

APPENDIX C

BIOLOGICAL ASSESSMENT

INTRODUCTION

The U.S. Forest Service has proposed a series of actions with the goal of forest restoration in the Upper South Platte Watershed on the Pike National Forest. These actions would include timber harvesting, prescribed burning, revegetation in the Buffalo Creek burn area, obliteration and reclamation of unnecessary roads, and trail improvements. This Environmental Assessment (EA) discloses the environmental consequences of implementing the proposed actions.

In conjunction with the National Environmental Policy Act (NEPA) process, the Forest Service is required to comply with Section 7 on the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*) by consulting with the U.S. Fish and Wildlife Service (USFWS) prior to release of the Environmental Assessment (EA). The purpose of this consultation is to ensure that the proposed action does not preclude or threaten the continued existence of any federally listed threatened or endangered species or adversely affect designated critical areas (50 CFR 17). In accordance with regulations at 50 CFR 402, the U.S. Forest Service initiated informal consultation with the USFWS on June 1, 2000.

Data was obtained from existing and available information, including resource management plans and other environmental documents prepared for similar proposed actions in the project study area. These documents were reviewed to determine the locations and types of biological resources that could exist in the project study area. Information on species occurrence was also gathered from the statewide database through contact with the CNHP. Contacts were made with species experts and resource specialists from the Forest Service, CDOW, and USFWS to gather file information on biological resources in the project study area, including maps and database information. This document provides an analysis of the potential effects of the project on these species and, with the concurrence of the USFWS, satisfies the ESA requirement for preparation of a Biological Assessment (BA) (50 CFR 402.112).

The BA presents an analysis of the potential effects of the project alternatives on Threatened and Endangered species identified by the above mentioned means. The list of species considered for this document include two birds and one invertebrate which are known from, or which could occur within the project area.

PROJECT AREA

For the purposes of the BA, the project area was defined as the Upper South Platte watershed. The Upper South Platte watershed is located within the foothills of the Colorado Front Range of the Rocky Mountains. It is a large, important watershed that is a critical water supply for the city of Denver,



providing 70 percent of the city's water. Due to its proximity to the city, it contains a large urban-wildlands interface and provides easy access to fishing, hiking, and other outdoor pursuits. A portion of the South Platte River is a gold medal trout fishery.

The Project Area is approximately 140,000 acres in total extent (public and private lands) and encompasses three sub-watersheds of the Upper South Platte River watershed including Horse Creek, Waterton/Deckers, and Buffalo Creek sub-watersheds. These watersheds are located in Jefferson and Douglas Counties, west of Denver. This area was selected based on recommendations from the Landscape Assessment of the Upper South Platte Watershed (Foster Wheeler, 1999).

Approximately 120,000 acres of the Project Area is on National Forest land. The remaining areas within these sub-watersheds are predominately privately owned lands. However, there are also state and county lands within the assessment area.

Elevations within the Assessment Area range from approximately 6,000 feet along the South Platte River to almost 9,000 feet at some of the higher peaks. The terrain is extremely varied and includes deep, narrow canyons; flat river-valley bottoms; broad meadows; rugged mountain foothills; steep slopes; rounded granite peaks; and scattered, rugged granite outcroppings. Portions of the Waterton/Deckers and Buffalo Creek watersheds are within the Lost Creek Wilderness Area.

A portion of the Project Area was burned in the 1996 Buffalo Creek fire. This large, hot fire resulted in loss of forest cover on 12,000 acres and burned several homes. Summer storms in the area of the burn caused catastrophic erosion and sediment deposition into the watershed's streams. Flooding events following the fire destroyed much of the stream channels and riparian zones along Buffalo and Spring Creeks. Even after four years, much of the burn area remains unvegetated (see Proposed Actions and Purpose and Need for further discussion of this fire).

METHODS

Review of literature and databases was conducted to assess the status of species identified by the Forest Service, USFWS, CNHP, and CDOW as potentially occupying the project area. Contacts with species experts were made to augment published information and database records of species occurrence. Federal, state, and Colorado Natural Heritage Program Database listings of special-status species and their habitats were reviewed to identify those species potentially occurring within the project area. Based on these lists, plants and wildlife species were carefully identified to eliminate or confirm the occurrence of special-status species within the project area.

THREATENED AND ENDANGERED ANIMAL SPECIES

Information on species occurrence was gathered from the statewide database through contact with the CNHP and Forest Service personnel. Contacts were made with species experts and resource specialists from the USGS Biological Service, Forest Service personnel, and USFWS personnel to gather file information on wildlife resources in the project study area, including mapped and database information. One invertebrate, two birds and one mammal were identified for analysis for this BA.



