United States Department of the Interior

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IN REPLY REFER TO:
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Mail Stop 65412

MAR 27 2003

Mr. Randy Hickenbottom, District Ranger
USDA Forest Service
South Platte Ranger District
19316 Goddard Ranch Court
Morrison, Colorado 80465

Applicant: USFS

Re: Reinitiation of Consultation of the Upper South Platte Watershed Restoration and Protection Project

Dear Mr. Hickenbottom:

This opinion/conference is the result of the U.S. Fish and Wildlife Service's (Service) reinitiation of consultation of the Upper South Platte Watershed Restoration and Protection Project (Project), which was completed January 10, 2001. Under the Reinitiation Notice of the 2001 Biological Opinion (2001 BO), the conditions provided in item 2 of this section state that reinitiation of formal consultation is required if "new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion." During the summer of 2002, the Hayman and Schoonover fires burned approximately 142,000 acres, including approximately 33,780 acres within the Project Area (representing 37 percent of the proposed treatment area). These fires substantially altered the conditions within many planned treatment areas, and have necessitated modification or abandonment of planned treatments in those areas. The Hayman and Schoonover fires burned within the habitats of four Federally-listed species within the project area, including the threatened Pawnee montane skipper *(Hesperia leonardus montana)*(skipper), the threatened Mexican spotted owl *(Strix occidentalis lucida)*(spotted owl), the threatened Preble's meadow jumping mouse *(Zapus hudsonius preblei)*(Preble's mouse), and the threatened bald eagle (*Haliaeetus leucocephalus*). The Service believes that consultation is needed to evaluate the effects of the modified project actions, including the cumulative effect, and, therefore, reinitiation of section 7 of the Endangered Species Act (Act), as amended (16 U.S.C. 1531 et. seq.) is warranted.

In addition to the amendments resulting from the Hayman and Schoonover fires, other amendments to the 2001 BO have become necessary and include: a new USFS decision notice for roadless area treatments; proposed critical habitat for the Preble's mouse; proposed new Denver Water and USFS actions; theTerms and Conditions for Preble's mouse habitat were exceeded; the need to revise some deficiencies or inconsistencies in the 2001 BO; and to otherwise update the BO to reflect current information. Because of the many issues addressed in this reinitiation opinion, the Service decided to include the original 2001 opinion in its entirety and to provide additions and modifications where

appropriate. As a result, subsections have been added that address changes in the project description and species information that have occurred since the issuance of the 2001 opinion.

Because it is likely that the project will not be completed before critical habitat is designated for the Preble's mouse, the Service recommends that formally conferencing on the project's potential impacts to proposed critical habitat for the Preble's mouse should occur at the same time as the biological opinion in order to avoid potential project delays when critical habitat is designated.

This reinitiation opinion addresses only those actions specified in this opinion/conference and the 2001 opinion. This reinitiation opinion does not address the fire suppression activities and emergency rehabilitation treatments resulting from the 2001 Hayman and Schoonover fires. Those actions are addressed in separate section 7 consultations and include the USFS (ongoing), NRCS (ongoing), EPA (completed), and the COE (ongoing).

If the Service can be of further assistance, contact Leslie Ellwood at (303)275-2383.

Sincerely,

LeRoy W. Carlson
Colorado Field Supervisor

pc: Grand Junction Field Office (Al Pfister)
US Forest Service (Steve Culver)
Colorado State Forest Service (Chuck Dennis)
Denver Water (Dave Little)
USFWS Solicitors Office (Tom Graff)
Region 6 (Bob McCue)
Law Enforcement (Roger Gephart)

Endangered Species Act - Section 7 Consultation

REINITIATION OF THE BIOLOGICAL OPINION AND CONFERENCE

for the

Upper South Platte Watershed Restoration and Protection Project

Agency: U.S. Department of Agriculture, Pike and San Isabel National Forests, Comanche and Cimarron National Grasslands
Denver Water Board
Colorado State Forest Service

Consultation: U.S. Fish and Wildlife Service, Colorado Field Office

Date Issued: March 27, 2003

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CONSULTATION HISTORY

On June 1, 2000, the USFS initiated informal consultation with the Service for the Upper South Platte Watershed Protection and Restoration Project EA. At that time, it was recognized that Denver Water and CSFS were also conducting similar forest restoration projects within the Upper South Platte watershed. The decision was made to coordinate the efforts of the USFS, Denver Water, and CSFS into a combined Federal action and, therefore, a combined consultation with the Service, in order to create a more unified and cooperative forest restoration effort within the Upper South Platte watershed. A letter of agreement between the USFS, Denver Water, and CSFS that assigned responsibilities for protecting federally-listed species was signed on November 28, 2000.

On July 21, 2000, critical habitat for the Mexican spotted owl was proposed (USFWS 2000). Areas of proposed critical habitat include the Project Area.

During informal consultation, trapping surveys during the summer of 2000 determined that the Preble's mouse was present in the Project Area.

During informal consultation, it was realized that forest thinning operations had been conducted by the CSFS on Denver Water property prior to consultation. A total of 215 acres (Trumbull property - 131 acres, Cheesman Reservoir - 81 acres, cabins at Deckers - 3 acres) had been thinned during the fall of 1999 and spring of 2000. A Settlement Agreement was signed on January 5, 2001, by CSFS, Denver Water, and the solicitor for the U.S. Department of the Interior.

Additional Consultation History after the Issuance of the 2001 Opinion

In November 2001, eight acres of willows on Denver Water property along the South Platte River floodplain near the town of Trumbull were mowed down with a Hydro-axe for the purposes of rejuvenating decadent stands of willow. The Service considered this activity to exceed the Terms and Conditions provided in the 2001 Opinion. The Service began the process of reinitiating consultation on the project in 2002, but the process was delayed by the events of the Hayman and Schoonover fires and the resulting need to revise the project and consultation.

On January 30, 2003, the Service received the Amendment to the Biological Assessment for reinitiation of the Upper South Platte Protection and Restoration Project, as prepared by the project partners, including the USFS, Denver Water, and CSFS.

2001 BIOLOGICAL AND CONFERENCE OPINION (with 2003 Reinitiation Modifications where noted)

In accordance with Section 7 of the Endangered Species Act (Act), as amended (16 U.S.C. 1531 et. seq.), and the Interagency Cooperative Regulations (50 CFR 402), this is the U.S. Fish and Wildlife Service's (Service) final biological opinion on impacts to federally-listed endangered and threatened species associated with the Upper South Platte Watershed Restoration and Protection Project (Project).

This biological opinion is based on the project proposal as described in the "Biological Assessment for the Upper South Platte Environmental Assessment" (BA), received November 27, 2000. The Project involves an interagency partnership between the U.S. Forest Service (USFS), Denver Water Board (Denver Water), and the Colorado State Forest Service (CSFS). The Service concurs with the USFS

determination that the proposed project may likely adversely affect the threatened Pawnee montane skipper *(Hesperia leonardus montana)*(skipper), the threatened Mexican spotted owl *(Strix occidentalis lucida)*(spotted owl), and the threatened Preble's meadow jumping mouse *(Zapus hudsonius preblei)*(Preble's mouse). The Service concurs with the USFS determination that the proposed project will not affect the threatened Ute ladies' tresses orchid (*Spiranthes diluvialis*). The Service concurred with the USFS determination that the proposed project as presented in the BA would not affect the threatened bald eagle (*Haliaeetus leucocephalus*). However, a new proposed action was submitted to the Service on December 14, 2000, that revised the forest treatments and proposed bald eagle monitoring at Cheesman Reservoir. After considering this revised proposed action, the Service believes that the proposed project is likely to adversely affect the bald eagle.

This biological opinion is based on information regarding cumulative effects, conditions forming the environmental baseline, the status of the skipper, spotted owl, Preble's mouse, and bald eagle, and the importance of the project area to the survival and recovery of these species. The data used in this biological opinion constitutes the best scientific and commercial information currently available.

DESCRIPTION OFTHE PROPOSED ACTION

The USFS, as the lead agency for the Project, along with Denver Water and the CSFS, has proposed a series of actions with the goal of forest restoration in the Upper South Watershed on the Pike National Forest. The Project was initiated to address concerns regarding continued soil and water problems resulting from the 1996 Buffalo Creek and the 2000 Hi Meadow fires and the potential for future fires to cause problems in other parts of the watershed. The goal is to develop a strategy for watershed restoration and protection.

USFS

These actions include timber harvesting, prescribed burning, revegetation in the Buffalo Creek burn area, obliteration and reclamation of unnecessary roads, and trail improvements. USFS proposed to treat 17,400 acres of dense forest vegetation. The forest would be thinned to a canopy closure of 25 percent on 13,000 acres. On the remaining 4,400 acres of treatment area, openings of 1 to 40 acres would be created. These openings would be dispersed within the thinned areas and would not be revegetated. The openings would be maintained by prescribed burns every 5 to 10 years, as appropriate. The thinning would be selective by age class and species to emulate the types of conditions occurring historically. In all areas, the larger and more mature trees would be left on-site. In most treated areas, ponderosa pine (*Pinus ponderosa*) would be selected to remain, although some larger Douglas-fir (*Pseudotsuga menziesii*) would also be selected. The exception would be the Christmas tree cutting area near Highway 126 where Douglas-fir are produced for Christmas trees. (Note - see section below in *Changes to the USFS Projection Description after the Issuance of the 2001 Opinion* for alteration of forest thinning activities).

Logs would be removed from approximately 11,600 acres of the treated area. Logs would not be removed from slopes that are too steep (generally greater than 30 percent slope), are too far from existing roads, or have trees that are of little or no economic value. The areas where trees would be left on-site would be determined on the ground during harvest activities. Logs and slash left on-site would be treated by crushing the slash and then letting the slash and logs degrade for approximately two years. At that time, burning would be prescribed to consume the remaining downed materials.

The logging systems used would include both conventional systems and forwarders. Conventional systems would be used where there are existing roads (approximately 8,600 acres). Forwarders would be used in areas without existing roads that meet the criteria for removal discussed above (approximately 3,000 acres).

Private landowners would be consulted to determine if they are interested in harvesting USFS lands around their property. If so, a 500-foot strip around their land would be created using the above techniques. Landowners would be responsible for removing the trees, if they so choose. To be conservative, it is assumed that all property owners will choose this option. However, it is likely that many will choose not to have the harvest completed.

The majority of the vegetation treatments would be located in Management Area (MA) 2B, Rural and roaded natural recreational opportunities or 7A, Wood-fiber production and utilization (66 percent and 24 percent, respectively). There would be no treatment in the following MAs: MA 3A, semiprimitive nonmotorized recreation in roaded or nonroaded areas; MA 8B, Primitive wilderness opportunities; and MA 8C, Semiprimitive wilderness opportunities.

Road Reclamation

USFS proposed to reclaim and permanently prevent use of 25 miles of nonsystem roads that are currently closed. The roads would be reclaimed by ripping and seeding the road beds, both for erosion control and to encourage revegetation. Biosolids would be used to increase soil fertility. Existing culverts would be removed and self-maintaining drainage would be created. The first 0.25 miles of each road may be obliterated and recontoured to discourage any use. Finally, large trees may be felled to fall across the roads throughout their length.

South Platte River Access Trail Improvements

The objective is to improve a total of 7.5 miles of existing trails along the South Platte River to increase safety for hikers, anglers, create conditions that are sustainable for the trail system, and reduce soil erosion and vegetation loss. Many of the improvements would encourage hikers to remain along established trails and discourage use of social trails to access favorite areas.

The actions that are proposed include:

- Expand the existing trailhead and parking space at Wigwam Campground;
- Construct new trail between the end of the Gill Trail and Cheesman Dam;
- Upgrade the original Gill Trail to safer and sustainable conditions;
- Construct safe and sustainable river access trails to the South Platte River. This would include constructed stairways or hardened trails on the steepest trail sections;
- Construct barrier-free accessible fishing sites and trails from parking areas near the South Platte River; and
- Reclaim existing social trails using conventional methods.

Buffalo Creek Burn Area Revegetation

The objective of the USFS Proposed Action is to reestablish vegetation on riparian and upland forested areas that have not successfully regenerated after the 1999 Buffalo Creek wildfire. Successful completion of this revegetation would reduce erosion from the exposed areas and subsequent stream sediment loading. The proposed activities would occur in Buffalo Creek and/or Spring Creek.

In the riparian areas, 60 acres of exposed sediments along streams and washes would be planted using certified weed-free indigenous plant material. Woody debris and boulders would be selectively placed in the stream channel to help stabilize the channel. The sediment deposits in the riparian zones would be reshaped as needed to facilitate plant reestablishment. Conventional equipment would be used to complete this task. The riparian habitat that would be created would consist primarily of willows.

In the upland areas, 1,000 acres of the burn area that have not successfully revegetated would be planted with ponderosa pine seedlings. In both the upland and riparian areas, appropriate types of Biosolids would be used as a soil amendment to improve conditions for revegetation.

Suction dredging is also proposed in the Buffalo Creek stream channel as part of the monitoring program. A 100-meter section of the channel would be dredged to remove and measure accumulated sediments. The structure and composition of the stream channel would be assessed, both in the dredged area and in adjacent undredged areas. The objective would be to measure the effects of sediment on stream habitat. The removed sediments could possibly be used for road reclamation or would be disposed of off-site. The material would not be deposited on vegetation or wetlands.

Changes to the USFS Project Description after the Issuance of the 2001 Opinion

Roadless Area Decision

On January 11, 2002, a new USFS Decision Notice and Finding of No Significant Impact was signed for the vegetation treatment subproject in inventoried roadless areas. This new decision replaced the one signed on August 2, 2001. Changes include a reduction in the maximum size of created openings from 40 acres to five acres, maximum total acreage in created openings reduced from 1000 acres to 250 acres, increase in area of thinning from 4,200 acres to 4,950 acres, and an additional standard that no trees 14" diameter at breast height (DBH) or greater will be cut. The area of skipper habitat treated would remain at 1,400 acres. The changes in the new decision did not result in any changes in determination of effects for Federally-listed species. Vegetation treatments within non-roadless areas will remain unchanged.

Hayman and Schoonover Fire Rehabilitation Activities

Approximately 6,588 acres of the 17,400 acres designated for treatment on USFS lands were burned. As a result, some designated treatment areas will no longer be treated, or will receive only partial treatment (e.g., noxious weed control) and treatment area boundaries may be shifted slightly where only small portions of treatment areas were burned. These changes in treatment area boundaries will be minor in scope and will be adjacent to designated treatment areas. Any changes from previously identified treatment area boundaries will be agreed upon with the Service prior to implementation. Any substantial changes in treatment locations would also be addressed through the NEPA process.

The USFS proposes to conduct fire rehabilitation and research activities in designated Project Area treatment sites affected by the 2002 fires. These actions would be in addition to those conducted pursuant to the USFS emergency consultations for the Hayman and Schoonover fires. These treatments would include actions such as seeding, scarification, road repair, mulching, contour felling, and installing protective floodwater diversion, such as straw bales or sandbags. Any activities in lightly burned skipper habitat would be agreed upon with the Service prior to implementation through October 31, 2003. Actions in moderate and high intensity burn areas would proceed without delay through October 31, 2003. (After October 31, 2003, field monitoring data gathered during the late 2003 skipper flight period will have been evaluated and the Service should have a better understanding of the status of the skipper population by that time). Actions to create defensible space around structures (on all land ownerships within the project area) would be exempted from this requirement, as would the specific USFS monitoring activities. The USFS proposes up to 442 acres of treatment in moderate and high

intensity burn areas, and up to 1227 acres of treatment in low intensity burn areas containing skipper habitat (if approved by Service). Skipper monitoring will continue to be organized by the USFS to determine the impacts of Project treatments and to assess post-fire recovery.

The USFS proposes up to156 acres of treatment in moderate and high intensity burn areas with potential Preble's habitat and up to156 acres of treatment in low intensity burn areas containing potential Preble's meadow jumping mouse habitat. There would be up to18 acres of treatment in low intensity burn areas containing proposed critical Preble's habitat. There is no moderate or high burn intensity in proposed critical Preble's habitat within Project Area treatment units. There would be no destruction or adverse modification of proposed critical habitat as a result of the proposed actions.

Forest Openings in Skipper Habitat

The 5 acre limit on created forest openings in skipper habitat, as addressed in the 2001 opinion, has been replaced by a maximum distance to forest edge requirement in skipper habitat. The maximum distance would be 265 feet, based on the radius of a 5 acre circle, such that any point in the opening would be within 265 feet from a forest edge. A forest edge would be defined as the outer margin of a forested area with 11% or greater canopy coverage of overstory trees, and which extends for at least 100 feet on the axis perpendicular to the edge. It is assumed that this is a more biologically meaningful protection for the skipper, and would also allow greater flexibility in accomplishing forest restoration and fuels reduction objectives. Created forest openings will be up to 40 acres in size, and those that are greater than 20 acres, but less than 40 acres, will require Service review and approval.

USFS Monitoring Activities:

In addition to the treatments previously identified as part of the Project, a number of monitoring activities are planned or occurring as well. These monitoring activities are designed to aid in the adaptive management of the Project, allowing managers to incorporate information gained as the project progresses, including any information that would benefit listed species. These activities may be conducted by a variety of entities (universities, federal agencies, etc.), and occur under permit from the USFS. Monitoring activities not addressed in the original BA/BO include the following:

Hydrologic Surveys - hydrologic surveys utilize structures such as silt fences and flumes to measure sediment and water volume in channels and near key features (such as along roads). Silt fences involve minimal localized disturbance when installed, and periodic maintenance to remove sediment. There are approximately 50-60 silt fences being used and two flumes. The sediment removed is placed back in the channel below the fence or flume, and therefore maintenance does not significantly alter natural processes (i.e., sediment remains in the channel from which it came). The installation of two monitoring flumes was addressed in previous correspondence that amended the BA and BO.

Abert's Squirrel Surveys - Abert's squirrel populations are being monitored annually through the use of a feeding index. The feeding index uses feeding evidence such as clipped twigs and peeled cones to estimate squirrel numbers. Transects are marked with flagging or GPS coordinates, and data collection does not involve any habitat disturbance beyond walking through the area and recording feeding evidence along the transect.

Goshawk Surveys - northern goshawk surveys involve walking transects (marked with flagging or with GPS coordinates) and imitating or playing recorded goshawk calls to detect nesting pairs. Nest locations are recorded and protected from disturbance with marked buffers. There are no known or suspected effects on listed species as a result of these surveys.

Denver Water

Denver Water owns property in various-sized parcels along the main stem of the South Platte River and the North Fork of the South Platte River. Denver Water's management objectives for their lands include reducing fire hazards, reducing loss from insects and disease, improving forest health through harvest and prescribed fire, and re-establishing forest stands to better reflect historic conditions. Denver Water also has plans for managing noxious weeds and reducing active erosion. Denver Water proposes forest restoration treatments similar to the USFS' proposed treatment. Unlike the USFS, Denver Water may construct new roads to treatment areas. New roads would only be constructed if there are no existing roads to treatment areas and would generally be less than 500 feet long, although some areas in the vicinity of Cheesman Reservoir may require longer roads.

A total of 4,764 acres of Denver Water land would be treated by stand thinning and prescribed fire operations. Areas of treatment include Denver Water land along the South Platte River, North Fork of the South Platte River between Pine, Colorado, and the Strontia Springs Reservoir, as well as Denver Water land surrounding the Cheesman Reservoir.

Specific to the area around Cheesman Reservoir, a fuel break would be created along the shoreline from the public access road to the dam and additional forest thinning would occur on Denver Water property around the reservoir. The fuel break would be approximately 200 feet in width and the tree cover within the fuel break would be similar to other forest thinning treatments, although the tree spacing would be more spread out and uniform. Other treatments around Cheesman Reservoir would include management of mistletoe infestations (C. Dennis, CSFS, pers. comm.). Initial forest treatments (winter/spring 2001) would occur in the area with habitat that is considered to be unsuitable for bald eagle winter communal roost sites, referred to as the clearance zone (Appendix, Figure 1). Additional treatment areas will be determined after review of the bald eagle communal roost site monitoring data that will be collected during the 2000/20001 winter and, if necessary, during the 2001/2001 winter. (Note - results of 2000/2001 bald eagle surveys are included in *Changes in the Environmental Baseline of the Bald Eagle After the Issuance of the 2001 Opinion*).

In March 1999, Denver Water contracted with the CSFS for the vegetation management of all of their lands within Colorado, approximately 55,000 acres. The contract prioritized management of Denver Water's lands within the Upper South Platte Watershed.

Operation, Maintenance, and Improvement Activities

Denver Water also proposed operation, maintenance, and improvement (OM&I) activities on Denver Water property within the Upper South Platte Watershed. These OM&I activities are included in the Proposed Action, and, therefore, covered by this Federal action. These OM&I activities will result in a maximum disturbance of 2,600 square feet and include the following projects:

- Pipeline, pumphouse construction, and development of defensible space around structures at Cheesman;
- Reservoir for fire protection measures;
- Construction of a boathouse and ramp at Cheesman Reservoir;
- Upstream control gate outlet work;
- Fire defenses around houses and structures owned by Denver Water that are not part of the Upper South Platte Watershed Restoration and Protection Project;
- Installation of six vault toilets along the North Fork of the South Platte River and the South Platte River corridor;

- Construction of a parking lot and new boat take-out at the confluence of the North Fork of the South Platte River and the South Platte River;
- Noxious weed control (Note that the noxious weeds will be controlled in accordance with the approved USFS and BLM Integrated Weed Management Plan and associated conservation measures for protecting Federal species [USFS and BLM 1998]).

Any additional OM&I projects that may be proposed in the future by Denver Water and/or CSFS will be reviewed by the Service, Denver Water, CSFS, and USFS.

Denver Water anticipates that the proposed thinning of dense stands of trees and creating open stands with an average of 30 percent tree canopy cover will generally improve habitat for the skipper. Specifically, Denver Water's actions under the Proposed Action will result in the enhancement of 2,709 acres of areas already designated as occupied skipper habitat. Denver Water believes that the enhancements are adequate to offset the disturbances associated with Denver Water's proposed OM&I activities. (Note - because of the large amount of skipper habitat on Denver Water properties that burned in the Hayman and Schoonover fires, the amount of skipper habitat that may be enhanced by forest thinning activities has changed from 2,709 acres to 207 acres).

