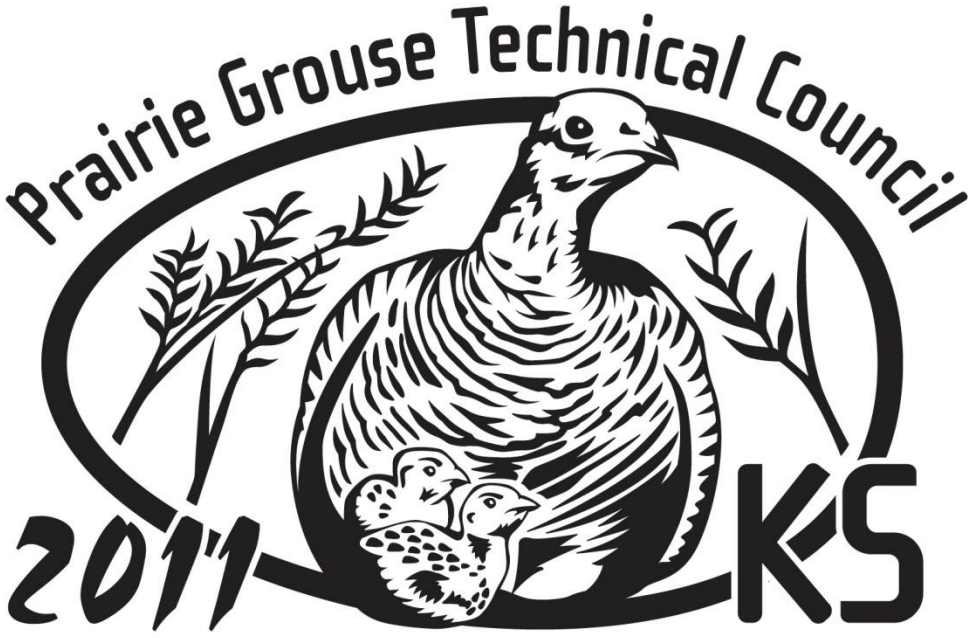
29TH MEETING OF THE



Robbins Center
Fort Hays State University
Hays, Kansas
October 3-6, 2011

Meeting Agenda

Monday, October 3

5:00 – 7:00 PM	Registration (Main Hall)
5:00 – 7:00 PM	Business Meeting (Board Room)
7:00 – 9:00 PM	Welcome Reception (Main Hall)
	- Drinks & Appetizers

Tuesday, October 4

7:00 – 12:00 PM	Conference Registration (Main Hall)
8:00 – 8:20 AM	Welcome and Opening Remarks
8:20 – 12:00 PM	Contributed Papers (Posters on display during breaks)
12:00 – 1:00 PM	Lunch (Provided)
1:00 – 4:00 PM	Contributed Papers (Posters on display during breaks)
4:00 – 5:00 PM	Group Discussion
	Dinner (On Your Own)

Wednesday, October 5

8:00 – 5:00 PM	Gove County Field Trip (Transportation & Lunch Provided)
6:30 – 10:00 PM	Banquet (Provided)

Thursday, October 6

8:00 – 12:20 AM	Contributed Papers
12:20 – 1:30 PM	Lunch (Provided)
1:30	Meeting Adjourned

***All activities will be held at the Robbins Center on the campus of Fort Hays State University**

Program

Tuesday, October 4

Opening Remarks and Welcome

8:00 – 8:05 Opening Remarks – Jim Pitman, KS Dept. of Wild., Parks, & Tourism (KDWPT)
8:05 – 8:20 Welcome – Keith Sexson, Assistant Secretary, KDWPT

Population and Habitat Monitoring
(Moderator: Jim Pitman)

8:20 – 8:40 Prairie grouse distribution and status in Kansas. J. C. Pitman, KDWPT.

8:40 – 9:00 Distribution and lek locations of greater prairie-chickens and sharp-tailed grouse outside of their traditional range in South Dakota. M. Orth, South Dakota State University.

9:00 – 9:20 A spring without moisture, how did it effect lesser prairie chickens and their habitat in Eastern New Mexico. C. E. Dixon, Wildlife Plus Consulting.

9:20 – 9:40 Insect abundance and Attwater's prairie-chicken brood survival. M. E. Morrow, Attwater Prairie Chicken National Wildlife Refuge.

9:40 – 10:00 Lesser prairie-chicken in Oklahoma and New Mexico – Summary of 12 years of research. D. H. Wolfe, Sutton Avian Research Center.

10:00 – 10:20 Break (Refreshments provided)

Conservation Genetics and Population Modeling
(Moderator: Dave Dahlgren)

10:20 – 10:40 Effective population size in lesser prairie-chicken. L. C. Larsson, Sutton Avian Research Center.

10:40 – 11:00 Dispersal, gene flow, and population genetic structure in greater sage-grouse: implications for connectivity and natural recolonization in declining populations. T. R. Thompson, University of Idaho - Moscow.

11:00 – 11:20 Limiting factors affecting population persistence of lesser prairie-chicken populations in shinnery-oak communities on the southern high plains of Texas. B. Grisham, TTU.

11:20– 11:40 Regional variation in nest success of lesser prairie-chickens. E. K. Lyons, Texas A&M University – College Station.

11:40– 12:00 Demography of greater prairie-chickens: regional variation in vital rates, sensitivity values, and population dynamics. L. B. McNew, Kansas State University (KSU).

12:00 – 1:00 Lunch (Provided)

Habitat Use and Behavior

(Moderator: Matt Bain)

1:00 – 1:20 Variation in nest and brood survival of greater-prairie chickens in the Nebraska sandhills. L. Anderson, University of Nebraska – Lincoln.

1:20 – 1:40 Response of greater sage-grouse to the conservation reserve program in Washington state. M. A. Schroeder, Washington Dept. of Fish & Wildlife.

1:40 – 2:00 Current prairie grouse research in Idaho. J. M. Knetter, Idaho Dept. of Fish & Game.

2:00 – 2:20 Behavior, vocalizations and management implications of hybrid prairie grouse (Tympanuchus *spp*.) in west-central Minnesota. J. K. Augustine, Ohio State University at Lima.

2:20 – 2:40 Break

2:40 – 3:00 Assessment of the distribution of lesser prairie-chickens in relation to potential wind energy development in Texas. J. M. Timmer, TTU.

3:00– 3:20 Greater prairie-chicken nest survival in relation to habitat characteristics and anthropogenic disturbance in north central Kansas. L. M. Hunt, KSU.

3:20 –3:40 Prairie grouse display ground and nest distribution relative to man-made structures with emphasis on the wind tower complex in northwestern Minnesota, 2001-2011. J. E. Toepfer, Society of Tympanuchus Cupido Pinnatus.

3:40– 4:00 Break

Group Discussion

4:00 – 5:00 Captive breeding facilities for Attwaters and Lesser prairie-chickens. S. K. Sherrod, Sutton Avian Research Center.

5:00 Dinner (on your own)

Wednesday, October 5

Gove County Field Trip (see attached itinerary and map)

7:30 – 8:00	Assemble and load bus in Best Western parking lot
8:15	Buses depart
5:00	Return to Best Western parking lot

Banquet

6:30 – 10:00	Announce silent auction winners
	Hamerstrom Award presentation
	Live Auction
	Western music by Jeff Davidson (http://www.jeffdavidsonmusic.com/)

Thursday, October 6

Population Restoration
(Moderator: Elmer Finck)

8:00 – 8:20	Greater prairie-chicken recovery and perceptions regarding cattle grazing as a management tool for tallgrass remnants in Missouri. M. Alleger, Missouri Dept. of Conservation (MDC).
8:20 – 8:40	Preliminary evaluations of habitat preferences of resident and translocated greater prairie-chickens in Missouri: implications for management on the eastern edge of the species range. S. E. Clubine, Retired MDC.
8:40 – 9:00	Missouri greater prairie-chickens: demography and movement. K. M. Kemink, University of Missouri – Columbia.
9:00 – 9:20	Break (Refreshments Provided)

Habitat Management Techniques
(Moderator: Dwayne Elmore)

9:20 – 9:40	Burned out: does fire frequency across the Flint Hills explain regional greater prairie-chicken population declines. A. J. Gregory, Northern Arizona University.
9:40 – 10:00	Greater prairie-chicken survival in grasslands managed for heterogeneity. T. J. Hovick, Oklahoma State University.

10:00 – 10:20 Use of grazing management to restore lesser prairie-chicken habitat in Eastern New Mexico. D. A. Haukos, KSU.

10:20 – 10:40 A ten year assessment of herbicide treatment and grazing on nest site selection and daily nest survival of lesser prairie-chickens in New Mexico. B. Grisham, TTU.

10:40 – 11:00 Break (Refreshments provided)

Conservation Planning

(Moderator: Tony Ifland)

11:00 – 11:20 Landscape resistance and connectivity for sharp-tailed grouse in Washington. L. A. Robb, Independent researcher.

11:20 – 11:40 Mitigation for prairie grouse: considerations for the new reality. S. Manes, Ranchland Trust of Kansas.

11:40 – 12:00 United States Department of Agriculture, Natural Resources Conservation Service, Lesser prairie-chicken initiative. R. D. Krehbiel, Natural Resources Conservation Service.

12:00 – 12:20 Lesser prairie-chicken conservation: initiatives and listings, how do we move forward? C. A. Hagen, Lesser prairie-chicken conservation initiative science advisor.

12:20 – 1:30 Lunch (Provided)

1:30 Meeting Adjourned

Prairie Grouse Technical Council Field Tour – Gove County, Kansas October 5, 2011

We will be traveling to southwestern Gove County (2 hours from Hays) where prairie-chicken populations have responded dramatically to the abundance of Conservation Reserve Program stands added to the landscape since the late 1980's. Both lesser and greater prairie-chicken are present in the area and, not only do their ranges overlap, many leks have both species. As you travel through the area, note the mosaic of unbroken prairie and CRP stands of varying composition. This area is within a CRP Conservation Priority Area and has also been targeted for special SAFE (CP38E) CRP enrollment. Up until 4 years ago, there was almost no oil development in the area, but the increase in crude prices and new technology which more accurately locates oil-bearing formations has significantly changed this landscape.

Due in part to the increased oil-field road traffic, we will be staying on the bus for some short stops. Only at stops so noted (stop numbers also circled on the map), will we exit the bus for field discussions.

- **Stop 1:** To the south, you'll see a typical example of the condition of much of the unbroken prairie in this region. Dominant grasses are blue grama, buffalo grass, and sideoats grama with lesser amounts of little bluestem. Taken alone, these rangelands supported only a very-scant population of prairie-chickens prior to the implementation of the CRP. Prairie grouse were rarely seen in the area. To the north, you'll see a CRP stand and be able to compare the differences in height and structure. A significant portion of this CRP stand was recently broken to be put back into crop production.

- **Stop 2:** This is a CP25 (Rare and Declining Habitat) stand 5-6 years old. When this stand was first seeded, it provided some of the finest pheasant habitat you'd ever see as it was full of head-high annual sunflowers, kochia, and other weeds. It typically takes 4-5 years in this region for grasses to completely establish. This "shortgrass" version of CP25 is heavily dominated by sideoats grama and, while it now offers some value to prairie chickens, it would have been better had it contained more little bluestem.

- **Stop 3 (Exit the vehicles):** Here is a 1997 alfalfa interseeding done in a long block along the north edge of this CRP stand (most later interseeding was done in alternating strips). During the extreme drought of 2002, virtually nothing in this landscape was green except for the interseeded alfalfa. This interseeded strip and the adjacent pasture edge was the only place where lesser prairie-chicken broods successfully fledged during the first summer of CSU graduate student Tammy Fields' study. This field also contains a lek near its center. The interseeding appears to have changed the composition of the stand over time and this should make for some interesting discussion.

- **Stop 4 (Exit the vehicles):** This 600-acre tract (479 in 2010 re-enrolled CP4D CRP) is owned by prairie-grouser Randy Rodgers and his wife Helen Hands. Roughly the NW ¼ of the property was burned on August 18th. We will discuss the reasons for doing

this, look at the regrowth, and discuss how this and other practices fit into Randy's long-term plans for the property. Some of you may have been by this tract on earlier tours and will note that Randy's management plans have changed, primarily due to recent and expected additional oil development on the property.

- **Stop 5:** Here we can view 4 different tracts of current or former CRP ranging from the youngest (SW of stop) which has had 6-7 growing seasons and has been burned twice to an expired tract (SE of stop) which has been fenced and is now being grazed. If it has recently rained, you may also be able to see the aggressive nature of ungrazed western wheatgrass which has invaded the CRP to the NE from an old 2-track trail to the east of the stop. Recent fall and spring drought has suppressed the growth of cool-season grasses in the area, so this phenomenon may be less visible than normal.

- **Stop 6 (Exit the vehicles):** The monument rocks (also known as the chalk pyramids) will be our lunch site, weather permitting. These outcrops are remnants of the shallow sea that once covered what is now the High Plains. The area is fossil rich, being well known for ancient sharks teeth and producing many skeletons of aquatic dinosaurs, and ancient fish. You may wish to visit the Sternberg Museum in Hays to get a sampling of the region's fossil record. If it can be arranged, we may get a local expert to talk about fossils in the area and/or a range conservationist to discuss the unique chalk prairie which surrounds the site.

