

**Billing Code 4310-55-P**

**DEPARTMENT OF THE INTERIOR**

**Fish and Wildlife Service**

**50 CFR Part 17**

**[Docket No. FWS-R2-ES-2012-0042]**

**[4500030114]**

**RIN 1018-AX13**

**Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat  
for Jaguar**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Proposed rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), propose to designate

critical habitat for the jaguar (*Panthera onca*) under the Endangered Species Act of 1973, as amended (Act). In total, we propose to designate as critical habitat approximately 339,220 hectares (838,232 acres) in Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New Mexico.

**DATES:** We will accept comments received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

We must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may submit comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal:

<http://www.regulations.gov>. In the Search field, enter Docket No. FWS–R2–ES–2012–0042, which is the docket number for this rulemaking. Then click on the Search button. You may submit a comment by clicking on “Comment Now!”

(2) *By hard copy:* Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R2–ES–2012–0042; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM; Arlington, VA 22203.

We request that you send comments **only** by the methods described above. We

will post all comments on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see the **Public Comments** section below for more information).

**FOR FURTHER INFORMATION CONTACT:** Steve Spangle, Field Supervisor, U.S. Fish and Wildlife Service, Arizona Ecological Services Fish and Wildlife Office, 2321 West Royal Palm Drive, Suite 103, Phoenix, AZ, 85021; telephone 602-242-0210. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

#### **SUPPLEMENTARY INFORMATION:**

##### **Executive Summary**

**This rule proposes to designate critical habitat for the species.** This is a proposed rule to designate critical habitat for an endangered mammal, the jaguar (*Panthera onca*). In total, we are proposing approximately 339,220 hectares (838,232 acres) for designation as critical habitat for the jaguar in Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New Mexico. We are proposing to designate six critical habitat units for the jaguar in Arizona and New Mexico as follows:

- Approximately 56,241 ha (138,975 ac) in the Baboquivari Mountains, Arizona.

- Approximately 58,104 ha (143,578 ac) in the Tumacacori, Atascosa, and Pajarito Mountains, Arizona.
- Approximately 138,821 ha (343,033 ac) in the Santa Rita, Patagonia, and Huachuca Mountains and Canelo Hills, Arizona.
- Approximately 42,694 ha (105,498 ac) in the Whetstone Mountains, including connections to the Santa Rita and Huachuca Mountains, Arizona.
- Approximately 40,290 ha (99,559 ac) in the Peloncillo Mountains, Arizona and New Mexico.
- Approximately 3,071 ha (7,590 ac) in the San Luis Mountains, New Mexico.

**We are preparing an economic analysis.** To ensure that we consider the probable economic impacts of the proposed designation, pursuant to section 4(b)(2) of the Act, we are preparing an economic analysis. The analysis will be used to inform the development of the final designation of critical habitat for the jaguar. We will publish an announcement and seek public comments on the draft economic analysis when it is completed.

**We will seek peer review.** We are seeking comments from independent specialists to ensure that our critical habitat designation is based on scientifically sound data, assumptions, and analyses. We have invited these peer reviewers to comment on our specific assumptions and conclusions used to develop this proposed critical habitat designation. Because we will consider all comments and information received during the

comment period, our final determination may differ from this proposal.

### **Public Comments**

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned government agencies, the scientific community, industry, or any other interested party concerning this proposed rule. We particularly seek comments concerning:

(1) The reasons why we should or should not designate habitat as “critical habitat” under section 4 of the Act (16 U.S.C. 1531 *et seq.*) including whether there are threats to the species from human activity, the degree of which can be expected to increase due to the designation, and whether that increase in threat outweighs the benefit of designation such that the designation of critical habitat may not be prudent.

(2) Specific information on:

(a) The amount and distribution of jaguar habitat;

(b) What areas, that were occupied at the time of listing (1972) (or are currently occupied) and that contain features essential to the conservation of the species, should be included in the designation and why;

(c) What period of time surrounding the time of listing (1972) should be used to

determine occupancy and why, and whether or not data from 1982 to the present should be used in this determination;

(d) Special management considerations or protection that may be needed in critical habitat areas we are proposing, including managing for the potential effects of climate change; and

(e) What areas not occupied at the time of listing are essential for the conservation of the species and why.

(3) Land use designations and current or planned activities in the subject areas and their possible impacts on proposed critical habitat.

(4) Information on the projected and reasonably likely impacts of climate change on the jaguar and proposed critical habitat.

(5) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designation; in particular, any impacts on small entities or families, and the benefits of including or excluding areas that exhibit these impacts.

(6) If lands owned and managed by Fort Huachuca should be considered for exemption because the Integrated Natural Resources Management Plan for the Fort currently benefits the jaguar, whether or not the species is specifically addressed.

(7) Whether any specific areas we are proposing for critical habitat designation should be considered for exclusion under section 4(b)(2) of the Act, and whether the benefits of potentially excluding any specific area outweigh the benefits of including that area under section 4(b)(2) of the Act.

(8) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding, or to better accommodate public concerns and comments.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments **only** by the methods described in the **ADDRESSES** section.

We will post your entire comment—including your personal identifying information—on <http://www.regulations.gov>. You may request at the top of your document that we withhold personal information such as your street address, phone number, or e-mail address from public review; however, we cannot guarantee that we will be able to do so.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on

<http://www.regulations.gov>, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Arizona Ecological Services Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

## **Background**

It is our intent to discuss only those topics directly relevant to designation of critical habitat for jaguar in this proposed rule. For more information on the species itself, refer to the *Previous Federal Actions* section, below, the final listing clarification rule published in the **Federal Register** on July 22, 1997 (62 FR 39147), and the previous critical habitat prudency determination published in the **Federal Register** on July 12, 2006 (71 FR 39335).

