



**1997  
ANNUAL MEETING  
OF THE  
IDAHO CHAPTER OF  
THE WILDLIFE SOCIETY**

**February 27-28, 1997  
Boise, Idaho**

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**IDAHO CHAPTER OF *THE WILDLIFE SOCIETY***

***1997 ANNUAL MEETING - BOISE, IDAHO***

***Wildlife Management at the Brink of a New Century***

**Program Development:**

Chad Bishop  
Alan Dohmen  
Robin Garwood  
Tom Hemker  
Ted Koch  
Sam Mattise  
Daryl Meints  
Craig Mickelson  
Kerry Reese  
Jim Unsworth

**Chapter Officers:**

Jim Unsworth, President      Kerry Reese, Vice President  
Robin Garwood, Treasurer      Francis Cassirer, Secretary

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## President's Message

Our annual meeting was a great success! Thank you to all who helped! As usual we generated a considerable amount of revenue from our auction and raffles. This year our Chapter made good on a long term commitment to establish scholarships at each of Idaho's major Universities. Our Chapter has provided \$5,000.00 to the scholarship funds at the University of Idaho (Elmer Norberg - Idaho Chapter of The Wildlife Society), Idaho State University (Edson Fichter - ICTWS), and Boise State University (Richard Olendorf - ICTWS). These scholarships will help future wildlife professionals with the expense of their education and establish a long term legacy that Idaho Chapter members can be proud.

At the meeting, we also staffed several important committees and we are asking committee chairs to provide quarterly updates of their activities in the newsletter. I encourage any member who is interested in participating on a committee to contact the chairman and get involved.

I recently saw a rather disturbing newspaper article. I think the headline ran something like, "Idaho Businesses Show Little Support for Teaming With Wildlife." Idaho Department of Fish and Game is no longer taking the lead on this important issue so the Chapter can provide some needed help. We have established an ad hoc Teaming with Wildlife committee within the Conservation Affairs Committee to help contact individuals, groups, and businesses to provide information and bolster support for Teaming With Wildlife Legislation. Paul Moroz is the Chapter contact for this committee and he needs all of our help. Write a letter, make a call.

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# Idaho Chapter of *The Wildlife Society* 1997 Annual Meeting Agenda

## *Wildlife Management at the Brink of a New Century*

### Wednesday, February 26

- 8:00am-4:45pm      **Species That Slip Through the Cracks of Current Management Paradigms, AFS and TWS Training Workshop, Owyhee Plaza Hotel, Boise**
- 6:00pm-7:30pm      **Registration - Red Lion Downtowner lobby**

### Thursday, February 27

- 7:00am-8:00am      **Registration - Red Lion Downtowner lobby**

### **TWS Annual Meeting - Teton/Selway Room**

- 8:15am              **Welcome - James Unsworth, President, Idaho Chapter of The Wildlife Society**
- 8:30am              **Keynote Speaker: FUTURE DIRECTIONS IN WILDLIFE MANAGEMENT**  
**Stephen P. Mealey, Director, Idaho Department of Fish and Game**
- 9:00am-11:40am      **Session A - Chairperson: Dr. E. O. Garton, University of Idaho**
- 9:00am              **WOLF MONITORING, MANAGEMENT, AND CONTROL IN IDAHO DURING 1996**  
**Tim Kiminski, Curt M. Mack, Layne R. Bangerter, Val Asher, and E. O. Garton**
- 9:40am              **Break**
- 10:10am             **BIOLOGY OF THE WOLVERINE IN CENTRAL IDAHO**  
**Jeffrey P. Copeland, James M. Peek, Wayne Melquist, and Charles E. Harris**
- 10:30am             **RARE CARNIVORES AND HIGHWAYS: MANAGEMENT PROBLEMS AND SOLUTIONS**  
**Bill Ruediger**
- 11:00am             **Keynote Speaker: THE BIG PICTURE OF CONSERVING ANIMAL SPECIES THROUGH SPACE AND TIME**  
**Dr. George Rabb, University of Chicago, Past Chair of the IUCN Species Survival Commission**

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11:40am-1:00pm	Lunch
1:00pm-2:20pm	<b>Session B - Chairperson: Christine L. Saxton, Idaho Fish &amp; Game</b>
1:00pm	GRAZING IN RIPARIAN HABITAT: FOUR INCH STUBBLE HEIGHT Sam Mattise
1:20pm	THE 1996 FEDERAL FARM BILL AND IDAHO WILDLIFE HABITAT Tom Hemker and Frank Fink
1:40pm	SINGLE SPECIES CONSERVATION STRATEGIES: COMPLEMENTARY OR CONTRADICTION? Lyle Lewis and Chuck Harris
2:00pm	THE IDAHO CONSERVATION EFFORT: THE PAST AND THE FUTURE Charles E. Harris and Lyle Lewis
2:20pm	Break
2:40pm-4:40pm	<b>Session C - Chairperson: Barbara Holliday, USDA Forest Service</b>
2:40pm	LONG-TERM TRENDS IN PRAIRIE FALCON ABUNDANCE AND REPRODUCTION IN SOUTHWESTERN IDAHO Karen Steenhof, Michael N. Kochert, Robert N. Lehman, and Leslie B. Carpenter
3:00pm	TURNOVER AND DISPERSAL OF PRAIRIE FALCONS IN THE SNAKE RIVER BIRDS OF PREY NATIONAL CONSERVATION AREA Leslie B. Carpenter, Robert N. Lehman, Karen Steenhof, and Michael N. Kochert
3:20pm	NICHE OVERLAP OF NORTHERN SAW-WHET OWLS ( <i>Aegolius acadicus</i> ) AND WESTERN SCREECH-OWLS ( <i>Otus kennicottii</i> ) Charley R. Rains
3:40pm	SIMULATING THE EFFECT OF HABITAT CHANGES ON BLACK- TAILED JACKRABBIT DISTRIBUTION IN SOUTHWESTERN IDAHO Steven T. Knick and Brett A. Hoover
4:00pm	BIRD-HABITAT RELATIONSHIPS IN FORESTS OF THE SOUTHERN BATHOLITH Rex Sallabanks and Jonathan B. Haufler
4:20pm	ANALYSIS OF ORNITHOLOGICAL RESEARCH 1955-1994: BIASES THAT MAY INFLUENCE ECOLOGY AND MANAGEMENT John T. Ratti and J. Michael Scott
7:00pm-9:15pm	<b>Idaho Bat Working Group Coordination Meeting</b>

