

**DRAFT ENVIRONMENTAL ASSESSMENT  
PROPOSAL OF CRITICAL HABITAT  
FOR PREBLE'S MEADOW JUMPING MOUSE  
(*Zapus hudsonius preblei*)**

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## **1.0 Purpose for the Proposed Action**

The purpose of the proposed action is to designate critical habitat for the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) (Preble's) by utilizing provisions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*)(Act). The purpose of the Act is to conserve the ecosystems upon which endangered and threatened species depend. Critical habitat designation identifies areas essential to the survival and recovery of the Preble's, and describes physical and biological features within critical habitat that require special management considerations to achieve conservation of the species.

## **2.0 Need for the Action**

The need for this action is to comply with section 4 of the Act, which requires that critical habitat be designated for endangered and threatened species unless such designation is not prudent. The final rule (62 FR 26517) was published on May 13, 1998, designating the Preble's as threatened throughout its range. The final listing rule indicated that designation of critical habitat was not prudent because publication of specific locations would increase the threat of vandalism or intentional destruction of habitat. Thus, no further action was subsequently taken to designate critical habitat for the Preble's. On June 9, 2000, the Biodiversity Legal Foundation, Biodiversity Associates, Center for Biological Diversity, South Dakota Resources Coalition, David C. Jones, and Dennis Williams filed a suit in the U.S. District Court for the District of Colorado (Civil Action Number 00-D-1180) against the Department of the Interior and the U.S. Fish and Wildlife Service (Service) over our failure to designate critical habitat for both the Preble's and the Topeka shiner, and for failure to prepare and implement a recovery plan for the Preble's. A court-mediated settlement was reached with the litigants that included a June 4, 2002, date for submission of proposed critical habitat for the Preble's to the Federal Register for publication and a June 4, 2003, date for submission of final critical habitat for the Preble's to the Federal Register. They agreed to dismiss their claim that the Service failed to prepare a recovery plan for the Preble's and subsequently agreed to extend the date for submission of the proposed critical habitat for the Preble's to July 8, 2002. On July 17, 2002, the rule proposing critical habitat for Preble's was published in the Federal Register (67 FR 47154).

Our position is that, outside the Tenth Circuit, we do not need to prepare environmental analyses as defined by the National Environmental Policy Act (NEPA) in connection with designating critical habitat under the Act of 1973, as amended. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244). This assertion was upheld in the courts of the Ninth Circuit (*Douglas County v. Babbitt*, 48 F .3d 1495 (Tenth Cir. Ore. 1995), cert. denied 116 S. Ct. 698 (1996)). However, when the range of the species includes States within the Tenth Circuit, pursuant to the Tenth Circuit ruling in *Catron County Board of Commissioners v. U.S. Fish and Wildlife Service*, 75 F .3d 1429 (Tenth Cir. 1996), we will complete a NEPA analysis with an Environmental Assessment. The range of the Preble's includes the States of Wyoming and Colorado, which are within the Tenth Circuit; therefore, we must complete an analysis.

Critical habitat is one of several provisions of the Act that aid in protecting the habitat of listed species until populations have recovered and threats have been minimized so that the species can be removed from the list of threatened and endangered species. Critical habitat designation is intended to assist in achieving long-term protection and recovery of the Preble's and the ecosystems upon which it depends. Section 7(a)(2) of the Act (50 CFR §402.13) requires consultation for Federal actions that may affect critical habitat to avoid destruction or adverse modification of this habitat. Further explanation of critical habitat and its implementation is provided below.

## 2.1 Background

Much of what is now known about the Preble's meadow jumping mouse is a result of information gained from the early 1990s to the present. Following the Preble's listing as a threatened species in 1998, knowledge about its distribution, habitat requirements, abundance, and population dynamics has grown substantially. However, much of the biology and ecology of the Preble's is still not well understood. Where gaps in knowledge exist, scientists have relied on information from closely-related subspecies of the meadow jumping mouse (*Z. hudsonius*) whose biology and ecology appear similar to the Preble's. Information presented below that is specific to the Preble's is described as being relevant to this subspecies, the Preble's, but when information pertains to what is known about other subspecies of meadow jumping mouse, it will be described as relevant to the species, the meadow jumping mouse. Portions of the following have been adapted from the general biology section of Preble's Meadow Jumping Mouse Recovery Team's February 27, 2002, Draft Discussion Document on a recovery plan for the Preble's.

### TAXONOMY/DESCRIPTION

The Preble's meadow jumping mouse is a member of the family Dipodidae (jumping mice) with four living genera, two of which, *Zapus* and *Napaeozapus* are found in North America (Hall 1981). The three living species within the genus *Zapus* are *Z. hudsonius* (the meadow jumping mouse), *Z. princeps* (the western jumping mouse), and *Z. trinotatus* (the Pacific jumping mouse).

Edward A. Preble (1899) first documented the meadow jumping mouse from Colorado. Krutzsch (1954) described the Preble's as a separate subspecies of meadow jumping mouse limited to Colorado and Wyoming. The Preble's is now recognized as one of twelve subspecies of meadow jumping mouse (Hafner et al. 1981).

The Preble's meadow jumping mouse is a small rodent with an extremely long tail, large hind feet and long hind legs. The tail is bicolored, lightly-furred and typically twice as long as the body. The large hind feet can be one-third again as large as those of other mice of similar size. The Preble's has a distinct, dark, broad stripe on its back that runs from head to tail and is bordered on either side by grey to orange-brown fur. The hair on the back of all jumping mice appears coarse compared to other mice. The underside hair is white and much finer in texture. Total length of adult Preble's mice is approximately 7 - 10 inches (in) (180 - 250 millimeters (mm)), and tail length is 4 - 6 in (108 - 155 mm) (Krutzsch 1954, Fitzgerald et. al. 1994).

The average weight of 120 adult Preble's mice captured early in their active season (prior to June 18) was 0.6 ounce (oz) (18 grams (g)); included were 10 pregnant females weighing more than 0.8 oz (22 g) ( Meaney et al., in review).

While the western jumping mouse is a distinctly separate species from the Preble's, it is similar in appearance and can easily be confused with the Preble's. The range of the western jumping mouse in Wyoming and Colorado is generally west of and at higher elevations than the range of the Preble's. However, they appear to coexist over portions of their range in southeastern Wyoming and Colorado (Long 1965, Clark and Stromberg 1987, Schorr 1999, Meaney et al. 2001). Compared to the western jumping mouse, the Preble's is generally smaller, has a more distinctly bicolored tail, and a less obvious dorsal stripe. Kruttsch (1954) described skull characteristics useful for differentiating the two species. Previously, studies found that the meadow jumping mouse could be distinguished from the western jumping mouse by a fold in the first lower molar (Klingener 1963, Hafner 1993). However, this molar characteristic is not always reliable due to tooth wear as animals age; specimens showing the tooth fold are presumed to be the Preble's, while specimens lacking the fold may be either species (Klingener 1963, Conner and Shenk, in review). A recent reevaluation of Preble's and western jumping mouse morphology showed that by using a combination of six skull measurements and this molar characteristic, the Preble's could be distinguished from the western jumping mouse (Conner and Shenk, in review).

A genetic study that analyzed tissue samples of meadow jumping mice and western jumping mice from throughout North America concluded that the Preble's is distinct from other subspecies of the meadow jumping mouse and from the western jumping mouse (Riggs et al. 1997, Hafner 1997). While results from the genetic study supported the taxonomic status of Preble's, samples taken from jumping mice in a few Wyoming and Colorado locations produced unexpected results. In these cases, samples from assumed Preble's mice at low elevations were determined to be the western jumping mouse and samples from assumed western jumping mice at high elevations were determined to be the Preble's. Hafner (1997) suggested that limited hybridization, recently or at a past time when there was co-occurrence of the western jumping mouse and the Preble's, could have affected the results of the study.

## GEOGRAPHIC RANGE

The Preble's meadow jumping mouse is found along the foothills in southeastern Wyoming, southward along the eastern edge of the Front Range of Colorado to Colorado Springs, El Paso County (Hall 1981, Clark and Stromberg 1987, Fitzgerald et al. 1994). Knowledge about the current distribution of the Preble's comes from collected specimens, and live-trapping locations from both range-wide survey efforts and numerous site-specific survey efforts conducted in Wyoming and Colorado since the mid-1990s. Recently collected specimens are housed at the Denver Museum of Nature and Science (DMNS) and survey reports are filed with the Service's Field Offices in Colorado and Wyoming.

In Wyoming, capture locations of mice confirmed as the Preble's, and locations of mice identified in the field as Preble's and released, extend in a band from the town of Douglas southward along the Laramie Range to the Colorado border, with captures east to eastern Platte County and Cheyenne, Laramie County. In Colorado, the distribution of the Preble's forms a band along the Front Range from Wyoming southward to Colorado Springs, El Paso County with eastern marginal captures in western Weld County, western Elbert County and north-central El Paso County.

The Preble's is likely an Ice Age relict (Hafner *et al.* 1981, Fitzgerald *et al.* 1994). Once the glaciers receded from the Front Range of Colorado and the foothills of Wyoming and the climate became drier, the Preble's was confined to the riparian (river) systems where moisture was more plentiful. The semi-arid climate in southeastern Wyoming and eastern Colorado limits the extent of riparian corridors and restricts the range of the Preble's in this region. The Preble's has not been found east of Cheyenne in Wyoming or on the extreme eastern plains in Colorado. The eastern boundary for the subspecies is likely defined by the dry shortgrass prairie, which may present a barrier to eastward expansion (Beauvais 2001).

The western boundary of the Preble's range in both States appears related to elevations along the Laramie Range and Front Range. The Service has used 7,600 ft (2,300 m) in elevation as the general upward limit of Preble's habitat in Colorado (U.S. Fish and Wildlife Service 1998). Recent morphological examination of specimens has confirmed the Preble's to a elevation of approximately 7,600 ft (2,300 m) in Colorado (Meaney *et al.* 2001) and to 7,750 ft (2,360 m) in southeastern Wyoming (Cheri Jones, DMNS, *in litt.*, 2001). In a modeling study of habitat associations in Wyoming, Keinath (2001) found suitable habitat predicted in the Laramie Basin and Snowy Range Mountains (west of known Preble's occurrence) but very little suitable habitat predicted on the plains of Goshen, Niobrara, and eastern Laramie counties (east of known Preble's occurrence).

## ECOLOGY/LIFE HISTORY

Typical habitat for the Preble's meadow jumping mouse is comprised of well-developed plains riparian vegetation with adjacent, relatively undisturbed grassland communities and a nearby water source. Well-developed plains riparian vegetation typically includes a dense combination of grasses, forbs, and shrubs; a taller shrub and tree canopy may be present (Bakeman 1997). When present, the shrub canopy is often willow (*Salix* spp.), although other shrub species, including snowberry (*Symphoricarpos* spp.), chokecherry (*Prunus virginiana*), hawthorn (*Crataegus* spp.), Gambel's oak (*Quercus gambelli*), alder (*Alnus incana*), river birch (*Betula fontinalis*), skunkbrush (*Rhus trilobata*), wild plum (*Prunus americana*), lead plant (*Amorpha fruticosa*), dogwood (*Cornus sericea*) and others may also occur (Bakeman 1997, Shenk and Eussen 1998).

Preble's have rarely been trapped in uplands adjacent to riparian areas (Dharman 2001). However, in detailed studies of the Preble's movement patterns using radio telemetry, the Preble's has been found feeding and resting in adjacent uplands (Shenk and Sivert 1999b, Ryon 1999, Schorr 2001). These studies reveal that the Preble's regularly uses uplands at least as far

out as 328 ft (100 m) beyond the 100-year floodplain (Ryon 1999, Tanya Shenk, Colorado Division of Wildlife, *in litt.*, 2002). Preble's can also move considerable distances along streams, as far as 1.0 mile (mi) (1.6 kilometer (km)) in one evening (Ryon 1999, Shenk and Sivert 1999a). Adjacent uplands used by the Preble's meadow jumping mouse are extremely variable ranging from open grasslands to ponderosa pine (*Pinus ponderosa*) woodlands (Corn et al. 1995, Pague and Gruneau 2000).

White and Shenk (2000) determined that riparian shrub cover, tree cover, and the amount of open water nearby are good predictors of Preble's densities, and summarized abundance estimates from nine sites in Colorado for field work conducted during 1998 and 1999. Estimates of abundance ranged from 6 to 110 mice per mile (4 to 67 mice per km of stream) and averaged 53 mice per mile (33 mice per km) of stream. A study compared habitats at Preble's capture locations on the Department of Energy's Rocky Flats Environmental Technology Site in Jefferson County, Colorado, and the U.S. Air Force Academy in El Paso County, Colorado. The Academy sites had lower plant species richness at capture locations but considerably greater numbers of the Preble's (Schorr 2001). However, the Academy sites also had higher densities of both grasses and shrubs. It is likely that Preble's abundance is not driven by the diversity of plant species, but by the density of riparian vegetation.

The Preble's is a true hibernator, usually entering hibernation in September or October and emerging the following May, after a potential hibernation period of seven or eight months. Adults are the first age group to enter hibernation because they accumulate the necessary fat stores earlier than young of the year. Similar to other subspecies of meadow jumping mouse, the Preble's do not store food, but survive on fat stores accumulated prior to hibernation (Whitaker 1963). Apparent hibernacula of the Preble's have been located both within and outside of the 100-year floodplain of streams (Shenk and Sivert 1999a, Ryon 2001, Schorr 2001). Those hibernating outside of the 100-year floodplain would likely be less vulnerable to flood-related mortality. Fifteen apparent Preble's hibernacula (hibernation nests) have been located through radio telemetry, all within 260 ft (78 m) of a perennial streambed or intermittent tributary (Bakeman and Deans 1997, Shenk and Sivert 1999a, Schorr 2001). Of these, one was confirmed through excavation (Bakeman and Deans 1997); others were left intact to prevent harm to the mice. Hibernacula have been located under willow, chokecherry, snowberry, skunkbrush, sumac (*Rhus* spp.), clematis (*Clematis* spp.), cottonwoods (*Populus* spp.), Gambel's oak, thistle (*Cirsium* spp.), and alyssum (*Alyssum* spp.) (Shenk and Sivert 1999a). At the Academy, 4 of 6 likely hibernacula found by radio-telemetry were located in close proximity to coyote willow (*Salix exigua*) (Schorr 2001). The one excavated hibernaculum at Rocky Flats was found 30 ft (9 m) above the streambed, in a dense patch of chokecherry and snowberry (Bakeman and Deans 1997). The nest was constructed of leaf litter 12 in (30 cm) below the surface in coarse textured soil.

The Preble's constructs day nests composed of grasses, forbs, sedges, rushes, and other available plant material. They may be globular in shape or simply raised mats of litter, and are most commonly above ground but can also be below ground. They are typically found under debris at the base of shrubs and trees, or in open grasslands (Ryon 2001). An individual mouse can have



multiple day nests in both riparian and grassland communities (Shenk and Sivert 1999a), and may abandon a nest after approximately a week of use (Ryon 2001).

