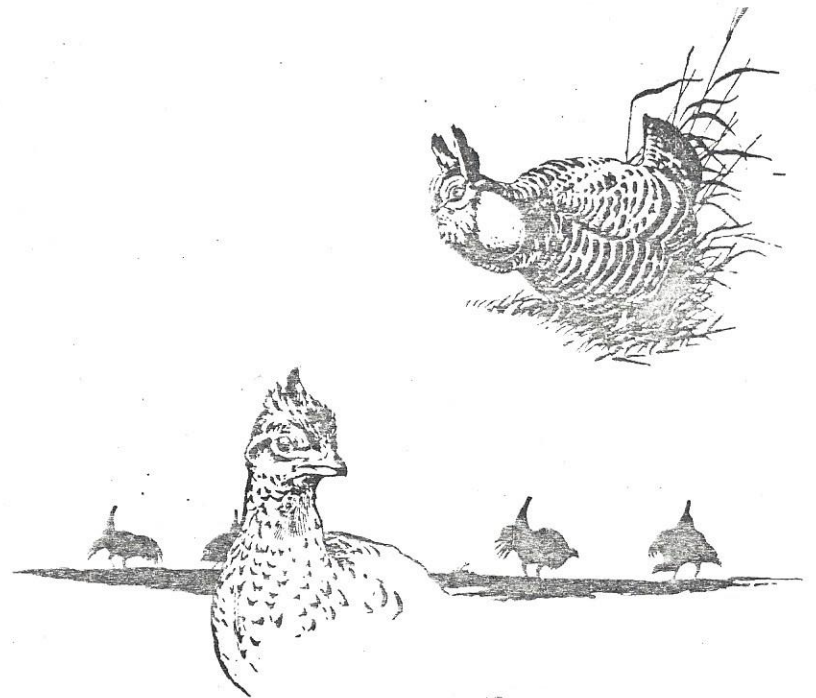


Went E. Dean

Proceedings of the
15th Conference

**PRAIRIE GROUSE
TECHNICAL COUNCIL**



September 20-22, 1983
Emporia, Kansas

Host
Kansas Fish and Game Commission

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Abstracts are presented as they were submitted by the author. They are not for publication or reference without consent of the contributing author.

Roger Wells
Compiler

INTRODUCTION: Roger Wells, Small Game Project Leader, Kansas Fish and Game Commission (Conference Coordinator and Chairman, P.G.T.C.)

WELCOME: Dale Stinson, President and Chief Executive, Emporia Chamber of Commerce

Bill Hanzlick, Director, Kansas Fish and Game Commission

KANSAS WILDLIFE AND HABITATS

By
Bob Mathews
Kansas Fish and Game Commission

Among the challenges faced by the first European settlers to venture into Kansas was acclimating themselves to the wide open prairies. Many dismissed the Kansas territory as uninhabitable, and continued westward. Those who stayed found rich soils, bountiful wildlife resources, and a surprising diversity of terrains and habitats. Hunters and fishermen today can attest to that richness. In western Kansas, hunters find a bounty of pheasant and mule deer hunting. In central Kansas, pheasant and quail hunting, as well as superlative deer hunting, beckons the hunter. Central Kansas also offers numerous public fishing lakes with unsurpassed walleye, striped bass, crappie and white bass fishing. The expansive Flint Hills of eastern Kansas contain the largest concentration of prairie chickens anywhere in the U.S. Eastern Kansas offers some of the best quail hunting in the country, as well as superior stream fishing.

HISTORY OF GREATER PRAIRIE CHICKENS IN KANSAS

By
Carroll Lange
Kansas Fish and Game Commission

When dealing with historical aspects of greater prairie chickens, most prairie grouse biologists credit agricultural expansion westward from Illinois and Missouri with fostering parallel prairie chicken range expansion and short-term exponential population growth. This expansion and growth is said to have resulted from the additional food available to chickens from crops planted by the newly arrived farmers. This theory assumes that lack of food was the limiting factor for the omnivorous chickens and prevented them from establishing themselves and multiplying in the great expanse of prairie which is now Kansas.

Without exception, those biologists fail to take into account the dynamic changes wrought upon prairie plant communities following the westward moving assault on the bison by hunters prior to the arrival of settlers. Demise of the bison without doubt resulted in improving range conditions and increased plant vigor previously suppressed by what must have been severe overgrazing judged by today's standards.

A more likely scenario is that remnant populations of greater prairie chickens probably always existed on the prairies as far west as

Census data introduced?
doubtful

eastern Colorado in small isolated habitats where they were seldom seen and not reported by early explorers. Populations grew and peaked with recovery of prairies after bison numbers were severely reduced.

Recovering prairies and rapidly growing chicken populations were then encountered by settlers as they moved westward homesteading the land.

The large populations of chickens reported by early settlers two to four years after their arrival were probably the result of crowding forced on the birds as land was turned to the plow and prairies destroyed. This phenomenon is analogous to the crowding of lesser prairie chickens in the sand sage prairie of southwest Kansas as it was converted row upon row to center pivot irrigation in the early to mid 1970's and noted by Fish and Game Commission biologists who recognized this as crowding and not peak population. *what?*
doubtful

data?