- **Stop 7 (Exit the vehicles):** This is an overlook where you can see the general landscape that fosters so many lesser prairie-chickens (currently a denser population than elsewhere in Kansas). The landscape to the south was, until recently almost completely grassland (unbroken or CRP), but a significant proportion has been broken for cropping in the last 2 years. A map of KDWPT CRP enhancement projects in relation to Stop 7 will be provided. You'll be able to see that many of the CRP stands in the area have been interseeded with forbs and legumes, but they have become less conspicuous over time owing to some disappearance of alfalfa from these stands and, at least this year, defoliation of established alfalfa by grasshoppers.

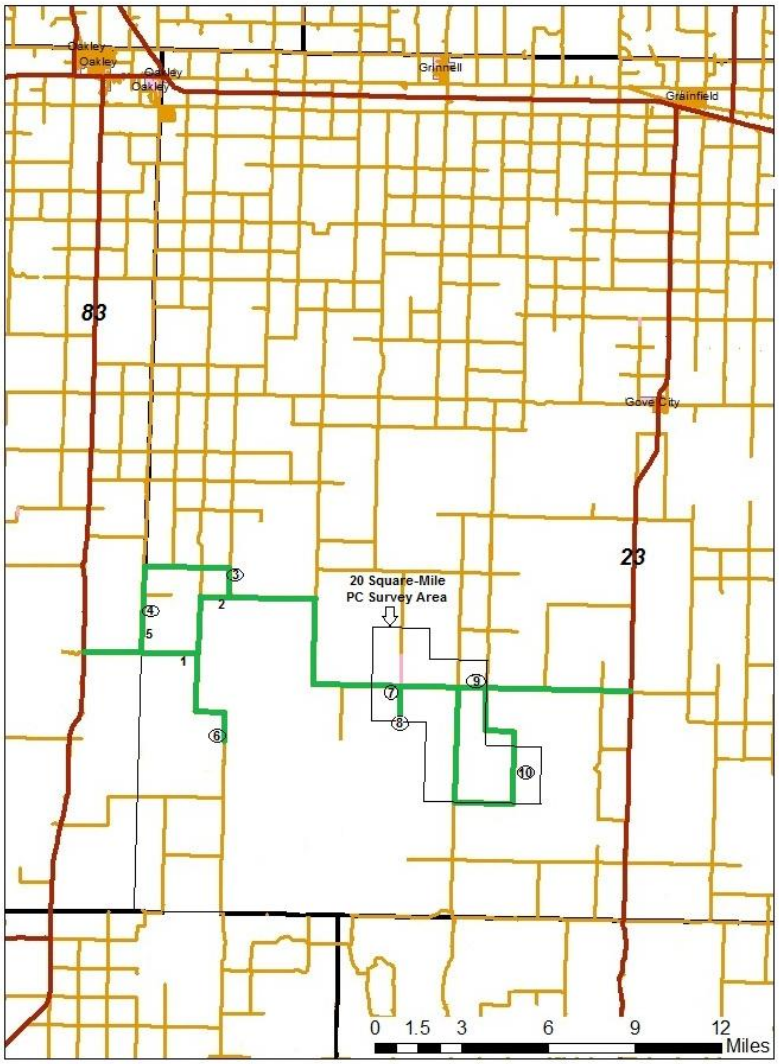
- **Stop 8 (Exit the vehicles):** Here we have two things to look at. The CRP stand to our NW was disked (multiple passes) and interseeded with alfalfa and a little sweet clover in 2008. You'll see that the grass has fully recovered. Probably owing to the very dry fall and spring, and perhaps abundant grasshoppers, much less of the interseeded legumes are visible this year than last. Also, the fence extending directly to our south was built using USFWS Landowner Incentive Program cost-share. This prevented the former CRP stand to our SE from being converted to cropland and, instead, allowed it to be used as grazing land. Unfortunately, the former CRP to the SW was broken. Biologists will discuss the fencing options used in Kansas to convert expired CRP to pasture.

- **Stop 9 (Exit the vehicles):** This is an unusual situation that allows a unique comparison of seeding mixtures. The terraces on the north side of the road were originally enrolled in CRP as grassed terraces (CP15B) and several years later, the

remainder of the field was allowed to be enrolled as CP25 (rare and declining). The group can discuss relative value of the two mixtures for prairie grouse. On the south side of the road, you'll see another CP25 stand that is heavily dominated by sideoats grama. Note also the effect of the firebreak that was disked multiple times in March 2008 prior to a burn of the stand.

- **Stop 10 (Exit the vehicles):** If there remains enough time, we will drive through some additional CRP/range mosaic and perhaps stop to have District Wildlife Biologist Matt Bain give us some idea of what it's like conducting lek surveys in this area where two species overlap. This is also an area where western wheatgrass encroachment on the native warm-season grasses has been significant. Matt can discuss his recent attempts to set back this wheatgrass encroachment using the post-hard-freeze spraying of glyphosate that Nebraska Game and Parks developed to control smooth brome.

Once we start heading back, the return trip to Hays will take about 90 minutes.



Map of Hays, KS

Presentation Abstracts

STATUS OF PRAIRIE GROUSE POPULATIONS IN KANSAS

JAMES C. PITMAN*, Kansas Department of Wildlife, Parks, and Tourism, Emporia, KS 66801, USA, DAVID K. DAHLGREN, Kansas Department of Wildlife, Parks, and Tourism, Hays, KS, 67601, USA, MATTHEW R. BAIN, Kansas Department of Wildlife, Parks, and Tourism, Colby, KS 67701, USA

The Kansas Department of Wildlife, Parks, and Tourism (KDWPT) has been monitoring prairie grouse populations across the state since 1963. The KDWPT now annually surveys 48 areas each spring across the state to assess prairie grouse population trends. Over the last 10 years, populations of greater prairie-chickens have been declining in the Flint Hills and Osage Cuestas while they have remained stable in the Smoky Hills. Lesser prairie-chicken populations have declined in sand sagebrush habitats of southwestern Kansas and increased in the Red Hills and sand prairies in the south-central part of the state. Both species of prairie-chicken now occupy the northern high plains region in northwest Kansas and their populations have increased markedly in recent years. Conservation challenges and successes responsible for these variations in population trends will be discussed along with some additional monitoring techniques that have been recently undertaken by the KDWPT. The expanded monitoring has better enabled the department to identify occupied ranges, target conservation programs, and guide the siting of various developments.

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DISTRIBUTION AND LEK LOCATIONS OF GREATER PRAIRIE-CHICKENS AND SHARP-TAILED GROUSE OUTSIDE OF THEIR TRADITIONAL RANGE IN SOUTH DAKOTA

MANDY ORTH*, CHARLES DIETER, and KENT JENSEN, Dept. of Natural Resource Management, South Dakota State Univ., Brookings, SD 57007 USA.

Grasslands play a critical role in providing habitat for greater prairie-chickens and sharp-tailed grouse. Due to increased conversion of grassland to cropland, South Dakota is losing this critical habitat. This study identifies areas of eastern SD where populations of prairie-chickens and sharp-tailed grouse were suspected to reside, characterizes landscape attributes within 3,000 m of leks, and analyzes landscape characteristics using GIS modeling to develop a predictive model. Survey routes were developed in areas of potential suitable habitat and were sampled beginning ½ hour before sunrise and ending 2 to 2½ hours after sunrise during the breeding period of mid-March to early June of each year, with listening points established at 1-mile intervals. Leks were located and recorded. All land and land-uses within 3,000 m of identified leks and randomly selected non-use points were digitized and labeled into a GIS. Land-use around these points was analyzed at 7 scales. It is expected that prairie grouse have spread outside of their traditional range in eastern SD. Also, it is hypothesized that leks of prairie grouse have more native grassland and/or CRP surrounding them than non-use points. These results will be used to create maps indicating where grouse are likely to be located in SD based on the location of suitable habitat.

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A SPRING WITH OUT MOISTURE, HOW DID IT EFFECT LESSER PRAIRIE CHICKENS AND THEIR HABITAT IN EASTERN NEW MEXICO

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Lesser Prairie Chickens have been trapped and their habitat monitored on the Weaver Ranch, NMDG&F North Blut Prairie Chicken Area and surrounding areas in NM from 2000 until the present to evaluate reproductive success, their use of the habitat and habitat composition in addition to other relationships. From November 1, 2010 until July 1, 2011 approximately 0.5 inches (1.27 cm) of precipitation fell on the area. The extreme dry period had a devastating effect on reproduction of Lesser Prairie Chickens (LPCH), other domestic and wild animals and residents involved in agriculture in the area. None of the LPCH hens trapped and fitted with radio transmitters on the Weaver Ranch or surrounding area during the 2011 breeding season or during previous trapping efforts were observed to have nested during the spring of 2011. Few forbs were observed during vegetation surveys and few insects were captured during invertebrate sampling when compared to previous years. Plant growth was minimal throughout the period with both grass and forb growth was greatly reduced. Multiple successive years with similarly dry springs would lead to dramatic declines of Lesser Prairie Chickens in the area.

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INSECT ABUNDANCE AND ATTWATER'S PRAIRIE-CHICKEN BROOD SURVIVAL

MICHAEL E. MORROW* and TERRY A. ROSSIGNOL, Attwater Prairie Chicken National Wildlife Refuge, Eagle Lake, TX 77434 USA.

The Attwater's prairie-chicken (*Tympanuchus cupido attwateri*) remains one of the most critically endangered birds in North America. Research has indicated that poor brood survival, especially during the first two weeks posthatch, has limited population growth. From 2009-2011, we investigated the relationship between insect abundance at brood sites and survival of 36 broods during the first two weeks posthatch at the Attwater Prairie Chicken National Wildlife Refuge near Eagle Lake, Texas. Location of brood sites was determined by triangulation of radioed brood hens beginning with the first day after hatch. Insect samples were collected at these brood sites by sweep netting (25 sweeps/sample) 1-2 days after triangulation to minimize brood disturbance. Samples were frozen until the number of insects and dry weight of each sample were determined. At two weeks posthatch, presence of chicks was assessed by visual observation of radioed brood hens at dawn. A brood was considered successful if at least one chick was observed. Samples from broods lost when brood hens were killed by predators were not included in this analysis. Median number of insects/sample at successful brood sites was 1.9 times higher ($P < 0.0001$) than those collected at unsuccessful brood sites. Dry weight of insect samples was not different ($P > 0.13$), suggesting that individual insects were smaller from successful brood sites. Research is underway to determine factors limiting insect abundance in Attwater's brood habitat, with current emphasis on impacts of the red imported fire ant (*Solenopsis invicta*).

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LESSER PRAIRIE-CHICKEN IN OKLAHOMA AND NEW MEXICO –SUMMARY OF 12 YEARS OF RESEARCH

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Due to concerns over declining Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*) populations in the 1990s, we began research projects on the species in Oklahoma and New Mexico in 1999. We have captured 934 Lesser Prairie-Chickens, and have recorded over 50,000 tracking locations since that time. Although we ceased radio-tracking in 2006 in New Mexico, and in 2010 in Oklahoma, analyses of collected data and various conservation efforts continue. Additionally, in 2010 and 2011, we conducted lek surveys and habitat evaluations in Oklahoma across the known Lesser Prairie-Chicken occupied range as well as in areas where we either suspect that prairie-chickens might still occur or have been noted in the previous 20 years. Although neither nesting success nor lifetime reproductive effort did not differ between study sites, clutch size was significantly larger and hen survivorship was lower in Oklahoma than in New Mexico. Also, mortality resulting from fence collisions was much more common in Oklahoma, and likely was a contributing factor in other life history differences that were observed. We will summarize these results and discuss conservation solutions, especially related to fragmentation of Lesser Prairie-Chicken habitat.

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EFFECTIVE POPULATION SIZE IN LESSER PRAIRIE-CHICKEN

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Wildlife managers primarily use census size (N_c) to evaluate the health of populations while estimates of effective population size (N_e) inform of loss of genetic diversity. It is important to assess extinction risks in populations with conservation concerns considering both demographic and genetic factors. We estimated N_e using genetic methods and a demographic method based on our research of lesser prairie-chicken (*Tympanuchus pallidicinctus*) in Oklahoma and New Mexico. Both populations exhibited low N_e estimates with a risk of inbreeding depression. The situation was worse in Oklahoma where the census size was smaller than in New Mexico and reproduction was not large enough to offset higher mortality rates among females. Approximately 34% of individuals' genes were passed on to following generations based on the demographic data we collected in Oklahoma, while the New Mexico population passed on ~38% of their genes. Contemporary N_e estimates based on genetic diversity in these populations imply a theoretical 0.2-1.5% decrease in heterozygosity each generation and indicate uncertain long-term viability. Furthermore, unless conservation efforts are successful, the ongoing decline of lesser prairie-chicken in Oklahoma will lead to smaller N_e with increased inbreeding and a greater risk of extinction.

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DISPERSAL, GENE FLOW, AND POPULATION GENETIC STRUCTURE IN GREATER SAGE-GROUSE: IMPLICATIONS FOR CONNECTIVITY AND NATURAL RECOLONIZTION IN DECLINING POPULATIONS.

