

Note

Coyote (*Canis latrans*) predation of colonial rodents facilitated by Golden Eagles (*Aquila chrysaetos*)

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Abstract

Interactions between Coyote (*Canis latrans*) and Golden Eagle (*Aquila chrysaetos*) are complex and likely not yet fully documented or understood. I observed a Coyote prey on a Black-tailed Prairie Dog (*Cynomys ludovicianus*) at the edge of a large colony in Grasslands National Park, Saskatchewan. The prairie dogs were vigilant toward three Golden Eagles circling above, and the Coyote apparently used this to its advantage. As such, the eagles appeared to facilitate the ability of the Coyote to rush in virtually undetected and prey on a prairie dog that was distracted by the avian predators. This observation is of scientific interest because it is another example of the varied interactions between Coyotes and Golden Eagles, which is competitive and includes kleptoparasitism.

Key words: Golden Eagle; *Aquila chrysaetos*; Coyote; *Canis latrans*; Black-tailed Prairie Dog; *Cynomys ludovicianus*; Grasslands National Park; interspecific competition; predation

Behavioural interactions among carnivorous vertebrates occupying similar trophic levels are not well known and have been highlighted as an area requiring further investigation (e.g., Linnell and Strand 2000; Saggiomo *et al.* 2017). On the Great Plains, Coyote (*Canis latrans*) and American Badger (*Taxidea taxus*) share similar prey and sometimes form hunting associations that appear mutualistic (Kiliaan *et al.* 1991; Minta *et al.* 1992). Several observations describe a Coyote waiting beside a badger that is excavating rodent burrows, presumably for a chance to capture animals as they rush out of their burrows, past the badger (reviewed in Kiliaan *et al.* 1991). As such, Coyotes may parasitize badgers, with the association benefiting Coyotes but not badgers (Minta *et al.* 1992). Moreover, occasionally these associations are competitive, rather than mutualistic, with both species reported to kill one another (Rathbun *et al.* 1980). However, badgers may benefit from Coyotes that locate and chase burrowing rodents underground, trapping them for the badger. Although Coyote–badger hunting associations appear mainly mutualistic, with both species reducing energetic costs of hunting when together (Minta *et al.* 1992), interactions between them are rich and complex.

Coyotes and Golden Eagle (*Aquila chrysaetos*) also share similar food items, including ungulates (Flook and Thomas 1962; Bruns 1970; Bowen 1980), lagomorphs (Ford and Alcorn 1964; Engel and Vaughan 1966; Jung *et al.* 2009), and colonial rodents such as ground squirrels (Bekoff 1977; Elliot and Flinders 1991; Best 1995; Hoogland 1996). Interactions between Coyotes and Golden Eagles, however, appear to be competitive rather than mutualistic. For instance, Coyotes may follow Golden Eagles to steal prey they find, flush, or kill (Engel and Vaughan 1966). Yet, it is difficult to discern from available field observations which species is dominant. Although Golden Eagles have kleptoparasitized (i.e., stolen food that was caught, collected, or stored by another) food from Coyotes (Jung *et al.* 2009), Coyotes have similarly stolen prey from Bald Eagle (*Haliaeetus leucocephalus*; Parris *et al.* 1980). In one observation, Coyotes drove Golden Eagles off an ungulate carcass so they could feed on it (Bowen 1980). Conversely, Coyotes have been driven from carcasses by both Golden Eagles (Flook and Thomas 1962) and Bald Eagles (Wells and Bekoff 1978). In several extreme instances, Golden Eagles have been

reported attacking or killing Coyotes (Miner 1954; Ford and Alcorn 1964; Woelfl and Woelfl 1995; Mason 2000), although I could find no reports of Coyotes killing Golden Eagles. Clearly, the extent of competitive interactions between Coyotes and Golden Eagles is complex and likely not yet fully documented or understood. Here, I add to the limited literature on competitive interactions between these species by reporting an observation of Coyote predation of a Black-tailed Prairie Dog (*Cynomys ludovicianus*) that appeared to be facilitated by Golden Eagles.

