willow clumps in a field about 1 km away. A male Marsh Hawk, presumably her mate, was hunting less than 300 m away in full view but did not come to the female's aid.

Meinertzhagen (1959, Pirates and predators, London, Oliver and Boyd, p. 137) notes that in England the Hen Harrier (*Circus c. cyaneus*) will chase ground roosting Short-eared Owls. Jung (1930, Auk 47: 537) describes an aerial fight between a Short-eared Owl and a Marsh Hawk, presumably territorial. Marsh Hawks have been seen robbing Short-eared Owls on the Buena Vista Marsh at least twice; I saw it once, as did Berger (1958, Wilson Bull. 70: 90). Clark (1970, unpublished Ph.D. dissertation, Ithaca, New York, Cornell Univ.) recorded two successful and six unsuccessful attempts at piracy by Marsh Hawks on Short-eared Owls but only one reversal, unsuccessful, for the owl. We have found no references to successful prey robbing by Short-eared Owls. The incident occurred at dusk, which may have enabled the owl to surprise the hawk.

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Spring lek activity of the Lesser Prairie Chicken in west Texas.—The lek, defined here as the traditional display ground used for arena behavior (cf. Johnsgard 1973: 102), is the focal point of many life activities of prairie grouse, and sampling lek populations is thus the common method of estimating prairie grouse numbers (Hoffman 1963, Jackson and DeArment 1973, Hamerstrom and Hamerstrom 1973). As Lesser Prairie Chickens (*Tympanuchus pallidicinctus*) are currently listed as a threatened species (U.S. Fish Wildl. Serv. 1973: 134), continued monitoring of their lek populations is essential. Elsewhere, Jones (1964) described the seasonal lek activity for both Greater (*T. cupido*) and Lesser Prairie Chickens. In Oklahoma, Copelin (1963) noted initial Lesser Prairie Chicken lek activity in late February and continuing until mid-May; intense territorial disputes developed in March and early April with most copulations occurring in the last 10 days of April and the first week of May. For censusing purposes, all population counts on leks in that study were conducted after 15 April. Hoffman (1963) reported lek activity in Lesser Prairie Chickens from mid-March through mid-June in Colorado with the peak occurring in late April and early May.

As little is known of peak lek activity periods of the Lesser Prairie Chicken in west Texas, we initiated a study in the spring of 1972 to compare morning (AM) and evening (PM) lek counts, and to contrast counts made at intervals during the spring. Also, observations of hen activities on leks were made each spring from 1972 to 1974 inclusive.

This study was conducted in Yoakum County, Texas, on the southern High Plains in west Texas. Leks were located from the last week of February and until March of 1972. Three population counts were made on each of five study sites. The first count was made the first 2 weeks of April, the second count during the last 2 weeks of April, and the third count was conducted within the first 3 weeks of May. Morning counts were made every 15 min beginning 30 min before sunrise until 3 h afterward. Evening counts were made from 3 h before sunset until 30 min after

TABLE 1

DAILY OCCURRENCE OF MAXIMUM LEK POPULATIONS FOR THE LESSER PRAIRIE CHICKEN IN WEST TEXAS, 1972

Date (1972)	Lek site	Occurrence of maximum number of cocks[1]	
		AM	PM
6 April	3	+45	Sunset
7	2	+30	−15
8	4	+60	−15
13	5	Sunrise to +105	−15
14	1	Sunrise to +60	+30
19	3	Sunrise	−120
20	2	+30	−30 to −15
27	4	Sunrise	−45
10 May	5	Sunrise	−90
11	1	+15	−90
12	3	+60 to +75	−45 to −30
15	2	Sunrise to +75	−60 to −30
17	4	+15 to +45	−120 to −60
19	5	Sunrise	No count[2]
20	1	Sunrise	−135

[1] For AM counts, + means after sunrise. For PM counts, − signifies before sunset, + refers to after sunset.
[2] No birds present on lek site 5 on 19 May.

TABLE 2

COMPARISON OF MAXIMUM AM AND PM LEK POPULATIONS FOR THE LESSER PRAIRIE CHICKEN IN WEST TEXAS, SPRING 1972

Lek site	Sample period[1]	Lek population	
		AM census	PM census
1	1	10	8
	2	9	7
	3	9	9
2	1	23	16
	2	19	5[2]
	3	18	18
3	1	25	21
	2	22	19
	3	23	23
4	1	20	19
	2	16	16
	3	16	15
5	1	12	6
	2	8	9
	3	2	0

[1] Sample period 1: first 2 weeks of April; sample 2: last 2 weeks of April; sample 3: first 3 weeks of May.
[2] Count taken during high wind that suppressed activity. If this number is replaced with an average (17) of the other two counts on site 2, the difference between AM and PM populations is still significant ($P < 0.01$).

sunset. Population data were transformed using $N = \sqrt{X} + \sqrt{X+1}$ for parametric analysis (Snedecor and Cochran 1971: 325–327). A paired Student's *t*-test was used to test for differences between AM and PM counts and analysis of variance tests were used to determine differences in counts made at varying times during the spring (Snedecor and Cochran 1971: 94–97, 299–301).

The times when maximum numbers of cocks were on leks are shown in Table 1. The range of maximum AM counts was from sunrise until 105 min after dawn with an average time of 27 min after sunrise. Maximum PM counts ranged from 135 min before sunset to 30 min afterwards. The average for maximum PM counts occurred 49 min before sunset.

A comparison of AM and PM counts made during the three sampling periods is shown in Table 2. AM counts were significantly higher ($P < 0.05$) than PM counts. Also, there was a difference between AM counts made at different times of the spring ($P < 0.10$). No significant difference occurred during the spring among PM counts ($P > 0.25$).

Cocks were present on the lek from early March until late May. The peak intensity of gobbling lasted from the third week of March through the second week in April. Hens were observed on leks from the last week of March until the third week of May. However, 82% (22/27) of all hens on leks were present during the first 2 weeks of April and 80% (4/5) of the copulations observed occurred during the same time period. These data indicate peak gobbling intensity and breeding in west Texas occur 2 or 3 weeks earlier than that reported in Oklahoma (Copelin 1963) or Colorado (Hoffman 1963).

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John A. Crawford and Eric G. Bolen, *Department of Range and Wildlife Management, Texas Tech University, Lubbock, Texas 79409. Present addresses: Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon 97331* (Crawford); *Rob and Bessie Welder Wildlife Foundation, Sinton, Texas 78387* (Bolen). Accepted 10 Oct. 74.