APPENDIX B
BIOLOGICAL EVALUATION

INTRODUCTION

The Forest Service is analyzing proposed forest restoration actions in the Upper South Platte watershed on the Pike National Forest. These actions would include timber harvesting, prescribed burning, revegetation in the Buffalo Creek burn area, obliteration and reclamation of unnecessary roads, and trail improvements.

This document contains an evaluation of potential effects of the Forest Service alternatives on sensitive species identified in the Upper South Platte Watershed Landscape Assessment (Foster Wheeler ,1999). The list includes 22 plants, 8 mammals, 3 amphibians, and 12 birds which are known from, or which could occur within the Upper South Platte Project Area. The principal objective of this Biological Evaluation (BE) is to ensure that a proposed action does not contribute to loss of viability of any native or desired non-native plant or animal species. Forest Sensitive Species have no protection under the Endangered Species Act, but are evaluated for impacts from projects occurring with National Forests in the spirit of the Act. Consideration of these sensitive plants and wildlife helps to protect from future listing.

PROJECT AREA

For the purposes of the BA, the project area was defined as the Project Area defined in the Environmental Assessment (EA). The Upper South Platte Project Area is located within the foothills of the Colorado Front Range of the Rocky Mountains. It is a large, important watershed that is a critical water supply for the city of Denver, providing 70 percent of the city's water. Due to its proximity to the city, it contains a large urban–wildlands interface and provides easy access to fishing, hiking, and other outdoor pursuits. A portion of the South Platte River is a gold medal trout fishery.

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

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

Elevations within the Assessment Area range from approximately 6,000 feet along the South Platte River to almost 9,000 feet at some of the higher peaks. The terrain is extremely varied and includes deep, narrow canyons; flat river-valley bottoms; broad meadows; rugged mountain foothills; steep slopes;

rounded granite peaks; and scattered, rugged granite outcroppings. Portions of the Waterton/Deckers and Buffalo Creek watersheds are within the Lost Creek Wilderness Area.

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

METHODS

This BE was conducted in accordance with procedures described in Forest Service Manual 2672.4 and Region 2 Supplement Number 2600-94-2. Federal, state, and Colorado Natural Heritage Program Database listings of special-status species and their habitats were reviewed to identify those species potentially occurring within the Project Area. Based on these lists, plants and wildlife species were carefully identified to eliminate or confirm the occurrence of special-status species within the Project Area.

The Environmental Assessment discusses activities that includes creating a more heterogeneous forest landscape, planting 1,000 acres of trees in the Buffalo Creek Burn area, revegetating 25 miles of roads, improving river trail systems to reduce soil erosion in and around riparian areas, and creating 60 acres of riparian areas in the upland areas of the Buffalo Creek Burn area. In general, the effects of these actions will improve habitat and diversity of wildlife in the project area. The planting of 1,000 acres of trees and rehabilitating 60 acres of riparian areas in the Buffalo Creek Burn area are beneficial in the long-term because additional habitat is being created. The reclamation of 25 miles of roads will offer a more continuous, less disjointed habitat. The improvement of the river trail systems to reduce soil erosion in and around riparian areas offers the similar benefits. Another beneficial effect would be that the project would yield a greater surface water flow and might increase the upwards extension of the riparian zones, which would increase the size of riparian habitat.

The impacts associated with the thinning and logging of the vegetation treatment areas is the focal point of the discussion below because some temporary adverse effect might take place. Although the creation of a heterogeneous forest will positively affect the majority of wildlife species in the project area, some temporary adverse effects may occur. These include: disturbance of foraging habitat during logging and burning, disruption of nesting habits, etc. These are only temporary adverse effects, but the long-term effects are anticipated to be beneficial. In addition, the treatment areas only encompass a small portion of habitat available to the wildlife. This means that suitable habitat is available for the wildlife outside of the treatment areas.

FOREST SERVICE SENSITIVE ANIMAL SPECIES

Information on species occurrence was gathered from the statewide database through contact with the CNHP and Forest Service personnel. Contacts were made with species experts and resource specialists

from the USGS Biological Service, Forest Service personnel, and USFWS personnel to gather file information on wildlife resources in the project study area, including mapped and database information.

FOREST SERVICE SENSITIVE PLANT SPECIES

Information on occurrences of known sensitive and rare plants in the project study area was obtained initially from the CNHP and through consultation with Forest Service personnel. Additional information on species' habitat requirements, blooming periods, and field identifying characteristics was obtained from state flora guides (Weber 1990; Spackman et al. 1997). Federal and state resource specialists, including the Forest Service and USFWS were also contacted to obtain information on sensitive plants.

SENSITIVE SPECIES KNOWN FROM OR POTENTIALLY OCCURRING WITHIN THE PROJECT AREA

This section describes the presence or absence and any potential impacts to Forest Service Sensitive plants and animals of priority for the Forest.

MAMMALS

North American Wolverine (Gulo gulo luscus)

Status: Colorado endangered species and Region 2 Forest Sensitive Species

The population status and distribution of the North American wolverine in Colorado is uncertain at this time. In 1978, the Colorado Division of Wildlife conducted surveys for the wolverine without finding any definitive population in the state (Fitzgerald et al., 1994). The wolverine may occur in the following Colorado counties: Chaffee, Clear Creek, Custer, Huerfano, Jefferson, Lake, and Park. The wolverine is a scavenging predator and depends on a diverse ungulate population with a high turnover rate. They can be found in mature and intermediate timbered areas around natural openings, including cliffs, slides, basins, and meadows. Their habitat use varies seasonally; in summer, they favor cooler subalpine and alpine areas (Forest Service, 1994). CNHP information on actual occurrences indicates that the wolverine has not been documented in the Project Area. Potential habitat for the wolverine does occur in pockets throughout the Project Area, but it is unlikely that wolverines occur within the project area because no positive records have been recorded in the state since during the early 1900s (Cary 1911).

