

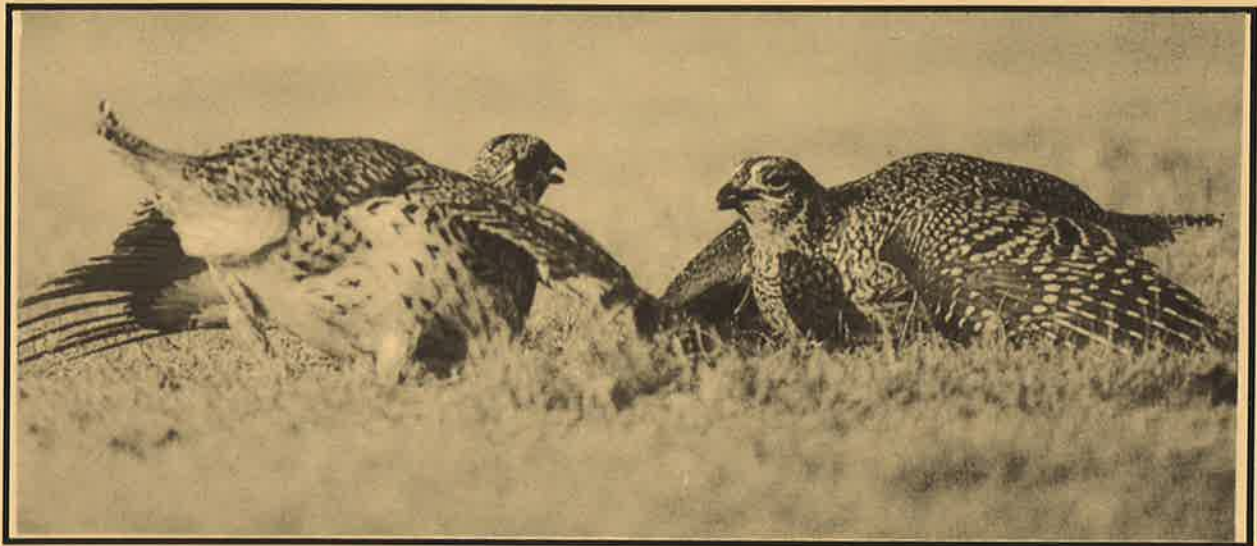
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PRAIRIE GROUSE TECHNICAL COUNCIL

PROCEEDINGS

21st BIENNIAL MEETING



August 28-31, 1995

Medora, North Dakota

Jerry Kobriger, Compiler

PRAIRIE GROUSE TECHNICAL COUNCIL

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Cover Photo By: Craig Bihrlle
North Dakota Game and Fish Department

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THE HAMERSTROM AWARD

In recognition of exemplary contribution towards prairie grouse conservation.

This award was established in honor of Fred and Fran Hamerstrom, pioneers of prairie grouse research and management. It will recognize an individual(s) and organizations(s) who have made significant contributions in prairie grouse research and management or other support programs which have enhanced the welfare of one or more species of prairie grouse in a particular state, province, or region. The contribution should be evidenced by a sustained effort over at least 10 years. The contribution may be related to research, management activity, promotion of an integrated program or some combination hereof. The relative importance given to these three categories is the prerogative of the Awards Committee but it should be based on how it has helped the overall welfare and survival of prairie grouse.

AWARDS HISTORY

<u>YEAR</u>	<u>INDIVIDUAL AWARD</u>	<u>GROUP AWARD</u>
1991	Fran Hamerstrom, WI	
1993	Don Christisen, MO	Nature Conservancy
1993	Ron Westemeier, IL	
1995	Dan Svedarsky, MN	
1995	Jerry Kobriger, ND	

AGENDA
21ST MEETING
PRAIRIE GROUSE TECHNICAL COUNCIL
SCHAFFER AUDITORIUM, MEDORA COMMUNITY CENTER
MEDORA, NORTH DAKOTA 28-31 AUGUST 1995

Monday, 28 August

6:00-9:00 PM Registration, Harold Schafer Heritage Center
Suds and Social at the Patio Bar

Tuesday, 29 August

7:30 AM Registration, Medora Community Center Hallway

8:30-8:45 AM Welcome, Keith Trego, Deputy Director, North Dakota
Game & Fish Department, Schafer Auditorium
Announcements, Jerry Kobriger, Chairman PGTC

SESSION I

8:45 AM GREATER PRAIRIE CHICKENS: MODERATOR - BILL VODEHNAL,
NEBRASKA GAME AND PARKS COMMISSION

8:45-9:05 AM Prairie Chicken Re-introduction in Southern
Iowa. Mel Moe, Iowa Dept. of Natural Resources.

9:05-9:25 AM Nest and Brood Habitats Used by Translocated
Greater Prairie Chickens in Illinois. Ron
Westemeier, Illinois Natural History Survey.

9:25-9:45 AM Survival, Movements, and Habitat Use of Greater
Prairie Chickens Translocated to North Dakota.
Pat Beringer and John Toepfer, University of
Wisconsin, Stevens Point.

9:45-10:05 AM Results of Prairie Chicken Re-introductions in
North Missouri. Larry Mechlin, Missouri
Conservation Commission.

10:05-10:20 AM BREAK

10:20-10:40 AM The Prairie Chicken in Oklahoma: a Status
Report. Russ Horton, Oklahoma Dept. of Wildlife
Conservation.

10:40-11:00 AM Habitat Characteristics of the Greater Prairie
Chicken in the Flint Hills of Kansas. Tom Eddy,
Emporia State University.

11:00-11:20 AM Analysis of Habitat Selection by Greater Prairie
Chickens in Central Wisconsin. Daniel Golner &
Timothy Trempe, University of Wisconsin, Stevens
Point.

11:20-11:40 AM Preliminary Look at Winter Ecology of Prairie
Chickens in Western Minnesota. Eric Rosenquist
and John Toepfer, St. Cloud State University.

11:40-12:00 AM Current Land Uses on Private Lands within
Wisconsin Prairie Chicken Range. Jim Keir,
Wisconsin Dept. of Natural Resources.

12:00 NOON Chuckwagon Buffet, On Your Own!

SESSION II

1:00 SHARP-TAILED GROUSE: MODERATOR-BILL BERG, MINNESOTA DNR

1:00-1:20 PM Re-establishment of Plains Sharp-tailed Grouse
in Colorado. Ken Giesen, Colorado Division of
Wildlife.

1:20-1:40 PM Effects of Grazing Management on Sharp-tailed
Grouse in North Dakota. Kevin Sedivec, North
Dakota State University.

1:40-2:00 PM Private Lands Habitat Rehabilitation for Sharp-
tailed Grouse in Manitoba. Rick Baydack,
Natural Resources Institute, University of
Manitoba.

2:00-2:20 PM Sharp-tailed Grouse Status and Future in
Wisconsin. Dave Evenson, Wisconsin Dept. of
Natural Resources.

2:20-2:40 PM Status of Sharp-tailed Grouse on the Devils Lake
Sioux Indian Reservation. Douglas Lohnes and
John Toepfer, Little Hoop Community College.

2:40-3:10 PM BREAK

3:10-3:35 PM A Conservation Program for Columbian Sharp-
tailed Grouse in Idaho - A Model for Other
States? Alan Sands and Jack Connelly, BLM and
Idaho Wildlife Dept.

3:35-4:05 PM Brushland Management and Biomass Harvesting
Research in Minnesota. Bill Berg and Don
Christian, Minnesota Dept. Natural Resources.

4:05-4:35 PM Vegetative Types of North Dakota. Bill Barker,
North Dakota State University.

- 4:35-5:00 PM Vegetation Exclosures in Southwestern North Dakota. Lee Manske, North Dakota State University.
- 5:00-6:30 PM Free Time
- 6:30 PM PITCHFORK FONDUE, AMPHITHEATRE PICNIC SITE
- 8:30 PM MEDORA MUSICAL, MEDORA AMPHITHEATRE

Wednesday, 30 August

- 8:00 AM FIELD TRIP: MEET IN BADLANDS MOTEL PARKING LOT
- 5:00 PM RETURN FROM FIELD TRIP
- 6:00 PM NO HOST SOCIAL HOUR
- 7:00 PM AWARDS BANQUET, DEMORES EAST ROOM
"BULLY" PERFORMANCE BY TEDDY ROOSEVELT (JOHN KUNICK) IN SCHAFFER AUDITORIUM AT 8:15 PM

Thursday, 31 August

- 8:00-9:00 AM Business Meeting, Schafer Auditorium
- SESSION III
- 9:00 AM PRAIRIE CHICKENS AND HABITAT: MODERATOR-RICK BAYDACK, UNIVERSITY OF MANITOBA
- 9:00-9:20 AM Thirty years of Lesser Prairie Chicken Lek Surveys in Kansas. Randy Rodgers, Kansas Dept. of Wildlife and Parks.
- 9:20-9:40 AM Partners for Prairie Wildlife. Sharron Gough, Missouri Conservation Commission.
- 9:40-10:00 AM Break
- 10:00-10:20 AM Insects May be Key to Prairie Chicken Abundance. Clifton Griffin, Texas A&M University.
- 10:20-10:40 AM Attwater's Prairie Chicken Population and Habitat Viability Analysis. Michael Morrow, Dennis Brown, Stephen Labuda, Rochelle Plasse, Nova Silvy. Attwater Prairie Chicken NWR.
- 10:40-11:00 AM Attwater's Prairie Chickens - Captive Population Update. Bob Smith, Fossil Rim Wildlife Center.

- 11:00-11:20 AM Conservation Genetics of Attwater's Prairie Chicken. Nova Silvy, Texas A&M University.
- 11:20-11:40 AM Implications of Disease as Possible Reason for Decline of Attwater's Prairie Chicken. Nova Silvy, Texas A&M University.
- 11:40-12:00 AM Where Have All the Prairies (In Coastal Texas) Gone? Stephen Labuda, USFWS, Attwater Prairie Chicken NWR.
- 12:00 NOON Final Announcements and closing of meeting
Lunch on your own as you head homeward.
- HAVE A SAFE TRIP AND THANKS FOR COMING!!!

ABSTRACTS PRAIRIE CHICKENS

SURVIVAL, MOVEMENTS AND HABITAT USE OF GREATER PRAIRIE CHICKENS TRANSLOCATED TO NORTH DAKOTA

Patrick S. Beringer, University of Wisconsin-Stevens Point, Stevens Point, WI 54481

John Toepfer, P.O. Box 387, Fort Totten, ND 58335

Abstract: Movements, survival, and habitat use of greater prairie chickens (*Tympanuchus cupido pinnatus*) translocated, during summer, to the Bry Wildlife Management Area, North Dakota, were documented from 1992 through 1994. Sixty-four prairie chickens (26 cocks, 38 hens) were released during the summers of 1992 and 1993 (22 hens and 15 cocks were radio-marked). Although survival of radio-marked prairie chickens during the first month post release was good during 1993 (76.5%) and 1993 (80%), no radio-marked prairie chickens released during the summer of 1992 survived to the summer of 1993. Four radio-marked prairie chickens survived for at least one year following the 1993 release.

Seventy-five percent of all cock and 77% of all hen relocations during 1992 were within 1.6 km of the release site. An analysis comparing dispersal distances between cocks and hens indicated that winter was the only season that showed a significant difference ($p=.0074$) with hens traveling farther than cocks. Sixty-eight and 55% of all cock and hen relocations for prairie chickens released during 1993 were within 1.6 km of the release site respectively. Significant differences between sexes were found during summer ($p=.0016$) and winter ($p<.0001$). Distances between consecutive locations were greatest during winter (range 713-1432 M) when birds moved farther to locate food, and smallest during summer (range 360-518 m) during the wing molt. Home ranges were greatest during winter (range 571-4,804 ha) and smallest during summer (range 9-3, 464 ha). No significant differences in home range were found between sexes.

The grass/forb habitat type was selected by cocks and used in proportion to its availability by hens. Monotypic grassland was avoided by cocks and used in proportion to its availability by hens. Class I vegetation (0-28 cm) was selected by both cocks and hens. Cocks used Class III (26-50 cm) vegetation less than its availability and hens used it in proportion to its availability. Class IV (>51 cm) vegetation was selected by both cocks and hens.

Nesting success was 20% during 1993 with 1 of 5 nests hatching. Two nests were flooded and 2 were depredated. Three of four nests hatched during 1994. All nests were in Class III (26-50 cm) grass/forb habitat.