Changes to the Denver Water Project Description after the Issuance of the 2001 Opinion

OM&I Activities

Addition to the list of OM&I activities: Construction of the Gill Trail parking lot near the Cheesman Reservoir headquarters.

Hayman and Schoonover Fires

Approximately 5,055 acres of the 13,901 acres of Denver Water property/CFSF managed land identified as potential treatment areas were burned in 2002. Denver Water proposes to conduct salvage logging on 1,578 acres of moderate to high severity burn areas at Cheesman Reservoir and salvage logging and other fire rehabilitation projects on 19 acres at Denver Water's Deckers and Horse Creek properties. Denver Water proposes to conduct restoration thinning on 188 acres of low severity burn areas at Cheesman Reservoir. Denver Water also proposes to realign a section of unimproved road at Cheesman Reservoir that is experiencing severe erosion after the Hayman fire.

Salvage Logging

The objectives of the salvage logging at Cheesman Reservoir, Deckers, and Horse Creek are: to remove dead and severely damaged trees from operable areas where the Hayman Fire burned with moderate to severe intensities; to remove trees within 1 to 1 1/2-tree height of roads to reduce safety hazards and long-term maintenance needs; to reduce the threat of insect and disease attacks to the few remaining live trees in the area; to reduce the volume of large diameter woody fuels that will, over time, accumulate across the property; and to protect an important future source of cones and seeds for re-establishing ponderosa pine on burned areas of the Cheesman property. The few individual and small groups of live trees, while very limited, are important islands to help establish new seedlings. In addition, seedling trees produced in nurseries from locally-collected seed sources have the best chance of survival.

The following salvage logging prescriptions/project conditions will be applied:

1. Trees to be felled will be either left in place for aesthetics, erosion control, wildlife habitat, or access control, or removed to the roadside for disposal, as described in 2, below.

2. Disposal may include, but is not limited to, burning, chipping, grinding, fuelwood and fencewood permits, commercial sale of wood products (including sawtimber), or cost recovery disposal through stewardship contracting.

3. Trees will be removed within 1 to 1 1/2-tree height of roads to reduce safety hazards and long-term maintenance needs. Elsewhere, merchantable trees will be removed wherever terrain and numbers of trees economically allow. Merchantability limits will vary according to the proposals received from the various interested operators. Generally, merchantability guidelines for operations of this type are for trees 10- to 11-inches or larger in diameter to be removed. If portable mills are utilized on the property, it is possible that trees down to 8-inches in diameter may be utilized. Trees will generally be removed in areas within 2-mile of roads, on slopes up to 35 percent. Use of forwarders, mechanical felling machines, such as Timbcos, etc., may increase the distance from roads and steepness of slopes that may be treated.

4. Soft snags and/or other trees over 8 inches in diameter which are determined to be useful for wildlife will be left uncut, unless they pose a specific hazard to roads, trails or improvements.

5. To provide vertical forest structure to help reoccupation of burned areas by the skipper, an average of 20 trees per acre will left, with a range of 5 to 35 trees per acre of at least 8-inches in diameter. Trees are to be left on approximately equal spacing.

6. Non-merchantable trees in the diameter range of 6-8 inches or larger will be felled on the contour per NRCS guidelines. The desired outcome will be 400 to 600 lineal feet of logs, where available, felled across the slope to act as water and erosion structures. They should be felled as close to the contour as possible, limbed and bucked at a 4 to 5 inch diameter top. All other non-merchantable trees may be felled to facilitate mulching. Slash (limbs and top) and non-merchantable trees, except those specifically felled on the contour for erosion control, will be piled, wind-rowed along the contour or concentrated by other approved methods to provide shading to help reoccupation of burned areas by the skipper.

7. In areas where salvage operations are undertaken but equipment cannot be used for piling or wind-rowing of slash, slash shall be lopped and scattered, or crushed. Here, non-merchantable trees may be left standing. Such locations will provide areas of higher stem density needed to help reoccupation of burned areas by the skipper.

8. Consistent with the 2001 Opinion, operational time limitations will be in effect for portions of the site within the bald eagle roosting protection areas, unless special exemptions can be obtained from USFWS.

9. All stumps will generally be no more than six inches high, as measured on the uphill side.

10. No mechanized equipment shall be used within 50 feet of the banks of live streams or wetlands (riparian protection zone), except when operating equipment from existing roads or trails, but may reach into the zone as far as possible to remove the tree from the stump. No skidding will occur across riparian areas or wetlands. No landings will be placed in riparian areas or wetlands.

11. In areas where existing roads or trails are desired to be closed, logs will be felled and left to restrict off-road travel, wherever possible. The project administrator will designate such areas.

12. Soil compaction will be minimized, as specified in the Conservation Measures section.

Restoration Thinning in Low-severity Burn Areas

Denver Water has developed treatment recommendations for lightly burned areas on its properties at Cheesman, Deckers, and Horse Creek. Thinning treatments of these areas were already addressed under the 2001 Opinion. The objectives of the restoration thinning are: to remove dead and severely damaged trees from operable areas where the Hayman Fire burned with low severity; to reduce the threat of insect and disease attacks to the remaining live trees in the area; to develop as much as possible "restored" ponderosa pine forest conditions such that the stand structure is similar to that at the Trumbull demonstration site; to protect an important future source of cones and seeds for re-establishing ponderosa pine on burned areas of the Cheesman property.

The following restoration thinning prescriptions/project conditions will be applied:

1. Stands of ponderosa pine second growth with "yellow bark" trees will retained wherever possible. Stands should exhibit maximum structural, spatial and species diversity. Emphasis is to retain and manage pine in excess of 16 inches in diameter and develop seedling/sapling component. Scattered aspen, juniper or other species to be retained or regenerated for species and stand structure diversity. On moist sites shade-tolerant species like Douglas-fir should be removed.

2. Stand structure eventually will be comprised of even-aged groups of trees that vary widely in size and shape. Individual tree groups will, in turn, be of different age and tree sizes. Often two, three and sometimes more age/size groups will be represented in a stand. From this standpoint, the stand will be considered uneven-aged.

3. Density will not maximize wood fiber production but will eventually provide high quality timber at small volumes per acre. Long-term management emphasis will be uneven-aged with vertical and horizontal diversity more like pre-1870 stand conditions (approximately 50 trees per acre, clumped, mostly larger diameter, with two or more snags/acre). Brush will be in widely-scattered clumps.

4. Trees with more than 75% of their crown scorched will be targeted for removal.

5. Areas of unburned blue grama will be marked or flagged so that they are not disturbed by heavy equipment.

6. Some downed trees will be left to serve as potential microsites for tree establishment and skipper oviposition.

7. Hydro-axe will be used for thinning in the lightly burned parcels A and B located north and south of Cheesman Dam.

8. Work will take place outside of the August 1 to October 1 skipper flight season.

9. Measures to protect the riparian and wetland areas and to minimize soil compaction will be the same as salvage logging procedures.

10. In areas where existing roads or trails are desired to be closed, logs will be felled and left to restrict off-road travel, wherever possible. The project administrator will designate such areas.

Other Denver Water Properties - Deckers and Horse Creek Treatments

Deckers - Less than 1 acre of the Deckers property was burned during the Hayman fire. The objectives at this site are as follows: to fell trees with more than 75% of their crown scorched; to prune remaining scorched trees to remove dead limbs; to pile slash and unusable logs for burning and burn these piles and unburned slash piles from the pre- Hayman treatments; and to develop as much as possible "restored" ponderosa pine forest conditions such that the stand structure is similar to that at the Trumbull demonstration site.

Horse Creek - Approximately 43 acres of the Horse Creek property were burned during the Hayman fire and approximately 18 acres will be treated. The objectives at this site are as follows: to create defensible space around structures; to fell dead trees and trees scorched more than 75% of the crown within 1 tree-height of the highway; to contour fell trees in the extreme northern portion of the property where fire burned as a crown fire; to directionally fell trees in drainages; and to develop stand conditions similar to those at the Trumbull demonstration site on the property east of Highway 67. Slash will be chipped adjacent to the road and blown on slopes to a depth of 3 inches or less. Slash may be lop-and-scattered elsewhere. Such work will not disturb regenerating riparian vegetation.

Colorado State Forest Service

In addition to the vegetation management that CSFS will conduct for Denver Water, CSFS also would conduct forest restoration treatments on a maximum of 9,137 acres of private and State lands (8,894 acres on private land, 243 acres on State land). Actual amounts of land treated will depend on the level of involvement of individual private land owners but will not exceed 8,894 acres of private land. Areas of treatment include private and State lands within the Waterton-Deckers/Horse Creek watershed and the Lower Elk Creek Management Unit.

CSFS proposes forest restoration treatments similar to the USFS' proposed treatment. Unlike the USFS, CSFS may construct new roads to treatment areas. New roads would only be constructed on private and State lands and would be constructed only if there are no existing roads to treatment areas.

Changes to the CSFS Project Description after the Issuance of the 2001 Opinion

CSFS has modified a forest restoration project on the Four Mile State Land in Douglas County to a salvage sale and post-fire rehabilitation project because of the Hayman fire. The forest restoration project was originally scheduled for the summer of 2002 as part of the Upper South Platte Restoration and Protection Project. This property is 360 acres in size and is comprised of ponderosa pine and Douglas-fir, with spruce, aspen, and willows intermixed. However, the Hayman fire killed most of the trees on the property; approximately 85% of the area had high burn severity, with a few pockets of moderate and low burn severity.

The salvage sale consists of 266 acres of ponderosa pine and Douglas-fir. Approximately 1,161,000 board feet will be removed from the property. Most of the material being removed is a minimum 7" DBH small end diameter with a minimum length of 16 feet. All soft snags will be retained as well as 2-3 snags per acre (minimum 8 inch DBH) for wildlife habitat. CSFS is working with the Colorado Division of Wildlife (CDOW) to determine how much material, both standing and dead, needs to be retained for wildlife habitat. A Hydro-axe will be used on smaller diameter material that was not used during the salvage sale. This work will provide mulch/ground cover as well as reduce future wildfire hazards. Once all logging operations have been completed, the area will be re-seeded where necessary. Contour felling and tree planting will be done in Spring 2003.

Conservation Measures

Conservation measures are actions in the project description that the project proponent will implement to lessen the impact of the proposed project and to further the recovery of threatened and endangered species. As part of the Proposed Action, the beneficial effects of these conservation measures are taken into consideration in the jeopardy and incidental take analyses. Conservation measures are part of the Proposed Action and their implementation is required under the terms of this consultation. Specific conservation measures identified in the biological assessment and included in this biological opinion that will minimize impacts of the proposed project for the skipper, spotted owl, Preble's mouse, and bald eagle are described in the following text.

A general conservation measure for this project is an annual project meeting between the Service, USFS, Denver Water, and CSFS. The annual meeting will be organized by the USFS and will occur during each year of the 12-year project (at a date to be determined). The agenda will include a discussion of the results of the project actions from the previous year as well as the proposed actions for the upcoming year. This annual meeting will provide an opportunity to evaluate treatment methodologies and to review monitoring results.

General Conservation Measures for the Skipper

1. Restrict openings in skipper habitat to 5 acres or less in size. (This measure has been revised, see *Changes in the Conservation Measures for the Pawnee Montane Skipper After the Issuance of the 2001 Opinion*).

2. Limit prescribed burning to 1,000 acres per year in skipper habitat with no more than 500 acres of contiguous habitat. Burns in adjacent areas should be staggered by a minimum of 2 years to allow for recovery of skipper populations.

3. Where possible, trees will be felled so as to avoid areas of blue grama (*Bouteloua gracilis* [*Chondrosum gracile*])/prairie gayfeather (*Liatris punctata*).

4. 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.

5. Slash deposition will be minimized in areas of blue grama/*Liatris*.

6. Noxious weed treatment will include:

    a). Noxious weeds in and near harvest units will be identified prior to forest thinning treatment.

    b). Weed concentrations will be pre-treated mechanically or with herbicide during the optimum life stage, typically fall or spring.

    c). Equipment will be washed prior to entering harvest areas.

    d). Machine operations should avoid driving through weed areas.

7. Reseeding mixture will contain blue grama seed.

8. Blading of existing roads or access routes that are vegetated and within skipper habitat will be limited to a maximum of 4.0 acres (approximately 3 miles of road) on USFS land and 4.0 acres on private and State lands. Bladed areas would be reclaimed immediately after treatments are completed.

<u>Additional Conservation Measures for the Skipper Specific to Denver Water and CSFS</u>

9. In skipper habitat, Denver Water and CSFS will limit the construction of new roads to less than 6 acres of disturbance (4 miles in length with an average width of 12 feet) at any given time.

10. New roads will be aligned to avoid high quality skipper habitat wherever possible.

11. In skipper habitat, the Service will be given the opportunity to review the routes for new logging truck access roads. The Service would be notified about construction of any spur roads (roads less than 500 feet in length).

12. New roads will be reclaimed immediately after forest treatments are completed. Reclamation would include grading to natural contours, ripping, and seeding. Seed mix will be certified weed-free and will include blue grama. Roads would be considered reclaimed after a ground cover of 50 percent of the potential ground cover is achieved.

Changes in the Conservation Measures for the Pawnee Montane Skipper for USFS/Denver Water/CSFS After the Issuance of the 2001 Opinion

13. Because of the uncertainty of the status of the skipper population following the recent wildfires, the Service will review individual Project treatments in unburned and low severity burn skipper habitat for Projects implemented before October 31, 2003. Based on monitoring results, the Service may recommend additional Terms and Conditions (project by project) to help minimize the impacts of these treatments during the initial post-fire recovery period. The Service and action agencies will agree on terms and conditions to be applied before carrying out these individual treatments. Actions to create defensible space around structures (on all land ownerships within the project area) would be exempted from this requirement. Actions in moderate and high intensity burn areas would proceed without delay through October 31, 2003.

14. The size and shape of created forest openings within skipper habitat will be based on the concept of a maximum distance to forest edge requirement in skipper habitat. The maximum distance would be 265 feet, based on the radius of a 5 acre circle, such that any point within the opening will be within 265 feet of a forest edge. A forest edge would be defined as the outer margin of a forested area with 11% or greater canopy coverage of overstory trees, and which extends for at least 100 feet on the axis perpendicular to the edge. A minimum of 100 feet of forest will remain between created openings. A few live ponderosa pine trees shall remain scattered throughout the opening. Created forest openings will be up to 40 acres in size, and those that are greater than 20 acres but less than 40 acres will require Service review and approval.

15. Salvage logging on Denver Water properties will only occur in moderate to high severity burn areas. Restoration thinning would occur in low severity burn areas.

16. During salvage logging on Denver Water properties, in order to provide vertical forest structure for reoccupation of burned areas by the skipper, an average of 20 trees per acre at least 8-

inches in diameter shall remain, with a range of 5 to 35 trees per acre. Trees are to be left on approximately equal spacing.

Residual Trees per Acre	Spacing Between Trees *(Feet)*
5	93
10	66
15	54
20	47
25	42
30	38
35	35

17. During salvage logging and restoration thinning activities, soft snags and/or other trees over 8 inches in diameter which are determined to be useful for wildlife will be left uncut, unless they pose a specific hazard to roads, trails or improvements.

18. During salvage logging and restoration thinning activities, areas of unburned blue grama will be marked or flagged so that the areas will not disturbed by heavy equipment.

19. During salvage logging, non-merchantable trees not used for contour felling may be felled to facilitate mulching. Slash (limbs and top) and non-merchantable trees will be piled, wind-rowed along the contour or concentrated by other approved methods to provide shading to help reoccupation of burned areas by the skipper.

20. In areas where salvage logging operations are undertaken but equipment cannot be used for piling or wind-rowing of slash, slash shall be lopped and scattered, or crushed. In such places, non-merchantable trees may be left standing. Such locations will provide areas of higher stem density needed to help reoccupation of burned areas by the skipper.

21. Areas with rocky outcrops, steep slopes and other factors will be difficult to treat during salvage logging. Such locations will provide areas of higher stem density that could help in the reoccupation of burned areas by the skipper. Additionally, there are areas of opportunity to remove trees outside the identified areas. These include areas along roads, selected groups of trees, etc. The area to be worked may be modified and expanded upon mutual agreement between the parties of this agreement to capture such areas.

22. During salvage logging and restoration thinning activities, in areas where existing roads or trails are desired to be closed, logs will be felled and left to restrict off-road travel, wherever possible. The project administrator will designate such areas.

23. During restoration thinning activities, some downed trees will be left to serve as potential microsites for tree establishment and skipper oviposition.

24. A Hydro-axe will be used for restoration thinning activities in the lightly burned parcels.

25. During restoration thinning activities, work will take place outside of the August 1 to October 1 skipper flight season.

26. During salvage logging and restoration thinning operations, the use of heavy equipment on saturated soils or when plastic soil limit is reached (to be determined from field testing) will be avoided. The plasticity test is simply squeezing a handful of soil; if it sticks together, it is wet and should be avoided.

27. If soil compaction occurs, such areas will be rehabilitated by scarification on the contour, and re-seeding if appropriate. Such areas will be identified by the project administrator and completed by Denver Water. If the area has been previously reseeded, mulched, or otherwise stabilized, any activities that disturb this process will need to be repaired. This may include reseeding, reapplying mulch, or other actions to return the site to the post-fire rehabilitated state. Such areas will be identified by the project administrator and completed by Denver Water.

General Conservation Measures for the Spotted Owl

1. Thinning and prescribed burn treatment areas will avoid the Devil's Head and Thunder Butte PACs.

2. No vegetation treatment (USFS or private) would be completed on ground that has greater than 40 percent average slope. However, there are small areas within the treatment area with greater than 40 percent slope that would be treated with prescribed fire.

Changes in the Conservation Measures for the Spotted Owl for USFS/Denver Water/CSFS After the Issuance of the 2001 Opinion

3. As with the 2001 Opinion, Project activities will avoid all PACS and slopes greater than 40 percent.

Conservation Measures for the Preble's Mouse

Conservation Measures for Forest Restoration Activities in Preble's Mouse Upland Habitat (Within 300 feet of 100-year flood plain, or 300 feet from the edge of the riparian vegetation, if more appropriate)

1. Forest restoration treatments will occur during the Preble's mouse hibernation period (November 1 through April 30).

2. All shrubs will be avoided by vehicles and associated logging equipment.

3. All riparian vegetation will be avoided.

4. Uprooting of trees by grubbing or other means will not occur.

5. During the annual meetings or prior to impact, the USFS, Denver Water, CSFS, and the Service will review treatment areas proposed for the upcoming season and will identify any areas that are potentially suitable or known occupied Preble's mouse habitat. The Service, USFS, CSFS and Denver Water will reach an agreement on the habitat suitability prior to treatment of an area.

Conservation Measures for Use of Drainage Crossings in Preble's Mouse Riparian Habitat

6. Disturbances from drainage crossings in occupied Preble's mouse riparian habitat shall not exceed 1 acre for the life of the project.

7. It will be assumed that areas of suitable habitat are occupied unless trapping surveys indicate that the Preble's mouse is not present at the site.

8. Drainage crossings will avoid riparian shrub habitat if possible.

9. If it is not possible to avoid riparian shrub habitat, efforts will be made to minimize disturbances of these areas.

10. No more than 0.5 acres of riparian grass and shrub habitats shall be impacted at any one time.

11. Once the drainage crossing is no longer needed to complete forest treatments, the crossing will be removed and the disturbance reclaimed to predisturbance conditions within 3 years. If reestablishment of the riparian vegetation on the drainage crossing is not achieved within 3 years, further work may be needed and mutually coordinated at the annual meeting.

12. During the annual meetings or prior to impact, the USFS, Denver Water, CSFS, and the Service will review any proposed drainage crossing that would cause a disturbance to Preble's mouse riparian habitat. The Service, USFS, CSFS, and Denver Water will reach an agreement on where the drainage crossing will occur and how to minimize the impact.

13. If trapping surveys are necessary, these surveys will be conducted in accordance with the Service's "Interim Survey Guideline for the Preble's Meadow Jumping Mouse", revised May 19, 1999.

Additional Conservation Measures for Activities in Preble's Mouse Habitat

14. At the expanded USFS Wigwam Campground parking lot, impacts will be offset by revegetating disturbed areas of the campground with plants that provide cover or food for the Preble's mouse, and by restoring areas of damaged riparian vegetation at a location approximately 3 miles upstream of the parking lot. Impacts will be offset at a ratio of 1.5:1.

15. Impacts from Denver Water OM&I activities will avoid and minimize disturbances in Preble's mouse habitat, where possible. Impacts to Preble's mouse habitat will be offset by habitat restoration (ratio of 1.5:1) on site, if possible, or at another site on Denver Water property within the Upper South Platte watershed.

16. Willow cuttings used for riparian revegetation activities would be cut and removed from Preble's mouse habitat only during the mouse's hibernation period. No willows within Preble's mouse habitat will be uprooted for revegetation purposes. (Note - see section below on *Changes in the Conservation Measures for Preble's Mouse After the Issuance of the 2001 Opinion* for changes in willow cutting procedures).

Changes in the Conservation Measures for Preble's Mouse for USFS/Denver Water/CSFS After the Issuance of the 2001 Opinion

17. During salvage logging and restoration thinning operations, no mechanized equipment shall be used within 50 feet of the banks of live streams or wetlands (referred to as the riparian protection zone

for salvage logging and restoration thinning projects), except when operating equipment from existing roads or trails.

18. Mechanical harvesting equipment shall remain outside the riparian protection zone, but may reach into the zone as far as possible to remove the tree from the stump. Trees shall not be bunched for skidding inside the riparian protection zone.

19. Other merchantable trees to be removed in the riparian protection zone that cannot be reached by mechanical harvesting equipment shall be felled by hand. Trees will be felled in such a manner that skidders will not enter the riparian protection zone. If needed, winch cable shall be pulled into the riparian protection zone for tree removal.

20. Areas of significant soil disturbance within the riparian protection zone caused by these operations will be regraded by hand. All non-merchantable trees shall be left standing within the riparian protection zone.

21. During salvage logging and restoration thinning operations, no skidding will occur across riparian areas or wetlands. Skidding across live stream channels will not occur without the use of approved mitigation measures.

22. During salvage logging and restoration thinning operations, no landings will be located in the riparian protection zone. Any road ditches or drainages damaged by logging activities will be repaired.

