

**FINAL  
ENVIRONMENTAL ASSESSMENT**

**DESIGNATION OF REVISED CRITICAL HABITAT  
FOR THE PREBLE'S MEADOW JUMPING MOUSE IN COLORADO**  
*(Zapus hudsonius preblei)*

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## **Introduction**

The U.S. Fish and Wildlife Service (Service) is proposing to revise designated critical habitat for the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) (hereafter, PMJM) in the significant portion of its range in Colorado. The PMJM was listed as threatened under the Endangered Species Act of 1973, as amended (ESA), on May 13, 1998 (62 FR 26517). On July 10, 2008, we amended the final rule for the PMJM to specify over what portion of its range the subspecies is threatened (73 FR 39789), and determined that the listing of the PMJM is limited to the significant portion of the range (SPR) in Colorado. Upon that determination, the State of Wyoming was removed from the regulations of 50 CFR 17.95 for this species.

Critical habitat designation is required by the ESA for listed species. This Final Environmental Assessment presents the purpose of and need for critical habitat designation, the Preferred Alternative and other alternatives, and an evaluation of the direct, indirect, and cumulative effects of the alternatives pursuant to the requirements of the National Environmental Policy Act of 1969 (NEPA) as implemented by the Council on Environmental regulations (40 CFR 1500, et seq.) and according to the U.S. Department of Interior NEPA procedures. This Final Environmental Analysis will be used by the Service to help decide whether revised critical habitat will be designated as proposed, if the proposed action requires refinement, or if further analysis is needed through preparation of an Environmental Impact Statement (EIS).

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

The purpose of the proposed action is to revise the designation of critical habitat in the SPR of the PMJM in Colorado by utilizing provisions of the ESA. The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend. Critical habitat designation identifies areas that contain the physical and biological features essential to the conservation of the PMJM and that may require special management or protection. The designation also describes the physical and biological features essential to the conservation of PMJM known as the Primary Constituent Elements (PCEs).

### **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. A final listing rule (62 FR 26517) published on May 13, 1998, designating the PMJM as threatened throughout its range. The final 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. On June 9, 2000, the Biodiversity Legal Foundation and others filed a suit in the U.S. District Court for the District of Colorado (Case No. 00-D-1180) against the Department of the Interior and the Service over our failure to designate critical habitat for the PMJM. A court-mediated settlement was reached with the litigants led to a July 17, 2002, rule proposing critical habitat for the PMJM (67 FR 47154) and a June 23, 2003, final rule

designating critical habitat for the PMJM (68 FR 37275). On August 22, 2003, the City of Greeley filed a complaint in the U.S. District Court for the District of Colorado challenging our designation of critical habitat for the PMJM (Case No. 03-cv-01607-AP). On December 9, 2003, the Mountain States Legal Foundation filed a complaint in the U.S. District Court for the District of Wyoming challenging our 1998 listing of the PMJM and designation of critical habitat for the PMJM (Case No. 03-cv-250-J). The complaint was later expanded to include our 2008 final determination on PMJM listing and transferred to the U.S. District Court for the District of Colorado (Case No. 1:08-cv-2775-JLK). These lawsuits challenged the validity of the information and reasoning we used to designate critical habitat for the PMJM. On July 20, 2007, we announced that we would review the June 23, 2003, final rule designating critical habitat after questions were raised about the integrity of scientific information we used and whether the decision we made was consistent with the appropriate legal standards (Service 2007a). Based on our review of the previous critical habitat designation, we determined that it was necessary to revise critical habitat.

On July 10, 2008, we amended the final rule for the PMJM to specify over what portion of its range the subspecies is threatened (73 FR 39789), and determined that the listing of the PMJM is limited to the SPR in Colorado. Upon that determination, all critical habitat designated in 2003 in the State of Wyoming was removed from the regulations of 50 CFR 17.95 for this species.

On April 16, 2009, we reached a settlement agreement with the City of Greeley in which we agreed to reconsider our critical habitat designation for the PMJM. The settlement stipulated that we submit to the **Federal Register** a proposed rule for revised critical habitat by September 30, 2009, and a final rule for revised critical habitat by September 30, 2010 (U.S. District Court, District of Colorado 2009a). On June 16, 2009, an order was issued granting Mountain States Legal Foundation a motion to dismiss their claims on the 1998 listing and 2008 final determination without prejudice, and staying their challenge to the 2003 critical habitat designation pursuant to the City of Greeley settlement (U.S. District Court, District of Colorado 2009b). On October 8, 2009, we published a proposed rule to revise critical habitat for the PMJM in the SPR in Colorado (74 FR 52066), and accepted public comments for 60 days (from October 8 to December 7, 2009). On May 27, 2010, we opened a second comment period of 30 days (from May 27 to June 28, 2010) and requested comments on our Draft Economic Analysis (Industrial Economics 2010a), Draft Environmental Assessment, amended Required Determinations section of the proposed rule, and any other part of our proposed revised critical habitat designation (75 FR 29700).

When the range of a 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 (10th Cir. 1996), we will complete an analysis pursuant to NEPA on critical habitat designations. The range of the PMJM includes the State of Colorado, which is within the Tenth Circuit.

Critical habitat is one of several provisions of the ESA 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 PMJM and the ecosystems upon which it depends. Section 7(a)(2) of the ESA (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

### *Species Description*

The PMJM is recognized as 1 of 12 subspecies of meadow jumping mouse (*Zapus hudsonius*), a species that ranges from the Pacific Coast of Alaska to the Atlantic Coast and from the northern limit of forests south to New Mexico, Oklahoma, and Georgia (Hafner *et al.* 1981; Hall 1981; Krutzsch 1954.). Meadow jumping mice are small rodents with long tails, large hind feet, and long hind legs. Total length of an adult is approximately 7 to 10 inches (187 to 255 millimeters), with the tail comprising 4 to 6 inches (108 to 155 millimeters) of that length (Krutzsch 1954; Fitzgerald *et al.* 1994). The large hind feet can be one-third again as large as those of other mice of similar size. The PMJM has a distinct, dark, broad stripe on its back that runs from head to tail and is bordered on either side by gray 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. The tail is bicolored and sparsely furred.

### *Geographic Range*

The PMJM is found along the foothills in southeastern Wyoming, southward along the eastern edge of the Front Range of Colorado to Colorado Springs in El Paso County (Hall 1981; Clark and Stromberg 1987; Fitzgerald *et al.* 1994; Clippenger 2002). Knowledge about the current distribution of the PMJM 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.

In Colorado, the distribution of the PMJM forms a band along the Front Range from Wyoming southward to Colorado Springs, with eastern marginal captures in western Weld County, western Elbert County, and north-central El Paso County.

The semi-arid climate in eastern Colorado limits the extent of riparian corridors and restricts the range of the PMJM in this region. The PMJM has not been found 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 PMJM's range in Colorado appears related to elevation along the Front Range. We use 7,600 feet (ft) (2,317 meters (m)) in elevation as the general upper limit of the PMJM's habitat in Colorado (Service 2004a). The western jumping mouse (*Zapus princeps*), a separate species from the PMJM, is similar in appearance and can easily be confused with the PMJM. The range of the western jumping mouse in Colorado is generally west of, and at higher

elevations than, the range of the PMJM. However, the two species appear to coexist over portions of their range in the Front Range of Colorado (Bohan *et al.* 2005; Schorr *et al.* 2007). Recent morphological examination of specimens has confirmed the PMJM to an elevation of approximately 7,600 ft (2,317 m) in Colorado (Bohan *et al.* 2005) and to 7,750 ft (2,360 m) in southeastern Wyoming (Service 2009). For a discussion of the difficulties of differentiating between the PMJM and the western jumping mouse see our July 10, 2008, final rule to amend the listing for the PMJM (73 FR 39789).