Hydrologic regimes that support Preble's habitat range from large perennial rivers such as the South Platte River to small ephemeral drainages only 3 to 10 ft (1 to 3 m) in width, as at Rocky Flats and in montane habitats. Flooding is a common and natural event in the riparian systems along the Front Range of Colorado. This periodic flooding helps create a dense vegetative community by stimulating resprouting from willow shrubs and allows herbs and grasses to take advantage of newly-deposited soil. Additionally, fire is a natural component of the Colorado Front Range and Wyoming foothills and Preble's habitat naturally fluctuates with fire events. Within shrubland and forest, intensive fire may result in adverse impacts to Preble's populations. However, in a review of the effects of grassland fires on small mammals, Kaufman et al. (1990) found a positive effect of fire on the meadow jumping mouse in one study and no effect of fire on the species in another study.

Meadow jumping mice usually have two litters per year, but there are records of three litters per year. An average of five young are born, but the size of a litter can range from two to eight young (Quimby 1951, Whitaker 1963).

The Preble's is long-lived for a small mammal, in comparison with many species of mice and voles that seldom live a full year. Along South Boulder Creek, Boulder County, Colorado, seven individuals originally captured as adults were still alive two years later, having attained at least three years of age (Meaney et al., in review). However, like many small mammals, the Preble's annual survival rate is low. Preble's survival rates appear to be lower over the summer than over the winter. Over-summer survival rates ranged from 22 to 78 percent and over-winter survival rates ranged from 56 to 97 percent (Shenk and Sivert 1999b, Schorr 2001, Meaney et al., in review).

Preble's have a host of known predators including garter snakes (*Thamnophis* spp.), prairie rattlesnake (*Crotalus viridus*), bullfrog (*Rana catesbiana*), foxes (*Vulpes vulpes* and *Urocyon cinereoargenteus*), house cat (*Felis catus*), long-tailed weasel (*Mustela frenata*), and red-tailed hawk (*Buteo jamaicensis*) (Shenk and Sivert 1999a, Schorr 2001). Other mortality factors of the Preble's include drowning and vehicle collision (Schorr 2001, Shenk and Sivert 1999a). Mortality factors known for the meadow jumping mouse, such as starvation, exposure, disease, and insufficient fat stores for hibernation (Whitaker 1963) are also likely causes of death for the Preble's.

While fecal analyses have provided the best data on the Preble's diet to date, they overestimate the components of the diet that are less digestible. The diet shifts seasonally; it consists primarily of insects and fungus after emerging from hibernation, shifts to fungus, moss, and pollen during mid-summer (July-August), with insects again added in September (Shenk and Sivert 1999a). The shift in diet along with shifts in mouse movements suggests that the Preble's may require specific seasonal diets, perhaps related to the physiological constraints imposed by hibernation (Shenk and Sivert 1999a).

## THREATS

Preble's is closely associated with riparian ecosystems that are relatively narrow and represent a small percentage of the landscape. If Preble's habitat is destroyed or modified, populations in those areas may decline or be extirpated. The decline in the extent and quality of Preble's habitat is considered the main factor threatening the subspecies (U.S. Fish and Wildlife Service 1998, Hafner et al. 1998, Shenk 1998). Habitat alteration, degradation, loss, and fragmentation resulting from urban development, flood control, water development, agriculture, and other human land uses have adversely impacted Preble's populations. Habitat destruction may impact individual Preble's directly or by destroying nest sites, food resources, and hibernation sites, by disrupting behavior, or by forming a barrier to movement.

Although there is little information on past distribution or abundance of the Preble's, surveys have identified various locations where the subspecies was historically present but is now absent (Ryon 1996). Despite numerous surveys, Preble's has not recently been found in the Denver and Colorado Springs metropolitan areas and is believed to be extirpated from these areas as a result of extensive urban development. Since at least 1991, the Preble's has not been found in Denver, Adams, and Arapahoe counties in Colorado. Its absence in these counties is likely due to urban development, which has altered, reduced, or eliminated riparian habitat (Compton and Hugie 1993, Ryon 1996).

The increasing presence of humans near Preble's habitats may result in increased level of predation that may pose a threat to the Preble's. The striped skunk (Mephitis mephitis), raccoon (Procyon lotor), red fox, and the domestic and feral cat are found in greater densities in and around areas of human activity; all four of these species feed opportunistically on small mammals. Introduction of species such as brown trout and the bullfrog into waters within Preble's range may result in additional predation. The fact that summer mortality is higher than overwinter mortality underscores the impact that predators can have on the Preble's.

Conversion of native riparian ecosystems to commercial croplands and grazed rangelands was identified as the major threat to Preble's persistence in Wyoming (Clark and Stromberg 1987, Compton and Hugie 1993). Intensive grazing and haying operations may negatively impact the Preble's by removing food and shelter. While some Preble's populations coexist with livestock operations, overgrazing can decimate riparian communities on which the Preble's depends. Similarly, haying operations that allow significant riparian vegetation to remain in place may be compatible with persistence of Preble's populations.

Trail systems frequently parallel or intersect riparian communities and thus are common throughout Preble's range. Trail development can alter natural communities and may impact the Preble's by modifying nest sites, food resources, and hibernation sites; fragmenting its habitat; and increasing predation. Humans and pets using these trails may alter behavior patterns of the Preble's and cause a decrease in survival and reproductive success.

Habitat fragmentation limits the extent and abundance of the Preble's. In general, as animal populations become fragmented and isolated, it becomes more difficult for them to persist. Small, isolated patches of habitat are unable to support as many Preble's mice as larger patches of habitat. When threats to persistence are similar, larger populations are more secure from extirpation than smaller ones.

The structure and function of riparian ecosystems are determined by the hydrology of the waterway. Changes in timing and abundance of water can alter the channel structure, riparian vegetation, and the adjacent floodplain, and may result in changes that are detrimental to the persistence of the Preble's. Increased development and impervious surface within a drainage can result in more frequent and severe flood events and prevent the maintenance of riparian communities. Bank stabilization, channelization, and other measures to address flooding and stormwater runoff have increased the rate of stream flow, straightened riparian channels, and narrowed riparian areas (Pague and Grunau 2000). Using riprap and other structural stabilization options to reduce erosion can destroy riparian vegetation, and prevent or prolong its reestablishment. These measures can alter the hydrologic processes and plant communities present to the point where Preble's populations can no longer persist. Alluvial aggregate extraction may produce long-term changes to Preble's habitat by altering hydrology and removing riparian vegetation. In particular, such extraction removes and often preclude reestablishment of habitat components required by the Preble's. Such mining impacts the deposits of alluvial sands and gravels that may be important hibernation locations for the Preble's.

Transportation and utility corridors frequently cross Preble's habitat and may negatively affect populations. As new roads are built and old roads are maintained, habitat can be destroyed or fragmented. Roads and bridges also may act as barriers to dispersal. Train and truck accidents within riparian areas may release spills of chemicals, fuels and other substances that may impact the mouse or its habitat. Sewer, water, communications, gas, and electric lines cross Preble's habitat. Their right-of-ways can contribute to habitat disturbance and fragmentation through new construction and periodic maintenance.

Invasive, noxious plants can encroach upon a landscape and displace native plant species. This change reduces the abundance and diversity of native plants, and may negatively impact cover and food sources for the Preble's. The control of noxious weeds may also impact the Preble's where large-scale removal of vegetation occurs through chemical treatments and mechanical mowing operations.

Pesticides and herbicides are used within the range of the Preble's. Inappropriate use of these chemicals may harm the Preble's directly or when ingested by the Preble's with food or water. Overall, an integrated pest management approach (use of biological, chemical, and mechanical control) may help reduce the threat of chemicals, but allow for the control of target species.

Fire, particularly catastrophic fires, can alter habitat dramatically and change the structure and composition of the vegetation communities so that the Preble's may no longer persist. In addition, precipitation falling in a burned area may degrade Preble's habitat by causing greater

levels of erosion and sedimentation along creeks. Controlled use of fire may be one method to maintain appropriate riparian, floodplain, and upland vegetation within Preble's habitat. However, over the past several decades, as human presence has increased through Preble's range, significant effort has been made to suppress fires. Long periods of fire suppression may result in a build-up of fuel and result in a catastrophic fire.

## **2.2 Endangered Species Act**

### **2.2.1 Critical Habitat**

Critical habitat is defined in section 3(5)(A) of the Act as – (i) the specific areas within the geographical 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 geographical 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 an 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 we base critical habitat designation 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. We may exclude areas from critical habitat designation if we determine 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. Within the geographic area occupied by the species, we will designate only areas currently known to be “essential to the conservation of the species.” Critical habitat should already have the features and habitat characteristics that are necessary to sustain the species. We will not speculate about what areas might be found to be essential if better information were available, or what areas may become essential over time. If information available at the time of designation does not show an area provides essential support for a species at any phase of its life cycle, then the area should not be included in the critical habitat designation. Within the geographic area occupied by the species, we will not designate areas that do not now have the primary constituent elements, as defined at 50 CFR 424.12(b), that provide essential life cycle needs of the species.

Habitat is often dynamic, and species may move from one area to another over time. Furthermore, we recognize designation of critical habitat may not include all habitat eventually determined as necessary to recover the species. For these reasons, areas outside the critical habitat designation will continue to be subject to conservation actions that may be implemented under section 7(a)(1) and the regulatory protections afforded by section 7(a)(2) jeopardy standard and the section 9 take prohibition, as determined on the basis of the best available information at the time of the action. We specifically anticipate that federally-funded or assisted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy

findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if new information available to these planning efforts calls for a different outcome.

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, we are required to base critical habitat determinations on the best scientific and commercial data available and to consider physical and biological features (primary constituent elements) that are essential to the conservation of the species, and that may require special management considerations or protection. These include, but are not limited to-- (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing (or development) of offspring; and (5) habitats protected from disturbance or that are representative of the historic geographical and ecological distributions of a species.

### **2.2.2 Section 7 Consultation**

Section 7(a)(2) of the Act requires every Federal agency, in consultation with and with the assistance of the Secretary, to insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. In fulfilling these requirements, each agency is to use the best scientific and commercial data available. This section of the Act sets out the consultation process, which is further implemented by regulation (50 CFR 402).

Each Federal agency is to review its actions at the earliest possible time to determine whether any action may affect listed species or critical habitat. If the action may affect a listed species or critical habitat, consultation with the Service is needed.

Informal consultation is an optional process that includes all discussions and correspondence between the Service and a Federal agency or designated non-Federal representative, designed to assist the Federal agency in determining whether formal consultation or a conference is required. If during consultation it is determined by the Federal agency, with the written concurrence of the Service, that the action is not likely to adversely affect listed species or critical habitat, the consultation process is terminated, and no further action is necessary. During informal consultation, the Service may suggest modifications to the action that the Federal agency and any applicant could implement to avoid the likelihood of adverse effects to listed species or critical habitat.

If the proposed action is likely to adversely affect a listed species or designated critical habitat, formal consultation with the Service is required. Formal consultation is a process between the Service and a Federal agency or applicant that: (1) determines whether a proposed Federal action is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat; (2) begins with a Federal agency's request and submittal of a

complete initiation package; and (3) concludes with the issuance of a biological opinion and incidental take statement by the Service.

With the request to initiate formal consultation, the Federal agency is to include: (1) a description of the proposed action, (2) a description of the area that may be affected, (3) a description of any listed species or critical habitat that may be affected, (4) a description of the manner in which the listed species or critical habitat may be affected and an analysis of cumulative effects, (5) relevant reports including any environmental impact statement, environmental assessment, or biological assessment, and (6) any other relevant and available information.

Formal consultation concludes 90 days after its initiation. Within 45 days after concluding formal consultation, the Service is to deliver a biological opinion to the Federal agency and any applicant. The biological opinion will include the Service's opinion on whether the action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat. If the action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat, the biological opinion will include a reasonable and prudent alternative, if any exist. A reasonable and prudent alternative is a recommended alternative action that can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, that is economically and technologically feasible, and that would avoid the likelihood of jeopardizing the continued existence of the listed species or the destruction or adverse modification of designated critical habitat.

Additionally, in those cases where the Service concludes that an action (or the implementation of any reasonable and prudent alternatives) and the resultant incidental take of listed species will not violate section 7(a)(2), the Service will provide with the biological opinion a statement concerning incidental take that (1) specifies the impact of the take on the species, (2) specifies the reasonable and prudent measures to minimize the impact, (3) sets forth terms and conditions that must be complied with by the Federal agency or any applicant to implement the reasonable and prudent measures, and (4) specifies procedures to handle any individuals actually taken. Reasonable and prudent measures, along with the terms and conditions that implement them, cannot alter the basic design, location, scope, duration, or timing of the actions and may involve only minor changes. Any taking covered in the incidental take statement and in compliance with the terms and conditions of the statement is not prohibited taking under the Act and no other authorization or permit under the Act is required.

### **2.2.3 Technical Assistance**

Although it is not defined in the regulations, technical assistance includes those parts of the informal consultation that provide information to agencies, applicants, and/or consultants, but specifically stops short of concurrence on "may effect" determinations. The term is used to differentiate "informal" consultation (where a concurrence with an agency, applicant, or consultant on "may effect" is provided) and the provision of information. This differentiation is primarily made for record-keeping purposes.

A telephoned or written inquiry about the presence or absence of listed and/or proposed species in a project area usually initiates informal consultation and frequently generates technical assistance. Service biologists may respond in different ways:

1. If species are not likely to be present, the consultation requirement is met and the Service may advise the agency, applicant or consultant.
2. If historical records or habitat similarities suggest the species may be in the area, then some survey work may be recommended to make a more precise determination.
3. If the species is definitely in the project area, but the Service determines it will not be adversely affected, the Service may notify the agency of that finding.

Technical assistance from the Service may take a variety of forms. It can include information on candidate species as well as names of contacts having information on State listed species. The Service may provide correspondence to State agencies or other Service offices to alert them to a project.

As a part of technical assistance, the Service may recommend:

1. that the action agency conduct additional studies on the species' distribution in the area affect by the action, or
2. that the action agency monitor impacts of the action on aspects of the species' life cycle. Monitoring may be recommended when incidental take is not anticipated but might possibly occur, thus triggering the need for project changes or formal consultation.

#### **2.2.4 Section 9 Prohibitions**

Section 9 of the Act prohibits “take” of endangered species of fish and wildlife. The Service has issued regulations (50 CFR 17.31) that generally apply to threatened wildlife the take prohibitions that section 9 of the Act establishes with respect to endangered wildlife. Take is defined in section 3 of the Act as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to 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 behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering (50 CFR 17.3). Incidental take is the take of listed fish and wildlife species that results form, but is not the purpose of, carrying out an otherwise lawful activity conducted by a Federal agency or applicant (50 CFR 402.02).

#### **2.2.5 Section 10 Permits/Habitat Conservation Plans**

Under section 10(a)(1)(B) of the Act, permits can be issued for any taking otherwise prohibited under section 9 if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. The applicant for the permit must submit a “habitat conservation plan” that specifies, among other things, the impacts that are likely to result from the taking and the measures the permit applicant will undertake to minimize and mitigate such impacts. When processing a section 10(a)(1)(B) permit application, the Service must complete an intra-Service

consultation under section 7 of the Act to ensure the issuance of the permit is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat.