T. R. THOMPSON*, Dept. Fish and Wildlife Resources, University of Idaho Moscow, ID 83843, USA, K. P. REESE, Dept. Fish and Wildlife Resources, University of Idaho Moscow, ID 83843, USA, A. D. APA, Colorado Division of Parks and Wildlife, Grand Junction, CO 81505, USA.

Since 1999 a total of 11 petitions have been filed with the U.S. Fish and Wildlife Service to list the greater sage-grouse (*Centrocercus urophasianus*) under the protection of the Endangered Species Act. There is currently little empirical information on the spatial structuring of sage-grouse populations and the effects that dispersal has on maintaining and regulating populations. Estimates of dispersal from demographic methods can only provide estimates of dispersal capacity, not dispersal success, which is the successful reproduction and transfer of genes. Genetic analysis, in contrast, can provide information on dispersal success, gene flow, and mating patterns, and how these factors influence the structuring of populations. Only by using the 2 methods concurrently can the full extent and consequence of dispersal and its effects on population structure be determined. Without this information to guide management at meaningful population and landscape levels, it will become increasingly more difficult to conserve this species over time under current levels of population and habitat fragmentation. The purpose of this project was to identify the genetic spatial structuring of greater sage-grouse populations in Northwestern Colorado and to compare estimates of gene flow, dispersal, and connectivity with a concurrent demographic study of natal dispersal. By combining both genetic and demographic approaches simultaneously to assess movement patterns and the effects of these movements within and between populations, it will be possible to get a better understanding of how to manage this species at meaningful population and landscape levels. We will discuss the results and consequences of our data.

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LIMITING FACTORS AFFECTING POPULATION PERSISTANCE OF LESSER PRAIRIE-CHICKEN POPULATIONS IN SHINNERY-OAK COMMUNITIES ON THE SOUTHERN HIGH PLAINS OF TEXAS

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Survival of Lesser Prairie-Chicken (LEPC) broods from hatch to the next breeding season has been identified as the main demographic parameter affecting population size. However, demographic data are lacking for LEPCs in shinnery-oak communities of West Texas. Therefore, our objectives were to assess hen, nest and brood survival for this ecoregion. We assessed hen survival for 51 radio-tagged LEPCs, nest survival for 37 nests and brood survival for 16 broods from 2008-2011. Our preliminary measure of LEPC hen survival was considerably higher compared to other studies on LEPCs throughout their range. Additionally, nest survival in our study was consistent with other studies on LEPC nesting ecology; however, brood survival for this study was lower than previously reported in other studies. The ultimate cause for low chick survival in our study is unknown, but a combination of unfavorable weather early in the brooding season and predation are likely mortality factors. Based on our preliminary results, efforts to improve brood survival 0-14 days post-hatch would offer the best potential to improve the overall nesting success of LEPC in shinnery-oak communities of West Texas.

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REGIONAL VARIATION IN NEST SUCCESS OF LESSER PRAIRIE-CHICKENS

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Declines in lesser prairie-chicken (LPC; *Tympanuchus pallidicinctus*) populations have been attributed to loss or fragmentation of habitat, conversion of native prairie to agricultural cropland, and have been exacerbated by improper grazing practices and drought. Loss of adequate vegetation for nesting and brooding of LPCs have accelerated population declines observed in the Texas Panhandle. We monitored 114 female radio-marked LPCs in the Texas Panhandle from 2001–2007 to determine if nest success differed in two regions (northeastern and southwestern) of the Texas Panhandle. We used an information theoretic approach to test hypotheses explaining differences in nest success of LPCs in each region. To evaluate differences between successful and unsuccessful nests, we measured vegetative height, plant species at nest, and visual obstruction readings (VOR) at each nest and at random points. Nest success was significantly *(P* = 0.040) lower in the southwestern region (38%) compared to the northeastern region (67%). Evaluating factors influencing nest success, we found that parameters examined did not explain differences in nesting success. However, we found nest locations had higher VOR then random sites in both the northeastern ($\bar{x}$ = 35 cm, *SE* = 2.3 vrs 21 cm, *SE* = 2.4) and southwestern ($\bar{x}$ = 18 cm, *SE* = 2.4 vrs 10 cm, *SE* = 1.1) regions. Height at nest locations ($\bar{x}$ = 44 cm, *SE* = 1.7) was greater than at random sites ($\bar{x}$ = 32 cm, *SE* = 1.8) for the southwestern regions, but not the northeastern region ($\bar{x}$ = 52 cm, *SE* = 3.9; $\bar{x}$ = 60 cm, *SE* = 8.2, respectively). Height and VOR at both nest sites and random locations were higher in the northeastern region than in the southwestern region indicating more cover and possibly explaining the greater nest success in the northeastern region. The effects of drought appeared to affect nesting attempts, nest success, and renesting in both regions during our study. To increase populations of LPCs in Texas, we recommend managers focus on providing vegetation with adequate height and visual structure for successful nesting.

DEMOGRAPHY OF GREATER PRAIRIE-CHICKENS: REGIONAL VARIATION IN VITAL RATES, SENSITIVITY VALUES, AND POPULATION DYNAMICS

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Intensification of rangeland management has coincided with population declines among obligate grassland species in the largest remaining tallgrass prairie in North America, although the causes of decline remain unknown. We modeled population dynamics and conducted sensitivity analyses from demographic data collected for an obligate grassland bird and tallgrass indicator species, the greater prairie-chicken, during a 4-year study in east-central Kansas, USA. We examined components of reproductive effort and success, juvenile survival, and annual adult female survival for three populations of prairie-chickens across an ecological gradient of human landscape alteration and land use. We observed regional differences in reproductive performance, survivorship, and population dynamics. All three populations of prairie-chickens were projected to decline steeply given observed vital rates, but rates of decline differed across a gradient of landscape alteration (λ_{South} = 0.74, 95%CI = 0.71-0.78), λ_{North} = 0.54, 95%CI = 0.52-0.59, λ_{Smoky} = 0.49, 95%CI = 0.46-0.53). Elasticity values, variance-scaled sensitivities, and contribution values from a random-effects Life-Table Response Experiment all showed that the finite rate of population change in our declining populations was most sensitive to changes in adult survival than any other demographic parameter. The rate of population change was also sensitive to nest survival at the most fragmented and least intensively grazed study site; suggesting that patterns of landscape fragmentation and land use may be impacting the relative influences of underlying vital rates on rates of population growth. Our model results indicate that (1) populations of prairie-chickens in eastern Kansas are unlikely to be viable without gains from immigration, (2) rates of population decline vary among areas under different land management practices. (3) human land-use patterns may impact the relative influences of vital rates on population trajectories, and (4) anthropogenic effects on population demography may influence the regional life history strategies of a short-lived game bird.

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VARIATION IN NEST AND BROOD SURVIVAL OF GREATER-PRAIRIE CHICKENS IN THE NEBRASKA SANDHILLS

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Greater prairie-chickens (*Tympanuchus cupido pinnata*) have experienced decline over much of their range. Grasslands in the Nebraska Sandhills have maintained a stable population at the core of the species' range, but few studies have documented dynamics that drive success during the breeding season in this region. We studied prairie-chickens on private rangelands in Rock and Brown Counties from 2009-2011 to provide information to land owners that will guide habitat management decisions. Throughout the study, we fitted 139 hens with radio collars to locate nest and brood sites and to determine nest and brood success rates. Hens were trapped on leks during the breeding season and monitored throughout the summer using VHF radio-telemetry. At nest sites and brood-rearing locations, we collected vegetation structure and composition data. Plant composition was estimated by functional groups using a quadrat method and vegetation structure was measured using the Robel pole and a digital image of a cover board. Apparent nest success was 60% in 2009, 31% in 2010, and 15% in 2011. Brood success at 21 days post-hatch was 57% in 2009, 50% in 2010, and 63% in 2011. Our initial analyses indicate that hens tended to select small patches for nesting with relatively dense cover (15.3 cm VOR) compared to random points (6.3 cm VOR) in the same pasture. Daily survival of nests declined with nest age; nests found in thick, restored CRP did not survive well and may have driven the negative relationship that we observed between survival and VOR at the nest site. Daily brood success rates increased as the previous day's low temperature increased, which may have been related to thermoregulation or insect availability. Our data suggests that grazing management can be tuned to provide the sufficient level of within-pasture, patch-scale heterogeneity needed for successful productivity of prairie-chickens.

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RESPONSE OF GREATER SAGE-GROUSE TO THE CONSERVATION RESERVE PROGRAM IN WASHINGTON STATE

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We examine the relationship between Conservation Reserve Program (CRP) lands and greater sage-grouse nest-site selection, general habitat use, and population response in Washington. Research in Washington between 1992 and 1997 showed that females readily nested in CRP and the proportion of nests in CRP increased with the field's maturation, characterized by increased cover of perennial grass and big sagebrush. In addition, nest success was similar for nests placed in CRP (45%) and native shrubsteppe (39%). In 2004, research was initiated to examine the use of CRP by sage-grouse with the aid of fecal pellet surveys. Counts of pellets indicated that sage-grouse selected CRP with greater sagebrush cover and in areas where the overall landscape was dominate by native shrubsteppe. The population response to CRP was compared for two separate populations in Washington, one in south-central Washington (~2% CRP) and one in north-central Washington (~17% CRP). Both populations declined substantially between 1970 and 1988, prior to establishment of CRP. Following establishment of CRP, the southern population continued to decline, while the northern population increased. These results indicate that lands enrolled in the CRP can have a positive impact on greater sage-grouse populations, especially if these habitats include big sagebrush and are focused in landscapes with substantial shrubsteppe.

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CURRENT PRAIRIE GROUSE RESEARCH IN IDAHO

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Columbian sharp-tailed grouse (CSTG) and greater sage-grouse occur in shrub-steppe, grassland, and mountain shrub communities of southern and western Idaho. CSTG were petitioned twice for listing under the Endangered Species Act; however, both petitions, were deemed not warranted. Sage-grouse are a candidate for listing under the Endangered Species Act because in 2010, the U.S. Fish and Wildlife Service found that listing was warranted, but precluded. In Idaho, both species are affected by habitat loss and fragmentation, including loss of Conservation Reserve Program (CRP) land, and energy development. Currently wind power development is occurring within CSTG habitat and is planned for key sage-grouse habitat. The Idaho Department of Fish and Game has been involved with prairie grouse research for over 35 years, providing a wealth of historical data. However, threats to populations of both species have underscored the need for additional research, especially with respect to use of CRP land and wind-power development. We present a summary of recent research and preliminary findings focusing on evaluating impacts of energy development and potential loss of Conservation Reserve Program lands. The goal of our research is to better understand how these changes to the landscape may impact long-term survival of these grouse and to better inform management in the future.

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BEHAVIOR, VOCALIZATIONS AND MANAGEMENT IMPLICATIONS OF HYBRID PRAIRIE GROUSE (*TYMPANUCUS SPP*.) IN WEST-CENTRAL MINNESOTA.

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In west-central Minnesota, Greater Prairie-Chickens (*Tympanuchus cupido*) hybridized with Sharp-tailed Grouse (*T. phasianellus*). Using observations of hybrids and 'pure' individuals on mixed-species leks, I monitored the vocalizations, behavior, and mating success of hybrid males. During the 2009 breeding season, I observed one lek consisting entirely of sharp-tailed grouse; two leks with both species and hybrids; and one lek with prairie-chickens, a hybrid, and one back-cross prairie-chicken. I recorded vocalizations and conducted 10 minute focal observations to quantify behavior of particular males. Copulations were recorded as they occurred. Hybrid individuals stomped their feet faster during epigamic displays, but had similar mating success as individuals of the parental species. Hybrid vocalizations were intermediate between the parental species. One unexpected finding was the high percentage of individuals with mixed-species parentage in this population (8-16%), and I suggest that managers seek to decrease the frequency of hybridization by increasing the population sizes of both parental species. These observations suggest that behavioral isolating mechanisms may be weak in these species, despite their lek-mating breeding system.

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ASSESSMENT OF THE DISTRIBUTION OF LESSER PRAIRIE-CHICKENS IN RELATION TO POTENTIAL WIND ENERGY DEVELOPMENT IN TEXAS

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Wind power has increased greatly in the past 30 years, especially in the Great Plains. While it is considered a more environmentally-friendly source of energy, wind energy production still has the potential to negatively impact wildlife and wildlife habitat. West Texas has been identified as a major source for future wind power and 2 Competitive Renewable Energy Zones (CREZ) have been identified in the Texas Panhandle. The Panhandle is also an important stronghold for lesser prairie-chickens (*Tympanuchus pallidicinctus* [LPC]) and as with many other grassland birds, LPCs have experienced population declines in the Southern Great Plains. This loss is mostly due to conversion of native grassland to cropland, extensive grazing, invasion of woody plants, and disturbance from energy development. Thus, the main objective of this study is to determine LPC density and distribution relative to future wind energy development in the Texas Panhandle. We estimated densities of LPC leks using an aerial survey line transect technique developed by Texas Tech University. We randomly-selected 5,184-ha survey blocks that overlap the current estimated LPC range in Texas and allocated survey efforts to those blocks in which there was the greatest potential for wind energy development to impact LPCs. During spring 2010 and 2011, we flew 208 survey blocks in a Robinson 22 helicopter and observed 176 LPC detections. Using distance sampling, we were able to provide lek density estimates for the northeast, southwest, and west-central Panhandle populations. Using spatial distance sampling, we can also model these estimates against human and vegetative features on the landscape, such as roads and transmission lines. These spatial models will help predict the potential impact from wind energy development on LPC distribution and determine which future wind facility sites will have the least impact on LPCs in West Texas.