No populations of this mammal are known to occur in the project area. Therefore, no adverse effects to the North American wolverine would result from the proposed action or the alternatives.

Ringtail (Bassariscus astutus)

Status: Region 2 Forest Sensitive Species

The ringtail inhabits arid and semiarid habitats throughout the southwest, including most of southern and western Colorado. In Colorado its preferred habitat includes areas in rimrock canyons with cliffs that have perennial streams and abundant trees and shrubs and foothills areas of pinyon-pine-juniper woodlands, montane shrublands, or mixed conifer oakbrush (Fitzgerald et al., 1994). The ringtail dens in rock crevices and tree cavities (Forest Service, 1994). Based on these habitat requirements, the ringtail is not expected to occur in any of the Treatment Areas. Therefore, no adverse effects to the ringtail would result from the proposed action or the alternatives.

Wet Mountains Yellow-bellied Marmot (Marmota flaviventris notioros)

Status: Region 2 Forest Sensitive Species

The Wet Mountains yellow-bellied marmot is found in rocky areas with boulders and talus slopes where it feeds primarily on grasses and forbs (Forest Service, 1994). This marmot is endemic to an area in Huerfano County and is not anticipated to occur in the Project Area and will not be evaluated further.

American Marten (Martes americanus)

Status: Region 2 Forest Sensitive Species and Forest Management Indicator species for Pike and San Isabel National Forests

The American marten is mostly a boreal mammal, ranging across Alaska and Canada to Newfoundland and southward at increasingly high elevation along mountain ranges to California and New Mexico. Their range of habitats in Colorado is fairly broad, including tundra rockpiles and talus slopes as well as montane woodland (Armstrong, 1987). In Colorado, American martens occur at elevations of 8,000 to 13,000 ft. They are associated with spruce-fir and lodgepole vegetation types with mature to old growth structural stages. They prefer moderate to high canopy cover (Forest Service, 1994).

No populations of this mammal are known to occur within the project area. However, suitable habitat for the animal does occur within the project area and if American marten were to eventually occupy the project area, the action alternatives may effect their habitat by reducing canopy cover. Based upon the magnitude of this short-term disturbance and the availability of similar potential habitat in adjacent subalpine and alpine areas, the action alternatives may effect individuals but are not likely to cause a trend toward federal listing or loss of viability of the marten within the project watersheds.

Dwarf Shrew (Sorex nanus)

Status: Region 2 Forest Sensitive Species

The dwarf shrew occurs in most of the mountains in Colorado. It is associated with alpine and subalpine rockslides to spruce fir bogs; coniferous forests; sedge marshes; dry brushy hillsides; and open woodland (Fitzgerald et al., 1994). The elevation range is from 5,500 to 10,000 ft (Armstrong, 1987). In Colorado, this species generally occurs at higher elevations near timberline. Based on these habitat requirements, the dwarf shrew is not expected to occur in any of the Treatment Areas and will not be evaluated further.

Fringed-tailed Myotis (Myotis thysanodes pahasapensis)

Status: Region 2 Forest Sensitive Species

The fringed-tailed myotis may occur in Baca, El Paso, Huerfano, Las Animas, Otero, and Pueblo Counties. It inhabits mid-elevation grasslands, deserts, and oak and pinyon woodlands. In Colorado, this bat reportedly winters in pinyon juniper and ponderosa pine habitats. It typically forages over watercourses (Forest Service, 1994).

Although potential habitat for the fringe-tailed myotis occurs in Waterton/Deckers and Buffalo Creek watersheds, CNHP information on actual occurrence has documented that this bat does not occur in any of the watersheds included in the Project Area. Therefore, this species will not be further evaluated.

Spotted Bat (Euderma maculatum)

Status: Region 2 Forest Sensitive Species

The spotted bat is known to occur on the western slope in Moffat and Montezuma Counties near Mesa Verde. Although no known records exist, there is some potential for the spotted bat to occur in the Pike and San Isabel National Forests. The nearest record is in northern New Mexico in Rio Arriba County (Forest Service, 1994). It has been found in ponderosa pine of montane forests, pinyon-juniper woodlands, and open semi-desert shrublands. Rockcliffs are necessary to provide suitable cracks and crevices for roosting, as is access to water. The animals show apparent seasonal changes in habitat, occupying ponderosa pine woodlands in the reproductive season and lower elevations at other times of the year (Fitzgerald et al., 1994).

Potential habitat for the spotted bat does occur in pockets throughout the Project Area. Potential temporary effects of the action alternatives include disturbance of foraging habitat during logging and burning. Although, these activities may temporarily effect individuals but are not likely to cause a trend toward federal listing or loss of viability of this species of bat in the project area.

Townsend's Big-eared Bat (Plecotus townsendii)

Status: Region 2 Forest Sensitive Species

Townsend's big-eared bat is a western species occupying semidesert shrublands, pinyon-juniper woodlands, and open montane forests. It is frequently associated with caves and abandoned mines for day roosts and hibernacula, or where the bat hibernates, but will also use abandoned buildings and crevices on rock cliffs for refuges. The bats are relatively sedentary. They do not move long distances from hibernacula to summer roosts nor do they move or forage far from their day roosts (Fitzgerald et al., 1994).

