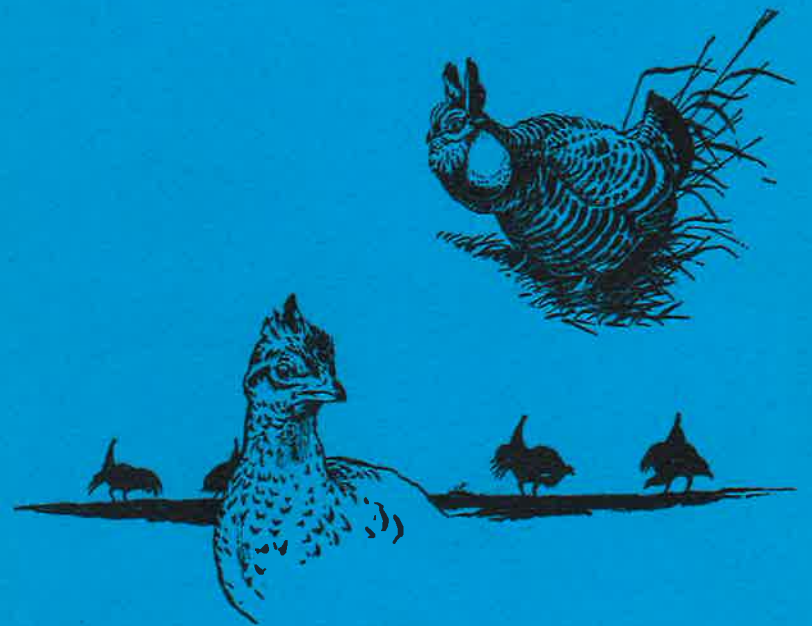


*Proceedings of the
14th Conference*

PRAIRIE GROUSE TECHNICAL COUNCIL



September 23-25, 1981
Halsey, Nebraska

Host
Nebraska Game and Parks Commission

**PROCEEDINGS OF 14TH CONFERENCE
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Abstracts are presented as they were submitted by the authors. They are not for publication without the consent of the contributing author.

**Jim Mitchell
Compiler**

**INTRODUCTION – Jim Mitchell, Upland Game Specialist
Nebraska Game and Parks Commission
(Conference Coordinator)**

**WELCOME – Bill Bailey, Assistant Director
Nebraska Game and Parks Commission**



IN MEMORIAM

This publication is dedicated to Ken Robertson, who died October 15, 1981. Mr. Robertson was chairman of the Executive Committee that hosted this conference, but was hospitalized and unable to attend. Although Ken was not able to be present, he made a significant contribution during the planning stages for the meeting. He was District Game Supervisor at the Nebraska Game and Parks Commission office in Bassett at the time of his death. He was 43 years old.

THE NEBRASKA SANDHILLS – AN OVERVIEW

By
Jon Farrar
Nebraska Game and Parks Commission

The Sandhills region of north-central Nebraska is the largest dune area in the Western Hemisphere, covering some 19,000 square miles. The dunes are of recent origin, formed near the end of the Pleistocene Epoch some 10,000 years ago. The eastern Sandhills is classified as sub-humid, the western edge as semi-arid. Over 75 percent of the precipitation falls during the growing season. The Sandhills is considered mixed-grass prairie and the bunch-grass association is the characteristic plant formation. *Adropogon* and *Calamovilfa* are the diagnostic genera. Fauna of the Sandhills is typical of other temperate grasslands. Over 1,600 lakes, ranging from 10 to 2,300 acres, are reported in the area. Most are freshwater and occur where the water table rises above the land surface. The rapid development of center-pivot irrigation in the eastern portion of the Sandhills during the last 15 years has removed significant acreages of upland pasture and lowered the water table threatening subirrigated hay meadows and wetlands.

PRAIRIE GROUSE IN THE SANDHILLS

By
Carl W. Wolfe
Nebraska Game and Parks Commission

A general look at the habitat and prairie grouse of the Nebraska Sandhills was presented by colored slides. The early history of prairie chicken use by settlers, market hunters, and other recreationists were traced from the mid-1800's to present.

The wide diversity of habitat in various regions of the Sandhills was depicted and discussed. Impacts of grazing, increased agricultural use and water extraction were noted. Preferences of sharptailed grouse and prairie chickens for specific daily and seasonal activity sites were discussed.

Past research efforts and present management findings were shown, and the relative findings of increased irrigation on prairie grouse populations were presented.

**GROUSE ON THE BESSEY DIVISION
NEBRASKA NATIONAL FOREST**

By
Steve Marquardt
U.S. Forest Service

A review of general Forest Service philosophy and management objectives was presented. Management strategies for various forest users on the Nebraska National Forest were presented. Possible solutions to user demands were discussed.

