DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R6–ES–2010–0015; MO 92210–0–0008 B2]

RIN 1018—AV83

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Ipomopsis polyantha (Pagosa Skyrocket) and Threatened Status for Penstemon debilis (Parachute Beardtongue) and Phacelia submutica (DeBeque Phacelia)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine endangered status for *Ipomopsis polyantha* (Pagosa skyrocket), a plant species in Archuleta County, Colorado; threatened status for *Penstemon debilis* (Parachute beardtongue) in Garfield County, Colorado; and threatened status for *Phacelia submutica* (DeBeque phacelia) in Mesa and Garfield Counties, Colorado, under the Endangered Species Act of 1973, as amended (Act). Designation of critical habitat for the three species is proposed concurrently in a separate rule in this edition of the **Federal Register.**

DATES: This rule becomes effective on August 26, 2011.

ADDRESSES: This final rule is available on the Internet at *http://www.regulations.gov.* Comments and materials received, as well as supporting documentation used in preparing this final rule are available for public inspection, by appointment, during normal business hours, at U.S. Fish and Wildlife Service, Western Colorado Ecological Services Field Office, 764 Horizon Drive, Building B, Grand Junction, CO 81506–3946; telephone 970–243–2778; facsimile 970–245–6933.

FOR FURTHER INFORMATION CONTACT: Al Pfister, Western Colorado Supervisor, U.S. Fish and Wildlife Service, Ecological Services Field Office, 764 Horizon Drive, Building B, Grand Junction, CO 81506–3946; telephone 970–243–2778, extension 29; facsimile 970–245–6933. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Previous Federal Actions

Ipomopsis polyantha

We first identified *Ipomopsis polyantha* as a taxon under review in the 1983 Supplement to Review of Plant Taxa for Listing as Endangered or Threatened Species (48 FR 53640, November 28, 1983). In that document, we included the species as a Category 2 candidate, based on our evaluation at that time. We published our decision to discontinue candidate categories and to restrict candidate status to those taxa for which we had sufficient information to support issuance of a proposed rule on December 5, 1996 (61 FR 64481). This resulted in the deletion of *Ipomopsis polyantha* from the list of candidate taxa for listing. We added the species to the list of candidates again in the 2005 Candidate Notice of Review (CNOR) (70 FR 24870, May 11, 2005) with a listing priority number (LPN) of 2. A listing priority of 2 reflects threats that are imminent and high in magnitude, as well as the taxonomic classification of *I. polyantha* as a full species. We published a complete description of our listing priority system in the **Federal Register** (48 FR 43098, September 21, 1983).

On June 23, 2010, we proposed to list *Ipomopsis polyantha* as endangered (75 FR 35721). In the proposed rule, we found that critical habitat for the species was prudent, but not determinable at that time. A proposed rule to designate critical habitat for this species is being published concurrently with this final rule.

Penstemon debilis

We first included *Penstemon debilis* as a category 2 candidate species in the February 21, 1990, Review of Plant Taxa for Listing as Endangered or Threatened Species (55 FR 6184). When we abandoned the use of numerical category designations in 1996, we changed the status of *P. debilis* to a candidate under the current definition. We published four CNOR lists between 1996 and 2004, and *P. debilis* remained a candidate species with an LPN of 5 on each (62 FR 49398, September 19, 1997; 64 FR 57534, October 25, 1999; 66 FR 54808, October 30, 2001; 67 FR 40657, June 13, 2002). An LPN of 5 is assigned to species with non-imminent threats of a high magnitude.

In the 2005 CNOR (70 FR 24870, May 11, 2005), we changed the LPN for *Penstemon debilis* from 5 to 2 based on an increase in the intensity of energy exploration along the Roan Plateau escarpment, making the threats to the species imminent. The CNOR lists published in 2006, 2007, and 2008 maintained *P. debilis* as a candidate species with an LPN of 2 (71 FR 53756, September 12, 2006; 72 FR 69034, December 6, 2007; 73 FR 75176, December 10, 2008).

In each assessment since its recognition as a candidate species in 1996, we determined that publication of a proposed rule to list the species was precluded by our work on higher priority listing actions. In 2008, we received funding to initiate the proposal to list *Penstemon debilis.* In the 2008 notice, we announced that we had not updated our assessment for this species, as we were developing a proposed listing rule (73 FR 75227). On June 23, 2010, we proposed to list *P. debilis* as threatened (75 FR 35721). In the proposed rule, we found that critical habitat for the species was prudent, but not determinable at that time. A proposed rule to designate critical habitat for this species is being published concurrently with this final rule.

Phacelia submutica

We included *Phacelia submutica* as a category 1 candidate species in the 1980 Review of Plant Taxa for Listing as Endangered or Threatened Species (45 FR 82480, December 15, 1980). In that notice, category 1 candidates were defined as species for which the Service had ''sufficient information on hand to support the biological appropriateness of their being listed as Endangered or Threatened species.'' We changed the candidate status of *P. submutica* to category 2 on November 28, 1983 (48 FR 53640). On February 21, 1990, we again identified *P. submutica* as a category 1 candidate species (55 FR 6184). In the February 28, 1996, **Federal Register** (61 FR 7596), all category 1 candidate species became candidates under the current definition. We assigned *P. submutica* an LPN of 11. In the 2005 CNOR (70 FR 24870, May 11, 2005) we raised the LPN to 8, to reflect the increasing level of threats, which were imminent and of moderate magnitude.

On May 11, 2004, we received a petition from the Center for Biological Diversity (CBD) to list, as endangered, 225 species we previously had identified as candidates for listing, including *Phacelia submutica* (CBD 2004, p. 146). Under requirements in section 4(b)(3)(B) of the Act (16 U.S.C. 1531 *et seq.*), the CNOR and the Notice of Findings on Resubmitted Petitions published by the Service on May 11, 2005 (70 FR 24870), included a finding that the immediate issuance of a proposed listing rule and the timely promulgation of a final rule for each of these petitioned species, including *P.*

submutica, was warranted but precluded by higher priority listing actions, and that expeditious progress was being made to add qualified species to the lists.

On April 28, 2005, the Center for Native Ecosystems (CNE), the Colorado Native Plant Society, and botanist Steve O'Kane, Jr., Ph.D., submitted a petition to the Service to list *Phacelia submutica* as endangered or threatened within its known historical range, and to designate critical habitat concurrent with the listing (CNE *et al.* 2005, p. 1). We considered the information in the petition when we prepared the 2006 CNOR (71 FR 53756, September 12, 2006). Section 4(b)(3)(C) of the Act requires that when we make a warranted but precluded finding on a petition, we are to treat such a petition as one that is resubmitted on the date of such a finding. We identified *P. submutica* as a species for which we made a continued warranted but precluded finding on a resubmitted petition in the **Federal Register** on December 6, 2007 (72 FR 69034), December 10, 2008 (73 FR 75176), and November 9, 2009 (74 FR 57804). We retained an LPN of 8 for the species. In the 2008 CNOR, we announced that we had not updated our assessment for this species, as we were developing a proposed listing rule (73 FR 75227). On June 23, 2010, we proposed to list *P. submutica* as threatened (75 FR 35721). In the proposed rule, we found that critical habitat for the species was prudent, but not determinable at that time. A proposed rule to designate critical habitat for this species is being published concurrently with this final rule.

Summary of Comments and Recommendations

We requested written comments from the public on the proposed listing of *Ipomopsis polyantha, Penstemon debilis, and Phacelia submutica* during the comment period associated with the publication of the proposed rule (75 FR 35721), which opened on June 23, 2010, and closed on August 23, 2010. We did not receive any requests for a public hearing. We also contacted appropriate Federal, State, and local agencies; scientific organizations; and other interested parties and invited them to comment on the proposed rule during this comment period.

During the comment period, we received 13 comment letters addressing the proposed rule. All substantive information provided during the comment period has either been incorporated directly into this final determination or is addressed below.

Peer Review

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinions from three knowledgeable individuals with scientific expertise that included familiarity with the species, the habitats in which the species occur, and conservation biology principles. We received responses from the three peer reviewers.

We reviewed all comments received from the peer reviewers for substantive issues and new information regarding the proposed listing of *Ipomopsis polyantha, Penstemon debilis, and Phacelia submutica.* The peer reviewers concurred with our analysis and conclusions, and provided additional information, clarifications, and suggestions to improve the final rule. Peer reviewer comments are addressed in the following summary and incorporated into the final rule as appropriate.

Peer Reviewer Comments

(1) *Comment:* One peer reviewer said that population trends cannot be identified from available data for *Penstemon debilis* and *Phacelia submutica,* but noted that annual fluctuations in plant numbers for both species make them vulnerable to additional stressors such as habitat loss. Another reviewer said that the lowest total annual plant count for *P. submutica* should be zero, because the plants do not emerge at all during very dry years. An agency commenter was concerned that the zero counts might reflect inadequate survey methods.

Our Response: The low and high plant counts reported for *Phacelia submutica* are simply a record of the lowest and highest plant counts recorded during blooming season surveys at known occupied sites. Not all occurrences are visited every year. Zero counts are reported only when a site was visited, not as a default. We report the negative surveys to show that the plants really do not emerge during some years, and that the fluctuations in plant numbers make it hard to measure the population trend.

(2) *Comment:* One peer reviewer indicated the correct name for the sensitive species of blazing star associated with *Penstemon debilis* is *Mentzelia rhizomata* (Roan Cliffs blazingstar), not *Mentzelia argillosa* (Arapien blazingstar).

Our Response: We corrected the text in this final rule accordingly. This is an important distinction, because *Mentzelia rhizomata* is a Bureau of Land Management (BLM) sensitive species that will benefit from protection of *P. debilis* habitat because it only grows on the same layers of shale.

(3) *Comment:* One peer reviewer stated that the extent and imminent nature of energy development may not have been ameliorated to the extent suggested in the proposed rule. In 2010, natural gas production in the range of *Phacelia submutica* and *Penstemon debilis* was the highest in Colorado, an increase from the 2008 report that was cited in the proposal.

Our Response: We have updated this final rule with the natural gas production reports provided by the reviewer and the Colorado Oil and Gas Conservation Commission (2010, pp. 1–2).

(4) *Comment:* One peer reviewer stated the potential impact of climate change on *Penstemon debilis* may be greater than indicated in the proposal, because the species is restricted to only one layer of shale; thus, it may be impossible for this species to migrate to a more suitable climate space if the substrate it depends upon does not exist. The peer reviewer indicated that Camille Parmesan (2006, p. 649) has authored a more comprehensive and current review documenting species' distributional shifts in response to warming.

Our Response: We have incorporated Parmesan's findings into our analysis of Factor E for *Penstemon debilis.* However, the current data are not reliable enough at the local level for us to draw conclusions regarding the imminence of climate change threats to *P. debilis* or the other two species.

(5) *Comment:* One peer reviewer suggested the potential impacts of fugitive dust on *Penstemon debilis* are overstated in the proposed rule. For at least the viable population on public land, the nature of the road is prohibitive to vehicles moving at speeds that could generate much dust. *Phacelia submutica,* which is more exposed to dust, should have an evaluation of dust impacts because it occupies habitat in the vicinity of roads that can better accommodate heavy, fast moving traffic. Additionally, *Phacelia submutica* habitats are more likely to be in the vicinity of well pads and pipelines than *Penstemon debilis,* and thus inclusion of an evaluation of the threat from dust on this species is warranted.

Our Response: We consider dust effects an impact that does not rise to the level of a threat to *Penstemon debilis* or *Phacelia submutica,* because we do not have research results to assess its effect. However, we have observed heavy dust settling on at least three of the *Penstemon debilis* occurrences from

heavy equipment and truck traffic (Ewing 2009a, p. 3). Most *Phacelia submutica* occurrences are not close to dust-producing roads, but Service biologists have observed dust sources along a pipeline construction route near *Phacelia submutica* occurrences.

(6) *Comment:* One peer reviewer stated the proposed listing rule fails to include pollinator information for *Phacelia submutica* and the potential for disruption of pollinator-plant interactions due to climate variations.

Our Response: The pollination mechanism for *Phacelia submutica* remains unknown at this time. Based on the size and shape of the flowers and lack of insects observed on the flowers, we expect that *P. submutica* is self-pollinated. We have initiated a pollination study for this species, but the results are not yet available. If the species did depend on pollinators for reproduction, then climate change could disrupt this relationship because the plants are receptive for a very short time. Pollination could fail to occur if the weather factors allowing the pollinating insects to emerge were not synchronized with plant receptivity. Because we have no data to indicate that pollinators are required, we do not assess the effects of climate variations on pollinator-plant interactions.

(7) *Comment:* One peer reviewer indicated that critical habitat should be determined for these three species based on the information available at this time. Given the level of threats and the narrow distribution of all three species, it is essential to provide the protection of designated critical habitat as soon as possible.

Our Response: We are proposing to designate critical habitat for the three species concurrently with this final rule. That proposal is published elsewhere in today's **Federal Register.** Comments on the proposal will be accepted following publication.

(8) *Comment:* Peer reviewers and commenters pointed out an error on page 35733 of the proposed listing rule, where the projected average temperature warming per decade was correctly cited as 0.2 °C, but the equivalent was incorrectly shown as 32.4 °F.

Our Response: For the next 2 decades, a warming of about 0.36 °F (0.2 °C) per decade is projected. By the end of the 21st century, average global temperatures are expected to increase 1.08 to 7.2 °F (0.6 to 4 °C) (Intergovernmental Panel on Climate Change (IPCC) 2007, p. 45). We corrected the text in this final rule accordingly.

Comments From the State of Colorado

Section 4(i) of the Act states, ''the Secretary shall submit to the State agency a written justification for his failure to adopt regulations consistent with the agency's comments or petition.'' Comments received from the State regarding the proposal to list *Ipomopsis polyantha, Penstemon debilis,* and *Phacelia submutica* are addressed below. The Colorado Natural Areas Program (CNAP) is the State agency within Colorado State Parks that works to cooperatively monitor and protect Colorado's most significant natural features, including rare plants.

Penstemon debilis

(9) *Comment:* The CNAP is concerned that listing *Penstemon debilis* will discourage future voluntary protections by the oil and gas industry. The CNAP stated in its letter that Oxy USA, Inc. (Oxy), has implemented voluntary best management practices to avoid impacts and reduce threats to the species, and they have supported 3 years of monitoring to document the status of the species on their land. The CNAP stated that although monitoring results at Mount (Mt.) Callahan and Mt. Callahan Saddle Natural Areas show a statistically insignificant downward trend in number of plant stems per plot, this trend may be a natural variation in population size or caused by climatic or other environmental factors, not by any effects from the gas well construction. No impacts to the *P. debilis* individuals were observed that may be related to natural gas development in the Natural Areas, and the buffers instituted are believed to be adequate to protect the populations. The CNAP will continue to work with Oxy to track the trends of this species. Monitoring will be done with care to minimize negative impacts from trampling of individual plants by people collecting the data.

