APPENDIX I

BIOLOGICAL ASSESSMENT OF ENDANGERED AND THREATENED SPECIES

ARAPAHO AND ROOSEVELT NATIONAL FORESTS AND PAWNEE NATIONAL GRASSLAND

I. INTRODUCTION

Section 7 of the Endangered Species Act (ESA), as amended, directs Federal departments and agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any listed threatened or endangered species, or result in the destruction or adverse modification of their critical habitats

Part 402.12 of ESA requires biological assessments (BAs) for Federal actions that are "major construction activities" to evaluate the potential effects of the action on listed and proposed species and designated and proposed critical habitat. Part 402 14 of ESA requires formal consultation with the US Fish and Wildlife Service (FWS) be initiated when any act may adversely affect listed species or critical habitat. Part 402.10 of ESA requires conferring with the FWS on any action which is likely to jeopardize the continued existence of any proposed species or result in the distruction or adverse modification of proposed critical habitat. This BA estimates the effects of implementing the Land and Resource Management Plan (LRMP) on endangered, threatened and proposed species.

II. PROPOSED ACTION

The proposed action is implementation of the LRMP Included are those activities and projects described in this EIS (Alternative B) and LRMP for the Arapaho and Roosevelt National Forests and Pawnee National Grassland.

III. STATUS AND BIOLOGY OF LISTED SPECIES

The species currently documented as occurring on NFS lands, suspected to occur on NFS lands but unconfirmed, or may not occur on NFS land but may be impacted by FS management actions (Appendix G) are assessed

Endangered Species

Species Currently Documented to Occur on NFS Lands

Birds

American peregrine falcon *Falco peregrinus anatum*

Occurrence ARNF and PNG

Habitat Usually inhabits open country from tundra and seacoasts, to high mountains and more open forested regions, preferably where there are rocky cliffs with lodges overlooking rivers, lakes or other water and an abundance of birds. Sometimes breeds in cites Requires cliffs or other nesting habitat near water, and an abundance of prey Tends to return to same nesting sites. Pursues prey, primarily birds, after sighting from perch or while soaring. Small- to medium-sized birds are usually captured in flight; birds too large to be carried are knocked to the ground Feeds on a wide variety of birds; occasionally takes mammals, some insects and fishes Can migrate long distances in relatively short time period (USDA Forest Service 1991).

Threats: Sensitive to human disturbances during nesting. Low reproductive success. Is recovering from DDT and related pesticide thinning of eggshells. Has possible continued exposure to pesticides in Mexico and Central America

Species May Not Occur on NFS Lands, but May be Impacted by FS Management Actions

Birds

least tern *Sterna antillarum*

Impact area of concern ARNF

Habitat: Inhabits river sandbars, inland islands, bread areas of sand or gravel beaches, and newly cleared land along the coast Frequents salt plains in Oklahoma. Requires open, sandy coastal beaches, and river sandbars for nesting Nests solitarily or in scattered colonies Shares habitat with piping plover in the Great Plains Skims the surface of the water or hovers and dives for food, sometimes spears fish with closed bill Eats sand eels, shrimp, and small fish (USDA Forest Service 1991)

Threats: Loss of wide gravel bars and sandy banks along major rivers could reduce useable habitat. Disturbance of nest site, or nesting habitat could negatively influence populations. Prey sources could also be negatively influenced, resulting in reduced tern populations.

piping plover *Charadrius melodus*

Impact area of concern ARNF

Habitat: Inhabits exposed, sparsely vegetated sandy shores and islands of shallow lakes and ponds, dry sandy ocean beaches, higher portions of strand near dunes, and large open

sandy areas, especially where scattered grass tufts are present In winter it is found on beaches, margins of lagoons, and areas of rubble Requires unspoiled, undeveloped beaches with little vegetation. Forages on beaches, along margins of watercourses, and on tidal sandflats for marine worms, insects such as fly larvae and beetles, crustaceans, and mollusks (USDA Forest Service 1991).
Threats: Reduction of flooding of major waterways due to water diversion projects has allowed vegetation to overgrow sand bars and shorelines of possible habitat. Mostly a migrant in this area. Easily disturbed by human activity.