Various grazing techniques and their relation to grouse populations were discussed. Problems in maintaining grazing schemes and the related impact on grouse numbers were demonstrated.

A field trip to selected grazing allotments on the forest was taken. On-site discussions were held to show various components of grouse habitat, and to demonstrate the impact of grazing on grouse.

**EXPERIMENTAL SHARP-TAILED GROUSE
INTRODUCTIONS IN PENNSYLVANIA**

By
John J. Kriz
Pennsylvania Game Commission

Sharp-tailed grouse from Manitoba were unsuccessfully introduced into northcentral Pennsylvania in 1953. In 1970, two hundred evenly sexed birds, trapped near Kadoka, South Dakota, were released in Erie (northwestern) and Bradford (northeastern) counties. Land use patterns in these sections of Pennsylvania bore some resemblance to prairie grouse habitats. Birds remained generally in the areas of release, but no display or reproduction was authenticated.

In 1973, sixty-nine sharp-tails were wild-trapped in the Nebraska sandhills and released in Erie County near the 1970 sites. The following winter eight more birds were obtained from Nebraska. Three of these were equipped with radio transmitters. One transmitter malfunctioned in three days, and the second and third slipped and resulted in mortality on the 14th and 27th day. During the tracking period the radioed birds remained with the others and stayed relatively close to the release sites.

Occasional, unverified reports of sharp-tail sightings are still being received in the general areas of the 1970 and later releases. It is believed that the chance for a successful introduction would have been increased if approximately 100 birds per year, over a three year period, were obtained during a population upswing, and if a sub-species more adaptable to Pennsylvania habitat conditions were available.

**ANALYSIS OF GREATER PRAIRIE CHICKEN POPULATION
AND HARVEST SURVEYS IN KANSAS**

By
Roger Wells
Kansas Fish & Game Commission

Regression analysis of the greater prairie chicken (*Tympanuchus cupido*) population indices prairie chickens/square mile of route (pc/mi²) and booming grounds/square mile of route (bg/mi²) with the harvest parameters total harvest (t harv), average daily bag (adb), and number of hunters (htrs) indicates that the index bg/mi² more closely correlates with the harvest parameters than does pc/mi².

Further analysis of greater prairie chicken harvest data indicates that the harvest was significantly higher ($p < .05$) for years when the prairie chicken season opened prior to ($n=12$) or later than ($n=2$) the openings for quail and pheasant seasons than the \bar{X} harvest for years of concurrent openings ($n=3$). Mean harvest was not different ($p > .10$) for years when prairie chicken season opened earlier than other seasons vs years when the prairie chicken season opened later. Average number of hunters for each season structure were significantly different in each case ($p < .10$) where the most hunters participated during seasons opening earlier than quail and pheasant seasons and the fewest numbers participating on years of concurrent openings.

Although ranging widely, the season lengths did not vary significantly between season structures ($p > .10$) and was not correlated with any harvest parameter.

Results indicate that prairie chicken harvest parameters may be reasonably estimated with bg/mi² as the index to population change. Through manipulation of greater prairie chicken season opening dates in relation to the opening dates for quail and pheasant season, harvest and numbers of hunters participating can be significantly altered without changing season length.

**CHARACTERISTICS OF GREATER
PRAIRIE CHICKEN RANGE IN COLORADO**

By
Gary C. Miller
Donald L. Schrupp
Denver, CO 80216

A portion of Colorado's sandsage-bluestem (*Artemisia-Andropogon*) prairie containing the highest known density of greater prairie chicken (*Tympanuchus cupido pinnatus*) leks in the state was analyzed using Landsat-generated data. Vegetation composition and structure,

measured at several "training sites" allowed computer-assisted differentiation of vegetation types within a 571 km² study area. Analysis indicated that 29.6% of the study area was cultivated, primarily as center pivot irrigated corn. Within the remaining rangeland area, differentiation among 5 vegetation types was possible. Whether or not similar differentiation can be accomplished over a larger area has not been ascertained.

Tall grasses and sandsage (*A. filifolia*) were co-dominant species on 39.6% of the rangeland area, with high variability in sandsage frequency. The most common tall grasses were prairie sandreed (*Calamovilfa longifolia*) and sand dropseed (*Sporobolus cryptandrus*).

Tall and mid grasses were dominant and relatively little sandsage occurred in 2 vegetation types. One of these, the bluestem swales, occupied 8.7% of the rangeland area. The other type, pastures containing primarily sand lovegrass (*Eragrostis trichodes*), amounted to 6.5%.

Sandsage was dominant and relatively little tall or mid grass occurred in 2 vegetation types comprising 45.2% of the rangeland area. Individually, these types were classified as sandsage-shortgrass (16.7%) and rank sandsage-bare ground (28.5%).