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GREATER PRAIRIE-CHICKEN NEST SURVIVAL IN RELATION TO HABITAT CHARACTERISTICS AND ANTHROPOGENIC DISTURBANCE IN NORTH CENTRAL KANSAS

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Greater Prairie-Chickens have suffered significant range contractions due to extensive loss and fragmentation of prairie habitats in North America. Much of the remaining habitat for the species occurs in areas with high concentrations of agriculture and other human development. Alteration of breeding habitat may have significant effects on key demographic rates of prairie-chicken populations such as nest survival. We conducted a study to evaluate the impacts of vegetation structure, habitat fragmentation and environmental variables on nest survival of prairie-chickens. During 2007-2011, we monitored 260 nests of 171 female Greater Prairie-Chickens within a 1,500 km^2 study area in the Smoky Hills ecoregion of north-central Kansas. Grassland habitats at the study area were fragmented by a dense road network (1.4 km of road per km^2) and variable land-use regimes (38% agriculture). We measured local nest-site vegetation structure, spatial attributes of the larger nesting area (patch size, shape, and landcover composition), and distance from nests to anthropogenic features. We then used an information theoretic approach to evaluate and compare competing models of nest survival as related to habitat components at multiple temporal and spatial scales. We present our findings on nest survival of Greater Prairie-Chickens in relation to habitat characteristics and anthropogenic disturbance in a heavily fragmented grassland ecosystem.

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PRAIRIE GROUSE DISPLAY GROUND AND NEST DISTRIBUTION RELATIVE TO MAN MADE STRUCTURES WITH EMPHASIS ON THE WIND TOWER COMPLEX IN NORTHWESTERN MINNESOTA, 2001-2011.

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The key to reducing the impact of human disturbances or structures on wildlife is to not create obstructions to travel or reduce and eliminate large amounts of habitat critical to a particular species or group of species. In northwestern Minnesota, we have monitored the booming grounds and nests of radio-marked prairie chickens associated with a three-tower wind generator complex near Felton, Minnesota since 2001. Population trends based on booming ground cock counts within 2 miles of the tower complex has paralleled the surrounding population. Since 2006 a total of 64 nests have been located within 1 mile of the towers and nesting success has averaged 59.4% (38/64) (Range 41.6-68.4%) and 68.4% (13/19) in 2011. This past year at total of 18 hens (6 adults, 12 immatures) were captured and radio-marked on the booming ground nearest the wind tower complex (0.66 miles). Seventeen of these hens nested within 1 mile of the complex. One of the criticisms of the information compiled from the Felton complex has been that this is an isolated GPC population and that these "birds have nowhere else to go". However, radio-marked birds can nest, feed, raise broods and night roost only as near to man-made structures as the distribution of grassland habitat will allow.

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GREATER PRAIRIE-CHICKEN RECOVERY AND PERCEPTIONS REGARDING CATTLE GRAZING AS A MANAGEMENT TOOL FOR TALLGRASS PRAIRIE REMNANTS IN MISSOURI.

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The Missouri Department of Conservation (MDC) initiated a comprehensive Greater Prairie-Chicken Recovery (GPC) program in 2006. Accomplishments to date include substantial habitat improvement on public and private lands in six priority geographies. Despite these efforts, 2011 lek surveys indicate that fewer than 100 native birds remain in profoundly isolated sub-populations. Despite occasional sightings, GPC may already be extirpated or critically near that point in four of the six geographies. Recent, precipitous declines may be partially explained by abnormally high precipitation and extreme weather events from 2007-2010. Only the population at Taberville Prairie appears to exhibit the degree of stability needed to persist more than a few more years. A five-year translocation project in cooperation with the Kansas Department of Wildlife, Parks and Tourism was initiated in 2008. A two-stage translocation process based on the recapture of radio-marked hens with broods was used from 2008-2010. Low survival among translocated juveniles prompted a shift to spring-only translocation of males and females during 2011. Although the long-term stability of the translocated population remains unknown, early indications of success include the re-establishment of extirpated booming grounds in the release landscape, declining dispersal among recently translocated individuals and successful reproduction. Prevailing dry conditions during the 2011 nesting season may be a factor in improved production, as 23 of 29 monitored nests successfully fledged 52 chicks (apparent nest success 79%). Patch-burn grazing is used as a management tool to reduce the dominance of native grasses and increase the structural heterogeneity of remnant prairies within GPC recovery landscapes. Habitat use observations confirm GPC preference for grazed pasture as well for nest site selection associated with 'soft edge' created both within grazing units and along boundaries with units receiving other management treatments. Despite apparent benefits, some Missouri grassland conservation stakeholders have voiced strong opposition to cattle grazing on remnant Tallgrass prairie based on perceived and unknown threats to long-term botanical diversity and headwater stream stability. As a result, MDC prairie managers find themselves at the center of a debate regarding grassland management priorities in a state that lies, geographically and ideologically, somewhere between the western rangeland management tradition and a protection paradigm more commonly identified with eastern prairie remnants.

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PRELIMINARY EVALUATIONS OF HABITAT PREFERENCES OF RESIDENT AND TRANSLOCATED GREATER PRAIRIE-CHICKENS IN MISSOURI: IMPLICATIONS FOR MANAGEMENT ON THE EASTERN EDGE OF THE SPECIES RANGE

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Greater prairie-chicken researchers in the tallgrass prairie region have often described gpc habitat as being prairie or other grass-forb complex with a maximum height of 14-17 inches. Most cover in the 25 inch (64 cm) or greater rainfall zones will easily exceed this height unless modified in some manner. Grazing, drought, or soil limitations were the primary factors limiting average or potential height historically for native prairie vegetation as well as introduced cool-season grasses and legumes. Westemeier (IL) and other researchers have used late summer and fall high clipping of native warm-season grass/forb plantings and introduced cool-season grasses and legumes. In addition to reducing height of vegetation, the resultant stubble is more likely to remain erect through winter for spring nesting with the upper weight removed whereas unclipped grass often is flat on the ground by spring from ice and snow. Using radio telemetry, we tracked native Missouri hens and males and translocated (from Kansas) males and hens with chicks in 2008 and 2009 to determine the habitat they used most often. The Missouri translocation team also noted where hens and chicks were most commonly found in the Smoky Hills of Kansas when they returned to catch and move them in the summers of 2008 and 2009. Preliminary observations suggest that vegetation height modification are important for greater prairie-chicken habitat east of the 25 inch (64 cm) rainfall zone to ensure appropriate cover for brood-rearing, as well as nesting and roosting. Results and management implications will be discussed.

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MISSOURI GREATER PRAIRIE-CHICKENS: DEMOGRAPHY AND MOVEMENT

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Few rigorous studies have evaluated translocation as a management tool, despite increased use of the technique in conservation settings. A 5 year translocation project in Missouri is attempting to augment the state's population of endangered greater prairie-chickens (*Tympanuchus cupido*). We used radiotelemetry to compare survival and movement patterns among 28 residents and 54 translocated birds between March 2011 and August 2011. Results indicated lower survival in translocated prairie-chickens (0.52 ± SE 0.08) than in residents (0.78 ± SE 0.08). The areas traversed by individuals also differed between translocated (n = 17) and resident (n = 13) males, though not between translocated (n = 16) and resident (n = 12) females. Minimum convex polygons for translocated male locations (median 5.79 km^2) were larger than polygons for resident males (median 3.15 km^2; $P < 0.001$). Minimum convex polygons for translocated females did not differ from resident females (P = 0.555; combined median 7.16 km^2). Translocated birds were also 3.4 times (95% CI 0.9–13.1) more likely than residents to make permanent movements off of study areas. Our research illustrates that demography and movement in recently translocated birds differs substantially from residents. We recommend the use of post-translocation survival and site fidelity studies during and after translocation as a conservation tool.

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BURNED OUT: DOES FIRE FREQUENCY ACROSS THE FLINT HILLS EXPLAIN REGIONAL GREATER PRAIRIE-CHICKEN POPULATION DECLINES

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The Flint Hills of Kansas represents the largest remaining tracts of tallgrass prairie left in the United States. Kansas Department of Wildlife and Parks (KDWP) Greater Prairie-Chicken (*Tympanuchus cupido*; hereafter prairie-chicken) lek survey data suggest that over the last 30 years prairie-chicken populations across the Flint Hills have declined by >30%. The exact mechanisms driving these declines are still under investigation. However, the occurrence of these declines are coincident in space and time with a shift in land management of much of the region to annual spring burning and intensive cattle stocking. Using remotely sensed data we created a map depicting fire frequency for grasslands across the Flint Hills over the last decade and compared the frequency of burning to lek population trends over the same time period. There was a weak negative rank correlation between fire frequency and lek attendance (rho = -0.035, P = 0.04), and overall, fire frequency directly accounted for 11% of the observed decline of prairie-chickens over the last decade (R^2 = 0.11, P = 0.032). Our data suggest that observed declines of prairie-chickens is only partially attributable to fire frequency over the last decade, but that fire frequency is likely one contributing factor to prairie-chicken population trends across the Flint Hills.

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GREATER PRAIRIE-CHICKEN SURVIVAL IN GRASSLANDS MANAGED FOR HETEROGENEITY

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Recent shifts in rangeland management and new energy development have increased threats to imperiled prairie grouse (*Tymapanuchus spp*.) populations. Once a common species throughout the tallgrass prairie ecoregion, the Greater Prairie-Chicken (*Tympanuchus cupido pinnata*) is now reduced to 11 states, several of which have reintroduced populations. The Flint Hills of Kansas and Oklahoma have some of the largest remaining Greater Prairie-Chicken populations; however, recent research findings report that populations in this area are declining at alarming rates. A shift in rangeland management to annual spring burning and intensive early grazing practices is hypothesized as a leading cause of declines. We investigated how managing for heterogeneity, where only a portion of the landscape is burned each year and season of fires varies, influenced survival of Greater Prairie-Chickens. Our research was conducted at the Tallgrass Prairie Preserve in Osage County, Oklahoma from March 2011 – August 2011. We trapped adult birds on 4 leks over the course of 30 trapping days in late March and early April. We captured 35 birds ($\bar{x}$ = 1.2 birds/trap day) and fitted 16 g radio-transmitters to 30 (n = 17 females; n = 13 males). Daily survival rates (DSR) for radio-tracked adults was greater for females than males (female = 0.975 ± 0.10; male = 0.950 ± 0.02) with an overall probability of surviving the 20-week breeding season of 60 % for females and 35 % for males. Tracking collared-females yielded a total of 16 nests, 14 first nest attempts and 2 re-nest attempts. Nest survival analyses in program MARK found that the constant daily survival model was best at predicting Greater Prairie-Chicken survival (DSR = 0.960; SE = 0.01), but multiple models were competitive (ΔAIC $\leq$ 2). Other competitive univariate models included time since fire (β = 0.03 on a logit scale, SE = 0.02, 95% CI was -0.01, 0.08) and a linear time trend model (β = – 0.03 on a logit scale, SE = 0.02, 95% CI was -0.07, 0.02). On average, first nest attempts occurred in patches that were 30.07 months post fire (range: 14 – 43, SE = 2.53). This research emphasizes the importance of residual biomass resulting from elapsed time since fire for nesting Greater Prairie-Chickens. Additionally, our results improve knowledge of Greater Prairie-Chicken survival demographics for the southern portion of the Flint Hills.

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USE OF GRAZING MANAGEMENT TO RESTORE LESSER PRAIRIE-CHICKEN HABITAT IN EASTERN NEW MEXICO

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In 2005, The Nature Conservancy purchased a nearly 7,500 ha ranch in eastern New Mexico to form the Milnesand Prairie Preserve, which is managed for conservation of sand-shinnery oak - grasslands and the species that depend upon these unique habitats. The original landowner continues to graze the Preserve using a cow-calf operation. There are 13 pastures grazed using a rotational strategy using two herds. The goal of the grazing program is to enhance lesser prairie-chicken habitat by limiting grazing utilization to ≤50%, increase litter component, increasing vegetation richness, and creating vegetation structure (>75% obstruction in first 33 cm) for nesting lesser prairie-chickens. Forage utilization was measured using clip plots in exclosures. Vegetation composition was measured using step-point transects. Vegetation structure was recorded using a profile board. Grazing intensity varied annually and averaged 866 cattle-grazed days/year. Forage utilization of ≤50% was achieved in 5 years and maintained throughout the remainder of the study. Species richness increased 50% (22 – 33 species) in 6 years. The visual obstruction goal was achieved in 5 years. Percent litter increased 44% in 6 years. Grazing management can be successfully used to maintain and create lesser prairie-chicken habitat, but annual monitoring is needed to ensure that habitat goals are achieved.

