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**DEPARTMENT OF THE INTERIOR****Fish and Wildlife Service****50 CFR Part 17****[Docket No. FWS-R2-ES-2011-0042;  
4500030113]****RIN 1018-AV86****Endangered and Threatened Wildlife  
and Plants; Determination of  
Endangered Status for the Chupadera  
Springsnail and Designation of Critical  
Habitat****AGENCY:** Fish and Wildlife Service,  
Interior.**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service, determine endangered status for the Chupadera springsnail and designate critical habitat for the species under the Endangered Species Act of 1973, as amended. The effect of this rule is to conserve the Chupadera springsnail and its habitat under the Endangered Species Act.

**DATES:** This rule becomes effective on August 13, 2012.

**ADDRESSES:** This final rule and associated final economic analysis and final environmental assessment are available on the Internet at <http://www.regulations.gov> or <http://www.fws.gov/southwest/es/NewMexico/>. Comments and materials received, as well as supporting documentation used in preparing this final rule, are available for public inspection, by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office, 2105 Osuna Rd. NE., Albuquerque, NM 87113; telephone 505-346-2525; facsimile 505-346-2542.

**FOR FURTHER INFORMATION CONTACT:** Wally "J" Murphy, Field Supervisor, U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office, 2105 Osuna Rd. NE., Albuquerque, NM 87113; telephone 505-346-2525; facsimile 505-346-2542. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

**SUPPLEMENTARY INFORMATION:** This document consists of: (1) A final rule to list the Chupadera springsnail as endangered and (2) a final critical habitat designation for the Chupadera springsnail.

**Executive Summary**

*Why we need to publish a rule.* Under the Endangered Species Act, a species may warrant protection through listing if it is endangered or threatened throughout all or a significant portion of its range. The Chupadera springsnail (*Pyrgulopsis chupadera*) qualifies for listing as endangered based on threats to its habitat and its very limited range, which makes it more susceptible to extinction.

*This rule designates the Chupadera springsnail as endangered with critical habitat.* We are listing the Chupadera springsnail as endangered. In addition, we are designating critical habitat for the species in two units on private property totaling 0.7 hectares (1.9 acres) in Socorro County, New Mexico.

*The Endangered Species Act provides the basis for our action.* Under the Endangered Species Act, we can determine that a species is 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.

We have determined that the Chupadera springsnail is endangered by habitat loss and degradation of aquatic resources, particularly decreases in spring flow due to drought and ongoing and future groundwater pumping in the surrounding area, habitat degradation from livestock grazing, and springhead modification.

*We prepared an economic analysis.* To ensure that we consider the economic impacts, we prepared an economic analysis of the designation of critical habitat. We published an announcement and solicited public comments on the draft economic analysis. The analysis found no economic impact of the designation of critical habitat beyond an unquantified "stigma effect" to land values.

*We requested peer review of the methods used in our designation.* We specifically requested that three knowledgeable individuals with scientific expertise in desert spring ecosystems or related fields review the scientific information and methods that we used when we proposed the species as endangered. The peer reviewers generally concurred with our methods and conclusions and provided additional information, clarifications,

and suggestions to improve the final listing and critical habitat rule.

*We sought public comment on the designation.* During the first comment period, we received five comment letters directly addressing the proposed listing and critical habitat designation. During the second comment period, we received two comment letters addressing the proposed listing and critical habitat designation. We received no comments during the third comment period, nor any comments regarding the draft economic analysis or draft environmental assessment.

**Background**

It is our intent to discuss below only those topics directly relevant to the listing of the Chupadera springsnail as endangered in this section of the final rule.

*Previous Federal Actions*

We identified the Chupadera springsnail as a candidate for listing in the May 22, 1984, Notice of Review of Invertebrate Wildlife for Listing as Endangered or Threatened Species (49 FR 21664). Candidates are those fish, wildlife, and plants for which we have on file sufficient information on biological vulnerability and threats to support preparation of a listing proposal, but for which development of a listing regulation is precluded by other higher priority listing activities. The Chupadera springsnail was petitioned for listing on November 20, 1985, and was found to be warranted for listing but precluded by higher priority activities on October 4, 1988 (53 FR 38969). The Chupadera springsnail has been included in all of our subsequent annual Candidate Notices of Review (54 FR 554, January 6, 1989; 56 FR 58804, November 21, 1991; 59 FR 58982, November 15, 1994; 61 FR 7595, February 28, 1996; 62 FR 49397, September 19, 1997; 64 FR 57533, October 25, 1999; 66 FR 54807, October 30, 2001; 67 FR 40657, June 13, 2002; 69 FR 24875, May 4, 2004; 70 FR 24869, May 11, 2005; 71 FR 53755, September 12, 2006; 72 FR 69033, December 6, 2007; 73 FR 75175, December 10, 2008; 74 FR 57803, November 9, 2009; 75 FR 69221, November 10, 2010; and 76 FR 66370, October 26, 2011). In 2002, the listing priority number was increased from 8 to 2 in accordance with our priority guidance published on September 21, 1983 (48 FR 43098). A listing priority of 2 reflects a species with threats that are both imminent and high in magnitude. On August 2, 2011, we published a proposed rule to list the Chupadera springsnail as endangered with critical habitat (76 FR 46218), and

on January 20, 2012, we published a notice of availability of the draft environmental assessment and draft economic analysis and reopened the comment period for the proposed rule (77 FR 2943). Finally, on May 1, 2012, we reopened the comment period for the proposed rule and its associated documents for an additional 15 days (77 FR 25668).

#### Species Information

The Chupadera springsnail (*Pyrgulopsis chupaderae*) is a tiny (1.6 to 3.0 millimeters (mm) (0.06 to 0.12 inches (in)) tall) freshwater snail (Taylor 1987, p. 25; Hershler 1994, p. 30) in the family Hydrobiidae. The pigmentation of the body and operculum (covering over the shell opening) of this species is much more intense than in any other species in the genus *Pyrgulopsis* (Taylor 1987, p. 26). The Chupadera springsnail was first described by Taylor (1987, pp. 24–27) as *Fontelicella chupaderae*. Hershler (1994, pp. 11, 13), in his review of the genus *Pyrgulopsis*, found that the species previously assigned to the genus *Fontelicella* had the appropriate morphological characteristics for inclusion in the genus *Pyrgulopsis* and formally placed them within that genus. Preliminary genetic information confirms that the Chupadera springsnail is a valid species (Hershler *et al.* 2010, p. 246).

Snails are strictly aquatic, and respiration occurs through an internal gill. Springsnails in the genus *Pyrgulopsis* are egg-layers with a single small egg capsule deposited on a hard surface (Hershler 1998, p. 14). The larval stage is completed in the egg capsule, and upon hatching, the snails emerge into their adult habitat (Brusca and Brusca 1990, p. 759; Hershler and Sada 2002, p. 256). The snail exhibits separate sexes; physical differences are noticeable between them, with females being larger than males. Because of their small size and dependence on water, significant dispersal likely does not occur, although on rare occasions aquatic snails have been transported by becoming attached to the feathers and feet of migratory birds (Roscoe 1955, p. 66; Dundee *et al.* 1967, pp. 89–90; Hershler *et al.* 2005, p. 1763). Hydrobiid snails feed primarily on periphyton, which is a complex mixture of algae, bacteria, and microbes that occurs on submerged surfaces in aquatic environments (Mladenka 1992, pp. 46, 81; Allan 1995, p. 83; Hershler and Sada 2002, p. 256; Lysne *et al.* 2007, p. 649). The lifespan of most aquatic snails is 9 to 15 months (Pennak 1989, p. 552).

Snails in the family Hydrobiidae were once much more widely distributed during the wetter Pleistocene Age (1.6 million to 10,000 years ago). As ancient lakes and streams dried, springsnails became patchily distributed across the landscape in geographically isolated populations exhibiting a high degree of endemism (species found only in a particular region, area, or spring) (Bequart and Miller 1973, p. 214; Taylor 1987, pp. 5–6; Shepard 1993, p. 354; Hershler and Sada 2002, p. 255). Hydrobiid snails occur in springs, seeps, marshes, spring pools, outflows, and diverse flowing water habitats. Although Hydrobiid snails as a group are found in a wide variety of aquatic habitats, they are sensitive to water quality, and each species is usually found within relatively narrow habitat parameters (Sada 2008, p. 59). Proximity to spring vents, where water emerges from the ground, plays a key role in the life history of springsnails. Many springsnail species exhibit decreased abundance farther away from spring vents, presumably due to their need for stable water chemistry (Hershler 1994, p. 68; Hershler 1998, p. 11; Hershler and Sada 2002, p. 256; Martinez and Thome 2006, p. 14). Several habitat parameters of springs, such as substrate, dissolved carbon dioxide, dissolved oxygen, temperature, conductivity, and water depth, have been shown to influence the distribution and abundance of *Pyrgulopsis* (O'Brien and Blinn 1999, pp. 231–232; Mladenka and Minshall 2001, pp. 209–211; Malcom *et al.* 2005, p. 75; Martinez and Thome 2006, pp. 12–15; Lysne *et al.* 2007, p. 650). Dissolved salts such as calcium carbonate may also be important factors because they are essential for shell formation (Pennak 1989, p. 552).

The Chupadera springsnail is endemic to Willow Spring and an unnamed spring of similar size 0.5 kilometers (km) (0.3 miles (mi)) north of Willow Spring at the southeast end of the Chupadera Mountains in Socorro County, New Mexico (Taylor 1987, p. 24; Mehlhop 1993, p. 3; Lang 1998, p. 36). The two springs where the Chupadera springsnail has been documented are on two hillsides where groundwater discharges flow through volcanic gravels containing sand, mud, and aquatic plants (Taylor 1987, p. 26). Water temperatures in areas of the springbrook (the stream flowing from the springhead) currently occupied by the springsnail range from 15 to 25 degrees Celsius (°C) (59 to 77 degrees Fahrenheit (°F)) over all seasons (as measured in 1997 to 1998). Water velocities range from 0.01 to 0.19 meters

per second (m/s) (0.03 to 0.6 feet per second (ft/s)) (Lang 2009, p. 1). In 1998, when Willow Spring was visited by New Mexico Game and Fish biologists, the springbrook was 0.5 to 2 meters (m) (1.6 to 6.6 feet (ft)) wide, 6 to 15 centimeters (cm) (2.4 to 6 in) deep, and approximately 38 m (125 ft) long, upstream of where it entered a pond created by a berm (small earthen dam) across the springbrook (Lang 2009, p. 1).

