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### ECTOPARASITES FROM A SERIES OF TEXAS COYOTES

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A large number of coyotes recently trapped by personnel of the Division of Predator and Rodent Control of the United States Fish and Wildlife Service have been examined for ectoparasites. The coyotes, *Canis latrans*, and a few wolves, *Canis niger rufus*, were trapped alive from widely separated parts of the state. It is thought that the series of animals examined is of sufficient number to give some idea of the species of arthropods parasitizing coyotes in Texas.

Ectoparasites of coyotes are of public health significance due to the possible association of the animals with domestic dogs, and the consequent possibilities of human infestation. To illustrate the close relationship between dogs and coyotes, Dice (1942) described the controlled mating of two different male hounds with a female coyote which produced a litter of one male and two female hybrid pups.

The ectoparasites were removed immediately after the animals were killed, and mailed to the Laboratory of the Texas State Department of Health in Austin for identification.

This report is based on the ectoparasites taken from ninety young and adult coyotes. In all, 2280 specimens were obtained with a resultant average of 25.3 ectoparasites per coyote. Three species of fleas were taken: *Pulex irritans*; *Echidnophaga gallinacea*; and a single female specimen of *Orchopeas sexdentatus*. Six species of ticks were obtained: *Amblyomma americanum*, *Amblyomma inornatum*, *Amblyomma maculatum*, *Dermacentor variabilis*, *Ixodes cookei*, and *Octobius megnini*. Two species of Mallophaga or biting lice were also taken, *Heterodoxus spiniger* and *Trichodectes canis*.

Dr. J. Bequaert kindly identified the *Ixodes cookei* specimens. Dr. W. L. Jellison checked the single *Orchopeas* flea, and Dr. E. W. Stafford determined the biting lice.

TABLE 1.—Ectoparasites taken from Texas coyotes in 1946

DATE	NUMBER OF ANIMALS	LOCATION	ECTOPARASITES	
			Fleas	Ticks and Lice
April 29	1	Floydada	65 <i>Pulex irritans</i>	
April 18	3	Floydada	92 <i>Pulex irritans</i>	
May 7	9	Childress	79 <i>Pulex irritans</i> 2 <i>Echidnophaga gallinacea</i>	5 <i>Ixodes cookei</i>
May 22	3	Vernon	53 <i>Pulex irritans</i>	
May 12	10	Childress	292 <i>Pulex irritans</i>	
May 7	2	Floydada	89 <i>Pulex irritans</i>	
May 13	5	Dickens	119 <i>Pulex irritans</i> 4 <i>Echidnophaga gallinacea</i>	
May 15	1	San Antonio	10 <i>Pulex irritans</i>	2 <i>Dermacentor variabilis</i> 10 <i>Amblyomma americanum</i>
May 25	2	Jayton	8 <i>Pulex irritans</i> 4 <i>Echinophaga gallinacea</i>	
May 27	18	Childress	329 <i>Pulex irritans</i> 1 <i>Echidnophaga gallinacea</i>	
May 27	3	Lubbock	69 <i>Pulex irritans</i> 3 <i>Echidnophaga gallinacea</i>	
June 1	8	Floydada	478 <i>Pulex irritans</i> 5 <i>Echidnophaga gallinacea</i>	
June 10	5	Crowell	21 <i>Pulex irritans</i>	5 <i>Heterodoxus spiniger</i>
June 10	3	Floydada	193 <i>Pulex irritans</i>	
June 28	4	Vernon	33 <i>Pulex irritans</i>	11 <i>Dermacentor variabilis</i>
June 30	1	Sierra	11 <i>Pulex irritans</i>	
July 23	2	Floydada	35 <i>Pulex irritans</i> 1 <i>Orchopeas sexdentatus</i>	2 <i>Dermacentor variabilis</i>
August 8	3	Floydada	13 <i>Pulex irritans</i>	2 <i>Dermacentor variabilis</i> 2 <i>Ixodes cookei</i>
August 27	1	Austwell		1 <i>Amblyomma inornatum</i> 14 <i>Amblyomma americanum</i> 1 <i>Dermacentor variabilis</i>
October 4	4	Floydada	35 <i>Pulex irritans</i> 3 <i>Echidnophaga gallinacea</i>	
November 15	2	Victoria		16 <i>Amblyomma maculatum</i> 150 <i>Trichodectes canis</i>

Animals from Floydada were trapped and combed by T. J. Sparks; those from Childress by H. W. Fite; from Vernon, R. E. Morton; from Dickens, C. R. Sparks; from San Antonio, W. J. Hall; from Jayton, S. H. Paine; from Lubbock, E. S. Pope; from Crowell, J. R. Watson; from Sierra Blanca, J. H. Tate; from Austwell, P. O. Davenport; from Victoria, Tennessee Colony, and Marlin, A. J. McKinney; and from Woodsboro, R. O. Calhoun.