In summary, the analysis of Landsat data indicated that tall and mid grass vegetation, major components of prairie chicken habitat, were either dominant or co-dominant with sandsage on 54.8% of the rangeland area (38.6% of the total area) in the main part of Colorado's greater prairie chicken range.

CAPABILITIES OF AND PROCEDURES FOR THE USE OF REMOTE SENSING IN HABITAT ANALYSIS

By
Don Rundquist
UNO Remote Sensing Applications Lab.

"Remote sensing" involves the gathering of information from aircraft and satellite altitudes with both photographic and non-photographic recording devices. In recent years, remote sensing techniques have been employed in habitat analysis with considerable success. The two sensor systems discussed in this paper, color-infrared aerial photography and Landsat multispectral scanner data, have been employed successfully in the Nebraska Sandhills for wetland classification and waterfowl habitat. Most recently, studies have been initiated to investigate the feasibility of using Landsat digital data in evaluating habitat for both sharptail grouse (*Pedioecetes phasianellus*) and whitetail deer (*O. virginianus*).

THE N.A.S.A. APPLICATIONS DEVELOPMENT PROGRAM FOR NEBRASKA SANDHILLS HABITAT EVALUATION

By
Joe Gabig
Nebraska Game and Parks Commission
Don Rundquist
UNO Remote Sensing Lab

A joint project of delineating prairie grouse habitat in a part of the Sandhills of Nebraska through LANDSAT imagery was described. The partners in the project are the Nebraska Game and Parks Commission (NGPC), the University of Nebraska at Omaha's Remote Sensing Applications Lab (RSAL), and the National Aeronautics and Space Administration (NASA). The NGPC identified habitat types that would need to be classified from LANDSAT data to be able to quantify prairie chicken (*Tympanuchus cupido*) and sharptailed grouse (*Pedioecetes phasianellus*) habitat. NASA is providing the data, data processing and final product production under their technology transfer program. The RSAL is providing a technical liaison between NGPC and NASA as well as some ground truth information.

The study area is 4500 square miles and is located in the north-central Sandhills (a portion of Cherry County). It contains a wide variety of Sandhill habitat types. Some of the items present on the study area which the NGPC has asked NASA to identify are: center pivot irrigation, crop type, blowouts, density-height-area of brushy patches, woody cover along with its respective density and/or biomass amount, density and height within hay meadow and wetland classifications.

Due to the large amount of ground truth data available (from previous work by the RSAL), LANDSAT data from September, 1979 will initially be used in the attempt to identify habitat types and quality. May, 1981 data will be analyzed if requested by NGPC personnel after evaluating classifications derived from the 1979 information. The project is scheduled for completion no later than December, 1982 but will likely be done by October.

MOVEMENTS AND MORTALITY OF TRANSPLANTED ATTWATER'S PRAIRIE CHICKENS

By
Jeffrey S. Lawrence
Nova J. Silvy
Texas A&M University

A small, isolated population of Attwater's prairie chickens (*Tympanuchus cupido attwateri*) was transplanted from Gulf of Airport near League City, Galveston County, Texas to the Gonzales Estate Ranch in

Victoria County, Texas. The reason for the transplant was loss of habitat due to urban growth associated with Houston. The transplant was a cooperative effort between Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, and Texas A&M University. Eden Corp. of General Homes, Inc. provided funding.

Twenty-three male (M) and 16 female (F) adult Attwater's prairie chickens were captured with a helinet during 2 capture efforts in October and December 1979. All birds were leg-banded and 25 (12 M: 13 F) were radio-tagged prior to release. Radio-tagged birds provided information on movements and mortality. Average minimum distance moved from release site was 4.8 and 4.2 km for males and females, respectively. The largest individual minimum distances were 7.0 km for a male and 9.9 km for a female. Average minimum range was 10.9 km² for both sexes. Largest individual minimum range was 25.2 km² for a male and 38.3 km² for a female. Average mean longevity was 103.8 days (range 10-255) for males and 79.7 days (range 10-196) for females. The radio-tagged cohort had 14 mortalities (7 M: 7 F), 6 lost transmitters (3 M: 3 F) and 5 unknown fate birds (2 M: 3 F). No birds are currently known to be surviving.

While this transplant effort was not thought to be successful, it did provide insights into potential problems to be considered before any future transplant. These problems included: (1) all birds captured were adults, (2) time-of-year was possibly wrong for the transplant, (3) habitat was not adequate to support the birds, (4) the radio-transmitters may cause increased mortality, and (5) different release techniques (i.e. holding at release site) may need to be tried.