The current status of the population at Willow Spring is unknown because access has been denied by the landowner since 1999, despite requests for access to monitor the springsnail (Carman 2004, pp. 1–2; 2005, pp. 1–5; NMDGF 2007, p. 12). Prior surveys show the springsnail population to be locally abundant and stable at this location through 1999 (Lang 1998, p. 36; Lang 1999, p. A5), with average densities in 1997–1998 of 23,803 ± 17,431 per square meter (2,211 ± 1,619 per square foot) (NMDGF 2011, p. 2). The landowner recently provided qualitative information in response to the 2011 proposed rule (76 FR 46218) that a springsnail, presumed to be the Chupadera springsnail, continues to occur at the springhead, although not in high numbers, and is abundant in the springbrook (Highland Springs Ranch, LLC 2011, p. 4). At the unnamed spring, the species was originally discovered in 1986 (Stefferdud 1986, p. 1) and reported from this location again in 1993 (Melhop 1993, p. 11). However, repeated sampling between 1995 and 1997 yielded no snails, and the habitat at that spring has been significantly degraded (devoid of riparian vegetation due to trampling by cattle, and the benthic habitat was covered with manure) (Lang 1998, p. 59; Lang 1999, p. B13). Therefore, the species is likely extirpated from this unnamed spring (NMDGF 1996, p. 16; Lang 1999, p. B13).

Springsnail dispersal is primarily limited to aquatic habitat connections (Hershler *et al.* 2005, p. 1755). Once extirpated from a spring, natural recolonization of that spring or other nearby springs is very rare.

#### Summary of Comments and Recommendations

We requested written comments from the public on the proposed listing of the Chupadera springsnail and the proposed designation of critical habitat for the Chupadera springsnail during three comment periods. The first comment period associated with the publication of the proposed rule (76 FR 46218) opened on August 2, 2011, and closed on October 3, 2011. We also requested comments on the proposed critical

habitat designation, associated draft economic analysis, and associated environmental assessment during a comment period that opened January 20, 2012, and closed on February 21, 2012 (77 FR 2943). Finally, on May 1, 2012, we reopened the comment period for an additional 15 days (77 FR 25668). We did not receive any requests for a public hearing, and none was held.

During the first comment period, we received five comment letters directly addressing the proposed listing and critical habitat designation. During the second comment period, we received two comment letters addressing the proposed listing and critical habitat designation. During the third comment period, we received no comment letters. We received no comments regarding the draft economic analysis or draft environmental assessment. All substantive information provided during the comment periods has either been incorporated directly into this final determination or is addressed below. Comments we received were grouped into eight general issues specifically relating to the proposed listing status or proposed critical habitat designation for the Chupadera springsnail and are addressed in the following summary and incorporated into the final rule as appropriate.

#### Peer Review

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

We reviewed all comments received from the peer reviewers for substantive issues and new information regarding critical habitat for the Chupadera springsnail. The peer reviewers generally concurred with our methods and conclusions and provided additional information, clarifications, and suggestions to improve the final listing and critical habitat rule. Peer reviewer comments are addressed in the following summary and incorporated into the final rule as appropriate.

#### Peer Reviewer Comments

(1) *Comment:* One peer reviewer and one commenter noted that, while the loss of groundwater is the biggest threat to the Chupadera springsnail, protections afforded by the Endangered Species Act are not sufficient to ameliorate this threat.

*Our Response:* Under section 4(b)(1)(A) of the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 *et seq.*), we must base a listing decision solely on the best scientific and commercial data available. The legislative history of this provision clearly states the intent of Congress to ensure that listing decisions are “based solely on biological criteria and to prevent non-biological criteria from affecting such decisions” (House of Representatives Report Number 97–835, 97th Congress, Second Session 19 (1982)). Therefore, we are not able to consider the potential efficacy of listing a species under the Act when making this determination. If a species meets the definition of endangered or threatened based on a review of the best available scientific information, then we must list that species under the Act. There is no discretion under the Act to make a not warranted finding based on a perception that the protections afforded by the Act would not be effective.

(2) *Comment:* One peer reviewer suggested that, since we have no information about the Chupadera springsnail or its habitat since 1999, we should presume that other natural or manmade factors (Factor E) may be a threat.

*Our Response:* Under Factor E, we found that the best scientific and commercial information available indicates that climate change may exacerbate current threats to the Chupadera springsnail but that climate change is not a threat in and of itself. We did not find other natural or manmade factors that warranted evaluation under Factor E. The lack of recent information does not necessitate presuming there are other natural or manmade factors threatening the species.

#### Comments From States

We received one comment letter from the New Mexico Department of Game and Fish regarding the proposal to list and designate critical habitat for the Chupadera springsnail, indicating their support for listing and critical habitat designation. Additional information regarding population status and species biology was also included in the letter, and that information has been incorporated into the appropriate sections of this rule.

#### Public Comments

(3) *Comment:* One commenter was concerned that we did not complete an initial regulatory flexibility analysis pursuant to the Regulatory Flexibility

Act (5 U.S.C. 601 *et seq.*) prior to publication of the proposed rule.

*Our Response:* We were unable to determine if an initial regulatory flexibility analysis was necessary prior to completion of the draft economic analysis. After considering the draft economic analysis, we certified in the January 20, 2012 (77 FR 2943, p. 2946), publication that an initial regulatory flexibility analysis is not required. Compliance with the Regulatory Flexibility Act is part of this final rule and can be found under the subheading of “*Regulatory Flexibility Act (5 U.S.C. 601 et seq.)*”.

(4) *Comment:* Two commenters suggested that we not designate the unnamed spring as critical habitat for the Chupadera springsnail because the species has been extirpated and habitat does not currently exist at the site.

*Our Response:* To be included in the critical habitat designation, unoccupied habitat must be considered to be essential for the conservation of the Chupadera springsnail. We considered the importance of the unnamed spring to the overall status of the species to prevent extinction and contribute to recovery, whether the unnamed spring could be restored to contain the necessary physical and biological features to support the Chupadera springsnail, and whether a population could be reestablished at the site. Although the unnamed spring has been excavated and currently exists as a pool and downstream marsh, we believe the site could be restored to provide suitable habitat for the Chupadera springsnail. Because the species only exists at one other site, the reintroduction of the snail at this unnamed spring would provide protection against extinction due to catastrophic events and contribute to its recovery. As a result, we have included the unnamed spring in this final critical habitat designation, as we believe it is essential for the conservation of the species.

(5) *Comment:* Two commenters pointed out that the information regarding the species’ population numbers is more than 10 years old and suggested we rely on more recent survey information.

*Our Response:* We agree that recent information would be more informative of the population’s status, but State of New Mexico and Service biologists have not been allowed access to the springs since 1999, despite repeated requests. Under the Act, we must use the best available scientific and commercial information to inform our listing decisions; in this case, the data up through 1999 is the best available

information about the species and its habitat.

(6) *Comment:* One commenter questioned whether the Chupadera springsnail ever occurred at the unnamed spring and why we stated the species has been known from Willow Spring since 1979 when the species was described in 1987.

*Our Response:* The Chupadera springsnail was documented from the unnamed spring in 1986 (Stefferd 1986, p. 1). Additionally, while the Chupadera springsnail was not described in the peer-reviewed literature until 1987 (Taylor 1987, pp. 24–26), it was first collected in 1979 by D.W. Taylor and R.H. Weber (Taylor 1987, p. 24).

(7) *Comment:* One commenter asked if we proposed to designate a buffer around the springhead, springbrook, seeps, ponds, and seasonally wetted meadow, and if so, how far from these features the buffer extended.

*Our Response:* We did not propose to designate a buffer around the spring features. We identified a coordinate for each spring and proposed to designate as critical habitat the springhead, springbrook, small seeps and ponds, seasonally wetted meadow, and all of the associated spring features. To determine the approximate area of the critical habitat, we used satellite imagery to roughly calculate the area of the spring features surrounding those coordinates.

(8) *Comment:* One commenter suggested that, in lieu of listing, the Service buy the land surrounding Willow Spring.

*Our Response:* The Act requires us to determine if the Chupadera springsnail is in danger of extinction throughout all or a significant portion of its range at the time we conduct a review of the species. Any future conservation actions, such as purchasing land, if the landowner is willing, or land management efforts to ameliorate threats, will be evaluated as part of the recovery planning process after the species is listed.

#### Summary of Changes From Proposed Rule

Since the publication of the August 2, 2011, proposed rule to list the Chupadera springsnail as endangered with critical habitat (76 FR 46218), we have made the following changes:

(1) The New Mexico Department of Game and Fish provided us with more detailed information regarding the Chupadera springsnail population and habitat at Willow Spring, and we updated the biological information in this rule accordingly.

(2) The landowner of Willow Spring provided qualitative information about the current habitat at Willow Spring and the current presence of the Chupadera springsnail, which we have incorporated into this rule.

#### Summary of Factors Affecting the Species

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

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

The principal threats to the habitat of Chupadera springsnail at Willow Spring include groundwater depletion, livestock grazing, and spring modification (Lang 1998, p. 59; NMDGF 2002, p. 45). These threats are intensified by the fact that the species' known historic range was only two small springs, and it has been extirpated from one of the known locations. Other potential threats, such as fire and recreational use at the springs, were considered, but no information was found that indicated these may be affecting the species at this time.

##### Groundwater Depletion

Habitat loss due to groundwater depletion threatens the Chupadera springsnail. Since spring ecosystems rely on water discharged to the surface from underground aquifers, groundwater depletion can result in the destruction of habitat by the drying of springs and cause the loss of spring fauna. For example, groundwater depletion from watering a lawn adjacent to a small spring (Snail Spring) in Cochise County, Arizona, has reduced habitat availability of the San Bernardino springsnail (*Pyrgulopsis bernardina*) at that location because of the loss of flowing water to the spring (Malcom *et al.* 2003, p. 18; Cox *et al.*

2007, p. 2). Also, in Pecos County, Texas, two large spring systems (Comanche Springs and Leon Springs) were completely lost to drying when irrigation wells were activated in the supporting local aquifer (Scudday 1977, pp. 515–516). Spring drying or flow reduction from groundwater pumping has also been documented in the Roswell (August 9, 2005; 70 FR 46304) and Mimbres Basins (Summers 1976, pp. 62, 65) of New Mexico.

