

## SPRING TRAPPING OF LESSER PRAIRIE-CHICKENS

DAVID A. HAUKOS, LOREN M. SMITH, AND GERALD S. BRODA

*Department of Range & Wildlife Management  
Texas Tech University  
Lubbock, Texas 79409 USA*

**Abstract.**—We compared spring lek trapping techniques for Lesser Prairie-Chickens (*Tympanuchus pallidicinctus*) during 1987 and 1988 in west Texas. We recommend walk-in drift traps over rocket nets and baited walk-in traps for capture of Lesser Prairie-Chickens. Walk-in drift traps had low mortality (0.4%) and high success (252 captures in 90 trapping days). Furthermore, walk-in traps on leks do not require continuous observer presence and are less expensive than rocket nets.

### **CAPTURA DURANTE LA PRIMAVERA DE INDIVIDUOS DE *TYMPANUCHUS PALLIDICINCTUS***

**Sinopsis.**—En estudio que se llevó a cabo en la parte oeste de Texas durante las primaveras de 1987 y 1988, comparamos diferentes técnicas de capturas de individuos de *Tympanuchus pallidicinctus* en leks. Recomendamos la utilización de trampas de entrar a la deriva ("walk in drift") sobre las técnicas de redes propulsadas con explosivos y trampas cebadas. La trampa que recomendamos, produce una baja mortalidad (0.4%) y un alto rendimiento de capturas (252 capturas en 90 días de trabajo). Además de esto, el uso de estas trampas en leks no requieren la presencia continua de un observador y resultan de menos costo que la utilización de redes propulsadas por explosivos.

Lesser Prairie-Chicken studies have been limited by the difficulty of trapping birds, especially females (Campbell 1972, Davis et al. 1979, Sell 1979, Taylor 1978). A trapping technique that can be used to capture large numbers of Lesser Prairie-Chickens in the spring within a short period of time would enable researchers to study a large proportion of the population. The capture of large numbers of birds at one time also would aid in relocation of the Lesser Prairie-Chicken. More birds could be moved to a new area within a shorter period than would be possible with other trapping techniques. Toepfer et al. (1988) described a drift fence approach as a lek trapping method for prairie grouse that was successful for Greater Prairie-Chicken (*T. cupido*) and Sharp-Tailed Grouse (*T. phasianellus*). We evaluated this technique and others for use on the Lesser Prairie-Chicken.

### METHODS

The study was conducted in Cochran and Yoakum counties, 35 km north of Plains, Texas during the springs of 1987 and 1988. Three trapping techniques were used during the study. Baited walk-in traps (Schwilling 1955) were used from 7 Jan. through 1 Feb. 1987. Rocket nets (Davis et al. 1980) were used on leks from 7 Mar. through 17 Apr. 1987 and from 16 Feb. through 17 Apr. 1988. Walk-in drift traps (Toepfer et al. 1988) were used on leks from 7 Feb. through 17 Apr. 1987 and from 16 Feb. through 20 Apr. 1988. Based on female capture frequency, these dates included peak hen attendance on each lek (Haukos 1988).

Baited walk-in traps were placed in areas of known Lesser Prairie-Chicken use on or near leks and baited with sorghum or corn. The traps were approximately 1.5 m in diameter, 0.6 m high, and covered with a 6.0 mm<sup>2</sup> mesh seine netting. Two entrance funnels (sloping from 25.0 cm high at the entrance to 10.0 cm high within the trap, 25.0 cm long, and 15.0 cm wide), constructed from 2.5 cm<sup>2</sup> mesh poultry wire, were placed at opposite ends of each trap.

Two 15.0 × 20.0 m rocket nets (2.5 cm<sup>2</sup> nylon mesh) were used on leks. There were three rockets per net. The nets were positioned near known male territories on the lek or on pathways used by female Lesser Prairie-Chickens walking onto the lek.

