

Swift Fox, *Vulpes velox*, Den Located Next to a Railroad Track in Northwestern Texas

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Swift Fox (*Vulpes velox*) dens are typically found in areas where the vegetation is sparse, in loam soils, and with unobstructed views of the surrounding area. In 2002 a Swift Fox in northwest Texas was found in a unique den situated at the base of a hill with the entrance within 1 m of an active railroad track. Use of a den in such proximity to railroad tracks has never been previously reported.

Key Words: Swift Fox, *Vulpes velox*, den, Texas.

The Swift Fox (*Vulpes velox*) is one of the most burrow dependent canids in North America (Kilgore 1969; Hines and Case 1991; Jackson and Choate 2000; Harrison 2003; Uresk et al. 2003). The objective of this paper is to describe an unusual den site used by a Swift Fox in northwest Texas.

On 28 September 2002, we captured, radiocollared, and ear-tagged a juvenile female Swift Fox as part of a larger study on Swift Fox ecology (Nicholson 2004; McGee 2005). We monitored this fox until her death 16 April 2003. This fox was occasionally located in dens with another resident adult male on our study site. She was killed by an automobile while moving between her den and our study site to the south.

The female fox maintained five different den locations including an unusual den located next to railroad tracks. We tracked this female to the den on three separate occasions between 25 March and 16 April 2003. No other fox used this den. The railroad tracks cut through a hill with a den at the bottom of a 1-meter bank (Figure 1). The den was underneath a limestone rock shelf 23 meters from Highway 54, and 1 meter from the railroad. Approximately 0.4 km west of the den was an active granary and train stop; to the east were rangeland and crop fields. The embankments on either side of the railroad tracks were covered in yucca (*Yucca* sp.). There were 20–25 trains per day that traveled along the tracks between Stratford and Dalhart, Texas (D. Richard, Union Pacific Railroad, personal communication).

Visibility appears to be an important factor in den site and habitat selection for Swift Fox (Zoellick et al. 1989; Uresk et al. 2003). Unlike most Swift Fox dens, which allow for a clear view of the surrounding area, this den had limited (i.e., 1 m) visibility. The other four dens this female used were typical of Swift Fox dens in short vegetation, loam and clay-loam soils, and were surrounded by heavily grazed rangeland. Vegetation

surrounding the railroad den (yucca taller than a fox), poor visibility (due to steep embankments), proximity to the railroad, and placement in a limestone rock shelf (dry, rocky soil) was uncharacteristic of previously described Swift Fox den sites.

We were not sure why this den site was selected but several explanations seem plausible. First, a lack of normal den sites or an over-saturation of foxes within the surrounding area may have limited this female's choices. We documented 35 different den sites used by 20 monitored foxes on our adjacent study site. Also, this unusual den could have been refuge from predation. In our study site, Coyotes (*Canis latrans*) were heavily exploited by landowners and recreational hunters, yet Coyotes were responsible for 80% of Swift Fox deaths (Kamler et al. 2003). If there was risk from Coyotes, having a den site next to the train tracks may have deterred pursuit by Coyotes. This particular den was located outside previously documented Coyote home ranges (Kamler et al. 2003). For a Swift Fox, danger from Coyotes may outweigh the danger from trains. The use of this den could have been at first opportunistic shelter between divided range lands. It is probable that this den was constructed by some other animal like a Badger (*Taxidea taxus*) or Striped Skunk (*Mephitis mephitis*) and the fox came upon it while searching for other resources. This den was located slightly north of her natal home range and could have been a refuge den used in pre-dispersal exploration.

Previous research suggested that Swift Fox dens tended to be near roads (Hillman and Sharps 1978; Hines and Case 1991; Pruss 1999). Kamler et al. (2003) found that Swift Foxes seemed naïve to the threat of vehicles because they hunt in road ditches within a few meters of passing vehicles. Swift Fox mortalities due to vehicles suggested that foxes never learned to avoid vehicles (Kamler et al. 2004). Swift Foxes may regard trains in the same respect as vehicles, thus never



Figure 1. Picture of a swift fox den with an arrow indicating the entrance next to the railroad tracks in Sherman County, Texas, 2003.

actively seeking to avoid trains. Avoidance of Coyotes would be a reasonable hypothesis if Coyotes avoided railroad tracks.

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