23. During salvage logging and restoration thinning operations, the use of heavy equipment on saturated soils or when plastic soil limit is reached (to be determined from field testing) will be avoided. The plasticity test is simply squeezing a handful of soil; if it sticks together, it is wet and should be avoided.

24. In areas where existing roads or trails are desired to be closed, logs will be felled and left to restrict off-road travel, wherever possible. The project administrator will designate such areas.

25. Compacted soils will be rehabilitated by scarification on the contour, and re-seeding, if appropriate. Such areas will be identified by the project administrator and completed by Denver Water. If the area has been previously reseeded, mulched, or otherwise stabilized, any activities that disturb this process will need to be repaired. This may include reseeding, reapplying mulch, or other actions to return the site to the post-fire rehabilitated state. Such areas will be identified by the project administrator and completed by Denver Water.

General Conservation Measures for the Bald Eagle

1. Prior to implementing vegetation management practices at Cheesman Reservoir, Denver Water will conduct weekly monitoring for bald eagles at the Cheesman Reservoir during the period from December 2000 through February 12, 2001. Surveys will be conducted by boat in the late afternoon to observe eagles arriving at the communal roosts. If the reservoir freezes over during this period, additional surveys will be conducted during the winter of 2001/2002 to the extent necessary to fill data gaps from the 2000/2001 survey period. Denver Water will provide a report that identifies known communal roost sites and the habitat conditions of those roost sites. (Note - results of 2000/2001 bald eagle surveys are included in *Changes in the Environmental Baseline of the Bald Eagle After the Issuance of the 2001 Opinion*).

2. A 1/8-mile (200 meter) radius "no forest management" protection zone will be established from the perimeter of known communal roost sites. Forest management activities will not be conducted within this buffer zone unless a work plan has been reviewed and approved by the Colorado Division of Wildlife raptor specialist and the Service.

3. No forest management work of any kind will occur within a 1-mile radius of these known roost sites from November 1 through March 30.

4. All ground work of any kind (except for emergency situations) within a 1/4-mile radius area of the communal roosts during the period from November to March will be pre-approved by the Service and will be conducted between the hours of 10:00 AM to 3:00 PM in order to minimize any potential inadvertent disturbance to roosting eagles. Boat trips for maintenance and monitoring purposes are permitted during this period.

5. CSFS will develop a *Coniferous Roost Area Description* based on the forest stand and ecological characteristics at Cheesman Reservoir and at Lory State Park in Larimer County. This *Coniferous Roost Area Description* will be used to identify potential communal roosting habitats at Cheesman Reservoir in addition to those identified during the monitoring surveys. Work in the vicinity of these potential roosting sites will be conducted in accordance with the protection zone measures identified in the previous text in General Conservation Measures for Bald Eagle, Items 2, 3, and 4.

Changes in the Conservation Measures for the Bald Eagle for USFS/Denver Water/CSFS After the Issuance of the 2001 Opinion

Consistent with the 2001 opinion, the specified limitations at Cheesman Reservoir will be in effect for the portions of the site within the bald eagle roosting protection areas, unless special exemptions can be obtained from Service.

STATUS OF THE SPECIES

Pawnee Montane Skipper

The skipper, a member of the Hesperidae butterfly family, was first described in 1911 as *Pamphila (Hesperia) pawnee montana* (Skinner 1911). Scott and Stanford (1982) combined two species (*Hesperia pawnee* and *Hesperia leonardus*), retained the specific name *leonardus*, and treated the Pawnee montane skipper as *Hesperia leonardus montana*. The subspecies occurs only in the South Platte Canyon River drainage system in Colorado, involving portions of Jefferson, Douglas, Teller, and Park Counties. There are two other subspecies of this group. *Hesperia leonardus leonardus* occurs in the eastern United States and Canada, and *Hesperia leonardus pawnee* occurs on the Northern Great Plains. The presence of ventral hind wing spots and its darker color differentiates *Hesperia leonardus montana* from *Hesperia leonardus pawnee* (Scott and Stanford 1982).

The Pawnee montane skipper is a small, brownish-yellow butterfly with a wing span slightly over 1 inch. Small, fulvous (dull brownish-yellow), usually distinct spots occur near the outer margins of the upper surface of the wings, while one to four distinct brownish to off-white spots occur on the lower (ventral) surface of the wings. The ventral spots are larger on the hind wing and are generally whiter on the female butterfly.

The skippers occur in dry, open, ponderosa pine woodlands. The slopes are moderately steep with soils derived from Pikes Peak granite. The understory is very sparse in the pine woodlands. Blue

grama grass, the larval food plant, and *Liatris*, the primary nectar plant, are two necessary components of the groundcover strata. Small clumps of blue grama occur throughout the hot, open slopes inhabited by skippers. *Liatris* occurs throughout the ponderosa pine woodlands. Skippers are very uncommon in pine woodlands with a tall shrub understory (Keenan et al. 1986) or where young conifers dominate the understory (ERT 1986b).

A quantitative estimate of optimum skipper habitat characteristics includes: tree canopy cover of 30 percent with ponderosa pine cover of 25 percent and Douglas-fir of 5 percent; tree density of less than 120 trees/acre in the smallest size class (0-5 inches diameter breast high) and overall tree density of less than 200 trees/acre; shrub and grass cover generally less than 10 percent; *Liatris* flowering stem density ranging from 50 to 500 flowering stems/acre; and blue grama canopy cover of 1 to 5 percent. The limiting habitat endpoints for the skipper seem to be treeless areas of 5 acres or more at one extreme to woodlands with understory shrub cover of 25 percent or more at the other extreme. The skipper is largely absent from steep, north-facing Douglas-fir stands where neither *Liatris* or blue grama are plentiful (USFWS 1998).

Pawnee montane skippers emerge as adult butterflies as early as late July. Males emerge before females by an average of a week to 10 days. The adults spend most of their short existence feeding and mating. Adult females directly deposit eggs singly on leaves of blue grama grass, the larval food plant (Scott and Stanford 1982, McGuire 1982). The species overwinters as larvae, and little is known of the larval and pupal stages. Pupation is generally short (13-23 days), as is most butterflies. The species completes its life cycle (egg to larva to pupa to adult butterfly to egg) annually (Keenan et al. 1986). Environmental Research and Technology (ERT)(1986b) indicated that adults probably fly until a major killing frost occurs. They also stated that the phenology of *Liatris*, the primary nectar plant, and the presence of the skipper are highly synchronous.

The skipper has a restricted range, occupying an area (though not necessarily all the available habitat within it) roughly 23 miles long and 5 miles wide (Keenan et al. 1986). It occurs along the mainstem of the South Platte River for approximately 20 miles and the North Fork of the South Platte Rive for approximately 15 miles upstream from their confluence to Cheesman Reservoir and Crossons, respectively. The present range covers approximately 38 square miles (ERT 1986b). Currently, the skipper's habitat forms one continuous band along the North and South Forks of the South Platte River and some of their tributaries, Buffalo and Horse Creeks, respectively. This type of habitat configuration allows for an interchange of individuals throughout the habitat. The area occupied by the skipper is owned and/or administered by the USFS, Denver Water, Bureau of Land Management, Jefferson County, State of Colorado, and numerous private individuals.

The vegetative community preferred by the skipper is a northern-most extension of the ponderosa pine/blue grama grass habitat type documented from southern Colorado and northern New Mexico. However, the preferred nectar plants of the skipper, *Liatris*, does not occur in similar habitats to the south. The northeastern limits of the ponderosa pine/blue grama grass community overlapping with the southwestern limit of the *Liatris* may contribute to the maintenance of the species in this limited area.

Population estimates for 1985, 1986, and 1987 were based on census survey transects and distribution survey counts (ERT 1986a, 1986b, and 1988). The distribution surveys were done by plotting a 200-pace transect within each quarter/quarter section (40 acres) of each quarter section assigned for sampling. Observers counted *Liatris*, blue grama, and skippers along the transects. The census surveys were conducted on 48 randomly-sampled 400 meter transects. The 1985 population estimate was 80,000 to 140,000 individuals; in 1986, the estimate was 67,900 to 166,100; and in 1987, the estimate was 116,000 individuals. These estimates are believed to be current, although no more recent surveys are known (USFWS 1998).

The elevational range of the species is 6,000 to 7,500 feet. Studies in 1985 showed that the ratio of males to female skippers was much greater at higher elevations than at lower elevations (32 males/7 females above 7,100 feet and 34 males/20 females below 7,100 feet; Keenan et al. 1986). In 1986, ERT found that the skipper occurrence showed a strong association with the presence of *Liatris* and that skipper abundance appeared to be positively related to *Liatris* abundance (ERT 1986b).

Although *Liatris* is the most important nectar source for the species, other plants have been noted as nectar sources for the skipper as well. The musk thistle *(Carduus nutans)* is important along river bottoms and up some ravines. Female skippers were seen in large numbers on musk thistle along the South Platte River canyon bottom (Opler 1986).

Liatris seems to require openings from single event disturbance such as logging or fire-created habitat, but does not tolerate continuous disturbance. However, it appears that the skipper does not colonize such areas for at least several years after disturbance and regeneration. Burnt or logged areas surveyed in 1986 had low numbers of skippers (Opler 1986).

Since modern settlement of Colorado, the Platte River Canyon has experienced a number of habitat changes that likely have resulted in loss, modification, and curtailment of former skipper habitat and range. Habitat loss likely has occurred as a result of fire suppression over the last 120 years. The encroachment of conifers and the subsequent loss of grasses and *Liatris* has reduced the quality and quantity of skipper habitat (USFWS 1998). Causes of lost habitat include Cheesman Reservoir, residential development, roads, and planted and mowed pastures. Invasion of noxious weeds, such as knapweed, which may outcompete blue grama and *Liatris*, are also a serious threat to the skipper (USFWS 1998).

Changes in the Status of the Pawnee Montane Skipper After the Issuance of the 2001 Opinion

There are no changes in the status of the Pawnee montane skipper after the issuance of the 2001 Opinion.

Mexican Spotted Owl

The Mexican spotted owl *(Strix occidentalis lucida)* is one of three subspecies of spotted owl occurring in the United States; the other two are the northern spotted owl (*S. o. caurina*) and the California spotted owl (*S. o. occidentalis*). The Mexican spotted owl is distinguished from the California and northern subspecies chiefly by geographic distribution and plumage. The Mexican spotted owl is mottled in appearance with irregular white and brown spots on its abdomen, back, and head. The spots of the Mexican spotted owl are larger and more numerous than in the other two subspecies giving it a lighter appearance.

The Mexican spotted owl has the largest geographic range of the three subspecies. The range extends north from Aguascalientes, Mexico, through the mountains of Arizona, New Mexico, and western Texas, to the canyons of southern Utah and southwestern Colorado, and the Front Range of central Colorado. Much remains unknown about the species' distribution in Mexico, where much of the owl's range has not been surveyed. The owl occupies a fragmented distribution throughout its United States range corresponding to the availability of forested mountains and canyons, and in some cases, rocky canyonlands. Although there are no estimates of the owl's historical population size, its historical range and present distribution are thought to be similar.

According to the Recovery Plan for the Mexican Spotted Owl (USFWS 1995) (Recovery Plan), 91 percent of owls known to exist in the United States between 1990 and 1993 occurred on land administered by the USFS; therefore the primary administrator of lands supporting owls in the United States is the USFS. Most owls have been found within Region 3 of the USFS, which includes 11 National Forests in New Mexico and Arizona. Forest Service Regions 2 and 4, including two National Forests in Colorado and three in Utah, support fewer owls. The range of the owl is divided into 11 Recovery Units (RU), 5 in Mexico and 6 in the United States, as identified in the Recovery Plan. The Recovery Plan also identifies recovery criteria and provides distribution, abundance, and density estimates by RU. The Upper Gila Mountain RU has the greatest known concentration of owl sites (55.9 percent), followed by the Basin and Range-East (16.0 percent), Basin and Range-West, (13.6 percent), Colorado Plateau (8.2 percent), Southern Rocky Mountains-New Mexico (4.5 percent), and Southern Rocky Mountains-Colorado (1.8 percent) RUs.

A reliable estimate of the numbers of owls throughout its entire range is not currently available. Fletcher (1990) calculated that 2,074 owls existed in Arizona and New Mexico in 1990 using information gathered by Region 3 of the USFS. The Service modified Fletcher's calculations and estimated a total of 2,160 owls throughout the United States (USFWS 1991). These numbers are not considered reliable estimates of current population size for a variety of statistical reasons. However, information summarized within the Recovery Plan was the last systematic effort to estimate the total number of owls.

Mexican spotted owls nest, roost, forage, and disperse in a diverse array of biotic communities. Nesting habitat is typically in areas with complex forest structure or rocky canyons, and contains mature or old-growth stands that are uneven-aged, multi-storied, and have high canopy closure (Ganey and Balda 1989a, USFWS 1991). In the northern portion of the range (southern Utah and Colorado), most nests are in caves or on cliff ledges in steep-walled canyons. Elsewhere, the majority of nests appear to be in Douglas-fir trees (Fletcher and Hollis 1994, Seamans and Gutierrez 1995). A wider variety of tree species is used for roosting; however, Douglas-fir is the most commonly used species (Ganey 1988, Fletcher and Hollis 1994, Young et al. 1998). Owls generally use a wider variety of forest conditions for foraging than they use for nesting/roosting.

The home-range size of Mexican spotted owls appears to vary considerably among habitats and/or geographic areas (USFWS 1995), ranging in size from 261-1,487 hectares (ha) (647-3,688 acres (ac)) for individuals birds, and 381-1,551 ha (945-3,846 ac) for pairs (Ganey and Balda 1989b). Little is known about habitat use by juveniles during natal dispersal.

Mexican spotted owls do not nest every year. This owl's reproductive chronology varies somewhat across its range. In Arizona, courtship usually begins in March with pairs roosting together during the day and calling to each other at dusk (Ganey 1988). Eggs are typically laid in late March or early April. Incubation begins shortly after the first egg is laid, and is performed entirely by the female (Ganey 1988). The incubation period is about 30 days (Ganey 1988). During incubation and the first half of the brooding period, the female leaves the nest only to defecate, regurgitate pellets, or receive prey from the male, who does all or most of the foraging (Forsman et al. 1984, Ganey 1988). Eggs usually hatch in early May, with nestling owls fledging four to five weeks later, and then dispersing in mid-September to early October (Ganey 1988).

Little is known about the reproductive output for the spotted owl. It varies both spatially and temporally (White et al. 1995), but the subspecies demonstrates an average annual rate of about one young per pair. Based on short-term population and radio tracking studies, and longer-term monitoring studies, the probability of an adult owl surviving from one year to the next is 80-90 percent. Average annual juvenile survival is considerably lower, at 6-29 percent, although it is believed these estimates

may be artificially low due to the high likelihood of permanent dispersal from the study area, and the lag of several years before marked juveniles reappear as territory holders and are detected as survivors through recapture efforts (White et al. 1995). Little research has been conducted on the causes of mortality, but predation by great horned owls (*Bubo virginianus*), northern goshawks (*Accipter gentilis*), red-tailed hawks (*Buteo jamaicensis*), and golden eagles (*Aquila chrysaetos*), as well as starvation, and collisions (e.g. with cars, powerlines), may all be contributing factors.

Mexican spotted owls consume a variety of prey throughout their range but commonly eat small and medium sized rodents such as woodrats (*Neotoma* spp.), peromyscid mice (*Peromyscus* spp.), and microtine voles (*Microtus* spp.). Owls also may consume bats, birds, reptiles, and arthropods (Ward and Block 1995). Habitat correlates of the owl's common prey emphasizes that each prey species uses a unique habitat. Deer mice (*P. maniculatus*) are ubiquitous in distribution in comparison to brush mice (*P. boylei*), which are restricted to drier, rockier substrates, with sparse tree cover. Mexican woodrats (*N. mexicana*) are typically found in areas with considerable shrub or understory tree cover and high log volumes or rocky outcrops. Mexican voles (*M. mexicanus*) are associated with high herbaceous cover, primarily grasses, whereas long-tailed voles (*M. longicaudus*) are found in dense herbaceous cover, primarily forbs, with many shrubs and limited tree cover. The difference in diet likely reflects geographic variation in population densities and habitats of both the prey and the owl (Ward and Block 1995).

Two primary reasons were cited for the listing the spotted owl as threatened in 1993--historical alteration of its habitat as the result of timber management practices, specifically the use of even-aged silviculture, and the threat of these practices continuing; and the danger of catastrophic wildfire. The Recovery Plan (USFWS 1995) for the spotted owl provides a basis for management actions to be undertaken by land management agencies and Indian Tribes to remove recognized threats and recover the spotted owl. Heavy accumulations of ground and ladder fuels have rendered many southwestern forests vulnerable to stand-replacing fires. Even-aged silviculture within potential spotted owl habitat is regarded as a threat because it tends to simplify stand structure and move stands away from containing structures used by spotted owls.

Protected and Restricted Areas

The Recovery Plan provides recommendations for two levels of habitat management: protected areas and restricted areas.

Protected sites include:

- Designated Protected Activity Centers (PAC) at spotted owl sites known since 1989. PAC boundaries delineate no less than 243 ha (600 ac) and include a nest site or roost site as well as foraging habitat;
- All areas in mixed-conifer and pine-oak types with slopes greater than 40 percent where timber harvest has not occurred in the past 20 years; and
- All legally and administratively reserved lands.

Restricted Sites include mixed-conifer forest, pine-oak forest, and riparian areas that are outside the protected sites. These areas should be managed to meet certain structural characteristics with the intent of providing additional owl habitat for future occupancy.

All Protected and Restricted Habitats, as described in the Recovery Plan, require special management consideration and protection to ensure their contribution to the species' recovery.

Proposed Critical Habitat

(Note the critical habitat was designated on February 1, 2001 after the issuance of the 2001 Opinion, see *Changes in the Status of the Mexican Spotted Owl After the Issuance of the 2001 Opinion*).

Critical habitat is defined in section 3(5)(A) of the Endangered Species Act (Act) as--(I) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection and; (II) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. The term "conservation," as defined in section 3(3) of the Act, means "to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary" (i.e., the species is recovered and removed from the list of endangered and threatened species).

Section 4(b)(2) of the Act requires that critical habitat designation is based on the best scientific and commercial data available, taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. Areas can be excluded from critical habitat designation if the Service determines that the benefits of exclusion outweigh the benefits of including the areas as critical habitat, provided the exclusion will not result in the extinction of the species.

Critical habitat helps focus conservation activities by identifying areas that contain essential habitat features (primary constituent elements), regardless of whether they are currently occupied by the listed species, thus alerting the public and land managing agencies to the importance of an area in the conservation of a listed species. Critical habitat also identifies areas that may require special management or protection. Critical habitat receives protection from destruction or adverse modification through required consultation under section 7 of the Act with regard to actions carried out, funded, or authorized by a Federal agency. Aside from the added protection provided under section 7, the Act does not provide other forms of protection to lands designated as critical habitat.

Designating critical habitat does not create a management plan for a listed species. Designation does not establish numerical population goals, prescribe specific management actions (inside or outside of critical habitat), nor does it have a direct effect on areas not designated as critical habitat. Critical habitat is limited to those areas within the proposed boundaries that meet the definition of protected, reserved, and restricted habitat, as described in the Recovery Plan. Private and state lands within mapped boundaries are not designated as critical habitat (USFWS 2000).

Primary Constituent Elements

In accordance with section 3(5)(A)(I) of the Act and regulations at 50 CFR 424.12, in determining which areas to propose as critical habitat, critical habitat designation is based on the best scientific and commercial data available and considers those physical and biological features that are essential to conservation of the species and that may require special management considerations or protection. Such requirements include, but are not limited to-- space for individual and population growth, and for normal behavior; food, water, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

The physical and biological habitat features essential to the conservation of the Mexican spotted owl, referred to as the primary constituent elements, include those that support nesting, roosting, and foraging. These elements were determined from studies of Mexican spotted owl behavior and habitat use throughout the range of the owl. The vegetative communities and structural attributes used by the owl vary across the range of the subspecies. The vegetative communities consist primarily of warm-temperate and cold-temperate forests, and, to a lesser extent, woodlands and riparian deciduous forests. The mixed-conifer community appears to be most frequently used throughout most portions of its range (Skaggs and Raitt 1988; Ganey and Balda 1989a, 1994; USFWS 1995). Structural characteristics associated with forested Mexican spotted owl habitat vary depending on the behavioral function it supports. Although Mexican spotted owl habitat is also regionally variable, some general attributes are common to the subspecies' life-history requirements throughout its range.

The primary constituent elements were determined for Mexican spotted owl from studies of their habitat requirements and the information provided in the Recovery Plan (USFWS 1995). These primary constituent elements include mixed conifer, pine-oak, and riparian forest types, as described in the Recovery Plan, that have, or are capable of having, the following attributes:

- high basal area of large diameter trees;
- moderate to high canopy closure;
- wide range of tree sizes suggestive of uneven-age stands;
- multi-layered canopy with large overstory trees of various species;
- high snag basal area;
- high volumes of fallen trees and other woody debris;
- high plant species richness, including hardwoods;
- adequate levels of residual plant cover to maintain fruits, seeds, and regeneration to provide for the needs of Mexican spotted owl prey species.

For canyon habitat, these primary constituent elements include the following attributes:

- cooler and often more humid conditions than the surrounding area;
- clumps or stringers of trees and/or canyon wall containing crevices, ledges, or caves;
- high percent of ground litter and woody debris;
- riparian or woody vegetation (although not at all sites)

The forest habitat attributes listed above usually develop with increasing forest age, but their occurrence may vary by location, past forest management practices or natural disturbance events, forest type, and productivity. These characteristics may also develop in younger stands, especially when the stands contain remnant large trees or patches of large trees from earlier stands. Certain forest management practices may also enhance tree growth and mature stand characteristics where the older, larger trees are allowed to persist.

Changes in the Status of the Mexican Spotted Owl After the Issuance of the 2001 Opinion

Mexican Spotted Owl Critical Habitat

The Service published its Final Rule designating critical of the spotted owl on February 1, 2001 (66 Federal Register 8530). A lawsuit was filed by the Center for Biological Diversity *et al.*, on August 27, 2001, against the Service through the Department of the Interior (DOI) for excluding nearly 9 million acres of federal and tribal lands in Arizona and New Mexico from critical habitat. On January 13, 2002, a U.S. District judge ruled that the Service shall re-propose critical habitat for the spotted owl within three months of the order and shall publish its final designation of critical habitat within six months

of the order. The U.S. District judge further ruled that current critical habitat designation shall remain in effect and shall be enforced until the final critical habitat is designated (U.S. District Court 2003). Given that both the proposed and final dates for re-designating spotted owl critical habitat are after the issuance date of this reinitiated BO, these actions do not affect the current critical habitat designation. However, this BO may need to be reinitiated following the final designation of critical habitat for the spotted owl.