Area groundwater use may significantly increase due to Highland Springs Ranch, a developing subdivision in the immediate vicinity of Chupadera springsnail habitat. Beginning in 1999, Highland Springs Ranch is being developed in four phases with approximately 650 lots ranging from 8 hectares (ha) (20 acres (ac)) to 57 ha (140 ac). There is no central water system, so each homeowner is responsible for drilling individual water wells. In Highland Springs Ranch, homeowners are entitled to 629 cubic meters (0.51 acre-feet) of water per year (New Mexico Office of the State Engineer (NMOSE) 2009, p. 1).

Although the NMOSE offered a positive opinion determining that sufficient groundwater is available to supply the needs of the subdivision for 40 years (Highland Springs, LLC 2011, p. 2), the NMOSE bases that decision on water availability, not on ensuring spring flow. Because of the proximity of the subdivision to Willow Spring (the northern boundary of one of the lots (42A) of Mountain Shadows, a phase of Highland Springs Ranch, is approximately 91 m (300 ft) from Willow Spring), it appears likely that groundwater pumping could affect the discharge from the spring through depletion of groundwater. Under normal conditions, Willow Spring has a very small discharge (Lang 2009, p. 1), and, therefore, any reduction in available habitat from declining spring flows would be detrimental to the Chupadera springsnail. Given the proximity of the unnamed spring (0.5 km (0.3 mi)) to Willow Spring, and because they both were historically occupied by the Chupadera springsnail, we believe both springs are fed by the same groundwater aquifer. Thus, groundwater depletion that would affect spring flow at Willow Spring would also likely affect the unnamed spring.

The Bosque del Apache National Wildlife Refuge western boundary is located about 0.8 km (0.5 mi) east of the spring where Chupadera springsnail occurs, providing protection from development and groundwater depletion for much of the land east of the spring. Therefore, any development

activities that may deplete groundwater are likely to occur in areas west of the springs.

In addition, any decreases in regional precipitation due to prolonged drought will further stress groundwater availability and increase the risk of diminishment or drying of the springs. The current, multiyear drought in the western United States, including the Southwest, is the most severe drought recorded since 1900 (Overpeck and Udall 2010, p. 1642). In addition, numerous climate change models predict an overall decrease in annual precipitation in the southwestern United States and northern Mexico (see discussion under *Factor E*, Climate Change, below). Recent regional drought may have affected habitat for Chupadera springsnail. For example, the extreme drought of 2002 resulted in drying streams across the State, with nearly all of the major river basins in New Mexico at historic low flow levels (New Mexico Drought Task Force 2002, p. 1). Because of our inability to access Willow Spring, we do not have information on how this drought affected the Chupadera springsnail.

Drought affects both surface and groundwater resources and can lead to diminished water quality (Woodhouse and Overpeck 1998, p. 2693; MacRae *et al.* 2001, pp. 4, 10), in addition to reducing groundwater quantities. The small size of the springbrooks where the Chupadera springsnail resides (1.5 m (5 ft) wide or less) makes them particularly susceptible to drying, increased water temperatures, and freezing. The springs do not have to cease flowing completely to have an adverse effect on springsnail populations. Because these springs are so small, any reductions in the flow rates from the springs can reduce the available habitat for the springsnails, increasing the species' risk of extinction. Decreased spring flow can lead to a decrease in habitat availability, an increase in water temperature fluctuations, a decrease in dissolved oxygen levels, and an increase in salinity (MacRae *et al.* 2001, p. 4). Water temperatures and factors such as dissolved oxygen in springs do not typically fluctuate under natural conditions, and springsnails are narrowly adapted to spring conditions and are sensitive to changes in water quality (Hershler 1998, p. 11). Groundwater depletion can lead to loss and degradation of Chupadera springsnail habitat and presents a substantial threat to the species.

#### Livestock Grazing

It is estimated that livestock grazing has damaged approximately 80 percent of stream and riparian ecosystems in the western United States (Belsky *et al.* 1999, p. 419). The damage occurs from increased sedimentation, decreased water quality, and trampling and overgrazing stream banks where succulent (high water content) forage exists (Armour *et al.* 1994, p. 10; Fleischner 1994, p. 631; Belsky *et al.* 1999, p. 419). Livestock grazing within spring ecosystems can alter or remove springsnail habitat, resulting in restricted distribution or extirpation of springsnails. For example, cattle trampling at a spring in Owens Valley, California, reduced banks to mud and sparse grass, limiting the occurrence of the endangered Fish Slough springsnail (*Pyrgulopsis perturbata*) (Bruce and White 1998, pp. 3–4). Poorly managed livestock use of springbrooks can directly negatively affect springsnails through contamination of aquatic habitat from feces and urine, habitat degradation of the springbrook by trampling of substrate and loss of aquatic and riparian vegetation, and crushing of individual springsnails.

When the species was first collected at the unnamed spring in 1986, Stefferud (1986, p. 1) reported that the spring was already a series of small stock tanks for cattle and horses with very little riparian vegetation. Lang (1998, p. 59) reported that the unnamed spring was heavily impacted by cattle because it was devoid of riparian vegetation, and the gravel and cobbles were covered with mud and manure. It appears that overgrazing and access to the aquatic habitat of the spring by livestock may have caused the extirpation of the Chupadera springsnail population from this unnamed spring (NMDGF 1996, p. 16; Lang 1999, p. A5). Grazing was occurring at Willow Spring in 1999 (the last time the spring was visited) (Lang 1999, p. A5). The landowner has indicated that cattle ranching continues to occur in areas of Highland Springs Ranch, but that no grazing is currently occurring within or adjacent to Willow Spring (Highland Springs, LLC 2011, p. 3). Continued use of the springs by livestock, if it is occurring at Willow Spring or the unnamed spring we are designating as critical habitat in this rule, presents a substantial threat to the Chupadera springsnail.

#### Spring Modification

Spring modification occurs when attempts are made to increase flow through excavation at the springhead,

when the springhead is tapped to direct the flow into a pipe and then into a tank or a pond, when excavation around the springhead creates a pool, inundating the springhead, or when the springbrook is dammed to create a pool downstream of the springbrook. Because springsnails are typically most abundant at the springhead where water chemistry and water quality are normally stable, any modification of the springhead could be detrimental to springsnail populations. In addition, any modification or construction done at the springhead could also affect individuals downstream through siltation of habitat. Because springsnails are typically found in shallow flowing water, inundation that alters springsnail habitat by changing water depth, velocity, substrate composition, vegetation, and water chemistry can cause population reduction or extirpation. For example, inundation has negatively affected populations of other springsnails such as Koster's springsnail (*Juturnia kosteri*) and Roswell springsnail (*Pyrgulopsis roswellensis*) at Bitter Lake National Wildlife Refuge and caused their extirpation from North Spring in Chaves County, New Mexico (NMDGF 2004, p. 33; 70 FR 46304, August 9, 2005).

The springheads at both Willow Spring and the unnamed spring have been modified through impoundment of the springbrooks and, at Willow Spring, to maintain a pump and improve water delivery systems to cattle (Lang 1998, p. 59). At Willow Spring, it appears that springbrook impoundment has only occurred downstream of the source, leaving some appropriate springbrook habitat intact upstream (Taylor 1987, p. 26). At the last visit to the Willow Spring in 1999, the habitat at the spring was of sufficient quality to sustain the Chupadera springsnail, but any subsequent alterations could be catastrophic for the species. Spring modification, either at the springhead or in the springbrook, is a threat to the Chupadera springsnail.

#### Small, Reduced Range

The geographically small range of the Chupadera springsnail increases the risk of extinction from any effects associated with other threats (NMDGF 2002, p. 1). When species are limited to small, isolated habitats, like the Chupadera springsnail in one small desert spring system, they are more likely to become extinct due to a local event that negatively affects the population (Shepard 1993, pp. 354–357; McKinney 1997, p. 497; Minckley and Unmack 2000, pp. 52–53).

The natural historic range of the Chupadera springsnail includes only

two small spring sites. As a result of habitat alteration at the unnamed spring, the species now occurs only at Willow Spring (Lang 1999, p. B13). We have very limited information on the current status of the species because access to Willow Spring has been continually denied since 1999 (Carman 2004, p. 1–2; Carman 2005, p. 1–5; NMDGF 2007, p. 12). The springsnail is limited to aquatic habitats in small spring systems and has minimal mobility, so it is unlikely its range will ever expand. As a result, if the population at Willow Spring were extirpated for any reason, the species would be extinct, since there are no other sources of this springsnail from which to recolonize. This situation makes the magnitude of impact of any possible threat very high. In other words, the resulting effects of any of the threat factors under consideration here, even if they are relatively small on a temporal or geographic scale, could result in complete extinction of the species.

Therefore, because the Chupadera springsnail is restricted to a single small site, it is particularly susceptible to extinction if its habitat is degraded or destroyed. While the small, reduced range does not represent an independent threat to the species, it does substantially increase the risk of extinction from the effects of all other threats, including those addressed in this analysis, and those that could occur in the future from unknown sources.

#### Summary of Factor A

In summary, the Chupadera springsnail is threatened by the present destruction and modification of its habitat and range. Groundwater depletion due to new wells from nearby subdivision developments, in addition to droughts, is likely resulting in reduced flow at the spring that supports the species. Livestock grazing has likely resulted in the extirpation of the species from habitat alteration and contamination at one of these springs and may continue in the future. Finally, springhead and springbrook modification have affected Chupadera springsnail habitat at Willow Spring, and further modification may have occurred since the last visit to this site in 1999. Because of the extremely small and reduced range of the species, these threats have an increased risk of resulting in extinction of the Chupadera springsnail. These threats are already occurring, they affect the full historical range of the species, and they result in the species being at risk of extinction.