THREATENED, ENDANGERED, AND CANDIDATE PLANT SPECIES

Information on occurrences of federally protected plants in the project study area was obtained initially from the CNHP and through consultation with Forest Service personnel. Additional information on species' habitat requirements, blooming periods, and field identifying characteristics was obtained from state flora guides (Weber 1990; Spackman et al. 1997). Federal and state resource specialists, including the Forest Service and USFWS were also contacted to obtain information on threatened and endangered plants. No threatened, endangered, or candidate plant species occur within the project area. Therefore, plants are not carried forward in this document.

THREATENED AND ENDANGERED SPECIES KNOWN FROM OR POTENTIALLY OCCURRING WITHIN THE PROJECT AREA

FEDERALLY LISTED THREATENED SPECIES

Pawnee Montane Skipper (*Hesperia leonardus montana*)

The Pawnee montane skipper is found in sparsely wooded grasslands and open pine forests at elevations from 6,000 to 7,500 ft. They are dependent on two plant species, the prairie gayfeather (*Liatris punctata*), which flowers late summer through early fall and blue grama (*Bouteloua gracilis*). The butterfly uses liatris for its nectar and the blue grama as larval plant food (U.S. Fish and Wildlife Service 1998). The butterfly has a very limited distribution occurring along a 12-mile stretch of the South Platte River. The Pawnee montane skipper is known to occur in Douglas, Jefferson, Park and Teller Counties in Colorado (Forest Service, 1994). Distribution information from CNHP indicates that the Pawnee montane skipper has been identified at two locations in the Waterton/Deckers Composite watershed and one location near the southeastern corner of the Horse Creek watershed.

An extensive study of skipper presence and habitat was conducted in 1986 for the proposed Two Forks reservoir (ERT Company 1986). The Two Forks study area was stratified into 160-acre sampling blocks for distribution sampling. There were 310, 160-acre blocks that were available for sampling. Skipper presence was confirmed in 161 sampling blocks. The occupied skipper habitat identified from the 1986 study is shown with the vegetation treatment areas on Map 1. The total occupied skipper habitat identified in the 1986 study is 24,831 acres. The occupied habitat in the EA Project Area is 14,010 acres. Habitat for the skipper occurs in the Vegetation Treatment Areas.

ALTERNATIVE A

Alternative A (No Action) would have no direct impacts on the skipper or its habitat. No trees would be cut down and no tree removal or prescribed burning would occur. However, marginal skipper habitat would continue to be degraded through increasing density of the forest. The higher quality skipper habitat would likely remain in good condition because those sites are quite dry. The loss of marginal habitat would increase habitat fragmentation, and reduce dispersal avenues among islands of highly suitable habitat. Catastrophic forest fires would likely be beneficial to skipper movements in the long-term.

This alternative would have a higher long-term risk of catastrophic fire than the other alternatives. Should a wildfire occur it could eliminate marginal skipper habitat and could kill individuals. The timing of recovery of the habitat and recolonization by the skipper is unknown but the post-fire condition would be more open and therefore would support more blue grama and liatris than the current condition.