EFFECT OF PREDATOR REDUCTION ON REPRODUCTIVE SUCCESS OF ATTWATER'S PRAIRIE CHICKEN

By
Jeffrey S. Lawrence
Nova J. Silvy
Texas A&M University

Small mammalian predators, striped skunks (*Mephitis mephitis*) opossums (*Didelphis virginiana*), and raccoons (*Procyon lotor*), were removed from a 3.3 km² area in Refugio County, Texas during February-June 1980-81. Predator removal techniques included trapping and night spotlight hunting. One-hundred-seven predators were removed in 1980, and 61 in 1981. Additional predators (24 in 1980, 5 in 1981) were removed from adjoining buffer areas. Comparing predator indices between the predator reduction area and a 3.8 km² control area indicated suppressed predator levels in the predator reduction area during 1981, possibly due to residual effect of predator removal in 1980.

Dummy nests (4 domestic chicken eggs) were placed in the predator reduction and control areas during 1980-81. Dummy nest success

was higher in the predator reduction area, but followed the trend observed between areas in an earlier study during a period of no predator reduction. Percent dummy nest success appeared to be influenced by area specific factors. Successful dummy nests had higher average environmental variables (vegetative obstruction of vision, % cover, distance to disturbance, and distance to trail) than did successful nests in 1980-81.

Attwater's prairie chicken (*Tympanuchus cupido attwateri*) hens were radio-tagged in each area during 1980-81. Attwater's nest success was 82% (N=11) in the predator reduction area versus 33% (N=12) for control nests. Successful Attwater's nests had higher average measurements for 3 of 4 environmental variables (vegetative obstruction of vision, % cover, and distance to trail) than did unsuccessful nests. Brood success was not evaluated in 1980 due to small sample size, and brood mortality was high due to heavy flooding during May and June in 1981. Greater hen mortality was observed in the predator reduction area than the control area, and the possibility that this was partially due to the nest predator reduction program should be considered.

FOOD HABITS OF ATTWATER'S PRAIRIE CHICKEN IN REFUGIO COUNTY, TEXAS

By
Virginia F. Cogar

Data on food habits of adult Attwater's prairie chickens were collected from February 1976 through January 1977 on the 6,400-ha Lake Pasture of the O'Connor Brothers' Riverside Ranch, Refugio County, Texas. Five cover types used by chickens (pipeline, roadside, hardpan, clumped midgrass and unclumped midgrass) were compared to determine seasonal vegetative characteristics. All differed significantly each season, and each contained a diversity of plant species. Forb species were most numerous during each season, even though the composition changed throughout the year.

Analysis of 480 adult prairie chicken droppings revealed a diverse diet, mainly herbage. Foliage of 56 plant species, seeds of 19 plant species, and 12 families of insects were identified. Droppings contained more fragments of plant foliage (leaves and flowers) than seed or insect parts: spring 97%, summer 70%, autumn 40% and winter 88%. Seeds were the second major component of the droppings: spring 1%, summer 23%, autumn 39% and winter 9%. The insect component of the droppings was smallest: spring less than 0.5%, summer 7%, autumn 21% and winter 3%. Seed and insect consumption were both greatest during autumn.

Almost all plant portions of the droppings were from native forbs. Combined forb foliage and forb seeds provided the main portion of the diet each season: spring 96%, summer 91%, autumn 78% and winter 94%. Seasonal diet preference of adult chickens were for foliage of 8 forbs and 5 grasses, plus seeds of 3 forbs. Use of available grain sorghum was only slight.

SHARPTAILS AND SURFACE MINING IN MONTANA

By
Darwin Sell
Bill Schwarzkoph
Western Energy Company

Sharp-tailed grouse (*Pedioetes phasianellus*) are abundant upland game birds in Southeastern Montana. Potential impacts of surface mining of the Fort Union coal reserves in this area have generated concern among wildlife managers. The Bureau of Land Management (BLM) has developed 20 environmental "unsuitability" criteria for federal lands and can designate specific areas as unsuitable for surface coal mining based on these criteria. Several of the criteria apply to wildlife with criterion number 15 specifically stating lands containing active sharp-tailed grouse dancing grounds may be deemed unsuitable for mining. In addition, a one-half mile radius around a given dancing ground would also be excluded from mining-related disturbance to maintain nesting cover. The criterion may be waived and a lease to mine may be issued if the state determines that a detrimental long-term impact on the sharptail population will not occur.

Recently, 181 acres were tentatively deleted from Western Energy Company's (WECO) mine plan under criterion 15. This decision would effectively eliminate approximately eight million tons of coal from production. Together with wildlife consultants, WECO has been gathering research and field data specific to sharptails since 1975. The data indicates sharptails will nest in revegetated mining areas. Two new dancing grounds have since become established adjacent to reclamation indicating rehabilitated post mine lands afford good sharptail habitat. The findings parallel evidence reported by others during the "Soil Bank Program" years. Western Energy Company is continuing research on sharp-tailed grouse in active and proposed mining areas.

