Lesser Prairie Chicken Responses to Range Fires at the Booming Ground
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Source: *Wildlife Society Bulletin*, Vol. 7, No. 1 (Spring, 1979), pp. 44-46
Published by: Allen Press
Stable URL: http://www.jstor.org/stable/3781408
Accessed: 10/04/2009 12:04

BRIEFER ARTICLES

LESSER PRAIRIE CHICKEN RESPONSES TO RANGE FIRES AT THE BOOMING GROUND[1]

Prairie chickens (*Tympanuchus* spp.) usually perform courtship displays at a traditional lek (booming ground) site. Chickens may change the location of, or completely abandon, a traditional site when standing dead grasses and forbs (residual vegetation) from the previous season become too tall or dense (Hamerstrom et al. 1957, Schwartz 1945).

Residual vegetation on lek sites should be maintained at a height of less than 15 cm by burning or mowing (Anderson 1969, Jones 1963). Westemeier (1972) concluded that male greater prairie chickens (*T. cupido*) in Illinois prefer to establish leks on recently burned areas rather than adjacent available sites such as mowed or plowed fields, new grass-legume seedings, and wheat fields. He reported using late winter burns to encourage greater prairie chickens to occupy a previously inactive, historical lek site and also to establish a lek at a new site.

During ongoing studies of lesser prairie chickens (*T. pallidicinctus*) in western Oklahoma we observed birds moving the location of a lek in response to spring fires. We believe that our observations and the earlier observations of Westemeier (1972) reflect a basic behavioral response of prairie chickens. This response may provide a mechanism for encouraging prairie chickens to move into new habitats or recolonize historic ranges.

On 4 April 1978, the landowner of our study area in Ellis County, Oklahoma, burned 54 ha of lovegrass (*Eragrostis curvula*) pasture, followed 16–17 April by burning of 210 ha of adjacent shinnery oak (*Quercus havardii*) rangeland predominated by little bluestem (*Schizachyrium scoparium*). Both burns removed late summer and early autumn growth of the previous year. The oak-bluestem pasture had not been grazed for 9 months and residual vegetation stood 0.6–1.0 m high.

At the time of the oak-bluestem burn, 2 leks were active in the 10.2-km^2 area (Fig. 1). Leks 1 and 2 were located on small ridges among scattered clumps of little bluestem, with patches of open ground providing areas for displaying males. After the fire, chickens remained at site 1, even though it had burned. Chickens abandoned lek site 2 in the unburned pasture and formed 2 new leks, both in the burned area. Lek 3 was located on a small ridge within the oak-bluestem pasture. Before the burn the ridge was densely covered with grass. Lek 4 was located at a historical site atop a large hill in the lovegrass pasture. That site had not been used during the previous 2 seasons.

Preburn leks 1 and 2 had 14 and 12 (total 26) displaying males, respectively, and had been active since early March. Postburn leks 1, 2, 3, and 4 had 21, 0, 12, and 6 males (total 39), respectively. Two additional counts (8 and 9 May) were made on the area and the number of displaying males on each lek remained unchanged.

The greater number of displaying males on leks after the burns probably included formerly nonterritorial males on the area since counts of leks in surrounding habitats remained unchanged after the burns. Classification of the new leks (3 and 4) as temporary (*satellite* or *peripheral*) leks may not be appropriate since their size and permanence were more characteristic of dominant grounds late in the display season than small, unstable, temporary leks.

[1] A contribution from Federal Aid in Wildlife Restoration; P. R. Project Oklahoma W-125-R, Oklahoma Department of Wildlife Conservation, and Oklahoma State University Environmental Institute, cooperating.

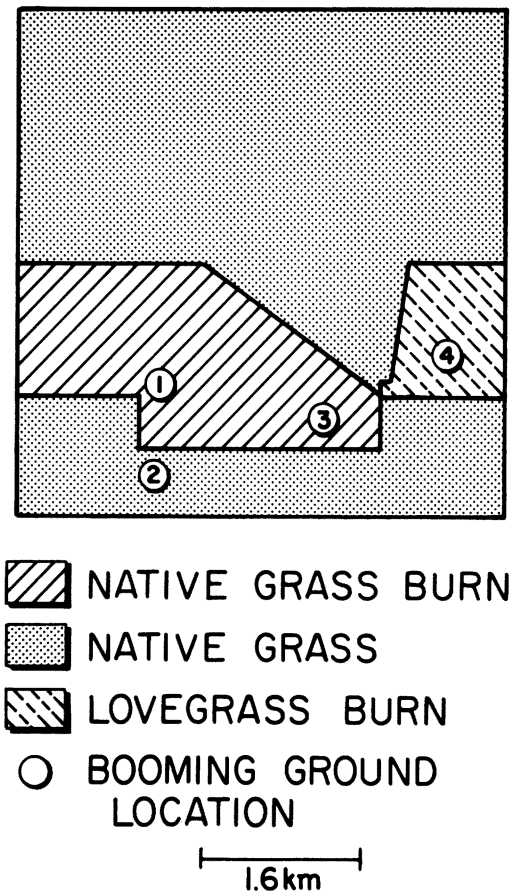

Fig. 1. Prairie chicken booming ground relocation in response to burning. Before burning, active booming grounds were at sites 1 and 2, while site 4, which was a historic site, was inactive. After burning, site 1 remained active, site 2 was abandoned, new site 3 was established, and historic site 4 was reoccupied.

