48 States occur at high elevations in the Rocky, North Cascade, and Sierra Nevada mountains (Aubry *et al.* 2007, p. 2153). Wolverines have recently been positively documented in the Sierra Nevada range in California and the southern Rocky Mountains of Colorado for the first time since the early 20th century.

Wolverines are opportunistic feeders and consume a variety of foods depending on availability. They primarily scavenge carrion, but also prey on small animals and birds, and eat fruits, berries, and insects (Hornocker and Hash 1981, p. 1290; Hash 1987, p. 579; Banci 1994, pp. 111–113).

Wolverines have delayed onset of reproduction in females and small litter sizes, and often reproduce only every other year.

Home ranges at the southern terminus of the current range are large for mammals of the size of wolverines, and may indicate that wolverines have high energetic requirements and at the same time occupy relatively unproductive niches (Inman *et al.* 2007a, p. 11). In addition, wolverines naturally occur in low densities that average about one wolverine per 150 km^2 (58 mi^2) (Hornocker and Hash 1981, pp. 1292–1295; Hash 1987, p. 578; Copeland 1996, pp. 31–32; Copeland and Yates 2006, p. 27; Inman *et al.* 2007a, p. 10; Squires *et al.* 2007, p. 2218).

Previous Federal Actions

We received a petition dated August 3, 1994, from the Predator Project (now named the Predator Conservation Alliance) and Biodiversity Legal Foundation to list the North American wolverine in the contiguous United States as an endangered or threatened species under the Act and to designate critical habitat concurrent with listing. On April 19, 1995, we published a finding (60 FR 19567) that the petition did not present substantial information indicating that listing the North American wolverine in the contiguous United States may be warranted. We did not make a determination as to whether the contiguous U.S. population of the North American wolverine constituted a DPS or other listable entity.

On July 14, 2000, we received another petition dated July 11, 2000, submitted by the Biodiversity Legal Foundation, Predator Conservation Alliance, Defenders of Wildlife, Northwest Ecosystem Alliance, Friends of the Clearwater, and Superior Wilderness Action Network, to list the North American wolverine within the contiguous United States as an endangered or threatened species under the Act and to designate critical habitat for the species concurrent with the listing.

On October 21, 2003, we published a 90-day finding that the petition to list the North American wolverine in the contiguous United States did not present substantial scientific and commercial information indicating that listing as threatened or endangered may be warranted (68 FR 60112). We did not determine whether the contiguous U.S. population of the North American wolverine constituted a DPS (or other listable entity), because sufficient information was not available at the time.

On September 29, 2006, as a result of a complaint filed by Defenders of Wildlife and others alleging we used the wrong standards to assess the July 2000 wolverine petition, the U.S. District Court, Montana District, ruled that our 90-day petition finding was in error and ordered us to make a 12-month finding for the wolverine (*Defenders of Wildlife et al.* v. *Norton and Hogan* (9:05cv99 DWM; D. MT)). On April 6, 2007, the Court approved an unopposed motion to extend the deadline for this 12-month finding to February 28, 2008, so that we would be able to use information published in the September 2007 edition of the *Journal of Wildlife Management* containing a special section on North American wolverine biology. On June 5, 2007, we published a notice initiating a status review for the wolverine (72 FR 31048).

On March 11, 2008, we published a 12-month finding on the wolverine in the contiguous United States (73 FR 12929). In that finding, we determined that the wolverine in the contiguous United States did not constitute a DPS. Therefore, we determined that the wolverine in the contiguous United States was not a listable entity under the Act. On September 30, 2008, Defenders of Wildlife *et al.* filed a complaint challenging our 12-month finding on the basis of our application of the DPS Policy and the Act. On March 23, 2009, we settled the lawsuit with the plaintiffs and agreed to submit a new 12-month finding to the **Federal Register** by December 1, 2010.

References Cited

A complete list of all references is available upon request from the Field Supervisor, Montana Ecological Services Field Office (*See* **FOR FURTHER INFORMATION CONTACT**).

Author

The primary authors of this document are the staff members of the U.S. Fish and Wildlife Service, Montana Ecological Servies Field Office.

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: March 30, 2010.

Daniel M. Ashe,

Deputy Director, U.S. Fish and Wildlife Service.

[FR Doc. 2010–8698 Filed 4–14–10; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R6-ES-2008-0127]
[MO 92210-0-0008-B2]

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List the Wyoming Pocket Gopher as Endangered or Threatened with Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of 12–month petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 12–month finding on a petition to list the Wyoming pocket gopher (*Thomomys clusius*) as endangered or threatened and to designate critical habitat under the Endangered Species Act of 1973, as amended. After review of all available scientific and commercial information, we find that listing the Wyoming pocket gopher as either endangered or threatened is not warranted at this time. We ask the public to continue to submit to us any new information that becomes available concerning the status of, or threats to, the Wyoming pocket gopher or its habitat.

DATES: The finding announced in this document was made on April 15, 2010.

ADDRESSES: This finding is available on the Internet at *http://www.regulations.gov* at Docket Number FWS-R6-ES-2008-0127. Supporting documentation we used in preparing this finding is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Wyoming Ecological Services Field Office, 5353 Yellowstone Road, Cheyenne, WY 82009. Please submit any new information, materials, comments, or questions concerning this finding to the above street address.

FOR FURTHER INFORMATION CONTACT: Brian Kelly, Field Supervisor, Wyoming

Ecological Services Field Office (see **ADDRESSES**); by telephone at 307-772-2374; or by facsimile at 307-772-2358. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Background

Section 4(b)(3)(B) of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*) requires that, for any petition to revise the Federal Lists of Endangered and Threatened Wildlife and Plants that presents substantial scientific or commercial information indicating that listing the species may be warranted, we make a finding within 12 months of the date of the receipt of the petition. In this 12–month finding, we may determine that the petitioned action is: (1) Not warranted, (2) warranted, or (3) warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are endangered or threatened, and expeditious progress is being made to add or remove qualified species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, that is, requiring a subsequent finding to be made within 12 months. We must publish these 12–month findings in the **Federal Register**.

Previous Federal Actions

On August 9, 2007, we received a petition, dated August 7, 2007, from the Biodiversity Conservation Alliance and Center for Native Ecosystems requesting that we list the Wyoming pocket gopher (*Thomomys clusius*) within its known historic range, as threatened or endangered under the Act. Additionally, the petition requested that we designate critical habitat concurrent with listing. We acknowledged receipt of the petition in a letter dated September 6, 2007. In that letter, we advised the petitioners that we could not address their petition at that time because responding to existing court orders and settlement agreements for other listing actions required nearly all of our listing funding. We also concluded in that September 6, 2007, letter that emergency listing of the Wyoming pocket gopher was not warranted.

On July 11, 2008, we informed the petitioners that, due to progress on addressing other priority listing actions, funding had become available to allow us to address the petition in fiscal year 2008. On November 4, 2008, the petitioners filed a complaint with the U.S. District Court for the District of Colorado against us for failing to complete the 90–day finding (*Center for Native Ecosystems and Biodiversity Conservation Alliance* v. *U.S. Fish and Wildlife Service and Kempthorne* (1:08-cv-02394-JLK)).

On February 10, 2009, we published our finding that the petition to list the Wyoming pocket gopher presented substantial scientific or commercial information indicating that listing the species may be warranted (74 FR 6558). On March 20, 2009, the petitioners provided a notice of intent to sue on additional grounds for failure to complete the 12–month finding within 12 months of the petition. In a June 12, 2009, stipulated settlement, the Service agreed to complete the 12–month finding by April 10, 2010, which would allow us to include 2009 Wyoming pocket gopher survey data in our analysis. This notice constitutes our 12–month finding on the August 7, 2007, petition to list the Wyoming pocket gopher as endangered or threatened.

Species Information

Life History

Pocket gophers are powerfully built mammals, characterized by a heavily muscled head without a noticeable neck, strong front limbs with long nails used for digging, small ears, small eyes, and fur-lined cheek pouches used to carry food (Verts and Carraway 1999, p. 3). They are highly fossorial (adapted to burrowing or digging), living, foraging, and reproducing in burrow systems and underground tunnels that provide protection from predators and from extreme environmental conditions (Clark and Stromberg 1987, p. 121).

Populations of pocket gophers generally tend to be small and patchily distributed across landscapes where they occur (Kennerly 1959, p. 251; Stinson 2005, p. 21). This distribution is thought to be primarily determined by the availability of soils appropriate for digging and foraging (Kennerly 1959, p. 249; Verts and Carraway 1999, p. 5). Specialization to local ecological conditions has resulted in a high degree of morphological variation across the range of each species (Patton and Brylski 1987, p. 493). For example, pocket gopher coat color is highly variable, strongly correlated with soil color, and thought to be an adaptive response to predation (Ingles 1950, p. 357; Wlasiuk and Nachman 2007, p. 567). Differences in abundance and nutritional content of forage can produce extreme variation in body size of individual pocket gophers and density of pocket gopher populations (Patton and Brylski 1987, p. 504).

Little is known about the Wyoming pocket gopher; assumptions about its distribution, ecology, and status are based on a few museum records, reports from more than 30 years ago, and research conducted in 2008 and 2009. This lack of knowledge has led to the recent efforts to obtain information on its distribution, status, and habitat use (Keinath and Griscom 2008, p. 1; Griscom *et al.* 2010, p. 3). Where specific life-history information is lacking, and where appropriate, we have provided information from other pocket gopher species, mainly in the *Thomomys* genus.

The Wyoming pocket gopher is differentiated from other pocket gophers in its geographical range by being smaller and paler, with a yellow cast to the coat, especially in younger animals. The dorsal coat is uniform in color, and the margins of the ears are fringed with whitish hairs (Thaeler and Hinesley 1979, p. 483; Clark and Stromberg 1987, p. 123; Keinath and Beauvais 2006, p. 8; Keinath and Griscom 2008, p. 2). This species does not display sexual dimorphism (differences in form between the sexes) (Clark and Stromberg 1987, p. 123; Keinath and Beauvais 2006, p. 8). Adult Wyoming pocket gophers typically have a body length of 112-134 millimeters (mm) (4.41-5.28 inches (in)), hind foot length of 20-22 mm (0.79-0.87 in), and a weight of 44-72 grams (g) (1.54-2.54 ounces (oz)) (Thaeler and Hinesley 1979, pp. 483-484; Clark and Stromberg 1987, p. 123). The measurements of specimens captured in 2008 and 2009 included body lengths of 86-128 mm (3.38-5.04 in), hind foot lengths of 15-23 mm (0.59-0.91 in), and weights of 43-66 g (1.52-2.33 oz) (Griscom *et al.* 2010, p. 23). These somewhat smaller measurements for 2008-2009 data can be partly explained by late summer captures that included juveniles, whereas older studies relied on captures prior to June 15 that would have included only adults (Griscom 2010a, pers. comm.).

