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**The Use of Perch Sites among Buteos
in Boulder County Open Space**

Robert J. Fletcher
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Dr. Alex Cruz

Introduction

Two of the most important factors in determining the destiny of avian populations are habitat and food resources. A primary factor for reductions in raptor populations is habitat loss (Millsap, 1987). Open space departments and green belts are known to play an essential role in providing habitats for raptors exposed to urban environments (Cringan, 1989). Grasslands, such as those in eastern Boulder county are of great importance to western raptor populations, where 58% of the 45 western species can be found, including primarily the larger, soaring buteo species (Olendorff, 1989). The purpose of this study is to examine the use of habitat, specifically the use of perch sites, by buteo raptors in a section of Boulder City Open Space, and determine if there is any non-random preference of perch sites based on their distance from trails, or relative density of perch sites.

Methods

The study site was located at the Boulder Valley Ranch/ Eagle Trailhead, just west of Boulder reservoir (see topographic map). The site was approximately 2 km, and was broken up into three separate transects. Within each transect, each perch site, all of which were deciduous trees of various age, was grouped into one of three possible categories: 1) solitary: a single tree with no obstructions to the field of view within the perching area of the tree, 2) intermediate: usually consists of two to four trees sparsely interlocking, causing some obstruction to the field of view due to the density of the branches, and 3) dense: consists of two to more than ten trees, forming a tightly interwoven web of branches, thus causing much obstruction to the field of view of a perching raptor.

The site as a whole was fairly diverse, encompassing small grass prairie, a riparian corridor, grazed agricultural land, a small pond, prairie dog towns, and cattail/bulrush marsh. Due to the prevalence of prairie dog towns, located in both the first and third transect, the focus could be centered around perching activities and preferences without a great problem of relative prey availabilities. The first transect primarily consisted of solitary perch sites, but there were also some intermediate perch sites. Approximately half were located within 200m of the trail. The vegetation was primarily short grass prairie, with prairie dog towns encompassing the majority of the landscape. South of the first transect the trail wound into a valley, around a small pond, and continued southwest (see map). This second transect had an abundance of dense and intermediate perch sites, yet few solitary perch sites, ranging from right off the trail to greater than 200m from the trail. To the east of the trail, the vegetation was dominated by cattail/ bulrush marsh, while to the west, the vegetation was predominantly grazed agricultural land. In an intermediate perch site just west of the pond resided two nests of Red-tailed Hawks (*Buteo jamaicensis*), where many sitings were recorded, both of the juveniles and the parental adults. The third transect was just south of the second transect, located on a plateau. There were mostly intermediate perch sites, and a few solitary sites in this area. The vegetation was very similar to the first transect, predominantly short grass prairie with prairie dog towns.

Every morning from March 18- 25 (except March 22), I went out to the trailhead at approximately 6:10a.m., and hiked each transect, recording sitings for one fifteen minute interval per transect. All data was recorded in a field journal, siting the date, time, species, and activity. The location and type of perch site were also sketched out on a rough map. This time of day was not only picked for convenience, but primarily for the reasoning that there would

