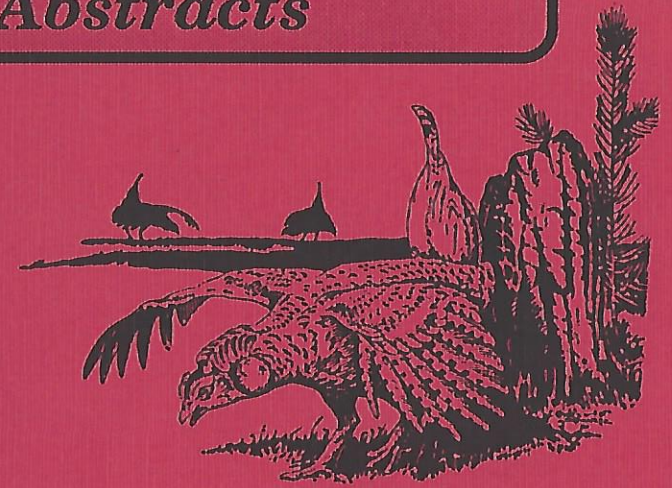
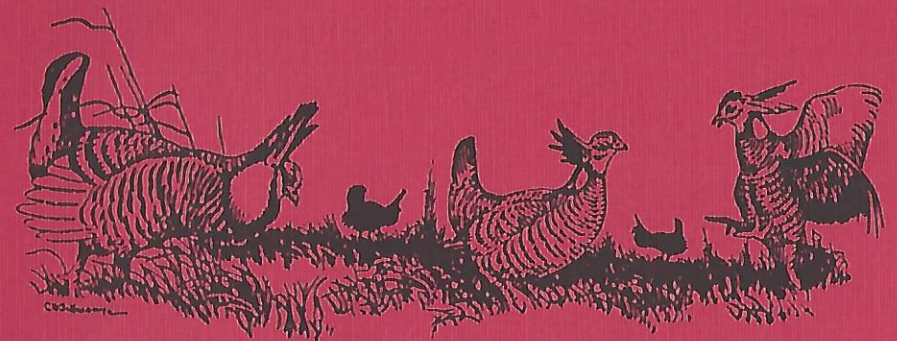


Abstracts



18th Prairie Grouse Technical Council Conference

September 12-15, 1989
Escanaba, Michigan



PROCEEDINGS OF THE 18th CONFERENCE
OF THE PRAIRIE GROUSE TECHNICAL COUNCIL

September 12-15, 1989

Ramada Inn, Escanaba, Michigan

Sponsors

Michigan Department of Natural Resources

U.S. Forest Service - Hiawatha National Forest

Abstracts are presented as they were submitted by the authors and may contain tentative findings and recommendations. They are not for publication or reference without the consent of the authors.

ACKNOWLEDGEMENTS

Thanks to the assistance of a number of agencies, organizations and individuals, the 18th Prairie Grouse Technical Council Conference happened in Michigan, along the shore of the Big Water. Special thanks to co-sponsors, the Michigan Department of Natural Resources - Wildlife Division and the U.S. Forest Service - Hiawatha National Forest. Planning committee members included John Urbain, Ray Perez, and Don Elsing with special assistance from Department secretary, Judith Salbert.

The following organizations contributed either monetary support or door prize gifts and their support is gratefully appreciated: Michigan Timberman's Association, Tri-County Wildlife Unlimited, Delta County Wildlife Unlimited, Michigan Conservation Foundation, Ruffed Grouse Society, Alan Asp, and Dietmar Krumery.

Don Elsing and his colleagues organized an excellent field trip to view sharp-tailed grouse habitat; past, present, and that with future potentials. The group was able to glimpse the past at the Fayette Historical State Park while Master Chef, George McLaughlin, tended to the roasting of the pig and the appetite needs of the present.

Thanks to attendees, their sponsoring agencies, and presenters for their efforts to maintain prairie grouse and their grassland and brushland habitats in North America. Special thanks to Jan Solheim of the Northwest Experiment Station, University of Minnesota, who typed yet another Technical Council Proceedings; with a smile. Experiment Station Superintendent, Larry Smith, supported the editor's involvement with this proceedings and other ongoing prairie wildlife works.

Thanks to all others who helped with ideas and other assistance that make a meeting of this sort a success!

Gregg Stoll, Chairman
Manistique, Michigan

Dan Svedarsky, Proceedings Editor
University of Minnesota, Crookston

PROGRAM

Tuesday, 12 September

6 - 9 p.m. "Covey-up" session, registration, and refreshments at Ramada Inn, Escanaba

Wednesday, 13 September

8:30 Welcome to Michigan's Upper Peninsula - Jean Jokipii, Mayor of Escanaba

8:40 Upland game management in Michigan - John Urbain, Michigan Department of Natural Resources

8:55 (1) Upland game bird management on Bureau of Land Management Lands - Neil Middlebrook, Bureau of Land Management

9:25 Break

9:45 Discussion - Neil Middlebrook

10:15 (2) Wisconsin greater prairie-chickens - a cause for preservation - Jim Keir and Dave Daniels, Wisconsin DNR

10:45 (3) Predation and parasitism of greater prairie-chicken nests in relation to habitat size and edge - Ron Westemeier, Illinois Natural History Survey

11:15 (4) Greater prairie-chickens and land use management on Valentine NWR - Len McDaniels, U.S. Fish and Wildlife Service

11:35 (5) Analysis of lesser prairie-chicken habitat in the sand sagebrush ecosystem of southwest Kansas - Kevin Church, Kansas Department of Wildlife and Parks; Vicky Varner and Edward Martinko, University of Kansas

11:55 Lunch

1:15 (6) The present status of Attwater's prairie-chickens, a 1989 update - Stephen Labuda, Jr., U.S. Fish and Wildlife Service

- 1:45 (7) Acres for greater prairie-chickens - Tom Toney, Missouri Department of Conservation
- 2:15 (8) Assimilated energy of winter foods by greater prairie-chickens in Kansas - Kevin Church, Kansas Department of Wildlife and Parks
- 2:35 Break
- 2:55 (9) Translocation, movements and habitat use of South Dakota greater prairie-chickens - Larry Fredrickson, South Dakota Game, Fish and Parks Department
- 3:25 (10) Weight dynamics and survival of prairie grouse - John Toepfer, Montana State University
- 3:55 (11) Effects of weather conditions on sharp-tailed grouse brood surveys - Jerry Kobriger, North Dakota Game and Fish Department
- 4:15 (12) A proposed method of establishing Attwater's prairie-chickens - Nova Silvy, Texas A & M University
- 6:00 Social hour - Ramada Inn
- 7:00 Banquet, raffle and program - "North Country-- Nature's Masterpiece" - Dan Urbanski, Silver Image Studios

Thursday, 14 September

- 8:00 a.m. All-day field trip to see sharp-tailed grouse habitat on Hiawatha National Forest - Don Elsing, Leader
- 5:30 p.m. Pig and corn roast - Fayette Historical State Park

Friday, 15 September

- 8:30 (13) Transplanting greater prairie-chickens - John Toepfer, Montana State University