## *Species Information*

The jaguar (*Panthera onca*), a large member of the cat family (Felidae), is an endangered species that currently occurs from southern Arizona and New Mexico to southern South America. Jaguars are muscular cats with relatively short, massive limbs and a deep-chested body. They are cinnamon-buff in color with many black spots; melanistic (dark coloration) forms are also known, primarily from the southern part of the range.



The life history of the jaguar has been summarized by Seymour (1989, entire) and Brown and López González (2001, entire), among others. Jaguars breed year-round rangewide, but at the southern and northern ends of their range there is evidence for a spring breeding season. Gestation is about 100 days; litters range from one to four cubs (usually two). Cubs remain with their mother for nearly 2 years. Females begin sexual activity at 3 years of age, males at 4. Studies have documented few wild jaguars more than 11 years old, although a wild male jaguar in Arizona was documented to be at least 15 years of age (Johnson *et al.* 2011, p. 12), and in Jalisco, Mexico, two wild females were documented to be at least 12 and 13 (Núñez 2011, pers. comm.). The consensus of jaguar experts is that the average lifespan of the jaguar is 10 years.

The list of prey taken by jaguars throughout their range includes more than 85 species (Seymour 1989, p. 4). Known prey include, but are not limited to, collared peccaries (javelina (*Pecari tajacu*)), white-lipped peccaries (*Tayassu pecari*), capybaras (*Hydrochoerus* spp.), pacas (*Agouti paca*), agoutis (*Dasyprocta* spp.), armadillos (*Dasypus* spp.), caimans (*Caiman* spp.), turtles (*Podocnemis* spp.), white-tailed deer (*Odocoileus virginianus*), livestock, and various other reptiles, birds, and fish (sources as cited in Seymour 1989, p. 4; Núñez *et al.* 2000, pp. iii–iv; Rosas-Rosas 2006, p. 17; Rosas-Rosas *et al.* 2008, pp. 557–558). Jaguars are considered opportunistic feeders, especially in rainforests, and their diet varies according to prey density and ease of prey capture (sources as cited in Seymour 1989, p. 4). Jaguars equally use medium- and large-size prey, with a trend toward use of larger prey as distance increases from the equator

(López González and Miller 2002, p. 218). Javelina and white-tailed deer are thought to be the mainstays in the diet of jaguars in the United States and Mexico borderlands (Brown and López González 2001, p. 51).

### *Previous Federal Actions*

In 1972, the jaguar was listed as endangered (37 FR 6476; March 30, 1972) in accordance with the Endangered Species Conservation Act of 1969 (ESCA), a precursor to the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 *et seq.*). Under the ESCA, the Service maintained separate listings for foreign species and species native to the United States. At that time, the jaguar was believed to be extinct in the United States; thus, the jaguar was included only on the foreign species list. The jaguar's range was described as extending from the international boundary of the United States and Mexico southward to include Central and South America (37 FR 6476). In 1973, the Act superseded the ESCA. The foreign and native lists were replaced by a single "List of Endangered and Threatened Wildlife," which was first published in the **Federal Register** on September 26, 1975 (40 FR 44412). In this regulation, the jaguar's range again was described as including Central and South America (40 FR 44412), but not the United States.

On July 25, 1979, the Service published a notice (44 FR 43705) stating that, through an oversight in the listing of the jaguar and six other endangered species, the

United States populations of these species were not protected by the Act. The notice asserted that it was always the intent of the Service that all populations of these species, including the jaguar, deserved to be listed as endangered, whether they occurred in the United States or in foreign countries. Therefore, the notice stated that the Service intended to take action as quickly as possible to propose the U.S. populations of these species (including the jaguar) for listing.

On July 25, 1980, the Service published a proposed rule (45 FR 49844) to list the jaguar and four of the other species referred to above in the United States. The proposal for listing the jaguar and three other species was withdrawn on September 17, 1982 (47 FR 41145). The notice issued by the Service stated that the Act mandated withdrawal of proposed rules to list species which have not been finalized within 2 years of the proposal.

On August 3, 1992, the Service received a petition from the instructor and students of the American Southwest Sierra Institute and Life Net to list the jaguar as endangered in the United States. The petition was dated July 26, 1992. On April 13, 1993 (58 FR 19216), the Service published a finding that the petition presented substantial information indicating that listing may be warranted, and requested public comments and biological data on the status of the jaguar. On July 13, 1994 (59 FR 35674), the Service published a proposed rule to extend endangered status to the jaguar throughout its range.

On April 10, 1995, Congress enacted a moratorium prohibiting work on listing actions (Public Law 104–6) and eliminated funding for the Service to conduct final listing activities. The moratorium was lifted on April 26, 1996, by means of a Presidential waiver, at which time limited funding for listing actions was made available through the Omnibus Budget Reconciliation Act of 1996 (Public Law No. 104–134, 100 Stat. 1321, 1996). The Service published guidance for restarting the listing program on May 16, 1996 (61 FR 24722). The listing process for the jaguar was resumed in September 1996, when the Southwest Center for Biological Diversity filed a law suit and motion for summary judgment for the Secretary to finalize the listing for the jaguar and four other species. On July 22, 1997, we published a final rule clarifying that endangered status for the jaguar extended into the United States (62 FR 39147). For more information on previous Federal actions concerning the jaguar, please refer to the July 22, 1997, final clarifying rule (62 FR 39147).