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**Friday, 28 February**

- 7:30am-8:00am**      **Registration - Red Lion Downtowner lobby**
- 8:00am-10:00am**      **Session D - Chairperson: Dr. Dennis Murray, University of Idaho**
- 8:00am**                      **MODELING THE LOCATION OF SNAKE DENS ON THE IDAHO NATIONAL ENGINEERING LABORATORY**  
**Sarah L. Cooper and Charles R. Peterson**
- 8:20am**                      **USE OF RIPARIAN AND UPLAND HABITATS BY AMPHIBIANS AND REPTILES ALONG THE LOWER SNAKE RIVER**  
**Susan Loper and Kirk Lohman**
- 8:40am**                      **DISTRIBUTION OF AMPHIBIANS AND REPTILES ON CRAIG MOUNTAIN, IDAHO: A TEST OF GAP ANALYSIS MODELS**  
**Robin L. Llewellyn and Charles R. Peterson**
- 9:00am**                      **GIS MAPPING OF HABITAT AND CAPTURE PROBABILITIES FOR THREE SECRETIVE SNAKE SPECIES IN SOUTHWESTERN IDAHO**  
**Jonathan M. Beck, Charles R. Peterson, Kelly D. Wilde, and A. M. A. Holthuijzen**
- 9:20am**                      **THE NORTHERN INTERMOUNTAIN HERPETOLOGICAL DATABASE**  
**Charles R. Peterson**
- 9:40am**                      **IMPACT OF TROUT ON THE ABUNDANCE AND DISTRIBUTION OF AMPHIBIANS IN THE SAWTOOTH WILDERNESS OF CENTRAL IDAHO**  
**James C. Munger, Bruce R. Barnett, and Aaron Ames**
- 10:00am**                      **Break**
- 10:20am-11:40am**      **Session E - Chairperson: Martha Wackenhut, Idaho Fish & Game**
- 10:20am**                      **EFFECTS OF LIMITED PREDATOR REMOVAL ON RING-NECKED PHEASANT POPULATIONS IN SOUTHERN IDAHO**  
**Gary Nohrenberg, Kerry Reese, and J. W. Connelly**
- 10:40am**                      **HABITAT USE, SURVIVAL, AND PRODUCTIVITY OF CHUKAR PARTRIDGE IN WEST-CENTRAL IDAHO**  
**Andrew Lindbloom, Kerry Reese, and Pete Zager**
- 11:00am**                      **THE LONG-TERM EFFECTS OF FIRE ON SAGE GROUSE NESTING AND BROOD-REARING HABITAT ON THE UPPER SNAKE RIVER PLAIN**  
**Pamela Bell, Kerry Reese, and John W. Connelly**
- 11:20am**                      **LONG-TERM CHANGES IN SAGE GROUSE POPULATIONS IN WESTERN ORTH AMERICA**  
**Jack Connelly and Clait Braun**

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11:40am-1:00pm	Lunch
1:00pm-3:20pm	<b>Session F - Chairperson: Rita D. Dixon, Lewis-Clark State College</b>
1:00pm	ROLE OF NGO'S IN THE FUTURE OF WILDLIFE MANAGEMENT Alan Sands
1:20pm	CAUSE-SPECIFIC MULE DEER FAWN MORTALITY DURING WINTER IN SOUTHWEST IDAHO Chad J. Bishop, Edward O. Garton, and James W. Unsworth
1:40pm	COMPARATIVE SURVIVAL OF WOODLAND CARIBOU IN THE SELKIRK MOUNTAINS Wayne Wakkinen
2:00pm	THE OCCURRENCE OF THE SPOTTED BAT, <i>Euderma maculatum</i> , IN OWYHEE COUNTY, IDAHO WITH SOME NOTES ON HABITAT USE, ACTIVITY LEVELS AND A MIST NET CAPTURE Bill Doering and Barry Keller
2:20pm	THE FORMATION, ORGANIZATIONAL STRUCTURE, AND GOALS OF THE IDAHO BAT WORKING GROUP (IBWG), AND ITS ROLE IN BAT MANAGEMENT, RESEARCH AND EDUCATION IN IDAHO AND THE WESTERN UNITED STATES Martha Wackenhut, Lyle Lewis, and Charles E. Harris
2:40pm	LARGE-SCALE CONSERVATION ASSESSMENT FOR BIRDS IN THE INTERIOR COLUMBIA RIVER BASIN Terry Rich and Vicki Saab
3:00pm	ASSESSING REPRESENTATION OF NATURAL VEGETATION IN PROTECTED AREAS J. M. Scott, M. Murray, R. G. Wright, T. Merrill, and B. Csuti
3:20pm	Break
3:45pm-5:00pm	<b>Business Meeting of ICTWS - all are encouraged to attend</b>
6:30pm-10:00pm	<b>Social and Auction - Ballroom</b> Awards Music by Bitterbrush Blues Band Special Presentation by Alan Thomas Auctioneer - Sam Mattise

# ABSTRACTS

Arranged in  
alphabetical order  
by senior author



GIS MAPPING OF HABITAT AND CAPTURE PROBABILITIES FOR THREE SECRETIVE SNAKE SPECIES IN SOUTHWESTERN IDAHO. Jonathan M. Beck<sup>1</sup>, Charles R. Peterson<sup>1</sup>, Kelly D. Wilde<sup>2</sup>, and Anthonie M.A. Holthuijzen<sup>2</sup> <sup>1</sup>Idaho State University, Pocatello, ID 83209-8007; <sup>2</sup>Idaho Power Company, PO Box 70, Boise, ID 83707.

The objective of this project was to develop a map indicating the probability of capture for three secretive species of snakes in the C.J. Strike Reservoir area. We first used drift-fences with funnel traps to determine macrohabitat preferences and probabilities of capture for Night Snakes (*Hypsiglena torquata*), Ground Snakes (*Sonora semiannulata*), and Longnose Snakes (*Rhinocheilus lecontei*). Recent advances in GIS software made it possible for us to combine the trapping data with a GIS cover-type map based on aerial photography. We generated maps that (1) predicted the total amount of potential habitat for each species, and (2) assigned a probability of capture for each species to each habitat polygon. The maps predicted potential habitat areas of 21, 21, and 45% of the study area for Night, Ground, and Longnose Snakes, respectively. The maps allowed us to visualize which habitats were most important to each species and where those habitat polygons occurred. Although the current maps need further testing and refinement, they represent the present state of our knowledge about the distribution of these species. This modeling approach should improve the effectiveness of future surveys and assist management efforts.

