

V40 Pt. 1 #3

IDAHO
DEPARTMENT OF FISH AND GAME
Jerry M. Conley, Director

Project No. W.-168-C-5
FEDERAL AID TO WILDLIFE RESTORATION
July 1, 1987 - June 30, 1988

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PROGRESS REPORT

Study 1, Job 1: Wildlife Research Coordination

Prepared by:

John J. Beecham
Wildlife Research Manager

September 1988

**PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH**

STATE: Idaho **JOB TITLE:** Wildlife Research
PROJECT: W-168-C-5 Coordination
PERIOD COVERED: July 1, 1987 to June 30, 1988

ABSTRACT

Project supervision was maintained for all wildlife research projects including study plan development, document preparation, report editing, submitting project reports, and budget preparation. Federal aid coordination was provided for all wildlife research, management, and land development projects.

OBJECTIVES

To plan project work and to provide supervision and administrative support for all P-R funded projects.

Meetings and Presentations

Meetings

Date	Name	Location
7/6-7	IDFG Public Comm. Board (PCB)	Boise
7/22	Mt. Lion Species Mgmt. Mtg.	Jerome
8/3-7	IDFG Summer Biologist Mtg.	Sun Valley
8/18	IDFG/USFS Field Tour	Featherville
9/8	IDFG/BPA Field Tour	Palisades Project
9/9	IDFG PCB Mtg.	Boise
9/17	IDFG/USFWS Section 6 Mtg.	Boise
9/23	Peregrine Fund Annual Mtg.	Boise
9/24	International Caribou Steering Comm.	Creston, B.C.
9/30	Bighorn Sheep Species Mgmt. Mtg.	Boise
10/5-9	Federal Aid Coordinators Mtg.	Ocean Shores, WA
11/5	Id. Coop. Research Unit Mtg.	Boise
11/30	Bur. Wildlife-Reg. IV Coord. Mtg.	Jerome
12/1	Bur. Wildlife-Reg. VI Coord. Mtg.	Idaho Falls
12/2	Bur. Wildlife-Reg. V Coord. Mtg.	Pocatello
12/8	Bur. Wildlife-Reg. I Coord. Mtg.	Coeur d'Alene
12/9	Bur. Wildlife-Reg. II Coord. Mtg.	Lewiston
12/11	Bur. Wildlife-Reg. III Coord. Mtg.	Boise
1/21	IDFG Prin. Wildlife Res. Biol. Mtg.	Boise
1/25-29	Federal Aid Chiefs Mtg.	Albuquerque, NM
2/9-10	Yst. Grizzly Bear Task Force Mtg.	Portland, OR
2/26	Id. Chapter, TWS Mtg.	Boise
3/7-8	IDFG PCB Mtg.	Boise
3/24	IDFG Depredation Study Mtg.	Lewiston
4/13	IDFG Library Com. Mtg.	Boise
4/21	Public Mtg.-Grizzly Bears	Priest River
4/26-27	Swan Falls Negotiation Mtg.	Lake Lowell
5/2	IDFG PCB	Boise
5/18-21	IDFG In-Service Training School	Boise
6/14	Priest Lake Sportsman Club	Nordman
6/27	IDFG Reg. I Staff Mtg.	Coeur d'Alene

PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH
RESEARCH COORDINATION REPORT
MULE DEER RESEARCH
C.G. BROWN, SENIOR WILDLIFE RESEARCH BIOLOGIST

STATE: Idaho JOB TITLE: Statewide Wildlife Research
PROJECT: W-160-R-15
SUBPROJECT: 1 STUDY NAME: Mule Deer Ecology
PERIOD COVERED: July 1, 1987 to June 30, 1988

ABSTRACT

Mule Deer Distribution

Thirty-three mule deer were captured and marked, 23 with standard VHF radio transmitters and 4 with satellite transmitters. Five deer were captured on the Wrights Creek summer range with a net gun from a Bell 206B and 28 deer were captured by drive netting at 5 sites on East Elkhorn winter range and 1 site on the Downey Face winter range. Deer captured included 18 antlered bucks, 1 buck fawn, and 14 does. A total of 902 aerial relocations from 68 radio-collared deer was obtained on 22 dates. Summer-fall home range sizes (12-1164 ha) were determined for 14 buck deer (median = 559.5 ha, CI = 251-850 ha) and for 26 does (median = 159.5 ha, CI = 81-234 ha). The difference was significant, $P \leq 0.01$. Ten deer from one summer range used 6 different winter ranges. Thirty deer monitored during 1987 were active as of June 30, 1988 and all were following their 1987 spring-early summer distribution patterns. There were no significant differences in sizes of summer ranges used by individual deer for 3 years (n=4) and 2 years (n=12). Data points from each satellite collared deer were obtained on 110, 112, 127 and 130 days with 846 relocations obtained, ranging between 179 to 259 per deer.