HABITAT CHARACTERISTICS OF THE GREATER PRAIRIE-CHICKEN IN THE FLINT HILLS OF KANSAS

Tom Eddy, Division of Biological Sciences, Emporia State University

Abstract: The habitat of the greater prairie-chicken, *Tympanuchus cupido* in the Flint Hills of Kansas is characterized as native tallgrass vegetation in a complex mosaic of range condition classes, range sites, and small interior and peripheral agricultural fields of wheat, sorghum, soybeans, and domestic hay crops. Five specific habitat use categories were identified and described based on 87 observations of prairie-chickens from 1991 to 1994 in a five county area. Booming grounds were on claypan range sites in poor condition and were dominated by short grasses and annual forbs. The vegetation height-density index was 0.7, the canopy coverage was 80% and use was limited to the spring and fall. Nesting areas were on loamy upland sites in fair range condition where tallgrass species dominated. The vegetation height-density index was 1.3, canopy coverage was 98% and use was limited to the spring. Brooding areas were on loamy upland range sites in good range condition and characterized by tall and mid grasses with annual and perennial forbs. The vegetation height-density index was 1.8 and canopy coverage was 109%. Brooding areas were used by birds during spring and early summer. Feeding areas were on loamy upland range sites in good range condition and in small agricultural fields. The height-density index on feeding areas was 1.5 and the canopy coverage was 113%. Use of agricultural crops was seasonal. Roosting and loafing areas were located on loamy range sites in fair range condition in mid and tallgrass habitat. The height-density index was 1.2 and the canopy coverage was 101%. Use by birds was year round. Land use practices and range site variation have produced an interspersed of habitat elements that can support a sizeable population of the greater prairie-chicken.

ANALYSIS OF HABITAT SELECTION BY GREATER PRAIRIE CHICKENS IN CENTRAL WISCONSIN

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Timothy J. Trempe, the College of Natural Resources, University of Wisconsin,
Stevens Point, WI 54481 (715) 346-2025.

Dr. James W. Hardin, the College of Natural Resources, University of Wisconsin,
Stevens Point, WI 54481 (715) 346-4178.

Dr. Lyle E. Nauman, the College of Natural Resources, University of Wisconsin,
Stevens Point, WI 54481 (715) 346-4109.

Abstract: The range of the greater prairie chicken (*Tympanuchus cupido pinnatus*) in central

Wisconsin consists of a mosaic of public and private lands, and is impacted by a variety of land use practices. A radio telemetry study, conducted during 1993 and 1994, was used to determine prairie chicken habitat selection and use in relation to management practices on the Buena Vista Grassland Management Area in Portage County, Wisconsin. Females were monitored during prenesting, nesting, brood rearing, and post brood rearing periods. Males were monitored during all seasons. A geographic information system was used to correlate bird locations with management practices on public lands. Identification of variables associated with specific management practices may be of value in developing future management strategies.

INSECTS MAY BE KEY TO PRAIRIE CHICKEN ABUNDANCE

**Clifton Griffin, Department of Wildlife and Fisheries
Sciences, Texas A&M University, College Station, TX 77843**

**Nova J. Silvy, Department of Wildlife and Fisheries
Sciences, Texas A&M University, College Station, TX 77843**

Abstract: Declines in Attwater's prairie chicken (*Tympanuchus cupido attwateri*) numbers have been linked to loss of habitat, but recently, numbers also have dropped dramatically in areas where habitat loss has not occurred. We link Attwater's prairie chicken declines to insect abundance by demonstrating the amount of insect biomass necessary to maintain chick growth. Data were collected on insect consumption by Attwater's prairie chicken chicks at the Small Upland Research Facility located at Texas A&M University during the 1995 breeding season. Chicks housed in a controlled environment consumed an average of 16.2 grams of grasshoppers daily. This figure was applied to wild birds and necessary insect availability numbers for chick growth over a 4-week period were quantified. In recent years, insect abundance in Attwater's prairie chicken habitats may have been impacted by population increases and invasion by cattle egrets (*Ardea ibis*) and imported fire ants. Increased numbers of insectivorous species and individuals have contributed to the loss of insects, which are the primary food source for juvenile prairie grouse. This is a possible reason for the recent declines in Attwater's prairie chicken numbers.

THE PRAIRIE CHICKEN IN OKLAHOMA: A STATUS REPORT

**Russ Horton, Oklahoma Department of Wildlife Conservation, Rt 2, Box 238,
Norman, OK 73071**

Abstract: Both Lesser and Greater prairie chickens are found in Oklahoma. The lesser prairie chicken is found in Beaver, Ellis, Harper, Roger Mills, Texas and Woodward counties in

northwest Oklahoma. The Greater prairie chicken is found in Craig, Kay, Mayes, Noble, Nowata, Osage, Ottawa, Pawnee, Rogers, Wagoner and Washington counties in north-central and northeastern Oklahoma. Booming grounds are surveyed in April to determine booming ground density, and average number of males per active lek. Booming male surveys were initiated in 1962, and the lek density determination routes were established in 1982. The average number of booming male greater prairie chickens has steadily declined from a high of 26.1 males/active ground in 1968 to an all-time low of 5.7 males/ground in 1995. Likewise, booming ground density peaked at 0.41 grounds/square mile in 1991, and reached an all-time low of 0.14 grounds/square mile surveyed in 1995. Lesser prairie chickens have shown similar trends; booming ground densities have ranged from 0.33 grounds/square mile surveyed in 1988, to 0.07 grounds/square mile in 1994. Average number of booming lesser prairie chicken males per active ground peaked at 16.5 males/ground in 1975 and reached a low of 4.6 males/ground in 1995. The current firearms hunting season is nine days length, opening on the second Saturday of November and running through the third Sunday of November. An archery only season is open the full month of December. A telephone survey is used to determine hunter success and a mail survey is used to determine harvest composition. Over the eight year period from 1986-1993 estimated number of hunters has decreased 70.9% and estimated harvest (greater and lesser combined) has decreased 85.3%.

STATUS OF GREATER PRAIRIE CHICKEN HABITATS ON THE SHEYENNE NATIONAL GRASSLAND IN NORTH DAKOTA

Clinton McCarthy, Custer National Forest, P.O. Box 2556, Billings, MT 59105

**Greg Link, North Dakota Game and Fish Department, Spiritwood Field Station, Rt. 1,
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Tim Pella, Custer National Forest, P.O. Box 946, Lisbon, ND 58054

Abstract: The greater prairie chicken population on the Sheyenne National Grassland (SNG) is the last remaining extant population in the state of North Dakota. Prairie chicken booming ground counts indicate a long-term downward trend of prairie chickens on the SNG. Males counted on booming grounds have declined from a high of approximately 400 males in the early 1980s, to a 20 year low of 84 males in 1994. Males on booming grounds were up slightly in 1995 (95 males).

Three prairie chicken habitat assessments were done for areas on and adjacent to the SNG. Cover class determinations were based on 83 Robel height/density transects conducted on the SNG in the fall of 1994. These were:

- 1) An assessment of the Durler/Venlo Allotment Block based on mapped vegetation communities, and the suitability and availability of these communities for providing

residual nesting cover.

- 2) An assessment of habitats within 1.6 km of 14 prairie chicken booming grounds on the SNG. This assessment is based on cover class mapping efforts. No differentiation was made between nesting and winter roosting cover.
- 3) A habitat suitability index (HSI) assessment using the prairie chicken HSI model (Prose 1985), HSI analyses were performed for Durler/Venlo Block (3,645 ha), areas within 1.6 km of booming grounds for 14 booming grounds (11,322 ha), and a large block area that includes the western portion of the Sheyenne National Grassland and adjacent private lands (12,437 ha).

Suitability/availability assessments for Durler/Venlo Block suggest that only 1,078 ha (30%) of the total habitat is capable of providing suitable nesting cover for prairie chickens. Robel cover class data identified 250 ha (7%) of the Durler/Venlo Block that provides greater than 1.5 dm at 100% VOM. Lowland habitats in Durler/Venlo Block were considered unsuitable for nesting habitat because they are generally too wet in the spring to provide nesting habitat.

Cover class data for areas within 1.6 km of booming ground centers identified 1618 ha (14%) providing greater than 1.5 dm at 100% VOM. No differentiation was made between winter and nesting cover. A high percentage of this area are lowland swales that probably do not function as nesting cover.

HSI model applications for the Durler/Venlo Block, 14 booming grounds, and the large block area resulted in values of 12%, 26% and 24%, respectively, of these areas meeting optimal nesting cover for prairie chickens. Again, the booming ground and large block area analyses did not differentiate between winter and nesting and winter roosting cover. The Durler/Venlo Block analysis is based on vegetation communities capable of meeting nesting cover requirements for prairie chickens. All values resulted in an HSI score of 0. Residual nesting cover is considered the primary limiting factor for prairie chickens on the SNG. This is consistent with the results of other studies.

Recent changes in environmental conditions were discussed relative to the poor habitat ratings and population declines. These include: leafy spurge encroachment, invasion of native and exotic woody species due to fire control, increase livestock sizes on the SNG (hence increased forage utilization), use of lowland swales as primary range in determining stocking capacities for livestock, increased intensity of agricultural development on adjacent private lands that limits the suitability of these lands for prairie chicken winter and summer habitats, use of grazing systems (in this case twice over systems) that may not provide residual nesting cover, conversion of warm season grass communities to short-grass (eg: blue grama) and cool season grass communities, and recent catastrophic weather conditions including a record snow-pack year and above average spring precipitation patterns that resulted in flooding of nesting habitats.

Recovery of the prairie chicken on the SNG should be viewed in light of the tall grass prairie system as a whole. The SNG hosts one of three remaining meta-populations of western prairie-fringed orchid, 35 rare plant species, several species of rare butterflies, portions of two of the rarest remaining ecosystems (oak/savannah and tall-grass prairie). Conservation measures should consider climatic factors, current and past vegetation patterns, and the role of processes such as herbivory and fire. The recovery of the tall-grass prairie system on the Sheyenne will also benefit the greater prairie chicken as well as numerous other ecosystem components and processes.

REINTRODUCTION OF GREATER PRAIRIE-CHICKENS TO NORTH MISSOURI

Larry Mechlin, Missouri Department of Conservation, 1110 S. College Ave.,
Columbia, MO 65201

Abstract: Greater Prairie-chicken populations probably peaked in Missouri in the mid-1800s (Christisen 1985) about the time of the civil war. This statewide peak population has been estimated anywhere from hundreds of thousands to millions. This population declined to a winter estimate in 1934 made by Bennitt and Nagle of only 5,000 birds. Schwartz (1945) estimated that by 1939 the state's spring population had quickly climbed to 15,000 before it began a rather steep decline. The decline was most noticeable in North Missouri. The largest and most dense range in the state that extended from the Iowa line south through Putnum, Sullivan and into Linn county went from an already declining population of 3,100 birds in 1941 to near 0 by the mid-1950s.

A combination of factors may have come into play making this decline so dramatic. Habitat destruction played a role with the intensification of agriculture following World War II. Attempts were made to reestablish populations with reintroductions in Macon (1965, 1966), Chariton (1971, 1973) and Harrison (1973) counties, but they were not successful. These releases involved small numbers of birds and were conducted without the benefit of telemetry for evaluation.

In recent years grassland habitat has improved greatly in the historic prairie-chicken range within Sullivan County. Many cultivated fields have been returned to pastures and haylands in addition to a high CRP set aside. This habitat improvement, the availability of 11 gram necklace transmitters (McKee 1995) to aid with evaluation and recent successes by Iowa with reintroductions provided support to attempt reintroductions once again in Missouri.

Prairie-chickens were trapped on booming grounds in April of 1993 and 1994 east of Manhattan, Kansas. Trapping was done with walk-in funnel traps (Toepfer and Newell 1987) and a modification of this system using traps with remote releases. One hundred prairie-chickens in 1993 (29 males & 21 females with transmitters) and one hundred in 1994 (22 males & 31 females with transmitters) were released on four different sites in Sullivan County.

Kaplan Meier survival rates (Pollock et al. 1989) computed from time of release in April until late August were .73 for all birds in 1993 and .34 in 1994. In both years most male mortality occurred in the first five days of release after which survival was high. In both years female mortality occurred on a linear slope from release to apx. mid-June after which survival was high.

Birds were highly mobile with two hens in 1993 nesting 31 and 21 miles from their release site. In 1994, two hens nested approximately 25 miles and four other 15 miles from their respective release sites. One of six nests located in 1993 and 12 of 16 in 1994 hatched.

In the spring of 1995 four booming grounds were located with 10, 12, 16 and 20 males displaying on them regularly. From the location of nests and activity centers away from these grounds, other small booming grounds are expected to exist.

REINTRODUCTION OF PRAIRIE CHICKENS TO SOUTHERN IOWA

Mel Moe, Iowa Department of Natural Resources, Mount Ayr, Iowa

Ed White, Iowa Department of Natural Resources, Russell, Iowa

Abstract: A prairie chicken reintroduction program was initiated in Iowa in 1987. Between 1987 and 1994, a total of 557 prairie chickens were translocated from Kansas to four release sites in south central Iowa. All of these birds were banded and 14 males were equipped with radio transmitters. Band returns and radio tracking showed that, though the prairie chickens sometimes ranged widely, they seemed to have a good ability to locate distant booming grounds.

