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Transmission of *Cytauxzoon felis* Kier, 1979 from Bobcats, *Felis rufus* (Schreber), to Domestic Cats by *Dermacentor variabilis* (Say)

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Cytauxzoon felis was reported first in the United States from domestic cats from Missouri (Wagner, 1975, J. Am. Vet. Med. Assoc. 167: 874; Wagner, 1976, J. Am. Vet. Med. Assoc. 168: 585–588). Since that time there have been reports of the parasite from Texas (Bendele et al., 1976, Southwest Vet. 29: 244–246), Louisiana (Hauck et al., 1982, J. Am. Vet. Med. Assoc. 180: 1472–1474) and many other locations in the U.S. (Kier et al., 1979, Mo. Vet. 29: 15–18). The sporadic occurrence of the parasite in domestic cats and the uniformly fatal syndrome it produces suggest that domestic cats are accidental hosts for this organism.

A recent study indicated that 60% of 20 free-ranging bobcats from Oklahoma harbored an intraerythrocytic piroplasm that was morphologically indistinguishable from *C. felis* (Glenn et al., 1982, J. Am. Vet. Med. Assoc. 181: 1251–1253). Blood from these naturally infected bobcats subinoculated intraperitoneally into domestic cats did not, however, cause fatal cytauxzoonosis. Instead a persistent erythroparasitemia developed, but the cats remained asymptomatic. Experimental infections of bobcats induced by inoculation of tissues and blood collected from domestic cats in the final stages of the fatal disease has, however, shown that bobcats are susceptible to both a fatal and nonfatal form of the disease (Kier et al., 1982, Am. J. Vet. Res. 43: 102–105; Glenn et al., 1983, J. Am. Vet. Med. Assoc. 183: 1155–1158). To date, the bobcat has not been proven to be the natural host for this parasite nor have vectors of the organism been determined. The present study was conducted to determine if the tick, *Dermacentor variabilis*, could transmit the erythrocytic piroplasm from bobcats to domestic cats and to examine further the relationship between the *Cytauxzoon*-like organism observed in erythrocytes of free-ranging bobcats and those demonstrated in domestic cats with fatal cytauxzoonosis.

Specimens of *Dermacentor variabilis* were reared and maintained at the Oklahoma State University Department of Entomology, Tick Laboratory (Patrick and Hair, 1975, J. Med. Entomol. 12: 389–390). Larvae were fed on rabbits and were allowed to develop to the nymphal stage. Nymphs were placed in a closed wooden box (0.6 m × 0.6 m × 0.6 m) with screen ventilation holes along with a splenectomized bobcat live-trapped in north-central Oklahoma that had a 40% parasitemia of *Cytauxzoon*. After 36 hr, the bobcat was moved to an elevated cage; the engorged nymphs were collected when replete and placed in a humidity chamber (90% to 98% relative humidity) at 25 C with a 14-hr photophase. Ticks were maintained under these conditions until they molted to the adult stage. At 3 and 8 wk post-molting, adult ticks were permitted to feed on laboratory-maintained splenectomized domestic cats using the procedure described for the bobcat. The domestic cats died of cytauxzoonosis at 13 and 17 days after tick engorgement. Stained impression smears (Diff-Quik Stain) of lymph nodes, lungs and bone

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marrow showed numerous large macrophages which contained multiple schizogenous stages of *C. felis*. Post-mortem findings were the same as those reported for both the naturally-occurring and experimentally-induced cytauxzoonosis in domestic cats (Wagner, 1976, op. cit.; Wagner et al., 1976, Mo. Vet. 26: 12–13; Kier et al., 1982, op. cit.; Glenn et al., 1983, op. cit.). Prior to the initial feeding of nymphs of *D. variabilis* on the donor bobcat, a 3 ml sample of whole blood from this bobcat was inoculated subcutaneously into a domestic cat and a persistent but non-fatal erythroparasitemia developed. The domestic cat was necropsied 6 mo after blood inoculation and no schizogenous stages were found on stained impression smears (Diff-Quik Stain) of lymph nodes, lungs or bone marrow.

The results of this study demonstrated that, at least experimentally, *D. variabilis* can serve as a transstadial vector of *C. felis*. It also appears that subinoculation of bood from the naturally-infected bobcats transmitted only the erythrocytic piroplasm stage; schizonts developing only after tick transmission of the organism. Transmission of this organism by ticks supports the hypothesis that the erythrocytic piroplasms observed in the bobcat are the erythrocytic stage of *C. felis*.

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Prevalence and Distribution of Larvae of *Trichinella* sp. in Cougars, *Felis concolor* L., and Grizzly Bears, *Ursus arctos* L., in Alberta

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Larvae of *Trichinella* sp. are prevalent in cougars and grizzly bears in the Rocky Mountain regions of British Columbia (Schmitt et al., 1976, Can. J. Public Health 67: 21–24; Schmitt et al., 1978, Public Health Rep. 190: 189–193), Montana, Idaho and Wyoming (Winters, 1969, Bull. Wildl. Dis. Assoc. 5: 400; Worley et al., 1974, *In* Proc. Third Int. Conf. on Trichinellosis, C. W. Kim (ed.), Intext Press, New York, pp. 597–602). A survey in Alberta (Gunson and Dies, 1980, J. Wildl. Dis. 16: 525–528) found larvae of *Trichinella* sp. in gray wolves (*Canis lupus* L.) and in one black bear (*Ursus americanus* Pallas). In 1979 a survey for *Trichinella* sp. infections in cougars and grizzly bears was initiated.

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Most of the 57 cougars were taken by hunters during January of the years 1979–1982; two were shot illegally and one was acquired from a zoo in Edmonton. Most of the grizzly bears were shot by hunters during the spring hunting seasons of April–June 1979–1982; eight were taken as the result of reported killings of livestock; three were road-kills and three were involved in human maulings. All cougars except one and most of the grizzly bears were collected from the Rocky Mountains or adjacent foothills; two grizzly bears were taken east of the Rockies and four were from northwestern Alberta (Figs. 1, 2). Hunters were required to bring the an-