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## Blood Parasites from Birds of the Lake Okoboji Region, Iowa

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## The Vertebrate Fauna of the Cayler Prairie Preserve, Dickinson County, Iowa

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The vertebrate fauna of the Cayler Prairie Preserve, Dickinson County, Iowa, has been compiled from field observations and study between 1971 and 1974. Seventy-two species, including four amphibians, seven reptiles, 35 birds, and 26 mammals, were recorded. The diverse fauna results from the variety of habitats

contained in the preserve, as well as the size of the preserve. One key member of the fauna is the badger (*Taxidea taxus*), which creates microhabitats favorable for small vertebrates while digging for ground squirrels. Few adventive vertebrates have successfully invaded the prairie, and the fauna represents a sizable fragment (larger vertebrates are absent) of the fauna typically associated with tall-grass prairies.

INDEX DESCRIPTORS: Cayler Prairie Preserve, Vertebrates, Badgers, Tall-Grass Prairie.

One of the larger remnants of tall-grass prairie in Iowa is the Cayler Prairie Preserve, located in the northwestern quarter of section 17 of the Lakeville Township, Dickinson County. This prairie, about 160 acres (65 ha) in size, is an esker complex belonging to the Altamont glacial moraine (Salisbury and Knox, 1969), and thus contains considerable topographic relief. Dry ridges are interspersed with potholes and sloughs that contain water during the spring, but frequently are dry during the summer. The flora is diverse, and many species of tall-grass prairie plants, as well as mixed prairie species on the dry ridge tops, are present (cf. Aikman and Thorne, 1956; Platt, 1975). The Cayler Prairie Preserve probably contains the most diverse flora and fauna of any of the larger prairie remnants in Iowa.

The purpose of this report is to provide a species list of vertebrates inhabiting the Cayler Prairie Preserve. Such information ultimately will be of value for scientists wishing to study animal ecology and distribution in tall-grass prairies.

## METHODS AND RESULTS

During the past four years I have been engaged in various research projects on the Cayler Prairie Preserve. I have kept notes on the species of vertebrates present on the area. Additional information has been obtained from Dr. Robert Cruden, Edwin L. Freese, and from field biology classes at the Iowa Lakeside Laboratory which utilize the prairie for classwork.

A total of 72 species of terrestrial vertebrates have been recorded from the Cayler Prairie Preserve during the past four years. These species do not include migratory birds that might be present briefly during the spring or fall and do not include transient species that cross or stray onto the prairie. Species breeding and/or foraging on the prairie are listed in Table 1, along with designations of relative abundance. Species were designated as rare if encountered less than five times in the past four years, uncommon if sighted less than twice a year, and common if they were encountered more frequently. Almost all species have been recorded previously from northwestern Iowa (cf. Blanchard, 1923; Tinker, 1914; King, 1946; Stephens, 1938; Scott, 1937; Polder, 1953).

## OBSERVATIONS AND DISCUSSION

The considerable topographic relief of the Cayler Prairie Preserve is in part responsible for the large number of species of vertebrates present. Some species tend to be associated with uplands, mesic slopes, or swales. Species typically associated with upland short-grass regions dominated by little blue stem (*Andropogon scoparius*) include *Eumeces septentrionalis*, *Thamnophis radix*, *Falco sparverius*, *Bartramia longicauda*, *Lanius ludovicianus*, *Spermophilus tridecemlineatus*, *Onychomys leucogaster*, *Zapus hudsonius*, and *Lepus townsendii*. Species typically found on the prairie mid-slopes dominated by big blue stem (*Andropogon gerardi*) include *Bufo americanus*, *Rana pipiens*, *Phasianus colchicus*, *Tyrannus tyrannus*, *Sturnella magna*, *S. neglecta*, *Dolichonyx oryzivorus*, *Spiza americana*, *Ammodramus saviannarum*, *Melospiza melodia*, *Sorex cinereus*, *Blarina brevicauda*, *Reithrodontomys megalotis*, and *Microtus pennsylvanicus*. Species found in the potholes and swales dominated by sloughgrass (*Spartina pectinata*) include *Ambystoma tigrinum*, *Pseudacris triseriata*, *Chelydra serpentina*, *Emydoidea blandingi*, *Chrysemys picta*, *Thamnophis sirtalis*, *Anas platyrhynchos*, *A. discors*, *A. crecca*, *Charadrius vociferus*, *Cistothorus platensis*, *Xanthocephalus xanthocephalus*, *Agelaius phoeniceus*, *Passerculus sandwichensis*, *Ondatra zibethicus*, *Sylvilagus floridanus*, and *Odocoileus virginianus*.

