

# INFRA-RED AERIAL MAPPING OF POTENTIAL BLACK-FOOTED FERRET HABITAT IN WYOMING

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## ABSTRACT.

Infra-red aerial photographs were used to inventory 260,627 ha for white-tailed prairie dog (*Cynomys leucurus*) colonies on BLM lands in northwestern Wyoming in 1979. Fifty-nine prairie dog towns were located, totalling 10,348 ha. The remainder of the resource area (approximately 181,943 ha) was inventoried during 1980 and 1981. Twelve additional colonies totalling 687 ha were located.

Infra-red aerial photographs were useful in locating prairie dog towns in grasslands and sage (*Artemisia* sp.)/grassland mixed areas. The photographs were of little use in locating towns in areas of light alkali soils which usually supported saltbush (*Atriplex* sp.) and cactus. Anthills, bare patches of alkali soil, and some livestock posed identification problems on infra-red aerial photos because they look like prairie dog mounds. The only known population of black-footed ferrets was discovered within the inventoried area during the fall of 1981.

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## INTRODUCTION

The black-footed ferret (*Mustela nigripes*) is one of the species included on the U.S. Fish and Wildlife Service's first published list of threatened and endangered wildlife (U.S. Dept. of the Interior, Bureau of Sport Fisheries and Wildlife 1964). One of the purposes of the Endangered Species Act of 1973 is to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved" (U.S. Dept. of the Interior, Fish and Wildlife Service 1978). The Federal Land Policy Management Act (FLPMA) of 1976 establishes policy for the systematic inventory of public lands (U.S. Congress 1976). Accordingly, BLM is doing an inventory of black-footed ferrets and other endangered species.

Prairie dog towns are the usual residence of black-footed ferrets (Henderson et al. 1974); yet not all prairie dog towns are inhabited by black-footed ferrets. A ferret habitat inventory may be divided into two stages. The first stage involves the location and mapping of prairie dog colonies. The second stage involves a search of each prairie dog colony for ferrets or ferret sign.

## STUDY AREA

The study area consists of portions of Park and Big Horn Counties in the Big Horn Basin of northwestern Wyoming. It is bordered by the Big Horn Mountains on the east at the Bighorn National Forest boundary. The western boundary is the Shoshone National Forest along the Absaroka and Beartooth Mountains. The northern boundary is the Wyoming-Montana state line. The southern boundary extends from the Wood River on the west to the Greybull River, along the Greybull River to the Big Horn River and up Shell Creek to the Bighorn National Forest boundary.

Annual precipitation averages less than 25.4 cm a year. Forty percent of the precipitation falls during May and June. The mean temperature of the area ranges from  $-26.6^{\circ}\text{C}$  in the winter to  $+35.0^{\circ}\text{C}$  in the summer (U.S. Dept. of the Interior, Bureau of Land Management, 1969). The eastern part of the Basin has more extreme temperature ranges, including a record minimum of  $-46.1^{\circ}\text{C}$  and a record maximum of  $+44.4^{\circ}\text{C}$  (U.S. Department of the Interior, Bureau of Land Management 1971).

Elevations range from 1433 m near the east boundary to 1524 m at Cody, 1981 m at McCullough Peaks, and 2743 m at Rattlesnake Mountain. The topography is generally flat with rolling hills and some very rugged badland hills scattered throughout the basin. The vegetation is predominately a mixture of sagebrush, saltbush, and grasses on well drained soils (U.S. Dept. of Agriculture, Soil Conservation Service 1974).

#### MATERIALS AND METHODS

1:31,000 scale infra-red aerial photographs were taken in July and August 1975 at 4.56 km. Each photo covered an area of approximately  $32\text{ km}^2$ . The photos were examined with a stereoscope for possible white-tailed prairie dog towns. In order to determine what prairie dog colonies looked like on infra-red aerial photos, two known colonies were inspected in the field. The corresponding aerial photos were then examined with a stereoscope. It was found that individual mounds appeared as faint scattered white dots. Use of topographic maps in combination with the photographs eliminated many steep and forested areas as potential prairie dog habitat.

Letters that included maps and a brief description of the study were sent to the 41 range allotment users with a request to return information on prairie dog town locations. Local Wyoming Game and Fish biologists and game wardens were also consulted for prairie dog town locations.

Potential prairie dog colonies were field checked using a 4-wheel drive truck, 7x35 mm binoculars, and 15-60 power spotting scope. Less accessible areas were inventoried by helicopter. All confirmed colony locations were plotted on acetate aerial photo overlays, and BLM land status maps. Locations were also plotted on the BLM Unit Resource Analysis Step 3 Endangered Species Habitat overlay.

All prairie dog towns were assigned an identification number, an approximate total acreage, the acreage on BLM land, and any comments or unusual characteristics such as possible ferret activity. Due to limitations of manpower and time, only major concentrations of 0.4 ha or more were recorded. A town was determined to be active if fresh diggings were noticed or prairie dogs were seen or heard.

#### RESULTS AND DISCUSSION

A total of 442,570 ha was inventoried for prairie dog colonies. Fifty-nine prairie dog towns totalling 10,348 ha were located in 1979. Twelve additional colonies totalling 687 ha were located in 1980 and 1981. Colonies located ranged from 0.4 to 1416.5 ha in size. Some of the colonies, including the largest one, were located by Clark et al. (1977). Of 41 letters sent to range users, 11 replies were received. Of the 11 replies, 16 prairie dog concentrations were reported. Four of the sixteen were already confirmed towns. Six new towns were found in subsequent ground checks while four reported towns were never found. The remaining two towns were not ground checked because they were reported on private land.

The use of infra-red aerial photos had several limitations. Bare spots of alkali soil or white livestock could be mistaken for prairie dog mounds. These errors were eliminated by conducting ground checks. Some colonies were found that were not readily visible on photos. These were usually in areas where the soil was light colored. The light soil caused a washed out effect on the photos. Since prairie dog towns appear as white dots, this made them extremely difficult to distinguish. Anthills surrounded by circular areas of bare ground compounded identification problems. There were very few anthills in the thick sage/grassland areas southwest of Cody, but in the remainder of the Resource Area there were many anthills.

Most of the prairie dog burrows in the eastern portions of the area were more scattered than those southwest of Cody. Most mounds in the eastern portion were noticeably smaller. In saltbush habitats, some burrows were found directly under cactus and saltbush with little or no mounds. This made identification from an aerial photograph impossible.

The helicopter, although expensive (\$175 per hour), proved to be very effective due to its maneuverability. It also made it possible to land and look at a colony in a remote area. When these areas were flown on a sunny day, many otherwise unnoticeable burrows became visible by the circular dark areas created by shadows over burrow entrances.

On September 27, 1981, a rancher reported a black-footed ferret near one of the prairie dog concentrations we located. To this date, six live black-footed ferrets have been accounted for in the same area. At this time, these are the only known wild black-footed ferrets.

#### LITERATURE CITED

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