

Research Note

Helminths of the Lesser Prairie Chicken, *Tympanuchus pallidicinctus* (Ridgway) (Tetraonidae), from the Texas Panhandle

The Lesser Prairie Chicken, *Tympanuchus pallidicinctus* (Ridgway), is an endemic gamebird of the sandy semiarid western rangelands dominated by sand shinnery oak (*Quercus havardi*), sand sagebrush (*Artemisia filifolia*) and little bluestem (*Schizachyrium soperium*). Its range presently extends very locally from southeastern Colorado and western Kansas into the Oklahoma and Texas Panhandles and south-central New Mexico. Although the species sharply declined after 1900 to a population of only about 3,000 birds in 1963, populations have increased in recent years to levels sufficient to allow very limited hunting seasons (Oberholser, 1974, *The bird life of Texas*. Vol. 1. Univ. Texas Press, Austin. 530 pp.).

Although there are several helminth species reported from the Greater Prairie Chicken, *Tympanuchus cupido* (Linnaeus), (Cram, 1928, U.S. Dep. Agric. Tech. Bull. 49:1-9; Gross, 1930, Progress report of the Wisconsin Prairie Chicken investigations. Wis. Conserv. Comm. Madison, Wis. 1-112; Harper et al., 1967, J. Wildl. Manage. 31:265-269; Leigh, 1940, Ill. Nat. Hist. Surv. Bull. 21:185-194; Leigh, 1941, J. Parasitol. 27:97-106; Morgan and Hamerstrom, 1941, J. Wildl. Manage. 5:194-198; Wehr, 1940, Vet. Med. 35:52-58), there is apparently only a single helminth, *Oxyspirura petrowi* Skrjabin, 1929, reported from the Lesser Prairie Chicken (Addison and Anderson, 1969, Can. J. Zool. 47:1223-1227). The Greater Prairie Chicken is restricted in range to the more humid mixed and long grass prairies of the eastern and central Great Plains (Oberholser, 1974, loc. cit.). Because of the differences in habitat of these two species, possible differences in their helminth parasite faunas could be predicted. Consequently, the present study was initiated to determine the composition and intensity of helminth parasitism in the Lesser Prairie Chicken and to compare the helminth fauna of this host with that of its eastern counterpart, the Greater Prairie Chicken.

Seven specimens of *T. pallidicinctus* were collected in Yokam Co., Texas, during the 1977 hunting season (October 15-16). An additional three birds from the same locality examined in the summers of 1976 and 1977 were provided by Dr. K. Stromberg. These were stress mortalities resulting from capturing and collaring. Attempts to collect additional hosts in December 1977 from Lea Co., New Mexico, were unsuccessful. Collected birds were frozen and later necropsied and examined for helminths. Nematodes were fixed briefly in glacial acetic acid, stored in a mixture of 70% ethyl alcohol with 5% glycerine and examined in glycerine wet mounts. Cestodes were fixed in AFA, stained with Celestine blue B, and mounted in Canada balsam. Simpson's index of diversity (Holmes and Podesta, 1968, Can. J. Zool. 46:1193-1204) was computed to indicate the concentration of dominance of the helminth faunas in this and previous studies involving the Greater Prairie Chicken. Sorenson's index of similarity (Greig-Smith, 1964, *Quantative plant ecology*. Butterworth & Co., London. 256 pp.) was used to compare the helminth faunas of prairie chickens from different geographic

Table 1. Helminths of the Lesser Prairie Chicken from the Texas Panhandle.

Helminth species	No. infected/ No. examined	%	Intensity	
			Range	\bar{X}
<i>Oxyspirura petrowi</i>	4/7	57	1-9	4
<i>Heterakis isolonche</i>	6/10	60	7-267	125
<i>Rhabdometra odiosa</i>	3/10	30	1-5	3

regions. These data were arranged in a trellis diagram. Representative specimens of helminth species recovered in this study are deposited in the USNM Helm. Coll. (Nos. 74690-74692).

Two nematode and one cestode species were recovered (Table 1). Eight of 10 birds examined were infected with one to three species of helminths. *Heterakis isolonche* von Linstow, 1906 (= *H. bonasae*) and *Rhabdometra odiosa* (Leidy, 1887) Jones, 1929 are reported for the first time from *T. pallidicinctus*.

The taxonomy and host-parasite relationships of the eyeworm *Oxyspirura petrowi* have been reviewed by Pence (1975, Proc. Helminthol. Soc. Wash. 42:181-183). This is apparently a widespread parasite of numerous ground-dwelling and/or ground-feeding avian species in North America. It has been previously reported from the Lesser Prairie Chicken in the Oklahoma Panhandle (Addison and Anderson, 1969, loc. cit.) and the Greater Prairie Chicken in Michigan (Cram, 1937, A review of the genus *Oxyspirura* with a morphological study of *O. petrowi* Skrjabin, 1929, recently discovered in galliform birds of the northern United States. Pages 89-98 in Papers Helminthol. Publ. Comm. 30 yr. Jubilee K. I. Skrjabin. Moscow, Nebraska (McClure, 1941, J. Wildl. Manage. 13:394-397) and Ontario (Addison and Anderson, 1969, loc. cit.). In West Texas it occurs in the Harlequin and Scaled Quail (Pence, 1975, loc. cit.) and Ring-necked Pheasant (Pence, unpublished data). The present study indicates a relatively high incidence of infection (57%) in the Lesser Prairie Chicken from the Texas Panhandle.

