

Swift Fox

Vulpes velox

REGULATORY STATUS

USFWS: Listing Denied
USFS R2: Sensitive
USFS R4: No special status
Wyoming BLM: Sensitive
State of Wyoming: Nongame Wildlife

CONSERVATION RANKS

USFWS: No special status
WGFD: NSS4 (Cb), Tier II
WYNDD: G3, S2
Wyoming contribution: LOW
IUCN: Least Concern

STATUS AND RANK COMMENTS

Swift Fox (*Vulpes velox*) was petitioned for listing under the Endangered Species Act (ESA) in 1992. A “warranted but precluded” finding was issued in 1995¹. In 2001 that finding was changed to “not warranted” based on new information that suggested Swift Fox was more abundant and widespread and had greater flexibility in habitat and food requirements than originally thought².

NATURAL HISTORY

Taxonomy:

Although 2 subspecies were once described for Swift Fox, a later reevaluation removed the split. Consequently, there are no currently recognized subspecies of *V. velox*³. Some researchers suggest Swift Fox and Kit Fox (*V. macrotis*) are subspecies of the same species; however, genetic differentiation currently supports classification as distinct species⁴.

Description:

Swift Fox can be identified by its small stature, black-tipped tail, and black spots on the side of the snout. It is the smallest canid species in the United States (adults 1.8–2.9 kg)⁵. Although males are larger than females, the sexes have similar coloring⁵. In winter the coat is dark buffy gray on the back; yellow-tan on the sides and legs; and pale yellow to white on the throat, chest, and belly. In summer the fur is shorter and redder in appearance. Kit Fox is easily confused with Swift Fox where they overlap, but Wyoming supports only Swift Fox⁶. In Wyoming, Swift Fox may be confused with Red Fox (*V. vulpes*), but Red Fox can be distinguished by a larger size, white-tipped tail, and black legs⁵. Very young Coyotes (*Canis latrans*) may also occasionally be mistaken for Swift Fox.

Distribution & Range:

The range of Swift Fox contracted greatly following European settlement of the plains in the 1800s. The species started to recover beginning in the 1950s, but Swift Fox remains absent from

most of its historic range⁷. Wyoming is located on the western edge of the species continental range. Within the state, Swift Fox distribution is largely unchanged from historic distribution⁸. Apparent westward range expansions have been documented in Wyoming, including roadkilled individuals observed near Farson and a pair of Swift Fox in Worland (pers. obs.).

Habitat:

Typical Swift Fox habitat consists of short-grass and mid-grass prairies with flat or gently sloping topography. However, Swift Fox also utilizes a mixture of non-native and atypical habitat throughout portions of their range, including agricultural croplands⁹. Habitat in Wyoming, for example, includes grasslands with a higher shrub component, including sagebrush (*Artemisia spp.*), greasewood (*Sarcobatus vermiculatus*), and saltbush (*Atriplex gardneri*)¹⁰. Within these sagebrush shrub communities, areas of lower-growing shrubs (≤ 30 cm) are used more often than those with taller shrubs^{10, 11}. Swift Fox depends greatly on burrows (dens), which are used year-round for pup-rearing as well as refuge. Swift fox may excavate their own dens or enlarge old burrows from ground squirrels or Badgers (*Taxidea taxus*)⁹. Den sites are typically characterized by well-drained, loamy soils and flat terrain, sloping plains, and hill tops^{6, 10}. Prairie dog (*Cynomys spp.*) colonies may also provide important habitat for Swift Fox, although this may vary throughout the range of the species¹².

Phenology:

Mating occurs between December and February, depending on latitude, and an average of 4–5 pups are born approximately 51 days later⁹, with most young born in March or April⁶. Juveniles are nearly full grown within 4 to 5 months, and dispersal typically occurs in September and October⁹. Swift Fox may form pair bonds in December of their first year and reproduce the following spring⁶.

Diet:

Swift Fox appears to be an opportunistic predator, and is known to consume mammals, insects (particularly grasshoppers), birds, herptiles, and grass. Small mammals, lagomorphs in particular, may be especially important⁶. Swift Fox diet in Wyoming is broad and tends to track prey abundance. However, the consumption of mammalian prey, including scavenged pronghorn (*Antilocapra americana*), is common year round¹⁰. Swift Fox is known to cache excess food under the snow in the winter months⁸.