Lek walk-in drift traps were constructed from 2.5 × 5.0 cm mesh welded wire. Traps covered a circular area approximately 0.7 m in diameter. These traps can be opened and closed by cutting apart the back side of the trap and using stakes to open or close the trap during the trapping operation. Three types of cover nettings were used: 6.0 mm<sup>2</sup> mesh seine netting; 2.0 cm<sup>2</sup> mesh monofilament netting; and 2.0 cm<sup>2</sup> mesh knotted twine netting. One entrance funnel per trap (sloping from 25.0 cm high at the entrance to 10.0 cm within the trap, 25.0 cm long, and 15.0 cm wide) was constructed from 2.5 or 5.0 cm<sup>2</sup> mesh poultry wire. Poultry wire leads (2.5 or 5.0 cm<sup>2</sup> mesh) 0.6 m high and varying from 7.5 to 45.5 m long were used to intercept Lesser Prairie-Chickens walking on the lek and guide them into the traps. Three trap designs used were: (1) leads completely encircling the lek or a portion of the lek, with the traps placed in areas frequented by prairie-chickens; (2) leads in a W shape facing the direction of Lesser Prairie-Chicken arrival or departure, with the traps positioned in the apex formed by the leads (Toepfer et al. 1988); or (3) combinations of (1) and (2) on the same lek (Fig. 1). A Chi-square test was used to compare the number of birds captured per trap day between drift walk-in traps and rocket nets.

#### RESULTS AND DISCUSSION

A total of 227 Lesser Prairie-Chickens (not including recaptures) was captured on leks during 1987 and 1988 (Table 1). Baited walk-in traps were unsuccessful possibly because of the population's unfamiliarity with the grains used as bait. Davis et al. (1979) had similar problems with a baited drop net. There was no difference in the number of birds captured per trap day between walk-in drift traps and rocket nets ( $\chi^2 = 0.0038$ ,  $P > 0.10$ ).

Rocket nets alone were effective on small leks (<15 males) and worked well in combination with lek walk-in traps on larger leks (Table 2). Advantages of rocket nets for Lesser Prairie-Chicken capture include: (1) the ability to capture specific males by positioning the net to cover frequent display areas; (2) the ability to increase the number of females captured per attempt by positioning the net on areas where hens congregate; and (3) easy relocation. Disadvantages of rocket nets include: (1) the need for continuous observation; (2) two or fewer Lesser Prairie-Chickens cap-

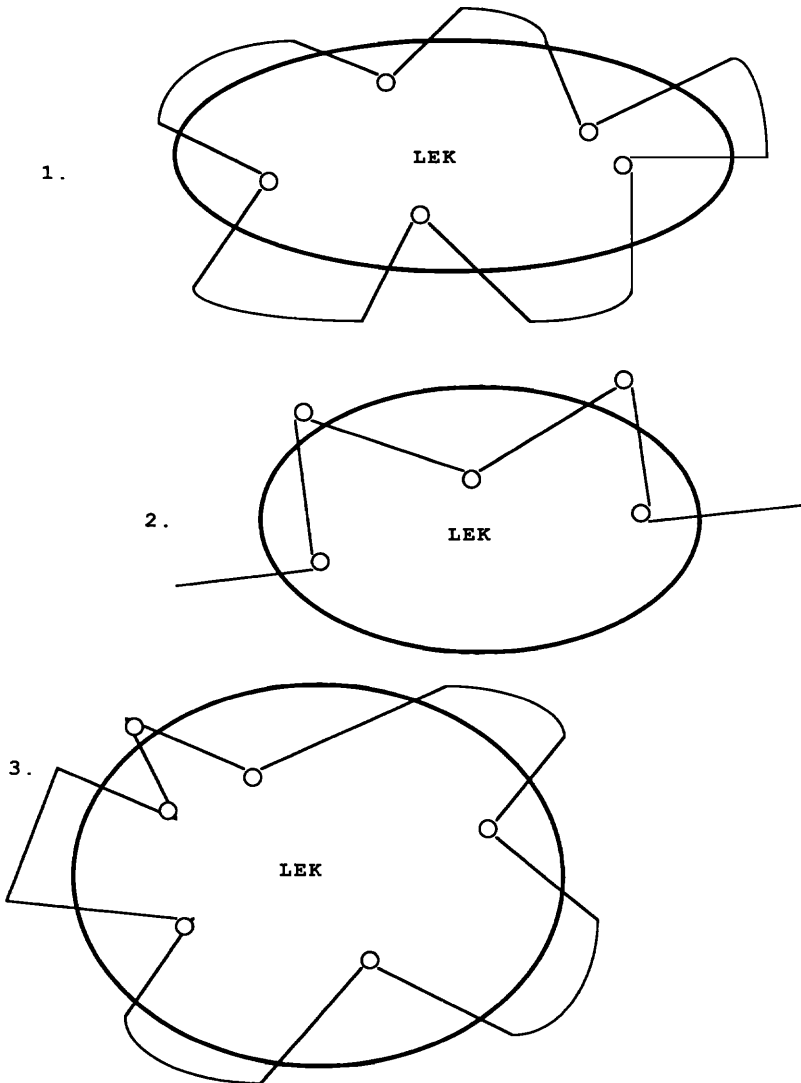


FIGURE 1. Overhead view of lek walk-in trap designs used to capture Lesser Prairie-Chickens in Cochran and Yoakum counties, Texas in 1987 and 1988 (O = trap).

tured on most attempts; and (3) the high frequency of escape if the captured bird is  $< 1$  m from the edge of the net. Davis et al. (1980) stated that cannon and rocket nets were superior to mist nets and drop nets for capture of female Lesser Prairie-Chickens on leks; with rocket nets superior to cannon nets because of their greater speed.