CAUSE-SPECIFIC MULE DEER FAWN MORTALITY DURING WINTER IN SOUTHWEST IDAHO. Chad J. Bishop, Edward O. Garton, University of Idaho, Moscow, and James W. Unsworth, Idaho Department of Fish and Game, Nampa.

A knowledge of the factors which contribute to mule deer (*Odocoileus hemionus*) fawn mortality during winter is necessary for successful management of deer populations. Using standard radio telemetry techniques, we determined the cause-specific mortality rates of 62 fawns during the 1995-96 winter and 60 fawns during the 1996-97 winter on 3 study areas in southwest Idaho. We randomly collected bitterbrush (*Purshia tridentata*) and cheatgrass brome (*Bromus tectorum*) samples from various habitats within each study area and analyzed them for protein content and digestibility. Fawn survival rate during the 1995-96 winter was 0.754 (SE = 0.055) for the 3 study areas combined. A majority of the mortality occurred in the Bennett Hills north of Glens Ferry, Idaho, where the survival rate was 0.524 (SE = 0.109). Predation on weakened fawns was the major cause. Bitterbrush quality was significantly different between study areas ( $P < 0.001$ ) and habitats ( $P = 0.024$ ). Cheatgrass quality was significantly different between study areas ( $P < 0.001$ ). Analyses relating the nutritional quality of forage to fawn survival have not been completed. We plan to develop a predictive fawn mortality model based on our data. Factors contributing to fawn mortality appear to be related to one another. Understanding these relationships is important for mule deer management.

THE LONG-TERM EFFECTS OF FIRE ON SAGE GROUSE NESTING AND BROOD-REARING HABITAT ON THE UPPER SNAKE RIVER PLAIN.

Pamela Bell, Kerry Reese, University of Idaho, and John W. Connelly, Idaho Department of Fish and Game, Pocatello.

Increasing use of fire as a tool to control sagebrush (*Artemisia* spp.) has led to concern over the effects of fire on sage grouse but little is known about the long-term effects of fire on nesting and brood-rearing habitat. We hypothesize that there is a long-term effect of burning on sage grouse nesting and brood-rearing habitat. Data from vegetation transects and invertebrate sampling will be collected and analysed to evaluate the quality of the habitat available as compared to optimum habitat characteristics reported in the literature. The study is in its second season and no conclusions have yet been reached. However, preliminary data indicate that high quality habitat may be limiting.

TURNOVER AND DISPERSAL OF PRAIRIE FALCONS IN THE SNAKE RIVER BIRDS OF PREY NATIONAL CONSERVATION AREA. Leslie Carpenter, Robert N. Lehman, Karen Steenhof, and Michael N. Kochert. U.S.G.S., B.R.D., Raptor Research Field Station, Boise, ID.

This paper summarizes turnover at nesting areas, site fidelity of individuals, and breeding and natal dispersal distances for prairie falcons marked in the Snake River Birds of Prey National Conservation Area (NCA) from 1970-1994. During these years, 1,858 nestling and 202 adult falcons were marked with U.S. Fish and Wildlife Service and color leg bands. Some birds were marked with wing tags or radio transmitters. Annual turnover at 59 nesting areas where prairie falcons were identified 1 year after marking was 59%, 2-10 times higher than those reported by other researchers. Status of fidelity to previous nesting areas was recorded 178 times for 166 falcons from 1975-1994. Fidelity ranged from 38% for females to 22% for males, much lower than rates reported in other areas of the species' range. Falcons that dispersed from their previous nesting area moved an average of 1.4 km. Of the 1,858 falcons banded as nestlings, 39 (2%) were encountered as adults at nesting areas in the NCA, and 24 (1%) were identified to individual. Mean distance between natal and breeding locations for these birds was 9.1 km. We found 4 males breeding at 1 year of age. Only 4 falcons banded as nestlings were found outside the NCA during the breeding period. Only 1 of these birds was known to be occupying a nesting area. We encountered no falcons banded outside the NCA occupying NCA nesting areas during this study. Our data suggest that prairie falcons in the NCA have high turnover but don't move very far.

## LONG-TERM CHANGES IN SAGE GROUSE POPULATIONS IN WESTERN NORTH AMERICA.

Jack Connelly, Idaho Department of Fish and Game, and Clait Braun, Colorado Division of Wildlife

Available data indicate that sage grouse (*Centrocercus urophasianus*) have declined throughout their range. This species presently occurs in 11 U.S. states and 2 Canadian provinces. In 9 states, breeding populations have declined 17 - 47% ( $x = 33\%$ ) from the long-term average. In 5 of 6 states having long-term information on breeding populations, production has declined 10 - 51% ( $x = 25\%$ ) from the long-term average. Habitat deterioration, loss, and fragmentation have reduced the quantity and quality of nesting and early brood rearing habitat causing population declines. These declines have been attributed to many factors but fire and drought appear to be the primary reasons for habitat deterioration and loss throughout much of western North America. Fire was historically rare in many sagebrush habitats occupied by sage grouse but is now relatively common. For example, the total area burned on the upper Snake River plain of southeastern Idaho increased by >2,000% between 1959 and 1989. Thus, the recent call for increased prescribed burns in sagebrush habitats seems inappropriate because of the increased frequency of wildfire and the detrimental effects such a program would likely have on sage grouse and other sagebrush obligates.

## BIOLOGY OF THE WOLVERINE IN CENTRAL IDAHO.

Jeffrey P. Copeland, James M. Peek, Wayne Melquist, and Charles E. Harris, Idaho Dept. Fish and Game, Boise.

We determined wolverine (*Gulo gulo*) presence, spatial use, movement, demographics, social structure, and habitat use in central Idaho from 1992-1995. Nineteen wolverines were captured and instrumented with intraperitoneal implant transmitters. Annual home ranges of resident adults averaged 384 km<sup>2</sup> for females and 1,582 km<sup>2</sup> for males. Adult home ranges were segregated by sex, with female home ranges overlapping <10% and male home ranges overlapping <15%. The reproductive rate for 4 adult females was less than 1 kit/female/year. Females used secluded high elevation cirque basins for natal den sites. Human disturbance at maternal dens resulted in den abandonment but not kit abandonment. Kits remained with the adult female for approximately 3 months subsequent to weaning at 9 to 10 weeks of age and remained associated with the natal area for up to 2 years corresponding with sexual maturation. Females commonly left dependent kits at rendezvous sites comprised of large boulder talus or riparian areas associated with mature overstory and dense timber deadfall. The extended presence of subadults may be related to the highly dispersed nature of food resources and may account for large home ranges. Juveniles and subadults interacted with resident kin, including their mother, the resident male, and siblings. Association between the resident adult male and juvenile wolverines was previously undescribed and may provide evidence for male parental investment. Four male wolverines dispersed at sexual maturity, with 2 emigrating distances greater than 185 km. Seven wolverines died during the study, with predation accounting for 43% of the mortality. Distinct seasonal shifts in elevational use were recorded, with higher elevational talus/rock cover types preferred during summer months, and montane coniferous forest cover types preferred during winter. Wolverines avoided lowland grass/shrub and ponderosa pine (*Pinus ponderosa*) cover types.