## **2.2.6 Special Regulations Under Section 4(d)**

Service regulations provide that special regulations under section 4(d) of the Act can be tailored for a particular threatened species. In that case, the general regulations for some section 9 take prohibitions do not apply to that species, and the special regulations contain the prohibitions, and exemptions, necessary and advisable to conserve that species. On May 22, 2001, the Service finalized special regulations under section 4(d) providing exemptions from the section 9 take prohibitions for specified activities related to rodent control, ongoing agricultural activities, landscape maintenance, and ongoing use of perfected water rights, for a period of 36 months (66 FR 28125). On October 1, 2002, we amended the special regulations to provide additional exemptions from section 9 take prohibitions for certain noxious weed control and ditch maintenance activities (67 FR 61531). The special regulations will be effective through May 22, 2004.

Because the special regulations provide exemptions from certain take prohibitions of section 9, the full impacts associated with enforcement of all the prohibitions of section 9 have been delayed. However, when these special regulations expire in 2004, landowners without incidental take permits may experience the full impacts of section 9 take prohibitions.

## **3.0 Description of Alternatives**

The Service considered four alternatives, including the No Action Alternative. The Action Alternatives are to designate critical habitat as agreed to in the court-mediated settlement. The Action Alternatives vary by the acreage and location of habitat included in the critical habitat designation. In addition, we considered two potential alternatives without thoroughly examining the impacts of its implementation.

### **3.1 Alternatives Considered But Not Fully Evaluated**

We considered an alternative designating the entire historical range of the Preble's, which would include all areas where the Preble's has been known to occur. Historical survey efforts are limited and it may be impossible to identify all areas within the historical range of the Preble's. Current habitat conditions along the Front Range of Colorado and Wyoming are altered compared to historic conditions, rendering certain sites unsuitable for the Preble's use. In addition to the difficulty of determining all potential historical sites used by the Preble's, additional sites not considered to be essential to this species' survival or recovery would be included in this alternative. All areas known to have widely scattered Preble's sites, low population densities, or marginal habitat quality would be included. Much of the historical range does not meet part (I) of the definition of critical habitat stated above (essential to the conservation of the species); therefore, we are not designating those areas as critical habitat. As a result, this alternative was removed from further consideration.



We also considered an alternative designating all areas described as Mouse Protection Areas and Potential Mouse Protection Areas in the 1998 Proposed Special Regulations for Preble's Meadow Jumping Mouse (63 FR 66777) (Proposed Rule). In the Proposed Rule, Mouse Protection Areas were defined as areas where Preble's meadow jumping mouse had been documented since 1992 and reported to the Service. Potential Mouse Protection Areas were defined as areas having a high potential to support the Preble's based on habitat conditions and included the many areas within the historic range of the Preble's that contained suitable Preble's habitat and had not been surveyed, or if previously surveyed, in which no mice had been captured. Together, those areas included more than 1,000 linear miles of streams, constituting all known locations and potential Preble's habitat in Colorado and Wyoming based upon information available in 1998. The list of Mouse Protection Areas and Potential Mouse Protection Areas was to be updated on a regular basis as new information became available. However, because of issues raised during the comment period for the Proposed Special Regulations, the 2001 Final Special Regulations for the Preble's Meadow Jumping Mouse (66 FR 28125) did not continue with the proposed designation of Mouse Protection Areas and Potential Mouse Protection Areas and no updating of those areas has taken place. We believe many of the Potential Mouse Protection Areas do not meet part (I) of the definition of critical habitat stated above (essential to the conservation of the species); therefore, we are not designating those areas as critical habitat. As a result, this alternative was removed from further consideration.

### **3.2 Alternative A. No Action Alternative.**

Pursuant to NEPA and its implementing regulations (40 CFR 1502.14), we are required to consider the No Action Alternative. The No Action Alternative would basically maintain the status quo. Preble's would remain listed as a threatened species with special regulations in place, but with no additional protection through designation of critical habitat. This alternative serves to delineate the existing environment and conditions that result from the listing of the species, without designation of critical habitat. Since the listing of the species as threatened, the Preble's has been protected under section 7 of the Act by prohibiting Federal agencies from implementing actions that would jeopardize the continued existence of the species. This protection under the Act is considered the baseline against which we evaluate the action alternatives described below. In addition, the No Action Alternative would ignore the legal requirement to designate critical habitat, where prudent, and would be non-responsive to the court-mediated settlement to designate critical habitat by June 4, 2003.

### **3.3 Action Alternatives**

Each Action Alternative includes designation of critical habitat in areas believed to contain the physical and biological features upon which the Preble's depends. The Act refers to these essential habitat features as "primary constituent elements."

In determining areas essential to conserve the Preble's meadow jumping mouse, we used the best scientific and commercial data available. We have reviewed approaches to the conservation of

the Preble's undertaken by the Federal, State, and local agencies operating within the species' range since its listing in 1998, and the identified steps necessary for recovery outlined in the working draft of the recovery plan for the Preble's. We also reviewed available information that pertains to the habitat requirements of this species, including material received since the listing of the Preble's. The material included research published in peer-reviewed articles, academic theses and agency reports; reports from biologists conducting research under section 10(a)(1)(A) recovery permits; the working draft of the recovery plan for the Preble's Meadow Jumping Mouse; information from consulting biologists conducting site assessments, surveys, formal and informal consultations; as well as information obtained in personal communications with Federal, State, and other knowledgeable biologists in Colorado and Wyoming.

The primary constituent elements for the Preble's meadow jumping mouse include those habitat components essential for the biological needs of reproducing, rearing of young, foraging, sheltering, hibernation, dispersal, and genetic exchange. The Preble's is able to live and reproduce in and near riparian areas located within grassland, shrubland, forest, and mixed vegetation types where relatively dense herbaceous or woody vegetation occurs near the ground level, where available open water exists during their active season, and where there are ample upland habitats of sufficient width and quality for foraging, hibernation, and refugia from catastrophic flooding events. While willows of shrub form (*Salix* spp.) are a dominant component in many riparian habitats occupied by the Preble's, the structure of the vegetation appears more important to the Preble's than species composition.

Primary constituent elements associated with the biological needs of dispersal and genetic exchange are also found in areas that provide connectivity or linkage between or within the Preble's populations. These areas may not include the habitat components listed above and may have experienced substantial human alteration or disturbance.

The dynamic ecological processes that create and maintain Preble's habitat also are important primary constituent elements. Habitat components essential to the Preble's are found in and near those areas where past and present geomorphological and hydrological processes have shaped streams, rivers, and floodplains, and have created conditions that support appropriate vegetative communities. Preble's habitat is maintained over time along rivers and streams by a natural flooding regime (or one sufficiently corresponding to a natural regime) that periodically scours riparian vegetation, reworks stream channels, floodplains, and benches, and redistributes sediments such that a pattern of appropriate vegetation is present along river and stream edges, and throughout their floodplains. Periodic disturbance of riparian areas sets back succession and promotes dense, low-growing shrubs and lush herbaceous vegetation favorable to the Preble's. Where flows are controlled to preclude a natural pattern and other disturbance is limited, a less-favorable mature successional stage of vegetation dominated by cottonwoods or other trees may develop. The long-term availability of habitat components favored by the Preble's is also dependent on plant succession and impacts of drought, fires, windstorms, herbivory, and other natural events. In some cases these naturally-occurring ecological processes are modified or are supplanted by human land uses that include manipulation of water flow and of vegetation.

Because the system supporting the Preble's is dynamic and complex, and because the Preble's is dependent upon it for continued survival and eventual recovery, boundaries of our proposed critical habitat units may include river and stream segments that might not exhibit all primary constituent elements at present, but have a history of and future potential for supporting such components. These segments currently provide corridors or linkages between areas of better Preble's habitat.

Primary constituent elements for the Preble's include:

(1) A pattern of relatively 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.

### **3.3.1 Alternative B. Designation of Critical Habitat as Identified in the Proposed Rule - (Proposed Alternative)**

Our Proposed Action would designate critical habitat as described in the proposed rule in the Federal Register (July 17, 2002; 67 F.R. 47154). The proposed designation includes 19 habitat units totaling approximately 57,446 acres (23,248 hectares) found along 657.5 miles (1,058.1 kilometers) of rivers and streams in the States of Colorado and Wyoming.

#### **METHOD OF IDENTIFICATION OF PROPOSED CRITICAL HABITAT**

Identification of the proposed critical habitat focused on (1) the conservation strategy outlined in the Draft Discussion Document on a recovery plan for the Preble's meadow jumping mouse developed by the Preble's Meadow Jumping Mouse Recovery Team and dated February 27,

2002 (Draft Document), (2) information regarding the presence of primary constituent elements from a number of sources, (3) information regarding the presence of the Preble's based largely on results of trapping surveys, and (4) information regarding stream order for determining upland extent of critical habitat units.

#### Conservation Strategy Described in Draft Document

While elements of the Draft Document may change prior to plan finalization, the concepts described within it apply the best available science on the Preble's and serve as a logical starting point for identifying areas that are essential for the conservation of the Preble's. The Draft Document identifies the need for a specified number, size, and distribution of wild, self-sustaining Preble's populations across the range of the Preble's, with recovery criteria identified for each of the three major river drainages where the Preble's occurs (the North Platte River drainage in Wyoming, the South Platte River drainage in Wyoming and Colorado, and the Arkansas River drainage in Colorado) and for each sub-drainage judged likely to support Preble's. The Draft Document uses U.S. Geological Survey 8-digit hydrological unit code (HUC) boundaries to define sub-drainages. A total of 19, 8-digit HUCs are identified in the Draft Document as occupied or potentially occupied by the Preble's. Of these, 5 HUCs are located in the North Platte River drainage, 11 in the South Platte River drainage, and 3 in the Arkansas River drainage.

The Draft Document identifies the need for 4 large, 5 medium, and approximately 30 small populations throughout the range of the Preble's. The Draft Document defines large populations as maintaining 2,500 mice and usually including at least 50 mi (80 km) of rivers and streams. It defines medium populations as maintaining 500 mice over at least 10 mi (16 km) of rivers and streams. Small populations are defined as at least three miles of connected stream habitat showing presence of the Preble's. The Draft Document does not delineate specific boundaries of these recovery populations. In only some cases does the Draft Document identify the general location of the recovery population. In those cases where the Draft Document does not identify locations, it only prescribes the need to establish one or more recovery populations of specified minimum size within a HUC. The Draft Document anticipates that, in the future, the locations of these recovery populations will be designated and their boundaries delineated by State and local government, and other interested parties, working in coordination with the Service. In order to use the Draft Document as a basis for proposing critical habitat, we needed to propose specific boundaries of critical habitat for the large and medium recovery populations designated in the Draft Document. In addition, we needed to propose the location of critical habitat, as appropriate, in HUCs where recovery populations are called for by the Draft Document, but not designated.

In addition to proposing critical habitat for sites of likely recovery populations based on the Draft Document, we reviewed other sites of Preble's occurrence, especially on Federal lands, for possible designation as critical habitat. The Draft Document emphasizes the importance of protecting additional Preble's populations, to provide insurance for the Preble's in the event that designated recovery populations cannot be effectively managed or protected as envisioned by the recovery plan, or are decimated by uncontrollable events such as fires or flooding. The Draft

Document also recommends directing recovery efforts toward public lands rather than private lands where possible and calls upon all Federal agencies to protect and manage for the Preble's where they occur on Federal lands. Given these recommendations from the Draft Document, the designation of additional areas of critical habitat on Federal land is essential for the conservation of the Preble's. Should unforeseen events cause the continued decline of Preble's populations throughout its range, Preble's populations and the primary constituent elements on which they depend are more likely to remain viable and to persist on Federal lands than on non-Federal lands. The likelihood of maintaining stable populations is greatest on these Federal lands, where consistent and effective land management strategies can be more easily employed. These Preble's populations on Federal lands could serve as substitute recovery populations should designated recovery populations decline or fail to meet recovery goals. In addition, some Preble's populations on Federal lands have been the subject of ongoing research that could prove vital to the conservation of the Preble's. For these reasons we have proposed selected stream reaches on Federal lands supporting the Preble's that we believe to be essential to the conservation of the Preble's, even if these areas appear unlikely to be selected for initially designated recovery populations based on the Draft Document. These areas of proposed critical habitat may include short reaches of intervening non-Federal lands that in some cases support all primary constituent elements needed by the Preble's or, if substantially developed, are likely to provide only connectivity between areas of Preble's habitat on nearby Federal lands.

#### Presence of Primary Constituent Elements

Presence of primary constituent elements was determined through a variety of sources including, but not limited to - Colorado Division of Wildlife mapping of Preble's Habitat Similarity Models derived from interpretation of aerial photographs; the Service's 1998 mapping of sites occupied or potentially occupied by the Preble's produced in conjunction with the Colorado Department of Natural Resources as part of proposed special regulation under section 4(d) of the Act (63 FR 66777); working maps produced by the Preble's Meadow Jumping Mouse Recovery Team during development of the Draft Document; National Wetland Inventory maps produced by the Service; results of research conducted on a variety of Federal properties by the Forest Service, the Department of Energy, the Air Force, and the Army Corps of Engineers; results of research conducted by the Colorado Division of Wildlife, Colorado Department of Transportation, and the City of Boulder; field assessments of habitat by Service staff; information amassed to support regional Habitat Conservation Plans (HCPs) including those in Boulder, Douglas, and El Paso counties in Colorado, and for Denver Water properties; coordination with Forest Service personnel from Medicine Bow - Routt, Arapaho - Roosevelt, and the Pike - San Isabel National Forests; and numerous evaluations of potential Preble's habitat by consulting biologists in support of developers, landowners, and other clients.

#### Presence of Preble's

Presence of the Preble's was determined based largely on results of trapping surveys, the majority conducted in the past 6 years. Sites judged to be occupied by the Preble's include those that – (1) have recently been documented to support jumping mice identified by genetic or morphological examination as the Preble's; (2) have been recently documented to support

jumping mice and for which historical verification of the Preble's exists, or (3) are at appropriate elevation levels for the Preble's, have recently been documented to support jumping mice identified in the field as Preble's, but where mice were released alive and not subject to definitive morphological or genetic studies. While in some cases proposed critical habitat units extend well beyond these Preble's capture locations, boundaries of these critical habitat units include only those reaches that we believe to be occupied by the Preble's based on the best available information regarding capture sites, the known mobility of the Preble's, and the quality and continuity of habitat components along stream reaches.

We considered several qualitative criteria to judge the current status and probable persistence of Preble's populations in the selection and proposal of specific areas as critical habitat. These included –(1) the quality, continuity, and extent of habitat components present; 2) the state of natural hydrological processes that maintain and rejuvenate suitable habitat components; (3) the presence of lands devoted to conservation, either public lands such as parks, wildlife management areas, and dedicated open space, or private lands under conservation easements; and (4) the landscape context of the site including the overall degree of current human disturbance and presence, and likelihood of future development based on local planning and zoning.

#### Upland Extent

The Service has typically described Preble's habitat as extending outward 300 ft (91 m) from the 100-year floodplain of rivers and streams (Service 1998). The Draft Document defines Preble's habitat as the 100-year floodplain plus 100 m (328 ft) outward on both sides, but allows for alternative delineations that provide for all the needs of the Preble's and include the alluvial floodplain, transition slopes, and pertinent uplands.