ALTERNATIVE B

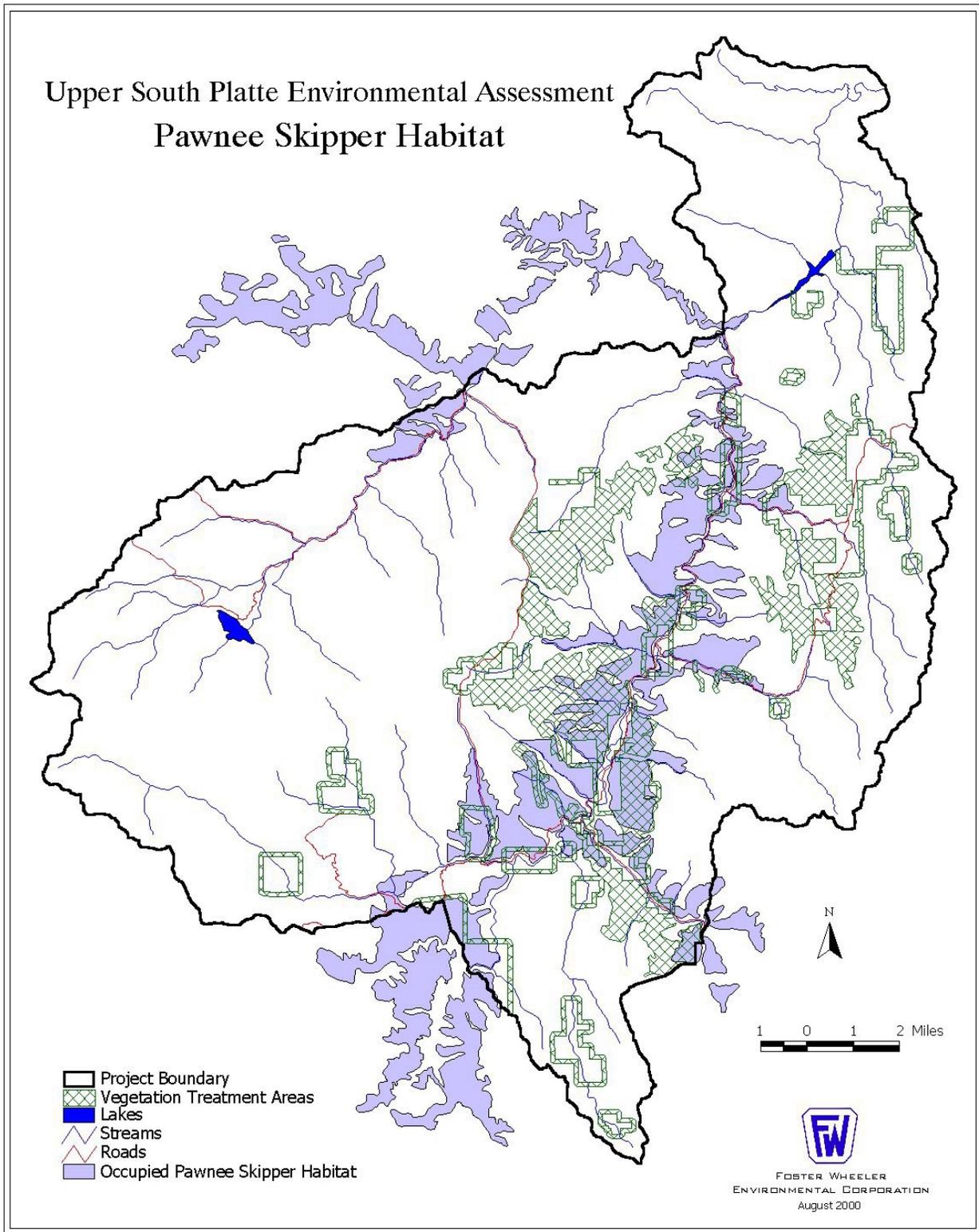
Alternative B (Proposed Action) would create open ponderosa pine stands on 17,500 acres of which 3,846 acres would be occupied skipper habitat. The vegetation treatments and prescribed burning would also reduce the wildfire risk and the resulting open ponderosa pine stands would be more favorable habitat conditions for the skipper.

In 1998, The USFWS developed a recovery plan for the skipper (U.S. Fish and Wildlife Service 1998). The recovery plan lists general characteristics of skipper habitat as:

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- ❖ **Tree canopy cover of 30 percent**
 - ❖ **Ponderosa pine crown cover of 25 percent, Douglas fir crown cover of 5 percent**
 - ❖ **Tree density of less than 120 trees/acre in the smallest size class (0 to 5 feet diameter breast high); overall tree density of less than 200 per acre.**
 - ❖ **Shrub and grass cover generally less than 10 percent**
 - ❖ **Prairie gayfeather flower stem density ranging from 50 to 500/acre**
 - ❖ **Blue grama cover 5 percent or less , present nearly everywhere**
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The vegetation treatments would move forest conditions to more favorable habitat based upon the general habitat characteristics listed above. The vegetation treatments would convert areas of more closed (40-70 percent closure) tree canopy to 30 percent or less. The general habitat characteristics indicate that Douglas fir would be a minor component. The vegetation treatments would create mostly pure ponderosa pine stands and would target Douglas fir for removal. Tree density would be less than 100 trees per acre and only 25 small trees per acre. The shrub, grass cover and flower densities would vary depending upon the site conditions following the vegetation treatments. However, the site conditions would be more favorable for establishment of good skipper habitat than the current condition. The vegetation treatments would have a risk of introduction or expansion of noxious and invasive weeds that would exclude liatris and blue grama.





Map 1. Occupied Pawnee montane skipper habitat.



An examination of current skipper habitat conditions, the vegetation treatment areas and the completed vegetation treatment area at Trumbell was conducted on July 19, 2000 to formulate mitigation measures. The following mitigation measures would minimize potential impacts to skippers and their habitat.