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A TEN YEAR ASSESSMENT OF HERBICIDE TREATMENT AND GRAZING ON NEST SITE SELECTION AND DAILY NEST SURVIVAL OF LESSER PRAIRIE CHICKENS IN NEW MEXICO

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We examined nest-site selection and daily nest survival of nest of lesser prairie-chickens among four combinations of treatments with tebuthiuron (0.75kg/ha) and a short-duration, rotational-grazing system being used to resort shinnery oak communities in New Mexico. From 2001-2010, we located and 205 LEPC nests via radio-telemetry. Seventy-eight nests were located in plots that were not treated with herbicide and were grazed, 37 were located in plots that were not treated with herbicide and were not grazed, 72 were located in plots that were treated with herbicide and were grazed, and 9 were located in plots that were treated with herbicide and were not grazed. We were unable to assess treatment type for 10 nests. We assessed nest survival for 196 nests. There was no support for differences in daily survival rates across treatment types. Tebuthiuron treatment did not appear to affect nest densities and survival. Low nest densities in plots that were not grazed compared to those that were grazed suggests that this grazing system is an important driver in nesting habitat selection by Lesser-Prairie Chickens in shinnery-oak communities.

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LANDSCAPE RESISTANCE AND CONNECTIVITY FOR SHARP-TAILED GROUSE IN WASHINGTON

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Connectivity of sharp-tailed grouse populations is a key conservation issue for their persistence in Washington State. The Washington Wildlife Habitat Connectivity Working Group (WHCWG) recently completed a statewide analysis that identified habitat linkage patterns for sharp-tailed grouse among eight habitat concentration areas (HCAs). We assembled spatial data on land cover, roads, and other landscape features and developed models of resistance of these features to grouse movement. We used these models to develop maps of: 1) resistance to movement across the study area; 2) cost-weighted distance, the ease and extent of movement outward from HCAs; and 3) linkage zones, highlighting the "easiest" movement pathways between HCAs. Sharp-tailed grouse HCAs are located away from developed areas and occupy "islands" of habitat. Two HCAs connect only to one other. One HCA connects to five others, forming a 'hub' for grouse movement among the other HCAs. The centrality of this particular HCA suggests that its loss or disruption would have a negative impact on a substantial portion of the sharp-tailed grouse population.

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MITIGATION FOR PRAIRIE GROUSE: CONSIDERATIONS FOR THE NEW REALITY

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Before the rapid onset of wind, solar, oil and natural gas energy (and new transmission corridors to transport it all), many populations of prairie grouse were already in trouble. While agencies and NGOs are scrambling to minimize the fallout from massive renewable energy development, record grain and mineral prices and CRP loss have made an already bad situation worse. So what are conservation agencies and NGOs to do? Buying more land probably isn't the answer. Part of the answer is to begin with the end in mind, and work backwards from the needs of landowners, mineral owners and Land Trusts, the controlling parties to perpetual conservation easements. In addition, grouse managers must begin now to develop coordinated, comprehensive metrics to adequately mitigate for impacts to prairie grouse, and decide in advance where and how mitigation funds should be targeted and leveraged. Presented are perspectives and recommendations from the first voluntary mitigation project for a wind energy facility in the country.

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UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, LESSER PRAIRIE-CHICKEN INITIATIVE

R. D. KREHBIEL, Resource Conservationist, Natural Resources Conservation Service, Salina, KS 67401 USA

In 2010, the Natural Resources Conservation Service (NRCS) in Colorado, Kansas, New Mexico, Oklahoma, and Texas along with partnering agencies developed the Lesser Prairie-Chicken Initiative (LPCI) to bring about protection to the species and a change in the philosophy of land management for both conservationists and to land stewards managing private lands throughout lesser prairie-chicken (LPC) range. The objective of the LPCI is to provide the ability for land stewards to improve their working lands in a manner that provides economic sustainability while creating, maintaining, or improving LPC habitat. The Playa Lakes Joint Venture, the Kansas Department of Wildlife, Parks and Tourism, and the NRCS utilized a large block geospatial analysis model to identify high priority areas and rank applications within the LPCI area in Kansas. Using a state-developed prairie-chicken assessment, range conservationists and biologists gathered benchmark conditions onsite to understand limiting factors for LPC success. This information is used to develop a plan aimed at addressing those habitat needs. Conservation Practices 528, Prescribed Grazing, and 645, Upland Wildlife Habitat Management, are the two core practices used for each plan. The NRCS in Kansas has received approximately $1.45 million in Fiscal Year (FY) 2010 and $1.44 million in FY 2011 for financial assistance to fund conservation practices on approximately 50,000 acres of private land. This represents the single greatest federal investment ever to directly benefit LPC.

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Presentation type: Lecture
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LESSER PRAIRIE-CHICKEN CONSERVATION: INITIATIVES AND LISTINGS, HOW DO WE MOVE FORWARD?

Christian A. Hagen, Lesser prairie-chicken initiative science advisor, Bend, Oregon 97702.

On the cusp of listing under the Endangered Species Act, strategic and effective conservation actions are now more necessary than ever for lesser prairie-chickens. The Natural Resource Conservation Service has stepped forward with considerable investment in time and money to reduce the threats facing the species, and perhaps alleviate the need for protection under ESA. The implications of listing versus voluntary conservation are discussed in the context of private land management, most of which is dedicated to agricultural type production. The role of private land stewardship in threat reduction to lesser prairie-chickens and their habitats are discussed.

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Poster Abstracts

MULTIPLE PATERNITY AND CON-SPECIFIC BROOD PARASITISM AMONG GREATER PRAIRIE-CHICKENS: A CONDITIONAL STRATEGY FOR COPING WITH ANTHROPOGENIC LANDSCAPE DISTURBANCE?

ANDREW J. GREGORY* School of Forestry, Northern Arizona University, Flagstaff, AZ 86011, LANCE B. MCNEW, BRETT K. SANDERCOCK, AND SAMANTHA M. WISELY, Division of Biology, Kansas State University, Manhattan, KS 66506.

Growing evidence suggests that human activities on the landscape alter life history characteristics of wildlife inhabiting them. Many species will allocate more time and resources toward reproduction on disturbed landscapes than on intact ones. Behaviorally, this may manifest as a proclivity for promiscuity and or increased tendencies toward bet hedging against your own survival via con-specific nest parasitism. Using molecular data from 16 microsatellite markers, on 305 chicks in 53 broods, we assessed rates of multiple paternity and con-specific brood parasitism (CBP) among female Greater Prairie-Chicken broods (*Tympanuchus cupido*) at three study sites across eastern Kansas. Human impacts on the landscape across our study area vary by latitude; from 90% grassland landcover and 0.3 km road/km^2 in the south to 53% grassland landcover and 1.04km road/km^2 in the north. Across this same gradient we found variation in the rates of CBP and multiple paternity among prairie-chickens (CBP rate south – north = 0 – 7% hens being parasitized, and multiple paternity rate south – north = 0 – 31% broods). These data support the notion of a conditional reproductive strategy among prairie-chicken populations driven by anthropogenic disturbance on the landscape. We found that prairie-chickens are more promiscuous and more likely to parasitize con-specific nests on disturbed landscapes than on less fragmented ones. We could not, however, discount a latitudinal effect. This conditional strategy may be adaptive and could have significant impacts on the viability of populations inhabiting disturbed landscapes.

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VOCALIZATIONS AND MATE CHOICE IN THE GREATER PRAIRIE-CHICKEN

J. A. HALE, Ohio State Univ., Columbus, OH 43210 USA, J. K. AUGUSTINE*, Ohio State Univ. at Lima, Lima, OH 45804 USA.

In lek-mating systems, females receive only a genetic contribution to offspring from mates rather than resources, parental care, or any other direct benefit. The Greater Prairie-Chicken (*Tympanuchus cupido*) is a lek-mating bird whose males perform a highly stereotyped mating display that includes a substantial vocal component. We hypothesized that aspects of male vocalizations are correlated with other indicators of fitness such as display rate and physical size. In addition, we hypothesized that vocalizations are more closely linked to male mating success than are morphological traits such as body size. We recorded vocalizations of displaying males from five leks near Manhattan, KS, and analyzed them in the context of behavioral observations and mating success. We found vocalizations to vary among leks, but vocalizations did not correlate with mating success or display or aggressive behavior. This observational study addresses the variability of auditory display components in a lek-mating bird and sheds light on factors females use to discriminate between potential mates in this species.

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EFFECTS OF RANGELAND MANAGEMENT ON THE SITE OCCUPANCY DYNAMICS OF PRAIRIE-CHICKENS IN A PROTECTED PRAIRIE PRESERVE

LANCE B. MCNEW*, Division of Biology, Kansas State University, Manhattan, KS 66506, USA, THOMAS J. PREBYL[2], Division of Biology, Kansas State University, Manhattan, KS 66506, USA, BRETT K. SANDERCOCK, Division of Biology, Kansas State University, Manhattan, KS 66506, USA

We investigated the site occupancy dynamics of greater prairie-chickens at Konza Prairie Biological Station, a protected site in northeastern Kansas that is managed for ecological research. We surveyed the site during mid-Mar to mid-May, 1981 – 2008, and recorded detections of birds in a grid of 6.3 ha survey plots (n = 187 plots). We used multiseason occupancy models to estimate the probabilities of occupancy (ψ) and detection (p), and tested whether land cover in woody vegetation, and land use with prescribed fire or grazing management influenced the dynamic processes of site colonization and local extinction. Probability of detection per site was consistently less than one and varied among years (p = 0.12–0.82). Site occupancy of prairie-chickens declined 40% over the study period from a high of $\psi = 0.19 \pm 0.02$SE in 1981 to a low of 0.11 ± 0.03 in 2008, despite protection from disturbance at leks and losses to harvest. We found that different sets of environmental factors impacted the probabilities of colonization and local extinction. Probability of colonization for an unoccupied site was negatively associated with the proportion of site occupied by woodland cover (β = -1.25), and was lower for grazed sites (β = -0.62). In contrast, probability of local extinction was affected by a weak interaction between grazing and average frequency of prescribed fire (β = -1.01), but model-averaged slope coefficients were not statistically different than 0. To conserve prairie-chickens, we recommend prairies be managed with combinations of prescribed fire and grazing that maintain a heterogeneous mosaic of prairie habitats, while preventing woody encroachment. To assess biotic responses to land management practices, field sampling should be based on occupancy models or similar techniques that account for imperfect detection.

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FIRST REPORTED CASE OF DOUBLE-BROODING BY A GREATER PRAIRIE-CHICKEN

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WILLIAM J. WHITE*, Division of Biology, Kansas State University, Manhattan, KS 66506, USA

Double-brooding, or the production of two broods by a single female in a single breeding season, is previously unreported for any species of grouse. We report the breeding history of 1 of 55 radio-marked female greater prairie-chickens that successfully hatched a nest and then renested after losing the initial brood during the breeding season of 2011 in Kansas. Although double-brooding in greater prairie-chickens is likely very rare, double brooding may be more common for southern populations in the Flint Hills of Kansas where breeding seasons are long and nest losses are high.

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CHEMICAL CONTROL OF SAND SAGEBRUSH: IMPLICATIONS FOR LESSER PRAIRIE CHICKEN HABITAT

ERIC THACKER, Southern Plains Range Research Station, USDA–ARS, Woodward OK 73801. ROBERT GILLEN, Western Kansas Agricultural Research Center, Hays, KS 67601. STACEY GUNTER, and TIM SPRINGER, Southern Plains Range Research Station, USDA–ARS, Woodward OK 73801.

Traditional management of sand sagebrush (*Artemisia filifolia*) rangelands has emphasized sagebrush control to increase forage for livestock. Concerns over declining lesser prairie–chicken (*Tympanuchus pallidicinctus*; LPC) populations have lead to increased scrutiny over the use of herbicides to control shrubs. Our objective was to describe changes to LPC habitat following chemical control of sand sagebrush in Northwest Oklahoma. Study Pastures ranged in size from 10 to 21 ha. Five pastures were sprayed with 2,4-dichlorophenoxyacetic acid (2,4-D) in 2003 (RECENT), five were sprayed with 2,4-D in 1984 (OLD), and four received no treatment (SAGE). We measured habitat structure (sagebrush cover, sagebrush density, visual obstruction [VOR], and basal grass cover), and dietary resources (forb density, forb diversity, and grass hopper density) from 2003–2006. OLD and RECENT pastures had less sagebrush (cover and density) and VOR than SAGE pastures. OLD pastures produced more annual forbs than either SAGE or RECENT pastures. However, SAGE pastures had more perennial forbs than RECENT pastures. Forb species diversity and grasshopper density did not increase despite 2,4-D application. 2,4-D reduced protective cover while providing no increase in forb abundance in RECENT pastures; pastures that had not been treated since 1984 (OLD) did have more annual forbs. Our results indicate it may take years to realize increases in annual forbs. However, loss of protective cover may persist for multiple years (20+ years), and removal of sagebrush did not increase forb diversity or grasshopper abundance. Thus, 2,4-D may have limited use as a habitat management tool.

