# Threatened and Endangered Species Technical Report

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Submitted To:

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# 1.0 INTRODUCTION

The Colorado Department of Transportation (CDOT) is evaluating potential improvements to the C-470 corridor between South Kipling Parkway and I-25 (the project). CDOT is initiating an Environmental Assessment (EA) that will be completed as part of the National Environmental Policy Act (NEPA) process. The EA will identify the future needs of the corridor and examine improvements that meet those needs, including the number of travel lanes, interchange modifications, and other major capacity improvements, as well as alternative modes of transportation and toll lanes.

This report has been prepared in support of the C-470 EA and describes the likely occurrence of federal and state listed threatened and endangered species, migratory birds, and other wildlife resources in the study area.

## 1.1 STUDY AREA

For the purposes of this study, the C-470 study area is defined as the area within ½ mile of the centerline of the existing C-470 highway alignment, extending from the C-470/I-25 interchange in Douglas County to Kipling Parkway in Jefferson County (Figure 1). The study area includes portions of the communities of Lone Tree, Highlands Ranch, and Littleton in Douglas, Arapahoe, and Jefferson Counties.

Most of the eastern portions of the study area are dominated by urban development including commercial and residential land uses. Several parks, golf courses, and protected open space areas are also found within the study area. West of US 85, the south side of the study area is dominated by undeveloped land and protected lands including Chatfield State Park and the Chatfield Arboretum. Through this area, the north side of the study area is dominated by urban development and golf courses. The study area crosses the South Platte River near US 85, and also crosses other prominent drainages including (from east to west) Willow Creek, Big Dry Creek, Lee Gulch, Dad Clark Gulch, the Highline Canal, and Massey Draw. Elevations in the study area range between 5,350 and 6,430 feet.

# 2.0 METHODS

In August 2003, a field team from ERO Resources inventoried existing noxious weed populations, potential wetlands, riparian areas, prairie dog colonies, raptors, migratory birds, and potential habitat for threatened, endangered, or sensitive species or communities in the study area. The field team used aerial photography to locate many of these environmental resources, and focused on areas in the existing C-470 right-of-way, vacant lots, drainage ditches, floodplains and floodways, parks, golf courses, and open space. The field team did not attempt to identify natural resources within

residential and commercial developments, and did not access private land to conduct the inventory.

Additional field work was conducted in February 2004 to qualitatively evaluate the relative value of wetlands and riparian areas in the study area, the condition of various streams, and potential wildlife corridors in the study area. In August and September 2004, ERO conducted jurisdictional wetland delineations in the APE and also evaluated potential habitat for federally listed threatened and endangered species.

# 3.0 ECOLOGICAL CONTEXT

This section describes the general ecological setting of the study area, including general vegetation communities and common wildlife species. Locations of riparian areas and wetlands are shown in Figure 1. With the exception of wetlands, these resources do not have specific regulatory protections.

## 3.1 VEGETATION COMMUNITIES

### 3.1.1 Grasslands

Most of the undeveloped portions of the study area support shortgrass and mixed grassland communities consisting of species such as western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Stipa viridula*), blue grama (*Bouteloua gracilis*), junegrass (*Koeleria macrantha*), side-oats grama (*Bouteloua curtipendula*), and buffalograss (*Buchloe dactyloides*). Non-native grasses such as smooth brome (*Bromus inermis*), annual rye (*Secale cereale*), and crested wheatgrass (*Agropyron cristatum*), as well as noxious weeds such as cheatgrass (*Bromus tectorum*) and field bindweed (*Convolvulus arvensis*), are common in the study area. Most native grasslands in the study area have been altered by the combined effects of agriculture and development.

### 3.1.2 Riparian Areas

Riparian vegetation in the study area is found along most of the principal streams and in other areas including drainage ditches, ponds, and other sources of water. Riparian vegetation is often intermixed with wetland vegetation and provides potential habitat for the threatened Preble's meadow jumping mouse. Riparian areas generally consist of woody vegetation with an understory of grasses and forbs. Dominant vegetation typically includes various species of trees and shrubs including plains cottonwood (*Populus deltoides*), willow (*Salix* spp.), chokecherry (*Prunus virginiana*), three-leaf sumac (*Rhus trilobata*), and Russian olive (*Elaeagnus angustifolia*) (a non-native weed species).

American currant (*Ribes americanum*) is a rare riparian shrub that occurs in drainages with dense woody vegetation. Most of the riparian areas in the study area, including the South Platte River, provide potential habitat for this species. Known populations of

American currant occur in South Platte Park (along the South Platte River floodplain) (CNHP 1999).

### 3.1.3 Wetlands

Within the study area, wetlands are commonly found within or adjacent to riparian areas, and are generally associated with streams, lakes, ditches, or other water sources. The most common wetland plant species in the study area include cattail, bulrush (*Scirpus validus*), grasses, and sedges. Many riparian shrubland species also occur within wetland areas. Canada thistle (*Cirsium arvense*), a noxious weed and invasive species, was observed in many of the wetlands identified in the study area.

