Frontiers of Wolf Recovery

2005

International Wolf Center™

COLORADO SPRINGS

OCTOBER 1 – 4

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TABLE OF CONTENTS

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Welcome Conference Participants,

This fourth International Wolf Center conference focuses on the Southwest, where wolf recovery maintains a rocky toehold and faces an uncertain future. In east-central Arizona and west-central New Mexico the Mexican wolf recovery effort supports 44 to 48 free-ranging wolves. The U.S. Fish and Wildlife Service's wolf recovery team is awaiting the results of litigation on the 2003 wolf reclassification before presenting a new plan for the distinct population of gray wolves in the Southwest.

Much of our understanding of the wolf is shaped by the lenses and filters of our own experience. Frontiers of Wolf Recovery: Southwestern U.S. and the World is a conference that will shine the light of many perspectives on the complex and timely issues of wolf recovery.

Scientists, livestock producers, Native American tribes, federal and state wildlife agency representatives, wolf lovers and antagonists, educators and advocates will present points of view, question each other and discuss the wolf—the topic that binds us. We have the opportunities to put forth perspectives for examination and to look through the lenses of stakeholders with different views.

We will encourage and rely on ethical persuasion. The persuasion of this method is not to convince someone else of the correct viewpoint. Rather, this approach encourages us to participate with respect, understanding, fairness and a willingness to be influenced.

Much remains to be discussed. As the human population burgeons, key land-use issues must be faced. How will wolf recovery affect local communities? How would you balance scientific information, environmental quality, social needs and economic realities in answering these and other questions for wolves and humans in the Southwest and around the world?

Welcome to the dialogue.

Sincerely,

Nancy jo Tubbs
Chair, Board of Directors

Walter M. Medwid
Executive Director

IUCN WORLD CONSERVATION UNION WOLF SPECIALIST GROUP

The International Wolf Center is proud to sponsor the Wolf Specialist Group meeting held in conjunction with Frontiers of Wolf Recovery: Southwestern U.S. and the World. Participants of this conference are invited to listen and observe the Wolf Specialist Group meeting, Saturday, October 1, 2005, 1:00 p.m. - 5:00 p.m. in the Print Shop room at the hotel.

The IUCN World Conservation Union is the foremost international conservation organization, and the Species Survival Commission (SSC) is the IUCN's species conservation arm. The chairman and members of the Wolf Specialist Group are appointed by the IUCN and SSC to promote ecologically sound management of the wolf worldwide and especially endangered wolf populations. International Wolf Center's founder, Dave Mech, has chaired this committee since 1978.

Wolf Specialists attending the conference include:

Layne Adams, USA
Anders Bjarvall, Sweden
Juan Carlos Blanco, Spain
Luigi Boitani, Italy
Ludwig Carbyn, Canada
Dean Cluff, Canada
Yadvendradev Jhala, India
Ovidiu Ionescu, Romania
Benoit Lequette, France
Henryk Okarma, Poland
David Mech, USA (Chair)
Mike Phillips, USA
Erkki Pullianinen, Finland
Jorge Servin, Mexico
Petter Wabakken, Norway

• CONFERENCE-AT-A-GLANCE •

Frontiers of Wolf Recovery: Southwestern U. S. and the World
October 1-4, 2005

SATURDAY, OCTOBER 1, 2005

MORNING	AFTERNOON / EVENING
Frontiers of Wolf Education – *Fremont, Hayden, Learning Center* Pike's Peak Field Trip – *Front of Antlers hotel*	Garden of the Gods Field Trip – *Front of Antlers hotel* Posters and Exhibits – *Heritage D* IUCN Wolf Specialist Meeting – *Print Shop* Conference Reception – *Heritage D F*

SUNDAY, OCTOBER 2, 2005

MORNING	AFTERNOON / EVENING
Welcome – *Summit* Opening Remarks – *Summit* Wolf Recovery in the SW US: An Introduction to the Issues – *Summit* Town Hall Forum – *Summit*	Silent Auction – *Heritage EF* Wolf Recovery and Reintroduction – *Heritage C* Wolf Recovery: People, Planning and Process – *Heritage A* The Role of Education – *Heritage B* The Ethical Questions – *Heritage C* Policies and Practice of Wolf Management – *Heritage A* Living with Wolves: Personal Experience – *Heritage B* Decade of the Wolf: Restoring the Wild To Yellowstone – *Summit*

MONDAY, OCTOBER 3, 2005

MORNING	AFTERNOON / EVENING
Win-Lose to Win-Win: The Role of Human Dimensions Research – *Summit* Denning and Reproductive Success – *Heritage C* Regional Population Dynamics – *Heritage A* Human Dimension: Culture and Attitudes – *Heritage B* Wolves and Humans: Current and Historical Perspectives – *Fremont* Wolf Range and Dispersal – *Heritage A* North American Status and Challenges – *Heritage B*	Red Wolf Panel – *Heritage C* Wolf Range and Dispersal (Continued) – *Heritage A* Europe and Asia Status and Challenges – *Heritage B* Living with Wolves : The Economic Factor – *Fremont* The Value of Long-term Studies – *Heritage C* Living with Wolves: Wolf/Human Conflict – *Fremont* Flying W Barbeque – *Front of Antlers Hotel*

TUESDAY, OCTOBER 4, 2005

MORNING	AFTERNOON / EVENING
Yellowstone Wolves, A Retrospective – *Summit* Prey, Predator and the Environment – *Heritage A* Policies and Practice of Wolf Management (Continued) – *Heritage B* Feature Film: Desert Wolves of India – *Heritage C* Of Wolves and Politics – *Summit*	

Frontiers of Wolf Recovery

2005 International Wolf Center

COLORADO SPRINGS

• CONFERENCE SCHEDULE •

FRIDAY, SEPTEMBER 30, 2005

6:00 pm- 9:00 pm	**HERITAGE D** **Exhibit and Poster Setup –** *Continues Saturday 7:30 am-12:00 pm*

SATURDAY, OCTOBER 1, 2005

7:00 am	**MAIN LOBBY**	
	Registration / Beverages available for Educators at 8:30 am in Fremont	
9:00 am	**FREMONT**	
	Welcome: ***Why Teach about Wolves?** *Andrea Lorek Strauss, International Wolf Center National Education Director*	
9:45 am (30 minute presentations)	**HAYDEN**	**FREMONT**
	Get Your PAWS Online! - *Kimberly S. Loomis* Wolves in the Classroom - *Sue A. Knopp* Wolves at Colorado's Door: Resources for Teaching about Colorado Wildlife - *Tabbi Kinion* Choices and Consequences - Living with Wildlife - *Bette Blinde*	Attitudes Toward Wolves in American Literature: Using Fiction to Change Attitudes Toward Wolves - *Deborah M Brenton* Wolf Ecology Brought to Life - *Andi Burling* Teaching About Controversial Wolf Issues - *Andrea Lorek Strauss* Wolves in the Middle School - *Kelly L Godfrey* Teaches With Wolves: High School Students Make a Difference - *John T. Thompson*
Noon	**Buffet Lunch for Educators in Jackson / Seating with tables in Jackson, Learning Center and**	
1:00 pm	**FREMONT**	
	Keynote Speaker: *Wolf Wars: Lessons Learned and Re-learned in the Southwest *- Terry B. Johnson, Endangered Species Coordinator, Arizona Game and Fish*	
2:00 pm	**HAYDEN**	**FREMONT**
	A Child's View of Wolves - *Sue Turbow, Joell Severens*	Tracking Wild Wolves - *Jen Westlund*
3:00 pm	**Beverage Break in Heritage D**	
3:15 pm	Scientific Inquiry to Study Wolves with Elementary/Middle School Students - *LaVerne K. Logan*	Get the Connection - *Bobbie H Holaday*
4:15 pm	**Break**	
4:30 pm	**Roundtable Discussion** How can distance learning improve the quality and impact of wolf education?	**Roundtable Discussion** How can wolf education help meet classroom objectives?
5:30 pm	**Conclusion, Turn in graduate credit paperwork at registration**	
6:00 pm	**Dinner - on your own / Registration Continued 6:00-9:00 pm – Main Lobby**	
7:00 pm	**HERITAGE D**	**HERITAGE F**
	***Conference Reception 7:00-9:30 pm**	
7:30 pm	***Gendron Jendron – artist**	***Gary Wockner Book Reading**

***See Special Presentation or Event.**

FRONTIERS OF WOLF RECOVERY: SOUTHWESTERN U.S. AND THE WORLD
COLORADO SPRINGS, COLORADO

FRIDAY

8:00 am — **HERITAGE D**: **Exhibit and Poster Setup**

SATURDAY

8:00 am — **MAIN LOBBY**: **Registration / Beverages available for Educators at 8:30 am in Fremont**

9:00 am — **FREMONT**: **Welcome:** ***Why Teach about Wolves?** *Andrea Lorek Strauss, International Wolf Center National Education Director*

9:45 am — **LEARNING CENTER**: Mexican Gray Wolf: Restoration in the Southwest *- Shawna Nelson*

11:15 am — Wolf Ecology 101: What Do We Know For Sure? *- John A Vucetich*

Noon — **Terrace (weather permitting), chairs only in Fremont.**

FREMONT: ***Keynote Speaker**

2:00 pm — **LEARNING CENTER**: Livestock Management and The Economic Impact of Wolves *- Bonnie Kline*

3:00 pm — **Beverage Break in Heritage D**

3:15 pm — Wolves, Ethics, and Critical Thinking *- Michael P. Nelson*

4:15 pm — **Break**

4:30 pm — **Roundtable Discussion** How should ethics and human values be incorporated into wolf education?

5:30 pm — **Conclusion, Graduation Credit**

6:00 pm — **Dinner / Registration**

7:30 pm-10:00 pm — **LEARNING CENTER**: ***Video Clips with Interpretation**

FIELD TRIPS

FRONT OF ANTLERS HOTEL

- **8:15 am-3:00 pm** — ***Pikes Peak Cog Railway Field Trip**
- **12:45 am-5:00 pm** — ***Garden of the Gods Field Trip**

PRINT SHOP

- **1:00 pm-5:00 pm** — ***IUCN Wolf Specialist Meeting**

CHEYENNE MT. ZOO

- **1:00 pm-3:00 pm** — ***Wild and Domestic Canids**

ONGOING ACTIVITIES

HERITAGE E F

***Wolf Den Store Hours**

- **7:30 am-10:00 pm** — Saturday and Sunday
- **8:00 am-5:00 pm** — Monday
- **8:00 am-1:00 pm** — Tuesday

HERITAGE D

***Exhibits and Posters Hours**

- **12:00 pm-9:00 pm** — Saturday
- **8:00 am-5:00 pm** — Sunday and Monday (Authors are available for questions on Monday 12:00pm-1:30pm)
- **8:00 am-11:00 am** — Tuesday

***See Special Presentation or Event.**

SUNDAY, OCTOBER 2, 2005

SUMMIT

8:00 am — **Welcome –** *Nancy jo Tubbs, Board of Directors Chair and Walter Medwid, Executive Director*

8:15 am — ***Opening Remarks –** What is the Long-term Future of Wolves in the SW and the World? - *Dave Mech , US Geological Survey*

8:30 am — ***Wolf Recovery in the Southwestern U.S.: An Introduction to the Issues**

- *Ron Refsnider, Endangered Species Listing Coordinator for Region 3 of the U.S. Fish and Wildlife Service*
- *Mike Phillips, Executive Director of the Turner Endangered Species Fund / Mexican Wolf Recovery Team technical member*
- *John Morgart, Mexican Wolf Recovery Coordinator for the U. S. Fish and Wildlife Service*
- *Carlos Carroll, PhD, Director of the Klamath Center for Conservation Research*
- *Peter Siminski, Leader of the Southwestern Gray Wolf Distinct Population Segment Recovery Team*
- *Tom Compton, PhD, Past President of the CO Cattlemen's Assn./rancher and Mexican Wolf Recovery Team stakeholder member*

10:15 am Beverages in Heritage D -no formal break

10:30 am — ***Town Hall Forum**

Noon — **Lunch - on your own / Silent Auction / *Film - C*aribou and Wolves* in Fremont**

1:30 pm

HERITAGE C

Mexican Wolf Recovery and Reintroduction

Mexican Gray Wolf Reintroduction Efforts in the Blue Range Wolf…- *John K. Oakleaf*

Historical Range of Distribution of the Mexican Wolf - *Jorge Servin*

Sky Islands to Southern Rockies: A Court Ruling…Broader Recovery… - *Michael J Robinson*

Efficacy of Release Methodology for Mexican Gray Wolves…Blue Range…- *John K Oakleaf*

Predation Patterns of Mexican Gray Wolves in Blue Range Wolf Recovery Area - *Dan W Stark*

Wolf Recovery in the Southwest: A Critical Review - *Dave Parsons*

Mexican Gray Wolves: Challenges for the Captive Breeding Program… - *Patrick C Valentino*

Managing Reproduction for Genetic Population Management - *Cheryl S. Asa*

HERITAGE A

Wolf Recovery: People, Planning and Process

From CR and ADR to ECR - Are…Conflict Resolution Processes an Option… - *Paige Tucker*

Creating a Wolf Management Plan With All the Key Interest Groups: … - *Alistair J. Bath*

Conservation of Wolf Through Acceptance by All Interest Groups: … - *Ana Strbenac*

Planning for Wolves in Colorado - *Gary T Skiba*

The State of Gray Wolf Conservation and Management in Montana:… - *Carolyn A. Sime*

The Wolf Planning Toolbox: An Oregon Example - *Amaroq E Weiss, Paul De Morgan*

Mexican Wolf Conservation: Adaptive Management on an Evolving Landscape - *Terry B Johnson*

Utah Public Planning - *Miles Moretti*

The Future for Gray Wolf Recovery in the Northeastern U.S. - *Peggy Struhsacker*

3:30 pm Beverages in Heritage D -no formal break

4:10 pm

The Ethical Question

The Ethics of Wolf Control - *Michael P. Nelson*

Wolf Survival: Moving Forward or the Final Frontier? - *Karlyn I Atkinson Berg*

Ethics and Values in Wolf Recovery: The Benchmark for Science, Education and Politics - *William S. Lynn, Camilla H Fox* (40 minutes)

4:30 pm

Policies and Practice of Wolf Management

Defining Recovery Goals for Wolves Using Previous Delisting Actions, … - *Carlos Carroll*

An Assessment of Current Methods Used for Monitoring Wolves - *Kyran Kunkel*

Predator Control in Alaska: An Analysis of Current Predator Control Programs… - *David Klein*

5:30 pm — **Dinner – on your own**

7:00 pm

SUMMIT

***Decade of the Wolf: Restoring the Wild to Yellowstone** - *Douglas Smith*

8:30 pm — ***Booksignings -** *Douglas Smith, Gary Wockner, Luigi Boitani, Brett Walker, Jon Coleman, Steve Grooms, Bobbie Holaday,*

9:30 pm

LEARNING CENTER

***Film - C*aribou and Wolves**

***See Special Presentation or Event.**

FRONTIERS OF WOLF RECOVERY: SOUTHWESTERN U.S. AND THE WORLD
COLORADO SPRINGS, COLORADO

SUMMIT

8:00 am — **Welcome**

8:15 am — ***Opening Remarks**

8:30 am — ***Wolf Recovery in the Southwestern U.S.: An Introduction to the Issues**

10:15 am Beverages in Heritage D -no formal break

10:30 am — ***Town Hall Forum**

Noon — **Lunch - on your own / Silent Auction / *Film - *Caribou and Wolves* in Fremont**

1:30 pm — **HERITAGE B**

The Role of Education

Using Bias with Integrity in Wolf Education - *Andrea Lorek Strauss*

Wolf Education Plan for Mexico - *Miguel A. Armella*

Implications on Education in the Upper Great Lakes Region… - *Pam S. Troxell*

A University Honors Course on Wolves - *George Catalano*

Addressing Shortfalls of Wolf Recovery: … Cooperative Education Initiatives… - *Michael Wolf*

Hunter Outreach: a Partnership of Volunteers and Wildlife Personnel… - *Dorothy F. McLeer*

3:30 pm Beverages in Heritage D -no formal break

4:00 pm — **Living with Wolves: Personal Experience**

Wolf Habituation and Management Implications - *Diane Boyd*

Living with Wolves: A Minnesota Farmer's Experience - *David Radaich*

Living with Wolves in Montana - *Ed Bangs*

Living with Wolves in the Northern Rockies - *Mike Jimenez*

Local Reaction to the Reintroduction of the Mexican Gray Wolf - *Nick Ashcroft*

5:30 pm — **Dinner – on your own**

7:00 pm — **SUMMIT**

***Decade of the Wolf**

8:30 pm — *Lu Carbyn, David Mech*

9:30 pm — **LEARNING CENTER**

Film - *Caribou and Wolves

ONGOING ACTIVITIES

HERITAGE E F

Silent Auction

12:00 pm-9:00 pm — Sunday

HERITAGE E F

Wolf Den Store Hours

7:30 am-10:00 pm — Sunday

8:00 am-5:00 pm — Monday

8:00 am-1:00 pm — Tuesday

HERITAGE D

Exhibits and Posters Hours

8:00 am-5:00 pm — Sunday

8:00 am-5:00 pm — Monday
Poster Session 12:00pm-1:30pm

8:00 am-11:00 am — Tuesday

*See Special Presentation or Event.

MONDAY, OCTOBER 3, 2005

SUMMIT

8:30 am — ***Win-Lose to Win-Win: The Role of Human Dimensions Research** - *Alistair Bath*

9:30 am

HERITAGE C

Denning and Reproductive Success

Wolf Den Site Selection in the Northern Rocky Mountains - *Jon R. Trapp*

Effects of Seasonal Caribou Movements and Human Development… - *Paul F Frame*

Denning Behavior of the Indian Wolf *(Canis lupus pallipes)*… - *Satish Kumar*

Multiple Denning by Wolves *(Canis lupus pallipes)* in Semi-wild Landscapes… - *Bilal Habib*

Pack Structure and Reproductive Success of Female Wolves in Yellowstone National Park - *Douglas W Smith*

Wolf Pup Survival and Recruitment in Algonquin Provincial Park - *Kenneth J Mills*

Response of Wolves to Experimental Disturbance at Homesites - *Paul F Frame*

HERITAGE A

Regional Population Dynamics

Assessing Wolf Dispersal, Disease and Genetic Variability... - *Astrid V Stronen*

Population Dynamics of Wolves in Denali National Park, 1986-2002 - *Layne G. Adams*

Restoration of Wolves in the NW United States - *Ed E. Bangs*

Wolf Recovery in Wyoming, Outside Yellowstone National Park, 1999-2004 - *Michael D. Jimenez*

Social Dynamics of Wolves in Yellowstone National Park - *Daniel R. Stahler*

10:15 am Beverages in Heritage D -no formal break

11:10 am

Wolf Range and Dispersal

Ranging Patterns of Wolves *(Canis lupus pallipes)* in Semi-wild Landscapes… - *Satish Kumar*

Movement Patterns of Wolves on Extended Trips on the Tundra - *Dean Cluff*

Noon — **Lunch – on your own – Poster Session in Heritage D**

1:30 pm

Red Wolf Panel

David R Rabon, Jr., US Fish and Wildlife Service
Bud Fazio, Red Wolf Coaltion
Nina Fascione, Defenders of Wildlife
Jennifer Gilbreath, Red Wolf Coalition

Dispersal of Wolves Living in an Agricultural Habitat in Spain - *Juan Carlos Blanco*

Dispersal in an Expanding Wolf Population at the Edge of the Range - *Ilpo Kojola*

Winter Activity Patterns & Behavior in the Re-establishing Wolf Population… - *Hâkan Sand*

3:00 pm

HERITAGE C

*The Value of Long-term Studies

Mike Phillips, Turner Endangered Species Fund, Facilitator
Lu Carbyn, Canadian Wildlife Service, Canada
John Theberge, University of Waterloo, Faculty of Environmental Studies, Canada
Petter Wabakken, Hedmark University College, Norway
Dave Mech, US Geological Survey, United States
Doug Smith, Yellowstone National Park, United States

3:30 pm Beverages in Heritage D -no formal break

5:10 pm — **Meet for the bus in front of the Antlers hotel at 5:15, 5:30, 5:45 pm**

6:00 pm — ***Flying W Barbeque and Awards – Tickets must be purchased**

***See Special Presentation or Event.**

FRONTIERS OF WOLF RECOVERY: SOUTHWESTERN U.S. AND THE WORLD
COLORADO SPRINGS, COLORADO

SUMMIT

8:30 am — **Win- Lose to Win- Win: The Role of Human Dimensions Research** - *Alistair Bath*

9:30 am

HERITAGE B

Human Dimension: Culture and Attitudes

The Social Carrying Capacity of Wolves - *Kevin F Schanning*

The Influence of Persuasive Arguments on Public Attitudes… - *Mike K. Phillips*

White Mountain Apache Tribe Wolf Program: Conflicts and Culture - *Cynthia Dale*

The Wolf and I - *Robin F. Ferruggia*

10:15 am Beverages in Heritage D -no formal break

10:50 am

North American Status and Challenges

Bison Fluctuations in Wood Buffalo National Park: Hypothesis Testing… - *Ludwig Carbyn*

A Vision for Wolf Conservation in North America - *David R. Parsons*

From Extermination to Conservation of the Mexican Wolf - *Jorge Servin*

FREMONT

Wolves and Humans: Current and Historical Perspectives

Historicizing Wolves and Wolf Conservation - *Brett Walker*

Last Animals: Stories of Extinction - *Jon Coleman*

Ecological Conditions of Non-rabid Wolf Attacks on Man... - *Jean-Marc Soulie*

The Wolf: Changing Scientific Myths - *George D. Catalano*

Wolves and Men: Challenges to Wolf Recovery… - *Catherine Raven Feher-Elston*

Our Naked Nape: Meeting Grounds for Human Recoveries – *Gendron Jenson*

Noon — **Lunch – on your own – Poster Session in Heritage D**

1:30 pm

Europe and Asia Status and Challenges

Wolf Status and Conservation in the Iberian Peninsula - *Ines Barroso*

Status of Wolves in Romania - *Ovidiu Ionescu*

Habitat Needs, Predation & Conservation of Indian Wolves - *Yadvendradev V Jhala*

Wolf Research Complementing Wolf Management in Croatia - *Josip JK Kusak*

3:30 pm Beverages in Heritage D -no formal break

Wolf Status in Maritime Alps and France - *Benoit Lequette*

Illegal Killing and Inbreeding Depression Threatens… Scandinavia… - *Olof Liberg*

People's Response to a Slight Increase in the Finnish Wolf Population - *Erkki Pulliainen*

3:30 pm

A Brief Status of Wolves in Germany - *Oliver Matla*

Protection of the Wolf in Poland: Success or Failure - *Henryk Okarma*

Living with Wolves: The Economic Factor

Economic Impacts of Reintroducing the Mexican Wolf *(Canis lupus baileyi)* … - *Timm Kroeger*

The Impact of Wolves on Ranching Operations - *Bonnie C Kline*

Back to Basics Management: Could Wolves Control CWD? - *Margaret A Wild*

Connection and Discovery: Lessons, Insights and Cautions… - *Peg Abbott*

Wolves - Worth the Watching! Natural History Outfitting…Yellowstone…- *Meredith Taylor*

The Economic Value of Wolves and Alternative Values of Wolves... - *Ken Sinay*

Living with Wolves: Wolf/Human Conflict

Management of Wolf-Human Conflicts in Minnesota - *Duane (Pete) Sahr*

Nature of the Beast: Managing Conflict …Wolf Conservation in the USA… - *Suzanne A Stone*

The Range Riders Project: Using Herders to Prevent Wolf Conflicts - *Janelle L Holden*

Panel - Living with Predators in Today's West - *Nina Fascione (40 minutes)*

5:10 pm — **Meet for the bus in front of the Antlers hotel at 5:15, 5:30, 5:45 pm**

6:00 pm — ***Flying W Barbeque and Awards – Tickets must be purchased**

***See Special Presentation or Event.**

TUESDAY, OCTOBER 4, 2005

8:15 am — SUMMIT

***Yellowstone Wolves, A Retrospective: a High Definition Look at Wolf Behavior** - *Bob Landis*

9:10 am

HERITAGE A	HERITAGE B
Prey, Predator and the Environment	**Policies and Practice of Wolf Management Continued**
Are Wolf-prey Systems Dominated by Top-down Processes or Bottom-up Processes? - *Rolf O. Peterson*	Relating Foraging Theory to Wolf Predation on Livestock in the Rocky Mountains: Application and Insight from Theory to a Conservation Management Problem. - *Timmothy J Kaminski*
Wolf Recovery in Wyoming, Outside Yellowstone National Park, 1999-2004 - *Michael D. Jimenez*	Assessing the Effects of a Harvest Ban on the Population Dynamics of Wolves in Algonquin Park, Ontario. - *Brent R Patterson*
Outcome of Interactions and Pursuit Distances During Wolf Attacks on Moose and Roe Deer - *Camilla K Wikenros*	Management of Wolf/livestock Conflict in NW United States - *Ed E. Bangs*
Influence of Harvest, Climate, and Wolf Predation on Yellowstone Elk, 1961-2004 - *John A Vucetich*	Reoccurrence of Depredation and Wolf Control as Wolves Return to the West - *Marco Musiani*

10:30 am — Beverage Break– Heritage D

10:45 am — SUMMIT

Keynote Closing: ***Of Wolves and Politics**

Martin Nie, Associate Professor of Natural Resource Policy in the College of Forestry and Conservation at the University of Montana

Martin places the story of wolf recover and management in its larger political context of environmental conflict and governance. Perspectives on information and ideas gathered from this conference will be included.

11:45 am — Closing

Walter Medwid, Executive Director

1:30 pm

CARSON	HERITAGE B
Private Stakeholder Meeting	**Private Captive Wolf Management Meeting**

***See Special Presentation or Event.**

FRONTIERS OF WOLF RECOVERY: SOUTHWESTERN U.S. AND THE WORLD
COLORADO SPRINGS, COLORADO

SUMMIT

8:15 am

***Yellowstone Wolves, A Retrospective: a High Definition Look at Wolf Behavior** - *Bob Landis*

9:10 am

HERITAGE C

***Feature Film: Desert Wolves of India**
– Y. Jhala

A film on the intimate life of the desert wolf of India

ONGOING ACTIVITIES

HERITAGE D

8:15 pm-
10:45 pm

Exhibit and Poster Take-down

10:30 am

Beverage Break– Heritage D

10:45 am

SUMMIT

Keynote Closing: ***Of Wolves and Politics**

Martin Nie, Associate Professor of Natural Resource Policy in the College of Forestry and Conservation at the University of Montana

Martin places the story of wolf recover and management in its larger political context of environmental conflict and governance. Perspectives on information and ideas gathered from this conference will be included.