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

There are very few people who are interested in or study springsnails, and those who do are sensitive to their rarity and endemism. Consequently, collection for scientific or educational purposes is very limited. As far as we know, because the Chupadera springsnail occurs on private land with limited access, there has been no collection of individuals since 1999, when NMDGF made its last collection (Lang 2000, p. C5). There are no known commercial or recreational uses of the springsnails. For these reasons, we find that the Chupadera springsnail is not threatened by overutilization for commercial, recreational, scientific, or educational purposes.

#### *C. Disease or Predation*

The Chupadera springsnail is not known to be affected or threatened by any disease. At the time the spring was last surveyed, no nonnative predatory species were present. However, any future introduction of a nonnative species into the habitat of the Chupadera springsnail could be catastrophic to the springsnail. The Chupadera springsnail has an extremely small and reduced range, and introduction of a nonnative predator or competitor carries an increased risk of resulting in extinction of the Chupadera springsnail. Because there are no known nonnative species present, we find that the Chupadera springsnail is not currently threatened by disease or predation.

#### *D. The Inadequacy of Existing Regulatory Mechanisms*

Under this factor, we examine whether existing regulatory mechanisms are inadequate to address the threats to the species discussed under the other factors. Section 4(b)(1)(A) of the Act requires the Service to take into account “those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species \* \* \*.” We interpret this language to require the Service to consider relevant Federal, State, and tribal laws, plans, regulations, Memoranda of Understanding (MOUs), Cooperative Agreements, and other such mechanisms that may minimize any of the threats we describe in threat analyses under the other four factors, or otherwise enhance conservation of the species. We give strongest weight to statutes and their implementing regulations and management direction that stems from those laws and

regulations. An example would be State governmental actions enforced under a State statute or constitution, or Federal action under statute.

Having evaluated the significance of the threat as mitigated by any such conservation efforts, we analyze under Factor D the extent to which existing regulatory mechanisms are inadequate to address the specific threats to the species. Regulatory mechanisms, if they exist, may reduce or eliminate the impacts from one or more identified threats. In this section, we review existing State and Federal regulatory mechanisms to determine whether they effectively reduce or remove threats to the Chupadera springsnail.

New Mexico State law provides some limited protection to the Chupadera springsnail. The species is listed as a New Mexico State endangered species, which are those species “whose prospects of survival or recruitment within the state are likely to become jeopardized in the near future” (NMDGF 1988, p. 1). This designation provides protection under the New Mexico Wildlife Conservation Act of 1974 (the State’s endangered species act) (19 NMAC 33.6.8), but only prohibits direct take of species, except under issuance of a scientific collecting permit. No permit has been issued for taking this species. The New Mexico Wildlife Conservation Act defines “take” or “taking” as “harass, hunt, capture, or kill any wildlife or attempt to do so” (17 NMAC 17.2.38). In other words, New Mexico State status as an endangered species only conveys protection from collection or intentional harm to the animals themselves but does not provide habitat protection. Because most of the threats to the Chupadera springsnail are from effects to its habitat, in order to protect individuals and ensure their long-term conservation and survival, their habitat must be protected. Therefore, this existing regulation is inadequate to mitigate the impacts of identified threats to the species. Namely, the existing New Mexico Wildlife Conservation Act will not prevent modification to the habitat of the Chupadera springsnail.

We also considered whether there were any other regulations that might address the identified threats to the species. In particular, we searched for State laws or local ordinances that would prevent groundwater pumping in the subdivisions adjacent to Willow Spring from affecting spring flows in the habitat of the Chupadera springsnail. The water supply for subdivision homes comes from individual wells, and each well in the Highland Springs Ranch subdivisions may pump up to 629 cubic meters (0.51 acre feet) per year (NMOSE

2009, p. 1). We found that the New Mexico Office of the State Engineer evaluates proposed water delivery systems if the proposed system is in an area designated as a domestic well management area (Utton Transboundary Resources Center 2011, p. 3). The land being developed around Willow Spring has not been designated as such and therefore does not provide protections to the habitat of Chupadera springsnail. As discussed in Factor A above, inadequate spring flow due to pumping of the groundwater aquifer by homeowners is a threat to the habitat of the Chupadera springsnail, and the current regulatory mechanisms in place do not alleviate this threat. Additionally, habitat degradation from livestock grazing is also a threat to the Chupadera springsnail, and there are no regulatory mechanisms to protect the springs from the effects of livestock grazing, and so none are evaluated for their adequacy.

#### *E. Other Natural or Manmade Factors Affecting Its Continued Existence*

Other natural or manmade factors affecting the continued existence of the Chupadera springsnail include introduced species and climate change. These threats are intensified by the fact that the species' known historical range was only two small springs, and it has been extirpated from one of the known locations.

#### Introduced Species

Introduced species are a serious threat to native aquatic species (Williams *et al.* 1989, p. 18; Lodge *et al.* 2000, p. 7). Because the distribution of the Chupadera springsnail is so limited, and its habitat so restricted, introduction of certain nonnative species into its habitat could be devastating. Saltcedar (*Tamarix* spp.) threatens spring habitats primarily through the amount of water it consumes and from the chemical composition of the leaves that drop to the ground and into the springs. Saltcedar leaves that fall to the ground and into the water add salt to the system, as their leaves contain salt glands (DiTomaso 1998, p. 333). Additionally, dense stands of common reed (*Phragmites australis*) choke small stream channels, slowing water velocity and creating more pool-like habitat; this habitat is not suitable for Chupadera springsnail, which are found in flowing water. Finally, Russian thistle (*Salsola tragus*; tumbleweed) can create problems in spring systems by being blown into the channel, slowing flow, and overloading the system with organic material (Service 2005, p. 2). The control and removal of nonnative

vegetation can also impact springsnail habitats. For example, this has been identified as a factor responsible for localized extirpations of populations of the federally endangered Pecos assimineia (*Assimineia pecos*), a snail in New Mexico, due to vegetation removal that resulted in soil and litter drying, thereby making the habitat unsuitable (Taylor 1987, pp. 5, 9).

Likewise, nonnative mollusks have affected the distribution and abundance of native mollusks in the United States. Of particular concern for the Chupadera springsnail is the red-rim melania (*Melanoides tuberculata*), a snail that can reach tremendous population sizes and has been found in isolated springs in the west (McDermott 2000, pp. 13–16; Ladd 2010, p. 1; U.S. Geological Survey 2010, p. 1). The red-rim melania has caused the decline and local extirpation of native snail species, and it is considered a threat to endemic aquatic snails that occupy springs and streams in the Bonneville Basin of Utah (Rader *et al.* 2003, p. 655). It is easily transported on fishing gear or aquatic plants, and because it reproduces asexually (individuals can develop from unfertilized eggs), a single individual is capable of founding a new population. It has become established in isolated desert spring ecosystems such as Ash Meadows, Nevada, San Solomon Spring and Diamond Y Spring, Texas, and Cuatro Ciénegas, Mexico. In many locations, this exotic snail is so numerous that it covers the bottom of the small stream channel. If the red-rim melania were introduced into Willow Spring, it could outcompete and eliminate the Chupadera springsnail.

None of these nonnative species is known to occur in the habitats of the Chupadera springsnail at this time, and so potential impacts have not been realized. While any of these species, or others, could threaten the Chupadera springsnail if they were introduced to the small habitats of the species, nonnative species are not considered a current threat to the Chupadera springsnail.

#### Climate Change

According to the Intergovernmental Panel on Climate Change (IPCC 2007, p. 5), “[w]arming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.” The average Northern Hemisphere temperatures during the second half of the 20th century were very likely higher than during any other 50-year period in the last 500 years and likely the highest

in at least the past 1,300 years (IPCC 2007, p. 5). It is very likely that over the past 50 years, cold days, cold nights, and frosts have become less frequent over most land areas, and hot days and hot nights have become more frequent (IPCC 2007, p. 8). Data suggest that heat waves are occurring more often over most land areas, and the frequency of heavy precipitation events has increased over most areas (IPCC 2007, pp. 8, 15).

The IPCC (2007, pp. 12, 13) predicts that changes in the global climate system during the 21st century will very likely be larger than those observed during the 20th century. For the next two decades, a warming of about 0.2 °C (0.4 °F) per decade is projected (IPCC 2007, p. 12). Afterwards, temperature projections increasingly depend on specific emission scenarios (IPCC 2007, p. 13). Various emissions scenarios suggest that by the end of the 21st century, average global temperatures are expected to increase 0.6 °C to 4.0 °C (1.1 °F to 7.2 °F), with the greatest warming expected over land (IPCC 2007, p. 15). However, the growth rate of carbon dioxide emissions continues to accelerate and is above even the most fossil fuel intensive scenario used by the IPCC (Canadell *et al.* 2007, p. 18866; Global Carbon Project 2008, p. 1), suggesting that the effects of climate change may be even greater than those projected by the IPCC.

In consultation with leading scientists from the Southwest, the New Mexico Office of the State Engineer prepared a report for the Governor of New Mexico (NMOSE 2006), which made the following observations about the impact of climate change in New Mexico:

- (1) Warming trends in the American Southwest exceed global averages by about 50 percent (p. 5);
- (2) Models suggest that even moderate increases in precipitation would not offset the negative impacts to the water supply caused by increased temperature (p. 5);
- (3) Temperature increases in the Southwest are predicted to continue to be greater than the global average (p. 5); and

- (4) The intensity, frequency, and duration of drought may increase (p. 7).