MOVEMENTS AND BEHAVIORS OF SHARP-TAILED GROUSE ON AND AROUND A DANCING GROUND IN SOUTHEASTERN MONTANA

By
Hans Landel
Department of Biological Sciences
Purdue University

Darwin Sell
Western Energy Company

The movements and behaviors of sharp-tailed grouse (*Tympanuchus phasianellus*) were studied both on and off a dancing ground located 10 miles west of Colstrip, in southeastern Montana, during the winter and spring of 1983. A total of 25 birds were captured with baited walk-in traps and rocket net. Eleven males and 4 females were marked with colored plastic leg bands, numbered aluminum leg bands, and numbered Herculite bibs. An additional 3 males and 8 females were tagged with solar-powered radios mounted on bibs. Another female had been radio-tagged and two males banded the previous spring. Results thus far suggest that: a) males from neighboring dancing grounds may be found together, b) the possession of central territory does not ensure mating success for males, c) there may be nonterritorial males, at least early in the season, d) the opportunity exists for off-arena mating, and e) hens will nest farther than 1 mile from the dancing ground at which they mated and not necessarily closer to it than to any other. These results have implications for studies of female mate-choice, population dynamics and dispersal, and for censusing techniques.

ANALYSIS OF PRAIRIE GROUSE BROOD DATA: CORRELATIONS WITH HUNTER SUCCESS AND BREEDING POPULATIONS

By
Jerry Kobriger
North Dakota Game and Fish Department
Dickinson, North Dakota

Data analyzed included rural mail carrier counts, spring dancing ground counts, brood routes, wing envelope surveys, and harvest data from postcards and hunter questionnaires.

Preliminary results indicate rural mail carrier surveys were not correlated with any of the other data.

The average brood size from late summer roadside counts was significantly correlated with the fall age ratio.

Most data from sharp-tailed grouse brood routes were significantly correlated with fall data. Grouse per mile was significantly correlated with fall harvest and grouse per hunter. Broods per hour was also significantly correlated with grouse per hunter as determined from questionnaires.

Total broods observed was significantly correlated with grouse per hunter, grouse per trip, and fall harvest.

Grouse per hunter in the fall was significantly correlated with males per square mile on census areas the following spring.

A TECHNIQUE FOR MINIMIZING INITIAL POST-RELEASE DISPERSAL OF PRAIRIE GROUSE

By
Randy D. Rogers
Kansas Fish and Game Commission

In 1981, the Kansas Fish and Game Commission began evaluating the potential of reestablishing sharp-tailed grouse on portions of their former range in northwestern Kansas. It was determined that 9 rangeland areas in northwestern Kansas varying from 10 to 150 square miles each hold potentially suitable habitat for sharp-tailed grouse.

Between 26 February and 12 March, 1982, 120 sharp-tails trapped by the North Dakota Game and Fish Department were released along Beaver Creek drainage in Rawlins County. Since post-release dispersal had been previously implicated as a probable cause for failure of most prairie grouse releases, efforts were made to minimize initial dispersal. An artificial lek was created with hand painted sharp-tail silhouettes and taped sharp-tail lek sounds. Grain sorghum was also

scattered around the hilltop release site. Thirty milligrams of ketamine hydrochloride was administered to each grouse about 2 hours prior to dawn before each was loaded into specially designed release boxes placed around the artificial lek. Each box contained 10 individual cells and could be opened remotely by pulling cords from a blind. The birds were released at dawn onto the artificial lek.

Lack of human disturbance during the release apparently prevented initial scattering. About half the sharp-tails walked away and the remainder flew less than 150 meters in groups from the release site. Subsequent sitings of 2 to 7 sharp-tails were made from 1 to 15 miles from the release site. Sitings have persisted over 15 months following the release, but minimal searches have revealed no leks, thusfar.

Potential improvements of this technique include 1) painting the interior of the release boxes black, 2) holding the sharp-tails overnight in the boxes, thus eliminating the need for anesthetic, and 3) continuing operation of the lek during morning and evening for several weeks or months after the release. Large (100) single-site gentle releases made over 2 or 3 consecutive years in the same area should improve chances for successful sharp-tail reestablishment.

no data on success

maybe

THE STATUS AND MANAGEMENT OF THE LESSER PRAIRIE CHICKEN IN COLORADO

By
Chuck Loeffler
Colorado Division of Wildlife

The lesser prairie chicken (*Tympanuchus palidicinctus*) is classified as a threatened species in Colorado. Although once found in at least six southeastern Colorado counties, the known remaining population of 600 to 700 birds is located primarily in Baca County (22 leks totaling 226 cocks), and Prowers County (4 leks totaling 81 cocks). One active lek with three cocks has also been located in Kiowa County. Surveys conducted during the past six years under the auspices of the Colorado Division of Wildlife's nongame program indicate the population may be expanding slightly. Work is presently being conducted to analyze lesser prairie chicken habitat quality and availability via Landsat satellite imagery, and to collect data on bird movement between lek via trapping and marking male prairie chickens at the display grounds. Some difficulty has been encountered in marking an adequate number of cocks without causing undue disturbance at the lek.

?

226
+ 2
452
+ 2
904

307
+ 2
614
+ 2
1228 4

MANAGEMENT STRATEGIES FOR IMPROVING ATTWATER'S PRAIRIE CHICKEN HABITAT

By
Wayne A. Shifflett

The Attwater Prairie Chicken National Wildlife Refuge was established on July 1, 1972. Various experimental management techniques have been used to provide optimum habitat conditions for the Attwater's prairie chickens. Management strategies used include controlled grazing, prescribed burning, mowing, pest plant control, and row cropping. The refuge's prairie chicken population has increased from 25 to approximately 186 birds.