11:45 am

Closing

Walter Medwid, Executive Director

Frontiers of Wolf Recovery

2005 International Wolf Center

COLORADO SPRINGS

• SPECIAL EVENTS AND PRESENTATIONS •

SPECIAL EVENTS & PRESENTATIONS

FRIDAY, SEPTEMBER 30, 2005

Poster and Exhibit Setup . . . . . .6:00 p.m. – 9:00 p.m. - *Heritage D*

SATURDAY, OCTOBER 1, 2005

Registration . . . . . .7:00 a.m. – 9:00 p.m. - *Antlers hotel lobby*

Exhibit and Poster Setup continued . . . . . .7:30 a.m. – 12:00 noon - *Heritage D*

Frontiers of Wolf Education . . . . . .9:00 a.m.–5:30 p.m. – *Fremont, Hayden and Learning Center*
Join us for a day of exploring the issues and opportunities of wolf education. Wolf education is the foundation for solution-oriented public discussions about wolves and wolf management. The opening day of the Frontiers of Wolf Recovery Conference is dedicated solely to this important facet of wolf recovery. Attendees will gain inspiration, knowledge, and resources for teaching about wolves…plus network with other wolf educators!

Welcome and Opening Remarks
Why teach about wolves? . . . . . *.9:00 a.m. – 9:45 a.m. - Fremon*t
All who have a stake in wolf issues have an interest in a well-informed public dialogue in which respectful, solution-oriented discussion leads to better wolf recovery plans that have broad public support. The key to transforming the public discussion is education. Wolf education must improve in-depth understanding of the various dimensions of wolf issues, and today's events will equip us all with the tools, perspectives, and motivation to improve our wolf education practices.
Andrea Lorek Strauss, International Wolf Center National Education Director

Wolf Wars: Lessons Learned and Re-Learned in the Southwest . . . . .*1:00 p.m. – 2:00 a.m. - Fremon*t
The Mexican wolf was absent from the Southwest just about long enough for people to become quite certain that its return would be the most horrible mistake ever, or the greatest thing ever. Absent facts based in science and knowledge, myth and rhetoric rule the reintroduction and recovery dialogue. How does one approach such a bipolar world, when it seems so crystal clear that compromise is both essential and inevitable, yet seemingly odious to all the key stakeholders? Well, hopefully with a thick skin, dogged persistence, and a sense of humor and fair play. This presentation will cover some of the challenges and opportunities associated with wolf recovery in the Southwest, with experience-based anecdotes about the full cast of characters and what they bring with them: individuals and groups that care deeply (pro and con) about wolves and wolf issues; the roles stakeholders can, should, and occasionally do play in shaping management decisions; and things that make wolf management easier, or more challenging. It will address the social, political, and science aspects of wolf recovery, from the perspective of 23-years of first-hand experience.
Terry B. Johnson, Endangered Species Coordinator, Arizona Game and Fish

Conference Field Trips
Pikes Peak Cog Railway . . . . . .8:15 a.m. – 3:00 p.m. - *In front of Antlers hotel*
Take the world-famous cog train 14,110 feet to the summit of Pikes Peak, and see the view that inspired Katherine Lee Bates to write the song "America the Beautiful"! The journey to the summit is lined with large stands of spruce and pine trees, waterfalls, breath-taking views and one of Colorado's largest herds of bighorn sheep. At the summit we will have 35 minutes for exploration and taking in the view. The temperature at the summit is often 30 degrees cooler, so please dress appropriately. Following the cog railway trip, we will visit the historic shopping district of Old Colorado City. Set amid historic brick buildings, it has never lost its feisty frontier spirit! Stroll along the tree-lined street, enjoy lunch on your own, and visit the distinctive shops and art galleries.

Garden of the Gods . . . . . .12:45 p.m. – 5:00 p.m. - *In front of Antlers hotel*
Join us for a half-day professionally guided tour of the magnificent Garden of the Gods! The trip includes a scenic drive through the area's trademark red rock formations and plenty of time to visit the Garden of the Gods Visitor Center to enjoy unobstructed views of Pikes Peak and a multimedia presentation on the famed geology of the region. You will also enjoy a short hike within the Garden of the Gods. Our tour will include an opportunity to visit the Garden of the Gods Trading Post, recognized as one of the largest markets of authentic Native American items in the country! On our way back to the hotel, we will visit the picturesque "Balanced Rock" formation.

International Wolf Specialist Group Meeting . . . . . .1:00 p.m. – 5:00 p.m. - *Print Shop*
The IUCN Wolf Specialist Group (WSG) is the world's chief body of scientific and practical expertise on the status and conservation of wolves. Members will update each other on the population and legal status of the wolf in each member's area of expertise. Any special problems requiring WSG or IUCN resolutions will be discussed, as well as the future organization and meetings of the WSG. Conference participants have a unique opportunity to observe this group meeting, chaired by Dr. L. David Mech. Although, participation or questioning by the conference attendees is not possible during the meeting itself, WSG members will be attending the remainder of the conference.

Wild and Domestic Canids: Conservation Detector Dog Demonstration . . . . . .1:00 p.m. – 3:00 p.m. - *Cheyenne Mountain Zoo (transportation to the zoo not provided)*
Prior to the demonstration, Lori Schmidt, Wolf Curator for the International Wolf Center, will give a short introduction about wolves as the ancestor of the domesticated dog. In 1997, Barbara Davenport and Steve Weigley of PACKLEADER Dog Training and Dr. Sam Wasser, developed an innovative, noninvasive method for identifying targeted species in their natural environment by using detection dogs. Researchers using this method are able to obtain DNA and stress hormone samples from targeted species scats in an unbiased manner without disturbing the animal or its habitat. These methods have proven to be reliable and repeatable. Unlike many other sampling methods, detection dogs do not influence or alter the target species' behavior. Properly trained dogs are not affected by the visual appearance of samples, can pinpoint the exact location of multiple target samples, and ignore all nontarget species. Dog teams are able to cover a larger geographic area faster and more completely than humans working alone.

Conference Reception . . . . . .7:00 p.m. – 9:30 p.m. - *Heritage D and F*
Conference participants are invited to congregate and socialize with others in Heritage E and F. Dessert and cash bar available. The events listed below will also take place in this area:
7:30 p.m.–8:30 p.m. Artist Gendron Jensen will be available to discuss his lithographic drawings of animal bones. "The spirit of the animals is in the bones," he says. "They speak of life and the creature they once were." His artwork is featured in the collections of the Walker Art Museum in Minneapolis, Minnesota; the Los Angeles County Museum of Art; the Fogg Museum at Harvard University; and the Albright-Knox Art Gallery in Buffalo, New York.
7:30 p.m.–8:30 p.m. *Comeback Wolves* edited by Gary Wockner is a collection of new essays and poems that celebrates wolf restoration in Colorado and the Southwest. Gary and a second editor, SueEllen Campbell, along with three Colorado Springs–area contributors—Susan Tweit, Michele Murray and Laurie Wagner Buyer—will read from and discuss their essays in the book. "*Comeback Wolves* reveals wolves are symbols of wildness, of our ability to restore ecological and spiritual health, and of hope."

Video Clips with Interpretation . . . . . .7:30 p.m. – 10:00 p.m. - *Learning Center*
Join us for an informal preview of unique video footage and imagery captured in some of the most remarkable wolf locations around the world—some of which has never before been shown in public! This informal showcase of six unique presenters will include short clips from locations in Canada, India and the United States on various topics including pup development and predator-prey interactions.

"Wolf/Bison Demonstration at Wolf Park"
For over 20 years, the Wolf/Bison Demonstration at Wolf Park in Battle Ground, Indiana, has educated the public about the early stages of the predatory behavior sequence. In this highlights video, two or three wolves interact with a small herd of plains bison in a 17-acre pasture, testing them for weakness. Neither species has experienced a serious injury during this unique demonstration. *Holly Jaycox, Wolf Park, Indiana*

"In Absence of Mother Wolf—Out of the Den"
A videotape of the activities of wolf pups outside the den in India. *Balil Habib, Aligarh Muslim University, Department of Wildlife Science, India*

"Moose Underwater: The Boreal Hippo"
Rolf Peterson will show and narrate results of an effort to capture video footage of moose feeding underwater at Isle Royale National Park in 2004, using a small remotely operated vehicle (ROV). The results were named "Most Creative Use of "ROV Technology" at the 2004 International ROV Conference. *Rolf Peterson, Michigan Technological University*

"Observations and Stories from Tundra Wolf Homesites in the Central Canadian Arctic"
Paul Frame, University of Alberta, Canada

"Mountain Lions, Wolves and Bears, Oh My!"
A lighthearted collection of video odds and ends from the wolf reintroduction in Yellowstone. *Bob Landis is an Emmy award-winning cinematographer.*

"Photographic Science: Understanding Yellowstone Wolves through Digital Imagery"
Efforts to photograph wolves in Yellowstone during routine scientific monitoring from both aerial and ground observation sites have yielded great insight into their ecology and behavior. Technological advances in photography, namely digital imagery, have enabled researchers to freely document and rapidly process images from the field. Yellowstone biologists are using digital images to understand behaviors in greater detail such as hunting strategies, interspecific interactions with other carnivores, feeding behavior, and patterns in reproduction and social structure within packs. Never-before-seen images of Yellowstone wolves as seen from the eyes of a raven will be shown. *Daniel R. Stahler and Douglas W. Smith, Yellowstone Wolf Project*

SUNDAY, OCTOBER 2, 2005

Opening Remarks . . . . . .8:30 a.m. – 8:45 a.m. - *Summit*
What is the Long-term Future of Wolves in the Southwest and the World?
Dave Mech
Society's treatment of the wolf symbolizes humanity's interactions with our overall environment. Learning from our past mistreatment of the natural world, including widespread extirpation of the wolf, we are now trying to make amends. By restoring wolf populations where possible, including the U.S. Southwest, and attempting to accommodate the species, we hope to readjust our world back toward a more natural state.

In doing so, however, we are acting against two powerful historical forces. The economic systems that provide our survival, comfort and leisure depend on use, degradation and depletion of natural resources, and few of us will sacrifice our personal interests to preserve those resources. Second, our innate imperative to "be fruitful and multiply" propels our population to all corners of the globe and threatens to degrade all of our environment except that which we deliberately protect. Not only do these forces conflict with our present desire to restore the wolf and preserve our remnant natural environment, but more importantly they threaten to totally overwhelm these efforts during the next several decades. Our real challenge in recovering the

wolf in the Southwest or anywhere is to develop the will and the means to prevent this outcome. Will we do it?

Dave Mech is a Senior Research Scientist for the Biological Resources Division, U. S. Geological Survey and an Adjunct Professor at the University of Minnesota in St. Paul. He holds a B.S. degree from Cornell University, a Ph.D. degree and an honorary D.A. degree from Purdue University. He has studied wolves and their prey full time since 1958 and has published 10 books and hundreds of popular articles about them.

Dave's research includes studying wolves and deer in northeastern Minnesota since 1968, wolves and caribou in Denali National Park, Alaska from 1986 to 1995, and wolves and elk in Yellowstone since 1995. Mech also lived each summer from 1986 through1996 with a pack of wolves in the High Arctic to study their behavioral interactions and their predation on musk-oxen and arctic hares and continues to study wolves and their prey there each summer. He has chaired the IUCN Wolf Specialist Group of the World Conservation Union since 1978 and is the founder and vice chair of the International Wolf Center in Ely, Minnesota.

Dave's latest book, a comprehensive reference work, was published in September 2003: "Wolves: Behavior, Ecology, and Conservation. Edited by L. David Mech and Luigi Boitani. University of Chicago Press."

Wolf Recovery in the Southwestern U.S: An Introduction to the Issues

Panel Members . . . . . .8:15 a.m. – 10:15 a.m. - *Summit*

- Ron Refsnider, Endangered Species Listing Coordinator for Region 3 of the U.S. Fish and Wildlife Service presents: *An overview of the state of wolf recovery plans and delisting*
- Mike Phillips, Executive Director of the Turner Endangered Species Fund and member of the technical group of the Mexican Wolf Recovery Team presents: *The why of wolf recovery in Southwestern U.S.*
- John Morgart, Mexican Wolf Recovery Coordinator for the U. S. Fish and Wildlife Service presents: *Current Status and future of the Mexican Wolf recovery program*
- Carlos Carroll, PhD, Director of the Klamath Center for Conservation Research presents: *An assessment of habitat for wolf recovery in SW U.S. and Northern Mexico*
- Peter Siminski, Leader of the Southwestern Gray Wolf Distinct Population Segment Recovery Team presents: *The key technical issues challenging Mexican Wolf recovery in the SW*
- Tom Compton, PhD, Past President of the Colorado Cattlemen's Association, rancher and member of the stakeholders group on the Mexican Wolf Recovery Team presents: *The key stakeholder issues challenging Mexican Wolf Recovery in the SW.*

Town Hall Forum . . . . . .10:30 a.m. – Noon - *Summit*

The objective of this session is to give conference participants an opportunity to understand better the range of viewpoints on issues surrounding wolf recovery. Using facilitated dialogue, we will focus on several core issues and provide an opportunity for Town Hall Forum members to give their perspectives. The issues will largely address the opportunities and the challenges presented by wolf recovery in the SW including the existing wolf recovery program in central Arizona and New Mexico and the potential of an expanded federal wolf recovery program in the greater SW.

Forum members include above panel members minus Ron Refsnider and :

- Rob Edward, *Director of Carnivore Restoration, Sinapu*
- Bonnie Kline, *Executive Director, Colorado Wool Growers*
- Martin Nie, PhD, *Associate Professor of Natural Resource Policy, College of Forestry and Conservation, University of Montana*
- Paul De Morgan-*Facilitator, Resolve, Inc. Resolve is a nationally renowned consensus building organization with particular expertise in natural resource issues in the West.*

Caribou and Wolves: The Endless Dance

Afternoon Film Feature . . . . . .12:15 p.m. – 1:15 p.m. - *Learning Center*
Night Owl Showing . . . . . .9:30 p.m. – 10:30 p.m. - *Fremont*

BBC Worldwide/New York: Natural World Series

Driven by the demands of motherhood, millions of caribou follow a never-ending journey across the top of North America, traveling 3,000 miles from their winter range to calving grounds and back again. With maternal instincts leading them forward, their journey is fraught with obstacles and dangers: grizzly bears, raging rivers, insect hordes, deep snow, extreme cold and especially wolves. Although a significant threat, the wolves also balance on the cusp of survival when caribou families move away from their den site, and nothing is left to eat.

Decade of the Wolf: Restoring the Wild to Yellowstone . . . . . .7:00 p.m. – 8:30 p.m. - *Summit*

Yellowstone Wolf Project leader Dr. Douglas Smith will talk about his new book, *Decade of the Wolf: Returning the Wild to Yellowstone*, co-authored with award-winning nature writer Gary Ferguson. This remarkable manuscript is an unforgettable account of the wolves themselves as well as of the scientists who are faithfully following them through the wilds of Yellowstone. Published on the 10th anniversary of this historic endeavor, the book describes exciting new discoveries about wolf behavior and the remarkable effects these animals are having on their environment. From bison to grizzly bears, beetles to bald eagles, willows to grasses, an astonishing range of species are being affected by the return of this powerful predator. As the book's co-author biologist Douglas Smith describes it, "wolves are fast becoming to Yellowstone what water is to the Everglades."

Book signings . . . . . .8:30 p.m. – 9:30 p.m. - *Summit*

The following authors will be available to sign books. Books will be available for sale at the Wolf Den Store and after the *Decade of the Wolf* presentation. It is recommended that you purchase your books before Sunday evening to minimize waiting in line.

- Douglas Smith, *Decade of the Wolf: Returning the Wild to Yellowstone*
- Gary Wockner, *Comeback Wolves*
- Dave Mech and Luigi Boitani, *Wolves: Behavior, Ecology, and Conservation*
- Brett Walker, *Lost Wolves of Japan: Historicizing Wolves and Wolf Conservation*
- Jon Coleman, *Last Animals: Stories of Extinction*
- Steve Grooms, *Return of the Wolf*
- Bobbie Holaday, *The Return of the Mexican Gray Wolf: Back to the Blue*
- Lu Carbyn, *Wolves, Bison, and the Dynamics Related to the Peace-Athabasca Delta in Canada's Wood Buffalo National Park*

MONDAY, OCTOBER 3, 2005

Win-Lose to Win-Win: The Role of Human Dimensions Research . . . . .8:30 a.m. – 9:30 a.m. - *Summit*

Alistair Bath

A key challenge for wildlife managers and government agencies in addressing wolf management issues is developing acceptable management plans that have maximum buy-in. I will present HD research findings from residents of Spain, Portugal, UK, France and Croatia comparing and contrasting attitudes towards wolves. In addition I will review how management plans can be developed where the fundamental concerns of all interest groups are addressed.

Wildlife mangers can use the tools of HD research to involve the public in the process and aid decision-making while keeping all parties invested in the process.

Dr. Alistair Bath has been working on human dimension in wolf management issues for more than 20 years. He has been involved in understanding and working with groups related to wolf reintroduction issues in Yellowstone and wolf control issues in the Yukon. Dr. Bath spends most of his time in Europe where he has human dimension research projects in Portugal, Spain, France, Poland and Croatia. He is trained as a geographer and currently teaches at Memorial University of Newfoundland in Canada.

Flying W Barbeque . . . . . .6:00 p.m. – 9:00 p.m. - In front of *Antlers hotel*
Buses leave at 5:15, 5:30 and 5:45

Howdy! Wear your Western attire, and join other wolf wranglers from the conference in a winning combination of beautiful natural surroundings, an old Western town and mouthwatering food. We will board the shuttles from the hotel and travel to the Flying W Ranch, where the Flying W Wranglers will top off the evening with their outstanding Western stage show. The International Wolf Center will also be on stage to recognize and present awards to people who have helped in wolf education, recovery and management.

Cost of the Flying W Ranch ticket is $35 and includes appetizers, dinner, show and transportation from the Antlers Hilton hotel. Additional space is available for purchase at the Wolf Den Store. A cash bar with appetizers will be available upon arrival, and you will have the opportunity to walk around the old Western town. Be sure to sign up for the Monday evening dinner on the registration form, and join us for food, entertainment and fun unsurpassed in Colorado. Check for ticket availability at registration.

TUESDAY, OCTOBER 4, 2005

Yellowstone Wolves, A Retrospective: a High Definition Look at Wolf Behavior
Bob Landis . . . . . .8:15 p.m. – 9:10 p.m. - *Summit*
An unofficial finale to the National Geographic series on Yellowstone's wolves, this film chronicles to date the life of the Druid Peak Pack while introducing new individual wolves as well. Yellowstone Wolves will also return us to the understanding that in allowing Yellowstone to rewild, we will never have the intimate relationship with this generation of wolves as we did with the original. Join us for the premiere of this high-definition film and contemplate the great unknown that is the future of wolves in Yellowstone.

Bob Landis is an Emmy award-winning cinematographer. He has produced over a dozen wildlife films for programs such as National Geographic and Nature. His work has taken him to Denali, Kluane and Algonquin Parks but his home is Yellowstone Park where he has excelled in the art of wildlife film-making for over 30 years.

Desert Wolves of India, featuring special guest Dr. Y. Jhala . . . . . .9:10 p.m. – 10:30 p.m. - *Fremont*
A Mike Birkhead Associates Production for BBC Natural World Series
No one has previously succeeded in making a film on the intimate life of the desert wolf of India until now. Dr. Yadvendradev Jhala has studied this much maligned and misunderstood predator of India for 15 years, researching the complex story of the Indian wolf and how it survives amid a dense population of desert people and their livestock. Through his own research and the creative expertise of producer/director Mike Birkhead, Dr. Jhala hopes to convince everyone that the wolves of India deserve as much respect as the tiger and elephant. This is a cinematographic treat for all!

Yadavendradev V. Jhala is a wildlife researcher with an avid interest in wolves for more than 15 years. Jhala, who teaches animal ecology and conservation biology at WII, commenced his research on Indian wolves in 1988 as part of his Ph.D. work at Virginia Tech. He was a postdoctoral fellow at the Smithsonian Institution's National Zoological Park in Washington, D.C. in the early 1990s.

Of Wolves and Politics - Keynote Closing . . . . . .10:45 a.m. – 11:45 a.m. - *Summit*
Martin Nie
Martin Nie places the story of wolf recovery and management in its larger political context of environmental conflict and governance. Martin sketches some of the most dominant drivers of public lands and wildlife conflict in the United States, like scarcity, land ownership patterns, problematic statutory language and scientific disagreement and uncertainty. He uses the case of wolf politics to discuss a host of issues that are important to environmental governance in general, including the role played by state wildlife commissions, conservation funding and the future of the Endangered Species Act. The discussion focuses on the role of science, litigation and collaborative conservation in wolf politics and environmental policy in general.

Martin Nie is Associate Professor of Natural Resource Policy in the College of Forestry and Conservation at the University of Montana. His teaching responsibilities and research interests are in the areas of environmental and natural resources policy, law and administration, with a focus on public lands and wildlife. Nie has a particular interest in natural resource-based political conflict and his current research agenda examines public lands governance—the political institutions and decision making processes used to handle difficult policy problems. He received his Ph.D. from Northern Arizona University. Professor Nie is the author of Beyond Wolves: The Politics of Wolf Recovery & Management (University of Minnesota Press, 2003) and various scholarly articles and law reviews. He is currently writing a book about public lands conflict and governance.

Private Southwest Wolf Stakeholder Meeting 1:30 p.m. - *Carson*
Colorado Wool Growers Association, International Wolf Center, National Wildlife Federation, and Arizona rancher, Darcy Ely, are co-hosting an invitation-only meeting of livestock, hunting, government and environmental representatives to discuss efforts to educate the public about wolves and their effects on people.

Private Captive Wolf Management Meeting . . . . . .1:30 p.m. – 2:30 p.m. - *Heritage B*
Jackie Fallon, Mexican Wolf Education Advisor for the Mexican Gray Wolf SSP and Northern Trail Keeper for the Minnesota Zoo, and Lori Schmidt, Wolf Curator for the International Wolf Center, are sponsoring an "invitation only" post-conference session related to the issues of captive wolf management. Many individuals working with wolves day to day may face management issues that could be benefited by the opportunity to share ideas, techniques, facility designs and feedback from other wolf care personnel. Topics include social pack dynamics, enrichment techniques, handler interaction with wolves, handler safety issues, and management challenges in the future.

Frontiers of Wolf Recovery

2005 International Wolf Center

COLORADO SPRINGS

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Connection and discovery: Lessons, insights and cautions from 10 years of guided wolf tours in Yellowstone

Abbott, Peg

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Tourism associated with wolf recovery in Yellowstone has brought economic gain to surrounding communities. In addition to producing local good, well-constructed tour experiences are memorable and have the potential to create a strong constituency concerned for the future of wolves. Agencies face the challenge of regulating the growing enthusiasm of organizations and tour companies to provide wolf-viewing tours. Balancing the needs of wolves, habitat resources and visitor expectations can be difficult. Guides are routinely called on to balance expectations of clients, desires of tour operators, rules of agencies that govern use and safety of viewing areas, and concern for how group viewing affects wolves and research efforts to monitor wolves. Guides have direct contact with clients, leading to a unique (and sometimes complex or discouraging) insight into how clients perceive the experience. Initial experience is crafted by tour company brochures, itineraries, photos used in marketing and the broader influences of TV and other media. Actual versus anticipated experience is tempered by the potential of viewing wolves, the quality of interpretation and information supplied by guides, group size and dynamics, the density, attitude and behavior of other viewers, the style of vehicles used, weather, and more. Peg Abbott, a professional naturalist guide, presents results from interviews with 20 guides that have led 5 or more wolf-viewing tours in Yellowstone in the past 10 years, summarizing information that may prove beneficial as tourism opportunities and regulations develop in the Southwest and beyond.

Population dynamics of wolves in Denali National Park, 1986–2002

Adams, Layne G.

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From 1986 to 2002, my colleagues and I investigated the dynamics of the wolf population inhabiting Denali National Park, Alaska, where wolves as well as their ungulate prey are minimally affected by human harvest. For 16 years, we monitored an average of 12 packs per year and instrumented 237 individual wolves. The wolf population fluctuated as a result of variation in winter severity and its influences on prey vulnerability. During 1986–88, a period of generally low winter snowfall, the wolf population averaged only 3.7 wolves/1,000 sq. km and was comprised of small packs (5.3 wolves/pack in late winter, on average) with few pups (1.4 pups/pack in autumn). During the 1988–94, we experienced 6 years of above-average snowfall, including 2 of the 3 worst winters on record. With the onset of these severe winters, the wolf population more than doubled over 2 years to 7.7 wolves/1,000 sq. km. Mean pack size increased to 11 wolves/pack by late winter 1990, and pup recruitment tripled (4.4 pups/pack in autumn). With a return to more average winter conditions during 1995–2002, the wolf population was relatively stable, averaging 5.4 wolves/1,000 sq. km, with concomitant reductions in pack size (5.4 wolves/pack in late winter) and pup recruitment (2.5 pups/pack in autumn). Overall, recruitment of pups by autumn (36% of the population on average) was offset by natural mortality (24% annually) and dispersal of predominantly young wolves (12% annually).

Wolf education plan for Mexico

Armella, Miguel A.

Universidad Autonoma Metropolitana Iztapalpaa, Dept. de BiologÌa, Av. San Rafael Atlixco 186, Mexico City, D.F., 9340, Mexico (maa@xanum.uam.mx)

One of the most important concerns for the Mexican Wolf Recovery Team in Mexico is public education. In Mexico the general public not only lacks knowledge about wolf biology and ecology but does not know there is a special race (or subspecies) of wolf living in Mexico: the Mexican gray wolf. Several ways to provide the general public with basic knowledge have been attempted, including public cards, talks and so on. However, as the wolf recovery program approaches its ultimate goal of having a sound population for liberation, more education and support is needed. The general public can be divided into three categories for producing educational materials: adults, children and teachers. Each one has to be considered with two strata: urban and rural. At this point we have created an innovative interactive CD game specially targeted to children, named "Lupus," which is also the name of the character who teaches the children about wolf biology and is the mascot of program. We have also produced two books, one for children ages 5 to 8, and another for adults in rural areas. A Web site was developed to reach more people. Workshops for the rural population and an interactive virtual club for children are now in developing stages. We recognize there is a lot to do, especially to prepare for the upcoming wolf release, which might require us to expedite these programs and to focus our attention in the states where these releases are going to take place.