Mule Deer Security

Median size of summer-fall home ranges in secure habitats was 142.5 ha for 14 does and 505 ha for 8 bucks. Median summer-fall range in low security habitat was 189.5 ha for 12 does and 608.9 ha for 6 bucks. Eight relocations were used to determine hunting season ranges used by 23 deer and 6.2 ± 0.5 relocations for another 13 deer. Hunting season

ranges were not determined for 8 deer. Hunting season ranges for 10 bucks had a median of 187 ha and was significantly larger than those used by 25 does, median = 63 ha. Twenty-five deer remaining on summer-fall ranges used 1.6-80.9% of their summer-fall ranges, mean = 34.1±9.8%. Median distances between summer-fall activity center and hunting season activity centers was 0.55 km for 20 deer in secure habitat and 1.55 km for 16 deer using low security habitats. The difference was significant for security levels but was not different among bucks and does.

Hunters saw 11.7±1.1 deer per day in Unit 73 during 1987, significantly higher than the 7.8±0.5 deer observed in 1986. The number of deer seen per day declined through the hunting season and was significantly higher in secure habitats (16.9±1.8 deer) than in low security sub-units (8.3±1.3 deer). Twenty buck deer have been monitored for 20 hunting seasons with 13 kills recorded, 5 of which were wounding losses. Thirty-eight does have been monitored for 57 hunting seasons with 9 killed, 8 recovered by hunters and 1 wounding loss. Mortality is significantly different among sex and security level of habitats. Unit 73 hunting pressure declined approximately 20% in 1987 from 1986. Deer using low security summer ranges moved farther between relocations (2.46±1.04 km) and pre-season-post season locations (12.67±7.79 km) than deer using secure habitats, 1.08±0.33 km between relocations and 3.30±1.76 km pre-season to post-season. A total of 708 deer killed in Unit 73 were recorded by sex, age and kill site.

During the fall 1987, radio-collared mule deer in Management Unit 73 were monitored to document circadian activity patterns. A total of 6,794 15-minute samples were collected on 13 deer (5 male and 8 female) from October 1 to November 14. An additional 98 hours and 3 minutes of activity data were gathered on 4 adult female deer using satellite telemetry. Preliminary analyses of activity data revealed no significant difference in male and female activity during the five day either sex season (October 28-November 1). A reduction in male diurnal activity was evident during the first week of hunting season (October 21-October 27) but thereafter increased throughout the field season (October 28-November 14). Female diurnal activity decreased throughout the hunting season and into post-hunting season monitoring (October 21-November 14). During the fall 1988, activity monitoring will continue and baseline habitat selection data will be gathered.

Meetings and Presentations

1987 Western Deer Workshop. Pingree Park, Colorado, August 4-7, 1987.

McDonald M.J., B.K. Keller and C.G. Brown. 1987. Circadian rhythm of habitat use by mule deer. Annual Meeting of the Idaho Chapter - The Wildlife Society. Feb. 26-27, 1988. Boise Idaho.

Meetings and Presentations

Meetings

Date	Name	Location
7/7-8	Bighorn Sheep Mgmt. Plan Committee	Boise
7/14	Boise Dist. BLM	Boise
7/20	Boise Dist. BLM	Boise
7/23	IDFG "Supervisory Dilemmas"	Boise
7/24	IDFG Reg. III/Fisheries Bur. Coord. Mtg	Boise
7/30	IDFG Dep. Plans	Boise
8/3-6	Biol. and Land Mgrs. Mtg.	Sun Valley
8/13-14	BLM bighorn study	Little Jack Camp
8/21	Reg. IV-Sawtooth Ntl Forest	Jerome
9/2	Reg III Physical fitness assessment	Boise
9/3	Elk Research Planning Mtg.	McCall
9/25	Boise Dist BLM bighorn study	Boise
9/29-30	Bighorn sheep Mgmt. Plan	Boise
10/6	Bighorn/domestic Sheep Task Force	La Grande,OR
11/4	Bighorn/domestic Sheep Task Force	La Grande, OR
11/17-18	Reg. Wildlife Mgrs. Mtg.	Boise
11/23	Boise Dist. BLM	Boise
11/30	Reg. IV/Bur. Wildlife Coord.	Jerome
12/21	Reg. III/Bur. Wildlife Coord.	Boise
1/7-8	IDFG Comm. Mtg.	Boise
1/9	Nampa Bow Chiefs Banquet	Nampa
1/15	Reg. IV/Id. St. Bowhunters Banquet	Jerome
1/21	Research Biol. Mtg.	Boise
2/3	Interagency Review-BLM, Dept. of AG	Boise
2/8	Boise Dist. BLM	Boise
2/9	Nampa Civi-Tan Serv. Club	Nampa
2/9	Reg. III/McCall Research Review	Boise
2/24-28	Found. for N. Am. Wild Sheep	Reno
3/16	Reg. IV/Sawtooth NF Coord. Mtg.	Jerome
3/21-22	Graduate Proj. Coord.	McCall
3/25	Reg. III/Adm. Bur. Coord.	Boise
3/28	Reg. IV/Wildlife Bur. Coord. Mtg.	Jerome
3/29	Health Screen	Boise
4/1	Reg. III/Wildlife Bur. Coord. Mtg.	Boise
4/5	Homedale Rod and Gun Club	Homedale
4/6	Amity School	Boise
4/7	IDFG Clerical Staff presentation	Boise
4/11-15	Northern Wild Sheep and Goat Council	Banff, Alberta
4/25-26	Aircraft Safety Comm.	Boise
5/1-2	Pheasant Dep. Study Mtg.	Boise
5/3	Elk Study Plan Mtg.	Boise
5/12-13	Bighorn Sheep Mgmt. Plan Mtg.	Salmon
5/14	Id. State Hunter Ed. Banquet	Boise
5/16	Elk Study Plan Mtg.	Boise
5/17	Boise Dist. BLM-bighorn proj. act.	Boise
5/17-21	In-Service Training School	Boise