Our Response: The Service acknowledges that Oxy has implemented voluntary best management practices to protect two of the *Penstemon debilis* occurrences on their private land. Oxy and other energy companies are aware that their compliance with conservation measures recommended by the Service is entirely voluntary. We believe that this level of protection, while voluntary and non-binding, minimizes the threats to the species to an extent that we can list it as threatened, rather than endangered. We also must consider the cumulative threats to the species as a whole throughout its entire limited range in making our listing decision. Despite the positive conservation being implemented by Oxy, we determined that the species still meets the definition of a threatened species because of cumulative effects of a variety of threats, many not under the control of Oxy, and the threats present in the remainder of the species' range.

Phacelia submutica

(10) *Comment:* The CNAP believes that the greatest threat to *Phacelia submutica* is oil and gas development that may be allowed within occupied habitat under current Federal regulations, because some surveys in potential habitat may not indicate the presence of this ephemeral and inconsistent species. Because this species may not emerge on an annual basis, that makes potential surveys for it very challenging, and surveys could result in the unintentional leasing and development of occupied habitat.

Our Response: Our threats analysis incorporates and supports CNAP's statement regarding the primary threats to *Phacelia submutica.*

Federal Agency Comments

Penstemon debilis

(11) *Comment:* In response to our description in the proposed rule of impacts that resulted from inadequate regulation, the BLM pointed out that the Anvil Points Mine reclamation was a Superfund project that was not subject to the Act, and that section 7 consultation was not required for the communication site access because the species was only a candidate for listing. Of the 88 plants at the reclamation site that were transplanted, covered, or fenced, BLM reported 71 survivors at the end of the 2009 growing season.

Our Response: The BLM avoided and minimized impacts from the reclamation project voluntarily, with input from the Service that was comparable to a section 7 consultation. However, plants were destroyed, habitat was modified, and the ongoing issue of impacts due to communication site access remains unresolved. We believe that listing as a threatened species will provide more support for agency efforts to protect the species.

Phacelia submutica

(12) *Comment:* The U.S. Forest Service (USFS) feels that critical habitat should not be designated for *Phacelia submutica* at this time because we do not have enough information about its specific soil requirements, seed bank, reproductive biology, or minimum population size; and that new populations being discovered each year are leading to new concepts of the species' distribution and requirements.

Our Response: Designation of critical habitat for the three species is proposed concurrently in a separate rule in this edition of the **Federal Register.** The criteria for critical habitat were evaluated using the best scientific and commercial data available. Surveys in 2009–2010 increased the known sites and numbers of plants, but did not change the habitat description or extend the range boundaries. We believe that *Phacelia submutica* has a large enough range, enough populations, and enough individuals that the occupied habitat alone, if protected from threats, would be adequate for the future survival and recovery of the species. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. A critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be required for recovery of the species.

Public Comments

(13) *Comment:* Support for listing the three plants was received from the Colorado Natural Heritage Program (CNHP), seven other non-profit environmental organizations in Colorado, and one local resident. Some of these commenters also believe that the species proposed for listing as threatened should not be subject to a 4(d) rule, which is a special regulation that can provide greater flexibility by allowing actions prohibited under section 9(a)(1) of the Act for species listed as threatened.

Our Response: We believe that the general prohibitions for threatened plants at 50 CFR 17.71 are appropriate for these two plant species. As a result, we did not develop a 4(d) rule for *Penstemon debilis* or *Phacelia submutica,* the two species we are listing as threatened.

(14) *Comment:* Several environmental groups commented that critical habitat is both prudent and determinable for all three species, and it should include all known occurrences of each species, including historical and recently extirpated and nonviable, as well as potential habitat.

Our Response: We are proposing critical habitat for each of the three species concurrently with this final listing rule. Critical habitat is defined in section 3 of the Act as: (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features that are essential to the conservation of the species, and which may require special management considerations or protection; and (2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. All known occurrences are evaluated, and must meet the criteria to be included in proposed critical habitat.

Penstemon debilis

(15) *Comment:* Andrea Wolfe shared her unpublished results of genetic research on *Penstemon debilis* in 2009, which show that its genetic diversity is very limited and each occurrence is genetically separated from the others, which indicates inbreeding depression.

Our Response: We appreciate receiving these results, which indicate the limited ability of *Penstemon debilis* to adapt to habitat or climate changes. We included them in our assessment of other natural factors affecting the species, under Factor E.

Summary of Changes From Proposed Rule

No substantial changes have been made in the threats analysis or determinations for the three species. Field surveys in 2010 increased the recorded number of plants for each species, but did not expand their known ranges or any decrease in the level of threats.

Endangered Status for *Ipomopsis polyantha;* Threatened Status for *Penstemon debilis* and *Phacelia submutica*

Background

It is our intent to discuss below only those topics directly relevant to the listing of *Ipomopsis polyantha* as endangered, and *Penstemon debilis* and *Phacelia submutica* as threatened, in this section of the final rule. More information on these species is available in the June 23, 2010, proposed rule (75 FR 35721).

Species Information—Ipomopsis polyantha

Taxonomy and Species Description

Ipomopsis polyantha is a rare plant endemic to shale outcrops in and around the Town of Pagosa Springs in Archuleta County, Colorado. The species is in the Polemoniaceae (phlox) family and was originally described by Rydberg (1904, p. 634) as *Gilia polyantha.* Two varieties, *G. polyantha* var. *brachysiphon* and *G. polyantha* var. *whitingii,* were recognized by Kearney and Peebles (1943, p. 59). Grant (1956, p. 353) moved the species into the genus *Ipomopsis.* Currently available information indicates that *I. polyantha* is a distinct species (Porter and Johnson 2000, p. 76; Porter *et al.* 2010, pp. 195, 196, 199). It is treated as such in the PLANTS database (U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) 2003), and in the Integrated Taxonomic Information System (2001). Reports of this species occurring in Arizona and New Mexico by the PLANTS National Database and State floras actually pertain to the two species that were formerly treated as varieties of *Ipomopsis polyantha* (Anderson 2004, pp. 11, 15).

The CNHP ranks *Ipomopsis polyantha* as critically imperiled globally (G1) and in the State of Colorado (S1) (CNHP 2010b, pp. 1–5). The Nature Conservancy (TNC) and CNHP also developed a scorecard that ranks *I. polyantha* among the most threatened species in the State based on number of plants, quality of the plants and habitat, threats, and adequacy of protection (CNHP and TNC 2008, p. 102).

Ipomopsis polyantha is an herbaceous biennial 12 to 24 inches (in) (30 to 60 centimeters (cm)) tall, branched from near the base above the basal rosette of leaves. Deeply divided leaves with linear segments are scattered up the stem. Stems and flower clusters are covered with glandular hairs. Flower clusters are along the stem in the axils of the leaves as well as at the top of the stem. The white flowers are 0.4 in (1 cm) long, with short corolla tubes 0.18 to 0.26 in (0.45 to 0.65 cm) long, and flaring corolla lobes flecked with purple dots (Anderson 1988, p. 3). These dots are often so dense that they give the flower a pinkish or purplish hue. The stamens extend noticeably beyond the flower tube, and the pollen is blue (Grant 1956, p. 353), changing to yellow as it matures (Collins 1995, p. 34). Seeds form a mucilaginous (secreting sticky mucous) coat after they are wet. Seeds germinate much faster in Mancos Shale soil than in potting soil (Collins 1995, p. 72). Mature seeds germinate to form rosettes that produce flowering stalks during the next growing season, or they may persist as rosettes for a year or more until conditions are right for flowering. Plants produce abundant fruits and seeds, but have no known mechanism for long-distance dispersal (Collins 1995, pp. 111–112). After seeds are mature, the plants dry up and die. We do not know how long the seeds remain viable.

Pollination by bees is the most common means of reproduction for *Ipomopsis polyantha,* and the primary pollinators are the honey bee (*Apis*

mellifera), metallic green bee (*Augochlorella* spp.), bumble bee (*Bombus* spp.), and digger bee (*Anthophora* spp.) (Collins 1995, pp. 71–72).

Ipomopsis polyantha is limited to Pagosa-Winifred soils derived from Mancos Shale. The soil pH is nearly neutral to slightly alkaline (6.6 to 8.4). The elevation range is 6,750 to 7,775 feet (ft) (2,050 to 2,370 meters (m)) (Service 2011c, p. 1). Plants occur in discontinuous colonies as a pioneer species on open shale or as a climax species along the edge of *Pinus ponderosa* (Ponderosa pine), mixed *P. ponderosa* and *Juniperus scopulorum* (Rocky mountain juniper), or *Juniperus. osteosperma* (Utah juniper) and *Quercus gambellii* (Gambel oak) forested areas. In 1988, Anderson (p. 7) reported finding the highest densities under *P. ponderosa* forests with montane grassland understory. Now the species is found mostly on sites that are infrequently disturbed by grazing, such as road right-of-ways (ROWs) that are fenced from grazing (as opposed to open range), lightly grazed pastures, and undeveloped lots (Anderson 2004, p. 20).

The two known occurrences of *Ipomopsis polyantha* are within about 13 miles (mi) (21 kilometers (km)) of each other, and collectively occupy about 388.4 acres (ac) (157.1 hectares (ha)) of habitat within a range that includes about 6.5 square mi (16.8 square km). The Pagosa Springs occurrence is southeast of the Town of Pagosa Springs along both sides of U.S. 84. Occupied habitat extends southward on the highway ROW for 3 mi (4.8 km) from the intersection with U.S. 160, and on private lands on both sides of the highway. The Dyke occurrence is about 10 mi (16 km) west of Pagosa Springs along U.S. Highway 160. It includes 0.5 mi (0.8 km) of highway ROW on both sides of U.S. 160, adjacent private land, and a BLM parcel. Species occurrences are further described in the June 23, 2010, proposed rule to list the species (75 FR 35721). Table 1 summarizes land ownership and results of the most recent plant counts reported within the two *I. polyantha* occurrences.

TABLE 1—OCCUPIED HABITAT FOR *Ipomopsis polyantha* BY LANDOWNERSHIP (ACRES (AC) (HECTARES (HA))

[Lyon 2006a; CNAP 2007; CNAP 2008, pp. 1–5; CNHP 2008a; CNHP 2010a, pp. 1–8; Service 2011a, p. 2; Service 2011b, p. 1]

Occurrence	Land ownership	ac (ha)	Flowering	Rosettes
Pagosa Springs including Mill Creek	State ROW	27.6 (11.2)	3,029	3,083
	County ROW	5.5 (2.2)	469	403
	Town of Pagosa Springs	7.5 (3.0)	126	15
	Private	301.7 (122.1)	158,326	174,989
Subtotals		342.3 (138.5)	161,950	178,490
Dyke	State ROW	2.3 (0.9)	19	102
	BLM	9.9 (4.0)	88	164
	Private	33.9 (13.7)	163	275
Subtotals		46.1 (18.6)	270	541
Totals		388.4 (157.1)	162,220	179,031

Approximately 2.5 percent of the occupied habitat is on Federally managed BLM land, 9.1 percent on State and County highway ROWs, 86.4 percent on private lands, and 1.9 percent on Pagosa Springs town park land and county land (Service 2011a, p. 2).

In 2004, the total estimate of flowering plants throughout the entire range of the species was 2,246 to 10,526 (Anderson 2004, p. 40). Plant surveys from 2005 to 2007 documented dramatic increases in the number of flowering individuals and rosettes within the Pagosa Springs occurrence at two sites on private land and on the U.S. 84 ROW (CNAP 2007, pp. 1–2). This increase was primarily attributed to the plants surveyed in 2005 and 2006 on a 3-ac (1.2-ha) private land site in the Pagosa Springs occurrence. The rapid appearance of such a dense patch of plants illustrates the species' ability to colonize barren Mancos Shale soil, and demonstrates the reproductive success of the species; however, the sites where they grow are vulnerable to habitat destruction. Currently, the total estimate of flowering plants is 162,220 (see Table 1 above). Again, the increase from 2,426 flowering plants counted in 2004 was largely due to the discovery of previously undocumented plants during new surveys on private lands. The trend in the species' status since 1988 is one of fluctuating population size that is typical of biennial species, combined with the loss of several hundred plants due to development (see Factor A below).

Summary of Factors Affecting *Ipomopsis polyantha*

Section 4 of the Act and its implementing regulations (50 CFR 424) set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination. Each of these factors is discussed below.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Ipomopsis polyantha is threatened with destruction of plants and habitat due to commercial, residential, municipal, and agricultural property development, and associated new utility installations and access roads. We have documented recent losses of habitat and individuals within the Pagosa Springs and Dyke occurrences of the species, as described in more detail below.

Land Use Changes

Primary land use within the range of *Ipomopsis polyantha* has historically

been livestock (horses or cattle) grazing, with homes on parcels of 35 ac (14 ha) or more. Several small businesses now occur along U.S. 84 within the Pagosa Springs occurrence. The intersection of U.S. 160 and U.S. 84 is zoned by the Town of Pagosa Springs for business, and commercially zoned land is currently available for development. Archuleta County also is considering sites in this area for new county buildings. These current and potential conversions of agricultural lands to residential and commercial development are incompatible with conservation of *I. polyantha* in the long term because the conversions cause direct mortality and permanent loss of habitat. Conversely, habitat modified by grazing may be recovered by changes in management.

Residential development is increasing in Archuleta County. The population of Archuleta County was 5,000 in 1990, increasing to 12,430 in 2009 (U.S. Census Bureau 2011). Prior to the slowing down of the real estate market over the past few years, projections for new development in Archuleta County were high. For example, all private land across the entire range of *Ipomopsis polyantha* is scheduled for development in the Archuleta County and Town of Pagosa Springs Community Plan (2000). In this plan, all areas occupied by *I. polyantha* on private land outside of the Town limits are planned for low (35 ac (14 ha)), medium (3 to 35 ac (1.2 to 14 ha)), or high (2 to 5 ac (0.81 to 2 ha)) density housing. The rate of current and proposed development is the most significant threat to the species, because development planned for the next 5 to 10 years will likely impact 86 percent of the species' habitat. This rate of land conversion puts the species at risk of extinction.

Private Development of 35 Acres (14 Hectares) or Less

Within the Pagosa Springs occurrence, a residential and agricultural development of about a dozen 35-ac (14-ha) parcels was built prior to 2005 on occupied habitat east of U.S. 84 (Archuleta County Assessor 2008, p. 1). In 2005, when most residences were new, about 782 flowering plants were counted in meadows and along the fences and access roads (Lyon 2005, pp. 1–2). By 2008, an increased number of horses were pastured in the meadows, roadsides and driveways were graded or widened, and few plants or rosettes could be found as a result (Mayo 2008b, p. 2). This information indicates that *Ipomopsis polyantha* plants are vulnerable to grazing effects and road improvements, and habitat can be modified to exclude plants in as few as 3 years. We do not know exactly what level of grazing is sufficient to eliminate the *I. polyantha* plants in a pasture. In 2006, at another location along U.S. 84, a private landowner mowed several hundred feet of occupied habitat on the highway ROW (Lyon 2006a, p. 1). No plants or rosettes were found at this site from 2006 to 2008, indicating that mowing destroys plants and halts reproduction. In 2005, dense patches of flowering plants were noted, from across the fence, in a privately owned meadow along U.S. 84. In 2007, a new home was built, and the meadow was mowed; no plants could be seen at the same site in 2008 (Mayo 2008b, p. 2), again indicating that mowing destroys flowering plants and inhibits reproduction, because the seeds cannot mature and grow into rosettes. We do not know how long the seeds remain viable in the soil.