Preble's Meadow Jumping Mouse

The Preble's mouse is a small rodent in the family Zapodidae and is 1 of 12 recognized subspecies of the species *Zapus hudsonius*, the meadow jumping mouse. The Preble's mouse is native only to the Rocky Mountains-Great Plains interface of eastern Colorado and southeastern Wyoming. This shy, largely nocturnal mouse lives in moist lowlands with dense vegetation. It is 8 to 9 inches long (its tail accounts for 60 percent of its length) with hind feet adapted for jumping. The Preble's mouse generally hibernates underground from September to May; the Service considers November 1 through April 30 to be the hibernation period.

Records for Preble's mouse define a range including Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Elbert, Jefferson, Larimer, and Weld counties in Colorado; and Albany, Laramie, Platte, Goshen, and Converse counties in Wyoming (Krutzsch 1954, Compton and Hugie 1993). Armstrong et al. (1997, p. 77) described typical Preble's mouse habitat as "well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity." Also noted was a preference for "dense herbaceous vegetation consisting of a variety of grasses, forbs and thick shrubs."

The Preble's mouse has undergone a decline in range and populations within its remaining range have been lost. Habitat loss and fragmentation resulting from human land uses have adversely impacted Preble's mouse populations. Compton and Hugie (1993) cited human activities that have adversely impacted Preble's mice including: conversion of grasslands to farms; livestock grazing; water development and management practices; and, residential and commercial development. Shenk (1998) linked potential threats to ecological requirements of Preble's mouse and suggested that factors which impacted vegetation composition and structure, riparian hydrology, habitat structure, distribution, geomorphology, and animal community composition must be addressed in any conservation strategy.

Residential and commercial development, accompanied by highway and bridge construction, and instream alterations to implement flood control, directly remove Preble's mouse habitat, or reduces, alters, fragments, and isolates habitat to the point where Preble's mouse can no longer persist. Roads, trails, or other linear development through Preble's habitat may act as barriers to movement. Shenk (1998) suggested that on a landscape scale, maintenance of acceptable dispersal corridors linking patches of Preble's mouse habitat may be critical to its conservation.

The Service has typically described Preble's mouse habitat as extending outward 300 feet (90 meters) from the 100-year floodplain of rivers and streams (Service 1998). The basis for the 300 feet standard is that mice have been documented to regularly move up to 150 feet from streams and wetlands. The remaining 150-foot zone serves as a buffer zone to avoid disturbance of Preble's mice habitat associated with human activities (63 FR 66777). In the instances of small, narrow mountains streams, the100-year floodplain is often difficult to define; in these settings, Preble's mouse habitat can be defined as 300 feet from the outside edge of the riparian vegetation.

Changes in the Status of the Preble's Meadow Jumping Mouse After the Issuance of the 2001 Opinion

Upward Elevational Limit
The Service considers the elevation of 7,600 feet to be the general upward limit of Preble's habitat in Colorado (Service 1998).

Proposed Critical Habitat for Preble's
On July 17, 2002, the Service proposed to designate critical habitat for Preble's in select areas in Colorado and Wyoming (67 Federal Register 137). Critical habitat identifies specific areas, both occupied and unoccupied, that are essential to the conservation of a listed species and that may require special management considerations or protection. In accordance with the Act, not all areas that can be occupied by a species will be designated critical habitat. If this proposed rule is made final, section 7 of the Act will prohibit destruction or adverse modification of critical habitat by any activity funded, authorized, or carried out by any Federal agency; and Federal agencies proposing actions affecting areas designated as critical habitat must consult with the Service on the effects of the proposed actions, pursuant to section 7(a)(2).

In the Service's regulations at 50 CFR 402.2, destruction or adverse modification is defined as "a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical of biological features that were the basis for determining the habitat to be critical."(67 Federal Register 137).

Primary constituent elements for the Preble's critical habitat include:(1) A pattern of dense riparian vegetation consisting of grasses, forbs, and shrubs in areas along rivers and streams that provide open water through the Preble's active season. (2) Adjacent floodplains and vegetated uplands with limited human disturbance (including hayed fields, grazed pasture, other agricultural lands that are not plowed or disced regularly, areas that have been restored after past aggregate extraction, areas supporting recreational trails, and urban/wildland interfaces). (3) Areas that provide connectivity between and within populations. These may include river and stream reaches with minimal vegetative cover or that are armored for erosion control, travel ways beneath bridges, through culverts, along canals and ditches, and other areas that have experienced substantial human alteration or disturbance. (4) Dynamic geomorphological and hydrological processes typical of systems within the range of the Preble's, i.e., those processes that create and maintain river and stream channels, floodplains, and floodplain benches, and promote patterns of vegetation favorable to the Preble's.

Existing features and structures within the boundaries of the mapped units, such as buildings, roads, parking lots, other paved areas, lawns, other urban and suburban landscaped areas, regularly plowed or disced agricultural areas, and other features not containing any of the primary constituent elements are not considered critical habitat.

The outward extent of critical habitat was set as a set distance outward from the river or stream edge (as defined by the ordinary high water mark) and will vary with the size (order) of a river or stream. The Service compared known floodplain widths to stream order over a series of sites and approximated average floodplain width for various orders of streams. To that average, we added an additional 100 meters (330 feet) outward on each side. Based on this calculation, for streams of order 1 and 2 (the smallest streams) we have delineated critical habitat as 110 meters (360 feet) outward from the stream edge, for streams of order 3 and 4 we have delineated critical habitat as 120 meters (400 feet) outward from the stream edge, and for stream orders 5 and above (the largest streams and rivers) we have delineated critical habitat as 140 meters (460 feet) outward from the stream edge.

While proposed critical habitat will not include all areas used by individual Preble's over time, we believe that these corridors of critical habitat ranging from 220 meters (720 feet) to 280 meters (920 feet) in width (plus the river or stream width) will support the full range of primary constituent elements essential for persistence of Preble's populations, and should help protect the Preble's and their habitats from secondary impacts of nearby disturbance.

The Project Area occurs within the Upper South Platte River Unit (Unit SP 13) of proposed critical habitat; this unit encompasses approximately 4,168 acres on 51.5 miles of stream and includes five subunits. The Chatfield subunit includes a section of the South Platte River upstream of Chatfield Reservoir within Chatfield State Recreation Area (Corps of Engineers' property). The Bear Creek subunit includes Bear Creek and West Bear Creek, tributaries to the South Platte River on Forest Service lands. The South Platte sub-unit includes a segment of the South Platte River upstream from Nighthawk, including the tributaries Gunbarrel Creek and Sugar Creek. This subunit is centered on Federal lands of the Pike-San Isabel National Forest but involves some intervening non-Federal lands, including Denver Water property. The Trout Creek subunit includes portions of Trout Creek, a tributary to Horse Creek, and also portions of Eagle Creek, Long Hollow, Fern Creek, Illinois Gulch, and Missouri Gulch. This subunit is centered on Federal lands of the Pike-San Isabel National Forest but includes some intervening non-Federal lands along Trout Creek. The Wigwam Creek subunit includes Wigwam Creek and its tributaries, Pine Creek and Cabin Creek on Forest Service lands.

This unit is unlikely to serve as an initial recovery population under the draft critical habitat document. The habitat components that are present, and the likely density of Preble's populations, vary. It encompasses five areas of primarily Federal land, including some private land, spread through the drainage, four within the Pike-San Isabel National Forest boundary. The Trout Creek subunit appears to have high quality Preble's habitat and may provide an opportunity to research relationships between the Preble's and the western jumping mouse, both of which have been verified from a single location in the subunit. Small segments of non-Federal lands in the unit are within the Douglas County HCP currently being developed. Preble's has been confirmed through morphological examination of a specimen from Trout Creek near the Douglas County-Teller County boundary at 2,310 m (7,590 ft). Other captures of jumping mice from various locations within this unit are presumed to be the Preble's.

In areas where critical habitat has been proposed for Preble's, the Service considers the outward extent of Preble's habitat to be the outward extent of the proposed critical habitat, which will be either 360 feet outward from stream edge for order 1 and 2 streams, or 400 feet outward from stream edge for order 3 and 4 streams, rather than 300 feet from the edge of the riparian.

Bald Eagle

The bald eagle *(Haliaeetus leucocephalus)* south of the 40th parallel line was listed as an endangered species on March 11, 1967. Many factors affected the decline of this species, including human persecution, prey reduction, habitat loss, and impaired reproduction caused by environmental contaminants especially dichloro-diphenyl-trichloro-ethane (DDT). Since the banning of DDT and intensive protection efforts, bald eagle populations and the number of occupied nesting territories have increased over the past two decades throughout much of the United States (USFWS 1983).

As a result of an increase in the number of adult pairs using the nesting territories, the Service reclassified the bald eagle in the lower 48 States from threatened to endangered on July 12, 1995 (60 FR 35999). Furthermore, the bald eagle in the lower 48 States has been proposed for delisting based on the recovery of the species (64 FR 36453). The recovery is due in part to habitat protection and management actions initiated under the Endangered Species Act of 1973, as amended (Act). It is also due to the reduction in levels of persistent organochlorine pesticides in the environment. The Act

requires that the Service monitor recovered species for at least 5 years following delisting. Removal of the bald eagle as a threatened species under the Act will not affect the protection provided under the Bald and Golden Eagle Protection Act, the Migratory Bird Act, and many other state laws. The date of the delisting for the bald eagle is not known at this time.

Bald eagles are often found in association with open water along seacoasts, large lakes, and rivers. Their diet consists largely of fish and waterfowl, but also includes upland birds, small mammals, and carrion. Bald eagles are skilled hunters but also have been observed stealing prey captured by other raptors.

Wintering bald eagles occur throughout the country but are most abundant in the west and midwest. An abundant, readily available food supply in conjunction with one or more suitable night roosts is the primary characteristic of winter habitat. The majority of wintering eagles are found near open water and they feed on fish and waterfowl, often taking those which are dead, crippled, or otherwise vulnerable. Mammalian carrion is an important alternate source of food at some locations. Also, many bald eagles spend a substantial portion of the wintering period in terrestrial habitats far from open water, relying on prey they can catch easily or scavenge, such as big game or livestock carrion and small mammals. Along Colorado's Front Range, prairie dogs represent the largest portion of the bald eagles' winter diet (USFWS 1983).

Wintering eagles often congregate at night at communal roost trees, in some cases traveling 20 km or more from feeding areas to a roost site. The same roosts are used for several years. Many are in locations that are protected from the wind by vegetation or terrain, providing a more favorable thermal environment. The use of these protected sites helps minimize the energy stress encountered by wintering birds. It also has been suggested that communal roosting facilitates food-finding. In addition to natural factors, roost sites generally provide isolation from humans. When human disturbance of a night roost occurs, birds may abandon the location (USFWS 1983). In some locations, the absence of a suitable night roost could limit the use of otherwise suitable habitat.

The tendency for bald eagles to congregate at certain locations during the wintering period is well known and for years it had been assumed that most of the birds were at concentration areas. However, analyses of data collected during the National Wildlife Federation's nationwide midwinter surveys indicate that perhaps only about 50 percent of the bald eagles in the Region are in concentration areas; others are present in hundreds of locations that are used regularly by one to 20 birds. Collectively the smaller groupings and individuals probably are equal in importance to the larger concentration areas (USFWS 1983).

Wintering areas in Colorado that meet any of the following criteria should be considered essential habitat for the bald eagle:

1. Locations used annually for two weeks or longer by adult or immature wintering eagles known (or strongly suspected) to be from nearby breeding areas.

2. Locations used annually by 15 or more eagles for two weeks or longer.

3. Locations used by bald eagles during periods of extremely harsh weather, when suitable feeding areas and night roost sites are limited in number. (The minimum two-week period of use does not apply to this criterion)(USFWS 1983).

Survival of individual bald eagles, particularly those in their first year of life, probably depends heavily on conditions they encounter during the wintering period. The physiological condition of adults at the

beginning of each breeding season, an important factor influencing reproductive success, also is affected by how well their energy demands are met in wintering areas. Thus, the survival and recovery of nesting populations in the Region depends in part on the eagles having suitable locations to use throughout the wintering period each year (USFWS 1983).

Changes in the Status of the Bald Eagle After the Issuance of the 2001 Opinion

No changes in the status of the bald eagle have occurred after the issuance of the 2001 Opinion.

ENVIRONMENTAL BASELINE

Pawnee Montane Skipper

The combined Project Area of the USFS-Denver Water-CSFS encompasses the majority of the occupied skipper habitat. Areas of skipper habitat that are not within the Project Area include small areas to the west of Cheesman Reservoir, small areas south of and tributary to Trout Creek, and small areas on the North Fork of the South Platte River in the vicinity of the town of Buffalo Creek.

The current forest conditions within skipper habitat generally are less suitable for skippers than in presettlement times. Fire suppression over the last 100 years has been a factor in the establishment of denser, more uniform stands with fewer openings, a greater proportion of understory trees, and an increase in the Douglas-fir cover type. Currently, 63 percent of the USFS land within the Project Area has a canopy of 40 percent or greater. The optimum conditions of skipper habitat include a tree canopy cover of 30 percent with ponderosa pine cover of 25 percent and Douglas-fir of 5 percent. Kaufman estimated that the typical crown closure of the Project Area under pre-European conditions averaged around 30 percent (USFS 2000).

In addition to creating forest stand conditions less suitable for the skipper, the denser and more uniform forest conditions have a much higher risk of catastrophic fire. "The current forest conditions, combined with greater human encroachment into the forest lands, have dramatically increased the risk of loss of life and property from wildfires in recent years. The current forested landscape condition does not reflect the historic disturbance regime and is not sustainable. Past fire control, logging, and grazing allowed smaller trees to proliferate. This resulted in relatively dense, even-aged, closed-crown forest conditions throughout the ponderosa pine/Douglas-fir forest that have a much higher risk of catastrophic fire compared to pre-settlement conditions. As such, because the forests have very little down wood to permit low-intensity ground fires, prescribed fires are unable to modify the forest structure. The existing small trees serve as ladder fuels, permitting surface fires to climb into the tree canopy and become crown fires. Wildfire will carry as a high-intensity crown fire under hot, dry, and windy conditions" (USFS 2000, pg 1-10).

Two large fires have occurred within the watershed during the last 5 years and some of the burn areas from these fires included the Project Area. The Buffalo Creek fire occurred in the summer of 1996 and burned a total of 12,000 acres. The Hi Meadow fire occurred in the summer of 2000 and burned a total of 11,000 acres. Of these fires, 724 acres of skipper habitat were burned in the Buffalo Creek fire and 1,593 acres of skipper habitat were burned in the Hi Meadow fire (B. Piehl, Foster Wheeler, pers. comm.)

Changes in the Environmental Baseline of the Pawnee Montane Skipper After the Issuance of the 2001 Opinion

Hayman and Schoonover Fires

The skipper has experienced considerable impacts from fires since 1996. "The total amount of suitable habitat burned since 1996 is 12,026 acres, or 48.3 percent of the mapped suitable habitat. Based on the USFS fire severity mapping for the four major fires since 1996, it is estimated that the skipper population has been extirpated (in areas of moderate to high severity burns) from about 30 percent of its former habitat since 1996."(Ellis 2002). The Hayman and Schoonover fires burned approximately 9,700 acres of the 24,831 total acres of known skipper habitat, or approximately 39 percent of the range of the species. Approximately 4,500 acres (18 percent) burned at low intensity, and approximately 5,200 acres (21 percent) burned at moderate or high intensity.

Specific to the skipper habitat around Cheesman Reservoir, a total of 4,387 acres of skipper habitat have been mapped at the Cheesman Reservoir area. During the Hayman and Schoonover fires, the majority of the skipper habitat burned (4,228 acres), of which 3,089 acres (70 percent of Cheesman Reservoir skipper habitat) were of moderate to high severity burn and 1139 acres (26 percent of Cheesman Reservoir skipper habitat) were of low severity burn.

In mid-September of 2002, a multi-agency team conducted a post-fire habitat monitoring study within burned and unburned areas of mapped skipper habitat. Of the fifty-five transects that were sampled, no individuals were seen within burned areas and only two individuals were seen on unburned transects. Several skippers were seen off transects in the Gunbarrel Creek drainage, Trumbull area east of South Platte River, and near the Wigwam Fishing Club (ENSR 2002a). According to Ellis (2002a), "The sparse occurrence of nectar plants to attract adult skippers appeared to be a factor, as well as the severe drought which may have caused diapause (e.g., physiologically-induced dormancy) in larvae that would have normally pupated and emerged as adults." Additional skipper and skipper habitat monitoring is planned during the 2003 skipper flight period and subsequent years.

Combined Fire Suppression and Emergency Rehabilitation Efforts

The 2001 Hayman and Schoonover resulted in extensive fire suppression and emergency rehabilitation efforts. These efforts involve section 7 consultations with the USFS (ongoing), NRCS (ongoing), EPA (completed), and the COE (ongoing) that are separate from this reinitiation consultation but are discussed here as a means of updating the baseline condition for the skipper. Note that treatment acres within skipper habitat for NRCS actions are an estimate since the exact distribution of the treatments in skipper habitat are not available; the Service has been conservative with these values and the numbers likely overestimate the actions within skipper habitat.

Within the South Platte mainstem area of skipper habitat, both ground disturbing and light surface treatments occurred within, and adjacent to, the burned areas. A total of 5.9 miles of hand line (1.9 mile) and dozer line (4 miles) were implemented in skipper habitat during suppression. Other ground disturbing activities (i.e., scarification, contour and directional felling) in burned skipper habitat occurred on 476 acres (USFS treatments) and approximately 1,890 acres (NRCS treatments). A backburn (e.g., burnout) occurred in 250 acres of skipper habitat. Light surface treatments (i.e., hydromulch, straw mulching, seeding) in burned skipper habitat occurred on 429 acres (USFS treatments) and approximately 3,600 acres (NRCS treatments).

Within the Cheesman Reservoir Area, ground disturbing and light surface treatments occurred within, and adjacent to, the burned areas. Contour felling and scarification occurred on approximately 1,400 acres of skipper habitat. Hydroaxing occurred on approximately 890 acres of skipper habitat. Seeding occurring throughout the Cheesman area and included approximately 4,388 acres of skipper

habitat; mulching occurred on approximately 1,500 acres of skipper habitat. An application of PAM (polyacrylamide) occurred on approximately 500 acres of skipper habitat at the southern end of the reservoir.

Mexican Spotted Owl

Two spotted owl nest/roost sites occur outside but immediately adjacent to the eastern perimeter of the Project Area. These sites include Devil's Head and Thunder Butte and both occur in USFS land. At Devil's Head, a pair of spotted owls was identified in 1993. A single spotted owl was located at Devil's Head in 1994 and 1996, and none have been identified since. At the Thunder Butte site, a pair of spotted owls was identified in 1994. A single spotted owl was identified at Thunder Butte in 1995 and 1996, and none have been identified since. Both the Devil's Head and the Thunder Butte site were surveyed during 2000; none were identified (D. Bohon, USFS, pers. comm.). The boundaries of the Protected Area Center (PAC) for these spotted owl sites do not extend into the Project Area. Historic observations of spotted owl calls also have been reported in the Lost Creek Wilderness Area (D. Bohon, USFS, pers. comm.).

Other areas within the Project Area and the general vicinity were surveyed for the spotted owl during the period from 1993 through 1997 and include: Turtle Mountain, Eagle Creek, Long Hollow, Polhemus, Bergen Road, Bear Creek, Campbell Mountain, Deep Creek, Baldy, Shinglemill Creek, Morrison Creek, Little Scraggy, AG Ranch, Jackson Creek, Long Scraggy, Cheesman Canyon, Goose Creek, Shafthouse, Crossons, Waterton Canyon, Turkshead, Pine Creek, Camp Creek, Black Mountain, Four-mile Creek, and Sheepnose. No spotted owls were identified at these locations (D. Bohon, USFS, pers. comm.).

An estimation of the most suitable spotted owl habitat within the proposed critical habitat, based on the combination of dense mixed-conifer trees, steep slopes, and rocky outcroppings, indicates that currently the best conditions appear to be in the Lost Creek Wilderness Area as well as at Devil's Head and the area southeast of Devil's Head. Neither of these areas are within the Project Area. In 1993 and 1994, Thunder Butte experienced a loss of some of the Douglas-fir trees that were at the base of the rocky cliffs as a result of Tussock moth infestations. The loss of these trees may have made the Thunder Butte site less suitable for the spotted owls (D. Bohon, USFS, pers. comm.).

The majority of the USFS land in the Project Area occurs within the boundaries of proposed critical habitat for the Mexican spotted owl (USFWS 2000). Critical habitat was proposed in this area based on the identification of spotted owls at Devil's Head and Thunder Butte (T. Ireland, USFWS, pers. comm.). This unit of proposed critical habitat includes approximately 208,914 acres, although private and State lands have not been subtracted from this amount (B. Piehl, Foster-Wheeler, pers. comm.).

Critical habitat is limited to areas within the proposed boundaries that meet the definition of protected, reserved, and restricted habitat, as described in the Recovery Plan. Private and State lands within mapped boundaries are not designated as critical habitat (USFWS 2000). Spotted owl protected areas and restricted areas occur within, and are adjacent to, the Project Area. Thunder Butte and Devil's Head PACs occur directly outside of, and to the east of the Project Area boundaries. Mixed conifer slopes (greater than 40 percent with no timber management during the past 20 years) protected areas are present within the boundaries of the Project Area, although these areas will be avoided by project actions. The treatment areas also will avoid the Lost Creek Wilderness Area (reserved land).