Mitigation plans for the "unsuitable" area have been submitted to the Montana Department of Fish, Wildlife and Parks (DFWP) to: (1) recontour the proposed disturbance to produce a knoll for a dancing ground site; (2) revegetate the area with native grasses and shrubs to re-establish suitable nesting habitat, (3) attract sharptails to the knoll by using electronic tapes after proper cover is obtained, (4) specifically manage the rehabilitated area for sharp-tailed grouse, (5) continue nesting studies on the 181 acre "unsuitable" area, (6) prohibit destruction of shrub communities from spraying or other mechanical means on 26 sections of non-coal lands owned by WECO in the Colstrip vicinity, and (7) fence reclaimed shrubby draws. The objectives of the mitigation plans are to re-establish a dancing ground at the approximate original site, provide nesting habitat nearby, and maintain a healthy sharptail population in the overall Colstrip vicinity.

MICHIGAN SHARPTAILS – PAST, PRESENT AND FUTURE?

By
Gregg Stoll
Michigan Dept. of Natural Resources

Sharptailed Grouse moved into Michigan after massive forest cutting and uncontrolled fires created favorable habitat conditions. Settlers intent on farming moved into this now open country, however a combination of poor soil and the depression caused abandonment of all but the best land. Uncontrolled fires and natural forest successional trends continued to provide excellent wildlife habitat. Starting in the 1940s programs of organized fire suppression and reforestation started a trend of declining sharptail grouse habitat. Now a relatively few large forest openings continue to hold small populations of sharptails as forest succession and pine planting programs continue to reduce their habitat. Unless adequate steps are taken to reverse this trend, the future in Michigan for prairie grouse management is bleak.

SHARP-TAILED GROUSE AND RANGE MANAGEMENT PRACTICES IN WESTERN RANGELANDS

By
Wini Kessler and Ray P. Bosch
University of Idaho

This paper reviews the state of knowledge on the Columbian sharp-tailed grouse (*Pedioecetes phasianellus columbianus*) and plains sharp-tailed grouse (*P. p. jamesi*) in relation to range management practices. Information was obtained by a literature search and questionnaire survey. Effects of specific range management practices, other than intensive grazing, have rarely been addressed in Columbian sharptail research. Respondents' opinions were variable, reflecting the lack of information. Grazing management and range improvement effects were identified as high priority research needs. Reintroduction of sharptail stock into former range emerged as a major research and management emphasis for the depleted Columbian subspecies. Effects of grazing intensities and systems have been addressed in plains sharptail research. However, considerable discrepancy exists between research findings and the opinions expressed by questionnaire respondents. Grazing system and intensity effects were identified as priority research needs, whereas reintroduction was not generally viewed as a feasible management activity.

**COLUMBIAN SHARP-TAILED GROUSE IN MANAGED
SAGEBRUSH/GRASS HABITAT OF SOUTHEASTERN IDAHO**

By
Wini Kessler and Ray P. Bosch
University of Idaho

A study conducted from 1977 to 1980 examined habitat relationships of Columbian sharp-tailed grouse (*Pedioecetes phasianellus columbianus*) within managed sagebrush (*Artemisia spp.*) / grassland habitat of the Curlew National Grassland, southeastern Idaho. Radio-telemetry locations were used to evaluate habitat-use responses to sagebrush reduction practices, including herbicides, fire, and mechanical treatments. Results suggest that Columbian sharptails avoid overmature sagebrush and respond to sagebrush reduction practices, including herbicides, fire, and mechanical treatments. Results suggest that Columbian sharptails avoid overmature sagebrush and respond to its reduction. Vegetation conditions resulting from sagebrush reduction treatments are discussed in relation to Columbian sharptail habitat requirements.

**GENERAL OBSERVATIONS ON MANAGEMENT OF
GREATER PRAIRIE CHICKENS IN SOUTHEAST NEBRASKA**

By
Jim Douglas
Nebraska Game and Parks Commission

In southeast Nebraska, populations of the once abundant greater prairie chicken (*Tympanuchus cupido pinnatus*) have declined to remnant levels, primarily occurring in five counties. The amount of tall grassland habitat in this region has declined 31% in the last thirty years.

Current monitoring by the Nebraska Game and Parks Commission includes annual recording of booming ground locations and spring cock counts. The current short-term trend for isolated populations varies from slightly declining in Richardson and Pawnee Counties, slightly increasing in Johnson and Jefferson Counties to moderately increasing in Gage County.

Management of two public areas, Pawnee Prairie and Burchard Lake Wildlife Management Areas, is devoted primarily to greater prairie chickens which frequent these areas. Current management techniques being used include rotational controlled burning, haying, mowing for booming ground maintenance and food plot establishment.