Private and County Development of Large Parcels

In 2008, the Pagosa Springs Town Council approved annexation of the 96-ac (39-ha) private development called Blue Sky Village into the Town (Aragon 2008a, pp. 1–2). The proposed development plan was for a mixed commercial and high- to low-density residential village (Hudson 2008, p. 1). The 96-ac (39-ha) parcel is adjacent to the highest density of *Ipomopsis polyantha* plants, and includes about 2,562 ft (781 m) of habitat on U.S. 84 frontage at the center of the species' distribution (Archuleta County Assessor 2008, p. 1). Plants have been observed on the property from over the fence, but not counted. Occupied habitat also borders the southern edge of the property.

In 2010, the Blue Sky Village property went into foreclosure. The County announced that it will acquire the property. Possible uses of the land include county buildings, sports fields, and the sale of commercial lots along the highway (Hudson 2010, p. 1). Development of the Blue Sky Village/County property would significantly reduce the amount of habitat within the species' range. Location of the development between the highest density of plants and the rest of the Pagosa Springs occurrence on the east side of U.S. 84 would further fragment the habitat that has already been impacted by commercial, residential, and agricultural land uses.

Another private development that includes 47 ac (19 ha) of occupied habitat and about 1 mi (1.6 km) of frontage along the west side of U.S. 84, is being considered for annexation and development (Aragon 2008a, p. 2; Archuleta County Assessor 2008, p. 1; Hudson 2010, p. 1). Preliminary plans show home sites and open space on the 47 ac (19 ha) of currently occupied plant habitat.

The above two development proposals would cover about 42 percent of the habitat within the Pagosa Springs occurrence, which is the larger of the two occurrences and is essential to the species' continued existence. Plants and habitat along U.S. 84 ROW are likely to be disturbed or destroyed by construction of new access roads, utility installations, and acceleration and deceleration lanes built to accommodate the proposed developments. The pace of development around Pagosa Springs fluctuates with the economy, but given the direction in the County plan and the projected growth rates for the County and the Town of Pagosa Springs, it is highly likely that further development will occur along U.S. 84 within 5 to 10 years.

A third large parcel of 1,362 ac (551 ha) proposed for development, plus 2,819 ft (859 m) of U.S. 84 frontage, is another annexation to the Town of Pagosa Springs being considered within the range of *Ipomopsis polyantha.* The proposed development, called Blue Sky Ranch, would include single and multi-family residential housing, a hotel and conference center, a golf course with clubhouse, and an equestrian center with riding trails and a multi-use arena (Aragon 2008b, p. 2). The status of the proposed development is unknown at this time, because it depends on the real estate market. This area has not been surveyed for plants, and is not included in the total occupied habitat.

Utilities Installations and Maintenance

Utilities installations and construction activities that are necessary for development can eliminate habitat and destroy *Ipomopsis polyantha* plants. During 2005 and 2006, a sewer line installation on the U.S. 84 ROW resulted in the loss of about 498 plants and 541 rosettes and the modification of about 1,473 ft (449 m) of roadside habitat (Mayo 2008c, p. 8). The Colorado Department of Transportation (CDOT) and Archuleta County consulted with the Service, and agreed on avoidance measures for this project, but contractors failed to follow the protocol. Where avoidance of plants and habitat was specified, topsoil, plants, and rosettes were scraped away on the bank; where native plant seeding was specified, nonnative grasses were seeded; and where straw was prohibited, a thick layer of straw was

applied (Mayo 2008c, pp. 1–4; Peterson 2006, pp. 1–3). As a result, in 2008, the remaining 8 flowering plants and 5 rosettes at this site were found in one spot, near plants on an adjacent property not disturbed by the sewer line project (Mayo 2008c, p. 8). In 2010, the combined number of flowering plants and rosettes at the site was 167. This incident demonstrates that *I. polyantha* cannot quickly recover from soil disturbance.

Although *I. polyantha* can colonize unvegetated Mancos Shale soil near a seed source, the number of flowering plants that appear in subsequent years depends on seed production and the survival of rosettes that are not outcompeted by other species or destroyed during ground disturbance. Power line maintenance was completed within occupied habitat in the Pagosa Springs occurrence in 2007. As a result of careful planning, there was negligible damage to adult plants. However, 278 rosettes were transplanted, but did not survive to reproduce for unknown reasons. We conclude that the species is highly vulnerable to ground disturbance during development because seedlings and rosettes are destroyed and transplanting is not known to be successful.

Highway Right of Ways

The Archuleta County and Town of Pagosa Springs revised 2004 Trails Plan (2004, p. 18) calls for an 8-ft (2.4-m) wide, 2.5-mi (4-km) long, paved bike path on the highway ROW from U.S. 160 south along U.S. 84 in occupied *Ipomopsis polyantha* habitat. This route, prioritized for completion as soon as funding is available, would eliminate about 38 percent of the total occupied habitat on the highway ROWs and 4 percent of the total occupied habitat for the species (see Table 1 above). Another planned paved bike trail, parallel to U.S. 160 and through the Dyke occurrence of *I. polyantha,* is on the low priority list in the Trails Plan (Archuleta County and Town of Pagosa Springs 2004, p. 28). Development of this bike trail would eliminate the portion of the Dyke occurrence located on the south side of the highway where the trail would be located, covering about 3 percent of the total highway ROW habitat.

The distribution of *Ipomopsis polyantha* within highway ROWs makes this species susceptible to threats associated with highway activities and maintenance. Exotic grasses planted by CDOT along roadsides dominate the ROW between pavement and ditch, limiting most *I. polyantha* plants to the ROW bank between ditch and fence. This limitation to the species' habitat along roadsides is significant because so little habitat exists elsewhere for the species. *I. polyantha* plants growing within the highway ROW along U.S. 84 in 2004 were killed when the thistles growing among them were treated with herbicide (Anderson 2004, p. 36). Since that time, Archuleta County has discontinued broadcast herbicide use and mowing on ROWs within the species' range. However, the planted exotic grasses continue to limit the species' habitat.

Highway ROWs provide about 9 percent of the occupied habitat for *Ipomopsis polyantha.* All highway ROW habitat is at risk of disturbance by construction of new access roads or acceleration lanes, bike paths, and utilities installation or maintenance. Such construction results in direct loss of *I. polyantha* individuals or reduced suitability of its habitat by altering the soil characteristics (Anderson 2004, p. 36).

Summary of Factor A

We determined that the present and threatened destruction, modification, and fragmentation of *Ipomopsis polyantha* habitat from commercial, municipal, agricultural, and residential development, associated new utility installations, construction of new access roads and bike paths, competition from introduced roadside grasses, and other impacts to highway ROWs are significant and imminent threats to the species throughout its range. At this time, the species persists primarily on private lands (about 86 percent) and highway ROWs (about 9 percent). Based on the rate of current and proposed development over the entire range of the species, we estimate that 95 percent of the species' habitat could be modified or destroyed within 5 to 10 years. The plants would then be relegated to 10 ac (4 ha) of BLM land; 7.5 ac (3 ha) of Town park land; small, fragmented portions of highway ROWs; and a few, small, lightly used, private yards and pastures, thus putting the species in danger of extinction.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Activities resulting in overutilization of *Ipomopsis polyantha* plants for commercial, recreational, scientific, or educational purposes are not known to exist. Therefore, we do not consider overutilization for commercial, recreational, scientific, or educational purposes to be a threat to the species now or in the foreseeable future.

C. Disease or Predation

Disease

Disease is not known to affect *Ipomopsis polyantha.* Therefore, we do not consider disease to be a threat to the species now or in the foreseeable future.

Predation

This species is threatened by destruction of flowering plants, rosettes, and seeds due to concentrated livestock disturbance and some herbivory. Observations of the ''fence line effect''—healthy plants outside the fence and impacted plants inside the fence—at several locations on private land used for cattle and horse grazing indicate that *Ipomopsis polyantha* does not tolerate intensive livestock grazing (Anderson 2004, p. 30). For example, grazing by horses at a residential/agricultural development within the Pagosa Springs occurrence in 2005 resulted in few *I. polyantha* plants 3 years later (Mayo 2008b, p. 2). Over-the-fence observations from seven locations (pastures) in 2009 found few or no plants in the three heavily grazed pastures and numerous plants in the adjacent pastures with light or no grazing (Glenne and Mayo 2010, pp. 1–3). We do not know whether the destruction of the plants was a result of herbivory or trampling. *I. polyantha* is not found in heavily grazed pastures, but occurrences have been observed in lightly grazed horse pastures and abandoned pastures (CNAP 2007, p. 6). Plants could possibly recolonize a pasture if livestock numbers were reduced sufficiently and the seed bank was still viable, or if there was a seed source nearby, such as on the ungrazed side of a fence. Indications are that the species may persist in areas with light grazing, but the level of impact and the threshold of species' tolerance have not been studied. Few plants persist in areas of continual grazing (Collins 1995, pp. 107, 111, 112). We determined that destruction of flowering plants, rosettes, and seeds due to heavy livestock use is a significant and ongoing threat to *I. polyantha* now and in the foreseeable future.

D. The Inadequacy of Existing Regulatory Mechanisms

Local Laws and Regulations

Town and county zoning ordinances have the potential to affect *Ipomopsis polyantha* and its habitats. We know of no town or county regulations that provide for protection or conservation of *I. polyantha* or its habitat. As discussed under Factor A above, Archuleta County road maintenance crews voluntarily

refrain from mowing or broadcast spraying ROWs within the range of *Ipomopsis polyantha;* however, there is no law, regulation, or policy requiring them to do so. New annexation of 2,018 ac (817 ha) into the Town of Pagosa Springs will change zoning from 35-ac (14-ha) residential and agricultural parcels to commercial and small lot residential, with anticipated adverse impacts to the Pagosa Springs occurrence of *I. polyantha,* as described under Factor A above. Decisions regarding annexations into the town and changes in allowable subdividing of parcels in the county are currently being made to encourage growth that will boost the local economy. Provisions for avoidance or minimization of disturbance to habitat for the plants are not included in these decisions or plans.

State Laws and Regulations

No State regulations protect rare plant species in Colorado. *Ipomopsis polyantha* is classified by CNHP as a G1 and S1 species, which means it is critically imperiled across its entire range and within the State of Colorado (CNHP 2010b, pp. 1–5). The CDOT has drafted best management practices for ROWs within *I. polyantha* habitat in collaboration with the Service (Peterson 2008, p. 1), but the agreement has not been finalized. In 2006, voluntary measures to minimize impacts to plants from a sewer line installation along U.S. 84 were recommended by CDOT and supervised by the county, but not implemented by the contractors, as described under Factor A (Mayo 2008c, pp. 1–4; Peterson 2006, pp. 1–3).

Federal Laws and Regulations

Ipomopsis polyantha is on the sensitive species lists for the USFS (2006, pp. 5, 6, 13, 15–20; USFS 2009, p. 6) and the BLM (2000, p. 3; 2008b, p. 47). Occupied habitat has not been found on USFS land, but there is nearby habitat that appears to be suitable, so the species is included in project clearance surveys on the forest. In 2006, we estimated that the Dyke occurrence extended onto 20 ac (8 ha) of BLM land (Lyon 2007b, pp. 3, 12, 13); 88 plants and 164 rosettes were found there in 2007 (CNAP 2007, p. 2). In 2010, we revised the estimated occupied BLM habitat to 9.9 ac (4.0 ha) (Service 2011a, p. 2). This BLM parcel was withdrawn from a proposed land exchange so that the plant habitat would remain under Federal management (Brinton 2009, pers. comm.; Lyon 2007b, p. 3). We believe that BLM adequately protects *Ipomopsis polyantha* on its lands pursuant to the Federal statutes and regulations that guide Federal land management. However, so little of the species' habitat occurs on BLM lands that the BLM can do little to influence the overall status of the species.

Summary of Factor D

We reviewed the suite of existing regulatory mechanisms that could potentially offer some protection to *Ipomopsis polyantha,* including the Federal Land Policy and Management Act (FLPMA)(43 U.S.C. 1701 *et seq.*), and State and local laws and determined that these existing regulatory mechanisms are inadequate to address the primary threats to the species. Ninety-seven percent of the known range of the species is on State, Town, and private lands, affording the species little to no protection on these lands. Federal statutes and regulations governing natural resource protection apply only to 2.5 percent of the occupied habitat and therefore can do little to influence the overall status of the species. The State of Colorado offers no regulatory protection to plants, which means that protection falls upon local County and Town ordinances. The planning regulations governing growth in Archuleta County and the Town of Pagosa Springs do not contain any requirements to protect rare plants, including *I. polyantha,* when siting new growth and development. In fact, the current county planning regulations contribute to the risk of extinction for the species by facilitating development in the last remaining habitat occupied by the species. Therefore, we determined that existing regulatory mechanisms do not adequately address the primary threats to the species.

E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

Habitat and Distribution

The adaptation of *Ipomopsis polyantha* to Pagosa-Winifred soils derived from Mancos Shale limits it to about 6.5 square mi (16.8 square km) within a 13-mi (21-km) range of fragmented habitat on outcrops of Mancos Shale. The species has specific physiological requirements for germination and growth that may prevent its spread to other locations (Anderson 2004, pp. 23–24). In greenhouse trials, seeds will germinate and grow on other soils, but they grow much faster on Mancos Shale soils (Collins 1995, p. 114). Faster growth may give *I. polyantha* a competitive advantage on relatively barren Mancos shale that it lacks on other soils, where its smaller seedlings have more competition from other plants for nutrients and water. The species produces more seed when it is cross-pollinated (Anderson 2004, p. 23); therefore, existing and foreseeable fragmentation of habitat may cause gene flow to be obstructed. Pollinator-mediated pollen dispersal is typically limited to the foraging distances of pollinators, and no bee species is expected to travel more than 1 mi (1.6 km) to forage (Tepedino 2009, p. 11). Thus, it is likely that the Dyke occurrence, of about 270 plants and 541 rosettes, is genetically isolated from the Pagosa Springs occurrence 13 miles (21 kilometers) away. Spatially isolated plant populations are at higher risk of extinction due to inbreeding depression, loss of genetic heterogeneity, and reduced dispersal rates (Silvertown and Charlesworth 2001, p. 185).

Transplanting

Rosettes in the path of power pole replacements were transplanted to suitable habitat in the town park in 2007. The 278 transplants survived the winter and produced about 27 flowering plants. However, no surviving rosettes could be relocated in the fall of 2007, and no evidence of trampling or habitat destruction was found (Coe 2007, pp. 2–3). Another attempt at transplanting rosettes, to save them from destruction during utility installations in 2005, was not effective in producing new rosettes in the third year (Brinton 2007, pers. comm.). There was no evidence of trampling or habitat destruction with these transplants. Unless effective methods are developed, most plants that cannot be avoided during utility installations and construction activities are unlikely to survive and reproduce. Whether the species can survive translocation under other circumstances remains uncertain, but at this time we consider transplantation an ineffective method of mitigating the impacts of development. For this reason, we conclude that the species is highly vulnerable to development because populations cannot be successfully moved out of the way.