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THERMAL ECOLOGY OF NESTING LESSER PRAIRIE-CHICKENS AND THE POTENTATIAL IMPLICATIONS OF CLIMATE CHANGE

BLAKE GRISHAM*, Department of Natural Resources Management, Texas Tech University, Lubbock, TX 79409, CLINT BOAL, U.S. Geological Survey, Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX 79409, DAVID HAUKOS, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University, Manhattan, KS, 66506

The Southern Great Plains is anticipated to experience earlier spring phenology due to climate change. These changes may influence populations of lesser prairie-chickens. Our study objectives were to examine phenology and the thermal aspects of prairie-chickens nesting in Texas and New Mexico. We found that prairie-chicken nests are maintained at relatively consistent temperatures and humidities compared to extensive daily variation in ambient conditions. This stable nest environment is appears to be more closely associated with presence of the hen. Nests are maintained at significantly warmer temperatures throughout most of the 24-hr period, but are kept significantly cooler than external temperatures during mid-day when ambient temperatures are in the ranges that increases potential for egg death. Similarly, nest humidity is maintained within tolerances for egg survival during the driest period of the day when external humidity is typically less than 10%. We also found that factors other than ambient temperature cause hens to go into thermal stress. These results may reveal important drivers of nesting habitat selection by lesser prairie-chickens in an extreme environment, potential impacts of climate change on nesting prairie-chickens, and insights toward improved habitat management and conservation.

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Business Meeting

Minutes of the Prairie Grouse Technical Council Business Meeting
October 3, 2011

AGENDA

Items:
2009 Business Meeting Minutes – Vote to accept
Finances of PGTC – W. Heck
Treasury Report (Kansas) – D. Dahlgren
Use of extra PGTC Funds
PGTC and MAFWA, AFWA, Combo?

Carried over from 2009 Business Meeting:
2013 meeting – State?
PGTC Position Statement on Wind Power – update
PGTC Website (SDSU) – update
Timing and Position Statement – Review

BUSINESS MEETING ATTENDEES

Name	Representing	Email
Mike Mitchener	KDWPT	mike.mitchener@ksoutdoors.com
Dave Dahlgren	KDWPT	dave.dahlgren@ksoutdoors.com
John Toepfer	STCP	jtoepfer@covedsd.com
KC Jensen	SDSU	kentjensen@sdstate.edu
Nova Silvy	TAMU	n-silvy@tamu.edu
Jeff Knetter	IDFG	jeff.knetter@idfg.idaho.gov
Dan Svedarsky	U of MN	dsvedars@crk.umn.edu
Rick Baydack	U of Manitoba	baydack@cc.unauit
Jack Connelly	IDFG	jcsagegrouse@aol.com
Jeff Lusk	NGPC	jeff.lusk@nebraska.gov
Travis Runia	SDGFP	travis.runia@state.sd.us
Aaron Robinson	NDGF	acrobinson@nd.gov
Mike Morrow	Attwater PCNWOR	mike_morrow@fws.gov
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Lance McNew	KSU	lbmcnew@ksu.edu
Mandy Orth	SDSU	mandy.orth@sdstate.edu
William Cohine	KSU	wjcohine218@yahoo.com
Jackie Augustine	OSU – Lima	Augustine.63@osu.edu
Max Alleger	MO Dept Cons	max.alleger@ndc.mo.gov

Approval of 2009 meeting minutes

- Vote to approve affirmative

Finances

Willard Heck was absent so review of paper budget was done by Dave Dahlgren

- Report attached

Discussion on how to use extra funds left over.

- Rick Baydack thinks there is a booklet on guidelines put together on how to use fund to get:
  - Student travel / scholarships
  - Fund a portion of a PBS special on Prairie Chickens
  - Awards for student presenters
  - Waive student registration if a presenter
  - Build up some excess funds and try to get match funds.

2011 PGTC Budget Report

2011 PGTC Conference Budget	Amount	Comment
Balance Forwarded (GCF)	2,000.00	Grassland Charitable Foundation
Income		
Registration	13,008.00	
Auction Proceeds	2,232.00	
Sponsors	3,150.00	
Sub Total	20,390.00	
Expenses		
SWAG: Shirts, Caps, Shears, Embroidery	5,922.59	
Bus (Field trip)	750.00	
Food/Catering	6,347.40	
Facilities	650.00	
Banquet: Entertainment and Door Prize	850.00	
Misc.	200.00	
Sub Total	14,719.99	
Balance KDWPT	**5,670.01**	
Balance Grassland Charitable Foundation	**11,420.48**	GCF is Transferring to NAGP
Total	***17,090.49***	

PGTC Funds

- North American Grouse Partnership volunteered to hold PGTC funds. D. Dahlgren discussed with W. Heck after the business meeting

PGTC – Become committee of MAFWA

2007 Letter from MAFWP inviting to join was decided by membership not to join.
Discussion on motion to join MAFWA as an official technical committee

- Much discussion against being association member
- Bylaws may need to be redone
- Maybe more difficult to get to travel
- May be able to be more influential in agency to be member of MAFWA

Motion to stay independent seconded and voted to stay independent and not join MAFWA. This subject has been discussed at multiple meetings in the past and the same conclusion/decision has been reached. Therefore, multiple attendees supported the idea that this subject not be brought up again in future meetings.

2013 and 2015 Meeting Sites

Initially Missouri agreed to hold the 2013 meetings. However, D. Svedarsky discussed Minnesota hosting it in 2013 with Max Alleger (Missouri) after the business meeting. The 2013 meeting will be held in Minnesota and the 2015 meeting will be in Missouri. Dan Svedarsky will chair the meetings in 2013, and Max Alleger will chair the meetings in 2015.

Wind power position finalization from 2009

D. Dahlgren read 2009 minutes and they indicate wind position statement was never completed.

- John Toepfer suggested we advocate for the resource and keep wind on black dirt (ag lands) out of the grasslands.
- Lance McNew thought we should not pick too finite a restriction as we may lose credibility; therefore a hard line in the sand to put on disturbed lands is a good choice.
- Aaron Robinson brought up the recent research indicating energy needs can be met by putting wind on disturbed sites.
- Jeff Knetter, Idaho – suggested placement right outside cities not in prairie grouse habitat.
- Consensus was for a short noncommittal statement on wind energy development; stating that wind development should take place on disturbed low wildlife value lands.

Website Development

- KC Jensen discussed the status of a PGTC website. KC volunteered to work with Grouse partnership to host the PGTC website. KC attempted to get SDSU to host the site, but university regulations prevented the type of site needed for PGTC. KC suggested that NAGP website host the site.
- Rick Baydack is not sure that the grouse partnership has the ability to do this
- Jeff Knetter asked if there was a possibility to get PF to host the PGTC website
- Randy Rodgers moved to approach PF to host PGTC website
- Jeff seconded
- Voted in favor

Jim Pitman volunteered to make arrangements with PF. KC Jensen will send dummy website that exists to Pitman.

Timing and Position Statement Review

Discussion on how far in advance do position statements

- Need to be far enough out that the membership can be reviewed.

Other Business

- Possible state reports - use to be part of meeting. A verbal report was given by the following states.

KS – LPCH Range extend northward Flint Hills and Osage Cuesta's down, Smoky Hills stable, LPCH initiative is going well, Spent funds, Hybrids being found, We did a Max ENT model that showed potential LPC Range

Ohio – No chickens

MO – Very good year in MO 23 of 29 nesting were successful, 52 young of year. Some places are losing birds still completed 4 of 5 each year of translocation from KS established 3 leks in release also a couple of new leks in private lands. Hard to do much W/L to Est grass.

ND – 3 Bad winters, study looking at oil, gas impacts. Found some birds moved from NW corner to Breshson MO River, 50% to 60% down on birds PCH season closed last year pop decreased 30% to 50% looking at development of AGPC plan CRP is going down

SD - PG harvest 55000 birds harvested long term reduction of grass in state loss CRP next year, loss is generally across the state. Where PG sharp tail & GPC research project looking at wind energy development 3 years pre and 3 years post development.

NE – Wind energy RFP just went out for site around Ainsworth. Moved prairie grouse season to September 1st, pop wet spring caused reproduction to be down.

ID – Continue research on sage grouse and sharp tails – Idaho providing Columbian sharps to Washington and other states for reintroduction or augmentation nest success rates down ~ 30% pressure from wind developers and transmission lines from MT to WY ~5000 Columbian sharp tails harvested per year. A lot of SAFE acres being put on ground – one requirement is SAFE acres must be within a mile of a lek.

MB (Manitoba Province) – Numbers stable relatively high, hired new people in 3 prairie provinces because old grouse biologists have all retired. No money for management and research this year, numbers seem to be down.

MN – Been really dry last 2 months good harvest for farmers some PC over the counter permits available, pop declined approximately 15%, nest success approximately 40%, CRP is going to be lost big time.

WI – plan is to increase management on sharp tails. Sharp tails moving into chicken range

TX – Attwater small pop increase in last couple of years. Think insect population a factor may be because of fire ant introduction 1970's, this year most broods failed, large project to treat large areas to eliminate fire ants and see a response in insect populations. LPCH down 70% in NE panhandle 50% down S of Lubbock think it is because of increase of oil and gas development in NE panhandle.

Motion and Seconded to adjourn

Awards

The Hamerstrom Award

The Hamerstrom Award was established in honor of Fred and Fran Hamerstrom, pioneers of prairie grouse research and management. It will be awarded at the meeting of the Prairie Grouse Technical Council. The award will consist of a plaque with the engraved name of the recipient.

Award Criteria:
1. To recognize individual(s) and organization(s) who have made significant contributions in prairie grouse research, management or other support programs which have enhanced the welfare of one or more species of prairie grouse in a particular state or region.

2. The contribution should be evidenced by a sustained effort over at least 10 years.

3. The contribution may be related to research, management activity, promotion of an integrated program, or some combination thereof. The relative importance given to these three categories of contributions 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.

Selection Procedure:
1. The selection of award recipients will be made by the three-member Executive Board and two additional members appointed by the Chairman.
2. Nominations will be accepted at large as well as from members of the Awards Committee.
3. Nominations will be submitted to the designated Awards Committee Chairman at least one month before (deadline for the 27th meeting is September 7, 2007) the biennial meeting of the Prairie Grouse Technical Council.
4. Nominations should include the following information:
    A. Name, address, and phone number of nominee.
    B. Biographic sketch of individual of brief history of an organization.
    C. Overview of contributions indicating the nature of the contributions, duration, how it has contributed to the welfare of one or more species of prairie grouse, and the geographic area influenced by the contributions.
5. A maximum of two individual awards and two organization awards may be presented at a biennial meeting. No awards will be given if the Awards Committee feels that no deserving individuals or organization are available at the time. The first recipient was Fran Hamerstrom, in 1991, and it has been since awarded at the biennial meetings of the Prairie Grouse Technical Council. When the awards program was in the concept stage, Fran wanted to ensure that the Hamerstrom name not be associated with any interpretation of the word "conservation" that would include any relationship to the anti-hunting mentality. To make that clear, the awards presentation is to include the following recommendation from Fran's *Wild Foods Cookbook* on yet another way to enjoy prairie grouse.

Prairie Grouse Recipe
Adapted from:
Hamerstrom, Frances. 1989. *Wild Foods Cookbook.* Iowa State University Press, Ames, Iowa.

Prairie grouse are outstanding table birds. Unlike most gallinaceous birds such as pheasant and Ruffed Grouse, they retain their juices well and do not tend to dry out while cooking.
Very young birds, still in juvenal plumage, have light breast meat and delicate texture, but the flavor is still undeveloped. By October, almost all the birds are in prime condition, with breast meat dark, almost like the legs, and very delicious. Chickens and sharptails should be served rare or at most welldone.

Roast:
Pluck dry, dress and clean. Do not stuff. Roast in a hot oven (450 degrees) 25 minutes for medium-rare sharptails or chickens.

Fried Prairie Grouse:
Pluck, dress, and clean. Cut in pieces for frying. The breasts of these birds are so plump that it is often simpler to cut them away from the bone: then cut or divide each side of the breast into two pieces. If this is not done, the legs and back will be overdone while the breast still requires more cooking. Flour each piece lightly before placing it in the hot fat. Salt just before serving.

If you want to take the wild taste out of your grouse, pay no attention to anything I've written.

2011 Recipients of the Hamerstrom Award
Presented at the
29th Prairie Grouse Technical Council Meeting
Hays, Kansas
5 October 2011

Mike Morrows-Individual Award 2011

Nomination Letter:

Respectfully submitted by Don Wolfe and Steve Sherrod.

Contact Information:
Mike Morrow
P.O. Box 519 Eagle Lake, Texas 77434 Phone: 979-234-3021

Biographical sketch:
Mike has been an active member of the Prairie Grouse Technical Council since 1985.
Mike completed his M. Sc. At Texas A&M University in 1983 on Mourning Doves, and he completed his Ph. D. at Texas A&M University in 1986 on Attwater's Prairie-Chickens, under the tutelage of Dr. Nova Silvy.

He has been employed by the U. S. Fish and Wildlife Service as a biologist at the Attwater Prairie Chicken National Wildlife Refuge since 1990.
Mike has been a member of the Attwater's Prairie-Chicken Recovery Team since 2004, and has served as the biologist in the field coordinating with that team since 1990.