HABITAT USE BY ATTWATER'S PRAIRIE CHICKEN ON THE ATTWATER PRAIRIE CHICKEN NATIONAL WILDLIFE REFUGE--A PRELIMINARY ANALYSIS

By
Michael E. Morrow
Nova J. Silvy
Texas A&M University

From March-August, 1983, habitat use by Attwater's prairie chicken (*Tympanuchus cupido attwateri*) was investigated on the Attwater Prairie Chicken National Wildlife Refuge, Colorado County, Texas using radio telemetry techniques. Results discussed were from data collected during the 1st field season of a 3-year study. The primary purposes of the paper were to make other members of the Prairie Grouse Technical Council aware of current Attwater's prairie chicken research, and to obtain feedback on preliminary results of the study. Telemetry locations for nesting/brood hens, hens without nests or broods, and males were classified according to range site and habitat treatment by month. Preference indices indicated that nesting hens preferred unburned, loamy prairie vegetation. Four of 5 nests were located in this vegetation type. Three nests were successful, all found in unburned, loamy prairie vegetation. Initially, relatively dense cover was used for brood cover by all 3 hens as indicated by moderately high obstruction of vision values and low amounts of bare ground coverage obtained on transects through representative areas of each habitat type. In June, all 3 brood hens made substantial moves to areas of lighter, more open cover. After these moves, young could be verified with only one hen. Hens without nests or young tended to use unburned lowland and loamy prairie sites during March-April, and probably reflects attempts by these hens at establishing nests. Beginning in April however, a wider variety of habitat types were used including haygrazer and fallow rice

fields. Overall, 2nd year burns were most important for hens without young, with infrequent but heavy use made of cultivated areas. Heaviest use by males from March-May was of 2nd year burned, loamy prairie areas and probably reflects the juxtaposition of this habitat type to the booming grounds. After the booming season ended in May, a great deal of individual variation was noted in the use of habitat by males. Heavy use of cultivated areas (haygrazer, fallow rice, and corn) was noted during the summer months.

COLORADO'S GREATER PRAIRIE CHICKENS: HISTORY AND STRATEGIES FOR PRESERVATION

By
Gary C. Miller
Frances M. Pusateri
Colorado Division of Wildlife

Greater prairie-chickens (*Tympanuchus cupido pinnatus*) have inhabited the northern portions of Colorado's sandsage-bluestem (*Artemisia-Andropogon*) prairies nearly to the exclusion of all other natural vegetation types. Sandsage-bluestem prairie (including the southern ranges occupied by lesser prairie chickens, *T. pallidicinctus*) once comprised 3.5% of Colorado's natural vegetation, but, by 1967, 48.3% of this vegetation type had been lost to other uses.

Although greater prairie chickens have been thought of as peripheral to Colorado, reasonable records show their historical occurrence in a minimum of 9 counties, nesting as far west as 220 km from the state's eastern border. Since the 1930's, greater prairie chickens have exhibited major reductions from their former distribution. The hunting season closure, in effect since 1937, has not stopped these reductions. Yuma County, one of Colorado's easternmost counties, now contains most of Colorado's greater prairie chickens; small numbers occur in 2, possibly 3, adjacent counties. Substantial losses of occupied range in Yuma County have been documented since 1952. Essentially all presently occupied range is privately controlled.

In 1973, the Colorado Wildlife Commission reclassified greater prairie chickens from protected game to nongame, endangered status. In order to meet its statutory obligation to at least maintain species endangered within the state, the Colorado Division of Wildlife established, as highest priority for greater prairie chickens, research to ascertain the minima needed to sustain a population of greater prairie chickens over a long period of time, in terms of habitat quantity and quality. Research began in 1981 to ascertain these minima within presently occupied range under current private land-uses. A second approach, of equal priority, was to restore a tract of state-owned sandsage-bluestem prairie, within the former range of greater to a condition suitable for sustaining greater prairie chickens. Preliminary information from these 2 approaches was presented.

THE BREEDING OF THE GREATER PRAIRIE CHICKEN IN SOUTH MISSOURI

By
Richard W. Cannon

In March-April, 1983, nearly 441,000 ha of historical range was censused for active leks in 25 counties in south Missouri. Standard census techniques were employed, with the exception that leks were censused only once. Lek size was recorded categorically in 6 size classes (I = 1-10 birds; II = 11-20; III = 21-30; IV = 31-40; V = 41-50; VI = 51-60). No leks were found in 8 of 25 counties (74 mi² of historical range). In the remaining 17 counties, 304 leks were located, 72% of which were categorized as Class I in size. This contrasts with a 20-year average of only 52% (from annual routes). Breeding range in the 17 counties encompassed 164,000 ha (based on a 1 mile radius around all active leks). The breeding range was divided into 64 district segments, ranging approximately 800 ha—20,000 ha in size. Lek densities ranged from 1 lek/864 ha to 1 lek/370 ha (0.3-0.7 leks/mi²). Approximately 34% of the range south of the Missouri mapped by Schwartz in the 1940's has been lost.

CYCLES, DENSITIES, AND THRESHOLDS AS CONSIDERATIONS FOR PRAIRIE CHICKEN MANAGEMENT IN ILLINOIS

By
Ronald L. Westemeier
Illinois Natural History Survey

Data for 21 years, plus historical information for prairie chicken populations in Illinois, support the existence of 10-year cycles of abundance; stable populations cannot be expected. Sanctuary management for 17 years has demonstrated that mean densities of 100 prairie chicken cocks/mi² of nest cover are realistic goals in Illinois. During the last cyclic low (1976-1978), mean densities of 70 cocks/mi² of nest cover were maintained in each of 2 sanctuary areas about 31 miles apart. This density, plus consideration of a genetic threshold of 50 birds (purely theoretical), suggest an ecological threshold of 230 or 270 acres of managed grassland (in a scatter pattern), depending on whether a sex ratio of 50:50 or 60:40 is used. Allowance for the following: (1) the possibility of a higher genetic threshold—perhaps 150-200 individuals—to avoid inbreeding depression; (2) adverse interactions between pheasants and prairie

chickens; (3) on production activity on and near sanctuaries. Other unforeseen acts of human disturbance and intensifying land use, suggest that a larger ecological threshold should be considered. Sanctuary land should be disturbed in scatter patterns and not in single, large refuges. To achieve Illinois' primary objective of preserving 2 separate populations of native prairie chickens, averaging about 300 birds each (in spring), about 1,500 well-managed acres may be needed for each population; about 1,000 acres need to be acquired to complete these goals.

