

SWIFT FOX COMPLETION REPORT

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STATE OF WYOMING NONGAME MAMMALS – Species of Special Concern

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INTRODUCTION

The swift fox monitoring project will occur in two phases.

The purpose of the distribution survey conducted in 1999, and of surveys planned for 2000, was to document known locations of swift fox (*Vulpes velox*) in the current range in Wyoming. Baited track plates placed in a continuous transect up to several miles long with a track plate spacing of 1.6 km (1 mi) between plates was found to be the most effective method for documenting swift fox in areas with potential habitat but unknown population status (Dieni et al. 1997).

Surveys to develop baseline transects for monitoring long-term population trends will begin in 2001. These trend surveys will occur in locations documented to have swift fox during the 1999 and 2000 distribution surveys. The University of Wyoming Cooperative Fish and Wildlife Research Unit developed the survey method, which will be used during this project (Olson et al. 1999). The trend transects will use a more intensive survey method (five track plates at a spacing of .8 km (.5mi) between plates). Approximately 20 transects will be surveyed in each of three geographic region with each transect no closer than five miles to another. The method is based on the assumption that there is an 88% probability that a fox documented in a location will remain in or return to the same location the following year (Olson et al. 1999).

Repetition of the 2001 surveys in 2006 will document the long-term trend for the species.

According to Woolley et al. 1995, the current population occurs primarily in three geographic regions: 1) Laramie Valley and Shirley Basin in Albany and Carbon counties, 2) Southeastern Plains—parts of Laramie, Platte and Goshen counties, and 3) Powder River Basin—parts of Converse, Natrona, Weston and Niobrara counties. Surveys were conducted in the Laramie Valley and Shirley Basin areas in 1999. The second and third regions will be surveyed in 2000.

METHODS

Track plates were made of 16-gauge sheet steel, measured 61cm x 61cm (2ft. x 2ft.) painted with two coats each of gray primer and gray paint. A one-gallon weed sprayer was used to coat the plates with talc and ethyl alcohol mixture, the ratio used was 2.5 cups talc: 1 gallon 95% ethyl alcohol. This mixture will prepare 40-50 plates. Approximately 15g of stirred jack mackerel were placed in the center of the plate as an attractant. Plates were spaced 1.6 km (1 mi) apart within public road easements where tracks could be observed without requiring private land access. Track plates were placed along an existing fence if one was present. When a fence was not present, plates were placed 10 m to 25 m from the centerline of the road.

Road kill observations were recorded and used as locations for initial sampling. The location of each plate was marked by flagging on the fence or a stick flag, and a GPS location in UTM coordinates was recorded for the center track plate of each transect. Track plates were observed for a maximum of four nights. Track plates were picked up for five miles on either side of a swift fox track occurrence after the first night swift fox use was documented to prevent duplicate recordings of the same animal (Olson et al. 1998). During periods of heavy rain plates were left in-place for up to five nights.

When a swift fox track was identified, track measurements were recorded and lifted for future reference with 2-inch clear packing tape. In some cases, clear contact paper was used to preserve an entire track plate for future use in identifying tracks. Plates were cleaned with a stiff brush or steel wool before reuse.

Baseline trend transects used during the 2001 trend monitoring survey will be those transects with positive identification of a swift fox track on a track plate during the 1999 and 2000 surveys. Where known den sites along roads are recorded those locations will be used as center locations for baseline transects.

RESULTS

Surveys from 18 August through 18 September 1999 attempted to sample all potential swift fox habitat (grasslands and grasslands with low shrub coverage) in Albany (Laramie River Valley) and Carbon Counties (Shirley Basin). Twenty-four transects (371 track plates) ranged from 5 – 32 km (3 – 20 mi) long. Total linear sample was 1304 km (815 mi). In Albany County, 15 transects (218 track plates) produced 58 locations and 9 transects (153 track plates) produced 12 locations in Carbon County. Thirteen hundred seventy-one (1371) track plate nights were recorded. One hundred eighty six (186) track plate nights were subtracted due to rain, leaving 1185 functional track plate nights.

Transect routes that detected swift fox were identified the first night except for three transects which needed two, two, and three nights, respectively, to detect a swift fox. Twenty-four discrete swift fox locations were documented and will serve as baseline transects during the

trend survey in 2001 and 2006 (Table 1).

Four separate den locations were documented while conducting track plate surveys. When a track plate location and a den site occurred within 8 km (5 mi) of each other the den site was used as the baseline location rather than the track plate location. These observations were included in the list of baseline transect locations (Table 1). A total of eight road killed swift fox were found during surveys, four of which were within 300 m (.2 mi) of a track plate location.