Managing reproduction for genetic population management

Asa, Cheryl S.

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The zoo community uses a combination of strategies to control animal numbers and gene flow in small population management. These objectives are achieved by enhancing or limiting individual reproductive rates using assisted reproduction techniques, such as semen banking and artificial insemination (AI), plus contraception or sterilization. Freezing semen preserves the genes of valuable individuals and can be used in the future, along with AI, to infuse those genes back into the population. AI can also be useful in transferring genes between individuals that are incompatible or separated by distance. In contrast, it can be equally important to control reproduction of individuals (to prevent inbreeding or over-representation of founders) or of populations to manage animal numbers. In our work with generic gray wolves (*Canis lupus*) and with Mexican wolves (*C. l. baileyi*) through the AZA Mexican Wolf Survival Plan, we have developed methods for safely and successfully collecting and freezing semen, controlling the time of ovulation for AI, and using nonsurgical intra-uterine insemination that less invasively increases fertility. We also have demonstrated the efficacy of methods for reversible contraception or permanent sterilization. Although these techniques have been used most commonly in zoos or similar captive breeding programs, they are finding increasing application in managed, free-ranging populations. Small populations often require similar management strategies, whether they are captive or free-ranging.

Reintroduction of the Mexican gray wolf

Ashcroft, Nick

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The issue of releasing predators within New Mexico and Arizona is one that is highly charged with emotions, opinions and value judgments. This presentation will present the results of numerous personal interviews with ranchers, guides and outfitters, and residents. A summary will be presented of the estimated actual and potential direct, indirect and induced socioeconomic impacts to the industries, communities and county.

Wolf survival: Moving forward or the final frontier?

Atkinson Berg, Karlyn

Humane Society of the United States, 44781 Bittner Point Road, Bovey, MN 55709, USA (karlyn@uslink.net)

This essay will explore the relationship between humans and wolves and illustrate how the wolf continues to be regarded as a competitor, thief and beast of evil and still inspires controversy. The author will review wolf control methods of the past and present, as well as the attitudes and subsequent actions that caused the wolf to become endangered. Several questions will be considered. After years of accumulated ecological and biological knowledge about the wolf, has this information been applied in any substantial way to wolf management? Have science or conservation efforts significantly changed wolf management philosophy and resulted in the implementation of ethical and humane wolf control techniques? Does the wolf still need protection to survive? Have contemporary wolf conservation philosophies, while professing to be enlightened, simultaneously enabled wolf protection to be reduced? Have current wolf policies and plans denied robust conservation goals, instead aiming primarily to keep wolf populations low, meeting minimal numerical criteria but not really supporting wolves returning to function freely in their ecological roles? Are wolves really experimental nonessential animals? Will humans genuinely provide scientific and ethical integrity to the wolf control? The author will question to what extent negative attitudes and hostile politics have forced the distortion of wolf science to allow wolf management to be based not on the wolf's conservation needs but on the satisfaction of other political agendas. The author will consider how the 2004 report on "Scientific Integrity in Policymaking" may also pertain to recent wolf policies.

Management of wolf-livestock conflict in the northwestern United States

Bangs, Ed E.

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Gray wolf *(Canis lupus*) populations were eliminated from the western United States by 1930 largely because of conflicts with livestock. By December 2004, 835 wolves were being managed in Montana, Idaho and Wyoming under the federal Endangered Species Act. Most core wolf habitat is occupied by resident packs, and conflicts will increase as wolves will disperse into areas used intensively for livestock production. Between 1987 and December 2004, at least 429 cattle, 1,074 sheep, 72 dogs, 12 goats, 9 llamas and 3 horses were killed by wolves, and over $400,000 was paid from a private damage compensation fund. Confirmed livestock loss from wolves remains regionally uncommon but can seriously affect some producers, particularly those using remote public land summer grazing allotments. Large wolf pack territories, increased wolf colonization of private rangeland, mixed public and private land ownership patterns, dispersed nature of livestock grazing, the ranching-without-wolves agricultural tradition in the western

United States, and seasonal elevational movements of many native ungulates makes effective management of wolf depredation difficult and extremely controversial. We have relocated wolves 117 times and killed 294 wolves to reduce conflict with livestock. While nonlethal methods were useful in some circumstances and will continue to be used, none were consistently reliable or effective. We believe that empowering the local public to protect their private property from wolf damage will increase tolerance of wolves.

Restoration of wolves in the northwestern United States

Bangs, Ed E., Joe Fontaine, Mike Jimenez, Curt Mack, Steve Nadeau, Carter Niemeyer, Carolyn Sime, and Doug Smith

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Gray wolf (*Canis lupus*) populations were eliminated from the western United States by 1930. Naturally dispersing wolves from Canada first denned in Montana in 1986. In 1995 and 1996 wolves from western Canada were reintroduced to central Idaho and Yellowstone National Park, Wyoming. By December 2004, 835 wolves were being managed in the northern Rocky Mountains under the U.S. Endangered Species Act. Wolf restoration has proceeded more quickly, with more benefits (public viewing and restoration of ecological processes) and fewer problems (livestock and pet depredations) than predicted. Livestock losses by wolves remain rare compared to other causes of livestock death but are inordinately controversial. Because over 85% of adult wolf mortality is human caused, our program focuses on addressing the concerns of people who live near wolves to increase tolerance of nondepredating wolves. The wolf population achieved its numerical, distribution and temporal recovery goal and is biologically recovered. In early 2005 a new 10j nonessential experimental rule for Montana, Idaho and Wyoming was finalized. This wolf population will be proposed for delisting when Wyoming develops a state wolf management plan that the U.S. Fish and Wildlife Service can approve.

Living with wolves in Montana

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Wolf status and conservation in the Iberian Peninsula

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Several regional or national surveys carried out in Portugal and Spain between 1999 and 2003 allowed us to ascertain the distribution area and estimate the number of packs and the population trends of wolves in the Iberian Peninsula, mainly by sign and howling surveys. Currently, the Iberian wolf range covers a total of 140,000 sq. km, 120,000 in Spain and 20,000 in Portugal. Most of the Iberian wolf range is located in

the northwestern quadrant of the Peninsula, with a small isolated population located in southern Spain. Three hundred twenty-two packs were estimated to exist in Iberia (254 confirmed + 68 probable), of which about 80% occur in Spain and 20% in Portugal. Nevertheless an unknown number of packs may have been undetected. The population size was estimated at more than 2,000 wolves, although methodological constraints made it difficult to obtain accurate figures. There has been a severe reduction in wolf distribution since the early 20th century, but since the mid-1990s the species seems to have stabilized in Portugal. In Spain, the wolf population started to recover in the 1970s, and from 1988 to 2001 has expanded its distribution area by 20%. The wolf is fully protected in Portugal, and a moderate hunting quota is allowed in Spain, although illegal persecution to prevent damage to livestock is common. Conservation priorities include maintaining the connectivity among Iberian semi-natural habitats to allow natural wolf recolonization and, especially in Portugal, to promote restoration of habitat and wild ungulates.

Creating a wolf management plan with all the key interest groups: The successful completion of the Croatian wolf management plan

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It is well recognized that wolves elicit strong emotions from the general public and various interest groups. The challenge for wildlife managers and government departments charged with the responsibility of developing wolf management plans is how to develop a management plan that addresses the fundamental concerns of all interest groups and is thus accepted creating a "win-win" situation rather than the traditional "win-lose" where at least one group feels their concerns have not been addressed. Human dimensions research (HD) has often been employed to gain this public acceptance. Examples of HD research from various countries in Europe and North America are used to illustrate aspects of human dimensions research. Attitudes of residents from Spain, Portugal, UK, France and Croatia toward wolves are compared and contrasted with each other. Such HD research provides insights to understanding issues. In addition, HD as a facilitated workshop approach can be employed to actually resolve issues. Experiences of public involvement techniques and the results of working with interest groups toward wolf management plans are presented. Thus managers wishing to use HD gain an understanding of the tool from a research and an applied tool to aid decision-making. Dr. Alistair Bath has been working on human dimension in wolf management issues for more than 20 years. He has been involved in understanding and working with groups related to wolf reintroduction issues in Yellowstone and wolf control issues in the Yukon. Dr. Bath spends most of his time in Europe where he has human dimension research projects in Portugal, Spain, France, Poland and Croatia. He is trained as a geographer and currently teaches at Memorial University of Newfoundland in Canada.

Dispersal of wolves living in an agricultural habitat in Spain

Blanco, Juan Carlos, and Yolanda Cortès

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We examined the dispersal patterns of wolves (*Canis lupus*) living in an agricultural habitat in Spain featuring high human density, scarce vegetation cover and wild ungulates, and an overabundance of livestock carrion, the staple item in the wolves' diet. Between 1997 and 2004 we radio-collared 14 wolves (7 males and 7 females) and monitored them for 42 wolf-years. Nine wolves (4 females and 5 males; one of them, twice) dispersed during the study. Five dispersers settled down and reproduced, one paired and settled but

has not yet reproduced, two died before settling, and one went missing during dispersal. The annual dispersal rate was 24%, and the average dispersal age and distance were 25.3 months and 32 km, with no differences between males and females. The 3 dispersers living in areas with low wolf density settled after short dispersal periods in home ranges of the same quality as their natal ranges. The dispersers living in wolf-saturated areas were wandering as floaters between 6 and 29 months before dying or settling in areas of much lower quality than that of their natal ranges. Of the 5 wolves that reproduced after dispersal, 2 males and one female did so in the first breeding season after settling, one female in the second and the other female in the fourth season after settling. We suggest that the overabundance of food and habitat fragmentation affected the dispersal patterns and dynamics of this population.

Choices and consequences - living with wildlife

Blinde, Bette

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Teaching about wolves requires teaching about agriculture in a realistic and fair way. The Colorado Foundation for Agriculture (www.growingyourfuture.com) provides educator resources for teaching about the challenges presented when agriculture and wildlife intersect. In this workshop participants will work to solve a wildlife dilemma in a simulation of a wolf killing a rancher's sheep.

Wolf habituation and management implications

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Over the past 100 year, the philosophy of wolf management in North America has evolved from severe persecution to protection, restoration, and control. Following protection granted by the Endangered Species Act in 1973, wolf distribution expanded dramatically through natural recovery and planned reintroductions in the United States. Pro-wolf values arose in much of Canada and Europe during this same time period, and wolf numbers and distribution significantly expanded in these areas as well. Concurrently, human populations grew and human activities in occupied wolf range have increased. Interactions between wild wolves and humans are occurring with greater frequency, occasionally resulting in human safety concerns and wolf mortalities. Many factors contribute to unwelcome wolf-human interactions including food conditioning, naïve human attitudes, disease, curiosity, predation, defense, and wolf adaptability. Managers and biologists face two challenges to minimize undesirable wolf-human interactions: 1) people management, creating new public outreach to prevent habituation while not generating wolf hysteria, and 2) wolf management, addressing wolf habituation through negative conditioning of wolves and selective wolf removal. Human perceptions, education, thoughtful wolf management plans, negative conditioning, and lethal control are all part of a complex solution to this conservation conundrum.

Attitudes toward wolves in American literature: Using fiction to change attitudes toward wolves

Brenton, Deborah M., and Raven Brenton-Bishop

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My study using late nineteenth to late twentieth century children's fiction on five common North American predators (badger, bears, wildcats, foxes and wolves) suggests that the wolf is portrayed as being the most sinister and frightening of them all. When we experience the wolf in the fantasy world of fiction, common misconceptions may lead us to infer that the wolf is a base creature having less value in the ecosystem than other predators. Four major factors revealed in my literature study appear to influence attitudes toward predators: economic, sporting value, aesthetic, and fear factors. These are briefly discussed and suggestions for using these factors to create positive educational materials are presented. My presentation calls attention to attitudes toward predators (particularly wolves) found in fiction and provides an annotated bibliography that wolf educators may find helpful in planning their curriculum. Educators need to be aware of the power that fiction has in perpetuating negative attitudes toward wolves. Included in my presentation is a children's story that I wrote and helped to illustrate with Raven Bishop. It is entitled, "Raven Anna Meets Aware Wolf." This story helps to educate children about wolves and spiders and provides an example of positive attitudes toward wildlife in children's literature. My presentation was developed from "The role that fiction plays in our cultural response to the animal kingdom: An analysis of attitudes toward wolves in American literature," my graduate thesis published August 8, 2004 in partial fulfillment of the requirements for the degree Master of Arts in Humanities, received May 2004 from California State University Dominguez Hills.

Utah public planning

Bunnell, Kevin D., and Miles Moretti

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In 2003, the Utah Legislature passed legislation directing the Utah Division of Wildlife Resources (UDWR) to draft a wolf management plan for the review, modification and adoption by the Utah Wildlife Board, through the Regional Advisory Council process. The UDWR created the Wolf Working Group (WWG) in summer 2003. The WWG was composed of 13 members who represented diverse public interests regarding wolves in Utah. The WWG included representatives from academia (USU faculty), wolf advocates (Utah Wolf Form), sportsmen representatives (Rocky Mountain Elk Foundation and Sportsmen for Fish and Wildlife), agricultural interests (Utah Farm Bureau Federation and Utah Wool Growers), local government representatives (Utah Association of Counties), the Ute Indian Tribe, two at-large conservation organization representatives, and a member of the Utah Wildlife Board. Technical advisors from the UDWR, the U.S. Fish and Wildlife Service and U.S. Department of Agriculture-Wildlife Services assisted the working group. Dynamic Solutions Group, of Casper, Wyoming, facilitated WWG meetings and helped draft the Utah Wolf Management Plan (UWMP). The UWMP will guide management of wolves in Utah during an interim period from delisting until 2015, or until it is determined that wolves have become established in Utah, or assumptions of the plan (political, social, biological or legal) change. During this interim period, arriving wolves will be studied to determine where they are most likely to settle without conflict. The goal of the UWMP is to manage, study and conserve wolves moving into Utah while avoiding conflicts with the

wildlife management objectives of the Ute Indian Tribe, preventing livestock depredation, and protecting the investment made in wildlife in Utah.

Wolf ecology brought to life

Burling, Andi

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Educators, come learn about tools for spicing up your teaching about the basics of wolf ecology. Using inquiry-learning principles, games, arts-n-crafts and other dynamic methods, you'll gain resources that will spark interest in your students or participants and motivate them to learn more. Activities will be demonstrated that illustrate complex ecological concepts such as predator-prey relationships and other important connections wolves have with other species. Using resources available at your fingertips these interactive techniques will help bring wolf ecology to life for students in grades 3 – 12 and are easily adaptable to the classroom or the informal setting.

Bison fluctuations in Wood Buffalo National Park: Hypothesis testing and trophic cascade implications

Carbyn, Ludwig N.

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The recent increase in the number of bison (*Bison bison*) in Wood Buffalo National Park has confounded the prediction that the population will remain in a continuous decline because of the presence of disease. It is possible, however, that wolf (*Canis lupus*) predation has a greater impact than diseases in this ecosystem. Bovine diseases most likely reduce both reproduction and survival. Wolf predation in a single prey-predator ecosystem could manifest itself differently in the absence of diseases. Long-term climatic changes (winter severity: accumulated snow depths, hardness and icing) may be more important to bison declines than the presence of bovine diseases. Shifting the herbivore biomass from a high-density, food-regulated equilibrium to a low-density, predator-regulated system has major impacts on the trophic level cascades in the ecosystem. Long-term studies of the system have been directed only toward monitoring of the change in numbers of the prey populations. A number of short-term studies have not been able to accomplish much in the understanding of the functional interactions of various components.

Transboundary assessment of wolf recovery needs in the southwestern United States and northern Mexico using a dynamic population model

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Recent court decisions have emphasized that recovery goals for endangered species should include a rigorous evaluation of potential habitat and threats across the species' historic range. We used a dynamic population model (PATCH), which incorporates data on human population and development trends, to estimate the distribution of suitable wolf habitat in the southwestern United States and northern Mexico. The results

identify core areas that are the key to regional persistence, as well as linkages that allow wolf populations to expand to occupy smaller and more isolated habitat patches. We evaluated the regional landscape as a whole as well as five potential or current reintroduction sites in the United States and four potential sites in Mexico. Of the sites evaluated, the Grand Canyon and the current reintroduction site in the Blue Range showed the highest ability to enhance wolf population establishment in the southwestern United States. Among the Mexican sites, the Durango site has the most productive habitat for wolves, but the Tutuaca and Carmen sites appear to have lower risk from conflict with livestock production. The Sierra San Luis (Sonora/Chihuahua) and San Juans (Colorado) sites showed moderate extinction risk, and the Carson (New Mexico) site was somewhat isolated from the bulk of wolf range, suggesting that these sites might be best paired with a second reintroduction site to ensure overall success. Comprehensive analysis such as this one can be key factors in strengthening recovery efforts in the many regions of the world where threatened wolf populations span national, state and provincial boundaries.

The wolf: Changing scientific myths

Catalano, George D.

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An undergraduate course has been taught that uses society's attitudes toward the wolf as a metaphor for exploring the changing nature of science. In the West, science has changed profoundly from the explanation offered for the universe from Lucretius and Aristotle through Newton and the Age of Enlightenment, Einstein and the Theory of Relativity and culminating today with Kauffman and modern complexity theory. Each model proposed by science shapes our views toward the natural world in a general sense and has specific significant implications for our attitudes toward the wolf. By tracking attitudes toward the wolf, we are able to explore the various scientific paradigms put forth and reflect upon the implications of the various models for the health of our global ecosystem. Feedback from students in the course suggests that it met the planned primary course objective: to foster an understanding that science is constantly in flux and such changes have significant impacts for all of us.

A university honors course on wolves

Catalano, George D., and Francine Montemurro

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A course, under the auspices of the university-wide undergraduate honors program, that focused upon the place of animals in the modern world has been developed and is open to any Honors student The course is subdivided into three main components: an introduction to animal ethics, an exploration of the link between animal ethics and world religions, and a careful consideration of the proposed reintroduction of the wolf into the Adirondack Park region in New York State. In the animal ethics portion, students consider philosophical theories of ethics; animal capacities for pain, emotion and consciousness; animal experimentation and biotechnology; animals in zoos, aquariums and entertainment; and issues related to wildlife restoration/preservation. Attitudes toward animals found in religions including Buddhism, Christianity, Judaism, Islam and Native American beliefs are also explored. The case of the proposed reintroduction of the wolf into the Adirondacks serves as the capstone experience for the class. Students have the opportunity to bring together a wide range of considerations in their advocacy for or against the reintroduction of the wolf. In addition to the required readings and critical review essays, students are also required to produce a

work of art depicting their understanding of the place of animals in today's world. Finally, students must complete a compassion practicum of their own design and choosing that in some small way reduces the suffering of animals. The accent in this project is on the completion of an actual act (versus additional scholarly reading and writing).

Movement patterns of wolves on extended trips on the tundra

Cluff, Dean, and Ian D. Jonsen

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Many tundra wolves (*Canis lupus*) that follow migratory barren-ground caribou (*Rangifer tarandus groenlandicus*) in the Northwest Territories and Nunavut, Canada, break away between May and September for denning. During this time, breeding adult wolves adopt a central place foraging strategy because they must return to the den to feed pups. Often the adult male travels extensively and may not return for days. We describe patterns of these extended trips for satellite collared wolves since 1997. Initially, wolves were monitored with ARGOS collars but Global Positioning System (GPS) collars deployed afterward provided accurate locations at 30-minute intervals during summer. Journeys (>48 hrs away from the den) are distinctive from the normal cluster of locations around the summer home range and consistent with the locations of large post-calving aggregations of caribou. We describe these journeys and employ state-space models to interpret movements. We attempt to identify moving, resting and killing states with the GPS location data. Identifying characteristics of movement behavior during foraging trips can assist with identifying predation sites during these trips and likely when wolves forage within their normal summer home range. Estimating summer predation rates on caribou by wolves with this technique is discussed.

Last animals: Stories of extinction

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This paper examines the stories surrounding the deaths of famous last animals in the nineteenth and twentieth centuries. These tales chronicled the deaths of exceptional vermin, and they mourned the sad but inevitable passing of Old Ephraim, Old Whitey, Monarch, the Barnard Panther, Old Three Toes, the Unaweep Wolf, Rags the Digger, Reelfoot, the Custer Wolf and the Phantom. The last animal stories gave ranchers and hunters the freedom to empathize with their prey and reflect on the modern world they helped create through the extermination of large carnivores. The legends recorded the convoluted sentiments extinction called forth in early-twentieth-century America, and they can serve as guides into the fractured emotions animals continue to evoke at the turn of the millennium. Today, the citizens of the United States spend billions of dollars feeding and caring for pet animals while they ingest millions of other beasts as meat. They found nonprofit organizations to protect endangered species while they fight protracted battles with invasive pests. They embrace animals that soar and lope in national parks while they ignore the wild creatures in their backyards. Americans' attitudes toward animals are radically situational, and the stories Americans tell about animals can help us understand this emotional bipolarity. As a cultural and environmental historian, I am uneasy offering advice to people trying to study, protect and manage animals in real time. History often reveals more problems than it solves, raises more questions than it answers. This paper will not provide a history lesson but rather an invitation to self-awareness. It asks wolf scientists and animal activists to pay careful attention to the tales they hear and tell. Stories can be as wild and illuminating as the animals they inscribe.

Wild and domestic canids: Conservation detector dog demonstration

Crites, Toni

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Prior to the demonstration, Lori Schmidt, Wolf Curator for the International Wolf Center will be doing a short introduction regarding the connection between wolves as the ancestor of the domesticated dog. In 1997, Barbara Davenport and Steve Weigley of PACKLEADER Dog Training and Dr. Sam Wasser, developed an innovative, non-invasive method for identifying targeted species in their natural environment. Researchers using this method are able to obtain DNA and stress hormone samples from targeted species scat, in an unbiased manner, without disturbing the animal or its habitat. These methods have proven to be reliable and repeatable. Unlike many other sampling methods, detection dogs do not influence or alter the target species' behavior. Properly trained dogs are not affected by the visual appearance of samples, while pinpointing the exact location of multiple target samples and ignoring all non-target species. Dog teams are able to cover a larger geographic area faster and more completely than humans working alone.

White Mountain Apache Tribe Wolf Program: Conflicts and culture

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Abstract to come

Living with predators in today's West

Fascione, Nina, Lane Adamson, John Hayne, Jan Holder, Mike Stevens, and Suzanne Stone

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Restoration of wolves and grizzly bears in the United States is often controversial due to occasional human-carnivore conflict. To facilitate good will toward predators and thus aide in their recovery, Defenders of Wildlife established two programs that incorporate market-based incentives for grizzly and wolf restoration. The goal of these programs is to spread the cost and responsibility for maintaining healthy carnivore populations, rather than have the burden fall on individual ranchers. The Bailey Wildlife Foundation Wolf and Grizzly Compensation Trusts were established to reimburse ranchers for livestock lost to predation by these species, and the Bailey Wildlife Foundation Proactive Carnivore Conservation Fund is used to cost-share with ranchers the expense of enacting management measures that reduce or eliminate livestock depredation. As a means of ensuring rancher concerns are fully taken into account, Defenders recently established a Livestock Producer Advisory Council to help guide the organization on making improvements to these programs. The advisory council is comprised of four ranchers who have had experience living with carnivores in the western United States. This panel session will include Defenders of Wildlife representatives and ranchers who will discuss the compensation and proactive programs, the ranchers' experiences living with predators, and the future of living with carnivores in the western United States.

Wolves and men: Challenges to wolf recovery in the American Southwest

Feher-Elston, Catherine Raven

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This presentation discusses the decimation of Mexican wolves by American invaders in the Southwest, tribal relationships with wolves, and why wolf recovery in the Gila region lags far behind wolf recovery in the Northern Rockies.The human factor is the key. Naturalist and historian Dr. Catherine Feher-Elston is from northern Arizona and works closely with the Hopi and Navajo tribes on ecological and wildlife issues. She regularly discusses community fears and concerns about lobo recovery with residents of the Gila country and documents these attitudes through many articles and her books. A professor of Native American Studies at Montana State University, she also chairs the Communications and Social Sciences division at Chief Dull Knife College on Cheyenne Indian lands. Wolves play a special role in Cheyenne society. Feher-Elston divides her time between the Mogollon/Colorado plateau and the Yellowstone country in Montana. She is the author of a new book from Penguin, *Wolfsong: A Natural and Fabulous History of Wolves*, which compares and contrasts wolf recovery efforts in the Southwest with more successful efforts in the Northern Rockies. Her work probes relationships between wolf behavior and human reactions to wolves.

The Wolf and I

Ferruggia, Robin F.

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Our relationship to wolves and how we choose to manage them is influenced by our cultural beliefs, symbolism, political forces, psychological needs, societal trends and religious beliefs and how we perceive government authority. My paper explores these influences and how they shape our wolf management practices. There are often too little biology and wolf needs involved in management decisions because we are often not consciously aware of what is motivating our management choices. If we were more aware of the influences on our behavior, we would make better, more informed choices that would benefit the wolves and ourselves.

Response of wolves to experimental disturbance at homesites

Frame, Paul F., Dean Cluff, and David S. Hik

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Most of what we known about disturbance at wolf homesites is based on chance encounters observed during accidental disturbance events. We conducted standardized low-intensity experimental disturbance at 12 wolf homesites during summers 2002 and 2003. Prior to being disturbed, homesites were observed, and pup age was estimated. Our disturbance consisted of an intruder walking to the homesite. We recorded behavioral responses, response distance and response intensity of wolves. Our objectives were to determine (1) if background disturbance levels influenced if homesites were moved in response to low-intensity disturbance, (2) if low-intensity disturbance influenced reproductive success, by comparing late summer pup numbers at disturbed and undisturbed sites, (3) if disturbed sites were reused the following year, and (4) to make management recommendations based on our results. Pups were moved from 3 homesites each year. Background disturbance did not influence if sites were moved. Response intensity and background

disturbance were inversely related; however, response distance was not related to background disturbance. There was a positive relationship between increasing age of pups and if a site was moved. Reproductive success was not influenced by disturbance. Disturbed sites were used the following year as often as undisturbed sites were. We believe pups are more vulnerable to disturbance earlier in the year when they are less mobile; therefore, managers should consider the age of pups when placing land-use restrictions near wolf homesites.