During the spring of 1995, 75 males prairie chickens were observed on 10 booming grounds in the region, and hens were noted on or near each of these booming rounds. Forty of the males were found on 7 booming grounds located in 4 Iowa counties, while 35 were observed on 3 booming grounds in adjacent Harrison County, Missouri. All of the booming rounds were located in areas of at least 50% grassland, and the highest numbers were found on sites with at least 2,000 acres of contiguous grassland.

ATTWATER'S PRAIRIE CHICKEN POPULATION AND HABITAT VIABILITY ANALYSIS

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Stephen E. Labuda, Jr., Attwater Prairie Chicken National Wildlife Refuge, P.O. Box 519, Eagle Lake, TX 77434

Rochelle Plasse, Houston Zoological Gardens, P.O. Box 66387, Houston, TX 77266

Nova J. Silvy, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77843

Bob Smith, Fossil Rim Wildlife Center, P.O. Drawer 329, Glen Rose, TX 76403

Abstract: Populations of the endangered Attwater's prairie chicken (*Tympanuchus cupido attwateri*) have declined precipitously in recent years because the coastal prairie habitat of this species is virtually gone. Remaining coastal prairie is highly fragmented, leading to isolation of small prairie chicken subpopulations. In January 1994, a group of biologists, managers, and decision makers met in a workshop format to conduct a population and habitat viability analysis for this critically endangered species. The objectives for this analysis were (1) assimilate existing ecological information about the Attwater's, (2) quantify the extinction risk using stochastic simulation models based on available demographic information, (3) quantify potential genetic loss in isolated populations, (4) enumerate continued threats, and (5) formulate solutions for reducing the extinction probability. Using demographic parameters observed in recent years, simulation results indicated a 98 and 100% probability of extinction (P_e) for Refugio and Colorado County populations, respectively. The projected mean time to extinction for these two populations were 12 and 7 years, respectively. However, model simulations indicated that P_e would drop to 0% with the continuing annual addition of 5 females/year to each population. As a result of these findings, establishment of a functional captive propagation program capable of producing stock for supplementation of wild populations was assigned the top priority for addressing short-term extinction threats. Restoration and maintenance of prairie habitat was considered essential for long-term survival.

CONSERVATION GENETICS OF ATTWATER'S PRAIRIE CHICKEN

Elizabeth A. Osterndorff, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77843.

Rodney L. Honeycutt, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77843.

Nova J. Silvy, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77843.

Abstract: High molecular weight genomic DNA was isolated from chorioallantoic membranes (CAMs) of hatched Attwater's prairie chicken (*Tympanuchus cupido attwateri*, APC) eggshells and were used in DNA fingerprint analyses. Identical fingerprint profiles were produced by CAM DNA and brain-tissue DNA from the same individual. CAM DNA provides a non-invasive means of genetically sampling avian species. DNA fingerprint data also were used to assess captive and natural populations of APC. DNA fingerprints were used to determine the sex and identify the mother of captivity produced birds. Levels of genetic variability in the 3 remaining natural APC populations indicated at least 2 of the populations had suffered a reduction in genetic variability. However, this did not appear to be a major factor contributing to the subspecies decline.

IMPLICATIONS OF DISEASE AS POSSIBLE REASON FOR DECLINE OF ATTWATER'S PRAIRIE CHICKEN

Jonny R. Purvis, Department of Wildlife and Fisheries Sciences,
Texas A&M University, College Station, TX 77843.

Nova J. Silvy, Department of Wildlife and Fisheries Sciences,
Texas A&M University, College Station, TX 77843.

Abstract: It has been suggested that disease, especially avian cholera (*Pasteurella multocida*) and the roundworm (*Trichostrongylus tenuis*), may be responsible for the continuing decline of the endangered Attwater's prairie chicken (*Tympanuchus cupido attwateri*). Sympatric geese, northern bobwhite, and Attwater's prairie chicken were examined for endoparasites, hemoparasites, and serologically tested for 8 infectious diseases. Geese harbored 3 cestode, 7 nematode, and 3 trematode species. Northern bobwhite harbored 1 cestode, and 4 nematode species. Attwater's prairie chickens had 2 nematodes including *T. tenuis* which was found in both geese and northern bobwhite. All hematologic tests were negative, however, quail and Attwater's prairie chicken had positive antibodies for avian cholera. Several thousand geese had died from avian cholera prior to this study. Captive Attwater's prairie chickens at Texas A&M University contacted reticuloendotheliosis virus (REV). One adult male Attwater's prairie chicken in Refugio County had positive antibodies for REV. It is recommended that further examination of Attwater's prairie chicken, sympatric northern bobwhite, and wild turkey (*Meleagris gallopavo*) for disease agents be conducted. Research on pathology of disease agents is needed to determine the effects of these diseases on Attwater's prairie chicken.

THIRTY YEARS OF LESSER PRAIRIE CHICKEN LEK SURVEYS IN KANSAS

Randy Rodgers, Kansas Department of Wildlife & Parks, Hays, KS 67601

Abstract: Spring lesser prairie chicken populations have been monitored in Kansas along four, 20-square-mile survey routes since 1964. Additional routes were gradually added bringing the total to ten by 1991. Estimated population densities along these survey routes have reflected a variety of land-use changes over three decades. Survey indices from routes situated in areas of sandsage prairie that has undergone substantial conversion to center-pivot irrigated cropland have shown extreme annual variations. Agricultural conversion to irrigated cropland has clearly displaced lesser prairie chickens and caused inordinately high densities, albeit temporarily, on adjacent intact sandsage prairie. A moratorium on installation of additional irrigation wells instituted in 1980 halted this form of destruction of Kansas' remaining sandsage prairie. Sandsage was also extensively treated with the herbicide 2, 4-D on the Cimarron National Grasslands from 1978 to 1984 with probable negative effects on lesser prairie chickens and other breeding birds. Lesser prairie chicken indices declined sharply on virtually all Kansas survey routes in the 1990s, including nonsandsage habitats, and have reached all-time lows. This recent decline appeared to have been precipitated by a series of weather extremes. Concern was expressed that Kansas' now-fragmented lesser prairie chicken populations may be less resilient to such weather extremes or to man-induced threats and that population recovery may be slow, if it occurs at all.

A PRELIMINARY REPORT ON THE WINTER ECOLOGY OF THE GREATER PRAIRIE CHICKEN (*TYMPANUCHUS CUPIDO PINNATUS*) IN NORTHWEST MINNESOTA

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Abstract: From 1992-1995 over 250 greater prairie chickens (*Tympanuchus cupido pinnatus*) were radio-marked and monitored in northwest Minnesota. Of these, 170 were monitored during the winter to document survival, habitat use, movements and winter distribution. Winter survival was 53.2% (17 of 32), 76.5% (52 of 68) and 88.5% (62 of 70) respectively for the years 1992-1995 (Mean = 72.7%). The increase in survival from 1992 to 1995 may be due to a decrease in the number of predators.

The accessibility of food was a major factor that influenced winter movements. Flocks of 30 to 40 birds were common in feeding areas, with some fields containing over 200 birds. Flock sizes in night roosting areas were much smaller, suggesting that larger flocks in feeding areas were concentrations of several small flocks. Small grains and sunflowers were the preferred food. Where available standing corn was used only when other food sources were covered by snow. Budding was observed occasionally but did not appear to be an important food source. Seasonal ranges for hens were larger than for cocks. Movements from nesting to wintering

areas greater than 16 km (10 mi.) were common for hens, while cocks remained within 6.4 km (4 mi.) of their home booming ground. Daily movements within the winter areas were small, especially during periods of extreme cold. Local movements centered around feeding areas with suitable grassland cover nearby for day and night roosting. Movements between feeding areas, however, often covered several kilometers.

Several habitat types were used for night roosting and loafing. Conservation Reserve Program (CRP) lands consisting of primarily brome (*Bromus inermis*) and alfalfa (*Medicago sativa*) were used when snow conditions permitted snow burrowing. Areas with forbs, particularly alfalfa and goldenrod (*Solidago* spp.), appeared to provide the best snow burrowing conditions. Although native prairie areas received high use in the spring and summer, winter use was low. Native prairie vegetation became packed down by snow and provided poor snow burrowing conditions. Although readily available, areas of herbaceous vegetation associated with willows (*Salix* spp.) were used only occasionally. Birds were rarely found night roosting under willow branches, but were found in the herbaceous vegetation associated with willow complexes. Herbaceous vegetation within willow complexes tended to accumulate snow creating better snow burrowing conditions.

Based on our preliminary observations the presence or absence of winter food along with sufficient night/day roosting cover appear to be the most significant factors influencing winter survival, movements and distribution of prairie chickens in northwest Minnesota.

ATTWATER'S PRAIRIE CHICKEN CAPTIVE POPULATION UPDATE: YESTERDAY, TODAY, AND TOMORROW

**Bob Smith, Avian Coordinator, Fossil Rim Wildlife Center, Route 1, Box 210,
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Abstract: The wild population of Attwater's Prairie Chicken (*Tympanuchus cupido attwateri*) had a major crash during the winter of "94/95". To insure the survival of the species in the wild, a captive population was begun by the Attwater's Prairie Chicken Recovery Team in 1992 to produce young birds for future release. This year the first F1 birds were released in the wild.

The captive population started in 1992 consisted of only 5 birds from only one of the remaining 4 populations. Today the captive population has grown to 100 birds representing all 4 of the wild sub populations. Today there are only 3 sub populations remaining with an estimated 66 birds. A review of captive management techniques used at Fossil Rim, Texas A&M and the Houston Zoo will be discussed as well as what we have learned so far, along with future plans and research goals.

NEST AND BROOD HABITATS USED BY TRANSLOCATED GREATER PRAIRIE- CHICKENS IN ILLINOIS

Ronald L. Westemeier, IDNR, Illinois Natural History Survey, Effingham, Illinois

Roger W. Jansen, IDNR, Illinois Natural History Survey, Effingham, Illinois

Scott A. Simpson, IDNR, Division of Natural Heritage, Newton, Illinois

Abstract: Illinois has completed 4 of 5 proposed translocations of non-resident greater prairie-chickens intended to genetically and demographically enhance a small, isolated, and declining remnant population in Jasper County. Translocated birds originated from MN (15 hens, August 1992; 8 cocks & 4 hens, August 1993; all radio marked) and from KS (46 cocks & 50 hens, April 1994, of which 6 cocks and 23 hens were radioed; 48 cocks & 50 hens, April 1995). For nesting, 18 hens showed selection for brome, redtop, and timothy, but avoided wheat stubble-legumes, mixed grasses, grass forbs, and restored prairie grasses ($P < 0.001$). For fields in which 11 hens successfully nested, visual obstruction readings (VORs in dm \pm SE) averaged 2.0 ± 0.2 in late March and 4.0 ± 0.1 about 1 June. After nest termination, VORs at successful nests averaged 4.6 ± 0.3 , and 4.4 ± 0.3 at 5m away in 4 directions (N,S,E,W); neither set of VORs differed from those taken for 4 depredated nests ($P > 0.05$). Egg quality was high. Broods were successfully reared from 3 of 4 hatches by radioed MN hens and from 3 of 7 hatches by radioed KS hens. Although all hatches occurred on sanctuaries and MN hens reared their broods almost exclusively on sanctuaries, KS brood hens used private land 65% of the time. Major habitats successfully used by individual broods included newly seeded grass-legumes, recently burned brome, and annual weeds (particularly *Setaria* spp.) with scattered legumes. No-till soybeans were heavily used by 4 broods, but losses of 2 broods were associated with repeated spraying of that habitat; another brood loss appeared associated with no-till corn. Quality brood habitats were essentially bare at the beginning of the 1994 growing season, but by hatching time they provided screening cover with VORs ranging from 2.0 - 4.0 dm, an abundance of grasshoppers, and ease of movement for broods. Although sanctuary patches as small as 1 ha provided important habitats, patches ≥ 4 ha may be more advantageous. No differences were noted between spring and summer releases relative to achieving our goals. Censuses on the release area increased from a low point of 7 - 8 cocks on basically 1 booming ground in 1994, to about 60 cocks on 4 well-established grounds in 1995, mostly as a result of the translocations.

ABSTRACTS SHARP-TAILED GROUSE

PRIVATE LANDS HABITAT REHABILITATION FOR SHARP-TAILED GROUSE IN MANITOBA.

Richard K. Baydack, Natural Resources Institute, University of Manitoba, Winnipeg, Manitoba, Canada. R3T 2N2.