- 9:15 (14) An update of the artificial lek technique for establishing sharp-tailed grouse - Randy Rodgers, Kansas Department of Wildlife and Parks
- 9:35 (15) Sharp-tailed grouse lek establishment on reclaimed mined lands - Bruce Waage, Western Energy Company
- 9:55 (16) Sharp-tailed grouse and integrated wildlife management - John Probst, U.S. Forest Service
- 10:15 Break
- 10:40 (17) Sharp-tailed grouse management problems in the Lake States: Does the sharptail have a future? - Bill Berg, Minnesota Department of Natural Resources
- 11:10 Prairie Grouse Technical Council business meeting
- 12:00 Lunch
- 1:15 Western Lakes States sharp-tailed grouse roundtable discussion

1. UPLAND GAME BIRD MANAGEMENT ON BUREAU OF LAND MANAGEMENT LANDS - Neal Middlebrook, Bureau of Land Management

Public attitudes are clearly changing and the BLM is responding. Program initiatives in "Fish and Wildlife 2000" and its companion, "Recreation 2000", are providing focus for an increasing emphasis on these programs. The Bureau is committed to carrying out Fish and Wildlife 2000 program initiatives. One of the ways this will be done is the development and implementation of specific strategy plans for high public interest species or species groups such as, waterfowl, raptors, upland game birds, and "watchable wildlife" or nongame. The BLM is the largest land management agency with over 270 million acres of public land. In comparison, the Forest Service manages 190 million acres. BLM has 225 wildlife biologists while the Forest Service has some 760 biologists. Likewise, the BLM wildlife budget was \$19.5 million in 1989 and the Forest Service budget was \$80 million. Clearly, BLM's biologists are spread thin and spend a great deal of their time in a support capacity. They provide information and recommendations to managers on the effects of other actions on wildlife including: oil and gas development, changes in livestock use, and transmission line rights-of-way. Providing wildlife information and recommendations for land use plans is another support function that occasionally occupies a great deal of their time.

BLM biologists are involved in specific wildlife program activities such as inventory, monitoring, research, habitat management plan preparation, and habitat project development and maintenance. The 1989 program priorities are: 1. endangered and threatened species management; 2. riparian and wetland habitat management and fisheries habitat management; and 3. management for other species. Because of the large amount of time spent in support of other programs and the need to deal with higher program priorities, little time is available to accomplish specific things to benefit upland game birds. Upland bird resources are as diverse as the habitats BLM manages. Virtually every upland bird known to occur in the United States is found on public lands although the abundance and distribution of various species varies widely. Some species like sage grouse and sharp-tailed grouse may be abundant in part of their range while quite

rare or even extirpated in other areas. Species not normally considered species of rangeland environments like blue grouse and ruffed grouse do, in fact, spend a considerable part of their life in these areas. Likewise, pheasants and gray partridge are usually considered to be associated with agriculture but undeveloped public lands can provide key habitat for these birds at certain times of the year.

BLM has sponsored upland game bird research projects, especially related to sage grouse habitat relationships. Intensive inventories of sage grouse populations are underway in Oregon and Washington due to their declining trend. At the request of the BLM, The Nature Conservancy acquired crucial Columbian sharp-tail habitat in western Idaho. BLM has also worked closely with the Conservancy's acquisition of potential sharp-tail habitat in eastern Oregon, where the species was extirpated by the early 1970's.

Both the BLM and the U.S. Forest Service are involved with a "Challenge cost share" program where funds for acceptable wildlife projects are matched. To date, this program has received approximately \$2 million, primarily for projects directed at sensitive species.

Many areas in the West are water deficient. The BLM has developed or cooperated in the development of many types of water developments for wildlife. Guzzlers have been the primary type of water development for upland birds. In some areas the improvement of riparian habitat may result in the return of permanent surface water. This is a better alternative than installation of guzzlers since a healthy riparian zone provides food and cover as well as water.

2. WISCONSIN'S GREATER PRAIRIE-CHICKENS - A CAUSE FOR PRESERVATION - Jim Keir and Dave Daniels, Wisconsin Department of Natural Resources

A 30-minute video was produced jointly by the Society of Tympanuchus Cupido Pinnatus, Inc. of Milwaukee, Wisconsin and the Wisconsin Department of Natural Resources. It is the story of the successful Wisconsin effort to save the

state's remaining prairie-chickens as seen through the eyes of those who were involved from the beginning - researchers, managers and private benefactors. It was the combined efforts of these individuals that allowed for the development of today's prairie-chicken management program in Wisconsin.

3. PREDATION AND PARASITISM OF GREATER PRAIRIE-CHICKEN NESTS IN RELATION TO HABITAT SIZE AND EDGE - Ronald L. Westemeier, Illinois Natural History Survey

Current ecological literature suggests decreased success and increased parasitism of nests of certain bird species as their habitats are increasingly fragmented. Over the past 27 years in Jasper County, Illinois, 859 prairie-chicken nests that were either successful, depredated, or abandoned were examined with respect to the size of fields and proximity to edges. Also, 74 prairie-chicken nests that had been parasitized by pheasants were similarly compared with their unparasitized counterparts. Most nests were on scattered sanctuaries of 120-232 acres where field size was held to about 10 acres. Fields were defined as managed grasslands of 0.5 to 26 acres, having a readily identifiable dominant cover and form of management prior to nesting. Relatively distinct edges nearest nests were classified as corridors (e.g. field lanes with wheel tracts), open (e.g. cropfields or freshly-burned grasslands), or subtle (e.g. redtop harvested for seed adjacent to unharvested redtop). Nest success did not vary significantly ($P > 0.10$) with field size or with proximity to nearest edge when tested with point-biserial correlation by year for all cover types and edges combined. Likewise, when data for fields were subdivided in increments of about 5 acres through 20-26 acres, and in increments of 10 yards through ≥ 50 yards for edge proximity, no significant differences were found using chi-square analyses. Further stratification of the data according to dominant covers in fields or to the 3 classifications of nearest edge also showed no significant relationships for nest success. For prairie-chicken nests parasitized by pheasants, average field size and nearness to edge were similar to that of unparasitized nests. In our situation