Effects of seasonal caribou movements and human development on reproductive success of tundra denning wolves in the central Canadian Arctic

Frame, Paul F., Dean Cluff, and David S. Hik

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Most wolf populations are driven by prey availability, which is usually expressed as kilograms of ungulate biomass available/wolf. In the central Arctic of mainland Canada the main prey of wolves are the migratory barren-ground caribou. The spatial and temporal movement patterns of caribou greatly influence their availability to wolves. Additionally, increased industrial development and recreation activity in the central Arctic have many concerned about the cumulative effects to wildlife populations in this ecologically sensitive region. Some evidence suggests that wolves in this area may be vulnerable to disturbance during the pup-rearing period, which could influence reproductive success and thus population dynamics. We used a cross-sectional time-series regression to analyze eight years of tundra wolf reproductive data with respect to human development and caribou migration patterns in a 49,900 km^2 area roughly centered around Lac de Gras, NWT (640N, 1100W). Increasing distance from wolf dens to northern and southern caribou migration routes had significant negative influences on wolf reproductive success. Timing of caribou migrations had little effect on pup numbers, and current levels of development are not measurably influencing wolf reproduction. However, the region-wide declines of caribou numbers and measurable avoidance by caribou of surface development could reduce prey availability during denning and adversely affect wolf numbers.

Wolves in the middle school

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Even before becoming a nanny this past summer at the International Wolf Center, I had used wolves to help teach character education in my at-risk middle-school classes. Character education is part of our core values that we incorporate into our teaching at O. L. Smith Middle School. I developed and taught an at-risk class of 7th and 8th graders for math and science and outdoor education. For that class, I used wolves to teach the students about pack behavior and how that can be synonymous with our group working together for a common goal at school. Many other aspects of wolves were taught, such as the biology of wolves, how scientists observe and record their behavior, and how biologists work in the public and political arenas to maintain or reintroduce wolves back into the wild. We study the reintroduction of wolves into Yellowstone National Park. At the conclusion of that research and discussion, I have the students play (and dress) the different parts in a panel discussion. Another area I use wolves with the students is the language arts classes. I have the students research and read books that pertain to wolves. We discuss how the wolf is portrayed in the books (usually as the bad guy!). Then taking what we have researched about wolves, each student writes their own children's story about wolves, showing them in a different light.

Multiple denning by wolves *(Canis lupus pallipes)* in semi-wild landscapes in the Deccan plateau, Maharashtra, India

Habib, Bilal

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Reproductive success is crucial for survival and persistence of any species. The semi-wild landscapes of the Deccan Biogeographic Zone harbor the major population of the Indian wolf in the country. Gaining a better understanding of den use pattern by wolves (*Canis lupus pallipes*) in these areas is thus vital for their conservation and management. In this paper we report den use and den shifting in wolves based on data for 20 dens. The wolves excavated multiple dens in our study sites and kept shifting their litters among them. One wolf pack used 14 dens in four breeding seasons. Discriminant Function Analysis performed on the cause of den shift, whether natural or forced, revealed that den shifting by wolves was more often natural than forced ($X2 = 34.26$, $df = 12$, $P < 0.001$) because of disturbance levels at den sites. The increasing age of pups ($r = 0.584$, $P < 0.05$) was one of the main factors associated with den shifting, more than the magnitude of disturbance ($r = 0.358$, ns). Tolerance to den shifting during the early stages of development of pups was negatively correlated with factors such as availability of water ($r = -0.519$, $P < 0.05$) and the age of pups ($r = -0.613$, $P < 0.01$). The analysis suggests that excavation of multiple dens by wolves was apparently related to den shifting in these semi-wild human-dominated landscapes in the Deccan.

Get the connection

Holaday, Bobbie H.

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Students get the connection with key people involved with wildlife programs and examine their feelings about how they feel about a controversial wildlife issue. Reintroduction of the Mexican gray wolf has produced many such issues. One way to understand these controversies is for students to take the parts of people involved, including livestock operators, federal or state biologists, members of a game and fish commission, wolf supporters and so on. This activity lets students role-play real people at a mock game and fish commission meeting where the issue is to recommend changing the federal rule to allow wolves that roam outside of the boundaries to be removed only when they cause livestock depredation or present an actual threat to humans. Students are assigned individual roles representing the principals and attendees who will participate in the meeting. Students contact officials from the various interest organizations and interview them to get firsthand opinions. They create the role they will play from their interview with a real person. The teacher instructs the student assigned the role of commission chairperson, as he/she conducts the mock meeting. The teacher instructs the other principals on commission meeting format. At the conclusion of this activity, other school officials determine who offered the most convincing presentation. At the Frontiers of Wolf Recovery conference, we will ask for volunteers from the audience to play these roles, and they will be provided write-ups describing the commission meeting officials and their duties, and the attendees who will testify at the meeting.

The Range Riders Project: Using herders to prevent wolf conflicts

Holden, Janelle L.

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The Range Riders Project is a pilot project in southwest Montana that seeks to test one very beneficial idea: Could the presence of people near livestock help prevent wolves from attacking cattle, sheep and other domestic animals? To help answer this question, Predator Conservation Alliance partnered with the Madison Valley Ranchlands Group, an association of ranchers in southwest Montana where conflicts between livestock and wolves have been a flashpoint. In 2004, Predator Conservation Alliance and the Madison Valley Ranchlands Group hired, paid and trained cowhands in nonlethal methods to keep wolves and livestock apart. These "Range Riders" would stay with livestock 24 hours a day throughout the grazing season and run off any wolves that came near the cattle. This presentation will describe the results of the first and second seasons of the Range Riders Project in the Madison Valley and of replicating the project in other areas in 2005. We also will discuss collaboration, the social side of wolf conservation, and making conservation projects financially sustainable over time. Other partners in the Range Riders project include the Turner Endangered Species Fund, the Montana Department of Fish, Wildlife, and Parks, the U.S. Fish and Wildlife Service and the U.S. Forest Service.

Wolves in Carpathians

Ionescu, Ovidiu, and Georgeta Ionescu

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In the center of Europe, covering an area of 209,256 km2, the Carpathians are the last region in Europe that supports viable populations of large predators and their natural prey. About 8,000 brown bears, 4,000 wolves (45% of Europe's population) and 3,000 lynx inhabit these areas. Wolves' population trends are different in different countries of the area, as is the legal status of the species. The strong tradition of hunting wolves in the region continues today, and the protective legislation is contradictory. Habitat fragmentation and private hunting rights are the main dangers to the species. In Romania the minimum level of the population is estimated to be around 2,500 wolves in an area of 90,000 km2. Beginning in 1993 when the Bern Convention was adopted by Romania, the protection status of wolves has been substantially improved. The population has increased very slowly in the past years only as a result of dispersal into new territories. Actually, very few areas with large forests are not inhabited by wolves. Competition with hunters and conflicts with livestock perpetuate the negative opinion about wolves' presence.

Our naked nape: Meeting grounds for human recoveries

Jensen, Gendron

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I will survey Western World's span of historical contributions from dawning of evolved scientific depictions. Further, the far longer lineage of Primitive and Eastern image making will be commented. The escapable and inescapable dynamics of beholding and depicting will be expressed in acknowledgement of the prodigal drift of our species, out of and away from the Natural Order, toward an increasingly Edenless "Order of Man". I will engage treatment of a reasoned recovery of our sensorial vernacular, unto and into the natural realms from which we collectively have strayed. Anecdotes from especially my own artistic experiences, enjoining Wildlife Managers of the DNR in northwoods Minnesota and Federal Researchers on Isle

Royale, will be recounted. Through nearly forty years of humanly artistic giveness within Nature, mostly through the bony relics of wild creatures of water, land and air habitats, I have humble measures of awareness and understanding to share. My sundry sentiments would come, emboldened by blushless association with many natural scientists over many years, working uniquely as a modern artist, having nothing to do with the Wildlife Art Movement.

Habitat needs, predation and conservation of Indian wolves

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Ecological data from 10 wolf packs from three geographical areas differing in prey type, prey density and socioeconomic conditions were collected using radio telemetry (1996–2003). Wolf territories ranged from 90 to 250 km^2; core areas for denning and rendezvous sites were small (5–20 km^2). Core areas were characterized by being devoid of human habitation and by having greater cover, minimal human disturbance and available fresh water. Habitat use by wolves was limited during the daytime by human use of the landscape; at night wolves often approached human habitation for scavenging. Selective wolf predation on adult male blackbucks resulted in a skewed sex ratio. Wolf and jackal predation on blackbuck calves together controlled the blackbuck population. In areas where wolves subsisted on domestic livestock, damage was estimated at about US $1,000/100 km^2. Persecution was limited to burning pups in dens and some incidences of poisoning packs when depredation became localized, resulting in high losses. Other major mortality factors were distemper and rabies, which killed juvenile wolves and entire packs, respectively. Wolves persisted in spite of high mortality due to their high fecundity. Vacant territories were occupied within a year by dispersing individuals. Most wolf populations in India exist outside of protected areas in agro-pastoral landscapes. Wolf conservation in an area was not exclusive of other land uses, and in many areas wolves existed because of traditional land-use practices. Protection of core areas of wolf territories between December and April (whelping season) would ensure recruitment to the wolf population.

Wolf recovery in Wyoming, outside Yellowstone National Park, 1999–2004

Jimenez, Michael D., Edward Bangs, Elizabeth Bradley, Steven Cain, Rodney F. Krischke, Dave Moody, and Jon Trapp

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Over the past 6 years, the Wyoming wolf population outside of Yellowstone National Park (YNP) has grown from a few dispersing wolves in 1999 to a resident population of approximately 89 wolves in 2004. From 1999 to 2004, pack size ranged from 2 to 23 wolves and averaged 7.8 wolves. Wyoming wolves have produced at least 154 pups with an average litter size of 4.3 pups. In 2004, 9 packs produced at least 44 pups, and 8 of these packs met USFWS recovery goals. The wolf population in Wyoming grew over 20% per year in 2002 and 2003; however, the population increased only 9% in 2004, mainly due to agency control of 29 wolves depredating on domestic livestock. All of the 9 wolf packs in Wyoming outside of YNP have been involved in at least 1 depredation, and in 2004, wolves in Wyoming were responsible for at least 122

livestock and 2 dogs lost to wolves. The total number of depredations increased in 2004 approximately 42% from 2003, when 86 livestock were lost to wolves. We documented 58% (n = 71) of all depredations in 2004 on public grazing allotments, and 42% (n = 51) on private property. Nonlethal control was routinely considered but was often not applicable in many areas in Wyoming. Wolves have and will continue to disperse to southern and central areas of the state. However, future population growth will be significantly limited by agency control of wolves killing livestock, illegal killing of wolves and lack of suitable habitat free from conflicts within rural communities.

Wolf/elk interactions on state managed feed grounds and adjacent national forest in Wyoming

Jimenez, Michael D., Steven Cain, Dave Moody, Susannah Phillips, and John Stephenson

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We monitored wolves *(Canis lupus)* during winters 2000–04 to determine the distribution of wolf packs, describe prey selection of wolves, and document the behavioral response of elk *(Cervus elaphus)* to the presence of wolves on three elk feed grounds and adjacent national forest in Wyoming. We used radio telemetry to locate wolves and estimate home ranges. We backtracked wolves to locate carcass remains of elk killed or scavenged by wolves. Radio-collared elk were followed to describe how elk responded to wolves hunting on the feed grounds. We located 188 kills made by wolves on all three feed grounds and the adjacent national forest. Forty-eight percent of the elk killed were cows, 8% were bulls, and 44% were calves. The mean age of adult elk killed was 9.2 years, and the oldest elk killed was 23 years. In 2001, calf/cow ratios dropped from a 10-year average of 27.6 calves/100 cows to 17.5 calves/100 cows. Calf/cow ratios increased in 2002 to 23.1 calves/100 cows. During winter 2002, 3,583 elk were counted in the Gros Ventre, compared to a 10-year average of 3,485 elk. Wolves did not displace elk from the Gros Ventre drainage. Elk responded to wolves hunting on the feed grounds by (1) remaining on the feed ground even when wolves killed elk (2) leaving the area but returning within days, and (3) leaving the feed ground when wolves killed elk and gathering in larger herds on adjacent feed grounds absent of wolves.

Living with wolves in the Northern Rockies

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Mexican wolf conservation: Adaptive management on an evolving landscape

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The history of the Mexican wolf (*Canis lupus baileyi*) is reasonably well known, at least in terms of control efforts that effectively eliminated the wild population by the mid-1900s. The effort to restore this wolf to Aldo Leopold's Escudilla Country, in eastern Arizona and western New Mexico, a landscape that is vastly different now in terms of land-use patterns and management frameworks, is still unfolding. Social factors and the human dimension, much more than wolf or prey biology or habitat issues, are the driving forces in southwestern wolf conservation, as is true virtually anywhere that wolves once howled, still howl or might someday howl again. Four phases of post–federal listing wolf conservation in the Southwest will be discussed in this presentation: 1973–82 (recovery planning); 1983–97 (reintroduction planning); 1998–2002 (reintroduction under federal leadership); and 2003–05 (adaptive management under state-tribal-federal leadership). The story will be told from the perspective of a state wildlife agency that did much of the groundwork that eventually led to reintroduction, then formally opposed reintroduction in Arizona, and since 1997 has been officially and fully committed to making reintroduction a success. Sometimes comedic, sometimes painful, almost always controversial, Mexican wolf reintroduction is an exploration of human willingness to share a landscape with an animal that some believe represents both the end of an era and the beginning of a new one. It is also a measure of agency willingness to share management with people who are most affected by the decisions we make.

Relating foraging theory to wolf predation on livestock in the Rocky Mountains: Application and insight from theory to a conservation management problem

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Predator-prey research employs foraging theory as a medium for understanding carnivore predation upon ungulates, but foraging theory has not been applied to understand wolf predation on domestic livestock where they are sympatric with carnivores and native ungulates. We introduce a foraging theory framework to assess wolf-livestock depredation data on rangelands in the Rocky Mountains, improve appreciation of biological mechanisms that may underlie wolf predation on domestic livestock, and inform a systematic application of ranching and wolf conservation measures to reduce wolf-livestock conflicts. Using foraging theory inference from published studies, we compare wolf predation data on native ungulates and livestock in Idaho, Wyoming and Montana. We develop a foraging theory framework by relating wolf and ungulate life history characteristics to traditional livestock management practices and livestock depredations on cattle. Estimates for available wolf home range data show that where livestock encounter rates exceed ungulate prey, recurrent depredations on calves and, when available, yearlings result. Accordingly, we hypothesize that wolves respond to seasonal increases in livestock abundance by forming a search image for vulnerable livestock by learning to select spatially predictable, untended, naive livestock more "profitable" as prey than ungulates, predation behavior that continues throughout the year. We contrast assessments that wolf predation on livestock is insignificant by showing that geographically recurrent depredations, not magnitude per se, are a significant carnivore conservation problem and that where livestock are untended, learned depredation behavior is unlikely to be resolved solely by wolf control and removal. We conclude that foraging theory can inform a working model and year-round application of depredation avoidance measures scaled to wolf pack home ranges that we theorize can reduce livestock losses and wolf mortality where livestock are sympatric with carnivores and ungulate prey in the Rocky Mountain West.

Wolves at Colorado's door: Resources for teaching about Colorado wildlife

Kinion, Tabbi

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In June 2004, a wild wolf from Wyoming was killed on I-70 near Idaho Springs, Colorado. We know wolves are near, and we know that our students are fascinated by them. Find out what resources are available to you from the Colorado Division of Wildlife that can help you teach about wolves and other Colorado wildlife. Take home some useful activities and information.

Predator control in Alaska: An analysis of current predator control programs and the recommendations of the 1997 National Research Council report "Wolves, Bears and Their Prey in Alaska"

Klein, David, Vic Van Ballenberghe, and Karen L. Deatherage

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Alaska's Intensive Game Management law requires game species such as caribou, moose and deer be managed for "high levels of consumptive use" and that the state set the necessary management directives to meet population and harvest objectives. State-sponsored ground-based and airborne predator control programs were conducted in Alaska until the early 1990s. In 1995, Governor Tony Knowles suspended the programs and commissioned the National Academy of Sciences (NAS) to prepare a scientific and economic review of wolf and bear management in Alaska. The report assesses the ecologic, economic and political contexts in which Alaska's predator control programs are carried out. In 2004, Alaska resumed state-sponsored aerial wolf killing. Since then, predation control plans have been greatly expanded and are expected to continue for the next four to five years. The state has also approved both lethal and nonlethal control plans for black and grizzly bears in an effort to augment moose calf survival. Defenders of Wildlife and many in the scientific community believe Alaska's current predator control programs do not meet the recommendations of the NAS report. We will look at whether existing research and management data provide a sound scientific basis for wolf control in Alaska, and if the programs make economic and ecological sense. We will also address the political ramifications of this highly controversial issue.

The impact of wolves on ranching operations

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Wolves can have a devastating impact on ranching operations even if wolves are not attacking livestock. The presence of wolves near livestock can cause the frightened livestock to run through fences or down timber and can make herding and managing livestock difficult if not impossible. In addition to depredation, ranchers incur increased management costs in the form of additional fuel, time and labor; decreased rate of gain; and decreased conception rates. It is important for people to know that just paying for the cost of a dead animal does not pay for all of the costs ranchers incur as a result of having wolves present. This presentation will also discuss the applicability of using additional guard dogs, carcass removal, nonlethal deterrents and so on.

Livestock management and the economic impact of wolves

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This presentation will discuss livestock management practices and the impact wolves have on ranching operations. Bonnie Kline is the Executive Director for the Colorado Wool Growers Association. She has been actively involved in both the sheep and cattle business all of her life. Kline is actively involved in federal lands grazing and wildlife management issues on behalf of the Colorado sheep industry. In addition to working on lynx management issues, Kline is serving on the Colorado Division of Wildlife's Wolf Working Group and Ranching for Wildlife Task Force, the Colorado Public Lands Council, the National Public Lands Council Wolf Task Force, and the Wild Horse and Burro Task Force. She has also spent time in Mongolia working with livestock producers and government officials to set up pasture and water associations.

Wolves in the classroom

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Big Bad Wolf? A comprehensive research/writing/novel unit, Big Bad Wolf encompasses all of the Colorado Model Content Standards for Reading and Writing. The unit begins with online research to examine a variety of Web sites and determine which are valid, reliable sources of information. Analysis of a variety of newspaper and periodical articles regarding wolf recovery continues student understanding of this issue. Students then write a persuasive essay either in favor of or not supportive of wolf recovery efforts in the United States. Citing textual evidence from readings and research is a key element for the essays. Students then read *Wolf Journal*, a novel by Brian Connolly. The novel interweaves many details learned about wolves and wolf recovery with an engaging fictional story about a boy who discovers wolves near his home. Students complete a study guide with the novel that includes content vocabulary. Three levels of questions are used to help students gain a deeper understanding of the novel, as well as close reading using quotations from the novel. As a unit wrap-up students watch the movie *Never Cry Wolf*. Feedback indicates a high level of interest in the topic by students, the majority of whom had little or no previous knowledge about wolves or wolf recovery efforts in the United States.

Dispersal in an expanding wolf population at the edge of the range

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We fitted 60 wolves from a block of neighboring packs with GPS and radio transmitters to study dispersal behavior at the western edge of the continuous Eurasian distribution range in eastern Finland. Prey density was fairly low (0.35 moose/km^2 in winter), and a lot of free space existed around the study territories. Wolves usually departed their home territory at the age of 10 to 12 months. The ratio between the length dispersal route and the straight dispersal distance varied from 1.1 to 6.3 and increased with the time spent moving from the home territory to the new establishment. Dispersal distance (range 35–445 km) was negatively correlated with the age at departure. Bothnian Bay that is c. 80 km wide at its narrowest part seemed to be an effective dispersal barrier between Scandinavian and Finnish/Russian populations because wolf traveling activity was low in winter.

Economic impacts of reintroducing the Mexican wolf *(Canis lupus baileyi)* in Arizona and New Mexico

Kroeger, Timm, Frank Casey, and Christopher Haney

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Reintroduction of Mexican wolves (*Canis lupus baileyi*) to the southwestern United States generates both economic benefits and costs at the individual and community levels. Benefits take the form of use and non-use values individuals attach to wolves, increased community economic activity caused by wolf-related tourism and associated economic multiplier effects within communities, and, possibly, an improvement in economically relevant ecosystem services. However, reintroduction and maintenance of viable wolf populations also incur costs for public agencies, proactive and compensation measures taken to reduce livestock depredation, and, potentially, wolf-related livestock losses not covered by compensation programs. We develop quantitative estimates of the monetary values of the benefits and costs of Mexican wolf reintroduction and maintenance. Estimates of the economic benefits associated with use and non-use values in New Mexico and Arizona are constructed by applying benefit transfer to data on people's observed willingness to pay for wolf reintroduction in other parts of the western United States. Benefits of reintroduction to the regional economy are estimated based on wolf-related tourism and the Bureau of Economic Analysis' regional impact modeling final demand earnings multipliers. Estimates of reintroduction planning and implementation cost are based on agency data. Finally, costs of depredation prevention and compensation measures are based on data from the Bailey Wildlife Foundation's Wolf Compensation and Proactive Trusts, and an experimental public proactive program in Montana. We investigate demand for proactive depredation prevention measures and identify possible ecosystem service benefits induced by wolf repopulation.

Denning behavior of the Indian wolf *(Canis lupus pallipes)* in the Great Indian Bustard Sanctuary, Nannaj, Maharashtra, India

Kumar, Satish, and Bilal Habib

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We investigated denning behavior such as selection of dens and rendezvous sites (homesites), association with homesites, activities at homesites and den shifting in the Indian wolf *(Canis lupus pallipes)* for two breeding seasons. The Great Indian Bustard Sanctuary falls in the semi-arid drought-prone area of the Deccan, the largest biogeographic zone in India, with less than 700 mm annual precipitation. The dens were enlargements of holes of the common Indian fox and monitor lizard, burrows excavated in ground, and the drainage pipes of percolation tanks, which become dry in winter. All dens (n = 5) were located in slightly elevated areas, 0.18–2.88 km (X = 0.93 km) from the nearest water source. The pups were born in winter and remained in dens for nearly one and half months. Two dens were excavated simultaneously, and depending on the degree of disturbance, the wolves kept shifting the pups between them and another den excavated after the litter was born. The average distance between the dens was 0.78 km (range = 1.2–1.8

km). The first rendezvous sites were located closer to their natal dens (X = 0.97 ± 0.83 km) than the second (X = 1.96 ± 0.22 km). The distance between rendezvous sites varied from 0.14–0.5 km (X = 0.22 ± 0.14 km). The average litter size was five pups (range = 4–6). All rendezvous sites but one were selected by wolves in shrubland or grassland patches with vegetative cover between 20–30%. The alpha male and female wolves guarded the dens more often than the helpers, and they were more aggressive than helpers around homesites. Prey switching was recorded in the wolf during denning.

Ranging patterns of wolves *(Canis lupus pallipes)* in semi-wild landscapes in the Deccan plateau, Maharashtra, India

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Variation in home range size is one of the most important parameters for effective conservation and management of species. Ranging patterns of two established wolf packs and dispersing wolves were investigated in semi-wild, human-dominated landscapes in the Deccan Biogeographic Zone. The habitat in the study areas comprised a mosaic of unprotected grasslands, cropfields, settlements, plantations and small protected grassland patches. The Minimum Convex Polygon (100%) home ranges were 76.4 ± SE16.2 km^2 in winter, 177.3 ± SE33.5 km^2 in summer and 144.7 ± SE20 km^2 in monsoon for the Nannaj pack, radio-tracked from November 2002 to February 2005. The home ranges for the Gangewadi pack, radio-tracked from July 2003 to February 2005, were 70 ± SE9 km^2 in winter, 209 km^2 in summer and 107 ± SE28 km^2 in monsoon. A nomadic male and female wolf ranged 724 and 480 km^2, respectively, before establishing new wolf packs. The linear distances between the centers of the newly established home ranges of these nomadic male and female wolves and the home ranges of their natal packs were 24.3 and 27 km, respectively. The home range polygons encompassed several settlements and industrial areas. The core areas were located toward the centers of their home ranges with low human disturbance. Our biweekly radio-tracking data on five wolves for continuous 36 hours suggested a clear temporal segregation of wolf and human activities to maximize their foraging efforts in the proximity of human habitation.

An assessment of current methods used for monitoring wolves

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Successful recovery strategies for imperiled species cannot be adequately developed without reliable estimates of population size. Wolf monitoring protocols are needed to address management objectives including (1) short-term documentation of minimum population levels above the federal relisting threshold to satisfy delisting requirements, and (2) long-term population distribution, status and trend for effective conservation and management of the species. To date, the Nez Perce Tribe and the U.S. Fish and Wildlife Service have used radio telemetry as the primary method for monitoring wolves in the northern Rocky Mountains. While this method is reliable and was appropriate for a small recovering Idaho wolf population, it is too expensive, logistically difficult, intrusive and unnecessary for long-term conservation and management of a much larger recovered wolf population. Therefore, we assessed the suitability of applying existing survey and monitoring methods to Idaho's landscapes and their potential for meeting identified objectives for

monitoring wolves across the state. We (1) synthesized a worldwide review of existing wolf and other carnivore survey and monitoring methods using a questionnaire survey and a review of literature, (2) assessed application of existing methods to Idaho based on established evaluation criteria, and (3) recommended monitoring methods with potential application to Idaho for further field testing and evaluation. From questionnaire responses and the literature, we evaluated 15 monitoring methods and outlined a design for field-testing and implementing a suite of these methods in Idaho. Our assessment can be readily modified and applied to other state and provinces and potentially other carnivores.