The July 22, 1997, clarifying rule included a determination that designation of critical habitat for the jaguar was not prudent (62 FR 39147). At that time, we determined that the greatest threat to the jaguar in the United States was from direct taking of individuals through shooting or other means. As a consequence, we determined that designating critical habitat for the jaguar was “not prudent,” because “publication of detailed critical habitat maps and descriptions in the **Federal Register** would likely make the species more vulnerable to activities prohibited under section 9 of the Act.”

Therefore, we believed that a critical habitat designation would increase the degree of threat to the species.

In response to a complaint by the Center for Biological Diversity, we agreed to re-evaluate our 1997 prudency determination and make a new determination by July 3, 2006 as to whether designation of critical habitat for the jaguar was prudent. In that subsequent finding (July 12, 2006; 71 FR 39335), we noted that since the time of our July 22, 1997, determination, the Jaguar Conservation Team, Arizona Game and Fish Department, publications, and other sources routinely had given specific and general locations of jaguars that had been sighted in the United States, and, as of 2006, these sightings were being documented through websites, public notifications, reports, books, and meeting notes. Publishing critical habitat maps and descriptions, as part of designating critical habitat, would not result in the species being more vulnerable in the United States than it was currently (in 2006). We then assessed whether designation of critical habitat would be beneficial to the species. We found that no areas in the United States met the definition of critical habitat, and, as a result, designation of critical habitat for the jaguar would not be beneficial to the species. As a result, we again determined that designation of critical habitat for the jaguar was not prudent (71 FR 39335). We did not consider designation of lands outside of the United States in this analysis, because, under the Act's implementing regulations, critical habitat cannot be designated in foreign countries (50 CFR 424.12(h)).

The Center for Biological Diversity again challenged the Service's decision that critical habitat was not prudent for the jaguar. On March 30, 2009, the United States District Court for the District of Arizona (Court) issued an opinion in *Center for Biological Diversity v. Kempthorne*, CV 07-372- TUC JMR (Lead) and *Defenders of Wildlife v. Hall*, CV08-335 TUC JMR (Consolidated) (D. Ariz., Mar. 30, 2009), that set aside our previous prudency determination and required that we issue a new determination as to "whether to designate critical habitat," i.e., whether such designation is prudent, by January 8, 2010. In this opinion, the Court noted, among other things, that the Service's regulations at 50 CFR 424.12(b) require that the Service "shall focus on the principal biological constituent elements within the defined area that are essential to the conservation of the species." Such elements include consideration of space for individual and population growth, and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

On January 13, 2010, we published a notice of determination that we had reevaluated our previous "not prudent" finding regarding critical habitat designation for the jaguar and the information supporting our previous findings (75 FR 1741). We also evaluated information and analysis that became available subsequent to the July 12, 2006, finding. We determined there were physical and biological features that can be used by

jaguars in the United States. Thus, in responding to the Court's order, and following a review of the best available scientific and commercial information, including the ongoing conservation programs for the jaguar, we determined that the designation of critical habitat for the jaguar would be beneficial. We also determined that designation of critical habitat would not be expected to increase the degree of threat to the species. We solicited comments and information on this determination, and stated we anticipated publishing a proposed critical habitat designation in the **Federal Register** by January 2011.

On October 18, 2010, we sent a letter to the Center for Biological Diversity and Defenders of Wildlife updating them on our process of developing a recovery plan and critical habitat for the jaguar. We stated that, because of scant information currently available for northern jaguars, we would be convening a bi-national Jaguar Recovery Team to synthesize information on the jaguar, focusing on a unit comprising jaguars in the northern portion of their range. We further stated that we would be working with the Conservation Breeding Specialist Group of the Species Survival Commission/International Union for Conservation of Nature to conduct a population viability analysis and a population and habitat viability analysis for the jaguar. We anticipated that these analyses would assist us in determining those recovery actions that would be most effective for achieving a viable jaguar population, as well as providing information relevant to determining critical habitat for the jaguar. Additionally, we stated that, based on the unusual situation where the best information on habitat in the United States essential to the conservation of the jaguar was being gathered through the recovery

planning effort, we would postpone publishing a proposed critical habitat rule until spring 2012.

## **Critical Habitat**

### *Background*

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 under 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 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) of the Act 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.

Under the first prong of the Act's definition of critical habitat, areas within the geographic area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential

to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical and biological features within an area, we focus on the principal biological or physical constituent elements (primary constituent elements such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, and soil type) that are essential to the conservation of the species. Primary constituent elements are the elements of physical or 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 second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographic 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. For example, an area currently occupied by the species but that was not occupied at the time of listing may be essential to the conservation of the species and may be included in the critical habitat designation. We designate critical habitat in areas outside the geographic area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the

best scientific 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 are determining 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, other unpublished materials, or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. 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 needed 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 ensure 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.

*Jaguar Habitat Requirements in the United States and U.S.-Mexico Borderlands Area*

Most of the information regarding jaguar habitat requirements comes from Central and South America; little, if any, is available for the northwestern-most portion of its range, including the United States. Jaguar habitat in Central and South America is quite different from habitat available in the U.S.-Mexico borderlands area, where jaguars show a high affinity for lowland wet communities, including swampy savannas or

tropical rain forests toward and at middle latitudes. Swank and Teer (1989, p. 14) state that jaguars prefer a warm, tropical climate, usually associated with water, and are rarely found in extensive arid areas. Rabinowitz (1999, p. 97) affirms that the most robust jaguar populations have been associated with tropical climates in areas of low elevation with dense cover and year-round water sources. Brown and López González (2001, p. 43) further state that, in South and Central America, jaguars usually avoid open country like grasslands or desertscrub, instead preferring the closed vegetative structure of nearly every tropical forest type.