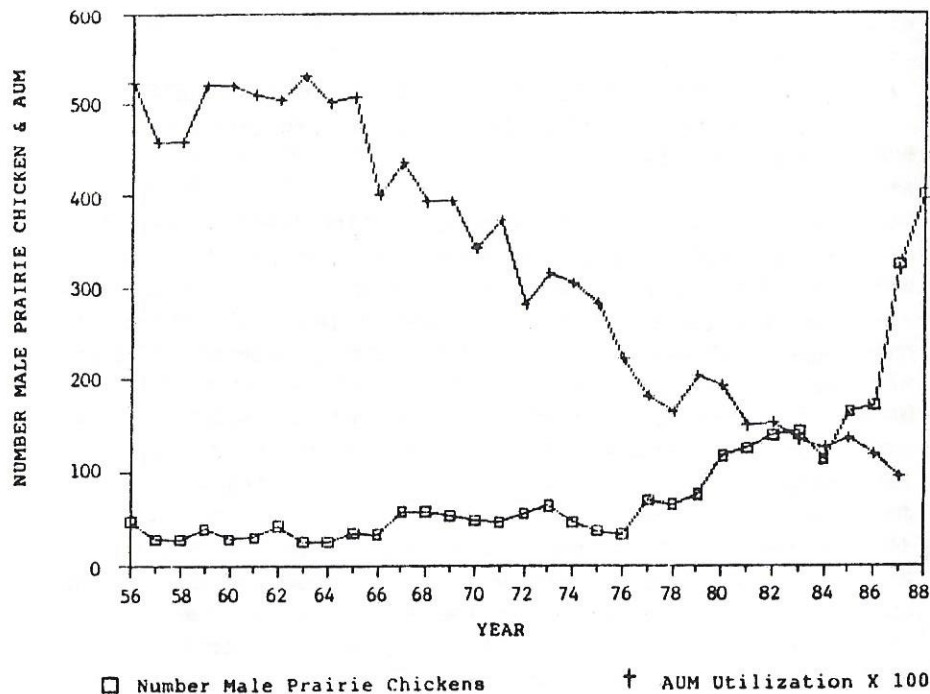
involving the use of introduced cool-season grasses and legumes, and seeded prairie grasses for nest cover on small scattered sanctuaries, prairie-chickens have long appeared to be edge nesters. Limiting field size to about 10 acres continues to be a practical way to provide edge. Analyses to date have not established a basis for enlarging field size and minimizing edge to enhance nest success or to reduce nest parasitism.

4. GREATER PRAIRIE-CHICKENS AND LAND USE MANAGEMENT ON VALENTINE NATIONAL WILDLIFE REFUGE - Len McDaniel, U.S. Fish and Wildlife Service

The prairie-chicken breeding population trend on Valentine National Wildlife Refuge (VNWR) was compared to land use practices during the period 1956-88. An inverse relationship between animal unit months (AUM) of grazing and number of male prairie-chickens was documented; however, prairie-chickens did not positively respond until AUM utilization had been significantly reduced and modified. Lek counts were initiated in 1956 and male prairie-chickens numbered < 60 on ≤ 10 leks until annual grazing utilization decreased from $> 50,000$ AUMs in 1956 to $< 20,000$ by 1977. During 1956-71 virtually all meadows (12,000 acres) were annually mowed for winter livestock feed and season-long grazing was in effect on the upland range sites (50,000 acres). In 1972, emphasis was placed on restoring native tall grass species on meadows where prairie-chickens prefer to nest. Annual mowing and winter grazing were reduced and rotational grazing was initiated on the upland range sites. By 1984, the percentage of undisturbed cover acreage of meadows in ≥ 2 years rest treatment had increased to nearly half the total meadow acreage. Continued periodic spring grazing treatments on meadows and implementation of short-duration grazing on the upland range sites in 1985 resulted in increased residual cover quality and quantity being available for nesting. AUM utilization was reduced to $< 10,000$ by 1988 and 401 male prairie-chickens were documented on 38 leks. Voluntary hunter harvest data for VNWR indicated an annual harvest of 6 prairie-chickens/year during 1980-82 which increased to 176 in 1988. The present

trend is to use livestock grazing as a management tool rather than being the objective on VNWR.

VALENTINE NATIONAL WILDLIFE REFUGE
 PRAIRIE CHICKEN POPULATION AND AUM UTILIZATION TRENDS
 1956-1988



5. ANALYSIS OF LESSER PRAIRIE-CHICKEN HABITAT IN THE SAND SAGEBRUSH ECOSYSTEM OF SOUTHWEST KANSAS - Kevin E. Church, Kansas Department of Wildlife and Parks; Vicky Varner and Edward Martinko, University of Kansas

The current distribution of lesser prairie-chickens (*Tympanuchus pallidicinctus*) is <90% of its former range. The conversion of native grasslands to croplands is the major factor responsible for this change. The effects of

land-use patterns on lesser prairie-chickens have been described for habitat in Texas and Oklahoma, but data are lacking for Kansas, which has the largest contiguous population. We used determined landscape characteristics important to prairie-chicken in the sand sagebrush ecosystem of southwest Kansas. Six, 52-km² (20-mi²) circular areas were studied. On each area, we measured 24 landscape variables using 1:58,000 scale color infrared photography (1985). In addition, prairie-chicken population indices (\bar{X} and SD) were calculated based on standardized lek counts (1983-1987). We examined factor loadings (VARIMAX option) of a principle factor analysis procedure to reduce the number of landscape variables to 5. Then, we identified the "best" independent variable multiple regression models (MAXR selection) for dependent population variables. The population mean was best explained ($R^2 = 0.97$, $P = 0.04$) by a 3-variable model which included a diversity index (-8.315), the number of different cover types (5.962), and the amount of rangeland (-0.102). The standard deviation of the population was attributed ($R^2=0.92$, $P=0.003$) to the amount of row crops (0.058). We concluded that the "ideal" 52-km² area for lesser prairie-chickens consisted of 95% sandy rangeland, 1% row crop (contiguous), and 4% other cover types (4 patches). However, populations can persist with <50% sandy rangeland.

6. THE PRESENT STATUS OF ATTWATER'S PRAIRIE-CHICKENS, A 1989 UPDATE - Stephen E. Labuda, Jr., U.S. Fish and Wildlife Service

Historically numbering over a million birds on coastal prairies of Louisiana and Texas, the Attwater's prairie-chicken has declined alarmingly in the last 30 years. Contributing to this decline has been a change in land use from small family-owned farms to large agribusinesses with monocultural plantings. Individual populations of the endangered Attwater's prairie-chicken have fallen to as few as 4 birds in some Texas counties, and the entire population is believed to number fewer than 500 at present. As a result of these low numbers, accelerated recovery efforts have been initiated. New and enhanced endeavors include captive propagation, incentives for management on private

lands, more intensive management of refuges, and increased federal funding.

If current trends are not halted and reversed, the Attwater's prairie-chicken will be extinct by 2003, according to regression analysis.

7. ACRES FOR GREATER PRAIRIE-CHICKENS - Thomas E. Toney, Missouri Department of Conservation

The Missouri Department of Conservation manages some 32 areas (12,738 acres) for the greater prairie-chicken. Over the past 15 to 30 years, tree encroachment within draws, on rocky soils, and along area boundaries has reduced the size and suitability of many prairies for chickens and other grassland birds. This woodland invasion has altered the habitat to favor raptor (great horned owls and red-tailed hawks) and mammalian predation on nesting chickens. Burger and Jones (1988) reported a 60% mortality rate on nesting hens by raptors. A tree removal project was carried out in 1987-88 on 10 prairies with 12.5 miles of trees being cut. An additional 3.25 miles of trees were cut in 1989. This project will continue as funding is made available.

A 15-minute video on "Farming for wildlife - prairie-chickens" was also presented.