Wolf research complementing wolf management in Croatia

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Six different gray wolves (*Canis lupus*) belonging to two wolf packs were radio-tracked in the northwestern part of the wolf range in Croatia. The study area (600 km^2) is 70% covered by mixed forest (beech and fir) and supports three species of wild ungulates (roe deer, red deer, wild boar), while livestock husbandry is of minor importance. A total of 435 ground relocations, 196 GPS relocations and 2,762 activity readings were recorded in the period from 21 June 2002 to 05 March 2005. According to the analysis of polymorphic molecular markers on DNA (microsatelites) from feces samples combined with snow tracking, the minimal number of wolves in packs varied from 2 to 6. Two of the collared wolves were shot by poachers, one was killed by other wolves, one died of disease, and two are still tracked. Home ranges (MCP 100% of locations) of two neighboring packs were 77 km^2 and 140 km^2, respectively. One dispersing female roamed 940 km^2 during 2.5 months of tracking with a GPS collar. Wolves were found to be active 46% of the time, and the activity was evenly distributed during all 24 hours of a day. Home ranges of wolf packs in Gorski kotar were even smaller than those in Dalmatia in southern Croatia (150 km^2), where wolves feed mostly on human food sources (livestock and garbage). This indicates the better habitat potential of the Gorski kotar area. The knowledge we acquired about pack ranges and numbers, mortality causes and genetic markers helped design the wolf management plan for Croatia.

Yellowstone Wolves, A Retrospective: A high definition look at wolf behavior

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An unofficial finale to the National Geographic series on Yellowstone's wolves, this film chronicles to date the life of the Druid Peak Pack while introducing new individual wolves as well. Yellowstone Wolves will also return us to the understanding that in allowing Yellowstone to rewild, we will never have the intimate relationship with this generation of wolves as we did with the original. Join us for the premiere of this high-definition film and contemplate the great unknown that is the future of wolves in Yellowstone.

Wolf status in Maritime Alps and France

Lequette, Benoît, Christophe Duchamp, Eric Marboutin, Michel Catusse, Pierre Migot, Christian Micquel, Pierre Taberlet, Francesca Marucco, and Luigi Boitani

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Since his first record in the Mercantour National Park (southeastern France) in 1992, the wolf has recolonized a large part of the French Alps and have even been recorded as far as eastern Pyrenees (Spanish/French border). The large scale monitoring of the species, which is based both on field observations and genetic controls, allows a good knowledge of the expansion. More than 600 field workers are involved within a network coordinated by the Office National de la Chasse et de la Faune Sauvage. Genetic analysis, which are mainly based on non-invasive genetic sampling for species identification, are used to assess the occurrence of the species in new areas and also for individual recognition. The several hundreds of wolf scats analyzed confirm our knowledge of the expansion obtained from field observations of wolf signs (scats, tracks and prey carcasses). Thirteen years after the first sighting of the wolf, an overview of the species status and its management can be given. During the winter 2004/2005 sixteen different areas were occupied by wolves, 9 of them concerning packs that already reproduced at least once during the previous years. Damage to livestock still increases in France and has reached 639 attacks (2809 animals compensated) during the year 2004. Several of the territories of these packs are transboundary and therefore need an efficient cooperation between Italian and French biologist, as it occurs in Maritime Alps.

Illegal killing and inbreeding depression threatens the small Scandinavian wolf population

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The gray wolf *(Canis lupus)* became extinct on the Scandinavian peninsula (Norway and Sweden) around 1965. A new wolf population was established on the peninsula after natural immigration from Finland. By 2004 there were approximately 100 wolves in the population. Beginning in 1998, the Swedish-Norwegian cooperative research project SKANDULV radio-marked 56 wolves. During the 1990s the growth rate was 26% annually but has declined in the past few years probably due to increased illegal killing and inbreeding depression. Illegal killing is the most immediate threat. Analysis of radio-marked wolves indicates that the magnitude of this mortality is 15% annually, while total mortality is 28%. To analyze inbreeding depression, a complete pedigree for the whole population was constructed, a unique achievement for a wild population of large mammals. The population is based on only three founders. The inbreeding coefficient F varied between 0.00–0.41 for wolves born during the study period. The number of surviving pups per litter during their first winter after birth was strongly correlated with inbreeding coefficients of pups ($R2 = 0.39$, $p < 0.001$). This inbreeding depression was recalculated to match standard estimates of lethal equivalents

(2B), corresponding to 6.04 (2.58–9.48, 95% confidence interval) litter-size-reducing equivalents in this wolf population. Population modeling indicates that even with a progressing inbreeding, the positive population growth will not stop during at least the next 15 to 20 years. Management implications of this situation are discussed.

Scientific inquiry as a means to study wolves with elementary/middle-school students

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Scientific inquiry skills provide a unique opportunity for elementary/middle-school students to begin an in-depth study of wolves. Of particular importance are the initial knowledge, questions and possible misconceptions students may have regarding wolves. The manner in which educators deal with students' current understandings of wolves is critical to long-term retention and attitude shifts. Both formal and informal educators may struggle with optimum levels of structure to impose when teaching in a scientific inquiry mode. To address this concern, the session will feature a framework that utilizes scientific inquiry as a launch point for the study of wolves. Interactive PowerPoint is showcased as an organizing tool for the investigation. Participants will discover effective instructional strategies for using scientific inquiry as a means to wolf content as well as a variety of content resources that reflect best practice. Informal educators may find this session especially helpful.

Get your PAWS online!

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Wolves are mysterious, charismatic, controversial animals, and *PAWS: Projects that Analyze Wolves and Society* will help students understand why. The International Wolf Center's online wolf education curriculum will guide students as they learn basic wolf biology and about the interaction of the wolf with its natural system. Students will also learn about human social systems and wolf-human interactions. They will explore, analyze and evaluate the many sides of wolf-human conflicts and come to informed opinions as to what possible and plausible solutions might be. This presentation will introduce individuals to PAWS online and provide connections to the National Science Education Standards and to other discipline areas.

Teaching about controversial wolf issues

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Wolves are often controversial, and teaching about their associated issues can be tricky. Where is the line between advocating a specific point of view and encouraging independent thinking? How do educators create an inclusive, learning atmosphere that allows freedom of ideas and values exploration? Is it possible to teach without bias? Building the skills to understand controversial issues helps students of all ages develop in many dimensions of their lives. Social, spiritual, moral and cultural skills and attitudes are all expanded and refined by experiencing the power of multiple viewpoints. By teasing apart the nuances of complex issues, students can improve their political literacy and gain motivation for community involvement.

They can learn to feel optimistic about their ability to understand and influence the world around them. This interactive workshop will include exercises and discussions that apply to all types of educational settings. Participants will learn how to approach wolf controversies in a teaching setting, discuss the various roles an educator can play, and compile effective strategies for using controversial issues to build critical thinking skills.

Using bias with integrity in wolf education

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Wolf issues are rife with bias. As educators, our responsibility is to help audiences know HOW to think about wolf issues, while allowing them the freedom to decide WHAT to think. This is more challenging than it seems, because we all possess preferences or inclinations about wolf controversies that inhibit our ability to be impartial. Our deeply held, highly personal beliefs about wolves, people, and the environment ultimately form the foundation of our thinking about and actions toward wolves. These thoughts and actions reflect our values – or biases – about what's important in life. In order to educate effectively about wolves we must explore and acknowledge our own biases. What does a bias look like so you'll know it when you see it? How can educators avoid transferring bias to audience members? What would fair, objective wolf education look like? This presentation will provide multiple examples of bias in the context of wolf issues and recommend strategies for improving objectivity in wolf education.

A howl for the wild: Bringing bioethics to carnivore conservation

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A bioethics perspective incorporates the interests of the natural world and its biotic community of plants and animals, and considers both the intrinsic value of the individual as well as the relationship and value of the individual to the larger whole. This perspective is often missing in science-based carnivore conservation and management strategies. To some, it may appear easier to argue that bioethics, public opinion and sociocultural values have no place in wildlife management. Such concerns are often labeled as emotion-based and therefore unscientific. But conventional carnivore conservation is laden with human values, attitudes and biases. With an increasingly urbanized populace that has shifted from a utilitarian valuation of wildlife to one that is more protectionist oriented, bioethical issues cannot be ignored. How can wildlife managers look beyond science and tradition and incorporate bioethical considerations into the decision-making process? What are the consequences for not doing so? This presentation will address these questions and offer suggestions for how integrating bioethics into planning and on-the-ground management can strengthen carnivore conservation efforts and help garner broader support among stakeholders.

A brief status of wolves in Germany

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In spring 2000, for the first time in 150 years, wolf pups were born in Germany. The breeding pair settled down on a military training site in Saxony, close to the border of western Poland, in the late 1990s. At present (March 2004), there are two wolf packs living in the area: the Muskau Heath pack with six to eight

individuals, and the Neustadt Heath pack with two. The future of the fragile population is uncertain, however, since it is mainly isolated from the contiguous wolf habitats in eastern Poland and Slovakia and therefore prone to hybridization with free-ranging dogs and, in the long term, inbreeding. Just recently, the presence of solitary wolves in the Bavarian National Forest was announced, and there have been reports of solitary wolves in Brandenburg since the early 1990s. This presentation briefly summarizes the current status of the wolf in Germany and the problems it is facing.

Hunter outreach: A partnership of volunteers and wildlife personnel in Michigan's Upper Peninsula and Wisconsin

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Presently, approximately 130,000 people hunt deer in Michigan's Upper Peninsula during firearm deer season. This equates to an average hunter diversity of 7.8 hunters per square mile. In areas of highest deer concentrations, hunter densities approach 16 per square mile. Recognizing that most wolf mortality is human caused, and an inordinate rise in mortality from 1960–86 occurred during the firearm deer season, Michigan's hunter outreach program began in the mid-1980s. Days before firearm deer season, volunteers partnering with the Michigan DNR and U.S. Forest Service personnel canvas state and federal lands, reaching over 1,000 hunters annually to (1) distribute accurate information about wolves, (2) provide observation reports to those most likely to see them, and (3) foster positive relations between citizens, the Michigan DNR and U.S. Forest Service personnel. Based on Michigan's program, hunter outreach in Wisconsin began in 2001 under the direction and partnership of the Wisconsin DNR and Timber Wolf Alliance, a program of the Sigurd Olson Environmental Institute. This presentation will address why these programs are effective on several fronts. We believe that the presence of people afield during the firearm deer season deters those people who may kill a wolf if no one is present. Observation reports submitted over time record a significant number of wolf sightings, helping greatly with winter population monitoring activities. Volunteer efforts bridge communication between wildlife agency personnel and hunters, while encouraging increased tolerance and understanding of wolves.

What is the long-term future of wolves in the Southwest and the world?

Mech, L. David

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Society's treatment of the wolf symbolizes humanity's interactions with our overall environment. Learning from our past mistreatment of the natural world, including widespread extirpation of the wolf, we are now trying to make amends. By restoring wolf populations where possible including the U.S. Southwest, and attempting to accommodate the species, we hope to readjust our world back towards a more natural state. However, in doing so, we are acting against two powerful historical forces. The economic systems that provide our survival, comfort, and leisure depend on use, degradation, and depletion of natural resources, and few of us will sacrifice our personal interests to preserve those resources. Second, our innate imperative to "be fruitful and multiply" propels our population to all corners of the globe and threatens to degrade all of our environment except that which we deliberately protect. Not only do these forces conflict with our present desire to restore the wolf and preserve our remnant natural environment, but more importantly, they threaten to totally overwhelm these efforts during the next several decades. Our real challenge in recovering

the wolf in the Southwest or anywhere is to develop the will and the means to prevent this outcome. Will we do it? Dave Mech is a Senior Research Scientist for the Biological Resources Division, U. S. Geological Survey and an Adjunct Professor at the University of Minnesota in St. Paul. He holds a B.S. degree from Cornell University, a Ph.D. degree and an honorary D.A. degree from Purdue University. He has studied wolves and their prey full time since 1958 and has published 10 books and hundreds of popular articles about them. Dave's research includes studying wolves and deer in northeastern Minnesota since 1968, wolves and caribou in Denali National Park, Alaska from 1986 to 1995, and wolves and elk in Yellowstone since 1995. Mech also lived each summer from 1986 through1996 with a pack of wolves in the High Arctic to study their behavioral interactions and their predation on musk-oxen and arctic hares and continues to study wolves and their prey there each summer. He has chaired the IUCN Wolf Specialist Group of the World Conservation Union since 1978 and is the founder and vice chair of the International Wolf Center in Ely, Minnesota. Dave's latest book, a comprehensive reference work, was published in September 2003: "Wolves: Behavior, Ecology, and Conservation. Edited by L. David Mech and Luigi Boitani. University of Chicago Press."

Wolf pup survival and recruitment in Algonquin Provincial Park

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Recent research on wolves in Algonquin Park, Ontario, suggests that pup production, survival and recruitment rates were low. This coupled with a decline in wolf numbers in eastern Algonquin prompted a moratorium on wolf harvesting in all townships surrounding the park in December 2001. Mandated with the moratorium was research regarding the effects of the ban on the dynamics and viability of wolves in Algonquin. We launched a two-tiered research program focusing on adult survival as well as pup survival and recruitment. A specific focus on pup dynamics is required to adequately assess the status of populations because recruitment is, in most cases, the primary source of adults into any given population. To fully address the question of pup survival in Algonquin Park, we marked individual pups early in development. During summer 2004, we captured 20 4-to-5-week-old pups from dens and fitted them with VHF radio transmitters via surgical implantation into the peritoneal cavity. No postoperative myopathies were documented, and most pups were successfully monitored into November. Survival was high in summer and fall 2004, with only 2 of 20 pups dying (one natural, one anthropogenic). Dispersal was relatively common (20%) and occurred as early as 3.5 months. These trends are consistent with data from 19 other pups radio-tagged in the park during late summer and early fall 2002–04. During summer 2005 we plan to continue capture efforts using transmitters with longer operational lives.

Reoccurrence of depredation and wolf control as wolves return to the West

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Due primarily to wolf depredation, some livestock producers and other interest groups oppose wolf conservation, which is an important objective for large sectors of the public especially in industrialized countries. Predicting depredation occurrence is difficult, yet necessary to prevent it. Better prediction of depredation would also facilitate application of depredation management actions. We analyzed temporal trends in depredation occurrence and wolf control, which is employed as a depredation management action. We gathered data from depredation investigations for Alberta, Canada, from 1982 to 1996 and for Idaho, Montana and Wyoming, USA, from 1987 to 2003 (i.e., a period during which wolves have been considered endangered in the conterminous USA). Wolf attacks occurred with a seasonal pattern, reflecting the seasonality of livestock calving and grazing and seasonal variation in energetic requirements of wolf packs. Seasonal wolf attacks were autocorrelated with lags of one year, indicating annual reoccurrence. Cross-correlation analysis showed that limited wolf control was rapidly employed as a short-term response to depredation and was not designed to decrease wolf depredation at a regional scale or in the long term. We therefore discovered a reoccurring seasonal-annual pattern for wolf depredation and control in western North America. Wolves are returning to various regions throughout the western United States. The compensation data that we also gathered demonstrates increased costs due to depredation in the northwestern (see above) and southwestern wolf recovery areas (Arizona and New Mexico). Ranchers and managers could use our data for focusing investment of resources to prevent wolf depredation increases during high depredation seasons.

Wolves, ethics, and critical thinking

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The political dimensions of the wolf debate attract a lot of attention, but the realm of ethics and critical thinking about wolf issues go largely ignored. Because wolf issues highlight individual differences in our society's underlying values and ethics, all citizens must improve their understanding of their own world-views as well as how these come to play in the wolf debate. This presentation will explore and map some of the relevant ethical terrain in the wolf world, as well as demonstrate some basic ways to think critically about, and through, wolf issues.

The ethics of wolf control

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The wolf control debate has continued for many years. Although in some respects the debate seems to be at an impasse, it also has the potential to take on a fresh character as wolves recover throughout the lower 48 states. At a superficial level, the debate is fueled by rhetoric, argument and political action (or inaction) of various kinds. At a deep level, the debate is motivated by groups with apparently conflicting worldviews. In some very important ways and for many participants in the debate, there is a pathological mismatch between these deeper motivations and the more superficial fueling. The mismatch is likely to be so great that it prevents anyone from adequately understanding how the worldviews actually conflict and how they may be more similar than is currently possible to appreciate. The purpose of this talk is to use formal (but accessible) philosophical tools to identify these unappreciated mismatches. This type of analysis provides the most promising means for identifying and dispensing with false conflicts and for clarifying genuine conflicts. Although this analysis is by itself insufficient for solving this controversy, it is an essential, and previously underappreciated, component of the ultimate solution. Except for those interested in conflict for its own sake, analysis like that presented here would advance the interests of all participants in this debate.

Mexican gray wolf: Restoration in the Southwest

Nelson, Shawna

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In this session, educators will gain a general perspective of the biological and social issues affecting the Mexican gray wolf recovery effort. Other topics covered include natural history, reasons for decline, recovery efforts, challenges to the program, field monitoring activities and current status of the recovery effort.

Of wolves and politics

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The keynote places the story of wolf recovery and management in its larger political context of environmental conflict and governance. It begins by sketching some of the most dominant drivers of public lands and wildlife conflict in the U.S., like scarcity, land ownership patterns, problematic statutory language, and scientific disagreement and uncertainty. It then uses the case of wolf politics to discuss a host of issues that are important to environmental governance in general, including the role played by state wildlife commissions, conservation funding, and the future of the Endangered Species Act. The discussion will also focus on the role of science, litigation, and collaborative conservation in wolf politics and environmental policy in general. Martin Nie is Associate Professor of Natural Resource Policy in the College of Forestry and Conservation at the University of Montana. His teaching responsibilities and research interests are in the areas of environmental and natural resources policy, law and administration, with a focus on public lands and wildlife. Nie has a particular interest in natural resource-based political conflict and his current research agenda examines public lands governance – the political institutions and decision making processes used to handle difficult policy problems. He received his Ph.D. from Northern Arizona University.

Professor Nie is the author of *Beyond Wolves: The Politics of Wolf Recovery & Management* (University of Minnesota Press, 2003) and various scholarly articles and law reviews. He is currently writing a book about public lands conflict and governance.

Mexican gray wolf reintroduction efforts in the Blue Range Wolf Reintroduction Area

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We will report the progress of field efforts from 1998–2004 to reestablish Mexican wolves *(Canis lupus baileyi*) into the Blue Range Wolf Reintroduction Area (BRWRA). The reintroduction area encompasses approximately 9,290 mi^2, composed of the Apache-Sitgreaves National Forests (A-SNF) and the Fort Apache Indian Reservation in east-central Arizona and the Gila National Forest in west-central New Mexico. The primary goal of this reintroduction effort is to restore a self-sustaining population of at least 100 wild Mexican wolves distributed across the BRWRA. In January 1998, the first Mexican wolves were released into the Alpine District of the A-SNF of Arizona. At the end of 2004, a minimum of 44 to 48 wolves in 11 packs or groups could be confirmed inhabiting areas of Arizona and New Mexico. The population trends through 2004 are similar to those predicted within the Final Environmental Impact Statement for the reintroduction of Mexican gray wolves into the BRWRA. Further, an increased number of second-generation wild-born pups are being produced in the population. However, a five-year review of the project suggests that several changes in the reintroduction program may increase the ultimate success of wolves in the area.

Efficacy of release methodology for Mexican gray wolves in the Blue Range Wolf Recovery Area

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Reintroduction of wolves requires the release of wolves from captivity or the translocation of wild wolves into areas where programs are trying to establish wolf populations. We assessed the success of release methodologies for both initial releases from captivity and translocations of free-ranging Mexican wolves in the Blue Range Wolf Recovery Area. Three methodologies of releases/translocations were employed on this project: (1) hard releases, (2) soft releases, and (3) modified soft releases in which the wolf or wolves were held in an electrified mesh enclosure until they either released themselves or were released by reintroduction staff. A successful release/translocation was considered any wolf that ultimately bred and produced pups in the wild. The proportion of successful released wolves was compared between releases and translocations and between various methodologies using a chi-squared analysis. Ninety wolves were released 130 separate times, including translocations (n = 51, some of the translocated wolves were captured in the wild) and initial releases from captivity (n = 79). Overall, wolves were successful 26% of all known fate releases. Similar to other studies, release success did not depend on the type of release method used. Data suggest that animals having lived in the wild for a larger proportion of their life are more likely to be involved in a successful release. Therefore, if wolves continue to be reintroduced in the southwestern United States, they would likely benefit from a large experience center in a wild, protected area.

Protection of the wolf in Poland: Success or failure

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The wolf has been strictly protected in Poland since 1998. This legal step was not accepted well by wildlife managers and livestock owners, who predicted an increase in wolf numbers, an expansion of its distribution, and a sharp increase in livestock damages and wildlife losses. After eight years of protection, neither an increase in numbers nor an expansion of the distribution of the species in Poland has been observed. It is indisputably a result of heavy illegal shooting by hunters whose attitude toward wolves is currently very negative. The main reason for such an attitude is not an increase in the number of wild game preyed on by wolves, which has not taken place, but unfavourable changes in the economy of hunting clubs, which have serious difficulty maintaining their existence. Moreover, the number of red deer in areas occupied by wolves has decreased considerably over the past ten years as a result of pressure by hunters to decrease the level of forest damage caused by deer. Livestock damage is not the major problem for the wolf in Poland now, because losses are compensated by the state nature conservation authorities. The level of damages to livestock has increased during the period of wolf protection by about 60%, from 35,000 USD in 1998 to 56,000 USD in 2004. Major problems for wolf conservation in Poland are currently lack of acceptance by some social groups (mainly hunters), lack of international cooperation in management, fragmentation of forests and lack of a national wolf management plan.

A vision for wolf conservation in North America

Parsons, David R., and Dave Foreman

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The Rewilding Institute (TRI) is a 501(c)(3) conservation think tank dedicated to the development and promotion of ideas and strategies to advance continental-scale conservation in North America. TRI believes that for conservation at all levels to be more effective, it must be guided by a grand conservation vision that is at once bold, scientifically credible, practically achievable and hopeful. Recognizing the vital role large carnivores play in maintaining or restoring ecological health, we believe that they represent an appropriate focal species for conservation planning from the eco-regional to continental scale. This presentation provides a justification for TRI's vision for wolf recovery and conservation in North America with an emphasis on what we call the "Spine of the Continent Megalinkage," which spans from Mexico to Alaska. Our overarching conservation strategy—rewilding—involves the restoration of ecologically effective populations of large carnivores—especially wolves—to large wild core habitats that are functionally connected by intervening landscapes that are permeable to animal movements. We present current scientific evidence documenting the role wolves and other large carnivores play as "strongly interacting species" in maintaining biodiversity and ecological health. We describe documented examples of ecological "trophic cascades" resulting from the extirpation and restoration of wolves and other predators. We discuss population viability, the emerging concept of "ecologically effective" populations, and the spatial requirements for viable populations of wolves. And we close by presenting a hopeful vision for the restoration and conservation of wolves from the Sky Island region of the Southwest to the Arctic and beyond.

Mexican recovery in the Southwest: A critical review

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Captive-reared Mexican wolves have been released into the Blue Range Wolf Recovery Area every year since the initial release of 11 wolves in 1998, with a goal of establishing a self-sustaining population of at least 100 wolves. The Mexican wolf reintroduction project is implemented by cooperating State, Federal, and Tribal agencies that use a formal "adaptive management" process for monitoring and evaluating results of past management actions and implementing changes to improve the success of the project. As required by project authorizing documents, formal reviews were conducted at intervals of three and five years following the initial releases of wolves. The 3-year review was conducted by outside experts lead by Dr. Paul Paquet and the 5-year review was conducted by agency experts on the wolf project staff. I will present crucial findings and recommendations from the technical reviews and summarize the agencies' response with special emphasis on recent decisions made by the Adaptive Management Oversight Committee—the interagency body responsible for applying the adaptive management process. I will present supporting evidence suggesting that the AMOC's implementation of the adaptive management process is flawed and influenced by political pressure. In brief, I will document that project results have fallen short of objectives established in the final Environmental Impact Statement for the reintroduction project.

Assessing the effects of a harvest ban on the population dynamics of wolves in Algonquin Park, Ontario.

Patterson, Brent R., Kenneth Mills, and Dennis Murray

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Algonquin Park is the largest protected area for wolves in Ontario. However, many wolves from Algonquin were killed by people while following migratory deer out of the park during the 1980s and 1990s. A moratorium on wolf harvesting in the 39 townships surrounding the park was implemented in November 2001. We radio-tagged 134 wolves, including 39 pups, to assess the effects of the harvest ban on wolf population dynamics. During winters 2002–05 median pack size was 4.5, 4, 5, and 4, respectively. Similarly, wolf densities have remained relatively stable following the ban. Some packs declined in size from one winter to the next despite high adult survival and confirmed presence of pups during the previous summer. Dispersal rates of all age classes of wolves seem relatively high. Twenty-four radio-collared yearling and adult wolves have died, and the deaths of 18 of those animals were attributable to natural causes (e.g., intra-specific strife, malnutrition, mange). This is in stark contrast to the 1990s when two-thirds of wolf mortality was attributable to humans. During the 3 years since the ban was implemented, annual survival has declined from > 92% to < 80% owing to an increase in natural mortality. That relatively high survival is apparently being offset by high dispersal with little overall change in wolf density suggests wolf densities in the park may presently be self-regulated at a level suitable for the present abundance of prey.

Are wolf-prey systems dominated by top-down processes or bottom-up processes?

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In general, are wolf-prey systems dominated by top-down processes (TD) or bottom-up processes (BU)? If BU dominates TD, then one might expect wolf and prey density to be correlated. Alternatively, if TD dominates BU, then one might expect prey density to decline with increased predator density. Paradoxically, substantial evidence supports both relationships. These relationships refer to variation in average conditions among different wolf-prey systems. One can also assess the relative importance of TD and BU within a single system, but this is a fundamentally different question concerning temporal, rather than spatial, variation. For example, in Isle Royale National Park, the TD influence of wolves seems significant when one considers that wolf predation is additive with other sources of moose mortality. At the same time, temporal fluctuations in moose abundance seem to be dominated more by BU than TD. TD and BU need not be mutually exclusive nor invariant across space and time, and lack of conceptual clarity continues to hamper understanding of general relationships. Analysis of prey density in 50 areas around the world suggests that ungulate prey density generally declines stepwise with additional predator species. A perspective on the significance of wolf predation in an area must include its collective predator fauna. The unfolding story of Yellowstone elk under a regime of wolf predation is considered in this context.