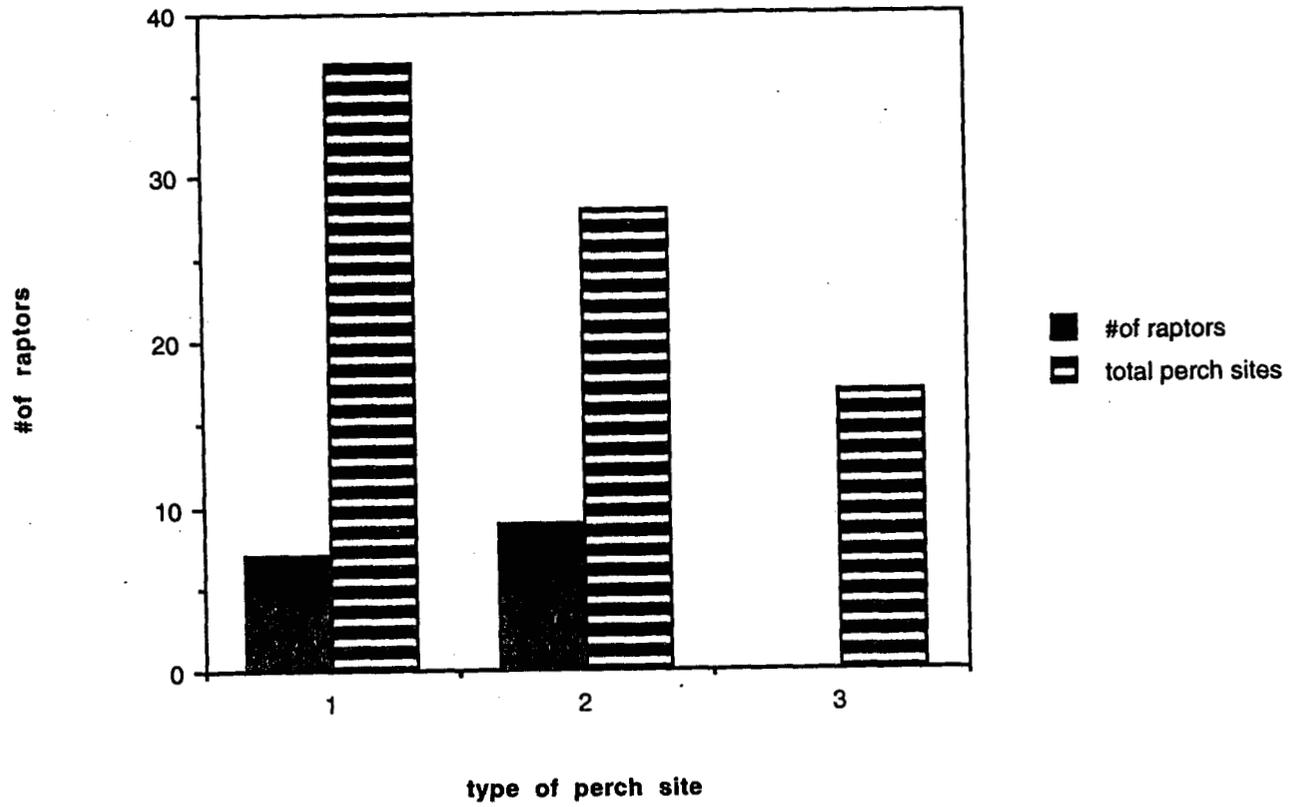
be more perching activities than soaring activities, due to the lower temperature in the morning causing less thermals for the buteos to be capable to soar. Every morning the transects were finished by approximately 7:30a.m. The weather was also recorded in the journal, but was fairly constant for the entire study, remaining cloudy to clear, with temperatures between 40-55 F.

After all the data had been collected, it was organized into various categories: number of raptors using each type perch site, number of perch sites used, and perching activity as a function of distance from the trail. Then the data was analyzed statistically and a topographic map showing the distribution and types of perch sites was assessed.