One important member of the vertebrate fauna is the badger (*Taxidea taxus*). Badgers dig holes in pursuit of ground squirrels (cf. Errington, 1937; Snead and Hendrickson, 1942) and in the process excavate mounds of dirt. This habitat modification not only results in distinct plant species associations (Platt, 1975), but also creates microhabitats favorable for small vertebrates. A number of amphibians and reptiles (i.e., *Ambystoma tigrinum*, *Bufo americanus*, *Rana pipiens*, *Eumeces septentrionalis*, *Thamnophis radix*) spend the winter inside the badger holes. These species may also survive dry spells during the summer inside badger holes. *Eumeces septentrionalis* lays eggs inside burrows dug in the mounds of dirt adjacent to the badger holes; I have observed at least 25 skinks with clutches of eggs in the early summer. Small rodents and insectivores also undoubtedly use badger holes. The large number of badger holes on the Cayler Prairie Preserve has favored large populations of some of these small vertebrates and perhaps is the reason species such as shrews are able to survive in xeric prairie habitats.

The vertebrate fauna of the Cayler Prairie Preserve repre-

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sents a fragment of that present prior to conversion of surrounding land to agricultural use (cf. Tinker, 1914; Stephens, 1938); larger birds and mammals were present at one time. However, invasions by other vertebrates are relatively few. Pheasants (*Phasianus colchicus*) and Hungarian partridge (*Perdix perdix*) presumably have replaced prairie chickens, *Tympanuchus cupido* (cf. Kendeigh, 1941). *Geomys bursarius*, the prairie pocket gopher, and *Scalopus aquaticus*, the eastern mole, are present only in disturbed areas along the periphery of the prairie and are not found in the relatively undisturbed central area of the preserve. Species commonly associated with man, such as the house sparrow (*Passer domesticus*), starling (*Sturnus vulgaris*), house mouse (*Mus musculus*), and Norway rat (*Rattus norvegicus*) are found on nearby farms, but not on the prairie. The existence of a vertebrate fauna fairly typical of that expected for a tall-grass prairie remnant suggests that the prairie is a relatively closed community not likely to be invaded by adventive species. Although larger vertebrates are not present, the community at present contains a relatively intact vertebrate fauna in which the terminal predators are raptors (especially the accipitrid hawks) and mustelids (weasels, badgers). It is worth noting that home ranges of badgers (270-580 ha; Lindzey, 1971) and the larger hawks (80-100 ha; Craighead and Craighead, 1956) are larger than the size of the existing preserve. Thus individuals of these species also forage in areas (now primarily pasture) adjacent to the prairie. I suggest that if this land were to be converted to crop use, an important faunal element of the Cayler Prairie Preserve would be eliminated, or at the least greatly reduced in numbers. Especially in the case of badgers, this would eliminate or greatly reduce rates of habitat modification. Small vertebrate and plant populations dependent upon these habitat alterations also might be eliminated or decrease in abundance.

TABLE I.

VERTEBRATE FAUNA OF THE CAYLER PRAIRIE PRESERVE  
Species classification was taken from Blair, *et al.* (1968) and Jones, *et al.* (1973). Species abundance designations are common (c), uncommon (u), or rare (r).

AMPHIBIA

- Urodela  
Ambystomatidae: *Ambystoma tigrinum* (tiger salamander-c)  
Anura  
Bufonidae: *Bufo americanus* (American toad-c)  
Hylidae: *Pseudacris triseriata* (northern chorus frog-c)  
Ranidae: *Rana pipiens* (leopard frog-c)

REPTILIA

- Chelonia  
Chelydridae: *Chelydra serpentina* (snapping turtle-u)  
Testudinidae: *Emydoidea blandingi* (Blanding's turtle-u);  
*Chrysemys picta* (painted turtle-u)  
Squamata  
Scincidae: *Eumeces septentrionalis* (prairie skink-c)  
Colubridae: *Thamnophis radix* (plains garter snake-c); *Thamnophis sirtalis* (common garter snake-c); *Elaphe vulpina* (fox snake-u)