Although there is little information on past distribution or abundance of the PMJM, surveys identified various locations where the subspecies was historically present but is now absent (Ryon 1996). Since at least 1991, the PMJM has not been found in Denver, Adams, or 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).

### *Ecology and Life History*

Much of the current knowledge regarding life history of the meadow jumping mouse comes from studies of the species in the eastern and midwestern United States. The meadow jumping mouse usually has two litters per year, with an average of five young born per litter (Quimby 1951; Whitaker 1963). Research has not been conducted on the number or size of PMJM litters, but we assume that they are comparable to other subspecies of the meadow jumping mouse. The PMJM is a true hibernator, usually entering hibernation in September or October and emerging the following May, after a potential hibernation period of 7 or 8 months (Whitaker 1963; Meaney *et al.* 2003). Similar to other subspecies of meadow jumping mouse, the PMJM does not store food, but survives on fat stores accumulated prior to hibernation (Whitaker 1963).

Meadow jumping mice are primarily nocturnal or crepuscular (active during twilight), but also may be active during the day. Little is known about social interactions and their significance in the PMJM. While the PMJM's dispersal capabilities are thought to be limited, in one case a PMJM was documented moving as far as 0.7 mi (1.1 km) in 24 hours (Ryon 1999), and the PMJM is able to move miles along stream corridors over its lifetime (Schorr 2003).

While fecal analyses have provided the best data on the PMJM's diet to date, they overestimate the components of the diet that are less digestible. Based on fecal analyses, the PMJM eats insects; fungus; moss; pollen; *Salix* (willow); *Chenopodium sp.* (lamb's quarters); *Salsola sp.* (Russian thistle); *Helianthus spp.* (sunflower); *Carex spp.* (sedge); *Verbascum sp.* (mullein); *Bromus*, *Festuca*, *Poa*, *Sporobolus*, and *Agropyron spp.* (grasses); *Lesquerella sp.* (bladderpod); *Equisetum spp.* (horsetail); and assorted seeds (Shenk and Eussen 1998; Shenk and Sivert 1999a). The diet shifts seasonally; it consists primarily of insects and fungi after emerging from hibernation, shifts to fungi, moss, and pollen during mid-summer (July and August), with insects again added in September (Shenk and Sivert 1999a). The shift in diet along with shifts in mouse movements suggests that the PMJM may require specific seasonal diets, perhaps related to the physiological constraints imposed by hibernation (Shenk and Sivert 1999a).

The PMJM has a host of known predators, including the garter snake (*Thamnophis* spp.), prairie rattlesnake (*Crotalus viridus*), bullfrog (*Rana catesbiana*), fox (*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 potential predators include coyote (*Canis latrans*), barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), screech owl (*Otus spp.*), long-eared owl (*Asio otus*), northern harrier (*Circus cyaneus*), and large predatory fish. Mortality factors of the PMJM include drowning and being hit by vehicles (Schorr 2001; Shenk and Sivert 1999a). Introduced fauna that occupy riparian habitats may displace or compete with the PMJM. House mice (*Mus musculus*) were common in and adjacent to historic capture sites where the PMJM was no longer found (Ryon 1996). Mortality factors known for the meadow jumping mouse, such as starvation, exposure, disease, and insufficient fat stores for hibernation (Whitaker 1963) also are likely causes of death in the PMJM subspecies.

### *PMJM Habitat*

Typical habitat for the PMJM is comprised of well-developed riparian vegetation with adjacent, relatively undisturbed grassland communities and a nearby water source (Bakeman 1997). The PMJM is typically captured in areas with multi-storied cover with an understory of grasses or forbs or a mixture thereof (Bakeman 1997; Meaney *et al.* 1997; Shenk and Eussen 1998; Schorr 2001). The shrub canopy is often *Salix* spp., although other shrub species may occur (Shenk and Eussen 1998).

Although the PMJM commonly uses riparian vegetation immediately adjacent to a stream, other features that provide habitat for the subspecies include seasonal streams (Bakeman 1997), low moist areas and dry gulches (Shenk 2004), agricultural ditches (Meaney *et al.* 2003), and wet meadows and seeps near streams (Ryon 1996).

White and Shenk (2000) determined that riparian shrub cover, tree cover, and the amount of open water nearby are good predictors of PMJM densities. Trainor *et al.* (2007) found that high-use areas for the PMJM tended to be close to creeks and were positively associated with the percentage of shrubs, grasses, and woody debris. Hydrologic regimes that support PMJM habitat range from large perennial rivers, such as the South Platte River, to small drainages only 3 to 10 ft (1 to 3 m) wide.

Clippenger (2002) found that, in Colorado, subshrub cover and plant species richness are higher at most sites where meadow jumping mice are present when compared to sites where they are absent, particularly at distances of 49 to 82 ft (15 to 25 m) from streams. In a study comparing habitats at PMJM capture locations on the Rocky Flats NWR (formerly the Department of Energy's (DOE's) Rocky Flats Environmental Technology Site), Jefferson County, and the U.S. Air Force Academy (Academy) in El Paso County, the Academy sites had lower plant species richness at capture locations but considerably greater numbers of the PMJM (Schorr 2001). However, the Academy sites had higher densities of both grasses and shrubs. It is likely that PMJM abundance is not driven by the diversity of plant species alone, but by the density and abundance of riparian vegetation (Schorr 2001).

The PMJM has rarely been trapped in uplands adjacent to riparian areas (Dharman 2001). However, in detailed studies of PMJM movement patterns using radio-telemetry, the PMJM has been found feeding and resting in adjacent uplands (Shenk and Sivert 1999a; Ryon 1999; Schorr 2001). These studies suggest that the PMJM uses uplands at least as far out as 330 ft (100 m) beyond the 100-year floodplain (Shenk and Sivert 1999b; Ryon 1999; Schorr 2001; Service 2003a; Shenk 2004). These upland habitats also assist in maintaining the integrity of riparian habitats by protecting them from disturbance and supporting normal hydrological functions of rivers, streams, and floodplains.

The PMJM 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 also can 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).

Apparent hibernacula (hibernation nests) of the PMJM have been located both within and outside of the 100-year floodplain of streams (Shenk and Sivert 1999a; Schorr 2001). Those hibernating outside of the 100-year floodplain would likely be less vulnerable to flood-related mortality. Fifteen apparent PMJM hibernacula have been located through radio-telemetry, all within 335 ft (102 m) of a perennial stream bed or intermittent tributary (Shenk and Sivert 1999a; Schorr 2001; Ruggles *et al.* 2003). Apparent hibernacula have been located under *Salix* shrubs, *Prunus virginiana* (chokecherry), *Symphoricarpos albus* (snowberry), *Rhus trilobata* (skunkbrush), *Rhus* spp. (sumac), *Clematis* spp. (clematis), *Populus* spp. (cottonwood), *Quercus gambelii* (Gambel's oak), *Cirsium* spp. (thistle), and *Alyssum* spp. (alyssum) (Shenk and Sivert 1999a). At the Academy, four of six apparent hibernacula found by radio-telemetry were located in close proximity to *Salix exigua* (coyote willow) (Schorr 2001).

