

## Coyote, *Canis latrans* – Rio Grande Turkey, *Meleagris gallopavo intermedia*, Interactions

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Coyotes (*Canis latrans*) are widely known to be predators of Wild Turkeys (*Meleagris gallopavo* spp.). We describe two observations of single Coyotes coming within 10 m of feeding Wild Turkey flocks without attempting to predate them in Stevens County, Kansas. We relate these observations to Coyote predation on turkeys and mobbing behavior.

**Key Words:** Coyotes, *Canis latrans*, Kansas, Rio Grande Turkeys, *Meleagris gallopavo intermedia*, mobbing behavior.

Coyotes (*Canis latrans*) are widely known to be predators of Wild Turkeys (*Meleagris gallopavo* spp.) (Ransom et al. 1987; Miller et al. 1992; Chamberlain et al. 1996; Hubbard et al. 1998; Miller et al. 1998). Coyotes also appear to be significant predators of Wild Turkeys in the rolling plains of Texas and Kansas (Figure 1). However, conditions under which Coyotes prey upon turkeys are poorly understood. We describe two observations of single Coyotes coming within 10 m of feeding Wild Turkey flocks without attempting to attack, in Stevens County, Kansas, and discuss the relevance of these observations in relation to avian mobbing behavior. We also describe a direct observation of Wild Turkey mobbing behavior, and present data demonstrating increased Coyote predation on Wild Turkeys as the latter become independent from intraspecific flocks during the breeding season.

### Methods and Study Area

In January to early February 2000 and 2001 Wild Turkeys were baited with whole-kernel corn in an area in western Stevens County, Kansas, to facilitate drop-net trapping (Baldwin 1947). The area was contained by and within 50 m of the west (north) bank of the Cimarron River. Immediate habitat consisted of understory vegetation including Sand Bluestem (*Andropogon hallii*), Blue Grama (*Bouteloua gracilis*), Dropseed (*Sporobolus cryptandrus*), Sand Lovegrass (*Eragrostis trichodes*), Prairie Sandreed (*Calamovilfa longifolia*), Western Ragweed (*Ambrosia psilostachya*) and Buffalo Grass (*Buchloe dactyloides*). Eastern Cottonwood (*Populus deltoides*) and Tamarisk (*Tamarix chinensis*) groves were found in the river basin. Most of the aforementioned grasses, as well as Sagebrush (*Artemisia filifolia*), rabbitbrush (*Chrysothamnus* sp.), Snakeweed (*Gutierrezia sarothrae*) and Plains Yucca (*Yucca glauca*) covered the fields and hills surrounding the Cimarron River corridor. Precipitation averaged approximately 42.16 cm/year and was concentrated from April to

September (Cable et al. 1996). Crop fields occurred within 100 m west of the riverbank, and are rotationally planted with corn and winter wheat. A major part of the Cimarron River in this area was dry at the surface, except for occasional flooding.

Both observations took place from a blind at the same bait site. The site was within the daily home range of a wintering turkey flock (B. Spears, unpublished data). Lone Coyotes were observed and Coyote groups were heard on a regular basis in and around the area.

### Results

On 4 February 2000 at 07:33 a flock of >40 turkeys arrived at bait underneath a drop net. At 07:37 a lone Coyote arrived, seemingly headed to another area. Several of the turkeys were alerted and watched the Coyote as the others continued to investigate the bait. After a several-second pause, the Coyote made a short run (<5 m) at the flock. The closest turkeys moved not more than 10 m further into the flock, which alerted the rest of the individuals. After the short charge, the Coyote stopped, turned around, and continued on its previous heading. Within 1 min the turkey flock moved under the net and most began to feed heavily.

At 07:55 on 11 January 2001, a flock of 63 individuals arrived on bait, coming directly from roost. Fourteen of the birds had been transmitter-equipped at the same trap site on 10 February 2000. At 08:35 the last individual ceased feeding, and the majority of the birds loafed in a large group among cottonwoods adjacent to the bait. Several individuals began moving up the west bank, and were startled and ran a short distance back toward the others and stopped. A lone Coyote was then observed moving east toward the flock. The Coyote continued to move east down the bank along a game trail, in between several turkeys and past the bait. Alerted turkeys stood watching as the Coyote moved between them, at points within 5 m. At no time did any of the turkeys disperse nor did the Coyote

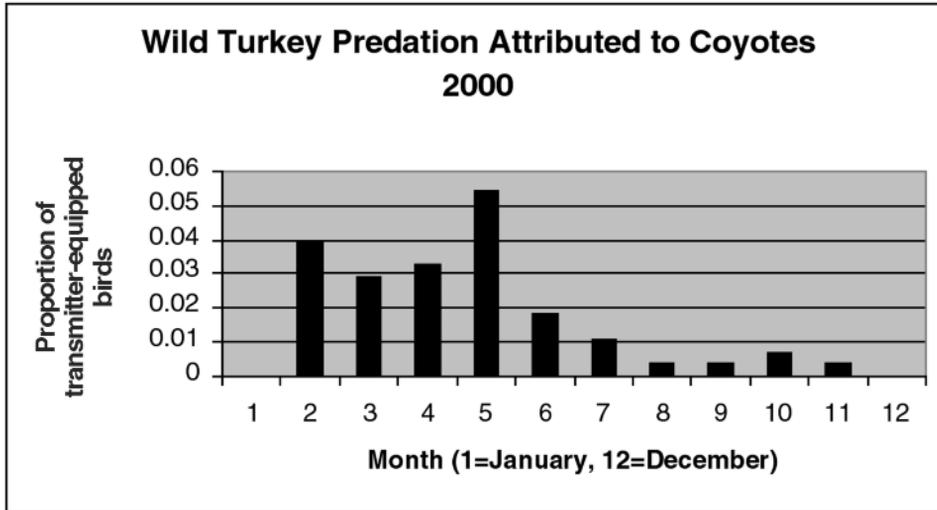


FIGURE 1. Proportions of transmitter-equipped Wild Turkey mortalities attributed to Coyotes in 2000 (n=56).

turn its head toward or make any sort of aggressive advance toward an alerted individual. The Coyote then continued at a walking pace into the river corridor. Many of the turkeys returned to feeding shortly thereafter, and then followed as the flock slowly wandered off the bait area into the river corridor. Lone Coyotes have subsequently been observed using the same or adjacent parallel game trails through the bait area.