One subspecies, *Plecotus townsendii pallescens* occurs over most of the western two-thirds of Colorado and extreme southeastern Colorado to elevations of about 9,500 feet (Fitzgerald et al., 1994). Potential habitat for this bat occurs throughout the Project Area, including all of the Treatment Areas. Potential impacts of the action alternatives include disturbance of foraging habitat during logging and burning. These activities may temporarily effect individuals but are not likely to cause a trend toward federal listing or loss of viability of this species of bat in the project area.

BIRDS

Osprey (Pandion haliaetus)

Status: Region 2 Forest Service Sensitive Species

Ospreys are a rare to uncommon spring and fall migrant in western valleys, mountains, and mountain parks, and on the eastern plains. It is also a rare to uncommon summer resident in the mountains and in mountain parks. The osprey is generally associated with lakes, rivers, and reservoirs (Andrews et al., 1992). They occur along river corridors during migration. Ospreys nest in a wide variety of places, requiring both a large body of water with fish large enough to catch, and suitable nest sites. They may nest in tall dead trees and dead broken-off treetops and on power poles and goose nest platforms (CBBA, 1998).

There are now records of confirmed breeding or probable breeding from at least 15 sites in the mountains nearly statewide, but concentrated in the northern half of the state. The largest concentration is at the reservoirs of eastern Grand County. The increase in breeding in Colorado may be due to the proliferation of mountain reservoirs in conjunction with this species' continuing population recovery (Andrews et al., 1992).

Based on potential habitat maps, the osprey may forage within the Project Area. Potential impacts of the action alternatives include temporary disturbance of foraging habitat during logging and burning, but riparian corridors, where the osprey would concentrate its activities, would be protected with a buffer zone, ranging from 100 feet to 280 feet, based on the slope of the bank. The treatment activities may temporarily effect individuals but are not likely to cause a trend toward federal listing or loss of viability of the osprey in the project area.

Northern Goshawk (Accipiter gentilis)

Status: Region 2 Forest Service Sensitive Species

The northern goshawk is a rare to uncommon resident in foothills and mountains. Some individuals wander to above timberline, especially in the fall. It is a rare spring and fall migrant and winter resident in western valleys, mountain parks, and on eastern plains. It occurs in forest, primarily in mature stands of aspen, ponderosa pine, and lodgepole pine. Migrants and winter residents are seen in all types of coniferous forests and in riparian forests and are occasionally seen in shrublands (Andrews et al., 1992).

Potential habitat for the northern goshawk occurs in the western and southeastern portion of the Project Area. Under the action alternatives, treatment activities in the project area could result in goshawk avoidance of foraging areas and decreased nesting success due to stress from short-term habitat loss and noise and activity of human activities. Mitigation measures for raptors, as discussed in the Environmental Consequences section of the Environmental Assessment are to be applied before treatment activities are to take place. With this mitigation, the action alternatives would have no impact on goshawks in the project area. The goshawk will show the beneficial effect of an increase in large diameter trees due to the treatment actions.

Black Tern (Chlidonias niger)

Status: Region 2 Forest Service Sensitive Species

The black tern is a common to abundant spring migrant and uncommon to fairly common fall migrant on the eastern plains. It is a rare to uncommon summer resident in mountain parks and on the eastern plains. It is associated with aquatic habitats that have emergent vegetation, such as cattail marshes, with adjacent large open water (Andrews et al., 1992). It resides in Otero, Pueblo, and Park counties and the southeast portion of Fremont County in the summer where it usually nests in small colonies on floating vegetation (Forest Service, 1994). There have been widespread declines in populations of this species probably due to loss of habitat but potentially also due to pesticide use (McDonald, 1991, as cited in Andrews et al., 1992). Riparian habitat will be avoided during vegetation treatments due to a buffer for activities occurring near drainages within the Forest, ranging from 100 feet to 280 feet, based on the slope of the bank. Thus, no adverse effects to the black tern would be expected under implementation of the action alternatives.

Flammulated Owl (Otus flammeolus)

Status: Region 2 Forest Service Sensitive Species

The flammulated owl is associated with mature to old growth ponderosa pine and ponderosa-Douglas-fir forests along the Rocky Mountains, often mixed with mature aspen. In some areas, these birds are seen in pure aspen or old-growth pinyon-juniper woodlands (Andrews et al., 1992). They are secondary cavity nesters and depend on woodpeckers for their nesting holes (Forest Service, 1994).

Potential habitat for the flammulated owl occurs throughout the Project Area, including all of the Treatment Areas. Under the action alternatives, treatment activities in the project area could result in owl avoidance of foraging areas and decreased nesting success due to stress from habitat loss and noise and activity of human activities. Mitigation measures for raptors, as discussed in the Environmental Consequences section of the Environmental Assessment are to be applied before treatment activities are to take place. Beneficial effects to the flammulated owl from treatment activities are: an increase of open areas for hunting, an increase of large, exposed branches, an increase in large diameter aspen trees, and better foraging due to increase of insects from the increase of grassy areas.