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 *Salix* shrubs, and allows herbs and grasses to take advantage of newly deposited soil. Fire is also a natural component of the Colorado Front Range, and PMJM habitat naturally waxes and wanes with fire events. Within shrubland and forest, intensive fire may result in adverse impacts to PMJM 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.

The tolerance of the PMJM for invasive exotic plant species is not well understood. Whether or not exotic plant species reduce PMJM persistence at a site may be due in large part to whether plants create a monoculture and replace native species. The Preble's Meadow Jumping Mouse Recovery Team (Recovery Team) was particularly concerned about nonnative species such as *Euphorbia esula* (leafy spurge) that may form a monoculture, displacing native vegetation and thus reducing available habitat (Service 2003a).

## *Threats*

The PMJM is closely associated with riparian ecosystems that are relatively narrow and represent a small percentage of the landscape. If PMJM habitat is destroyed or modified, populations in those areas may decline or be extirpated. The decline in the extent and quality of PMJM habitat is considered the main factor threatening the subspecies (Service 1998, Hafner et al. 1998, Shenk 1998). Within Colorado, riparian habitat has been severely modified or destroyed by human activities. With current and projected human population increases and commensurate increases in urban and rural development, road construction, and water use, the ongoing loss and modification of riparian habitat will continue in much of the PMJM's Colorado range. Even with the protections of the Act, development in Colorado has continued to affect the PMJM's habitat, both directly and indirectly. The best currently available information suggests that at least half of the Prebles' current range in Colorado is on private land with potential for future development. In the absence of the Act's protections, most of this habitat could be lost or degraded within the foreseeable future. While appreciable lands in Colorado supporting the Prebles are controlled by Federal or State agencies, or have been set aside as open space by local governments, many of these areas also are likely to experience some habitat degradation in the absence of the Act's protections. Some of these areas will experience negative indirect effects from upstream development. Where conservation properties are not extensive, the Prebles' populations are likely to become small, fragmented, and unsustainable. Additional recovery efforts are required to establish and protect extensive contiguous conservation properties in Colorado.

A variety of other factors that may impact the PMJM in Colorado were evaluated in our July 10, 2008, final rule to amend the listing for the PMJM to specify over what portion of its range the subspecies is threatened (73 FR 39789), including: overutilization, disease, predation, fire, flooding, drought, invasive weeds, weed control programs, pesticides, herbicides, non-point source pollution, secondary impacts associated with human development, scarcity, the potential for competition between the Prebles and the western jumping mouse (*Z. princeps*), and the future effects of climate change. We concluded that there was no conclusive information to indicate that these factors are, individually, a threat to the subspecies' long-term conservation status. To the extent that meaningful impacts are possible, these factors are likely to be most significant to smaller and more fragmented populations. Thus, we expect these issues could be meaningful as cumulative impacts in the Colorado SPR where development pressures are likely to substantially reduce and fragment populations.

For additional information on the biology of this subspecies and threats to its continued existence, see the May 13, 1998, final rule to list the PMJM as threatened (63 FR 26517); the June 23, 2003, final rule designating critical habitat for the PMJM (68 FR 37275); and the July 10, 2008, final rule to amend the listing for the PMJM to specify over what portion of its range the subspecies is threatened (73 FR 39789).

## 2.2 Endangered Species Act

### 2.2.1 Critical Habitat

Critical habitat is defined in section 3(5)(A) of the ESA 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 threatened and endangered species).

Section 4(b)(2) of the ESA 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 that 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 physical and biological features that provide essential life cycle needs for 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 the 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 planning efforts calls for a different outcome.

In accordance with section 3(5)(A)(i) of the ESA 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 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 ESA 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 ESA 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 required.

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 a prohibited taking under the ESA and no other authorization or permit under the ESA 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:

- a) If species are not likely to be present, the consultation requirement is met and the Service may advise the agency, applicant or consultant.

- b) 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.
- c) 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:

- a) That the action agency conduct additional studies on the species' distribution in the area affected by the action, or
- b) That the action agency monitors 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 ESA 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 ESA establishes with respect to endangered wildlife. Take is defined in section 3 of the ESA 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 from, 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 ESA to ensure the issuance of the permit is not likely to jeopardize the continued existence of any endangered 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 ESA 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 rule, as amended, was scheduled to end May 22, 2004, but was made permanent on May 20, 2004 (69 FR 29101).

## **3.0 Description of Alternatives**

This section describes the proposal for critical habitat for the PMJM. Alternatives are different ways of meeting the purpose and need for critical habitat designation as described in chapter one, which can be summarized as to provide protection of habitat that is essential to the conservation of listed species. In addition, we considered two potential alternatives without thoroughly examining the impacts of their implementation.

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

We considered an alternative designating the entire range of the PMJM in Colorado, which would include all areas where the PMJM has been recently (since the early 1990s) known to occur. The alternative of designating critical habitat based solely on known occurrence would include sites not considered to be essential to this species' survival or recovery. All areas believed to have widely scattered PMJM occurrence, low population densities, or marginal habitat quality would be included. Some of the range in Colorado where PMJM has been recently known to occur 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.

We also considered an alternative of designating critical habitat for the PMJM in Colorado as outlined in recovery criteria from the Preliminary Draft Recovery Plan for the PMJM (PDRP) (Service 2003a). The PDRP was developed based on a preliminary draft recovery plan developed by the PMJM Recovery Team over the course of 3 years. It incorporated principles of conservation biology and all available knowledge regarding the PMJM. For our proposal to revise critical habitat, we relied heavily on the information, concepts, and conservation recommendations contained in the PDRP, as well as the current efforts of the recently reformed PMJM Recovery Team. We used these as a starting point for identifying those areas for inclusion in critical habitat that contain the requisite PCEs in the appropriate quantity and spatial arrangement that are essential for the conservation of the PMJM. However, recovery criteria in

the PDRP identify only sizes and numbers of PMJM populations necessary for recovery, and distributions across the PMJM range by hydrologic unit (watershed). The PDRP does not delineate boundaries of recovery populations within hydrologic units. Therefore, while the PDRP provided useful support to our proposed revision of critical habitat, it can not be used to designate specific areas essential to the conservation of the species. 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. Alternative A, the No Action Alternative, would maintain the status quo. The 2003 designation of critical habitat for the PMJM in the SPR in Colorado comprises 5 units totaling 234 mi (377 km) of stream corridors. This alternative serves to delineate the existing environment and conditions that result from the listing of the species and the 2003 designation of critical habitat as it applies to the SPR of PMJM in Colorado. Within existing critical habitat the PMJM has been protected under section 7 of the ESA by prohibiting Federal agencies from implementing actions that would destroy or adversely modify critical habitat. Both within and outside of currently designated critical habitat, the PMJM has been protected under section 7 of the ESA by prohibiting Federal agencies from implementing actions that would jeopardize the continued existence of the species. These protections under the ESA are considered the baseline against which we evaluate the action alternative described below.