Fluctuating Population Size

Ipomopsis polyantha shows great differences in plant numbers from year to year, probably because the plants are biennial and grow from seed. This trait makes them more vulnerable than perennials to changes in environment, including timing and amount of moisture and length of time since disturbance. With increased time after disturbance, competition from both native and nonnative plants increases (CNAP 2008a, p. 4). As a biennial species, *I. polyantha* also may be

vulnerable to prolonged drought. During drought years, seeds may not germinate and plants may remain as rosettes without flowering or producing a new crop of seeds.

Climate Change

Habitat changes as a result of climate change could potentially impact *Ipomopsis polyantha.* Localized projections indicate the southwest United States may experience the greatest temperature increase of any area in the lower 48 States (IPCC 2007, p. 30). A 10 to 30 percent decrease in precipitation in mid-latitude western North America is projected by the year 2050, based on an ensemble of 12 climate models (Milly *et al.* 2005, p. 1). Climate modeling at this time has not been refined to the level that we can predict the amount of temperature and precipitation change within the limited range of *I. polyantha.* Therefore, this analysis is speculative based on the data available at this time. When plant populations are impacted by reduced reproduction during drought years, they may require several years to recover. Climate change may exacerbate the frequency and intensity of droughts in this area and result in reduced species' viability as the dry years become more common. As described above, *I. polyantha* is sensitive to the timing and amount of moisture due to its biennial life history. Thus, if climate change results in local drying, the species could experience a reduction in its reproductive output.

Recent analyses of long-term data sets show accelerating rates of climate change over the past 2 or 3 decades, indicating that the extension of species' geographic range boundaries towards the poles or to higher elevations by progressive establishment of new local occurrences will become increasingly apparent in the short term (Hughes 2000, p. 60). The limited geographic range of the Mancos Shale substrate that underlies the entire *Ipomopsis polyantha* habitat likely limits the ability of the species to adapt by shifting occurrences in response to climatic conditions.

Summary of Factor E

We determined that the natural and human-caused factors of specific soil and germination requirements, fragmented habitat, effects of drought and climate change, and lack of proven methods for propagation and reintroduction present an imminent and moderate degree of threat to *Ipomopsis polyantha* across the entire range of the species. These factors make the species highly vulnerable to the development threats described under Factor A, and it is highly unlikely that the species could respond to these threats by extending its range.

Cumulative Impacts

Some of the threats discussed in this finding could work in concert with one another to cumulatively create situations that potentially impact *Ipomopsis polyantha* beyond the scope of each individual threat. For example, as discussed under Factor A, destruction and modification of habitat by clearing the ground, mowing and weed spraying, and concentrated livestock grazing could reduce the number of available pollinators for the plants by removing other species of blooming plants that attract pollinators and by destroying the ground-nesting habitat needed by bees. A reduction in bee pollinators could cause *I. polyantha* to produce fewer seeds. Such cumulative impacts from development-related activities are likely to impact the species, given the ubiquity of development within the habitat.

We have not identified other likely scenarios where the threats discussed in the five factors above have potential to interact synergistically to produce threats to *Ipomopsis polyantha* beyond those which we have analyzed.

Summary of Factors

The Pagosa Springs occurrence of *Ipomopsis polyantha* totals approximately 342 ac (138 ha) of *Ipomopsis polyantha* habitat, including 3 mi (4.8 km) of highway ROW and the private properties on either side of the highway. The smaller Dyke occurrence of about 46 ac (19 ha) includes highway ROWs, private land, and 10 ac (4 ha) of BLM land. Destruction of plants, when combined with the modification and fragmentation of habitat within this small range, results in a substantial loss to the viability of the species. Both known occurrences face ongoing, new, and foreseeable threats, including commercial, residential, agricultural, and municipal development; associated road and utility improvements and maintenance; heavy livestock use; inadequacy of existing regulatory mechanisms to address the primary threats to the species; fragmented habitat; and prolonged drought conditions. The magnitude of threat for *I. polyantha* is high due to the direct overlap of ongoing and planned land development on 95 percent of the known habitat. The overall impact of current and planned development is likely to result in extensive disturbance and destruction of the remaining habitat within the foreseeable future of 5 to 10 years, depending on economic growth in the area, thus putting the species in danger of extinction.

Species Information—Penstemon debilis

Description

Penstemon debilis is a rare plant, endemic to oil shale outcrops on the Roan Plateau escarpment in Garfield County, Colorado. This species is known by the common names Parachute beardtongue and Parachute penstemon. *P. debilis* is classified by the CNHP as a G1 and S1 species, which means it is critically imperiled across its entire range and within the State of Colorado (CNHP 2010b, pp. 6–10). Traditionally, the genus *Penstemon* was included in the Scrophulariaceae (figwort) family. However, *Penstemon* is now considered to be within the Plantaginaceae (plantain) family due to recent research using DNA sequences (Oxelman *et al.* 2005, p. 415). We recognize this placement and make the appropriate attribution in the amendments to 50 CFR 17.12(h) at the end of this document. The text includes the family name as Plantaginaceae.

Penstemon debilis was discovered in 1986, and was first described by O'Kane and Anderson in 1987 (pp. 412–416). *P. debilis* is a mat-forming perennial herb with thick, succulent, bluish leaves, each about 0.8 in. (2 cm) long and 0.4 in. (1 cm) wide. Plants produce shoots that run along underground, forming what appear as new plants at short distances away. Individual *P. debilis* plants are able to survive on the steep, unstable, shale slopes by responding with stem elongation as leaves are buried by the shifting talus. Buried stems progressively elongate down slope from the initial point of rooting to a surface sufficiently stable to allow the development of a tuft of leaves and flowers (O'Kane and Anderson 1987, pp. 414–415). The funnel-shaped flowers are white to pale lavender, and bloom during June and July. *P. debilis* plants produce a small number of seeds that are dispersed by gravity. They require cross pollination, and have many different pollinators that vary between occurrences (McMullen 1998, p. 26). None of the pollinators are specialists to *P. debilis,* nor are any of them rare (McMullen 1998, p. 31).

Genetic diversity in all populations of *P. debilis* surveyed is very limited and there is little contact among the populations, which indicates inbreeding depression (Wolfe 2010, pers. comm.). There is a close genetic relationship between the two Mount Callahan populations. The Anvil Points populations are also clustered together,

and the Mount Logan population is intermediate between the other groups (Wolfe 2010, pers. comm.).

Habitat

Penstemon debilis seems to be adapted to natural physical disturbance (McMullen 1998, p. 81). Many of the characteristics that are most similar among sites promote continual shifting of the substrate: steep slopes, unstable surface layers of broken shale rubble, and no surface soil (McMullen 1998, p. 82). The plants grow on steep, oil shale outcrop slopes of white shale talus at 8,000 to 9,000 ft (2,400 to 2,700 m) in elevation on the southern escarpment of the Roan Plateau above the Colorado River and the town of Parachute, Colorado. The Roan Plateau falls into the geologic structural basin known as the Piceance Basin. Average annual precipitation at Parachute, Colorado, is 12.75 in (32.4 cm) (IDcide 2009, p. 1), which is considered a high desert climate. *P. debilis* is found only on the Parachute Creek Member of the Green River Formation. *P. debilis* is often found growing with other species endemic to the Green River formation, including *Mentzelia rhizomata* (Roan Cliffs blazingstar) (Reveal 2002, pp.763–767), *Astragalus lutosus* (dragon milkvetch), *Festuca dasyclada* (Utah fescue), and *Thalictrum heliophilum* (sun-loving meadowrue), as well as several non-endemics (O'Kane & Anderson 1987, p. 415).

Distribution

The historical range and distribution for this species is unknown. All of the currently known occurrences occupy about 91.8 ac (37.2 ha) on the Green River geologic formation in Garfield County, Colorado. Although this formation is underground throughout most of the Piceance Basin, it is exposed on much of the southern face of the Roan Plateau, to which the plant is restricted. The total area of the plant's geographic range is about 2 mi (3 km) wide and 17 mi (27 km) long. Six occurrences of *Penstemon debilis* were found between 1986 and 2005; two of them are no longer viable (CNHP 2010a, pp. 9–23). It is likely that unknown occurrences exist, because many areas are inaccessible to surveyors due to cliff-side terrain or private land ownership or both.

Occurrences

Penstemon debilis occurrences are described in the proposed rule to list the species (75 FR 35728–35729) and summarized in Table 2.

TABLE 2—*Penstemon debilis* OCCURRENCES BY LANDOWNERSHIP (ACRES (AC) (HECTARES (HA))

[CNHP 2010a, pp. 9–23; Ewing 2008a; Ewing 2009a; DeYoung 2008a pers. comm.; DeYoung 2009b, pers. comm.; DeYoung 2009c, pers. comm.; Service 2011a, p. 4]

Occurrence	Viability	Number of plants	ac (ha)	Total plant mortality*	Trend	Land ownership
Mt. Callahan Natural Area.	Excellent	2,200	32.7 (13.2)	None	Stable to slightly downward.	Private.
Mt. Callahan Saddle Natural Area.	Good	650	3.8 (1.5)	None	Stable to slightly downward.	Private.
Smith Gulch	Fair	50	13.4 (5.4)	Unknown		BLM.
Anvil Points Mine	Good	700	5.3 (2.1)	20	Small downward	BLM.
Anvil Points Rim	Poor	2	5.7 (2.3)	250	Nearly extirpated	BLM.
Mt. Logan Mine	Fair	483 Private	24.7 (10.1) Private	30	Small downward	Private.
		50 BLM	5.8 (2.3) BLM			BLM.
Mt. Logan Road	Poor	3	0.4 (0.2)	7	Nearly extirpated	BLM.
Total		4,138	91.8 (37.1)	307		

* Total of all dead plants reported from all sources.

Two occurrences on BLM land, Anvil Points Rim and Mt. Logan Road, have lost 257 plants and are nearly extirpated. Because these two occurrences have only five plants remaining and we do not expect them to recover, we consider these occurrences nonviable, and focus our analysis of ongoing and foreseeable threats on the four viable occurrences.

The occurrences on BLM land represent about 19.4 percent of the total plants counted and approximately 33.3 percent of the occupied habitat. A new Smith Gulch location on BLM land has been added to the Mt. Callahan Saddle occurrence because it is on shale deposited at the base of the cliffs directly below the saddle (Graham 2009a, pp. 1–2). Oxy USA Inc. owns land that contains 68.9 percent of the total plants on 39.8 percent of the occupied habitat, with agreements directing management of lands under their control. The Oxy oil shale division owns land with 11.6 percent of the plants on 26.9 percent of the occupied habitat, with no management agreements.

Summary of Factors Affecting *Penstemon debilis*

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Penstemon debilis habitat is threatened by energy development and associated impacts. Of the four known viable occurrences (Mt. Callahan and Mt. Callahan Saddle Natural Areas, Anvil Points Mine, and Mt. Logan Mine), all but the Anvil Points Mine occurrence are on lands wholly or partially owned by energy development companies. All four viable occurrences face ongoing or potential threats, including oil and gas development, oil shale extraction and mine reclamation, road construction and maintenance, and vehicle access through occurrences.

Oil and Gas Development

The Mt. Callahan and Mt. Callahan Saddle Natural Area occurrences, which include approximately 68.9 percent of the total known *Penstemon debilis* plants on 39.7 percent of the occupied habitat, occur on land owned by Oxy USA Inc. (Oxy). These occurrences are behind locked gates, making them inaccessible to the public. Oxy has developed two natural gas well drilling pads within a 680–ac (275–ha) area that includes both occurrences (Webb 2008, p. 1). One pad is located 360 ft (110 m) from the nearest known *P. debilis* individual and 105 ft (32 m) uphill from its habitat (Ewing 2008a, p. 2). The other pad is located farther from the habitat, where runoff will flow down the opposite side of the ridge. Operation of these wells could potentially impact *P.*

debilis by dust generation, loss of pollinator habitat, spills of produced water or other drilling wastes, and inadvertent trampling by employees and contractors. Monitoring of the occurrences, in connection to the energy development, has resulted in trampling of individual plants by people collecting the data (Ewing 2009a, pp. 1–2).

To protect plants and habitat from potential impacts, CNAP and Oxy have agreed to best management practices and conservation measures, to include plant surveys, surface disturbance buffers, designated travel routes, handling of produced wastes, dust abatement, a monitoring plan for the plants, and weed management. Working with Oxy, CNAP designated the areas of Mt. Callahan and Mt. Callahan Saddle as State Natural Areas (Kurzel 2008, pers. comm.; CNAP 1987, pp. 1–7; CNAP 2008a, pp. 1–7; Webb 2008, p. 1). Through these designations, the landowner has agreed to develop natural gas pads in a way that will avoid or minimize impacts to the *P. debilis* occurrences (Ewing 2008a, pp. 1–2). The agreements include conservation measures such as storm water management and a noxious weeds management plan (CNAP 2008c, pp. 1–4; CNAP 2008d, pp. 1–4). The CNAP has been very successful in garnering landowner participation in conservation of rare species in Colorado. The plant habitat on the natural areas appears unmodified by the gas well pad activity. Trampling of plants during monitoring has been noted as a minor impact that will be minimized in the future by modifying the sampling methods. Natural area agreements are voluntary and can be terminated at any time by either party with a 90-day written notice. However, we believe that these natural area agreements for *P. debilis,* while voluntary and non-binding, minimize the threats to the species to an extent that we can list it as threatened, rather than endangered.

The Smith Gulch location of an estimated 50 plants was discovered on BLM lands below the Mt. Callahan occurrences at the base of the cliffs during surveys for a proposed oil and gas development project in June 2009 (Graham 2009a, p. 1). Two well pads, and corresponding roads and pipelines, were proposed for this area (Graham 2009a, p. 3; Graham 2009b, pers. comm.). Following an environmental assessment, two well pads were permitted, to be located about 800 ft (244 m) downslope from the plants. The pads have not been built as of February 2011 (DeYoung 2011b, pers. comm.). When development proceeds, we anticipate no significant impacts to the plants unless they get washed down the drainage into the gas well area, which we cannot predict. Potential minor impacts are loss of pollinator habitat, dust impacts, or inadvertent trampling.

Oil and gas exploration and development continues to increase each year on both private and BLM lands on and around the Roan Plateau, where all of the known *Penstemon debilis* populations are found. In Garfield County, 566 new wells were permitted in 2003; 796 in 2004; 1,508 in 2005 (Colorado Oil and Gas Conservation Commission (COGCC) 2006, p. 1); 1,844 in 2006; 2,550 in 2007 (COGCC 2008, p. 1); and 2,888 in 2008 (COGCC 2009, p. 1). Because of a decrease in natural gas prices, new well permits decreased in 2009 to 743 (Webb 2009, p. 1; COGCC 2009, p. 1), but increased again to 1,887 in 2010, the highest for a county in Colorado after Weld County (COGCC 2010, p. 17).

Energy exploration and development activities include construction of new unpaved roads, well pads, disposal pits, evaporation ponds, and pipeline corridors, as well as off-road travel by employees. Each of these actions has the potential to cause direct impacts to *Penstemon debilis,* such as plant removal and trampling, and indirect impacts, such as dust deposition and loss of habitat for pollinators. Because *P. debilis* was unknown as a species until 1987, and the occurrences are on private land or in remote locations on public land, the impacts may go unnoticed. For example, impacts to the Mt. Logan Mine occurrence were unknown until the occurrence was recorded in 2005. Even after the discovery, further mine-related impacts occurred because most of the plants were on oil shale company land, making it difficult for BLM to manage the occurrence (CNHP 2010a, pp. 17–18; Ewing 2009a, p. 4).