Black Swift (Cypseloides niger)

Status: Region 2 Forest Service Sensitive Species

The black swift has localized distribution in the mountains in the summer with records in El Paso County. It nests on precipitous cliffs near or behind high waterfalls. Beyond that requirement, they inhabit a variety of landscapes, from seacoasts to the Rocky Mountains. Black swifts spend most of their time in the air, ranging far from nesting areas. They forage over most montane and lowland habitats (CBBA, 1998). Habitats where they may occur include aspen groves, spruce fir, spruce fir clearcuts, Douglas-fir, lodgepole pine, lodgepole pine clearcuts, ponderosa pine, open water, forest dominated by wetland and riparian areas, shrub dominated wetland and riparian areas, exposed rock, mining operations, and meadow tundra (NDIS, 1999).

Potential habitat for the black swift occurs in the northwestern and southeastern portions of the Project Area, including many of the Treatment Areas. The black swift may potentially occur in the Spring Creek area in association with the waterfalls present there. Temporary effects due to treatment activities in the project area could result in swift avoidance of foraging areas and displacement due to loss of foraging

habitat. Black swift forage over large areas (Andrews and Righter 1992); hence, removal and disturbance of potential foraging habitat is not likely to impact black swifts that nest in the area. Alternatives B and C may temporarily effect individuals but are not likely to contribute to a trend toward federal listing or loss of viability of black swifts within the project area.

Three-toed Woodpecker (Picoides tridactylus)

Status: Region 2 Forest Service Sensitive Species and a Forest Management Indicator Species

The three-toed woodpecker primarily occurs in spruce-fir forests. At all seasons and elevations, this species is most common in years and areas where trees have high insect populations due to disease or fire. Where insect populations are high it may also occur in ponderosa pine, Douglas-fir and lodgepole pine forest (Andrews et al., 1992).

Potential habitat for the three-toed woodpecker occurs in the Project Area, especially in the western portion of the Area. The action alternatives will impact suitable woodpecker habitat in the short-term but improve habitat by improving forest health in the long-term. Suitable habitat to be temporarily affected may result in avoidance of foraging areas and displacement due to loss of nesting habitat. Woodpecker habitat is widespread throughout the forest and removal and disturbance of some habitat is not likely to impact the woodpeckers that occur within the forest. The action alternatives may temporarily impact individuals but are not likely to contribute to a trend toward federal listing or loss of viability of three-toed woodpecker within the project area.

Lewis' Woodpecker (Melanerpes lewis)

Status: Region 2 Forest Service Sensitive Species

Lewis' woodpecker is a year-round resident of the foothills of southern Colorado and occurs in lowland and foothill riparian areas, agricultural areas and urban areas with tall deciduous trees. It sometimes avoids riparian forests because of competition with the red-headed woodpecker. It is known to occur in the Wet Mountains and Custer and Pueblo Counties (Forest Service, 1994). Based on these habitat requirements and its known distribution, Lewis' woodpecker is not expected to occur in any of the Treatment Areas. Therefore, the Lewis' woodpecker will not be further evaluated.

Olive-sided Flycatcher (Contopus borealis)

Status: Region 2 Forest Service Sensitive Species

The olive-sided flycatcher is primarily a mountain summer resident at elevations of 10,000 and 11,500 ft (Forest Service, 1994). It breeds primarily in mature spruce-fir and Douglas-fir forests, especially on steep slopes or near cliffs, and less often in other types of coniferous forests, mountain and foothill riparian communities, and aspen forests. During migration, it occurs in all types of wooded habitats (Andrews et al., 1992). Although not expected to occur within the project area, suitable habitat for the flycatcher does occur within the proposed treatment areas.

Potential habitat for the flycatcher occurs in the project area, including many of the Treatment Areas. Under the action alternatives, treatment activities in the project area could result in flycatcher avoidance of foraging areas and displacement due to loss of foraging habitat. Based on the availability of potentially suitable habitat in the area and since the birds generally prefer higher elevations than those within the project area, Alternatives B and C may effect individuals but are not likely to contribute to a trend toward federal listing or loss of viability of olive-sided flycatchers within the project area. Mitigation measures

for olive-sided flycatchers, as discussed in the Environmental Consequences section of the Environmental Assessment are to be applied during treatment activities.

Purple Martin (Progne subis)

Status: Region 2 Forest Service Sensitive Species

The purple martin is a summer resident of the mountains of western Colorado, but is occasionally found on the east slope and plains. It breeds in loose colonies of old growth aspen forests near parks and generally near water. It may also occur in mixed aspen/ponderosa pine or aspen/Douglas-fir forest. In some areas it nests in dead trees near or standing in reservoirs. During migration, it occurs over riparian areas, open agricultural areas, and reservoirs (Andrews et al., 1992).

Potential habitat for the purple martin exists throughout the Project Area, especially along riparian corridors. The purple martin may nest and forage within the Project Area and implementation of the action alternatives would impact them by disturbance of foraging habitat during logging and burning. Since the birds prefer to nest and forage near water, impacts to this species would be limited because riparian corridors, where the martins would concentrate their activities, would be protected with a buffer zones. The treatment activities may effect individuals but are not likely to cause a trend toward federal listing or loss of viability of the purple martin in the project area.