### **3.3 Alternative B. Designation of Critical Habitat as Identified in the Proposed Rule.**

Alternative B, would designate critical habitat as described in the proposed rule published in the Federal Register (October 8, 2009; 74 FR 52066). This proposed revision includes 11 units comprising a total of 418 mi (674 km) of stream corridors considered essential to the conservation of the PMJM. The six additional units (Cedar Creek, South Boulder Creek, Rocky Flats NWR, Cherry Creek, West Plum Creek, and Monument Creek) were all proposed as critical habitat in the same or similar form on July 17, 2002 (67 FR 47154), but were not included in the 2003 final designation. We also propose as critical habitat lands addressed in the Denver Water HCP (Service 2003b) that were excluded under section 4(b)(2) of the ESA in our 2003 final designation.

### **3.4 Alternative C. Designation of Critical Habitat Using Douglas County Resource Conservation Zone Boundaries (Preferred Alternative).**

This alternative was developed following comments on our Draft Environmental Assessment and proposal to designate revised critical habitat. It is similar to Alternative B with the following exception. Our delineation of the outward boundary of designated critical habitat in those portions of Units 8, 9, and 10, where a Riparian Conservation Zone (RCZ) has been mapped to delineate the limits of PMJM habitat in conjunction with development of the Douglas County Habitat Conservation Plan (HCP), would conform to the outward limits of that RCZ. The RCZ depicts known or potential PMJM habitat over 283 stream mi (456 km) and over 18,000 ac (7,000 ha) in Douglas County. Mapping of the RCZ relied on geomorphology and existing

vegetation to assess presence and extent of required habitat components (i.e., those physical and biological features essential for the conservation of the PMJM). It followed the alternative habitat delineation suggested in the Draft Plan (Service 2003a), and provides for the needs of the PMJM by including the alluvial floodplain, transition slopes, and appropriate upland habitat along stream reaches. When we approved the Douglas County HCP, we reviewed the methodology and concluded that the RCZ reflected the best information available for establishing the limits of PMJM habitat.

Beyond the conclusion that the RCZ boundary provides a more accurate depiction of the appropriate boundary of critical habitat than what we proposed, we also consider the potential confusion that designation of critical habitat that differs from the established RCZ boundary might cause. The RCZ has been widely publicized in Douglas County and is used as a guide to help avoid impacts to PMJM and its habitat. Establishing critical habitat through standard setbacks from streams, as in Alternative B, would create a confusing pattern of dual lines that depict PMJM habitat limits. For these reasons we are proposing designating the outward boundary of critical habitat on non-Federal lands in Units 8, 9, and 10 to correspond to the boundaries set by the RCZ, where the RCZ is present. In some instances this increases the width of critical habitat designated; in others it decreases the width. Overall, it results in a 36,496 ac (14,780 ha) decrease in critical habitat than that in Alternative B, but it more accurately reflects on-site habitat conditions. On Federal properties designated as revised critical habitat in Douglas County, and on a very few non-Federal properties not included in the RCZ, outward boundaries of critical habitat units would include standard distances from streams based on stream order.

Both Alternative B, and Alternative C, the Preferred alternative, include the revised designation of critical habitat to include areas believed to contain the physical and biological features upon which the PMJM depends. The ESA refers to these essential habitat features as “primary constituent elements.” The PCEs for the PMJM include those habitat components essential for the biological needs of reproducing, rearing of young, foraging, sheltering, hibernation, dispersal, and genetic exchange. The PMJM 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 PMJM, the structure of the vegetation appears more important to the PMJM than species composition.

PCEs associated with the biological needs of dispersal and genetic exchange are also found in areas that provide connectivity or linkage between or within the PMJM 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 PMJM habitat also are important PCEs. Habitat components essential to the PMJM 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. PMJM 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 PMJM. 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 PMJM 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, as indicated above, the system supporting the PMJM is dynamic and complex, and because the PMJM 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 PCEs at a given time, but have a history of and future potential for supporting such components. These segments currently provide corridors or linkages between areas of better PMJM habitat.

PCEs for the PMJM include:

(1) Riparian corridors:

(A) Formed and maintained by normal, dynamic, geomorphological, and hydrological processes that create and maintain river and stream channels, floodplains, and floodplain benches and promote patterns of vegetation favorable to the Preble's meadow jumping mouse;

(B) Containing dense, riparian vegetation consisting of grasses, forbs, or shrubs, or any combination thereof, in areas along rivers and streams that normally provide open water through the Preble's meadow jumping mouse's active season; and

(C) Including specific movement corridors that provide connectivity between and within populations. This 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; and

(2) Additional adjacent floodplain and upland habitat with limited human disturbance (including hayed fields, grazed pasture, other agricultural lands that are not plowed or disked regularly, areas that have been restored after past aggregate extraction, areas supporting recreational trails, and urban-wildland interfaces).

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 disked agricultural areas, and other features not containing any of the PCEs are not considered critical habitat.

In the proposed designation of revised critical habitat we identified specific areas that include only river and stream reaches, and their adjacent floodplains and uplands, that are within the known geographic and elevational range of the PMJM, that contain the features essential to the conservation of the PMJM. Further, all areas included in proposed critical habitat contain at least one of the requisite PCEs, and are currently believed to be occupied by the PMJM or provide crucial opportunities for connectivity to facilitate dispersal and genetic exchange. A complete discussion of the criteria used for defining essential habitat can be found in the October 8, 2009, proposal to designate critical habitat for the PMJM (74 FR 52066).

### 3.5 Summary of Actions by Alternative

In Table 1, we provide a comparison between Alternative A, the No Action Alternative, which includes 2003 final critical habitat designation for the PMJM in Colorado, Alternatives B, the proposed revised critical habitat of October 8, 2009, and Alternative C, the Preferred alternative, which is similar to Alternative B but incorporates Douglas County’s RCZ lines as the outward extent of critical habitat on non-Federal lands in Douglas County.

TABLE 1. Existing and Proposed Critical Habitat for the Preble’s Meadow Jumping Mouse by Stream Miles (Kilometers) and Acres (Hectares) per Unit.

UNIT	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B	ALTERNATIVE C (PROPOSED)
1. N. Fork, Cache la Poudre	88 mi (142 km) 8,206 ac (3,321 ha)	88 mi (142 km) 8,619 ac (3,488 ha)	88 mi (142 km) 8,619 ac (3,488 ha)
2. Cache la Poudre River	51 mi (82 km) 4,725 ac (1,912 ha)	51mi (82 km) 4,944 ac (2,001 ha)	51mi (82 km) 4,944 ac (2,001 ha)
3. Buckhorn Creek	43 mi (69 km) 3,798 ac (1,537 ha)*	46 mi (73 km) 3,995 ac (1,617 ha)	46 mi (73 km) 3,995 ac (1,617 ha)
4. Cedar Creek	0	8 mi (12 km) 668 ac (270 ha)	8 mi (12 km) 668 ac (270 ha)
5. South Boulder Creek	0	8 mi (12 km) 856 ac (347 ha)	8 mi (12 km) 856 ac (347 ha)
6. Rocky Flats NWR	0	13 mi (20 km) 1,108 ac (449 ha)	13 mi (20 km) 1,108 ac (449 ha)
7. Ralston Creek	8 mi (13 km) 686 ac (277 ha)	9 mi (14 km) 809 ac (328 ha)	9 mi (14 km) 809 ac (328 ha)
8. Cherry Creek	0	30 mi (48 km) 2,647 ac (1,071 ha)	30 mi (48 km) 2,598 ac (1,052 ha)
9. West Plum Creek	0	94 mi (151 km) 8,724 ac (3,530 ha)	94 mi (151 km) 6,249 ac (2,531ha)
10. Upper South Platte River	44 mi (71 km) 3,265 ac (1,321 ha)	35 mi (57 km) 3,353 ac ( 1,357 ha)	35 mi (57 km) 3,231 ac (1,309 ha)
11. Monument Creek	0	39 mi. (62 km) 3,419 ac (1,383 ha)	39 mi. (62 km) 3,419 ac (1,383 ha)