TABLE 1. Comparisons among trapping techniques used on spring leks of Lesser Prairie-Chickens in Cochran and Yoakum counties, Texas during 1987 and 1988.

	Baited walk-in	Rocket net	Walk-in drift trap
Number of leks trapped			
1987	2	5	8
1988	—	6	8
Trapping days <sup>a</sup>			
1987	10	18	26
1988	—	42	64
Trap days <sup>b</sup>			
1987	20	36	156
1988	—	71	384
Number of males captured			
1987	0	9	37
1988	—	18	108
Number of females captured			
1987	0	4	11
1988	—	7	33
Number of birds captured/trap day			
1987	—	0.36	0.30
1988	—	0.35	0.36
Mortality	—	1.6%	0.4%

<sup>a</sup> The number of days in which the traps were set up to capture birds.

<sup>b</sup> The number of trapping days multiplied by the number of traps in use on each day.

Silvy and Robel (1968) and Toepfer et al. (1988) expressed concern over altered behavior of Greater Prairie-Chickens (*Tympanuchus cupido*) on leks (male territory shifts, changes in male dominance status, and female disappearance from leks after capture attempts) following use of rocket nets. On three occasions during this study, female Lesser Prairie-Chickens were captured with the second rocket net attempt of the morning. All male Lesser Prairie-Chickens identified during rocket net capture (banded and tagged) returned to the lek of capture by the following morning and displayed in the general area as the previous morning. Sell (1979) recommended that rocket nets not be used on Lesser Prairie-Chicken leks because of deaths related to capture and handling stress. Taylor (1978) had one third of captured Lesser Prairie-Chickens exhibit injuries from rocket nets. Davis et al. (1979) reported 3% mortality with cannon nets. In this study, of 64 birds captured in rocket nets (including recaptures), one male (1.6%) died of stress.

The walk-in drift trap was an effective capture technique during this study. The type of material used to cover the traps did not appear important. Advantages of walk-in drift traps include: (1) they are passive trapping techniques resulting in minimal capture stress (of 252 walk-in trap captures, including recaptures, one male died of stress [0.4%]); (2)

TABLE 2. Characteristics of 10 leks on which rocket nets and/or walk-in drift traps were used to capture Lesser Prairie-Chickens in Cochran and Yoakum counties, Texas during 1987 and 1988.

Lek number	Number of territorial males	Dates trapped <sup>a</sup>		Number of birds captured	
		Rocket net	Walk-in drift trap	Rocket net	Walk-in drift trap
1	23	—	7 Feb. 87–17 Apr. 87	—	17
2	12	28 Feb. 87–17 Mar. 87	28 Feb. 87–17 Mar. 87	1	4
3	14	19 Mar. 87–17 Apr. 87	14 Mar. 87–17 Apr. 87	4	22
		—	16 Feb. 88–20 Apr. 88		
4	18	—	18 Mar. 87–17 Apr. 87	—	19
			16 Feb. 88–20 Apr. 88		
5	32	16 Feb. 88–17 Apr. 88	28 Feb. 87–17 Apr. 87	16	41
			16 Feb. 88–20 Apr. 88		
6	17	—	15 Mar. 87–17 Apr. 87	—	11
		1 Mar. 88–10 Apr. 88	16 Feb. 88–20 Apr. 88		
7	21	17 Mar. 88–14 Apr. 88	20 Feb. 88–20 Apr. 88	0	15
8	9	6 Mar. 87–17 Apr. 87	22 Feb. 87–1 Apr. 87	13	7
		16 Feb. 88–17 Apr. 88	16 Feb. 88–20 Apr. 88		
9	29	—	22 Feb. 88–20 Apr. 88	—	51
10	13	4 Mar. 88–3 Apr. 88	4 Mar. 88–3 Apr. 88	4	2

<sup>a</sup> Dates are inclusive of the days traps were present on leks, but the traps were not necessarily operated every day.