## 3.2 WILDLIFE

### 3.2.1 General Wildlife

Wildlife habitat in the study area is generally located along the undeveloped stream corridors that cross C-470, and the open grasslands and shrublands that are found in the western portion of the study area. Most of the species likely to be found in the study are well-adapted to human modified habitat and human disturbance. Common mammals in these areas include mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), cottontail rabbit (*Sylvilagus audubonii*), deer mouse (*Peromyscus maniculatus*), and striped skunk (*Mephitis mephitis*).

Most of the stream crossings along C-470 also serve as wildlife corridors across the highway. The most significant wildlife corridors are along the South Platte River and Big Dry Creek, where highway bridges allow for wildlife passage. Other wildlife crossings include Willow Creek, Dad Clark Gulch, and the Highline Canal, where box culverts allow for some wildlife movement (Sperger 2004). Any habitat impacts, especially riparian and wetland habitat impacts, would adversely affect the wildlife species that depend on them. Several important wildlife species are discussed further in the following sections.

### 3.2.2 Mule Deer and Elk

Mule deer (*Odocoileus hemionus*) is an important big game species found in most habitat types in Colorado. They are most common in shrublands on rough, broken terrain that provides abundant browse and cover. Mule deer are especially common along the foothills of the Front Range (NDIS 2003). Mule deer are likely to occur in and near the western portions of the corridor, especially in the South Platte River floodplain and along the Dakota hogback.

American elk (*Cervus elaphus*) are commonly found in semi-open forest or along forest edges above 6,000 feet. Elk are known to migrate through the Chatfield Basin to the southwest of the corridor and along the Dakota hogback to the west of the study area,

and may occasionally venture into the corridor, particularly in the winter (Sperger 2004).

The existing C-470 highway poses a substantial barrier to movement by both of these species. Mule deer are likely to use the South Platte River and Big Dry Creek bridges as movement corridors, while the likelihood of elk crossing C-470 to the north and east is very small due to the absence of suitable habitat in the urbanized areas. Although the South Platte River bridge is likely a major movement corridor, it provides little room for wildlife movement along the river banks due to the existing trail and riprap (Sperger 2004). Mule deer also may occasionally cross the C-470 roadway surface during low traffic periods.

Build alternatives would cause the direct disturbance or loss of habitat areas for mule deer or elk because of the larger footprint of the proposed roadway and its associated facilities. Most impacts would be to relatively low quality habitat in the median and in mowed areas of existing ROW. Some higher quality habitat would be lost in areas where the ROW would be expanded into currently undeveloped areas. In addition to direct impacts to habitat, increased noise and traffic volumes would enlarge the area around the highway that mule deer and elk would likely avoid. This would effectively reduce the amount habitat used by deer and elk. A benefit of transportation improvements would be reconstruction of the existing bridge over the South Platte River. The reconstructed bridge would improve the movement corridor between Chatfield State Park and South Platte Park. Movement at other crossings would not be improved.

### 3.2.3 Black-Tailed Prairie Dogs

The black-tailed prairie dog, a burrowing mammal, is a state species of special concern. In August 2004, the U.S. Fish and Wildlife Service (USFWS) removed the prairie dog from consideration as a candidate for listing as a threatened species under the ESA (USFWS 2004). Prairie dogs form large colonies in shortgrass or mixed prairie along the Colorado Front Range, and can play an important role in grassland ecosystems by contributing to nutrient cycling and grassland regeneration, and by providing habitat for numerous other vertebrate species (Whicker and Detling 1988; Fitzgerald et al. 1994).

During the 2003 field review, 21 prairie dog colonies covering a total of about 90 acres were observed on vacant land throughout the study area (Figure 1). Many of the prairie dog colonies in the C-470 study area are located within or adjacent to the existing right-of-way and would be potentially impacted by transportation improvements.

# 4.0 STATE THREATENED AND ENDANGERED SPECIES

As part of its wildlife species conservation program, the State of Colorado has developed a list of wildlife species that it considers to be threatened or endangered within its range in Colorado. All federally listed species are also listed by the state, but since the state designation is focused strictly on species' ranges within Colorado, in addition to federally listed species, there are several state listed species that are not federally listed.

Terrestrial wildlife species listed as threatened or endangered by the state, but not included on the federal list are:

1. Boreal toad – state endangered
2. Burrowing owl – state threatened
3. Kit fox – state endangered
4. Lesser prairie-chicken – state threatened
5. Plains sharp-tailed grouse – state endangered
6. River otter – state threatened
7. Wolverine – state endangered

Aquatic species listed as threatened or endangered by the state, but not included on the federal list are:

1. Rio Grande sucker – state endangered
2. Lake chub – state endangered
3. Plains minnow – state endangered
4. Suckermounth minnow – state endangered
5. Northern redbelly dace – state endangered
6. Southern Redbelly dace – state endangered
7. Brassy minnow – state threatened
8. Common shiner – state endangered
9. Arkansas darter – state threatened

Of the species listed above, based on habitat requirements, the burrowing owl is the only terrestrial species likely to occur in the area. Of the aquatic species listed above, potential habitat is present for the lake chub, northern bedbelly dace, common shiner, suckermounth minnow, plains minnow, and brassy minnow. These species and their potential to occur within the study area are discussed in the sections below.