8. ASSIMILATED ENERGY OF WINTER FOODS BY GREATER PRAIRIE-CHICKENS - Kevin E. Church, Kansas Department of Wildlife and Parks; Michael Heffron and John W. Parrish, Emporia State University

Severe winter weather and limited availability of food can cause physiological responses in galliformes that reduce survival or reproduction. Management practices which increase the quality and quantity of winter food are intended to mitigate these effects. We determined the energetic value of 10 different types of seeds previously reported in the diet of greater prairie-chickens. Seventeen

male prairie-chickens were kept in a constant 10 h. light, 14 h. dark at 3° C. Two consecutive trials (2 days-/trial) were conducted with water and food ad libitum. Food items were Blackwell switchgrass, soybean, pearl millet pennisetum, pigweed, corn, wheat, grain sorghum, Korean lespedeza, buckbrush, sunflower chips, and a commercial maintenance mix (35% protein). For each item we determined combustible energy, gross energy, utilization efficiency, assimilated energy, and metabolizable energy. Seeds were then ranked as poor (buckbrush, pigweed, switchgrass), fair (wheat, corn, sorghum), good (sunflower, lespedeza) and excellent (millet, soybean). We concluded that throughout much of the range of greater prairie-chickens, row crop stubble is sufficient to meet energy demands during most winters. However, when food is limiting we recommend soybean, grain sorghum, corn or sunflower be available. Where intensive management is justified, supplemental emergency feeding of soybean or millet may be appropriate during periods when food is otherwise inaccessible.

9. TRANSLOCATION, MOVEMENTS, AND HABITAT USE OF SOUTH DAKOTA GREATER PRAIRIE-CHICKENS - Larry F. Fredrickson, South Dakota Department of Game, Fish, and Parks

In 1986, 22 prairie-chickens were radioed as follows: 10 on the Fort Pierre National Grassland (5 males, 5 females) and 12 on the Lower Brule Indian Reservation (9 males, 3 females). Twelve grouse nests were found (8 prairie-chicken, 4 sharptail). Some radioed birds were tracked only until late summer when they were recaptured with a net gun. Twenty-nine prairie-chickens were released on the Leola area (12 females, 15 males and 2 of unknown sex) in McPherson county. Nine of these had radios (6 males, 3 females). Four radioed birds wintered 8, 7, 21 and 27 miles away from the release area and returned the next spring. Of 2 radioed resident birds on the Fort Pierre National Grassland, one wintered 3 and the other 8 miles from their lek. Five males displayed on grounds near the release area in the spring of 1987.

In 1987, 21 prairie-chickens were radioed as follows: 7 on the Fort Pierre National Grassland (5 males, 2 females) and

14 on the Lower Brule Indian Reservation (7 males, 7 females). Thirteen grouse nests were found (8 prairie-chicken, including one re-nest, and 5 sharptail). Some radioed birds were tracked only until late summer and were recaptured with a net gun. In 1987, 43 prairie-chickens (6 males, 8 females and 20 of unknown sex) were released on the Leola area, including 9 radioed birds (1 male, 8 females). Two birds wintered 27 miles southeast and one 14 miles east of the release area. Other birds were not found. One bird wintered in the area of capture on the Fort Pierre National Grassland. In the spring of 1988, a lek with 17 male prairie-chickens and one hybrid was found near the release area.

In 1988, 29 prairie-chickens and one sharptail were radioed as follows: 14 on the Fort Pierre National Grassland (12 males, 2 females) and 15 prairie-chickens (8 males, 7 females) and one sharptail female on the Lower Brule Indian Reservation. Seventeen grouse nests (12 prairie-chicken, 5 sharptail) and 7 pheasant nests were found. Some radioed birds were tracked only until late summer when they were recaptured with a net gun. In 1988, 29 birds (5 males, 9 females and 6 unknown) were released on the Leola area including 9 radioed birds (5 males, 4 females). One radioed female wintered on the release area and from 1 to 2 miles west of it. One radioed male wintered 16 miles from the release area. Three radioed birds were eaten by predators near the release area. One radioed female was later found on the release area in the spring. In the spring of 1989, 2 male prairie-chickens displayed on separate sharp-tailed grouse dancing grounds on the release area. One radioed prairie-chicken hen thought to be bred by 1 of the above males on the sharptail lek had 1 hatched nest (lost the brood) and 1 destroyed re-nest. A total of 11 prairie-chickens were seen on the release area.

Conclusions were as follows: 1. Late summer transplanted adult prairie-chickens homed back to the release area in the spring for booming; 2. The drought of 1988 caused excessive mortality on radioed and transplanted birds; 3. The present success of the Leola area prairie-chicken transplant is unknown; 4. Food crops or food plots (corn, sorghum or sunflowers) should be located in a release area

to hold prairie-chickens and reduce mortality associated with migration to (sometimes unsuitable) wintering areas; and 5. Late summer transplants should be tried again in a more ideal situation (a no-drought year in an area with unharvested crops or food plots).

10. WEIGHT DYNAMICS AND SURVIVAL OF GREATER PRAIRIE-CHICKENS - John E. Toepfer, Montana State University

Weights of 801 wild and 681 pen-reared prairie-chickens (*Tympanuchus cupido pinnatus*) in Wisconsin were examined for seasonal and biweekly patterns. Mean weights indicated that cocks weighed more than hens and adults more than immatures. Recaptures of the same individuals the following winter indicated that prairie-chickens do not reach adult size until their second winter. Biweekly trends indicated that minimum weight in prairie-chickens occurs during the molt in mid-August. Mean weights increased during the fall, peaked in late December, declined through the winter, increased with the disappearance of snow cover in early spring, peaked again in late March in cocks and then declined during the display season. Weights of hens also increased in late March but peaked in late April just before incubation. Mean weights and breast circumferences of immature pen-reared birds during the spring were significantly less ($P < 0.01$) than those of immature wild birds. Mean weights of pen-reared birds were directly related to the condition of their flight feathers and a bird's ability to fly. Seasonal survival patterns of 54 adult radio-tagged birds in Wisconsin showed that survival was lowest during the winter (cocks 33.3%, hens 53.8%), followed by spring (cocks 78.5%, hens 55.6%), summer (cocks 73.3%, hens 72.7%) and fall (cocks 76.2%, hens 68.8%). Hens were more susceptible when with broods than without (55% versus 95%). Survival was relatively high during incubation (87.5%). Ninety percent of 55 radio-tagged pen-reared birds were dead within 30 days. The annual survival of 223 pen-reared birds was 0.5% with over 80% of these losses attributed to predation. Pen-reared prairie-chickens were capable of differentiating between raptors and non-raptors just like wild birds. However, because of confinement, they learn to respond to predators

by running rather than taking flight like wild birds. Flushing distance of pen-reared birds were one-third those of wild birds.

11. EFFECTS OF WEATHER CONDITIONS ON SHARP-TAILED GROUSE BROOD SURVEYS - Jerry Kobriger, North Dakota Game and Fish Department

Sharp-tailed grouse brood routes have been conducted in North Dakota since 1977. Weather conditions during brood surveys were recorded. A numerical rating for weather was devised using temperature, wind, cloud cover, and dew. Routes were graded from 1 to 12, 1 being very poor while 12 was excellent. A significant correlation was found between both sharptails/100 miles ($R^2=.95$; $P<.05$) and sharptail broods/100 miles ($R^2=.98$; $P<.01$) and weather conditions.