The influence of persuasive arguments on public attitudes toward a proposed wolf restoration in the Southern Rockies

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Perhaps no species elicits more polarized opinions in the United States than do gray wolves *(Canis lupus)*. Both proponents and opponents of wolf recovery use symbolic language in an attempt to persuade others to change their attitudes and values. We examined the attitudes of people living in Arizona, Colorado and New Mexico toward a proposed restoration of the gray wolf to the southern Rocky Mountains and examined the ability of persuasive arguments to change these attitudes using structured phone interviews with 1,300 registered voters. We found a high level of support for wolf restoration by residents of all three states; 64% of respondents favored reestablishing wolves in the Southern Rockies, whereas 33% expressed opposition. Support was general across almost all demographic and other groups sampled, the exception being ranchers (44% in favor, 53% opposed). Persuasive arguments had little impact on respondents' attitudes toward wolves and their proposed restoration. Most people who did change their opinion increased the extremity of their responses, supporting attitudinal theory that predicts that people with strongly held attitudes will increase the extremity of their opinions after receiving more information. This polarization poses a significant challenge to wildlife managers. If management agencies decide to pursue wolf restoration in the Southern Rockies, efforts to mitigate strongly polarized positions should be given a high priority. Alternatively, if those agencies choose not to restore wolves, they will likely face significant controversy as unsatisfied wolf proponents make their feelings known.

The value of long-term studies

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The natural world is really big, even when one's interest in it is really small. Mother nature operates over vast spatial and temporal scales that support ecological relationship of stupefying proportions and complexity. The smartest among us readily admit to being befuddled by it all. Indeed, E. O. Wilson, arguably the most insightful biologist of the 20th century, has observed that we are as yet unable to explain properly the functioning of 1 ft^2 of soil. Despite this intellectual handicap, biologists frequently publish papers in which they claim, often with confidence, the existence of correlational or (more significantly) causal relationships between two or more variables. It seems though that caution is called for when considering the veracity of such claims. Few biological studies of any kind have been conducted over a sufficient period of time and with adequate robustness to capture even a modicum of the variability that nature can dish up. This is certainly true with investigation of wildlife species, especially carnivores, that are hard to study for myriad reasons. Curiously, one of the most studied species of all time is the gray wolf. Despite the species' relative scarcity, due to the pioneering perseverance of a handful of dedicated biologists, we seem to know a great deal about wolves. Or do we? Have wolf studies been conducted with sufficient intensity and for sufficient periods of time to be truly instructive? This is the question that will be considered by a distinguished panel of biologists, each unique in their involvement with research projects that span unusually long periods of time.

People's response to a slight increase in the Finnish wolf population

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The author has studied wolves and attended the public debate on the protection of wolves in Finland since the beginning of the 1960s. During the past decade the wolf population has slightly increased, exceeding 150 individuals in 2005. The main range of the species covers areas south of the reindeer husbandry area. This recent slight increase in numbers has been too much to very many people in rural areas. The role of opinion leaders has been key in stirring up these negative attitudes toward wolves (as well as the killing of hunting dogs by wolves). A Wolf Management Plan (WMP) is under preparation, but it has faced real problems since too many opinion leaders are at the same time members of the Parliament. The WMP is needed for the commission of the European Union, since its legislation determines the limits of the measures that an individual member state can use. To be effective in practice, the WMP should be honest. In similar situations in history the wolves have been killed legally or illegally. It is significant that there is not a saturation point situation in the wolf population adjacent to the eastern frontier of Finland (in Russian Federation).

Red wolf recovery panel

Rabon, David R., Jr., Nina Fascione, Bud Fazio, and Jennifer Gilbreath

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The red wolf (*Canis rufus*) holds the distinction of being North America's first large carnivore to go extinct in the wild in modern times. Fortunately, successful captive breeding and reintroduction programs brought the red wolf back from the brink of extinction. Today, fewer than 300 wolves survive, and most reside in captive breeding facilities across the country. North Carolina lays claim to the only wild mainland population of red wolves in the world. About 100 red wolves roam freely in the northeastern part of the state. This population was established by the U.S. Fish and Wildlife Service, which began reintroducing red wolves to the wild in 1987. The program has become a model for reintroducing other large carnivores, and facilitated the return of gray wolves (*C. lupus*) to Yellowstone National Park, and Mexican wolves (*C. l. baileyi*) to the southwestern United States. This session's speakers will address various aspects of red wolf recovery: Bud Fazio, U.S. Fish and Wildlife Service, will provide an update on the reintroduction program and status of the wild population; David Rabon, U.S. Fish and Wildlife Service, will present results from nearly 30 years of captive breeding; Jennifer Gilbreath, former Red Wolf Recovery Team biologist and founder of the Red Wolf Coalition, will discuss public efforts to restore red wolves to their native ecosystem; and Nina Fascione, Defenders of Wildlife, will present results from an ecotourism study conducted in northeastern North Carolina demonstrating that red wolves and other wildlife could provide essential economic benefits to this rural region.

Living with wolves: A Minnesota farmer's experience

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As a beef farmer living in northern Minnesota, my family and I are well acquainted with the struggles associated with wolf-human coexistence. We have about 250 beef cows on 1,200 acres of land in the heart of wolf country. Local depredation officers responding to calls from our property have come to know the land as well as we do. The occurrences of depredation they are responding to add to the already tough business of farming. Farming is a business with low returns on investments and goals that seemingly take millions of hours to reach. Therefore, when a farmer loses a calf, it is not "just a calf." It is his money, food for his table, his time and his pride in feeding the world. But this doesn't mean that farmers hate wolves. We are preservationists and conservationists who understand that without everything nature has to give, we would be nothing. Really, farmers just want everything to live. We want the grass to grow and the calves to stay alive, and we want the wolves to live too. The conundrum is, how do we do all of that?

Sky Islands to Southern Rockies: A court ruling will lead to broader recovery goals

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On January, 31, 2005, a federal court overturned the U.S. Fish and Wildlife Service's April 1, 2003, creation of three gray wolf "distinct population segments," reinstating a March 9, 1978, rule that assured that

"biological subspecies would continue to be maintained and dealt with as separate entities." What are gray wolf subspecies within the bounds of the former SWDPS? Taxonomists from 1929 through 1983 consistently identified *Canis lupus baileyi*, the Mexican gray wolf, as a subspecies, even as other putative subspecies were consolidated. More recent genetic assessments, though offering a more guarded appraisal of the very concept of subspeciation, confirm that *baileyi* is the most distinctive of extant wolves in North America. Its evolutionary range is equally distinct, as implied in Aldo Leopold's nickname for it: "desert wolf." A biologically and legally sound recovery schemata for the Southwest would lead to reoccupation of the Sky Islands and Mexico by *C. l. baileyi*. But that is not enough. Central to the court ruling was the Endangered Species Act requirement to recover the gray wolf in all "significant" portions of its range. Outside *C. l. baileyi's* arid range, separate recovery criteria must be developed for the southern Rocky Mountains, Mogollon Plateau and Colorado Plateau. Wildlife corridors (some already utilized by dispersing "lobos") would likely lead to recovery in these areas without further reintroductions. But first, federal regulations requiring Mexican wolves to stay in their politically drawn recovery area must be rescinded, and the species treated like other endangered wildlife. The court ruling provides tools to ensure this will be enacted.

Management of wolf-human conflicts in Minnesota

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In 1974, the gray wolf *(Canis lupus)* population in Minnesota was protected by the federal Endangered Species Act (USA). At that time there were 500 to 700 wolves in the state. By 2003, the population was estimated at around 3,000 wolves. As the wolf population has grown and expanded, conflicts between wolves and humans have increased. Since 1978, when wolves were reclassified from "endangered" to "threatened" in Minnesota, the USDA's Wildlife Services program has used a combination of lethal and nonlethal control methods to reduce depredations by wolves on pets and livestock throughout the state. A state compensation program, established in 1978, reimburses livestock producers for losses verified as wolf depredations. Currently, wolf depredations are verified at 75 to 100 farms annually, and 100 to 200 wolves are taken each year in response to the depredations. Compensation payments to livestock producers for wolf damage have averaged $69,621 per year during the past five years. Most losses occur in summer when livestock are released to graze in open and wooded pastures. A timely, efficient and effective response to depredation complaints is essential for reducing both livestock losses and the number of wolves that need to be taken. Minnesota's wolf population is currently considered to be fully recovered by the U.S. Fish and Wildlife Service, and federal delisting is expected to occur in the near future.

Winter activity patterns and behavior in the reestablishing wolf population on the Scandinavian Peninsula.

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Activity patterns and predation behavior were studied in the reestablishing wolf (*Canis lupus*) population on the Scandinavian Peninsula during two successive winters, 2001–02. The alpha females were tagged with GPS collars in two territories, which located the animals on an hourly basis. An activity-time budget showed that the wolves had a bimodal activity pattern and that they on average were active throughout 44–51% of the time. Feeding occurred mainly between 2100 and 0800 hours. Wolves were very mobile during handling time, and in general they rested several kilometeres away from their killed prey between

feeding occasions. Handling time ranged from 1–101 hours, with an average of 28 hours, and kill rate varied between 3.7–5.1 days/kill. The wolves tended to kill their prey during late evenings (2000–2400 h.) and early mornings (0400–0800 h.). As a result of relatively inactive periods during afternoons (1200–1600 h.), the number of kills during daytime was significantly lower than what would have been expected from a uniformly distributed killing behavior.

The social carrying capacity of wolves

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The return of the gray wolf in Wisconsin and Michigan is astounding. However, the return of the wolf has also lead to conflicts between wolves and humans. The concept of a social carrying capacity has appeared in numerous publications from resources management agencies in Wisconsin, Michigan and Minnesota, as well as in the popular press in reference to the acceptable number of wolves, deer or turkeys in a particular area. This presentation will explore the factors that contribute to the social carrying capacity of wolves in the states of Wisconsin, Michigan and Minnesota. Detailed surveys were carried out between 2002 and 2004 in each of the these states. This presentation presents the analysis of these surveys in an attempt to uncover the factors contributing to the social carrying capacity of gray wolves in the upper Midwest. The goal of the presentation is to provide people who manage wolves or educate others about wolves a better understanding of what might influence people's acceptance of wolves. This presentation is linked to one by Pam Troxell of the Timber Wolf Alliance in which she will explore the implications of these findings for educators.

From extermination to conservation of the Mexican wolf

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In Mexico, the extermination of the Mexican wolf (*Canis lupus baileyi*) stopped at the end of the 1970s. The hunting, steel traps and poison quickly decreased wild populations of wolves in the mountains of Mexico. The recovery efforts started in 1976–80 with the capture of wild wolves to begin a breeding program in captivity. During 1998 the captive population became healthy and large enough to support releases in some places with suitable habitat. Now we are in the third stage, reintroduction in the wild, and we are preparing recommendations for reintroduction. We have generated maps with the potential areas, and we have been unable to identify many areas of temperate forests, decreed by the Mexican laws for biological conservation. We are requesting that the federal government increase the area of temperate forests designated as protected areas for biological conservation. This last stage will entail decision making and administering environmental public policy, which will involve the federal government, nongovernmental organizations, researchers and local people. This stage will require critical negotiations, summing up efforts of almost 30 years and confronting several scenarios that involve political, economic, and social approaches and conservation biology, so that we can achieve the first releases of Mexican wolves in our country and reach the big goal, their conservation.

Historical range of distribution of the Mexican wolf

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Mexican wolves (*Canis lupus baileyi*) were eradicated in Mexico, and their original range of distribution was unknown. Using a Geographical Information System, GARP model and a database with 600 georeferenced places of wild wolves trapped and killed throughout Mexico, a map of the historical range distribution based on the ecological niche of the species was generated. The model of the niche was obtained based on four dimensions (temperature, pluvial precipitation, elevation on the sea level and vegetation type). This map will be used as basic information to choose suitable places in Mexico that fulfill the following characteristics: extensive forest, interconnected fragments, no geographical barriers, biological corridors, good water and prey availability, nonintensive cattle raising, preferably with mining activity or forest in recovery, and scarce density of human population.

The state of gray wolf conservation and management in Montana: Moving from paper to practice

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Ten years have passed since gray wolves were reintroduced into Yellowstone National Park and the central Idaho wilderness. Twenty years have passed since wolves were first documented in northwest Montana. Wolf numbers and distribution have expanded since the early 1980s due to natural recolonization and immigration. While the Northern Rockies biological recovery criteria have been met or exceeded since 2002, delisting has been delayed. Montana's wolf conservation and management plan, completed in 2003, was approved by U.S. Fish and Wildlife Service in January 2004. Montana Fish, Wildlife & Parks (FWP) emphasized a people-centered rather than an agency-led or a political/legislative approach. Montana's plan is based on adaptive management concepts that allow wolves to find their place on the landscape and provide a spectrum of management tools to respond to variable public acceptance under a variety of environmental settings. Montana is implementing its plan to the extent possible despite the delay. But the essential question remains: is it possible to extend the ecological benefits of wolf restoration beyond Yellowstone and overcome the new biological and social challenges created by it? Adaptive management principles make it easier to move from paper to practice by linking decisions to wolf ecology, population status, people and the land and including mechanisms to learn along the way. This begins the transition from wolf recovery to long-term conservation and management led by FWP under the aegis of the North American Model of Wildlife Conservation.

The economic value of wolves and alternative values of wolves on the landscape

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Yellowstone Safari Company (YSC) and Ken Sinay are now in the 16th year of operation as an "ecotourism" service in the "Greater Yellowstone Ecosystem." One of the primary goals of YSC is to demonstrate alternative economic values of wildlife. The company's intent is to promote investment in diverse wildlife and habitat resources on the part of communities. Biodiversity is of great value to YSC because it results in more wildlife-related service options (potential guest experiences) and products. Wolves are an increasingly important part of this resource (experience and "product") mix. In fact, it can be argued that wolves play a critical role in the success of this business. Note: Tourism can be critical to the economies of small rural communities. YSC has grown slowly but steadily since its inception in 1990. Wolf-based tourism has allowed YSC to expand seasons of service extensively in winter and spring, and to a lesser extent in fall. Historically these are the slowest seasons for tourism in Montana and the Rockies. Tourism participants and providers are stakeholders in management and maintenance of wildlife resources and can play a significant role in preservation of biological diversity and economic development. It is critical for continued support of wolf populations for communities to perceive of viable populations of wolves as beneficial. Highlights: Wolves can provide economic benefits to all tourism-related businesses (hotel, restaurants and retailers). Non-government organizations (NGO) and resource managers appropriately should recognize and encourage appropriate wolf-based tourism as part of sustaining wolf populations. A diverse array of alternative wolf-based tourism services and products are possible, many of which have not yet been explored or recognized.

Planning for wolves in Colorado

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In spring 2004, the State of Colorado, through its Division of Wildlife (CDOW), began to plan for the possible arrival of dispersing wolves from reintroduced populations to the north and south. The CDOW appointed a 14-member public working group to discuss issues surrounding wolf presence in Colorado. The group included livestock producers, wildlife advocates, sportsmen, county commissioners and professional wildlife biologists. The group reached consensus on a set of recommendations addressing the management of wolves that migrate into the state, which they presented to the Colorado Wildlife Commission in January 2005. These recommendations were adopted by the commission in May 2005 and will form the basis of wolf management when legal authority for wolf management is returned to the state.

Pack structure and reproductive success of female wolves in Yellowstone National Park

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Ten years after wolf reintroduction to Yellowstone National Park (YNP), data on pack structure and lifetime reproductive success of female wolves are available. Protection from exploitation has allowed stable and

complex (several age classes) wolf packs to form and persist. Of 20 packs that have formed in YNP since 1995, 18 (90%) are still in existence. Packs sizes ranged from 2–37 and averaged 10.1. The first two years after reintroduction 3 (27%) of 11 packs were complex compared to 71 (84%) of 85 packs from 1997–2005 due mostly to nondispersal of juveniles. The average number of age classes/pack was 3.4 (range = 1–6) and increased from 2.2 in 1995–96 to 3.5 in 2003–04. The average age at first breeding for females was 30.1 months of age (n = 26). The average lifetime number of pups born per female was 14.8 (range = 4–34) with an average survival to a yearling of 11.1 (75%; range = 0–27). Lifetime litters/female ranged from 1–7, and the oldest known breeding female was 8 years of age. Breeding success and pack structure in a protected population are discussed.

Decade of the Wolf: Restoring the wild to Yellowstone

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Yellowstone Wolf Project leader Dr. Douglas Smith will talk about his new book, *Decade of the Wolf: Returning the Wild to Yellowstone*, co-authored with award-winning nature writer Gary Ferguson. This remarkable manuscript is an unforgettable account of the wolves themselves, as well as of the scientists who are faithfully following them through the wilds of Yellowstone. Published on the tenth anniversary of this historic endeavor, here are exciting new discoveries about wolf behavior, as well as the remarkable effects these animals are having on their environment. From bison to grizzly bears, beetles to bald eagles, willows to grasses, an astonishing range of species are being affected by the return of this powerful predator. As Douglas Smith describes it, "wolves are fast becoming to Yellowstone what water is to the Everglades."

Ecological conditions of non-rabid wolf attacks on man from late medieval to modern France

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Despite the great number of wolves living in early France, non-rabid individuals occasioned relatively few human deaths or injuries, and man-eating activity was considered as a deviant behavior. Contemporaries described such man-eaters as beasts with a shape of wolves, as werewolves, or as foreign wolves coming from wild countries. They did not distinguish wild wolves from natural wolf-dog crossbreeds or from wolves reared by so-called human wolf leaders. In the southern half of France, the only wild large prey was boar. Wolf attacks occurred most frequently near the places where cattle were butchered, in the vicinity of towns or fairs. Wolves used to feed there on scraps of meat. This led to some form of mental association between humans and food. Outbreaks of wolf attacks during human starvation periods are documented. After mass disasters like wars or epidemics, wolves cleaned out animal and human unburied corpses, thus probably saving lives by limiting the spread of cholera and other diseases. But one or two years later attacks began by grown-up pups that had been fed with human body remains. Among more specialized man-eaters, the case of the Beast of the Gevaudan is particularly well documented (now the department of Lozère; 1764–67, circa 100 persons killed). The ecological context includes a severe epizootic epidemic among sheep (1762), a severe canine distemper epidemic in 1763 (wolf-dog crosses among survivors), maximum deforestation (rarefaction of wild boars!). A family of wolf leaders was hanged in Mende in 1762, but what happened to their wolves?

Social dynamics of wolves in Yellowstone National Park

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Yellowstone National Park's (YNP) regularly observed wolves provide an unprecedented opportunity to study the social environment of a natural, unexploited wolf population. Through repeated field observations of the behaviors governing survival, reproductive fitness and intraspecific interactions, together with knowledge of individual and pack histories, a more detailed understanding of wolf sociality is emerging. In the tenth year following reintroduction of wolves to YNP, there exists a saturated population that continues to have access to high prey densities and is made up largely of complex packs engaging in polygamous relationships resulting in a high frequency of multiple litters. However, increased competition between packs over resources (i.e., territory, food, and mates) is being documented through such forms as spatial and temporal overlap in territories, intraspecific killing, usurping of carcasses and temporary liaisons during the breeding season. Here we examine aspects of social dynamics in YNP such as breeding strategies, intra- and inter-pack relationships, and territoriality and discuss how variation in behaviors and ecological conditions may influence such dynamics. Additionally, we discuss how the recent inclusion of molecular genetic information profiling levels of relatedness helps to explain the behaviors governing social dynamics of YNP wolves.

Predation patterns of Mexican gray wolves in the Blue Range Wolf Recovery Area

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Little is known about the predation patterns of the Mexican gray wolf (*Canis lupus baileyi*) because no studies were conducted prior to its extirpation in the wild. The reintroduction of Mexican gray wolves in the Southwest is likely to influence ungulate populations in the Blue Range Wolf Recovery Area (BRWRA). This study investigates kill rates and prey selection characteristics by Mexican wolves. Aerial surveys and global positioning system collars will be used to detect kill locations and estimate kill rates on ungulates. Initial results from predation studies on Mexican gray wolves are summarized. This research should allow (1) comparison of predation rates and impacts of Mexican gray wolves to predictions that were made prior to Mexican gray wolf reintroduction in the BRWRA, and (2) comparison of kill rates and prey impacts of Mexican wolves with other wolf populations that have been studied. Information collected in this study may be used to estimate impacts on ungulates in other areas where wolf restoration may take place in the southwestern United States. Finally, the results from the study may also be used to address concerns expressed by rural citizens that are impacted by Mexican wolf reintroduction.

Why Teach about Wolves?

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All who have a stake in wolf issues have an interest in a well-informed public dialogue in which respectful, solution-oriented discussion leads to better wolf recovery plans that have broad public support. The key to transforming the public discussion is education. Wolf education must improve in-depth understanding of the various dimensions of wolf issues, and today's events will equip us all with the tools, perspectives, and motivation to improve our wolf education practices.

Nature of the beast: Managing conflict associated with wolf conservation in the USA Northern Rockies

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As wolves have expanded their range in the USA Northern Rockies, increased conflicts with humans have occurred. These conflicts deepen negative attitudes toward wolves, increase polarization and impact management costs. In 1987, Defenders of Wildlife initiated The Bailey Wildlife Wolf Compensation Trust program to address these conflicts by compensating livestock owners for wolf-related losses, which today exceeds $500,000 in total payments. To evaluate the program's effectiveness, all 2002–04 Northern Rockies compensation recipients were mailed comprehensive surveys. Nearly 70% of the respondents reported satisfaction with the amount of compensation they had received. Most respondents stated that their tolerance toward wolves would be lower if the compensation program ended. Our findings indicate that compensation programs can be an essential and effective component of wolf conservation. Encouragingly, more than half of the respondents also expressed an interest in nonlethal methods to reduce depredations. Defenders has cost-shared $220,000 in nonlethal deterrents and assistance to livestock owners including use of multiple livestock guarding dogs, fladry, predator deterrent fencing, increased human presence, automated guard systems, targeted aerial monitoring and proactive livestock husbandry practices. Based on the success of these efforts and response from livestock owners, these programs are proving to be effective in reducing losses and conflict. By comparison, traditional lethal control programs are expensive, sometimes endanger human life when aerial gunning programs are used to kill wolves, and increase public polarization. Management programs that rely heavily on lethal control promote a relentless cycle of killing wolves while providing only temporary livestock protection.

Conservation of the wolf through acceptance by all interest groups: Development of the Croatian Wolf Management Plan

Strbenac, Ana

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How to find a balance between economical, ecological and sociological interests to ensure long-term conservation of wolves with as harmonious as possible coexistence with humans? As the result of the alarming status of the wolf population in Croatia, the population was strictly protected in 1995. A damage compensation system for livestock was introduced. On the other hand, hunting management was not adjusted to the situation. Thus, hunters and livestock breeders started to express their dissatisfaction with the strict protection status of the wolf. Media published these opinions and often presented the wolf as a

dangerous bloodthirsty beast, thus reinforcing negative attitudes of the rural public. Illegal killings of wolves occurred, and accurate data about them was difficult to obtain since no one would willingly report such acts; this resulted in poor law enforcement. To solve this situation, a human dimension approach to the wolf management planning was introduced. Funds provided by the European Commission's LIFE Programme enabled the organization of a series of workshops with representatives of all interest groups (from hunters to "green" non-government organizations). At the same time, a number of activities were implemented to reduce damages to livestock, to raise public awareness and improve knowledge of wolves. The Wolf Management Plan was developed as the result of efforts of many different interest groups that were willing to listen to different viewpoints and work together to propose possible solutions. The plan, which includes a set of measures for the reduction of existing conflicts in a way that all interest groups find acceptable, was also officially adopted.

Assessing wolf dispersal, disease and genetic variability in the Riding Mountain Ecosystem, Manitoba, Canada.

Stronen, Astrid V., Graham Forbes, and Paul Paquet

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The combined effects of isolation, human-caused mortality and disease may threaten long-term survival of wolves in the Riding Mountain Ecosystem, Manitoba, and information is needed on whether disease maybe impacting the park population and whether wolves within Riding Mountain National Park may be becoming genetically isolated. We are examining wolf dispersal from 2003 to 2006 in an area including Riding Mountain National Park and Duck Mountain Provincial Park and Forest to (1) determine the dispersal rate for wolves in the Riding Mountain Ecosystem, (2) detect prevalence of infection in wolves, and (3) assess the performance of a noninvasive genetic approach to detect this information. Thirteen radio-collared wolves in 8 packs are currently being monitored weekly by aerial telemetry to assess dispersal and wolf movements, and this information will be compared with the results from DNA analysis to assess dispersal in the study area. Preliminary results from radio telemetry indicate that wolves within Riding Mountain National Park are not strictly territorial, and some wolves have traveled repeatedly in areas occupied by other packs. We will assess whether flexible territory boundaries may be correlated with degree of relatedness between neighboring wolf packs. Serological analysis of blood samples from 14 radio-collared wolves showed that all had been exposed to canine parvovirus, and 8 of 14 had been exposed to canine distempervirus.

The future for gray wolf recovery in the Northeastern United States

Struhsacker, Peggy

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Wolf populations have exceeded population estimates for recovery in both the Great Lakes region and the Northern Rockies and have been recognized as an Endangered Species Act success story. The wolf in these two regions has thrived as a result of direct protection from human-caused mortality. The success of these two populations has been the result of intensive educational outreach to stakeholder groups, and collaboration among state and federal agencies and conservation/environmental organizations and the public. What has been learned is that the wolf is a story of human dimensions. Ultimately, these lessons will be used for a successful recovery of the wolf in the Northeast. Gray wolves are native to northern New England, but

direct persecution and habitat alteration led to their demise by the late 1800s. The neighboring Canadian Province of Quebec has been able to maintain viable wolf populations, and it is from this source that wolves could potentially recolonize in suitable habitat in the north woods of New England. Currently, natural recolonization is the accepted way for recovery, while reintroduction creates resistance to the wolf recovery. The Northeast is yet another region where a federal wolf recovery plan is going to take place. To support the effort, the task at hand is to demonstrate that wolves can coexist with humans, as they have in many other regions of the United States and world, and can be a source of ecological, economic and social values, as well as an inspiration to the people of the north woods and the 70 million people who live within a day's drive of the northern forest. The presentation will detail the grassroots work within a community in northern New Hampshire as an example of how to change old attitudes to new.