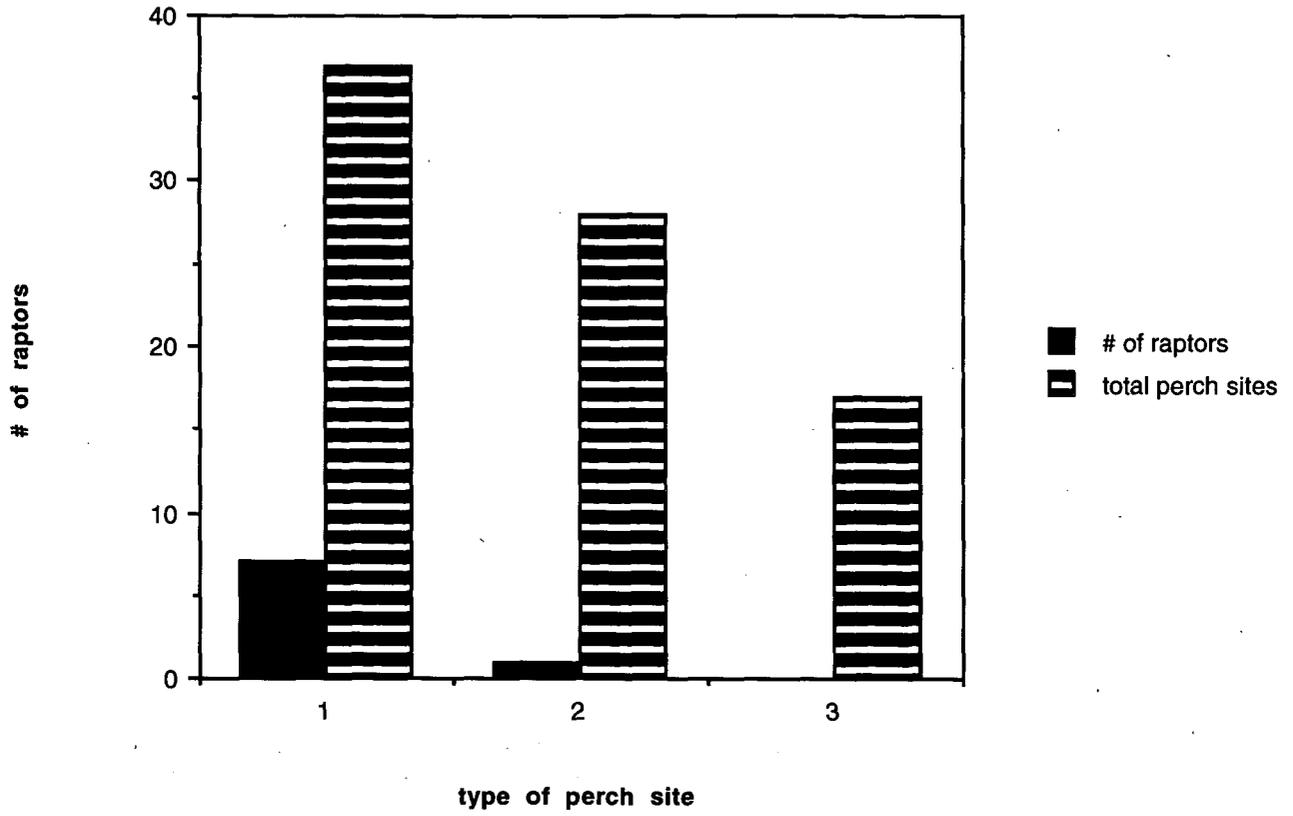
Results

In seven mornings of gathering data, I witnessed 21 raptors in the study area, all buteos, except three sightings of Northern Harriers (*Circus cyaneus*), none of which were perching. Other raptors observed in the area included: Red-tailed Hawks (*Buteo jamaicensis*), Ferruginous Hawks (*Buteo regalis*), a Rough-legged Hawk (*Buteo lagopus*), and a Bald Eagle (*Haliaeetus leucocephalus*). Out of the 21 raptors observed, 16 were observed perching, all of which were either in solitary or intermediate perch sites. Out of these 16, eight were sightings of either Red-tailed Hawks or juveniles perched in the intermediate perch sites, where the nests were located. Therefore, there were 8 sightings of importance to the hypothesis that the buteos are going to perch in a non-random manner with reference to the relative density of the perch site. In 7 of these 8 sightings, I witnessed the buteos to be using solitary sites. The other sighting, a Red-tailed Hawk used an intermediate site. No high density perch sites were selected for by the buteos (see figures 1-4, where solitary sites=1, intermediate sites=2, and dense sites=3).