The Wyoming pocket gopher occurs entirely within the range of the northern pocket gopher (*Thomomys talpoides*), but the two species likely occupy different habitats locally (Thaeler and Hinesley 1979, p. 486; Keinath and Beauvais 2006, p. 8; Griscom *et al.* 2010, p. 15). Approximately 50 percent of the known range of the species occurs on Bureau of Land Management (BLM) lands (Service 2009a, p. 1). A Wyoming Natural Diversity Database (WYNDD) predictive distribution model for the

Wyoming pocket gopher developed in January 2010 shows the species could occur in Sweetwater, Carbon, and Fremont Counties in Wyoming (Griscom *et al.* 2010, p. 32). The predicted range abuts Colorado's northern border, but Colorado was not included in the distribution analysis (Griscom *et al.* 2010, p. 32). Additional specimens are considered unlikely to be found south of current distribution points (Griscom *et al.* 2010, p. 12). To date, Wyoming pocket gophers have been located only in Sweetwater and Carbon Counties, which is consistent with historical records that show this area to be the extent of the species' range. Although the full historic range of the species has not been defined, we consider the capture points in Sweetwater and Carbon Counties presented by Thaeler and Hinesley (1979, pp. 482, 486-487) to present an approximation of historic range. This historic range includes the type specimen collected in 1857, two specimens collected in 1949 and 1951, and several specimens collected in the 1960s and 1970s (Thaeler and Hinesley 1979, p. 487). Very little information exists regarding the actual population size of the Wyoming pocket gopher (Keinath and Beauvais 2006, p. 21). The only population estimate we found was 10,000 (NatureServe 2009, unpaginated). However, we are unable to determine the basis for this estimate and thus have no way to determine its scientific validity.

Vegetation composition of a site may be more important in determining habitat for the Wyoming pocket gopher than soils or topography (Keinath and Griscom 2008, p. 2). The Wyoming pocket gopher occurs primarily in small "islands" of low vegetation within a sagebrush matrix. This matrix typically includes *Artemesia tridentada wyomingensis* (Wyoming big sagebrush), *Chrysothamnus* spp. (rabbitbrush), and other low shrubs, cushion plants, grasses, and forbs (Keinath and Griscom 2009, p. 1). In comparison to unoccupied control sites and northern pocket gopher capture sites, the Wyoming pocket gopher appears to prefer areas within this matrix with less perennial grass cover, less *Artemesia tridentata* (Big sagebrush), more *Krascheninnikovia lanata* (winterfat), more *Atriplex gardneri* (Gardner saltbush), more bare soil, less litter, and fewer surface rocks (Griscom *et al.* 2010, p. 15). Difference in habitat use would be expected, given that phenotype (observable physical characteristics) has been shown to correlate with habitat for pocket gophers (Ingles 1950, p. 357; Wlasiuk and Nachman 2007, p. 567).

Previously, the Wyoming pocket gopher was believed to exclusively occupy well-drained, gravelly ridges instead of the valley bottoms and riparian areas with deeper soils preferred by the northern pocket gopher (Thaeler and Hinesley 1979, p. 486). However, recent research showed Wyoming pocket gophers occupy sites with more varied topography (Keinath and Griscom 2008, p. 2). Compared to northern pocket gophers, Wyoming pocket gophers appear to prefer areas of lesser slopes (Griscom *et al.* 2010, p. 15). Wyoming pocket gophers appear to use a variety of soil types that can be more compacted than those used by northern pocket gophers (Griscom *et al.* 2010, p. 15). These soils often have a substantial gravel component, usually contain little clay (Keinath and Griscom 2008, p. 2), and tend to be more alkaline than the soils that northern pocket gophers prefer (Griscom 2009a, pers. comm.). In general, pocket gophers in the *Thomomys* genus are more specialized for tooth digging rather than claw digging, which allows for exploitation of a broader range of soil types (Lessa and Thaeler 1989, p. 696). Based on the characterization of the Wyoming pocket gopher's size and habitat, it appears to fit the island model of isolation displayed by other species of pocket gophers specifically adapted to the soils of an area (Miller 1964, pp. 259-260). The limited distribution of the Wyoming pocket gopher relative to other species of pocket gopher may be due to its specialized habitat requirements (Keinath and Beauvais 2006, pp. 12-15).

Pocket gophers construct extensive burrow systems. These systems consist of a main tunnel with side branches of shallow feeding tunnels (tunnels dug to forage on plant material). Additional feeding tunnels can be constructed when plant production is poor (Davis 1938, p. 338; Reichman *et al.* 1982, p. 691). The main tunnel also connects to a smaller system of chambers that serve as nest sites, food caches, and latrines (Miller 1964, p. 257; Keinath and Beauvais 2006, p. 16). Depths of the burrows vary from 6 to 12 inches below the ground surface. All aboveground entrances are plugged with soil (Clark and Stromberg 1987, p. 121). Burrow widths of the Wyoming pocket gopher are significantly smaller than those of the northern pocket gopher, likely reflecting their smaller body size (Griscom *et al.* 2010, p. 15). The extent of burrow systems can vary with the size of the individual, soil type, and plant production. The extensive tunneling and feeding activity of pocket gophers can have strong effects on soil formation, hydrology, nutrient flows, plant diversity, and competitive interactions of plants (Tilman 1983, pp. 290-292; Huntly and Inouye 1988, entire; Reichman and Seabloom 2002, entire; Sherrod *et al.* 2005, pp. 586-587; Kyle *et al.* 2008, p. 377). The effects of pocket gopher burrowing on physical and chemical soil properties vary based on the nature of the soil (Kerley *et al.* 2004, pp. 164-165).

The diet of pocket gophers consists of roots, stems, and leaves of forbs, with some consumption of grasses and shrubs (Aldous 1951, pp. 85-86; Ward and Keith 1962, p. 747). The average consumption of forbs by pocket gophers in west-central Colorado, as measured by stomach content, was highest in July and August at 96 percent, decreasing to 73 percent in October (Ward and Keith 1962, p. 747). Consumption of shrubs and roots of all types increased in late September and October, and consumption of grasses increased in June, September, and October (Ward and Keith 1962, p. 747). Pocket gophers in the *Thomomys* genus throughout the western United States generally prefer forb shoots during the growing season, and grass shoots, corms, and roots during periods of plant dormancy (Hunt 1992, pp. 47-48). Other species of the *Thomomys* genus (e.g., northern pocket gopher, Botta's (valley) pocket gopher (*T. bottae*), Townsend's pocket gopher (*T. townsendii*), Mazama (western) pocket gopher (*T. mazama*), and Camas pocket gopher (*T. bulbivorus*)) are not strict herbivores, in that they also seasonally consume the fungi associated with plant roots (i.e., are mycophagous) (Maser *et al.* 1978, p. 805; Taylor *et al.* 2009, p. 367). Pocket gophers may cut their food into small pieces and carry it in their cheek pouches back to the main burrow where it is consumed, stored for winter, used for nest building, or taken into tunnels and later pushed to the surface (Aldous 1951, p. 84; Verts and Carraway 1999, p. 6). Pocket gophers remain active all winter (Clark and Stromberg 1987, p. 121).

Based on the life histories of other pocket gophers, Wyoming pocket gophers presumably reproduce the calendar year following birth, have one litter with 4 to 6 young per year, and usually do not live more than two breeding seasons (Keinath and Beauvais 2006, p. 18). However, one northern pocket gopher is known to have survived for about 4 years (Hansen 1962, p. 153). Some species of pocket gophers have more than one litter per year in southern climates with longer breeding seasons (Miller 1946, pp. 335-336). Hansen (1960, p. 332) found no

evidence of more than one annual litter per female in the Rocky Mountain region.

Pocket gophers are solitary animals and are typically found together only during the breeding season, or when females have young. Variation in levels of tolerance between males and females ranges from being together only during mating to raising young of the year together (Hansen and Miller 1959, pp. 581-582). Pocket gophers are usually polygynous (Reichman *et al.* 1982, p. 693). However, some evidence of serial monogamy has been found in Botta's pocket gopher in Arizona (Reichman *et al.* 1982, p. 693). The sex ratio for Botta's pocket gopher was one male per one female; however, the effective sex ratio was one male per two females as some small males did not reproduce (Reichman *et al.* 1982, p. 693). Populations of Botta's pocket gopher in California showed a much more skewed sex ratio, ranging from 1.4 to 4.67 females per male (Patton and Feder 1981, p. 917). We do not have specific information regarding the Wyoming pocket gopher mating system or sex ratio.

Outside of the breeding season, pocket gophers are highly territorial, and males and females have exclusive territories. Generally, pocket gophers avoid each other (Reichman *et al.* 1982, p. 693). The infrequent interactions that occur are mostly agonistic, occasionally escalating to open combat and even death (Zinnel and Tester 1994, p. 96). This aggression appears to have evolved as a means to ensure adequate individual food supplies, but could also be related to reproductive behaviors like mate guarding (Zinnel and Tester 1994, pp. 99-100). Pocket gopher population density is likely to be primarily regulated through intraspecific aggression; the number of animals an area can hold appears to be determined by combative interactions (Zinnel and Tester 1994, p. 100).

Dispersal strategies of the Wyoming pocket gopher are unknown, but may be similar to other pocket gopher species. Although dispersal was common, 63 percent of individual Botta's pocket gophers set up their territory within 40 meters (m) (131.23 feet (ft)) of their natal home (Daly and Patton 1990, p. 1291). Average dispersal lengths for Botta's pocket gopher are estimated at 100-500 m (328.08-1,640.42 ft) per year (Hafner *et al.* 1998, p. 281). Individual Botta's pocket gophers that disperse are typically young, pre-reproductive, and more likely to be female (Daly and Patton 1990, p. 1287). Pre-reproductive juvenile females begin dispersing as early as the summer following their birth, while males typically delay dispersal for up to one year after birth (Daly and Patton 1990, p. 1287). Spring dispersal is common in reproductive adults of both sexes. Fifty percent of plains pocket gopher (*Geomys bursarius*) female adults relocate after raising a litter, leaving the site in possession of female young (Zinnel and Tester 1994, p. 99). Once pocket gophers establish territories and burrows, they may shift to other areas based on environmental conditions or interactions with other pocket gophers, but they generally do not move far from original territories (Miller 1964, p. 262; Reichman *et al.* 1982, pp. 687-688; Daly and Patton 1990, p. 1286).