Wolves – worth the watching: Natural history outfitting in the greater Yellowstone ecosystem

Taylor, Meredith

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Wolves are big business to ecotourism outfitters, who celebrate wolf recovery in the Greater Yellowstone ecosystem. The number of people who want to see or hear wolves in the wild has increased substantially. Public interest in wolves has led people to outfitters asking, "I've dreamed about seeing wolves all my life. What are the chances that I'd get to see them?" You can count on it in Yellowstone. Worldwide interest in wolf-watch trips in Yellowstone has boosted natural history outfitters' business and the local economy around Yellowstone's satellite communities as well. The Yellowstone wolves are the most photographed packs in the world. Yellowstone Park visitation was up by at least 26% where wolf-watchers view wolves in the Lamar Valley. Grizzly bear groupies now watch wolves as well in northern Yellowstone. It is difficult to know how much wolf-watching in Yellowstone converts to in tourism dollars, but it has created an off-season attraction to Yellowstone's winter wonderland when the bears are hibernating. During this first decade of Yellowstone wolf recovery, big changes included a 50% reduction in coyote numbers, and the interaction between predators and prey has led researchers to understand the significance of large ungulate dispersal on winter range. Thus, wolves minimize the impact of grazers, and ecosystem balance is recovered for native species. Wolves' and other large carnivores' role in Greater Yellowstone is part of Taylor Outfitter's conservation message to those who want to see a functioning ecosystem. The economy of ecology is the future of any successful outfitters' business plan because it is sustainable.

Teaches with wolves: High school students make a difference

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The Illinois Mathematics and Science Academy (IMSA), a state residential secondary school for talented students, has actively investigated wolf biology as part of an ecology class. This presentation will discuss the instructional use of integrating various academic disciplines, problem-based learning, extensive fieldwork, student research and presentations as strategies to teach about wolf biology. Students from this course have conducted field research in northern Minnesota and the Greater Yellowstone ecosystem since 1993. As high school students, they have presented at national conferences and the Yellowstone EIS hearings in Washington, DC, served as consultants to Northwestern University on the production of an interactive wolf CD, developed

a life-size kill site model for the new Brookfield Zoo Wolf Woods exhibit, established a wolf loan box with the Field Museum of Natural History, and worked as advisors to local governments, school districts and individuals on canid biology. This presentation will also highlight the use of technology to enhance instruction on wolf biology such as radio tracking, bio-acoustics of wolf howls, GIS/GPS mapping data and PDAs to record population and behavioral information on wolves and their prey populations. Participants will be invited to join a national online discussion among high school students on wolf biology and conservation questions.

Wolf den site selection in the northern Rocky Mountains

Trapp, Jon R.

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Because mortality of wolves is highest during the first 6 months of life, den site selection may affect reproductive success of wolf populations. We studied fine-scale denning habitat selection (within 100 m of den sites) by comparing field-measured characteristics of 22 dens in Idaho, Montana and Canada with paired random contrast locations within pack home ranges. In order of importance, wolves denned in areas that had greater canopy cover, hiding cover, herbaceous ground cover and woody debris, and were closer to water than paired random sites. These factors suggest selection for physical protection and a readily available water source around den sites. We also compared 35 wolf dens with 35 paired contrast locations in Idaho, Montana and Yellowstone National Park with respect to 6 remotely sensed variables (elevation, slope, coniferous forest cover, solar radiation, distance to water and distance to roads). We found no significant ($P < 0.10$ univariate) contrasts in the remotely sensed variables, suggesting that some important variables can only be measured in the field. Nonetheless, a multivariate model based on the Mahalanobis distance with 4 of these remotely sensed variables (slope, elevation, coniferous forest cover and solar radiation) suggests that > 85% of dens will occur in potential denning habitat that occupies < 12% of the wolf recovery areas in the northern Rocky Mountains. These results suggest optimal wolf denning habitat may be a limiting factor affecting fitness and viability.

Implications for education in the upper Great Lakes region based on the State of the Wolf Attitudinal Survey

Troxell, Pam S., and Lisa Lemke

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Northland College's Sociology Department, with help from the Timber Wolf Alliance (TWA), a small nonprofit education organization based in northern Wisconsin, surveyed residents of Michigan, Minnesota and Wisconsin about attitudes toward wolves. The responses received provided significant information on how citizens view wolf management and what it means to share the landscape with wolves and a look at citizen's knowledge base of wolf ecology. The responses have been rich with information and have helped TWA determine (1) what information we have been deficient in teaching, and (2) what education message should receive the highest priority. This paper will discuss some of the outcomes from the survey and how these outcomes are being incorporated into TWA's education programming. This presentation is linked to one by Kevin Schanning of Northland College in which he will explore his findings on social carrying capacity from the State of the Wolf Attitudinal Survey.

From CR and ADR to ECR: Are environmental conflict resolution processes an option for human-wolf conflict today?

Tucker, Paige

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Conflict resolution (CR) is utilized with increasing frequency at all levels of government in the decision-making process. The conflict resolution field formed some 30 years ago and utilizes techniques, such as alternative dispute resolution (ADR), in an attempt to resolve disputes to avoid protracted and costly litigation. When litigation occurs in environmental conflicts, it often means that there has been a failure of the legislative and administrative arenas to effectively address the underlying controversies involved. The ADR movement has grown from a small group of mediation practitioners to institutional programs in courts, public agencies, private corporations and nonprofit organizations seeking to identify and address conflicts and their underlying origins. The Environmental Policy and Conflict Resolution Act of 1998 and the creation of the new federal agency, the U.S. Institute for Environmental Conflict Resolution, reflect the growth of the discipline. This presentation will focus on Consensus-Based/Building Processes of Environmental Conflict Resolution, a brief review of the ECR literature, and the pros and cons of the processes for large predator restoration efforts. Specifically, the most common consensus-based processes used in environmental conflicts are conflict assessment, convening, facilitation, mediation, conciliation, negotiated rule-making and policy dialogues. Case examples of these processes relating to natural resource/environmental conflicts from the United States and Africa will be presented to illustrate the benefits and weakness of the process and future possibilities. Wolf restoration may be described as a case example of protracted environmental conflict with multiple involved parties and varying human dimensional factors. The importance of demographic and development trends in regions and future implications of global warming raise the question of consideration of ECR techniques as an option for wolf recovery in the future.

A child's view of wolves

Turbow, Sue, and Joell Severens

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There is a population of children that have a difficult time understanding many concepts about wolf education. These are children between the ages of 4 and 7 years old. These children think in terms of concrete application rather then abstract application, as do children over 7 years old (Jean Piaget). This workshop will provide participants with hands-on activities for children ages 4 to 7 so that these children will begin to understand how wolves live in the wild. The participants will actually have hands-on experiences doing the activities with the workshop leaders. Some examples of these activities include the following. (1) Understanding Wolf Pack Structure: Children are given a "role" within the wolf pack. Roles include the alpha pair, beta male and female, and lower-ranking pack members to the omega. They will also learn about what can happen when the alpha dies or a pack member leaves to form its own pack. (2) Environments Where Wolves Live Game: This is a matching game where participants receive the materials to put together their own game. This information includes various subspecies of wolves and the environments where they would be found. (3) The Wolf Raven Connection: Children are assigned a "role" of either wolf or raven. A discussion then ensues on how the wolf and raven help each other. Children move around a room as would the "companions," helping one another. There will be other activities, as well. The above are sample activities.

Mexican gray wolves: Challenges for the captive breeding program 2005

Valentino, Patrick C., Susan Lindsey, and Daniel Moriarty

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Formidable challenges facing the Mexican Wolf Recovery Program include the release of captive-raised wolves. This presentation will outline the current status of the Mexican gray wolf in captivity and challenges in raising a wild wolf. Listed in 1976 under the Endangered Species Act, the Mexican gray wolf is one of the rarest land mammals in the world. The goal of the Mexican Wolf Recovery Plan is the reestablishment of wild populations from captive-raised wolves. Today about 335 Mexican wolves survive, with about 285 held at 48 captive facilities in the United States and Mexico. The others are free-ranging in the Apache and Gila Forests of Arizona and New Mexico. Mexican wolves are held in a variety of facilities, creating management challenges. Critical issues include the improvement of husbandry practices to increase chances of wild survival. Size of enclosures, feeding protocols and evaluation metrics all contribute to what character of wolf gets released in the wild. While more pups are being born in the wild, political boundaries have restricted free recovery of Mexican wolves. The number of wolves released and the number that need to be managed in captivity will determine the focus of captive wolf managers. The program's Five-Year Review recommends a larger recovery area for Mexican wolves. Releasing more Mexican gray wolves from captivity will increase the genetic diversity in the wild and also benefit northern ranging gray wolves.

Wolf ecology 101: What do we know for sure?

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Educators often use the wolf as a case study to teach about ecological systems, but there's so much new information becoming available that it's hard to keep track of what we know and what we don't. Learn more about the wolf's affect on prey and non-prey species - at the population level, in the short and long term, in various different geographic locations. How much influence do wolves really have in an ecosystem, relative to other species or factors? This presentation will also discuss how ecological information informs wolf reintroduction and management decisions.

Influence of harvest, climate and wolf predation on Yellowstone elk, 1961–2004

Vucetich, John A., Douglas Smith, and Daniel Stahler

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In the period following wolf reintroduction to Yellowstone National Park (1995–2004), the Northern Yellowstone elk herd declined from ~17,000 to ~8,000 elk (8.1% yr-1). The extent to which wolf predation contributed to this decline is not obvious because the influence of other factors (human harvest and precipitation) has not been quantified. To assess the contribution of wolf predation to this elk decline, we built and assessed models based on elk-related data prior to wolf reintroduction (1961–95). We then used the best of these models to predict how elk dynamics might have been realized after wolf reintroduction (1995–2004) had wolves never been reintroduced. The best performing model predicted 64% of the variance in growth

rate and included elk abundance, harvest rate, annual snowfall and annual precipitation as predictor variables. Harvest rate accounted for ~47% of the observed variation in elk growth rate. According to the best-performing model, the elk population would have been expected to decline by 7.9% per year, on average, between 1995 and 2004. Within the limits of uncertainty, which are not trivial, climate and harvest rate explain most of the observed elk decline. To the extent that this is true, we suggest that between 1995 and 2004 wolf predation was primarily compensatory.

Historicizing wolves and wolf conservation

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This paper argues that historians can contribute to wolf conservation in an even more meaningful way than interpreting documents—they can interpret the historical place of the conservation project itself. Debates regarding Japan's extinct wolves will serve as my case study. Recent debates over "global warming" prove that science is not an objective, truth-seeking force but a socially constructed one that reflects our shifting needs. This is also true of wolf taxonomy, which is a historical construct and raises the question: are attempts to preserve "pure" wolves, say among Algonquin populations, really preserving a "natural" lupine state, or are these more reflective of our needs? Ultimately, scientists and policymakers need to ask themselves are they "conserving" present-day wolves or "creating" historical wolves through their conservation efforts. "Historical evolution" is the manner in which humans spark evolutionary changes in historical time. Insects evolving to combat insecticides are one example; agricultural "biotechnologies" are another. Historical watersheds reverberate throughout the natural world as well, often in ways that modify the behavior and evolution of other living things, and because wolves adapt to their surroundings, in a sense they too experience history. Is it our role to interfere in this process by "conserving" or "restoring" them, attempting to rescue them from the forces of both history and evolution? My answer is "yes," but we need to be historically minded. Once we begin to see ourselves as part of "nature ongoing," it will help us set more realistic, and scientifically sound, goals for global wolf conservation.

The Wolf Planning Toolbox: An Oregon example

Weiss, Amaroq E., Paul De Morgan, and Mark Henjum

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Oregon's endangered species act lists the wolf, which mandates its conservation in Oregon regardless of its federal status. Anticipating Idaho wolves reestablishing in Oregon, a state Wolf Conservation and Management Plan was developed through a consensus process with diverse stakeholders. In this session, the lead neutral facilitator, the lead technical agency staff member and one of the stakeholder representatives involved in developing the Oregon Plan will discuss the planning process and components. Throughout the process, people represented their interests in wolves at both extremes, arguing all wolves entering the state should be killed or wolves should be actively reintroduced. The Oregon Plan instead establishes a center point and includes novel approaches reflecting the uniqueness of Oregon's land base, its state wildlife laws, and the diverse viewpoints of its citizens. The planning process, which included appointed citizen stakeholders, agency personnel and a professional mediation firm, allowed for these unique approaches to be incorporated into a state plan for wolves that also had to meet legal requirements and conservation needs of the species.

Through this panel discussion, session attendees will gain an enhanced understanding of (1) the controversy and challenges inherent in wolf conservation and management, and (2) tools and approaches to facilitate highly controversial issues with high emotions.

Tracking wild wolves

Westlund, Jen

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Follow wild wolves! The International Wolf Center is proud to offer educators a unique teaching tool to help you track wild wolves through the seasons as they roam the Superior National Forest in Minnesota. Using current data from wolf biologists, you can learn about wolf territorial behavior, causes of mortality, den site selection, pack sizes, dispersal and more. This resource will bring the wolf to life for your participants. This session will cover the basics of using radio telemetry equipment, accessing wolf location data on our web site, mapping wolf locations and demonstrating sample activities you can use with audiences of all ages. We will also discuss where to find and purchase radio telemetry equipment, other applications of this equipment, and other methods of research. This is a great resource for engaging your audience in current scientific research.

Outcome of interactions and pursuit distances during wolf attacks on moose and roe deer

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We examined factors important to pursuit distances of moose *(Alces alces)* and roe deer *(Capreolus capreolus)* by wolves *(Canis lupus)*, outcome of interactions between wolves and moose, and moose defence behavior during attacks. In total, 316 pursuit distances on moose and roe deer by wolves were registered in Scandinavia during 1997–2003. Median pursuit distances by wolves during successful and failed attacks were 50 meters and 100 meters on moose, and 300 meters and 200 meters on roe deer, respectively. Both adult moose and calf moose were killed in lay. On only one occasion we observed a multiple kill when two roe deer were killed by two alpha wolves. Prey species, outcome of attacks, snow depth, and the number of alpha individuals involved in the attack were all significant predictors of pursuit distances. Hunting success per total number of moose attacked was 26%, and an additional 11% of the moose were injured by wolves. Among the moose that survived a wolf attack, 92% outran wolves, and 8% confronted wolves. Pursuit distances on both moose and roe deer were shorter, and fewer moose confronted wolves when attacked in Scandinavia, as compared to moose, elk *(Cervus elaphus)* and white-tailed deer *(Odocoileus virginianus)* in North America.

Back to basics management: Could wolves control chronic wasting disease?

Wild, Margaret A.

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Recent theoretical studies have suggested that alterations to predator abundance can strongly influence disease prevalence. We suggest that restoring top predator-prey-scavenger food webs is a promising management alternative for chronic wasting disease (CWD) that warrants investigation. The effect of CWD on deer and elk populations can be significant, both from the infection and from collateral impacts of management actions. Current approaches to managing CWD are intensive and costly (often both economically and environmentally) and will require a long-term commitment to reduce the prevalence of or eliminate the disease in free-ranging populations. Wolves could influence CWD prevalence through several mechanisms including increasing mortality rates, particularly selective removal of CWD positive deer and elk, redistributing deer and elk from areas of high concentration, and removing infected carcasses from the environment. We used a simple mathematical model to forecast that predation by wolves could have potent effects on CWD prevalence in elk. Results from preliminary simulations suggest that predation by wolves has the potential to eliminate CWD from an infected elk population in the absence of reinfection from outside sources. Although model experiments revealed that uncertainties in estimates of parameters resulted in uncertainty in estimates of time required to eliminate the disease from closed elk populations, the fundamental conclusion of elimination was robust and consistent in these preliminary analysis. These results, coupled with potential effects on disease prevalence from changes in transmission rates associated with alterations in elk distribution and concentration and removal of prion-infected carcasses, suggest that wolves could serve to control CWD in free-ranging populations.

Addressing shortfalls of wolf recovery: Recommendations for cooperative education initiatives and criteria for measuring their success

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Wolf recovery is being heralded as a success because population goals have been attained. Yet two of the five factors cited by the Wolf Recovery Plan as being the most important causes of the previous eradication of wolves from the United States, ignorance and misperceptions about wolves, remain to this day. Though the Wolf Recovery Plan required public education, it neither required that the aforementioned factors be addressed nor set up criteria for determining the success of education programs. To prevent recovery from failing and wolves being eradicated once again, private groups must take on the task of educating the public. Factors believed to be demonstrative of the failings of the Wolf Recovery Plan to adequately educate the public about wolves are examined in light of their effect on initially causing the eradication of wolves. From these, criteria are determined in order to measure the success of recommended education efforts. Recommendations for what groups can do to work together and independently to fill this gap in the Wolf Recovery Plan are made to ensure that population numbers of wolves are not the only criterion used to judge the success of wolf recovery. Through cooperative and individual efforts measured against criteria, advocacy groups can ensure that wolves will remain recovered forever. The presentation will be adjusted per lessons learned at Chico and to accommodate a broader audience.

Frontiers of Wolf Recovery

2005 International Wolf Center

COLORADO SPRINGS

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Identifying predictors of reproductive success in captive Mexican gray wolves (Canis lupus baileyi) using transfer and reproductive histories
– Mary K Agnew, Saint Louis University, USA

Behavioral responses of Mexican gray wolf to structure and managing conditions on Mexican zoos.
– Miguel A Armella, Universidad Autonoma Metropolitana Iztapalpaa, MEXICO

Wolf status and conservation in the Iberian Peninsula
– Juan Carlos Blanco, Wolf Project, CBC, SPAIN

Habitat characteristics of wolf rendezvous sites in the southern Apennines, Italy.
– Paolo Ciucci, Dept. of Animal and Human Biology, University of Rome La Sapienza, ITALY

Long-distance wolf dispersal from Italy to France revamps the need for transboundary wolf management plans
– Paolo Ciucci, Dept. of Animal and Human Biology, University of Rome La Sapienza, ITALY

The Path Less Traveled: New Approaches to the Wolf Restoration Debate
– Rob Edward, Sinapu, USA

Wolf Behavioral Research - Using captive wolf observation to complement wild wolf studies.
– Holly A Jaycox, Wolf Park, USA

Mexican Wolf Reintroduction
– Terry B Johnson, Mexican Wolf Adaptive Management Oversight Committee, USA

Applying predictive models to management decisions regarding livestock damages attributed to wolves in Asturias (n. Spain)
– Luis L Llaneza, ARE.NA. Asesores en Recursos Naturales, S.L., SPAIN

Running with the Pack-Wolf Pup Nanny
– Deborah J Lucchesi, Volunteer (International Wolf Center), USA

Using compositional analysis to analyze winter habitat selection of wolves in the Western Alps
– Francesca F.M. Marucco, Wildlife Biology Program, USA

Effects of GPS collar schedules on measured movement distance and territory size in wolves
– Kenneth J Mills, Trent University, CANADA

Importance of positive affiliation behaviors in a captive wolf (Canis lupus) pack and link with social stress, during winter
– Barbara Molnar, University of Neuch'tel, Switzerland, SWITZERLAND

Eco-ethological relationships between the iberian wolf and free grazing livestock: implications for conservation in Northwest Portugal
– Helena Rio-Maior, Grupo Lobo / Centro de Biologia Ambiental, PORTUGAL

Social interaction in captivity wolves Canis lupus lupus and the effects of reducind their territory
– Natalia N Sastre, Unidad de Zoologia, SPAIN

• POSTER PRESENTATIONS •

Identifying predictors of reproductive success in captive Mexican gray wolves *(Canis lupus baileyi)* using transfer and reproductive histories

Agnew, Mary K., Cheryl Asa, Sue Lindsey, and Shawn Nordell

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Recovery of endangered Mexican gray wolves (*Canis lupus baileyi*) is dependent upon a captive breeding program, as recommended by the group's Species Survival Plan (SSP®). Recovery necessitates the transfer of individual wolves throughout facilities in the United States and Mexico, often for breeding purposes. However, not all of the planned pairings culminate in the birth of live offspring. To examine which variables best predict reproductive success, four categories of variables were analyzed using 196 breeding opportunities (N = 86 males). Effect of travel, effect of male and female characteristics, effect of lineage and effect of transfer date itself (timing of transfer) were examined. Information gathered from the international studbook, reproduction reports, and breeding and transfer recommendations were compiled into a comprehensive database. Analysis were performed using nominal logistic regression for two groups: one for the entire data set and one for a subset of males (n = 24 males, 111 pairings) involved in an ongoing sperm quality study. The following variables, representing lineage and individual characteristic categories, significantly loaded into the models: male cumulative number of pairings, dam of female, and female lineage for the entire data set; dam of male and male lineage for both data sets; and female age for the sperm study male data set. Inbreeding in two of the three historical lineages may be the underlying explanation for many of these results, as inbreeding can negatively affect fecundity. The identification of key traits associated with reproductive success may be useful to the SSP when making future breeding recommendations.

Wolf status and conservation in the Iberian Peninsula

Álvares, Francisco, Ines Barroso, Juan Carlos Blanco, João Correia, Yolanda Cortes, Gonzalo Costa, Luis Llaneza, Luis Moreira, José Nascimento, Vicente Palacios, Francisco Petrucci-Fonseca, Virginia Pimenta, Sara Roque, and Eduardo Santos

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Several regional or national surveys carried out in Portugal and Spain between 1999 and 2003 allowed us to ascertain the distribution area and to estimate the number of packs and the population trends of wolves in the Iberian Peninsula, mainly by sign and howling surveys. Currently, the Iberian wolf range covers a total of 140,000 km^2, 120,000 in Spain and 20,000 in Portugal. Most of the Iberian wolf range is located

in the northwestern quadrant of the Peninsula, with a small isolated population located in southern Spain. Three hundred twenty-two packs were estimated to exist in Iberia (254 confirmed + 68 probable), of which about 80% occur in Spain and 20% in Portugal. Nevertheless an unknown number of packs may have been undetected. The population size was estimated at more than 2,000 wolves, although methodological constraints made it difficult to determine accurate figures. There has been a severe reduction in wolf distribution since early 20th century, but since mid 1990s the species seems to have stabilized in Portugal. In Spain, the wolf population started to recover in the 1970s, and from 1988 to 2001 has expanded its distribution area by 20%. The wolf is fully protected in Portugal, and a moderate hunting quota is allowed in Spain, although illegal persecution to prevent damages to livestock is common. Conservation priorities include maintaining the connectivity among Iberian semi-natural habitats to allow natural wolf recolonization, and especially in Portugal, to promote habitat and wild ungulates restoration.

Behavioral responses of the Mexican gray wolf to structure and managing conditions in Mexican zoos

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The reproduction program of the Mexican gray wolf has been a successful one. However, differences among the facilities are evident but have no clear explanation. We studied the behavioral responses of Mexican gray wolves *(Canis lupus baileyi)* hosted in different Mexican zoos. For the three zoos in Mexico City, those in Guadalajara and Leon, and the natural enclosure of San Cayetano, we studied the physical conditions of the enclosures, including ground material, vegetation, public disturbance and so on to provide a good estimate of the enclosure's quality. Facilities were also classified according to their handling practices, such as food type, feeding conditions, cleaning and so on. With those data we did a cluster analysis to categorize the enclosures. Also we studied the reproduction success at each facility using the Mexican Wolf Stud Book, published by Peter Siminski. Results indicate that Mexican zoos can be divided into three main categories: (1) the three facilities in Mexico City, (2) facilities in smaller cities, and (3) the natural enclosures like San Cayetano. Stereotyped locomotion was the behavioral category that showed the larger differences among the three categories. Differences in reproduction were not consistent with those of behavior or with the classification of zoo facilities. Differences in reproduction were better explained by some other factors like the number of movements an animal experienced in its life.

Habitat characteristics of wolf rendezvous sites in the southern Apennines, Italy

Ciucci, Paolo, Luigi Boitani, and Alessandra Falcucci

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Especially in highly populated countries, rendezvous sites (RVs) characteristics and location relative to areas of intensive human use can play an important role in wolf pup survival and pack territorial stability. Where anthropogenic features are common, availability of RVs suitable areas could represent a limiting factor for local wolf populations or, alternatively, RVs location can reflect tolerance and/or adaptation by wolves to humans. Analysis of RVs location, habitat features and distance from settlements with respect to some fitness proxy can disclose selection processes and suggest potential adaptive mechanisms. By means

of wolf-howling surveys, radio-tracking and on-site field surveys we localized 41 potential RVs in 8 packs in Pollino National Park (1958 km^2, Southern Italy) from 1999-2003. Excluding those not confirmed through field surveys and/or whose location was not accurately estimated, we utilized the remaining 30 RVs to develop a resource selection function to assess habitat and landscape selection at two scales of analysis, over the whole park area and at the pack territory level. Based on 14 RVs for which we GPS recorded the real location through field surveys, the linear error of the locations estimated through wolf-howling triangulation averaged 149 ± 95 m, with an upper 95% confidence bound of 201 m. The latter distance was then used as a buffer to represent RVs into a GIS environment (ArcGIS^{TM} 9, ESRI). Habitat variables, considered as covariates in matched case-control logistic regression, where elevation, aspect, slope, topography, forest type, forest fragmentation, road density, distance from roads and towns. Application of the model could assist Park authorities to reduce wolf-human conflicts in summer by, for example, suggesting location of grazing allotments in areas where the odds for wolves to locate a RV are lower than elsewhere.

Long-distance wolf dispersal from Italy to France revamps the need for transboundary wolf management plans

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Male M15, a 28-kg wolf pup soon to be brought to popularity by the Italian and French media with the name of Ligabue, was hit by a vehicle on 24 February 2004 in the outskirts of the city of Parma (Northern Italy). Most probably a dispersing pup that originated from a pack some 81 km SE along the Apennines (as from DNA microsatellite analysis on a previously collected fecal sample), M15 was successively released (March 11), in a nearby mountainous area, fitted with a GPS collar (remote download). After release, M15 quickly resumed dispersing, and during the next 10 months travelled WNW along the Apennine range, eventually reaching the French Alps by October 7, in 211 days after release. This (Mercantour National Park) is the same area where, in 1992, wolf recover in France was first officially reported. M15, however, later attempted to settle in the adjacent Italian side of the Alps (Valle Pesio Regional Park). Based on 484 fixes recorded at 12-hour intervals, M15 travelled for a minimum distance of 1,242 km prior to settling, corresponding to a largest net displacement of 217 km. M15 dispersal trajectory crossed 2 States, 4 Regions, 4 main national highways and went as close as 4 km to towns like Genoa. Although recover of wolves in France from the Italian population has been already confirmed on genetic grounds, M15 provided the first direct evidence of the dispersal permeability and mechanism that, along the narrow and fragmented Ligurian Apennines, would eventually allow connection of the Apennine and Alpine (French and the Italian) wolf populations. Utilizing standard movement metrics in a GIS environment, we hereby detail this first report of a wolf dispersing from Italy to France, and quantify its travel trajectory with respect to different movement behaviors, heterogeneity in landscape and habitat characteristics. We also discuss the reasons why this case should recall the necessity for a transboundary wolf conservation and management planning.