MANAGEMENT IMPLICATIONS

The importance of fire to the ecology of prairie chickens is documented (Chamrad and Dodd 1972, Gross 1928, Kirsch 1974, Lehmann 1965). Prescribed burning is generally regarded as the best method for maintaining nesting and brood-rearing habitats. Burns are usually conducted during late spring or early summer, ultimately resulting in improved cover for nesting during subsequent seasons. From our observations, we believe that early spring burns on small areas may constitute strong proximate cues (Hilden 1965) during habitat selection by lesser prairie chickens. Stimuli associated with a recently burned area may cause some or all members of a lek to abandon established territories and move into the burned area.

Remaining flocks of lesser prairie chickens are widely scattered within Oklahoma (Cannon and Knopf, unpubl. data, Copelin 1963) and much of the southwestern United States. The range of the species is disjunct, comprising many spatially separate populations. Past attempts to restock prairie chickens into formerly occupied or new habitats have met with limited success (Jacobs 1959).

Reclamation of recently abandoned oak-bluestem rangeland adjacent to remnant flocks may be a viable alternative to transplanting as a means of reestablishing the lesser prairie chicken in parts of its former range. The response of chickens to spring burns may favor the rapid movement of birds into those habitats simultaneously managed to provide proper nesting and brood-rearing cover.

LITERATURE CITED

ANDERSON, R. K. 1969. Prairie chicken responses to changing booming-ground cover type and height. J. Wildl. Manage. 33:636–643.

CHAMRAD, A. D. AND J. D. DODD. 1972. Prescribed burning and grazing for prairie chicken habitat manipulation in the Texas coastal prairie. Proc. Tall Timbers Fire Ecol. Conf. 12:257–276.

COPELIN, F. F. 1963. The lesser prairie chicken in Oklahoma. Okla. Wildl. Conserv. Dep. Tech. Bull. 6. 58pp.

GROSS, A. O. 1928. The Heath hen. Boston Soc. Nat. Hist. Memoirs 6:491–588.

HAMERSTROM, F. N., JR., O. E. MATTSON, AND F. HAMERSTROM. 1957. A guide to prairie chicken management. Wis. Conserv. Dep. Tech. Bull. 15. 128pp.

HILDEN, O. 1965. Habitat selection in birds: A review. Ann. Zool. Fenn. 2:53–75.

JACOBS, K. F. 1959. Restoration of the greater prairie chicken. Okla. Dep. Wildl. Conserv., Div. of Fed. Aid in Wildl. Restoration Proj. W-65-R. 42pp.

JONES, R. E. 1963. Identification and analysis of lesser and greater prairie chicken habitat. J. Wildl. Manage. 27:757–778.

KIRSCH, L. M. 1974. Habitat management consid-

erations for prairie chickens. Wildl. Soc. Bull. 2:124–129.
LEHMANN, V. W. 1965. Fire in the range of Attwater's prairie chicken. Proc. Tall Timbers Fire Ecol. Conf. 4:127–143.
SCHWARTZ, C. W. 1945. The ecology of the prairie chicken in Missouri. Univ. Mo. Stud. 20:1–99.
WESTEMEIER, R. L. 1972. Prescribed burning in grassland management for prairie chickens in Illinois. Proc. Tall Timbers Fire Ecol. Conf. 12:317–338.

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Received 25 September 1978.
Accepted 3 November 1978.

IMPACT OF THE BOTFLY ON SQUIRREL HUNTING IN MISSISSIPPI[1]

The larvae of the squirrel botfly (*Cuterebra emasculator*), also known as wolves, heel flies, warbles, or grubs are subcutaneous parasites of the gray squirrel (*Sciurus carolinensis*), fox squirrel (*S. niger*), and eastern chipmunk (*Tamias striatus*). *Cuterebra* myiasis of squirrels is widespread in the eastern United States. Reported infestation prevalence of the parasite in gray squirrels includes greater than 50% in Mississippi (Clark 1974), 40% in North Carolina (Allison 1953), 27% in Virginia (Parker 1968), 12% in Ohio (Madson 1964), and 7% in Alabama (Atkeson and Givens 1951).

Because of the conspicuous and grotesque appearance of *Cuterebra* myiasis, the parasite may influence aesthetic values associated with squirrel hunting. Squirrels killed harboring well-developed larvae are often considered unfit as food and are thrown away. Although no definitive studies on the impact of *Cuterebra* myiasis on squirrel hunting have been conducted, Allison (1953) estimated that during a single hunting season in North Carolina over 380,000 *Cuterebra*-infested squirrels were discarded. The objectives of our study were to document the range of the parasite and estimate the sociologic impact of the parasite on hunting in Mississippi.

[1] Study supported by Federal Aid in Wildlife Restoration Funds Project W-48-25.

RESULTS AND DISCUSSION

Periodic mail surveys of hunters are conducted by the Mississippi Game and Fish Commission to obtain estimates of hunter numbers, days afield, and harvest of game species. As part of the survey for the 1976–77 hunting season, hunters were asked questions related to their encounters with squirrel botfly larvae. The survey was mailed to 10,000 sportsmen whose names were randomly selected from 1976–77 license files.

Of the 5,438 usable replies to the questionnaires, 3,365 (61.9%) of the hunters surveyed had hunted squirrels during the 1976–77 hunting season. Almost all (99.6%) of these hunters were successful in killing at least 1 squirrel and 1,225 (37.1%) of the successful hunters reported killing squirrels with *Cuterebra* larvae present. The parasite was reported in all but 3 Mississippi counties (Fig. 1). In general, hunters from the east-central counties reported the highest prevalence of the parasite; up to 97% of the hunters in some counties reported contact. When asked, "Did you eat squirrels infested with bots?", only 2% of those who killed infested squirrels answered "yes." A total of 1,787 hunters responded to the question, "What effect did contact with infested squirrels have on your hunting satisfaction?" Thus, analyses of the responses to this question were not limited only to those hunters who killed infested