However, jaguars have been documented in arid areas of northwestern Mexico and the southwestern United States, including thornscrub, desertscrub, lowland desert, mesquite grassland, Madrean oak woodland, and pine-oak woodland communities (Brown and López González 2001, pp. 43–50; Boydston and López González 2005, p. 54; McCain and Childs 2008, p. 7; Rosas-Rosas and Bender 2012, p. 88). The more open, dry habitat of the southwestern United States has been characterized as marginal habitat for jaguars in terms of water, cover, and prey densities (Rabinowitz 1999, p. 97). However, McCain and Childs (2008, p. 7) documented two male jaguars (and possibly a third) using an extensive area including habitats of the Sonoran lowland desert, Sonoran desert scrub, mesquite grassland, Madrean oak woodland, and pine-oak woodland in mountain ranges in southern Arizona. Therefore, while habitat in the United States can be considered marginal when compared to other areas throughout the species' range, it appears that a few, possibly resident jaguars are able to use the more open, arid habitat found in the southwestern United States.

To define the physical and biological features required for jaguar habitat in the United States, we are relying on studies conducted in Mexico as close to the U.S.-Mexico border as available. Many of these studies have been compiled and summarized by the Jaguar Recovery Team in the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, entire) and Digital Mapping in Support of Recovery Planning for the Northern Jaguar report (Sanderson and Fisher 2011, pp. 1–11). These documents describe the entire Northwestern Recovery Unit and Northwestern Management Unit of the jaguar (see *Jaguar Recovery Planning in Relation to Critical Habitat*, below) including areas of Sonora, Chihuahua, Sinaloa, Nayarit, and Jalisco, Mexico, and south-central and southeastern Arizona and southeastern New Mexico in the United States (Jaguar Recovery Team 2012, pp. 20–24). When U.S.-specific data are available, we attempt to narrow the focus of our analysis to information within the United States to determine the physical and biological features currently present that provide jaguar habitat north of the border.

The Jaguar Recovery Team (2012, pp. 15–16) determined that high-quality habitat for jaguars in the Northwestern Recovery Unit and Northwestern Management Unit includes the following features: (1) High abundance of native prey, particularly large prey like deer and peccary and adequate numbers of medium-sized prey; (2) water available within 10 kilometers (km) (6.2 miles (mi)) year round; (3) dense vegetative cover (to stalk and ambush prey and for denning and resting), particularly including

Sinaloan thornscrub; (4) rugged topography, including canyons and ridges, and some rocky hills good for denning and resting; (5) connectivity to allow normal demographic processes to occur and maintain genetic diversity; (6) expansive areas of adequate habitat (i.e., area large enough to support 50 to 100 jaguars) with low human density; (7) low human activity, development, and infrastructure, including low densities of high-speed roads, mines, and agriculture; and (8) no to low jaguar persecution or poaching by humans. Therefore, we are basing our definition of jaguar habitat in the United States on these features but with modifications more applicable to areas north of the U.S.-Mexico border (see *Physical or Biological Features*, below).

#### *Jaguar Recovery Planning in Relation to Critical Habitat*

The 2012 Recovery Outline for the Jaguar describes two recovery units for the jaguar across its range, the Northwestern and Pan American Recovery Units (Jaguar Recovery Team 2012, p. 58). Recovery units are subunits of the listed species' habitat that are geographically or otherwise identifiable and essential to the recovery of the species (Jaguar Recovery Team 2012, p. 20).

Recovery units for the jaguar are further divided into core, secondary, and peripheral areas (Jaguar Recovery Team 2012, pp. 20–23). Core areas have both persistent verified records of jaguar occurrence over time and recent evidence of reproduction. Secondary areas are those that contain jaguar habitat with either or both

historical or recent records of jaguar presence with no recent record or very few records of reproduction. In peripheral areas, most historical jaguar records are sporadic, and there is no or minimal evidence of long-term presence or reproduction that might indicate colonization or sustained use of these areas by jaguars.

Potential jaguar habitat in the U.S.-Mexico borderlands area is part of the secondary area of the Northwestern Management Unit within the Northwestern Recovery Unit for the jaguar (Jaguar Recovery Team 2012, p. 58). Because such a small portion of the jaguar's range occurs in the United States, it is anticipated that recovery of the entire species will rely primarily on actions that occur outside of the United States; activities that may adversely or beneficially affect jaguars in the United States are less likely to affect recovery than activities in core areas of their range (Jaguar Recovery Team 2012, p. 38). However, the portion of the United States is located within a secondary area that provides a recovery function benefitting the overall recovery unit (Jaguar Recovery Team 2012, pp. 40, 42). For example, specific areas within this secondary area that provide the physical and biological features essential to jaguar habitat can contribute to the species' persistence and, therefore, overall conservation by providing areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit (about 210 km (130 mi) south of the U.S.-Mexico border in Sonora near the towns of Huasabas, Sahuaripa (Brown and López González 2001, pp. 108–109), and



Nacori Chico (Rosas-Rosas and Bender 2012, pp. 88–89)). Independent peer review cited in our July 22, 1997, clarifying rule (62 FR 39147, pp. 39153–39154) states that individuals dispersing into the United States are important because they occupy habitat that serves as a buffer to zones of regular reproduction and are potential colonizers of vacant range, and that, as such, areas supporting them are important to maintaining normal demographics, as well as allowing for possible range expansion. As described in the Recovery Outline for the Jaguar, the Northwestern Recovery Unit is essential for the conservation of the species; therefore, consideration of the spatial and biological dynamics that allow this unit to function and that benefit the overall unit is prudent. Providing connectivity from the United States to Mexico is a key element to maintaining those processes.