Swift fox tracks on 70 track plates ranged from 21mm – 28mm wide; averaging 24mm, the lengths ranged 27mm – 35mm long averaging 31mm. Tracks found at the entrance to a swift fox den in soft sand measured 35mm x 50 mm. Mud surrounding a stock pond produced tracks 27mm wide x 40mm long. Other tracks found on track plates included: coyote (*Canis latrans*), domestic dog (*C. familiaris*), bobcat (*Lynx rufus*), domestic cat (*Felis domesticus*), red fox (*Vulpes vulpes*), badger (*Taxidea taxus*), striped skunk (*Mephitis mephitis*), long-tailed weasel (*Mustella frenata*), white-tailed jackrabbit (*Lepus townsendii*), cottontail species (*Sylvilagus sp.*), white-tailed prairie dog (*Cynomys leucurus*), unidentified ground squirrels, mouse species, tiger salamander (*Ambystoma tigrinum*), sage grouse (*Centrocercus urophasianellus*) and other small prairie birds.

DISCUSSION

Surveys for swift fox in 1999 were designed to establish a sufficient sample size of known fox locations to serve as baseline trend transect locations for subsequent years. Short and mixed grass prairies mostly devoid of heavy shrub coverage characterized areas where swift fox were most commonly found. Selection of survey routes took into account random swift fox observations made during black-footed ferret spotlight surveys and prairie dog density transecting in Shirley Basin, and random observations by USDA -Wildlife Services, Wyoming Game and Fish Department, and Wyoming Cooperative Fish and Wildlife Research Unit personnel.

In contrast with other prairie mammals in Wyoming swift fox tracks demonstrated unique characteristics. Swift fox tracks were differentiated from red fox in that red fox prints are 15 - 20 mm longer and 10 - 15mm wider. Coyote tracks are similar to red fox though they have slightly wider measurements and less hair between paw pads than do red fox. Claw impressions of canines on track plates are rarely detected compared to tracks of the same animal in softer substrates. White-tailed jackrabbit front tracks were similar to swift fox but distinguishable by the amount hair distorting the shape of toe and palm pads. These tracks looked similar to pressing a cotton ball on the surface of the track plate. Usually the front tracks were accompanied by the much longer hind tracks. Rodents and cows may have affected the number of fox detections by taking attractant or smudging plates. Since impressions of grassland mammal tracks appear slightly different on track plates than on softer surfaces such as mud, sand, and snow, it is recommended that each project preserve track plates of separate species for

comparison.

Eight observations of road mortality were documented while surveying a total linear sample of 1304 km (815 mi). On average one swift fox road mortality was observed for 163 km (102 mi) surveyed. Distribution of road mortality occurrences include: four near one den site, approximately 50 meters from Wyoming State Highway 487 North in Shirley Basin, one on State Highway 77 in Shirley Basin, one on State Highway 287 between Bosler and Rock River, one on a maintained, gravel county road south of Laramie, and one on a two-track dirt road near Wheatland Reservoir No.2.

Swift fox distribution surveys in the year 2000 will be conducted in sample region two (Converse, Natrona, Weston, and Niobrara counties) and sample region three (Laramie, Platte and Goshen counties). Surveys for monitoring population trends will start in 2001. The Wyoming Cooperative Fish and Wildlife Research Unit (Olson et. al. 1999) developed protocol for sampling probabilities of swift fox detection, which includes establishing permanent track plate transects. Recommended transect length is 1.3 km (0.8mi) with five plates spaced evenly (0.2 mi) using locations from Table 1 as the center track plate.

Transects will be observed for a maximum of six days, but monitoring will cease the day after swift fox presence is confirmed. This method is designed to detect declines in the population under the assumption that there is an 88% chance that a fox will remain in or return to the same area from one year to the next. Resurveying the twenty-four baseline locations in the year 2006 will provide swift fox population trends. A stable population will require twenty-one out of the twenty-four transects to have an occurrence.

Recent data on swift fox occurrence is available and these locations will be sampled in the year 2000 surveys. In 1998 the Douglas Ranger District surveyed on and near Thunder Basin National Grassland. These data documented twenty-two suspected swift fox locations (Sidle 1998). Woolly et al. 1995 listed thirty-seven locations of fox observed on track plate and spotlight surveys. Wyoming Game and Fish Department trapper surveys, U.S. Forest Service incidental sightings, and Wyoming Game and Fish Department wildlife observation system records will provide additional locations. Locations near Cheyenne include fox captures made in 1991 for relocation to Canada (Carbyn pers. comm.). From these documentations an adequate sample size (approximately 20 in each region) should be obtainable.

LITERATURE CITED

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