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- ❖ **Restrict openings in skipper habitat to 5 acres or less in size**
 - ❖ **Fell trees off of blue grama/liatris areas where possible**
 - ❖ **Minimize the disturbance area with a pre-logging survey to determine the best skid trails and forwarder routes. Routes would be designated to avoid blue grama/liatris areas.**
 - ❖ **Minimize slash on blue grama/liatris areas**
 - ❖ **Minimize machine operations on blue grama/liatris areas**
 - ❖ **Limit prescribed burning to 500 acres per year in skipper habitat and stagger timing so that adjacent areas are burned with a minimum 2 year window for recovery time.**
 - ❖ **Noxious weed treatments should include**
 - **Identify weed concentration areas in and near harvest units**
 - **Pretreat weed concentrations with herbicide during the optimum life stage for treatment, typically spring or fall**
 - **Wash equipment before it is brought into the harvest area**
 - **Avoid machine operations through weed areas**
 - ❖ **Use blue grama seed in the seed mixture used for road reclamation.**
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Direct and indirect effects of the vegetation treatment on the skipper would be minimal if the above mitigation is followed. Females typically deposit their eggs in open areas with existing low tree cover and larger patches of blue grama. If harvesting equipment is kept off of these areas then there would be minimal impacts. Prescribed burning would have the highest potential for effects.

The egg stage occurs in the summer when no prescribed burning would occur. Early Spring would be best for prescribed burning because larval stage is down in the soil or in the basal clump of blue grama and therefore would have some thermal protection, and soil temperatures are low. Fall prescribed burning would also allow similar protection of the larval stage. The blue grama/liatris areas have few trees. Therefore, if slash is kept off of blue grama/liatris areas the prescribed fire would not burn hot, or at all, because of lack of fuel.

Road reclamation activities present an opportunity to improve skipper habitat and populations. These roads likely do not currently function as skipper habitat. The use of blue grama seed in the revegetation effort would increase skipper habitat. Another potential benefit would be that if blue grama were established on these reclaimed roads they could serve as possible habitat connections between better habitat islands. The use of biosolids would help promote the establishment of blue grama (which is difficult to establish).

The Gill Trail project would have both positive and negative effects on skipper habitat. The expansion of the parking lot at the trailhead would permanently remove about 1 acre of skipper habitat. This habitat is disturbed and is not high quality. A portion of the social trails that would be rerouted are in skipper habitat. The trail rerouting would minimize current human impacts to that habitat.



Biological Assessment

The Buffalo Creek burn area revegetation and riparian rehabilitation efforts proposed would have minimal but positive effects on skipper habitat. Areas that are proposed for ponderosa pine planting may become skipper habitat in the future. The use of biosolids would help promote revegetation efforts.

This alternative would be consistent with the skipper recovery plan because skipper habitat would be created or marginal habitat improved. The long-term habitat trend would be positive, however there may be some short-term impacts. During implementation of the vegetation treatments, falling trees and vehicle tires may crush larvae or adult butterflies and skidding may pull up or crush blue grama and gayfeather plants. The burning of slash, may kill individual adult butterflies and larvae (particularly if the fire is a hot ground fire).

Monitoring

Monitoring the effects of burns on known skipper areas would provide the feedback needed for adaptive management. The Buffalo Creek burn and the Trumbull site should be reviewed during the summer of 2000 flight season and in subsequent years. There is a monitoring opportunity because one of the 1986 transects appears to be partially in the Trumbull area where Denver Water completed vegetation treatments during the fall of 1999. This area should be re-surveyed to compare the conditions before and following treatment. Additional 1986 transects exist in proposed vegetation treatment areas on National Forest land.

A monitoring study has been designed for the summer of 2000. The details of the plan are presented here but subsequent monitoring may be modified to better meet the objectives.

Objectives, Study Area and Study Design

The objective of this study is to compare skipper butterfly use (measured by the number of adult butterflies seen within a known area) of untreated ponderosa pine woodland with butterfly use in thinned ponderosa pine woodland. Other habitat measurements (e.g., tree density, blue grama grass ground cover, prairie gayfeather *Liatris punctata* density) will be conducted by the Forest Service to provide other indicators of habitat quality for this species.

The study area is defined as suitable skipper habitat within two square miles J9S, R70W, Sections 10 and 13) east of the South Platte River near the community of Trumbull. Portions of this study area were thinned during 2000, and these two square miles include more than 600 acres of suitable skipper habitat, based on the skipper habitat map included in the ERT 1986 skipper survey report.

The study design consists of sampling skipper in treated and untreated habitat for statistical analysis purposes. Within each treatment type, three permanent 400 meter transects will be established. Each transect will be sampled once each day on three consecutive days. The total year 2000 sampling program consists of 18 sampling points (2 treatments X 3 transects per treatment x 3 sampling days per transect).

To minimize potential habitat interactions on skipper behavior, the entire length of untreated transects will be located 400 to 500 feet away from treated (thinned) area boundaries.