Restricted habitat is present in the Project Area but only in scattered, dense, mixed-conifer stands or in canyon habitats within the Project Area. Restricted habitat (mixed conifer forest, pine-oak forest, and riparian areas outside of protected areas) is designated only where primary constituent elements can be

found. Some of the primary constituent elements (e.g., moderate to high canopy closure; adequate levels of residual plant cover to maintain fruits, seeds, and regeneration to provide for the needs of spotted owl prey species) are present within the Project Area, and, therefore, restricted areas are present within the Project Area. The majority of the Project Area does not have attributes such as a "high basal area of large diameter trees" or a "wide range of tree sizes suggestive of uneven-age stands" (USFWS 2000). The Pike National Forest mixed-conifer ecosystem currently do not meet the threshold conditions for mixed-conifer and pine-oak stands within restricted areas (i.e., 150 ft^2/acre of basal area with at least 20 trees per acre greater than 18 inches dbh on 25 percent of the area), as identified in the Recovery Plan, Table III.B.I (USFWS 1995), nor did this ecosystem meet these conditions prior to European settlement (J. Thinnes, USFS, pers. comm.). Furthermore, it is unlikely that the threshold conditions described in Table III.B.I can ever be achieved on the Pike National Forest given that the current stands have 100-120 ft^2/acre of basal area and are experiencing epidemic defoliation and high mortality from beetle infestations (J. Thinnes, USFS, pers. comm.). Some of the canyon habitats within the Project Area contains primary constituent elements with attributes such as clumps or stringers of trees and/or canyon walls containing crevices, ledges, or caves, and are therefore considered restricted areas.

Changes in the Environmental Baseline of the Mexican Spotted Owl After the Issuance of the 2001 Opinion

Hayman and Schoonover Fires

There are approximately 182,000 acres within the spotted owl critical habitat boundaries on the Pike National Forest. Approximately 40,863 acres (22 percent) within that boundary were burned in the Hayman and Schoonover fires. Only those areas within this boundary meeting the specific criteria of critical habitat, however, are considered critical habitat (66 FR 8533). Most areas burned did not meet the critical habitat definition, however, one protected activity center (PAC) was burned. Of the total of 1,059 acres that constitute the Thunder Butte PAC, approximately 641 acres were burned (305 acres burned at low intensity and 336 acres burned at moderate or high intensity). The surrounding area was burned in a mosaic, with considerable amounts of unburned or lightly burned habitat. It is not known if the partial burning of the PAC will result in habitat becoming unsuitable to Mexican spotted owls. The species was last detected at the site in 1996, and surveys were last conducted in 1997, so it is not known how consistently the site has been occupied in recent years. In the absence of compelling evidence at this time that the site is no longer suitable, the PAC will continue to be considered a valid designation. An analysis of occupied spotted owl habitat burned by wildfires in California, New Mexico, and Arizona between 1985 to 2001 found that the wildfires had little short-term impact on survival, site fidelity, mate fidelity, and reproductive success (Bond et al.. 2002).

Combined Fire Suppression and Emergency Rehabilitation Efforts

The 2001 Hayman and Schoonover resulted in extensive fire suppression and emergency rehabilitation efforts. These efforts involve section 7 consultations with the USFS (ongoing), NRCS (ongoing), EPA (completed), and the COE (ongoing).

Within the spotted owl critical habitat, both ground disturbing and light surface treatments occurred within, and adjacent to, the burned areas. A total of 14.7 miles of hand line were implemented in spotted owl critical habitat during suppression. Other ground disturbing activities (i.e., scarification, directional felling) in burned spotted owl critical habitat occurred on 3,627 acres (USFS treatments) and 3,780 acres (NRCS treatments). Light surface treatments (i.e., hydromulch, straw mulching, seeding) in burned spotted owl critical habitat occurred on 7,027 acres (USFS treatments) and 7,250 acres (NRCS treatments).

Within the Thunder Butte PAC, only light surface treatment occurred and included 43 acres of aerially-applied straw mulch (USFS treatment).

Preble's Meadow Jumping Mouse

The Preble's mouse was identified in the Upper South Platte watershed in the summer of 2000. Field trapping in the summer of 1999 detected the presence of *Zapus* but it was not until 2000 that the skeletal examination determined that both species of the jumping mouse in Colorado, the western jumping mouse (*Zapus princeps*) and the Preble's meadow jumping mouse (*Zapus hudsonius preblei*), were confirmed in the Upper South Platte watersheds (D. Bohon, USFS, pers. comm.).

As a result of field trapping during the 1999 and 2000 field seasons, the Preble's mouse has been identified in five locations within the Pike National Forest. These locations include: Trout Creek, Wigwam Creek, Bear Creek, Indian Creek, and on the South Platte River at the Ouzel Campground (approximately 6 miles downstream of Deckers)(D. Bohon, USFS, pers. comm.). Outside of the Pike National Forest, the Preble's mouse was identified in the Pine Valley on the North Fork of the South Platte River and on Jackson Creek, Garber Creek, and Cook Creek, which are tributary to West Plum Creek.

Suitable habitat exists within many riparian areas of the Upper South Platte watersheds. It is anticipated that future field trapping of additional sites in the area will yield new locations of the Preble's mouse. For the purposes of this project, all areas of suitable riparian habitat within the Project Area is considered to be occupied by the Preble's mouse until surveyed further.

Changes in the Environmental Baseline of the Preble's Meadow Jumping Mouse After the Issuance of the 2001 Opinion

Hayman and Schoonover Fires

The Hayman and Schoonover fires burned approximately 844 acres of proposed critical habitat, with 372 acres burned at low intensity and 472 acres burned at moderate or high intensity. Approximately 6,706 additional acres of potential Preble's mouse habitat (riparian habitat below 7,600 feet and 300 feet of adjacent uplands) also occur within the fire perimeters. There are approximately 36,149 acres of potential Preble's mouse habitat within the administrative boundaries of the Pike National Forest. Burned riparian habitat is expected to recover quickly, and substantial re-sprouting of riparian shrubs and trees is already evident. Increased sedimentation and scouring due to elevated levels of erosion following the 2002 fires has impacted some riparian areas. Increased erosion and sedimentation may continue for several years, and may continue to negatively impact Preble's meadow jumping mouse habitat.

Within the Cheesman Reservoir area, Preble's mouse potential habitat comprises 1,618 acres (875 acres of high severity burned and 179 acres of moderate severity burn). Low severity burn occurred on 390 acres and 174 acres of habitat remain unburned.

Combined Fire Suppression and Emergency Rehabilitation Efforts

The 2001 Hayman and Schoonover resulted in extensive fire suppression and emergency rehabilitation efforts. These efforts involve section 7 consultations with the USFS (ongoing), NRCS (ongoing), EPA (completed), and the COE (ongoing). Note that treatment acres within Preble's mouse habitat for NRCS actions are an estimate since the exact distribution of the treatments in Preble's mouse habitat are not available; the Service has been conservative with these values and the numbers likely overestimate the actions within Preble's mouse habitat.

Within potential Preble's mouse habitat, both ground disturbing and light surface treatments occurred within, and adjacent to, the burned areas. A total of 2.1 miles of fireline (0.9 miles hand line and 1.2 mile dozer line) were implemented in potential Preble's mouse habitat during suppression. Other ground disturbing activities (i.e., scarification, fire camp, directional felling) in burned Preble's mouse habitat occurred on 94.5 acres (USFS treatments). NRCS treatments in Preble's mouse habitat are difficult to quantify but include actions such as: placement of sand bags and straw bales in burned drainages, some of which were Preble's habitat; directional tree felling in drainages; and rock check structures. A backburn (e.g., burnout) occurred in 100 acres of Preble's mouse habitat. Light surface treatments (i.e., hydromulch, straw mulching, seeding) in burned Preble's mouse habitat occurred on 920 acres (USFS treatments). Light surface treatments from NRCS actions in Preble's mouse habitats are difficult to quantify but generally included areas of upland habitat rather than riparian areas.

Within proposed Preble's mouse critical habitat, both ground disturbing and light surface treatments occurred within, and adjacent to, the burned areas. A total of 3.4 miles of fireline were constructed in proposed Preble's mouse critical habitat (1.2 miles handline and 2.2 miles dozerline). Ground disturbing activities (i.e., scarification, directional felling) in burned proposed Preble's mouse critical habitat occurred on 16.5 acres (USFS treatments) and 1 acre (NRCS treatments). Light surface treatments (i.e., hydromulch, straw mulching, seeding) in burned proposed Preble's mouse critical habitat occurred on 299 acres (USFS treatments) and 1 acre (NRCS treatments).

Bald Eagle

Bald eagles are known to use Cheesman Reservoir as a winter nocturnal roosting area and to use the upper South Platte River as a winter and summer foraging area. Specific winter roost stands around Cheesman Reservoir have not been identified but are generally considered to occur within stands of large ponderosa pine and Douglas-fir trees and some spruce trees that are present within a 0.5 mile distance from the reservoir shoreline. Suitable roost trees typically consist of mature, large trees within an open branch structure, thus allowing areas for the eagles to land (J. Craig, CDOW, pers. comm.). The number of bald eagles utilizing the Cheesman Reservoir area currently is not known but is estimated to be approximately 20 individuals (J. Craig, CDOW, pers. comm.). During a site visit to Cheesman Reservoir on December 7, 2000, by Jerry Craig, CDOW, and representatives of Denver Water, twenty eagles were observed and two communal roosting sites were identified along the western shoreline of the reservoir. Additional surveys during the 2000/2001 winter will provide additional information on the Cheesman Reservoir bald eagle population size and on the locations of winter nocturnal roosting areas. During the December 7, 2000, site visit, an area along the eastern portion of Cheesman Reservoir was determined to contain habitat that was not suitable for bald eagle communal winter roosts (J. Craig, CDOW, pers. comm.).

Changes in the Environmental Baseline of the Bald Eagle After the Issuance of the 2001 Opinion

Bald Eagle 2000/2001 Winter Surveys

Bald eagle surveys were conducted at Cheesman Reservoir from December 2000 through February 2001. Surveys were conducted by a consultant for Denver Water. Results of the study show that a single communal roost was located on the west side of Cheesman Reservoir at site directly west of the island. Numbers of individuals remained steady between 12 and 19 bald eagles, with a high count of 22 recorded in early December. No other communal roost sites were located during extensive surveys of the reservoir. Several frequently-used staging or transition perches were located on the west side of the reservoir; these perches were used by the bald eagles before they entered the communal roost. Most staging perches were located on prominent outcrops and/or peninsulas that provided a good view of the surrounding terrain (Beane 2001).

Hayman and Schoonover Fires

The majority of the bald eagle winter, nocturnal, communal roost site at Cheesman Reservoir, as well as the land surrounding the roost site, experienced a moderate to high severity burn in the Hayman fire. A narrow strip of land (approximately 30 feet in width) in the roost on the shoreline burned under low severity. The Service and the Colorado Division of Wildlife (CDOW) conducted weekly monitoring during the winter of 2002/2003 (from December 6, 2002 through end of March 2003) and possibly will continue for future years to further assess use of the area by eagles. Results of the monitoring through the end of March 2003 show that typically 17 eagles were present at the roost site, with a range of 9 to 24 individuals. Eagles are using the low severity burned trees along the shoreline as well as the more severely burned areas up the hillslope. Foraging habitat along the South Platte River likely has been affected by ash and sediment flows and could be further impacted if major flooding occurs in the future and the South Platte fishery declines.

Combined Fire Suppression and Emergency Rehabilitation Efforts

The 2001 Hayman and Schoonover resulted in extensive fire suppression and emergency rehabilitation efforts. These efforts involve section 7 consultations with the USFS (ongoing), NRCS (ongoing), EPA (completed), and the COE (ongoing).

As per the conditions specified in the 2001 Opinion, rehabilitation activities did not occur within one mile of the winter, nocturnal communal bald eagle roost site, with the exception of aerial seeding that occurred for approximately one week at the end of November, 2002. This aerial seeding, although occurring during daylight hours, likely caused some short-term disturbance to bald eagles that may have been starting to use the winter roost.

EFFECTS OF ACTION

Pawnee Montane Skipper

Impacts Common to USFS-Denver Water-CSFS

In general, the proposed activities should provide a long-term benefit to the skipper by thinning the forest to a more suitable density for the skipper. Treatment areas consist of forested habitats, primarily ponderosa pine, with more than 40 percent cover. Treatment areas will be thinned to 30 percent cover (25 percent cover in ponderosa pine, 5 percent cover in Douglas-fir), which is considered to be the optimum density for the skipper. Reducing the forest canopy cover is expected to result in an increase in blue grama grass and *Liatris*.

The physical effects on blue grama and *Liatris* from forest thinning activities with heavy equipment are considered to be short term and will likely consist of removal and damage to some blue grama grass and *Liatris* plants. Surface impacts to existing vegetation and soils will be minimized because overland travel by equipment will avoid patches of these plants, where possible, and trees will be felled away from patches of these plants, where possible. Careful operation procedures also should minimize the threat of invasion or spread of noxious weeds.

In areas of prescribed burns, all stages of the life cycle (eggs, larvae, pupae, and adults) of the skipper may be damaged or killed by the fire. However, prescribed burns will most likely occur during the fall or spring, a time when the larva should be burrowed into the soil at the base of the blue grama grass plants, thereby minimizing direct impacts to the skipper larva (S. Ellis, ENSR, pers. comm.). Prescribed burns would not occur in the summertime, thereby avoiding the period when adults are in flight and eggs are present on the surface of the blue grama grass leaves. By burning slash in piles, the

fire impacts to larvae in the soil should be restricted to localized areas and should allow for easier containment of the prescribed fire. Placement of slash piles away from concentrations of blue grama and Liatris, where possible, should further minimize fire effects on the skipper. Furthermore, the effects of forest thinning and prescribed burns should reduce the risk of a large, catastrophic fire that could remove large areas of skipper habitats, as evidenced by the Buffalo Creek, Hi Meadow, Hayman and Schoonover fires.

The Proposed Action will also include the creation of forest openings, which will be created by tree felling and will be maintained by controlled burns every 5 to 10 years. These openings will be limited in width such that any point in the opening will be within 265 from a forest edge. Most of the openings size will be less than 20 acres and no openings will be greater than 40 acres. Given these parameters, created openings are not expected to adversely affect the skipper.

A combined total of 7,165 acres (approximately 30 percent of total habitat) of forest restoration treatments by the USFS-Denver Water-CSFS would occur in skipper habitat. (Note - see section on *Changes in the Impacts to the Pawnee Montane Skipper After the Issuance of the 2001 Opinion* for changes in acres of skipper habitat to be affected).

Impacts Specific to USFS

The Proposed Action would treat a total of 17,400 acres of USFS land, of which 3,846 acres (15.5 percent of total habitat) consist of skipper habitat. No new roads would be constructed on USFS land. Blading of existing roads that are vegetated and within skipper habitat may occur on a maximum of 4.0 acres (approximately 3 miles) of USFS land. Therefore, blue grama and *Liatris* that are present on existing roads may be removed, although these roads will be revegetated following completion of treatment. (Note - see section on *Changes in the Impacts to the Pawnee Montane Skipper After the Issuance of the 2001 Opinion*).

Impacts Specific to Denver Water

The Proposed Action would treat a total of 4,764 acres of Denver Water land, of which 2,709 acres (11.0 percent of total habitat) consist of skipper habitat. Shared between Denver Water and CSFS operations, a total of 6 acres of new roads within skipper habitat would be disturbed at any given time. Also shared between Denver Water and CSFS operations, blading of existing roads that are vegetated and within skipper habitat may occur on a maximum of 4.0 acres (approximately 3 miles) of private and State lands. Therefore, blue grama and *Liatris* vegetation that is present on existing roads may be removed, although these roads will be revegetated following treatment. (Note - see section on *Changes in the Impacts to the Pawnee Montane Skipper After the Issuance of the 2001 Opinion* for changes in acres of skipper habitat to be affected).

Impacts Specific to CSFS

The Proposed Action would treat a total of 8,894 acres of private land and 243 acres of State land, of which 564 acres of private land and 46 acres of State land (2.5 percent of total habitat) consist of skipper habitat. Shared between Denver Water and CSFS operations, a total of 6 acres of new roads within skipper habitat would be disturbed at any given time. Also shared between Denver Water and CSFS operations, blading of existing roads that are vegetated and within skipper habitat may occur on a maximum of 4.0 acres (approximately 3 miles) of private and State lands. Therefore, blue grama and *Liatris* vegetation that is present on existing roads may be removed, although these roads will be revegetated following treatment. (Note - see section on *Changes in the Impacts to the Pawnee*

Montane Skipper After the Issuance of the 2001 Opinion for changes in acres of skipper habitat to be affected).

Changes in the Impacts to the Pawnee Montane Skipper After the Issuance of the 2001 Opinion

USFS Actions

The USFS will continue to conduct forest thinning activities, as addressed by the 2001 opinion, on approximately 2,570 acres of unburned Project treatment areas in skipper habitat. The USFS will conduct fire rehabilitation and research activities in Project treatment areas burned by the Hayman and Schoonover fires. There would be up to 442 acres of rehabilitation treatment in moderate and high severity burned skipper habitat, and up to 1,227 acres of treatment in low severity burn skipper habitat, if approved by the Service. These fire rehabilitation and research activities would be in addition to those conducted pursuant to the USFS emergency consultations for the Hayman and Schoonover fires.

Fire rehabilitation actions would include seeding, scarification, road repair, mulching, contour felling, and installation of protective floodwater diversions, such as straw bales or sandbags. Fire research activities may involve a variety of actions but would be minor in scope, non-invasive and are not anticipated to cause any take of species. Any activities in lightly burned or unburned areas where skippers may still occur would be agreed upon with the Service prior to implementation. Actions in moderate and high intensity burn areas would proceed without delay through October 31, 2003.

These fire rehabilitation actions are likely to adversely affect the skipper in the near term through disturbance of understory vegetation. Actions such as scarification and contour felling may cause some damage to regenerating blue grama and *Liatris* plants. However, impacts from ground disturbance from fire rehabilitation and research actions are not expected to be extensive because of the nature of the activities and because the use of off-road equipment will be minimal. Lightly burned areas are expected to recover quickly, and may provide improved habitat, while more intensely burned areas may take many3 years to recover. The fire rehabilitation actions are expected to result in long-term benefits by reducing erosion and sedimentation, thereby protecting overall ecosystem health and aiding in the recovery of natural forest conditions. Skipper monitoring will continue to be organized by the USFS to determine the impacts of Project treatments and to assess post-fire recovery.

Denver Water Actions

Under the 2001 opinion, Denver Water proposed to conduct forest thinning activities on 4,764 acres of Denver Water land, of which 2,709 acres would consist of skipper habitat. However, the majority of the land proposed in the 2001 opinion for forest thinning at Cheesman Reservoir burned in the Hayman Fire. Denver Water's proposed project now includes salvage logging on some of the areas of high to moderate burn severity and restoration thinning on some of the areas of low burn severity.

Denver Water's Salvage Logging

Denver Water's salvage logging will include 1,578 acres at the Cheesman Reservoir, of which 974 acres will occur on skipper habitat in moderate to high severity burn areas. No salvage logging will occur on low severity burn areas. Restoration thinning will occur on 188 acres of low severity burn areas at Cheesman Reservoir. Other post-fire rehabilitation actions by Denver Water at Cheesman Reservoir are addressed in the NRCS and EPA consultations with the Service and are separate from this consultation. The Denver Water properties at Horse Creek and Deckers will involve an additional combined 19 acres of restoration thinning in low severity burn areas in skipper habitat.

Salvage logging operations are anticipated to affect skippers and skipper habitat in several ways: a) ground disturbances resulting from the logging operations will directly harm the blue grama and *Liatris*

seedlings that have sprouted following the Hayman Fire and will delay the recovery of the skipper habitat; b) ground disturbances resulting from salvage logging are likely to increase erosion in areas around the reservoir, including some areas with low severity burn and unburned skipper habitat; and c) removal of standing dead trees may alter the forest component of skipper habitat and may adversely affect the ability of the skippers to repopulate the Cheesman Reservoir area.

a) Ground Disturbance from Salvage Logging to Blue Grama/*Liatris* Seedlings - The Service believes that the ground disturbance by salvage logging operations will damage blue grama/Liatris seedlings currently present around Cheesman Reservoir. Post-fire salvage logging has been shown to damage seedlings from ground disturbances. Roy (1956) reported that 75 percent of established seedlings were killed in a single post fire salvage logging operation in Humboldt County, California. Damage to the blue grama/*Liatris* seedlings is anticipated to slow the recovery of the habitat and to impair the behavioral breeding, feeding, and sheltering of skippers that will reoccupy the area.

Both blue grama and *Liatris* seedlings were observed resprouting in the Cheesman Reservoir area during the September 2002 skipper surveys. As described in the Pawnee Montane Skipper 2002 Post-Fire Habitat Assessment Survey (ENSR 2002a),

> "Blue grama frequency in the low severity burn areas was the same as that in the unburned areas, suggesting little mortality caused by the fire. Blue grama frequency in moderate to high severity burn areas was about half that recorded in lower severity areas, but still nearly 10 percent frequency. These observations indicate a strong and rapid recovery by this species, particularly if normal snowfall and rainfall return in the next growing season (Pg 7-3)." ..Unlike the blue grama, Liatris did not show an immediate resprouting response after burning. Some plants were observed in high severity burn areas, primarily on the east and north side of Cheesman Reservoir. .. Based on the adaptation of this perennial species to fire and drought (massive subterranean crown and deep root system), it is likely that this species will respond vigorously when normal precipitation returns (Pg 7-4)."