SEASONAL LEKKING ACTIVITY OF THE GREATER PRAIRIE CHICKEN IN ILLINOIS

By
Scott A. Simpson
Eastern Illinois University

The seasonal lekking behavior of greater prairie chickens (*Tympanuchus cupido*) was studied intensively for one season in Illinois. Morning and evening observations were made weekly from the beginning of lek attendance on 25 September 1982 thru the end of lekking activity on 23 June 1983 on one major lek. A gradual increase in numbers occurred from September to November, with a decrease in December for the AM period. The peak cock count was in February, followed by a gradual decline thru June. The PM count was lower and irregular with no attendance during twelve of forty observation periods, but also had the greatest decrease in December and peak count in February. Time (minutes) spent by prairie chickens on the lek during the AM period ranged from 148 for December to 900 for May. Prairie chickens spent 61% less time (minutes) during the PM period on the lek, with a range of 13.6 for December to 462 for May.

The activity index (total number of aggressive encounters/number of PC's involved) summed on a monthly basis, had a peak level during April and May for the AM period. The PM activity was very low from September to January, then a marked increase occurred in February followed by a peak in April. The AM and PM prairie chicken and northern harrier (*Circus cyaneus*) interactions both peaked in February.

THE FARMLAND HABITAT OF MISSOURI'S PRAIRIE CHICKEN RANGE

By
Donald M. Christisen
Missouri Department of Conservation

The major soil associations comprising Missouri's greater prairie chicken range were surveyed by random sampling and on site inspection of sections of land during the growing season. Land use data were compiled on 102,278 acres representing four different soil groups.

The Shelby soils of 618 sq. mi., unoccupied by prairie chickens since the late 1950's, had 70% of the land in grass and 23% in grain crops. The disappearance of prairie chickens was correlated with a dramatic increase in head of cattle, acres of soybeans and wheat and a sharp decline in acres of hay.

The Mexico-Putnam soils of 396 sq. mi., marginal range for prairie chickens since the 1950's had 82% of the land in grain crops and 11.5% in grass. Wheat comprised nearly 11% of the area cover and may have compensated in part for the deficiency of grass. Soybeans were grown on 51% of the land. The prairie chicken density was estimated to be .6-1.2 cocks/sq. mi.

The Oswego-Dennis soils of 406 sq. mi. of south Missouri range had 48% in grass and 44% in grain. Over 36% of the land was in fescue and 13% in wheat, the leading grain crop. The prairie chicken density was estimated at 3.8-5.2 cocks/sq. mi.

The Parsons-Gerald soils of 468 sq. mi. of south Missouri range had 54% of the land in grain and 39% in grass. Fescue grew on nearly 26% of the land and nearly 9% was in native prairie. The leading grain crop was soybeans, 24%, but wheat constituted 16% of the land use. The prairie chicken density was estimated to be 5.3-7.0 cocks/sq. mi.

Forage crops were grown on 71% of the Shelby soils, 47% of the Oswego-Dennis soils, 40% of the Parsons-Gerald soils, and 13% of the Mexico-Putnam soils. Pasture represented 61% of the Shelby soils use and only 9% of the Putnam-Mexico soils. Over 17% of the Oswego-Dennis soils was hayland and only 3.6% of the Putnam-Mexico soils was for hay production.

It appeared that native prairie, hayland, unimproved pasture, diversity of grass, and presence of wheat were positive factors in the prairie chicken habitat whereas preponderance of grain crops, particularly soybeans, and high densities of cattle were negative factors.

PRAIRIE CHICKEN MANAGEMENT IN WISCONSIN

By
James R. Keir
Wisconsin Department of Natural Resources

Wisconsin's original prairie chicken range was the tall grass prairie once found in the southern 1/3 of the state. During the late 1800's, the prairie grasslands were being destroyed by plan. But, at the same time, whole clear-cutting of timberlands in the remainder of the state was creating new, but short-lived chicken habitat to the north. Wisconsin actually had prairie chickens in every county. By the mid 1900's, the prairie destruction was complete and the cleared forests had grown beyond chicken habitat. The only remaining populations were now in the central part of the state.

The Wisconsin prairie chicken management program began in the late 1940's and 1950's as the research of Dr. F. N. Hammerstrom pointed the way. Ecological patterning was the concept used to provide nest and brood cover, the limiting factor. From the mid 50's to the mid 70's, two private organizations purchased the bulk of the land now under management (about 14,000 acres) and the Wisconsin Department of Natural Resources leased the management rights.

Present management has two habitat objectives—periodic grassland disturbance and brush control. Techniques used include prescribed burning, mowing, contract haying, sharecrop farming, herbicide and grazing. No technique is without its faults and some are very costly. Considering the variables involved with Wisconsin's chicken management program, such as increasing costs and land use changes on surrounding private land, the proper use of the right management techniques remains a challenging endeavor.