Sampling Methods

Skipper counts will follow the same sampling protocol used for the 1986 skipper census surveys. All skippers in the genus *Hesperia* (Pawnee montane skipper, comma skipper) will be counted within a belt transect 400 meters long by 10 meters wide (5 meters each side of the centerline). The centerline will be flagged frequently so that the observer can stay on the centerline. The belt will be subdivided into eight 50 meter subplots (staked or flagged at each 50 meter interval) so that skipper dispersion in the habitat can be examined. The number of individual skippers observed in each subplot within the overall transect will be



counted, and entered onto a data sheet. The sex of each skipper individual, skipper behavior, and the microhabitat where the individual was observed will also be recorded. Skippers observed outside the belt plot will also be recorded.

Two observers will count skippers on three transects each per day between the hours of 0900 and 1300 under good weather conditions (sunny to light overcast, temperature between 70 and 85 degrees F). Each observer will conduct trial transect walks to calibrate the distance between the centerline and the outer plot boundary so that a consistent sampling area can be maintained, and to reliably identify skippers seen within the plot. Each observer will sample all six of the transects at least once, and three transects twice. Documentary color photographs will be taken of each 400 meter plot at the beginning and mid point.

Data Analysis

The primary statistical analysis will be to determine whether there are statistically significant differences ($p = .05, .10$) in skipper numbers between treated and untreated plots. Depending on the outcome of the primary comparison, an analysis of the sources of variation in the data may be conducted to account for anomalies, or make recommendations for future changes in the program. The vegetation data collected by the USFS from each transect will be examined to identify factors that may have influenced the presence or absence skippers (e.g. tree canopy cover, *Liatris* or other nectar plant occurrence).

CUMULATIVE IMPACTS

The cumulative effects of the proposed vegetation treatments include activity in skipper habitat by Denver Water, CSFS and other private landowners. The distribution of ownership and activity proposed in skipper habitat is displayed on Table 1. The majority of activity in skipper habitat in the EA Project Area would be US Forest Service vegetation treatments proposed in the EA. However, there is a total of 7,186 acres of activity possible in skipper habitat in the cumulative effects area, which includes all of occupied skipper habitat. This activity would amount to approximately one-third of the total skipper habitat.

Table 1. Land Ownership and Skipper Habitat.

	Area in EA Project Area (acres)	Area in Cumulative Effects Area (acres)
Total Skipper Habitat	14,010	24,831
USFS Vegetation Treatment Area in Skipper Habitat	3,846	3,846
Private Treatment Areas in Skipper Habitat	527	3,340
Denver Water Department Land	1,070	6,455
Elk Creek Management Unit	NA	842
State Lands	0	268



Colorado State Forest Service Vegetation Treatments

Colorado State Forest Service (CSFS) proposes treatment activities similar to the U.S. Forest Service proposal with the following differences:

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- ❖ **Vegetation treatments would occur only on state or private land**
 - ❖ **New temporary roads may be built to access unroaded private or state treatment areas. No new roads would be built across USFS land.**
 - ❖ **The CSFS project area would include all private and state lands within the Waterton/Deckers/Horse Creek Watershed (USFS Project Area) and the Lower Elk Creek Management Unit, Denver Water land surrounding Cheesman Reservoir, and Denver Water and state lands along the North Fork of the South Platte between Pine, Colorado and Strontia Springs Reservoir.**
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The CSFS would focus treatment activities on Denver Water and state property. New roads would only be built if there were no existing roads to treatment areas and be reclaimed immediately after work was completed. These new roads would typically be short spurs less than 500 feet long. However, some areas on Denver Water property surrounding Cheesman Reservoir may require longer roads.

Additional Skipper Mitigation for Colorado State Forest Service Vegetation Treatment Areas

In addition to other mitigation measures and design criteria that apply to all treatment areas, the following would apply to state and private treatment areas:

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- ❖ **New road construction to treatment areas within habitat occupied by pawnee montane skipper would be limited to less than four miles of road that averages 12-foot wide (6 acres maximum disturbance). New roads would be aligned to avoid high quality skipper habitat wherever possible.**
 - ❖ **To ensure that new roads disturb less than 6 acres of skipper habitat at any one time, treatment area roads would be reclaimed immediately after treatments are completed. Reclamation would include grading to natural contours and seeding. Seed mix will be certified weed-free and include Blue Grama. Roads would be considered reclaimed after 50% of potential ground cover is achieved.**
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The potential impacts to skippers and their habitat would be minimal in the short-term and would be very positive in the long-term. If the listed mitigation measures are followed this alternative would not be likely to adversely affect the skipper. This alternative could lead to habitat expansion and potential delisting of the skipper.