Road traffic on unpaved roads increases dust emissions on previously stable surfaces (Reynolds *et al.* 2001, p. 7126). For every vehicle traveling 1 mi (1.6 km) of unpaved roadway once a day, every day for a year, approximately 2.5 tons of dust are deposited along a 1,000-ft (305–m) corridor centered on the road (Sanders 2008, p. 20). Vascular plants can be greatly affected within the zone of maximum dust fall (*i.e.,* the first 410 ft (125 m) from the road) (Walker and Everett 1987, p. 481). Excessive dust may affect photosynthesis, affect gas and water exchange, clog plant pores, and increase leaf temperature, leading to decreased plant vigor and growth (Ferguson *et al.* 1999, p. 2; Sharifi *et al.* 1997, p. 842). Because the viable occurrences of *P. debilis* are within 300 ft (91 m) of roads, well within the zone of maximum dust fall, they are all likely to be affected by decreased ability to photosynthesize, impaired gas and water exchange, clogged pores, and decreased plant vigor and growth. However, traffic volume and speed and dust generation within 300 ft (91 m) of the plants is currently likely to be low, slow, and sporadic, because reclamation and pad/road construction within the occurrences is mostly, but not entirely, completed. Dust levels could increase at any time depending on the amount of energy development in the vicinity. We believe that dust deposition has an impact on the plants, but available information does not indicate that the impact rises to the level of a threat.

Other indirect impacts to *Penstemon debilis* can occur due to loss of pollinator habitat. *P. debilis* requires an insect pollinator to reproduce (McMullen 1998, p. iii). Prior to the energy boom, McMullen (1998) concluded that pollinators for *P. debilis* were generalists and were not limiting at that time. However, Tepedino (2009) described the ways in which the pollination biology of another Piceance Basin rare plant, *Physaria obcordata* (Dudley Bluffs twinpod), is impacted by energy development. He described that any energy development that reduces the general level of available floral vegetation has a detrimental effect on pollinators' ability to reproduce, because fewer flowers provide less nectar to feed the pollinators, subsequently resulting in fewer pollinators and reduced ability of the dependent plant, such as *P. debilis,* to produce seeds (Tepedino 2009, pp. 16–17). The degree of impact on *P. debilis* from loss of pollinator habitat due to energy development is unknown, but is not likely to rise to the level of a threat, because disturbance of vegetated areas adjacent to *P. debilis* occurrences is not nearly as extensive as the foraging distance of the pollinators.

A large parcel of land including habitat occupied by both Anvil Points occurrences was leased by the BLM for oil and gas development in August 2008 (DeYoung 2008b, pers. comm.; DeYoung 2008c, pers. comm.; BLM 2008a, p. 1). This proposed development is described in the Roan Plateau Resource Management Plan (RMP) Amendment, which is still being contested in court by environmental groups (Williams 2010). Increased energy exploration in the Anvil Points Mine area may increase maintenance and vehicle access on the unstable road that transects the *Penstemon debilis* occurrence and may increase the likelihood of impacts to *P. debilis* due to construction of additional

roads and other facilities associated with oil and gas exploration. Despite ongoing disturbances, Anvil Points Mine is the largest occurrence on Federally managed land. If impacts continue to modify or curtail this habitat, the species is likely to become in danger of extinction.

Oil Shale Extraction and Mine Reclamation

Oil shale mining has likely impacted *Penstemon debilis* occurrences. Access roads for the mines at Anvil Points and Mt. Logan were cut across cliff sides occupied by the plants, displacing the loose shale habitat and destroying plants. Oil shale extraction activities occurred on the Roan Plateau in the early 1980s and into the 1990s (COBiz 2008, pp. 3–4). Because *P. debilis* was not identified as a species until 1987, we have no record of the pre-mining occurrence status. However, we believe the plants were present at these sites prior to mining because some are still present now. The plants were likely heavily impacted by mine operations within their habitat, and we think that the occurrences are likely to have recovered to a far smaller population size on a reduced area of habitat (see Factor E for discussion of inherent risk of small population size).

Commercial oil shale extraction has not yet proven to be economically viable, and current research and development efforts no longer focus exclusively on surface mining of oil shale rock on the Roan Cliffs (COBiz 2008, pp. 3–4). In November 2008, the BLM issued its record of decision approving resource management plan (RMP) amendments to allow oil shale leasing in the Piceance Basin (BLM 2007a, p. 1). The known *Penstemon debilis* occurrences are not within the area that BLM has currently identified as available for oil shale leasing (BLM 2007a, p. 14). It is unknown when oil shale extraction will become economically viable. If commercial oil shale production does become economically viable, we expect a renewed interest in extracting shale from the cliffs of the Roan Plateau because the shale is located conveniently near the surface. Recent impacts to the Anvil Points Mine plants occurred due to energy production research and removal of core samples by an oil shale research and development company (discussed below), and at the Anvil Points Mine and Mt. Logan Mine occurrences due to mine reclamation and closure efforts (DeYoung 2009a, pers. comm.; Mayo 2006, pp. 1–4).

The BLM conducted mine reclamation actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. 9601 *et seq.*), commonly known as Superfund, to remove health and safety hazards from Anvil Points Mine. Actions included closing access to the passages leading into the mine and removing lead mine tailings soil on the mine bench (Goodenow 2008, pers. comm.). It is unknown whether the lead in the soil is a threat to *Penstemon debilis.* An estimated 350 plants were on the mine bench where the reclamation was done (CNHP 2010a, p. 19). Eighty-eight plants are known to have been directly impacted by Anvil Points Mine reclamation actions permitted by BLM during 2008–2009 (DeYoung 2009b, pers. comm.; Bennett 2010, pp. 1–2). Of the 88, 21 plants that would have been crushed by heavy equipment were transplanted, 56 were covered by matting intended to reduce soil disturbance (DeYoung 2009b, pers. comm.; DeYoung 2009c, pers. comm.), and 11 plants were either covered with tires or screened from human activities with construction fencing (Bennett 2010, p. 2). As of December 2009, 17 of the 88 plants were either dead or unaccounted for (Bennett 2010, p. 2). Any loss of plants at Anvil Points Mine is a threat to the species because of the small size of the entire population, but we expect less disturbance at the site now that reclamation is completed.

The BLM also allowed an oil shale research and development company to conduct research in the Anvil Points Mine, a project area containing the Anvil Points Mine occurrence (Ewing 2008a, pp. 4–6). This research consisted of taking high resolution photographs of the geologic formation visible from the sides of the mine, and removal of stored core samples. The project included vehicle trips up the road every day for 1 month and directly impacted *P. debilis* individuals growing in the road immediately outside the mine (Ewing 2008a, pp. 4–6). The roads transecting the occurrence are on shifting shale talus slopes and are frequently subject to rockslides and mudslides, which require the road to be maintained frequently. Three plants out of about 350 are known to have been destroyed by the road maintenance conducted under this permit (DeYoung 2009a, pers. comm.). The BLM believes that some additional plants may have been trampled by unauthorized access to an area that was fenced off during the research period; however, it is unclear how many plants were disturbed (DeYoung 2008c, pers. comm.). In addition to the direct impacts, the road maintenance required to allow this level of traffic made occupied *P. debilis* habitat more accessible to the public, which could result in further trampling by humans and vehicles (Ewing 2008a, pp. 4–7).

The Mt. Logan Mine occurrence of *Penstemon debilis* is primarily located on land owned by Oxy oil shale division, with a portion of the occurrence occupying BLM land. This occurrence is perched on a steep, unstable slope above a road that is used for access to an oil shale mine reclamation project and for ongoing maintenance of the site. Plants were presumably removed to construct and maintain the road during past mining operations. Several plants out of 513 total on this steep road bank were dangling by their roots in 2005 due to road widening during reclamation (Mayo 2006, pp. 1–4). The road was widened farther, and these plants were gone by 2006 (Mayo 2006, p. 1). Mine reclamation actions destroyed about 30 of the 513 plants at another portion of this occurrence by burying them in topsoil (Ewing 2009a, p. 4). This site also contains noxious weeds associated with the disturbance, but it is unknown whether the weeds will pose a threat to *P. debilis* (Ewing 2009a, p. 4). The BLM portion of this occurrence was included in an oil and gas lease parcel nominated for sale; however, BLM deferred the sale of the lease parcel until completion of their RMP revision (now scheduled for May 2013) and until the Service publishes a determination concerning the status of the species (CNE 2005, p. 1; Lincoln 2009, pers. comm.). We believe that the 513 plants counted at this occurrence are a remnant of a larger population that existed prior to mining and reclamation activities. The potential for further loss of plants at this location is an ongoing threat that could contribute to the species becoming in danger of extinction within the foreseeable future.

Road Construction and Maintenance and Vehicle Access

The Anvil Points Mine occurrence also is impacted during road stabilization work by Garfield County, which is done to maintain ongoing access to a communications transmitter tower located within occupied habitat for *Penstemon debilis* on the mine bench. We expect that continued vehicle access through the plant habitat will destroy a few plants at a time when vehicles turn around and workers walk on the shale slopes. Maintenance and use of the road prevents reclamation of the road bed, which would allow loose

shale to cover the road and reclaim the plant habitat along the mine bench.

The Mt. Logan Road occurrence, located on the ROW above a heavily traveled road near the Logan Mine occurrence, had 10 plants in 1996, of which only 3 plants were found in 2005 and again in 2010 (CNHP 2010, p. 22). This occurrence has no barriers to shield the plants from heavy dust generated by truck traffic (CNHP 2010a, p. 22; DeYoung 2009e, pers. comm.; Ewing 2009a, p. 3). As a result of these ongoing threats and the low number of plants at the site, we consider this occurrence to be nonviable.

Summary of Factor A

In summary, three of the four viable occurrences (Mt. Callahan and Mt. Callahan Saddle Natural Areas and Mt. Logan Mine) are on lands owned wholly or partially by energy development companies. Some individuals at the fourth occurrence (Anvil Points Mine), on BLM land, have been subject to transplanting or destruction as a result of a mine closure project and road maintenance. Over the past 6 years, oil and gas exploration and production has increased substantially in the area containing the habitat for *Penstemon debilis,* making it likely that the species will become in danger of extinction in the foreseeable future. The pace of new development slowed in 2009 because of a variety of factors, but increased again in 2010 (COGCC 2010, p. 17). *P. debilis* grows on steep shifting slopes, and roads through *P. debilis* habitat are unstable and require frequent maintenance, which destroys plants. Plants seem to be able to recolonize their habitat after disturbance; however, recolonization is slow, and would not be able to keep pace with rapid development. For these reasons we consider destruction and modification of the species' habitat for natural gas production, oil shale mining, mine reclamation, road maintenance, exploration activities, and associated impacts resulting from increased vehicle access to the occurrences to constitute an ongoing threat to *P. debilis* that may cause the species to become in danger of extinction within the foreseeable future.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Activities resulting in overutilization of *Penstemon debilis* plants for commercial, recreational, scientific, or educational purposes are not known to exist. Therefore, we do not consider overutilization for commercial, recreational, scientific, or educational purposes to be a threat to the species now or in the foreseeable future.

C. Disease or Predation

Seed predation of *Penstemon debilis* by small mammals is very low (McMullen 1998, pp. 39–40). Grazing, predation, and disease are not known to affect *P. debilis.* Therefore, we do not consider disease or predation to be a threat to the species now or in the foreseeable future.

D. The Inadequacy of Existing Regulatory Mechanisms

Local Laws and Regulations

Approximately 66.6 percent of *Penstemon debilis* occupied habitat occurs on private lands. We are not aware of any city or county ordinances or zoning that provide for protection or conservation of *P. debilis* or its habitat. Garfield County continues to maintain and enlarge a communications transmitter site within the Anvil Points Mine occurrence without a permit from BLM. Existing County ordinances fail to address appropriate placement of communications transmitters to avoid impacts to sensitive species. The impact may rise to the level of a threat if the transmitter site is allowed to remain and expand.

State Laws and Regulations

No State laws or regulations protect rare plant species in Colorado.

Federal Policy and Management

The BLM manages the habitat for about 19.4 percent of the *Penstemon debilis* plants, on 33.3 percent of the occupied habitat. Candidate species are managed by BLM as sensitive species. BLM has a policy for management of sensitive species that recommends avoidance and minimization of threats to plants and habitat, as well as habitat conservation assessments and conservation agreements (BLM 2008c, pp. 8, 36–38). No habitat conservation assessments or conservation agreements have been formalized for *P. debilis.*

The Federal Land Policy and Management Act (FLPMA) (43 U.S.C. 1701 *et seq.*) directs BLM, as part of the land use planning process, to ''give priority to the designation and protection of areas of critical environmental concern'' (43 U.S.C. 1712(c)(3)). The FLPMA defines areas of critical environmental concern (ACECs) as ''areas within the public lands where special management attention is required * * * to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards'' (43 U.S.C. 1702 (a)). Designation as an ACEC recognizes an area as possessing relevant and important values that would be at risk without special management attention (BLM 2006, pp. 3–110). The ACEC designation carries no protective stipulations in and of itself (BLM 2006, pp. 2–65).

Following an evaluation of the relevance and importance of the values found in potential ACECs, a determination is made as to whether special management is required to protect those values and, if so, to specify what management prescriptions would provide that special management (BLM 2006, pp. 3–111). The records of decision (RODs) for the Roan Plateau RMP Amendment were signed June 8, 2007, and March 12, 2008. The March 12, 2008, ROD designated the Anvil Points ACEC, as an area for management of sensitive resources including *Penstemon debilis* (BLM 2008b, ROD p. 4). The ROD lists as an objective for the Anvil Points ACEC to ''protect occupied habitat and the immediately adjacent ecosystem processes that support candidate plants.'' This ROD also authorizes oil and gas development in the ACECs, making the portions of these areas that are not currently leased available for lease (BLM 2008b, ROD p. 2). Anvil Points ACEC covers most of the formerly occupied occurrence area at Anvil Points Rim, and the entire Anvil Points Mine occurrence. At present, no oil and gas development activities are allowed. Implementation of the RMP amendment, including lease development, is dependent on the outcome of litigation.

In order to protect *Penstemon debilis* in the ACEC, a no surface occupancy (NSO) and no ground disturbance (NGD) stipulation was established for both Anvil Points *P. debilis* occurrences (BLM 2007b, ROD p. 26). The term NGD applies to all activities except oil and gas leasing and permitting, while the term NSO applies only to oil and gas leasing and permitting (BLM 2008b, ROD p. 6). The NSO designation prohibits long-term use or occupancy of the land surface for fluid mineral exploration or development to protect identified resource values (BLM 2006, pp. 2–3). This designation means that an area is protected from permanent structures or long-term ground-disturbing activities (*i.e.,* lasting longer than 2 years) (BLM 2006, pp. 2–3). For example, an NSO designation would preclude construction of a well pad (because it would last longer than 2 years) but not a typical pipeline (because it would be revegetated within 2 years) (BLM 2006, pp. 2–3). Also, an

NSO does not preclude the extraction of underlying fluid minerals if they can be accessed from outside the area by directional drilling (BLM 2006, pp. 2–3). Directional drilling may not disturb the overlying surface, including *Penstemon debilis* habitat. Except for specified situations, individual NSOs may include exceptions so that BLM may allow a ground-disturbing activity if it meets specific, stated criteria (BLM 2006, pp. 2–3). For example, the NSO designation for these occurrences allows the BLM to grant exceptions for short-term ground disturbing activities if a conference with the Service indicates that proposed activity would not impair maintenance or recovery of the species (BLM 2007c, pp. F6–F7).