Mike's dedication to the conservation and preservation of Attwater's Prairie-Chickens is unparalleled, and may possibly only be compared to the similar efforts of Alfred Gross and the closely related Heath Hen of eastern North America. Mike continues to play a crucial role in the recovery efforts for this critically endangered grouse, and is clearly unwilling to give up until the Attwater's Prairie-Chicken is self- sustaining in the wild. In ingoing efforts to improve the captive propagation of Attwater's Prairie-Chickens, Mike was part of a small team that visited the world acclaimed Houbara Bustard breeding facilities (Emirates Center for Wildlife Propagation) in Morocco in 2008. He has pioneered the use of brood pens for wild APCH broods and hens, has furthered studies on insect food size classes and sources for APCH chicks, and is instrumental in studies of how fire ants impact APCH's. Mike has been instrumental in establishing potentially viable breeding populations of APCH's on private lands. Above all, Mike is always able to make adjustments when current management efforts and strategies do not yield the expected results, and continually seeks out new and innovative ways to better manage the critically endangered Attwater's Prairie-Chicken
Mike's list of scientific publications is quite impressive. In addition to several publications on Northern Bobwhite and Mourning Doves, Mike has authored or coauthored at least 15 publications on prairie-chickens.

Jack Connelly-Individual Award 2011

Nomination Letter:

12 July 2011

Grant Beauprez
Lesser Prairie-chicken and Resident Small Game Biologist
New Mexico Dept. of Game and Fish
513 New York Drive Portales,
NM 88130 575-478-2460

Dear Grant:
The Hamerstrom Award was established in honor of Fred and Fran Hamerstrom to recognize: (1) individual(s) and organization(s) who have made significant contributions in prairie grouse research, management or other support programs which have enhanced the welfare of one or more species of prairie grouse; (2) contributions sustained over at least 10 years; and (3) specific research and/or management accomplishments, as long as these have benefited the overall welfare and survival of prairie grouse. The purpose of this letter is to nominate Dr. Jack Connelly (Idaho Department of Fish & Game, 83 W 215 N, Blackfoot, ID 83221, 208-681-1414, jcsagegrouse@aol.com) for the Hamerstrom Award.

Jack Connelly epitomizes the purpose of the Hamerstrom Award. Jack has been conducting research on grouse for more than 30 years. This involvement has been substantially beyond the normal 'call to duty'. If research or writing needs to be done, Jack is usually the first to volunteer. As a result, Jack has taken a leadership role in some of the most important range-wide sage-grouse publications including the management guidelines of 2000, the species assessment of 2004, and the Studies in Avian Biology book of 2011. Jack is also involved with research and

management on issues related to sharp-tailed grouse and is an author of the sharp-tailed grouse management guidelines of 1993 and the American Ornithologists Union species account of 1998.

Although a careful accounting of Jack's grouse publications is difficult due to the large number, he has authored more than 100 peer-reviewed papers and chapters on grouse. He has provided intellectual and logistic support for numerous research projects in the state of Idaho and served on numerous graduate student committees. Jack also has done a superb job of placing research into a management context, both with his writing and with his involvement in specific management issues. He has been a leader with the Western Agencies Sage- and Columbian Sharp-tailed Grouse Technical Group for many years and he has been willing to tackle tough management issues such as wind power, habitat degradation, and harvest regulation. Jack is currently the Northwest Section Representative for The Wildlife Society and is a preeminent national and international expert on grouse.

Thank you for considering this nomination.

Sincerely,

Michael A. Schroeder Washington Department of Fish and Wildlife
P.O. Box 1077 Bridgeport, WA 98813 509-686-2692
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Nomination Letter:

1 September, 2011

Grant Beauprez
Lesser Prairie-chicken and Resident Small Game Biologist
New Mexico Dept. of Game and Fish
513 New York Drive Portales,
NM 88130 575-478-2460

Dear Grant and Committee,

I'm writing to nominate Dr. Jack Connelly for the Hamerstrom Award during the 29th meeting of the Prairie Grouse Technical Council (PGTC) meetings. Jack typifies a "grouse" biologist worthy of the Hamerstrom Award. Jack has worked for over 30 years on grouse-related management and research issues. He has been a leader in both sage-grouse and Columbian sharptailed grouse management, serving on numerous inter-state agency groups, graduate committees, and editor and referee of grouse publications. He has over 100 publications on grouse both in peer-review publications and various chapters. He is recognized as a world-wide authority on grouse by his peers. His work has proven a personal passion for grouse, far beyond the call to duty.

On a personal note, Jack served on both my MS and PhD committees as I began my career as a grouse biologist. Jack was a true mentor to me during this time. If you truly know Jack this means it was not easy for me. During one of our conversations he mentioned what he considered

one of the most prestigious awards in the grouse world, the Hamerstrom Award. I naively asked "what's the Hamerstrom Award?" After receiving a severe verbal reprimand for being involved in grouse work and not knowing about the Hamerstroms, I was told to educate myself on this issue especially before my defense. I then asked if he had received this award yet, and he told me he had not and wondered aloud if his work was truly worthy of it.

I have since repented of my naiveté and learned much more about the Hamerstroms and their life's work, and what this award represents. Therefore, I whole heartedly endorse Jack Connelly for this award. I also request that if the committee decides to give Jack this award that I be allowed to personally present the award to him.

Sincerely,
David Dahlgren
Small Game Specialist
Kansas Department of Wildlife, Parks, and Tourism

Minnesota Prairie Chicken Society – Organizational Award

Nomination Letter:

Contact Information: Brian Winter, President; 15337 28th Avenue South. Glyndon, MN. 56547. bwinter@tnc.org 218-498-2679

The Minnesota Prairie Chicken Society (MPCS) was formed in 1973, and since that time has worked tirelessly to bring more awareness to the plight of the greater prairie chicken and their habitat in Minnesota. It is this dedication and the cooperation of other individuals, agencies and non-governmental organizations like The Nature Conservancy that has helped to increase the population of prairie chickens in Minnesota. In fact, without the focused conservation effort on prairie chickens and their habitat the last 40 years, it is doubtful that they would still "boom" each spring in Minnesota.

One of the many activities of the MPCS is providing free viewing blind opportunities for the general public throughout the prairie chicken range. In addition to coordinating many viewing blinds, MPCS has been the driving force behind the annual census of prairie chickens in Minnesota. Recently MPCS has been working with Minnesota Department of Natural Resource and the U.S. Fish and Wildlife Service staff to enhance the management of the prairie grasslands that the birds need to thrive. Trees have been cut, prairie has been planted, and grasslands have been improved thanks to this cooperative Heritage Enhancement Effort.

Another large project the Society has been involved with is the reintroduction of the prairie chicken to southwestern Minnesota and also to other states like North Dakota, Wisconsin, and Illinois. All these efforts have paid off in many ways, but one which brings even more attention to the prairie chicken in Minnesota was the return of an annual prairie chicken hunting season in 2001, after over a 60-year absence.

Objectives

- Increase public awareness of prairie chickens and prairies.
- Support efforts to preserve habitat for the prairie chickens and other prairie life.
- Encourage prairie chicken conservation by state, federal, and private organizations.
- Encourage land management agencies to re-establish prairie chickens after habitat is restored.
- Support legislation that will favor the goals of the Society.

Accomplishments

- Coordinate an annual census of the prairie chicken population in conjunction with agencies and private individuals.
- Provided funds (~ $ 20,000) to purchase equipment for land managers for prescribed burning of grassland habitats.
- Supported over $ 25, 000 to support prairie chicken research by graduate students and independent researchers.
- Provided educational materials to landowners and learning centers.
- Supported (~ $ 20,000) towards the production program of a DVD which tells the story of prairie chickens in Minnesota. Provided free distribution of 75 copies to school and other educational groups.
- Coordinated the application for and administration of over $ 300, 000 in grant funds from the Minnesota Legacy Fund to conduct prescribed burning and cut trees within the prairie chicken range. Secured another $ 250,000 from the Minnesota Habitat Enhancement Fund to support habitat management.
- Sponsored 3 educational trunks and a Tympie prairie chicken suit for educational "performances."

For more information see: http://www.prairiechicken.org/aboutmpcs.html

Mike Morrows (2011 recipient) and Dan Svedarsky

Dave Dahlgren and John (Jack) Connelly (2011 recipient)

Recipients of the Hamerstrom Award

1991 Fran Hamerstrom
1993 Ron Westemeier
1995 Dan Svedarsky and Jerry Kobriger
1998 Bob Robel
1999 Bill Berg
2001 Len McDaniel
2003 John Toepfer
2005 Nova Silvy and The Society of Tympanuchus Cupido Pinnatus, Ltd.
2007 Rick Baydack and Kerry Reese
2009 Randy Rodgers and Bill Vodehnal
2011 Mike Morrow, Jack Connelly, and The Minnesota Prairie Chicken Society

Past PGTC Conferences

1st	Grand Island, Nebraska	September 1957
2nd	Emporia, Kansas	March 1959
3rd	Stevens Point, Wisconsin	September 1960
4th	Pierre, South Dakota	September 1961
5th	Nevada, Missouri	September 1963
6th	Warroad, Minnesota	September 1965
7th	Effingham, Illinois	September 1967
8th	Woodward, Oklahoma	September 1969
9th	Dickinson, North Dakota	September 1971
10th	Lamar, Colorado	September 1973
11th	Victoria, Texas	September 1975
12th	Pierre, South Dakota	September 1977
13th	Wisconsin Rapids, Wisconsin	September 1979
14th	Halsey, Nebraska	September 1981
15th	Emporia, Kansas	September 1983
16th	Sedalia, Missouri	September 1985
17th	Crookston, Minnesota	September 1987
18th	Escanaba, Michigan	September 1989
19th	Billings, Montana	September 1991
20th	Ft. Collins, Colorado	July 1993
21st	Medora, North Dakota	August 1995
22nd	College Station, Texas	February 1998
23rd	Gimli, Manitoba	September 1999
24th	Woodward, Oklahoma	September 2001
25th	Siren, Wisconsin	September 2003
26th	Valentine, Nebraska	September 2005
27th	Chamberlain, South Dakota	October 2007
28th	Portales, New Mexico	October 2009
29th	Hays, Kansas	October 2011

Meeting Attendees

No.	Last	First	Organization	Address	City	St	Zip	Phone	Email
1	Pitman	Jim	KDWPT	1830Merchant, P.O. Box 1525	Emporia	KS	66801	620-342-0658	jim.pitman@ksoutdoors.com
2	Silovsky	John	KDWPT	300 SW Wanamaker	Topeka	KS	66606	785-273-6740	john.silovsky@ksoutdoors.com
3	Wolfe	Roger	KDWPT	300 SW Wanamaker	Topeka	KS	66606	785-273-6740	roger.wolfe@ksoutdoors.com
4	Swank	Charlie	KDWPT	56 N.E. 40th Road	Great Bend	KS	67530	620-793-3066	charlie.swank@ksoutdoors.com
5	Smith	Matt	KDWPT	#3 State Park Road	Sylvan Grove	KS	67481	785-658-2465	matt.smith@ksoutdoors.com
6	Schultz	Kraig	KDWPT	P.O. Box 1502	Elkhart	KS	67950	620-697-2109	kraig.schultz@ksoutdoors.com
7	Fisher	Daryl	KDWPT	785 S. Hwy 83	Garden City	KS	67846	620-276-8886	daryl.fisher@ksoutdoors.com
8	Gann	Chasen	KDWPT	785 S. Hwy 83	Garden City	KS	67846	620-276-8886	chasen.gann@ksoutdoors.com
9	Kramer	Lucas	KDWPT	#3 State Park Road	Sylvan Grove	KS	67481	785-658-2465	lucas.kramer@ksoutdoors.com
10	Baugh	Aaron	KDWPT	1001 McArtor Road	Dodge City	KS	67801	620-227-8609	aaron.baugh@ksoutdoors.com
11	Gray	Marc	KDWPT	1210 Nine Road	Stockton	KS	67669	785-425-6775	marc.gray@ksoutdoors.com
12	Williams	Josh	KDWPT	1880 S. Range Ave., Suite 2	Colby	KS	67701	785-462-7993	josh.williams@ksoutdoors.com
13	Bain	Matt	KDWPT	1880 S. Range Ave., Suite 2	Colby	KS	67701	785-462-3367	matt.bain@ksoutdoors.com
14	Odle	Brad	KDWPT	1426 Hwy 183 Alt	Hays	KS	67601	785-628-8614	brad.odle@ksoutdoors.com
15	Dahlgren	David	KDWPT	1003 Fern St.	Victoria	KS	67671	785-628-8614	dave.dahlgren@ksoutdoors.com
16	Berens	Chris	KDWPT	512 SE 25th Ave	Pratt	KS	67124	620-672-0771	chris.berens@ksoutdoors.com
17	Simpson	Brad	KDWPT	512 SE 25th Ave	Pratt	KS	67124	620-672-5911	brad.simpson@ksoutdoors.com
18	Elmore	Dwayne	Oklahoma State Univ.	008 Ag Hall	Stillwater	OK	74078	405-714-8885	dwayne.elmore@okstate.edu
19	Augustine	Jackie	Ohio State Univ.	4240 Campus Dr.	Lima	OH	45804	419-995-8237	augustine.63@osu.edu
20	Runia	Travis	SD Dept of G, F, & P	895 3rd St SW	Huron	SD	57350	605-353-8477	travis.runia@state.sd.us
21	Alleger	Max	MO Dept of Cons.	425 SE 571	Clinton	MO	64735	660-885-8179	max.alleger@mde.mo.gov
22	Tacha	Roger	NRCS	622 Hoeb Av	Oakley	KS	67748	785-443-0355	
23	Manes	Stephanie	Ranchland Trust of KS	916 22nd Road	Kanopolis	KS	67454	620-388-3843	stephmanes@gmail.com
24	Hill	Matt	MO Dept of Cons.	525 S. Carter St.	Clinton	MO	64735	417-876-5226	matt.hill@mdc.mo.gov
25	Gilmore	Len	MO Dept of Cons.	9445 NE 300 Rd	Osceola	MO	64776	417-876-5226	len.gilmore@mde.mo.gov
26	Cooper	Steve	MO Dept of Cons.	2000 S. Limit Ave	Sedalia	MO	65701	660-530-5500	steve.cooper@mdc.mo.gov
27	Timmer	Jennifer	Texas Tech Univ.	4811 8th St	Lubbock	TX	79416	512-775-5906	jennifer.timmer@hu.edu
28	Lusk	Jeffery	NGPC	2200 N. 33rd St.	Lincoln	NE	68503	402-471-1756	jeff.lusk@nebraska.gov
29	Nichols	Clay	USFWS	2909 W. 2nd St.	Roswell	NM	88201	505-514-6357	clay.nichols@fws.gov
30	Rodgers	Randy		509 W. 14th	Hays	KS	67601	785-628-3878	randyr@ruraltel.net
31	Tacha	Dusty	USDA-NRCS	13278 101st Rd	Winfield	KS	67156	785-672-0476	dusty.tacha@ks.usda.gov
32	Howard	Randy	BLM	2909 W. 2nd St.	Roswell	NM	88203	575-627-0266	randy_howard@blm.gov
33	Davis	Harley	USDOI/BLM	2909 W. 2nd St.	Roswell	NM	88203	575-627-0247	harley_c_davis@blm.gov
34	McDaniel	Tish	The Nature Conserv	#1 Pueblo Pt.	Clovis	NM	88101	575-762-6997	pmcdaniel@tnc.org
35	Vodehnal	Bill	NE Game and Parks	P.O. Box 508	Bassett	NE	68714	402-684-2921	bill.vodehnal@nebraska.gov