ALTERNATIVE C

Alternative C (Roadless Alternative), would be similar to Alternative B. The main difference would be that trees on 5,400 acres would not be removed as they would in Alternative B. The logs left on the site would increase the short-term (1-2 years) fire risk compared to Alternative B. There would also be more fuel that may cause the prescribed fire to burn hotter. Some large portions of the vegetation treatment areas that are in skipper habitat are in roadless areas. As described above under Alternative B the higher risk for skippers would be the prescribed fire. Therefore, in the areas where log removal is not

accomplished there would be a higher potential impact on skipper individuals because of the higher fuel loading and consequent higher risk of a hot fire. This alternative also does not proposed the use of biosolids, as in Alternative B, which could reduce the success of blue grama establishment on reclaimed roads.

The potential impacts to skippers and their habitat would be minimal in the short-term and would be very positive in the long-term. If the listed mitigation measures are followed this alternative would not be likely to adversely affect the skipper. This alternative could lead to habitat expansion and potential delisting of the skipper. The cumulative effects would be similar to Alternative B.

Mexican Spotted Owl (*Strix occidentalis lucida*)

The Upper South Platte Watershed is at the northern extent of the range of the Mexican spotted owl. In this area the owl occurs primarily in steep-walled, rocky canyons (USDI Fish and Wildlife Service 1995). Further south in the owl's range it occupies more diverse habitats. Nesting habitat also changes from caves and cliff ledges in steep-walled canyons in Colorado to mostly in forested stands further south in New Mexico and Arizona (USDI Fish and Wildlife Service 1995). All nests in Colorado found to date occur on cliff ledges or caves along canyon walls (Forest Service, 1994).

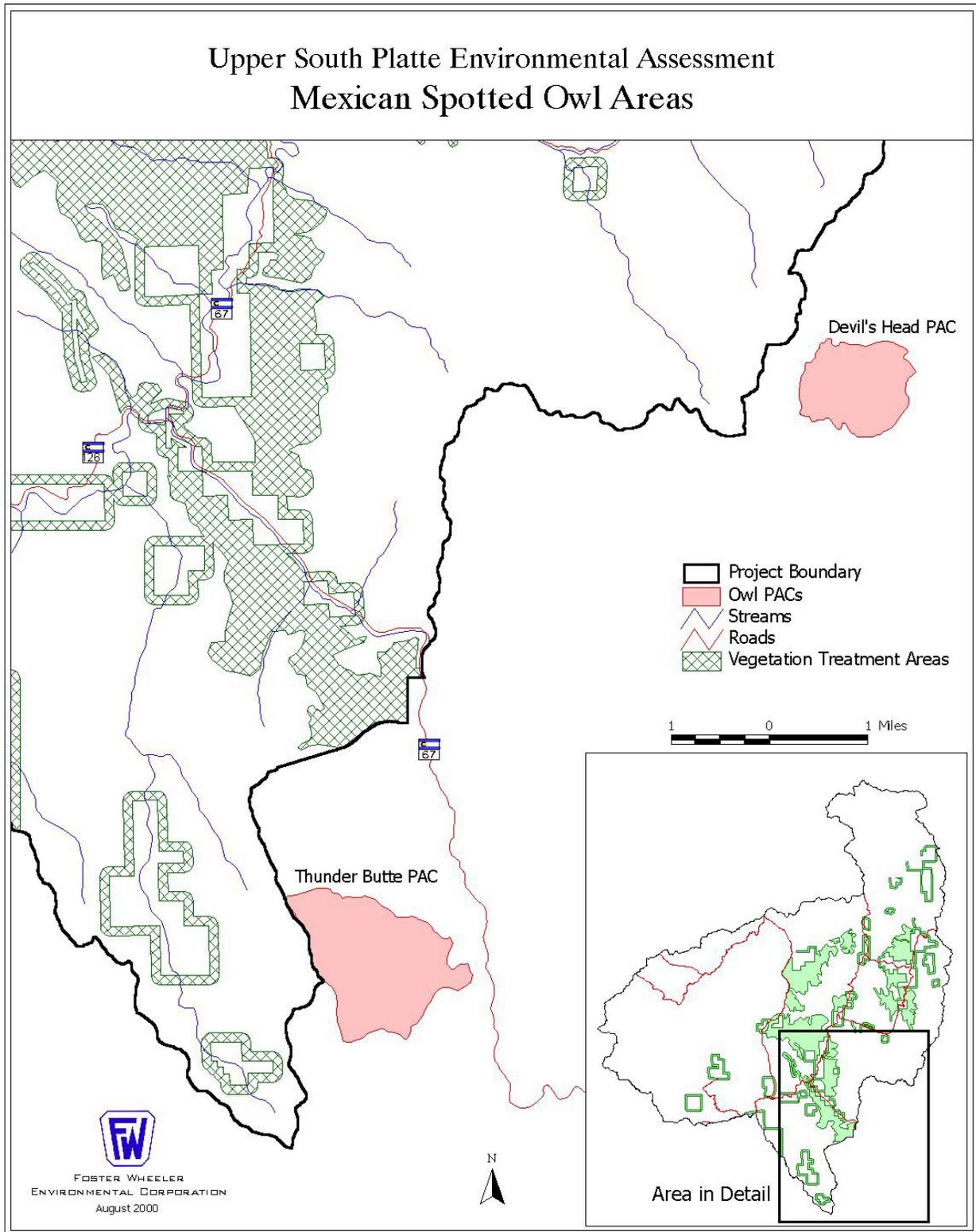
There have been some reports of mortality from great horned owls and golden eagles. However, it is not currently known what effects this predation may have on Mexican spotted owl populations (USDI Fish and Wildlife Service 1995). The Mexican spotted owl has been observed on the Pikes Peak, South Platte, and San Carlos Ranger Districts. Preferred habitat includes deep rocky canyons, or between bands of cliffs, or steep slopes of mixed conifer or broad-leaf old-growth forest, also sometimes in oak or spruce-fir forests (Forest Service 1992 and CBBA 1998). This species occupies two distinct habitats in Colorado (Reynolds 1990): large, steep canyons with exposed cliffs and dense old-growth mixed forest of Douglas-fir, white fir, and ponderosa pine, and canyons in pinyon-juniper areas with small and widely scattered patches of old Douglas-firs (Barrows 1981). Summer roost sites are in a cool microclimate, generally with a closed canopy and/or a north-facing slope (Andrew et al., 1992).