As mentioned above, the U.S. lands within the secondary area of the Northwestern Recovery Unit are also located within the Northwestern Management Unit. Management units, as described in the Recovery Outline, are areas within a recovery unit that might require different management, be managed by different entities, or encompass different populations (Jaguar Recovery Team 2012, p. 40). The U.S. lands located within the Northwestern Management Unit simply acknowledge the existence of different species management on either side of the International Border with Mexico. This additional description of the U.S. lands as part of management unit does not mean that the habitat in United States has any less significance within the secondary area of the recovery unit.

Additionally, as thoroughly discussed in the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, pp. 19–20) and Johnson *et al.* (2011, pp. 30–31), populations at the edge of a species' range play a role in maintaining the total genetic diversity of a species; in some cases, these peripheral populations persist the longest as fragmentation and habitat loss impact the total range (Channell and Lomolino 2000, pp. 84–85). The United States and northwestern Mexico represent the northernmost extent of the jaguar's range, with populations persisting in distinct ecological conditions (xeric, or extremely dry, habitat) that occur nowhere else in the species' range (Sanderson *et al.* 2002, entire). Peripheral populations such as these are an important genetic resource in that they may be beneficial to the protection of evolutionary processes and the environmental systems that are likely to generate future evolutionary diversity (Lesica and Allendorf 1995, entire). This may be particularly important considering the potential threats of global climate change (see "Climate Change," below). The ability for jaguars in the Northwestern Recovery Unit to utilize physical and biological habitat features in the Northwestern Management Unit is ecologically important to the recovery of the species; therefore, maintaining connectivity to Mexico is essential to the conservation of the jaguar.

### Climate Change

The degree to which climate change will affect jaguar habitat in the United States is uncertain, but it has the potential to adversely affect the jaguar within the next 50 to

100 years (Jaguar Recovery Team 2012, p. 32). Climate change will be a particular challenge for biodiversity because the interaction of additional stressors associated with climate change and current stressors may push species beyond their ability to survive (Lovejoy 2005, pp. 325–326). The synergistic implications of climate change and habitat fragmentation are the most threatening facet of climate change for biodiversity (Hannah and Lovejoy 2005, p. 4). Current climate change predictions for terrestrial areas in the Northern Hemisphere indicate warmer air temperatures, more intense precipitation events, and increased summer continental drying (Field *et al.* 1999, pp. 1–3; Hayhoe *et al.* 2004, p. 12422; Cayan *et al.* 2005, p. 6; Intergovernmental Panel on Climate Change (IPCC) 2007, p. 1181). Climate change may lead to increased frequency and duration of severe storms and droughts (Golladay *et al.* 2004, p. 504; McLaughlin *et al.* 2002, p. 6074; Cook *et al.* 2004, p. 1015).

The current prognosis for climate change impacts in the American Southwest includes fewer frost days; warmer temperatures; greater water demand by plants, animals, and people; and an increased frequency of extreme weather events, such as heat waves, droughts, and floods (Weiss and Overpeck 2005, p. 2074; Archer and Predick 2008, p. 24). How climate change will affect summer precipitation is less certain, because precipitation predictions are based on continental-scale general circulation models that do not yet account for land use and land cover effects or regional phenomena, such as those that control monsoonal rainfall in the Southwest (Weiss and Overpeck 2005, p. 2075; Archer and Predick 2008, pp. 23–24). Some models predict dramatic changes in

Southwestern vegetation communities as a result of climate change (Weiss and Overpeck 2005, p. 2074; Archer and Predick 2008, p. 24), especially as wildfires carried by nonnative plants (e.g., buffelgrass) potentially become more frequent, promoting the presence of exotic species over native ones (Weiss and Overpeck 2005, p. 2075).

The impact of future drought, which may be long-term and severe (Seager *et al.* 2007, pp. 1183-1184; Archer and Predick 2008, entire), may affect jaguar habitat in the U.S.-Mexico borderlands area, but the information currently available on the effects of global climate change and increasing temperatures does not make sufficiently precise estimates of the location and magnitude of the effects. We do not know whether the changes that have already occurred have affected jaguar populations or distribution, nor can we predict how the species will adapt to or be affected by the type and degree of climate changes forecast. We are not currently aware of any climate change information specific to the habitat of the jaguar that would indicate what areas may become important to the species in the future. Therefore, we are unable to determine what additional areas, if any, may be appropriate to include in the final critical habitat designation for this species specifically to address the effects of climate change.

#### *Physical or Biological Features*

In accordance with section 3(5)(A)(i) and 4(b)(1)(A) of the Act and regulations at 50 CFR 424.12, in determining which areas within the geographic area occupied by the

species at the time of listing to designate as critical habitat, we consider the physical or biological features that are essential to the conservation of the species and 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 historical, geographic, and ecological distributions of a species.

