

**2ND NORTH AMERICAN WILD SHEEP CONFERENCE  
 APRIL 6 - 9, 1999  
 RENO, NEVADA**

**TABLE OF CONTENTS**

Page No.

**PLENARY SESSION: HISTORY, CURRENT STATUS, AND  
 WORKING HYPOTHESIS FOR WILD SHEEP**

**MODERATOR:** Kevin Hurley, Executive Director, Northern Wild Sheep and Goat Council

**Welcome from Conference Co-Chairs**

- Kevin Hurley, Executive Director, Northern Wild Sheep and Goat Council ..... 1
- Rick Brigham, Bureau of Land Management, Nevada ..... 5

- Memorial Dedication** ..... 7
- Amy Fisher, New Mexico Department of Game and Fish



- New perspectives on the evolutionary origins, historic phylogeography, and population structure of North American mountain sheep** ..... 9
- Rob Roy Ramey II, University of Colorado



- Introduction to the 2ND North American Wild Sheep Conference.** ... 21
- Wayne E. Heimer, Alaska Department of Fish and Game (Ret.)



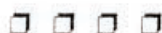
- A working hypothesis for thinhorn sheep management** ..... 25
- Wayne E. Heimer, Alaska Department of Fish and Game (Ret.)



- A working hypothesis for Rocky Mountain bighorn sheep management** ..... 47
- William D. Wishart, Alberta Fish and Wildlife (Ret.)



**A working hypothesis for California bighorn sheep management** ..... 55  
**Dale Towell**, Idaho Department of Fish and Game



**A working hypothesis for desert bighorn sheep management** ..... 67  
**Raymond M. Lee**, Arizona Game and Fish Department



**The Tiburon Island desert bighorn sheep: A conservation and sustainable development program in Mexico** ..... 77

**Fernando Colchero**, Instituto de Ecología, UNAM, Mexico, D.F.

**Rodrigo Medellín**, Instituto de Ecología, UNAM, Mexico, D.F.

**Raymond M. Lee**, Arizona Game and Fish Department

**Carlos Manterola**, Unidos para la Conservación, A.C.

**Gerardo Ceballos**, Instituto de Ecología, UNAM, Mexico, D.F.



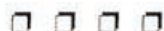
## **WILD SHEEP ADVOCACY GROUPS**

**Kevin Hurley**, Executive Director, Northern Wild Sheep and Goat Council ..... 83

**Leland Speakes, Jr.**, Foundation for North American Wild Sheep ..... 85

**Rick Brigham**, Bureau of Land Management, Nevada ..... 87

**Larry Johnson**, Nevada Bighorns Unlimited, Reno ..... 89



## **HABITAT PROBLEMS AND HUMAN DISTURBANCE**

**CHAIR: Jim Bailey**, New Mexico Department of Game and Fish

**Activity patterns of Rocky Mountain bighorn ewes in Central Idaho** ..... 103

**Guy D. Wagner** and **James M. Peek**, Department of Fish and Wildlife Resources, University of Idaho



**Effects of river-based recreation and livestock grazing on desert bighorn sheep on the Navajo Nation** ..... 123

**Nike J. Goodson**, Stevens Wildlife Consulting, Montana

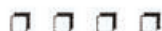
**David R. Stevens**, Stevens Wildlife Consulting, Montana

**Kathleen McCoy**, Navajo Fish and Wildlife Department, Arizona

**Jeff Cole**, Navajo Fish and Wildlife Department, Arizona



**Management of Rocky Mountain bighorn sheep on alpine ranges in the Rocky Mountain states and provinces (Abstract only)** ..... 133  
**W. David Hacker**, Environmental Science and Management Department, New Mexico Highlands University  
**Eric M. Rominger**, New Mexico Department of Game and Fish  
**William C. Dunn**, New Mexico Department of Game and Fish  
**Toby G. Velasquez**, Environmental Science and Management Department, New Mexico Highlands University



**Man and wild sheep: when is it coexistence and when is it encroachment? (Abstract only)** ..... 135  
**William C. Dunn**, New Mexico Department of Game and Fish



**Effects of increasing recreational activity on desert bighorn sheep in Canyonlands National Park, Utah (Abstract only)** ..... 137  
**Christopher M. Papouchis**, Animal Protection Institute, California  
**Francis J. Singer**, Biological Resource Division, U.S. Geological Survey, Colorado  
**William Sloan**, Canyonlands National Park, Utah



**Open Discussion: What are 10 things that we do know about wild sheep habitat and effects of disturbance on wild sheep?** ..... 139  
**Moderator: Jim Bailey**, New Mexico Department of Game and Fish



**STATE/FEDERAL RELATIONSHIPS**

**CHAIR: Vern Bleich**, California Department of Fish and Game

**Wildlife and wildlife habitat inventory to meet land-based program planning needs for mountain sheep** ..... 151  
**Dennis A. Demarchi**, Wildlife Inventory Section, Resources Inventory Branch, Ministry of Environment, Lands and Parks, British Columbia  
**Raymond A. Demarchi**, Ecodomain Consulting, British Columbia



**Sometimes wildlife survive because of Bureau of Land Management/state fish and game agency relationships; sometimes in spite of them** ..... 163  
**Donald J. Armentrout**, Bureau of Land Management, California



**Federal assumption of fish and wildlife management in Alaska** ..... 169  
**Wayne E. Heimer**, Alaska Department of Fish and Game (Ret.)