Mexican spotted owls were found adjacent to the Project Area in West Creek (Thunder Butte) and on Devils Head (Map 2) adjacent to the project area. Distribution information from CNHP indicates that this owl has not been identified in any of the watersheds in the Project Area. However, suitable habitat for the species does occur within the project area. Critical habitat for the owl has been designated in the Project Area and covers the entire Project Area.

Six distinct recovery units were designated in the recovery plan (USDI Fish and Wildlife Service 1995). The Project Area for the Upper South Platte EA is in the Southern Rocky Mountains – Colorado recovery unit. Most of the Mexican spotted owl habitat in the Project Area fits into the ponderosa pine or mixed-conifer forest definitions in the recovery plan. Protected areas fall into three categories;

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- ❖ **Protected Activity Centers (PACs) that protect all known sites from 1989 through the life of the plan,**
 - ❖ **all areas in mixed-conifer and pine-oak types with slope >40 percent where timber harvest has not occurred in the past 20 years,**
 - ❖ **And all legally and administratively reserved lands.**
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Map 2. Mexican Spotted Owl Protected Area Centers (PACs)



ALTERNATIVE A

Alternative A would have no direct effects on the Mexican Spotted Owl habitat or its habitat in the Project Area. However, the long-term risk of a catastrophic fire would be the highest of all alternatives. Habitat for nesting, roosting and foraging would be reduced or eliminated in areas burned by a crown fire (USDI Fish and Wildlife Service 1995).

ALTERNATIVE B

Alternative B would reduce the distribution of Douglas-fir and create more pure ponderosa pine stands. The Devil's Head PAC would not be affected. The Thunder Butte site does not have a PAC delineated but no activity is proposed within 1 mile of the nest site. No legally or administratively reserved lands would be affected. The vegetation treatments would occur on moderate to flat slopes, and no cliffs or canyons would be impacted. There may be some areas of mixed-conifer on slopes >40 percent where timber harvest has not occurred in the past 20 years in the vegetation treatment areas. However, these areas would not be harvested because they are on too steep of slopes.

The opening of the canopy would create better habitat for preybase species, primarily small mammals such as rodents and rabbits, and would improve flight pathways and visual hunting zones for the birds. This alternative also would decrease the long-term risk of catastrophic fire.

The road reclamation, trail access and Buffalo Creek burn area rehabilitation subprojects would have no effect on Mexican spotted owls or their habitat. Due to the reasons stated above the vegetation treatments in Alternative B would have no effect on Mexican spotted owl or its habitat.

ALTERNATIVE C

Alternative C would have similar effects to the Mexican spotted owl as Alternative B. The difference between the two alternatives would be a short-term increased fire risk on more area in Alternative C than Alternative B. These differences would not change the opinion that Alternative C would have no effect on Mexican spotted owl or its habitat.