whooping crane *Grus americana*

Impact area of concern· ARNF and PNG
Habitat· Inhabits marshy areas interspersed with shallow potholes having soft marly bottoms and a pH range of 7 6 to 8 3. Primarily inhabits aspen parkland, but also in northern coniferous forest, shortgrass plains, northern mixed forest, river deltas, and tundra. Winters on tallgrass prairies, salt flats, coastal marshes, lagoons, and brackish water areas. Requires large, shallow wetlands that provide visibility over a wide area and are free of human disturbance. In winter, primarily feeds on blue crabs, but also eats aquatic insects, freshwater minnows, shrimps, crayfishes, marine worms, snails, clams, sprouting corn, acorns, grasses, sedges, and other plants (USDA Forest Service 1991).
Threats. Has very low reproductive success, and has limited breeding population. Vunerable to human disturbance, habitat loss, and limited genetic pool. Very low populations at this time.

Eskimo curlew *Numemius borealis*

Suspected occurrence PNG
Habitat· Nests on arctic tundra; winters in South America. Most sightings in this century have been along the Texas coast during spring migration This species is almost extinct (National Geographic, 1987). There is one accidental spring migrant record in Colorado, and two were collected in Denver, April, 1882 (Andrews and Righter, 1992). Curlew uses wet meadows for feeding on its migrational path (USDA Forest Service 1995a)
Threats The Eskimo curlew is almost extinct at this time Management activities that influence downstream water flows in the South and North Platte River Drainages are of concern

Fish

bonytail chub *Gila elegans*

Impact area of concern. ARNF
Habitat. Originally abundant throughout the Colorado River basin, buy it is currently restricted to deep canyon-bound portions of the Yampa, White, Gunnison, and Colorado Rivers. Found in swift water canyon areas of large rivers It is usually collected in eddies adjacent to the swift water over a clay, mud, sand, gravel, or rubble bottom Requires a

moderate to swift current and is tolerant of high turbidities. Omnivorous, feeds primarily on surface debris with terrestrial insects and plant debris making up a large portions of the diet (USDA Forest Service 1981)

Threats. Damming and water diversion projects along the western slope has reduced natural water temperatures and turbidity requirements for the chub Exotics also out-compete the chub after habitat alterations Reduced populations are having difficulty expanding population into former ranges

Colorado squawfish *Ptychocheilus lucius*

Impact area of concern ARNF

Habitat: Originally occupied the Colorado River drainage, including the Green, Yampa, Colorado, Gunnison, White, Dolores, San Juan, and Animas Rivers Small populations of these fish are now limited to portions of the Yampa, Gunnison, and Colorado Rivers. Inhabits the main channel of large rivers and are adapted to widely fluctuating water levels, silt loads and temperatures. Young of the year inhabit backwaters while adults inhabit eddies, pools and pockets just outside the mainstream. Spawn when temperature exceeds 70 degrees, and turbidity decreases This huge minnow is a voracious predator which feeds primarily on fish Young feed on aquatic insects and small invertebrates (USDA Forest Service 1981)

Threats· Damming and dam water releases has cooled temperatures of rivers hindering spawning of squawfish. Regulated flows have also reduced backwater nursuries for young Limited populations are having a difficult time recolonizing past habitats

humpback chub *Gila cypha*

Impact area of concern: ARNF

Habitat: Once abundant throughout the Colorado River basin, but it is currently restricted to deep canyon bound portions of the Green, Yampa, Gunnison, and Colorado Rivers Adults prefer eddies and runs adjacent to swift water over a sand bottom Requires warm water temperatures for spawning. May be a surface feeder (USDA Forest Service 1981)

Threats. Construction of dams has reduced suitable habitat and cold tailwaters have prevented spawning for several miles downstream Reduced populations are having a difficult time with interspecific competition and reduced breeding populations

razorback sucker *Xyrauchen texanus*

Impact area of concern. ARNF

Habitat Originally widely distributed throughout the Colorado River system Now found in limited portions of the Yampa, Colorado, and Gunnison rivers. This sucker is well adapted to the large river environment characterized by enormous fluctuations in flows, variable water quality and shifting substrate. It is usually found in water 4-8 feet deep with a strong current over a sand, mud, or rock bottom It rests in backwater areas just outside the main current. Feed off the bottom and in open water. Zooplankton, aquatic insect larvae, and filamentous algae constitute the principal foods of this sucker (USDA

Forest Service 1981).