PRAIRIE CHICKEN MANAGEMENT ON WOODSON WILDLIFE AREA

By
Bob Culbertson
Kansas Fish and Game Commission

The greater prairie chicken (*Tympanuchus cupido*) is one of the target management species on the Woodson Wildlife Area. The 2,700 acre state-owned area contains 1,500 acres of prime prairie chicken habitat. The primary goal is to preserve the tallgrass prairie ecosystem as an example of good range management, soil conservation and grazing economies and for sustained consumptive and non-hunting

values. Prescribed burning and controlled grazing are utilized in managing the prairie ecosystem. The ten grazing units are burned at two to four year intervals in April to provide a mixture of nesting and brood-rearing habitat each year, control woody plant invasion and increase seed and insect availability. Summer long and rotation grazing is allowed from May 1 to August 31 and each unit is deferred for a complete growing season every four to five years. This type of a moderate grazing system helps prevent excessive accumulation of grass litter and provides more cover diversity in the rangeland. Small food plots and forty acres of cropland also add to the area's diversity. Approximately forty prairie chickens have been harvested on Woodson Wildlife Area in 1981 and 1982. The fall flock counts have increased from approximately fifty birds in 1973 to 200 birds in 1982.

A PLAN FOR GREATER PRAIRIE CHICKENS IN MINNESOTA

W. Daniel Svedarsky
University of Minnesota
Terrance J. Wolfe

Minnesota Department of Natural Resources

In recent years a spring population of about 1,500 greater prairie chicken cocks have been censused in Minnesota. This is almost twice that censused from 1974-1978. Most of these are associated with grasslands owned by the Minnesota Department of Natural Resources (31,500 acres), the U.S. Fish and Wildlife Service (14,500 acres), The Nature Conservancy (5,800 acres), and additional acres under private ownership.

An annual census is coordinated by the Minnesota Prairie Chicken Society, an organization of approximately 150 agency personnel, farmers, teachers, bird watchers and students. This organization was established in 1973 to support education, management and research activities to benefit prairie chickens.

The Prairie Chicken Society is currently developing a "plan" which will be in the form of a booklet noting the past and present status of prairie chickens in Minnesota, stating management goals of the Society, and charting an action course to accomplish those goals. The plan will serve as a visible education project of the Society and hopefully result in more prairie chicken habitat management on agency and Nature Conservancy lands. Currently there is not an official management effort directed towards prairie chickens by the Minnesota Department of Natural Resources since it is not a game

species. Since it is hunted in some states, it is not classified as "nongame" either, which would qualify it for a specific support program from the new Nongame Wildlife Program; although it benefits by "prairie management programs." The Prairie Chicken Society feels that the population is healthy enough to sustain a limited hunting season. This would broaden the support base for the species and clarify the status issue.

Other issues to be addressed in the plan are policies concerning restoration and public viewing programs on booming grounds.

1983 STATUS REPORT ON COLUMBIAN SHARP-TAILED GROUSE IN COLORADO FOR PRAIRIE GROUSE TECHNICAL COUNCIL REPORT

Colorado is in the 3rd year of a research project examining population dynamics and habitat characteristics of Columbian Sharp-tailed Grouse. Breeding surveys on a sample of 24 leks in 1983 resulted in 311 sharp-tails being counted (13.0/lek). This compares to 14.0/lek and 12.2/lek being counted in 1981 and 1982, respectively. Only 16.7% of males trapped on leks were yearlings, despite excellent production in 1982 (66% chicks in the fall harvest).

The 1983 hunting season was 16 days long with a bag and possession limit of 3 and 6, respectively. A sample of 207 wings (about half the estimated state harvest) indicated that production was excellent, with juveniles comprising over 66% of the harvest. This is much higher than our previous 7-year average (1976-82) of 53% juveniles.

The short-term outlook for sharptail populations in Colorado remains good, although energy development and its associated human impacts may reduce sharptail habitats and populations in the future.

STATUS REPORTS

Minnesota—Terry Wolfe

Prairie Chicken Status

Minnesota's prairie chickens may have peaked in 1982 when 1,648 cocks were counted on booming grounds. The 1983 count was 1,420. Not all grounds were counted in 1983, but still we saw decreases in areas where all chickens were counted.

Habitat conditions are about as stable as we might expect. Con-

*wings used
Hend's
Kane?*

version of grassland to cropland is occurring but at a reduced rate from the mid-late 70's. Most of Minnesota's prairie chickens are dependent on grasslands owned by the Department of Natural Resources, U.S. Fish and Wildlife Service, and The Nature Conservancy. About 50 square miles of prairie chicken habitat are owned by these three organizations. Acquisition programs are continuing by all three, though slowly.

Improving our management of the grasslands may be the best way of substantially increasing prairie chicken numbers. Prescribed burning impacts more acres each year than other management tools. Some haying and grazing is being used. The Fish and Wildlife Service has planted thousands of acres of native grasses in old fields to improve nest cover.

The Minnesota Prairie Chicken Society is working on a management plan for chickens that will update knowledge of the birds, and hopefully improve management and increase interest.

Possible ways of increasing public interest in prairie chickens are being discussed. Suggestions include: limiting hunting, field trials, more organized booming ground watching.

Sharp-tailed Grouse Status

Sharptails continued the gradual decline of recent years caused by advancing plant succession largely caused by fire protection, conifer plantations, and land clearing for agriculture. In the Northwest census zone, the number of sharptails on 32 dancing grounds censused in both 1982 and 1983 declined 22%. This population decline follows the lowest proportion of juvenile sharptails killed (43% in 1982) in 20 years of Karlstad area hunter bag checks. Male sharptails declined similarly (24%) in the East Central census zone, with 66 birds counted on 10 grounds. (Information from Bill Berg, Forest Wildlife Populations and Research Group, Grand Rapids, Minnesota.)

Wisconsin—Jim Kier and Paul Kooiker

Sharp-tailed Grouse

Sharptail grouse numbers in Wisconsin continue to decline as a result of successional changes and conversion to conifer types. Remnant populations in unmanaged habitats are slowly disappearing.