In order to allow normal behavior and to assure that the Preble's and the primary constituent elements on which it depends are protected from disturbance, the outward extent of critical habitat should at least approximate the outward distances described above in relation to the 100-year floodplain. Unfortunately, floodplains have not been mapped for many streams within Preble's range and electronic layers depicting 100-year floodplains needed to facilitate GIS mapping are not available for several counties within Preble's range. Where floodplain mapping is available, we have found that it may include local inaccuracies.

For this proposal we ultimately settled on delineating the upland extent of critical habitat boundaries as a set distance outward from the river or stream edge (as defined by the ordinary high water mark) varying with the size (order) of a river or stream. We 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 328 ft (100 m) outward on each side. Based on this calculation, for streams of order 1 and 2 (the smallest streams) we have delineated critical habitat as 360 ft (110 m) outward from the stream edge, for streams of order 3 and 4 we have delineated critical habitat as 394 ft (120 m) outward from the stream edge, and for stream orders 5 and above (the largest streams and rivers) we have delineated critical habitat as 459 ft (140 m) 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 722 ft (220 m) to 918 ft (280 m) 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.

## LOCATION AND EXTENT OF PROPOSED CRITICAL HABITAT

### North Platte River Drainage

In order to meet recovery criteria, the Draft Document calls for one large and two medium recovery populations spread over three of the five HUCs in the North Platte River drainage thought likely to support the Preble's. Additionally, the Draft Document calls for three small populations (defined as 3 mi (5 km) or more of occupied habitat) or one medium population in each of the other two HUCs. Two of the five HUCs currently lack confirmed occurrence of the Preble's. Therefore, we have proposed critical habitat areas representing large and medium recovery populations on the remaining three HUCs, all of which have extensive areas supporting primary constituent elements required by the Preble's. Maps of proposed critical habitat are provided in Appendix 1.

We have proposed critical habitat consistent with one medium recovery population in the Cottonwood Creek watershed (Unit NP1). The unit encompasses approximately 2,284 ac (924 ha) on 26.9 mi (43.3 km) of streams and includes Cottonwood Creek from Harris Park Road upstream to the 7,000 ft elevation. Tributaries include North Cottonwood Creek and Preacher Creek. The unit includes both public and private lands, including a small portion on the Medicine Bow - Routt National Forest. The Preble's habitat on this unit appears generally excellent, particularly on the Forest Service lands. This population is essential not only to maintain distribution near the northernmost extreme of known Preble's range, but because the large size of the population (as predicted by amount and quality of habitat) should help ensure viability into the future.

Unit NP2 encompasses approximately 377 ac (153 ha) on 4.1 mi (6.5 km) of streams within the Horseshoe Creek watershed. It includes Horseshoe Creek upstream from Harris Park Road. The unit is entirely on Federal lands within the Medicine Bow - Route National Forest. While unlikely to serve as a recovery population under the Draft Document, it encompasses a significant area of habitat entirely on Federal lands.

Critical habitat consistent with a large recovery population is proposed in the Chugwater creek watershed (Unit NP3). The unit encompasses approximately 9,416 ac (3,811 ha) on 111.5 mi (179.4 km) of streams. It extends from several miles downstream of the town of Chugwater, upstream on Chugwater Creek and its tributaries to approximately the 7,000-ft elevation. Major tributaries within the unit include Middle Chugwater Creek, South Chugwater Creek, Three Mile Creek, Sand Creek, Ricker Creek, Strong Creek, and Shanton Creek. The unit consists of both public and private lands. The unit supports excellent Preble's habitat with a complex tributary system and is likely to support a high density of the Preble's. While some isolated portions of this unit may be less suitable, we do not believe those areas are permanently affected by current

land use practices or pose such barriers as to segregate portions of this Preble's population. Based on the amount and apparent quality of Preble's habitat contained in this unit, it may support one of the largest populations of the Preble's within its entire range and has a high probability of remaining viable well into the future.

We have proposed the Friend Creek and Murphy Canyon watersheds as two subunits of Unit NP4 that encompasses approximately 1,689 ac (683 ha) on 19.9 mi (32.0 km) of streams. It consists largely of Federal lands within the Medicine Bow - Routt National Forest but includes small parcels of intervening non-Federal lands. While unlikely to serve as a recovery population under the Draft Document, it encompasses a significant area of Preble's habitat largely on Federal lands within the Medicine Bow - Route National Forest.

We have proposed critical habitat of approximately 4,373 ac (1,770 ha) on 52.3 mi (84.1 km) of streams within the Horse Creek watershed (Unit NP5), consistent with one of the two medium recovery populations called for in the Draft Document. It includes Horse Creek from the Interstate Highway 25 bridge upstream to the 7,000-ft elevation with major tributaries including Dry Creek, the South Fork of Horse Creek, Mill Creek, and the North Fork of Horse Creek. The unit consists of both public and private lands. It includes lands owned by the University of Wyoming. In general, the habitat appears extremely good with a broad floodplain, patches of dense shrubs, and extensive hay meadows. This population appears to be relatively large, as predicted by quality and extent of habitat present, and should retain viability into the future.

Suitable habitat appears to be present throughout the Middle North Platte-Casper HUC. However, survey efforts targeted at the Preble's have occurred on only a limited basis in this subdrainage, with the only known captures of jumping mice at elevations above 7,800 ft and likely to be western jumping mice. Habitat components suitable for the Preble's appear to be quite limited in the Middle North Platte - Scottsbluff HUC and are largely confined to the westernmost portions of the subdrainage. Some small pockets of suitable habitat are scattered throughout the rest of the subdrainage, but they are quite isolated. Additionally, trapping efforts targeted at the Preble's have occurred on a limited basis in this subdrainage with no surveys providing captures of the jumping mice. Therefore, while we believe there is a high probability that the Preble's occurs within these subdrainages, we have not proposed critical habitat based on lack of known occurrence.

#### South Platte River Drainage

A critical habitat unit (SP1) is proposed in the Lodgepole Creek watershed, with approximately 654 ac (265 ha) on 13.0 mi (20.8 km) of streams within two subunits on Lodgepole Creek and the Upper Middle Lodgepole Creek. The Lodgepole Creek subunit includes Lodgepole Creek from Horse Creek Road (County Road 211) upstream beyond the confluence of North Lodgepole Creek and Middle Lodgepole Creek up to 7,000-ft elevation on both creeks. The subunit consists of almost entirely private lands. The Upper Middle Lodgepole Creek subunit includes Middle Lodgepole Creek from the eastern boundary of the Pole Mountain Unit of the Medicine Bow - Routt National Forest upstream to about 7,750-ft elevation and including the North Branch of Middle Lodgepole Creek. The unit consists of public lands including portions of the



Medicine Bow - Routt National Forest. This unit is located in the Upper Lodgepole HUC and is proposed to address two of three small recovery populations included in the recovery criteria for this HUC in the Draft Document.

In the Crow Creek HUC we have proposed Unit SP2 which encompasses approximately 331 ac (134 ha) on 3.6 mi (5.7 km) of streams within the Crow Creek watershed. It includes Crow Creek on the F.E. Warren Air Force Base (Base) from the southeastern boundary of the Base in Cheyenne upstream to the western boundary of the Base. The unit consists entirely of Federal lands of the Base.

We have proposed Unit SP3 in the Lone Tree – Owl HUC to address two of the three small recovery populations called for in the Draft Document. The unit encompasses approximately 997 ac (394 ha) on 11.7 mi (18.7 km) of streams within the Lone Tree Creek watershed. It includes two subunits, Lone Tree Creek, Wyoming, and Lone Tree Creek, Colorado. The Lone Tree Creek, Wyoming, subunit includes a reach of Lone Tree Creek and a portion of Goose Creek. The subunit consists of both public and private lands. The Lone Tree Creek, Colorado, subunit includes Lone Tree Creek both upstream and downstream of a successful trapping site near Interstate Highway 25. This subunit also consists of both public and private lands.

Unit SP4 is proposed in the Cache La Poudre HUC and encompasses approximately 4,725 ac (1,912 ha) on 51.2 mi (82.4 km) of streams within the North Fork of the Cache La Poudre River watershed. It includes the North Fork of the Cache La Poudre River from Seaman Reservoir upstream to Halligan Reservoir. Major tributaries within the unit include Stonewall Creek, Rabbit Creek (including its North Fork, Middle Fork and South Fork), and Lone Pine Creek. The unit includes both public and private lands. It includes portions of the Arapaho-Roosevelt National Forest, as well as Lone Pine State Wildlife Area. The unit is proposed to address the large recovery population designated for this area in the Draft Document. The area remains rural and agricultural with habitat components likely to support relatively high densities of Preble's. Pressure for expanded development is increasing within the area. Portions of the unit are the included in the Livermore Valley Landowners HCP currently under development.

We have proposed critical habitat encompassing approximately 4,725 ac (1,912 ha) on 51.2 mi (82.4 km) of streams within the Cache La Poudre River watershed (SP5). It includes the Cache La Poudre River from Poudre Park upstream to the 7,600-ft elevation (below Rustic). Major tributaries within the unit include Hewlett Gulch, Young Gulch, Skin Gulch, Poverty Gulch, Elkhorn Creek, Pendergrass Creek, and Bennett Creek. The unit is primarily composed of Federal lands of the Arapaho-Roosevelt National Forest, including portions of the Cache La Poudre Wilderness, but includes limited non-Federal lands. The unit is located in the Cache La Poudre HUC and, while unlikely to serve as a recovery population under the Draft Document, it encompasses a significant area of habitat likely to support a sizeable population of Preble's.

Proposed Unit SP6 encompasses approximately 3,798 ac (1,537 ha) on 43.0 mi (69.2 km) of streams within the Buckhorn Creek watershed. It includes Buckhorn Creek from just west of Masonville, upstream to the 7,600-ft elevation. Major tributaries within the unit include Little Bear Gulch, Bear Gulch, Stringtown Gulch, Fish Creek, and Stove Prairie Creek. The unit

includes both public and private lands, and includes portions of the Arapaho-Roosevelt National Forest. The unit is located in the Big Thompson HUC and is proposed to address the medium recovery population designated for this area in the Draft Document.

Unit SP7 encompasses approximately 624 ac (252 ha) on 7.3 mi (11.7 km) of streams within the Cedar Creek watershed, including Dry Creek and Jug Gulch. Cedar Creek is a tributary of the Big Thompson River and enters the Big Thompson River at Cedar Cove. The unit is centered on Federal lands of the Arapaho-Roosevelt National Forest but includes some stream reaches on non-Federal lands. This unit is located in the Big Thompson HUC and, while unlikely to serve as a recovery population under the Draft Document, it supports a population on mostly Federal lands of the upper Big Thompson River, isolated, at least in terms of riparian connection, from the Preble's population on nearby Buckhorn Creek. This site is upstream of The Narrows of the Big Thompson Canyon, a barrier to Preble's movement, while the confluence of the Big Thompson River and Buckhorn Creek is downstream from The Narrows. However, the close proximity of the headwaters of Jug Gulch within this unit to the headwaters of Bear Gulch within the Buckhorn Creek unit suggests that some individual Preble's mice may pass between the two populations and thus between the two significant watersheds within this HUC.

We have proposed Unit SP8 in the St. Vrain HUC, encompassing approximately 702 ac (283 ha) on 7.3 mi (11.8 km) of streams within the South Boulder Creek watershed. It includes South Boulder Creek from Baseline Road upstream to Eldorado Springs, and includes the Spring Brook tributary. The unit includes both public and private lands. It includes substantial lands owned by the City of Boulder Open Space and Mountain Parks. This unit is proposed to address the medium recovery population designated for this area in the Draft Document. Portions of the area have been the subject of Preble's research funded by the City of Boulder and, in places, high densities of the Preble's have been documented. A wide floodplain, complex ditch system, and the irrigation of pastures makes habitat within the lower portions of this unit unique. In places, the outward extent of primary constituent elements likely surpasses the standard distance outward from the stream used to define critical habitat in this proposal.

Unit SP9 encompasses approximately 1,059 ac (429 ha) on 12.1 mi (19.5 km) of streams within the Rock Creek, Woman Creek, and Walnut Creek watersheds. The unit includes only Federal lands on the Department of Energy's Rocky Flats Environmental Technology Site. Portions of this unit are located in the St. Vrain HUC (Rock Creek) and portions are in the Middle South Platte-Cherry Creek HUC (Woman Creek and Walnut Creek). While unlikely to serve as a recovery population under the Draft Document, this unit is unique in that it is limited entirely to Federal lands and has been the subject of substantial past research on the Preble's. After cleanup and closure of the Rocky Flats Environmental Technology Site, the property will be transferred to the Service to become part of the National Wildlife Refuge system. Population studies have taken place on the site over a period of years. Streams within the unit are small and habitat components present do not support a high density of the Preble's. The site presents an opportunity to study small populations and their viability over time.

Approximately 698 ac (282 ha) on 8.1 mi (13.1 km) of streams within the Ralston Creek watershed has been proposed as Unit SP10. It includes Ralston Creek from Ralston Reservoir

upstream to the 7,600-ft elevation. The unit includes both public and private lands including lands in Golden Gate Canyon State Park, White Ranch County Park, and lands owned by Denver Water. This unit is located in the Clear Creek HUC and is proposed to partially address the criteria of three small recovery populations or one medium recovery population required for this area in the Draft Document. The segment of Ralston Creek that passes through the Cotter Corporation's existing Schwartzwalder Mine serves as a connector between areas supporting primary constituent elements required by the Preble's located in areas upstream and downstream.

Unit SP11 encompasses approximately 1,738 ac (703 ha) on 19.9 mi (32.1 km) of streams within the Cherry Creek watershed. It includes Cherry Creek from the downstream boundary of the Castlewood Canyon State Recreation Area, upstream to its confluence with Lake Gulch. Major tributaries within the unit include Lake Gulch and Upper Lake Gulch. The unit includes both public and private lands. It includes portions of the Castlewood Canyon State Recreation Area, as well as Douglas County's recently acquired Green Mountain Ranch property. This unit is located in the Middle South Platte-Cherry Creek HUC and is proposed to address the medium recovery population designated for this area in the Draft Document.

We have proposed Unit SP12 encompassing approximately 8,080 ac (3,270 ha) on 91.1 mi (146.6 km) of streams within the Plum Creek watershed. It includes Plum Creek from Chatfield Reservoir upstream to the confluence with West Plum Creek then continues upstream on West Plum Creek to its headwaters. Major tributaries within the unit include Indian Creek, Jarre Creek, Garber Creek (including North, Middle, and South Garber Creek), Jackson Creek, Spring Creek, Dry Gulch, Bear Creek, Starr Canyon, Gove Creek, and Metz Canyon. The unit is a combination of public and private lands. It includes portions of the Pike-San Isabel National Forest, as well as Chatfield State Recreation Area (Corps of Engineers property), and Colorado Division of Wildlife's Woodhouse Ranch property. This unit is located in the Upper South Platte HUC and is proposed to address the large recovery population designated for this area in the Draft Document.