## 4.1 BURROWING OWL

### 4.1.1 Species Background

The burrowing owl is a small migratory owl that occupies prairie dog towns in Colorado during the summer breeding season and is a state threatened species.

Although not a federally threatened or endangered species, federal and state laws, including the Migratory Bird Treaty Act, prohibit the killing of burrowing owls. The owl is active during the day and uses abandoned prairie dog burrows for nesting and roosting. Burrowing owls nest in sparsely vegetated areas on the plains (typically prairie dog towns in eastern Colorado). When plague or poisoning kills off the prairie dogs in a colony or when the grass around their burrows gets more than ankle high, burrowing owls will abandon their nest burrows (Kingery 1998). Burrowing owl breeding in Colorado occurs from early May to late August. Burrowing owls are typically present in Colorado until late October, when they migrate south to Mexico and Central America.

### 4.1.2 Potential Habitat and Possible Effects

During the 2003 field review, 21 black-tailed prairie dog colonies covering a total of about 90 acres were present on vacant land throughout the study area. The colonies provide potential habitat for the burrowing owl and may support active nests during the breeding season. No burrowing owls were observed during the field review.

Impacts to the prairie dog colonies would result in the loss of potential burrowing owl nesting habitat. Colorado Division of Wildlife (CDOW) recommends surveying for burrowing owls if the prairie dog towns within the preferred alternative boundaries would be affected by development activities during the breeding season. If prairie dog relocation, poisoning, or construction or other earth-moving projects occur between March 1 and October 31, the prairie dog colonies within the preferred alternative area of impact should be surveyed for the presence of burrowing owls.

## 4.2 STATE-LISTED AQUATIC SPECIES

### 4.2.1 Species Background

The six state-listed fish are small-bodied fish that occur in rivers, streams, ponds, and lakes in the eastern Colorado plains. The six species are widely distributed throughout the Missouri and Mississippi river basins, but Colorado is on the western edge of their distribution. These species have been declining in Colorado as a result of land and water development projects. Based on CDOW information (CDOW 2005) lake chub is known to be present in the St. Vrain River and reservoirs in Clear Creek County and the upper Cache la Poudre River. Northern bedbelly dace is present in West Plum Creek west of Castle Rock. Common shiner is present in cool, clear water of the upper South Platte River tributary system and the St. Vrain River. Suckermounth minnow is present in Lodgepole Creek and a small reach of the Arkansas River. Plains minnow is present in the South Platte River between Fort Morgan and Sterling. Brassy minnow is present in St. Vrain Creek, Cache la Poudre River, Lonetree Creek, Pawnee Creek, and the lower South Platte River east of Sterling.

### 4.2.2 Potential Habitat and Possible Effects

Although they are not known to occur in the study area, potential habitat for the six species is present in the streams, ponds, and lakes in the study area, including the South Platte River. Because of urbanization, changes in stream flow regimes, and reservoirs that impede dispersal of individuals, the quality of potential habitat in the study area is low. None of the species are present in great number in any parts of the state and they are not known to be present in the project area. The most recent captures in the state have been limited to particular segments of the South Platte River or segments of South Platte River tributaries as described above. None of the six species were captured during qualitative, one-pass fish surveys done in 2003 by the CDOW on the South Platte River at C-470, Mineral Avenue, Bowles Avenue, and Hampden Avenue (CDOW 2003). Because the best available data indicate the species are not present in or immediately downstream of the study, the project would have no effect on the species.

# 5.0 FEDERALLY THREATENED, ENDANGERED, AND CANDIDATE SPECIES

Federally threatened and endangered species are protected under the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1531 et seq.). Significant adverse effects to a federally listed species or its habitat resulting from a project with a federal action, in this case review and approval of work in right-of-way ultimately overseen by Federal Highway Administration, requires consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA. There are no federal regulations that require consultation for effects to candidate species, but if the species were to become listed during construction, consultation with the USFWS would be required. Because the status of candidate species may change over the course of a project, CDOT policy requires addressing candidate species during the environmental clearance process.

The study area was assessed for the presence of potential habitat for species listed as threatened or endangered and for species considered to be candidates for listing under the ESA by the USFWS. The following list of threatened, endangered, and candidate species with potential to occur in the study area was provided by the USFWS (Linner 2005).

**Table 1. Federally-listed Species with Potential to Occur Within the C-470 Study area**

| Common Name | Scientific Name | Likelihood of Occurrence in the Study Area | Federal Status |
|---|---|---|---|
| Preble's meadow jumping mouse | *Zapus hudsonius preblei* | Low | Threatened |
| Ute ladies'-tresses orchid | *Spiranthes diluvialis* | Low | Threatened |
| Colorado butterfly plant | *Gaura neomexicana* ssp. *coloradensis* | Low | Threatened |

| | | | |
|---|---|---|---|
| Bald eagle | *Haliaeetus leucocephalus* | Occasional Occurrence | Threatened |

Included on the list provided by the USFWS are species that would be affected by continued or on-going water depletions to the Platte River system (Table 2). Species on this list could be adversely affected by water depletions associated with a variety of project elements including detention ponds and dust abatement.