### Discussion

As evidenced by these observations, we hypothesize that Coyotes are deterred from attacking Wild Turkey flocks. A major deterrent presumably is the ability of a turkey flock to mob Coyotes. Wild Turkey mobbing behavior was witnessed by Roilond and Brent McDonald, two residents of Morton County, Kansas (personal communication). They witnessed a turkey flock mob a lone Coyote that attempted to attack an individual within the flock. The occurrence took place on the north edge of the riparian corridor of the Cimarron River, several years prior to, and approximately 10 km southwest of, the above observations. Several turkeys joined in the behavior, and they concluded that the Coyote had been physically injured in some manner before it retreated.

Our observations of Coyote behavior near flocks of turkeys differ markedly from an observation of a lone Coyote that approached a single turkey at Fort Riley Military Base, Kansas. On 9 May 1998, Irwin Hoogheem (personal communication) stopped his automobile at 11:00 to watch a lone Coyote crossing a soybean field along the eastern boundary of Fort Riley Military Base. The Coyote, wearing a radio-collar, was part of a family group that commonly hunted around the field; it was trotting toward a lone turkey feeding among

young soybeans that were 10-12 cm high. The Coyote suddenly ran directly at the turkey when it was about 20 m away. The turkey fled and started to fly when the Coyote was within 5-10 m; it flew approximately 250 m across the field to a large Sycamore (*Platanus occidentalis*) tree and perched 25-30 m above the ground. The Coyote slowed to a trot and followed the flight path of the turkey to the tree. The Coyote lay down near the base of the tree and watched the turkey. Hoogheem observed the animals for 30 minutes; the turkey remained perched in the tree and the Coyote was vigilant on the ground.

Mobbing behavior has been widely observed throughout the avian class, as well as in mammals and fish (Shed 1978; Earnhardt 1989; Ridall 1998), with larger groups of individuals appearing to produce more successful mobbings (Earnhardt 1989). Several reasons for mobbing have been proposed. First, mobbing may be a direct attempt to reduce individual risk of predation by causing a predator to move out of the area through intimidation and harassment (Shed 1978; Wahl 1979; Earnhardt 1989; Ridall 1998). Second, mobbing may be a form of "perception advertisement", that is, the predator is deterred from predation attempts where its prey has discovered its presence (Earnhardt 1989; Ridall 1998). Third, passive mobbing, or indirect mobbing, may be an evolutionary technique to locate and track a predator. Birds apparently remember previous locations of a predator, and even continue to mob the location in the absence of the predator (Altmann 1954; Ridall 1998). Individuals also may use mobbing to alert and recruit other mobbers, or to aid distressed victims (Earnhardt 1989; Ridall 1998) or protect young through predator distraction (Wahl 1979). Finally, mobbing may be a cultural transmission device in which

parents teach their young about a specific predator (Earnhardt 1989; Ridall 1998). Birds appear to have the ability to differentiate among predators (Altmann 1954; Shed 1978; Wahl 1979; Ridall 1998), and may communicate the type of predator vocally. They also may have the ability to differentiate between predator behaviors (i.e., hunting vs. loafing) and mob accordingly (Ridall 1998). It has also been proposed that avian mobbing behavior evolved through a combination of several separate behaviors including attack, investigation, and flight behaviors (Shed 1978).

Although many avian species have been classified as "winter mobbers", "summer mobbers", or "year-round mobbers" (see Shed 1978 and Earnhardt 1989 for extensive reviews), avian mobbing seems to increase as breeding seasons progress, and to peak at peak breeding times (Shed 1978; Wahl 1979; Earnhardt 1989; but see Ridall 1998). However, Shed (1978) also found a high incidence of mobbing during winter in resident flocking species that maintained winter territories. Wild Turkey mobbing would appear to increase and be more efficient during winter months when turkeys are in larger flocks and maintain a mutual home range.

Wild Turkeys may become more vulnerable to predation during spring and summer months. Individuals break from their flocks in late winter and early spring and develop separate or small-group summer home ranges. Nesting hens actively avoid other individuals while searching for nest sites and during egg laying (Healy 1992). Factors increasing mortalities due to predation may include dispersal and migration movement through unfamiliar habitats and increased visibility due to displaying and breeding behaviors. However, we hypothesize that a major factor is the decreased protection occasioned by reduced vigilance without a surrounding flock.

Wild Turkey predation attributed to Coyotes in the high/rolling plains of Kansas and Texas in 2000 increased during the breeding season, with a peak during peak breeding and nesting months (Figure 1). In other areas proportions of kills attributed to Coyotes subsequently decrease as brooding hens began to reflock with other hens and males (Moody and Woodcock 1995).

Trends in turkey mortalities attributed to Coyote predation seem to follow those of a decrease and subsequent increase in flock numbers. Therefore, we speculate that flocking behavior provides turkeys with a detection and deterrent system to facilitate escape from predation when confronted by Coyotes.

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