

**Report to
Kansas Department of Wildlife & Parks**

**ESTIMATES OF AMPHIBIAN, REPTILE, AND TURTLE MORTALITY
IF PHOSTOXIN® IS APPLIED TO 10,000 ACRES
OF PRAIRIE DOG BURROWS IN LOGAN COUNTY, KANSAS**

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The herpetofauna of Logan County consists of nine amphibians, 18 reptiles, and five turtles. Two species (Green Toad and Longnose Snake) are state listed Threatened Species. As defined by Wasson et al. (2005), there is one Tier I species (Lesser Earless Lizard), four Tier II species (Green Toad, Northern Cricket Frog, Western Hognose Snake, and Eastern Hognose Snake), and four Tier III species (Eastern Glossy Snake, Milk Snake, Longnose Snake, and Prairie Rattlesnake) on site.

Prairie dog burrows are used by amphibians, reptiles, and turtles in Logan County. The use of aluminum phosphide (Phostoxin®) will have a negative effect on the populations of most of these species where it is applied. The application of Phostoxin® during the period of late September through early April will have greatest impact on amphibian, reptile, and turtle populations as they will be aggregated and inactive while overwintering in the burrows.

The following species accounts detail those anticipated effects on each respective taxon. Estimates of population density are sorely lacking for all of these taxa, and the application of those density measures that do exist are certainly problematic. However, an estimate has been determined based on our 80+ years of observations of these species in western Kansas. This population value is purposefully conservative, and biased to underestimate the actual population size. The estimated number killed is based on the lowest value determined individually by the three authors of this report.

Great Plains Toad (*Anaxyrus cognatus*). This species is a known inhabitant of Prairie Dog burrows, and utilizes these burrows during the period of winter inactivity. The impact Phostoxin® application of on this species would be detrimental to all age classes. Estimated number killed: 50,000.

Green Toad (*Anaxyrus debilis*) - State Threatened. Green Toads are known from sites directly adjacent to the Prairie Dog colonies at issue. They certainly utilize these burrows as refugia when not foraging or breeding, and many undoubtedly overwinter in the burrows as well. Estimated number killed: 15,000.

Woodhouse's Toad (*Anaxyrus woodhousii*). This species is the largest and most abundant toad on in Logan County. They are known to be year-round inhabitants of Black-tailed Prairie Dog burrows, and would be heavily affected by the application of Phostoxin®. Estimated number killed: 100,000.

Northern Cricket Frog (*Acris crepitans*). The Northern Cricket Frog is primarily confined to riparian areas and makes use of Black-tailed Prairie Dog burrows as they encroach these areas. The impact of the application of Phostoxin® would be relatively minor on this species. Estimated number killed: 100.

Boreal Chorus Frog (*Pseudacris maculata*). This amphibian utilizes upland pools and ditches to breed early in the spring, and during rainy periods in early summer begins to metamorphose and disperse in search of suitable refugia. Many undoubtedly use Black-tailed Prairie Dog burrows at this time and a similar number also overwinter in these burrows. Estimated number killed: 40,000.

Plains Leopard Frog (*Lithobates blairi*). Through much of the year, this species leads a surprisingly terrestrial existence and can often be encountered well away from identifiable sources of surface water. During these dispersions, burrows (especially those of the Black-tailed Prairie Dog) offer a respite from the external environment and are used extensively. Most individuals return to water to overwinter; however some hold over in burrows. Estimated number killed: 50,000.

Bullfrog (*Lithobates catesbeianus*). The Bullfrog is much less likely than the congeneric Plains Leopard Frog to leave the confines of open water to travel overland. However, individuals (particularly males and juveniles) will disperse during late spring and also on rainy nights. Many of them temporarily make use of Black-tailed Prairie Dog burrows; however few probably attempt to overwinter in the burrows. Additionally, the Bullfrog is not a relatively common amphibian in Logan County. Estimated number killed: 50.

Plains Spadefoot (*Spea bombifrons*). A common inhabitant of Black-tailed Prairie Dog colonies, this amphibian probably is second in abundance only to the Barred Tiger Salamander in number of individuals to be expected. All terrestrial age classes may be found in and around the burrows year-round. Estimated number killed: 160,000.

Barred Tiger Salamander (*Ambystoma mavortium*). The most common herpetofaunal element of Black-tailed Prairie Dog colonies is the Barred Tiger Salamander. The burrows are utilized year-round and especially during winter. Estimated number killed: 200,000.

Common Snapping Turtle (*Chelydra serpentina*). The Common Snapping Turtle will suffer minimal mortality as a consequence of the application of Phostoxin® to Black-tailed Prairie Dog colonies. Estimated number killed: 1.

Northern Painted Turtle (*Chrysemys picta*). The application of Phostoxin® to Black-tailed Prairie Dog burrows will result in minimal mortality of Northern Painted Turtles. Estimated number killed: 0.

Ornate Box Turtle (*Terrapene ornata*). Ornate Box Turtles are common inhabitants of Black-tailed Prairie Dog burrows year-round and will suffer significant mortality if Phostoxin® is applied to the burrows. Estimated number killed: 30,000.