Unit SP13 encompasses approximately 4,168 ac (1,687 ha) on 51.6 mi (83.1 km) of streams within the Platte River watershed. It includes five sub-units. The Chatfield sub-unit includes a section of the South Platte River upstream of Chatfield Reservoir within Chatfield State Recreation Area (Corps of Engineers property). The Bear Creek sub-unit 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 sub-unit is centered on Federal lands of the Pike-San Isabel National Forest but includes some intervening non-Federal lands. The Trout Creek sub-unit 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 sub-unit 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 sub-unit includes Wigwam Creek and its tributaries, Pine Creek and Cabin Creek on Forest Service lands. This unit is located in the Upper South Platte HUC and, while unlikely to serve as a recovery population under the Draft Document, encompasses five areas of primarily Federal land spread through the drainage, four

within the Pike-San Isabel National Forest boundary. Habitat components present and the likely density of Preble's populations vary.

While the Draft Document calls for either three small populations or one medium population in both the Kiowa and Bijou HUCs, no confirmation of the Preble's currently exists for either of these subdrainages. To our knowledge, no trapping efforts targeted at the Preble's have taken place within likely Preble's habitat in either HUC. While primary constituent elements appear present and we believe it is likely that the Preble's occurs within these systems, based on lack of known Preble's occurrence we have not proposed critical habitat within these HUCs at this time.

### Arkansas River Drainage

In order to meet recovery criteria, the Draft Document calls for one large recovery population in the Arkansas River drainage. Additionally, the Draft Document calls for three small populations (defined as 3 mi (5 km) or more of occupied habitat) or one medium population in each of the other two HUCs.

Within the Fountain Creek HUC, we have proposed critical habitat along Monument Creek and its tributaries (A1). This unit encompasses approximately 3,110 ac (1,259 ha) on 35 mi (56.3 km) of streams and includes Monument Creek from the confluence of Cottonwood Creek upstream to the southern boundary of the Air Force Academy and from the northern boundary of the Air Force Academy upstream to the dam at Monument Lake. Major tributaries within the unit include Kettle Creek, Black Squirrel Creek, Monument Branch, Smith Creek, Jackson Creek, Beaver Creek, Teachout Creek, and Dirty Woman Creek. The unit is primarily on private lands. It includes a small portion of the Pike-San Isabel National Forest. This unit is proposed to address the large recovery population designated for this area in the Draft Document. The area is unique in that it represents the only known Preble's population of significant size within the Arkansas River drainage and the southernmost known occurrence of the Preble's.

The Draft Document calls for either three small recovery populations or one medium recovery population to meet recovery criteria in both the Chico and the Big Sandy HUCs. The Preble's has been documented at a single location within the Chico HUC, in apparently marginal habitat along an unnamed tributary of Black Squirrel Creek. Subsequent trapping could not relocate the Preble's at the site. Limited trapping of other sites has produced no captures of the Preble's and the extent of appropriate habitat components within the subdrainage appears limited. We have not proposed critical habitat in the Chico HUC based on our uncertainty that the Preble's exists within any given reach in this area. In the Big Sandy HUC limited trapping efforts targeted at the Preble's have not confirmed Preble's presence. Sites supporting primary constituent elements required by the Preble's appear few. For these reasons we have not proposed critical habitat in the Big Sandy HUC.

### **3.3.2 Alternative C. Designation of Critical Habitat in Colorado Only**

Alternative C proposes designation of a subset of the critical habitat units identified in Alternative B. For the most part, this alternative focuses on those units faced with the most

immediate and significant threats, generally development and associated threats, resulting from the units locations along the Front Range of Colorado. This alternative would designate critical habitat based upon the Draft Document, as discussed above, but only within the state of Colorado. See Table 1 for list of units in Colorado.

### **3.3.3 Alternative D. Designation of Critical Habitat in Wyoming Only**

Alternative D proposes designation of a subset of the critical habitat units identified in Alternative B. On the whole, this alternative focuses on those units facing less significant threats, but generally lacking ongoing efforts to develop and implement plans to provide for the special management considerations or protection needed by critical habitat. This alternative would designate critical habitat based upon the Draft Document, but only within Wyoming. See Table 1 for list of units in Wyoming.

**3.4 Table 1. SUMMARY OF ACTIONS BY ALTERNATIVE**

	ALTERNATIVES <sup>1</sup>		
ACTION	ALTERNATIVE B (PROPOSED ALTERNATIVE)	ALTERNATIVE C (COLORADO ONLY)	ALTERNATIVE D (WYOMING ONLY)
<b>1. Designated sites of critical habitat:</b>			
	Lone Tree Creek North Fork Cache La Poudre River Cache La Poudre River Buckhorn Creek Cedar Creek South Boulder Creek Rocky Flats (Rock, Woman, and Walnut creeks) Ralston Creek Cherry Creek West Plum Creek Upper South Platte River Monument Creek Cottonwood Creek and tributaries Horseshoe Creek Chugwater Creek and tributaries Friend Creek and Murphy Canyon Horse Creek and tributaries Lodgepole and Upper Middle Lodgepole Creeks F.E. Warren AFB (Crow Creek) Lone Tree Creek and tributary	Lone Tree Creek North Fork Cache La Poudre River Cache La Poudre River Buckhorn Creek Cedar Creek South Boulder Creek Rocky Flats (Rock, Woman, and Walnut creeks) Ralston Creek Cherry Creek West Plum Creek Upper South Platte River Monument Creek	Cottonwood Creek and tributaries Horseshoe Creek Chugwater Creek and tributaries Friend Creek and Murphy Canyon Horse Creek and tributaries Lodgepole and Upper Middle Lodgepole Creeks F.E. Warren AFB (Crow Creek) Lone Tree Creek and tributary
<b>2. Estimated miles of stream</b>	657.5 mi (1,058.1 km)	420.3 mi (676.4 km)	237.2 mi (381.7 km)
<b>3. Estimated acres of habitat</b>	57,445 ac (23,248 ha)	37,392 ac (15,132 ha)	20,053 ac (8,116 ha)

<sup>1</sup> Does not include the No Action Alternative, since no areas would be designated as critical habitat. All actions are zero for this alternative.

## **4.0 Description of the Affected Environment**

The geographic area for Alternative B (Proposed Action) includes 57,445 acres (23,248 hectares) of critical habitat found along 657.5 river miles (1,058.1 kilometers) in Colorado and Wyoming on Federal, State, and private lands. Alternative C (Colorado Only) includes those proposed critical habitat units occurring in Colorado totaling 37,392 acres (15,132 hectares) of critical habitat found along 420.3 river miles (676.4 kilometers). Alternative D (Wyoming Only) includes those proposed critical habitat units occurring in Wyoming totaling 20,053 acres (8,116 hectares) of critical habitat found along 237.2 river miles (381.7 kilometers).

### **4.1 Physical Environment**

Areas proposed as critical habitat in Alternative B occur generally at the interface of the western short grasslands and the Colorado Rockies forests ecoregions (Ricketts et al. 1999) in northern Colorado and southeastern Wyoming. Proposed critical habitat occurs along piedmont streams widely distributed throughout the range of the Preble's, which includes small portions of three major river drainages – the North Platte River drainage, the South Platte River drainage, and the Arkansas River drainage. This encompasses parts of Albany, Converse, Laramie, and Platte counties in Wyoming, and Boulder, Douglas, El Paso, Jefferson, Larimer, Teller, and Weld counties in Colorado.

The North Platte River Basin is the largest drainage basin in Wyoming, covering more than 22,000 square miles and ranging in elevation from over 12,000 feet on Medicine Bow Peak to less than 4,100 feet where the North Platte River leaves Wyoming and flows into Nebraska. The North Platte River is impounded by several large federal water projects that provide water for agriculture, industrial and municipal supply, flood storage, instream flow for fish and wildlife, and recreational uses.

Native plant communities are found throughout the North Platte River drainage. Upland vegetation includes alpine tundra, high elevation conifer, low elevation conifer, sagebrush grassland, and shortgrass prairie. Wetland types include seasonal playas, scrub-shrub, palustrine emergent wetlands, and wet meadows often associated with extensive cottonwood and willow stands along riparian corridors. Irrigation allows cultivation of large areas, predominantly native hay and alfalfa upstream of Casper, with increasing amounts of row crops downstream. The North Platte valley below Guernsey Reservoir and the Laramie River valley near Wheatland benefit from the large irrigation facilities on the North Platte River, producing a large percentage of Wyoming's corn, sugar beets, and dry beans. Dryland wheat farming occurs in Platte, Goshen, and Laramie counties. Major cities and towns in the North Platte River Basin include Casper, Laramie, Douglas, Torrington, Wheatland, Saratoga, and Rawlins.

The South Platte River originates along the Continental Divide in Colorado. It flows generally northeast from its headwaters through the Denver metropolitan area, continuing northeast through Colorado and into the State of Nebraska. The elevation of the river ranges from more than 14,000 feet to 3,450 feet where the South Platte leaves Colorado and flows into Nebraska.

Native plant communities found throughout the South Platte River drainage include alpine tundra, high and low elevation conifer, sagebrush grassland and shortgrass prairie. Along the lower reaches, open and closed cottonwood stands, mixed-cottonwood stands, willow stands, wetlands, and salt meadows are common along the river. Major cities and towns in the South Platte River Basin include Denver and its surrounding metropolitan area, Longmont, Loveland, Greeley, Ft. Collins, and Cheyenne.

The Arkansas River originates along the Continental Divide at over 10,000 feet near Leadville, Colorado. It flows southeast and east from its headwaters, through Pueblo and continues east into the State of Kansas at an elevation of approximately 3,400 feet.

Plant communities found throughout the Arkansas River drainage include alpine tundra, high and low elevation conifer, pinon-juniper, semidesert shrublands, and shortgrass prairie. Within the Colorado piedmont, open and closed cottonwood stands, mixed cottonwood stands, willow stands, and wetlands are common along the river. Major mainstem reservoirs include Pueblo Reservoir and John Martin Reservoir. The lower Arkansas Valley supports irrigated cropland, dryland farming, and grazing. Major cities and towns in the Arkansas River drainage include Canon City, Colorado springs, and Pueblo.

The climate of the project area is continental, with highly variable temperature and precipitation on a seasonal, elevational and topographical basis. The mountains receive high precipitation (often over 40 inches) in the form of winter snows, while the surrounding plains receive as little as 12 inches of precipitation annually. Wind is common and occasionally strong in the Wyoming portion of the project area.

Within the North Platte, South Platte, and Arkansas River drainages, proposed critical habitat most often occurs on major tributaries with relatively broad floodplains and abundant riparian vegetation.

The physical environment affected by Alternative C includes that part of the above-described area that occurs in Colorado, including a portion of the South Platte River drainage and the Arkansas River drainage. The physical environment affected by Alternative D includes that part of the above-described area that occurs in Wyoming, including a portion of the South Platte River drainage and the North Platte River drainage.

#### **4.2 Fish and Wildlife**

Several federally listed threatened species may occur within the range of Alternative B (Proposed Action), including the Canada lynx (*Lynx canadensis*), bald eagle (*Haliaeetus leucocephalus*), Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*), and the Ute ladies'-tresses (*Spiranthes diluvialis*).

The Canada lynx and bald eagle may occasionally use areas proposed for designation as Preble's critical habitat. However, no areas of regular use by either species are known to occur within areas proposed for designation as critical habitat.



Ute ladies'-tresses is currently known to occur in riparian/wetland meadow habitat in Boulder, Jefferson, Larimer, and Moffat counties, Colorado; and Converse, Goshen, Laramie, and Niobrara counties, Wyoming. Historically, the plant was also known from El Paso and Weld counties in Colorado (U.S. Fish and Wildlife Service 1995). Extant populations known to co-occur with Preble's in the vicinity of proposed critical habitat include South Boulder Creek in Boulder County, Colorado (Pague and Grunau 2000). However, not all suitable habitat has been surveyed, particularly on private land. Therefore, there may be other populations within the area covered by the proposed critical habitat.

The Colorado butterfly plant is currently known to occur in riparian/wetland meadow habitat in Weld County, Colorado; Laramie County, Wyoming; and Kimball County, Nebraska. Historically, the plant was also known from Boulder, Larimer and Douglas counties in Colorado (Fertig 1994, 2000). Extant populations known to co-occur (or occur within fairly close proximity in the same drainage) with Preble's in the vicinity of proposed critical habitat include Lone Tree Creek in Weld County, Colorado, (Pague and Grunau 2000) and Lone Tree Creek, Crow Creek, and Horse Creek in Laramie County, Wyoming. However, not all suitable habitat has been surveyed, particularly on private land. Therefore, there may be other populations within the area covered by the proposed critical habitat.

In addition, several species considered threatened or endangered by the State of Colorado are found within the range of Alternative B. Potentially affected State-listed species include the common shiner (*Luxilus cornutus*) (threatened, W. Plum Cr., Douglas Co., Colorado), northern redbelly dace (*Phoxinus eos*) (endangered, W. Plum Cr., Douglas Co., Colorado), brassy minnow (*Hybognathus hankinsoni*) (threatened, not known from any proposed critical habitat areas), and the river otter (*Lutra canadensis*) (endangered, active reintroduction effort, scattered locations). The state of Wyoming does not maintain an endangered species list.

Waterfowl, migratory songbirds, furbearers, various big game species, amphibians, and reptiles also use habitat within the Proposed Action area.

The species of fish and wildlife known to occur within the general range of Alternative C include those described above that occur in Colorado. As discussed above, these species include several federally listed threatened species, including the Canada lynx, bald eagle, Colorado butterfly plant, and the Ute ladies'-tresses. In addition, several species considered threatened or endangered by the State of Colorado are found within the range of Alternative C, including the common shiner, northern redbelly dace, brassy minnow, and the river otter. Waterfowl, migratory songbirds, furbearers, various big game species, amphibians, and reptiles also use habitat within the general range of Alternative C.

The species of fish and wildlife known to occur within the general range of Alternative D include those described above that occur in Wyoming. As discussed above, these species include several federally listed threatened species, including the Canada lynx, bald eagle, Colorado butterfly plant, and the Ute ladies'-tresses. The State of Wyoming does not maintain an endangered

species list. Waterfowl, migratory songbirds, furbearers, various big game species, amphibians, and reptiles also use habitat within the general range of Alternative D.

### **4.3 Human Environment**

A wide diversity of human activities and land uses occur throughout or adjacent to the areas identified for designation as critical habitat in Colorado and Wyoming under Alternative B. Uses include farming, livestock grazing, residential and commercial development (and associated actions such as utility infrastructure), transportation, municipal water supply, and a variety of recreational activities. Bank stabilization projects have occurred at various locations in both states. Fire suppression and prevention projects are common at the wildland-urban interface as part of the National Fire Plan. Private, State, and Federal lands are included in the proposed action. Unless otherwise cited, the following information is taken from the Draft Economic Analysis of Critical Habitat Designation for the Preble's Meadow Jumping Mouse (Economic Analysis) (Industrial Economics, Incorporated 2002).

#### Colorado

In Colorado, most of the areas proposed for critical habitat are located near urban, residential areas in Boulder, Douglas, El Paso, Jefferson, Larimer, Teller, and Weld counties. These counties have a total population of 2,038,000, or about 46 percent of the total Colorado population in 2001. The population of the area has grown approximately 40 percent since 1990. Therefore, development pressure is great in various vicinities in Colorado. Additionally, there are many associated transportation, utility, and bank stabilization projects.

Total income in this seven-county area totaled \$64 billion in 2000, with total revenue in residential and related development industries of \$3 billion. The largest industries in the area include retail, construction, manufacturing, professional and scientific services, healthcare and social assistance, and accommodation and food-services. More detailed information regarding the various industries in each of these seven Colorado counties is provided the Economic Analysis (Industrial Economics, Incorporated 2002).