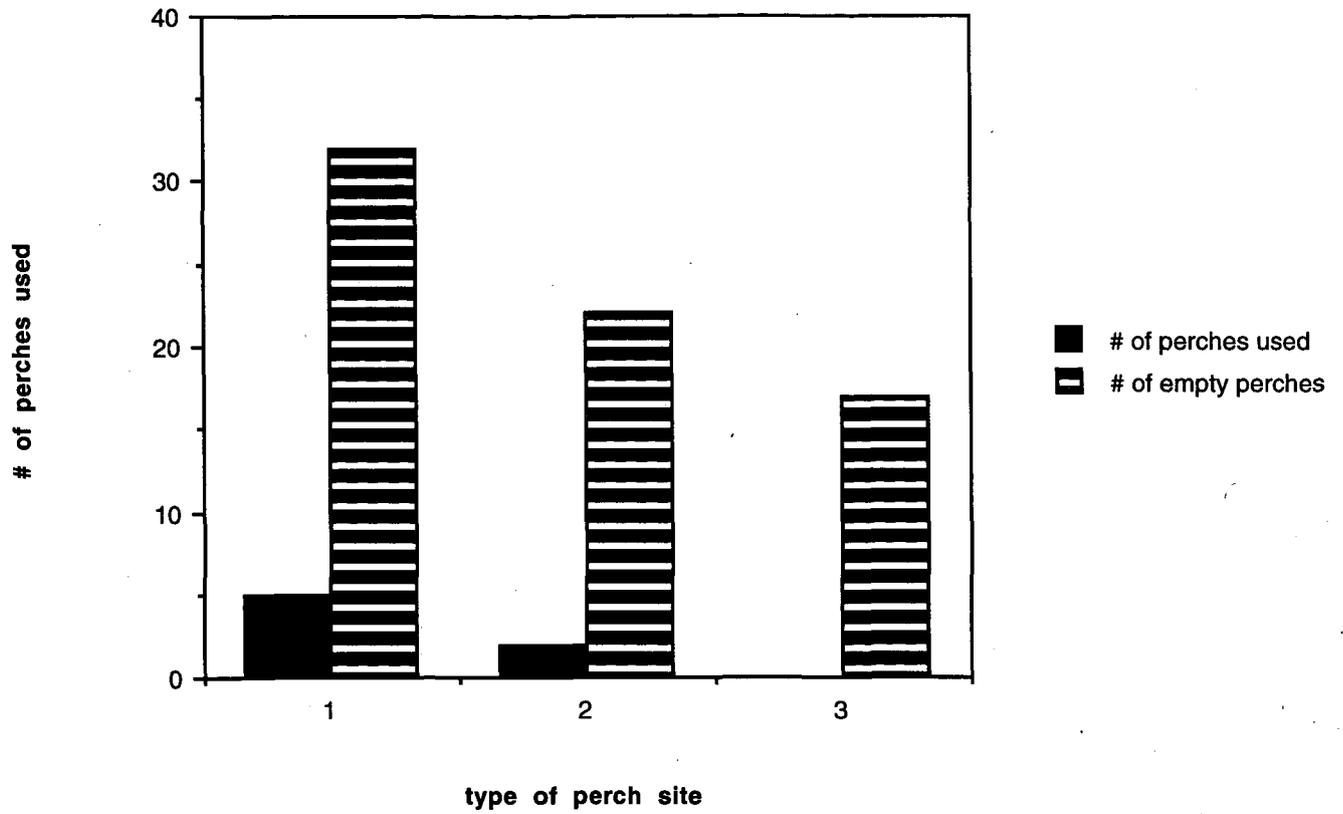
Perch Selection by Raptors (includes nest site)