As noted in the Pawnee Montane Skipper Butterfly Recovery Plan (USFWS 1998), the skipper apparently does not colonize fire-created or logged areas for at least several years after disturbance and regeneration. ENSR (2002a) estimated that "although there is no basis for estimating permanent reoccupation, it is expected to begin within the range of 3 to 5 years." The Service believes that proposed salvage operations involving 974 acres of the 3,089 acres of moderate to high severity burn areas (32 percent of moderate to high severity burn) will further delay the recovery of the habitat and the subsequent reoccupation by the skipper.

b) Salvage Logging and Erosion

Logging of sensitive areas, such as severely burned areas, is often associated with accelerated soil erosion and soil compaction (Beschta et al. 1995). Marston and Haire (1990) studied runoff and soil loss following the 1988 Yellowstone Fires and found that rates of soil loss were highest on sites where litter cover was minimal, percent silt content in soils were high, and logging had occurred. Conversely, vehicle operations in the high to moderate severity burn areas may facilitate breaking up the layer of hydrophobic soils that developed in these areas and may help to reduce erosional effects. Conservation measures proposed by Denver Water involve means to reduce erosional impacts and include: minimization of road construction, operations will not occur when soils are prone to compaction, no vehicles will be off-road within 50 feet of streams, and no skidding or landings will occur within riparian areas or wetlands. These measures, in addition to the emergency rehabilitation measures, such as contour felling, hydro-axing, straw bale check dams, seeding (seed mix contains 10 percent blue grama grass) and mulching, that are ongoing at Cheesman Reservoir and addressed through the NRCS and EPA consultations, should help to reduce soil erosion impacts from salvage

logging. Furthermore, the majority of the salvage logging will occur on frozen soil, often with snow cover, which should help to minimize soil disturbance.

c) Removal of Standing Dead Trees Important for Skipper Habitat
Ellis, pers. comm., suggested that a mosaic of open and standing live and dead trees offer a habitat mosaic that might be used by dispersing skippers. Standing dead and live trees may provide a vertical structure that provides important visual cues for skipper movement through its habitat. To achieve this mosaic, Ellis recommended that a fraction of dead trees be left standing in high severity burn areas that are salvage logged. As an overall guideline, Ellis recommended that 50 percent of the average number of trees be left standing (average of 20 trees per acre to be left) in burned skipper habitat, and that this average may range from 5 to 35 trees per acre. Conservation measures proposed by Denver Water include the retention of an average of 20 trees per acre, with a range of 5 to 35 trees per acre; the diameter of these trees will be at least 8 inches diameter breast height (DBH). The Service recognizes that the retention of burned trees for the purposes of maintaining skipper habitat is a temporary measure since the trees will likely fall over at some time. The Service would also like to recognize that Denver Water and CSFS are planning a 10-year project to plant ponderosa pine and *Liatris* seedlings in the area around the Cheesman Reservoir.

Denver Water's Restoration Thinning
Restoration thinning at Cheesman Reservoir would occur in some of the few remaining areas that may have surviving skippers. The Service believes that low burn severity areas, due to the patchy nature of the fire in these areas, are potential survival areas for skippers and skipper habitat. As written in the Pawnee Montane Skipper 2002 Post-Fire Habitat Assessment Survey (ENSR 2002a), "Some skipper habitat on fingers projecting into Cheesman Reservoir on both the east and west side went unburned or were lightly burned. These sites represent important population survival points that may act as sources for colonization upslope in the future. Other areas with a high potential for surviving skipper populations are lightly burned areas on both sides of the Cheesman Reservoir dam, extending downstream to the confluence with Wigwam Creek, and further downstream to Lone Rock Campground."

Approximately 1,298 acres (30 percent) of the total of 4,387 acres of mapped skipper habitat at Cheesman Reservoir may still support skippers, as represented by 1,139 acres of skipper habitat of low severity burn and 159 acres unburned skipper habitat. The proposed restoration thinning would include 207 acres of low burn severity, which represents 16 percent of the surviving skipper habitat at Cheesman Reservoir. Ground disturbance from the operation of heavy equipment in low burn severity areas would likely injure or destroy individual skippers that may be sheltered at the base of blue grama grasses.

Conservation measures proposed by Denver Water include the identification and avoidance of unburned patches during restoration thinning operations. Development of an uneven-aged stand with an average of 50 trees per acre should provide suitable skipper habitat conditions. Thinning will be accomplished through the use of a Hydro-axe, which will further reduce ground disturbance, as compared to skidders and forwarders.

CSFS Actions
The CSFS actions are not within skipper habitat, with the exception of the creation of defensible space around private residences, which was previously addressed by the 2001 opinion. A calculation of the acres of disturbance of skipper habitat from the creation defensible space around private residences is difficult to calculate.

Combined Project Post-Fire Actions

The combined Project post-fire actions by USFS and Denver Water involve a total of up to 1,416 acres of treatment in moderate to high severity burn areas and up to 1,434 acres of treatment in low severity burn areas. Project actions in unburned area will likely continue as planned in the 2001 opinion, conditional on the approval by the Service.

Mexican Spotted Owl

Impacts Common to USFS-Denver Water-CSFS

The majority of the Project Area occurs within the boundaries of the proposed critical habitat for the spotted owl. Critical habitat is limited to those areas within the proposed boundaries that meet the definition of protected, reserved, and restricted habitat, as described in the Recovery Plan. Private and State lands within mapped boundaries are not designated as critical habitat (USFWS 2000). Considerations of critical habitat include whether or not the Proposed Action will adversely affect the "primary constituent elements of critical habitat".

The project treatment areas will avoid all spotted owl protection areas (PACs; mixed conifer slopes 40 percent or greater with no timber management in the past 20 years; and reserved lands) but will occur within some of the spotted owl restricted areas. Specifically, the treatment areas will avoid the PACs, Thunder Butte and Devil's Head, that occur outside of, and to the east of the Project Area boundaries. The treatment areas will avoid mixed conifer slopes (greater than 40 percent with no timber management in the last 20 years) protected areas. Areas for forest treatment were selected based on an average slope of less than 30 percent and a forest canopy ranging from 40 to 80 percent cover. The treatment areas also will avoid the Lost Creek Wilderness Area (reserved land).

Restricted areas (mixed-conifer forest, pine-oak forest, and riparian areas outside of protected areas) are present within the Project Area but only where primary constituent elements can be found. Restricted areas occur in the Project Area only in scattered stands that contain larger basal areas with multi-storied canopies and in canyon habitats. Project actions will avoid canyon habitats and will not affect these restricted areas. Therefore, only mixed-conifer restricted areas may be affected by the Proposed Action. However, the Proposed Designation of Critical Habitat for the Mexican Spotted Owl, Draft (USFWS 2000) reports that "Actions not likely to destroy or adversely modify critical habitat include activities that are implemented in compliance with the Recovery Plan, such as .... fuels reduction to abate the risk of catastrophic wildfire... We do not expect any restrictions to those activities as a result of critical habitat designation ". The Proposed Designation of Critical Habitat for the Mexican Spotted Owl, Draft (USFWS 2000) further reports that "In addition, some activities may be considered to be of benefit to Mexican spotted owl habitat, and, therefore, would not be expected to adversely modify critical habitat. Examples of activities that could benefit critical habitat may include some protective measures such as fire suppression, prescribed burning, brush control, snag creation, and certain silvicultural activities such as thinning". Therefore, the Proposed Action will not result in an adverse modification of the primary constituent elements of proposed critical habitat.

Furthermore, the proposed forest treatments will reduce the risk of a catastrophic fire occurring in the watershed, thus providing a greater opportunity to protect the higher quality spotted owl habitat in the area, namely the Devil's Head and Thunder Butte PACs and the drainages southeast of those sites, as well as the Lost Creek Wilderness Area.

Impacts Specific to USFS

The Proposed Action would treat a total of 17,400 acres of USFS land, of which 16,880 acres (8.1 percent of proposed critical habitat) consist of proposed critical habitat for the spotted owl. No new roads would be constructed on USFS land.

Impacts Specific to Denver Water

Because private lands have been excluded from designation as proposed critical habitat for the spotted owl, there will be no impacts to proposed critical habitat.

Impacts Specific to CSFS

Because private and State lands have been excluded from designation as proposed critical habitat for the spotted owl, there will be no impacts to proposed critical habitat.

Changes in the Impacts to the Mexican Spotted Owl After the Issuance of the 2001 Opinion

As with the 2001 opinion, project activities will not occur within spotted owl protection areas, including the Thunder Butte PAC and mixed conifer slopes 40 percent or greater with no timber management in the past 20 years. USFS restoration activities will only occur in treatment areas previously identified in the 2001 opinion, which were areas that did not contain constituent elements of critical habitat. Areas to be salvage logged at Cheesman Reservoir and Four Mile State Land were not considered to contain spotted owl habitat due to the terrain and homogenous vegetation, even prior to the 2002 fires, and do not contain critical habitat because these are not Federally-owned properties.

Preble's Meadow Jumping Mouse

Impacts Common to USFS-Denver Water-CSFS

Forest thinning and prescribed burn activities will occur in upland vegetation communities and, therefore, generally will avoid disturbance to riparian habitats. However, some disturbances of riparian habitats may occur where access routes across drainages are necessary for project equipment.

Drainage crossings will involve primarily small tributaries and intermittent streams and will not affect either the South Platte River or the North Fork of the South Platte River. Drainage crossings will avoid riparian shrub habitat, if possible. Where it is not possible to avoid, efforts will be made to minimize impacts to riparian shrubs. Disturbances from drainage crossing of occupied Preble's mouse habitat shall not exceed 1 acre for the life of the project, with no more than 0.5 acres of riparian grass and shrub habitat disturbed at any given time. Drainage crossings will be approximately 12 feet in width. Depending on the configuration of the drainage and the type of vehicle utilizing the crossing, construction of the crossing may range from soil hardening to placement of temporary culverts. Construction of the crossings may injure or destroy individual mice and may damage hibernaculum, if present. Drainage crossings will be returned to predisturbance conditions within 3 years of reclamation.

Some forest thinning and prescribed burn activities will occur within upland habitats of the Preble's mouse (i.e., 300 feet from the exterior of the 100-year floodplain or 300 from the edge of riparian vegetation). Activities in these areas will occur only when the Preble's mice are hibernating

(November 1 through April 30) and all riparian vegetation and shrub stands will be avoided by vehicles. Furthermore, uprooting of trees by grubbing or other means will not occur within Preble's mouse habitats. Except for short term disturbance, tree removal and prescribed fire within such areas during the hibernation period is not expected to adversely affect the Preble's mouse or its habitat. The Service believes that the thinning of upland, dense stands of ponderosa pine and Douglas-fir within the

buffer areas may benefit the Preble's mouse by allowing an increase in the growth of grasses and forbs and a subsequent increase in seed production.

An additional potential impact to Preble's mouse habitat is the cutting of willow branches for the purposes of riparian revegetation projects. Cutting will occur by hand and will not uproot the willow clump. Cutting will occur only during the hibernation period for the Preble's mouse. The Service anticipates that the cutting of willow branches, as described, will not impact the Preble's mouse.

Impacts Specific to USFS

Of the South Platte River access trail improvements projects, only the expansion of the Wigwam Campground and trailhead will involve adverse impacts within Preble's mouse habitat. Specifically, the expansion of the Wigwam Campground will cause the long-term removal of 1.0 acre of upland habitat that is within 300 feet of Wigwam Creek, which is known to be inhabited by the Preble's mouse. The restoration site is located 3 miles upstream from the proposed parking expansion and will involve the revegetation of 1.5 acres (1.5:1 mitigation ratio) of land that has been impacted previously by off-road parking.

Other South Platte River access trail improvements include the closing of excess social trails along the South Platte River and upgrading the Gill Trail. These other trail improvement projects will not involve the removal or destruction of vegetation within the 300-foot buffer and, therefore, should not affect the Preble's mouse.

The Buffalo Creek Burn revegetation project will involve the planting of 60 acres of areas with exposed sediment along streams and washes. Plantings will consist primarily of willows. Woody debris and boulders will be selectively placed in the stream channels to help stabilize the channel. These areas of stream channel with exposed sediments are not expected to contain habitat suitable for the Preble's mouse. This riparian revegetation effort ultimately is expected to benefit the Preble's mouse by recreating riparian vegetation that was lost from the scouring effect of the flooding following the Buffalo Creek fire. Additionally, suction dredging of 110 yards of exposed sediments of Buffalo Creek should not affect the Preble's mouse since these channels with exposed sediments also are not expected to contain habitat suitable for the Preble's mouse.

Impacts Specific to Denver Water

Denver Water's proposed OM&I activities along the South Platte and North Fork of the South Platte Rivers could disturb a maximum of 2,600 square feet of Preble's mouse habitat. These activities include the installation of six toilets along the South Platte and the North Fork of the South Platte River, the improvements to the parking lot plus a boat take-out at the confluence of the North Fork and South Platte Rivers, and the creation of a fire-defensible space around the historic South Platte Hotel. These disturbances will be long-term and may involve the removal of riparian habitat, although such removal will be avoided and minimized where possible. Any impacts to Preble's mouse habitats will be mitigated at a 1.5: ratio and will take place on-site, if possible.

Impacts Specific to CSFS

No additional CSFS projects that may affect the Preble's mouse are anticipated.

Changes in the Impacts to the Preble's Meadow Jumping Mouse After the Issuance of the 2001 Opinion

USFS Actions

The USFS will continue to conduct forest thinning activities in unburned Project treatment areas, as addressed by the 2001 opinion, and to conduct fire rehabilitation and research activities in Project treatment areas burned by the Hayman and Schoonover fires. These fire rehabilitation and research activities would be in addition to those conducted pursuant to the USFS emergency consultations for the Hayman and Schoonover fires. Fire rehabilitation actions would include seeding, scarification, road repair, mulching, contour felling, and installation of protective floodwater diversions, such as straw bales or sandbags. Fire research activities may involve a variety of actions but would be minor in scope, non-invasive and are not anticipated to cause any take of species.

These fire rehabilitation actions are likely to adversely affect the Preble's mouse upland habitat in the near term through disturbance of understory vegetation. Actions such as scarification and contour felling may affect some upland vegetation but, due to the nature of the projects, are less likely to affect riparian vegetation. The fire rehabilitation actions are expected to result in long-term benefits by reducing erosion and sedimentation that could cause long-term adverse impacts to Preble's mouse habitat. USFS actions would involve up to 156 acres of treatment in moderate and high severity burn areas with potential Preble's mouse habitat and up to 156 acres of treatment in low severity burn areas containing potential Preble's mouse meadow jumping mouse habitat.

USFS actions would involve up to18 acres of treatment in low severity burn areas containing proposed critical Preble's mouse habitat, if approved by the Service. There are no proposed USFS actions in moderate or high burn severity areas in proposed critical Preble's mouse habitat within Project treatment units. There would be no destruction or adverse modification of proposed critical habitat as a result of the proposed USFS actions.

Impacts to the Preble's mouse mouse from willow cuttings are expected to be minimal because of the avoidance of riparian areas by vehicles and the measures to avoid denuding willows. Monitoring of clumps and adaptive management, if appropriate, will further evaluate the effect of willow cuttings on Preble's mouse habitat.

Denver Water Actions

Salvage logging activities would occur in the vicinity of several streams with Preble's mouse habitat in the Cheesman Area for a total of 3.5 miles; these streams include Flickenstein, Sand Draw, Turkey Creek, and Douglas Creek. Salvage logging activities would adversely impact regenerating Preble's mouse upland vegetation through ground disturbances but will likely cause only minor disturbances to regenerating riparian vegetation since vehicles will not be allowed off-road within 50 feet of streams. Felling of trees within the 50 foot protection zone will only occur by hand and tree removal will occur by hand-pulling a winch cable into this area. These measures are expected to reduce impacts in potential mouse habitat and should help to reduce soil erosion impacts from salvage logging. Restoration thinning is not within potential Preble's mouse habitat at Cheesman Reservoir, but would involve 0.25 miles of Horse Creek. Restoration activities at Horse Creek and Deckers will avoid disturbances to regenerating riparian habitat. The Service would like to recognize that Denver Water and CSFS are planning a 10-year project to plant shrubs in the drainages in the area around the Cheesman Reservoir.

Critical habitat for the Preble's mouse has not been proposed in the Cheesman Reservoir area. Critical habitat has been proposed for the Preble's mouse on Denver Water property along the South Platte River near Sugar Creek and Gunbarrel Creek (South Platte subunit). No Project activities are known to be planned in this proposed subunit. There would be no destruction or adverse modification of proposed critical habitat as a result of the proposed Denver Water actions.

Impacts to the Preble's mouse from willow cuttings are expected to be minimal because of the avoidance of riparian areas by vehicles and the measures to avoid denuding willows by requiring that willow cuttings involve no more than one-half the stems of a clump and no more than one-half of the willow clumps within a 0.5 acre area undergo stem removals. Monitoring of clumps and adaptive management, if appropriate, will further evaluate the effect of willow cuttings on Preble's mouse habitat.

CSFS Actions

The proposed CSFS actions at Four Mile Creek State land are above 7,600 feet and, therefore, will not cause direct effects to Preble's mouse habitat, although indirect effects from increased soil erosion and sedimentation could affect downstream Preble's mouse habitats on the South Platte River. A pond at the YMCA camp, located approximately 2 miles downstream of the Four Mile Creek State land, will help to collect sediment that may be mobilized by the CSFS action.

Impacts to the Preble's mouse from willow cuttings are expected to be minimal because of the avoidance of riparian areas by vehicles and the measures to avoid denuding willows by requiring that willow cuttings involve no more than one-half the stems of a clump and no more than one-half of the willow clumps within a 0.5 acre area undergo stem removals. Monitoring of clumps and adaptive management, if appropriate, will further evaluate the effect of willow cuttings on Preble's mouse habitat.

The combined USFS-Denver Water-CSFS projects will not cause an adverse modification of proposed critical habitat.

Bald Eagle

Impacts Specific to Denver Water

The 1/8-mile (200 meters) "no forest management" protection zone around the perimeter of known communal roosts should be sufficient to protect the roost trees and adjacent trees that constitute the roost stand. The 1-mile "no forest vegetation management during winter (November through March)" protection zone should avoid or reduce disturbances to the bald eagles from project activities and noise. The exception to the 1-mile "no forest vegetation management during winter" protection zone is the clearance zone located on the eastern side on the reservoir. Activity will be permitted in the clearance zone during winter, even if it is within 1 mile of a roost; bald eagles may be disturbed by activities in the clearance zone if their roosts are located near this area.

Furthermore, potential, inadvertent disturbances within the roost stands will be reduced during the winter (November to March) by limiting all activity on the ground within 1/4 mile of the communal roosts only to the period from 10:00 AM to 3:00 PM. (Note that this activity must be pre-approved by the Service). Boat trips on the reservoir for the purposes of maintenance and bald eagle observation may occur during the winter at a time earlier than 10:00 AM or later than 3:00 PM and may cause some temporary disturbance of bald eagles. Based on observations from the December 7, 2000, field visit, it is expected that boat trips may cause the bald eagles to temporarily leave the roost trees but that they will return after the disturbance is removed (J. Craig, CDOW, pers. comm).

OM&I actions proposed by Denver Water in the vicinity of Cheesman Reservoir include the construction of a pipeline, pump house, boathouse and ramp, the development of fire defensible spaces around buildings and other structures at Cheesman Reservoir, and work on the upstream control gate. These actions are not expected to impact wintering bald eagles at Cheesman Reservoir since these projects, with the exception of the upstream control gate, are within the area identified by Jerry Craig, CDOW (pers. comm.) as unsuitable bald eagle nocturnal winter roost habitat.

Impacts Specific to USFS

No impacts to the bald eagle by USFS actions are anticipated since USFS land is not present in the immediate vicinity of Cheesman Reservoir.

Impacts Specific to CSFS

No additional impacts to the bald eagle by CSFS actions are anticipated.

Changes in the Impacts to the Bald Eagle After the Issuance of the 2001 Opinion

USFS Actions
USFS actions are not anticipated to affect any bald eagle foraging or roosting habitat along the South Platte River.

Denver Water Actions
Denver Water's proposed salvage logging and restoration thinning activities will occur on the north, east, and south side of Cheesman Reservoir and will not be near the bald eagle roost, which is located on the west side of the reservoir. All actions will be outside the one-mile buffer around the winter roost. Erosion and sedimentation from salvage logging and restoration thinning on the slopes around the reservoir could affect fish populations and could affect the foraging potential for the bald eagle. However, many of the emergency rehabilitation measures, such as contour felling, hydro-axing, straw bale check dams, seeding and mulching, that are ongoing at Cheesman Reservoir and addressed through the NRCS and EPA consultations, should help to reduce soil erosion impacts from salvage logging and restoration thinning.

CSFS Actions
CSFS actions on private and state lands are not anticipated to cause any adverse effects to bald eagle forage or roosting along the South Platte River.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the Proposed Action are not considered in this opinion because they require separate consultation pursuant to section 7 of the Act. No cumulative impacts are anticipated as a result of the proposed project.

Changes in the Cumulative Effects After the Issuance of the 2001 Opinion

Future non-Federal actions that are reasonably certain to occur in the action area include Denver Water's preparation of a Habitat Conservation Plan (HCP) for Denver Water activities in Preble's mouse habitats. Activity types covered under this HCP are distinct and separate from the Proposed

Action. No activities within the HCP are currently planned within the Project Area. Any activities related to Denver Water's HCP that may affect any Federally-listed species other than the Preble's mouse, such as the skipper, bald eagle, and spotted owl, will require separate consultation with the Service. Douglas County is also preparing a HCP for activities in Preble's mouse activities within Douglas County. Other future non-Federal actions that are reasonably certain to occur include the creation of defensible space around private residences that are within skipper habitat but outside the Project boundary.

CONCLUSION

After reviewing the current status of skipper, spotted owl, Preble's mouse, and bald eagle, the environmental baseline for the Project Area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the proposed Project is not likely to jeopardize the continued existence of the skipper, spotted owl, Preble's mouse, or the bald eagle, and is not likely to destroy or adversely modify designated critical habitat for the spotted owl. The proposed Project is not likely to destroy or adversely modify proposed critical habitat for the Preble's mouse.

Pawnee Montane Skipper
Issues considered by the Service in the jeopardy evaluation for the skipper include:

- Skippers are expected to be present on 12,805 acres of unburned habitat (52 percent of mapped habitat). Because of the patchy nature of the low intensity fires, some skipper survivors are also expected to be present on 4,500 acres of low severity burn (18 percent of mapped habitat)

- The acreages estimated to include surviving skippers did not include Buffalo Creek and Hi Meadow fire sites since these areas have not been surveyed, although it is likely that some reoccupation has occurred.

- The distribution of the unburned and low severity burn skipper habitat includes a large block of generally contiguous habitat along the main stem of the South Platte River and also a relatively unbroken block along the North Fork of the South Platte River.

- Post-fire monitoring activities observed blue grama and *Liatris* seedlings in the burn areas; both of these plant species are expected to recover from the fires.

- The presence of the skipper, blue grama, and *Liatris* in a fire-adapted community.

- Three years of skipper monitoring of transects in initial 2000 forest thinning treatment areas suggest that treatments may improve skipper habitat, as indicated by higher skipper and *Liatris* counts.