The protections provided by the NSO/NGD provision of the ACEC designation are not adequate to provide for maintenance of the Anvil Points Mine occurrence because although BLM may and usually does discuss plans with the Service, they are not required to consult with the Service and ensure that proposed activity would not impair maintenance or recovery of the species prior to authorizing an exception to the NSO/NGD (BLM 2007a, pp. F6–F7). Consultation for a candidate or sensitive species is not mandatory. Despite NSO/NGD provisions, projects have proceeded that resulted in destruction of *Penstemon debilis* individuals. Other actions with likely impacts to *P. debilis* are still being considered by BLM (DeYoung 2010, pers. comm.). This ability to proceed with actions that cause negative impacts to the species indicates that the NSO/NGD provisions do not fully protect *P. debilis* and its habitat.

Recent examples demonstrating the use of the NSO/NGD provisions were discussed under Factor A. All of these examples refer to the Anvil Points Mine occurrence of *Penstemon debilis:*

(1) The BLM approved work under the CERCLA to remove health and safety hazards from the Anvil Points Mine occurrence. While the BLM conferred with the Service and minimized damage to the plants ''as much as was practicable,'' hazards to humans take precedence over protecting candidate plant species. This project resulted in direct impacts to at least 88 *Penstemon debilis* individuals (DeYoung 2009c, pers. comm.).

(2) Also at the Anvil Points Mine, the BLM is still considering granting permission for continued maintenance of the Garfield County transmitter tower access road (DeYoung 2009b, 2010 pers. comm.). Maintaining the existing tower access road rather than relocating it increases the likelihood of destroying *P. debilis* plants and prevents the recolonization of plants in the current road bed.

(3) The BLM has authorized oil shale research projects in the past at the Anvil Points Mine (Ewing 2008a, p. 4), which led to the destruction of *P. debilis* plants (BLM 2007c, pp. F6–F7; DeYoung 2009a, pers. comm.).

(4) The land containing the Anvil Points Mine occurrence was leased for oil and gas development under the BLM August 2008 lease sale that is still awaiting a court decision (DeYoung 2008b, p. 1; BLM 2008b, p. 1; Ewing 2008a, p. 7). Despite plant protections built into the RMP amendment that is now being challenged, increased energy exploration in the Anvil Points Mine area may increase maintenance and vehicle access and consequently increase the likelihood of destroying plants

Summary of Factor D

We found that existing regulatory mechanisms and agency policies do not address the primary threats to *Penstemon debilis* and its habitat. The species was afforded some protection on Federal lands as a candidate species; however, candidate status has not prevented impacts and threats to the species from oil and gas development and mine reclamation. Federal natural resource laws do not protect *Penstemon debilis* because they are not regulatory unless the plant is proposed or listed, and projects have occurred that have continued to directly impact the species. Furthermore, because much of the plant population occurs on non-Federal lands, *P. debilis* has no regulatory protection for approximately 81 percent of the total estimated plants. Therefore, we determined that the existing regulatory mechanisms do not adequately address the primary threats to the species.

E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

Failure of Transplants

The Anvil Points Rim occurrence, which formerly included several hundred plants on BLM land, was reduced to zero plants in 1999 for unknown reasons (CNHP 2010a, pp. 11–12). It appears that the decline of this occurrence was a result of natural processes, including competition by surrounding native vegetation, which includes *Chrysothamnus viscidiflorus* (yellow rabbitbrush) (DeYoung 2008a, pers. comm.; CNHP 2010a, p. 12). Fifty-three *Penstemon debilis* seedlings grown off site from seeds were introduced to Anvil Points Rim in 1996. Ten survived until 2001, but all were gone by 2005. Two mature plants found in 2010 appear to be overlooked survivors from the original population (CNHP 2010a, p. 11). Monitoring failed to show a cause for the decline of this occurrence (DeYoung 2008a, pers. comm.).

Small Population Size

Penstemon debilis population sizes are small, and the smaller the population, the more likely extinction is in any given period of time (Shaffer 1987, p. 70). All occurrences of *P. debilis* grow on a 17-mi (27-km) stretch of the rim of the Roan Plateau in Garfield County, Colorado (Ewing 2008a, p. 7). The two largest occurrences are within 2 mi (3 km) of each other (Ewing 2008a, p. 7). A species with such a small range is particularly susceptible to extirpation from a stochastic event such as a rockslide or severe hail storm (McMullen 1998, p. 3). This increased susceptibility is due to the likelihood that, although stochastic events are often localized in severity, such a localized event would likely impact all occurrences of the species, rather than just a small portion of the occurrences, as may be expected for a species with a larger range. For example, the newly discovered Smith Gulch location is small (estimated 50 plants) and, because of its positioning in a drainage, has a high potential for being destroyed by a rain event (DeYoung 2009d, pers. comm.).

Habitat Fragmentation—Genetic Diversity

In addition, the fragmentation of *P. debilis* habitat by human-related activities threatens to reduce the species to mosaics of small populations occurring in isolated habitat remnants. Foraging pollinators spend more time within large populations than small populations, so sensitive plant species with small populations (fewer than 50 individuals) are more likely to have a lower seed set per individual than larger ones, and to suffer genetic problems such as genetic drift and inbreeding depression due to losses of individuals in such events such as those described under Factor A (McMullen 1998, p. 3; Ellstrand & Elam 1993, pp. 226, 228). Genetic diversity of *P. debilis* is low compared to other species of plants with similar life-history traits (Wolfe 2010, p. 1), and thus the species is more susceptible to genetic problems.

Climate Change and Drought

Climate change could potentially impact *Penstemon debilis.* The limited geographic range of the oil shale substrate that makes up the entire *Penstemon debilis* habitat could limit the ability of the species to adapt to changes in climatic conditions by progressive establishment of new populations.

Incidental disturbance by humans and stochastic events such as drought, landslides, or encroaching vegetation can impact *Penstemon debilis.* Climate change could exacerbate these factors, causing them to pose a threat to *P. debilis;* however the current data are not reliable enough at the local level for us to draw conclusions regarding the imminence of climate change threats to *P. debilis.* The collective effects of small population size, fragmented habitat, genetic isolation, inability to shift with climate changes, and failure of reintroduction efforts make the species vulnerable to destruction and modification of its habitat, to the extent that it is likely to become endangered within the foreseeable future.

Cumulative Impacts

Some of the threats discussed in this finding could work in concert with one another to cumulatively create situations that potentially impact *Penstemon debilis* beyond the scope of the combined threats we have already analyzed. Destruction and modification of habitat, and fugitive dust from truck traffic, could reduce the number of other species of blooming plants that attract pollinators and could destroy the ground-nesting habitat needed by bees. A reduction in pollinators could cause *P. debilis* to produce fewer seeds. Such cumulative impacts may lower seed production and reduce the number of plants. We do not have documentation that these cumulative impacts are currently threatening the species.

Summary of Factors

The primary factors threatening *Penstemon debilis* are the present and threatened destruction, modification, or curtailment of its habitat and range, and the inadequacy of existing regulatory mechanisms to address the primary threats to the species, exacerbated by the collective impacts described under Factor E. These factors pose imminent threats to the species because they are ongoing. The threats are moderated because 39.8 percent of the occupied habitat is protected by voluntary conservation agreements, and 33.3 percent is managed to minimize some of the threats, although 26.9 percent has no special management or protection. We believe that the two main occurrences of the species will be protected within the State Natural Areas because Oxy is implementing best management practices during development. While these actions may not prevent the species from becoming endangered when energy demands rise again, the species is not likely to become in danger of extinction within the foreseeable future.

Species Information—Phacelia submutica

Phacelia submutica is a rare annual plant endemic to clay soils derived from the Atwell Gulch and Shire members of the Wasatch Formation in Mesa and Garfield Counties, Colorado. The 9 populations and 22 known occurrences of the plant occupy a total of 625.9 ac (253.3 ha) (CNHP 2010a, pp. 24–82; Service 2011a, p. 7). All occurrences consist of small patches of plants on uniquely textured, shrink-swell clay soil separated by larger areas of similar soils that are not occupied by *P. submutica.* The estimated total number of plants ranges from 7,767 to 68,371 per year, depending on growing conditions. In some years, surveyors have failed to find any plants. The species depends on its seed bank to survive for one or many years, again depending on growing conditions.

Taxonomy

Phacelia submutica was first described by Howell based on specimens collected from the town of DeBeque, Mesa County, Colorado, in 1911 and 1912 (Howell 1944, pp. 370–371). Halse (1981, pp. 121, 129, 130) reduced it to varietal status as *P. scopulina* var. *submutica.* Halse's nomenclature has been challenged by O'Kane (1987, p. 2), who claimed Halse used inadequate collection materials and that *P. submutica* is geographically isolated from *P. scopulina* (O'Kane 1987, p. 2; 1988, p. 462). *Phacelia submutica* is the recognized species name in current floristic treatments in Weber and Wittmann (1992, p. 98; 2001, p. 203) and by the Director of the Biota of North America Program (Kartesz 2008, pers. comm.). While the Integrated Taxonomic Information System (2001) database cites John Kartesz as the expert source for this species, it is not updated with his currently accepted name for the species: *Phacelia submutica* (Kartesz 2008, pers. comm.). Because the weight of evidence indicates that *Phacelia submutica* is the appropriate species name, we are listing the species with this nomenclature. *Phacelia* is included in the Hydrophyllaceae (waterleaf) family. Recent molecular data suggest that this family should be combined in an expanded Boraginaceae (borage) family. Conflicting views exist on the configuration of this larger Boraginaceae. The lead author of the family treatment for the upcoming *Flora of North America* has chosen to retain the Hydrophyllaceae. Therefore, we will retain *Phacelia* in the Hydrophyllaceae family for this final rule.

Description

Phacelia submutica is a low-growing, herbaceous, spring annual plant with a tap root. The stems are typically 0.8 to 3 in (2 to 8 cm) long, often branched at the base and mostly lying flat on the ground as a low rosette (Howell 1944, pp. 371–372). Stems are often deep red and more or less hairy with straight and stiff hairs. Leaves are similarly hairy, reddish at maturity, 0.2 to 0.6 in (5 to 15 mm) long, egg-shaped or almost rectangular with rounded corners, with bases abruptly tapering to a wedge-shaped point. Leaf margins are smooth or toothed. The tube-shaped flowers are yellowish white, on short stems; the 5 petals are 0.16 to 0.19 in (4–5 mm) long; the stamens do not protrude beyond the petals. The style is 0.04 to 0.06 in (1 to 1.5 mm) long and nearly hairless, and the seed capsules do not have a short, sharply pointed tip (Howell 1944, pp. 371–372; Halse 1981, p. 124). The elongated egg-shaped seeds are 0.6 to 0.8 in (1.5 to 2 mm) long with 6 to 12 crosswise corrugations, and are blackish brown and somewhat iridescent (Howell 1944, p. 370; Halse 1981, p. 130; O'Kane 1987, p. 3).

Seed Bank

Phacelia submutica plants flower between late April and late June and set seed from mid-May through late June. Individuals finish their life cycle by late June to early July, after which time they dry up and disintegrate or blow away, leaving no indication that the plants were present (Burt and Spackman 1995, p. 23). The species grows in a habitat with wide temperature fluctuations, long drought periods, and erosive saline soils. Upon drying, cracks form in the shrink-swell clay soils. Seeds plant themselves by falling into the cracks that close when wetted, thus covering the seeds (O'Kane 1988, p. 20).

Phacelia submutica seeds can remain dormant for 5 years (and probably longer) until the combination and timing of temperature and precipitation are optimal for germination (CNHP 2010a, pp. 24–82). The ideal conditions required for seed germination are unknown, but it is likely that germination depends not on total

precipitation but on the temperature after the first major storm event of the season (Levine *et al.* 2008, p. 795). Rare annuals that flower every year are subject to extinction under fluctuating conditions, because they exhaust their seed reserves (Meyer *et al.* 2006, p. 901). Rare ephemeral annuals, such as *P. submutica,* that save their seed bank for the best growing conditions are more resilient to fluctuating conditions. *P. submutica* numbers at Horsethief Mountain fluctuated from 1,700 plants in 1986, to 50 in 1992, up to 1,070 in 2003, and down to only a few from 2006 to 2008 (CNHP 2010a, pp. 49–50). The fluctuation in numbers indicates that many seeds remain dormant in the seed bank during years when few plants can be found. We do not know how long the seeds can remain viable in the soil. Although plant sites differ in numbers of flowering plants each year, there are no observations of site expansion.

Habitat

Phacelia submutica is restricted to exposures of chocolate to purplish brown and dark charcoal gray alkaline clay soils derived from the Atwell Gulch and Shire members of the Wasatch Formation (Donnell 1969, pp. M13–M14; O'Kane 1987, p. 10). These expansive clay soils are found on moderately steep slopes, benches, and ridge tops adjacent to valley floors of the southern Piceance Basin in Mesa and Garfield Counties, Colorado. On these slopes and soils, *P. submutica* usually grows only on one unique small spot of ground that shows a slightly different texture, color, and crack pattern than the similar surrounding soils (Burt and Spackman 1995, p. 15). We do not have a precise scientific description of the soil features required to support this species. The natural shrink-swell cracking process creates the conditions needed for the plants and seed bank to thrive.

Distribution

The currently known occupied habitat where the plants grow occurs on about 625.9 ac (253.3 ha) (CNHP 2010a, pp. 24–82). About 80.9 percent of the occupied habitat is on lands managed by the BLM, 11.9 percent is on private lands, 6.4 percent is on lands managed by the USFS, and 0.7 percent is on lands managed by the Colorado Division of Wildlife (CDOW) (Service 2011a, pp. 6–7). A general range encompassing outlying occurrences of *Phacelia submutica* includes about 82,231 ac (34,896 ha) (Service 2011a, p. 13). The growing town of DeBeque and about 10 mi (16.4 km) of Interstate 70 and the Colorado River bisect the species' range.

Phacelia submutica is classified by the CNHP as a G2 and S2 species, which means it is imperiled across its entire range and within the State of Colorado (CNHP 2010b, p. 12). The CNHP ranks the quality of each occurrence on a scale of A to E, with A meaning an excellent occurrence that is abundant and viable; B, C, and D meaning good, fair, and poor, respectively; and E meaning the occurrence still exists, but no ranking information is available. Historical records (H rank in Table 3, below) have not been revisited for 20 years or more. Ranks are based on the viability and number of plants, the amount of anthropogenic (human) disturbance, and the amount of weed cover and intact habitat (CNHP 2010b, pp. 12–13).