Abstract: A private land rehabilitation program has been developed in Manitoba through the efforts of the Sharptails Plus Foundation. Sharptails Plus is a private, non-government organization, with the objective of increasing populations of sharp-tailed grouse in Manitoba. One component of Sharptails Plus is their Private Land Management Program, which is designed to assist landowners by suggesting modifications to their farming practices which improve farm profitability while also enhancing habitat for wildlife. In Manitoba, sharptail habitat has been lost in southern areas due to agricultural expansion. Habitat loss has resulted in a reduction in suitable sites for nesting and brood rearing for sharp-tailed grouse as well as many other wildlife species. The Program identifies candidate landowners, sets project objectives for habitat improvement through a Technical Advisory Committee, and evaluates effects of habitat treatments from the biological and agricultural perspective. The Technical Advisory Committee includes biologists, agrologists, and land managers working together in an interdisciplinary framework. All steps of the program must be approved by the landowner.

Three Sharptails Plus pilot demonstration projects have been initiated in Manitoba to depict the variety of techniques that landowners can use to enhance their farming operations and improve habitat. In southeastern Manitoba near Vita, the project is designed to demonstrate habitat benefits from rotational and pulse grazing and shrub plantings. At Lunder in Manitoba's Interlake, the demonstration project shows habitat benefits from aspen clearing, managed grazing, and modified hay management to increase edge and provide additional brood security. Near Plumus in the Westlake region, the project is designed to demonstrate habitat benefits of aspen control through various clearing techniques along with rotational and pulse grazing. A video presentation has been developed which documents the positive feelings that have developed between the various project partners. Further work is on-going to develop a series of videos which landowners could borrow from Department of Agriculture offices which explain different habitat management options available to them.

SHARP-TAILED GROUSE STATUS AND FUTURE IN WISCONSIN

Dave Evenson, Wisconsin DNR, Box 397, Cumberland, WI 54829

Abstract: This Wisconsin DNR and the U.S. Forest Service in Wisconsin are both reorganizing. Wisconsin DNR Wildlife Management budget reductions are 1.5 million per year

over the coming biennium. Oak and pine barrens and other early successional communities are recognized as being important elements in the DNR Biodiversity Report. Habitat management for barrens includes about 6,500 acres of prescribed burning, 100 acres of herbiciding, 200 acres of clearing and 200 acres of mowing. We found 459 dancing males this spring. Same site surveys were up 54% from 1994. In 1992-1994 160 to 240 hunters took 45 to 108 sharptails per year. Wisconsin will close its sharptail season in 1996 until the state has legislative authority to regulate hunter numbers. Habitat work will continue on most sites in recognition of other rare species as well as sharptails.

RE-ESTABLISHMENT OF PLAINS SHARP-TAILED GROUSE IN COLORADO

Kenneth M. Giesen, Colorado Division of Wildlife, 317 West Prospect Road, Fort Collins, Colorado.

Abstract: Plains sharp-tailed grouse (*Tympanuchus phasianellus jamesi*) historically occurred in suitable habitats along the Front Range of Colorado, primarily from Larimer County on the Wyoming border south to El Paso County, and along riparian corridors in some northeastern counties. Populations and distribution of plains sharp-tailed grouse in Colorado declined following settlement and loss of habitat due to development, livestock grazing, agricultural conversion, and fire suppression. By the 1960's plains sharp-tailed grouse populations were documented only in Douglas and Elbert counties with breeding populations estimated at 200-300 birds. This population has since declined to less than 50 breeding birds. Sharp-tailed grouse were recently reported breeding in Logan County following a transplant of greater prairie-chickens (*Tympanuchus cupido*) into the Tamarack Ranch state wildlife area, and hybrids between the two species has been documented. In 1995 several active dancing grounds were located in northern Weld County, just south of the Wyoming border. Each of these two populations has less than 50 birds.

A transplant effort totaling 168 plains sharp-tailed grouse from North Dakota and Nebraska were released east of Trinidad in Las Animas County from 1987-1989. Although documentation was poor, few grouse apparently survived more than a few months and no reproduction was observed. In 1995 Colorado transplanted 43 plains sharp-tailed grouse from Wyoming onto Raton Mesa in Las Animas County, less than 10 km from the 1987-89 release site. Severe snowstorms during the releases resulted in post-release dispersal of radiomarked grouse and high initial mortality. Released males were observed displaying 0.5 km from the release site although no reproduction was documented. Most surviving radiomarked grouse have moved 8-10 km south into New Mexico. Because habitat conditions on Raton Mesa appear suitable to sustain a population an additional transplant of 40-50 grouse is scheduled for April 1996 and should increase the chances for success.

A CONSERVATION PROGRAM FOR COLUMBIAN SHARP-TAILED GROUSE IN IDAHO - A MODEL FOR OTHER STATES?

Alan Sands, Bureau of Land Management, Boise, Idaho and John Connelly, Idaho Department of Fish and Game, Pocatello, Idaho

Abstract: A proactive program to remove threats to Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*) is currently underway in Idaho. This effort is part of a larger program to conserve 45 species of rare animals and plants in Idaho. Termed the Idaho Conservation Effort, state and regional administrators for the U.S. Fish and Wildlife, Forest Service, Bureau of Land Management, and Idaho Departments of Fish and Game and Parks and Recreation have agreed to cooperate and coordinate work to conserve these species.

Two documents are being developed which form the basis to entering into a formal Conservation Agreement. First, a Conservation Assessment outlines the species' status, trend, life history, ecology and threats to their continued existence. Second, a Conservation Strategy identifies goals and multifaceted actions needed to conserve the species. The Conservation Strategy leads to Conservation Agreement which formalizes each party's responsibilities in implementing the strategies.

By addressing the needs of Columbian sharptails using a Conservation Agreement, federal, state and private entities can retain management flexibility, reduce conflicts, improve efficiency, minimize cost, and potentially avoid the need for federal listing under the more restrictive provisions of the Endangered Species Act.

EFFECTS OF GRAZING MANAGEMENT ON SHARP-TAILED GROUSE IN NORTH DAKOTA

Kevin K. Sedivec, William T. Barker, Terry A. Messmer, Dan R. Hertel, and Kenneth F. Higgins.

Abstract: Sharp-tailed grouse production was monitored on private and public rangeland managed under proper use (40 to 60 percent degree of use) rotational and seasonlong grazing, and nonuse in North Dakota from 1983 through 1992. The nonuse rangeland had been idled for 4 years when the study began and remained idled through the study duration. The study was conducted at five different areas in the Prairie Pothole region of North Dakota, with sites located near Benedict, Carrington, Denhoff, Gackle, and Streeter. Study objectives were to 1) determine if nonuse rangeland will produce more sharp-tailed grouse than full-use grazed native rangeland, and 2) the physiological nest site features of sharp-tailed grouse on graze rangeland at full-use capacity and nonuse rangeland.

Visual obstruction readings (VOR) (Robel et al. 1970) were used to determine height and

density of the vegetation among each of the treatments on replicated permanent line transects and at all nest sites recorded adjacent to the nest. Nest searches were conducted on all grazing treatments beginning about May 1, with four searches made at 19- to 22-day intervals ending in mid-July (Higgins et al. 1977; Klett et al. 1986). Nests in which at least one egg hatched were considered successful. Hatching success (productivity) was calculated by using apparent and Mayfield methods (Mayfield 1975). Annual predator track surveys (Sargeant 1990) were conducted in April, May, and June of 1990, 1991, and 1992. Incidental field sightings of predators were recorded on maps and used with the track data to determine predator territories.

Of the 93 sharp-tailed grouse nests found, 76 were on properly grazed rangeland, 17 on nonuse rangeland during 1983-1992. Average annual sharp-tailed grouse nest density was higher ($P < 0.05$) on the nonuse rangeland (1.2 nests/40.5 ha) than on grazed rangeland (0.6 nests/40.5 ha) for all years combined. These data would support previous studies, indicating grazing by domestic livestock does contribute to a decline in the initiation of sharp-tailed grouse nests (Kirsch et al. 1973, Kohn 1976).

Sharp-tailed grouse nesting success was higher ($P < 0.05$) on the grazed rangeland versus the nonuse rangeland. The results would indicate that although nesting density was significantly higher on nonuse rangeland, nesting success was lower. Grazed rangeland produced numerically more successful nests per 40.5 ha; however, no differences ($P > 0.05$) occurred between treatments.

The average nest site VOR on grazed rangeland was 1.82 dm, significantly ($P < 0.05$) lower than 2.16 dm nest site VOR on nonuse rangeland. Although the average VOR for all grouse found was 1.88 dm, the desired cover was 2.16 dm, based on a significantly higher use of the taller vegetative cover. Nest site VORs were analyzed to compare hatched and depredated nests to determine if those nests found in taller cover were safer. VORs for successful nests averaged 1.87 dm and 1.86 dm for depredated nests with no difference ($P > 0.05$) occurring.

The literature indicated sharp-tailed grouse nest in a denser cover often associated with woody species or in swales and draws associated with taller grass species (Hamerstrom 1939, Christenson 1970, Kantrud and Higgins 1992). Nests were analyzed to compare nest site use between overflow and silty range sites and availability of each range site from 1987 through 1992. Sharp-tailed grouse showed a greater ($P < 0.05$) use of the overflow range site as compared to available cover, with 86.7 % of the nests found in the overflow range site (48.1 % available cover).

Average initiation dates were determined for sharp-tailed grouse nests found from 1987 through 1992. The average initiation date was May 18. Sharp-tailed grouse began nesting as early as April 27 and initiated nests as late as June 16, with a nesting season of April 27 through July 21.

In summary, sharp-tailed grouse chose nesting on nonuse rangeland rather than on properly grazed rangeland, using the nonuse rangeland 2.1 times more than grazed rangeland in our

study. However, nesting success was greater on the properly grazed rangeland than on nonuse rangeland, with success 3.0 times higher on grazed rangeland.

Nonuse rangeland was a preferred nesting habitat for sharp-tailed grouse; however, it did not provide the safest nesting habitat. The improvement in safe nesting habitat under a properly grazed rangeland situation made up for the lower nesting density when denser habitat was not provided, with no differences ($P>0.05$) found in overall sharp-tailed grouse production between grazed and nonuse treatments.

LITERATURE CITED:

Christenson, C.D. 1970. Nesting and brooding characteristics of sharp-tailed grouse (*Pediocetes phasianellus jamesi*: Lincoln) in southwestern North Dakota. M.S. thesis. Univ. North Dakota, Grand Forks.

Hamerstrom, F.N., Jr. 1939. A study of Wisconsin prairie chicken and sharp-tailed grouse. *Wilson Bull.* 51:105-120.

Higgins, K.F., L.M. Kirsch, H.F. Duebbert, A.T. Klett, J.T. Lokemoen, H.W. Miller, and A.D. Kruse. 1977. Construction and operation of a cable-chain drag for nest searches. *Wildl. Leaflet* 512. U.S. Fish and Wildl. Serv. Washington, D.C.

Kantrud, H.A. and K.F. Higgins. 1992. Nest and nest site characteristics of some ground-nesting non-passerine birds of northern grasslands. *Prairie Nat.* 24(2):67-84.

Kirsch, L.M., A.T. Klett, and H.W. Miller. 1973. Land use and prairie grouse relationships in North Dakota. *J. Wildl. Manage.* 37:449-453.

Klett, A.T., H.F. Duebbert, C.A. Faanes, and K.F. Higgins. 1986. Techniques for studying nest success of ducks in upland habitats in the prairie pothole region. *Resour. Publ.* 158. U.S. Fish and Wildl. Serv. Washington, D.C.

Kohn, S.C. 1976. Sharp-tailed grouse nesting and brooding habitat in southwest North Dakota. M.S. thesis. South Dakota State Univ., Brookings.

Mayfield, H. 1975. Suggestions for calculating nest success. *Wilson Bull.* 87:456-466.

Robel, R.J., J.N. Briggs, A.D. Dayton, and L.C. Hulbert. 1970. Relationships between visual obstruction measurements and weight of grassland vegetation. *J. Range Manage.* 23:295-297.

Sargeant, A.B., S.H. Allen, and R.T. Eberhardt. 1984. Red fox predation on breeding ducks in mid-continent North America. *Wildl. Monogr.* 89.

ABSTRACTS GROUSE HABITAT

VEGETATIVE TYPES OF NORTH DAKOTA.

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Abstract: The following North Dakota Types are discussed progressing from east to west across North Dakota: Big Bluestem-Little Bluestem-Switchgrass Type, Sandhills Prairie Type, Wheatgrass-Bluestem-Needlegrass Type, Wheatgrass-Bluestem-Needlegrass (Rough-Fescue Mixed) Type, Wheatgrass-Needlegrass Type, Riparian Woodland Types, Upland Woodland Types, Badlands and River Breaks Type, and Pine Savana Type. A map of these Types can be found on page 24.