12. A PROPOSED METHOD OF ESTABLISHING ATTWATER'S PRAIRIE-CHICKENS - Nova Silvy, Texas A & M University

This paper discussed a method for reestablishing Attwater's prairie-chickens into areas of their former range. At the proposed site of reestablishment, a 1-acre octagon-shaped slow-release pen will be constructed on quality prairie habitat. The pen will be subdivided into 8 equal-sized compartments with drop doors on the exterior walls to allow slow release of hens with young. Automatic feeders and faucets will be used in each compartment to minimize bird disturbance and habituation to human presence. Each compartment will have a homemade insect trap to concentrate insects for young prairie-chickens. A single male with 1-4 female prairie-chickens will be placed in each compartment. Hens will be allowed to nest "naturally" within the confines of each compartment. Once the breeding population has produced young, the adult hens with young will be released when the young are 6 weeks of age. The proposed facility will produce a minimum of 40 young each year with an estimated maximum production of over 200 young per year.

13. TRANSPLANTING GREATER PRAIRIE-CHICKENS - John E. Toepfer, Montana State University

Efforts to re-establish prairie-chickens date back to the mid-1800's when large numbers of birds were transplanted from the Midwest to the east coast to bring back heath hen populations. Recent attempts have been made in Wisconsin, Illinois, Colorado, Minnesota, Nebraska, Iowa, Missouri, Oklahoma, Texas and South Dakota. Since 1950 there have been at least 26 attempts made to re-establish prairie-chicken populations in vacant "habitat." Procedures include: releasing pen-reared birds, placing prairie-chicken eggs in sharptail nests, and transplanting birds during all seasons. At this time only 2 projects can be considered "successful." A review of attempts since 1970 reveals the primary reason for so many failures is not using available information on the basic biology and ecology of prairie-chickens. Dispersal of transplanted birds away from the release site, not enough habitat, and the failure to document releases to determine reasons for the lack of success have been problems. The most successful efforts (Wisconsin and Colorado) have released birds during the spring or summer and established over 1,416 ha of habitat before any birds were released. The presence of at least 100 cocks during the spring seems to be the minimum number necessary to maintain an isolated population. Based on distances between booming grounds in existing populations, 25 km² of grassland habitat is the minimum size of an area necessary to maintain a population of 100 cocks. At least one-third of this should be open, undisturbed grass about 25-50 cm tall.

14. AN UPDATE ON THE ARTIFICIAL LEK TECHNIQUE FOR ESTABLISHING SHARP-TAILED GROUSE - Randy D. Rodgers, Kansas Department of Wildlife and Parks

Winter-trapped, sharp-tailed grouse from Nebraska and the Dakotas have been successfully held in pens and released in mid-March using an artificial lek system in Kansas. The artificial lek involves silhouette decoys and a self-timed audio system which plays lek sounds, morning and evening. The site is selected on the basis of habitat quality,

topography, and grazing practices. When weather is suitable, grouse are removed from holding pens, transported to the release site, and loaded into special release boxes. The birds remain in the release boxes overnight and at sunrise boxes are opened remotely from a blind with the audio system operating and decoys in place. Typically, dancing begins at the site within 5 minutes of release and eventually involves participation of virtually all released males. The sharptails develop an affinity for the release site and are gradually weaned from the artificial stimulation. Sharptail leks have been established successfully using this method in 1985, 1988, and 1989. Leks established in 1988 and 1989 occur at the exact site of release and the 1985 release produced a lek 300 m from the release site. The oldest lek appears to be self-sustaining and the new leks are expected to be so, though it is too soon to be conclusive.

15. SHARP-TAILED GROUSE LEK ESTABLISHMENT ON RECLAIMED MINED LANDS - Bruce Waage, Western Energy Company

Eastern Montana is generally considered prime plains sharp-tailed grouse (Pedioecetes phasianellus jamesi) habitat. Sharp-tailed grouse gather at specific sites each year to perform courtship rituals. Western Energy Company (WECO) documented one dancing ground to be active at the same knoll for 22 years. Because of the apparent necessity of these dancing grounds, concerns were raised about the effect on sharp-tailed grouse populations if dancing grounds were removed by mining. Realizing that WECO's future mine plans may come into conflict with existing sharp-tailed grouse dancing grounds, WECO initiated studies to investigate these concerns as early as 1975. Studies were designed to answer the following question: can sharp-tailed grouse be attracted to potential dancing ground sites on reclaimed mine lands? This paper reviewed dancing ground mitigation efforts at WECO's Rosebud Mine with a discussion of field techniques and equipment used. Results have been promising, as our first sharp-tailed grouse dancing ground was established in 1982 and has remained active to date with 3 other sites showing promise.

16. SHARP-TAILED GROUSE AND INTEGRATED WILDLIFE MANAGEMENT - John R. Probst, U.S. Forest Service

An emphasis on sharp-tailed grouse habitat needs is basic to providing sustainable harvests of grouse as well as viable, functional populations of other wildlife. Sharp-tailed grouse are associated with large areas of open country which also provide habitat for other desired species requiring edge or large openings. Sharptail management includes habitats as diverse as prairies, barrens, old fields, cropland, large pastures, wetlands, brushland (including temporary openings) and conifer bogs. Managing large areas of land in diverse habitats will involve a variety of landownerships with very different management objectives. Thus, grouse management can provide a regional framework for improved distribution and habitat area for key wildlife species that have game, furbearer, rare, or threatened status. Sharptails can provide a focus for integrated management of selected habitat types through application of biogeographic principles.

Providing large scale habitat requirements for area-sensitive open lands species requires broad spatial planning for optimum patch size and proximity of similar or related habitat types. Planning that integrates permanent with temporary openings and emphasizes habitat linkages will achieve maximum "effective size" of habitat. Other wildlife species of concern which are expected to benefit from such a regional research and management effort include: short-eared owl, merlin, yellow rail, sandhill crane, upland sandpiper, bobolink, and at least 5 sparrow species (grasshopper, Henslow's, LeConte's, sharp-tailed, and savannah).

17. SHARP-TAILED GROUSE MANAGEMENT PROBLEMS IN THE LAKE STATES: DOES THE SHARPTAIL HAVE A FUTURE? - William E. Berg, Minnesota Department of Natural Resources

The prairie sharp-tailed grouse (Tympanuchus phasianellis campestris) presently occurs in about one-half of its indigenous range, having been extirpated from Iowa, Illinois, and southern portions of Minnesota, Wisconsin, and Michigan,

and most of southwestern Ontario. The sharptail population in the western Lake States has declined to the extent that annual harvests during the 1980's have been less than 10,000 in Minnesota, and less than 1,000 in Wisconsin and Michigan. Causes of the loss of habitat and resulting population decline center on advancing vegetation succession and improperly-placed conifer plantations. Extensive land clearing for agriculture destroyed considerable sharptail habitat in Minnesota until the Federal Conservation Reserve Program began in 1985. Data from the U.S. Fish and Wildlife Service Breeding Bird Survey indicate that the loss of open lands habitats across the western Lakes States has also caused drastic population reduction in nongame birds such as savannah sparrow, vesper sparrow, grasshopper sparrow, bobolink, and eastern meadowlark. Methods for reversing the continuing loss of the large, open grass-brush/jack pine barrens/oak barrens ecosystem include: (1) education of resource managers, (2) restoring hunter interest, and (3) applying an open lands ecosystem approach to management. State and Federal (National Forest and National Wildlife Refuge) long range management plans for restoration of open lands habitats should use the sharptail as an indicator species, and establish realistic population goals. Renewed interest in managing open lands for wildlife in the western Lakes States during the late 1980's has resulted in: (1) open lands management goals in the northern National Forests, (2) increased funding for sharp-tailed grouse habitat management on public and private lands, (3) increased interest in prescribed burning, and (4) formation of groups such as the Minnesota Sharp-tailed Grouse Society. Without emphasis on management of open lands during the 1990's, the sharptail in Michigan, Wisconsin, and east-central Minnesota will exist only in relic flocks. Although sharptails in northwestern Minnesota are the most secure, eventual elimination of the Federal Conservation Reserve Program will greatly reduce their remaining habitat base.