- The expectation that the short-term impacts to the skipper by ground disturbance from thinning treatments are expected to be outweighed by the long-term benefits of reducing the risk of a catastrophic fire and by creating more suitable, open forest canopy cover within skipper habitat, as is consistent with the Recovery Plan (USFWS 1998).

- The Service's opinion that another catastrophic fire in skipper habitat could jeopardize the continued existence of the skipper.

- The opportunity to minimize disturbances on unburned and low severity burn areas by individually agreeing upon treatments in these areas through October 31, 2003 (after the next skipper flight period). The USFS has already adjusted plans for 2003 thinning treatments such that large projects will avoid skipper habitat. Denver Water property will mark and avoid unburned patches of skipper habitat on 207 acres of low severity burn areas during restoration thinning activities.

The baseline conditions, including the significant fires since 1996, and the natural history of the skipper, combined with the project impacts and the cumulative impacts leads the Service to believe that the continued existence of the skipper is not currently jeopardized and will not be jeopardized by the proposed Project.

Mexican Spotted Owl
For the spotted owl, the effects of reducing the forest canopy are anticipated to be offset by the reduction of the risk of a catastrophic fire. The Proposed Action will not adversely modify or destroy critical habitat for the spotted owl.

Preble's Meadow Jumping Mouse
For the Preble's mouse, project impacts in Preble's mouse habitat and proposed critical habitat are anticipated to be minimal and short-term. Furthermore, the subunit of proposed critical habitat that encompasses the Project Areas is unlikely to serve as an initial recovery population.

Bald Eagle
For the bald eagle, although the future suitability of the bald eagle winter, nocturnal, communal roost site is uncertain, the potential loss of the Cheesman Reservoir roost, which may affect the local populations, would not jeopardize the continued existence of the bald eagle.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the USFS so that they become binding conditions of any grant or permit issued to the USFS, as appropriate, for the exemption in section 7(o)(2) to apply. The USFS, along with Denver Water and CSFS, has the continuing duty to regulate the activity covered by this incidental take statement. If the USFS, Denver Water, or CSFS fails to assume and implement the terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, USFS, Denver Water,

and CSFS must report the progress of the action or its impact on the species to the Service as specified in the incidental take statement.

AMOUNT OR EXTENT OF TAKE

Pawnee Montane Skipper

A total of 7,165 acres of skipper habitat will undergo forest thinning and prescribed burn activities over the course of the 12-year project. The Service anticipates the incidental take of no more than 1,000 acres of skipper habitat to undergo prescribed burns in a given year, of which no more than 500 acres of skipper habitat will be contiguous. The 1000-acre per year burn threshold correlates to an annual loss of no more than 2 to 4 percent of the skipper population (i.e., estimated skipper population is 116,000 individuals [USFWS 1998]; estimated density is 2 - 4 skippers per acre [S. Ellis, ERT, pers. comm.]; 1000 acres x 2 individuals/acre = 2,000 skippers; 1000 acres x 4 individuals/acre = 4,000 skippers). Because of the nature of the Proposed Action and implementation of the conservation measures, take of skippers from tree removal operations and other project activities is anticipated to be minimal. (Note - see *Changes in Amount or Extent of Take of the Pawnee Montane Skipper After the Issuance of the 2001 Opinion*).

Changes in Amount or Extent of Take of the Pawnee Montane Skipper After the Issuance of the 2001 Opinion

Due to the Hayman and Schoonover fires, many of the areas planned in the 2001 opinion for forest thinning activities will now receive some form of forest fire rehabilitation activity, including fire rehabilitation on USFS land and salvage logging on Denver Water properties. Forest thinning activities will continue on the unburned treatment areas addressed in the 2001 opinion and post-fire treatments will not extend beyond areas previously addressed in the 2001 opinion. Of the 7,165 total acres of skipper habitat proposed in the 2001 opinion for forest thinning activities, 4,594 acres burned and 2,570 acres remain unburned.

Therefore, incidental take continues to be provided for the remaining 2,570 acres of unburned skipper habitat for Project forest thinning activities.

The Service anticipates the take of 1,669 acres of skipper habitat on USFS lands from forest rehabilitation activities.

The Service anticipates the take of 974 acres and 207 acres of skipper habitat on Denver Water land from salvage logging activities and restoration thinning treatments, respectively.

(Note that incidental take for other areas of burned skipper habitat from fire suppression and other fire rehabilitation activities are provided through separate consultations with the USFS, NRCS, EPA, and COE and are not addressed in this opinion).

Mexican Spotted Owl

The Service anticipates that there will be no incidental take of spotted owl protected habitat or critical habitat for the Mexican spotted owl since there will no be adverse modification of the primary constituent elements of critical habitat.

Changes in Amount or Extent of Take of the Mexican Spotted Owl After the Issuance of the 2001 Opinion

There are no changes in the incidental take for the spotted owl.

Preble's Meadow Jumping Mouse

The Service anticipates the incidental take of upland vegetation within upland Preble's mouse habitat for the purposes of forest thinning and prescribed burn.

The Service anticipates the incidental take of a combined total of 1 acre of occupied Preble's mouse habitat for the purposes of drainage crossings by vehicles involved in the forest restoration operations.

The Service anticipates the incidental take of 1 acre of occupied Preble's mouse habitat for the USFS construction of the expanded Wigwam Creek parking lot.

The Service anticipates the incidental take of 2,600 square feet of occupied Preble's mouse habitat for Denver Water OM&I projects.

Changes in Amount or Extent of Take of the Preble's Mouse After the Issuance of the 2001 Opinion

In addition to the incidental take of Preble's mouse provided in the 2001 opinion, other incidental take relating to post-fire activities are also provided.

The Service anticipates the take of up to156 acres of Preble's habitat in moderate and high severity burn areas and up to156 acres of Preble's mouse habitat in low severity burn areas by the USFS for fire rehabilitation activities; this take will primarily occur in upland Preble's mouse habitat, rather than riparian areas. Of the activities in Preble's mouse habitat with low severity burn, the Service anticipates the take of up to 18 acres in proposed critical Preble's mouse habitat, if approved by the Service.

The Service anticipates that take of 3.75 miles of Preble's mouse habitat in the Cheesman Reservoir area and along Horse Creek for Denver Water's salvage logging and restoration thinning activities; take will primarily involve upland Preble's mouse habitat.

The Service anticipates the take of no more than 12 acres of willow cuttings for rehabilitation purposes, of which no more than 2 acres of willows per year will be cut.

Bald Eagle

The Service anticipates incidental take in the form of disturbance, or harassment, of bald eagles using the winter nocturnal communal roost sites at Cheesman Reservoir as a result of boat trips for Denver Water maintenance and bald eagle monitoring purposes as well as adjacent project activities on land. This harassment is not expected to cause the abandonment of the roost sites nor is it expected to cause the death of any bald eagles.

Changes in Amount or Extent of Take of the Bald Eagle After the Issuance of the 2001 Opinion

The Service does not anticipate additional take of the bald eagle from the post-fire activities.

REASONABLE AND PRUDENT MEASURES

Pawnee Montane Skipper

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of skippers:

Ground disturbances in skipper habitat will be minimized to reduce the impacts to blue grama and *Liatris* plants.

Ground disturbances in skipper habitat will be minimized to reduce the impacts to skippers from the spread of noxious weeds.

Prescribed burn areas within skipper habitat will be distributed in such a manner to allow for recolonization of burned areas by skippers.

Removal of trees in burned skipper habitat (i.e., salvage logging) will retain a sufficient number of trees to provide a habitat mosaic that will allow reoccupation by skippers.

Mexican Spotted Owl

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of spotted owls:

Project activities shall avoid all PACs.

Project activities shall avoid all areas in mixed-conifer and pine-oak types with slopes greater than 40 percent where timber harvest has not occurred in the past 20 years.

Project activities shall avoid all legally and administratively reserved lands (i.e., Lost Creek Wilderness Area).

Preble's Meadow Jumping Mouse

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of the Preble's mouse:

Project activities should avoid all areas within Preble's mouse habitat, where possible.

Where not possible to avoid Preble's mouse habitat, disturbances within this area shall be minimal and shall avoid riparian habitat, where possible, and shall occur when the Preble's mouse is in hibernation.

Activities in burned Preble's mouse habitat (i.e., salvage logging and forest rehabilitation) shall avoid all areas within the 300-feet from the edge of the 100-year floodplain or riparian vegetation, where possible, and in particular, shall avoid the area within 50 feet of riparian vegetation.

For activities within proposed critical habitat for the Preble's mouse, the outward extent of the proposed critical habitat shall be used to define Preble's mouse habitat instead of the 300-feet from the edge of the 100-year floodplain or 300 feet from the edge of the riparian vegetation.

Bald Eagle

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of the bald eagle:

Project activities should avoid altering the site characteristics of the forest within 1/8 of a mile of the roost stand.

Project activities should avoid causing any forest management disturbances within 1 mile of a roost stand during the winter (November 1 through March 31).

Project activities on the ground during the winter (November 1 through March 31) within 1/4 mile of a roost stand may only occur during the middle of the day (10:00 AM to 3:00 PM) and must be pre-approved by the Service.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the following terms and conditions must be completed, which implement the reasonable and prudent measures described above. These terms and conditions are listed by responsible agency, USFS, Denver Water, and CSFS. These terms and conditions are non-discretionary.

USFS

I. Treatments

A. Treatments in Skipper Habitat

1). The size and shape of created forest openings within skipper habitat will be based on the concept of a maximum distance to forest edge requirement in skipper habitat. The maximum distance would be 265 feet, based on the radius of a 5 acre circle, such that any point within the opening will be within 265 feet from a forest edge. A forest edge would be defined as the outer margin of a forested area with 11% or greater canopy coverage of overstory trees, and which extends for at least 100 feet on the axis perpendicular to the edge. A minimum of 100 feet of forest will remain between created openings. A few live ponderosa pine trees shall remain scattered throughout the opening. Map 2 in the 2000 BA may be updated as new data becomes available. Created forest openings will be up to 40 acres in size, and those that are greater than 20 acres but less than 40 acres will require Service review and approval.

2). Limit prescribed burning to a combined USFS-Denver Water-CSFS total of 1,000 acres per year in skipper habitat with no more than 500 acres of contiguous burns. Burns shall be scheduled such that adjacent areas are burned with a minimum of 2 years for recovery time.

3). Noxious weed treatment shall include:

a) Noxious weeds in and near harvest units shall be identified prior to forest thinning treatment.

b) Weed concentrations shall be pretreated mechanically or with herbicide during the optimum life stage, typically fall or spring.

c) Equipment shall be washed prior to entering forest treatment areas.

d) Machine operations shall avoid driving through weed areas.

4). Reseeding of disturbed areas

a) Areas disturbed by Project activities will be monitored for 2 years to determine if seeding is necessary. If the desired level of vegetative cover is not achieved at this time (average ground cover of 10 percent, of which blue grama represents 5 percent), then seeding will proceed in these areas.

b) Seed mixture will be broadcast in disturbed areas and hand raked into the disturbed soils to the extent that 0.25 to 0.50 inches of soil cover over the seed is achieved.

c) Seeding rate will be 13.9 lbs. of Pure Live Seed per acre, which is equivalent to 16.4 lbs. of bulk seed per acre.

d) Recommended seed mixture:

Species	Variety	Percent of Mixture	Lbs. Pure Live Seed per Acre
Hard fescue	Durar	25	2.0
Side oats grama	(See Note)	10	3.2
Slender wheat grass	San Luis	10	2.2
Canby bluegrass	Canbar	20	1.2
Blue grama	Lovington	25	1.5
Little blue stem	(See Note)	10	3.8

Note: Variety has not been determined but the variety selected should be suitable for the cold, dry conditions of this area.

5). Treatments in skipper habitats in unburned and low severity burn areas will be agreed upon individually between the Service and the action agencies through October 31, 2003.

B. Treatments in Spotted Owl Habitat

1). Thinning and prescribed burn treatment areas will avoid the Devil's Head and Thunder Butte PACs.

2). Thinning and prescribed burn treatment areas will avoid areas with greater than an average of 40 percent slope. However, there are small areas within the treatment area with greater than 40 percent slope that would be treated with prescribed fire.

3). Forest thinning operations will remove smaller trees and, wherever possible, will retain the larger, more mature trees, especially those trees over 150 years in age.

4). Thinning operations will retain standing snags of varying and larger diameter tree classes and that are not a safety hazard at a rate of 3-5 snags per acre (USFS 2000, Biological Assessment, pg 4-41).

C. Treatments in Preble's Mouse Habitat

1). Forest Thinning and Restoration Activities in Upland Preble's Mouse Habitat (Within 300 feet of 100-year floodplain, or 300 feet from the edge of the riparian vegetation, if more appropriate)

a) Forest restoration treatments will occur during the Preble's mouse hibernation period (November 1 through April 30).

b) All shrubs will be avoided by vehicles and associated logging equipment.

c) All riparian vegetation will be avoided by Project activities (however, drainage crossings in Preble's mouse habitat are discussed in the following section).

d) Uprooting of trees by grubbing or other means will not occur.

e) During the annual meetings or prior to impact, the USFS, Denver Water, CSFS, and the Service will review treatment areas proposed for the upcoming season and identify any areas that are potentially suitable or known occupied Preble's mouse habitat. The Service, USFS, CSFS and Denver Water will reach an agreement on the habitat suitability prior to treatment of an area.

f) In areas where critical habitat has been proposed for the Preble's mouse, the outward extent of the proposed critical Preble's mouse habitat will be considered to represent Preble's habitat, rather than 300 feet from the 100-year floodplain or 300 feet from the edge of the riparian vegetation.

g) Preble's mouse habitats disturbed by project activities will be evaluated qualitatively for 3 years. If the disturbed area does not

achieve predisturbance conditions within 3 years, further work may be needed and mutually coordinated between the action agencies and the Service at the annual meeting.

2). Use of Drainage Crossings in Preble's Mouse Habitat

a) Drainage crossings will involve primarily small tributaries and intermittent streams and will not affect the South Platte River or the North Fork of the South Platte River.

b) Vehicles shall not enter riparian areas except for purposes of using drainage crossings.

c) Disturbances from drainage crossings to occupied Preble's mouse habitat shall not exceed a combined USFS-Denver Water-CSFS total of 1 acre for the life of the project.

d) It will be assumed that habitat (riparian and 300 foot buffer) is occupied unless trapping surveys indicate that the Preble's mouse is not present at the site.

e) Drainage crossings will avoid riparian shrub habitat, if possible.

f) If it is not possible to avoid riparian shrub habitat, efforts will be made to minimize disturbances of these areas.

g) No more than 0.5 acres of riparian grass and shrub habitats shall be impacted at any one time.

h) Once the drainage crossing is no longer needed to complete forest treatments, the crossing will be removed and the disturbance reclaimed to predisturbance conditions within 3 years. If reestablishment of the riparian vegetation on the drainage crossing is not achieved within 3 years, further work may be needed and mutually coordinated at the annual meeting.

i) During the annual meetings or prior to impact, the USFS, Denver Water, CSFS, and the Service will review any proposed drainage crossing that would cause a disturbance to Preble's mouse habitat. The Service, USFS, CSFS and Denver Water will reach an agreement on where the drainage crossing will occur and how to minimize the impact.

j) If trapping surveys are necessary, these surveys shall be conducted in accordance with the Service's "Interim Survey Guideline for the Preble's Meadow Jumping Mouse", revised May 19, 1999, or any later revisions.

3). Construction of Expanded Wigwam Campground Parking Lot

a) The parking lot will be designed to utilize the land adjacent to the existing paved highway and to minimize the impact on land adjacent to Wigwam Creek.

b) Damaged riparian vegetation (1.0 acres) on Wigwam Creek will be restored at a location approximately 3 miles upstream of the parking area to compensate for loss of Preble's mouse habitat at the parking lot. Impacts will be offset at a ratio of 1.5:1.

c) Additional restoration will include the revegetation of disturbed areas in the Wigwam Campground with plants that provide cover or food for the Preble's mouse.

4). Riparian Area Revegetation

a) Willow cuttings used for riparian revegetation activities would be cut and removed from Preble's mouse habitat only during the mouse's hibernation period (November 1 through April 30).

b) No willows within Preble's mouse habitat will be uprooted for revegetation purposes. Off-road vehicles will not enter riparian areas.

c) Willow cuttings will be pruned from dormant, live willow plants at an approved harvest site.

d) Willows will be cut by hand and will not result in split wood or stripped bark.

e) No more than 50 percent of each donor live willow will be harvested and no more than 50 percent of willow plants at the harvest site will be used as donors. If variations in the amount of stems cut per clump are desired, Service approval is required. Harvest sites will be no larger than 0.5 acres. No more than 2 acres will be used for willow cuttings annually. The combined project USFS-Denver Water-CSFS willow cutting total is 12 acres.

5). Fire Rehabilitation and Research Activities

a) During fire rehabilitation and research activities on USFS lands, mechanized equipment shall not shall be used within 50 feet of the banks of live streams or wetlands (i.e., riparian protections zone), except when operating equipment from existing roads or trails, unless approved by the Service.

II. Monitoring

A. Work will be periodically inspected by a USFS-authorized representative to ensure that Conservation Measures and Terms and Conditions identified in the biological opinion are carried out.

B. Vegetation Monitoring in Skipper Habitat

1). USFS will monitor the vegetative cover of the USFS treatment area in skipper habitat immediately following the tree thinning treatment.

2). If bare ground is created as a result of Project activities, seeding of the approved seed mixture will occur if deemed necessary after two years of monitoring (desired result is average ground cover of 10 percent, of which blue grama represents 5 percent cover) and will continue annually until the desired level of vegetative cover (average ground cover of 10 percent, of which blue grama represents 5 percent cover) for the skipper is achieved.

C. Skipper Monitoring

1). USFS, Denver Water, and CSFS will monitor for the presence of skippers within the treatment area and the control areas for 3 years following treatment.

2). The goal of this monitoring is to determine how the forest thinning treatments benefit the survival and recovery of the skipper.

3). Three treatment conditions will be inventoried in detail and will include:

a) Three 400-meter transects on land with thinning treatments in the fall of 1999 and spring of 2000 (Denver Water land)

b) Three 400-meter transects on land to receive tree thinning treatments (USFS land)

c) Three 400-meter transects on land with no proposed thinning (i.e., control transects)(USFS land).

4). These nine transects will have a detailed vegetation study. Monitoring at these transects was initiated in August 2000.

5). The three treatment conditions occur within the same proximity of each other (i.e., within 1 square mile of each other) in order to limit the possible variation in sites based on soil conditions, local climatic factors, and past land use history.

6). Monitoring will occur annually during the time period from the last week in July to mid-week of September. Actual timing of the monitoring will depend on the flowering of the *Liatris* and will be adjusted accordingly.

7). Each transect will be monitored once each day for a total of 3 days. The three monitoring days will occur within a 10-day period (S. Ellis, ENSR, pers. comm). Monitoring will occur during the hours of 0900 to 1300 to encompass the optimum skipper flight period. Monitoring will occur during good weather conditions (sunny to light overcast, temperature between 70 and 85 degrees F).

8). Monitoring will consist of walking each transect and recording the number of skippers, gender, activity, and the number of flowering *Liatris* stalks observed

within the 10-meter width of the transect. Each transect will be divided into 50-meter segments for recording purposes. In addition to the observations on the Pawnee montane skipper, observations of the other skipper that occurs in the area will also be recorded.

9). Vegetation within the transects will be monitored for crown cover, canopy cover by species, bare soil cover, cover of coarse fragments, and cover of key riparian-weed-skipper plants using the following methods:

Along each skipper transect, 4-100 meter vegetation transects will be surveyed, one at each of the four segments. On each 100 meter transect, 20 Daubenmire microplots will be placed at regular intervals (begin at the 5 meter mark, then 10 meter, 15 meter, etc.).

On each 100 meter transect, the following will be recorded:

a) Cover by all live vascular plant species, including *Liatris punctata* and *Chondrosum gracile*, as well as all trees and shrubs.

b) Cover in all live layers.

c) Ground cover in all categories present.

d) Cover by line-intercept for all shrub species and canopies of trees less than 8 feet in height.

Oblique photographs will be taken at the beginning of each transect, and at the cardinal directions relative to the transect. Also, a vertical photograph of the microplot will be taken at each location ending in a "5" (i.e., 5 meters, 15 meters, 25 meters, etc.).

10). In addition to the detailed monitoring for the skipper, random skipper monitoring will also occur in prescribed burn areas in skipper habitat.

a) Monitoring will occur in the first and fourth year following the prescribed burn.

b) For each 1,000 acres burned, five transects will be monitored.

c) Each transect will be a total of 1,000 meters and will consist of four transects (each 250 meters [approximately 200 paces] in length) connected end-to-end and oriented within a 40-acre unit such that all slope and aspects of the unit will be included.

d) In order to randomly select monitoring locations, transect segments will be located on a USGS 7.5 quadrangle map prior to viewing the site in the field.

e) Field crews will stake the start of the initial segment and will record a compass heading for each of the end-to-end segments.

f) Monitoring will consist of walking the transect and counting all skippers and *Liatris* stalks within a 10-meter wide belt (5 meters on either side of the centerline). Additionally, the observer will stop every 20 paces and record whether blue grama is present or absent within a 0.5 meter quadrat directly in front of the observer.

g) Survey condition requirements (i.e., weather conditions, timing) will be the same as for the permanent monitoring transects.

A. Monitoring of Willow Cutting Sites

1). Willow cutting sites will be monitored after the first growing season to evaluate the growth of new shoots from willow clumps that experienced cuttings.

2). Monitoring will consists of live stem/cut stem counts and photographs at ten (10) willow clumps that received cutting.

III. Reporting

A. An annual progress meeting between the Service, USFS, Denver Water, and CSFS will be held of each year (date to be determined) to discuss project activities and results from the previous year and to discuss plans and goals for the upcoming year's activities.

B. The USFS will provide an annual report to the Colorado Field Office of the Service which includes photographic documentation pre- and post-project implementation. This report will be available at least two weeks prior to the annual progress meeting.

IV. Training

A. Workers onsite will be informed as to the reason for, and importance of, limiting ground disturbance in skipper and Preble's mouse habitats.

B. Workers will be shown on-site the desired tree thinning results.

C. Workers will be trained on-site to recognize and avoid unburned patches of skipper habitat.

V. Dead and Injured Individuals

A. In the event a skipper, spotted owl, Preble's mouse, bald eagle, or any other Federally-listed species is killed or injured during project activities, the Colorado Field Office of the Service (303)275-2370 should be contacted within ten (10) days.