We derive the specific physical or biological features essential for jaguars from studies of this species' habitat, ecology, and life history as described below. Additional information can be found in the final clarifying rule published in the **Federal Register** on July 22, 1997 (62 FR 39147), the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, entire), and the Digital Mapping in Support of Recovery Planning for the Northern Jaguar report (Sanderson and Fisher 2011, pp. 1–11). We have determined that the following physical or biological feature is essential for the jaguar: Expansive open spaces in the southwestern United States with adequate connectivity to Mexico that contain a sufficient native prey base and available surface water, have suitable vegetative cover and rugged topography to provide sites for resting, and have minimal human

impact, as further described below.

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

*Expansive open spaces*—Jaguars require a significant amount of space for individual and population growth and for normal behavior. Jaguars have relatively large home ranges and, according to Brown and López González (2001, p. 60), their home ranges are highly variable and depend on topography, available prey, and population dynamics. Home ranges need to provide reliable surface water, available prey, and sites for resting that are removed from the impacts of human activity and influence (Jaguar Recovery Team 2012, pp. 15–16). The availability of these habitat characteristics can fluctuate within a year (dry versus wet seasons) and between years (drought years versus wet years).

Specific home ranges for jaguars depend on the sex, season, and vegetation type. The home ranges of borderland jaguars are presumably as large or larger than the home ranges of tropical jaguars (Brown and López González 2001, p. 60; McCain and Childs 2008, pp. 6–7), as jaguars in this area are at the northern limit of their range and the arid environment contains resources and environmental conditions that are more variable than those in the tropics (Hass 2002, as cited in McCain and Childs 2008, p. 6). Therefore, jaguars require more space in arid areas to obtain essential resources such as food, water, and cover (discussed below).

Only one limited home range study using standard radio-telemetry techniques and two home range studies using camera traps have been conducted for jaguars in northwestern Mexico. Telemetry data from one adult female tracked for 4 months during the dry season in Sonora indicated a home range size of 100 square km (37 square mi) (López González 2011, pers. comm.). Additionally, using camera traps, a male in Sonora was documented using an average home range of 84 square km (32 square mi) (López González 2011, pers. comm.). No home range studies using standard radio-telemetry techniques have been conducted for jaguars in the southwestern United States, although McCain and Childs (2008, p. 5), using camera traps, reported one jaguar in southeastern Arizona as having a minimum observed “range” of 1,359 square km (525 square mi) encompassing two distinct mountain ranges. This study, however, was not designed to determine home range size; therefore, we are relying on minimum home-range estimates for male and female jaguars from Sonora, Mexico (López González 2011, pers. comm.) for the minimum amount of adequate habitat required by jaguars in the United States.

Therefore, based on the information above, we identify expansive open spaces in the United States of at least 84 to 100 square km (32 to 37 square mi) in size with connectivity to Mexico, adequate native prey and available surface water, suitable vegetative cover and rugged topography to provide sites for resting, and minimal human impact as the essential components of the physical or biological feature essential for the conservation of the jaguar in the United States.

*Connectivity between expansive open spaces in the United States and Mexico*—As discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* section, above, connectivity between the United States and Mexico is essential for the conservation of jaguars. Therefore, we identify connectivity between expansive open spaces in the United States and Mexico as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

*Connectivity between expansive open spaces within the United States*—We know that connectivity between areas of habitat for the jaguar in the United States is necessary if viable habitat for the jaguar is to be maintained. This is particularly true in the mountainous areas of Arizona and New Mexico, where isolated mountain ranges providing the physical and biological features of jaguar habitat are separated by valley bottoms that may not possess the features described in this proposed rule. However, we also know that, based on home range sizes and research and monitoring, jaguars will use valley bottoms and other areas of habitat connectivity to move among areas of higher quality habitat found in isolated mountain ranges. We acknowledge that jaguars use connective areas to move between mountain ranges in the United States; however, as they are mainly using them for passage, jaguars do not linger in these areas. As a result, there is only one occurrence record of a jaguar in these areas. With only one record, we are unable to describe the features of these areas because of a lack of information. Therefore, while we acknowledge that habitat connectivity within the United States is important, the



best available scientific and commercial information does not allow us to determine that any particular area within the valleys is essential, and all of the valley habitat is not essential to the conservation of the species. Therefore we are not designating any areas within the valleys between the montane habitat as critical habitat.

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

*Food*—Jaguar and large-cat experts believe that high-quality habitat for jaguars in the northwestern portion of their range should include a high abundance of native prey, particularly large prey like white-tailed deer and collared peccary (javelina), as well as an adequate number of medium-sized prey (Jaguar Recovery Team 2012, pp. 15–16). However, the Jaguar Recovery Team (2012, pp. 15–16) did not quantify “high abundance” or “adequate number” of each type of prey, making it difficult to state the density of prey required to sustain a resident jaguar in this portion of its range.

Jaguars usually catch and kill their prey by stalking or ambush and biting through the nape as do most Felidae (members of the cat family) (Seymour 1989, p. 5). Like other large cats, jaguars rely on a combination of cover, surprise, acceleration, and body weight to capture their prey (Schaller 1972 and Hopcraft *et al.* 2005, as cited by Cavalcanti 2008, p. 47). Jaguars are considered opportunistic feeders, and their diet varies according to prey density and ease of prey capture (sources as cited in Seymour 1989, p. 4). Jaguars equally use medium- and large-size prey, with a trend toward use of

larger prey as distance increases from the equator (López González and Miller 2002, p. 218).