Convicted of arson - jail - community time - fired from job

BUSINESS MEETING

The business meeting was convened at 11:30 a.m. by Chairman Gregg Stoll who expressed his thanks to all who helped to make the meeting a success. There have been several miscellaneous requests during Gregg's tenure as Chairman but the most significant has been the invitation by the Bureau of Land Management for input to their "Fish and Wildlife 2000" planning effort. Jerry Kobriger is the PGTC representative for this process. Neal Middlebrook (BLM) indicated they will report again at the next PGTC meeting.

Jerry Kobriger (ND) has received information from the Western States Sage Grouse Committee, a group which also meets every 2 years. They include Columbian sharp-tailed grouse in their sessions since their range overlaps that of sage grouse according to Ken Geisen (CO). Should we consider merging with this group since our bylaws include sage grouse? John Probst (WI) raised the possibility of the PGTC having some joint meetings when the logistics work out. Their meeting was in July this year. Ron Westemeier (IL) asked if they publish proceedings and Geisen indicated they usually don't. Greg Schenbeck (NE) indicated that an advocacy group is definitely needed in the western states and combining groups might dilute that effort somewhat. Randy Rogers (KS) moved that the PGTC contact the sage grouse organization and explore the possibility of a joint meeting some time in the future. Motion seconded by Toney (MO). Bill Berg (MN) suggested that a joint meeting be held every other time. Motion passed and Ken Geisen was asked to look into the possibility of a future joint meeting.

Greg Schenbeck asked if the PGTC could provide input to the planning effort of the Forest Service in Nebraska and other areas. He noted the educational function of the PGTC stated in Article II, Section 3 of our bylaws and emphasized the importance of this extending to agency heads as well as the general public. Greg will keep the PGTC informed on the planning process and will send appropriate addresses to the new PGTC chairman. John Toepfer (ND) indicated that it might be useful to have a designated representative of the PGTC from each state to serve an advisory function to agencies and other groups. Len McDaniel (NE) cautioned that it might be better to have a PGTC representative from a state other than the location of the agency seeking

input to avoid conflict of interest possibilities. Travel costs could be a problem however.

John Probst raised the question of whether the PGTC is more "professionally-oriented" or "advocacy-oriented." Perhaps the advocacy role might be better served by smaller focus groups like the Minnesota Sharp-tailed Grouse Society. The general feeling was that the PGTC should continue to provide professional input.

Nova Silvy (TX) reported that all but 5 chapters for the prairie grouse book are in now. Some chapters submitted early could be updated and he will be in contact with those authors. The Word Perfect 5.0 system will be used and some coordination is in order to ensure the consistency of graphics. Nova will be contacting the Canadian people for their contributions. January 1 is the new deadline for chapters with a May 1 target date for things going to the printers. He will be contacting PGTC people and others to serve as reviewers and encourages authors to get advance peer review. Nova will be taking a sabbatical next year and plans to publish the bibliography as well.

Jim Keir (WI) suggested that since the Hamerstoms commenced their prairie-chicken research approximately 50 years ago, some official recognition from the PGTC might be appropriate. John Toepfer added that 50 years isn't necessarily the key item but simply recognition for a job well done. Dan Svedarsky (MN) pointed out that our bylaws (Article IX, Section 2) provides for an Awards Committee ("made up of the Executive Board and 2 additional members") to do this function. Silvy moved and Toepfer seconded that this committee become operational. Passed. Silvy and Svedarsky agreed to move this effort along and will be soliciting nominations before the next PGTC meeting.

John Toepfer expressed concern about the genetic implications of moving prairie grouse around to "shore-up" declining populations. Should the PGTC establish a policy on this? Ron Westemeier indicated that his boss, Glen Sanderson, feels strongly that it is undesirable to move birds long distances. Svedarsky asked if Nova Silvy and his graduate student, Darrell Ellsworth, could give a report on this topic at the next meeting. Darrell mentioned that sometimes inbreeding is mentioned as a problem of small populations when lots of other things are going wrong. Nova mentioned there may even be "outbreeding suppression" as has been demonstrated in some zoo ungulates.

We need to establish baseline genetic data on this question. Svedarsky mentioned the concern about not mixing up ecotypes in regard to prairie plants. Is there a policy of The Nature Conservancy, Native Plant Society or other group regarding plant transplants? Tom Toney said he didn't think there is; just heated discussions. Dick Kimmel (MN) suggested that perhaps Darrell Ellsworth and Kevin Church (KS) might organize a panel discussion on this topic at the next meeting.

Chairman Stoll then entertained bids to host the next meeting. Bruce Waage of Western Energy Company in Colstrip, Montana, and Ron Westemeier of the Illinois Natural History Survey extended invitations. Montana was chosen with Bruce Waage as the host. An inquiry will be made to have a joint meeting with the sage grouse organization.

The business meeting was concluded at 12:30 p.m.

Respectfully submitted,

Dan Svedarsky, Acting Secretary

Addendum:

An informal, roundtable discussion was held in the afternoon to discuss the issue of sharp-tailed grouse management in the western Lakes States. A lively discussion dealt with: policy interpretations, whether policies and personnel favor planting openings to trees or maintaining them as grouse habitat, the appropriate use of fire, and the need for coordinated planning. Bill Berg (MN) was asked to coordinate a "Lake States Sharp-tailed Grouse Management Task Force" and to seek additional input from Minnesota, Wisconsin, and Michigan in order to develop sharptail management guidelines for state, federal, and private lands.

ATTENDANCE LIST

Aartila, Dick, MI DNR, PO Box 495, Escanaba, MI 49829
Ammann, G.A., 2010 Raby Road, Road 2, Haslett, MI 48840
Anderson, Raymond K., WI St. Univ., Stevens Pt., WI 54481
Barnett, Bryan R., USFS, 499 E Lake Shore Drive, Manistique, MI 49854
Berg, Bill, MN DNR, 1201 E Hwy 2, Grand Rapids, MN 55744
Church, Kevin, KS Fish/Game, PO Box 1525, Emporia, KS 66801
Davis, George, MN DNR, Karlstad, MN 56732
Doran, Kevin, USFS, PO Box 160, Munising, MI 49862
Dubovsky, Carl, USFS, 8181 US Hwy. 2, Rapid River, MI 49878
Edde, Jerry, USFS, 2100 E. Cloverland Dr., Ironwood, MI 49938
Elsing, Donald, USFS, 2727 N Lincoln Rd., Escanaba, MI 49829
Fehribach, Denis, USFWS, Seney, MI 49883
Finney-Lahde, Virginia, 13903 Summer Meadow, Rock, MI 49880
Forester, Gordon, MN DNR, 123 Main Avenue North, Thief River Falls, MN 56701
Fredrickson, Larry, Dept Game/Fish/Parks, HC-69, Box 7, Chamberlain, SD 57325
Giesen, Kenneth M., Wildlife Res. Ctr., 317 W Prospect Street, Ft. Collins, CO 80526
Gregg, Larry, WI DNR, PO Box 220, Park Falls, WI 54552
Hawady, Maya, USFS, 8181 US Hwy. 2, Rapid River, MI 49878
Irvine, Bill, 5121 N Crosby Rd, Cadillac, MI 49601