B. The Service considers that incidental take of skippers will be difficult to detect because finding a dead or impaired specimen will be difficult due to the small size of the skipper and because fire will likely destroy any specimens.

Denver Water and CSFS

I. Treatments

A. Treatments in Skipper Habitat

1). The size and shape of created forest openings within skipper habitat will be based on the concept of a maximum distance to forest edge requirement in skipper habitat. The maximum distance would be 265 feet, based on the radius of a 5 acre circle, such that any point within the opening will be within 265 feet from a forest edge. A forest edge would be defined as the outer margin of a forested area with 11% or greater canopy coverage of overstory trees, and which extends for at least 100 feet on the axis perpendicular to the edge. A minimum of 100 feet of forest will remain between created openings. A few live ponderosa pine trees shall remain scattered throughout the opening. Map 2 in the 2000 BA may be updated as new data becomes available. Created forest openings will be up to 40 acres in size, and those that are greater than 20 acres but less than 40 acres will require Service review and approval.

2). Limit prescribed burning to a combined USFS-Denver Water-CSFS total of 1,000 acres per year in skipper habitat with no more than 500 acres of contiguous burns. Burns shall be scheduled such that adjacent areas are burned with a minimum of 2 years for recovery time.

3). Noxious weed treatment shall include:

a) Noxious weeds in and near harvest units shall be identified prior to forest thinning treatment.

b) Weed concentrations shall be pretreated mechanically or with herbicide during the optimum life stage, typically fall or spring.

c) Equipment shall be washed prior to entering forest treatment areas.

d) Machine operations shall avoid driving through weed areas.

4). Reseeding of disturbed areas

a) Areas disturbed by Project activities will be monitored for two years to determine if seeding is necessary. If the desired level of vegetative cover is not achieved at this time (average ground cover of 10 percent, of which blue grama represents 5 percent), then seeding will proceed in these areas.

b) Seed mixture will be broadcast in disturbed areas and hand raked into the disturbed soils to the extent that 0.25 to 0.50 inches of soil cover over the seed is achieved.

c) Seeding rate will be 13.9 Lbs. of Pure Live Seed per acre, which is equivalent to 16.4 Lbs. of bulk seed per acre.

d) Recommended seed mixture:

Species	Variety	Percent of Mixture	Lbs. Pure Live Seed per Acre
Hard fescue	Durar	25	2.0
Side oats grama	(See Note)	10	3.2
Slender wheat grass	San Luis	10	2.2
Canby bluegrass	Canbar	20	1.2
Blue grama	Lovington	25	1.5
Little blue stem	(See Note)	10	3.8

Note: Variety has not been determined but the variety selected should be suitable for the cold, dry conditions of this area.

5). Only temporary roads will be constructed in skipper habitat.

6). Road construction will be limited to less than 6 acres (4 miles of road approximately 12-feet wide) of skipper habitat at any given time. Of the 4 miles, no more than 1 mile of new road shall be constructed for salvage logging activities in skipper habitat. If an additional mile of road for salvage logging is needed in skipper habitat, Service approval is required.

7). New roads in skipper habitat will be reclaimed immediately after treatments are completed.

8). Roads will be considered reclaimed after 50 percent of potential ground cover is achieved.

9). Prior to construction, all logging truck access roads (longer than 500 feet) must be approved by the Service. For the construction of logging truck spur roads to landings (shorter than 500 feet), the Service will be notified prior to construction but approval will not be required in order to minimize delays during forest thinning operations. Skid trails and forwarder routes do not require Service approval or notification.

10). Treatments in skipper habitats in low severity burn and unburned areas will be agreed upon individually between the Service and the action agencies through October 31, 2003.

B. Treatments in Spotted Owl Habitat

1). Thinning and prescribed burn treatment areas will avoid the Devil's Head and Thunder Butte PACs.

2). Thinning and prescribed burn treatment areas will avoid areas with greater than an average of 40 percent slope. However, there are small areas within the treatment area with greater than 40 percent slope that would be treated with prescribed fire.

3). Forest thinning operations will remove smaller trees and, wherever possible, will retain the larger, more mature trees, especially those trees over 150 years in age.

4). Thinning operations will retain standing snags of varying and larger diameter tree classes and that are not a safety hazard at a rate of 3-5 snags per acre (USFS 2000, Biological Assessment, pg 4-41).

C. Treatments in Preble's Mouse Habitat

1). Forest Restoration Activities in Upland Preble's Mouse Habitat (Within 300 feet of 100-year floodplain or within 300 feet of outside edge of riparian habitat)

a) Project activities will occur during the Preble's mouse hibernation period (November 1 through April 30).

b) All shrubs will be avoided by vehicles and associated equipment.

c) All riparian vegetation will be avoided by Project activities (however, drainage crossings in Preble's mouse habitat are discussed in the following section).

d) Uprooting of trees by grubbing or other means will not occur.

e) During the annual meetings or prior to impact, the USFS, Denver Water, CSFS, and the Service will review treatment areas proposed for the upcoming season and identify any areas that are potentially suitable or known occupied Preble's mouse habitat. The Service, USFS, CSFS and Denver Water will reach an agreement on the habitat suitability prior to treatment of an area.

f) In areas where critical habitat has been proposed for the Preble's mouse, the outward extent of the proposed critical Preble's mouse habitat will be considered to represent Preble's habitat, rather than 300 feet from the 100-year floodplain or 300 feet from the edge of the riparian vegetation.

g) Preble's mouse habitats disturbed by project activities will be evaluated qualitatively for 3 years. If the disturbed area does not achieve predisturbance conditions within 3 years, further work may be needed and mutually coordinated between the action agencies and the Service at the annual meeting.

2). Use of Drainage Crossings in Preble's Mouse Habitat

a) Drainage crossings will involve primarily small tributaries and intermittent streams and will not affect the South Platte River or the North Fork of the South Platte River.

b) Vehicles shall not enter riparian areas except for purposes of using drainage crossings

c) Disturbances from drainage crossings to occupied Preble's mouse habitat shall not exceed a combined USFS-Denver Water-CSFS total of 1 acre for the life of the project.

d) It will be assumed that habitat (riparian and 300 foot buffer) is occupied unless trapping surveys indicate that the Preble's mouse is not present at the site.

e) Drainage crossings will avoid riparian shrub habitat, if possible.

f) If it is not possible to avoid riparian shrub habitat, efforts will be made to minimize disturbances of these areas.

g) No more than 0.5 acres of riparian grass and shrub habitats shall be impacted at any one time.

h) Once the drainage crossing is no longer needed to complete forest treatments, the crossing will be removed and the disturbance reclaimed to predisturbance conditions within 3 years. If reestablishment of the riparian vegetation on the drainage crossing is not achieved within 3 years, further work may be needed and mutually coordinated at the annual meeting.

i) During the annual meetings or prior to impact, the USFS, Denver Water, CSFS, and the Service will review any proposed drainage crossing that would cause a disturbance to Preble's mouse habitat. The Service, USFS, CSFS and Denver Water will reach an agreement on where the drainage crossing will occur and how to minimize the impact.

j) If trapping surveys are necessary, these surveys shall be conducted in accordance with the Service's "Interim Survey Guideline for the Preble's Meadow Jumping Mouse", revised May 19, 1999, or any later revisions.

3). Denver Water Operations, Maintenance, and Improvement (OM&I) Activities

a) Treatments will occur during the Preble's mouse hibernation period (November 1 through April 30).

b) All shrubs will be avoided by vehicles and associated logging equipment.

c) All riparian vegetation will be avoided (however, drainage crossings in Preble's mouse habitat are discussed separately).

d) Uprooting of trees by grubbing or other means will not occur.

e) If suitable habitat is present at the ground disturbance areas, it will be assumed that the habitat is occupied by the Preble's mouse.

f) Overall impacts within Preble's mouse habitat (riparian and 300-foot buffer area) will not exceed 2,600 feet.

g) Structures will be placed in areas that are not vegetated, where possible.

h) If not possible for structure placement to avoid vegetated areas, structure placement will avoid shrub habitat.

i) After following these avoidance and minimization measures, any impacts to Preble's mouse habitat will be offset at a ratio of 1.5:1.

j) Restoration will occur on site, if possible, or at another site on Denver Water property within the Upper South Platte watershed.

4). Riparian Area Revegetation

a) Willow cuttings used for riparian revegetation activities would be cut and removed from Preble's mouse habitat only during the mouse's hibernation period (November 1 through April 30).

b) No willows within Preble's mouse habitat will be uprooted for revegetation purposes. Off-road vehicles will not enter riparian areas.

c) Willow cuttings will be pruned from dormant, live willow plants at an approved harvest site.

d) Willows will be cut by hand and will not result in split wood or stripped bark.

e) No more than 50 percent of each donor live willow will be harvested and no more than 50 percent of willow plants at the harvest site will be used as donors. If variations in the amount of stems cut per clump are desired, Service approval is required. Harvest sites will be no larger than 0.5 acres. No more than 2 acres will be used for willow cuttings annually. The combined project USFS-Denver Water-CSFS willow cutting total is 12 acres.

D. Treatments in Bald Eagle Habitat

1). A 1/8-mile (200 meter) radius "no forest management" protection zone will be established from the perimeter of known communal roost sites. Forest management activities will not be conducted within this buffer zone unless a

work plan has been reviewed and approved by the Colorado Division of Wildlife raptor specialist and the Service.

2). No forest management work of any kind will occur within a 1-mile radius of known roost sites from November 1 through March 30, exclusive of the clearance zone shown in the Appendix, Figure 1.

3). All the ground work of any kind (except for emergency situations) within a 1/4- mile radius area of the communal roosts during the period from November to March will be pre-approved by the Service and will be conducted between the hours of 10:00 AM to 3:00 PM in order to minimize any potential inadvertent disturbance to roosting eagles.

4). In the event that bald eagle communal roosts are identified within the clearance zone shown in the Appendix, Figure 1, consultation will be reinitiated with the Service.

5). CSFS will develop a *Coniferous Roost Area Description* based on the forest stand and ecological characteristics at Cheesman Reservoir and at Lory State Park in Larimer County. This *Coniferous Roost Area Description* will be used to identify potential communal roosting habitats at Cheesman Reservoir in addition to those identified during the monitoring surveys. Work in the vicinity of these potential roosting sites will be conducted in accordance with the protection zone measures identified in the previous text in Bald Eagle Treatments, Items 1, 2, and 3.

A. Post-Fire Salvage Logging and Restoration Thinning

1). Salvage logging on Denver Water properties will only occur in moderate to high severity burn areas. Restoration thinning will occur in low severity burn areas.

2). During salvage logging on Denver Water properties, an average of 20 trees per acre at least 8-inches in diameter (range of 5 to 35 trees per acre) will remain standing to provide vertical forest structure to help skipper reoccupation of burned areas. Trees to be left standing should have an approximately equal spacing.

3). During salvage logging on Denver Water properties, non-merchantable trees not used for contour felling may be felled to facilitate mulching. Slash (limbs and top) and non-merchantable trees, except those specifically felled on the contour for erosion control, will be piled, wind-rowed along the contour or concentrated by other approved methods to provide shading to help reoccupation of burned areas by the skipper.

4). Soft snags and/or other trees over 8 inches in diameter which are determined to be useful for wildlife will be left uncut, unless they pose a specific hazard to roads, trails or improvements.

5). During salvage logging and restoration thinning operations on Denver Water properties, the use of heavy equipment on saturated soils or when plastic soil

limit is reached (to be determined from field testing) will be avoided. The plasticity test is simply squeezing a handful of soil; if it sticks together, it is wet and should be avoided.

6). During salvage logging and restoration thinning operations, areas of unburned blue grama will be marked or flagged so that they are not disturbed by equipment.

7). Compacted soils will be rehabilitated by scarification on the contour, and re-seeded, if appropriate. Such areas will be identified by the project administrator and completed by Denver Water and/or CSFS. If the area has been previously reseeded, mulched, or otherwise stabilized, any activities that disturb this process will need to be repaired. This may include reseeding, reapplying mulch, or other actions to return the site to the post-fire rehabilitated state. Such areas will be identified by the project administrator and completed by Denver Water and/or CSFS.

8). During restoration thinning activities, a Hydro-axe will be used for thinning in the lightly burned parcels A and B (north and south of Cheesman Dam, respectively) in order to minimize ground disturbance. During restoration thinning activities, some downed trees will be left to serve as potential microsites for tree establishment and skipper oviposition.

9). During restoration thinning activities in low severity burn areas, work will take place outside of the August 1 to October 1 skipper flight season.

10). During salvage logging and restoration thinning operations on Denver Water properties, no mechanized equipment shall be used within 50 feet of the banks of live streams or wetlands (i.e., riparian protections zone), except when operating equipment from existing roads or trails. Mechanical harvesting equipment shall remain outside the riparian protection zone, but may reach into the riparian protection zone as far as possible to remove the tree from the stump. Trees shall be bunched for skidding outside the riparian protection zone.

11). Other merchantable trees to be removed from the riparian protection zone that cannot be reached by mechanical harvesting equipment shall be felled by hand. Trees will be felled in such a manner that skidders will not enter the riparian protection zone. If needed, winch cable shall be pulled into the protection zone for tree removal.

12). All non-merchantable trees shall be left standing within the riparian protection zone.

13). During salvage logging and restoration thinning operations on Denver Water properties, no skidding will occur across riparian areas or wetlands. No landings will be located in riparian areas or wetlands.

14). Any road ditches or drainages damaged by logging activities will be repaired. Areas of significant soil disturbance within the riparian protection zone caused by these operations will be regraded by hand.

15). In areas where existing roads or trails are desired to be closed, logs will be felled and left to restrict off-road travel, wherever possible. The project administrator will designate such areas.

II. Monitoring

A. Work will be periodically inspected by a Denver Water/CSFS authorized representative to ensure that Conservation Measures and Terms and Conditions identified in the biological opinion are carried out.

B. Vegetation Monitoring in Skipper Habitat

1). Denver Water will monitor the vegetative cover of the Denver Water treatment area in skipper habitat immediately following the tree thinning treatment.

2). If bare ground is created as a result of Project activities, seeding of the approved seed mixture will occur if deemed necessary after two years of monitoring (desired result is average ground cover of 10 percent, of which blue grama represents 5 percent cover) and will continue annually until the desired level of vegetative cover (average ground cover of 10 percent, of which blue grama represents 5 percent cover) for the skipper is achieved.

C. Skipper Monitoring

1). USFS, Denver Water, and CSFS will monitor for the presence of skippers within the treatment area and the control areas for 3 years following treatment.

2). The goal of this monitoring is to determine how the forest thinning treatments benefit the survival and recovery of the skipper.

3). Three treatment conditions will be inventoried in detail and will include:

a) Three 400-meter transects on land with thinning treatments in the fall of 1999 and spring of 2000 (Denver Water land)

b) Three 400-meter transects on land to receive tree thinning treatments (USFS land)

c) Three 400-meter transects on land with no proposed thinning (i.e., control transects)(USFS land).

4). These nine transects will have a detailed vegetation study. Monitoring at these transects was initiated in August 2000.

5). The three treatment conditions occur within the same proximity of each other (i.e., within 1 square mile of each other) in order to limit the possible variation in sites based on soil conditions, local climatic factors, and past land use history.

6). Monitoring will occur annually during the time period from the last week in July to mid-week of September. Actual timing of the monitoring will depend on the flowering of the *Liatris* and will be adjusted accordingly.

7). Each transect will be monitored once each day for a total of 3 days. The three monitoring days will occur within a 10-day period (S. Ellis, ENSR, pers. comm). Monitoring will occur during the hours of 0900 to 1300 to encompass the optimum skipper flight period. Monitoring will occur during good weather conditions (sunny to light overcast, temperature between 70 and 85 degrees F).

8). Monitoring will consist of walking each transect and recording the number of skippers, gender, activity, and the number of flowering *Liatris* stalks observed within the 10-meter width of the transect. Each transect will be divided into 50-meter segments for recording purposes. In addition to the observations on the Pawnee montane skipper, observations of the other skipper that occurs in the area will also be recorded.

9). Vegetation within the transects will be monitored for crown cover, canopy cover by species, bare soil cover, cover of coarse fragments, and cover of key riparian-weed-skipper plants using the following methods:

Along each skipper transect, 4-100 meter vegetation transects will be surveyed, one at each of the four segments. On each 100 meter transect, 20 Daubenmire microplots will be placed at regular intervals (begin at the 5 meter mark, then 10 meter, 15 meter, etc.).

On each 100 meter transect, the following will be recorded:

Cover by all live vascular plant species, including *Liatris punctata* and *Chondrosum gracile*, as well as all trees and shrubs.
A. Cover in all live layers.
B. Ground cover in all categories present.
C. Cover by line-intercept for all shrub species and canopies of trees less than 8 feet in height.

Oblique photographs will be taken at the beginning of each transect, and at the cardinal directions relative to the transect. Also, a vertical photograph of the microplot will be taken at each location ending in a "5" (i.e., 5 meters, 15 meters, 25 meters, etc.).

10). In addition to the detailed monitoring for the skipper, random skipper monitoring will also occur of prescribed burn areas in skipper habitat.

a) Monitoring will occur in the first and fourth year following the prescribed burn.

b) For each 1,000 acres burned, five transects will be monitored.

c) Each transect will be a total of 1,000 meters and will consist of four transects (each 250 meters [approximately 200 paces] in length)

connected end-to-end and oriented within a 40-acre unit such that all slope and aspects of the unit will be included.

d) In order to randomly select monitoring locations, transect segments will be located on a USGS 7.5 quadrangle map prior to viewing the site in the field.

e) Field crews will stake the start of the initial segment and will record a compass heading for each of the end-to-end segments.

f) Monitoring will consist of walking the transect and counting all skippers and *Liatris* stalks within a 10-meter wide belt (5 meters on either side of the centerline). Additionally, the observer will stop every 20 paces and record whether blue grama is present or absent within a 0.5 meter quadrat directly in front of the observer.

g) Survey condition requirements (i.e., weather conditions, timing) will be the same as for the permanent monitoring transects.

D. Bald Eagle Monitoring

1). Prior to implementing vegetation management practices at Cheesman Reservoir, Denver Water will conduct weekly monitoring for bald eagles at the Cheesman Reservoir during the period from December 2000 through February 12, 2001.

2). Surveys will be conducted by boat in the late afternoon to observe eagles arriving at the communal roosts.

3). If the reservoir freezes over during this period, additional surveys will be conducted during the winter of 2001/2002 to the extent necessary to fill data gaps from the 2000/2001 survey period.

E. Monitoring of Willow Cutting Sites

1). Willow cutting sites will be monitored after the first growing season to evaluate the growth of new shoots from willow clumps that experienced cuttings.

2). Monitoring will consists of live stem/cut stem counts and photographs at ten (10) willow clumps that received cutting.

II. Reporting

A. An annual progress meeting between the Service, USFS, Denver Water, and CSFS will be held each year (date to be determined) to discuss project activities and results from the previous year and to discuss plans and goals for the upcoming year's activities.

B. Denver Water will provide an annual report to the Colorado Field Office of the Service which includes photographic documentation pre- and post-project implementation. This report will be available at least two weeks prior to the annual

progress meeting.

C. Denver Water and CSFS will provide a report that identifies known communal roost sites at Cheesman Reservoir and the habitat conditions of those roost sites.

IV. Training

A. Workers onsite will be informed as to the reason for, and importance of, limiting ground disturbance in skipper and Preble's mouse habitats.

B. Workers will be shown on-site the desired tree thinning results.

C. Workers will be trained on-site to recognize and avoid unburned patches of skipper habitat.

V. Dead and Injured Individuals

A. In the event a skipper, spotted owl, Preble's mouse, bald eagle, or any other Federally-listed species is killed or injured during project activities, the Colorado Field Office of the Service (303)275-2370 should be contacted within ten (10) days.

B. The Service considers that incidental take of skippers will be difficult to detect because finding a dead or impaired specimen will be difficult due to the small size of the skipper and because fire will likely destroy any specimens.

VI. Denver Water and CSFS will agree to and will carry out the conditions set forth in the Settlement Agreement.

CONSERVATION RECOMMENDATIONS

The Service, USFS, Denver Water, and CSFS are willing to look collectively at the enhanced skipper habitat (7,165 acres) to offset potential impacts for future ESA consultations (section 7 or section 10). However, these future actions would be required to undergo separate ESA compliance evaluations at a later date. In reviewing future actions, the Service will take into consideration the enhancements which have resulted from this project in determining both future baseline conditions and how the enhanced acres will be used to offset future actions within the Upper South Platte watershed.

These future actions could potentially include:

Strontia Springs Reservoir sediment control project;
Other sediment control projects in existing or future burn areas;
Recreation or other enhancements envisioned in the Wild and Scenic Rivers Alternatives analysis;
Recreational trail construction; and
Other activities that are not anticipated at this time.

Changes to the Conservation Recommendations after the Issuance of the 2001 Opinion

Following the Hayman and Schoonover fires, the amount of skipper habitat that may be enhanced by the forest thinning treatments is now 2,570 acres. This value reflects the unburned acres of skipper

habitat that remain from the original 7,165 acres of skipper habitat planned for forest thinning in the 2001 opinion (7,165 acres - 4,594 acres burned = 2,570 acres).

The Service recommends that the prescribed burns, which may occur every 5-10 years as part of the forest thinning process, that extend beyond the 12-year project should be evaluated through adaptive management by the action agencies and the Service. This adaptive management process will evaluate how to best conduct the prescribed burns given changing conditions, such as the recovery from the Hayman and Schoonover fires.

REINITIATION NOTICE

This concludes formal consultation on proposed Federal actions related to the USFS's Upper South Platte Watershed Restoration and Protection Project. As required by 50 CFR 402.16, reinitiation of formal consultation is required if (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an adverse effect to the listed species or critical habitat that was not considered in this opinion, (4) a new species is listed or critical habitat designated that may be affected by the action, (5) the skipper monitoring program indicates that the skipper population is critically low, (6) or if the stipulated agreement is not carried out.

Regarding proposed critical habitat for the Preble's mouse, the USFS may ask the Service to confirm the conference opinion as a biological opinion issued through formal consultation if the critical habitat for the Preble's mouse is designated. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion on the project and no further section 7 consultation will be necessary.

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