CONSERVATION CONCERNS

Abundance:

Continental: WIDESPREAD

Wyoming: UNCOMMON

Estimates of Swift Fox abundance in Wyoming are not available. The species is widely distributed across suitable habitat in the state^{13, 14}, and may be locally abundant, especially in Laramie County⁵.

Population Trends:

Historic: MODERATE DECLINE

Recent: STABLE to INCREASE

Range-wide, Swift Fox populations started to decrease in the 1800s due to widespread habitat conversion and loss and poisoning campaigns targeting Coyotes. Swift Fox populations started recovering in the 1950s following changes in poisoning regulations. Recently, Swift Fox has

been documented well west of its assumed historic range boundary in the state (pers. obs.). Swift Fox demonstrated a slight decrease in occupancy rates at 48 grids throughout the predicted distribution in eastern Wyoming from 2010 to 2013¹⁴. However, long-term trend analyses are still needed.

Intrinsic Vulnerability:

MODERATE VULNERABILITY

Across most of its range the Swift Fox depends on short- to mid-grass prairies, making the species sensitive to the threats affecting those ecosystems. In Wyoming, Swift Fox also utilizes a variety of non-native (e.g., short-stature dryland crops) and atypical (e.g., shrub-steppe) habitats that may insulate populations from habitat changes in traditional habitats^{9, 10}. Environmental conditions and features that allow denning and predator avoidance may be the most important components of Swift Fox habitat^{10, 15}.

Extrinsic Stressors:

SLIGHTLY to MODERATELY STRESSED

Habitat alteration and loss may be the biggest current threat to Swift Fox range-wide. In Wyoming there has been little large-scale habitat modification⁸. However, in an evaluation of Swift Fox occupancy in eastern Wyoming, probability of local extirpation from 2010 to 2013 increased with length of time exposed to energy development¹⁴. Predation by Coyotes, and to a lesser extent raptors, is a major cause of direct mortality for Swift Fox; individuals are also often killed by vehicle collisions^{9, 15, 16}. The widespread use of strychnine to kill carnivores has been banned, but Swift Fox remains susceptible to poisoning and trapping efforts that target larger carnivores and rodents⁹, although it is unknown if this represents a major source of mortality for the species.

KEY ACTIVITIES IN WYOMING

Following the petition to list Swift Fox under the ESA the Wyoming Game and Fish Department (WGFD) and 9 other western state agencies founded the Swift Fox Conservation Team (SFCT) in 1994 in an effort to compile existing and future data, monitor and manage populations, and advance conservation and restoration of Swift Fox¹². The Wyoming Cooperative Fish and Wildlife Research Unit conducted intensive field work near Medicine Bow, Wyoming from 1996 to 1999 to evaluate population characteristics, habitat, and survival of Swift Fox¹⁰. The WGFD began monitoring Swift Fox in 1999 in an effort to determine distribution throughout the state¹⁷. In 2009, the WGFD evaluated a number of detection and survey protocols¹⁸ and, based on their findings, implemented an occupancy-based monitoring protocol beginning in 2010¹³. Wyoming has also provided Swift Foxes to South Dakota in 2004–2006 and 2009, and Canada from 1994–1996, to assist with reintroduction efforts^{19, 20}.

ECOLOGICAL INFORMATION NEEDS

Swift Fox habitat use in Wyoming differs from other areas of the range. Although specific projects have focused on habitat characteristics throughout portions of the state, the apparently expanding distribution and larger shrub component present in Swift Fox habitat in Wyoming likely warrant further investigation. Additionally, research is needed to better understand the importance of prairie dog colonies to Swift Fox survival and reproduction in Wyoming. Finally, given the relatively recent and accelerating alteration of Swift Fox habitat by energy development, a deeper understanding of potential effects on Swift Fox populations and behavior is needed.

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Nichole L. Bjornlie. Management priorities for Swift Fox in Wyoming will continue to focus on evaluating trends and the impact of potential threats, including predation and energy development, on occupancy rates. Additional projects will evaluate and delineate the apparent westward expansion of Swift Fox in the state. The WGFD will also continue active participation in the SFCT and coordinating with landowners in order to promote information dissemination and conservation and management priorities.