The Department of Energy's Rocky Flats Environmental Technology Site encompasses 6,266 acres in Jefferson County. Beginning in 1951 the site served as a nuclear weapons production facility until the mission changed to site cleanup and closure in 1992. The Rocky Flats National Wildlife Refuge Act of 2001 establishes the area as a refuge and mandates the refuge will be managed for the purposes of (1) restoring and preserving native ecosystems, (2) providing habitat for, and management of, native plants and migratory and resident wildlife, (3) conserving threatened and endangered and candidate species under the Endangered Species Act of 1973, and (4) providing opportunities for compatible scientific research. Most of the site will be transferred to the Service sometime after 2006, after closure and cleanup is complete. Rocky Flats has long been a focus of research on Preble's.

## Wyoming

In Wyoming, areas proposed for critical habitat designation are generally in rural, agricultural areas in Albany, Converse, Laramie, and Platte counties. These four counties have a total population of 134,100 persons, or about 27 percent of the total Wyoming population in 2001. The population of this four-county area has grown approximately nine percent since 1990, with most growth focused in and around the city of Cheyenne in Laramie County.

The two largest cities in the four-county area, Cheyenne and Laramie, account for the majority of the counties' population. Both cities have relatively diversified economies based upon state government, transportation, trade and services, finance, and light manufacturing. The remainder of the four-county area is largely rural with small communities interspersed among farms and ranches, as well as interspersed industrial activity (i.e., Laramie River Station power plant near Wheatland) and recreation (generally limited to the Medicine Bow National Forest in Albany County).

F.E. Warren Air Force Base (Base) covers more than 5,800 acres on the western edge of Cheyenne in Laramie County. The primary mission of the Base is national security and storage and maintenance of missiles. The 20<sup>th</sup> Air Force, headquarters for the nations' Intercontinental Ballistic Missile forces, is located at the Base. The Base is the largest employer in the area and infused over 216.5 million dollars into the local economy in Fiscal Year 1998 (U.S. Department of Defense 2001).

The predominant economic activity in rural areas of southeastern Wyoming is agricultural production. The four-county area contains 1,739 farms and ranches covering 8.9 million acres, with an average size of about 5,100 acres. The most prevalent type of agricultural production involves irrigated hay production in support of livestock operations, with irrigation water typically coming from surface water diversions on tributaries of the North Platte River. In 1997, total agricultural sales in the four-county area totaled \$225.2 million, with total farm and ranch production expenses in the area of about \$177 million, leaving \$48.2 million in net farm income for the area. More detailed information regarding agriculture in each of these four Wyoming counties is provided in the Economic Analysis (Industrial Economics, Incorporated 2002).

### **4.4 Tribal Lands**

There are no tribal lands located within the geographic range of the Preble's meadow jumping mouse.

## 5.0 Environmental Consequences

This section reviews the expected environmental consequences of designating critical habitat for the Preble's under each of the Action Alternatives and the environmental consequences of the No Action Alternative. The impacts of critical habitat designation involve evaluating the "without critical habitat" baseline versus the "with critical habitat" scenario. Impacts of a designation equal the difference, or the increment, between the two scenarios. Measured differences between the baseline and the scenario in which critical habitat is designated may include, but are not limited to, changes in land use, environmental quality, property values, or time and effort expended on consultations and other activities by Federal landowners, Federal action agencies, and in some instances, State and local governments and private third parties. These incremental changes may be either positive or negative.

Regardless of which alternative is chosen, in accordance with section 7(a)(2) of the Act, Federal agencies are required to review actions they authorize, fund, or carry out to determine the effects of proposed actions on federally listed species. If the Federal agency determines that its action may adversely affect a listed species, it must enter into formal consultation with the Service. This consultation results in a biological opinion issued by the Service as to whether the proposed action is likely to jeopardize the continued existence of the species, which is prohibited under the Act.

A similar process would be required if critical habitat is designated. While reviewing their actions to determine the effect on the listed species, Federal agencies would also review their action for the effects on critical habitat and would enter into section 7 consultations with us on actions they determine may affect critical habitat. If the proposed action was determined to be likely to adversely affect the species or the critical habitat, the consultation would result in a biological opinion as to whether the proposed action is likely to destroy or adversely modify designated critical habitat, which also is prohibited under the Act.

Activities that would destroy or adversely modify critical habitat are defined as those actions that "appreciably diminish the value of critical habitat for both the survival and recovery" of the species (50 CFR 401.02). Activities that would jeopardize the continued existence of a species are defined as those actions that "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery" of the listed species (50 CFR 402.02). Given the similarity of these definitions, activities that would likely destroy or adversely modify critical habitat would almost always result in jeopardy to the species. This is particularly true in cases, such as Preble's, where the range of the species is relatively small and no unoccupied habitat is proposed for designation as critical habitat.

Federal agencies have been required to ensure that their actions do not jeopardize the continued existence of the Preble's since its listing in 1998. In Fiscal Years 1982 through 2001, we conducted at least 60 (52 in Colorado, 8 in Wyoming) formal section 7 consultations with other Federal agencies to ensure that their actions were not likely to jeopardize the continued existence of the Preble's. The prohibition against adverse modification of critical habitat is not expected to impose any additional restrictions to those that currently exist in areas of designated critical

habitat. However, we do realize that some Federal agencies have not fully recognized their responsibilities under the Act and may not have been initiating section 7 consultation and may now recognize their need to do so.

It is difficult to differentiate between consultations that result from the listing of Preble's (i.e., jeopardy to the species) and consultations that result from the presence of critical habitat (i.e., destruction or adverse modification of critical habitat). The Economic Analysis (Industrial Economics, Incorporated 2002) quantifies the potential impacts associated with all future section 7 in or near proposed critical habitats. As a result, the analysis results in an over-estimation of the impacts of the proposed critical habitat, in that it likely overstates the impacts of regulatory activity attributable to critical habitat designation. The following discussion will disclose the potential impacts associated with all future section 7 in or near critical habitat (when available from the Economic Analysis (Industrial Economics, Incorporated 2002)), but will also to describe how much of this cost is attributable to critical habitat designation.

Individuals, organizations, States, local and Tribal governments, and other non-Federal entities are only affected by the designation of critical habitat if their actions occur on Federal lands, require a Federal permit, license, or other authorization, or involve Federal funding (for example, 404 permits from the U.S. Army Corps of Engineers, dam licensing or relicensing by the FERC, or funding of activities by the Natural Resource Conservation Service).

Potential environmental consequences that may result from implementation of the No Action and Action Alternatives are discussed below. All impacts are expected to be indirect, as critical habitat designation does not in itself directly result in any alteration of the environment.

As required by NEPA, this document is in part intended to disclose the programmatic goals and objectives of the Act. These objectives include protection of natural communities and ecosystems, minimization of fragmentation and promotion of the natural patterns and connectivity of wildlife habitats, promotion of native species and avoidance of the of non-native species introduction, protection of rare and ecologically important species and unique or sensitive environments, maintenance of naturally occurring ecosystem processes and genetic and structural diversity, and restoration of ecosystems, communities and recovery of species.

## **5.1 Physical Environment**

None of the alternatives will impact the physical environment.

## **5.2 Fish, Wildlife, and Plants**

### **5.2.1 Preble's Meadow Jumping Mouse**

The No Action Alternative would have no impacts on the Preble's because the protections resulting from its listing in 1998 and the associated requirements of section 7 of the Act are already in place and duplicate protections associated with critical habitat designation.

All Action Alternatives would have similar effects on Preble's, in that there may be minimal additional impacts beyond those already considered in section 7 consultation since the 1998 listing. However, these additional impacts would be most widespread under Alternative B, as it would designate the most critical habitat over the widest area. Benefits to the Preble's that may accrue from designation of critical habitat, under any of the Action Alternatives, would be the requirement under section 7 of the Act that Federal agencies review their actions to assess their effects on critical habitat. Designation of critical habitat may also provide some benefits to Preble's by alerting Federal agencies to situations when section 7 consultation is required. Another potential benefit is that critical habitat may help to focus Federal, State, and private conservation and management efforts by identifying the areas of most importance to a species. Critical habitat also allows for long-term planning for species conservation.

Designating critical habitat does not, in itself, lead to the recovery of a listed species. The designation does not establish a reserve, create a management plan, establish numerical population goals, prescribe specific management practices (inside or outside of critical habitat), or directly affect areas not designated as critical habitat. Specific management recommendations for areas designated as critical habitat are most appropriately addressed in recovery and management plans, and through section 7 consultation and section 10 permits.

### **5.2.2 Other Fish, Wildlife and Plant Species**

The No Action Alternative would have no significant impacts on fish, wildlife or plants beyond those protections already in place as a result of listing of the Preble's in 1998 and associated requirements of section 7 of the Act.

All Action Alternatives would have similar effects on fish, wildlife, and plants, in that there may be minimal additional impacts beyond those already considered in section 7 consultation since the 1998 listing. However, these additional impacts would be most widespread under Alternative B, as it would designate the most critical habitat over the widest area. The objectives of designating critical habitat include the protection of natural communities and ecosystems, minimization of fragmentation and maintenance and restoration of the natural landscape patterns and connectivity of wildlife habitats, promotion of native species and avoidance of non-native species introduction, protection of rare and ecologically important species and unique or sensitive environments, maintenance of naturally occurring ecosystem processes and genetic and structural diversity, and restoration of ecosystems, communities and recovery of species.

Maintenance or restoration of natural landscape patterns is of particular importance in those areas where proposed Preble's critical habitat overlays Ute ladies'-tresses and Colorado butterfly plant populations. Management of a critical habitat unit solely for Preble's may focus on the dense vegetation and shrub component used by the Preble's. Neither Ute ladies'-tresses nor Colorado butterfly plant competes well in densely vegetated areas. Therefore, management solely for maintenance of Preble's habitat may be detrimental to these species. In those areas where critical habitat overlays Ute ladies'-tresses or Colorado butterfly plant populations, the Service hopes to cooperate in the development of management plans designed to provide for a natural mosaic of habitat for all species.

Fish, wildlife, and plants may indirectly benefit as a result of ecosystem protections provided through conservation of the Preble's and the associated requirements of section 7(a)(2) of the Act. As a result of critical habitat designation, Federal agencies may be able to prioritize landowner incentive programs such as the Wildlife Habitat Incentives Program or Environmental Quality Incentives Program enrollment, riparian easements, and private landowner agreements that benefit the Preble's, as well as other fish, wildlife, and plant species. Critical habitat designation also may assist States in prioritizing their conservation and land-managing programs.

### **5.3 Human Environment**

As discussed above, individuals, organizations, States, local governments, and other non-Federal entities are only affected by the designation of critical habitat if their actions occur on Federal lands, require a Federal permit, license, or authorization, or involve Federal funding. Since 1998, Federal agencies have been required to consider the effects of their actions on Preble's and consult with the Service as appropriate. While a similar process is required for critical habitat, analysis of effects to critical habitat is not expected to cause large increases in the number or complexity of consultations. This is true partially because no unoccupied habitat has been proposed for designation as critical habitat. However, we realize that some Federal agencies have not fully recognized their responsibilities under the Act and may not have been initiating section 7 consultation. Those agencies may now recognize their need to do so, resulting in a small increase in consultations.

We recognize a perception may exist within some segments of the public that any of the action alternatives designating critical habitat will severely limit property rights; however, critical habitat designation has no effect on private actions on private land that do not involve Federal approval or action. We also are conducting an extensive public outreach program, including several public meetings, a website, and press releases to help explain exactly what this critical habitat designation means. We recognize that there are private actions on private lands that involve Federal actions; however, there should already be section 7 consultations taking place in these situations.

Differentiating between consultations that result from the listing of Preble's and consultations that result from the presence of critical habitat is difficult. Therefore, the following discussion will disclose the potential impacts associated with all future section 7 consultation in or near critical habitat units (as provided in the Economic Analysis (Industrial Economics, Incorporated 2002)) and will describe how much of this cost is likely attributable to critical habitat designation.

#### **5.3.1 Residential Development and Development-Related Activities**

The No Action Alternative would have no impacts on residential development and development-related activities beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For Alternatives B and C, impacts to residential and related development projects may result from administrative costs associated with the consultation process, costs of project delays, and costs of mitigation measures to protect habitat. Given the availability of substitute housing sites in the general project area, total residential development is not likely to decline as a result of the critical habitat designation for Preble's. It is likely, though, that project delays and required project modifications will result in some increased costs either to the land owner/seller, the land developer, or possibly the housing consumer. However, the distribution of costs across landowners, developers, and homebuyers is difficult to predict. Alternative D would have only limited effects because the development is largely confined to areas in Colorado.

For Alternatives B and C, total section 7 consultation costs associated with residential development and development-related activities affecting proposed critical habitat for Preble's (generally confined to Colorado) are predicted to range from \$57,438,000 to \$141,507,000 over the next ten years. These costs would be borne by the Service, Federal action agencies, landowners, developers, builders, and consumers. No costs associated with future section 7 consultation on residential development and development-related activities in or near critical habitat in Wyoming were identified.

As discussed previously, only a portion of the section 7 consultation cost results from designation of critical habitat. Where a Federal nexus occurs, consultation already takes place based upon presence of the species.

### **5.3.2 Agriculture**

The No Action Alternative would have no impacts on agricultural activities, including farming and grazing, beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For Alternatives B and D, agricultural activities will be affected by critical habitat only minimally, because they typically do not involve a Federal nexus, as most are not authorized, permitted, or funded by a Federal agency. There are, however, some Federal agricultural programs that may create a Federal nexus with agricultural activity in critical habitat areas. These programs include (1) agricultural operation improvements funded through programs of the Farm Service Agency (FSA) and the Natural Resources Conservation Service (NRCS), (2) conservation activities, such as riparian improvement projects, funded by FSA and/or NRCS through programs such as the Environmental Quality Incentives Program (EQIP), and (3) grazing permitted by Forest Service and BLM on Federal lands. Alternative C would have very limited effects because agricultural activities are largely focused in Wyoming.

Impacts to agricultural activities result from administrative costs associated with the consultation process, costs of project delays, and costs of project modifications to protect habitat. However, there is a great deal of uncertainty regarding the nature and cost of project modifications that may be requested by the Service in consultations on federally funded operational improvement and conservation activities. For Alternatives B and D, total section 7 consultation costs associated with agricultural activities affecting proposed critical habitat for Preble's (generally



confined to Wyoming) are predicted to range from \$561,000 to \$600,000 over the next ten years. These costs would be borne by the Service, Federal action agencies, and private landowners. No costs associated with future section 7 consultation on agricultural activities in or near critical habitat in Colorado were identified.

As discussed previously, only a small portion of the total future section 7 consultation cost results from designation of critical habitat. This is particularly true of agricultural activities, since these types of activities do not typically result in “adverse modification” of critical habitat. 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 or biological features that were the basis for determining the habitat to be critical.” Many agricultural activities are generally compatible with Preble’s habitat. For example, irrigation and appropriate levels of grazing maintain vigorous vegetation in riparian areas. Although haying may result in some level of take of individual Preble’s, in many instances cultivation of hay may result in minimal impacts to habitat provided adequate riparian shrub habitat was maintained nearby.