**Table 2. Federally-listed Species with Potential to be Affected by Depletions to the Platte River System**

| Common Name | Scientific Name | Likelihood of Occurrence in the Study Area | Federal Status |
|---|---|---|---|
| Whooping crane | *Grus americana* | Low | Endangered |
| Least tern | *Sterna antillarum* | Low | Endangered |
| Eskimo curlew | *Numenius borealis* | Low | Endangered |
| Piping plover | *Charadrius melodus* | Low | Threatened |
| Pallid sturgeon | *Scaphirhynchus albus* | None | Endangered |
| Western prairie fringed orchid | *Platanthera praeclara* | Low | Threatened |

The following sections provide a description of habitat requirements for each species, an assessment of the potential for habitat in the study area to support the species, and a description of possible effects associated with the project.

## 5.1 PREBLE'S MEADOW JUMPING MOUSE

### 5.1.1 Species Background

The Preble's meadow jumping mouse is listed as threatened under the ESA. Typically, Preble's meadow jumping mouse is located in low undergrowth consisting of grasses and forbs, in open wet meadows, riparian corridors near forests, or where tall shrubs and low trees provide adequate cover. Along Colorado's Front Range, the mouse is found below 7,500 feet in elevation, generally in lowlands with medium to high moisture along permanent or intermittent streams.

### 5.1.2 Potential Habitat and Possible Effects

Portions of the study area are within an area designated by the USFWS as the Preble's Denver metropolitan area block clearance zone. In designating the block clearance zone, the USFWS eliminated the need for individuals or agencies to coordinate with the USFWS prior to conducting activities in habitats that otherwise would be deemed to have potential to support Preble's (Carlson 2000). The establishment of the block

clearance zone is based on the likely absence of Preble's within this area. The block clearance zone has been updated and renewed until 2007 (Linner 2004).

Potential Preble's habitat in portions of the study area outside the block clearance zone is generally poor quality. Habitat fragmentation, isolation from known populations, and development encroachment make it unlikely that potential habitat is capable of being used as a movement corridor or of supporting a viable population of Preble's.

One area of higher-quality potential habitat is the large, mature riparian community on the South Platte River that runs from downstream of Chatfield Reservoir Dam to the north end of South Platte Park. The area contains habitat that may be at least marginally capable of acting as a movement corridor or of supporting Preble's. The quality of potential habitat at this site is higher because of the size of the riparian community and the lack of encroachment by development. The quality of the community is lowered by extensive recreation use by bikers, pedestrians, off-leash dogs, and anglers.

Although the South Platte River in the vicinity of the study area may have some habitat elements required by Preble's, it is unlikely Preble's is present for two reasons. First, Chatfield Reservoir and its dam are significant barriers to movement between the study area and the nearest known Preble's population on Plum Creek. As a result of isolation since construction of the dam in 1967, currently marginal habitat, and past disturbance associated with gravel mining and flood control activities, the reach of the South Platte River between the dam and the boundary of the exclusion zone is unlikely to support a viable population of Preble's. Second, in 1998, the U.S. Army Corps of Engineers performed extensive trapping surveys for Preble's in Chatfield State Park, including downstream of the dam (Burns and McDonnell 1998). No Preble's were captured downstream of the dam. Additional trapping surveys were performed in the vicinity of the study area (primarily in South Platte Park) in 1995, 1997 (3 surveys), and 1998, also with negative results (Meaney and Clippinger 1995, Bakeman 1997, Ensight Technoligical Services 1997, Pardisan Associates 1997, Da Ti Mbi Environmental 1998).

Based on a previous trapping survey, an assessment of existing habitat, isolation, and past and current patterns of disturbance, it is unlikely Preble's is present in the study area. Because it is unlikely to be present, the project is not likely to adversely affect Preble's.

## 5.2 UTE LADIES'-TRESSES ORCHID

### 5.2.1 Species Background

Ute ladies'-tresses orchid (ULTO) occurs at elevations below 6,500 feet in moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes.

Occurrences of ULTO have been documented in Colorado, Wyoming, Idaho, Nevada, and Utah. Once thought to be fairly common in low elevation riparian areas in Colorado, Utah, and Nevada, currently only sixteen populations are reported to occur in Colorado with most populations occurring along the Front Range. Generally, ULTO is found in areas where the vegetative cover is relatively open; dense, overgrown sites are not conducive to ULTO establishment. ULTO is found most often in areas where soils are typically alluvial deposits of sandy, gravelly material that are saturated to within 18 inches of the surface for at least part of the growing season.