CONTRIBUTORS

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Figure 1: A Swift Fox at a Black-tailed Prairie Dog (*Cynomys ludovicianus*) colony in the short-grass prairie of Logan County, Kansas. (Photo courtesy of Brian Zinke)

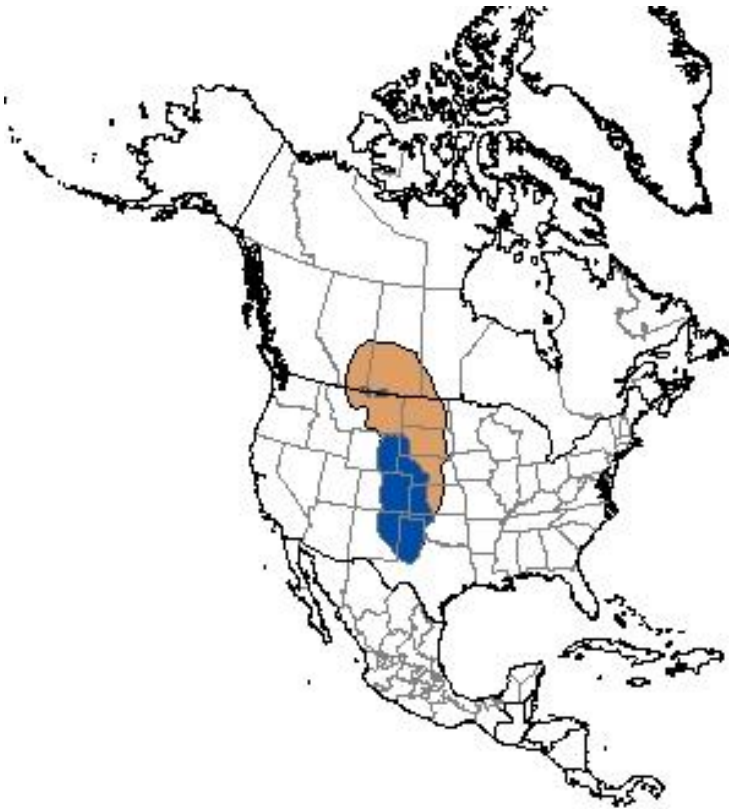


Figure 2: Current North American range of *Vulpes velox* in blue and historic range in brown. (Map modified from: Patterson, B. D., et al. (2007) Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0, NatureServe, Arlington, Virginia.)



Figure 3: Full moon over Swift Fox short-grass prairie habitat in the Shirley Basin, Wyoming. (Photo courtesy of Nichole L. Bjornlie)

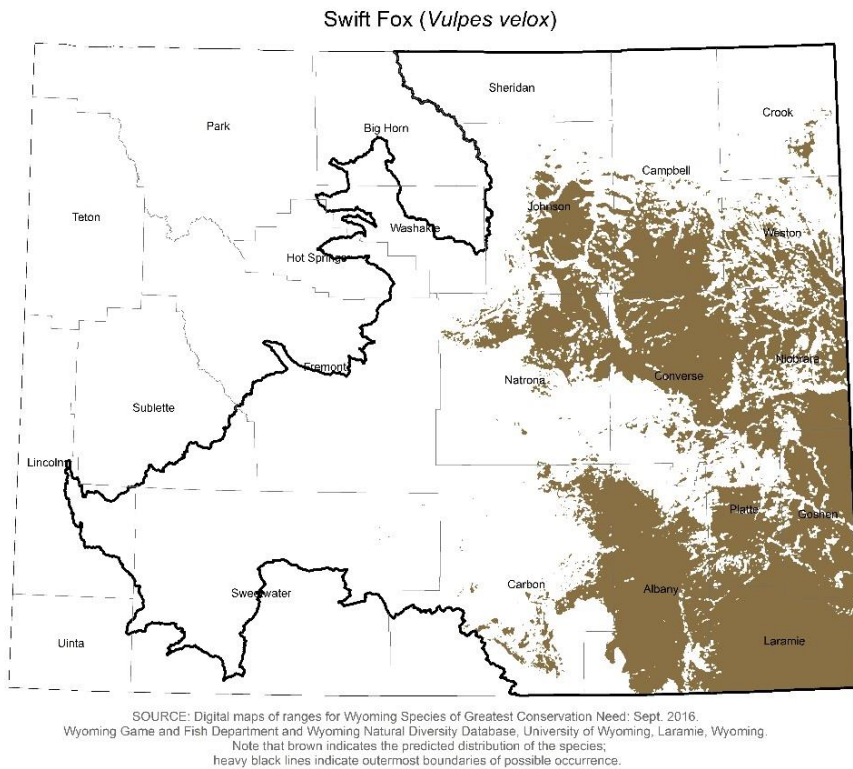


Figure 4: Range and predicted distribution of *Vulpes velox* in Wyoming.