Wisconsin's best remaining sharptail grouse habitat is in the northwest part of the state, although there are a few managed populations in the central and northeast portion of the state. In the northwest area, 300 cocks were censused on 50 leks. Perhaps, 200 more cocks exist statewide. It is almost certain that in the near future sharptail grouse will exist only on managed habitats; currently there are about 10 state-managed sharptail areas in Wisconsin. One positive note—sharptail grouse on Crex Meadows and Namekagon Barrens were up in 1983 (32% on Crex). Interest in managing sharptail grouse is increasing in Wisconsin.

There is a 23 day hunting season in the northern half of Wisconsin. The season opens the third Saturday in October, and the bag limit is 3 birds. Because of concern about the possible impact of hunting on sharptail grouse numbers, a harvest rate study was launched this fall at Crex Meadows, a 30,000 acre prairie-wetlands project. To date, 39 sharptail grouse have been banded in a 2 week period, out of an estimated population of 200 birds. Trapping broods in funnel traps appears to be an effective technique. The study will be expanded next summer to include other managed sharptail grouse areas. (Researcher—Larry Gregg)

(Techniques—200' to 400' leads with a funnel trap at each end; 1 trap night = 2 call nights. Birds are marked with color coded leg bands and reward bands.)

Prairie Chicken

Population data from the past 3½ decades seems to indicate a cyclical trend for the prairie chicken in Wisconsin. Based on these data, a decline in birds was expected in 1982. The 1981 spring booming counts had indicated a higher population than at any time since management had begun nearly 30 years ago. A small decline did occur in 1982—3% on Buena Vista Marsh, the main management area, and 7½% for the central Wisconsin population as a whole.

A further decline was predicted this year, and a much more significant drop occurred. Booming counts indicated one-third fewer males on leks for both Buena Vista and the central Wisconsin population. We now have 359 males on Buena Vista (down from the 1981 high of 55), 49 on Leola, 188 on the Paul Olson Wildlife Area (formerly called Sherry-Carson), and 101 males on the Mead Wildlife Area. The total population is down from a high of 1,121 males in 1981 to 697 this past spring.

If history is any indication, further declines can be expected. Management is continuing with the goal of minimizing the decline and assuring a future population high similar to that in 1981.

Illinois—Ron Westemeier

Greater prairie chickens were censused for the 21st consecutive year this spring in Jasper, Marion, and Wayne counties. Cocks counted on booming grounds on the 3 areas totaled 155—24% fewer than the 203 cocks counted in 1982. The decline in numbers of cocks from spring 1982 to spring 1983 by area was: —28% near Bogota in Jasper County (from 83 cocks to 60), —20% near Kimmunity in Marion County (from 116 cocks to 93), and —50% near Mt. Erie in Wayne County (from 4 cocks to 2).

The population decline in Bogota was not expected on the basis of the number of hatched nests (18) found there in 1982. The number of cocks censused each spring at Bogota has shown high correlation ($R^2 = 0.893$) with the number of hatched nests found the previous summer; thus, the population should have been unchanged with about 83 cocks again this spring. However, the spring count of cocks

has shown even higher correlation ($R^2 = 0.956$) with the count of cocks made the previous fall. From our fall 1982 count, we predicted 64.4 cocks for spring 1983 (actual count was 60 cocks). Apparently, events occurring between the 1982 spring hatch and our fall count played a role in the population decline—perhaps dispersal or poor brood survival. Such adverse factors as pheasant interactions with prairie chickens and the large increase in oil-production activity in 1982 are suspect at Bogota, but the concomitant drop in prairie chicken numbers at Kimmundy, and perhaps at Mt. Erie, suggest that regional factors such as weather may have been involved. Illinois may be witnessing the onset of the next cyclic low in its remnant prairie chicken populations.

South Dakota—Larry F. Fredrickson

The 1982 fall hunting season in South Dakota revealed the following: More hunters were out than the previous year but not as many as during years when the grouse population was widely advertised in newspapers as being good. Sixteen thousand seven hundred fifty (16,750) hunters harvest 68,700 sharptailed grouse and prairie chickens combined. About 5% of these were prairie chickens (3 to 4 thousand). Four hundred forty-six (446) sharptailed grouse were checked which revealed 2.66 young per old. Only 22 prairie chickens were checked with 2.14 young per old. The peak of hatching was calculated as the last two weeks of May. Five hundred eighty (580) hunters were checked and man hours per bird was calculated at 3.7 and 2.2 birds were harvested per man day which was better than the average since 1959. The man hours per bird of 3.7 was average.

Spring Booming Ground Counts

1983 Sharptails: 22 routes with 831 square miles had 104 grounds with 1,036 males for 9.87 males/ground or 1.25 males per square mile. Ten core routes (in existence for most years and run every year since data has been collected) with 359 square miles had 55 grounds with 592 males for 10.96 males/ground or 1.65 males per square mile. This was a 51% increase over the same as the average for 1969 through 1979.

1983 Prairie Chickens: 14 routes with 511 square miles had 31 grounds with 277 males for 7.32 males/ground or 0.44 males per square mile. Five core routes had 175 square miles with 84 males for 7.00 males per ground or 0.48 males per square mile. This was a -9% decrease from the 0.53 males per square mile for 1982 and a -17% decrease from 1969 through 1979 average of 0.64 males per square mile.

1983 Summer Random Brood Survey: Conservation Officers counted 147 prairie grouse broods for an average brood size of 8.3, compared to 63 broods counted in 1982 with an average brood size of 7.5.

Outlook for the 1983 prairie grouse season starting on September 17: Abundant spring rainfall and excellent growth of vegetation for nesting and brood rearing and survival should provide an excellent grouse hunting season. More than twice as many broods were counted as the previous summer. Grasshopper populations were high in late summer also.

North Dakota—Jerry Kobriger

Reproduction of prairie grouse in North Dakota in 1982 was about average, with an age ratio of 1.94 determined from 3,102 wings. We had 38,696 hunters who hunted 4 times each and harvested 118,600 sharptails.