Literature cited: Barker, William T. and Warren C. Whitman. 1989. *Vegetation of the Northern Great Plains. Research Report 111. ND Agri Expt. Sta., Fargo, ND. 26pp.*

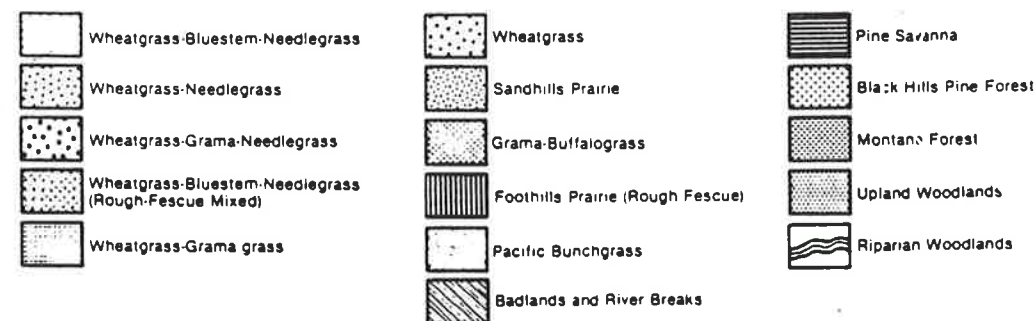
BRUSHLANDS MANAGEMENT AND BIOMASS HARVESTING RESEARCH IN MINNESOTA

Don Christian, Biology Department, University of Minnesota, Duluth

Bill Berg, Minnesota Department of Natural Resources, Grand Rapids

Abstract: Grass-brush landscapes are the main habitat for sharp-tailed grouse in Minnesota. Due to efficient fire suppression, land clearing for agriculture, and tree planting in traditionally open lands, brush landscapes have become fragmented and have decreased in quantity and quality. The loss of these landscapes has resulted in a drastic decline in populations of sharp-tailed grouse and several species of nongame birds that require open lands. Population trend data from dancing ground counts suggest that since 1980, sharptail numbers have declined 75% and 87% in their northwest and east-central Minnesota ranges, respectively, and annual sharptail harvests hover at 5,000-10,000, compared to 50,000 in the late 1970's. Brushlands management targeted at controlling succession consists of prescribed burning, shearing, hydroaxing, and hand cutting. Approximately \$200,000 is expended annually on this management, with slightly more than one-half going towards burning. Even though 25,000 acres were burned in spring, 1995, and additional acreage was sheared, there is still a net loss of brushland habitat suitable for sharptails.

A new research initiative, beginning in summer 1995, revolves around assessing the feasibility of harvesting woody biomass from brushlands. This legislatively funded project is a



collaborative effort between the University of Minnesota, Duluth, the Minnesota Department of Natural Resources, and the Minnesota Sharp-tailed Grouse Society. The major aim of the project is to develop an additional approach to managing brushlands, in which the same process (commercial biomass harvesting) results in both an economically valuable renewable energy source and the regeneration of early-succession habitats. This approach is envisioned as a possible substitute for prescribed burning or, probably more likely, as a replacement for shearing or other mechanical means often used in site preparation for prescribed burning.

Major research components of the project linked directly to biomass harvesting include assessing biomass availability in different brushland habitats; evaluating effects of brush removal on site-level nutrient availability; assessing existing equipment that might be used in future large-scale brush harvesting; and creating several demonstration projects from which brush is removed to simulate a commercial harvest. These sites will be used as long-term ecological study sites and in education and outreach efforts on brushland ecology and management. The project includes studies aimed at enhancing understanding of brushland habitats in Minnesota. Specifically, we will analyze sharp-tailed grouse and songbird populations, with sampling centered on a) active sharp-tailed grouse dancing grounds, b) formerly active but now defunct dancing grounds, and c) randomly located points in brushland complexes. Habitat- and landscape-level features of these classes of sampling points will be analyzed through a combination of field studies and GIS analysis of satellite images. The project includes major efforts to develop and disseminate information on brushland ecology and management opportunities for the public, landowners, managers, and resource personnel.

PARTNERS FOR PRAIRIE WILDLIFE

Sharron Gough, Prairie Chicken Specialist, Missouri Department of Conservation, P.O. Box 106, El Dorado Springs, MO 64744

Abstract: The Greater Prairie Chicken in Missouri has been on a steady, rapid decline since 1940's. Historically 1/3 of the state was tallgrass prairie, and prairie chickens numbered in the hundreds of thousands. Currently, an estimated population of 2,000 remains. Loss of prairie, tree invasion and use of tall fescue are the three major contributors to the bird's demise. The Department of Conservation has acquired some prairie tracts, but not enough remain of sufficient size in the same areas to guarantee the bird's long term survival. Also, public ownership of land is beginning to gender negative reactions from landowners. In response to the decline of all prairie wildlife and the need for immediate, long term, habitat changes on a landscape scale, the Department of Conservation introduced a pilot project called Partners for Prairie Wildlife. The project covers two 40 section areas. Between 1994 and 1999, landowners within these areas are eligible to use ten incentive practices, ranging from the conversion of fescue to alternative forages, prairie restoration, inter-seeding legumes in grasslands and small grains, rotation grazing systems, tree removal, and help with fences damaged during tree removal. Records were made of present land use practices. Prairie

wildlife populations will be closely monitored throughout the 10 year project, to see what, if any changes occur. The first sign-up brought 20 landowner participants. Over 33 miles of treelines will be removed, and approximately 2,200 acres of habitat affected at an average cost of \$50.00 per acre. Contributing Partners include Missouri Department of Conservation, private landowners, Missouri Department of Natural Resources, U.S. Fish and Wildlife Service, Monsanto Agricultural Group and Quail Unlimited.

CURRENT LAND USES ON PRIVATE LANDS WITHIN THE WISCONSIN PRAIRIE CHICKEN RANGE

James R. Keir, Wisconsin Department of Natural Resources, Friendship, WI

Abstract: Land use changes have had dramatic impacts on the range and numbers of greater prairie chickens in Wisconsin. Large scale timber harvest in the latter half of the 19th century "opened up" the landscape and allowed the chicken to expand statewide from its historic range in the southern 1/3 of the state.

After peak populations early in the 20th century, changes on the landscape resulted in rapid loss of grassland habitat. Chicken numbers declined. By the middle of this century, Wisconsin was left with only a remnant population in the central part of the state.

In order to administer a complete program with maximum benefits for our prairie chicken resource, we must be aware of land uses, both private and public, within the prairie chicken range. Further, we must also be aware of the impact of these land uses (and changes) on the birds in the area. It is important to emphasize that it is not enough to be concerned only with the quality of habitat on our management properties. What occurs on private lands within the range is extremely important to the welfare of the chickens. Private land uses may dictate future management decisions and may actually, in the long run, determine the fate (or at least the level) of prairie chicken populations in Wisconsin.

The locations of all known prairie chicken booming grounds define the present day range of this native Wisconsin grouse. A land use survey was conducted in 1990-91 on more than 200,000 acres within this well defined range. Over 95% of all known booming grounds were included. This study has documented present land use within the prairie chicken range, and has established baseline data for future comparisons. In addition, previous land use survey results were available for comparison on a portion of the total survey area.

WHERE HAVE ALL THE (TEXAS GULF COASTAL) PRAIRIES GONE?

Stephen Labuda, U.S. Fish & Wildlife Service, P.O. Box 519, Eagle Lake, Texas 77434

Abstract: Historical estimates place the size of the Gulf Coastal Prairies at 6 to 7 million acres at the turn of the century, extending from south Texas to the Bayou Teche in Louisiana. Today, that acreage has been reduced to an estimated 200,000. Concurrent with this 97% loss of a major ecosystem, there has been the extinction of several species such as bison and red wolf, and the endangerment of several more: Houston toad, Whooping crane, Attwater's prairie chicken, and others.

The first question which arises is: "How does one lose a prairie?" Several factors have played a role in the reduction in size and fragmentation of these coastal prairies. Urbanization, highway construction, some types of agriculture, and woody brush encroachment have all contributed to the loss.

The second question which arises is: "How can one protect and restore coastal prairies?" Traditionally, people have looked at land conservation in terms of fee simple purchase of parks, refuges, and other protected areas. Today, neither the state nor federal governments have enough money at their disposal to go out and buy the lands we need to protect. Consequently, new and innovative approaches to land protection are being investigated. Some of these approaches are short-term (3 yrs) leases through funding sources such as Section 6 of the Endangered Species Act, longer-term (5 yrs) arrangements through Challenge Cost-Share funding, and long term (20-25 yrs) projects managed through Cooperative Agreements between the U.S. Fish and Wildlife Service and private Resource Conservation and Development boards. In this last category alone, it has been estimated that the program will spend up to \$300,000 per year to restore up to 20,000 acres per year. The primary key to successfully implementing these various new land protection techniques is: building trust between the private citizens of this nation and the land management agencies of the various state and federal governments.

RANGELAND REFERENCE AREAS IN WESTERN NORTH DAKOTA

Llewellyn L. Manske Ph.D., Associate Range Scientist, North Dakota State University, Dickinson Research Extension Center

Abstract: Western North Dakota has four "two-way" rangeland reference areas that are 58 years old. These reference areas were established by Dr. Warren C. Whitman in the Pyramid Park Region on the eastern edge of the breaks of the Little Missouri River Badlands in 1936-1938. The sites were selected to represent four of the major grassland types of the region. All four sites (Sandy, Shallow, Silty, and Overflow Range Sites) are located in Billings County, south of the city of Medora.

These four rangeland reference areas are the oldest and best scientifically documented reference areas in North Dakota and possibly in the northern Great Plains. Dr. Whitman established these rangeland reference areas for the purpose of studying the long-term effects of grazing on four typical grassland ecosystems by monitoring changes in herbage production, plant species composition, and soil characteristics. Eight years of data were collected by Dr. Whitman during the years following establishment on locations within the exclosures and similar areas outside the exclosures that were exposed to grazing. Six years of additional data were collected by Dr. Whitman after 1952.

Dr. Michael Brand continued this project with intensive research data collection at these sites from 1976 through 1978 to document the changes in vegetation and soils of the exclosures and adjacent grazed areas after 40 years. A summary of Dr. Brand's data reported in Brand 1980, and Brand and Goetz 1986 is included in this report.

These four reference areas show the differences in rangeland ecosystems on sandy, shallow, silty, and overflow range sites after 40 years without livestock grazing and 40 years of 7 to 8 months of moderate season long grazing. Generally, the aboveground herbage production was about the same for most categories on the grazed plots and exclosures except Kentucky bluegrass and upland sedge production which were great enough on the exclosures of the silty range site and shallow range site, respectively, to show an increase in total graminoid production on the respective exclosures. Mulch biomass was greater on all exclosures than on grazed plots. Below ground biomass was greater on grazed plots except the shallow range site which was about the same as the exclosure. Graminoid and total herbaceous plant basal cover was greater on all grazed plots of the reference areas. Blue grama basal cover was greater on the grazed plots. Upland sedge basal cover was greater on the exclosures. Kentucky bluegrass and prairie sandreed basal cover were greater on the exclosures of the silty and sandy range sites, respectively.