Pygmy Nuthatch (Sitta pygmaea)

Status: Region 2 Forest Service Sensitive Species

The pygmy nuthatch is a fairly common to common resident in the foothills and lower mountains from Mesa, Grand, and Larimer counties southward. It is rare to uncommon in the periphery of the San Luis Valley and is apparently absent from northwestern Colorado. It is primarily found in ponderosa pine and aspen forest. In Grand and Summit Counties, it is commonly found in lodgepole pine forests, but seems to be rare in that habitat elsewhere. It is found rarely in Douglas-fir and pinyon-juniper woodlands, and even more rarely in spruce-fir forests and lowland riparian forests (Andrews et al., 1992). Human population expansion and cutting of firewood in ponderosa pine forests have caused a loss of trees with suitable nest sites, resulting in population declines. For this reason, this species is an excellent indicator species for the ponderosa pine forest (Webb, 1985 as cited in Andrews et al., 1992).

Potential habitat for the pygmy nuthatch occurs throughout the Project Area. Direct loss of habitat in the short-term due to logging would occur under the proposed action alternatives. However, the treatments will improve forest health in the long-term and benefit the nuthatch. Based on this and the availability of potentially suitable habitat in the surrounding area, Alternatives B and C may effect individuals but are not likely to cause a trend toward federal listing or loss of viability of the pygmy nuthatch in the project area.

Golden-crowned Kinglet (Regulus satrapa)

Status: Region 2 Forest Service Sensitive Species

The golden-crowned kinglet is a summer resident of high mountains but moves to lower elevations in the winter. It breeds primarily in mature, dense spruce-fir forests, and occasionally in limber pine and Douglas-fir forests. In winter, it occurs in coniferous forests, especially Douglas-fir or ponderosa pine, but also in other types such as pinyon pine-juniper woodlands, foothill and lowland riparian forests, and in planted conifers in parks, cemeteries, and residential areas in the lowlands. During migration, it mostly

occurs in wooded habitats. The golden-crowned kinglet appears to be more common west of the Continental Divide than the east (Andrews et al., 1992).

Potential habitat for the golden-crowned kinglet occurs in the majority of the Treatment Areas. Direct loss of habitat in the short-term due to logging would occur under the proposed action alternatives. However, the habitat treatments will improve forest health in the long-term and benefit the kinglet. Based on this and the availability of potentially suitable habitat in the surrounding area, Alternatives B and C may effect individuals but are not likely to cause a trend toward federal listing or loss of viability of the golden-crowned kinglet in the project area.

Fox Sparrow (Passerella iliaca)

Status: Region 2 Forest Sensitive Species

The fox sparrow is a summer resident in the Colorado mountains where it uses riparian willow shrublands and wet willow green meadows. The fox sparrow also uses forest undergrowth, woodland thickets, and montane brushland. It is less common east, rather than west, of the Continental Divide (Forest Service, 1994).

Based on habitat requirements, suitable habitat for the fox sparrow potentially occurs within the Project Area., especially along riparian corridors. The sparrow may nest and forage within the Project Area and implementation of the action alternatives would temporarily effect them by disturbance of foraging habitat during logging and burning. Since the birds prefer to nest and forage near water, impacts to this species would be limited because riparian corridors, where the fox sparrow would concentrate its activities, would be protected with a buffer zone, ranging from 100 feet to 280 feet, based on the slope of the bank. The treatment activities may impact individuals but are not likely to cause a trend toward federal listing or loss of viability of the purple martin in the project area.

AMPHIBIANS

Northern Leopard Frog (*Rana pipiens*)

Status: Region 2 Forest Service Sensitive Species

The northern leopard frog occurs throughout Colorado except in the Republican River drainage and southeastern Colorado, south of the Arkansas River. It can range up to 11,000 ft in elevation, and inhabits the banks and shallow portions of marshes, ponds, lakes, reservoirs, beaver ponds, streams, and other bodies of permanent water. The frog appears to be especially associated with rooted aquatic vegetation (Forest Service, 1994).

Based on habitat requirements, the northern leopard frog can potentially occur within the Project Area. However, no direct impacts to its habitat would be expected under the action alternatives since riparian areas will be protected with a buffer. Indirect impacts to the species may occur with an increase in erosion and increased sediment load to drainages. Mitigation to address impacts due to erosion may compensate for indirect impacts to potential breeding habitat. Reseeding after treatment and use of silt fencing when treating near drainages would eliminate indirect impacts to the frog.

Tiger Salamander (Ambystoma tigrinum)

Status: Region 2 Forest Service Sensitive Species

The tiger salamander occurs throughout Colorado at elevations up to 12,000 ft. It occurs in virtually any habitat where there is a body of non-flowing water nearby for breeding. Tiger salamanders inhabit ponds, lakes and reservoirs, glacial kettle ponds, and beaver ponds. It is usually absent from water inhabited by predatory fishes, bullfrogs, turtles, and crayfish (Forest Service, 1994).

Based on habitat requirements, the tiger salamander can potentially occur within the Project Area. However, no direct impacts to its habitat would be expected under the action alternatives since riparian areas will be protected with a buffer. After a wet, breeding season, this salamander will sometimes move upland a long distance from the water. This could result in direct effect to adults from equipment and falling trees. Mitigation to address impacts due to erosion may compensate for indirect impacts to potential breeding habitat. Reseeding after treatment and use of silt fencing when treating near drainages would eliminate indirect impacts to the salamander.

PLANTS

Addersmouth (Malaxis brachyopoda)

Status: Region 2 Forest Sensitive Species

Addersmouth is found along streams in mosses where it is kept wet by spray from streams. Occurrences are given as Boulder, Jefferson, and El Paso counties. It can occur from 7,200 to 8,000 ft in elevation (Spackman et al., 1997). The El Paso County site may have been destroyed by development. One site is near Bailey in Pike National Forest (Forest Service, 1994).