## MODELING THE LOCATION OF SNAKE DENS ON THE IDAHO NATIONAL ENGINEERING LABORATORY.

Sarah L. Cooper and Charles R. Peterson, Department of Biological Sciences, Idaho State University, Pocatello, ID 83209

In northern climates, snakes typically congregate in communal den areas (hibernacula), to overwinter. Because these areas serve as critical habitat, the detection of snake hibernacula is important for the protection and conservation of snake species. To predict the locations of snake dens on the Idaho National Engineering Laboratory in southeastern Idaho, we measured the habitat features of 10 known snake dens and used a Geographic Information System (GIS) to locate areas that had a similar complement of habitat features (slope values (30-75%), aspect values (90-260°), lava age classes Qbc and Qbd). Using this information, we were able to create a predictive map that we tested our by visiting fifty randomly selected locations that lay within the predicted areas and fifty randomly selected areas that were not predicted to be denning areas. The predicted areas on our map were less than 1% of the total area of the site. Out of the 50 predicted sites that were surveyed, 32% (16) showed snake activity, while none of the not-predicted sites showed snake activity. Exact testing indicated that the model was statistically significant at the  $\alpha = 0.05$  level ( $P = 0.012$ ). Because of the current difficulty in locating snake dens, we consider the model to be a useful tool for locating snake dens in southeastern Idaho. In the future, we plan to test the success of this model in other areas of the Snake River Plain.

THE OCCURRENCE OF THE SPOTTED BAT, *Euderma maculatum*, IN OWYHEE COUNTY, IDAHO WITH SOME NOTES ON HABITAT USE, ACTIVITY LEVELS AND A MIST NET CAPTURE. Bill Doering and Barrv L. Keller. Department of Biological Sciences, Idaho State University, Pocatello, ID 83209.

The spotted bat is one of the rarest North American mammals. Information on its occurrence, status and distribution in Idaho is severely lacking. Prior to the current study, a single unsexed, mummified specimen, deposited at Albertson's College, constituted the only voucher specimen for the state. The objective of this study was to gather baseline data for the BLM on bat species in the Bruneau-Jarbidge Canyon area. During the summer seasons of 1995-96, ultrasonic and mist net bat surveys resulted in the detection of spotted bats at five new locations. In the study area, spotted bats emerged after sunset from roosting sites within crevices in high cliff faces and moved out along foraging courses. Foraging courses can take these bats many kilometers from their day roosts; active spotted bats were occasionally detected far from canyon areas. Feeding was observed high over riparian areas and shrub steppe uplands. No feeding was detected over exotic grassland communities. Intensity of activity varied across the study area. Mist netting efforts yielded the second spotted bat specimen for the state of Idaho and first intentionally collected from a confirmed resident population. This adult male specimen was captured approximately 7.1 m above ground level. Results suggest that the Bruneau-Jarbidge Canyon area of Owyhee County is an important population concentrating center for this rare bat.

**THE IDAHO CONSERVATION EFFORT: THE PAST AND THE FUTURE.** Charles E. Harris, Idaho Department of Fish and Game, Boise, and Lyle Lewis, U.S. Bureau of Land Management, U.S. Forest Service, Twin Falls.

The Idaho Conservation Effort is a cooperative program between state and federal resource management agencies with a goal to develop and implement proactive approaches to species conservation that will preclude the need to list species as Threatened or Endangered. Thirty-three species of plants and animals have been addressed by the program since 1994. Habitat Conservation Assessments and Conservation Strategies for 29 species have been written by expert teams. Conservation actions are currently being implemented for 10 species. The program is striving to finalize existing draft Habitat Conservation Assessments and Conservation Strategies, update Habitat Conservation Assessments as new information becomes available, evaluate the efficacy of the conservation actions, and explore ways to involve more partners and stakeholders in the program.

**WOLF MONITORING, MANAGEMENT, AND CONTROL IN IDAHO DURING 1996.** Tim Kiminski, Curt Mack, Nez Perce Tribe, Lapwai, Idaho, Layne R. Bangerter, U.S.D.A., APHIS, Animal Damage Control, Boise, Val Asher, U.S. Fish and Wildlife Service, Stanley, Idaho, and E. Q. Garton, Wildlife Resources, University of Idaho.

The management of wolves in Idaho has required the combined efforts of several agencies and groups, each with specific roles and obligations. The information on wolf activity this year is significant because 1996 was the first full year after wolf reintroduction to Idaho, and the first year wherein wolf reproduction was confirmed. Monitoring was used to determine where wolves occur, reproductive status, and to assist in resolving livestock predation. Investigations into reported livestock losses from wolves resulted in findings which ranged from being inconclusive, probable but not confirmed, or confirmed wolf involvement. Two wolf control actions were taken in 1996. Three pairs of wolves are known to have reproduced during this year.

**THE 1996 FEDERAL FARM BILL AND IDAHO WILDLIFE HABITAT.** Tom Hemker, Idaho Department of Fish and Game and Frank Fink, Natural Resource Conservation Service, Boise, ID.

In 1985 Congress passed a Federal Farm Bill that for the first time included major conservation provisions. The Conservation Reserve Program (CRP) is the best known of these and as of early 1997 has rented and established permanent vegetation on over 35 million acres of marginal and mostly fragile farmland nationwide. In 1990, the Wetland Reserve Program (WRP) was added to the Farm Bill and as of 1997 had impacted over 400,000 acres of the nation's wetlands. Also added in 1990 was the Stewardship Incentive Program (SIP) that provides incentives to owners of small acreages of private forestland as well as cost-sharing on shelterbelt construction in areas of intensive agriculture. The 1996 Farm Bill added several new programs to the Conservation Title including the Wildlife Habitat Improvement Program (WHIP) and Environmental Quality Incentives Program (EQUIP). The authors will provide an overview of these and other provisions of the current Federal Farm Bill and how Idaho natural resource managers can use them to help solve the problems they face.