Spring census indicated a statewide increase of 25% in breeding males from 1982 to 1983 (sharptails). Brood surveys indicated an increase of about 43% in birds/mile. Four hundred (400) pinnate males were counted on 34 booming grounds on the Cheyenne Grasslands in SE North Dakota. This was an increase over 1982, but the percentage is unknown.

The current season opened on September 10. Data from 600 wings collected on opening weekend indicated an age ratio of 2.9 to 1. We anticipate a higher harvest in 1983 than 1982.

Nebraska—William L. Vodehnal

Fifteen (15) prairie grouse spring survey routes were completed in 1983 throughout the Nebraska Sandhills. Results projected 1,318 greater prairie chickens and 1,225 sharptail grouse on leks in 1983, compared to 1,165 chickens and 1,098 sharptails in 1982, which accounts for 13% and 12% increases, respectively. A total of 1,157 male chickens occurred on 103 grounds in 1983, compared to 1,023 males on 85 grounds in 1982; a 15% increase in male numbers. A total of 1,050 male sharptails occurred on 84 grounds in 1983, compared to 938 males on 76 grounds in 1982; a 12% increase in male numbers.

Results from the 1982 hunting season indicate a comparable harvest to the 1981 season. More hunters took to the field in 1982 (21,690 vs. 20,520) and more birds were bagged in 1982 (101,400 vs. 97,800). Birds bagged per hunter declined slightly from 4.76 in 1981 to 4.67 in 1982. The 1982 hunting season opened on September 18 and closed on November 14. Kill/hunter day was 1.4 in 1982, compared to 1.28 in 1981.

Range and conditions are in good to excellent shape at this time. Residual cover was sufficient for good nesting cover in 1983. Improved range conditions are attributed to abundant rainfall throughout spring and mid-summer. The increased breeding population and good range conditions indicate good hunting prospects.

1983 Opening Weekend Success

Preliminary Results = 1.55 Birds/Hunter Day
3.27 Hours/Bird

Excluding Bessey Forest at Halsey Due

To Hunter Pressure (Over 200 Hunters on Opening Weekend)

Without Halsey 1.75 Birds/Hunter Day
2.76 Hours/Bird

Colorado—Gary C. Miller and Charles M. Loeffler

Greater prairie chickens continue to colonize (recolonize?) areas of eastern Colorado's sandsage-bluestem prairie. Range extensions of 10-15 miles have been detected during 1983 lek surveys, and "gaps" between several small isolated populations are closing. Population indices are not yet available, but do not appear to be much different from the mean of 0.12 leks/mi² seen in previous years. Habitat conditions continued fair in 1982-1983 in response to moderate grazing and adequate rainfall.

Habitat restoration activities on the Division of Wildlife's Tamarack property show signs of success—switchgrass and bluestem planted in 1981 and 1982 demonstrated high survival. Plans for a transplant of greater to the property are being developed—if a population can be secured on these public lands, removal of the species from its present endangered classification will be likely.

Research activities on greater continue. Movement, habitat use and preference, and productivity data have been and are being collected from 20 radio-fitted hens. Overall, the thrust of the research is to ascertain minimum quantity and quality parameters for population maintenance. This year, we are attempting some experimental manipulation of nests to circumvent nest predation (more about this in the September meeting).

The annual survey of lesser prairie chickens in southeastern Colorado was completed in late May. Results indicate a stable or slightly expanding population in Baca, Prowers, and Kiowa counties. Habitat evaluation via use of Landsat imagery has been started, and preliminary results should be available at the September meeting.

Missouri—Don Christisen

The annual lek survey of 1983 for south Missouri showed a decline of 27% in the cock population. The population, according to the route sample of 16% of the range, was estimated to be 4,100 cocks. The lek survey in 1982 had indicated a 30% increase in cocks. The population has been relatively stable in the past decade.

A census of 16 public prairies tallied 42 leks and 408 cocks, for an average of 2.6 leks and 25.5 cocks per area.

A lek survey to remap the south Missouri prairie chicken range was conducted in 25 counties during March and April. Active leks were

found in 17 counties representing 633 square miles of breeding range in 65 distinct segments, ranging in size from 3 square miles to 77 square miles. About 34% of the 1945 south Missouri range has been lost as breeding range by absence of leks. Data on 304 leks showed 72% were in the class of 10 birds or less. About 3% of the breeding range is in public ownership.

A land use study of 102,000 acres of occupied and unoccupied prairie chicken range revealed up to 82% in grain crops in a portion of the occupied range and a lack of diversity in grass species in other areas where the amount of grass was adequate.

The future of prairie chickens will depend on the success of a warm season native grass program sponsored by the Department of Conservation and the acquisition of public lands suitable for prairie chicken management.

Kansas—Roger Wells

The 1982 Kansas greater prairie chicken harvest estimate set an all time high at 109,000. This was up 36% from the 1981 harvest of 79,900. Average birds per day was 0.71 with a season-long bag per hunter of 2.05. An estimated 53,100 hunters spent an average of 3.18 days afield each, for an estimated 168,500 mandays of prairie chicken hunting.

The 1982 lesser prairie chicken harvest was estimated at 6,200. Approximately 3,400 hunters spent an average of 3.31 days afield hunting lessers and bagged an average of 0.58 birds per day and 1.81 birds for the season.

Spring (1983) densities of greater prairie chickens were essentially unchanged ($p > .20$) in both the numbers of birds and numbers of booming grounds. The number of birds/sq. mile was up an average of 1%, with the numbers of booming grounds down an average of 1% or -0.025 booming grounds/sq. mile. The rangewide average of birds/sq. mile is 16% below the 5 year average yet very near (+1%) the 10 year average. The rangewide average of booming grounds/sq. mile is 8% below the 5-year average and identical to the 10-year average.