Based on habitat requirements, the addersmouth may potentially occur within the Project Area. However, no impacts to this species or its habitat would be expected under the action alternatives since riparian areas will be protected with a buffer. Riparian areas that will be restored upland in the Buffalo Creek burn area will stabilize river banks, which will increase opportunities for establishment of the plant.

Altai Cottongrass (Eriophorum altaicum)

Status: Region 2 Forest Sensitive Species

Altai cottongrass, also known as white cottongrass, may be found growing in fens at altitudes of 9,500 to 14,000 ft in elevation. Its distribution in Colorado includes Eagle, Gunnison, Hinsdale, La Plata, Park, and San Juan Counties (Spackman et al., 1997). Based on its habitat requirements, altai cottongrass is not expected to occur in any of the Treatment Areas. Therefore, altai cottongrass will not be further evaluated.

Colorado False Needle Grass (Ptilagrostis mongholica *ssp.* porteri*)*

Status: Region 2 Forest Service Sensitive Species

Colorado false needle grass is endemic to central Colorado (El Paso, Lake, Park, and Summit Counties). It can be found in hummocks in fens and willow carrs at elevations from 9,200 to 12,000 ft (Spackman et al., 1997). Based on these habitat requirements, the Colorado false needle grass is not expected to occur in any of the Treatment Areas. Therefore, Colorado false needle grass will not be further evaluated.

Colorado Tansy-aster (Machaeranthera coloradoensis)

Status: Region 2 Forest Sensitive Species

The Colorado tansy-aster is endemic to south-central Wyoming and to Colorado (Gunnison, Hinsdale, La Plata, Lake, Mineral, Park, Pitkin, Saguache, and San Juan Counties). It is found in gravelly places in high mountain parks, slopes, and rock outcrops up to dry tundra from an elevation of 8,500 to 12,500 ft (Spackman et al., 1997). Known locations are in Horseshoe Cirque and the floor of South Park in Park County (Forest Service, 1994). Based on these habitat requirements, the Colorado tansy aster is not expected to occur in any of the Treatment Areas. Therefore, the Colorado tansy-aster will not be further evaluated.

Degener's Penstemon (Penstemon degeneri)

Status: Region 2 Forest Service Sensitive Species

Degener's penstemon is endemic to woodlands and mountain meadows of Custer and Fremont Counties. It is typically found in pinyon/juniper woodlands and montane grasslands on rocky soils with igneous bedrock. It typically occurs from 6,000 to 9,500 ft in elevation (Forest Service, 1994). Known occurrences of this species include the pinyon-juniper woodlands of the Arkansas River Canyon and a few other areas near Canon City. These sites are well outside of the Project Area and the plant's range does not enter the project area. The plant would not be expected to occur within the project area. Thus, Degener's penstemon will not be further evaluated.

Globe Gilia (Ipomopsis globularis)

Status: Region 2 Forest Sensitive Species

Globe gilia is endemic to central Colorado. Its known distribution is limited to the Mosquito Range and the Hoosier Range area that includes Lake, Park, and Summit Counties. It grows in gravelly, exposed calcareous, alpine ridges on Leadville limestone or Manitou dolomite at elevations from 12,000 to 14,000 ft (Spackman et al., 1997). Based on these habitat requirements the globe gilia is not expected to occur in any of the Treatment Areas. Therefore, the globe gilia will not be further evaluated.

Great-spurred Violet (Viola selkirkii)

Status: Region 2 Forest Service Sensitive Species

The great-spurred violet is known from two areas: Rocky Mountain National Park, where it was last seen in 1965, and at the east base of Devil's Head in Douglas County, where it was last seen in 1923 (Colorado Native Plant Society [CNPS], 1997). Potential habitat for this species includes cold mountain forests, moist woods, and thickets at elevations from 8,500 to 9,100 ft (Spackman et al., 1997). No suitable habitat for this species exists in the project area. The plant requires moist to wet conditions within alder stands. Some marginal habitat may occur for the species within the project area, but based on its very

strict habitat requirements, it would not be expected to occur within the project area. Thus, the great-spurred violet will not be further discussed.

Greenland Primrose (Primula egaliksensis)

Status: Region 2 Forest Service Sensitive Species

The Greenland primrose occurs in Colorado in Park County. This species occurs in wet meadows, streambanks, willow carrs, and rich fens in high mountain valleys from 9,000 to 9,800 ft in elevation (Spackman et al., 1997). Based on these habitat requirements the Greenland primrose is not expected to occur in any of the Treatment Areas. Therefore, the Greenland primrose will not be further evaluated.

Hall Fescue (Festuca hallii)

Status: Region 2 Forest Sensitive Species

Hall fescue is an alpine grass that may occur on the Pike National Forest in Kobresia stands. One historic record from the 1890s is from somewhere in or around the north end of the South Park (Forest Service, 1994). Based on these habitat requirements, Hall fescue is not expected to occur in any of the Treatment Areas. Therefore, hall fescue will not be further evaluated.

Livid Sedge (Carex livida (Wahlenb.) Willd.)

Status: Region 2 Forest Service Sensitive Species

Livid sedge is a wetland species occurring in rich fens from 9,000 to 10,000 ft in elevation. Its distribution includes High Creek Fen and East Lost Park, both located in Park County (CNPS, 1997). Based on these habitat requirements, the livid sedge is not expected to occur in any of the Treatment Areas. Therefore, livid sedge will not be further evaluated.