**SIMULATING THE EFFECT OF HABITAT CHANGES ON BLACK-TAILED JACKRABBIT DISTRIBUTION IN SOUTHWESTERN IDAHO.** Steven T. Knick, and Brett A. Hoover, Biological Resources Division, U.S. Geological Survey.

We modeled the effect of changes in shrubsteppe habitat on the spatial distribution of black-tailed jackrabbits (*Lepus californicus*) in a 400,000-ha region of southwestern Idaho. Our objective was to develop predictive scenarios for habitat and prey management that have implications for raptor conservation. In this region, wildfires are the primary cause of large-scale loss of shrublands, which are important habitats for jackrabbits. We modeled spatial and temporal patterns of wildfires and shrub regeneration on a map of current habitats in a GIS. Simulated habitat changes then were reconfigured into a map of jackrabbit distribution based on a habitat selection model developed from use/availability data. Changes in jackrabbit distribution were closely linked to changes in availability of large shrub patches within the landscape. Under current conditions, the extensive shrub losses exceed shrub regeneration rates across the landscape. Therefore, available habitat for jackrabbits, a primary prey of golden eagles (*Aquila chrysaetos*), is likely to decrease.

**SINGLE SPECIES CONSERVATION STRATEGIES: COMPLEMENTARY OR CONTRADICTION?** Lyle Lewis, U.S. Bureau of Land Management, U.S. Forest Service, Twin Falls, and Chuck Harris, Idaho Department of Fish and Game, Boise.

An interagency team collectively analyzed proposed conservation actions in draft conservation strategies and ongoing conservation actions. In addition, all strategies and conservation actions that are a part of Threatened or Endangered species recovery plans and interim conservation plans for anadromous (PACFISH) and resident (INFISH) fish species and associated habitats were analyzed. The interagency team concluded that: 1) conservation actions proposed are complementary; 2) the conservation of a small number of wide-ranging species is beneficial for the conservation of many species; and 3) no coarse-filter strategy covers all habitat needs and biological needs specific to an individual species.

**DISTRIBUTION OF AMPHIBIANS AND REPTILES ON CRAIG MOUNTAIN, IDAHO: A TEST OF GAP ANALYSIS MODELS,** Robin L. Llewellyn<sup>1</sup>, Charles R. Peterson<sup>1,2</sup>, <sup>1</sup>Idaho State University, <sup>2</sup>Idaho Museum of Natural History, Pocatello, Idaho

The objective of this study was to provide a field test of the accuracy of Gap Analysis predicted distributions for amphibian and reptile species in northern Idaho. The study was conducted in 1994 and 1995 on Craig Mountain (CM), a 60,000 acre area characterized by a high elevation, coniferous plateau with steep, grassland breaks down to the Snake and Salmon Rivers. CM is a good site for testing Gap Analysis models because of its diverse topography and vegetation. Because of the ecological diversity of amphibians and reptiles, we utilized a number of sampling techniques (trapping, visual encounter surveys, road driving, etc.)

Of the 21 native species of amphibians and reptiles potentially occurring in the CM area, we detected 6 amphibian and 10 reptile species (about half of the species occurring in Idaho). The Gap Analysis models (based on county records, habitat associations, a vegetation map, and lilac blooming dates) predicted 6 amphibian and 9 reptile species. Inaccurate predictions included one commission error and two omission errors (which were due to incomplete county records). We compared our field results with Gap predicted distributions at three spatial scales: (1) coarse - all of CM; (2) intermediate - forest vs. grassland; and (3) fine - ponds. Our analysis indicated relatively high accuracies at the coarse and intermediate scales (86 and 83%, respectively) but lower accuracy at the fine scale (55%). These results provide a better understanding of the limitations of Gap Analysis models and how to improve them.

**HABITAT USE, SURVIVAL, AND PRODUCTIVITY OF CHUKAR PARTRIDGE IN WEST-CENTRAL IDAHO.** Andrew Lindbloom, Kerry Reese, University of Idaho, Moscow, and Pete Zager, Idaho Department of Fish and Game, Lewiston.

Previous studies on chukar partridge (*Alectoris chukar*) using radio-telemetry to assess population characteristics are almost non-existent. Using walk-in cloverleaf traps, 51 chukars were trapped in the Lower Salmon River Canyon from January to May of 1995 and 1996. Twenty-two chukars were radio-tagged with necklace-mounted transmitters and 29 received backpack-mounted transmitters. Radio-marked birds were located approximately weekly between April and August. Habitat use data from incidental chukar locations and those obtained from radio-tagged chukars revealed that birds used shrub and rock covertypes more than expected. Additional results on habitat use, survival, and productivity will be reported.

**USE OF RIPARIAN AND UPLAND HABITATS BY AMPHIBIANS AND REPTILES ALONG THE LOWER SNAKE RIVER.** Susan Loper and Kirk Lohman, Dept. of Fish and Wildlife Resources, University of Idaho.

We investigated the distribution and abundance of amphibians and reptiles along the lower Snake River in southeastern Washington. Our objective was to determine if either relative abundance or species richness differed between riparian and upland habitats. We also wished to compare the effectiveness of several sampling techniques (pitfall traps, funnel traps, and visual encounter surveys). Based on number of animals caught per trap night, amphibian and reptile relative abundance was slightly, but not significantly, greater in upland than riparian habitat. In contrast, based on species seen per hour surveyed, amphibian and reptile relative abundance was greater in riparian than upland habitat, although this difference was not significant. Species richness was similar in both habitats. The generally poor quality of riparian habitats along the lower Snake River may explain the absence of significant differences in species richness and relative abundance between riparian and upland habitats. The percent effectiveness of the three sampling techniques was similar in detecting presence/absence of amphibians and reptiles. Each technique, however, detected species the others did not and a combination of techniques maximized the number of species detected.

**GRAZING IN RIPARIAN HABITAT: FOUR INCH STUBBLE HEIGHT.**

**Sam Mattise**, Lower Snake River District, Bruneau Resource Area, BLM, Boise.

Livestock grazing in riparian areas is a continual problem for land managers. The Bruneau and Owyhee Resource areas identified allotments having streams with important riparian habitat. A four inch stubble height requirement at the end of the growing season was installed on these streams. Area personnel held information meetings and conducted site visits with all interested parties. Photo stations and 100 point vegetation monitoring transects were established and will be read each year. Segments of 30 streams in the Bruneau R.A. and 27 in the Owyhee R.A. were measured. Fifty-seven percent of streams in the Bruneau R.A. and 37% in the Owyhee R.A. met or exceeded the four inch stubble height requirement. Discussions with allotment permittees were conducted regarding ways to reduce the use on riparian areas by livestock. These segments must meet the 4 inch requirement in two growing seasons or changes in grazing permits could occur.