Total	234 mi (377 km) 20,680 ac (8,368 ha)	418 mi (674 km) 39,142 ac (15,840 ha)	418 mi (674 km) 36,496 ac (14,780 ha)
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Areas may be excluded from final critical habitat designation after consideration of economic impact or any other relevant impact if the Secretary determines that the benefits of such exclusion outweigh the benefits of specifying such areas as part of the critical habitat.

#### 4.0 Description of the Affected Environment

The geographic area for Alternative B and Alternative C, the Preferred alternative, includes 418 river miles (674 kilometers) in Colorado on Federal, State, local government, and private lands in Boulder, Douglas, El Paso, Jefferson/Broomfield, Larimer, and Teller counties, Colorado. Alternative B and Alternative C, the Preferred Alternative, encompass all areas currently designated as critical habitat under the Alternative A, the No Action Alternative.

#### 4.1 Physical Environment

Areas proposed as critical habitat in Alternatives B and C occur generally at the interface of the western short grasslands and the Colorado Rockies forests ecoregions in Colorado. Proposed critical habitat occurs along piedmont streams widely distributed throughout the Colorado range of the PMJM, which includes portions of two major river drainages –the South Platte River drainage, and the Arkansas River drainage.

The South Platte River originates along the Continental Divide in Colorado. It flows generally northeast from its headwaters through the Colorado Front Range 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, and Ft. Collins.

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 project area.

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

## **4.2 Fish and Wildlife**

Several federally-listed threatened species may occur within the range of Alternatives B and C, the Preferred Alternative, including the Mexican spotted owl (*Strix occidentalis lucida*), Canada lynx (*Lynx canadensis*), Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*), and the Ute ladies'-tresses (*Spiranthes diluvialis*).

The Mexican spotted owl and Canada lynx may occasionally use areas proposed for designation as PMJM critical habitat. However, no areas of regular use by these 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, and Larimer counties, Colorado. Historically, the plant was also known from El Paso and Weld counties in Colorado. Extant populations known to co-occur with PMJM 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. Historically, the plant was also known from Boulder, Larimer and Douglas counties in Colorado (Fertig 1994, 2000). Extant populations are not known that co-occur (or occur within fairly close proximity in the same drainage) with PMJM. 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 Alternatives B and C. Potentially affected State-listed species include the common shiner (*Luxilus cornutus*) (threatened, West Plum Creek, Douglas County), northern redbelly dace (*Phoxinus eos*) (endangered, West Plum Creek, Douglas County), 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).

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

### **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 under Alternatives B or C. Uses include residential and commercial development (and associated actions such as utility infrastructure), transportation, municipal water supply, farming, livestock grazing, gravel mining, and a variety of recreational activities. Stream and bank stabilization projects occur at various locations in the developed Front Range along Colorado streams. Fire suppression and prevention projects are common at the wildland-urban interface. Private, State, and Federal lands are included in the proposed action area.

Continued rapid development is expected along Colorado's Front Range as the human population continues to grow. The State of Colorado expects the population of counties supporting the Prebles to increase by an additional 1.5 million people from 2005 to 2035 (an increase of 69 percent), including: 100,000 in Boulder County; 284,000 in Douglas County; 43,000 in Elbert County; 371,000 in El Paso County; 154,000 in Jefferson County; 203,000 in Larimer County; and 326,000 in Weld County (Colorado Demography Office 2008).

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 Colorado counties is provided the 2003 Economic Analysis (Industrial Economics, Incorporated 2003).

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 has been transferred to the Service following closure and cleanup. Rocky Flats has in the past been a focus of research on PMJM.

### **4.4 Tribal Lands**

There are no tribal lands located within the geographic range of the PMJM.

## **5.0 Environmental Consequences**

This section reviews the expected environmental consequences of revising designated critical habitat for the PMJM under Alternative B or Alternative C, the Preferred Alternative to revise critical habitat, and the environmental consequences for maintaining existing critical habitat under Alternative A, the No Action Alternative. The impacts of revising critical habitat designation involve evaluating the "existing critical habitat" baseline versus the "revised critical

habitat” scenario. Impacts of a revised designation equal the difference, or the increment, between the two scenarios. Measured differences between the existing baseline and the scenario in which revised critical habitat is designated in Alternatives B or C 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, or whether a Federal action affects critical habitat, in accordance with section 7(a)(2) of the ESA, 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 ESA.

A similar process is required where critical habitat is currently designated. While reviewing their actions to determine the effect on the listed species, Federal agencies also review their action for the effects on critical habitat and enter into section 7 consultations with us on actions they determine may affect critical habitat. If the proposed action is determined to be likely to adversely affect 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 ESA. Under the Action Alternative, critical habitat would be increased in area; therefore, instances where the Federal action agency would be required to address both the jeopardy standard and the destruction or adverse modification of critical habitat standard in section 7 consultations would increase.

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). Activities that would destroy or adversely modify critical habitat would almost always result in jeopardy to the species. This is particularly true in cases, such as PMJM, where the range of the species is relatively small and no habitat believed to be unoccupied is proposed for designation as critical habitat.

In areas of currently designated critical habitat, the prohibition against adverse modification of critical habitat has rarely imposed additional burden on Federal agencies or project applicants. It is difficult to differentiate between consultations that result from the listing of PMJM (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 Draft Economic Analysis (Industrial Economics, Incorporated 2010) quantifies the potential economic impacts associated with future section 7 consultations in or near proposed critical habitats, including critical habitat currently designated. The following discussion will disclose the potential cost attributable to critical habitat designation when available from the Draft Economic Analysis. Since the Draft Economic Analysis addresses all proposed critical habitat, including that currently designated,

the incremental cost difference between proposed critical habitat, as compared with existing designated critical habitat, would always be smaller than the costs described.

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 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 ESA. 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 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 directly impact the physical environment.

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

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

Alternative A, the No Action Alternative, would have no significant impacts on the PMJM because the protections resulting from its listing in 1998, designation of critical habitat in 2003, and the associated requirements of section 7 of the ESA are already in place.

Alternative B and Alternative C, the Preferred Alternative, would designate more critical habitat over a wider area but would have similar effects on fish, wildlife, and plants as Alternative A. There would be only minimal impacts associated with designation of critical habitat beyond those already considered in section 7 consultation since the 1998 listing, critical habitat designation in 2003, and associated requirements of section 7 of the Act. Benefits to the PMJM that may accrue from expanded designation of critical habitat, under Alternatives B or C, would relate to the requirement under section 7 of the ESA that Federal agencies review their actions to assess their effects on critical habitat. Designation of critical habitat may also provide some benefits to PMJM by alerting Federal agencies to situations when section 7 consultation is required. Another potential benefit is that critical habitat designation 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 project 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**

Alternative A, 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 PMJM in 1998, critical habitat designation in 2003, and associated requirements of section 7 of the Act.