Although previous studies (Leigh, 1940, loc. cit.; Morgan and Hamerstrom, 1941, loc. cit.; Harper et al., 1967, loc. cit.) indicate that the Greater Prairie Chicken is commonly infected with the cecal worm *Heterakis gallinarum* (Schrank, 1788) Madsen, 1949, specimens collected in the present study from the Lesser Prairie Chicken most closely conform to the description of a related species, *H. isolonche* (Levine, 1968, Nematode parasites of domestic animals and man. Burgess Publ. Co., Minneapolis. 600 pp.). The distinct curvature and sharp tip of the terminal end of the right spicule characteristic of *H. gallinarum* is distinctly absent in specimens recovered in this study. *Heterakis isolonche* is frequently reported from the bobwhite in the United States (Kellogg and Calpin, 1971, Avian Dis. 15:704-715). Although two of the birds in the present study had heavy infections (>200 worms), both were in good condition and apparently suffered no ill effects from these levels of infection. *Heterakis isolonche* is the most common helminth parasite of the Lesser Prairie Chicken in the Texas Panhandle.

The cestode, *Rhabdometra odiosa*, has been previously reported from the bobwhite (Kellogg and Calpin, 1971, loc. cit.) and Plain Chachalaca (Christensen

				Illinois
			50	Kansas
		40	40	Wisconsin
	0	0	0	West Texas
West Texas	Wisconsin	Kansas	Illinois	

Figure 1. Trellis diagram of values for Sorenson's index of similarity for the helminth faunas of Greater and Lesser Prairie Chickens from different geographic regions in North America.

and Pence, 1977, J. Parasitol. 63:830) in Texas. A related species, *Rhabdometra nullicollis* Ransom, 1909, is reported from the Greater Prairie Chicken in Wisconsin (Morgan and Hamerstrom, 1941, loc. cit.).

Of the helminths infecting the Lesser Prairie Chicken, two of the three species, *O. petrowi* and *R. odiosa*, require arthropod intermediate hosts. These are undoubtedly transmitted during the spring and summer months when insects constitute an important part of this host's diet (Oberholser, 1974, loc. cit.). It is also of interest that all three helminths reported in this study are also important parasites of quail. Undoubtedly, the Scaled Quail and Bobwhite serve in part as a reservoir for these infections.

Simpson's index computed for the Lesser Prairie Chicken from the Texas Panhandle was 0.35 indicating a lack of dominance (in terms of frequency of occurrence) of any particular helminth species in the population. Likewise, Simpson's indices for the helminth faunas of the Greater Prairie Chicken in Illinois (Leigh, 1940, loc. cit.), Wisconsin (Morgan and Hamerstrom, 1941, loc. cit.), and Kansas (Harper et al., 1967, loc. cit.) were 0.33, 0.31, and 0.48, respectively. These low values indicate a similar equability of dispersion among the helminth species in this host.

Comparison of the helminth fauna of the Lesser Prairie Chicken from West Texas and that of the Greater Prairie Chicken in Illinois, Wisconsin, and Kansas using Sorenson's index of similarity revealed a basic dissimilarity between Greater Prairie Chicken helminth faunas in different geographic regions and between the helminth faunas of the Greater and Lesser Prairie Chickens (Fig. 1). Although at least two species, *Heterakis gallinarum* and *Cyrnea colini* (Cram, 1927) Chaubaud 1959, are found in the Greater Prairie Chicken from the above three areas, the other species comprising the total helminth composition from each area are sufficiently variable to indicate a basic dissimilarity between different geographic regions.

Although our sample size is small resulting from the difficulty in obtaining host

specimens, the helminth fauna of the Lesser Prairie Chicken in the Texas Panhandle appears to consist principally of three species: *O. petrowi*, *H. isolonche*, and *R. odiosa*. The conspicuous absence of certain helminth species such as *H. gallinarum*, *Ascaridia galli* (Schrank, 1788) Travassos, 1913, *C. colini*, and *Railletina variabilis* Leigh, 1941 in Lesser Prairie Chickens commonly encountered in the Greater Prairie Chicken probably results from the latter hosts' preference for a much more arid, sandy-soiled habitat. Such an environment undoubtedly suppresses transmission of many parasite species whose egg or larval stages require higher levels of moisture and a different soil type for development (Levine, 1968, loc. cit.). There is a basic dissimilarity in the helminth fauna of this host and its eastern counterpart, the Greater Prairie Chicken. There appears to be an equability of dispersion (lack of dominance) of helminth species in both hosts.

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Research Note

Some Helminth Parasites of the Common Grackle of Southern Texas

Quiscalus quiscula, Vieillot, 1819 (common grackle) ranges from southern Canada east of the Rocky Mountains, south to the Gulf of Mexico. Studies of the parasites of this host have been primarily limited to midwestern populations (Welker, 1962, Ph.D. Thesis, Ohio State Univ.—Indiana; Stanely and Rabalais, 1971, Ohio J. Sci. 71:302-303; Cooper and Crites, 1974, Proc. Helminthol. Soc. Wash. 41:233-237—Ohio). Greiner et al. (1975, Can. J. Zool. 53:1762-1768) report on the hematozoa of the grackle throughout its range. Only two endohelminths, *Conspicuum icteridorum* Denton and Byrd, 1951 (Denton and Byrd, 1951, Proc. U.S. Nat. Mus. 101(3274):157-202) and *Tanaisia bragai* dos Santos, 1934 (Byrd and Denton, 1950, Am. Midl. Nat. 43:32-57) have been reported from grackles in Texas.

Fifteen adult common grackles were live-trapped by Dr. K. A. Arnold, Department of Wildlife and Fisheries Sciences, Texas A&M University, between February 1 and April 19, 1977 in Brazos County, Texas. Six additional specimens

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