Taxonomy

The Wyoming pocket gopher (*Thomomys clusius*) is a member of the Geomyidae (pocket gopher) family. Including the Wyoming pocket gopher, nine species are currently assigned to the genus *Thomomys*. The type specimen for Wyoming pocket gopher was collected in 1857 by Dr. W.A. Hammond near Rawlins, Wyoming, but was not described and given the name *Thomomys clusius* until 18 years later (Coues 1875, p. 138). The designation of the Wyoming pocket gopher within *Thomomys* has changed over time, with the name *clusius* being applied at both the species and subspecies level to various pocket gopher specimens collected in southern Wyoming (Keinath and Beauvais 2006, p. 11).

Thaeler and Hinesley (1979, entire) clarified the Wyoming pocket gopher taxonomy with karyotype (i.e., a count of the number of diploid chromosomes) and morphological analyses of pocket gopher specimens collected in Wyoming. Members of the pocket gopher genus *Thomomys* are the most karyotypically and morphologically diverse group of mammals known (Patton 1972, p. 574; Patton and Brylski 1987, p. 493). The Wyoming pocket gopher has a unique karyotype of 2n = 46, a yellowish coat, and a generally small size, which support the validity of Wyoming pocket gopher as a distinct species within *Thomomys* (Thaeler and Hinseley 1979, p. 483). These traits differed significantly from the northern pocket gopher, which occurs across the range of the Wyoming pocket gopher. Although northern pocket gophers are generally darker and larger, they share morphological similarities with Wyoming pocket gophers that had led to some misidentification of specimens in earlier publications (e.g., Bailey 1915 and Long 1965, cited in Keinath and Beauvais 2006, p. 11). Thus, karyotype analysis was previously thought necessary for positive identification. Northern pocket gophers differ from Wyoming pocket gophers in that they have a karyotype of 2n = 48 or 56, depending on the subspecies (Thaeler and Hinesley 1979, p. 483). However, based on the amplified fragment length polymorphism (AFLP) analysis completed on tail clippings during the 2008 field season, field assessment of phenotype was shown to be a reasonably reliable method for discerning the two species from each other (Hayden-Wing Associates 2008, p. 3; Beauvais 2009, p. 1; McDonald 2009a, pers. comm.). AFLP testing showed strong genetic signals that clearly differentiate the Wyoming pocket gopher from other species of pocket gophers (Beauvais 2009, p. 1; McDonald 2009a, pers. comm.). This recent genetic analysis has confirmed definitively what taxonomists had determined historically: the Wyoming pocket gopher is a unique species representing a monophyletic clade (i.e., descended from one common ancestor) (McDonald 2009a, pers. comm.).

Summary of Information Pertaining to the Five Factors

Section 4 of the Act, and its implementing regulations at 50 CFR 424, set forth the procedures for adding species to, removing species from, or reclassifying species on the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, a species may be determined to be endangered or threatened based on any of the following five factors: (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. Under section 4(b)(1)(A), this determination should be made on the basis of the best scientific and commercial data available and after conducting a status review and taking into consideration State conservation efforts. In making our 12–month finding on a petition to list the Wyoming pocket gopher, we considered and evaluated the best available scientific and commercial information. Information pertaining to the status and threats to the Wyoming pocket gopher in relation to the five factors provided in section 4(a)(1) of the Act is discussed below.

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

Wyoming pocket gopher habitat is exposed to a number of influences that may affect the species, including energy exploration and development, road construction and use, climate change and drought, introduction of nonnative species, grazing, and urbanization. However, no studies have been conducted to determine the species' response to these influences, or to the potential changes in habitat that may result. Where information specific to the Wyoming pocket gopher is lacking, we have utilized information from other pocket gopher species, mainly in the *Thomomys* genus.

Literature describes both positive and negative effects to other species of pocket gophers resulting from various types of disturbance. Many pocket gopher species exhibit a positive response of increased rates of mound-building activities when vegetation has been disturbed (Mielke 1977, p. 175). Three species (Botta's pocket gopher, plains pocket gopher, and yellow-faced pocket gopher (*Cratogeomys castanops*)) are more common in disturbed areas, such as roadways and floodplains, in New Mexico (Best 1973, p. 1314). Similarly, pocket gopher (*Thomomys* spp.) burrows were frequently observed along roadways in Nevada, but not the adjacent creosote habitats, suggesting they were using areas where the habitat would have been unsuitable without the disturbance (Garland and Bradley 1984, p. 54). In contrast, plains pocket gophers and yellow-faced pocket gophers in southwestern Kansas are not present within areas of intensive agricultural operations involving annual plowing or disking (Hoffman *et al.* 2007, p. 300). Intensive residential and commercial development has reduced patch sizes of Mazama pocket gopher habitat in western Washington such that the species no longer occurs in many areas (Service 2009b, pp. 7-8; Flotlin 2010, pers. comm.). The response to disturbance may be dependent on the species, as the plains pocket gopher is more common in disturbed areas, such as roadsides and cultivated fields, while the yellow-faced pocket gopher is more common in native shortgrass prairie in southeastern Colorado (Moulton *et al.* 1983, p. 58).

In 2008 and 2009, WYNDD, with the assistance of several other groups, trapped Wyoming pocket gophers, northern pocket gophers, and Idaho pocket gophers (*T. idahoensis*) to better understand the species' range and distribution, habitat requirements and preferences, and the genetic and morphological differences between species (WYNDD 2009, p. 2; Hayden-Wing Associates 2008, p. 1; Keinath and Griscom 2008, p. 1; Griscom *et al.* 2010, pp. 5-7). This effort resulted in the successful trapping of 31 confirmed Wyoming pocket gophers distributed across the species' currently known range (Griscom *et al.* 2010, p. 5; Griscom 2010b, pers. comm.). Prior to 2008, a total of 16 confirmed Wyoming pocket gophers had been captured, and all of these confirmed specimens were collected by Charles Thaeler approximately 40 years ago (Griscom 2009b, pers. comm). This information provided both historic and recent locations for our use in creating a general assessment of Wyoming pocket gopher presence to ascertain if the known locations of the species have changed over time. Based on the limited number of collection sites, the species appears to be currently distributed throughout its known range in a pattern that approximates historic distribution (Figure 1). Therefore, we find no evidence that curtailment of the species' range is occurring.

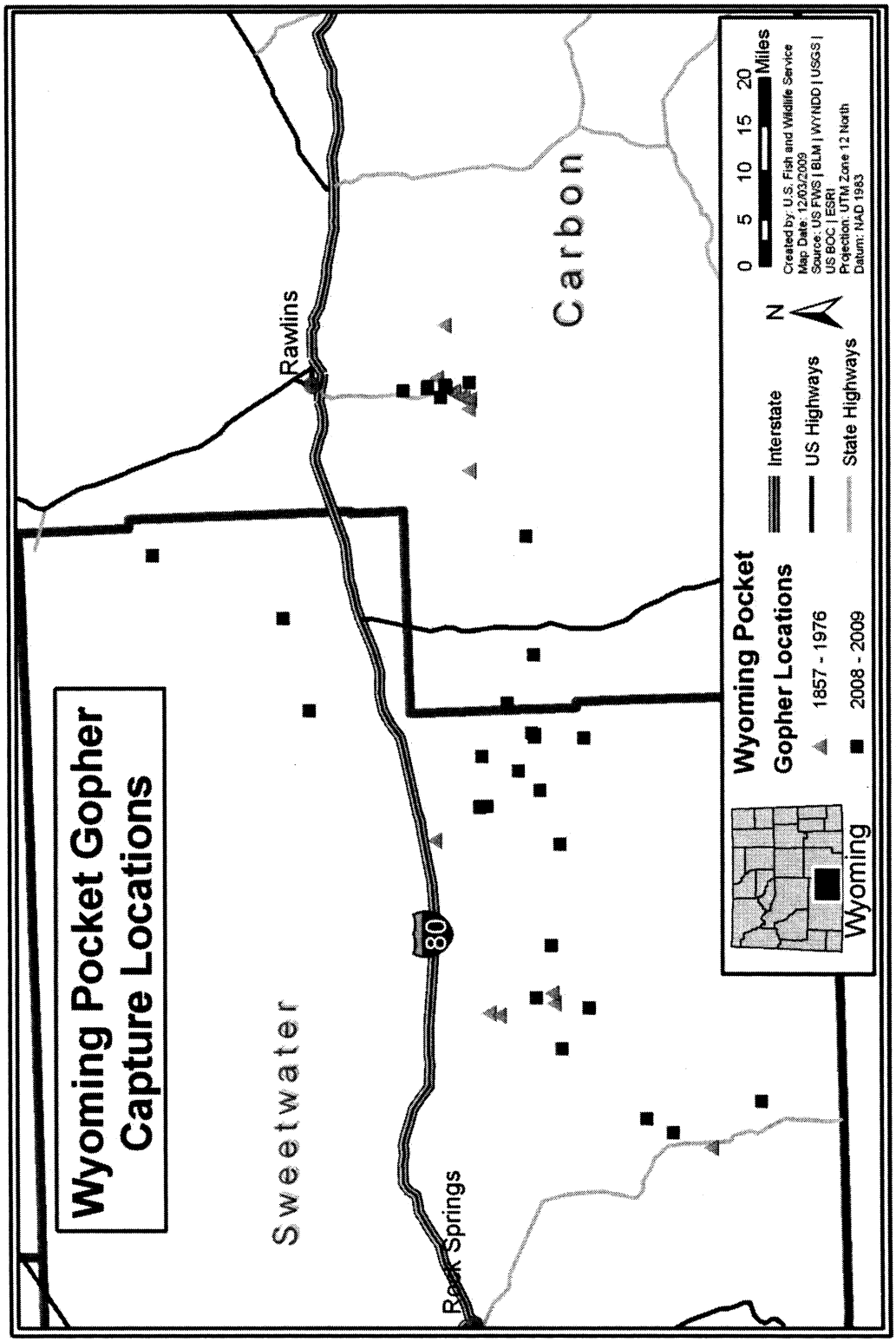

Figure 1: Historic and current capture locations of the Wyoming pocket gopher (Data compiled from Service, Bureau of Land Management, WYNDD, U.S. Geological Survey, U.S. Census Bureau, ESRI).

Although there is no evidence of curtailment of the species' range, habitat of the Wyoming pocket gopher is exposed to various influences that may affect the species, including energy exploration and development, road construction and use, introduction of nonnative species, climate change, drought, grazing, and urbanization. These variables that may affect the species' habitat are discussed below.

Energy Exploration and Development

The primary forms of existing and planned energy development in the range of the Wyoming pocket gopher are oil, gas, and wind. Based on existing

National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et seq.*) documents for major oil and gas developments, estimates of project life for major oil and gas developments within the Wyoming pocket gopher's range are between 10-50 years (Service 2010a, p. 3). Some non-renewable energy development is already occurring within the species' known occupied range. Renewable energy development is estimated to reach maximum development by 2030 (U.S. Department of Energy 2008, p. 10), and several developments are being considered within the species' range. Based on this information, we estimate the foreseeable future of energy development at a minimum of 10 years, but anticipate that energy development will be present for up to 50 years.