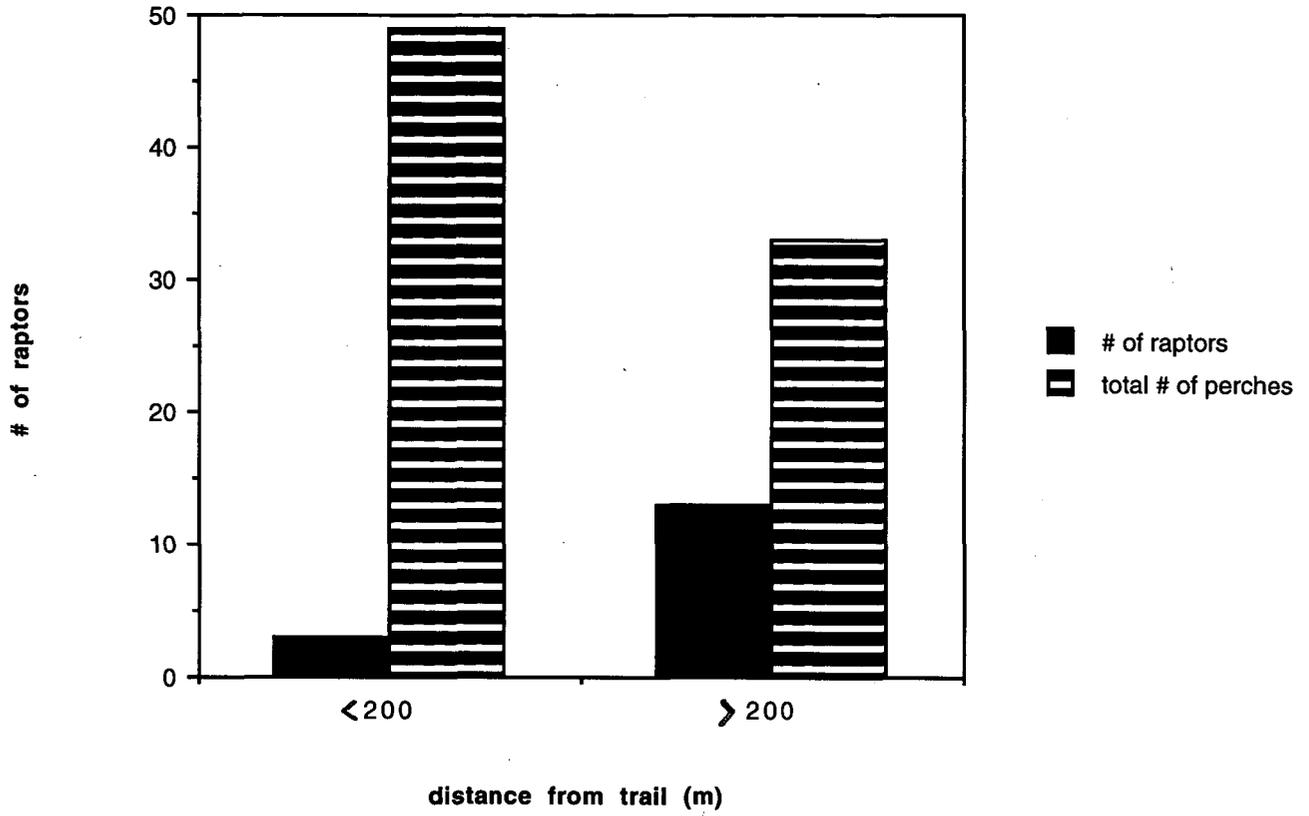
Perch Selection by Raptors (excludes nest site)