36	Hovick	Torre	Oklahoma State Univ.	008c Ag Hall	Stillwater	OK	74074	405-744-5619	torre.hovick@gmail.com
37	Clubine	Steve	Retired Consultant	703 S Main St	Windsor	MO	65360	660-647-2738	steveclubine@embarqmail.com
38	Mowry	Craig	USFWS	702 E Xavier Rd	Kirwin	KS	67644	785-543-6673	craig_mowry@FWS.gov
39	Jacobs	Tony	PF/QF	406 E 13th St	Ellis	KS	67637	785-764-6240	tjacobs@pheasantsforever.org
40	Riley	Steve	PF/QF	10630 N 135th St	Waverly	KS	67462	402-433-5078	Sriley@pheasantsforever.org
41	Witecha	Mark	PF/QF	NRCS Field Office	Ness City	KS	67560	608-434-3062	mwitecha@pheasantsforever.org
42	Collins	Ken	USFWS	9014 E 21st ST	Tulsa	OK	74129	918-581-7458	ken_collins@fws.gov
43	Grisham	Blake	Texas Coop Unit	15th & Boston Ag Ed 218	Lubbock	TX	79409	806-781-9079	blake.grishamCftu.edu
44	Gregory	Andrew	Northern Arizona Univ.	3835 S Yaqui Dr #18	Flagstaff	AZ	86001	928-523-2167	andrew.gregory@nau.edu
45	Ifland	Tony	USFWS	702 E Xavier Rd	Kirwin	KS	67644	785-543-3133	tony_ifland@fws.gov
46	Kramos	Greg	USFWS	2609 Anderson Ave	Manhattan	KS	66502	785-539-3474	greg_kramos@fws.gov
47	Thornton	Clint	KDWPT	PO Box 293	Wakefield	KS	67487	785-259-2474	clint.thornton@ksoutdoors.com
48	Sowards	Wes	KDWPT	5800A River Pond Rd	Manhattan	KS	66502	785-207-0370	wes.sowards@ksoutdorrs.com
49	Rieschhoff	Brad	KDWPT	300 SW Wanamaker	Topeka	KS	66606	785-273-6740	brad.rueschhoff@ksoutdoors.com
50	Whiteaker	Randy	KDWPT	PO Box 21	Valley Falls	KS	66088	785-945-6615	randy.whiteaker@ksoutdoors.com
51	Hess	Marc	SWCA	7255 Langtry Suite 100	Houston	TX	77040	281-743-8709	mhess@swca.com
52	Prendergast	Jeffery	KDWPT	738 Fegan Rd	Toronto	KS	6777	620-637-2748	jeffery.prendergast@ksoutdoors.com
53	Schmitz	Nathan	NRCS	307 W Beech St	Lamar	CO	81052	515-450-4176	nathan.schmitz@co.usda.gov
54	Dixon	Charles	Wildlife Plus Consult.	PO Box 416	Alto	NM	88312	575-808-1221	wildlifeplus@wildblue.net
55	Baydack	Rick	Univ.of Manitoba	255 Wallace Building	Winnipeg	Manitoba	R3T2N2	204-471-2439	baydack@cc.umanitoba.ca
56	Heck	Willard	Weaver Ranch	PO Bx 23	Causey	NM	88113	575-273-4360	wrcnm@yucca.net
57	Schroeder	Michael	WDFW	PO Box 1077	Bridgeport	WA	98813	509-686-2692	grouse@homenetnw.net
58	Robb	Leslie	WDFW	PO Box 1077	Bridgeport	WA	98813	509-686-2692	robblar@homenetnw.net
59	Blocksome	Carol	KSU	Dept. of Agronomy	Manhattan	KS	66506	785-532-0416	blocksom@ksu.edu
60	Hoeme	Tonya	KDWPT	512 SE 25th Ave	Pratt	KS	67124	620-672-5911	tonya.hoeme@ksoutdoors.com
61	Mitchener	Mike	KDWPT	512 SE 25th Ave	Pratt	KS	67124	620-672-0797	
62	Kramer	Joe	KDWPT	512 SE 25th Ave	Pratt	KS	67124	620-672-2797	
63	Sandercock	Brett	KSU	Div of Biology 116 Ackert	Manhattan	KS	66502	785-532-0120	bsanderc@k-state.edu
64	Hagen	Christian	NRCS	60958 Targee Dr	Bend	OR	97702	541-410-0238	centrocerus@gmail.com
65	Wolfe	Don	Sutton Research Center	PO Box 2007	Bartlesville	OK	74005	918-336-7778	dwolfe@ou.edu
66	Larson	Lena		PO Box 2007	Bartlesville	OK	74005	918-336-778	llarson@ou.edu
67	Sherrod	Steve		PO Box 2007	Bartlesville	OK	74005	918-336-7778	sksherrod@ou.edu
68	Robinson	Aaron	NDG&F	225 N 30th Ave SW	Dickinson	ND	58601	701-290-1370	acrobinson@nd.gov
69	Svedarsky	Dan	Minnesota	18205 300th St SW	Crookston	MN	56716	218-281-8129	dsvedars@crk.umn.edu
70	Kemink	Kaylan	UMC	302 Anheuser-Busch Building	Columbia	MO	65201	914-475-4009	kmk5dc@mizzou.edu
71	Mueller	Brad	AWE	737 Silver Lake Rd.	Monticello	FL	32344	850-997-3551	bmueller@wildblue.net
72	Orth	Mandy	SDSU	601 4th St. #17	Brookings	SD	57006	605-645-6261	mandy.orth@sdstate.edu
73	Toepfer	John	STCP	3755 Jackson Ave #3	Plover	WI	54467	701-866-0499	jtoepfer@coredcs.com
74	Knetter	Jeffrey	Idaho Dept. Fish & Game	PO Box 25 600 S Walnut	Boise	ID	83712	208-287-2747	JEFFKNETTER@IDGF.idaho.gov
75	Loncarich	Frank	MO Dept of Cons.	7031 Hwy 96	La Russell	MO	64848	417-452-3879	frank.loncarich@mdc.mo.gov

76	Thompson	Tom	MO Dept of Cons.	2010 S 2nd St	Clinton	MO	64735	660-885-8179	tom.thompson@mdo.mo.gov
77	Phillips	Chase	ODWC	5420 E 22nd Apt 13	Woodward	OK	73801	580-571-5820	dcphillips17@yahoo.com
78	Gregory	Alva	ODWC	3014 Lakeview Dr	Woodward	OK	73801	580-334-4459	alvagregory@sbeglobal,net
79	Morrow	Mike	APCNWR	PO Box 579	Eagle Lake	TX	77434	979-234-3021	mike_morrow@fns.gov
80	Cardinal	Casey	USU	474 E 700 N	Logan	Utah	84321	715-641-2586	casey.cardinal@gmail.com
81	Krehbiel	Dean	NRCS	760 S Broadway	Salina	KS	67401	785-823-4541	dean.krehbiel@ks.usda.gov
82	Ungerer	Jon	NRCS	760 S Broadway	Salina	KS	67401	785-823-4547	jon.ungerer@ks.usda.gov
83	Burr	Andy	NRCS	760 S Broadway	Salina	KS	67401	785-823-4593	andy.burr@ks.usda.gov
84	Cikanek	Victoria	FHSU	311 E 11th St	Ellis	KS	67637	970-412-1497	vvhunter@scatcat.fhsu.edu
85	Hamilton	Justin	KDWPT	1908 C Street	Garden City	KS	67846	620-474-2949	justin.hamilton@ksoutdors.com
86	Corman	Kelly	RMBO/NRCS	3503 South Main St	Lamar	CO	81052	719-336-3437	kelly_corman@yahoo.com
87	Simpson	Scott	IL DNR	4295 N 1000th St	Newton	IL	62448	618-783-2685	scott.simpson@illinois.gov
88	Shelby	Bob	IL Audubon Society	1985 Co Rd 300E	West Salem	IL	62476	618-838-0476	shelbysigns@hotmail.com
89	Harrison	Leroy	IL Audubon Society	934 W Bryant St	Olney	IL	62450	618-839-2010	N/A
90	Anderson	Lars	Univ of Nebraska	3272 Starr St # 7	Lincoln	NE	68503	308-890-0017	lars.c.anderson@ gmail.com
91	Thacker	Eric	USDA-ARS APRRS	2000 18th St	Woodward	OK	73801	580*256-7449	eric.thacker@ars.usda.gov
92	McNew	Lance	KS State University	116 Ackert Hall	Manhattan	KS	66506	620.381.4383	lbmcnew@ksu.edu
93	Haukos	David	USGS KCFWRU	205 Leasure Hall, KSU	Manhattan	KS	66506	785.532.5761	dhaukos@ksu.edu
94	Reitz	Jonathan	Colorado Parks & Wildlife	245 E 10th Ave	Springfield	CO	81073	719.980.0025	jonathan.reitz@state.co.u
95	Finck	Elmer	Ft Hays St University	Dept of Biology, Ft Hays	Hays	KS	67601	785.650.1057	efinck@fhsu.edu
96	Thomasson	Scott	KDWPT	#3 State Park Rd	Sylvan Grove	KS	67481	785.658.2465	scott.thomasson@ksoutdoors.com
97	Nyhoff	Mike	KDWPT	PO Box 338	Hays	KS	67601	785.628.8614	mike.nyhoff@ksoutdoors.com
98	White	William	KS State University	116 Ackert Hall	Manhattan	KS	66506	302.740.2040	wjwhite218@yahoo.com
99	Hunt	Lyla	KS State University	1536 Harry Rd	Manhattan	KS	66502	951.207.2323	lmhunt@ksu.edu
100	Jensen	K.C.	SD State University	SPB 138, Box 2140B SDSU	Brookings	SD	57007	605.688.4781	kent.jensen@sdstate.edu
101	Chambers	Glenn	MO Prairie Foundation	807 Cornwell	Columbia	MO	65203	573.445.9773	glennchambers@mac.com
102	Connelly	Jackie	IDFG	83 W 21 SW	Blackfoot	ID	83221	208.681.1414	jcsagegrouse@aol.com
103	Silva	Nova	Playa Lakes JV	14703 IGN Rd	College Station	TX	77845	979.690.7420	n-silva@tamu.edu
104	Crouch	Barth	Playa Lakes JV	205 S Santa Fe	Salina	KS	67401	785.823.0240	barth.crouch@pljv.org
105	Klataske	Ron	Audabon of Kansas	210 Southwind Place	Manhattan	KS	66502	785.937.4385	ron_klataske@audabonofkansas.org
106	Salter	Curran	USDA APHIS		Hoisington	KS		620.260.7432	gregory.c.salter@aphis.usda.gov

MEETING SPONSORS

Platinum Level (>$2,000)

Kansas Department of Wildlife, Parks and Tourism

Gold Level ($1,000 - $1,999)

None

Silver Level ($500 - $999)

Quail and Upland Wildlife Federation

North American Grouse Partnership Est. 1999

AMERICAN WILDLIFE ENTERPRISES
Custom Built Radio Transmitters for Wildlife Research

Bronze (<$500)

Buffalo Brand
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