WYNDD is analyzing potential threats to Wyoming's 152 species of greatest conservation need related to energy development in its Assessment of Wildlife Vulnerability to Energy Development (AWVED). Preliminary conclusions from the AWVED analysis indicate that the Wyoming pocket gopher is Wyoming's species with the highest potential risk for energy-related effects based on its proximity to existing wells, the proportion of lands leased for oil and gas within its range, and the density of wells within that range (Keinath 2009, pp. 12-13). This potential risk is based on exposure to energy development across the species' range and is not based on any known effects to the species from energy development activities. Our February 10, 2009, 90–day finding (74 FR 6558) acknowledged that the likelihood of oil and gas development throughout the species' range is high based on the energy development potential and existing leases that cover much of the range. Approximately 4,000 actively producing oil and gas wells are within the range of the species (Service 2010b, p. 3), and an additional 10,000 oil and gas wells have been proposed in that area (Service 2010a, p. 1). In this finding, rather than what was done in our previous 90–day finding on the petition, we are determining whether the best available information indicates that the species meets the definition of a threatened or endangered species and therefore warrants listing under the Act, which is a more in-depth analysis than the one conducted for the 90–day finding.

Several different types of oil and gas exploration and development activities occur within the range of the Wyoming pocket gopher. Oil and gas geophysical exploration is conducted to generate a subsurface image of fluid minerals and usually involves either drilling holes and detonating explosives or using a vibrating pad that is driven across an area using heavy vehicles. The extent of impacts from either exploration method on pocket gophers is unknown. The vibrations and potential soil impacts would, at a minimum, temporarily alter habitat and may result in collapse of burrows. Pocket gophers in the immediate vicinity of operations would likely notice the activity, but the type of response is unknown. Pocket gopher communication likely occurs through seismic signals (Mason and Narins 2001, p. 1177), and frequent vibrations could disrupt signals used to attract mates, warn of intruders, or avoid predators. However, we have no information to support that energy exploration negatively impacts the species.

Oil and gas development involves staging a drilling rig and setting up additional equipment that is used during production. Generally, developers build roads to access each site and clear and level well pads. These soil-disturbing activities would affect the habitat that lies within and adjacent to the footprint of well pads and roads. Any soil that is moved could have a direct impact on pocket gophers that are present. Once a rig is in place, the drilling process creates vibrations that could affect habitat and any pocket gophers in the area. Once a well has been drilled and is producing, energy companies make regular trips to well pads to monitor production, conduct maintenance, or collect extracted resources. These regular trips may disturb, either directly or through the resulting noise, pocket gophers that are present at or near well pads and roads. In the past, the Wyoming pocket gopher has been considered potentially vulnerable to disturbance because the reasons for the species' limited distribution had not yet been explained (Keinath and Beauvais 2006, p. 21). However, as described above, certain types of disturbance can elicit a positive population response in some pocket gopher species.

Energy producers often try to maintain a clear work area by using herbicides on well pads and along roads. Herbicide use and the direct impacts of development would reduce the availability and quality of vegetation, creating negative effects to Wyoming pocket gopher habitat (Keith *et al.* 1959, pp. 142-144). In general, broadcast herbicide application is assumed to be minimal in southern Wyoming (Keinath and Beauvais 2006, p. 22). We do not have information on use of herbicides for oil and gas development, and we are unaware of monitoring for resulting vegetative shifts. Therefore, we are unable to assess how changes in the vegetation due to herbicide use may affect the Wyoming pocket gopher. The BLM does not use pesticides or rodenticides in Wyoming to protect reclamation areas (Abbott 2009a, pers. comm.), so we do not anticipate direct mortality from these substances in reclamation areas. Introduction and spread of nonnative plants may result from energy development activities, and the potential threat of nonnative vegetation to the Wyoming pocket gopher is discussed separately below.

We used information from Wyoming pocket gopher trapping and from known oil and gas development to assess the extent to which energy development may be affecting the species. By overlaying producing wells on a map with species capture sites, we found that the locations of capture sites in relation to new and existing development does not appear to reflect a pattern of either species avoidance of, or preference for, producing oil and gas wells. Some capture sites are as near as 95 m (312 ft) to a producing well site (Service 2010b, p. 2), while others are in areas that have no oil or gas wells. We recognize that this simple geospatial assessment has limitations in determining what effects oil and gas development has on the species. We also recognize dispersal is likely already difficult across portions of the range that do not currently have pocket gophers, and recolonization following local extirpation would be unlikely (Keinath *et al.* 2008, p. 7).

The amount of surface disturbance provides another approach to consider the impacts of natural gas development. The two largest natural gas developments not yet fully built in the Wyoming pocket gopher range are Atlantic Rim and Continental Divide-Creston (Service 2010a, p. 1). The scoping notice for the Continental-Divide Creston development states disturbances during initial development will be approximately 47,060 acres (ac) (19,045 hectares (ha)) of 1.1 million ac (445,154 ha), or 4.28 percent of the project area (BLM 2006a, p. 4). The impacted area will be reduced to 1.67 percent through interim reclamation (BLM 2006a, p. 4). As this proposal includes areas of infill, the amount of disturbance described in the scoping notice does not include existing development (BLM 2006a, p. 1). The proposed well density includes 8 wells per square mile, with a possibility of up to 16 wells per square mile in certain areas (BLM 2006a, p. 1). The Record of Decision for the Atlantic Rim development allows a total surface

disturbance of 2.8 percent of the project area at a given time, with well spacing of 8 wells per square mile (BLM 2007, p. 10). For comparison, the existing Continental Divide/Wamsutter II gas development has been mostly developed, with 22,400 ac (9,065 ha) of surface disturbance across 1,061,200 ac (429,452 ha) (2.11 percent of the project area) and well densities of 1 to 8 wells per square mile (BLM 2000, section 2.0). All of these surface disturbance percentages are small. Although we do not know how the Wyoming pocket gopher is likely to respond to any proposed increases in well numbers, the level of development indicates that large interstitial spaces will continue to be available for Wyoming pocket gopher use. We know from our analysis that the Wyoming pocket gopher does occur near developed areas (Service 2010b, p. 2).

The BLM administers approximately half of the lands within the Wyoming pocket gopher range (Service 2009a, p. 1). Throughout the range, the BLM has leased 41.23 percent of the Wyoming pocket gopher range for oil and gas development, and 11.23 percent of the range on BLM lands has producing oil and gas leases (Service 2010c, p. 2). We are unable to determine whether development will occur on all leases.

Given limited knowledge of pocket gopher response to oil and gas development, and both the positive and negative observed impacts of disturbance to other species of pocket gophers, we do not consider producing wells at current or projected levels to be a threat to the Wyoming pocket gopher.

Although little wind development has occurred within the range of the species, projections for future wind energy are significant. One major proposal, the Chokecherry and Sierra Madre Wind Energy Project, includes 1,000 wind turbines across 98,500 ac (39.66 ha) within the range of the Wyoming pocket gopher (AECOM 2009, p. 1). Wind development may cause effects to habitat that are similar to oil and gas development. Wind development also results in a network of pads connected by roads. Soils are disturbed during development, and frequent maintenance trips are necessary. The Wyoming pocket gopher's response to wind development within its habitat is not known. For the Botta's pocket gopher, researchers mapping prey base to better understand raptor mortalities at a wind farm in California observed that pocket gophers were clustered near the wind turbines (Thelander *et al.* 2003, p. 23). They attributed this to the pocket gophers' attraction to the vertical and lateral edges formed by access roads and the area around wind towers (Thelander *et al.* 2003, p. 24). We anticipate that the response of the Wyoming pocket gopher may be similar, but we lack species-specific information. Therefore, the best available information does not indicate whether current or future wind development will have positive or negative effects on the Wyoming pocket gopher.

Summary of Energy Exploration and Development

Little information exists to indicate whether the Wyoming pocket gopher will be affected by an increased density of wells or by an expansion of oil, gas, and wind development into currently undeveloped areas. The response to disturbance in pocket gophers appears to be species-specific. For example, in southeastern Colorado, the plains pocket gopher is more common in disturbed areas, but the yellow-faced pocket gopher is more common in native versus disturbed habitats (Moulton *et al.* 1983, p. 58). Based on our current understanding of the Wyoming pocket gopher, energy development, at levels that we can detect or anticipate, is as likely to benefit Wyoming pocket gophers as it is to harm them.

We have no information that additional energy development activity will fragment habitat in a way that will significantly limit dispersal, movement, or genetic interchange. Using the best available information, we conclude that these habitat alterations do not constitute a threat to the Wyoming pocket gopher now, or in the foreseeable future.

Road Construction and Use

Roads are built to create access for oil, gas, and wind developments, as well as for other activities that occur on the landscape, including recreation, grazing, and land management. Much of the recent expansion of road networks in Wyoming pocket gopher habitat is related to energy development, but some areas have also likely experienced an increase in access by recreational vehicles. Expansion of road networks may fragment the species' habitat, create barriers to movement of the species, isolate individual populations, and increase opportunities for invasive species (Keinath and Beauvais 2006, pp. 22-23). Roads may increase direct mortality from vehicles, but this source of mortality is not always significant to populations (Garland and Bradley 1984, p. 52). Roads also may improve habitat for pocket gophers in some ways by providing looser soil and increasing vegetation in rights-of-way from precipitation run-off. As described above, roads can have a positive effect on other pocket gopher species (Best 1973, p. 1314; Moulton *et al.* 1983, p. 58; Garland and Bradley 1984, p. 54). The effects of roads on Wyoming pocket gopher populations are not known; however, we have limited anecdotal observations of individual gopher occupancy near roads. In 2009, one Wyoming pocket gopher specimen was captured 7 m (23 ft) from a graded dirt road, and northern pocket gophers were captured as close as 2 m (6.5 ft) to a graded dirt road (Griscom 2009b, pers. comm.). Small mammals may avoid roads due to noise and other factors, but roads may also provide additional habitat or movement corridors (Garland and Bradley 1984, entire; U.S. Department of Transportation 2009, unpaginated). Northern pocket gophers have been observed digging tunnels underneath a right-of-way road (Richens 1966, p. 532).

Depending upon the size of the road and the associated degree of soil compaction, a road may impact the dispersal of Wyoming pocket gophers. For example, distribution of the Shelton pocket gopher (*T. mazama couchi*) was impacted by soil compaction around an airport runway, and no pocket gopher activity was observed in graded areas that appeared to be highly compacted (GeoEngineers 2003, p. 15). The Wyoming pocket gopher apparently can use more compacted soils than the northern pocket gopher (Griscom *et al.* 2010, p. 15), but we are unsure what amount of soil compaction would begin to limit habitat use by the Wyoming pocket gopher.