One of the primary effects of climate change on the Chupadera springsnail is likely to be associated with groundwater availability that supports the spring flows in its habitat. There is high confidence that many semiarid areas like the western United States will suffer a decrease in water resources due to climate change (Kundzewicz *et al.* 2007, p. 175). Consistent with the outlook presented for New Mexico, Hoerling (2007, p. 35) reports that

modeling indicates that a 25 percent decline in stream flow will occur from 2006 to 2030, and a 45 percent decline will occur from 2035 to 2060 in the Southwest, compared to stream flows between 1990 and 2005. Milly *et al.* (2005, p. 349) project a 10 to 30 percent decrease in runoff in mid-latitude western North America by the year 2050, based on an ensemble of 12 climate models. Solomon *et al.* (2009, p. 1707) predict precipitation amounts in the southwestern United States and northern Mexico will decrease by as much as 9 to 12 percent (measured as percentage of change in precipitation per degree of warming, relative to 1900 to 1950 as the baseline period). Christensen *et al.* (2007, p. 888) state, "The projection of smaller warming over the Pacific Ocean than over the continent \* \* \* is likely to induce a decrease in annual precipitation in the southwestern USA and northern Mexico." In addition, Seager *et al.* (2007, p. 1181) show that there is a broad consensus among climate models that the Southwest will get drier in the 21st century and that the transition to a more arid climate is already under way. Only one of 19 models has a trend toward a wetter climate in the Southwest (Seager *et al.* 2007, p. 1181). A total of 49 projections were created using the 19 models, and all but three predicted a shift to increasing aridity (dryness) in the Southwest as early as 2021 to 2040 (Seager *et al.* 2007, p. 1181). These research results indicate that the Southwest can be expected to be hotter and drier in the future, likely negatively affecting the water resources, including spring ecosystems such as Willow Spring.

It is anticipated that the effects of climate change will also lead to greater human demands on scarce water sources while at the same time leading to decreasing water availability because of increased evapotranspiration (water drawn up by plants from the soil that evaporates from their leaves), reduced soil moisture, and longer, hotter summers (Archer and Predick 2008, p. 25; Karl *et al.* 2009, pp. 47, 52). Climate change will likely reduce groundwater recharge through reduced snowpack and perhaps through increased severity in drought (Kundzewicz *et al.* 2007, p. 175; Stonestrom and Harrill 2008, p. 21). There is currently no information to quantify the likely effects of climate change on the groundwater system that supports the springs where the Chupadera springsnail occurs. However, in a study of the Ogallala aquifer, a much larger aquifer east of Willow

Spring, Rosenberg *et al.* (1999, p. 688) found that groundwater recharge will be reduced in the face of climate change. They also found that Ogallala aquifer water levels have been directly correlated with annual precipitation over time (Rosenberg *et al.* 1999, p. 679) and concluded that changes in climate could profoundly affect the accessibility and reliability of water supplies from the aquifer. We anticipate that the aquifer that supplies water to Chupadera springsnail habitat may also be susceptible to climate change-induced changes in precipitation.

In summary, the Chupadera springsnail could be affected by the combined effects of global and regional climate change, along with the increased probability of long-term drought. However, we are not able to predict with certainty how these indirect effects of climate change will affect Chupadera springsnail habitat because we lack specific information on the groundwater system that provides water to the species' spring habitat. However, we conclude that climate change may be a significant stressor that indirectly exacerbates existing threats by increasing the likelihood of prolonged drought that would reduce groundwater availability and incur future habitat loss. As such, climate change, in and of itself, may affect the springsnail, but the severity and immediacy (when the impacts occur) of the impacts remain uncertain. We conclude that climate change is not currently a threat to the Chupadera springsnail, but it has the potential to be a threat in the foreseeable future, and impacts from climate change in the future will likely exacerbate the current and ongoing threat of habitat loss caused by other factors, as discussed above.

#### Summary of Factor E

The Chupadera springsnail is not currently threatened by other natural or manmade factors. However, any future introduction of harmful nonnative species could have severe effects on the species. In addition, the effects of climate change, while difficult to quantify at this time, are likely to exacerbate the current and ongoing threat of habitat loss caused by other factors, particularly the loss of spring flows resulting from prolonged drought.

#### Determination

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Chupadera springsnail and have determined that the species warrants listing as

endangered throughout its range. The loss of one of two known populations, the ongoing threat of modification of the habitat at the only known remaining site (Willow Spring) from grazing and spring modification, and the imminent threat of groundwater depletion posed by subdivision development adjacent to the spring places this species at great risk of extinction. The small, reduced distribution of the Chupadera springsnail heightens the danger of extinction due to threats from Factor A (specifically loss of spring flow, livestock grazing, and spring modification). Additionally, the existing regulatory mechanisms are not adequate to ameliorate known threats (Factor D). The existing threats are exacerbated by the effects of ongoing and future climate change, primarily due to the projected increase in droughts. Because these threats are ongoing now or are imminent, and their potential impacts to the species would be catastrophic given the very limited range of the species, we find that a designation of endangered, rather than threatened, is appropriate.

The Act defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." In considering "significant portion of the range," a key part of this analysis in practice 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. Based on the threats to the Chupadera springsnail throughout its entire limited range (one spring), we find that the species is in danger of extinction throughout all of its range, based on the immediacy, severity, and scope of the threats described above. The species is designated as endangered, rather than threatened, because the threats are occurring now or are imminent, and their potential impacts to the species would be catastrophic given the very limited range of the species, making the Chupadera springsnail at risk of extinction at the present time. Because threats extend throughout its entire range, it is unnecessary to determine if it is in danger of extinction throughout a significant portion of its range. Therefore, on the basis of the best available scientific and commercial information, we designate the Chupadera springsnail as endangered throughout its range in accordance with sections 3(6) and 4(a)(1) of the Act.

#### Available Conservation Measures

Conservation measures provided to species listed as endangered or

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

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline shortly after a species is listed, preparation of a draft and final recovery plan, and revisions to the plan as significant new information becomes available. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. The recovery plan identifies site-specific management actions that will achieve recovery of the species, measurable criteria that determine when a species may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (comprised of species experts, Federal and State agencies, nongovernment organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available from our Web site (<http://www.fws.gov/endangered>), or from our New Mexico Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private and State lands.

Once this species is listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of New Mexico would be eligible for Federal funds to implement management actions that promote the protection and recovery of the Chupadera springsnail. Information on our grant programs that are available to aid species recovery can be found at: <http://www.fws.gov/grants>.

Please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

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

consultation with the Service. For the Chupadera springsnail, Federal agency actions that may require consultation would include any federally funded activities in the Willow Spring watershed, groundwater source area, or directly in the spring that may affect Willow Spring or the Chupadera springsnail (for example, activities that require a permit from the U.S. Army Corps of Engineers pursuant to section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*)).

#### *Jeopardy Standard*

Prior to and following listing and designation of critical habitat, if prudent and determinable, the Service applies an analytical framework for jeopardy analyses that relies heavily on the importance of core area populations to the survival and recovery of the species. The section 7(a)(2) analysis is focused not only on these populations but also on the habitat conditions necessary to support them. The jeopardy analysis usually expresses the survival and recovery needs of the species in a qualitative fashion without making distinctions between what is necessary for survival and what is necessary for recovery. Generally, if a proposed Federal action is incompatible with the viability of the affected core area population(s), inclusive of associated habitat conditions, a jeopardy finding is considered to be warranted, because of the relationship of each core area population to the survival and recovery of the species as a whole.

#### *Section 9 Take*

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. The prohibitions, codified at 50 CFR 17.21 for endangered wildlife, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), import, export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered or threatened wildlife species under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22 for

endangered species. With regard to endangered wildlife, a permit must be issued for the following purposes: For scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that will or will not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within the range of listed species. The following activities could potentially result in a violation of section 9 of the Act; this list is not comprehensive:

(1) Unauthorized collecting, handling, possessing, selling, delivering, carrying, or transporting of the species, including import or export across State lines and international boundaries, except for properly documented antique specimens of these taxa at least 100 years old, as defined by section 10(h)(1) of the Act;

(2) Introduction of nonnative species that compete with or prey upon the Chupadera springsnail, such as the introduction of competing, nonnative species to the State of New Mexico;

(3) The unauthorized release of biological control agents that attack any life stage of this species;

(4) Unauthorized modification of the springs; and

(5) Unauthorized discharge of chemicals or fill material into any waters in which the Chupadera springsnail is known to occur.

Questions regarding whether specific activities constitute a violation of section 9 of the Act should be directed to the New Mexico Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

## Critical Habitat

### Background

It is our intent to discuss below only those topics directly relevant to the designation of critical habitat for the Chupadera springsnail in this section of the final rule.

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features;

(a) Essential to the conservation of the species and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner seeks or requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

For inclusion in a critical habitat designation, the habitat within the geographical area occupied by the species at the time it was listed must contain physical and biological features essential to the conservation of the species and be included only if those features may require special management considerations or protection. Critical habitat designations

identify, to the extent known using the best scientific and commercial data available, those physical and biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat), focusing on the principal biological or physical constituent elements (primary constituent elements) within an area that are essential to the conservation of the species (such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type). Primary constituent elements are the elements of physical and biological features that, when laid out in the appropriate quantity and spatial arrangement to provide for a species' life-history processes, are essential to the conservation of the species.

Under the Act and regulations at 50 CFR 424.12, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species. When the best available scientific data do not demonstrate that the conservation needs of the species require such additional areas, we will not designate critical habitat in areas outside the geographical area occupied by the species. An area currently occupied by the species but that was not occupied at the time of listing may, however, be essential to the conservation of the species and may be included in the critical habitat designation.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we determine which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge.

We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be required for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to insure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) the prohibitions of section 9 of the Act if actions occurring in these areas may affect the species. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

#### *Prudency Determination*

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1)) state that the designation of critical habitat is not prudent when one or both of the following situations

exist: (1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or (2) such designation of critical habitat would not be beneficial to the species.

There is no documentation that the Chupadera springsnail is threatened by collection, and it is unlikely to experience increased threats by identifying critical habitat. In the absence of a finding that the designation of critical habitat would increase threats to a species, if there are any benefits to a critical habitat designation, then a prudent finding is warranted. The potential benefits include: (1) Triggering consultation under section 7 of the Act in new areas for actions in which there may be a Federal nexus where it would not otherwise occur because, for example, an area has become unoccupied or the occupancy is in question; (2) focusing conservation activities on the most essential features and areas; (3) providing educational benefits to State or county governments or private entities; and (4) preventing people from causing inadvertent harm to the species.

The primary regulatory effect of critical habitat is the section 7(a)(2) requirement that Federal agencies refrain from taking any action that destroys or adversely modifies critical habitat. Lands designated as critical habitat that are subject to Federal actions may trigger the section 7 consultation requirements. There may also be some educational or informational benefits to the designation of critical habitat. Educational benefits include the notification of the general public of the importance of protecting habitat.