The populations frequenting these two state areas are influenced by land use on adjacent private land and may be slowly decreasing.

**MANAGEMENT AFFECTING PRAIRIE GROUSE ON
VALENTINE NATIONAL WILDLIFE REFUGE**

By
Leonard McDaniel
U.S. Fish and Wildlife Service

Valentine NWR is located in the heart of the Nebraska Sandhills and is comprised of 71,517 acres (approximately 10,000 are lakes and marshes, 12,000 sub-irrigated meadow and 50,000 in sand and choppy sand sites). Primary emphasis for management is to create and maintain vigorous stands of native vegetation for waterfowl production. However, maintenance of native prairie is also conducive to other species such as prairie grouse.

Changes in grassland quality and management methodology was traced from the 1950's to the early 1970's. Recovery of the grassland was accelerated by periodic treatments of spring and fall grazing and rest.

Presently, 62000 acres of grassland are fenced into 136 management units where periodic treatments of rest, mowing and spring, fall and rotational grazing are applied. Approximately 1,000 acres are mowed annually for maintaining leks, promoting grouse and goose browse, mulching refuge sand trails and to provide winter feed for the Texas longhorn cattle at Fort Niobrara National Wildlife Refuge. Rest is annually applied to approximately 40% of the total refuge acreage.

Sharptail populations have remained relatively stable over the past 20 years, averaging 6 males/sq. mi. Hunting is permitted on the western portion of the refuge. The eastern portion has historically been closed to hunting due to the remnant prairie chicken population being concentrated in this area. A gradual increase in prairie chicken numbers has been noted. In 1977 a breeding male count of 69 on 7 leks was the highest on record since inventories were initiated in 1956. Since 1977 the breeding male count has increased to 125 on 15 leks with expansion into the hunting area. Improved native grassland is considered responsible for the increase of the prairie chicken population.

DO PRAIRIE CHICKEN COCKS MOVE FROM EXTERIOR TO INTERIOR TERRITORIES AS THEY GROW OLDER?

By
F. N. Hamerstrom
University of Wisconsin

In the winter of 1955-56 we color-banded 193 Prairie Chickens in Wisconsin, of which 80 were immature cocks. Twenty-three were never seen again; 13 were later recovered but not on spring booming grounds. Forty-four were recognized on booming grounds in spring, but 13 must be discarded from this test because there are gaps in their histories (For details of observational techniques see F. and F. Hamerstrom, "The Prairie Chicken in Wisconsin: highlights of a 22-year study. . .", Wis. Dept. Nat. Res. Tech. Bull. 64, 1973).

Of the 31 really usable histories, 11 cocks were seen only in one spring, 10 of them in their first spring and one in his third (external). One was an external cock on one booming ground and a visitor without territory on a second. Of those on one booming ground only, one was internal in his first spring, 6 were external and 3 were visitor cocks. Thus, 2 of 11 did not fit the pattern and 9 disappeared without further record.

Twenty immatures remain. Seven were seen during their first and second springs, 8 during the first through third springs, 2 during the first through fourth, 2 the first through fifth, and one (never internal!) during the first five plus the seventh. Of the 20; 13 were found on only one booming ground, 6 on 2, and one on 4.

The cocks that used more than one booming ground were farthest from the looked-for pattern. One was external in his first spring then internal on a second ground for 3 springs, but none of the rest showed a consistent external-to-internal pattern although 2 were sometimes one and sometimes the other.

The single-ground cocks came closer. Six of the 13 were first external as immatures then internal in later years. One was internal during both of his 2 springs. Three were external throughout (up to 3 springs). The rest were in some springs external and in some, internal.

In short, 2 of 11 cocks seen during only one spring violated the external-to-internal pattern; of the 20 known on booming grounds from 2 to 7 years, 9 (45%) never became interior cocks. One was interior from the start, and 3 showed various combinations but no consistent centripetal pattern. Only 7 (35%) started as external cocks as immatures and moved to the interior as adults.

Thus, in the 1955-56 year class, at least, there was no consistent pattern of centripetal pattern with increasing age.

SOME SUGGESTIONS FOR SAVING PRAIRIE GROUSE RANGE

By
Frances Hamerstrom
University of Wisconsin

My first suggestion is to refrain from being too earnest. Often we care so much that we become ineffective.

My next suggestion is to have good visual aids (such as the movie we showed on Wisconsin's shrinking range).

My third suggestion is to reach the general public. Technical papers seldom have political influence. My latest attempt is a book, *Strictly for the Chickens* (Iowa State University Press) which is reaching readers who say, "I've never cared about birds!"