Many roads in the range of the Wyoming pocket gopher have been on the landscape for decades or for more than a century, while others have been developed within the past few years. Evidence suggests some historic wagon trails (a type of road) have lasted for well over 100 years (BLM 2009, unpaginated), even when use of the road is discontinued. Other roads are reclaimed and do not have such a lasting effect. We anticipate that the existing roads within the range of the Wyoming pocket gopher will persist for at least 10 to 50 years in support of energy development activities. Additional roads may also be constructed to support that development, while others are reclaimed when no longer necessary. We anticipate that county roads providing access to livestock management facilities, homes, and recreational opportunities will persist indefinitely.

We conclude the effects of roads on the Wyoming pocket gopher may be positive and negative. Although we remain concerned about the potential impacts of roads, the best available information does not indicate that road construction and use poses a threat to the Wyoming pocket gopher now, or in the foreseeable future.

Nonnative Species

The introduction of nonnative species may affect the Wyoming pocket gopher, but the degree of impact from these species is not clear. A review of Wyoming pocket gopher information resulted in no information indicating a likelihood that nonnative vegetation alters or restricts pocket gopher populations; nonnative species were viewed as a potential threat, but not a current threat (Keinath and Beauvais 2006, p. 23). We do not fully understand the extent to which nonnative species will spread throughout the species' range into the future. Nonnative vegetation is considered a threat to the Mazama pocket gopher in western Washington (Service 2009b, pp. 7-8). The Mazama pocket gopher is adapting to the presence of many types of nonnative vegetation; however, the presence of *Cytisus scoparius* (Scotch broom), which has large root masses, restricts pocket gopher dispersal. The loss of prairie habitat to conifer encroachment is also a threat to the Mazama pocket gopher (Flotlin 2010, pers. comm.). *Cytisus scoparius* does not occur within the range of the Wyoming pocket gopher, and conifer encroachment is limited.

To inform our evaluation of the potential threat from nonnative species, we looked at the potential for *Bromus tectorum* (cheatgrass) to impact Wyoming pocket gopher populations. The conversion from *A. tridentata* spp. to *B. tectorum* has been shown to negatively impact other small mammals (Yensen *et al.* 1992, p. 309). The spread of *B. tectorum* has the potential to change vegetative communities in a way that could affect the Wyoming pocket gopher. As discussed previously, forbs are an important component of pocket gopher diets, and high densities of *B. tectorum* reduce the biomass and growth rates of forbs, as well as seedling survival for some forb species (Parkinson 2008, pp. 37-46). Further, when chemical treatments were used to experimentally reduce the abundance of weedy forbs in favor of grasses, a northern pocket gopher population declined roughly in proportion to the loss of forbs (Keith *et al.* 1959, p. 231).

Pocket gophers that eat grass species have reduced body weights (Tietjen *et al.* 1967, pp. 642-643). Grasses, when not consumed with other vegetation, do not seem to provide an adequate diet for *Thomomys* species (Cox 1989, p. 80). While *Bromus tectorum* may impact the abundance of forbs in the species' habitat, *B. tectorum* may also be used by Wyoming pocket gophers. Small quantities of the seeds of *B. tectorum* have been occasionally found in tunnels of northern pocket gophers, although seed heads of *B. tectorum* were not preferred as forage (Cox 1989, pp. 78-80). Northern pocket gophers also occur at locations where *B. tectorum* was considered to be a prevalent plant species (Ostrow *et al.* 2002, p. 992). During their breeding season, Botta's pocket gophers have been found to consume substantial quantities of species related to *B. tectorum, B. mollis* (soft brome) and *B. rubens* (red brome), when the nutrient content of the plants was highest (Hunt 1992, p. 49).

While *Bromus tectorum* appears to have the potential to impact Wyoming pocket gopher habitat, the spread of *B. tectorum* throughout the habitat of the Wyoming pocket gopher is not a foregone conclusion. In Wyoming, *B. tectorum* can be locally abundant, but precipitation and elevation differences influence where *B. tectorum* occurs (Smith and Enloe 2006, p. 1). In southern Wyoming counties, the fall precipitation prior to cold weather needed for *B. tectorum* germination is generally rare in zones where 14 inches or less of precipitation is received annually (Smith and Enloe 2006, p. 1). The annual precipitation within the range of the Wyoming pocket gopher is generally less than 14 inches of precipitation annually (National Atlas 2005, unpaginated).

In approximately the last 100 years, no broad-scale *B. tectorum* eradication method has been developed. Given the history of invasive plants on the landscape, the continued challenges in controlling such species, and the current infestation of invasive plants across the Wyoming pocket gopher's range, we anticipate that invasive plants will be on the landscape for the next 100 years or longer. However, studies indicate *B. tectorum* germination may be generally rare in Wyoming pocket gopher habitat, possibly inhibiting the future spread and impact of this invasive species in Wyoming pocket gopher habitat. In summary, we could find no information suggesting that nonnative species or *B. tectorum*, where it occurs within the occupied range of the Wyoming pocket gopher, represent a threat to the species now, or in the foreseeable future.

Climate Change

The Intergovernmental Panel on Climate Change (IPCC) has concluded that warming of the climate is unequivocal and that continued greenhouse gas emissions at or above current rates will cause further warming (IPCC 2007, p. 30). Eleven of the 12 years from 1995 through 2006 rank among the 12 warmest years in the instrumental record of global surface temperature since 1850 (Independent Scientific Advisory Board 2007, p. 6). Climate-change scenarios estimate that the mean air temperature could increase by more than 3 degrees Celsius (5.4 degrees Fahrenheit) by 2100 (IPCC 2007, p. 46). The IPCC also projects that there will very likely be regional increases in the frequency of hot extremes, heat waves, and heavy precipitation (IPCC 2007, p. 46), as well as increases in atmospheric carbon dioxide (IPCC 2007, p. 36).

Plant species provide habitat and forage that affect the ability of mammal species, such as the Wyoming pocket gopher, to persist over time. A variety of plant-related factors are not included in climate space models, including the effect of elevated carbon dioxide on plant water-use efficiency, the physiological effect to the species of exceeding the assumed (modeled) bioclimatic limit, the life stage at which the limit affects the species (seedling versus adult), the life span of the species, and the movement of other organisms into the species' range (Shafer *et al.* 2001, p. 207). These factors would likely help determine how climate change would affect plant species distributions. While more empirical studies are needed on what determines species and multi-species distributions, those data are often lacking; in their absence, climatic space models can play an important role in characterizing the types of changes that may occur so that the potential impacts on natural systems can be assessed (Shafer *et al.* 2001, p. 213).

One study modeled potential climate change impacts to *A. tridentata* spp., which are representative of the ecosystem currently known to be occupied Wyoming pocket gopher habitat (Shafer *et al.* 2001, pp. 200-215). Each scenario in the study predicted a reduction in the size of the overall range of sagebrush and shift where sagebrush may occur. These simulated changes were the result of increases in the mean temperature of the coldest month, which the authors speculated may interact with soil moisture levels to produce the simulated impact. Each model predicted that climate suitability

for big sagebrush would shift north into Canada. Other areas within big sagebrush distributions would become less suitable climatically and would potentially cause a significant contraction in sagebrush range. Since the Wyoming pocket gopher is associated with sagebrush in the matrix that forms Wyoming pocket gopher habitat, contractions of sagebrush could result in negative effects to the species. However, although the Wyoming pocket gopher occurs within sagebrush habitats, the species prefers vegetation other than sagebrush at a finer scale within that matrix (Griscom *et al.* 2010, p. 15).

In some cases, effects of climate change can be demonstrated (e.g., McLaughlin *et al.* 2002, p. 6073). Where it can be, we rely on that empirical evidence, such as increased stream temperatures (see Rio Grande cutthroat trout, 73 FR 27900, May 14, 2008) or loss of sea ice (see polar bear, 73 FR 28212, May 15, 2008), and treat it as a threat that can be analyzed. The degree to which climate change will interact with ecological processes important to Wyoming pocket gophers is not currently known.

Based on the evolutionary and ecological response of pocket gopher species to past global warming and cooling events, changes in temperature and precipitation may result in phenotypic and density changes in Wyoming pocket gopher populations (Hadly 1997, p. 292; Hadly *et al.* 1998, p. 6896; Barnosky *et al.* 2003, pp. 360-361), but we have no information specific to the Wyoming pocket gopher. If the Wyoming pocket gopher's range experiences increased temperatures and reduced precipitation in the future, these changes could include reduced body size and population abundance (Hadly 1997, p. 292). Past climate-induced, population-level, phenotypic change in pocket gophers was likely the result primarily of developmental plasticity within populations and not large-scale migration (Hadly *et al.* 1998, p. 6896; Barnosky *et al.* 2003, p. 362). Measured changes in phenotype and population size appeared to be an initial response to global warming episodes, with the extent of change being dependent upon the magnitude and duration of climatic change (Barnosky *et al.* 2003, pp. 364-365).

Smaller body size and reduced abundance experienced by historical pocket gopher populations during global hot, dry periods is likely a response to reduced food availability during those periods (Hadly 1997, p. 290). Projected climate change has the potential to significantly alter the distribution of forage important to pocket gophers through shifts in timing and amount of precipitation, or through changes in seasonal high, low, or average temperatures (Bachelet *et al.* 2001, p. 174). For example, warmer temperatures and greater concentrations of atmospheric carbon dioxide create conditions favorable to *Bromus tectorum*, which outcompetes native vegetation and greatly accelerates the natural fire cycle in areas where it becomes established (Chambers and Pellant 2008, p. 31; Global Climate Change Impacts in the United States 2009, p. 83). Future carbon dioxide emissions from energy use are projected to increase by 40 to 110 percent between 2000 and 2030 (IPCC 2007, p. 44). If a resulting shift in the vegetative communities occurs within the range of the Wyoming pocket gopher, the displacement of native forbs and grasses could significantly alter the availability of sufficient forage resources. This could then be exacerbated by the continued loss of those resources as a result of the shortened fire cycle.

Application of continental-scale climate change models to regional landscapes and even more local or "step-down" models projecting habitat potential based on climatic factors is informative, but contains a high level of uncertainty when predicting future effects to the Wyoming pocket gopher and its habitat due to a variety of factors, including regional weather patterns, local physiographic conditions, life stages of individual species, generation time of species, and species' reactions to changing carbon dioxide levels. The models summarized above are limited by these types of factors; therefore, their usefulness in assessing the threat of climate change on the Wyoming pocket gopher into the future is also limited.