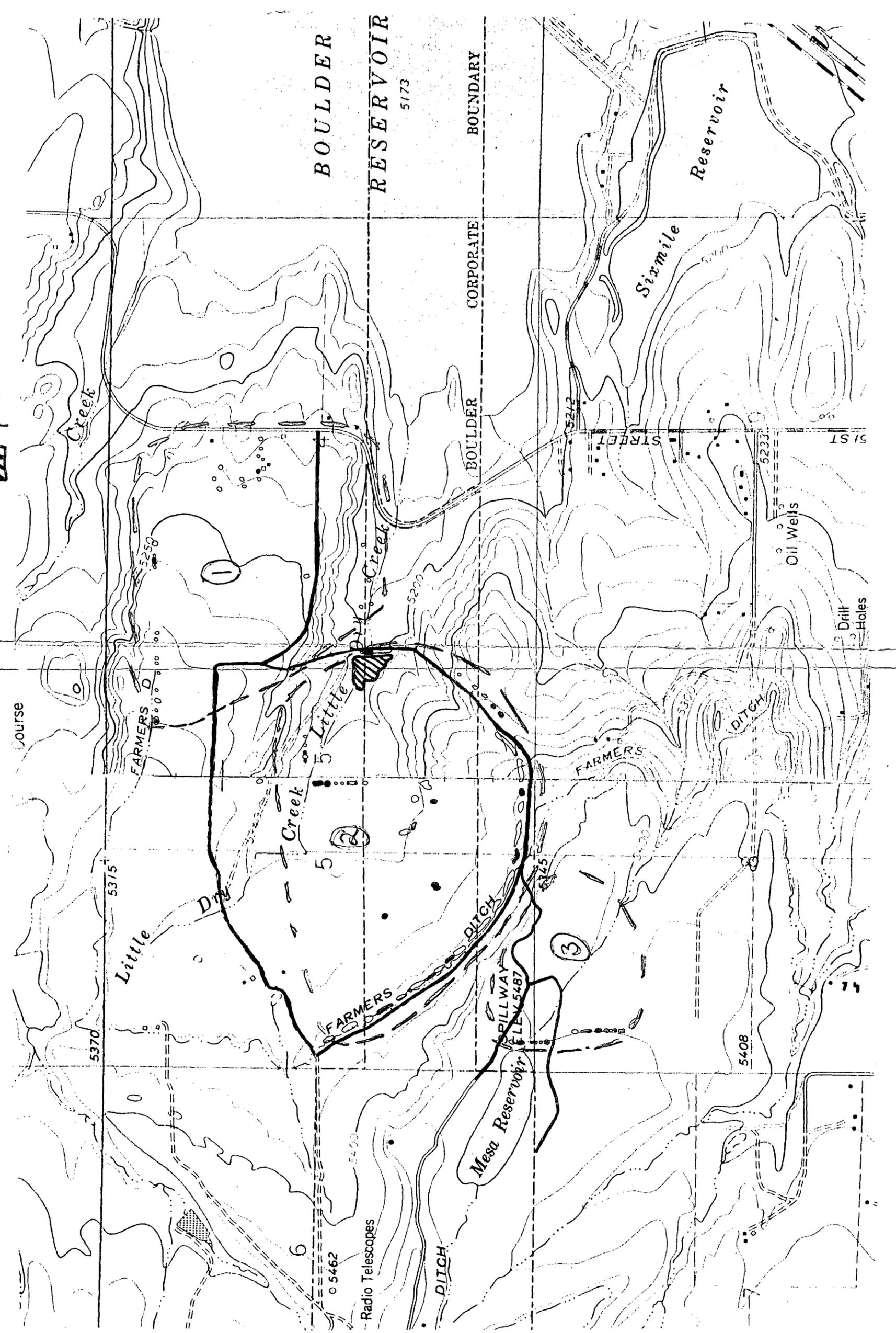
Amount of Perches Used (excludes nest site)



Raptor Distribution correlating to Distance from Trail



- trail
- solitary perch site
- intermediate perch site
- pond
- transect (1, 2, or 3)
- dense perch site



3
2
1

With reference to perching activity in correlation to their distance from the trail, only 3 of 16 sitings were within 200m of the trail, 13 were over 200m from the trail, which is the most significant finding from this study (χ^2 , $p < .05$, $df = 1$). Of the 3 sitings within 200m of the trail, 2 of the sitings were within 200m of a small, single-track area of the trail, while only one was within 200m of a large, more recreational trail.

Discussion

Although it has been speculated that the primary source limiting populations of buteos, such as the Ferruginous Hawk, is the density of the food resource, this suggests that the habitat, specifically its perching requirements and distance from human intervention, may also play an important role in buteo distribution (Howard & Wolfe, 1976). This study suggests a non-random preference of buteos to select mostly solitary perch sites, and also occasionally intermediate perch sites. This would be beneficial to the raptors by increasing their field of view while hunting from a perch: both by increasing their field of view around their perching area and by also causing less ground cover for their prey to conceal themselves. Although the vegetation was different, Wakeley (1978) found similar results in the tactics of the primarily ground hunting Ferruginous Hawks, where "the density of vegetative cover was a more critical factor than was prey density".

More studies need to be done on determining the relative importance of the various parameters of habitat in correlation to raptor populations and distribution. Also more studies need to be done looking at the effects of trails and other human interventions on the distributions of raptor populations. If this study is found conclusive for these grassland raptors, efforts on limiting

trail interventions and conserving local potential perch sites must be emphasized in order to prevent reductions in local populations.

Literature Cited

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