No occurrences of *Phacelia submutica* have been found beyond the described habitat and range. Surveys for *P. submutica* have been conducted outward from DeBeque as far as the exposed soil members extend within the geologic formation (Burt and Spackman 1995, p. 14). Surveys in 2010 added 148 ac (60 ha) of new locations within the known range of the species.

TABLE 3—*Phacelia submutica* OCCURRENCES WITHIN POPULATIONS BY LANDOWNERSHIP (ACRES (AC) (HECTARES (HA))

(CNHP 2010a, pp. 24–82, observation dates 1982 to 2010; WestWater Engineering 2007, pp. 16, 17, 19, 27; Kirkpatrick 2011, pers. comm.; Potter 2010, Wenger 2010; Lyon 2010, pers. comm.; Service 2011a; CNHP 2010b, pp. 12–13)

Population occurrences	High counts estimates	Low counts	Habitat ac	Habitat ha	Viability rank*	Owner
SULPHUR GULCH:						
Sulphur Gulch	70	0	4.4	1.8	H	BLM.
Winter Flats Sulphur Gulch	35	25	9.7	3.9	D	BLM.
PYRAMID ROCK:						
Pyramid Rock	3,050	1	213.6	86.4	BC	BLM.
Pyramid Ridge Coon Hollow South.	1,500	2	55.4	22.4	B	BLM.
Coon Hollow/B/C	11,000	42	58.4	23.6	AB	BLM.
Mount Low West of DeBeque	10,000	300	15.9	6.4	B	BLM, Private.
Dry Fork Roan Creek	800	100	24.2	9.8	BC	BLM, Private.
Bloat Gulch Logan Wash	5,820	0	50.2	20.3	H	BLM, Private.
Coon Hollow	200	150	2.1	0.8	H	BLM.
ROAN CREEK:						
Roan Creek	195	21	5.8	2.3	C	Private.
DEBEQUE						
DeBeque West	500	0	14.8	6.0	H	BLM, Private.
DeBeque East Cemetery Road	20	0	36.2	14.6	D	BLM.
MOUNT LOGAN:						
Mount Logan	50	5	7.0	2.8	C	BLM.
ASHMEAD DRAW:						
South of DeBeque	17	0	3.9	1.6	H	BLM.
DeBeque Reservoir Ashmead Draw.	210	0	16.8	6.8	C	BLM, Private.
BAUGH RESERVOIR:						
Baugh Reservoir	1,000	0	6.1	2.5	H	BLM, Private.
HORSETHIEF MOUNTAIN:						
Jerry Gulch	300	200	3.2	1.3	C	Private.
Moffat Gulch	20	0	2.0	0.8	H	BLM.
S of Horsethief Creek	55	10	2.0	0.8	C	BLM.
Housetop Mtn. Jerry Gulch Atwell Gulch.	4,000	235	20.4	8.2	B	BLM, USFS.

TABLE 3—*Phacelia submutica* OCCURRENCES WITHIN POPULATIONS BY LANDOWNERSHIP (ACRES (AC) (HECTARES (HA))—Continued

(CNHP 2010a, pp. 24–82, observation dates 1982 to 2010; WestWater Engineering 2007, pp. 16, 17, 19, 27; Kirkpatrick 2011, pers. comm.; Potter 2010, Wenger 2010; Lyon 2010, pers. comm.; Service 2011a; CNHP 2010b, pp. 12–13)

Population occurrences	High counts estimates	Low counts	Habitat ac	Habitat ha	Viability rank*	Owner
Horsethief Mtn. NW.–SW.–WSW. Shire Gulch.	14,429	5,300	69.1	28	C	USFS, BLM, Private.
ANDERSON GULCH:						
Anderson Gulch Round Mtn.	15,100	1,376	4.5	1.8	A	Private, State.
Totals	68,371	7,767	625.9	253.3		

* An A indicates those occurrences with the highest number of individuals and best habitat, while a D represents those occurrences with the fewest individuals and degraded habitat. An H represents an occurrence that has not been re-visited in over 20 years.

Summary of Factors Affecting *Phacelia submutica*

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Phacelia submutica is threatened with destruction and modification of its seed bank and habitat due to the following issues: modification of areas for oil and natural gas exploration and production, development of the Westwide Energy Corridor, increased access to the habitat by off-road vehicles (ORVs), soil and seed disturbance by livestock and wild ungulates, and proposed water reservoir projects. All known occurrences are in the midst of the second largest natural gas-producing area in Colorado (COGCC 2010).

Natural Gas Development

About 78 percent of the habitat for the species and 67 percent of the entire range of *Phacelia submutica* are on BLM lands currently leased for oil and gas drilling (Ewing 2009, map). An additional 65 ac (26 ha) of habitat (10 percent) may be opened to natural gas development by BLM pending development of a new RMP for the Grand Junction Field Office in 2013 (Ewing 2008a; BLM 2005, p. 5). About 3 percent of the habitat is on private land owned by energy companies (Burt and Spackman 1995, p. 25). Although the sale of oil and gas leases by BLM does not directly impact rare plant habitat, it indicates the intention to continue and increase the level of development in an area that covers a large portion of the range of *P. submutica.* Likewise, the Colorado Oil and Gas Conservation Commission (COGCC) issues permits to drill that indicate imminent development at specific sites on private and Federal lands (COGCC 2009b, pp. 1–3). COGCC issued 10 new drilling permits in 2009. Within the range of *P. submutica,* there are 178 natural gas wells; 60 of these wells are located within the same 640 ac (259 ha) section as 18 of the 22 occurrences of the species (Ewing 2009b, map).

Five occurrences of *Phacelia submutica* are located on BLM land in an area called South Shale Ridge that covers more than a third of the known range for this species (BLM 2005, p. 5). Part of South Shale Ridge was recommended as an ACEC for protection of *P. submutica* in 1995, but was not designated as an ACEC (Burt and Spackman 1995, p. 36) in that area. Portions of South Shale Ridge that were withheld from leasing in the past were leased for oil and gas development in November 2005 (BLM 2005, p. 5). These leases were subsequently deferred pending development of a new RMP for the Grand Junction Field Office (Ewing 2008c, pers. comm.; BLM 2005, p. 5). The new RMP is now scheduled for May 2013, and the leases are still on hold (Ewing 2011, pers. comm.). If the BLM sells these leases, then 8 ac (3 ha) of occupied *P. submutica* habitat within about 65 ac (26 ha) of suitable habitat will be newly opened to natural gas development in a previously undeveloped area (Ewing 2009, map), with additional impacts anticipated from associated roads and related development.

Pyramid Rock is adjacent to South Shale Ridge, and the Pyramid Rock occurrence of *Phacelia submutica* is within the BLM Pyramid Rock ACEC, including an estimated 1 to 3,050 plants (depending on the year) within 214 ac (86 ha) of habitat (CNHP 2010a, p. 29; Wenger 2009, pp. 1–11; Wenger 2010, p. 3). Stipulations of no new surface occupancy or ground disturbance apply to this ACEC for protection of candidate, proposed, and listed plant species. These stipulations do not apply to sensitive species. However, due to the possibility of exceptions being granted, we cannot predict with any degree of certainty what stipulations will actually be applied to the plant or its habitat that ensure the long-term conservation of the species. The BLM installed cable fence in 2007 to deter ORVs from crossing habitat for the Federally threatened cactus *Sclerocactus glaucus* (Colorado hookless cactus) and *P. submutica.* Only a few ORVs have left tracks under the fence and across *P. submutica* habitat. The BLM excluded this ACEC from a South Shale Ridge lease sale in 2005 (BLM 2005, p. 5). *P. submutica* plants have not been directly impacted since the fence was installed, and existing pipeline and roads remain outside the fence. The ACEC has provided some protection thus far for about 4 percent of the plants (see Table 3 above).

We recommend buffers of 656 ft (200 m) for pipeline ROWs between the edge of disturbance and suitable plant habitat to protect the plants from destruction by vehicles that stray outside of the project area, runoff, erosion, dust deposition, or other indirect effects such as destruction of pollinator nesting habitat. In spite of such efforts, pipeline ROWs exist within 20 ft (6 m) and 100 ft (30 m) of known *P. submutica* occurrences (Lincoln 2008, pers. comm.).

The ongoing threats to habitat that are associated with oil and gas development include well pad and road construction; installation of pipelines; and construction of associated buildings, holding tanks, and other facilities. All of these actions would destroy the seed bank of *Phacelia submutica* and modify its habitat so that the plants could no longer grow in these areas.

Westwide Energy Corridor

The Energy Policy Act of 2005 (42 U.S.C. 15801 *et seq.*) directs the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate energy transport corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on Federal lands in certain western U.S. States. A portion of the

designated Westwide Energy Corridor crosses 16,326 ac (6,621 ha) of BLM land within the range of *Phacelia submutica.* Nine of the species' 22 occurrences are located within this energy corridor (Westwide 2009, map; Ewing 2009, map). Pipeline and transmission line routes along the energy corridor are not yet identified, but it is not feasible that all habitat for *P. submutica* will be avoided as the corridor continues to be developed.

Cumulative Impacts of Energy Development

Energy development activities described above are occurring in close proximity to *Phacelia submutica* locations (WestWater Engineering 2004, p. 11). Oil and gas pipelines, well pads, and access roads are present on 11 *P. submutica* occurrences (CNHP 2010a, pp. 24–82). Frequently travelled roads bisect and cross the edges of nine occurrences. It is likely that some of the seed bank was displaced or destroyed to build the roads and pipelines. On Federal lands, direct impacts to known plant locations are mostly being avoided by careful placement of pipelines, well pads, and associated facilities, due to the candidate status of the species.

Our concern is primarily for the cumulative impacts of energy development. When all of the oil and gas wells are connected to the system of local pipelines, roads, and pumping stations, in combination with cross-country transmission lines and pipelines, more ROWs will be necessary. Under these conditions, it is difficult to protect occupied or potential habitat for *P. submutica.* The natural shrink-swell cracking process creates the soil conditions needed for *P. submutica* and its seed bank to thrive; however, the natural soil surface structure is fragile and easily disturbed. Blading of the top few inches of soil during well pad and road construction, installation of underground pipelines, and construction of associated buildings, holding tanks, and other facilities alter the unique soil structure, especially when it is wet, and may disturb, damage, or remove seed banks that are critical to the survival of this species. Any ground disturbance that churns or compacts the soil or changes the shrink-swell crack structure is likely to have a deleterious effect on the *in situ* seed bank and, therefore, on successful plant recruitment and survival of the species in subsequent years (Meyer *et al.* 2005, p. 22).

Off-Road Vehicle Recreation

Energy development increases access to previously roadless areas, which encourages ORV traffic to drive on nearby slopes that support plant habitat. ORV use occurs on BLM lands in the general vicinity of *Phacelia submutica* and has been recorded within occupied habitat at seven occurrences (CNHP 2010a). The vehicles stray from designated roads to climb hills for recreational purposes (Mayo 2008d, photo). Substantial surface disturbance due to churning by ORV tires can alter the unique soil structure required by this species, with the same negative effects on the seed bank as described above.

Trampling

Trampling of the habitat by livestock and wildlife is documented at 14 of the 22 occurrences (CNHP 2010a, pp. 24–82). Substantial surface disturbance due to heavy trampling increases soil compaction and erosion and alters the microhabitat, such as the cracked soil surface, the species requires.

Livestock-related impacts have resulted in the loss of similar plant species in other locations. *Lepidium papilliferum* (slickspot peppergrass) is a rare ephemeral annual desert plant in Idaho (comparable to *Phacelia submutica*), which has highly specific soil requirements and which depends on its seed bank. The slickspot peppergrass population dropped from thousands of plants in 1995, to no new plants after intensive trampling when the soil was wet and seeds were germinating (Meyer *et al.* 2005, p. 22). The population has not recovered, which is believed to be due to damage and burying of seeds that prevented them from germinating. After 11 years of monitoring, researchers have clear evidence that ''any form of soil disturbance is likely to have a deleterious effect on the *in situ* seed bank,'' and that all potential habitat for such a species (such as *P. submutica*) should be managed as if it were currently occupied (Meyer *et al.* 2005, p. 22).

Water Reservoirs

Two water reservoir projects known as Roan Creek and Sulphur Gulch have been proposed in the past within occupied habitat of *Phacelia submutica.* The potential reservoir locations would have impacted two occurrences. Recently, both projects were again evaluated as potential reservoirs to provide a water supply for in-stream flows for endangered fishes in the Colorado River (Friedel 2004, p. 1; Grand River Consulting Corporation 2009, p. 3). After evaluation of numerous alternatives, the Sulphur Gulch and Roan Creek projects are no longer being considered as a water supply for endangered fishes because more practical sources were found (Bray and Drager 2008, pers. comm.; Grand River Consulting Corporation 2009, pp. 1–5). The Roan Creek reservoir project also was proposed by Chevron Shale Oil Company and Getty Oil Exploration Company to be used for development of oil shale extraction (Chevron-Getty 2002, pp. 2, 8), but the oil shale projects were not developed. These potential reservoirs could permanently destroy plants and their habitat by project construction and inundation. Because the proposals have been withdrawn, these threats are not imminent; however, the sites have been identified as potential reservoir locations that could be developed within 20 years if warranted by increased demands for water. Increased demands are likely, depending on the oil shale market, urban development in Colorado, and less precipitation due to climate change.

Summary of Factor A

We consider destruction, modification, and fragmentation of habitat to be moderate threats to *Phacelia submutica* throughout its range, due to ongoing development of oil and gas with associated pipelines, construction of new road and utility ROWs, road widening, and construction of access roads. *P. submutica* habitat also is threatened by soil modification resulting from livestock trampling and ORV tracking. These threats are of moderate magnitude because at least 14 of the 22 occurrences are being impacted to some degree by one or more of the threats, and because the plants and their seed banks occur in small, isolated patches that are easily destroyed by small-scale disturbances. If these threats increase in frequency, severity, or scope, the species is likely to become in danger of extinction within the foreseeable future.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Activities resulting in overutilization of *Phacelia submutica* plants for commercial, recreational, scientific, or educational purposes are not known to exist. Therefore, we do not consider overutilization for commercial, recreational, scientific, or educational purposes to be a threat to the species now or in the foreseeable future.

C. Disease or Predation

Disease or herbivory are not known to affect *Phacelia submutica.* Therefore, we do not consider disease or predation

to be a threat to the species now or in the foreseeable future.

D. The Inadequacy of Existing Regulatory Mechanisms

Local Laws and Regulations

County ordinances or zoning are not known to affect *Phacelia submutica* or its habitat. Therefore, we do not consider inadequacy of existing local laws and regulations to be a threat to the species now or in the foreseeable future.