GAME COMMISSION STRATEGIES FOR MANAGEMENT OF PRAIRIE GROUSE ON AGENCY AND PRIVATE LANDS IN NEBRASKA'S PRIMARY GROUSE RANGE

By
Larry Radant
Nebraska Game and Parks Commission

The Nebraska Game and Parks Commission manages approximately 11,000 acres of prairie grouse habitat in the Sandhills of Nebraska. Management of this habitat is directed toward a variety of species of game and non-game animals. Management practices include restricting haying and grazing, vegetation rejuvenation, tree and shrub plantings and restricting vehicle access.

Commission involvement in the management of prairie grouse on private land has increased with the passage of LB861 (Habitat Bill). With money generated by the Habitat Stamp the Commission provides cost-share money to private landowners, through local Natural Resources Districts, for habitat improvement. The Commission also provides trees and shrubs to landowners for the purpose of habitat improvement.

TWENTY YEARS ON THE PRAIRIE GROUSE TOUR

By
Jerry Koberger
North Dakota Game and Fish Department

A brief history of the last twenty years of the Prairie Grouse Technical Council was presented. Slides of prairie grouse habitat in ten states, nine of which had hosted meetings were shown, including Missouri, Minnesota, Oklahoma, Illinois, North Dakota, Colorado, Texas, South Dakota, Kansas, and Wisconsin.

BUSINESS MEETING

September 25, 1981

By John W. Schulz
North Dakota Game and Fish Department

The business meeting was called to order at approximately 10:30 a.m. by Jerry Kobriger, acting chairman. John Schulz, North Dakota was appointed acting secretary.

The group expressed appreciation to the Nebraska personnel, Jim Mitchell, Joe Gabig, Carl Wolfe and Harvey Suetsugu for hosting an excellent meeting.

All authors should have abstracts of their papers to Mitchell for inclusion in the proceedings.

Chairman Kobriger gave a brief history of the action committee. It was formed in 1975 at the Texas meeting. The purpose was further discussed at the South Dakota meeting in 1977. At that time a pamphlet or booklet was decided upon as the final document of the action committee. Chairman Rice at the South Dakota meeting selected a committee, with the members instructed to solicit prairie grouse data (status, management, needs, etc.) from geographical areas. Some data were collected and sent to Rice but apparently the committee then died. It was not discussed at the Wisconsin meeting in 1979. Direction from the group was requested, should the committee continue or be officially dissolved.

Silvy stated that the brochure should contain life history and status of prairie grouse. Kessler suggested an informational brochure with range maps, photos and general information — not a technical report. Mitchell thought the brochure should outline prairie grouse-pheasant interaction, grouse range reduction and habitat management procedures. Watt wanted it to outline land management for prairie grouse for use by land managers. Miller mentioned that perhaps two publications should be developed — general and technical. The technical publication could be a loose leaf guideline so additional information could be added. Clubine said that each state with prairie grouse should develop a publication to make available to the prairie grouse council. Cogas suggested that the current chairman assist the 1983 chairman in developing the brochure format, sources of funding, etc. while Wells wanted a committee appointed to assist the current chairman and 1983 chairman to research information and recommend an approach at the 1983 meeting. Mitchell moved that the 1983 chairman and current chairman assemble past data and decide publication format during the next two years. The 1983 chairman will appoint additional committee members as needed. 1983 chairman will report on progress at 1983 meeting. Seconded by Curry. Kessler will look into funding sources for the publication. Motion passed by voice vote.

Kobriger informed the membership of the Western States Sage Grouse Workshop. Some members expressed interest in attending. However, members appreciate size and informality of prairie grouse meeting and probably will not merge with sage grouse workshop. Kobriger will query the sage grouse membership to find out their feelings on a joint meeting. Kritz mentioned that another grouse workshop called the "grouse group" will meet in Michigan, fall 1982. Primary emphasis is forest grouse but prairie grouse papers are also presented.

Gabig mentioned that Nebraska plans to update their prairie grouse range map and would assist in updating the North American prairie grouse range map. No further discussion.

Hamerstrom presented a bibliography of greater prairie chicken recently made available: Bibliography on the Greater Prairie Chicken (*Tympanuchus cupido pinnatus*) prepared by Chris Schumacher and John N. Krull, Dept. Biology, Central Michigan University, Mt. Pleasant, Michigan 48859, December, 1980.

Secretary's Note: The Fish and Wildlife reference service newsletter (No. 53, Spring, 1981) listed a new literature search available for prairie chicken which included 140 references.

Wells (Kansas) invited the prairie grouse council to Kansas for the 1983 meeting. Mitchell, for Ken Robertson, moved the membership accept the Kansas offer. Second by Westemeir, and motion carried as no other bids were submitted. Wells will be the 1983 chairman. Meeting will probably be scheduled for September, 1983.

Gabig moved for adjournment. Second by Silvy. Motion carried.