Noteworthy activities included:

1. Completion of stratified aerial surveys of the Little Jack Creek area (August 24, June 14) and East Fork Owyhee River and associated drainages (August 18-20).
2. Distribution surveys of the West Fork Bruneau and Jarbridge River herds (August 21).
3. Capture of 12 bighorns for transplant from Little Jack Creek to Cottonwood Canyon in Twin Falls County (December 15).
4. Capture of 14 bighorns, equipped with radio collars for future monitoring in the Little Jack Creek study area (December 21).
5. Fixed-wing surveys of collared bighorn sheep and cattle distribution (April 3, May 4, June 4).

Three research projects, funded through Department and Pittman-Robertson funds and utilizing graduate students, were supervised. These projects included:

1. A study of habitat utilization by a newly-introduced herd of California bighorn sheep in the Sawtooth National Forest. This project, involving Dr. John Bissonette and graduate student Melanie Steinkamp of Utah State University, is being conducted in Cottonwood Canyon south of Twin Falls, Idaho. It will continue through FY 89.
2. A study of ways to reduce spring damage to emerging food crops (corn and sugar beets) by pheasants. This study involves Dr. Robert Jarvis and graduate student Bryan Helmich of Oregon State University, and is being conducted of Ft. Boise WMA and nearby private lands. It will continue through FY 89.
3. An evaluation of an elk census technique that may be conducted using fixed-wing aircraft, potentially saving thousands of dollars of helicopter flight time to obtain census data. This project involves Dr. Lynn Irby and graduate student Tim Ferguson of Montana State University, and is being conducted in Units 22 and 31 near Council, Idaho. It will continue through FY 89.

Other noteworthy activities included:

1. Assisted in the release of 14 bighorns from British Columbia into Big Jack Creek (Feb. 5).
2. Assisted management personnel in capture of 14 bighorns from the East Fork Salmon River and 25 from Morgan Creek for transplant (Feb. 17-19).
3. Assisted in capture of 4 rams from Battle Creek for release into Big Jack Creek (March 4).

4. Filled in for Wildlife Research Manager (March 6-8).
5. Assisted in statewide Free Fishing Day (June 11).
6. Served as Region 3 Flight Safety Officer.
7. Served on the Wildlife Society National Publication Committee.

Reports, Publications, Articles:

- Anonymous. 1987. Bighorns: new herds, bigger herds mean more hunting opportunity. Idaho Fish and Game News, December 1987:3.
- Anonymous. 1988. Bighorns on the move in Idaho. Idaho Fish and Game News, May-June 1988:8.
- Poglayan-Neuwall, I., and D.E. Toweill. 1988. Bassariscus astutus. Mammalian Species Account No. 327, Am. Soc. Mamm., in press.
- Toweill, D.E. 1988. Idaho Wildlife Depredation Management Plan, 1988-1992. Idaho Dep. Fish and Game, Boise. 102 pp.
- Toweill, D.E., and R.G. Anthony. 1988. Annual diet of bobcats in Oregon's Cascade Range. Northwest Sci. 62(3):99-103.
- Toweill, D.E., and R.G. Anthony. 1988. Coyote foods in a coniferous forest in Oregon. J. Wildl. Manage. 52(3):507-512.
- Toweill, D.E., C. Maser, L.D. Bryant, and M.L. Johnson. 1988. Reproductive characteristics of eastern Oregon cougars. Northwest Sci. 62(4):147-150.

PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH
RESEARCH COORDINATION REPORT
SAGE GROUSE ECOLOGY
J.W. CONNELLY, PRINCIPAL WILDLIFE RESEARCH BIOLOGIST

STATE: Idaho **JOB TITLE:** Statewide Wildlife Research
PROJECT: W-160-R-15
SUBPROJECT: 9 **STUDY NAME:** Sage Grouse Ecology
PERIOD COVERED: July 1, 1987 to June 30, 1988

ABSTRACT

The movements, distribution, survival and reproduction of sage grouse (Dendrocerus urophasianus) are being investigated on the upper Snake River Plain of southeastern Idaho. A portion of the study area will be burned in late summer 1989. Thus, we are in the pre-burn phase of a project aimed at assessing the response of sage grouse to a controlled burn. A total of 369 sage grouse was trapped and marked during spring 1988. Forty-nine of these birds (13 percent) were equipped with radios. Females nested from <1 TO >14 km from the lek on which they were captured (N=23, X=3.8 km). Nesting success of radio-marked grouse decreased from 58 percent in 1987 to 43 percent in 1988. Although sample sized were relatively small, survival may have decreased slightly over this same period.

Sage grouse nesting and winter habitat use on the Big Desert was investigated. Nest site data were collected on 30 nests during 1988. Sagebrush (Artemisia spp.) canopy cover at nests was 18, 22 and 16% for 1986, 1987, and 1988, respectively. Similar values were obtained for sagebrush cover at random sites. Vegetation characteristics were also measured for 22 sage grouse winter use sites and 22 randomly located throughout the study area.

Reports, Publications, Articles & Presentations:

- Connelly, J.W., W.L. Wakkinen, K.P. Reese and L. Doughty. 1987. Sage grouse and fire; an update on an Idaho research project. Presented at the 15th Western States Sage Grouse Workshop. 28-30 July. Midway, UT.
- Connelly, J.W., H.W. Browsers, and R.J. Gates. 1988. Seasonal movements of sage grouse in southeastern Idaho. J. Wildl. Manage. 52:116-122.
- Connelly, J.W., W. Wakkinen and K.P. Reese. 1988. Sage grouse seasonal movements and their relevance to management. Presented at the Annual Mtg. of the Idaho Chapt. of the Wildlife Society. 26-27 Feb. Boise, ID.
- Gates, R.J., H.W. Browsers, and J.W. Connelly. Seasonal range fidelity in southeastern Idaho sage grouse. Peer review.
- Musil, D.D., K.P. Reese, and J.W. Connelly. 1988. Implications of 3 release methods for translocated sage grouse. Presented at the Annual Mtg. of the Idaho Chapt. of The Wildlife Society. 26-27 Feb. Boise, ID.
- Musil, D.D., K.P. Reese and J.W. Connelly. 1988. Comparisons of three release methods for translocated sage grouse. Presented at the Annual Mtg. of the Northwest Section of the Wildlife Society. 18-20 Apr. Coeur d'Alene, ID.
- Musil, D.D., J.W. Connelly, and K.P. Reese. 1988. Preliminary results of a translocation effort. Presented at the 15th Western States Sage Grouse Workshop. 28-30 July. Midway, UT.

PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH
RESEARCH COORDINATION REPORT
MULE DEER ECOLOGY
BRUCE ACKERMAN, GRADUATE STUDENT
J.W. CONNELLY, PRINCIPAL WILDLIFE RESEARCH BIOLOGIST

STATE: Idaho **JOB TITLE:** Statewide Wildlife Research
PROJECT: W-160-R-15 **STUDY TITLE:** Mule Deer Census
SUBPROJECT: 12 **STUDY NAME:** Mule Deer Ecology
PERIOD COVERED: July 1, 1987 to June 30, 1988

ABSTRACT

Helicopter surveys were conducted in southeast Idaho from 1984 to 1987, to improve counts by correcting for visibility bias and by improving statistical aspects of survey design. Radio collars were used to quantify factors causing deer groups to be missed.

Stepwise logistic regression was used to determine factors most useful in predicting visibility bias. Factors tested were related to the animal, its group, vegetation cover, observer experience, weather conditions, and time of year. Only 54% of groups containing radio-collared deer were seen during 277 sightability trails. Group size, activity level, and vegetation cover, sex and age of deer, winter snow conditions and snow cover were significant in univariate analyses, but were strongly correlated to factors in the model and were not included. Visibility was much lower during severe winter conditions (27%) than in mild (53%) or greenup (63%) conditions.

The sightability model was used to predict the probability of observing deer groups, and to correct winter survey counts. Corrected counts indicated that 31-47% of deer were missed. Stratified population estimates were compared for replicate counts of subpopulations. Predicted number of deer agreed well between replicates. Visibility bias was also removed from herd composition data. Number of bucks present, especially mature ones, was underestimated by typical counts. The sightability correction therefore increased buck:doe ratios.