### 5.2.2 Potential Habitat and Possible Effects

Since the study area is located in Jefferson and Douglas Counties, the USFWS orchid survey guidelines (USFWS 1992) consider all wetlands as potential orchid habitat. ERO assessed all wetlands in the study area for their potential to support the orchid. The assessment was done during August in the survey period of the orchid, and presence/absence surveys were done in the few wetlands identified as being potentially capable of supporting the orchid.

One of the major determinants of suitable orchid habitat is the presence of subirrigated alluvial soils. Soils in the study area vary by their location and source materials and several distinct soil associations are found in the study area. Soils in the Highlands Ranch area are dominated by the Renohill-Buick-Litle association and the Fondis-Kutch association. These soils are moderately deep loamy soils with loamy to clayey subsoils (SCS 1971; SCS 1974). Soils in the area along the South Platte River are dominated by the Alluvial land- Nunn association, and the Loamy alluvial land – Sampson association. These soils are mainly loamy and sandy soils on flood plains and terraces. These soils are located in an area with a shallow water table that is generally subject to flooding (SCS 1971; SCS 1974). Soils in the Massey Draw area, generally between the South Platte River floodplain and Kipling Parkway, are dominated by the Nunn-Denver association, which consists of clayey soils that formed in material derived from mudstone and shale (SCS 1974). The wetlands associated with the South Platte River are the only wetlands in the study area with subirrigated alluvial soils. Soils in other wetlands likely preclude the orchid.

In addition to soils, another major determinant of suitable orchid habitat is the plant community. Most of the wetland communities adjacent to streams in the study area are dominated by sandbar willow and dense herbaceous growth. These dense, overgrown communities typically preclude the orchid. Most isolated wetlands in the study area that are not dense and overgrown are located in roadside ditches in the C-470 right-of-way.

As previously described, wetlands along the South Platte River are the only wetlands with soils suitable for the orchid. However, most of those wetlands are dominated by

dense stands of sandbar willow and reed canarygrass, which would typically preclude the orchid. Areas along the South Platte River with more open wetland vegetation were surveyed for the orchid in August 2004, but none were found. Because the orchid was not found in the project area, the project is not likely to affect the orchid. However, in order to confirm its absence, suitable habitat for the orchid would be surveyed again no more than one year before construction, with the survey results reviewed and accepted by the USFWS.

## 5.3 COLORADO BUTTERFLY PLANT

### 5.3.1 Species Background

The Colorado butterfly plant is a short-lived perennial herb found within a small area of southeastern Wyoming, western Nebraska, and north-central Colorado (CNHP 1999). Its historical and current distribution includes Boulder, Douglas, Larimer, and Weld Counties, Colorado. The Colorado butterfly plant is found in active floodplains along perennial streams and occurs where vegetation is relatively open. Agricultural activities within floodplains as well as water diversion projects, channelization, and urban development threaten this species.

### 5.3.2 Potential Habitat and Possible Effects

The USFWS has not established official survey guidelines for the Colorado butterfly plant; however, wetlands associated with an intermittent or perennial stream with an active floodplain are considered potential habitat. The rivers and streams located within the study area do not have suitable habitat for the Colorado butterfly plant because of the dense cover of competitive species such as sandbar willow, reed canarygrass, Emory sedge, and fescue, which may prevent new seedlings from becoming established. Additionally, most of the drainages are deeply incised and do not have active floodplains that are periodically scoured free of vegetation. Because of these characteristics, suitable habitat is not present within the project area and the project would not affect Colorado butterfly plant.

## 5.4 BALD EAGLE

### 5.4.1 Species Background

The bald eagle is a large North American bird with a historical distribution throughout most of the U.S. The bald eagle was listed as an endangered species in 1978. Population declines are attributed to habitat loss, the use of organochlorine pesticides, and mortality from shooting. Since its listing, the population trend for the bald eagle has been increasing. The bald eagle was downlisted from endangered to threatened in 1995 and the USFWS is proposing to delist the bald eagle due to population recovery. If the bald eagle is removed from the list of threatened and endangered species, it will

continue to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Bald eagles are primarily winter residents in Colorado, although nesting along the Colorado Front Range has increased in recent years (CDOW 2001). Most nesting in Colorado occurs near lakes or reservoirs or along rivers. Typical bald eagle nesting habitat consists of forests or wooded areas that contain many tall, aged, dying and dead trees (Martell 1992).

### 5.4.2 Potential Habitat and Possible Effects

No designated critical or essential eagle habitat is present in the study area, but bald eagles are known to frequently fly along the South Platte River and they occasionally forage or perch in the vicinity of the study area. There is a report of a new bald eagle nest in South Platte Park, about 1.7 miles from C-470 outside the study area (Sperger, 2004). In 2004, a mated pair of apparently young adult bald eagles attempted to nest in an existing red-tailed hawk nest. Nesting material was added to the nest and incubation behavior observed, although the pair failed to produce any young. Reasons for nest failure unknown, but first time nesting attempts for young bald eagles typically fail. In 2005, great horned owls were nesting in the 2004 bald eagle nest.