Molybdenum Milk-vetch (Astragalus molybdenus)

Status: Region 2 Forest Sensitive Species

Molybdenum milk vetch is endemic to Gunnison, Lake, Park, Pitkin, and Summit Counties. It is found on rocky slopes and turf hillsides above timberline at elevations between 11,400 to 13,200 ft (Spackman et al., 1997). Based on these habitat requirements, the molybdenum milk-vetch is not expected to occur in any of the Treatment Areas. Therefore, molybdenum milk-vetch will not be further evaluated.

Myrtle-leaf Willow (Salix myrtillifolia)

Status: Region 2 Forest Service Sensitive Species

Myrtle-leaf willow is a wetlands plant that has a disjunct distribution in Colorado (Park County). It can be found in calcareous fens at approximately 9,300 ft elevation (Forest Service, 1994). Based on these habitat requirements, the myrtle-leaf willow is not expected to occur in any of the Treatment Areas. Therefore, myrtle-leaf willow will not be further evaluated.

Narrow-leaved Moonwort (Botrychium lineare)

Status: Region 2 Forest Sensitive Species

The narrow-leaved moonwort is sparsely distributed throughout the mountainous portions of Colorado. Locally this species appears to occur only on Pikes Peak (Forest Service, 1994). Other locations have been recorded in New Brunswick, Quebec, Idaho, Montana, Oregon, and California. This species occurs on grassy slopes, among medium-height grasses, and along edges of streamside forests at elevations from 7,900 to 9,500 ft (Spackman et al., 1997). All known occurrences of this species and its historic range are well outside of the treatment areas, therefore narrow-leaved moonwort will not be further evaluated.

Northern Blackberry *(*Cylactis arcticus *ssp.* acaulis*)*

Status: Region 2 Forest Service Sensitive Species

The northern blackberry's distribution includes Clear Creek and Park Counties. It is found in willow bogs and mossy streamsides at elevations from 8,600 to 9,700 ft (Forest Service, 1994). Based on these habitat requirements and the use of buffers, the northern blackberry is not expected to occur in any of the Treatment Areas. Therefore, northern blackberry will not be further evaluated.

Pale Moonwort (Botrychium pallidum)

Status: Region 2 Forest Sensitive Species

Pale moonwort is found in mountain meadows of Teller County. It has also been reported in Boulder, Conejos, Gunnison, Larimer, Park, San Juan and Teller Counties. Its habitat consists of open exposed hillsides, burned or cleared areas and old mining sites from an elevation of 9,800 to 10,600 ft (Spackman et al., 1997). All reported sightings of the species are outside of the treatment areas and the project area elevational range. Therefore, the pale moonwort would not be expected to occur within the project area and will not be further evaluated.

Reflected Moonwort (Botrychium echo*)*

Status: Region 2 Forest Service Sensitive Species

The reflected moonwort is found in mountain meadows in central Colorado, including El Paso and Clear Creek Counties (just northwest of the Project Area). It grows in gravely soils near roads and trails, rocky hillsides, grassy slopes, and meadows at elevations between 9,500 and 11,000 ft (Forest Service, 1994). Based on these habitat requirements and the location of known occurrences, the reflected moonwort is not expected to occur in any of the Treatment Areas. Therefore, the reflected moonwort will not be further evaluated.

Rolland's Bulrush *(*Scirpus rollandii*)*

Status: Region 2 Forest Service Sensitive Species

Rolland's bulrush is a wetland/alpine species that has a disjunct distribution in Colorado. It is known to occur in Horseshoe Cirque on South Park Ranger District in wet moss willow carrs. This rush grows in calcareous soils (Forest Service, 1994). Based on these habitat requirements and the use of buffers,

Rolland's bulrush is not expected to occur in any of the Treatment Areas. Therefore, Rolland's bullrush will not be further evaluated.

Sea Pink (Armeria maritima *ssp.* siberica)

Status: Region 2 Forest Sensitive Species

Sea pink is an alpine species with a widely disjunct distribution in Colorado. It is found in Summit and Park Counties and occurs on the South Park and South Platte Ranger Districts (Forest Service, 1994). Its habitat consists of grassy tundra slopes, wet, sandy, or spongy organic soils at 11,900 to 13,000 ft in elevation (Spackman et al., 1997). Based on these habitat requirements, sea pink is not expected to occur in any of the Treatment Areas. Therefore, sea pink will not be further evaluated.

Smith's Whitlow-grass (Draba smithii*)*

Status: Region 2 Forest Service Sensitive Species

Smith's Whitlow-grass is endemic to south-central Colorado (Custer, Las Animas, Mineral, and Saguache Counties). It is found between 8,000 and 11,000 ft in talus slopes and crevices and between rocks in shaded protected sites (Spackman et al., 1997). Known occurrences of this species include Wagon Wheel Gap, the high country of the Sangre de Cristo Range, and the Raton Mesa-Fishers Peak area above Trinidad. Based on these habitat requirements, Smith's whitlow-grass is not expected to occur in any of the Treatment Areas. Therefore, Smith's whitlow-grass will not be further evaluated.

Smooth Rockcress (Braya glabella)

Status: Region 2 Forest Sensitive Species

Smooth rockcress is an alpine species with a disjunct distribution in central Colorado, including Chaffee, Gunnison, Park, and Pitkin Counties. It can be found on calcareous substrates (Leadville limestone and Manitou dolomite), sparsely vegetated slopes above timberline with fine gravels or on disturbed sites associated with inactive mines between 12,000 and 12,300 ft (Spackman et al., 1997). Based on these habitat requirements, smooth rockcress is not expected to occur in any of the Treatment Areas. Therefore, smooth rockcress will not be further evaluated.