Most deer (56%) moved <0.2 km after being disturbed during surveys (Maximum 1.27 km). Long-term energetic costs of this disturbance are probably minimal.

The sightability model approach yields more valid confidence intervals than were available in the past. Rigorous survey design and these corrections should improve accuracy, with less survey effort than for past total counts. Advantages for management counts are that once the model is developed, only 1 survey is necessary to obtain population estimates with confidence intervals, and no marked animals are required. These procedures could also be applied to survey designs such as quadrat, strip, or transect counts.

Reports, Publications, Articles:

Ackerman, B.B. 1988. Visibility bias of mule deer aerial census procedures in southeast Idaho. Ph.D. Thesis. Univ. of Idaho. Moscow. 106pp.

Meetings and Presentations:

Ackerman, B.B. 1987. Visibility bias of mule deer aerial census procedures in southeast Idaho. Poster session presented at the 1987 Western Deer Workshop. 4-7 Aug. Pingree Park, CO.

PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH
RESEARCH COORDINATION REPORT
WHITE-TAILED DEER ECOLOGY

GEORGE PAULEY, GRADUATE STUDENT
PETER ZAGER, SENIOR WILDLIFE RESEARCH BIOLOGIST
LONN KUCK, PRINCIPAL WILDLIFE RESEARCH BIOLOGIST

STATE: Idaho **JOB TITLE:** Statewide Wildlife Research
PROJECT: W-160-R-15
SUBPROJECT: 13 **STUDY NAME:** White-Tailed Deer Ecology
PERIOD COVERED: July 1, 1987 to June 30, 1988

ABSTRACT

Study No. I. Habitat Use at Priest Lake.

White-tailed deer (Odocoileus virginianus) were trapped and fitted with radiocollars during the winters of 1987 and 1988. A total of 51 deer have been captured and collared. During the summer study period, 352 radiolocations were established using radiotelemetry. During the winter of 1987-88, an additional 172 locations were obtained. Vegetation analysis has been conducted at 228 summer radiolocations. Stand delineation on aerial photographs and fecal collections have progressed as planned.

PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH
RESEARCH COORDINATION REPORT
COTTONWOOD BIGHORN SHEEP ECOLOGY
MELANIE STEINKAMP, GRADUATE STUDENT
DALE E. TOWELL, PRINCIPAL WILDLIFE RESEARCH BIOLOGIST

STATE: Idaho **JOB TITLE:** Statewide Wildlife Research
PROJECT: W-160-R-15
SUBPROJECT: 14 **STUDY NAME:** Cottonwood Bighorn Sheep Study
PERIOD COVERED: July 1, 1987 to June 30, 1988

ABSTRACT

In December 1986, thirteen California bighorn sheep were trapped from the Little Jack's Creek herd and released into Big Cottonwood Canyon in south-central Idaho. Four were collared. In December 1987, an additional ten sheep were captured and released. Nine were collared. Possible effects of livestock activities were measured through changes in preference for specific habitat components by bighorn sheep over time. Bighorn sheep were located five days per week, from May 5 until June 30, for a total of 48 locations. Cattle were located after their placement on the allotments on May 23, two days per week for a total of 20 locations. Lamb count for the 1988 season was six, bringing the population number to 29 (not including last year's lamb count). An adult ewe found dead last fall by fishermen was reported in June, 1988. Bighorn sheep movements were compared on a temporal scale to movements of cattle grazed on leased Forest Service pastures. Habitat components of areas used by bighorn sheep and cattle were recorded for later use in analysis. Field work for this season will continue until mid-September 1988.

PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH
RESEARCH COORDINATION REPORT
PHEASANT DEPREDATION STUDY
BRYAN HELMICH, GRADUATE STUDENT
DALE TOWEILL, PRINCIPAL WILDLIFE RESEARCH BIOLOGIST

STATE: Idaho **JOB TITLE:** Statewide Wildlife Research
PROJECT: W-160-R-15
SUBPROJECT: 15 **STUDY NAME:** Pheasant Depredation Study
PERIOD COVERED: July 1, 1987 to June 30, 1988

ABSTRACT

Depredation to newly-emergent corn by ring-necked pheasants was studied in southwestern Idaho during the spring of 1988. A randomized complete block design was used to evaluate 4 treatments (reflective tape, Miller Hot Sauce Animal Repellent, Isotox Seed Treater (F), and provision of alternate food) used to reduce damage relative to untreated control plots. Pheasant damage began 2, -1, and -1 days prior to sprout emergence in test fields. Plots treated with alternate food had significantly more sprouts disturbed than any other treatment type. Plots treated with reflective tape had significantly fewer sprouts disturbed than plots treated with alternate food and Miller Hot Sauce Animal Repellent. No other significant differences existed between the number of sprouts disturbed in any of the treatment types. Sixty-nine percent of all damage occurred before sprouts attained a height of 4 centimeters. Damage was concentrated along field edges and between the hours of 0700-0800 and 1900-2000 MDT, with each pheasant eating a mean 10.9 sprouts per bout.

PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH
RESEARCH COORDINATION REPORT
LOCHSA ELK RESEARCH
LONN KUCK, PRINCIPAL WILDLIFE RESEARCH BIOLOGIST
JIM UNSWORTH, SENIOR WILDLIFE RESEARCH BIOLOGIST

STATE: Idaho JOB TITLE: Statewide Wildlife Research
PROJECT: W-160-R-15
SUBPROJECT: 22 STUDY NAME: Lochsa Elk Research

PERIOD COVERED: July 1, 1987 to June 30, 1988

ABSTRACT

Study No. I. Bull Elk Habitat Use.

Habitat use by elk on the Lochsa study area was evaluated using 2355 aerial relocations of radio-collared animals. Cover types were used disproportionately by elk with preferences changing seasonally. Generally, elk used more open cover types during winter and more closed types during the remainder of the year. Bull elk habitat use differed significantly ($P < 0.01$) from cow elk habitat use during summer and winter. Use of topography varied seasonally with bulls significantly ($P < 0.01$) using ridge tops and upper slopes more than cows during winter. Elk primarily used southerly aspects throughout the year with the greatest use occurring during winter. Bull elk tended to use steeper slopes than cows.

Study No. II Elk Sightability

Sightability data were collected from 18 groups of elk and this information incorporated into the existing sightability model. Aerial surveys were completed in each of 4 years in Unit 12, and population estimates were made using the sightability model. There was no significant difference between the number of elk estimated in 1985 and the number estimated for 1988 ($P = 0.183$). Number of spike bulls for the upcoming winter survey were projected.

Study III. Habitat security characteristics and hunting season mortality rates.

Sixty-one elk were monitored during the 1986 and 1987 hunting seasons to determine habitat use and mortality rates. Habitat components were used disproportionately by elk. Closed timber was used more than in proportion to its availability and open timber and shrubfields were used less than in proportion to availability during September and October. Shrubby fields were used in proportion to availability in November when analyzed with sexes combined. When cow habitat use was analyzed separately all habitat components were used in proportion to availability during August and November. Percentage use of topography, aspect, and slope were analyzed. Twenty-four mortalities occurred during this period: 3 archery-wounding losses, 3 rifle-wounding losses, 3 poaching losses, 14 recovered rifle kills, and 1 disease related mortality, seasonal mortality rates were calculated.

Meetings and Presentations (Lonn Kuck)

Meetings

<u>Date</u>	<u>Name</u>	<u>Location</u>
7/6	Aircraft Safety Committee	Boise
7/15	Elk Sightability	Moscow
7/22	Fisheries Personnel Mtg.	Boise
8/1	Nez Perce NF Pub. Info. Mtg.	Lowell
8/3-7	Wildlife Bureau Summer Biol. Mtg.	Sun Valley
8/19-20	Clearwater NF Interagency Mtg.	Lowell
9/1	Depredation Committee	Lowell
9/3	Aircraft Safety Committee	Boise
9/4	Legislator Tour	Billy Creek
9/9	Hunter Behavior Study	Moscow
9/18	GIS Mtg.	Lewiston
9/18	Energetics Mtg.	Pullman, WA
9/24	Caribou Steering Committee	Creston, B.C.
10/21	Mt. Dept. of Fish, Wldlf., Parks	Missoula, MT
10/21	National Bison Range	Moise, MT
10/27	Panhandle NF	Coeur d'Alene
11/27-18	Sightability Workshop	Boise
11/24	Aircraft Safety Committee	Boise
12/2-3	USFS Region 1 Wildlife Biol. Workshop	Helena, MT
12/8	Wildlife Bureau Coord. Mtg.	Coeur d'Alene
12/9	Wildlife Bureau Coord. Mtg.	Lewiston
12/11	Int. Caribou Tech. Comm. Mtg.	Coeur d'Alene
12/18	Grizzly Bear Mtg.	Boise
1/9	Commission Mtg.	Boise
1/9	Commission Public Hearing	Boise
1/12	Sand Creek Elk Study Review	Idaho Falls
1/21	Principal Wildlife Research Mtg.	Boise
1/31	Id. State Bowhunters	Moscow
2/5	Forest Service Workshop	Moscow
2/18-21	Rocky Mtn. Elk Foundation	SLC, UT
2/23	Dept. of Water Resources	Boise
3/30	Adm. Bureau/Reg. II Coord. Mtg.	Lewiston
4/4	Reg. II Wildlife Personnel Mtg.	Lewiston
4/5	Reg. I Wildlife Personnel Mtg.	Coeur d'Alene
4/6-7	Outfitters and Guides Mtg.	Salmon
4/19-20	NW Sec. of the Wildlife Society	Coeur d'Alene
4/25-26	Aircraft Safety Mtg.	Boise
5/12-13	Nez Perce NF/Reg. II Coord. Mtg.	Billy Creek
5/17	Wildlife Research Mtg.	Boise
5/18-21	In-Service Training School	Boise
6/10	Outfitters and Guides Assoc.	Lewiston
6/20-21	USFS Starkey Proj.	Pendelton, OR
6/23-24	Clearwater NF/Reg. II Coord. Mtg.	Billy Creek