In addition to the new nest, there are other cottonwood trees in and near the study area large enough to provide suitable nest substrate. No eagles have exhibited nest-building behavior in these trees. Because of the proximity of the new nest, it is unlikely another nesting pair would begin construction along the South Platte River in or near the study area, but it is possible the current pair may abandon the existing nest in favor of an alternative nest site.

The proposed alternatives would not directly impact any known bald eagle roosts or nests. However, transient bald eagles that use the South Platte River floodplain for foraging or travel may change their movement, foraging, and perching behaviors during construction. Forage reduction from the loss of black-tailed prairie dogs is unlikely to affect the nesting pair of bald eagles in South Platte Park.

In order to determine if the impacts to the black-tailed prairie dogs would adversely affect nesting bald eagles, all black-tailed prairie dog colonies and areas of open water within three miles of the nest were mapped. Mapping was done via interpretation of aerial photography. Of the 500 acres of prairie dog habitat within three miles of the bald eagle nest, only 7.9 acres, or 1.5 percent would be impacted by C-470 improvements. None of the open water would be affected by the alternatives.

Although the proposed alternatives may affect bald eagle by negligibly reducing its prey base, the alternatives are not likely to significantly adversely affect bald eagle. In

order to further reduce the effects, CDOT is coordinating with South Platte Park management to implement several measures that would enhance bald eagle foraging and nesting opportunities. In order to enhance bald eagle foraging opportunities, CDOT would install three to five perch poles near bodies of open water in South Platte Park. CDOT would also plant several masses of shrubs to create cover for rabbits and other small mammals, and would relocate as many as 30 black-tailed prairie dogs from C-470 impact areas to a currently vacant 1-acre prairie dog colony at South Platte Park. In order to enhance nesting opportunities, CDOT would install one nest basket in a large cottonwood tree and would erect one nest platform. The numbers and locations of enhancement measures would be approved by the USFWS and documented in a Memorandum of Agreement between CDOT and South Platte Park.

## 5.5 PLATTE RIVER SPECIES

### 5.5.1 Species Background

Whooping crane, least tern, Eskimo curlew, piping plover, pallid sturgeon, and western prairie fringed orchid are species that rely heavily on habitat provided by the Platte River system. Whooping crane, least tern, Eskimo curlew, and piping plover are bird species that may migrate through Colorado or that may occasionally nest on wide, sandy shores of reservoirs, typically in eastern Colorado. Pallid sturgeon is a fish species found in the Missouri River and Middle Mississippi River. Western prairie fringed orchid is a plant species whose habitat is the tall grass prairie ecosystem west of the Mississippi River.

### 5.5.2 Potential Habitat and Possible Effects

There is no habitat for whooping crane, least tern, Eskimo curlew, piping plover, pallid sturgeon, or western prairie fringed orchid in the study area. Because no habitat is present, transportation improvements to C-470 would have no direct affect on these species.

With regard to possible water depletions to the Platte River system, potential project elements that could result in depletions include detention facilities, dust abatement, and wetland mitigation. As currently proposed, these elements would not result in depletions for the following reasons: 1) Detention facilities are planned to be dry facilities, would release detained water within 24 to 48 hours, and so would not result in discernable water loss via evaporation; 2) water used for dust abatement would be obtained from municipal sources that have previously undergone depletions consultations; and 3) wetland mitigation would be at a 1:1 ratio and so would not increase water loss via transpiration. Therefore, proposed improvements would not result in depletions and would have no indirect effect on the species.

# 6.0 MIGRATORY BIRDS

Migratory birds as well as their eggs and nests are protected under the Migratory Bird Treaty Act (MBTA). With the exception of house sparrow, rock dove (common or feral pigeon), European starling, and resident game birds such as pheasant and grouse, all wild birds commonly found in the U.S. are protected by the MBTA, even species such as magpie and great horned owl that tend to be present throughout the year. All active nests are protected, including cavity nests (e.g., flicker), ground nests (e.g. killdeer), and subterranean nests (e.g., burrowing owl). The MBTA does not contain any prohibition that applies to the destruction of an inactive bird nest alone (without birds or eggs), provided that no possession occurs during the destruction. While destruction of an inactive nest by itself is not prohibited under the MBTA, nest destruction that results in the unpermitted take of migratory birds or their eggs is illegal and fully prosecutable under the MBTA (Migratory Bird Permit Memorandum, U.S. Fish and Wildlife April 15, 2003).

## 6.1 RAPTORS

During the August 2003 field surveys, six active red-tailed hawk (*Buteo jamaicensis*) nests and one active prairie falcon (*Falco mexicanus*) nest were observed within a mile of C-470 (Figure 1). Although not active during the August 2003 field surveys, nests known to be previously productive for great horned owl (*Bubo virginianus*) and Swainson's hawk (*Buteo swainsoni*) are also present. The riparian canopy near the Highline Canal is known to be a winter perch site for bald eagles (*Haliaeetus leucocephalus*), while the nearby grasslands provide foraging habitat.