In northeastern Sonora, where the northernmost breeding population of jaguars occurs, Rosas-Rosas (2006, pp. 24–25) found that large prey greater than 10 kilograms (kg) (22 pounds (lbs)) accounted for more than 80 percent of the total biomass consumed. Specifically, cattle accounted for more than half of the total biomass consumed (57 percent), followed by white-tailed deer (23 percent), and collared peccary (5.12 percent). Medium-sized prey (1–10 kg; 2–22 lbs), including lagomorphs (rabbit family) and coatis (*Nasua nasua*), accounted for less than 20 percent of biomass. Small prey, less than 1 kg (2 lbs), were not found in scats (Rosas-Rosas 2006, p. 24). At the Chamela-Cuixmala Biosphere Reserve in Jalisco, Mexico (which is closed to livestock grazing), deer and javelina were the two most preferred prey species for jaguars, with jaguars consuming the equivalent of 85 deer per individual per year (Brown and López González 2001, p. 51). No estimates of the number of javelina consumed were provided, although in combination with deer, armadillo, and coati, these four prey items provided 98 percent of the biomass taken by jaguars (Brown and López González 2001, p. 50). Most jaguar experts believe that collared peccary and deer are mainstays in the diet of jaguars in the United States and Mexico borderlands (62 FR 39147), although other available prey, including coatis, skunk (*Mephitis* spp., *Spilogale gracilis*), raccoon (*Procyon lotor*), jackrabbit (*Lepus* spp.), domestic livestock, and horses are taken as well (Brown and López González 2001, p. 51; Hatten *et al.* 2005, p. 1024; Rosas-Rosas 2006, p. 24).

Therefore, based on the information above, we identify areas containing adequate numbers of native prey, including deer, javelina, and medium-sized prey items (such as coatis, skunks, raccoons, or jackrabbits) as an essential component of the physical and biological feature essential for the conservation of the jaguar in the United States.

*Water*—Several studies have demonstrated that jaguars require surface water within a reasonable distance year-round. This requirement likely stems from increased prey abundance at or near water sources (Cavalcanti 2008, p. 68; Rosas-Rosas *et al.* 2010, pp. 107–108), particularly in arid environments, although it is conceivable that jaguars require a nearby water source for drinking, as well. Seymour (1989, p. 4) found that jaguars are most commonly found in areas with a water supply, although the distance to this water supply is not defined. In northeastern Sonora, Mexico, Rosas-Rosas *et al.* (2010, p. 107) found that sites of jaguar cattle kills were positively associated with proximity to permanent water sources. They also found that these sites were positively associated with proximity to roads, but concluded that the effect of roads likely represented a response to major drainages, as roads generally followed major drainages within their study area.

In the United States, only one modeling study analyzing distance to water as a feature of jaguar habitat has been conducted. Hatten *et al.* (2005, p. 1026) used jaguar records from Arizona dating from 1900 to 2002, selecting the most reliable records (those

with physical evidence or from a reliable witness) and most spatially accurate records (those with spatial errors of less than 8 km (5 mi)) to create a habitat suitability model. Of the 57 records they considered, 25 records were deemed reliable and accurate enough to include in the model. Using a digital Geographic Information System (GIS) layer that included perennial and intermittent water sources (streams, rivers, lakes, and springs), Hatten *et al.* (2005, p. 1029) found that when perennial and intermittent water sources were combined, 100 percent of the 25 jaguar records used for their model were within 10 km (6.2 mi) of a water source. This distance from water (10 km; 6.2 mi) was then incorporated into jaguar habitat modeling exercises in New Mexico (Menke and Hayes 2003, pp. 15–16), and in northern Mexico and the U.S.-Mexico borderlands area (Sanderson and Fisher 2011, pp. 10–11), and was further acknowledged by jaguar and large cat researchers (primarily with expertise in the northwestern-most portion of the jaguar range) as the maximum distance an area could be from a year-round water source to constitute high-quality jaguar habitat (Jaguar Recovery Team 2012, pp. 15–16).

Using data compiled by Sanderson and Fisher (2011, database) and McCain and Childs (2008, entire, and unpublished data), we collected undisputed Class I reports of jaguar locations in the United States since the time the species was listed (see *Criteria Used To Identify Critical Habitat*, below). Our compilation of data resulted in 130 reports of jaguar locations to use in our analysis, of which we found that approximately 98 percent occurred within 10 km (6.2 mi) of a water source. Therefore, based on the information above, we identify sources of surface water within at least 20 km (12.4 mi)

of each other such that a jaguar would be within 10 km (6.2 mi) of a water source at any given time (i.e., if it were halfway between these water sources) as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

#### Cover or Shelter

*Vegetative cover*—Jaguars require vegetative cover allowing them to stalk and ambush prey, as well as providing areas in which to den and rest (Jaguar Recovery Team 2012, pp. 15–16). Jaguars are known from a variety of vegetation communities (Seymour 1989, p. 2), sometimes called biotic communities or vegetation biomes (Brown 1994, p. 9). Jaguars have been documented in arid areas in northwestern Mexico and the southwestern United States, including thornscrub, desertscrub, lowland desert, mesquite grassland, Madrean oak woodland, and pine-oak woodland communities (Brown and López González 2001, pp. 43–50; Boydston and López González 2005, p. 54; McCain and Childs 2008, p. 7; Rosas-Rosas *et al.* 2010, p. 103). As most of the information pertaining to jaguar habitat in the U.S.-Mexico borderlands relies on descriptions of biotic communities from Brown and Lowe (1980, map) and Brown (1994, entire, including appendices), for purposes of this document we are using these same sources and descriptions, as well.