Drought

Drought conditions occur within the range of the Wyoming pocket gopher and are a natural process that has historically occurred separately from climate change. We anticipate natural drought cycles to occur periodically within the range of the Wyoming pocket gopher into the future. We could find no specific information regarding the effects of drought on the Wyoming pocket gopher. Presumably drought would likely affect forage growth and potentially limit food availability. While this may have temporary effects on population numbers and the reproductive ability of the Wyoming pocket gopher, the species continues to occupy its known range despite historic periods of natural drought.

Summary of Climate Change and Drought

The direct, long-term impact from climate change to the Wyoming pocket gopher is not known. Shifts in the vegetative community may affect the species' ability to forage. However, given our lack of knowledge of important food resources for the Wyoming pocket gopher, our resulting lack of understanding about how changes in the forage base may affect the species, and our uncertainty regarding the effects of climate change on those food resources, we cannot consider climate change to be a threat to the species now, or in the foreseeable future. A reduction in forage availability may also occur during periods of drought. However, we have no data to facilitate our understanding of what impacts this may have on the species. Additionally, the Wyoming pocket gopher has persisted within its known range since at least 1857 (Thaeler and Hinesley 1979, p. 480) despite periods of natural drought. Therefore, while there may be population variation as a result of drought, we do not have any data indicating that drought creates a threat to the Wyoming pocket gopher now, or in the foreseeable future.

Grazing

Currently, livestock grazing is the most widespread type of land use across the sagebrush biome, which includes the known range of the Wyoming pocket gopher (Knick *et al.* 2003, p. 616; Connelly *et al.* 2004, pp. 7-29; Knick *et al.*, in press, p. 27). Several studies have shown that livestock grazing can result in reduced pocket gopher abundance and in some cases complete exclusion (Phillips 1936, p. 676; Hunter 1991, p. 117; Stromberg and Griffin 1996, p. 1205; Eviner and Chapin 2003, p. 125). Livestock grazing has the potential to negatively affect pocket gophers through a variety of mechanisms, such as soil compaction (Phillips 1936, pp. 677-678). However, direct competition for forage likely has the largest negative effect on pocket gopher populations (Phillips 1936, p. 677). Wild ungulate grazing has been found to have similar competitive effects to other small mammals (Coäte *et al.* 2004, p. 129), and this interaction may impact pocket gophers. However, we have no information to suggest that this competition is occurring with the Wyoming pocket gopher.

Historically, pocket gophers have been recognized by livestock producers as competitors with livestock for limited rangeland forage (Richens 1965, p. 424; Julander *et al.* 1969, p. 325; Turner

1969, p. 377; Laycock and Richardson 1975, p. 458). Pocket gophers primarily feed on forbs; however, diet composition can shift seasonally to include varying percentages of grasses and shrubs (see discussion above under Life History; Aldous 1951, pp. 85-86; Ward and Keith 1962, p. 747). Cattle are grazers, feeding mostly on grasses, but they will make seasonal use of forbs and shrub species (Vallentine 1990, p. 226). Domestic sheep are intermediate feeders, making high use of forbs but also using a large volume of grass and shrub species (Vallentine 1990, pp. 240-241). Horses are generalists, but seasonally their diets can be almost wholly comprised of grasses (Wagner 1983, pp. 119-120). The degree of competition between pocket gophers and livestock due to diet varies with local conditions that affect type and abundance of vegetation, stocking rates, and types of livestock (Phillips 1936, p. 676; Eviner and Chapin 2003, p. 125). We are unable to assess the levels of competition that are occurring, but competition has likely remained constant since grazing levels on BLM lands have generally been stable since 1978 (Laycock *et al.* 1996, p. 50). We anticipate future levels of competition from grazing to remain constant, as the recently renewed BLM Resource Management Plan for much of the range of the Wyoming pocket gopher does not include a change in past livestock stocking rates (BLM 2008, pp. 2-19).

Domestic livestock grazing will continue at present levels within the range of the Wyoming pocket gopher (BLM 2008, pp. 2-19). The current amounts, kinds, and seasons of livestock grazing use will be authorized until monitoring, field observations, ecological site inventory, or other data acceptable to the BLM indicates an adjustment to grazing use is necessary (BLM 2008, pp. 2-19). While we cannot provide an exact estimate of the foreseeable future for grazing, we expect this use to be persistent across the Wyoming pocket gopher's range for several decades.

We recognize the potential for negative impacts to Wyoming pocket gopher populations due to direct competition with livestock, but have no information about the impacts of grazing practices or grazing intensity to the species. Livestock grazing has remained consistent over time, and the Wyoming pocket gopher has continued to occupy its known range. Additionally, we are unaware of any studies linking grazing practices to population levels of the Wyoming pocket gopher. Therefore, we have no information to indicate that grazing poses a threat to the Wyoming pocket gopher now, or in the foreseeable future.

Urbanization

Urbanization is considered a significant threat to other species of pocket gopher, such as the Mazama pocket gopher (Service 2009b, p. 8); however, urbanization is limited within the range of the Wyoming pocket gopher. This area is largely rural, with approximately 55,000 people residing in Carbon and Sweetwater Counties in 2008 (U.S. Census Bureau 2009, p. 94), which is an average of 3 people per square mile (2.6 square kilometers). However, most of this population is concentrated in the population centers of Rock Springs, Green River, and Rawlins, which are at the edges of the potential Wyoming pocket gopher range. The BLM administers approximately half of the land in the range of the species, so urban development is precluded from those areas. Limited housing development is occurring near Wyoming pocket gopher collection sites, primarily to support gas field workers. These areas provide concentrated areas of disturbance, which create fewer impacts to the overall range of the species. The limited amount of housing across the range of the species also restricts the opportunities for domestic pet predation on Wyoming pocket gophers. We are unable to quantify a foreseeable future, but anticipate that additional urbanization will be limited based on the isolated nature of the area and the harsh environment that has not historically attracted many people. Based on the limited amount of urbanization, we do not consider it to be a significant threat to the Wyoming pocket gopher now, or in the foreseeable future.

Summary of Factor A

We conclude that the range of the Wyoming pocket gopher has experienced and will continue to experience significant changes, primarily related to oil, gas, and wind development. The range is also likely to experience some changes related to climate change. Changes from other sources, including nonnative vegetation, grazing, and urbanization, may occur to a lesser degree. However, we are unable to demonstrate that these alterations to habitat will result in negative effects to the species. Examining data from studies on other species of pocket gophers' responses to similar disturbances did not provide clarity as the response appeared to vary by species. For example, the invasive *Bromus tectorum* may negatively affect pocket gophers, but northern pocket gophers can occur where *B. tectorum* is a prevalent plant species (Ostrow *et al.* 2002, p. 992), and the seeds of *B. tectorum* were occasionally found in their burrows (Cox 1989, pp. 78-80). Many species of pocket gophers increase rates of mound building in areas of disturbed vegetation, while others are not found in areas of disturbance (Moulton *et al.* 1983, p. 58). Therefore, predicting the potential effects of habitat disturbances or alteration on the Wyoming pocket gopher based on the responses of other pocket gophers is not possible. The species continues to occupy its known historic range despite habitat alterations that have occurred within that range, and we have no evidence of population declines.

We conclude that the best scientific and commercial information available indicates that the Wyoming pocket gopher is not now, or in the foreseeable future, threatened by the present or threatened destruction, modification, or curtailment of its habitat or range to the extent that listing under the Act as an endangered or threatened species is warranted at this time.

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

Overutilization is the consumptive use of an organism, where individuals are intentionally captured or taken for a variety of purposes. Examples include take for human consumption, use of feathers or fur to create garments, and capture and removal of individuals for scientific or educational examinations or study. We have no data indicating that the Wyoming pocket gopher has been, is currently being, or will be in the future, used for commercial, recreational, or educational purposes.

In the late 1970s, in Wyoming and Colorado, 228 pocket gophers of three different species were collected and euthanized to collect tissue for taxonomic delineation (Thaeler and Hinesley 1979, p. 480). Forty of the animals collected were identified as Wyoming pocket gophers, although the authors note that tissue preparation on 83 individuals was insufficient to do genetic analyses. Therefore, more Wyoming pocket gophers may have been collected but not identified. No further documented captures of the Wyoming pocket gopher occurred until 2008, when 12 individuals were trapped to collect genetic and morphological information for species determination (Griscom *et al.* 2010, p. 5). Two of those pocket gophers were euthanized to obtain the tissue necessary for karyotyping procedures (McDonald 2009b, pers. comm.). Trapping

continued in 2009 to collect distribution and habitat information. A total of 19 individuals were captured in 2009 (Griscom 2010b, pers. comm.), with 2 individuals found dead in the traps (Griscom *et al*. 2010, p. 9). No other Wyoming pocket gopher mortalities from these trapping efforts were reported. Tissue samples (removing the tip of the tail) were collected from 5 individuals in 2008 and 15 individuals in 2009 prior to their subsequent release at the capture location (Griscom 2009c, pers. comm.; Griscom *et al*. 2010, p. 22). Some individuals may have died after release at the capture location; however, one Wyoming pocket gopher (Griscom 2009c, pers. comm.) and a pocket gopher of another species were recaptured a day or two after the tip of the tail was removed (Griscom *et al*. 2010, p. 11). The wounds were healing, and the pocket gophers did not appear to show any ill effects (Griscom *et al*. 2010, p. 11). Northern pocket gophers survived in a lab environment for several weeks after having their tails clipped (McDonald 2009a, pers. comm.). This limited evidence suggests that this tissue collection does not result in mortality.

The Wyoming Game and Fish Department (WGFD) issued collection permits for Wyoming pocket gophers for the scientific work that occurred in 2008 and 2009 (Emmerich 2009, p. 2). The review associated with the permitting process provided a protective measure to the species by limiting take to those individuals authorized to perform the work (Wyoming Game and Fish Commission (WGFC) 1998, pp. 52-8–52-9). Based on recent interest in the Wyoming pocket gopher, we anticipate that some utilization of the species related to scientific research will occur in 2010 and possibly in future years.

We could find no other information on research or scientific use of the Wyoming pocket gopher. The lack of population data for this species results in difficulties in determining whether the Wyoming pocket gopher is adversely impacted by scientific purposes. However, we do not believe overutilization to be a current or future threat because relatively few individuals have been affected by scientific research, research methodologies generally involve live captures, and available information indicates captured individuals can survive without noticeable effects.

Summary of Factor B

We conclude that the best scientific and commercial information available indicates that the Wyoming pocket gopher is not now, or in the foreseeable future, threatened by overutilization for commercial, recreational, scientific, or educational purposes to the extent that listing under the Act as an endangered or threatened species is warranted at this time.