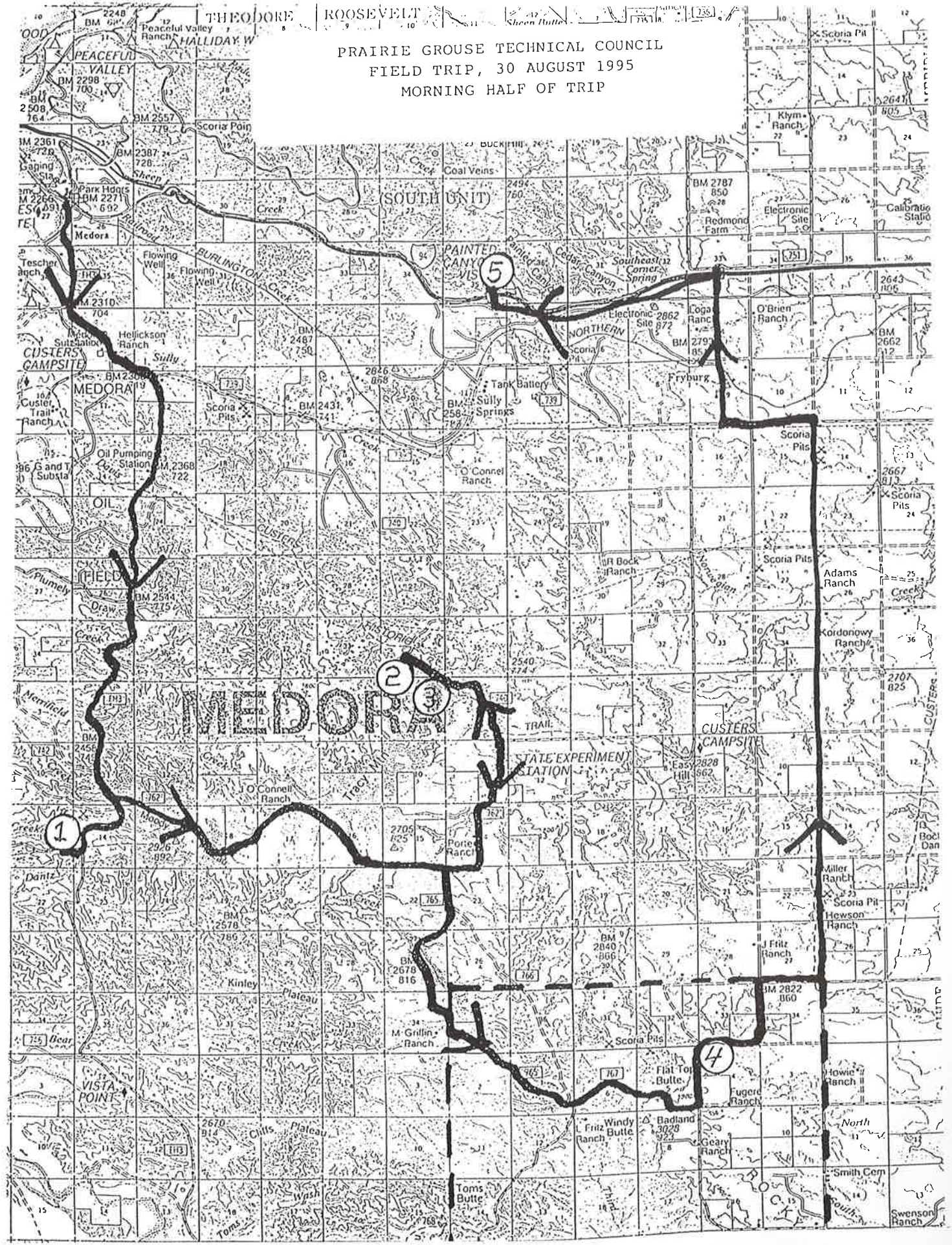
Brand, M.D. 1980. Secondary succession in the mixed grass prairie of southwestern North Dakota. PhD Dissertation, North Dakota State University. Fargo, N.D. 77p.

Brand, M.D. and H. Goetz. 1986. Vegetation of exclosures in southwestern North Dakota. Journal of Range Management 39:434-437.

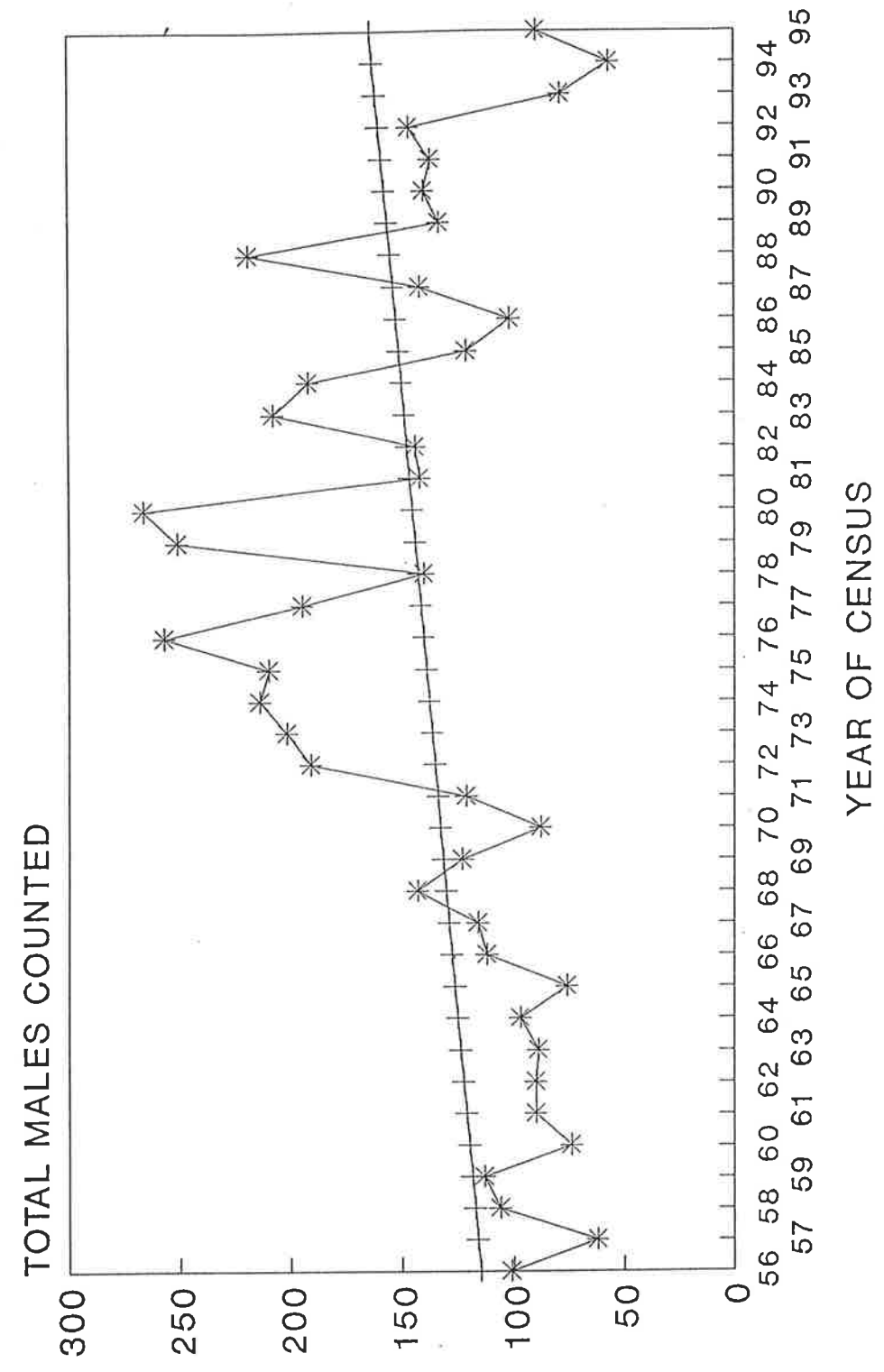
FIELD TRIP ITINERARY
21ST MEETING
PRAIRIE GROUSE TECHNICAL COUNCIL
MEDORA, NORTH DAKOTA
30 AUGUST 1995

- 0800 AM Depart from Badlands Motel Parking Lot in Medora.
- 0830 AM Stop 1: Vegetation exclosure established in 1937 in a sandy upland site. Comparison of ungrazed grassland vegetation with grazed vegetation outside the exclosure. This is in a mixed grass prairie under semi-arid climate. Tour speaker: Lee Manske, Range Scientist, North Dakota State University.
- 0930 AM Stop 2: Initial Rock. Inscriptions in rock by two soldiers of the Custer Expedition on the way to Little Big Horn. This is near a campsite of the expedition on that journey.
- 1000 AM Stop 3: Vegetation exclosure established in 1938. This site has more relief than stop 1 and has a greater shrub component. Again comparison can be made with grazed vegetation with that protected from domestic livestock for nearly 60 years. Tour Speaker: Lee Manske, Range Scientist, North Dakota State University.
- 1140 AM Stop 4: Billings County Sharptail Census Area. Stop is on the northern edge of a township that has been censused for sharp-tailed grouse each year since 1956 (see map). Counts have varied from a low of 57 to a high of 266 (see graph). Complete counts are made annually from about mid-March to 1 May each year. Listening runs are made early in the season with actual counts made in April. Tour speaker: Jerry Kobriger, ND Game & Fish Department.

Fugere-Molm Impoundment: Ducks Unlimited Waterfowl Habitat Project. The 1120-acre Fugere-Molm grazing allotment consists of 480 acres in private ownership and 640 acres of Federal land. The impoundment is 10-acres of water with 19 acres of rolling mixed-grass native prairie. The USFS is responsible for all maintenance and operations on the project area. The area is in a 3-pastured deferred rotation or comparable grazing system to provide waterfowl and upland game nesting habitat on surrounding uplands. Tour Speaker: Paul Bultsma, DU Regional Biologist.



MALE SHARP-TAILED GROUSE COUNTED ON THE
 BILLINGS COUNTY CENSUS AREA
 NORTH DAKOTA



ST CENSUS PGTC

1300 PM Stop 5: NOON LUNCH BREAK AT PAINTED CANYON. LUNCH WILL BE SERVED, AND YOU CAN ENJOY THE PAINTED CANYON VISTA AND VISIT THEODORE ROOSEVELT VISITOR CENTER.

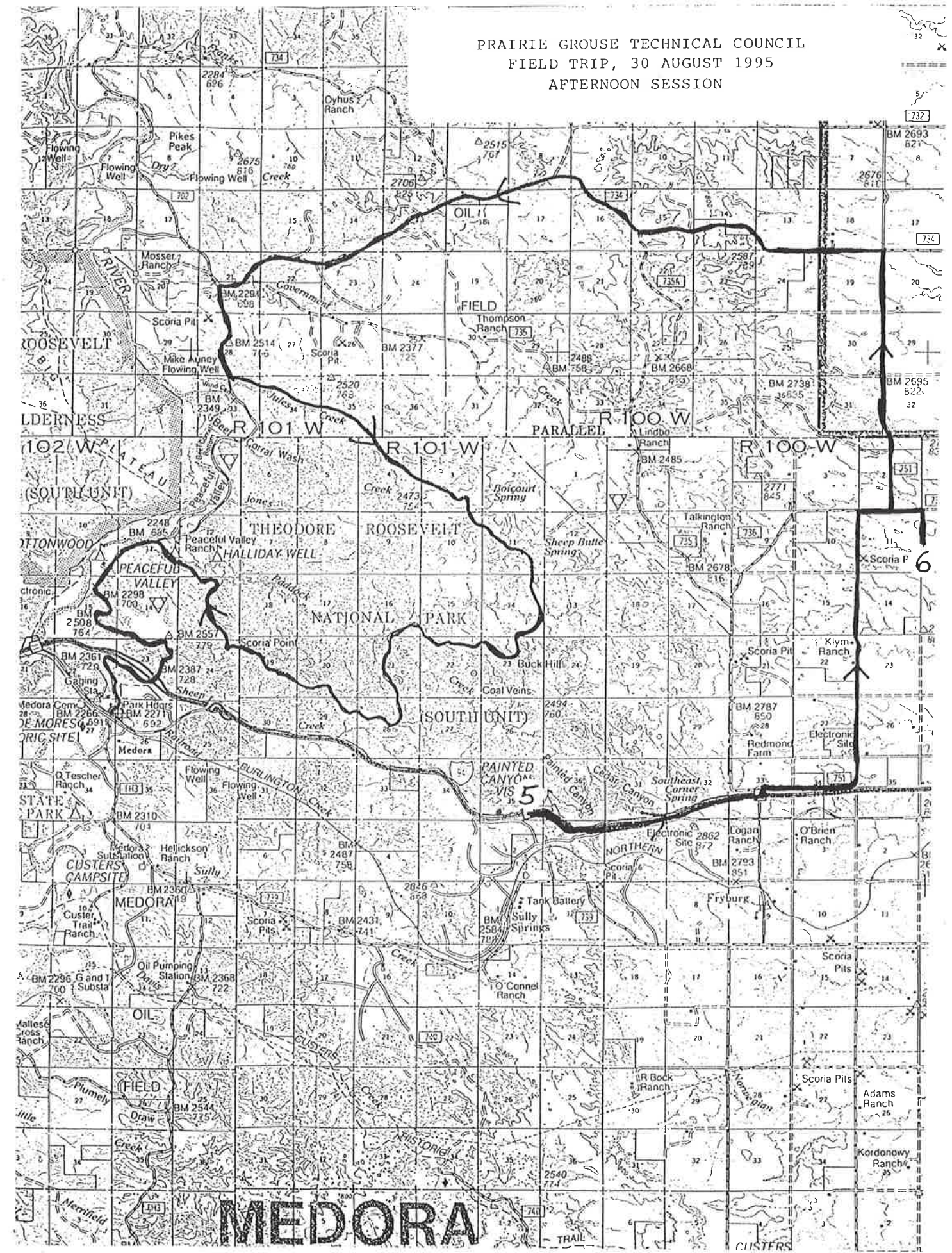
1430 PM Stop 6: Prescribed Burn on National Grasslands. A prescribed burn on approximately 640 acres of crested wheatgrass was completed on 6 April 1995. Purpose was to remove dead plant material and increase palatability of the crested wheatgrass for livestock and wildlife (deer & antelope). No seeding or re-seeding was done after the burn. Prescribed burning is considered a more effective and efficient alternative to managing crested wheatgrass than other techniques such as fertilization or mowing. The burn was implemented when conditions met prescription requirements which ensured good soil moisture, a cool burn, and positive plant response after the burn. The goal for this management area is to provide for the continuation of livestock grazing, implementation of intensive range management systems and the facilitation of minerals land energy development with consideration of other resource needs. Tour Speaker: Lu Burger, Rangeland Management Specialist, US Forest Service.