### **5.3.3 Transportation**

The No Action Alternative would have no impacts on transportation, including road and bridge construction and maintenance, beyond those already resulting from the 1998 listing of the Preble’s and the associated requirements of section 7 of the Act.

For all action alternatives, there is the potential for a significant number of road and bridge construction and maintenance activities within critical habitat over the next ten years. The projects may include (1) construction and maintenance of access roads to dams, pipelines, and other infrastructure, (2) potential expansion or improvement of the existing public road network, and (3) the construction or improvement of private roads. The typical Federal nexuses for these activities is either funding from the Federal Highway Administration or a section 404 permit under the Clean Water Act from the Corps of Engineers for projects involving placement of fill material into a water of the United States.

Impacts to road and bridge construction and maintenance activities result from administrative costs associated with the consultation process, costs of project delays, and costs of project modifications to protect habitat. For Alternative B, total section 7 consultation costs associated with road and bridge construction and maintenance activities affecting proposed critical habitat for Preble’s are predicted to range from \$10,006,000 to \$17,669,000 over the next ten years. Alternative C is predicted to have total section 7 consultation costs associated with road and bridge construction activities affecting proposed critical habitat for Preble’s ranging from \$1,639,000 to \$7,168,000 over the next ten years. Alternative D is likely to result in total costs ranging from \$8,367,000 to \$10,501,000 over the next ten years as a result of total section 7 consultation costs associated with road and bridge construction activities affecting proposed critical habitat for Preble’s. These costs would be borne by the Service, Federal action agencies, and State departments of transportation.

Only a small portion of the future total section 7 consultation cost results from designation of critical habitat. This is especially true of road and bridge construction and maintenance activities, since these types of activities are typically of limited scope and duration and would not be likely to result in adverse modification of critical habitat. Road and bridge construction can be designed to minimize habitat disturbance, maintain habitat connectivity, and provide for free movement through the area. Maintenance activities alone are likely to have only minimal impacts to habitat.

#### **5.3.4 Utilities**

The No Action Alternative would have no impacts on utilities beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For all action alternatives, utility projects anticipated for proposed critical habitat include sewer pipelines, water transmission mains, natural gas pipelines, fiber optic cable installation, and other services related to development. Impacts to utility projects result from administrative costs associated with the consultation process, costs of project delays, and costs of project modifications to protect habitat. For Alternative B, total section 7 consultation costs associated with utility projects affecting proposed critical habitat for Preble's are predicted to range from \$1,322,000 to \$2,260,000 over the next ten years. Alternative C is predicted to have total section 7 consultation costs associated with utility projects affecting proposed critical habitat for Preble's ranging from \$1,225,000 to \$2,015,000 over the next ten years. Alternative D is likely to result in total costs ranging from \$97,000 to \$245,000 over the next ten years as a result section 7 consultation associated with utility projects affecting proposed critical habitat for Preble's. These costs would be borne by the Service, Federal action agencies, and third parties, such as local sanitation districts or interstate pipeline companies.

Utility projects are typically of limited scope and associated disturbance is of a temporary nature. These projects can be designed to minimize habitat disturbance and, with appropriate habitat reclamation after project completion, the projects will maintain habitat connectivity and provide for free movement through the area. Maintenance activities are likely to have only minimal impacts to habitat. Therefore, only a very small portion of the future total section 7 consultation costs result from critical habitat designation.

#### **5.3.5 Bank Stabilization**

The No Action Alternative would have no impacts on bank stabilization beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For all action alternatives, bank stabilization projects anticipated for proposed critical habitat may include projects implemented to protect watersheds, eliminate damage caused by increased runoff from developed areas, flood management, and agricultural land protection. Impacts to bank stabilization projects result from administrative costs associated with the consultation

process, costs of project delays, and costs of project modifications to protect habitat. For Alternative B, total section 7 consultation costs associated with bank stabilization projects affecting proposed critical habitat for Preble's are predicted to range from \$440,000 to \$769,000 over the next ten years. Alternative C is predicted to have total section 7 consultation costs associated with bank stabilization projects affecting proposed critical habitat for Preble's ranging from \$388,000 to \$638,000 over the next ten years. Alternative D is likely to result in total costs ranging from \$52,000 to \$131,000 over the next ten years as a result of section 7 consultation associated with bank stabilization projects affecting proposed critical habitat for Preble's. These costs would be borne by the Service, Federal action agencies, and third parties.

Only a small portion of the future total section 7 consultation cost associated with bank stabilization projects results from designation of critical habitat. Bank stabilization projects are typically designed in a manner that minimizes habitat disturbance, maintains habitat connectivity, and provides for free movement through the area.

### **5.3.6 National Fire Plan Projects**

The No Action Alternative would have no impacts on National Fire Plan projects beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For all action alternatives, National Fire Plan projects may be impacted by section 7 consultation as a result of administrative costs and costs of project modifications to protect habitat during restoration National Fire Plan activities. For Alternative B, total section 7 consultation costs associated with National Fire Plan projects affecting proposed critical habitat for Preble's are predicted to range from \$530,000 to \$1,326,000 over the next ten years. Alternative C is predicted to have total section 7 consultation costs associated with National Fire Plan projects affecting proposed critical habitat for Preble's ranging from \$517,000 to \$1,305,000 over the next ten years. Alternative D is likely to result in total costs ranging from \$13,000 to \$21,000 over the next ten years as a result of section 7 consultation associated with National Fire Plan projects affecting proposed critical habitat for Preble's. These costs would be borne by the Service and the Federal action agencies (typically BLM or Forest Service).

Only a portion of the future total section 7 consultation cost associated with National Fire Plan projects results from designation of critical habitat. Restoration associated with National Fire Plan projects is typically designed in a manner that minimizes habitat disturbance, quickly restores vegetative cover, limits erosion and sedimentation, maintains habitat connectivity, and provides for free movement through the area.

### **5.3.7 Recreation**

The No Action Alternative would have no impacts on recreation beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For all action alternatives, recreation projects anticipated for proposed critical habitat may include recreation management, issuance of special use permits, campground construction and maintenance, trail construction and maintenance, restroom facility management, construction and upgrade of general recreational facilities. Impacts to recreation projects result from administrative costs associated with the consultation process. For Alternatives B and C, total section 7 consultation costs associated with recreation projects affecting proposed critical habitat for Preble's are predicted to range from \$25,000 to \$43,000 over the next ten years. No costs associated with future section 7 consultation on recreation projects in or near critical habitat in Wyoming were identified. These costs would be borne by the Service and the Forest Service.

Only a portion of the future total section 7 consultation cost associated with recreation projects results from designation of critical habitat. Typically, the Forest Service attempts to locate recreation projects outside of sensitive areas, such as riparian areas that provide habitat for Preble's.

### **5.3.8 F.E. Warren Air Force Base**

The No Action Alternative would have no impacts on F.E. Warren Air Force Base beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For Alternatives B and D, projects anticipated to occur in or near proposed critical habitat at F.E. Warren Air Force Base may include clean-up activities associated with two landfills, flood control projects, weed control activities, road maintenance activities, and expansion of a campground. Impacts to these projects result from administrative costs associated with the consultation process, costs of project delays, and costs of project modifications to protect habitat. For Alternatives B and D, total section 7 consultation costs associated with projects affecting proposed critical habitat for Preble's are predicted to range from \$794,000 to \$1,121,000 over the next ten years. Alternative C would designate no critical habitat in Wyoming, so no costs would be incurred. These costs would be borne by the Service and the Department of Defense.

Only a portion of the future total section 7 consultation cost associated with projects in critical habitat at F.E. Warren Air Force Base results from designation of critical habitat. The Base has consulted with the Service on many projects in the past based upon the presence of Preble's and typically implements as many measures as possible to minimize the adverse effects to the mouse. It is unlikely that any of the future projects will be of sufficient size or duration to result in significant adverse effects to habitat, fragmentation of habitat, or barriers to mouse movement between portions of habitat.

### **5.3.9 Rocky Flats Environmental Technology Site**

The No Action Alternative would have no impacts on the Rocky Flats Environmental Technology Site beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For Alternatives B and C, projects anticipated to occur in or near proposed critical habitat at Rocky Flats will include activities associated with clean-up of the site and may include well abandonment and replacement, replacement of covers and slurry walls, breaching of dams, and other smaller activities. Impacts to these projects result from administrative costs associated with the consultation process, costs of project delays, and costs of project modifications to protect habitat. For Alternatives B and C, total section 7 consultation costs associated with projects affecting proposed critical habitat for Preble's are predicted to range from \$1,440,000 to \$1,920,000 over the next ten years. Alternative D would designate no critical habitat in Colorado, so no costs would be incurred. These costs would be borne by the Service and the Department of Energy.

A portion of the future total section 7 consultation cost associated with projects in critical habitat at Rocky Flats results from designation of critical habitat. Critical habitat may increase the amount of affect acreage and associated mitigation costs.

### **5.3.10 Gravel Mining**

The No Action Alternative would have no impacts on gravel mining beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For Alternative B, four gravel mining operations, currently in production, may be located within the proposed critical habitat. If formal consultations were required for all four gravel mining operations, the total section 7 consultation costs associated with gravel mining in proposed critical habitat are predicted to range from \$338,000 to \$470,000. No information was available regarding the location of the four mining operations, so it is not possible to determine how the costs of section 7 consultation would be apportioned between Alternatives C and D.

Although gravel mining operations could have a Federal nexus through section 404 permits from the Corps of Engineers or funding from the Federal Highway Administration, there is a high level of uncertainty regarding whether these projects would require a consultation (based upon previous consultation history). Therefore, these costs were not included as a cost in this assessment or the Economic Analysis (Industrial Economics, Incorporated 2002).

### **5.3.11 Habitat Conservation Plans**

The No Action Alternative would have no impacts on habitat conservation plans (HCP) beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

As discussed previously, take of a listed species by non-Federal property owners can be permitted through section 10 of the Act. An HCP must accompany the application for the permit and an intra-agency section 7 consultation must be completed by the Service prior to issuance of the permit. HCPs are generally developed to meet the requirements of section 10 of the Act and the costs are distinct from those associated with designation of critical habitat. However, some

stakeholders may assert a connection between the development of HCPs and designation of critical habitat, particularly if an HCP is developed in order to exclude certain lands from critical habitat designation.

According to the Economic Analysis (Industrial Economics, Incorporated 2002), it is unlikely that any HCPs will be developed in Wyoming over the next ten years, based upon conversations with county representatives and private landowners. It is likely that a substantial number of HCPs will be developed over the next ten years in Colorado. Currently Boulder, Douglas, El Paso, and Jefferson counties, as well as a group in the Livermore Valley of Larimer County, are developing HCPs. However, none of the current efforts to develop HCPs were designed to exempt lands from critical habitat designation. Additionally, there is considerable uncertainty concerning the number and scope of future HCPs. Therefore, impacts associated with internal section 7 consultations regarding future HCPs are not included as a cost in this assessment and were not quantified in the Economic Analysis (Industrial Economics, Incorporated 2002).

#### **5.4 Technical Assistance**

The No Action Alternative would have no impacts on technical assistance beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

For Alternative B, total technical assistance costs associated with projects affecting proposed critical habitat for Preble's are predicted to range from \$1,875,000 to \$4,341,000 over the next ten years. Alternative C is predicted to have total technical assistance costs associated with projects affecting proposed critical habitat for Preble's ranging from \$1,472,000 to \$3,452,000 over the next ten years. Alternative D is likely to result in total costs ranging from \$403,000 to \$889,000 over the next ten years as a result of technical assistance associated with projects affecting proposed critical habitat for Preble's. These costs would be borne by the Service, Federal agencies, and private parties.

Technical assistance requests are likely to increase as a result of designation of critical habitat, resulting in an increase in cost. These requests may be associated with projects in critical habitat or elsewhere. The requests may come from private parties attempting to clarify whether they have a Federal nexus. However, many technical assistance requests will continue to be a result of the presence of a listed species, not critical habitat. Therefore, only a portion of the technical assistance costs is attributable to critical habitat.

#### **5.5 Archeological and Cultural Resources**

The No Action Alternative would have no impacts on archaeological and cultural areas beyond those already resulting from the 1998 listing of the Preble's and the associated requirements of section 7 of the Act.

All of the Action Alternatives would have similar effects on archeological and cultural sites, in that there are not likely to be any additional impacts beyond what we have already considered in

section 7 consultation since the 1998 listing. Designation of critical habitat is expected to have no direct impacts on these resources. As a result of designation, increased protection of these sites and resources within critical habitat may occur if a Federal action is proposed.

## **5.6 Environmental Justice**

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629 (1994), directs Federal agencies to incorporate environmental justice in their decision making process. Federal agencies are directed to identify and address as appropriate, any disproportionately high and adverse environmental effects of their programs, policies, and activities on minority or low-income populations. This assessment has not identified any adverse or beneficial effects unique to minority or low-income populations in the affected areas.

## **5.7 Cumulative Impacts**

Designation of critical habitat for the Preble's will add minimal incremental impacts when added to other past, present, and reasonably foreseeable future actions.

We expect the impacts to be relatively small. In addition to the Preble's, several listed species occur in the general vicinity of the proposed critical habitat, including the Canada lynx, bald eagle, Colorado butterfly plant and the Ute ladies'-tresses. The Service has not designated critical habitat for any of these species. Several listed species also occur downstream of the project area in the North Platte and South Platte River drainages. These include the piping plover, interior least tern, bald eagle, whooping crane, and pallid sturgeon. In addition, there is critical habitat designated for the whooping crane and proposed for the piping plover downstream in those drainages. We also anticipate proposing critical habitat for the Colorado butterfly plant within the next year. Many of these species use similar habitat types and are protected through implementation of a limited number of conservation measures, such as protection of riparian areas. Therefore, the impacts of these species and their critical habitat are not additive.

As discussed previously, Federal agencies are required to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of the listed species, or destroy or adversely modify designated critical habitat in accordance with section 7(a)(2) of the Act.

Activities that adversely modify critical habitat are defined as those actions that "appreciably diminish the value of critical habitat for both the survival and recovery" of the species (50 CFR 401.02). Activities that jeopardize a species are defined as those actions that "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery" of the listed species (50 CFR 402.02). According to these definitions, activities that destroy or adversely modify critical habitat would almost always jeopardize the species. Therefore, designation of critical habitat has rarely resulted in greater protection than that afforded under section 7 by the listing of a species. Section 7 consultations

apply only to actions with Federal involvement (i.e., activities authorized, funded, or conducted by Federal agencies), and do not impact activities strictly under State or private authority. In practice, the designation of critical habitat for the piping plover will likely provide little additional benefits to the species in presently occupied, or unoccupied, areas because there are functioning program activities already alerting Federal agencies and the public of endangered species concerns. However, we recognize that Federal agencies may not actively carry out their section 7 responsibilities in all cases.

Section 4(b)(2) of the Act requires us to designate critical habitat on the basis of the best scientific and commercial information available and to consider the economic and other relevant impacts of designating a particular area as critical habitat. We may exclude areas from critical habitat upon a determination that the benefits of such exclusions outweigh the benefits of specifying such areas as part of critical habitat. We cannot exclude such areas from critical habitat if such exclusion would result in the extinction of the species concerned. We are currently conducting an analysis of the economic and other relevant impacts of the Proposed Alternative. The Economic Analysis will be available for public review and comment, and we will announce its availability in the Federal Register and local newspapers. We will consider the results of that analysis in preparing the final Environmental Assessment of critical habitat designation.