All but one of the coyotes examined (Table 1) were infected, some heavily, with *Pulex irritans*. An average of 22.5 *Pulex irritans* per animal was obtained. This flea readily attacks humans and has been experimentally proven capable of transmitting endemic typhus and sylvatic plague from animal to animal. Other Texas State Health Department host records for this flea are dog, man, raccoon, opossum, bobcat, gray fox, prairie dog, domestic rat, wolf, badger, and burrowing owl.

A less severe infestation of another flea, *Echidnophaga gallinacea*, was noted. Only twenty-two specimens were taken. This flea is commonly called the chicken flea because it builds up its largest numbers on gallinaceous hosts. *Echidnophaga gallinacea* have been found naturally infected with endemic typhus rickettsia and proven efficient vectors of the disease from rat to rat by personnel of this laboratory. Other Texas State Health Department host records are domestic rats and mice, man, wolf, dog, calf, owl, opossum, raccoon, fox, cat,

TABLE 2.—Ectoparasites taken from Texas wolves in 1946

DATE	NUMBER OF ANIMALS	LOCATION	ECTOPARASITES	
			Fleas	Ticks and Lice
May 22	1	Vernon		4 <i>Dermacentor variabilis</i>
May 29	2	Woodsboro	14 <i>Echidnophaga gallinacea</i>	3 <i>Dermacentor variabilis</i>
May 31	2	Tennessee Colony		64 <i>Amblyomma americanum</i>
June 10	2	Marlin	11 <i>Pulex irritans</i>	55 <i>Amblyomma americanum</i>
October 15	1	Victoria	5 <i>Ctenocephalides felis</i> 34 <i>Pulex irritans</i>	100 <i>Heterodoxus spiniger</i>

domestic and wild rabbit, ground squirrel, bobcat, badger, burrowing owl, rock squirrel, gopher, and prairie dog.

The tick infestation was light. The twenty-four *Amblyomma americanum* taken were all from South Texas. This tick is a proven vector of the rickettsia of spotted fever in this country. Anigstein and Bader (1943) have reported the recovery of a rickettsia-like organism from *Amblyomma americanum* collected at Camp Bullis, Texas, the site of several cases of an apparently new disease designated as Bullis fever.

The fact that Parker and Kohls (1943) have claimed recovery of the infectious agent of American Q fever, *Rickettsia diaporica*, from *Amblyomma americanum* collected in Liberty County, Texas (1935), has assumed additional importance with the recent outbreak of fifty-five human cases of the disease at Amarillo, Texas (Irons *et al.*, 1946).

Eighteen *Dermacentor variabilis* were taken. This tick is a natural vector of spotted fever and tularaemia and is suspected of transmitting bovine anaplasmosis. The sixteen *Amblyomma maculatum*, or cattle ear tick, were from two South Texas coyotes.

Twelve specimens of the spinose ear tick, *Octobius megnini*, one *Amblyomma*

*inornatum*, and seven *Ixodes cookei* made up the remainder of the collection of ticks. The spinose ear tick is an important economic pest of horses and cattle. In addition to the annoyance caused by its feeding, it makes wounds which become subject to screwworm infestations.

The small series of eight wolves examined showed a somewhat different ectoparasite picture (Table 2). Only two were infested with fleas and the tick population was high. The following ectoparasites were taken: forty-five *Pulex irritans*; fourteen *Echidnophaga gallinacea*; five *Ctenocephalides felis*; one hundred nineteen *Amblyomma americanum*; seven *Dermacentor variabilis*; and one hundred biting lice, *Heterodoxus spiniger*.

In an earlier study of ectoparasites of Lavaca County, Texas (Randolph and Eads, 1946), several wolves were examined. Two species, *Rhopalopsyllus coxi* and *Ixodes scapularis*, were taken in addition to the wolf ectoparasites mentioned above.

## LITERATURE CITED

- ANIGSTEIN, L., AND M. N. BADER. 1943. Investigations on rickettsial disease in Texas, preliminary report on investigations of Bullis fever. *Tex. Rept. on Biol. and Med.*: 298.
- DICE, LEE R. 1942. A family of dog-coyote hybrids. *Jour. Mamm.*, 23: 186-92.
- IRONS, J. V., N. H. TOPPING, AND C. C. SHEPARD. 1946. Outbreak of Q fever in the United States. *U. S. Pub. Health Repts.*, 58: 734-85.
- PARKER, R. R., AND G. N. KOHLS. 1943. American Q fever: the occurrence of *Rickettsia diaporica* in *Amblyomma americanum* in eastern Texas. *U. S. Pub. Health Repts.*, 58: 1510-11.
- RANDOLPH, N. M., AND R. B. EADS. 1946. An ectoparasite survey of mammals from Lavaca County, Texas. *Ann. Ento. Soc. Amer.*, 39: 597-601.

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