Threats Decline of the razorback sucker is a result of cold tailwaters of dams which lower water temperature to a point that prevents spawning and increased water diversions which reduce instream flow and alter the mainstream river habitat utilized Also has been known to hybridize with flannelmouth sucker.

Invertebrates

American burying beetle *Nicrophorus americanus*

Impact area of concern ARNF

Habitat: Historically occurred in Nebraska, where a single specimen was found in 1988 Wetlands are considered to be the remaining, limited areas of refuge in Nebraska Data is not available for distribution in Colorado USDA Forest Service 1995a)

Threats: Loss of riparian or wetland habitat could reduce potential habitat.

Threatenend Species

Species Currently Documented to Occur on NFS Lands

Birds

bald eagle Haliaeetus leucocephalus

Occurrence· ARNF and PNG

Habitat Closely associated with lakes and large rivers in open areas, forests and mountains, and along seacoasts In Alaska and Canada, where human disturbance is slight, habitat is composed of a narrow strip of land along lake shores and rivers that provides trees for nesting, snags, but also live trees or boulders that provide good visibility for perching Winters in coastal habitats and inland where ice-free waters allow access to fish. Requires large bodies of water containing abundant fish resources, large trees for nesting, perching, and roosting, and freedom from human disturbance. Shows strong nest site fidelity Feeds primarily on fish it catches or takes from other eagles or fish eating birds. Will feed on waterfowl and other birds, carrion, small to medium sized mammals, and turtles. Inlands, subsists mainly on dead waterfowl and carrion during winter (USDA Forest Service 1991)

Threats Loss of habitat and prey sources could reduce populations Also susceptable to poaching, and human disturbance during nesting Recovering from habitat degradation and pesticide related problems

Fish

greenback cutthroat trout Oncorhynchus clarki stomias

Occurrence ARNF

Habitat: Originally ranged throughout the South Platte and Arkansas River drainages and are currently restricted to several headwater streams within this range Inhabits clear, cold, and well-oxygenated streams with a gravel to rocky substrate and abundant riparian vegetation. Requires cover created by undercut banks, overhanging vegetation or eddies caused by instream boulders This trout does best in waters where other trout species are absent because of competition and the tendency towards hybridization Requires water temperatures not exceeding 70 degrees, and high oxygen concentration Cutthroat are opportunistic feeders Fingerlings feed mainly on insects while older trout feed mainly on fish if available (USDA Forest Service 1981)

Threats: Hybridization, competition from non-natives, and exotic disease (whirling disease) introductions are the main threats to greenback cutthroat trout Many of historic greenback trout streams are stocked with non-natives which out compete greenbacks. Degradation of stream and riparian habitat, specifically loss of habitat components and increased water temperature, also can create suboptimal conditions for greenback cutthroat trout.

Species or Habitat Suspected to Occur on NFS Lands, but Unconfirmed

Birds

Mexican spotted owl Strix occidentalis lucida

Suspected occurrence. ARNF

Habitat Inhabits dense mixed-coniferous forests with crown closures of at least 80 percent or mixed woodlands and deeply shaded canyons composed of Douglas-fir, white fir, and ponderosa pine, and canyons in pinon-juniper areas with small and widely scattered patches of old Douglas-firs Summer roost sites are in cool microclimates, generally with a closed canopy and/or on north facing slopes Closely associated with densly wooded riparian canyons (Andrews and Righter 1992) Preys upon woodrats, squirrels, mice, and other rodents Nests in cliff faces that are under forest canopy There are no records of Mexican spotted owls nesting in trees in Colorado (Reynolds 1990)

Threats: On the Arapaho-Roosevelt, suitable habitat appears to be limiting factor in owls dispersal. Lack of growing-season moisture, and insect infestation (bark beetles) seem to limit potential for more old-growth mixed conifer, riparian canyons Potential habitat limited to low elevation canyons at 6,000-7,000 feet (Hughes and Petterson 1994)