Alternative B and Alternative C, the Preferred Alternative, would designate more critical habitat over a wider area but would have similar effects on fish, wildlife, and plants as Alternative A. There would be only minimal impacts associated with designation of critical habitat beyond those already considered in section 7 consultation since the 1998 listing, critical habitat designation in 2003, and associated requirements of section 7 of the Act.. Minimal positive impact may ensue since 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 PMJM critical habitat may overlay Ute ladies'-tresses and Colorado butterfly plant populations. While any related impacts are anticipated to benefit these species, management of a critical habitat unit solely for PMJM could focus on the dense vegetation and shrub component used by the PMJM. Neither Ute ladies'-tresses nor Colorado butterfly plant competes well in densely vegetated areas. Therefore, management solely for maintenance of PMJM habitat may not be beneficial to these species. In those areas where critical habitat may overlay 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 PMJM and the associated requirements of section 7(a)(2) of the ESA. 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 PMJM, 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 PMJM and consult with the Service as appropriate. A similar process is required for critical habitat and analysis of effects to critical habitat since 2003 has not caused large increases in the number or complexity of consultations. This is true partially because no habitat believed to be unoccupied has been designated or is currently proposed for designation as critical habitat. However, we realize that some Federal agencies have not fully recognized their responsibilities under the ESA and may not have been initiating section 7 consultation in all cases where consultation is appropriate. Those agencies may recognize their need to do so in areas designated as critical habitat, resulting in a small increase in consultations.

A perception may exist within some segments of the public that any designation of 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 are conducting a public outreach effort, postings on our website, and a press release to help explain exactly what 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 PMJM and consultations that result from the presence of critical habitat is difficult. However, the following discussion will address how much of the cost associated with all future section 7 consultation in or near all proposed critical habitat units is likely attributable to critical habitat designation, as provided in the Final Economic Analysis (Industrial Economics, Incorporated 2010). The Final Economic Analysis discusses the costs associated with all proposed critical habitat, including existing critical habitat. Therefore, the incremental cost difference between existing and proposed critical habitat would be less than that described in all cases.

The Final Economic Analysis addresses the incremental costs associated with our proposed revision of critical habitat as published in the Federal Register (October 8, 2009; 74 FR 52066), Alternative B. Costs were estimated to range from \$28,200,000 to \$63,400,000 over a 20-year period. Alternative C, the Preferred Alternative, represents a 6 percent decrease in total area that would be designated as critical habitat as compared with Alternative B, with all of the difference

attributable to use of the Douglas County RCZ line as the outward limit of critical habitat in Units 8, 9, and 10 in Douglas County, primarily in Unit 9. The difference is largely inconsequential in respect to the economic impacts. While economic impacts of Alternative B and Alternative C are addressed as similar below, impacts of Alternative C are likely to be slightly less overall, and could be significantly less for some activities in Unit 9.

### **5.3.1 Residential and Commercial Development**

Alternative A, the No Action Alternative, would have no impacts on residential and commercial development beyond those already resulting from the 1998 listing of the PMJM, the 2003 designation of critical habitat, and the associated requirements of section 7 of the ESA.

For Alternative B and Alternative C, the Preferred Alternative, impacts to residential and commercial development projects are expected to be 96 percent of all impacts attributable to revised critical habitat (Industrial Economics, Incorporated 2010). These costs are associated with section 7 consultations with Federal agencies and include administrative costs associated with the consultation process, costs of project delays, and costs of mitigation measures to protect habitat. The typical Federal nexus for these activities is 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. Only a portion of residential and commercial developments within revised critical habitat would have a Federal nexus and be subject to section 7 consultation. These costs would be borne by the Service, Federal action agencies, landowners, developers, subdividers, builders, and consumers. Consultation costs of residential and commercial development associated with proposed critical habitat for PMJM are predicted to total from \$26.9 to \$61.1 million over the next 20 years (Industrial Economics, Incorporated 2010). Incremental costs of revised critical habitat as compared with existing critical habitat would be somewhat less. The Draft Economic Analysis estimates that over the next 20 years in counties supporting proposed critical habitat, only 0.008 percent of new home construction would be impacted. Given the availability of substitute housing sites in the general area, total residential development is not likely to decline as a result of revised critical habitat designation for the PMJM. It is likely, though, that in some instances project delays and required project modifications will result in some increased costs either to the land owner/seller, the land developer, builder, or possibly the housing consumer. The distribution of costs among these entities is difficult to predict.

### **5.3.2 Road, Bridge, Utility, and Bank Stabilization Construction and Maintenance**

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, the 2003 designation of critical habitat and the associated requirements of section 7 of the Act.

For Alternative B and Alternative C, the Preferred Alternative, there is the potential for a significant number of road and bridge utility, and bank stabilization construction and maintenance activities within revised critical habitat over the next 20 years. Road and bridge

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. Utility projects anticipated for proposed revised critical habitat include sewer pipelines, water transmission mains, natural gas pipelines, fiber optic cable installation, and other services related to development. 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. 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, bridge, utility, and bank stabilization 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. The total costs from the proposed revised designation of critical habitat associated with these activities is predicted to range from \$497,000 to \$946,000 total over the next 20 years (Industrial Economics, Incorporated 2010). Incremental costs of revised critical habitat as compared with existing critical habitat would be somewhat less. These costs would be borne by the Service, Federal action agencies, the Colorado Department of Transportation, local governmental entities, and utilities.

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, and utility projects can be designed to minimize habitat disturbance, maintain habitat connectivity, and provide for free movement through the area. 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. Bank stabilization projects are typically designed in a manner that minimizes habitat disturbance, maintains habitat connectivity, and provides for free movement through the area. Maintenance activities alone are likely to have only minimal impacts to habitat. It is unlikely that the number and type of future projects would be affected by the revision of critical habitat that is proposed.

### **5.3.3 Water Supply Development**

Alternative A, the No Action Alternative, would have no impacts on residential and commercial development beyond those already resulting from the 1998 listing of the PMJM, the 2003 designation of critical habitat, and the associated requirements of section 7 of the ESA.

For Alternatives B and Alternative C, the Preferred Alternative, there is the potential for water supply development activities within revised critical habitat over the next 20 years. Projects under development include (1) Halligan Reservoir, Larimer County, (2) Milton Seaman Reservoir, Larimer County, and (3) Chatfield Reservoir, Douglas and Jefferson counties. These reservoir projects are in various stages of development, with construction/implementation expected within 20 years. The expected impacts of revised critical habitat primarily consist of administrative costs associated with the consultation process, costs of project delays, and costs of

mitigating habitat lost. The typical Federal nexus for these activities is through the U.S. Army Corps of Engineers permit under a section 404 permit under the Clean Water Act or a project occurring on Federal property.