At present, the only known extant population of the Chupadera springsnail occurs on private lands in the United States. The species currently is not known to occur on Federal lands or lands under Federal jurisdiction. However, lands designated as critical habitat, whether or not under Federal jurisdiction, may be subject to Federal actions that trigger the section 7 consultation requirement, such as the granting of Federal monies or Federal permits.

We reviewed the available information pertaining to habitat characteristics where this species is located. This and other information represent the best scientific data available and led us to conclude that the designation of critical habitat is prudent for the Chupadera springsnail because, as discussed above, there is no information to indicate that

identification of critical habitat will result in increased threats to the species, and information indicates that designation of critical habitat will be beneficial to the species.

#### *Critical Habitat Determinability*

As stated above, section 4(a)(3) of the Act requires the designation of critical habitat concurrently with the species' listing "to the maximum extent prudent and determinable." Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist:

- (i) Information sufficient to perform required analyses of the impacts of the designation is lacking, or
- (ii) The biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat.

When critical habitat is not determinable, the Act provides for an additional year to publish a critical habitat designation (16 U.S.C. 1533(b)(6)(C)(ii)).

We reviewed the available information pertaining to the biological needs of the species and habitat characteristics where this species is located. This and other information represent the best scientific data available, and the available information is sufficient for us to identify areas to designate as critical habitat. Therefore, we conclude that the designation of critical habitat is determinable for the Chupadera springsnail.

#### *Physical and Biological Features*

In accordance with section 3(5)(A)(i) and 4(b)(1)(A) of the Act and the regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied at the time of listing to designate as critical habitat, we consider the physical and biological features essential to the conservation of the species which may require special management considerations or protection. These include, but are not limited to:

- (1) Space for individual and population growth and for normal behavior;
- (2) Food, water, air, light, minerals, or other nutritional or physiological requirements;
- (3) Cover or shelter;
- (4) Sites for breeding, reproduction, or rearing (or development) of offspring; and
- (5) Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

We consider the specific physical and biological features essential to the

conservation of the species and laid out in the appropriate quantity and spatial arrangement for the conservation of the species. We derive the specific physical and biological features for the Chupadera springsnail from the biological needs of this species as described above (see *Species Information*).

Based on the needs and our current knowledge of the life history, biology, and ecology of the species and the habitat requirements for sustaining the essential life-history functions of the species, we have determined that the Chupadera springsnail requires the following physical and biological features:

#### Space for Individual and Population Growth and for Normal Behavior

The Chupadera springsnail occurs where water emerges from the ground as a free-flowing spring and springbrook. Within the spring ecosystem, proximity to the springhead is important because of the appropriate stable water chemistry and temperature, substrate, and flow regime. The Chupadera springsnail occurs in one spring in an open foothill meadow at 1,620 m (5,315 ft) elevation. The species has been found in the springhead and springbrook. Historically, it was also found at an unnamed spring 0.5 km (0.3 mi) from this location. Therefore, based on the information above, we identify unpolluted spring water (free from contamination) emerging from the ground and flowing on the surface as a physical and biological feature for the Chupadera springsnail.

#### Food, Water, Air, Light, or Other Nutritional or Physiological Requirements

Taylor (1987, p. 26) found Chupadera springsnails on pebbles and cobbles interspersed with sand, mud, and aquatic plants. Individuals were abundant in flowing water on stones, dead wood, and among vegetation on firm surfaces that had an organic film (periphyton). Chupadera springsnail was not found in the impoundment created by damming the springbrook (Taylor 1987, p. 26). From data collected in 1997 and 1998, Lang (2009, p. 1) determined the springsnails were found in water velocities that ranged from 0.01 to 0.19 m/s (0.03 to 0.6 ft/s).

Chupadera springsnails consume periphyton on submerged surfaces. Spring ecosystems occupied by Chupadera springsnails must support the periphyton upon which springsnails graze. Therefore, based on the information above, we identify periphyton (an assemblage of algae,

bacteria, and microbes) and decaying organic material as a physical and biological feature for the Chupadera springsnail.

#### Sites for Breeding, Reproduction, and Rearing of Offspring

Substrate characteristics influence the productivity of the springsnails. Suitable substrates are typically firm, characterized by cobble, gravel, sand, woody debris, and aquatic vegetation such as watercress. Suitable substrates increase productivity by providing suitable egg-laying sites and providing food resources. Therefore, based on the information above, we identify substrates that include cobble, gravel, pebble, sand, silt, and aquatic vegetation, for egg laying, maturing, feeding, and escape from predators as a physical and biological feature for the Chupadera springsnail.

#### Habitats Protected From Disturbance or Representative of the Historical, Geographical, and Ecological Distributions of the Species

The Chupadera springsnail has a restricted geographic distribution. Endemic species whose populations exhibit a high degree of isolation are extremely susceptible to extinction from both random and nonrandom catastrophic natural or human-caused events. Therefore, it is essential to maintain the spring systems upon which the Chupadera springsnail depends. This means protection from disturbance caused by exposure to cattle grazing, water contamination, water depletion, springhead alteration, or nonnative species. The Chupadera springsnail must, at a minimum, sustain its current distribution for the one remaining population to remain viable.

As discussed above (see Factor E. *Other Natural or Manmade Factors Affecting Its Continued Existence*), introduced species are a serious threat to native aquatic species (Williams *et al.* 1989, p. 18; Lodge *et al.* 2000, p. 7). Because the distribution of the Chupadera springsnail is so limited, and its habitat so restricted, introduction of certain nonnative species into its habitat could be devastating. Potentially harmful nonnative species include saltcedar, common reed, Russian thistle, and the red-rim melania. Therefore, based on the information above, we identify nonnative species either absent or present at low population levels as a physical and biological feature for the Chupadera springsnail.

#### Primary Constituent Elements for the Chupadera Springsnail

Under the Act and its implementing regulations, we are required to identify the physical and biological features essential to the conservation of Chupadera springsnail in areas occupied at the time of listing, focusing on the features' primary constituent elements. We consider primary constituent elements to be the elements of physical and biological features that are essential to the conservation of the species.

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, we determine that the primary constituent elements specific to Chupadera springsnail are springheads, springbrooks, seeps, ponds, and seasonally wetted meadows containing:

- (1) Unpolluted spring water (free from contamination) emerging from the ground and flowing on the surface;
- (2) Periphyton (an assemblage of algae, bacteria, and microbes) and decaying organic material for food;
- (3) Substrates that include cobble, gravel, pebble, sand, silt, and aquatic vegetation, for egg laying, maturing, feeding, and escape from predators; and
- (4) Nonnative species either absent or present at low population levels.

#### Special Management Considerations or Protections

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features that are essential to the conservation of the species and which may require special management considerations or protection. Threats to the physical and biological features essential to the conservation of the Chupadera springsnail include loss of spring flows due to groundwater pumping and drought, inundation of springheads due to pond creation, degradation of water quality and habitat due to livestock grazing or other alteration of water chemistry, and the introduction of nonnative species. A more complete discussion of the threats to the Chupadera springsnail and its habitats can be found in "Summary of Factors Affecting the Species" above.

#### Criteria Used To Identify Critical Habitat

As required by section 4(b)(1)(A) of the Act, we use the best scientific and commercial data available to designate critical habitat. We review all available information pertaining to the habitat

requirements of the species. As part of our review, in accordance with the Act and its implementing regulation at 50 CFR 424.12(e), we consider whether designating areas outside those currently occupied, as well as those occupied at the time of listing, are necessary to ensure the conservation of the species. We designate areas outside the geographical area occupied by a species at the time of listing only when a designation limited to its present range would be inadequate to ensure the conservation of the species.

For the purpose of designating critical habitat for Chupadera springsnail, we define the occupied area based on the most recent surveys available, which are from 1999. There is only one area currently occupied. We then evaluated whether this area contains the primary constituent elements for the Chupadera springsnail and whether they require special management. Next we considered areas historically occupied, but not currently occupied. There is only one area where the Chupadera springsnail historically occurred but is not currently occupied. We evaluated this area to determine whether it was essential for the conservation of the species.

To determine if the one currently occupied area (Willow Spring) contains the primary constituent elements, we assessed the life-history components of the Chupadera springsnail as they relate to habitat. The springsnail requires unpolluted spring water in the springheads and springbrooks; periphyton and decaying organic material for food; rock-derived substrates for egg laying, maturation, feeding, and escape from predators; and absence of nonnative species.

To determine if the one site historically occupied by the Chupadera springsnail (unnamed spring) is essential for the conservation of the Chupadera springsnail, we considered: (1) The importance of the site to the overall status of the species to prevent extinction and contribute to future recovery of the Chupadera springsnail; (2) whether the area could be restored to contain the necessary physical and biological features to support the Chupadera springsnail; and (3) whether a population of the species could be reestablished at the site.

We plotted the known occurrences of the Chupadera springsnail in springheads and springbrooks on 2007 U.S. Geological Survey (USGS) Digital Ortho Quarter Quad maps using ArcMap (Environmental Systems Research Institute, Inc.), a computer geographic information system (GIS) program. There are no known developed

areas such as buildings, paved areas, and other structures that lack the biological features for the springsnail within the designated critical habitat areas.

In summary, we are designating critical habitat in areas that we determined are occupied at the time of listing and contain sufficient primary constituent elements to support life-history functions essential to the conservation of the species and require special management, and areas outside the geographical area occupied at the time of listing that we determine are essential for the conservation of Chupadera springsnail.

**Final Critical Habitat Designation**

We are designating two units of critical habitat for the Chupadera springsnail. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for Chupadera springsnail. The two areas we designate as critical habitat are: (1) Willow Spring, which is currently (at the time of listing) occupied and contains the primary constituent elements; and (2) unnamed spring, which is not currently (at the time of listing) occupied but is determined to be essential for the conservation of the species. The approximate area and land ownership of each critical habitat unit is shown in Table 1.