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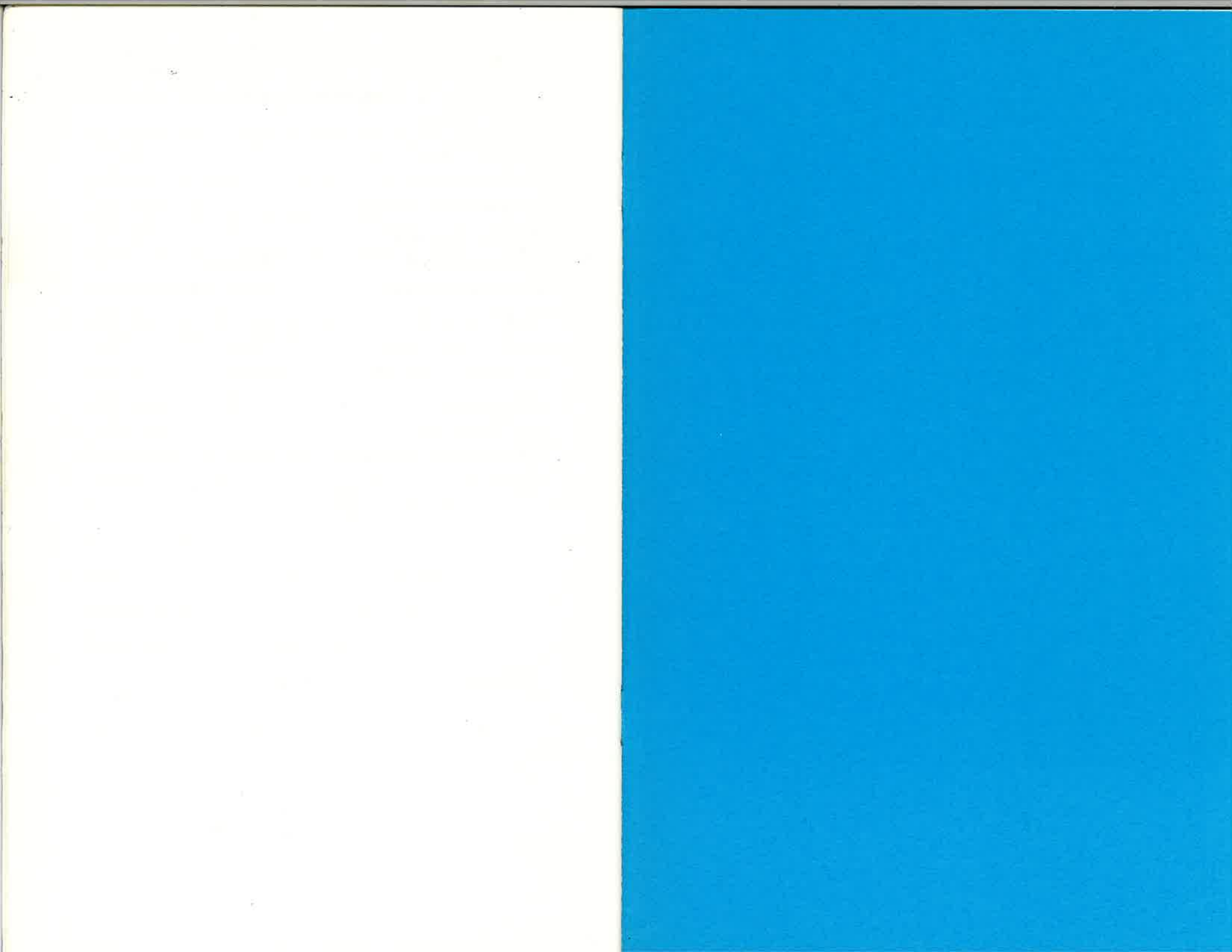
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PAST CONFERENCES

- 1st, Grand Island, Nebraska September 25, 26, 27, 1957
- 2nd, Emporia, Kansas. March 16, 17, 18, 1959
- 3rd, Stevens Point, Wisconsin. September 8, 9, 10, 1960
- 4th, Pierre, South Dakota September 21, 22, 1961
- 5th, Nevada, Missouri. September 18, 19, 20, 1963
- 6th, Warroad, Minnesota September 14, 15, 16, 1965
- 7th, Effingham, Illinois. September 12, 13, 14, 1967
- 8th, Woodward, Oklahoma September 9, 10, 11, 1969
- 9th, Dickinson, North Dakota September 14, 15, 16, 1971
- 10th, Lamar, Colorado September 5, 6, 7, 1973
- 11th, Victoria, Texas September 9, 10, 11, 1975
- 12th, Pierre, South Dakota September 13, 14, 15, 1977
- 13th Wise Rapids, Wisconsin September 26, 27, 28, 1979



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