a permanent site location can be used with little maintenance between relocations; (3) continuous observer presence is not required; and (4) the design takes better advantage of Lesser Prairie-Chicken lek behavior than rocket nets because the entire lek can be trapped instead of a portion of the lek. Disadvantages to walk-in drift traps are: (1) male Lesser Prairie-Chickens quickly learn to avoid the traps, which may be averted by repositioning the leads and traps on the lek; (2) captured birds may escape back through the entrance funnel (use of 5.0 cm<sup>2</sup> mesh poultry netting for funnel construction usually prevents escape by collapsing and blocking the entrance when captured birds walk over the funnel); (3) in comparison to rocket nets, physical damage is higher to birds in walk-in traps; (4) they can be more difficult to relocate than rocket nets; and (5) once predators, usually coyotes (*Canis latrans*) locate a trap site, it is necessary to move the traps. Captured birds were prone to cutting themselves on the wire walk-in drift traps during escape attempts resulting from raptor disturbance, human presence, and when more than one bird was in the trap. Males were also subject to injury in traps during escape attempts when females appeared on the lek and when they were defending their territories.

Walk-in drift traps are recommended for spring capture of Lesser

Prairie-Chickens on leks. Other than initial material costs, this technique is relatively inexpensive when compared to rocket nets. Two people are required to set-up, maintain, and relocate the traps. The main advantage of this technique is that it does not require continuous observation and several leks can be trapped at once, provided one continuously travels between trap sites and releases trapped birds. Recommendations for use of this technique are: (1) prior to setting up the traps, determine arrival and departure directions for Lesser Prairie-Chickens attending the lek and position the traps accordingly; (2) if no male captures result within 3 d of set-up, reposition the traps; (3) concentrate on hen congregation areas for increased female capture success; and (4) realize that there are no set ways for positioning the traps and leads, just experiment until a design works for the lek.

#### ACKNOWLEDGMENTS

The Caesar Kleberg Foundation for Wildlife Conservation and the Houston Livestock Show and Rodeo Association provided funding for this study. S. Demarais, M. T. Merendino, and J. F. Bergan reviewed this manuscript. This is contribution T-9-569, College of Agriculture Sciences, Texas Tech University.

#### LITERATURE CITED

- CAMPBELL, H. 1972. A population study of lesser prairie chickens in New Mexico. *J. Wildl. Manage.* 36:689-699.
- DAVIS, C. A., T. Z. RILEY, J. F. SCHWARZ, H. R. SUMINSKI, AND M. J. WISDOM. 1980. Livetrapping prairie-chickens on spring leks. Pages 64-67, in P. A. Vohs, Jr., and F. L. Knopf, eds. *Proc. of prairie grouse symp.* Oklahoma State Univ., Stillwater. 89 pp.
- , ———, R. A. SMITH, H. R. SUMINSKI, AND M. J. WISDOM. 1979. Final report: habitat evaluation of lesser prairie chickens in eastern Chaves county, New Mexico. New Mexico State Univ. Agric. Exp. Stn., Las Cruces. 141 pp.
- HAUKOS, D. A. 1988. Reproductive ecology of lesser prairie-chickens in west Texas. M.S. thesis. Texas Tech University, Lubbock. 82 pp.
- SCHWILLING, M. 1955. Study of the lesser prairie chicken in southwest Kansas. *Kansas Fish and Game* 12:10-12.
- SELL, D. L. 1979. Spring and summer movements and habitat use by lesser prairie chicken females in Yoakum county, Texas. M.S. thesis. Texas Tech Univ., Lubbock. 41 pp.
- SILVY, N. J., AND R. J. ROBEL. 1968. Mist nets and cannon nets compared for capturing prairie chickens on booming grounds. *J. Wildl. Manage.* 32:175-178.
- TAYLOR, M. A. 1978. Fall and winter movements and habitat use of lesser prairie chickens. M.S. thesis. Texas Tech Univ., Lubbock. 52 pp.
- TOEPPER, J. E., J. A. NEWELL, AND J. MONARCH. 1988. A method for trapping prairie grouse hens on display grounds. Pages 21-23 in A. J. Bjugstad ed. *Prairie chickens on the Shenyenne National Grasslands.* USDA Forest Serv. Gen. Tech. Rep. RM-159, Rocky Mountain Forest and Range Exper. Stat., Fort Collins, Colorado. 73 pp.

Received 7 Sep. 1988; accepted 23 Jul. 1989.