The prairie falcon nest is not likely to be affected by transportation improvements, and is located outside of the ½ mile study area on either side of the highway. Of the six active red-tailed hawk nests in the study area, four are within 1/3 mile of C-470 and could potentially be affected by transportation improvements. These four nests are:

- Two nests in the southeast corner of the C-470 – U.S. 85 interchange. These nests were inactive in 2003, but have been active in the last 3 years (nests active within 3 years are considered to be currently active).
- One nest along Big Dry Creek on the north side of C-470.
- One nest along Willow Creek on the south side of C-470.

Direct effects to raptors in the project area would include the removal of trees in which their nests have been constructed. Indirect effects include loss or reduction of foraging habitat near the nests, which includes nearby prairie dog towns or fields that support habitat for small mammals such as mice and voles. If foraging habitat is reduced enough, raptors would abandon the area in search for more forage elsewhere. Another indirect effect is changed behavior of the raptors. Behaviors may permanently change if structures or activities encroach into the "comfort zone" of the birds. Encroachment

could lead to discontinued use of nests or foraging areas or to total abandonment of the area. Depending on the type and extent of encroachment, some changes in foraging or breeding behaviors may be temporary if the birds resume their normal behaviors following construction, or if they acclimate to the changed environment and continue to nest and forage in the vicinity of the highway.

None of the four active red-tailed hawk nests in the project area would be directly impacted. However, due to their proximity to the limits of construction, nest productivity of the nests would likely be indirectly affected either by reduced foraging habitat or by changed behaviors. Because they are close to the highway and not screened from the highway by vegetation or their location in the landscape, the four nests most likely to be indirectly affected by encroachment are two in the southeast corner of the Santa Fe Drive interchange, one along Big Dry Creek on the north side of C-470, and one along Willow Creek on the south side of C-470.

These four nests would be monitored prior to and during construction to evaluate whether they are active. Construction would not occur within 1/3 mile of active nests between February 15 and July 15.

Temporary behavioral disturbance including changes in foraging or breeding behaviors may also occur during construction activity. However, it is likely that the birds would resume their normal behaviors following construction, having acclimated to the changed environment, and continue to inhabit the area near the highway.

## 6.2 OTHER BIRDS

A variety of bird species occur within the study area. Mallards (*Anas platyrhynchos*), Canada geese (*Branta canadensis*) and other waterfowl are found in and around open water habitat and wetland species include red-winged blackbird (*Agelaius phoeniceus*) and song sparrow (*Melospiza melodia*). Common grassland birds include the western meadowlark (*Sturnella neglecta*), vesper sparrow (*Pooecetes gramineus*) and mourning dove (*Zenaida macroura*). Cliff swallows (*Petrochelidon pyrrhonota*) nest beneath bridges and other overhanging structures.

Habitat for a variety of bird species, especially swallows and ground- or wetland-nesting birds would likely be impacted and would be subject to the conditions of the MBTA.

# 7.0 CONCLUSIONS

The C-470 EA study area contains a mix of developed and undeveloped areas. Undeveloped areas include large parcels of dedicated parks and open space that are primarily located in the west third of the study area. Undeveloped areas support a variety of common bird and mammal species. Riparian areas associated with drainages in the study area provide the highest quality wildlife habitat and act as the primary north/south movement corridors. Over the project reach, the amount of usable habitat would be lower because of direct impact to habitat in the right-of-way, increased noise and light, and greater difficulty in crossing the highway. While the build alternatives would increase the difficulty of wildlife movement across the highway, wildlife movement along the South Platte River would likely be improved by construction of a new bridge across the river. In addition, existing culverts in excess of 24 inches in diameter will remain to serve as small animal crossings.

Although not afforded state or federal regulatory protection, the black-tailed prairie dog is a state species of concern and CDOT has developed guidelines for its removal from project areas. In areas where avoidance is not possible, CDOT would follow its guidelines, which include the pursuit of suitable prairie dog relocation sites as well as coordination with the CDOW on approved removal methods.

The only state-listed threatened or endangered terrestrial species with potential habitat in the study area is burrowing owl. Prior to construction, surveys for burrowing owl would be conducted. If owls are present, CDOT would confer with the USFWS to determine appropriate mitigation measures. Mitigation would likely entail restricting construction activity in the vicinity of active nest burrows.

The South Platte River and its tributaries provide potential habitat for several state-listed threatened or endangered fish species, but their occurrence is unlikely.

Based on habitat evaluations and information about known populations, the study team does not believe that the C-470 study area supports any populations of Preble's meadow jumping mouse, Ute ladies'-tresses orchid, or Colorado butterfly plant and so proposed alternatives are unlikely to affect the species.
The study area does provide nesting, perching, and foraging habitat for the bald eagle, though there are no known occurrences of a bald eagle roost or nest in the study area at this time. Nesting bald eagles about 1.7 miles from the highway may be affected by the loss of prey base that would result from impacts to black-tailed prairie dogs in the project area. However, the reduction in prey base is such as small fraction of prey available within three miles of the nest that it is unlikely to adversely affect the nesting bald eagles. The reduction in prey base would be offset by mitigation measures proposed in South Platte Park.