Jarvis, Bill, USFS, Federal Bldg, PO Box 472, East Tawas, MI 48730
Johnson, Earl, MN DNR, Box 823, Detroit Lakes, MN 56501
Keir, Jim, WI DNR, Ranger Station, Box 100, Friendship, WI 53934
Kimmel, Dick, MN DNR, RR 1 Box 181, Madelia, MN 56062
Kobriger, Jerry, ND G & F, RR 1 Box 56, Dickinson, ND 58601
Kooiker, Paul, WI DNR, Box 141, Grantsburg, WI 54840
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Mechlin, Larry M., MO DOC, 1110 S College Ave, Columbia, MO 65201
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Nietzke, Dennis, USFS, 1498 W US Hwy. 2, St. Ignace, MI 49781
Okonck, Ann
Perez, Raymond, MI DNR, 309 W McMillian Ave, Newberry, MI 49868
Probst, John, USFS, Box 898, Hwy. K, Rhinelander, WI 54501
Retzlaff, Terry, 513 Jefferson St, Oconto, WI 54153
Ries, John L., 580 W. Gloucester, Saginaw, MI 48603

Rodgers, Randy, KS Fish/Game, Route 2, Hayes, KS 67601

Sampson, Lynn, SCS, Rm 101, 1405 S Harrison Road, E Lansing, MI 48823

Schenbeck, Greg, USFS, 270 Pine St, Chadron, NE 69337

Silvy, Nova, Texas A & M, RR 4 Box 325, College Station, TX 77834

Simpson, Scott A., IL DOC, RR 1 Box 37, Newton, IL 62448

Stoll, Gregg D., RR 2 Box 2555, Manistique, MI 49854

Svedarsky, Dan, Univ of MN, Crookston, MN 56716

Toepfer, John, MT State Univ, Fish & Wildlife Prog., Bozeman, MT 59717

Toney, Tom, MO DOC, RR 3 Box 51, Lockwood, MO 65682

Urbain, John W., MI DNR, PO Box 30028, Lansing, MI 48909

Urban, Crystal L., USFS, 499 E Lake Shore Drive, Manistique, MI 49854

Vora, Robin

Wagge, Bruce, Western Energy Co, PO Box 99, Colstrip, MT 59323

Weiland, Norm, USFS, 1170 4th Ave S, Park Falls, WI 54552

Wells, Doug, MN DNR, 1221 Fir Ave E, Fergus Falls, MN 56573

Westemeier, Ronald L., IL Nat. Hist. Survey, 304 Poplar Dr, Effingham, IL 62401

Wethy, Jim

Wolfe, Terry, MN DNR, 716 Pine Street, Crookston, MN 56716

A TRIBUTE TO THE HAMERSTROMS

Dr. Fred Hamerstrom passed away in the spring of 1990. The Hamerstrom name is synonymous with prairie-chicken conservation and with the Prairie Grouse Technical Council organization itself. Hamerstrom student and close friend, Ray Anderson paid the following tribute to Fred, but, as he states, "it is impossible to consider the Hamerstrom contribution separately" so it is a tribute to Fran as well. The accompanying photo taken at the 1985 Technical Council meeting in Missouri depicts the closeness and intrigue of these remarkable people.



Dr. Frederick N. Hamerstrom, Professor of Wildlife, and "quiet scientist" of international repute, died near Idleyld Park, Oregon on 28 March 1990, in a place of his choosing, a cabin on the Umpquah River. His last experience in life, as he considered it, was shared with Dr. Frances Hamerstrom, his wife and life-long research colleague of similar fame, in a manner that was typical of their 59 years of marriage. Dr. Hamerstrom was an idealistic model for wildlife professionals throughout this life; his moment of death was no exception.

Hamerstrom began his wildlife career at the Game Conservation Institute, Clinton, New Jersey, in 1931 learning artificial propagation of game birds after having earned an A.B. degree at Harvard College and marrying Frances Carnes Flint that same year. Thus was forged one of the most remarkable wildlife research teams known to the field of wildlife ecology. Although this tribute was prompted by Frederick Hamerstrom's death, it is virtually impossible to consider the Hamerstrom's contribution separately.

Hamerstrom was a Research Fellow under Dr. Paul L. Errington at Iowa State College from 1932 to 1935 where he and his wife studied pheasant nesting, winter ecology of bobwhite quail, and raptor food habits. Their paper, "The great horned owl and its prey in the north-central United States", co-authored with P.L. Errington, won The Wildlife Society's first Terrestrial Publication Award in 1940. The first cooperative Wildlife Research Unit was established at Iowa State in 1932; Dr. Errington was its first leader and Frederick Hamerstrom, its second graduate student, earned a M.S. degree and Frances a B.S. degree there in 1935.

The Hamerstroms made their first research contact with prairie chickens in 1935 when Frederick became Project Game Manager for the U.S. Resettlement Administration Central Wisconsin Game Project near Necedah, Wisconsin. Although the prairie chicken was to become their major focal point in succeeding years, they also dealt with sharp-tailed grouse, ruffed grouse, sandhill cranes, furbearers, deer, food habits of great horned owls, winter feeding, food and cover plantings, and development of water areas at this time.

The Hamerstroms were Research Fellows at the University of Wisconsin under Aldo Leopold from 1937 to 1941. Frederick earned

a Ph.D. degree in 1941, and Frances a M.S. degree in 1940. Frederick is 1 of only 3 to earn a Ph.D., and Frances is the only woman ever to have earned a graduate degree under Leopold. They continued their research on prairie chickens and sharp-tailed grouse in Wisconsin during the spring seasons of 1941 through 1943, and then again in 1947 and 1948 while Frederick was Curator of the Edwin S. George Reserve. They also studied prairie chickens and sharptails in Michigan and predators and deer on the Reserve during this time. Frederick served in the U.S. Air Force from 1944 through 1946 as an Aviation Physiologist; Frances was a medical technician in Beaumont General Hospital.

Hamerstrom's research on prairie chickens provided tools for other ornithological studies. They were among the first to color-mark wild birds by using the falconer's technique of imping colored feathers into the pinnae and tails of prairie-chicken cocks; thus they discovered that cocks were territorial on booming grounds. Fran irreverently wrote, to Aldo Leopold's delight, the following poem about this episode:

The prairie hen will wonder soon,
but not because her love goes boom.
Consider with what joy, she'll hail
the colored feathers in his tail.