Bald Eagle (*Haliaeetus leucocephalus*)

Habitats where bald eagles may occur include urban or built upland, cropland, orchards, tall grass prairie, grasslands, sagebrush, shrubland, aspen groves, Douglas-fir, lodgepole pine, ponderosa pine, blue spruce, juniper woodland, open forest, wetlands, and subalpine meadows (Colorado Natural Diversity Information Service [NDIS], 1999). The bald eagle migrates in summer to northern breeding grounds but return to lower latitudes during the winter. Winter habitat consists of roost trees along rivers and other large open bodies of ice-free waters that allow access to fish (Forest Service, 1994). Typical nesting sites include trees on reservoir edges, cottonwoods along rivers, and conifers near lakes or streams (CBBA, 1998). Bald eagles overwinter at Cheesman Lake and forage along the South Platte River. Based on potential habitat maps, the bald eagle may occur within the Project Area.

No bald eagles are known to nest in the Vegetation Treatment Areas. Bald eagles undoubtedly move through the area from Cheesman Reservoir to the South Platte River, however, no seasonal concentration areas are known to exist in or directly near the project area. The action alternatives would not affect shoreline trees that may be used for roosting and foraging since riparian areas will be protected with buffers. Therefore, the project will not affect habitats that are likely to be occupied by bald eagles other than infrequently. Based on these considerations, the project will have no effect on the bald eagle.



Preble's meadow jumping mouse (*Zapus hudsonius preblei*)

The Preble's meadow jumping mouse (*Zapus hudsonius preblei*) is a small rodent in the family Zapodidae and is 1 of 12 recognized subspecies of the species *Z. hudsonius* (Federal Register 1998a). All records of Preble's meadow jumping mouse are from southeastern Wyoming and eastern Colorado. Typically, Preble's meadow jumping mouse subsists on seeds, small fruits, fungi and insects, and hibernates from October to May. This mouse is adapted for digging and creating nests of grasses, leaves, and woody material several centimeters below the ground. Preble's meadow jumping mouse is primarily nocturnal or crepuscular, but can be observed during daylight (Federal Register 1998b).

Armstrong et al (1997) described typical Preble's meadow jumping mouse habitat as "well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity." This mouse also shows a preference for "dense herbaceous vegetation consisting of a variety of grasses, forbs and thick shrubs"(Federal Register 1998c).

Surveys conducted in 1999 by CNHP located the mouse at Ouzel Campground on the South Platte River and on Trout Creek, a tributary to the South Platte River (Schorr 1999). A survey conducted along Bear Creek adjacent to and downstream from the Indian Creek Campground in the Pike National Forest in July 2000 showed presence of Preble's meadow jumping mouse (Ruggles et al 2000).

The U.S. Fish and Wildlife Services proposed 4(d) regulations recommend a 300 foot buffer on each side of each stream's centerline, or 300 feet from the exterior boundary of any contiguous wetlands, whichever is further (Federal Register 1998d). It has been indicated that the 100-year floodplain may provide a more definitive boundary for protection of the Preble's meadow jumping mouse (Plage 2000). Due the potential presence of the Preble's meadow jumping mouse along the South Platte River and its main tributaries (Bear Creek), the 4(d) rule has been incorporated into mitigation for this project.

The following mitigation measures and design criteria would minimize or avoid potential impacts to Preble's meadow jumping mouse and their habitat.

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- ❖ **Create a 300-foot buffer from the exterior boundary of the 100-year floodplain. Within the floodplain and the 300-foot buffer, do not allow ground disturbance from vehicles or falling trees except for access routes. This will include the South Platte River, perennial tributary streams, and intermittent streams that have well-developed riparian vegetation.**
 - ❖ **Within the 100-year floodplain and 300-foot buffer, use existing roads. Where these are not available, the maximum number of crossing access routes will be limited to six access routes. Locate these routes on sites with little vegetation and prior to use, conduct surveys for the Preble's meadow jumping mouse according to U.S. Fish and Wildlife Service protocol.**
 - ❖ **At the completion of the project, revegetate access routes with native seed.**
 - ❖ **Within the 300-foot buffer, prescribed burns will only be conducted during the hibernation period of November 1 to April 30) (Plage 2000). Avoid damaging the shrub and tree components within this buffer at all times.**
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The application of these mitigation measures would result in the proposed actions having a not likely to adversely affect the Preble's meadow jumping mouse. If, within the 300-foot buffer, the habitat is deemed unsuitable for the Preble's meadow jumping mouse, further consultation with U.S. Fish and Wildlife Service would be conducted. Unsuitable habitat would include a drastic change in elevation or entrance into dry ponderosa pine forest.

A beneficial long-term effect of the action alternatives would be a possible increase of surface water flow, which could increase the size of riparian habitat. The thinning of the ponderosa pine forest, which could

subsequently create grass and forb production. These two effects could increase the habitat for the Preble's meadow jumping mouse.

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