Reports, Publications, Articles: (Lonn Kuck)

Unsworth, J.W., L. Kuck and B.B. Compton. 1987. Bull elk habitat use. Prog. Rep., Project W-160-R, Study I. Idaho Dep. Fish and Game, Boise. 25pp.

Unsworth, J.W., L. Kuck. 1988. Elk Sightability. Prog. Rep., Project W-160-R, Study II. Idaho Dep. Fish and Game, Boise. 51pp.

_____ and _____. 1988. Elk habitat security characteristics and hunting season mortality rates. Prog. Rep., Project W-160-R, Study III. Idaho Dep. Fish and Game, Boise. 23pp.

Zager, P. and L. Kuck. 1988. Elk habitat security characteristics and hunting season mortality rates. Prog. Rep., Project W-160-R, Study III. Idaho Dep. Fish and Game, Boise.

_____ and _____. 1988. Elk sightability. Prog. Rep., Project W-160-R, Study II. Idaho Dep. Fish and Game, Boise.

_____ and _____. 1988 Bull elk habitat use. Prog. Rep., Project W-160-R, Study III. Idaho Dep. Fish and Game. Boise.

_____ and _____. 1988. Mandatory check data analysis. Prog. Rep., Project W-160-R, Study IV. Idaho Dep. Fish and Game, Boise.

Meetings and Presentations (Jim Unsworth)

Meetings

Date	Name	Location
7/15	IDFG Comm. Mtg.	Lewiston
7/22	IDFG Fisheries personnel	Lewiston
8/3-7	Wildlife Bureau Summer Mtg.	Sun Valley
9/9	Hunter Behavior Study	Moscow
9/18	Habitat Use Techniques	Pullman, WA
10/20	National Bison Range	Missoula, MT
11//17-18	Aerial Survey Techniques	Boise
12/9	Bur. of Wildlife/Reg. II Coord. Mtg.	Lewiston
1/12-14	Sand Creek Elk Proj.	Idaho Falls
3/2	USFS Elk Mortality Study	Kooskia
3/10	USFS/Wildlife Bureau	Lewiston
3/11	Aerial survey data	Kamiah
3/15	USFS/Wildlife Bur.	Lewiston
4/18-21	NWS of the Wildlife Soc. Mtg.	Coeur d'Alene
5/17-21	In-Service Training School	Boise
6/10	Wildlife Bur./Outfitters and Guides	Boise

Reports, Publications, Articles: (Jim Unsworth)

Unsworth, J.W., Kuck, L. and B.B. Compton. 1987. Bull elk habitat use. Prog. Rep., Project W-160-R. Study I. Idaho Dep. Fish and Game. Boise, Idaho. 25pp.

Unsworth, J.W. and L. Kuck. 1988. Elk sightability. Prog. Rep., Project W-160-R. Study II. Idaho Dep. Fish and Game. Boise, Idaho. 51pp.

_____ and _____. 1988. Elk habitat security characteristics and hunting season mortality rates. Prog. Rep., Project W-160-R. Study III. Idaho Dep. Fish and Game. Boise, Idaho. 23pp.

PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH
RESEARCH COORDINATION REPORT
COEUR D'ALENE ELK ECOLOGY
PETER ZAGER, SENIOR WILDLIFE RESEARCH BIOLOGIST

STATE: Idaho **JOB TITLE:** Statewide Wildlife Research
PROJECT: W-160-R-15
SUBPROJECT: 23 **STUDY NAME:** Coeur d'Alene Elk Ecology
PERIOD COVERED: July 1, 1987 to June 30, 1988

ABSTRACT

Study No. I. Study area selection.

Unit 4, essentially the Coeur d'Alene River drainage North of I-90, was selected as the project study area because it supports a major elk population, provides significant recreational opportunity, is dominated by heavy vegetative cover types, and has proximate areas of high and low road density. This area should provide some good data to compare with the Clearwater elk project.

Study No. 1. Bull elk habitat use.