**THE EFFECTS OF LIMITED PREDATOR REMOVAL ON RING-NECKED PHEASANT SURVIVAL IN SOUTHERN IDAHO.**

Gary Nohrenberg, University of Idaho  
Kerry Reese, University of Idaho  
J. W. Connelly, Idaho Dept. of Fish and Game

We examined the effect of using limited predator removal on radio-marked pheasant (*Phasianus colchicus*) survival in southern Idaho during 1995-96. Red fox (*Vulpes vulpes*), striped skunks (*Mephitis mephitis*), and feral cats (*Felis catus*) were removed from 2 treatment areas in southern Idaho during March of 1995-96. The survival of 55 radio-marked hen pheasants was compared between treatment and control areas. No differences were found between years so data were pooled to calculate a composite April-July survival estimate. Overall survival in treatment areas for the interval April-July ( $51 \pm 27\%$ ) did not differ significantly from control areas ( $34 \pm 25\%$ ,  $P = 0.237$ ). Based on presented survival estimates, limited predator removal as described does not appear to significantly improve localized hen pheasant survival.

**IMPACT OF TROUT ON THE ABUNDANCE AND DISTRIBUTION OF AMPHIBIANS IN THE SAWTOOTH WILDERNESS OF CENTRAL IDAHO.**

**James C. Munger**, Bruce R. Barnett, and Aaron Ames, Department of Biology, Boise State University, Boise, Idaho 83725

One hundred five lakes were surveyed in the Sawtooth Wilderness of Central Idaho during a three-week period in August, 1996. Columbia Spotted Frog adults and/or larvae (*Rana luteiventris*) were found in 27% of the lakes; Long-toed Salamander adults and/or larvae (*Ambystoma macrodactylum*) were found in or near 21% of the lakes; and Pacific Treefrogs (*Pseudacris regilla*) were heard calling near one lake. Amphibians were found only in lakes below 2725 m elevation. The presence of cutthroat trout was found to have only modest negative effects on the presence of amphibians. However, the presence of trout apparently has a substantial negative effect on the numbers of amphibians present: large numbers of amphibians were only found in lakes with no fish. In addition, in those lakes where amphibians and fish co-occurred, amphibians were found to occupy only very small and protected portions of the lakes. Columbia Spotted Frogs and Long-toed Salamanders tended to be found more often than expected in lakes with mud substrate, without bedrock substrate, with logs on the periphery, and with grassy banks.

**NORTHERN INTERMOUNTAIN HERPETOLOGICAL DATABASE.** **Charles R. Peterson**, Department of Biological Sciences, Idaho State University, Pocatello, ID 83209-8007.

The Northern Intermountain Herpetological Database contains information on the distribution and biology of all species of amphibians and reptiles in the state of Idaho, the counties bordering Idaho, and the Greater Yellowstone Ecosystem (portions of Wyoming, Idaho, and Montana). Sources of data include museum records, the literature (including agency reports), our field surveys, and reported observations. Since 1990, we have contacted over 100 North American museum collections for information on herpetological specimens from the Northern Intermountain West. We are compiling a bibliography of herpetological studies for Idaho and the GYE and have actively solicited observations of amphibians and reptiles from educational institutions, government agency personnel, private industry, conservation organizations, and the public. Photo identification cards for Idaho amphibians and reptiles are under development to help increase the accuracy of reported observations. We currently have entered and digitized coordinates for about 6,000 museum records and 4,000 observations. Within our constraints of time and funding, the information in this database is shared with state and federal agencies, private industry, private conservation organizations, academic biologists, and museums. This database is housed in the Herpetology Section of the Idaho Museum of Natural History in Pocatello, Idaho. Inquiries or contributed specimens and observations should be directed to Dr. C. R. Peterson, Box 8007, ISU, Pocatello, ID 83209. (208) 236-3922 (voice), (208) 236-4570 (FAX), [petechar@isu.edu](mailto:petechar@isu.edu) (e-mail). A World Wide Web site is under development.

Niche Overlap of Northern Saw-whet Owls (*Aegolius acadicus*) and Western Screech-owls (*Otus kennicottii*). Charley R. Rains. Raptor Research Center, B.S.U..

Since 1986, both Western screech-owls (*Otus kennicottii*) and Northern saw-whet owls (*Aegolius acadicus*) have nested in nest boxes in riparian areas within the Snake River Birds of Prey National Conservation Area (NCA). I analyzed breeding season diet and nest site micro-habitat of these owls to determine niche overlap. Prey removed from nest boxes and pellets, was collected for all known nesting attempts. Skull and/or mandible fragments were used to identify all mammal prey species. I examined a total of 2251 prey items of Northern saw-whet owls, and 702 of Western screech-owl. The most common prey items for both owl species were: *Peromyscus*, *Microtus*, *Reithrodontomys*, and *Mus musculus*. I also described micro-habitat features at all occupied Northern saw-whet owl nest boxes. The same features were also described at random samples of occupied Western screech-owl nest boxes, and unoccupied nest boxes. Within the sampling area I described both biotic and abiotic characteristics. I found significant differences between Northern saw-whet owl and Western Screech-owl diet in both the prey frequency  $P = 0.001$  and biomass  $P = 0.01$ . Niche overlap was calculated to be 0.818. There was no significant differences in the nesting habitat within the NCA between the two owl species.

LARGE-SCALE CONSERVATION ASSESSMENT FOR BIRDS IN THE INTERIOR COLUMBIA RIVER BASIN. Terry Rich, Bureau of Land Management, Boise, and Vicki Saab, U.S. Forest Service, Boise.

The status and habitats of 71 species of high-priority birds were evaluated within the Interior Columbia River Basin (CRB). Objectives were to examine population trends, estimate responses to alternative management activities and make recommendations leading to long-term persistence of populations. Among 132 neotropical migrants (NTMBs) that breed in the area, 1) 14 species had significant 26-year declines, 2) 13 showed significant increases, 3) 62 have no detectable trend, 4) 33 are not adequately monitored, and 5) 30 need improved monitoring techniques. Among 16 habitats, riparian vegetation was used by more NTMBs (64%) than any other. Other habitats used by relatively many species were young coniferous forest (38%) and old-growth forest (35%). Nine habitats had more species with significantly decreasing than increasing populations. Five habitats (riparian, old growth forests, shrubsteppe, grasslands, and juniper) are priorities based on population declines, vulnerability to human activities and habitat loss. Analysis of non-migratory species also will be discussed.