AVES

- Anseriformes  
Anatidae: *Anas platyrhynchos* (mallard-c); *Anas discors* (blue-winged teal-c); *Anas crecca* (green-winged teal-c)  
Falconiformes  
Vulturidae: *Cathartes aura* (turkey vulture-u)  
Accipitridae: *Buteo jamaicensis* (red-tailed hawk-c); *Circus*

- cyaneus* (marsh hawk-u)  
Falconidae: *Falco sparverius* (American kestrel-c)  
Galliformes  
Phasianidae: *Phasianus colchicus* (ring-necked pheasant-c);  
*Perdix perdix* (Hungarian partridge-c)  
Charadriiformes  
Charadriidae: *Charadrius vociferus* (killdeer-c)  
Scolopacidae: *Bartramia longicauda* (upland plover-c)  
Columbiformes  
Columbidae: *Zenaida macroura* (mourning dove-c)  
Strigiformes  
Strigidae: *Bubo virginianus* (great-horned owl-u)  
Caprimulgiformes  
Caprimulgidae: *Chordeiles minor* (common nighthawk-u)  
Apodiformes  
Trochilidae: *Archilochus colubris* (ruby-throated hummingbird-u)  
Passeriformes  
Tyrannidae: *Tyrannus tyrannus* (eastern kingbird-c)  
Alaudidae: *Eremophila alpestris* (horned lark-u)  
Hirundinidae: *Riparia riparia* (bank swallow-c); *Hirundo rustica* (barn swallow-c)  
Corvidae: *Corvus brachyrhynchos* (common crow-c)  
Troglodytidae: *Cistothorus platensis* (short-billed marsh wren-c); *Cistothorus palustris* (long-billed marsh wren-u)  
Turdidae: *Turdus migratorius* (American robin-u)  
Laniidae: *Lanius ludovicianus* (loggerhead shrike-u)  
Icteridae: *Molothrus ater* (brown-headed cowbird-c); *Xanthocephalus xanthocephalus* (yellow-headed blackbird-u); *Agelaius phoeniceus* (red-winged blackbird-c); *Sturnella magna* (eastern meadowlark-c); *Sturnella neglecta* (western meadowlark-c); *Dolichonyx oryzivorus* (bobolink-c)  
Fringillidae: *Spiza americana* (dickcissel-c); *Carduelis tristis* (American goldfinch-c)  
Emberizidae: *Passerculus sandwichensis* (savannah sparrow-c); *Ammodramus savannarum* (grasshopper sparrow-c); *Melospiza melodia* (song sparrow-c)

MAMMALIA

- Insectivora  
Soricidae: *Sorex cinereus* (masked shrew-c); *Blarina brevicauda* (short-tailed shrew-c)  
Talpidae: *Scalopus aquaticus* (eastern mole-u)  
Chiroptera  
Vespertilionidae: *Myotis lucifugus* (little brown bat-u)  
Rodentia  
Sciuridae: *Spermophilus tridecemlineatus* (13-lined ground squirrel-c); *Spermophilus franklini* (Franklin's ground squirrel-r)  
Geomysidae: *Geomys bursarius* (plains pocket gopher-c)  
Castoridae: *Castor canadensis* (beaver-r)  
Cricetidae: *Reithrodontomys megalotis* (western harvest mouse-c); *Peromyscus maniculatus* (deer mouse-c); *Onychomys leucogaster* (northern grasshopper mouse-u); *Microtus pennsylvanicus* (meadow vole-c); *Ondatra zibethicus* (muskrat-u)  
Zapodidae: *Zapus hudsonius* (meadow jumping mouse-c)  
Lagomorpha  
Leporidae: *Lepus townsendii* (white-tailed jackrabbit-c); *Sylvilagus floridanus* (eastern cottontail-u)  
Carnivora  
Canidae: *Vulpes fulva* (red fox-u)  
Procyonidae: *Procyon lotor* (raccoon-c)  
Mustelidae: *Mustela nivalis* (least weasel-c); *Mustela erminea* (short-tailed weasel-c); *Mustela frenata* (long-tailed weasel-u); *Mustela vison* (mink-r); *Mephitis mephitis* (striped skunk-u); *Spilogale putorius* (eastern spotted skunk-u); *Taxidea taxus* (badger-c)  
Artiodactyla  
Cervidae: *Odocoileus virginianus* (white-tailed deer-c)

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