Eighteen bull and 13 cow elk were radio-collared during April-June 1988 in the Coeur d'Alene River drainage. One bull calf dropped its collar, leaving 17 marked bulls. These animals are being monitored periodically to determine elk habitat use. Delineation of habitat components using aerial photographs was initiated.

Study No.2. Elk sightability.

This project is scheduled to begin in the Coeur d'Alene River area in FY 90. The project has been inactive.

Study No. 3. Habitat security characteristics and hunting season mortality rates.

Thirty-one elk have been radio-collared in the Coeur d'Alene River drainage and will be monitored intensively during the hunting seasons to provide data for this study.

A draft proposal was developed to determine hunter density, distribution, and strategy, and to evaluate the relative roles of cover, topography, and access on elk mortality rates. Field work is scheduled to begin with the 1988 hunting seasons.

Study No. 4. Mandatory check data analysis.

Region 1's mandatory check data was summarized. It was found that compliance remains greater than 70%, providing the Department with a large and unique data set. More than 1,500 elk were checked annually, 1982-86. The percent yearling bulls in the harvest ranged from 28% to 43.3%; percent adult cows ranged from 24.5% to 38.8%. Bull survival ranged from .509 to .625, whereas cow survival ranged from .689 to .845. Population modeling showed increasing populations when cow harvests were held at 5% and bull harvests ranged up to at least 49%. Model populations declined when bull harvest was held constant at 27% and cow harvest exceeded 7%.

Meetings and Presentations

Meetings

Date	Name	Location
Jul	Elk sightability model	Moscow
Jul	USFS - Challenge Grant Prog.	Coeur d'Alene
Jul	IPNF	Coeur d'Alene
Aug	Mandatory check data	Moscow
Aug	Centennial Trail Comm. Mtg.	Coeur d'Alene
Aug	IDFG Biol. Mtg.	Sun Valley
Sep	Hunter aspects of elk proj.	Moscow
Sep	Evaluating elk habitat	Pullman, WA
Sep	Priest Lake white-tailed deer proj.	Moscow
Sep	Council of the NW Sec. Wildlife Soc.	Moscow
Oct	MDFWP	Missoula, MT
Oct	USFWS	Moise, MT
Oct	Potlatch Corp.	Lewiston
Oct	NW Section of Wildlife Soc. Mtg.	Moscow
Oct	White-tailed deer pregnancy testing	Moscow
Oct	USFS - CDA elk project	Coeur d'Alene
Nov	Habitat evaluation procedures	Moscow
Nov	Hunter density, strategy proj.	Moscow
Nov	IDFG Reg. Staff	Coeur d'Alene
Dec	Bureau of Wildlife/Reg. I Coord. Mtg.	Coeur d'Alene
Dec	IDFG	Boise
Dec	White-tailed deer pregnancy testing	Moscow
Dec	Int. Mtn. Caribou Tech. Comm. Mtg.	Spokane, WA
Dec	ESRI - GIS	Boise
Jan	USFS - GIS	Coeur d'Alene
Jan	USFS - Challenge Grant possibilities	Coeur d'Alene
Jan	Reg. 1 Fishing Regulations Mtg.	Coeur d'Alene
Jan	IDFG Black Bear Species Plan	Lewiston
Feb	IDFG	Boise
Feb	IDWR - GIS	Boise
Mar	IDFG elk sightability model	Kamiah
Mar	Reg. I/Bur. of Adm. Coord. Mtg.	Coeur d'Alene
Mar	USFS - elk research	Coeur d'Alene
May	In-Service Training School	Boise
Apr	NW Sec. Wildlife Soc. Mtg.	Coeur d'Alene

Reports, Publications, Articles: (Peter Zager)

Zager, P. 1988. Elk habitat in the northwestern United States. in Land Classification Based on Vegetation: Applications for Resource Management. U.S. Dep. Agric., For. Serv. (in press).

_____. (ed.) 1986. Proceedings from the International Conference on Bear Research and Management. Vol. 6. 226pp.

_____. (ed.) 1987. Proceedings from the International Conference on Bear Research and Management. Vo. 7. 390pp.

_____, and L. Kuck. 1988. Elk habitat security characteristics and hunting season mortality rates. Prog. Rep., Project W-160-R, Study III. Idaho Dep. Fish and Game, Boise.

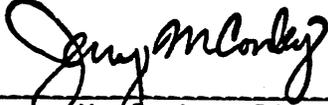
_____ and _____. 1988. Elk sightability. Prog. Rep., Project W-160-R, Study II. Idaho Dep. Fish and Game, Boise.

_____ and _____. 1988. Bull elk habitat use. Prog. Rep., Project W-160-R, Study III. Idaho Dep. Fish and Game, Boise.

_____ and _____. 1988. Mandatory check data analysis. Prog. Rep., Project W-160-R, Study IV. Idaho Dep. Fish and Game, Boise.

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