The total costs from the proposed revised designation of critical habitat associated these activities is predicted to range from \$323,000 to \$937,000 total over the next 20 years (Industrial Economics, Incorporated 2010). In addition, uncertainty regarding the regulatory impacts of designation of critical habitat may cause project proponents to pursue alternative, less preferable, or more costly projects. The Draft Economic Analysis did not include such costs because of their speculative nature (Industrial Economics, Incorporated. 2010). Incremental costs of proposed revised critical habitat as compared with existing critical habitat would be considerably less since there is no proposed change in critical habitat for two of the three projects listed above. These costs associated with revised critical habitat would be borne by the Service, Federal action agencies, and project proponents

### **5.3.4 U.S. Forest Service Lands Management**

Alternative A, the No Action Alternative, would have no impacts on the U.S. Forest Service lands management beyond those already resulting from the 1998 listing of the PMJM, 2003 designation of critical habitat, and the associated requirements of section 7 of the Act.

For Alternative B and Alternative C, the Preferred Alternative, actions anticipated to occur in or near proposed critical habitat on U.S. Forest Service lands include forest management plan revisions, recreation, construction projects authorized under special use permits, exotic or invasive species control, and grazing. Impacts to these projects result from administrative costs associated with the consultation process and costs of project modifications to address adverse modification in section 7 consultations, as well as costs of implementing project modifications to mitigate impacts and to restore and enhance PMJM habitat. Costs associated with projects affecting proposed critical habitat for PMJM are predicted to be \$357,000 over the next 20 years (Industrial Economics, Incorporated 2010). However, since proposed revised critical habitat adds little to existing critical habitat on U.S. Forest Service lands, little of the above total represents incremental cost between currently designated and proposed revised critical habitat. What costs may occur would be borne mostly by the U.S. Forest Service.

### **5.3.5 Rocky Flats National Wildlife Refuge**

Alternative A, the No Action Alternative, would have no impacts on the Rocky Flats National Wildlife Refuge beyond those already resulting from the 1998 listing of the PMJM and the associated requirements of section 7 of the Act.

For Alternative B and Alternative C, the Preferred Alternative, projects anticipated to occur in or near proposed critical habitat at Rocky Flats National Wildlife Refuge will include activities associated with management of the refuge and continued clean-up of the Central Operating Unit, the former nuclear industrial facility managed by the U.S. Department of Energy. These may include habitat management; weed control; road and trail construction, removal, and

maintenance; and visitor services. Another potential activity that may be impacted by the proposed revised critical habitat is the planned expansion of the Northwest Parkway, which may run within the eastern boundary of the refuge. Since the refuge's involvement in this project is not clear at this time (e.g., the refuge may sell or lease land for the project), the Draft Economic Assessment included these projected costs within road/bridge construction activities (see 5.3.2). For the Central Operating Unit, this may include maintenance of groundwater treatment system components. Impacts to these projects from proposed revised designation of critical habitat result from administrative costs associated with addressing adverse modification in the section 7 consultation process, as well as costs of project modifications to restore and enhance habitat. Costs associated with projects affecting proposed critical habitat for PMJM are predicted to be \$70,800 over the next 20 years (Industrial Economics, Incorporated 2010). Since no critical habitat is currently designated at Rocky Flats National Wildlife Refuge, the estimate represents the incremental cost between currently designated and proposed revised critical habitat. These costs would be borne by the Service and the U.S. Department of Energy.

### **5.3.6 Agriculture**

Alternative A, 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 PMJM, the 2003 designation of critical habitat, and the associated requirements of section 7 of the Act.

For Alternative B and Alternative C, the Preferred Alternative, 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. Some Federal agricultural programs may create a Federal nexus in critical habitat areas (those funded through the Farm Service Agency and the Natural Resources Conservation Service). In addition, grazing is permitted by the Forest Service on some Federal lands proposed as revised critical habitat. As discussed previously, only a small portion of the future section 7 consultation cost results from the designation of critical habitat. This is particularly true of agricultural activities since these type of activities do not typically result in adverse modification of critical habitat. Many agricultural activities are compatible with PMJM habitat and no costs associated with future section 7 consultation on agricultural activities in or near critical habitat in Colorado were identified in the Draft Economic Analysis.

### **5.3.7 Habitat Conservation Plans**

Alternative A, the No Action Alternative, would have no impacts on habitat conservation plans (HCPs) beyond those already resulting from the 1998 listing of the PMJM, 2003 designation of critical habitat, 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 ESA. 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 ESA 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.

While, there is considerable uncertainty concerning the number and scope of future HCPs, it is unlikely that a substantial number of new HCPs will be developed over the next 20 years that include the PMJM. El Paso County has expressed ongoing interest in developing a HCP for the PMJM on county administered lands, but has not yet submitted a plan to the Service for review. Therefore, impacts associated with internal section 7 consultations regarding future HCPs are not addressed further in this assessment and were not quantified as a cost in the Draft Economic Analysis.

#### **5.4 Technical Assistance Requests of the Service**

Alternative A, the No Action Alternative, would have no impacts on technical assistance requests to the Service beyond those already resulting from the 1998 listing of the PMJM, 2003 designation of critical habitat, and the associated requirements of section 7 of the ESA.

For Alternative B and Alternative C, the Preferred Alternative, technical assistance costs associated with projects affecting proposed critical habitat for PMJM would seldom exceed those already resulting from the 1998 listing, since PMJM are believed to be present in areas proposed as revised critical habitat. These requests may be associated with projects in critical habitat, in occupied PMJM habitat, or elsewhere. The requests may come from private parties attempting to clarify whether they have an issue under the ESA. 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 revised critical habitat. Technical assistance requests may increase slightly as a result of publicity regarding the revised designation of critical habitat. Any resulting increase in costs would be borne by the Service.

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

Alternative A, the No Action Alternative, would have no impacts on archaeological and cultural areas beyond those already resulting from the 1998 listing of the PMJM, the 2003 designation of critical habitat, and the associated requirements of section 7 of the ESA.

Alternative B and Alternative C, the Preferred Alternative, would have similar effects on archeological and cultural sites to Alternative A, 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 revised critical habitat is expected to have no direct impacts on these resources. As a result of revised designation, increased protection of some 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

Additional designation of critical habitat for the PMJM under Alternative B or Alternative C would 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 PMJM, several listed species occur in the general vicinity of the proposed critical habitat, including the Canada lynx, Mexican spotted owl, Colorado butterfly plant, and the Ute ladies'-tresses. The Service has not designated critical habitat for any of these species that overlaps proposed revised critical habitat for the PMJM. Several listed species also occur downstream of the project area in the North Platte and South Platte River drainages. These include the whooping crane (*Grus americana*), interior least tern (*Sternula antillarum*), the piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), and western prairie fringed orchid (*Platanthera praeclara*). In addition, there is critical habitat designated for the whooping crane and the piping plover downstream in those drainages. 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 to any impacts of designated critical habitat of the PMJM.

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 ESA.

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 PMJM will likely provide little additional benefits to the species in presently occupied 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 ESA 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 have conducted an analysis of the economic and other relevant impacts of alternatives. The Draft Economic Analysis was made available for public review and comment, and we announced its availability in the Federal Register. We considered the results of that analysis, modifications based on public comments received, and the Final Economic Analysis in preparing this Final Environmental Assessment of proposed revised critical habitat designation.