Factor C. Disease or Predation

Disease and parasites have not been demonstrated to limit populations of pocket gophers (Keinath and Beauvais 2006, p. 20). In general, pocket gophers host some endo- and exo-parasites, most of which have been identified incidentally to other research (Keinath and Beauvais 2006, p. 21). In some cases, northern pocket gophers have been found with sufficient levels of botfly larvae to result in mortality, with up to 25 to 37 percent of local gopher populations affected (Keinath and Beauvais 2006, p. 21 and references therein). However, the effects of these infestations on population persistence were not provided. No research has been conducted on diseases and parasites of the Wyoming pocket gopher. Therefore, combined with the lack of population data, we have no way of assessing the current or future impact of this factor on this species. We recognize that lower levels of genetic diversity may allow a population to have greater susceptibility to diseases (Sanjayan *et al*. 1996, p. 1525), but we do not have information indicating that disease poses a threat to the Wyoming pocket gopher, and we do not have sufficient information to describe genetic diversity of the species. Additionally, we do not have information indicating that human activities in the area increase the susceptibility of the Wyoming pocket gopher to disease or parasites due to increased physiological stress.

Pocket gophers are subject to predation from gopher snakes (*Pituophis catenifer*), rattlesnakes (*Crotalus viridis*), long-tailed weasels (*Mustela frenata*), coyotes (*Canis latrans*), bobcats (*Lynx rufus*), badgers (*Taxidea taxus*), foxes (*Vulpes* spp.), skunks (*Mephitis* spp.), numerous owls (Keinath and Beauvais 2006, p. 20), and domestic pets (Stinson 2005, p. 51). However, we have no data indicating that predation limits Wyoming pocket gopher populations. Ravens (*Corvus corax*) use road networks associated with oil fields in southwestern Wyoming for foraging activities (Bui 2009, p. 31), and common raven abundance increases in association with oil and gas development in southwestern Wyoming (Holmes 2009, p. 1). However, we could find no information that ravens prey upon pocket gophers. Therefore, if raven abundance is increasing within the range of the Wyoming pocket gopher as a result of energy development activities, there is likely no effect on Wyoming pocket gophers. We were unable to find any other information to suggest that the predator-prey balance for the Wyoming pocket gopher has been affected by any anthropogenic activity, or may be affected within the forseeable future.

Based on our understanding of past and current effects, we do not anticipate the effects of disease, parasites, or predation to change for the foreseeable future.

Summary of Factor C

We conclude that the best scientific and commercial information available indicates that the Wyoming pocket gopher is not now, or in the foreseeable future, threatened by disease or predation to the extent that listing under the Act as an endangered or threatened species is warranted at this time.

Factor D: The Inadequacy of Existing Regulatory Mechanisms

Under this factor, we examine whether identified threats to the Wyoming pocket gopher are adequately addressed by existing regulatory mechanisms. These mechanisms could include: (1) Local land use laws, processes, and ordinances; (2) State laws and regulations; and (3) federal laws and regulations. Regulatory mechanisms, if they exist, may preclude listing if such mechanisms are judged to adequately address the threat to the species such that listing is not warranted.

We could find no local land use laws, processes, or ordinances that provide a regulatory mechanism for the Wyoming pocket gopher. The State of Wyoming has identified the Wyoming pocket gopher as a Native Species Status 4, meaning that while populations are restricted in distribution, the species' habitat does not appear to be declining, and there are no known sensitivities to human disturbance (Oakleaf *et al*. 2002, p. 263). Important conservation efforts for this species identified by the WGFD are to collect more information on the species' status, trends, and habitat use. The Wyoming pocket gopher is identified in the WGFD Comprehensive Wildlife Conservation Strategy (WGFD 2005, pp. 250-251) as a species of concern, which signifies a decline or restriction to the population or its habitat or both, but confers no State protection to the species. The Wyoming pocket gopher received this designation based on restricted habitat and limited available information on the species (Emmerich 2009, p. 1). The WGFD does

restrict the take of the Wyoming pocket gopher under Chapter 52 of the WGFC regulations (WGFC 1998, p. 52-9; Emmerich 2009, p. 1). This designation protects individuals of the species from take unless take is authorized by regulations or is necessary to address human health or safety (WGFC 1998, pp. 52-58). No state regulatory mechanisms provide for protection of the species' habitat.

The Wyoming pocket gopher has been identified as a sensitive species by Region 2 of the U.S. Forest Service (USFS) based on the species' rarity and potential sensitivity to disturbance (Keinath and Beauvais 2006, p. 6; USFS 2006, p. 10), although we are unaware of any occurrence of this species on USFS lands (Keinath and Beauvais 2006, p. 7). The USFS does not confer any protective regulations to identified sensitive species. The BLM in Wyoming also identifies the Wyoming pocket gopher as a sensitive species (Abbott 2009b, pers. comm.), which requires the agency to consider the welfare of these species when evaluating any action on public lands (BLM 2001, pp. 21J-22D3c(2)). The BLM has identified the Wyoming pocket gopher in NEPA documents in the areas of the Wyoming pocket gopher's distribution, such as the 2006 Atlantic Rim Final Environmental Impact Statement (BLM 2006b, p. 4-89). Project proponents for future projects on BLM lands were instrumental in collecting distributional data in 2008 and 2009 (Beauvais 2009, p. 4; Griscom *et al.* 2010, p. 6). However, species-specific management actions have not been developed by the BLM (Keinath and Beauvais 2006, pp. 6-8; Abbott 2010, pers. comm.). Despite the lack of regulatory mechanisms, this species continues to occupy its known range.

We anticipate no changes in the current regulatory mechanisms for the foreseeable future, unless research on the Wyoming pocket gopher indicates that regulatory mechanisms are necessary and can help prescribe specific effective protections.

Summary of Factor D

We conclude that the best scientific and commercial information available indicates that the Wyoming pocket gopher is not now, or in the foreseeable future, threatened by the inadequacy of existing regulatory mechanisms to the extent that listing under the Act as an endangered or threatened species is warranted at this time. It is unclear that regulatory mechanisms in addition to those described are needed for the species based on the current understanding of threats.

Factor E. Other Natural or Manmade Factors Affecting Its Continued Existence

Other natural or manmade factors affecting the continued existence of the Wyoming pocket gopher that we analyzed include vulnerability of small populations, use of poisons to target the species, and recreational activities. We are unaware of other factors that may affect the continued existence of the species.

Vulnerability of Small Populations

The Wyoming pocket gopher is a narrow endemic species (i.e., a species whose natural occurrence is confined to a certain region and whose distribution is relatively limited). The best available scientific data suggest that this species occurs in just two counties in southwest Wyoming. Small geographic range has been identified as the most important single indicator of elevated extinction risk in mammals (Purvis *et al.* 2000, p. 1949; Oborny *et al.* 2005, p. 291; Cardillo *et al.* 2006, pp. 4157-4158; Cardillo *et al.* 2008, p. 1445; Davies *et al.* 2008, p. 11559). The inherent vulnerability associated with small geographic range is due to the fact that a single localized threat, whether it is manmade (e.g., development) or environmental (e.g., disease), can potentially impact the entire distribution of the species, resulting in an increased probability of extinction (Davies *et al.* 2008, p. 11559).

Small population size has also been identified as an important predictor of extinction vulnerability (O'Grady *et al.* 2004, p. 517). Although we have no information on Wyoming pocket gopher abundance, restricted geographic range frequently correlates with small population size (Purvis *et al.* 2000, p. 1947). Thus, it is reasonable to assume that abundance is low relative to other pocket gopher species with larger geographic ranges (e.g., northern pocket gopher). Given their restricted distribution and presumably relatively small population size, Wyoming pocket gophers are more vulnerable to demographic, environmental, and genetic stochasticity than larger, more widely distributed species, which could affect the Wyoming pocket gopher's likelihood for long-term persistence.

Wyoming pocket gopher distribution appears to be discontinuous, and it remains undetermined if a metapopulation structure (a group of spatially separated populations which interact at some level) exists for this species (Keinath and Beauvais 2006, p. 19). Based on the abilities of other pocket gophers, which is consistent in the scientific literature for all species, Wyoming pocket gophers are not thought capable of dispersing long distances and may be restricted by the energetic demands of tunneling (Hansen 1962, p. 152; Vaughan 1963, p. 371; Keinath and Beauvais 2006, p. 16). There may be some above-ground dispersal at night (Griscom 2009a, pers. comm.) or when there is snow cover (Vaughan 1963, p. 369). The patchy distribution and low dispersal capability result in a low probability for recolonization following local population extinctions (Keinath *et al.* 2008, p. 7). When the area over which a colonization-extinction process operates is geographically small, as is the case with Wyoming pocket gopher, a single local extinction that is not followed by recolonization can have a large impact on the occupancy of the total area (Oborny *et al.* 2005, p. 291).

The Wyoming pocket gopher has persisted since at least 1857 (Coues 1875, p. 138) and may never have had a large population size. The species appears to be currently distributed throughout its known range in a pattern that approximates historic distribution (see Figure 1 above). However, it appears to have several characteristics, such as small geographic range, isolated populations, and low dispersal ability, which increase the species' vulnerability to extinction from stochastic events and other threats on the landscape. Currently, we do not have information on these threats to an extent that allows us to know whether small population size allows for other manmade or environmental factors to create a threat to the Wyoming pocket gopher. Further, the historic range and persistence of the species' population size indicate the species occurs in normally low population densities. We are unable to quantify a foreseeable future for stochastic events that may have disproportionate negative effects on small population sizes. We do not anticipate the effects of these events on small population size to change, but our understanding of these effects may improve over time.

Lethal Control of Pocket Gophers

Campaigns to eliminate other species of pocket gophers are often pursued in association with development, farmlands, and ranchlands. We have no information that indicates that pocket gophers are the target of lethal control campaigns within the range of the Wyoming pocket gopher. Strychnine and Rozol are both rodenticides approved by the U.S. Environmental Protection Agency for control of pocket gophers, and these substances may

create a threat to the Wyoming pocket gopher through targeted application or non-target poisonings of another species (Dickerson 2009a, pers. comm.). We are unable to show the extent to which these and similar substances are used on private lands in the area; however, rangelands, which form the majority of Wyoming pocket gopher habitat, are not typically the target of pocket gopher control measures (Dickerson 2009b, pers. comm.). Additionally, the BLM does not use pesticides or rodenticides in Wyoming to protect reclamation areas (Abbott 2009a, pers. comm.). We are unable to determine if the Wyoming pocket gopher may be targeted by, or exposed to, substances used for lethal control in the future. We are unaware of other methods that are commonly used for lethal control of pocket gopher populations. We currently do not have any information that would lead us to anticipate an increase in lethal control of the Wyoming pocket gopher for the foreseeable future.

Recreational Activities

Recreational activities within the range of the Wyoming pocket gopher include hunting, camping, hiking, horse riding, use of all-terrain vehicles, and visiting historic sites. These activities may cause elevated levels of human presence on the landscape and resultant disturbances to habitat, which were discussed in Factor A. We have no information to indicate that increased human presence related to recreation poses a threat to the Wyoming pocket gopher. We anticipate that recreational activities will continue at current or slightly increased levels within the range of the Wyoming pocket gopher for the foreseeable future.