On 9 September 2018, from atop a knoll along a ridge, I used binoculars to observe the Monument Colony of Black-tailed Prairie Dogs and Richardson Ground Squirrels (*Urocitellus richardsonii*) in the Frenchman River Valley of Grasslands National Park, Saskatchewan. At about 0920 local time, I observed three Golden Eagles (one mature, two immature) soar together above the prairie dog colony about 400 m west of my location. The prairie dogs became quite vocal and vigilant as the eagles circled ~250 m above ground level. About 60–90 s after the Golden Eagles began circling above the colony, I heard a particularly loud, sharp “yip” from immediately north of my hill-top position, and I turned to see a Coyote shaking a prairie dog on the slope of the adjacent knoll. After shaking it for a few seconds, the Coyote bounded over the hill with the prairie dog and was out of view. I did not see the eagles attempt to prey on a prairie dog, but they continued to fly above the colony for another few minutes before they flew out of sight.

I did not see the Coyote before it grabbed the prairie dog, but presume it came over the knoll and down the slope to the area where burrows were located, as I had an unobstructed view of much of the area and did not see it coming. There are three hypotheses regarding how the Coyote came to attack the prairie dog so quickly after the Golden Eagles started circling the colony. First, similar to the observation by Engel and Vaughan (1966), the Coyote may have been following the eagles, seeking a chance to prey on an individual flushed or otherwise startled by them. Ravens (*Corvus corax*) similarly follow Gray Wolves (*Canis lupus*) to find food (Stahler *et al.* 2002; Kaczensky *et al.* 2005). However, I reject this hypothesis because the Coyote undoubtedly came from the north and the eagles were flying from the south, suggesting that the Coyote was not following the eagles. Second, the Coyote was coincidentally in the vicinity of the colony and was cued to the sudden, loud alarm calling by prairie dogs and ground squirrels and rushed to the site to try to capture one. Third, the Coyote may have been resting below a shrub on the other side of the hill, near the colony, waiting for prairie dogs and ground squirrels to be startled by another predator so that it could

opportunistically try to capture one. Both the second and third hypotheses seem plausible, but it is not possible to discern which was the case. Regardless, both hypotheses point to the Coyote opportunistically preying on a prairie dog when the eagles had distracted it, thus, profiting from their apparent hunting efforts.

The third hypothesis is particularly intriguing because it implies that the Coyote may have been waiting for an opportunity to ambush a prairie dog or ground squirrel. Ambushing prey is not a well-observed tactic of Coyotes, which normally kill their prey by flushing and chasing them (i.e., “couraging”) or using a “stalk-and-pounce” approach (Bekoff 1977). Black-tailed Prairie Dog colonies are predictable on the landscape and attract potential predators (Lomolino and Smith 2004). A Coyote resting out of sight near a colony may use a “sit-and-wait” strategy to opportunistically prey on prairie dogs when their attention is focussed on another predator.

It is also interesting that the prairie dog was captured adjacent to a burrow that was at the extreme edge of the colony and mid-slope on a knoll (Figure 1). Black-tailed Prairie Dogs are likely a keystone species on the North American Great Plains, chiefly because they are ecosystem engineers that modify local site conditions to benefit other species, while also being important in the food webs of grassland biomes (Ceballos *et al.* 1999; Kotliar *et al.* 1999). They represent predictable patches of potential prey on the landscape, and predators are attracted to their colonies (Hoogland 1996; Lomolino and Smith 2004). Indeed, a colonial lifestyle by fossorial rodents living in open habitats is likely an adaptation that allows for heightened vigilance by colony members and a concomitant reduction in individual predation risk (Hoogland 1981). However, this observation provides an example of the risk that some colonial rodents take by locating their burrow in apparently sub-optimal habitat at the edge of a colony.

In conclusion, I describe an incident of a Coyote taking advantage of Golden Eagles distracting prairie dogs, so that it could capture prey that the eagles were apparently hunting. This interaction between these predators likely occurs more frequently than indicated in the literature, given that they often hunt the same prey species. The success of the Coyote’s hunting efforts was apparently facilitated by the eagles. As such, my observation provides another aspect to the rich, complex, and largely unknown interactions between Coyotes and Golden Eagles.

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FIGURE 1. Mid-slope burrow, where a Black-tailed Prairie Dog (*Cynomys ludovicianus*) was preyed by a Coyote (*Canis latrans*) in Grasslands National Park, Saskatchewan. Photo: T.S. Jung.

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