Talkington Impoundment: 42 acre wetland basin in 280 acre Talkington common livestock grazing allotment. Livestock enter the pasture after 1 July each year. Tour Speaker: Paul Bultsma, DU Regional Biologist.

1530 PM Scenic drive, Theodore Roosevelt National Park Loop Road.

1730 PM Arrive at Badlands Motel.

PRAIRIE GROUSE TECHNICAL COUNCIL
FIELD TRIP, 30 AUGUST 1995
AFTERNOON SESSION



OPTIONAL FIELD TRIPS

SHEYENNE NATIONAL GRASSLAND

The Sheyenne National Grassland is part of the fertile Sheyenne Delta that formed at the mouth of the Sheyenne River as it discharged into glacial Lake Agassiz and is composed of deltaic deposits and sand dunes. Topography ranges from flat plains to sand dunes up to 75 feet high. Elevations are 970 feet to 1,135 feet above sea level.

The Sheyenne River is the major drainage. It traverses the northern portion of the Grassland and eventually flows into Hudson Bay by way of the Red River of the North. It is steep sided with banks up to 120 feet high in places. The few streams flowing through the area are tributary to the Sheyenne River. The water table is generally within one to five feet of the surface over much of the area. Drainage of the sand dune areas is excessive while the nearly flat delta areas are generally poorly drained. Ponding occurs occasionally for short periods.

The Sheyenne National Grassland lies within the tall grass prairie zone and originally supported tall grass prairie vegetation. Dominant species were big bluestem, little bluestem, Indian grass, switchgrass, prairie cordgrass and several species of sedge. Farming destroyed much of the native vegetation, but the area has revegetated very well. Today, major species include needle-and-thread, Kentucky bluegrass, little bluestem, big bluestem, and sand bluestem, Junegrass, drop seed, Canada wild rye, prairie sandreed grass, several species of sedge, cudweed sagewort, narrowleaf gromwell, perennial ragweed, Missouri goldenrod, spiderwort, leadplant and prairie rose.

Forage production potential ranges from an average of 4,500 pounds per acre per year on the better sites to 1,500 pounds per acre per year or less on poor sites.

Noxious weeds in the area include leafy spurge and hemp. Leafy spurge is found in nearly all areas of the Grassland with a present estimated infestation of approximately 3,770 acres and growing rapidly. Hemp is found only in the Hankinson Unit with a total infestation estimated at about 45 acres.

Out of the 70,180 acres in the Sheyenne National Grasslands, 68,150 acres are open for grazing. In 1977, 75 percent of the suitable range was estimated to be in good condition and 25 percent in fair condition. Most of the blowouts that were prevalent in the 1930's and '40's have stabilized.

Fenced in along with the Federal land are 1,169 acres of waived private land.

The Sheyenne National Grassland has been grazed by domestic livestock since the late 1800's. These lands were in private ownership until the late 1930's when they were purchased by the Federal government under the Bankhead-Jones Farm Tenant Act. The collapse of the

economy in the late 1920's and early 1930's, combined with the great drought during the mid-1930's, resulted in extreme hardships on the submarginal land and the landowners.

The Forest Service assumed management of these lands in 1954. In 1957, the grazing season was changed from an 8-month season, May through December, to a 6-month season running from early May to early November. This change in grazing season reduced the number of livestock by approximately 560 head, but it allowed grazing permittees to make better use of their permitted grazing. In 1977, 10,776 cattle grazed during a 6-month season (May 10 to November 20), utilizing 81,920 AUM's of forage. This grazing rate has remained relatively constant for quite some time. Technically, one grazing permit is issued to the Sheyenne Valley Grazing Association by the Forest Service, but the Association then issues 102 separate permits to its members.

The range management situation is characterized by livestock distribution problems caused by undulating topography, varying soils and a mixture of vegetation species in close proximity to each other which have differences in palatability. Wet lowland sites are often lightly used while adjacent knolls are heavily used. This combination challenges livestock management systems.

The overall management direction has been toward increasing the native tall grass prairie species through intensive management and improving distribution patterns. Presently 97 percent of the area is under intensive range management--generally two or three pasture deferred rotation systems. Haying and burning of lowland sites is also used along with the rotation systems to remove the rank vegetation in the lowland sites and improve palatability and distribution.

As noted previously, the grazing season was reduced in 1957 but no great changes in stocking have taken place as a result of implementing intensive management. Some allotments have received increases but the primary benefits of improved management have gone to maintaining present stocking and improving range conditions.

Probably over 90 percent of all the greater prairie chickens found in North Dakota are found on or near the Sheyenne Grasslands. Recent census data were presented by Clint McCarthy during the paper session of this meeting.

Ed Bry Wildlife Management Area

The Ed Bry WMA lies in northeastern North Dakota in Grand Forks County. It is 12 miles northwest of Grand Forks and contains 3,150.52 acres (see map). The first purchase of 160 acres was made in 1968.

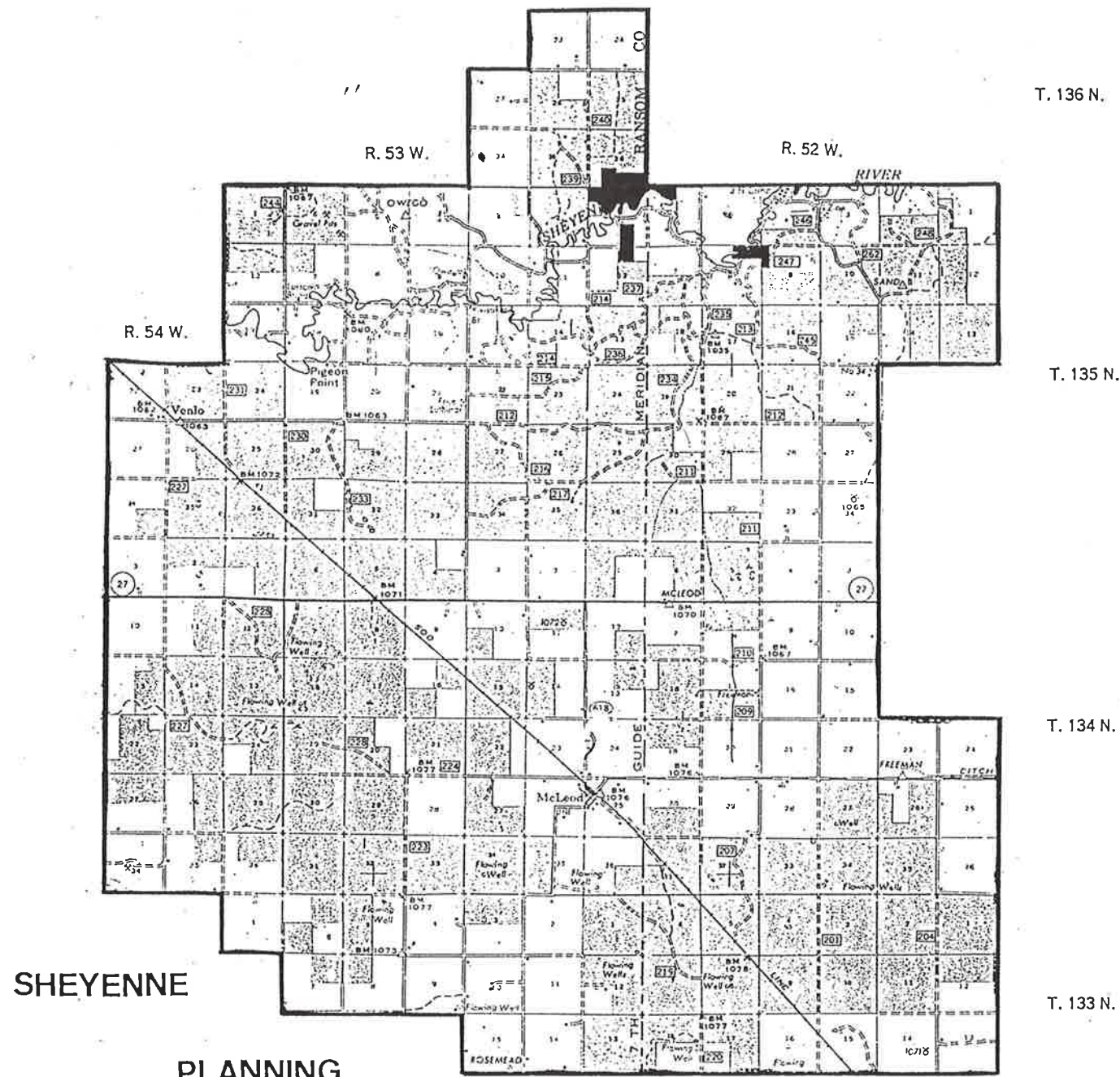
Plans for enlargement of the area depends upon funding and potential sellers as the Department works on a willing seller basis only. Funds for purchase of the existing wildlife management area came from the N.D. Game and Fish Department and monies donated by individuals from all over the United States.

This area was established to retain a prairie chicken population in a part of its range in North Dakota. There is a small population of prairie chickens existing on the area from recent transports and it is hoped that through habitat manipulation this existing population can be expanded. See the accompanying table for past census data.

Topography of the WMA is fairly level. Past attempts to farm portions of the management area, met with limited success. Soil types, for the most part, are class IV, V, VI, and VIII. Several small tracts of better soil types exist throughout the area. Much of the area is wet in spring and water is slow to be absorbed into the soil due to soil type and a very poor drainage pattern.

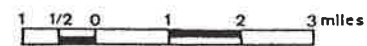
Past attempts to crop the area resulted in a mono-type of quack and brom grass.

Manipulations to improve habitat conditions are currently being. These manipulations include controlled burning, reestablish native grasses, maintain a food supply for fall and winter and complete protection of the prairie chicken. Most development work is done on a cropshare arrangement with a local cooperator. For a 70% cropshare the cooperator will plant grass, maintain fire breaks, maintain trees, mow dancing grounds, and other jobs as prescribed by the area biologist.



SHEYENNE

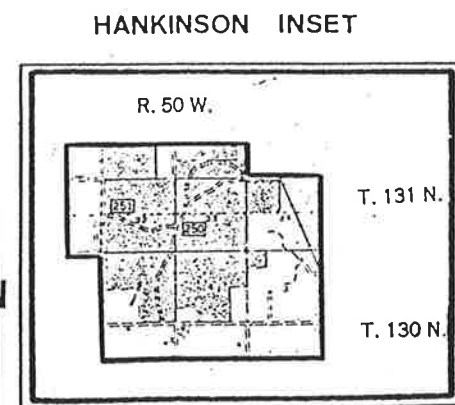
PLANNING



UNIT

Planning Unit Map

- Legend
- State Land
 - ▣ Sheyenne National Grasslands
 - Private Land
 - All-Weather Road
 - Dirt Road
 - Primitive Road
 - Railroad