Because no habitat is present and there would be no anticipated water depletions to the Platte River system, the project would have no affect on whooping crane, least tern, Eskimo curlew, piping plover, pallid sturgeon, or western prairie fringed orchid.

The study area provides diverse foraging and nesting habitat for numerous migratory birds. As described previously, prairie dog colonies provide habitat for the burrowing owl. Large trees in the study area provide nesting substrate for raptors. Four active red-tail hawk nests are located within the ½ mile disturbance buffer from C-470, and construction would not occur within 1/3 mile of nests between February 15 and July 15. Other migratory birds present in the study area include swallows that nest under many of the existing bridges and culverts, as well as other species that nest in wetland and grasslands. The presence of these migratory birds requires additional surveys prior to construction as part of compliance with the MBTA. Mitigation for adverse affects would be coordinated with the USFWS and, for raptors, the CDOW.

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Figure 1a

## Project Area with Natural Resources

- Project Area
- 3 Mile buffer of Blad Eagle Nest
- Open Water
- Wetlands
- Black-tailed Praire Dog Colony
- Riparian Habitat
- Preble's Meadow Jumping Mouse Habitat
- Raptor Nest/Forage Area *Field Verified*
- Bald Eagle Nest *(Not for Public Disloser)*

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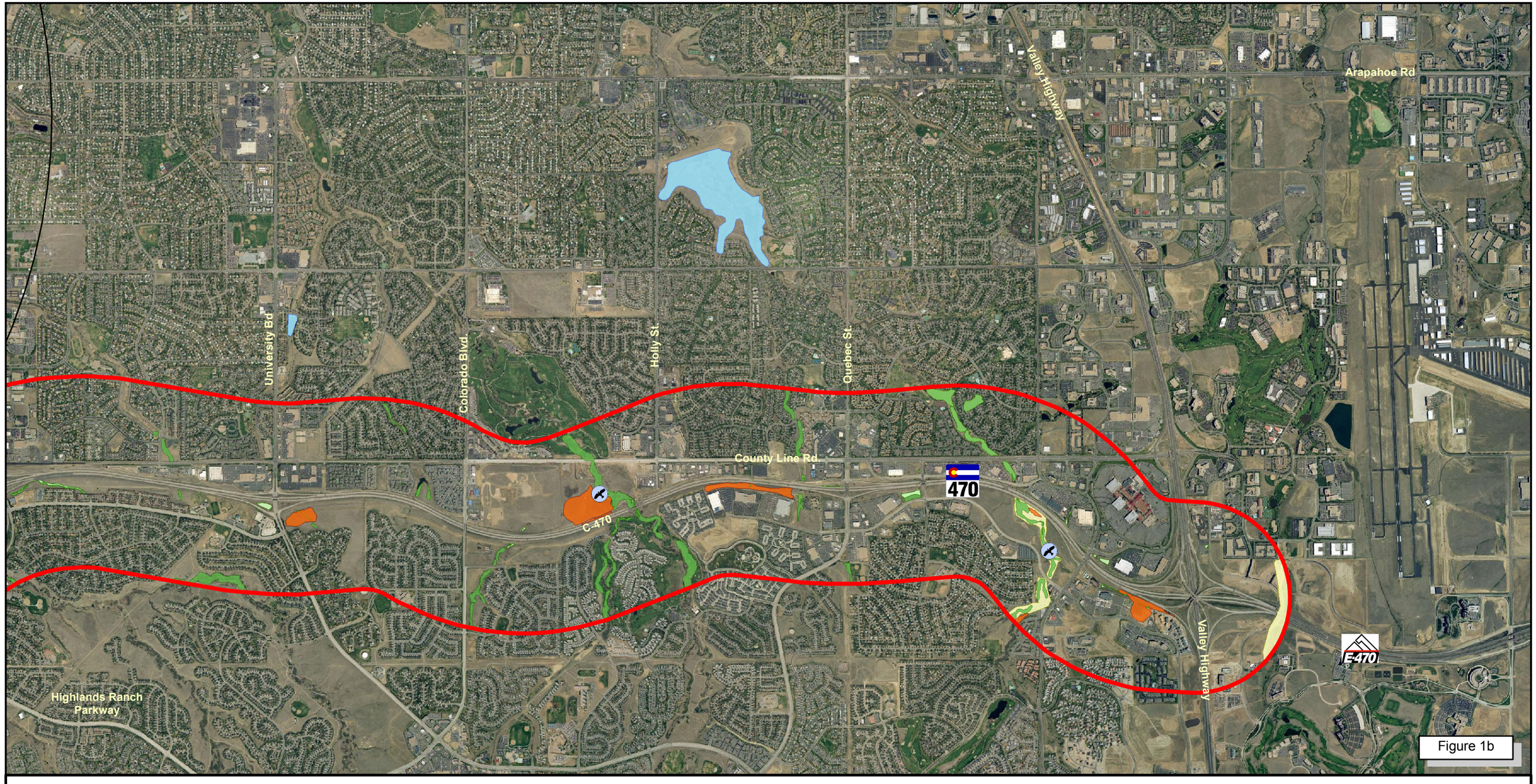


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