**State/Federal relationships regarding Dall sheep research and management in Alaska** ..... 187  
**Kenneth R. Whitten**, Alaska Department of Fish and Game



**State and federal wildlife relationships in Mexico (Abstract only)** ..... 193  
**Ramiro Uranga-Thomas** and **Raul Valdez**, Department of Fishery and Wildlife Sciences, New Mexico State University



**Wildlife conservation and wilderness management: uncommon objectives and conflicting philosophies** ..... 195  
**Vernon C. Bleich**, California Department of Fish and Game



**HUNTING/HARVEST STRATEGIES**

**CHAIR: Kevin Hurley**, Wyoming Game and Fish Department

**The use of silent witness lines to deter wild sheep poaching** ..... 209  
**Rob B. Young** and **Jim C. deVos Jr.**, Arizona Game and Fish Department



**Bighorn sheep wildlife law enforcement in the Missouri River Breaks in central Montana** ..... 215  
**Chris Wright** and **Shane Reno**, Montana Department of Fish, Wildlife and Parks



**Open Discussion: What are the biological bases for our harvest strategies?** ..... 221  
**Moderator: Kevin Hurley**, Wyoming Game and Fish Department



## CAPTURE AND TRANSPLANT

**CHAIR:** Amy Fisher, New Mexico Department of Game and Fish

<b>Guidelines for the restoration of bighorn sheep into large landscapes: report of recent findings</b> .....	229
Francis J. Singer, Biological Resource Division, U.S. Geological Survey, Colorado	
<b>Christopher M. Papouchis</b> , Animal Protection Institute, California	
Linda Zeigenfuss, U.S. Geological Survey, Colorado	
Michelle Gudorf, National Park Service, Colorado	
□ □ □ □	
<b>Arizona big game transplant program (Abstract only)</b> .....	241
<b>Raymond M. Lee</b> , Arizona Game and Fish Department	
□ □ □ □	
<b>Methods for improving bighorn capture success</b> .....	243
<b>Amy Fisher</b> , New Mexico Department of Game and Fish	
Doug Humphreys, Texas Parks and Wildlife Department	
□ □ □ □	
<b>Oregon's corral type bighorn trap</b> .....	249
<b>Vic Coggins</b> , Oregon Department of Fish and Wildlife	
□ □ □ □	
<b>Netgunning wild sheep: video followed by open discussion</b> .....	253
<b>James Innes</b> , Helicopter Wildlife Management, Utah	
□ □ □ □	
<b>Immobilization of free-ranging Rocky Mountain bighorn ewes with Telazol® and xylazine hydrochloride (Abstract only)</b> .....	263
<b>Deirdre S. Merwin</b> , Wildlife Science Group, University of Washington	
Joshua J. Millspaugh, School of Fisheries, University of Washington	
Gary C. Brundige, Custer State Park, South Dakota	
David Schultz, Fall River Veterinary Clinic, South Dakota	
C. Lee Tyner, Florida	
□ □ □ □	

**Chemical immobilization of wild sheep - history and cautions** ..... 265  
**David Hunter**, DVM, Turner Enterprises and Turner Endangered Species Fund, Montana



**Post-capture survival estimates for bighorn sheep** ..... 269  
Jim C. deVos, Jr., Arizona Game and Fish Department  
**Raymond M. Lee**, Arizona Game and Fish Department  
Len H. Carpenter, Wildlife Management Institute, Colorado  
Heather A. Whitlaw, LGL Alaska Research Associates



**Human mortality in wild sheep management** ..... 275  
**Wayne E. Heimer**, Alaska Game and Fish Department (Ret.)



**DISEASE**

**CHAIR: Kevin Hurley**, Wyoming Game and Fish Department

**A range-wide evaluation of the population dynamics and ecological factors associated with bighorn sheep dieoffs (Abstract only)** ..... 281  
**Ryan J. Monello**, Department of Fish and Wildlife Resources, University of Idaho  
Dennis L. Murray, Department of Fish and Wildlife Resources, University of Idaho  
E. Frances Cassirer, Idaho Department of Fish and Game



**Open Discussion: Are we effectively reducing interaction between domestic and wild sheep?** ..... 283  
**Moderator: Kevin Hurley**, Wyoming Game and Fish Department



**PREDATION**

**CHAIR: Tom Ryder**, Wyoming Game and Fish Department

**Biological extinction and a test of the “conspicuous individual hypothesis” in the San Andres Mountains, New Mexico** ..... 293  
**Eric M. Rominger**, New Mexico Department of Game and Fish  
Mara E. Weisenberger, San Andres National Wildlife Refuge, USFWS, New Mexico



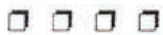
**Wolf management in Alaska’s intact ecosystems: an observer’s review, critique,  
and functional prescription** ..... 311  
Wayne E. Heimer, Alaska Department of Fish and Game (Ret.)



**Open discussion on predation issues** ..... 333  
Moderator: Tom Ryder, Wyoming Game and Fish Department



**WILD SHEEP MANAGEMENT WORKSHOP** ..... 341  
Moderator: Kevin Hurley, Executive Director, Northern Wild Sheep and Goat Council



**APPENDIX A: WILD SHEEP STATUS QUESTIONNAIRES** ..... 373



**APPENDIX B: ATTENDEES** ..... 459