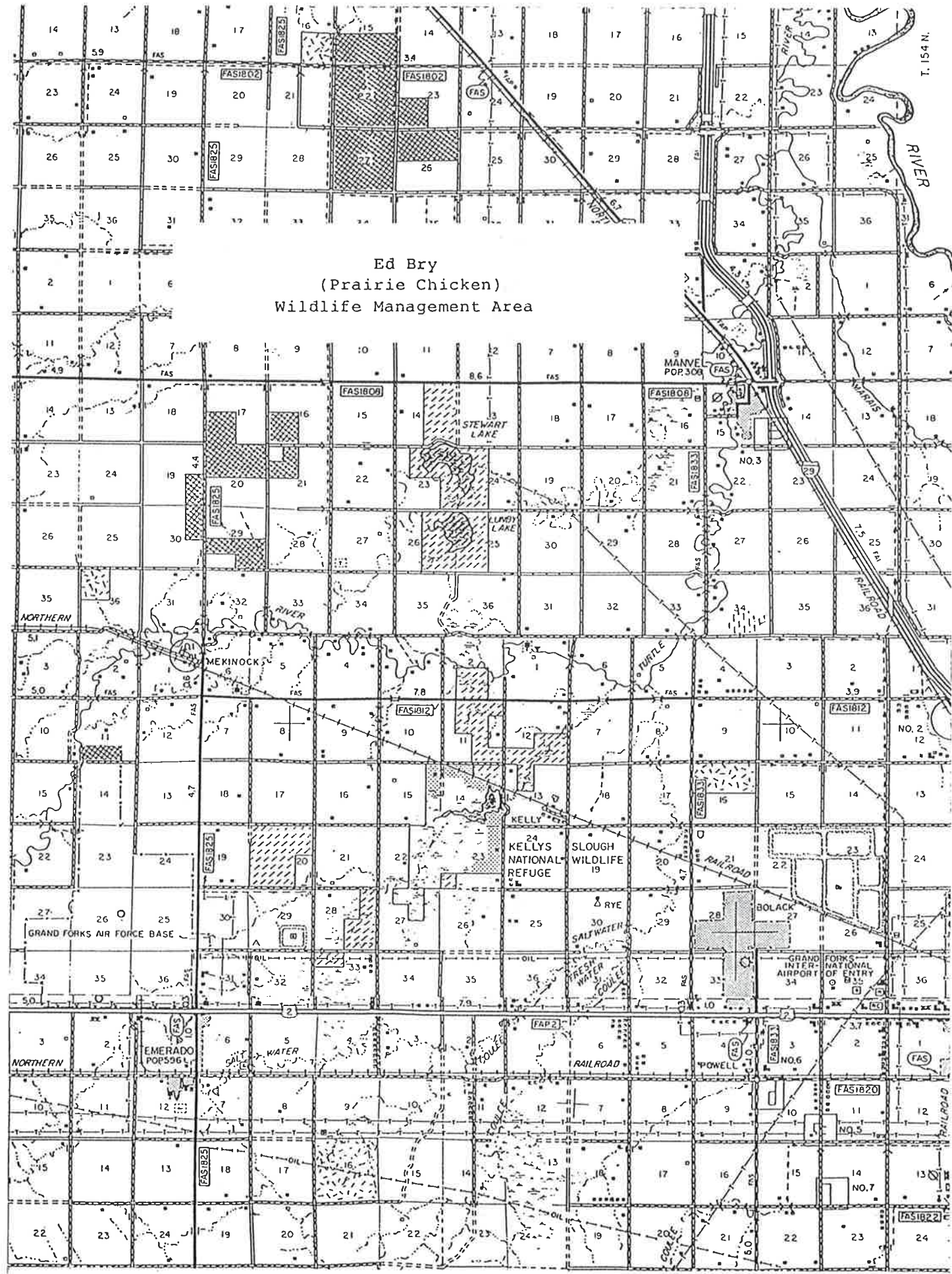


T. 136 N.

T. 135 N.

T. 134 N.

T. 133 N.



Summary of all pinnated grouse counts on Grand Forks census area, North Dakota, 1954-80.

Ground Number & Location	Year of Census																		
	54	55	56	60	61	65	66	67	68	69	70	71	72	73	74	75	77	78	79
1. SW¼NE¼ 20-153-52	8	9	11	11	11	6	6	7	4	8	11	5	1	6	3	2	0		
2. NW¼ 24-153-52	3	0	7	7	2	2	0	0	0	0	0	0	0	0	0	0	0		
3. SE¼NW¼ 16-153-52						10	0	0	0	0	0	0	0	0	0	0	0		
4. NE¼ 30-153-52							7	5											
5. SE¼ 5-153-52							5												
6. NW¼ 27-154-52								18											
7. SE¼ 28-154-52									4	0									
8. SE¼ 17-153-52									6	5	3								
9. NE¼SE¼ 21-154-52									2	0	0	2							
10. NW¼SE¼ 23-154-52												11	10	3	9				
14. SW¼ 21-154-52																			
18. SW¼ 17-152-53																			

PRAIRIE GROUSE TECHNICAL COUNCIL
21ST BIENNIAL MEETING
31 AUGUST 1995
MEDORA, NORTH DAKOTA

BUSINESS MEETING AGENDA

- I. Call to order: Jerry Kobriger, Chairman
- II. Review of minutes of last meeting (Colorado, 1993)
- III. Treasurer's Report: Ken Geisen, Colorado
- IV. Announcements:
 - A. Change in Executive Committee
 - B. Change in Awards Committee
- V. Committee Reports:
 - A. **THE BOOK!!!** Nova Silvy
 - B. Bibliography Committee: John Toepfer
 - C. Grouse Status Committee: John Toepfer
 - D. Award Committee: Bruce Waage
 - E. Archives Committee: Ron Westemeier
 - F. By-laws Committee: ????
- VI. New Business:
 - A. Grazing Bill: Sen. Domenici, Senate Bill 852, Title I and Title II.
Action Alert by NWF.
 - B. World Pheasant Association and Seventh International
Grouse Symposium, Ft. Collins, CO, 1996
 - C. Host for next meeting.

Business Meeting Minutes
21st Prairie Grouse Technical Council
30 August 1995
Medora, North Dakota

Chairman Jerry Kobriger (ND) called the meeting to order at 0750 with 52 people in attendance. Minutes of the 1993 meeting were approved after 1 correction. N. Silvy stated that 3 prairie chicken chapters were outstanding. The Minutes had incorrectly reported that all chapters had been submitted.

Financial Report: Ken Geisen (CO) reported that income received during 1991-93 amounted to \$5,292.38. Expenses during that same period amounted to \$4,056.37, leaving a balance of \$1,236.01. At the last Prairie Grouse Technical Council (PGTC) meeting in Ft. Collins (1993), the Colorado Department of Wildlife helped pay part of the meeting expenses which amounted to an additional \$1,219.02. The balance (\$1,236.01) was disbursed to the new chairmen (PGTC - \$285.88: Sage Grouse Workshop - \$950.13).

Committee Changes: Members of the Executive Committee have been changed to include Jerry Kobriger, Ken Geisen, and Nova Silvy (Chairman). Bruce Waage has completed his term of office. The Awards Committee will now be chaired by Ken Geisen. New members will be Nova Silvy and Mike Morrow. All committee members will be listed in the proceedings of this meeting.

Prairie Grouse Book: Book coordinator, Nova Silvy (TX), reported minimal progress on the prairie grouse book. Problems have arisen with some chapters because some authors have left their positions and are unable to complete their assignments. In addition some completed chapter reports are 11 years old. A discussion followed on how to update these chapters, since some chapters need a complete re-write. Kobriger indicated that requests for prairie grouse information is still received by Council and is usually forwarded to appropriate biologists in a particular state, so some type of information circulation is needed. Members decided to drop publication of the prairie grouse book. Silvy said he will return original chapter manuscripts to the authors. They may want to publish the material elsewhere.

Bibliography Committee: John Toepfer (ND) said that bibliographies for prairie chickens and sharp-tailed grouse were completed. Both bibliographies should be available early in 1996. There is not a lot of popular information available in the bibliographies, such as from state game and fish magazines. This could be added if States would send references to him. Rick Baydack (MB) asked if this information could be made available on internet or some type of computerized data system. Toepfer said it was possible and material would be updated regularly.

Grouse Status Committee: John Toepfer indicated that the group had talked about getting commemorative stamps made of the four species of prairie grouse. The committee is discussing various courses of action with this project. The group discussed the value of

video's and educational trunks on prairie grouse as an educational tool and how to get material into the hands of people who want to use them.

Awards Committee: Bruce Waage (MT) suggested that the award recipients be listed in the proceedings of this meeting.

Archive Committee: Ron Westemeier (IL) said that all original records of the PGTC are being archived and each meeting chairman should send minutes and other meeting records to Western Historical Manuscript Selection in Columbia, Missouri for safe keeping. This way all records of PGTC meetings will be permanently on file.

Bylaws Committee: Inactive, no report.

New Business: Jerry Kobriger received a letter from Verheirstraeten.Emiel, in Belgium requesting information on "buffalo chickens". This person is interested in propagation so the letter will be turned over to chairman Silvy to handle since he is involved with prairie chicken propagation.

The 7th International Pheasant and Grouse Symposium will be held in Ft. Collins on August 20-24, 1996. Additional information can be obtained by writing the Colorado Division of Wildlife.

A discussion was held on where to hold the 1997 PGTC meeting. Texas offered to host with possible locations being: Galveston Island (it offers sand beaches, good seafood and is within 25 miles of the largest remaining Attwater's prairie chicken booming ground. It is also close to Houston where the zoo has a captive breeding program); Dallas, or Lubbock.

Oklahoma offered to host the 1997 meeting with possible locations including Woodward (close to Tall Grass Prairie Preserve) or Tulsa.

Manitoba offered, with reservations, to host the 1997 meeting. Rick Baydack felt the landscape in Manitoba might closely resemble that in North Dakota so participants wouldn't see any different surrounding habitats. He felt more comfortable in offering to host in 1999. Possible locations would include the southeast corner where a Tall Grass Prairie Preserve occurs, 200 miles north of Winnipeg (interlake region) where large numbers of sharptails occur, or Riding Mountain National Park. Manitoba would offer some unique grouse hunting opportunities for those who would want to partake.

Illinois seriously considered hosting the 1997 meeting but had to decline because of staffing and budgetary problems.

By popular vote, Texas was selected as the site of the 1997 PGTC meeting. Manitoba, Oklahoma, and Illinois showed interest in hosting the meeting in 1999.

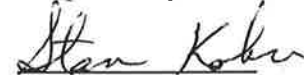
Kobriger introduced the Livestock Grazing Act of 1995 (Grazing Bill) for discussion. Bill Berg (MN) suggested that PGTC might want to select an "action committee" to respond to bills or legislative actions affecting prairie grouse. Kobriger indicated that the executive committee hasn't done much in the past regarding action on proposed legislative bills. Does the PGTC want the executive committee to start commenting on bills like the Grazing Bill? What is the best approach that the PGTC should take to respond on the Grazing Bill and other such bills? A good discussion followed. Terry Riley (Wildlife Management Institute) felt that the PGTC should respond to any legislation that affects prairie grouse. Kobriger noted that before Council officially responds to any legislative bills, it needs to develop new letterhead stationary. Kobriger directed Nova Silvy to develop new letterhead stationary for the PGTC. Funds remaining from the 1995 meeting could be used to upgrade stationary and purchase envelopes.

Alexius Duxbury (ND) reviewed various portions of the 1995 Grazing Bill. Areas of concern include preserving current level of public participation in management decisions, stabilizing the livestock industry by making livestock grazing the dominant use of the grasslands, defining management roles of the Forest Service and Grazing Associations, and how the bill affects environmental laws currently in place on public lands. Dan Svedarsky (MN) moved that PGTC officially respond to the Grazing Bill and express Council's concerns on the bill and how it will affect management of National Grasslands. Motion was seconded by Bill Berg; motion carried. Nova Silvy, along other members of the Executive Committee (Jerry Kobriger, Ken Geisen) will write the letter with help from Alexius Duxbury, Lee Manske (ND) and Terry Riley. Terry Riley suggested that Council send the letter directly to committee and subcommittee chairmen. The bill is complicated and Council shouldn't address areas of the bill that doesn't concern our interests. Better to keep the letter short, simply stating our opposition to the bill and outlining a few general reasons why PGTC opposes the bill. In addition to Council sending a letter, Nova Silvy encouraged members to write individual letters on this bill. He said individual letters have more of an impact on congressmen than letters from groups.

John Toepfer noted that because of the Conservation Reserve Program there has been some negative impacts relative to technical assistance for livestock grazing. When CRP became available, monies previously used for technical assistance programs on grazing were funneled elsewhere. There is now a move to return these monies to various government programs that would help ranchers with technical assistance on grazing programs.

Toepfer moved for adjournment at 0905.

Respectively submitted,



Stan Kohn, Acting Secretary

REGISTRATION

21st Meeting

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PRAIRIE GROUSE TECHNICAL COUNCIL CONFERENCES

1st	Grand Island, Nebraska	26-27 September 1957
2nd	Emporia, Kansas	16-18 March 1959
3rd	Stevens Point, Wisconsin	8-10 September 1960
4th	Pierre, South Dakota	21-22 September 1961
5th	Nevada, Missouri	18-20 September 1963
6th	Warroad, Minnesota	14-16 September 1965
7th	Effingham, Illinois	12-14 September 1967
8th	Woodward, Oklahoma	9-11 September 1969
9th	Dickinson, North Dakota	14-16 September 1971
10th	Lamar, Colorado	5-7 September 1973
11th	Victoria, Texas	9-11 September 1975
12th	Pierre, South Dakota	13-15 September 1977
13th	Wisconsin Rapids, Wisconsin	26-28 September 1979
14th	Halsey, Nebraska	23-25 September 1981
15th	Emporia, Kansas	20-22 September 1983
16th	Sedalia, Missouri	24-26 September 1985
17th	Crookston, Minnesota	15-19 September 1987
18th	Escanaba, Michigan	13-15 September 1989
19th	Billings, Montana	25-27 September 1991
20th	Fort Collins, Colorado	26-28 July 1993
21st	Medora, North Dakota	29-31 August 1995
22nd	Texas	1997