The path less traveled: New approaches to the wolf restoration debate

Edward, Rob

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The effort to restore wolves to parts of their historic range in North America has unfolded as a classic cultural conflict. While ecological data mounts, much of it suggesting that wolves play a disproportionately important role in their native ecosystems, the struggle between agricultural interests and those who seek to restore wolves overshadows much of what we have learned about wolves and how to live with them. In the southern Rocky Mountains, citizens are attempting to shift the wolf restoration debate away from the classic conflict and toward a win-win course. Though not without strife, the approach has thus far yielded significant positive results and holds the potential to set a positive precedent for the restoration of wolves and other imperiled species. Rob Edward, co-director of the Southern Rockies Wolf Restoration Project and a member of Colorado's Wolf Management Plan Working Group, will share his perspective on this evolving approach to wolf restoration.

Wolf behavioral research: Using captive wolf observation to complement wild wolf studies.

Jaycox, Holly A., Pat A. Goodmann, and Linda Thurston

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Researchers who study wolves in the wild usually see only short glimpses of wolf behavior or often no wolves at all—only wolf sign. However, wild wolf researchers rarely utilize the resource of captive wolves in order to become familiar with the behavior's variable appearance and in its full continuum. It is clear that not all behavior observed in captive situations will be the same as wild wolf behavior. Because animals are a product of their genes and their environment, wolves that develop in different environments, such as in captivity or in the Arctic or other unique habitats, will have differences in behavior. For example, captive wolves do little hunting, experience less food stress, and are not in situations requiring great physical endurance. However, we argue that there is sufficient overlap in behavior of wild and captive wolves to gain valuable insights into wolves in the wild. In captive situations, researchers can observe wolves going through most of their normal social behavior repertoire, including play, assertion of rank, testing, care-giving, chorus howls and rallies, courtship and mating. Captive facilities also provide increased accessibility, decreased cost over field studies, and efficient data-gathering potential. We will also address what characteristics a captive facility needs in order to be useful to researchers. Studying captive wolves has benefits as well as drawbacks as a means of increasing knowledge of their wild counterparts. Video footage and still photographs of wild and captive wolves will illustrate this talk.

Mexican wolf reintroduction

Johnson, Terry B., Krista Beazley, David Bergman, Colleen Buchanan, John Caid, Shawn Farry, Chuck Hayes, John Morgart, Wally Murphy, John Oakleaf, and Nick Smith

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Mexican wolf reintroduction began in 1998, when 11 wolves were released in the Blue Primitive Area of east-central Arizona. Since then, released and wild-born wolves have traveled widely, including into New Mexico. Capture and translocation for management purposes have also brought wolves to New Mexico. An Interagency Field Team, composed of state, tribal, and federal biologists, carries out on-the-ground management of these wolves. An Interagency Adaptive Management Program provides guidance to the reintroduction project and opportunities for public participation in shaping the effort. In a poster display, the project collaborators will describe the status of the project from a biological and from a social perspective.

Applying predictive models to management decisions regarding livestock damages attributed to wolves in Asturias (n. Spain)

Llaneza, Luis L.

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We gathered data on 79 variables after inspecting the surrounds and corpses in 182 wolf damage claims. Two dependent variables were established: PREDA (death due to predation) and WOLF (death due to predation by wolves). Both variables were noted according to the researcher's expert judgment. Exploratory analysis of the variables led to those with unbalanced frequencies being removed, leaving 46. With 164 cases we constructed two logistical regression models to determine which variables provide the most information in determining the exact cause of damages. The PREDA model (R2 = 0.749) correctly classified 89.6% of cases and included the following variables: presence of (a) drag marks around the prey, (b) tracks, (c) scats, (d) bite marks with subcutaneous haematomas, and (e) tearing. The WOLF model (R2 = 0.611) correctly classified 84.8% of cases and included the following variables: presence of (a) tracks, (b) scats, (c) bite marks with subcutaneous haematomas, (d) tearing, (e) subcutaneous haematomas associated with tearing, (f) signs that the body was moved while being eaten, and (g) the hindquarters were eaten. Although the application of these results is still being validated, we think the models may prove a useful tool in establishing inspection criteria and in decision-making in damage management.

Running with the pack: Wolf pup nanny

Lucchesi, Deborah J.

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Education goes a long way toward protecting something that we value and want future generations to understand and cherish as we much as we have. But the act of "educating" should become the responsibility of each of us to carry forward the knowledge we gain. In July 2004, I participated in an educational "Adventure" program at the International Wolf Center when I volunteered as a nanny to the newly acquired pups. However, the act of educating people about wolves began before I even attended the Nanny Week 8

Team. I sold photographic prints, t-shirts, and cards to raise funds to pay for my cost of attending. People began asking lots of questions about the Center, the Nanny program, and wolves, and they looked forward to learning more when I returned! After my week, I started offering 1-hour PowerPoint presentations to Oxbow Park/Zoo (where the first pups were acquired for the Center in 1989), high school biology students, a Mayo retirement community and employees, a Healing Center, a Minneapolis Outdoor Expo, University of Minnesota-Duluth, and the Superior Hiking Trail Association. Through images of the Center's pups, diverse audiences who might not have taken an interest in wolves have been energized to learn about wolf history/behavior and our part in their future. Other nannies have given similar presentations in their home states. Additionally, I have had two articles about the experience published by a Duluth magazine and a Rochester magazine, which featured it with Grizzer on the cover! The experience of working at the Center and with the pups has been too powerful for me and fellow nannies to leave them behind. We have found a way to keep them close to us by passing them forward!

Using compositional analysis to analyze winter habitat selection of wolves in the Western Alps

Marucco, Francesca F.M., Luigi Boitani, and Marco Rughetti

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The decision that an animal makes in the habitat selection process is influenced by landscape and habitat structure at a variety of scales. The way a wolf uses its home range is largely determined by the dispersion of resources and the costs associated with moving between patches. The characteristics of travel routes can be of critical importance in determining the quality of the home range, especially in highly fragmented territories such as Western Europe. The results of this analysis underline the importance of snow-tracking as a useful technique to study habitat selection at the finest scale. Compared to other common employed techniques, snow-tracking provides a continuous sample of a habitat utilization trajectory, thus providing more precise estimates of proportional habitat use. One of the limitations of snow-tracking data is related to the assumption of the independence of the data that does not permit the use of certain statistics, such as logistic regression. Compositional analysis is an appropriate method for this kind of continuous data because serial correlation between locations is irrelevant. We investigated the landscape variables naturally selected by wolves along 1,942 km of snow-tracking data of 6 wolf packs during 3 winter seasons (2001–04) in the Western Alps. Hunting movements and travel movements were explained by different habitat variables. Though this technique does not allow for predictive model building, it does permit inferences on what is selected by the animals, and therefore can help to guide management decisions in wolf conservation.

Effects of GPS collar schedules on measured movement distance and territory size in wolves

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Integration of Global Positioning System (GPS) capabilities into wildlife telemetry collars has greatly advanced the investigation of animal ecology at fine temporal and spatial scales. These capabilities have been subject to testing for effects of topography, vegetation and behavior patterns on collar performance; however, collar performance with respect to GPS collar schedules has received less attention. Investigations into this aspect of GPS telemetry are necessary to better understand transmitter performance under a variety of conditions and ecological questions. Wolves are an ideal focal species to test GPS collar data because they are highly mobile and maintain specific territories; they are also sufficiently large to receive relatively large and powerful transmitters. This permits testing the effects of varying collar schedules on estimates of movement distance and territory size. Previous research suggests that the use of shorter fix intervals provides a more accurate measure of movement distance and territory size. However, most research to date has focused on less mobile animals or used fix intervals far below the capabilities of contemporary GPS collars. We used GPS collars to study the effects of varying fix intervals on movement distances and territory sizes of wolves in Algonquin Park, Ontario. Movement distance increased exponentially with decreasing fix intervals; 100% MCP territory size also increased exponentially, while kernel territory sizes decreased, with shorter fix intervals. Our results suggest that shorter fix intervals provide superior data for research regarding animal movements and home ranges.

Importance of positive affiliation behaviors in a captive wolf *(Canis lupus)* pack and link with social stress during winter

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Much of the research to date on the social relations of wolves (*Canis lupus*) has focused on aggressive behavior. Less is known about positive affiliation interactions. A pack of captive wolves was videotaped over three consecutive winters at the Canadian Centre for Wolf Research. Positive affiliation behaviors from nine individuals were quantified and analyzed. The influence of these behaviors on social stress was also evaluated, using urinary cortisol as an index of stress. The results indicate that the positive affiliation behaviors are frequent among the members of the pack and play an important role in the social life of the animals considered. In addition, the individuals have dissimilar involvement in the categories of behavior studied, and the members of the pack share different relationships with each other. There is some evidence to support the hypothesis that positive affiliation behaviors exert a calming effect on individuals and on the whole pack. These behaviors may also offset the physiological consequences of social stress on the animals. Furthermore, the results indicate that the behavior of one specific individual may have an impact on the stress level of the whole pack. The data suggest that young individuals seem to have a significant influence on the quality and quantity of positive affiliation behaviors within the pack, and that dominant animals also play an important role in these interactions. With a focus on positive affiliation, as opposed to aggressive, behaviors, this research furthers our understanding of the social interactions within a wolf pack.

Eco-ethological relationships between the Iberian wolf and free-grazing livestock: Implications for conservation in northwest Portugal

Rio-Maior, Helena, Francisco Álvares, Francisco Fonseca, and Ana Guerra

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The coexistence between wolves (*Canis lupus signatus*) and free-grazing cattle (*Bos taurus*) and horses (*Equus caballus*) occurs in most parts of the north Iberian Peninsula, namely in Peneda-Gerês National Park, northwest Portugal. In this area, the wolf diet is based on livestock with cattle and horses representing up to 50%. This study aims to determine ecological and behavior relationships between wolves and free-ranging livestock in order to acquire scientific guidelines to minimize wolf predatory impact and decrease shepherd-wolf conflict. This study started in March 2004. The use of space and time by herds, the size and organization of herds and the antipredatory behavior of herds in relation to wolf abundance are being studied. The size, composition, cohesion and habitat selection of 400 herds were recorded once a month by daily and nocturnal surveys in areas with distinct levels of wolf abundance. Additionally, the adaptative significance of antipredatory behavior patterns on herds was examined by recording the behavior responses to human-simulated wolf howling. Wolf abundance was taken as a measure of predation intensity. Preliminary results suggest that predation pressure influences the behavior of cattle and horses. Both species have distinct antipredatory behavior toward wolf predation. Grouping behavior in open areas is one of the most important antipredator strategies of ungulates. Thus, in areas of high wolf abundance, the most efficient antipredatory strategy could be forming large groups in open areas and small groups in wooded areas.

Social interaction in captive wolves *(Canis lupus lupus)* and the effects of reducing their territory

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Social interaction is the ontogeny factor of wolves' social behavior. The aim of this study is to undertake an assessment, based upon empirical data, of the social interaction of wolves. In order to meet this objective, we have estimated the average distances between four related wolf pups during the periods of inactivity in two different territories. Diverse conclusions were drawn from the observation of young individuals in the first territory, a 3-hectare natural island. In spite of the absence of adult individuals, wolf pups establish a social hierarchy. The dominant male and female are heavier than subordinates. They spend most of the time in a group of four within an average distance of 8 meters. In the second analyzed territory, a small 0.1 hectare-area that does not represent wolves' natural conditions, the individual learning process slows down because the resting time increases and the playing and exploration time diminishes. Additionally, the sexual interaction among pups is negligible, which might be a very significant fact when trying to produce offspring from sexually mature wolves raised in captivity. Nevertheless it is been observed that even in the smaller territory, the dominant wolves are heavier and still prefer to rest together within an average distance of 8 meters.

• EXHIBITORS •

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California Wolf Center
PO Box 1389 • Julian, CA 92036
www.californiawolfcenter.org
The California Wolf Center's mission is to increase awareness and understanding of the importance of all North American wildlife by focusing on the history, biology, behavior, and ecology of the gray wolf, through education, exhibition, studies of captive wolves, and participation in endangered species recovery programs.

Cheyenne Mountain Zoo
4250 Cheyenne Mountain Zoo Road • Colorado Springs, CO 80906
www.cmzoo.org
The Cheyenne Mountain Zoo's mission is to provide a link between people and nature in a complex and changing world, to foster an appreciation and respect for all living things, to actively provide survival assistance for species in peril, to provide a high quality recreational experience and to be source of pride and economic strength.

Defenders of Wildlife
1130 17th Street, NW • Washington, DC 20036
www.defenders.org
Defenders of Wildlife is dedicated to the protection of all native wild animals and plants in their natural communities.

Denver Zoo
2300 Steele St. • Denver, CO 80205
www.denverzoo.org
The Denver Zoo's mission is to provide a wildlife conservancy which offers high-quality experiences in an urban recreational setting. To provide environmental education which inspires public awareness of global conservation. To engage in scientific programs which make meaningful contributions to the conservation of animals and their ecosystems.

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www.lotek.com
Lotek is a world leader in design and manufacturing of fish and wildlife monitoring systems with innovative and internationally recognized radio, acoustic archival and satellite monitoring solutions.

Mexican Wolf Species Survival Program
Living Desert
47900 Portola Avenue • Palm Desert, CA, 92260-6156
The mission of the Mexican Wolf Species Survival Program is to support the reestablishment of the Mexican wolf in the wild through captive breeding, public education and research.

PackLeader Dog Training
14401 Crews Road KPN • Gig Harbor, WA 98329
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In 1997, Barbara Davenport and Steve Weigley of PackLeader Dog Training collaborated with Dr. Sam Wasser of the University of Washington on the development of a method which would result in increased sampling efficiency while reducing the bias associated with unequal "capture" rates characteristic of other sampling methods. The result was an innovative, non-invasive method of sampling.

Predator Conservation Alliance

PO Box 6733 • Bozeman, MT 59771
www.predatorconservation.org

Predator Conservation Alliance (PCA), founded in 1991, is dedicated to conserving, protecting, and restoring native predators and their habitats in the Northern Rockies and Northern Plains. In short, we are saving a place for America's predators.

Red Wolf Coalition

PO Box 2318 • Kill Devil Hills, NC 27948
www.redwolves.org

The Red Wolf Coalition is a non-profit education organization whose mission is to advocate for the long-term survival of wild red wolf populations by teaching about red wolves and by fostering public involvement in red wolf conservation.

Sinapu

1911 – 11th St, Ste. 103 • Boulder, CO 80302
www.sinpau.org

Named after the Ute word for wolves, Sinapu is dedicated to the restoration and protection of native carnivores and their wild habitat in the Southern Rockies, and connected high plains and deserts.

Timber Wolf Alliance

Northland College
1411 Ellis Ave. • Ashland, WI 54806
www.northland.edu/timberwolfalliance

Timber Wolf Alliance (TWA) promotes and assists in achieving a sustainable population of wolves in the Upper Great Lakes region with a special emphasis in Michigan and Wisconsin through public education. TWA has produced the annual Wolf Awareness Week posters for the past 15 years. Posters will be available at the conference.

Wolf Education and Research Center

111 Main St, Rm 150 • Lewiston, ID 83501
www.wolfcenter.org

The Wolf Education and Research Center is dedicated to providing public education and scientific research concerning the gray wolf and its habitat in the Northern Rocky Mountains.

Wolf Forum of the Southern Rockies

www.wolfforum.org

The Wolf Forum of the Southern Rockies was created to provide science-based information and access to the arguments for and against the wolf's return to the Southern Rocky Mountain Region. We respect diverse viewpoints and good science. We hold as our guiding principle that "Good Information to Good People Leads to Good Decisions." We do not advocate for or against the return of the wolf to the Southern Rockies.

Wolf Park

4004 E 800 N • Battle Ground, IN 47920
www.wolfpark.org

Wolf Park is a private non-profit organization dedicated to improving the lives of wolves in the wild and in captivity through behavioral research and education of the public.

International Wolf Center presents:
Frontiers of Wolf Recovery: Southwestern U. S. and the World
October 1-4, 2005 Colorado Springs, Colorado

Conference Program Updates

Program Changes

Saturday, October 1 11:30-12:15pm Fremont
"Teaches with Wolves" presentation by John Thompson has been cancelled.

Saturday, October 1 7:30-8:00pm Heritage D
Artist Gendron Jenses will be presenting.

Sunday, October 2 2:30-2:50 pm Heritage C
"Efficacy of Release Methodology for Mexican Gray Wolves in the Blue Range Wolf Recovery Area" presentation will be given by Maggie Dwire.

Sunday, October 2 4:10-4:30 pm Heritage A
"Moving Toward Wolf Recovery in the Northeast: A Process of Changing Old Attitudes to New" will be presented by Peggy Struhsacker (see following abstracts)

Sunday, October 2 4:50-5:10 pm Heritage C
"A Howl for the Wild: Bringing Bioethics to Carnivore Conservation" will be presented by Camilla H. Fox (see following abstracts)

Sunday, October 2 5:10-5:30 pm Heritage C
"Wolfish Thoughts on Ethics and Conservation" will be presented by William S. Lynn (see following abstracts)

Monday, October 3 9:50-10:15 am Heritage B
"The Influence of Persuasive Arguments on Public Attitudes Toward A Proposed Wolf Restoration in the Southern Rockies" by Mike Phillips will be joined by "The Path Less Traveled: New Approaches to the Wolf Restoration Debate" by Rob Edward (see following abstracts)

Monday, October 3 3:30-5:00 pm Heritage C
"The Value of Long-term Studies" includes Dr. Rolf Peterson, Michigan Technological University, Houghton, Michigan

Monday, October 3 4:30-4:50pm Heritage B
"Wolf has returned and successfully settled at Wrangel Island, Russia" will be presented by Nikita Ovsyanikov.

Tuesday, October 4 9:30-9:50 am Heritage A
"Wolf/Elk Interactions on State Managed Feed Grounds and Adjacent Forests in Wyoming" will be presented by Mike Jimenez

New or Changed Abstracts/Meetings

Saturday, October 1 1:00-5:00 pm Print Shop, Antlers Hotel

IUCN Wolf Specialist Group Meeting Agenda

1. Introductions
2. Choosing a recording secretary
3. Call for additional agenda items
4. Individual reports on wolf status in our area of expertise (10 minutes each)
5. Chicago Zoological Society grants
6. India wolf taxonomy proposal - Y. Jhala
7. Need for improved cooperation between Norway and Sweden - Anders Bjarvall
8. Advantages and disadvantages of WSG remaining independent vs. merging with the Canid Specialist Group
9. Proposal for next meeting

Sunday, October 2 4:10-4:30 pm Heritage A

Moving Toward Wolf Recovery in the Northeast:
A Process of Changing Old Attitudes to New

Struhsacker, Peggy

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Wolf populations have exceeded population estimates for recovery in both the Great Lake and the northern Rockies and have been recognized as an Endangered Species Act success story. The wolf in these two regions has thrived as a result of direct protection from human caused mortality. The success of these two populations were and have been the result of intensive educational outreach to stakeholder groups, collaboration between state and federal agencies and conservation/environmental organizations and the public. What has been learned is that the wolf is a story of human dimensions. Ultimately, these lessons will be used for a successful recovery of the wolf in the Northeast.

Gray wolves are native to northern New England, but direct persecution and habitat alteration led to their demise by the late 1800's. The neighboring Canadian Province of Quebec has been able to maintain viable wolf populations, and it is from this source that wolves could potentially recolonize in suitable habitat in northwoods of New England. Currently, natural recolonization is the accepted way for recovery while re-introduction creates resistance to the wolf recovery.

The Northeast is yet another region where a federal wolf recovery plan is going to take place. To support the effort, the task at hand is to demonstrate that wolves can co-exist with humans, as they have in many other regions of the U.S. and world and be a source of ecological, economic and social values, as well as an inspiration to the people of the north woods and 70 million people who live within a day's drive of the Northern Forest. The presentation will detail the grassroot work within a community in Northern New Hampshire as an example of how to change old attitudes to new.

Sunday, October 2 4:50-5:10 pm Heritage C

A Howl for the Wild: Bringing Bioethics to Carnivore Conservation

Fox, Camilla H.

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A bioethics perspective incorporates the interests of the natural world and its biotic community of plants and animals, and considers both the intrinsic value of the individual as well as the relationship and value of the individual to the larger whole. This perspective is often missing in science-based carnivore conservation and management strategies. To some, it may appear easier to argue that bioethics, public opinion, and socio-cultural values have no place in wildlife management. Such concerns are often labeled as emotion-based and therefore unscientific. But conventional carnivore conservation is laden with human values, attitudes, and biases. With an increasingly urbanized populace that has shifted from a utilitarian-valuation of wildlife to one that is more protectionist oriented, bioethical issues cannot be ignored. How can wildlife managers look beyond science and tradition and incorporate bioethical considerations into the decision-making process? What are the consequences for not doing so? This presentation will address these questions and offer suggestions for how integrating bioethics into planning and on-the-ground management can strengthen carnivore conservation efforts and help garner broader support among stakeholders.

Sunday, October 2 5:10--5:30 pm Heritage C

Wolfish Thoughts on Ethics and Conservation

Lynn, William S.

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The world of wolf recovery is undergoing a quiet revolution, a 'moral turn' in our thinking about conservation, protection and reintroduction. Scientists and advocates are increasingly aware that the recovery of wolves is as much an ethical issue, as it is a matter of public opinion, economic forces or biological science. The reason for this is straightforward -- humanity's troubled relationship with wolves is rooted in conflicting cultural values, particularly deeply rooted ethical conflicts over coexisting with predators. Thus in conferences like this one, the emphasis on science in conservation policy and environmental education is increasingly complemented by the human dimensions of wolf recovery. An ethics for wolf recovery is an indispensable element of this effort, and a necessary compass in the shifting politics of wolf management. To date, our collective effort has focused on the intrinsic value of wolves, the ethical reasons for wolf recovery, and the complementarity between science and ethics. When considered in light of the successful recovery of wolves in Yellowstone National Park and elsewhere, these claims seem to bode well for the future of wolves in a human-dominated world. Yet from the vantage point of ethics, the situation is not so encouraging. Wolves are increasingly managed through intrusive monitoring and lethal controls, incarcerated in relic landscapes that function as unfenced zoos, and excluded from surrounding areas suitable for recolonization. All of this prevents a deep recovery of wolves across their former range, and treats them as functional units of ecosystems, instead of complex social beings of intrinsic value. The primary reason given for this approach is to mitigate human-wolf conflicts, but that is neither convincing nor the whole of the story. Institutionally, there is a system of wolf recovery that has no provision for ethical reflection when establishing policies or management strategies. The situation is exacerbated by vested partisan and economic interests that take no responsibility for living with wolves. And with the

best of intentions, many advocates of wolf recovery support this approach because it gets wolves 'on the ground'. Yet in the process, they have made a set of problematic compromises within a mortally flawed system. We all know that paths paved with good intentions may have unintended consequences. In the long run, we may be participating in a process that fails to meet our moral responsibilities to wolves, and charts the end of wolf recovery. This presentation looks at this emerging issue.

Monday, October 3 9:50-10:15 am Heritage B

The Path Less Traveled: New Approaches to the Wolf Restoration Debate

Edward, Rob

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The effort to restore wolves to parts of their historic range in North America has unfolded as a classic cultural conflict. While ecological data mounts—much of it suggesting that wolves play a disproportionately important role in their native ecosystems—the struggle between agricultural interests and those who seek to restore wolves overshadows much of what we've learned about wolves and how to live with them.

In the Southern Rocky Mountains, citizens are attempting to shift the wolf restoration debate away from the classic conflict and toward a win-win course. Though not without strife, the approach has thus far yielded significant positive results, and holds the potential to set a positive precedent for the restoration of wolves and other imperiled species.

Rob Edward, co-director of the Southern Rockies Wolf Restoration Project and a member of Colorado's Wolf Management Plan Working Group, will share his perspective on this evolving approach to wolf restoration.

Monday, October 3 10:15-10:35 am Heritage B

White Mountain Apache Tribe-Mexican Gray Wolf Program: Conflicts and Culture

Dale, Cynthia

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Mexican gray wolves were extirpated from the United States by the mid-1900's largely due to aggressive predator control. The last known Mexican wolves were captured in Mexico and used in the captive breeding program. Wolves were reintroduced in March of 1998 to the Blue Range Recovery Area adjacent to the Fort Apache Indian Reservation and by June 1998, wolves were monitored on the Reservation. Culturally, in the past, wolves were respected for their way of hunting and traveling silently; a wolf war song has been passed on through generations. In July 1998, the Tribal Council appointed a Mexican Wolf Task Force consisting of natural and cultural resource specialists to evaluate the benefits and impacts of allowing the return of wolves to the Reservation. Three alternatives were considered; the chosen alternative was to allow a limited number of wolves to come onto and establish on the Reservation. Consideration was to be given to wolf releases after an initial year of evaluation. A Tribal Mexican Wolf Management Plan was completed in February 2000 and was accepted by the USFWS. A five-year Cooperative Agreement was signed with the USFWS in March 2000 for wolf management on the Reservation. After Wolf Task Force review, a resolution was adopted in May of 2003 for the release of wolves on the Reservation. A resolution and MOU that established the White Mountain Apache Tribe as one of the six lead agencies for Mexican wolf reintroduction was

signed in January 2004. Conflicts have been mitigated to date by close coordination and cooperation with tribal members and Livestock Associations through information sharing, educational meetings, equipment and grants, and a responsive depredation program through Defenders of Wildlife.

Monday, October 3 4:30-4:50 pm Heritage B

Wolf has returned and successfully settled at Wrangel Island, Russia

Ovsyanikov, Nikita

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More evidence has been found in 2005 that wolves are doing well on Wrangel Island. With these new developments, we have gotten an Arctic version of the "Isle Royale" model, but greater in scale and more severe in conditions. The question remains whether or not we can find resources to follow it as a long-term project. The situation on the island is outstandingly interesting. I shall give a brief view on the current situation and perspectives.