Species May Not Occur on NFS Lands, but May be Impacted by FS Management Actions

Plants

western prairie fringed orchid Platanthera praeclara

Impact area of concern ARNF

Habitat Few scattered populations remain on the Great Plains from North Dakota to Oklahoma where previous signicant populations were once known to occur. The orchid is found in relatively intact native plant associations in mesic to wet mesic tallgrass and sandhill prairies that are adapted to fire In Kansas and Nebraska, the orchid can be found in subirrigated meadows usually along river floodplains Apparently the species requires considerable light, subsurface moisture and maybe above average precipitation to bloom. It is not well adapted to competition from other plants, and fire appears important in removing choking or shading vegetation

Threats: Significant declines are largely due to habitat loss by conversion of prairies to cultivated land, fire suppression, haying and urbanization. Succession of habitats to thickets or river forests create conditions that are too shady for the orchid to survive Mowing of hay fields is considered detrimental since most are cut near peak bloom or during early seed set. Stream channelization and draining of seasonally wet prairies in the Nebraska and South Dakota sand hills probably changed the hydology of many prairies to the detriment of the orchid

Ute ladies-tresses Spiranthes diluvialis

Impact area of concern: ARNF

Habitat: The orchid is known from several scattered populations in Colorado, Nevada, Utah and Wyoming It inhabits moist soils in mesic or wet meadows near springs, lakes, and perennial streams; usually sites where the surrounding vegetation is not too dense, overgrown, or overgrazed The habitat at some sites has been enhanced by irrigation All known populations are between the elevations of 4500 and 6800 feet. The relatively poor competitiveness of Ute ladies'-tresses in densely overgrown meadows indicates that the orchid requires periodic removal of competing vegetation

Threats: Ute ladies'-tresses has been adversely impacted by modification of its riparian habitat, urbanization and heavy agricultural use in rural areas. About half of the populations documented by specimens no longer exist Extant populations are usually very small and vulnerable to habitat changes Many orchid species take many years to reach maturity and reproductively mature plants do not flower or set seed every year Under natural conditions, reproduction appears to be very low Herbivory can be a significant threat Cattle are known to eat the species, as are small rodents (probably voles).

Proposed Species

Species or Habitat Suspected to Occur on NFS Lands, but Unconfirmed

Mammals

Preble's meadow jumping mouse *Zapus hudsonius preblei*

Suspected occurrence ARNF

Habitat Occurs in riparian meadows where tall grass/shrubs are common. Has been known to move in order to find suitable moist habitats in hot, dry weather. Occupies similar habitats as voles, but does not use or bild runways, instead "crawls" through vegetation Feeds on animal matter in spring when it comes out of hibernation, and feeds on seeds and vegetable matter rest of season (Fitzgerald 1994). Site below 7,400 feet in or near wet meadows (both natural and those created by seeps from human structures), native hayfields, stream channels (perrenial and intermittent), riparian habitats, or floodplains are considered potential habitat (USDI 1997)

Threats: Populations in Colorado are thought to be disjunct relic populations from ice age when more tall grass prairie inhabited region. Distribution of species is strictly limited to a few island populations. Sensitive to conversion of wetland meadows to irrigation reservoirs, or other loss of habitat. Preyed upon by a number of larger species, and has very high winter mortality (Armstrong et.al 1997 and Fitzgerald 1994).

V. Effects to Listed Species

Considering the numerous, varied activities and projects allowed and/or anticipated and the range of habitats affected, it is estimated that implementation of the Land and Resource Management Plan may affect any or all listed and proposed species Considering the intent and design of the Plan which includes goals, standards and guidelines for resource protection, desired conditions and management area emphases, as well as the estimated effects in the draft EIS, it is further estimated that implementation is not likely to adversely affect any species

To further assure that potential adverse effects are avoided, determination of effects will be done for each project or activity carried out to implement the Plan according to ESA, involving both formal and informal consultation with the FWS as appropriate for endangered and threatened species For proposed species, conference with the FWS will occur for any project that may jeopardize the species or habitat

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