**5.8 Table 2. SUMMARY OF ENVIRONMENTAL CONSEQUENCES BY ALTERNATIVE (Costs Attributable to Proposed Revised Critical Habitat, Industrial Economics, Inc.2010)**

**IMPACTS**

	ALTERNATIVE A. NO ACTION	ALTERNATIVE B.	ALTERNATIVE C. PREFERRED ALTERNATIVE
PMJM Meadow Jumping Mouse	No change to existing situation.	May be beneficial impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat. Expansion of critical habitat, adverse modification standard. Designation of critical habitat can help focus conservation activities for listed species.	May be beneficial impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat. Expansion of critical habitat, adverse modification standard. Designation of critical habitat can help focus conservation activities for listed species.
Other Fish, Wildlife, and Plants	No change to existing situation.	May be minimal beneficial impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat. For example, Federal agencies may be able to prioritize landowner incentive programs that benefit many species.	May be minimal beneficial impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat. For example, Federal agencies may be able to prioritize landowner incentive programs that benefit many species.
Residential and Commercial Development	No change to existing situation.	Total estimated costs over 20 years associated with proposed revised critical habitat – 20 to 50.4 million. Incremental costs associated with difference between existing and proposed revised critical habitat would be less.	Total estimated costs over 20 years associated with proposed revised critical habitat – 20 to 50.4 million. Incremental costs associated with difference between existing and proposed revised critical habitat would be less.
Road, Bridge, Utility, and Bank Stabilization Construction and Maintenance	No change to existing situation.	Total estimated section 7 consultation costs over 20 years associated with proposed revised critical habitat \$ 0.6 to 1.0 million. Incremental costs associated with difference between existing and proposed revised critical habitat would be less.	Total estimated section 7 consultation costs over 20 years associated with proposed revised critical habitat \$ 0.6 to 1.0 million. Incremental costs associated with difference between existing and proposed revised critical habitat would be less.
Water Supply Development	No change to existing situation.	Total estimated costs over 20 years associated with proposed revised critical habitat - \$324,000 to 928,000. Incremental costs associated with difference between existing and proposed revised critical habitat would be less.	Total estimated costs over 20 years associated with proposed revised critical habitat - \$324,000 to 928,000. Incremental costs associated with difference between existing and proposed revised critical habitat would be less.

U.S. Forest Service Lands Management	No change to existing situation.	Total estimated costs over 20 years associated with proposed revised critical habitat - \$413,000. Incremental costs associated with difference between existing and proposed revised critical habitat would be less.	Total estimated costs over 20 years associated with proposed revised critical habitat - \$413,000. Incremental costs associated with difference between existing and proposed revised critical habitat would be less.
Rocky Flats National Wildlife Refuge	No change to existing situation.	Total estimated costs over 20 years associated with proposed revised critical habitat - \$78,200.	Total estimated costs over 20 years associated with proposed revised critical habitat - \$78,200.
Agriculture	No change to existing situation.	No appreciable additional impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat.	No appreciable additional impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat.
Habitat Conservation Plans	No change to existing situation.	No appreciable additional impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat.	No appreciable additional impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat.
Technical Assistance Request of the Service	No change to existing situation.	No appreciable additional impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat.	No appreciable additional impacts beyond those associated with the 1998 listing, 2003 designation of critical habitat.
Archaeological and Cultural	No change to existing situation.	No likely additional impacts.	No likely additional impacts.
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**

Impacts of the action, 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 and the 2003 designation of existing critical habitat. 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, it is unlikely that 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. To the extent that this misconception may exist, previous designation of PMJM critical habitat has not been highly controversial.
5. The Service has designated critical habitat for PMJM and 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 revised 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 revised critical habitat will be additive (cumulative) to critical habitat that has been, and will be, designated for the PMJM and other species. However, it is the Service's conclusion that the 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 revised designation of critical habitat will be beneficial to endangered and threatened species, particularly the PMJM. 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 revised 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**

This designation of revised critical habitat has and will be coordinated with the State of Colorado, Federal agencies, and other interested parties through letters, faxes, emails, telephone calls, and our web site. These contacts include the Arapahoe-Roosevelt National Forest; the Pike-San Isabel National Forest; the Service's Rocky Flats Environmental National Wildlife Refuge; the Colorado Division of Wildlife; counties in Colorado including Larimer, Boulder, Broomfield, Jefferson, Douglas, Teller, and El Paso County; the City of Boulder; the City of Greeley; Town of Monument, Denver Water; and others.

### **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 PMJM. Each of these also will be notified of the publication of the final rule:

#### **FEDERAL AGENCIES**

##### **DEPARTMENT OF AGRICULTURE**

Natural Resources Conservation Service, Colorado  
U.S. Forest Service, Region 2, Lakewood, Colorado  
Pike-San Isabel National Forest  
Arapahoe – Roosevelt National Forest

##### **DEPARTMENT OF DEFENSE**

U.S. Army Corps of Engineers

Tri-Lakes Regulatory Office, Littleton, Colorado  
Pueblo Regulatory Office, Pueblo, Colorado

DEPARTMENT OF THE INTERIOR

Bureau of Land Management, Colorado Field Office  
U.S. Fish and Wildlife Service  
Rocky Flats National Wildlife Refuge  
Private Lands Coordinator  
Law Enforcement Division

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

FEDERAL CONGRESSIONAL DELEGATION

COLORADO

Office of Senator Udall  
Office of Senator Bennet  
Office of Representative Diana Degette  
Office of Representative Jared Polis  
Office of Representative John Salazar  
Office of Representative Betsy Markey  
Office of Representative Doug Lamborn  
Office of Representative Ed Permuter

STATE AGENCIES

Colorado Department of Agriculture  
Colorado Department of Natural Resources  
Colorado Department of Transportation  
Colorado Division of Wildlife

GOVERNORS

Colorado, Bill Ritter

COLORADO COUNTY COMMISSIONERS

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

LOCAL GOVERNMENTS AND PRIVATE GROUPS

Center for Native Ecosystems  
Chatfield Water Providers  
City of Boulder  
City of Golden  
City of Greeley  
Colorado Association of Homebuilders  
Colorado Environmental Coalition

Colorado Farm Bureau  
Denver Audubon Society  
Denver Water  
Douglas County Open Space and Natural Resources  
ERO Resources  
Land Use Dept., Boulder County  
Laramie County Planning  
Town of Monument

## **8.0 List of Contributors**

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Denver, CO 80225-0486  
Phone 303-236-4750

## **9.0 References Cited**

A complete list of all references cited is available upon request from the Colorado Ecological Services Field Office.

## **10. Maps of the Alternatives**

Detailed maps depicting the stream reaches addressed in Alternative A, the no action alternative, and Alternative B and Alternative C, the Preferred Alternative, are available in our June 23, 2003, final rule designating critical habitat for the PMJM (68 FR 37275) and our October 8, 2009, proposed rule to revise critical habitat for the PMJM in the SPR in Colorado (74 FR 52066), respectively. They are available on our web site at <http://mountain-prairie.fws.gov/species/mammals/preble/> Alternative C differs from the map provided in our October 8, 2009, proposed rule only in outward boundaries of non-Federal land in Units 8, 9, and 10. The scale of the maps does not allow depiction of differences in outward boundaries between Alternative B and Alternative C