**5.8 Table 2. SUMMARY OF ENVIRONMENTAL CONSEQUENCES BY ALTERNATIVE (Total Section 7 Costs)**

IMPACTS	ALTERNATIVES			
	ALTERNATIVE A. NO ACTION	ALTERNATIVE B. PROPOSED ACTION	ALTERNATIVE C	ALTERNATIVE D
Preble’s Meadow Jumping Mouse	No change to existing situation.	May be minimal beneficial impacts beyond those associated with the 1998 listing. For example, designation of critical habitat can help focus conservation activities for listed species.	Impacts are similar to that of Proposed Action, with fewer locations potentially affected.	Impacts are similar to that of Proposed Action, with fewer locations potentially affected
Other Fish, Wildlife, and Plants	No change to existing situation.	May be minimal beneficial impacts beyond those associated with the 1998 listing. For example, Federal agencies may be able to prioritize landowner incentive programs that benefit many species.	Impacts are similar to that of Proposed Action, with fewer locations potentially affected.	Impacts are similar to that of Proposed Action, with fewer locations potentially affected.
Residential Development and Development-Related Activities	No change to existing situation.	Total section 7 consultation costs - \$57,438,000 - \$141,507,000	Total section 7 consultation costs - \$57,438,000 - \$141,507,000	Total section 7 consultation costs – N/A
Agriculture	No change to existing situation.	Total section 7 consultation costs - \$561,000 - \$600,000	Total section 7 consultation costs – N/A	Total section 7 consultation costs - \$561,000 - \$600,000
Transportation	No change to existing situation.	Total section 7 consultation costs - \$10,006,000 - \$17,669,000	Total section 7 consultation costs - \$1,639,000 - \$7,168,000	Total section 7 consultation costs - \$8,367,000 - \$10,501,000
Utilities	No change to existing situation.	Total section 7 consultation costs – \$1,322,000 - \$2,260,000	Total section 7 consultation costs - \$1,225,000 - \$2,015,000	Total section 7 consultation costs - \$97,000 - \$245,000
Bank Stabilization	No change to existing situation.	Total section 7 consultation costs -\$440,000 - \$769,000	Total section 7 consultation costs - \$388,000 - \$638,000	Total section 7 consultation costs - \$52,000 - \$131,000
National Fire Plan Projects	No change to existing situation.	Total section 7 consultation costs - \$530,000 - \$1,326,000	Total section 7 consultation costs - \$517,000 - \$1,305,000	Total section 7 consultation costs - \$13,000 - \$21,000
Recreation	No change to existing situation.	Total section 7 consultation costs - \$25,200 - \$42,900	Total section 7 consultation costs - \$25,000 - \$43,000	Total section 7 consultation costs – N/A

IMPACTS	ALTERNATIVES			
	ALTERNATIVE A. NO ACTION	ALTERNATIVE B. PROPOSED ACTION	ALTERNATIVE C	ALTERNATIVE D
F.E. Warren Air Force Base	No change to existing situation.	Total section 7 costs - \$794,000 - \$1,121,000	Total section 7 consultation costs – N/A	Total section 7 consultation costs - \$794,000 - \$1,121,000
Rocky Flats Environmental Technology Site	No change to existing situation.	Total section 7 consultation costs - \$1,440,000 – \$1,920,000	Total section 7 consultation costs - \$1,440,000 – \$1,920,000	Total section 7 consultation costs – N/A
Habitat Conservation Plans	No change to existing situation.	Total section 7 consultation cost – N/A	Total section 7 consultation cost – N/A	Total section 7 consultation cost – N/A
Technical Assistance	No change to existing situation.	Total cost -\$1,875,000 - \$4,341,000	Total cost - \$1,472,000 - \$3,452,000	Total cost - \$403,000 - \$889,000
Archaeological and Cultural	No change to existing situation.	No likely additional impacts beyond those associated with the 1998 listing.	No likely additional impacts beyond those associated with the 1998 listing.	No likely additional impacts beyond those associated with the 1998 listing.
Environmental Justice	No change to existing situation.	No impacts.	No impacts.	

## **6.0 Council on Environmental Quality Analysis of Significance**

Under CEQ 40 CFR Part 1508.27, the determination of “significantly” requires consideration of both context and intensity.

### **6.1 Context**

Based upon our responses from agencies and the public any effects, although long-term, will not be national, only regional and mostly local in context; and any that occur are expected to be small.

### **6.2 Intensity**

Intensity is defined by CEQ as referring to the severity of impact. The following 10 points identified by CEQ were considered in evaluating intensity:

1. We foresee minimal additional negative impacts beyond what we have already considered in section 7 consultation since the 1998 listing. There may be perceived negative impacts but we are carrying out a public outreach program which should address and minimize most of those misconceptions. There may be some beneficial impacts to the environment.
2. This designation will not have a discernable impact on human safety.
3. Although several areas designated as critical habitat are in proximity to historic and cultural sites, parklands, farmland, wetlands, scenic rivers and ecologically critical areas, minimal adverse impacts will occur to these areas.
4. There is a perception by some segments of the public that critical habitat designation will severely limit property rights; however, critical habitat designation has no effect on private actions on private land that do not involve Federal approval or action. Therefore, we conclude that this misconception will be clarified by the Final Rule and will result in this designation not being highly controversial.
5. The Service has designated critical habitat for other species in the recent past and we are familiar with the associated effects. Therefore, we anticipate minimal effects to the human environment and we are certain this action does not involve any unique or unknown risks.
6. This designation of critical habitat is not expected to set any precedents for future actions with significant effects or represent a decision in principle about a future consideration because critical habitat has been designated before for other species, as required by law.

7. This designation of critical habitat will be additive (cumulative) to critical habitat that has been, and will be, designated for other species. However, it is the Service's conclusion that the beneficial and adverse impacts of any and all critical habitat designations are small, and, therefore, insignificant due to the existing impacts, both beneficial and adverse, already resulting from the listing of the species involved.
8. This designation will have minimal adverse effects to National Register of Historic Places or other cultural sites.
9. Most impacts from this designation of critical habitat will be beneficial to endangered and threatened species, particularly the Preble's. Designation of critical habitat can help focus conservation activities for listed species by identifying areas essential to conserve the species. Designation of critical habitat also alerts the public, as well as land-managing agencies, to the importance of these areas. These benefits are minimal, as most occurred at the time of listing.
10. This designation of critical habitat will not violate any Federal, State, or local laws or requirements imposed for the protection of the environment.

## **7.0 Contacts and Coordination With Others**

We have coordinated with States, Federal agencies, and other Interested Parties through letters, formal and informal presentations, and telephone calls. These contacts include- Senator Craig Thomas' office, Senator Mike Enzi's office, Congresswoman Barbara Cubin's office, the Bureau of Land Management (WY), the Arapahoe-Roosevelt National Forest, the Pike-San Isabel National Forest, the Medicine Bow - Route National Forest, the Department of Energy's Rocky Flats Environmental Technology Site, the Air Force Academy, the F.E. Warren Air Force Base, the Colorado Division of Wildlife, Wyoming Game and Fish Department, Wyoming Department of Agriculture, Larimer County, CO, Boulder County, CO, Jefferson County, CO, Douglas County, CO, Elbert County, CO, El Paso County, CO, Albany County, WY, Converse County, WY, Goshen County, WY, Laramie County, WY, Platte County, WY, the City of Boulder, Denver Water, The Nature Conservancy (Colorado Office), True Ranches, and numerous individual land owners.

### **7.1 List of Agencies, Organizations, and Persons to Whom Copies of This Environmental Assessment Were Sent or Contacted**

The following is a list of individuals, organizations, and public agencies contacted concerning development of this Environmental Assessment and the proposed rule to designate critical habitat for the Preble's. Each of these individuals also will be notified of the publication of the final rule:

## FEDERAL AGENCIES

### DEPARTMENT OF AGRICULTURE

- Natural Resources Conservation Service, Colorado
- Natural Resources Conservation Service, Wyoming
- U.S. Forest Service, Region 2, Lakewood, Colorado
- Medicine Bow - Routt National Forest
- Pawnee National Grassland

### DEPARTMENT OF DEFENSE

- U.S. Army Corps of Engineers
  - Regulatory Office, Cheyenne, Wyoming
  - Tri-Lakes Office, Littleton, Colorado
  - Pueblo Office, Pueblo, Colorado
- F.E. Warren Air Force Base, Wyoming
- Fort Carson
- U.S. Air Force Academy, Colorado

### DEPARTMENT OF ENERGY

- Rocky Flats Environmental Technology Site, Colorado

### DEPARTMENT OF THE INTERIOR

- Bureau of Land Management
  - Wyoming State Office
  - Colorado Field Office
- U.S. Fish and Wildlife Service
  - Private Lands Coordinator
    - Colorado, Wyoming
  - Law Enforcement Division
    - Colorado, Wyoming
- National Park Service, Denver, Colorado
- Rocky Mountain National Park
- Office of Surface Mining

### DEPARTMENT OF TRANSPORTATION

- Federal Highway Administration

## FEDERAL CONGRESSIONAL DELEGATION

### COLORADO

- Office of Senator Wayne Allard
- Office of Senator Ben Nighthorse Campbell
- Office of Representative Diana De Gette
- Office of Representative Mark Udall
- Office of Representative Scott McInnis
- Office of Representative Bob Schaffer
- Office of Representative Joel Hefley
- Office of Representative Thomas Tancredo

## WYOMING

Office of Senator Michael Enzi  
Office of Senator Craig Thomas  
Office of Representative Barbara Cubin

## STATE AGENCIES

Colorado Department of Agriculture  
Colorado Department of Natural Resources  
Colorado Department of Transportation  
Colorado Division of Wildlife  
Wyoming Game and Fish Department  
Wyoming Department of Agriculture  
Wyoming Department of Environmental Quality  
Wyoming Board of State Lands Commissioners  
Wyoming Department of Transportation  
Wyoming Division of State Parks and Historic Sites  
Wyoming Department of Commerce  
Wyoming State Lands and Farm Loans Office  
Wyoming State Lands and Investments Office, State Forestry  
Wyoming Office of Federal Land Policy  
Wyoming Game and Fish Commission  
Wyoming Natural Diversity Database  
Wyoming Cooperative Fishery and Wildlife Research Unit  
Wyoming Oil and Gas Conservation Commission  
Wyoming Livestock Board

## GOVERNORS

Colorado, William Owens  
Wyoming, Dave Freudenthal

## STATE LEGISLATIVE MEMBERS

### COLORADO

#### Senators

Norma V. Anderson, John Andrews, Ken Arnold, Bruce Cairns, F. Jim Dyer, Mary Ellen Epps, John Evans, Joan Fits-Gerald, Ken Gordon, Bob Hagedorn, Deanna Hanna, Rob Hernandez, Mark D. Hillman, Doug Lambourn, Doug Linkhart, Stan Matsunaka, Rkon May, Andy McElhany, Marilyn Musgrave, Alice Nichol, David T. Owen, Pat Pascoe, Ed Perlmutter, Terry Phillips, Peggy Reeves, Stephanie Takis, Penfield Tate, Ron Tupa, Sue Windels

#### Representatives

Bob Bacon, Alice Borodkinb, Betty Boyd, Bill Cadman, Nolbert D. Chavez, Lauri Clapp, Mark Cloer, Fran Coleman, Bill Cranes, Kelley Danielner, Doug Dean, Richard D. Decker, Rob Fairbank, Tymothy Fritz, Michael Garcia, Peter C. Groft, Dan Grossman, Lynn Hefley, Mary HodgeTakis, Bryan Jameson, Cheri John, Steve Johnson, Keith King, Don Lee, Frana Araujo Mace, Alice Madden, Rosemary Marshall, Shawn Mitchell, Joe Nunez, Mark Paschall, Tom Plant, Ann F. Ragsdale, Pam Rhodes, Andrew Romanoff, Todd Saliman, Desiree Sanchez, David Schultheis, Glenn Scott, William D. “Bill” Sinclair, Nancy Spence, Lola Spradley, Debbie Stafford, Joe Stengel, Bill Swenson, Lois Tochtrop, Jennifer Veiga, Valentine J. Vigil, W.H. “Bill” Webster, Frank Weddig, Suzanne Williams, Tambor Williams, John Witwer, Brad Young

### WYOMING

#### Senators

Jim Anderson, Bill Barton, Rich Cathcart, Irene Devin, John Hanes, April Brimmer Kunz, Mike Massie, Curt Meier, E. Jayne Mockler, and Kathryn Sessions

#### Representatives

Rodney Anderson, Ross Diercks, Dave Edwards, Floyd A. Esquibel, James C. Hageman, Roger Huckfeldt, Pete Illoway, Lorna Johnson, Wayne Johnson, Mac McGraw, Larry Meuli, Layton Morgan, Phil Nicholas, Wayne Reese, Tony Ross, Doug Samuelson, Jim Slater, Bill Stafford, and Jane Warren

## COUNTY COMMISSIONERS

### COLORADO

County Commissioners from the following counties– Boulder, Douglas, El Paso, Elbert, Jefferson, Larimer, Teller, Weld

### WYOMING

County Commissioners from the following counties–Albany, Converse, Goshen, Laramie, Platte

## LOCAL GOVERNMENTS AND PRIVATE GROUPS

Biodiversity Associates/Friends of the Bow  
Biodiversity Legal Foundation  
City of Boulder Open Space and Mountain Parks  
Colorado Association of Homebuilders  
Colorado Bird Observatory  
Colorado Environmental Coalition  
Colorado Farm Bureau  
Colorado Heritage Foundation  
Colorado State University  
Colorado Timber Industry Association  
Colorado Wildlife Federation  
CPR marketing  
Sherri Cullen, Wyoming  
Denver Audubon Society  
Denver Water  
Douglas County Open Space and Natural Resources  
EL Paso County Parks  
ERO Resources  
Al Johnson, Colorado  
Iron Mountain Ranch, Wyoming  
Izaak Walton League of America  
Jefferson County Special Project Coordinator  
Land and Water Conservation Fund  
Land Use Dept., Boulder County Planning Mgr.  
Laramie County Planning  
Lummis Livestock Co.  
Massey, Semenoff, Schwarz and Bailey  
Rocky Mountain Oil and Gas Association  
    The Nature Conservancy  
The Wildlife Society  
    Wyoming Chapter  
True Ranches  
Trust for Public Lands  
University of Denver Law School, Forbes House  
Wyoming Association of Conservation Districts  
Wyoming Audubon Society  
Wyoming Farm Bureau  
Wyoming Stock Growers Association  
Wyoming Outdoor Council  
Wyoming Wildlife Federation  
    The Sierra Club  
Wyoming Wool Growers Association



## 8.0 List of Contributors

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## 10.0 Appendices

**10.1 Appendix 1. Maps of Alternative B. Designation of Critical Habitat as Identified in the Proposed rule**

**10.2 Appendix 2. Map of Alternative C. Designation of Critical Habitat in Colorado Only**

### **10.3 Appendix 3. Map of Alternative D. Designation of Critical Habitat in Wyoming Only**