isolated pockets of remnant short to midgrass prairie habitat. The Service estimates that swift fox may actually occupy only half of the remaining 20 percent of its historical range.

Habitat loss and fragmentation has occurred due to a variety of human activities such a agricultural conversion of the prairie and mineral extraction. Beyond direct agricultural conversion, the remaining short to midgrass prairie ecosystem has been significantly altered due to creation of a grassland-cropland mosaic, with continued reduction of the prairies rodent prey base and modification of the native predator community. Roadways also alter the availability and suitability of habitat, thus fragmenting swift fox habitat and exposing them to traffic, trapping, shooting, predator control, and rodent control.

B. Overutilization from commercial, recreational, scientific, or educational *purposes.* Commercial trapping for other furbearers occurs throughout the range of the swift fox. Often swift fox are harvested incidental to commercial trapping for other furbearers such as coyotes (McDaniel 1976; Sharps 1984; Jones et al. 1987; U.S. fish and wildlife Service 1990). Unlike other furbearers, swift fox pelts are not particularly valuable (Arnold 1925; Jones et al. 1987; FaunaWest 1991). This lack of value and pelt quality has not completely stopped trade in swift fox pelts. Protection is minimal because the swift fox is unwary and naive, making it susceptible to trapping, ragardless of whether it is the targeted species. Legal and/or incidental take of the species is expected to continue.

The swift fox is legally harvested in four States (Colorado, New Mexico, Kansas, and Texas). In Wyoming, it is a protected species by virtue of its nongame status, but it is still legal to buy and sell swift fox pelts. In addition, Wyoming has supplied 25 to 30 swift fox per year to Canada for their recovery program. Harvest data received from the above States is insufficient to assist the Service in the determination of population trends or to determine the actual numbers being legally harvested on an annual basis. The New Mexico data shows a significant (95 percent) decrease in the kit-swift fox harvest in recent years, but its significance relative to swift fox status cannot be determined. The Colorado data shows that harvest of kit/swift fox has decreased from a high of 3,322 animals during the 1981–1982 season to 161 animals (fox) in 1990 and 373 animals in 1991, respectively. Harvest data from Kansas indicates that between 1982 and 1994, 1,220 swift fox were harvested from approximately 23

counties located in the western-most one-fourth of the State. Jones (1987) reports that available harvest data from Texas is limited, but it shows an annual harvest of between 300 and 500 animals.

C. Disease and predation. The effects of infectious diseases in swift fox are relatively unknown. However, they are susceptible to most diseases that plague canids (FaunaWest 1991). Studies conducted in California on the kit fox noted canine parvovirus as a major disease (FaunaWest 1991). Since parvovirus is found throughout the U.S. and is fatal to domestic dogs, it is probably also fatal to swift foxes. Other diseases documented in kit foxes include canine hepatitis, tularemia, brucellosis, toxoplasmosis, and coccidiomycosis (FaunaWest 1991). Many of these diseases are known to be widespread and their presence in swift fox populations is highly probable.

Because of major changes to the faunal community of the western Great Plains ecosystem, the swift fox has become extremely vulnerable to predation from coyotes. Historically, the gray wolf (Canis lupus) was the dominant canid in the Great Plains hierarchy. The gray wolf was not considered a significant predator on swift fox and, because it targeted large ungulates, it probably provided swift fox with a source of carrion (Moravek 1990; U.S. Fish and Wildlife Service 1990; FaunaWest 1991). The coyote and red fox, while widely distributed in specific habitats, were not generally considered abundant because of the wolf's dominant canid role in the western Great Plains ecosystem (Johnson and Sargeant 1977). Coyotes are now the most abundant and widely distributed canid on the Great Plains (Alan Sargeant, U.S. Fish and Wildlife Service, pers. comm. 1992). Studies have shown that predation by coyotes has a severe impact on the survival of swift fox (Robinson 1961; Reynolds 1986; Rongstad et al. 1989; Sharps 1989; Moravek 1990; U.S. Fish and Wildlife Service 1990; Carbyn et al. 1992). Furthermore, the red fox, which historically existed in isolated pockets on the Great Plains, expanded its distribution westward because of agriculture development (Moravek 1990; A. Sargeant, pers. comm. 1992). Also red foxes undoubtedly compete with swift fox.

D. Inadequacy of existing regulatory mechanisms. The swift fox is listed as endangered in Nebraska, threatened in South Dakota, and is protected by regulation in Wyoming. Despite having this protective status, it is still legal to buy and sell swift fox pelts in Wyoming (Bob Oakleaf, Wyoming Game and Fish

Department, pers. comm. 1993). The swift fox is listed as a furbearer in seven States (Colorado, Montana, Kansas, Oklahoma, New Mexico, North Dakota, and Texas) and it is legally harvested in Colorado, Kansas, Texas, and New Mexico). In Montana. Oklahoma. and North Dakota, no legal harvest of swift foxes is allowed because of the species' rarity (Arnold Dood, Montana Department of Fish, Wildlife and Parks, pers. comm. 1993; Sonja Jahrsdoerfer, U.S. Fish and Wildlife Service, pers. comm. 1993; Randy Kreil, North Dakota Game and Fish Department, pers. comm. 1993).

Since the swift fox is not federally protected and its pelts are of little economic value, there is little effort by the States to determine the status of the swift fox in their jurisdiction, even though it is harvested legally or incidentally taken. Other than State trapping regulations, there is little regulatory protection afforded the swift fox or its habitat. Efforts by the States to modify techniques to avoid the unintentional trapping of swift fox are minimal.

E. Other man-made or natural factors affecting the species' continued existence. The swift fox is inquisitive in nature, thus making it extremely vulnerable to human activities. Swift fox are easily trapped, shot, captured by dogs, or killed along country roadsides (Kilgore 1969; Hillman and Sharps 1978; Hines 1980; Sharps and Whitcher 1983; Uresk and Sharps 1986; U.S. Fish and Wildlife Service 1990; Dr. Clyde Jones, Texas Technology University, pers. comm. 1993). Additionally, swift fox are mistakenly taken for coyotes or by people wishing to remove all canids for fear of livestock predation (Zegers 1976).

Habitat loss and modification, rodent control programs, and other human activities often reduce the prey base, impacting the species' ability to find prey. Historically, the range of the swift fox and prairie dog overlapped extensively (Hall and Kelson 1959; Sharps 1993). Swift fox are extremely vulnerable to prey reduction caused by habitat modification and prairie dog control programs (Hines 1980; Egoscue 1979; Sharps 1984; Sharps 1989; Uresk and Sharps 1986; Moravek 1990). Where the prey base has been reduced, swift fox often seek out carrion along roadsides (Hines 1980). Additionally, predator control in the area is conducted by private individuals who use leg hold traps, snares, and shoot animals (U.S. Fish Wildlife Service 1990; Sharps 1993; FaunaWest 1991).