TABLE 1—OWNERSHIP AND APPROXIMATE AREA OF CRITICAL HABITAT UNITS FOR CHUPADERA SPRINGSNAIL

Critical habitat unit	Land ownership by type	Estimated size of unit in hectares (acres)
1. Willow Spring Unit.	Private .....	0.5 (1.4)
2. Unnamed Spring Unit.	Private .....	0.2 (0.5)
Total .....	.....	0.7 (1.9)

We present below brief descriptions of the units and reasons why they meet the definition of critical habitat for Chupadera springsnail.

*Unit 1: Willow Spring Unit*

Unit 1 consists of approximately 0.5 ha (1.4 ac) in Socorro County, New Mexico. When last visited in 1999, the Willow Spring Unit was a wet meadow with a springbrook that runs approximately 38 m (125 ft) before being impounded by a berm that crosses the meadow. The entire unit is in private ownership. We are designating a single

critical habitat unit that encompasses Willow Spring and includes the springhead, springbrook, small seeps and ponds, and the seasonally wetted meadow associated with the spring downstream to the artificial berm. This spring is located within the drainage of the Rio Grande, approximately 2.7 km (1.7 mi) west of Interstate Highway 25.

The Willow Spring site has documented occupancy of Chupadera springsnail from 1979 to 1999 (Taylor 1987 p. 24; NMDGF 2004, p. 45). Based on observations in 2011 provided by the landowner (Highland Springs, LLC 2011, p. 3), we presume the species persists at Willow Spring. The Willow Spring Unit contains all the primary constituent elements to support all of the Chupadera springsnail's life processes. Threats to the primary constituent elements in this unit that may require special management include the effects of livestock grazing, groundwater depletion, springhead or springbrook modification, water contamination, and potential effects from nonnative species.

*Unit 2: Unnamed Spring Unit*

Unit 2 consists of approximately 0.2 ha (0.5 ac) in Socorro County, New Mexico. The entire unit is privately owned. We are designating a single critical habitat unit that encompasses the unnamed spring and includes the springhead, springbrook, small seeps and ponds, and the seasonally wetted meadow associated with the spring. This spring is located within the drainage of the Rio Grande, approximately 2.7 km (1.7 mi) west of Interstate Highway 25, and about 0.5 km (0.3 mi) north of Willow Spring.

The Unnamed Spring Unit is currently unoccupied by the Chupadera springsnail, but it was historically occupied (Stefferd 1986, p. 1; Taylor 1987, p. 24; Lang 1998, p. 36). The spring appears to share a common aquifer and similarities in water chemistry, temperature, and hydrology with Willow Spring. When developing conservation strategies for species whose life histories are characterized by short generation time, small body size, high rates of population increase, and high habitat specificity, it is important to maintain multiple populations as opposed to protecting a single population (Murphy *et al.* 1990, pp. 41–51). Having replicate populations is a recognized conservation strategy to protect species from extinction due to catastrophic events (Soule 1985, p. 731). This area is important to prevent extinction of the Chupadera springsnail. Some habitat restoration work may be needed before Chupadera springsnail

could be reintroduced to the Unnamed Spring Unit; however, creating a second population is important for the long-term persistence of the species. The Unnamed Spring Unit is essential for the conservation of the species because it is a site where the Chupadera springsnail can be reintroduced.

### Effects of Critical Habitat Designation

#### Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that actions they fund, authorize, or carry out are not likely to destroy or adversely modify critical habitat. Decisions by the courts of appeals for the Fifth and Ninth Circuits have invalidated our definition of “destruction or adverse modification” (50 CFR 402.02) (see *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F. 3d 1059 (9th Cir. 2004) and *Sierra Club v. U.S. Fish and Wildlife Service et al.*, 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain those physical and biological features that relate to the ability of the area to periodically support the species) to serve its intended conservation role for the species.

If a species is listed or critical habitat is designated, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. As a result of this consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat, we also provide

reasonable and prudent alternatives to the project, if any are identifiable. We define “Reasonable and prudent alternatives” at 50 CFR 402.02 as alternative actions identified during consultation that:

- Can be implemented in a manner consistent with the intended purpose of the action,
- Can be implemented consistent with the scope of the Federal agency’s legal authority and jurisdiction,
- Are economically and technologically feasible, and
- Would, in the Director’s opinion, avoid jeopardizing the continued existence of the listed species or destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

#### Application of the “Adverse Modification” Standard

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

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the physical and biological features to an extent that appreciably reduces the conservation value of critical habitat for Chupadera springsnail. As discussed above, the role of critical habitat is to support life-history needs of the species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may

destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that may affect critical habitat, when carried out, funded, or authorized by a Federal agency, will result in consultation for the Chupadera springsnail. These activities include, but are not limited to:

(1) Actions that would reduce the quantity of water flow within the spring systems designated as critical habitat.

(2) Actions that would modify the springheads within the spring systems designated as critical habitat.

(3) Actions that would degrade water quality within the spring systems designated as critical habitat.

(4) Actions that would reduce the availability of coarse, firm aquatic substrates within the spring systems designated as critical habitat.

(5) Actions that would reduce the occurrence of native aquatic algae or periphyton or both within the spring systems designated as critical habitat.

(6) Actions that would introduce, promote, or maintain nonnative species within the spring systems designated as critical habitat.

### Exemptions

#### Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan by November 17, 2001. This plan integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108–136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: “The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.”

There are no Department of Defense lands within the critical habitat designation, and, therefore, there are no exemptions under section 4(a)(3) of the Act.

## Exclusions

### *Application of Section 4(b)(2) of the Act*

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise his discretion to exclude the area only if such exclusion would not result in the extinction of the species.

### Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In order to consider economic impacts, we prepared a draft economic analysis, which we made available for public review on January 20, 2012 (77 FR 2943), based on the proposed rule published on August 2, 2011 (76 FR 46218). We accepted comments on the draft economic analysis until February 21, 2012. Following the close of the comment period, a final analysis of the potential economic effects of the designation was completed in April 2011, taking into consideration the public comments and any new information. No comments were received during the final comment period (77 FR 25668; May 1, 2012).

The intent of the final economic analysis is to identify and analyze the

potential economic impacts associated with the critical habitat designation for the Chupadera springsnail. The final economic analysis describes the economic impacts of all potential conservation efforts for the Chupadera springsnail; some of these costs will likely be incurred regardless of whether we designate critical habitat. The economic impact of the final critical habitat designation is analyzed by comparing scenarios both “with critical habitat” and “without critical habitat.” The “without critical habitat” scenario represents the baseline for the analysis, considering protections already in place for the species (e.g., under the Federal listing and other Federal, State, and local regulations). The baseline, therefore, represents the costs incurred regardless of whether critical habitat is designated. The “with critical habitat” scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts are those not expected to occur absent the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat, above and beyond the baseline costs; these are the costs we consider in the final designation of critical habitat when evaluating the benefits of excluding particular areas under section 4(b)(2) of the Act. The analysis looks at baseline impacts incurred from the listing of the species and forecasts both baseline and incremental impacts likely to occur with the designation of critical habitat. For a further description of the methodology of the analysis, see the “Framework for the Analysis” section of the final economic analysis.

The final economic analysis provides estimated costs of the foreseeable potential economic impacts of the final critical habitat designation for the Chupadera springsnail. It identifies potential incremental costs as a result of the final critical habitat designation; these are those costs attributed to critical habitat over and above those baseline costs attributed to listing. The final economic analysis quantifies economic impacts of Chupadera springsnail conservation efforts associated with residential development and ranch activities.

Existing and planned subdivision development in the area can lead to groundwater depletion, threatening the springsnail and its habitat by reducing water flow at the spring that supports the species. Residential activities can also lead to modification of the area around the springhead and springbrook,

causing habitat degradation through inundation and changes in water flow and chemistry. However, a Federal nexus consultation under section 7 of the Act is unlikely to exist, as each parcel will have its own groundwater well, which is regulated by the New Mexico Office of the State Engineer with no Federal involvement. Unit 1 is not slated for development; therefore, it is unlikely the landowners will apply for a permit under section 404 of the Clean Water Act. We are unaware of the plans for Unit 2, but we believe that any development would avoid the spring and therefore avoid the need for a section 404 permit. Because there are no foreseeable activities with a Federal nexus, the draft economic analysis found no economic impact of the designation of critical habitat beyond a possible “stigma effect” to land values. This stigma effect arises from the perception of landowners that designation of critical habitat may impede future land development and, therefore, depress land values. Our economic analysis was unable to quantify the economic value of any possible stigma effects.

Our economic analysis did not identify any disproportionate costs that are likely to result from the designation. Consequently, the Secretary is not exerting his discretion to exclude any areas from this designation of critical habitat for the Chupadera springsnail based on economic impacts. A copy of the final economic analysis with supporting documents may be obtained by contacting the New Mexico Ecological Services Field Office (see **ADDRESSES**) or for downloading from the Internet at <http://www.regulations.gov>.

### Exclusions Based on National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense where a national security impact might exist. In preparing this final rule, we have determined that the lands within the designation of critical habitat for the Chupadera springsnail are not owned or managed by the Department of Defense, and therefore, anticipate no impact to national security, and the Secretary is not exerting his discretion to exclude any areas from this final designation based on impacts on national security.

### Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We

consider a number of factors including whether the landowners have developed any HCPs or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any Tribal issues, and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation.

In preparing this final rule, we have determined that there are currently no HCPs or other management plans for the Chupadera springsnail, and the final designation does not include any Tribal lands or trust resources. We anticipate no impact to Tribal lands, partnerships, or HCPs from this critical habitat designation. In addition, we considered other relevant impacts during preparation of the environmental assessment pursuant to the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*) (see Required Determinations, *National Environmental Policy Act (NEPA)* below) and found no other significant impacts that would warrant our consideration for excluding any areas from critical habitat designation. Accordingly, the Secretary is not exercising his discretion to exclude any areas from this final designation based on other relevant impacts.

#### Required Determinations

##### *Regulatory Planning and Review* (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) will review all significant rules. The Office of Information and Regulatory Affairs has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed

this rule in a manner consistent with these requirements.

##### *Regulatory Flexibility Act (5 U.S.C. 601 et seq.)*

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C. 801 *et seq.*), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. Based on our final economic analysis of the critical habitat designation, we provide our analysis for determining whether the final rule will result in a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than \$5 million in annual sales, general and heavy construction businesses with less than \$27.5 million in annual business, special trade contractors doing less than \$11.5 million in annual business, and agricultural businesses with annual sales less than \$750,000. To determine if potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term "significant economic impact" is meant to apply to a typical small business firm's business operations.