The 1983 spring densities of lesser prairie chickens were down from 1982 an average of 6% or 0.91 birds/sq. mile. This change is significant at $p = .20$. The numbers of gobbling grounds was essentially unchanged ($p > .20$) at +1% and -0.021 grounds/sq. mile. The birds/sq. mile index is 16% below the 5-year average of 13.5 and 13% below the 10 year average of 13.1.

Oklahoma—Dennis Geary

Oklahoma's prairie chicken populations could be described as static or slightly down. Population estimates and occupied range were last described by Martin (greater) and Cannon (lesser) in 1980, and little has appeared to change in the time that has elapsed since.

Two successive years of above average rainfall and mild winters have combined to provide favorable native range conditions and low winter mortality. Low mortality was noted in a 14-year high of adult cocks per booming ground for greater chickens and a four-year high for lesser chickens in the spring of 1982. Reproductive success during 1982, although somewhat depressed from the 1981 data, is representative of a static population. Results of the first wing and retrices mail survey, conducted by the Department, yielded adult/young ratios of 1/.78 for greater chickens and .93/1 for lessers.

Also during the survey, an attempt was made to determine the sex and age ratios of birds harvested and the selective vulnerability, if any, of sex or age classes by habitat type, pasture vs. cropland. Hunters who responded as hunting pastureland returned envelopes representing 56% cocks and 44% hens. For hunters who responded as hunting agricultural land, the disparity was reversed resulting in a harvest slightly in favor of hens: 59% hens and 41% cocks.

Sex and age ratios collected through controlled hunts at the Osage Management Units were similar to those collected through the mail cooperation survey.

During the spring of 1983, lek/area routes were established in all but two counties containing prairie chickens. Combined results from greater chicken routes decreased from .38 leks/sq. mile surveyed in 1982 to .30 lek/sq. mile surveyed in 1983. This was the first year lek/area routes were established in lesser chicken counties with the exception of Ellis County, where 1983 was the second year a route was run. Leks/area surveyed in Ellis County decreased from .5/sq. mile in 1982 to .4/sq. mile in 1983.

Statewide, both species of prairie chicken are slightly down from the peak 1982 spring counts. As with most species of the order Galliformes, climatic conditions combine to influence yearly fluctuations in numbers. These population numbers will undoubtedly continue to fluctuate as long as suitable habitat remains available. The continuing availability of habitat will remain the limiting factor to Oklahoma's prairie chickens. Increased wheat production and the ever expanding use of herbicides such as Graslan or Grazon could have a profound effect on lesser chickens and a somewhat reduced effect on greater. As was noted by both Martin (1983) and Cannon (1980), occupied range has continued to decrease since prairie chicken habitats were first described. Although soil types should prevent total loss of occupied greater chicken habitat, lesser chicken habitat is not so protected and therefore, its future remains in doubt.

Continuing research, range management, education and land acquisition of unique habitats is needed immediately, if lesser chickens are to remain in viable numbers.

Texas—Wayne Shifflett

The annual census of Attwater's prairie chickens was conducted in Texas during the second and third weeks of March. A total of 1,596 chickens was counted in 8 counties. The county counts were Refugio (646), Colorado (320), Austin (292), Victoria (112), Goliad (84), Galveston (66), Fort Bend (54), and Aransas (22). The 1983 count reflected an increase of 314 birds over 1982.

BUSINESS MEETING

September 22, 1983

The business meeting was called to order at approximately 11:00 a.m. by Roger Wells, Chairman.

The group expressed appreciation to Kansas Fish and Game Commission personnel for putting together an excellent conference.

Chairman Wells requested that all authors send the abstracts of their papers to him as soon as possible.

Chairman Wells presented the report of the action (or publication committee) relative to the feasibility of the Council publishing an informational book or booklet. After the 1981 meeting, Wells requested the help of Gary Miller (Colorado), Jerry Kobriger (North Dakota), Wini Kessler (University of Idaho) and Nova Silvy (Texas A&M University) to determine the best format for the publication and find a potential funding source.

The committee recommended that the Council proceed with plans for producing a publication. An earlier canvas of the membership showed considerable divergence of opinion in what format the publication should take. Some favored a small popular brochure for distribution to managers and landowners. Others favored a book with chapters on each prairie grouse species and subspecies.

The committee recommended that the publication be in book form. The book could be set up in sections by species (subspecies) with the leadoff to each section a general description and life history of the bird. This would be followed by state by state chapters within each section. State information would include distribution and density, habitat management, habitat problems, etc. Individual state pamphlets could be made by off printing the general life history information and the state chapter.

Wini Kessler has offered to act as editor of the publication and the committee recommended that the Council accept her offer.

Nova Silvy has located a potential funding source in either the Caesar Kleberg Wildlife Foundation or the Welder Wildlife Foundation in Texas.

During floor discussion, Svedarsky and Giesen expressed concern about the publication becoming outdated if too much data is included such as population trends, research data, etc.

After further discussion, Westemeier moved (Miller 2nd) to proceed with publication of the book as recommended by the committee and appoint Wini Kessler as editor. Motion passed.

Chairman Wells asked that those individuals who would be willing to author state chapters to put their name and address on a sign-up sheet. This list will then be sent to Kessler.

Cannon (Missouri) invited the Prairie Grouse Council to Missouri for the 1985 meeting. Svedarsky moved (Westemeier 2nd) to accept the Missouri offer. Motion passed. Christisen moved (Toney 2nd) to elect Cannon Chairman of the Prairie Grouse Technical Council. Motion passed.

Meeting adjourned at 12:15 p.m.

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