

Kit Fox (*Vulpes macrotis*)**Species Status Statement.**Distribution

Kit fox is a desert carnivore occurring in arid and semi-arid regions of western North America (McGrew 1979, NatureServe 2018). Its range extends from southern Oregon and Idaho, south to California and east to Colorado through Texas, and into northern and central Mexico (Meaney et al. 2006, NatureServe 2018). Kit fox occurs in desert regions across Utah, including the Great Basin, Colorado Plateau, and Mojave Desert (McGrew 1977, Meaney et al. 2006, Richards 2017).

Table 1. Utah counties currently occupied by this species.

Kit Fox	
BEAVER	KANE
BOX ELDER	MILLARD
CARBON	SAN JUAN
DAVIS	TOOELE
EMERY	UTAH
GARFIELD	WASHINGTON
GRAND	WAYNE
IRON	WEBER
JUAB	

Abundance and Trends

Kit fox density is declining in Utah; however, there are no population abundance estimates (Meaney et al. 2006, Arjo et al. 2007). Densities of kit fox in the West Desert have declined from 0.15–0.22 foxes/km² in the 1950s (Egoscue 1956, 1962), 0.10–0.21 foxes/km² in the 1960s (Egoscue 1975) to 0.02–0.06 foxes/km² in the late 1990s-early 2000s (Arjo et al 2007), and 0.02 foxes/km² in the mid-2010s (Lonsinger et al. 2018a). A recent study (Lonsinger et al. 2018b) comparing genetic samples from current and historical specimens of kit fox from the West Desert found the effective population size (N_e) has decreased 85% from the mid-20th century to present.

Statement of Habitat Needs and Threats to the Species.Habitat Needs

Throughout Utah, this small fox is associated with desert soils, desert shrub vegetation (e.g. shadscale, saltbush, sagebrush, and greasewood), low elevation (<5500 ft.), and relatively mild winters (McGrew 1977). The species also appears to prefer relatively flat areas, likely for visibility (Daneke et al. 1984, Richards 2017). Fine, silty soils provide the proper substrate for digging dens (McGrew 1977, Egoscue 1962, Richards 2017). Kit fox does not require free water sources; individuals get adequate moisture from ingesting prey items such as insects, rodents, kangaroo rats, and lagomorphs (McGrew 1977, McGrew 1979, Arjo et al. 2007, Kozlowski et al. 2012).

Threats to the Species

Habitat loss, fragmentation, and degradation are major threats to kit fox in Utah (Meaney et al. 2006). Cheatgrass (*Bromus tectorum*) invasion degrades the desert habitat by displacing native grasses and forbs, increasing fire frequency, and reducing prey abundance. Although OHVs may not directly threaten kit fox, the increased use of these vehicles likely spreads cheatgrass and other invasive plant species and increases the probability of fire ignitions across the landscape. Prolonged drought conditions can also negatively affect vegetation, fire regimes, and prey availability. It is important to try to maintain landscape connectivity to prevent the loss of genetic diversity, which could accelerate population declines (Lonsinger et al. 2018b).

Coyote (*Canis latrans*) predation is a major source of direct mortality. Coyotes are also a source of interference competition, by causing kit foxes to change their behavior to avoid coyotes. This includes changing hunting areas to suboptimal habitats (Kozlowski et al. 2008, Kozlowski et al. 2012, Lonsinger et al. 2017). Although coyotes are more dependent on free water sources, to date, the increased use of developed water in Utah deserts does not appear to affect kit foxes negatively via displacement by coyotes (Hall et al. 2013).

Table 2. Summary of a Utah threat assessment and prioritization completed in 2014. This assessment applies to the species' entire distribution within Utah. For species that also occur elsewhere, this assessment applies only to the portion of their distribution within Utah. The full threat assessment provides more information including lower-ranked threats, crucial data gaps, methods, and definitions (UDWR 2015; Salafsky et al. 2008).

Kit Fox
High
Inappropriate Fire Frequency and Intensity
Invasive Plant Species – Non-native
Problematic Animal Species – Native
Medium
Droughts
OHV Motorized Recreation

Rationale for Designation.

Kit fox populations have been declining over the last half-century, likely due to changes in habitat suitability and competition from coyotes that are recent arrivals into the historical range of kit fox. Most of the information we have on kit fox in Utah has come from studies conducted in the Great Basin, specifically Dugway Proving Ground and surrounding areas in Tooele County, even though kit fox also inhabits both the Mojave Desert and the Colorado Plateau. Richards (2017) has developed a new monitoring protocol for occupancy that can be used to estimate trends for kit fox statewide easily and cost-effectively, using scent stations and remote cameras. Lack of information about the population status of kit fox, and the continuing, and possibly increasing, threats to this species in Utah warrants its inclusion on the Sensitive Species list.

Economic Impacts of Sensitive Species Designation.

Sensitive species designation is intended to facilitate management of this species, which is required to prevent Endangered Species Act listing and lessen related economic impacts. Kit fox is primarily found in desert areas on BLM administered lands, and its distribution coincides with areas of traditional and renewable energy resources. ESA listing of kit fox could trigger environmental review and potential mitigation and land-use restrictions for a wide variety of other multiple-use activities including management of vegetation, grazing, OHVs, wild horses, and utility rights-of-way. Kit fox is also found on Dugway Proving Ground and the Utah Test and Training Range. Therefore, ESA listing could affect the military's ability to carry out its mission on those lands.

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