Summary of Factor E

Based on the best available information, we have no indication that other natural or manmade factors are likely to significantly threaten the existence of the species. We recognize the inherent vulnerabilities of small populations and restricted geographic range, which appear to be exhibited by the Wyoming pocket gopher. The impacts of various potential threats can be more pronounced on small or isolated populations, and we have identified numerous activities occurring on the landscape within the range of the Wyoming pocket gopher (see Factor A discussion). However, at this time, we do not have information to indicate that these activities pose a threat to the Wyoming pocket gopher. Additionally, we do not consider a small population alone to be a threat to species; rather, it can be a vulnerability that can make it more susceptible to threat factors, if they are present. Many naturally rare species have persisted for long periods within small geographic areas, and many naturally rare species exhibit traits that allow them to persist despite their small population sizes (Nevo *et al.* 1997, p. 388; Rubinoff and Powell 2004, p. 2547; Lawson *et al.* 2008, p. 927; Abeli *et al.* 2009, p. 3887). The Wyoming pocket gopher is one of these species, existing in a limited range since its discovery in 1857. We have no information that this rarity is working in combination with any threat factors that would cause the species to be likely to become in danger of extinction in all or a significant portion of its range in the foreseeable future. We have identified lethal control of pocket gophers and recreational activities as other manmade factors that may impact the species, but we have no information that these factors are negatively impacting the species at this time.

We conclude that the best scientific and commercial information available indicates that the Wyoming pocket gopher is not now, or in the foreseeable future, threatened by other natural or manmade factors affecting its continued existence to the extent that listing under the Act as an endangered or threatened species is warranted at this time.

Finding

As required by the Act, we considered the five factors in assessing whether the Wyoming pocket gopher is endangered or threatened throughout all or a significant portion of its range. We have carefully examined the best scientific and commercial information available regarding the status and the past, present, and future threats faced by the Wyoming pocket gopher. We reviewed the petition, information available in our files, and other published and unpublished information submitted to us by the public following our 90–day petition finding. We also consulted with Wyoming pocket gopher experts and other Federal and State resource agencies. In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the species responds to the factor in a way that causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant, it may drive or contribute to the risk of extinction of the species such that the species warrants listing as threatened or endangered as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors are operative threats that act on the species to the point that the species meets the definition of threatened or endangered under the Act. We were able to quantify the foreseeable future only for energy development and scientific utilization of the species, but discussed how we anticipate each factor to change over time. We were unable to project changes to the species into the future because we do not have sufficient data to know if these factors will result in positive or negative effects to the species.

Our review of the best available scientific and commercial information pertaining to the five factors does not support the assertion that there are threats of sufficient imminence, intensity, or magnitude to indicate the Wyoming pocket gopher is in danger of extinction (endangered), or is likely to become endangered within the foreseeable future (threatened), throughout all or a significant portion of its range. Therefore, we find that listing the Wyoming pocket gopher throughout all or a significant portion of its range is not warranted at this time.

In making this finding, we recognize that the Wyoming pocket gopher, despite not being warranted for listing as endangered or threatened, may benefit from increased management emphasis due to its limited distribution and range. In particular, future oil, gas, and wind development may have positive or negative impacts to the species and should be carefully considered and monitored. We recommend precautionary measures be taken to protect the species, and that additional research be pursued to improve the understanding of the species so that the responses to future potential threats can be better understood.

Distinct Vertebrate Population Segments

After assessing whether the species is endangered or threatened throughout its range, we next consider whether a distinct vertebrate population segment (DPS) of the Wyoming pocket gopher meets the definition of endangered or is likely to become endangered in the foreseeable future (threatened).

Under the Service's Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act (61 FR 4722, February 7, 1996), three elements are considered in the decision concerning the establishment and classification of a possible DPS. These are applied similarly for additions to or removals from the Federal List of Endangered and Threatened Wildlife. These elements include: (1) The discreteness of a population in relation to the remainder of the taxon to which it belongs; (2) the significance of the population segment to the taxon to which it belongs; and (3) the population segment's conservation status in relation to the Act's standards for listing, delisting (removal from the list), or reclassification (i.e., is the population segment endangered or threatened).

As stated above, the Wyoming pocket gopher is a narrow endemic species, historically and currently found in only two counties in south-central Wyoming. Only 47 confirmed Wyoming pocket gophers have been trapped over approximately the past 40 years, and the species appears to be currently distributed throughout its known range in a pattern that approximates historic distribution (see Figure 1 above). Dispersal strategies of the Wyoming pocket gopher are unknown (see discussion under Life History above). However, in other species of pocket gophers, dispersal has been well documented (e.g., Daly and Patton 1990, p. 1291; Hafner *et al.* 1998, p. 281), and we have no evidence to suggest that the Wyoming pocket gopher does not disperse within its known range. Therefore, we have no evidence suggesting that the Wyoming pocket gopher is isolated in any part of its range. We determine, based on a review of the best available information, that no portion of the Wyoming pocket gopher range meets the discreteness conditions of the 1996 DPS policy. The DPS policy is clear that significance is analyzed only when a population segment has been identified as discrete. Since we found that no population segment meets the discreteness element, and therefore no population segment qualifies as a DPS under the Service's DPS policy, we will not conduct an evaluation of significance.

Significant Portion of the Range

Having determined that the Wyoming pocket gopher does not meet the definition of an endangered or threatened species throughout its entire region, we must next consider whether there are any significant portions of the range where the Wyoming pocket gopher is in danger of extinction or is likely to become endangered in the foreseeable future.

On March 16, 2007, a formal opinion was issued by the Solicitor of the Department of the Interior (USDI), "The Meaning of 'In Danger of Extinction Throughout All or a Significant Portion of Its Range'" (USDI 2007, entire). We have summarized our interpretation of that opinion and the underlying statutory language below. A portion of a species' range is significant if it is part of the current range of the species and it contributes substantially to the representation, resiliency, or redundancy of the species. The contribution must be at a level such that its loss would result in a decrease in the ability to conserve the species.

In determining whether a species is endangered or threatened in a significant portion of its range, we first identify any portions of the range of the species that warrant further consideration. The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that are not reasonably likely to be significant and endangered or threatened. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that: (1) The portions may be significant, and (2) the species may be in danger of extinction there or likely to become so within the foreseeable future. In practice, a key part of this analysis is whether the threats are geographically concentrated in some way. If the threats to the species are essentially uniform throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats applies only to portions of the species' range that are not significant, such portions will not warrant further consideration.

If we identify portions that warrant further consideration, we then determine whether the species is endangered or threatened in these portions of its range. Depending on the biology of the species, its range, and the threats it faces, the Service may address either the significance question or the status question first. Thus, if the Service considers significance first and determines that a portion of the range is not significant, the Service need not determine whether the species is endangered or threatened there. Likewise, if the Service considers status first and determines that the species is not endangered or threatened in a portion of its range, the Service need not determine if that portion is significant. However, if the Service determines both that a portion of the range of a species is significant and that the species is endangered or threatened there, the Service will specify that portion of the range as endangered or threatened under section 4(c)(1) of the Act.

The terms "resiliency," "redundancy," and "representation" are intended to be indicators of the conservation value of portions of the range. Resiliency of a species allows the species to recover from periodic disturbance. A species will likely be more resilient if large populations exist in high-quality habitat that is distributed throughout the range of the species in such a way as to capture the environmental variability found within the range of the species. A portion of the range of a species may make a meaningful contribution to the resiliency of the species if the area is relatively large and contains particularly high-quality habitat, or if its location or characteristics make it less susceptible to certain threats than other portions of the range. When evaluating whether or how a portion of the range contributes to resiliency of the species, we evaluate the historical value of the portion and how frequently the portion is used by the species, if possible. In addition, the portion may contribute to resiliency for other reasons—for instance, it may contain an important concentration of certain types of habitat that are necessary for the species to carry out its life-history functions, such as breeding, feeding, migration, dispersal, or wintering.

Redundancy of populations may be needed to provide a margin of safety for the species to withstand catastrophic events. This does not mean that any portion that provides redundancy is necessarily a significant portion of the range of a species. The idea is to conserve enough areas of the range such that random perturbations in the system act on only a few populations. Therefore, each area must be examined based on whether that area provides an increment of redundancy that is important to the conservation of the species.

Adequate representation ensures that the species' adaptive capabilities are conserved. Specifically, the portion should be evaluated to see how it contributes to the genetic diversity of the species. The loss of genetically based diversity may substantially reduce the ability of the species to respond and adapt to future environmental changes. A peripheral population may contribute meaningfully to representation if there is evidence that it provides genetic diversity due to

its location on the margin of the species' habitat requirements.

Section 4(c)(1) of the Act requires the Service to determine whether a portion of a species' range, if not all, meets the definition of endangered or threatened. As stated above, based on the best scientific information, we find listing the Wyoming pocket gopher across its entire range is not warranted. We were unable to identify any significant portion of the range that merits additional analysis. The 31 Wyoming pocket gopher captures that occurred in 2008 and 2009 indicate that the species is currently distributed throughout its known historic range (see Figure 1 above). The limited information available on the Wyoming pocket gopher, such as the lack of population numbers and dynamics, does not allow us to determine what portion of the range, if any, contributes substantially and differentially to the long-term persistence of the species. As discussed previously, we do not know how the species is likely to respond to many potential threats (e.g., wind energy), and therefore we cannot determine if the potential threats imperil a significant portion of the species' range. Further, for those potential threats with more well-understood impacts to the species (e.g., poisoning), we could find no portion of the range in which threats are concentrated or otherwise likely to impact a significant portion of the species' range.

Conclusion

We do not find that the Wyoming pocket gopher is in danger of extinction now, nor is it likely to become endangered within the foreseeable future, throughout all or a significant portion of its range. Therefore, listing the species as endangered or threatened under the Act is not warranted at this time.

We request that you submit any new information concerning the status of, or threats to, the Wyoming pocket gopher to our Wyoming Ecological Services Field Office (see **ADDRESSES** section) whenever it becomes available. New information will help us monitor this species and encourage its conservation. If an emergency situation develops for the Wyoming pocket gopher or any other species, we will act to provide immediate protection.

References Cited

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

Author

The primary authors of this document are staff members of the Wyoming Ecological Services Field Office (see **ADDRESSES** section).

Authority

The authority for this action is section 4 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: March 30, 2010.

Daniel M. Ashe,

Acting Director, U.S. Fish and Wildlife Service.

[FR Doc. 2010–8578 Filed 4–14–10; 8:45 am]

BILLING CODE 4310–55–S