ANALYSIS OF ORNITHOLOGICAL RESEARCH 1955-1994: BIASES THAT MAY INFLUENCE ECOLOGY AND MANAGEMENT.

John T. Ratti, Fish and Wildlife Resources, and J. Michael Scott, Idaho Cooperative Research Unit, University of Idaho, Moscow

We conducted a search of all articles published (1955-94) in 6 ornithological journals, *Auk*, *Ornithological Monographs*, *Condor*, *Studies in Avian Biology*, *Wilson Bulletin*, and *Journal of Field Ornithology*. We examined 13,744 publications; > 70% were natural history or multi-species studies. No publications were located for 6 families and 170 species; 15 families and 537 species had 1-10 studies. The most highly studied family (2,679) was Emberizidae (Emberizid finches and allies), and the 3 most highly studied species were red-winged blackbird (*Agelaius phoeniceus*) (206), brown-headed cowbird (*Molothrus ater*) (203), and white-crowned sparrow (*Zonotrichia leucophrys*) (148). We concluded the research disparity among families and species was the result of research programs being driven by logistic difficulty, funding, animal abundance, time and ease of data collection, and recreational and economic importance of the species. Considering that 80% of 13,744 publications included only 25% of the North American avian families, we suspect some significant biases in our general-avian-biology knowledge. Because our literature search was restricted, these data should be considered with caution, and treated as an index to the distribution of research among North American avian families and species.

RARE CARNIVORES AND HIGHWAYS: MANAGEMENT PROBLEMS AND SOLUTIONS. Bill Ruediger. Threatened and Endangered Species Program Leader. Northern Region. USDA Forest Service. Missoula, MT

A serious conservation issue facing rare carnivores (*grizzly bear*, *Ursus arctos*; *gray wolf*, *Canis lupus*; *wolverine*, *Gulo gulo*; *lynx*, *Lynx canadensis*; *fisher*, *Martes pennanti*) is the impacts created by highways. Carnivores are vulnerable to highways because of their large spatial requirements, which require frequent crossings of busy roads. Highways are habitat and ecosystem issues. Highways affect carnivores by increasing direct and indirect mortality, habitat loss, habitat fragmentation, and displacement. The impacts of highways on carnivores are permanent and severe. The author hypothesizes that 1. There is an increasing effect on carnivores as the standard of road or highway is increased. 2. That extirpation of rare carnivores in the lower 48 states is partially a factor of highway density. Suggested priorities for reducing highway impacts on carnivores include: 1. Educating agency personnel, biologists, engineers, and the public on highway/wildlife impacts. 2. Emphasis on research. 3. Identification and protection of land corridors. 4. Implementation of highway crossing structures. 5. Improving wildlife/highway mitigation policies.

## BIRD-HABITAT RELATIONSHIPS IN FORESTS OF THE IDAHO SOUTHERN BATHOLITH.

Rex Sallabanks, Sustainable Ecosystems Institute, Meridian, ID and Jonathan B. Haufler, Boise Cascade Corporation, Boise, ID

The distribution of breeding birds in relation to forest habitat type class and vegetation growth stage is currently being examined in 46 forest stands of the Idaho Southern Batholith landscape in west-central Idaho. Within a matrix of habitat type class x vegetation growth stage combinations ("ecological land units"), avian abundance and species richness were found to be highest in mid-seral Grand Fir (*Abies grandis*) and old growth Subalpine Fir (*Abies lasiocarpa*) forest types. When examined independently, vegetation growth stage influenced the distribution of more bird species than did habitat type class. Many bird species were found to be significantly more common in specific ecological land units of the Idaho Southern Batholith landscape. Analyses of stand structure data were used to further examine bird-habitat relationships and provide a more mechanistic understanding of why certain bird species were distributed as they were.

## ASSESSING REPRESENTATION OF NATURAL VEGETATION IN SPECIAL MANAGEMENT AREAS.

J. M. Scott, M. Murray, B. G. Wright, T. Merrill, and B. Csuti, U.S. Geological Survey, Biological Research Division, Idaho Cooperative Research Unit, University of Idaho, Moscow, ID 83844-1141

Conservation biologists are faced with two basic questions: 1) What proportion of the area occupied by an element of biological diversity, e.g. species, vegetation cover type, or ecosystem, must be protected to assure long term viability? 2) Should the proportion of the area to be protected be distributed across the geographical and ecological range of the element of interest? In an attempt to address these two questions, we examined the occurrence within special management areas of four ecologically disparate vegetation cover types using three different conservation targets. We found overall protection among vegetation types to vary from 1-47% of total mapped areas. None of the vegetation types examined occurred in special management areas across its full geographical and ecological range, at any of the three conservation targets examined, 12%, 25%, and 50%. We suggest that future decisions for representation of species occurrence in conservation areas be based on the entire distribution of species, thereby increasing its survival potential in evolutionary time. When gaps in the occurrence of special management areas are identified, protection efforts should be aimed at the largest remaining parcels that are ecologically intact, are under the greatest threat, and large enough to accommodate the full range of ecological processes and biological phenomena.

## THE ROLE OF NONGOVERNMENTAL ORGANIZATIONS IN THE FUTURE OF WILDLIFE MANAGEMENT.

Alan Sands, The Nature Conservancy, David Lockwood, Pheasants Forever, and Cal McCluskey, Bureau of Land Management

More and more, wildlife management is being shaped by political decisions. As such, wildlife-oriented nongovernmental organizations (NGOs) have the potential to make a significant contribution to wildlife conservation. NGOs can yield considerable influence in shaping wildlife policy, management and education programs, and funding decisions. Their influence can be further enhanced when they form coalitions. However, NGOs are successful only as long as they can continuously point to tangible accomplishments that are important to their membership. Wildlife professionals need to embrace these organizations and help them accomplish things important to their organization while ensuring that their activities fit within the larger framework of wildlife conservation. We see the ultimate goal of the wildlife profession as gaining broad public support for Leopold's land ethic. The extent to which this occurs depends, to a large degree, on the extent to which wildlifers continuously cultivate positive relationships with NGOs and involve them in meaningful conservation activities.