State Laws and Regulations

No State regulations protect rare plant species in Colorado. The CNAP has entered into agreements with BLM to help protect the Pyramid Rock ACEC occurrence of *Phacelia submutica* by also managing it as a designated State Natural Area that is monitored by volunteer stewards. The Pyramid Rock occurrence has been adequately protected thus far, but the management agreement can be terminated with 90-day written notice by either party. Therefore, we have concluded that the State Natural Area designation alone does not constitute a regulatory mechanism to conserve *P. submutica.*

Federal Laws and Regulations

Bureau of Land Management

Candidate species are managed by BLM as sensitive species. Sensitive species designations provide policies to be carried out with the resources available, but they do not provide regulations to protect this species from losing habitat and seed banks to energy development projects. The BLM attempts to avoid disturbances that would adversely affect sensitive species' viability or trend the species toward Federal listing. This includes avoidance of suitable habitat if it can be identified as such (BLM 2008c, pp. 8, 36; BLM 2008d, pp. 5–7). However, the BLM policy of avoidance and minimization of threats to plants and habitat may not adequately protect *Phacelia submutica* because the plants can only be found for a few weeks during years when growing conditions have been favorable (Burt and Spackman 1995, p. 8). Thus, well-intentioned avoidance and minimization measures may not be implemented if no plants are seen, even in areas where subsequent timely surveys would likely demonstrate a persistent seed bank. As opposed to listed species, biological assessments or consultation with the Service are not required for BLM-designated sensitive species during the authorization process for oil and gas use on Federal lands (BLM 2008d, p. 33).

Section 365 of the Energy Policy Act of 2005 (42 U.S.C. 15801 *et seq.*) establishes a Federal Permit Streamlining Pilot Project with the intent to improve the efficiency of processing oil and gas use authorizations on Federal lands. The two BLM pilot project offices for Colorado are in the Colorado River Valley and Grand Junction Field Offices, both of which manage *Phacelia submutica* habitat. Faster processing of permits to drill increases the likelihood of ground disturbance on *P. submutica* habitat because the plants are ephemeral annuals that can only be found for about 6 weeks during favorable years, and not all of the habitat has been surveyed. When the plants are not present or previously documented, avoidance of the seed bank depends on field assessments of habitat. As a result, seed banks and habitat are increasingly likely to be disturbed or removed during the process of approving locations for new energy development projects.

U.S. Forest Service

Phacelia submutica is currently on the sensitive species list for the USFS, Region 2 (USFS 2009). The USFS manages 6.4 percent of the habitat for *P. submutica* (Service 2011a, p. 9). Trampling by mule deer and trespass cattle has damaged plants and habitat at two sites on the Grand Mesa National Forest; ORVs have impacted another site (USFS 2010; CNHP 2010a, pp. 24–82). Most of the habitat is protected from access by steep badlands and canyons. The habitat is open to oil and gas leasing with an NSO stipulation.

A Proposed Research Natural Area to protect the species on the White River National Forest has not been formally established (Proctor 2010, pers. comm.). If established, protection would include restrictions on ORV use, livestock grazing, and resource extraction. Regulatory mechanisms on USFS lands do not protect the species, because such restrictions are not in place, and the NSO stipulation can be waived in some cases.

Summary of Factor D

We have determined that existing regulatory mechanisms do not address the primary threats to *P. submutica* because the existing RMPs do not provide protection from the threat of oil and gas development. The one ACEC in place is not adequate to protect the species because it includes only 4 percent of the habitat. Sensitive species designations provide policies to be carried out with the resources available, but they do not provide regulations to protect this species from losing habitat and seed banks to energy development projects, cattle trampling, or ORV traffic over the next 10 to 20 years.

E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

Climate Change

Climate change is likely to affect *Phacelia submutica* because seed germination, seed dormancy, and persistence of the seed bank are all directly dependent on precipitation and temperature patterns (Levine *et al.* 2008, p. 805). As described under Factor E for *Ipomopsis polyantha,* climate modeling is not currently to the level that we can predict the amount of temperature and precipitation change within the limited range of *P. submutica.*

Future changes in the timing of and temperatures associated with the first major spring rains each year may more strongly affect germination and persistence of ephemeral annual plants than changes in the amount of season-long rainfall (barring severe droughts) (Levine *et al.* 2008, p. 805). Likewise, increasing environmental variance, such as an unusually wet spring, might decrease extinction risk for rare desert ephemeral plants, because they typically rely on extremely good years to restock the persistent seed bank, while extremely bad years have little impact (Meyer *et al.* 2006, p. 901). A persistent seed bank enables the species to survive drought. However, extremely long droughts resulting from climate change, with no good years for replenishing the seed bank, would likely cause *Phacelia submutica* to become endangered. Because the soil can remain bare of *P. submutica* plants for several years, it is difficult to identify and protect the seemingly unoccupied habitat that occurs in small, isolated patches that are easily destroyed by small-scale disturbances, and can be overlooked during habitat assessments. The longer the species remains dormant, the less likely it is that we will know if an area is occupied, reducing our ability to avoid impacts to the species and protect it from becoming endangered.

We do not yet have information on the species' pollinator needs sufficient to predict the effects of climate change on pollinator-plant interactions for this species.

Summary of Factor E

While current climate change predictions are not reliable enough at the local level for us to draw conclusions about its effects on *P. submutica,* it is likely that there will be

drying trends in the future and the seeds will remain dormant for long periods. This would make it increasingly difficult to detect occupied habitat and avoid destruction of habitat, and more likely that the species will become endangered. Because its seed bank is vital to the survival of *Phacelia submutica,* the potential impacts of climate change (described above) are likely to make the species more vulnerable to the threats described under Factor A to an extent that the species may become endangered within the foreseeable future.

Summary of Factors

The current range of *Phacelia submutica* is subject to human-caused modifications from natural gas exploration and production with associated expansion of pipelines, roads, and utilities; development within the Westwide Energy Corridor; increased access to the habitat by ORVs; soil and seed disturbance by livestock and wildlife (Factor A).

The main reason that the species is vulnerable to energy development is that the plants' annual life cycle only lasts a few weeks before they dry up and blow away, and they may not appear at all for several years if growing conditions are not favorable. With such a short life cycle and unpredictable emergence, occupied habitat may not be recognized as such, so it may be inadvertently destroyed.

Protecting the seed bank in the soil depends on avoiding ground disturbance of bare patches of clay soil where nothing appears to be growing most of the time. The plants and their seed banks occur in small, isolated patches that are easily destroyed by even small-scale disturbances. The species' small geographic range, highly specific soil and germination requirements, limited seed dispersal, fragmented habitat, prolonged seed dormancy, and potential seed bank depletion by prolonged drought (Factor E) make *P. submutica* vulnerable to the threats in Factor A to an extent that the species may become endangered within the foreseeable future, depending primarily on the rate of future energy development. The plants do not disperse seeds beyond the existing patches of unique soil that are separated from one another by a few yards or several miles. Any loss of occupied habitat will be a permanent loss for the foreseeable future, and cause a decline in the status of the species.

Determination

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to *Ipomopsis polyantha, Penstemon debilis,* and *Phacelia submutica.*

Ipomopsis polyantha

We find that the present and threatened destruction, modification, or curtailment of *Ipomopsis polyantha* habitat is a threat to the species' continued existence. Ongoing and planned commercial, municipal, and residential development; associated road and utility improvements and maintenance; and competition from introduced roadside grasses (as discussed under Factor A above) pose a significant threat to the species. The resulting modifications of the species' habitat will likely relegate the plants to small, fragmented portions of highway ROWs and a few small, lightly used, private pastures, within 5 to 10 years, depending on the real estate market. At that point the species would no longer be resilient or viable, indicating that the species is in danger of extinction across its entire range.

Ipomopsis polyantha also is threatened by concentrated livestock trampling of plants and soil and some herbivory (as discussed under Factor C). Livestock grazing may decrease in the future, but mowing and landscaping is likely to increase with higher density development within the next few years. Predation is an ongoing threat of moderate magnitude and severity, which, combined with the threat of habitat modification under Factor A, could cause the species to become extinct within the foreseeable future.

The existing regulatory mechanisms do not address the threats to the species or its habitat. The absence of regulatory mechanisms exacerbates the threats discussed under Factor A.

The natural and human-caused factors of specific soil and germination requirements, fragmented habitat, effects of drought and climate change, and lack of proven methods for propagation and reintroduction (as discussed under Factor E) present an ongoing and moderate degree of threat to *Ipomopsis polyantha* across the entire range of the species. This factor alone is not likely to cause the species to become extinct, but it impacts the species' ability to withstand and recover from the threats discussed under Factors A and C.

On the basis of the best available information, we are listing *Ipomopsis polyantha* as an endangered species. Endangered status reflects the vulnerability of this species to threat factors negatively affecting it and its limited and restricted habitat. This species is beyond threatened status, or beyond the point of being likely to become an endangered species within the foreseeable future. Ongoing threats to the species and its habitat (discussed under Factors A and C) are such that it is currently in danger of extinction throughout all of its range, meeting the definition of an endangered species as defined in the Act. We have determined that *I. polyantha* is in danger of extinction throughout all of its range.

Penstemon debilis

Penstemon debilis is threatened with destruction and modification of its habitat due to ongoing and foreseeable threats that include oil and gas development, oil shale extraction and mine reclamation, road construction and maintenance, and vehicle traffic throughout its habitat (as discussed under Factor A above). These threats are of high magnitude across more than half of the species' limited range. We believe that the effects of these threats are likely to cause *Penstemon debilis* to become an endangered species within the foreseeable future.

The existing regulatory mechanisms do not address the threats to the species or its habitat. The absence of regulatory mechanisms exacerbates the threats discussed under Factor A. Local or State regulations of plant species' habitats are nonexistent. Existing Federal regulatory mechanisms are only partially effective at ameliorating threats to plants and habitat (as discussed under Factor A). Stipulations for Federal protection of habitat are planned but not yet implemented (as discussed under Factor A). Private landowner agreements with the State currently protect 69 percent of the habitat, but their continuation is not guaranteed.

The natural and human-caused factors of extremely low numbers of plants and a highly restricted soil substrate and geographic range, fragmented habitat and low genetic diversity, effects of drought and climate change, and lack of proven methods for propagation and reintroduction (as discussed under Factor E) present an ongoing and moderate threat to *Penstemon debilis* across the entire range of the species. These threats in themselves are not likely to cause the species to become endangered, but they affect the species' ability to withstand and recover from the effects of the threats described under Factor A, and thus make *Penstemon debilis* likely to become endangered within the foreseeable future.

On the basis of the best available information, we are listing *Penstemon debilis* as a threatened species. Threatened status reflects the

vulnerability of this species to factors that negatively affect the species and its limited and restricted habitat. While not in immediate danger of extinction, *P. debilis* is likely to become an endangered species within the foreseeable future, depending on whether energy development escalates, draft management plans are implemented, and current conservation agreements are continued.

Phacelia submutica

The destruction, modification, and fragmentation of habitat pose moderate threats to *Phacelia submutica* throughout its range. Natural gas production with associated expansion of pipelines, roads, and utilities; development within the Westwide Energy Corridor; increased access to the habitat by ORVs; and soil and seed disturbance by livestock, wildlife and ORVs all threaten the species' habitat (as discussed under Factor A). These ongoing and potential threats are likely to cause *P. submutica* to become endangered within the foreseeable future, depending mainly on the rate of energy development.

The existing regulatory mechanisms do not address the threats to the species or its habitat. The absence of regulatory mechanisms exacerbates the threats discussed under Factor A. Local or State regulations provide no protection for the species and its habitat. Existing Federal regulatory mechanisms are only partially effective at ameliorating threats to plants and their habitat (as discussed under Factor A).

Other natural or manmade factors affecting the continued existence of *Phacelia submutica* include the species' small geographic range, highly specific soil and germination requirements, limited seed dispersal, fragmented habitat, prolonged seed dormancy, and potential seed bank depletion by prolonged drought (as discussed under Factor E). These factors make the species vulnerable to climate change and to the threats under Factor A (as described above), to an extent that the species may become endangered within the foreseeable future, depending primarily on the rate of future energy development.

On the basis of the best available information, we are listing *Phacelia submutica* as a threatened species. Threatened status reflects the vulnerability of this species to factors that negatively affect the species and its limited and restricted habitat. While not in immediate danger of extinction, *P. submutica* is likely to become an endangered species within the foreseeable future if habitat is lost and existing seed banks cannot expand to maintain the species' range.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness and conservation by Federal, State, and local agencies; private organizations; and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for all listed species. The protection measures required of Federal agencies and the prohibitions against certain activities are discussed, in part, below.

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal agency actions within the habitat of these three species that may require conference or consultation or both as described in the preceding paragraph include the following:

- Management, leasing, permitting, and other actions that result in landscape altering activities on Federal lands administered by the BLM and USFS;
- Issuance of section 404 Clean Water Act (33 U.S.C. 1251 *et seq.*) permits by the U.S. Army Corps of Engineers;
- Construction and management of gas pipeline and power line ROWs by the Federal Energy Regulatory Commission and BLM;
- Construction and maintenance of roads or highways by the Federal Highway Administration; and
- Provision of Federal funds to State and private entities through Federal programs such as CDOT highway construction or improvement projects, Housing and Urban Development Tax Credit Assistance Program, the Service's Landowner Incentive Program, and the NRCS.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered plants. All prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale in interstate or foreign commerce, or remove and reduce the species to possession from areas under Federal jurisdiction. In addition, for plants listed as endangered, the Act prohibits the malicious damage or destruction on areas under Federal jurisdiction and the removal, cutting, digging up, or damaging or destroying of such plants in knowing violation of any State law or regulation, including State criminal trespass law. It also is unlawful to violate any regulation pertaining to plant species listed as threatened or endangered (section 9(a)(2)(E) of the Act). Certain exceptions to the prohibitions apply to agents of the Service and State conservation agencies. No State regulations protect rare plant species in Colorado.

We may issue permits to carry out otherwise prohibited activities involving endangered and threatened plant species under certain circumstances. Regulations governing permits are codified at 50 CFR 17.62 for endangered plants, and at 17.72 for threatened plants. With regard to endangered plants, a permit must be issued for the following purposes: for scientific purposes or to enhance the propagation or survival of the species.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies may sometimes need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect

subsequently listed species or designated critical habitat.

Required Determinations

Paperwork Reduction Act of 1995

This rule does not contain any new collections of information that require approval by Office of Management and Budget under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget control number.

National Environmental Policy Act

We have determined that Environmental Assessments and Environmental Impact Statements as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), need not be prepared in connection with regulations adopted under section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Field Supervisor, Western Colorado Ecological Services Field Office (see **ADDRESSES** section).

Authors

The primary authors of this document are staff members of the Western Colorado Ecological Services Field Office, U.S. Fish and Wildlife Service (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

■ 2. Amend § 17.12(h) by adding entries for *Ipomopsis polyantha, Penstemon debilis,* and *Phacelia submutica* under FLOWERING PLANTS in the List of Endangered and Threatened Plants, to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
FLOWERING PLANTS							
*	*	*	*	*	*		*
Ipomopsis polyantha	Pagosa skyrocket	U.S.A (CO)	Polemoniaceae	E		NA	NA
*	*	*	*	*	*		*
Penstemon debilis	Parachute beardtongue.	U.S.A. (CO)	Plantaginaceae	T		NA	NA
*	*	*	*	*	*		*
Phacelia submutica	*DeBeque phacelia*	*U.S.A. (CO)*	*Hydrophyllaceae*	*T*		*NA*	*NA*
*	*	*	*	*	*		*

* * * * *

Dated: July 5, 2011.

Daniel M. Ashe,

Director, Fish and Wildlife Service.

[FR Doc. 2011–18429 Filed 7–26–11; 8:45 am]

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