Fred was instrumental in creating a prairie grouse trapping cooperative with Jack Manweiler. Curiously, trapping prairie-chickens for banding was extraordinarily difficult in the 1930's and 1940's. His trapping and banding program saved money by showing that prairie-chicken food patches could be 5 miles apart rather than 1 per square mile. Fred was employed by The Wisconsin Department of Natural Resources from 1949 through 1972 as Project Leader of the Prairie Grouse Management Research Unit headquartered in Plainfield; Fran was Assistant Leader. Early in this period, the Hamerstroms and Os Mattson, WDNR land manager for the project, formulated a management plan to "save the prairie-chicken" in Wisconsin. This was published as "A Guide to Prairie-Chicken Management," a WDNR Technical Bulletin that received The Wildlife Society's award for best publication of the year in 1957. The scatter-pattern plan of land management, introduced a new concept which has been applied for other species, including some of those in the rain forests. The plan was designed for the Buena Vista Marsh area where the Hamerstroms

concluded that the chicken had the best chance of being maintained for a variety of reasons. Land values were low, the chicken population was still in good shape because of the existing habitat, and there was little competition for uses of the land. After designing and presenting the plan, 2 Foundations, The Society of Tympanuchus Cupido Pinnatus and The Prairie Chicken Foundation, competed - in a friendly manner - to buy lands needed to save the chickens. About 12,000 acres were bought in roughly the pattern recommended in "A Guide to Prairie-Chicken Management." The Hamerstroms and Mattson were also actively involved in implementing the first management efforts to maintain the grasslands in the face of ever present natural succession of shrubs and trees that were persistently reclaiming the area. Land acquisition and subsequent management stopped the decline of the prairie-chicken population on the Buena Vista Marsh and fostered its resurgence to the 1950 level by 1981.

The Hamerstroms continued their chicken population research on the Buena Vista and published their population and management data in 1973 in another WDNR Technical Bulletin, "The Prairie Chicken in Wisconsin - Highlights of a 22-year study of counts, behavior, movements, turnover and habitat." They retired from the WDNR in 1972 but maintained an active interest in the population dynamics and management of the prairie-chicken as Faculty and Research Associates (1972-1982) and Adjunct Professors (1982-present) at the University of Wisconsin-Stevens Point. They also conducted long-term studies of northern harriers and kestrels on the Buena Vista Marsh. The 25-year harrier study was published in a book by Fran entitled "Harrier, Hawk of the Marshes: The Hawk That is Ruled by a Mouse." The kestrel study, now in its 21st year, continues under Fran's direction.

Virtually all of the main range of the greater prairie-chicken and some of the range of the lesser and Attwater's prairie-chicken in the United States, and most of the range of the sharp-tail races campestris and jamesi, plus some of the range of 3 of the other 4 races in the United States and Canada, were examined by the Hamerstroms. They made 5 trips to Europe (Germany, Austria, Finland, Lapland, Norway, Sweden, and Denmark) to study grouse in particular, and to study red and roe deer, hunting traditions and ethics, and general conservation, and to speak at several universities and meetings of ornithological societies. They were members of 7 International Ornithological Congresses

and were invited speakers at 6 of them. They spent 1 month in Australia's outback and visited India, Iran, Siberia, and Sri Lanka for conservation-oriented purposes. They initiated a continuing study of Harris' hawks in Texas and of an osprey population in Sonora, Mexico.

The Hamerstroms published 168 papers and articles, 10 books, and about 50 reviews between them. Frederick Hamerstrom was a highly skilled technical writer and editor. In addition to editing the 10 books that were published by Fran, the last one only 2 days before his death, he refereed technical papers for several journals and was the Principal Referee for Raptor Research. He served on several graduate committees at UW-Stevens Point and thus was a mentor for wildlife students in areas of research planning, design, execution, analysis, and writing. He also shared his wealth of knowledge and experience with numerous other wildlife apprentices in his home which was a classroom, library, laboratory, dormitory, research headquarters, and social center that often echoed with good music and laughter. Dr. Hamerstrom's philosophy of life included his admonition that..."Good works do not need to be done in a sepulchral atmosphere."

He was a charter member of The Prairie Grouse Technical Council and an active member of the following conservation-oriented societies and committees: American Institute of Biological Sciences; British Ecological Society; Prairie Grouse Cooperative (Secretary); Saskatchewan Natural History Society; Tall Timbers Association; American Ornithologists' Union (Chair, Emergency Committee for Relief of European Ornithologists); Chihuahuan Desert Research Institute (Board of Scientists); Citizens' Natural Resources Association (Councilor); Deutsche Ornithologen-Gesellschaft; Ecological Society of America; The Nature Conservancy; National Wildlife Federation; Raptor Research Foundation (Principal Referee); The Wildlife Society (Editorial Board, Leopold Award Committee); Wisconsin Academy of Science, Arts and Letters (Co-Vice President for Science); Wilson Ornithological Society (Chair, Conservation Committee, Associate Editor); Wisconsin Society for Ornithology (President, twice; Co-Chair Research Committee).

Most recently, The Raptor Research Foundation created The Frederick and Frances Hamerstrom Award in their honor. Memorial contributions may be made to this award through Dr. Jeffrey L. Lincer, 4718 Dunn Drive, Sarasota, FL 34233.

Professor Hamerstrom's distinguished public service and high quality research did not go unrecognized even though he was a very modest man; Fran called him "a quiet scientist." He was recognized with the following Honors and Awards: The American Ornithologists Union - Fellow; Dane County Conservation League - Distinguished Cooperative Wildlife Research Unit - Certificate of Recognition; Phi Kappa Phi; Sigma Xi; and jointly with Fran, Citizens Natural Resources Association - Silver Acorn Award; College of Natural Resources, University of Wisconsin-Stevens Point - Environmentalist of the Year, 1978; National Wildlife Federation - Wildlife Conservation Award; United Peregrine Society - Conservation Award; The Wildlife Society - Terrestrial Publication Award, 1940 (with P.L. Errington for "The great horned owl and its prey in north-central United States") and 1957 (with O.E. Mattson for "A Guide to Prairie-Chicken Management"); Wisconsin Chapter, The Wildlife Society - Wisconsin Award for Wildlife Research, 1980; Wilson Ornithological Society - Edwards Prize (with C.J. Burke); Wisconsin Department of Natural Resources - Bureau of Research Award; Wisconsin Outdoors Communicators Association - Honorary Life Members; Wisconsin Society for Ornithology - Silver Passenger Pigeon Award for Service to WSO, and Honorary Life Membership Award for distinguished ornithology.

Dr. Hamerstrom left an indelible wildlife legacy that can be realized each spring when prairie grouse greet the sunrise with their booming, dancing, strutting, and when they take wing from cover during the fall hunting season; whenever the eye is privileged to the sight of a soaring buteo, hunting harrier, diving osprey, stooping falcon, or darting accipiter; or when one gets that unique tingle in the nape of the neck while treading grasslands with "buena vistas." His scholarship, ethical research standards, unselfish dedication to the conservation of natural resources, all flavored with the modest character of a gentleman, provided a model for wildlife scientists that inspires emulation. He was a Professor of Wildlife and Conservationist of the highest order. I am grateful for having had the opportunity to be one of his students, a relationship that never ceased - I sensed that I was in the presence of greatness.

Raymond K. Anderson
University of Wisconsin-Stevens Point

PAST CONFERENCES

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