## LONG-TERM TRENDS IN PRAIRIE FALCON ABUNDANCE AND REPRODUCTION IN SOUTHWESTERN IDAHO.

Karen Steenhof, Michael N. Kochert, Robert L. Lehman, USGS-BRD, Raptor Research Field Station, Boise, ID, and Leslie B. Carpenter, Raptor Research Center, BSU, Boise, ID

We monitored nesting populations of prairie falcons (*Falco mexicanus*) in the Snake River Birds of Prey National Conservation Area (NCA) from 1974-1994. Our sampling period included 2 major droughts and associated crashes in Townsend's ground squirrel (*Spermophilus townsendii*) populations. Falcon reproductive rates were tied closely to ground squirrel abundance. Although the mean number of prairie falcon pairs found in the NCA from 1991-1994 was similar to the mean number found from 1976-1978, the number of nesting pairs declined significantly in 3 segments of the canyon that we surveyed in 14 years between 1976 and 1994. Declines were most severe at the eastern end of the NCA, where fires and agriculture have changed native shrubsteppe habitat. Declines also occurred in the portion of the canyon near the Orchard Training Area (OTA), which is operated by the Idaho Army National Guard. Reproduction was more variable in the stretch of canyon near the OTA than in adjacent areas.

THE FORMATION, ORGANIZATIONAL STRUCTURE, AND GOALS OF THE IDAHO BAT WORKING GROUP (IBWG), AND ITS ROLE IN BAT MANAGEMENT, RESEARCH AND EDUCATION IN IDAHO AND THE WESTERN UNITED STATES.

Martha Wackenhut, Idaho Department of Fish and Game, Idaho Falls, Lyle Lewis, U.S. Bureau of Land Management and U.S. Forest Service, Twin Falls, and Charles E. Harris, Idaho Department of Fish and Game, Boise.

The population declines and habitat losses experienced by some bat species are a growing concern among many biologists. In response to this concern and to bring attention to the management needs of bats, the Western States Bat Working Group (WSBSG) was formed in January 1996 at a meeting between western states bat biologists. The Idaho Bat Working Group (IBWG) was formed subsequent to that meeting, as were working groups in 10 other western states. The IBWG group includes seven individuals representing public agencies and the private sector. The goals of the state working group and the western states group are: 1) to facilitate communication among parties interested in and responsible for bat management; 2) to provide current information on bat populations and distribution as well as research, monitoring, and management techniques; 3) to encourage professional and public education about bat biology and conservation. This paper presents background information leading to IBWG formation, a discussion of IBWG goals and objectives, and a summary of current data collection efforts and needs in the state.

#### POSTER

##### EFFECTS OF FIRE ON GOLDEN EAGLE OCCUPANCY AND NESTING SUCCESS.

Michael N. Kochert, Karen Steenhof, USGS, Biological Resources Division, Boise, ID, John M. Marzluff, Greenfalk Consultants, Boise, ID, and Leslie B. Carpenter, Raptor Research Center, Boise State University, Boise, ID.

We assessed the effects of wildfire on territory occupancy, reproductive success, and habitat use of golden eagles (*Aquila chrysaetos*) in the Snake River Birds of Prey National Conservation Area. Radio-tagged eagles tended to avoid burned habitat. Pairs in burned areas tended to have larger home ranges. Occupancy and success rates at all burned territories declined significantly after major fires and were significantly lower than those of unburned territories. Occupancy and success decreased more in burned territories during the post-burn years than they did in unburned territories. Effects on success at burned territories were greatest 4 to 6 years after burning with a rebound in success 4 to 5 years later. The extent of fires and other habitat disturbance did not allow us to predict which territories would be affected adversely. Pre-burn success was the factor most related to post-burn occupancy and success of territories. Eagles may adjust to the effects of burning or other habitat alterations by using alternate habitats or by encroaching into vacant neighboring territories. Eagle pairs that continued to occupy territories and produce young apparently compensated for the effects of habitat alteration by foraging over large ranges and seeking remnant patches of shrub habitat for jackrabbits, or by foraging in alternative habitats and using alternate prey.

#### COMPARATIVE SURVIVAL OF WOODLAND CARIBOU IN THE SELKIRK MOUNTAINS. Wayne Wakkinen, Idaho Department of Fish and Game, Bonners Ferry.

Sixty woodland caribou (*Rangifer tarandus caribou*) were translocated from British Columbia to the Selkirk Mountains of Idaho from 1987 to 1990. Some animals remained near the release site in the Two-mouth lake area. Others became associated with resident animals located near Stag Leap Park in the BC portion of the ecosystem. I calculated survival rates for each group using a Kaplan-Meier staggered entry design. Estimated survival rates were 0.77 (95% C.I. 0.70-0.85) for caribou within the Two-mouth area and 0.87 (0.77-0.97) for caribou within the Stag Leap Park area. Annual winter surveys since 1991 show a decline in the Two-mouth herd. Known movements from the Two-mouth to the Stag Leap area cannot account for the observed decline. The Two-mouth herd is declining, primarily as a result of predation. Large wild fires and timber harvest have created younger forests, increasing white-tailed deer and moose numbers and distribution. This may be responsible for an increase in mountain lion abundance, resulting in depressed survival rates of woodland caribou and jeopardizing short-term recovery efforts.

#### POSTER

EFFECTS OF FIRE AND HABITAT ALTERATIONS ON FERRUGINOUS HAWKS. Robert N. Lehman, Leslie B. Carpenter, Michael N. Kochert, and Karen Steenhof. U.S. Geological Survey., Biological Research Division, Raptor Research Field Station, Boise, ID.

We assessed potential effects of fire-induced habitat alterations on ferruginous hawk (*Buteo regalis*) abundance, nesting success, and habitat use in the Snake River Birds of Prey National Conservation Area (NCA), in southwestern Idaho. Mean number of ferruginous hawk pairs ( $\geq 10$  pairs each year) and mean percent of laying pairs successful in the Snake River Canyon did not change between pre-fire (1976-1978) and post-fire (1990-1994) periods ( $P$ 's  $> 0.88$ ). Data from burn and vegetation maps indicate that large proportions ( $\geq 80\%$ ) of many ferruginous hawk generalized home ranges burned in the last 15 years, and that ferruginous hawks have continued to nest in these areas. We found no difference in the amount of burned habitat or grassland inside 45 generalized home ranges used from 1990-1994 and 82 random plots, indicating that ferruginous hawks are not avoiding or selecting for burned areas grasslands. We found no difference in the amount of burned habitat inside generalized home ranges of successful and unsuccessful pairs, but found significantly more grassland ( $P = 0.03$ ) in generalized home ranges of successful pairs.