Yellow Mud Turtle (*Kinosternon flavescens*). The Yellow Mud Turtle populations will suffer low mortality as a consequence of the application of Phostoxin® to Black-tailed Prairie Dog colonies. Estimated number killed: 10.

Spiny Softshell *Apalone spinifera*. The application of Phostoxin® to Black-tailed Prairie Dog burrows will result in minimal mortality of Spiny Softshell populations. Estimated number killed: 0.

Lesser Earless Lizard *Holbrookia maculata*. This species is still relatively common in Logan County, despite suspected declines over much of its former range in Kansas. It reaches its peak abundance in sandy areas, but it benefits from the openness of Black-tailed Prairie Dog colonies and uses the burrows as refuge. Estimated number killed: 60,000.

Prairie Lizard (*Sceloporus consobrinus*). The Prairie Lizard is a relatively uncommon inhabitant of Black-tailed Prairie Dog colonies, preferring areas with significant vertical structure. They reach their greatest concentration around the periphery of the Black-tailed Prairie Dog colonies. Estimated number killed: 20,000.

Six-lined Racerunner (*Aspidoscelis sexlineata*). This is a very abundant lizard that makes extensive use of both active and inactive Black-tailed Prairie Dog burrows. Estimated number killed: 100,000.

Eastern Glossy Snake (*Arizona elegans*). The population in Gove and Logan counties is relictual and the species persists in relatively low densities. Estimated number killed: 1,000.

Eastern Racer (*Coluber constrictor*). The Eastern Racer is a widespread and abundant snake in Logan and Wallace counties. This diurnal snake makes use of Black-tailed Prairie Dog burrows year-round. Estimated number killed: 50,000

Common Kingsnake (*Lampropeltis getula*). Common Kingsnakes persist in Logan County in relatively low densities compared to more eastern localities in Kansas. They occupy Black-tailed Prairie Dog colonies where they prey on the abundance of lizards, other snakes, and small mice within the burrow systems; some newborn Prairie Dogs may also be eaten. Estimated number killed: 20,000.

Milk Snake (*Lampropeltis triangulum*). This species is moderately abundant throughout Logan County. Estimated number killed: 30,000.

Coachwhip (*Masticophis flagellum*). This large quick snake is abundant in rangeland areas of Logan County, and is regular inhabitant of Black-tailed Prairie Dog colonies. Estimated number killed: 30,000.

Great Plains Rat Snake (*Pantherophis emoryi*). The Great Plains Rat Snake is a relatively scarce member of the Logan County herpetofauna. The impacts of Black-tailed Prairie Dog Phostoxin® fumigation to this reptile will be relatively small. Estimated number killed: 500.

Gopher Snake (aka Bullsake) (*Pituophis catenifer*). This large-bodied constrictor is one of the most observably abundant big reptiles associated with Black-tailed Prairie Dog colonies, and probably is a significant predator of them. Estimated number killed: 30,000.

Longnose Snake *Rhinocheilus lecontei*) – Threatened. The population in Logan and possibly Wallace counties is relictual and thus more susceptible to fluctuations in population size and extinction. Estimated number killed: 10,000.

Plains Blackhead Snake *Tantilla nigriceps*). This species is small, fossorial, and wide-spread. They are an especially abundant in Logan County and known inhabitants of Black-tailed Prairie Dog colonies. Estimated number killed: 150,000.

Prairie Rattlesnake *Crotalus viridis*. This medium-sized snake is a common feature in western Kansas and is especially numerous in association of Black-tailed Prairie Dog colonies, where the burrows are utilized year-round. Estimated number killed: 40,000.

Ringneck Snake *Diadophis punctatus*. This species is another small, semi-fossorial species of snake. Ringneck Snakes are widespread and opportunistic in their habitat preferences. Estimated number killed: 20,000.

Plains Garter Snake *Thamnophis radix*. This species is widespread, feeds on a wide variety of prey items, and produces large litters annually, allowing it to reach relatively large densities where ideal conditions exist. It is commonly encountered in Black-tailed Prairie Dog colonies and makes use of the burrows year-round. Estimated number killed; 100,000.

Lined Snake *Tropidoclonion lineatum*. The Lined Snake approaches the western limit of its range in Logan County. It is a small semi-fossorial snake that reaches relatively large densities. Estimated number killed: 20,000.

Western Hognose Snake *Heterodon nasicus* – SINC. The Western Hognose Snake is a relatively abundant member of the Logan County herpetofauna. It uses Black-tailed Prairie Dog colonies year-round and, like many other species, is most vulnerable to the effects of fumigation during the winter when aggregated in burrows to overwinter. Estimated number killed: 50,000.

Eastern Hognose Snake *Heterodon platirhinos* – SINC. This species follows riparian corridors west onto the High Plains, where it reaches its peak abundance in Kansas. This reptile has been observed immediately adjacent to Black-tailed Prairie Dog colonies in Logan County and probably makes use of the burrows year-round. Estimated number killed: 20,000.

Estimated total number of individuals killed: 1,446,651

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