Weber's Monkey-flower (Mimulus gemmiparus)

Status: Region 2 Forest Sensitive Species

Weber's monkey-flower is endemic to Colorado (Grand, Jefferson, Larimer, and Park Counties). It occurs on granitic seeps, slopes and alluvium in open sites within spruce-fir and aspen forests 8,500 to 10,500 ft in elevation (Spackman et al., 1997). Based on these habitat requirements, Weber's monkey-flower is not expected to occur in any of the Treatment Areas. The action alternatives will create more suitable habitat for the species in the long-term. Therefore, the Weber's monkey-flower will not be further evaluated.

Wooly Willow (Salix lanata *L. ssp*. calcicola)

Status: Region 2 Forest Service Sensitive Species

The wooly willow is a wetland species with a disjunct distribution in Colorado (including Gunnison and Park Counties). It is known to occur in Horseshoe Cirque on South Park Ranger District, on calcareous lakeshores or edges of tarns at approximately 12,000 ft elevation (Forest Service, 1994). Based on these habitat requirements, wooly willow is not expected to occur in any of the Treatment Areas. Therefore, the wooly willow will not be further evaluated.

STATE PROTECTED SPECIES

Boreal Toad (Bufo boreas boreas)

Status: Federal candidate, state endangered and Region 2 Forest Service Sensitive Species

The boreal toad occurs throughout most of the mountainous portion of Colorado, but appears to be absent from the Wet Mountains and Pikes Peak region. They are most common between 8,500 and 11,000 ft in elevation. This toad inhabits marshes, wet meadows, and the margins of streams, beaver ponds, lakes, and glacial kettle ponds in subalpine areas of Colorado. It is found in shallow water or among sedges and shrubby willows where soil is damp or wet (Forest Service, 1994). Based on habitat descriptions, the boreal toad may potentially occur within the Project Area but not within any treatment areas. Riparian buffers will be employed and suitable habitat for this species is not expected to be impacted. Therefore, no impacts are expected to the boreal toad under implementation of the action alternatives.

Peregrine Falcon (Falco peregrinus)

Status: Region 2 Forest Service Sensitive Species and Colorado threatened species

The peregrine falcon is a rare spring and fall migrant in western valleys, foothills, lower mountains, mountain parks, and on the eastern plains. It is a rare summer resident in foothills and lower mountains. Breeding pairs nest on cliffs and forage over adjacent coniferous and riparian forests, and at times other habitats. Migrants and winter residents occur mostly around reservoirs, rivers, and marshes, but may also be seen in grasslands, and agricultural areas (Andrew et al., 1992). Active aeries are known on the San Isabel and the Pike National Forests (USFS, 1994).

CNHP information (from NDIS 1999) indicates that there are no conservation sites in the Project Area, and that the falcon may occur in the northeastern portion of the Project Area including the Buffalo Creek and Waterton/Deckers Composite watersheds, specifically near Foxton and Eagle Rock. Forage areas, along river corridors, may be affected by the vegetation treatment activity in the action alternatives, however the long-term trend would be an increase in forage. Therefore, no impacts are expected to the peregrine falcon under implementation of the action alternatives.

CUMULATIVE EFFECTS

Alternative A would result in no direct or indirect effects to species or their habitats. A potential long-term impact would be a continuing increase in fire risk, compared to the action alternatives. The

cumulative effect of this alternative would be basically the same effect as the current and future actions. There would be no additional cumulative effect from this alternative.

Alternative B and C (action alternatives) would cause direct loss of vegetation due to the treatments, particularly logging, within or adjacent to sensitive species habitat in Pike National Forest. These impacts include the short-term loss of habitat through thinning and the creation of openings within the forest itself, the displacement of foraging animals, the loss of nesting trees and other habitats, and crushing and mortality of sensitive plants that may occur within the treatment areas by use of harvesting equipment during logging. However, these negative short-term impacts are outweighed by positive long-term effects, including the creation, improvement, and enhancement of habitat within the Pike National Forest and the decreased risk of catastrophic fires, like the Hi-meadows Fire in June 2000.

Virtually all species discussed in this Biological Evaluation will benefit from a more heterogeneous forest structure. This will allow for increased diversity of habitat and populations. The planting of 1,000 acres of trees in the Buffalo Creek Burn area will benefit all species in that area by creating habitat that was lost in the fire. For those species in this Biological Evaluation that require riparian habitat, the creation of 60 acres of riparian habitat in the Buffalo Creek Burn area will benefit from this new habitat. These same species will benefit from the improvement of the river trail systems by minimizing impacts on riparian areas by reducing potential human interference. For the species discussed in this Biological Evaluation whose movement might be restricted by roads, the reclamation and revegetation of 25 miles of roads will increase the ability of movement for these species. This action will also provide grassland habitat for those species dependant on grasslands. The current and future restoration actions would also contribute to enhancement of habitat and associated improved population viability. Therefore, the action alternatives would have a positive cumulative effect on forested habitats and sensitive species on the Pike National Forest.

REFERENCES

Andrew, R. and R. Righter. 1992. Colorado Birds. Denver, Colorado: The Denver Museum of Natural History. 442 pp.

Cary, M. 1911. A Biological Survey of Colorado. N. Ameri. Fauna. 33:1-256.