To determine if the designation of critical habitat for the Chupadera springsnail will affect a substantial

number of small entities, we considered the number of small entities affected within particular types of economic activities, such as residential development and ranch activities. In order to determine whether it is appropriate for our agency to certify that this final rule will not have a significant economic impact on a substantial number of small entities, we considered each industry or category individually. In estimating the numbers of small entities potentially affected, we also considered whether their activities have any Federal involvement. Critical habitat designation will not affect activities that do not have any Federal involvement; designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. In areas where the Chupadera springsnail is present, Federal agencies will be, as of the effective date of this rule (see **DATES**), required to consult with us under section 7 of the Act on activities they fund, permit, or implement that may affect the species. Consultations to avoid the destruction or adverse modification of critical habitat will be incorporated into the consultation process.

In the final economic analysis, we evaluated the potential economic effects on small entities resulting from implementation of conservation actions related to the designation of critical habitat for the Chupadera springsnail. Information in the final economic analysis and final environmental assessment indicates the critical habitat designation will have no effect on any small entities. Please refer to the final economic analysis of the final critical habitat designation for a more detailed discussion of potential economic impacts.

In summary, we have considered whether the final designation will result in a significant economic impact on a substantial number of small entities. Information for this analysis was gathered from the Small Business Administration, stakeholders, and the Service. We have identified no small entity that may be impacted by the final critical habitat designation. For this reason, and based on currently available information, we certify that the final critical habitat designation will not have a significant economic impact on a substantial number of small business entities. Therefore, an initial regulatory flexibility analysis is not required.

##### *Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 801 et seq.)*

Under SBREFA, this rule is not a major rule. Our detailed assessment of

the economic effects of this designation is described in the final economic analysis. Based on the effects identified in the economic analysis, we believe that this rule will not have an annual effect on the economy of \$100 million or more, will not cause a major increase in costs or prices for consumers, and will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises. Refer to the final economic analysis for a discussion of the effects of this determination.

#### *Energy Supply, Distribution, or Use*

On May 18, 2001, the President issued Executive Order 13211 (E.O. 13211; "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use") on regulations that significantly affect energy supply, distribution, and use. E.O. 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. OMB has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute "a significant adverse effect" when compared to not taking the regulatory action under consideration. The economic analysis finds that none of these criteria are relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with Chupadera springsnail conservation activities within critical habitat are not expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

#### *Unfunded Mandates Reform Act*

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(a) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)-(7). "Federal intergovernmental mandate" includes a regulation that "would impose an enforceable duty upon State, local, or [T]ribal governments" with two exceptions. It excludes "a condition of Federal assistance." It also excludes "a duty

arising from participation in a voluntary Federal program," unless the regulation "relates to a then-existing Federal program under which \$500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority," if the provision would "increase the stringency of conditions of assistance" or "place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding," and the State, local, or Tribal governments "lack authority" to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. "Federal private sector mandate" includes a regulation that "would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program."

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(b) We do not expect this rule to significantly or uniquely affect small governments because the critical habitat designation is on private land. Small governments will be affected only to the extent that any programs having Federal funds, permits, or other authorized activities must ensure that their actions will not adversely affect the critical habitat. Therefore, we do not believe a Small Government Agency Plan is required.

#### *Takings*

In accordance with E.O. 12630 ("Government Actions and Interference with Constitutionally Protected Private Property Rights"), we have analyzed the potential takings implications of designating critical habitat for the Chupadera springsnail in a takings implications assessment. Critical habitat designation does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. The takings implications assessment concludes that this designation of critical habitat for the Chupadera springsnail does not pose significant takings implications for lands within or affected by the designation.

#### *Federalism*

In accordance with E.O. 13132 (Federalism), this rule does not have significant Federalism effects. A federalism impact summary statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this critical habitat designation with appropriate State resource agencies in New Mexico. We received comments from the New Mexico Department of Game and Fish and have addressed them in the Summary of Comments and Recommendations section of this rule. The designation of critical habitat in areas currently occupied by the Chupadera springsnail imposes no additional restrictions to those that will be put in place on the effective date of this rule (see **DATES**) and, therefore, has little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments in that the areas that contain the physical and biological features essential to the conservation of the species are more clearly defined, and the physical and biological features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).



■ 3. In § 17.95, amend paragraph (f) by adding an entry for “Chupadera Springsnail (*Pyrgulopsis chupaderae*)” in the same alphabetical order that the species appears in the table at § 17.11(h), to read as follows:

**§ 17.95 Critical habitat—fish and wildlife.**

\* \* \* \* \*  
 (f) *Clams and Snails.*  
 \* \* \* \* \*

**Chupadera Springsnail (*Pyrgulopsis chupaderae*)**

(1) Critical habitat units are depicted for Socorro County, New Mexico, on the map below.

(2) Within these areas, the primary constituent elements of the physical and biological features essential to the

conservation of the Chupadera springsnail consist of springheads, springbrooks, seeps, ponds, and seasonally wetted meadows containing:

- (i) Unpolluted spring water (free from contamination) emerging from the ground and flowing on the surface;
- (ii) Periphyton (an assemblage of algae, bacteria, and microbes) and decaying organic material for food;
- (iii) Substrates that include cobble, gravel, pebble, sand, silt, and aquatic vegetation, for egg laying, maturing, feeding, and escape from predators; and
- (iv) Nonnative species either absent or present at low population levels.

(3) Critical habitat does not include manmade structures (such as buildings, roads, and other paved areas, and the

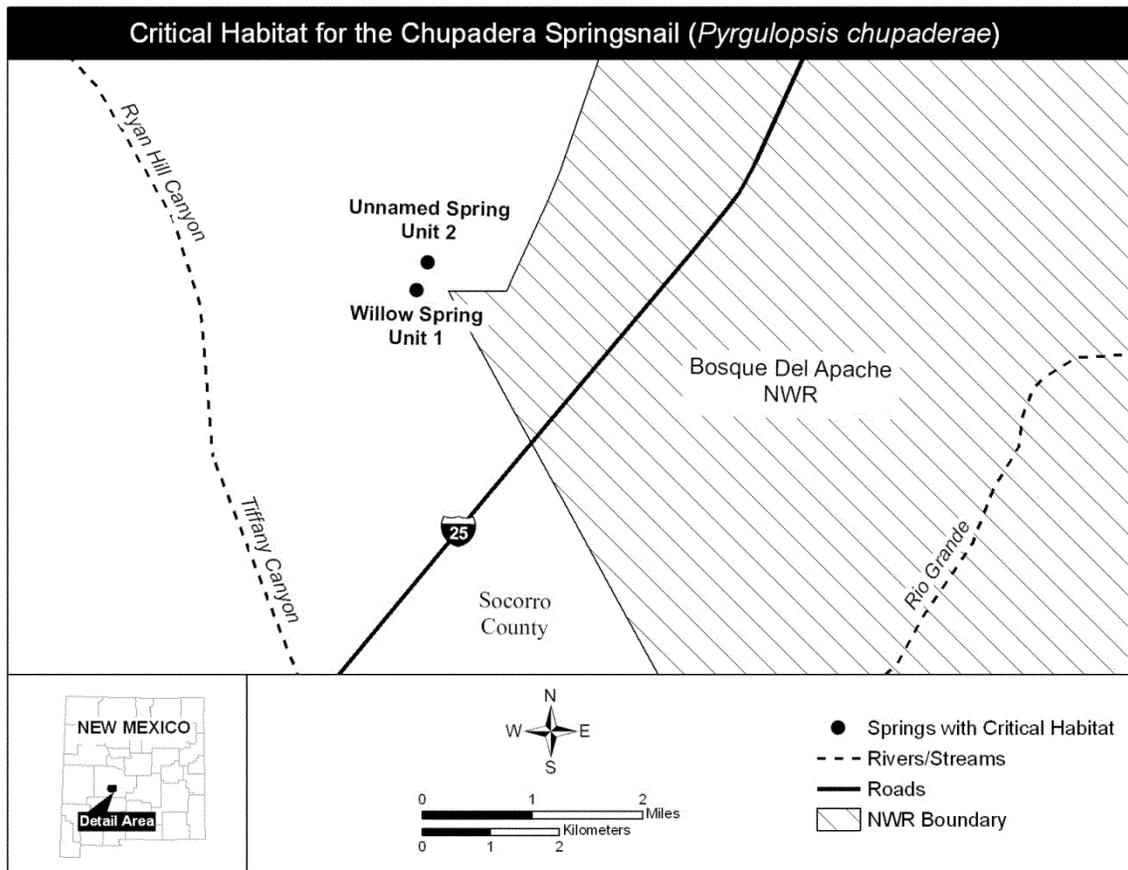
land on which they are located) existing on the effective date of this rule.

(4) Critical habitat map units were plotted on 2007 USGS Digital Ortho Quarter UTM coordinates in ArcMap (Environmental Systems Research Institute, Inc.), a computer GIS program

(5) Unit 1: Willow Spring, Socorro County, New Mexico.

(i) The critical habitat area includes the springhead, springbrook, small seeps and ponds, seasonally wetted meadow, and all of the associated spring features. This area is approximately 0.5 ha (1.4 ac) around the following coordinates: Easting 316889, northing 3743013 (Universal Transverse Mercator Zone 13 using North American Datum of 1983).

(ii) Map of Units 1 and 2 follows:



(6) Unit 2: Unnamed Spring, Socorro County, New Mexico.

(i) The critical habitat area includes the springhead, springbrook, small seeps and ponds, seasonally wetted meadow, and all of the associated spring features. This area is approximately 0.2 ha (0.5 ac) around the following

coordinates: Easting 317048, northing 3743418 (Universal Transverse Mercator Zone 13 using North American Datum of 1983).

(ii) Map of Unit 2 is provided at paragraph (5)(ii) of this entry.

\* \* \* \* \*

Dated: June 19, 2012.

**Rachel Jacobson,**  
*Acting Assistant Secretary for Fish and Wildlife and Parks.*

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