According to Brown and López González (2001, p. 46), the most important biotic community for jaguars in the southwestern borderlands (Arizona, New Mexico, Sonora,

Chihuahua) is Sinaloan thornscrub (as described in Brown 1994, pp. 100–105), with 80 percent of the jaguars killed in the state of Sonora documented in this vegetation biome (Brown and López González 2001, p. 48). This biotic community, however, is absent in the United States (Brown and Lowe 1980, map; Brown and López González 2001, p. 49). Madrean evergreen woodland is also important for borderlands jaguars; nearly 30 percent of jaguars killed in the borderlands region were documented in this biotic community (Brown and López González 2001, p. 45). Brown and López González (2000, p. 538) indicate jaguars in Arizona and New Mexico predominantly use montane environments, probably because of more amiable temperatures and prey availability. A smaller, but still notable, number of jaguars were killed in chaparral and shrub-invaded semidesert grasslands (Brown and López González 2001, p. 48). In Arizona, approximately 15 percent of the jaguars taken within the State between the years 1900 and 2000 were in semidesert grasslands (Brown and López González 2001, p. 49).

The more recent sightings (2001–2007), as described in McCain and Childs (2008, entire), document jaguars in these same biotic communities (note that the Madrean evergreen woodland and semidesert grassland biotic communities encompass the Sonoran lowland desert, Sonoran desert scrub, mesquite grassland, Madrean oak woodland, and pine-oak woodland habitats), and the most recent sighting of a jaguar in Arizona (2011) was in Madrean evergreen woodland, as well (Arizona Game and Fish Department, unpublished data).

Several modeling studies incorporating vegetation characteristics have attempted to refine the general understanding of habitats that have been or might be used by jaguars in the United States. To characterize vegetation biomes, Hatten *et al.* (2005, entire) used a digital vegetation layer based on Brown and Lowe (1980, map) and Brown (1994, entire). They found that 100 percent of the 25 jaguar records used for their model were observed in four vegetation biomes, including: (1) Scrub grasslands of southeastern Arizona (56 percent); (2) Madrean evergreen forest (20 percent); (3) Rocky Mountain montane conifer forest (12 percent); and (4) Great Basin conifer woodland (12 percent).

In addition, two studies (Menke and Hayes 2003, entire; Robinson *et al.* 2006, entire) attempted to evaluate potential jaguar habitat in New Mexico using methods similar to those described in Hatten *et al.* (2005, pp. 1025–1028). However, due to the small number of reliable and spatially accurate records within New Mexico, neither model was able to determine patterns of habitat use (and associated vegetation communities) for jaguars in New Mexico, instead relying on literature and expert opinion for elements to include in the models. These vegetation communities included Madrean evergreen woodland, which Menke and Hayes (2003, p. 13) considered the most similar to habitats used by the closest breeding populations of jaguars in Mexico, as well as grasslands (semidesert, Plains and Great Basin, and subalpine), interior chaparral, conifer forests and woodlands (Great Basin, Petran montane, and Petran subalpine), and desertscrub (Chihuahuan, Arizona upland Sonoran, and Great Basin).

Finally, Sanderson and Fisher (2011, pp. 1–11) created a jaguar habitat model for northwestern Mexico and the U.S.-Mexico borderlands area using the methodology described in Hatten *et al.* (2005, pp. 1025–1028), but with some modifications. From 54 references published between the years 1737 and 2010, they compiled 333 potential jaguar locations from across the United States and northern Mexico (Sanderson and Fisher 2011, p. 4). These records were not selected to include only those that were reliable and spatially accurate (as described above in Hatten *et al.* 2005, pp. 1025–1026). Instead, they included cultural evidence (such as a jaguar painting in a cave or a place name including the word jaguar), sightings of live animals or their sign, mortalities (such as hunting events or jaguars killed after a predation event), and observations of possible jaguars (such as a cat, spotted cat, or large quadruped (four-footed animal)) (details as described in the database associated with Sanderson and Fisher 2011). Another modification Sanderson and Fisher (2011, pp. 7–8) made was to substitute a digital layer describing tree cover for the digital vegetation layer based on Brown and Lowe (1980, map) and Brown (1994, entire). In doing so, Sanderson and Fisher (2011, p. 9) determined the percent tree cover at each of the 333 locations used in their model, reporting that approximately 70 percent of the locations were in areas with 3 to 60 percent tree cover. They then used this range of tree cover as a variable delineating jaguar habitat (Sanderson and Fisher 2011, p. 11).

Using the same digital vegetation layer as Hatten *et al.* (2005, p. 1028) and the tree cover layer used by Sanderson and Fisher (2011, pp. 7–8), we analyzed 130 jaguar



locations in the United States and found that approximately 98 percent of them occurred in Madrean evergreen woodlands and semidesert grasslands, with 88 percent occurring in areas containing 3 to 40 percent tree cover. Therefore, based on the information above, we identify Madrean evergreen woodlands and semidesert grasslands containing 3 to 40 percent tree cover as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

*Rugged topography*—Rugged topography (including canyons, ridges, and some rocky hills to provide sites for resting) is acknowledged as an important component of jaguar habitat in the northwestern-most portion of its range (Jaguar Recovery Team 2012, pp. 15–16). The habitat model for the Northern Jaguar Recovery Unit created by Sanderson and Fisher (2011, p. 9) determined that jaguars in this area were most frequently found in intermediately, moderately, and highly rugged terrain. Additionally, one study in the U.S.-Mexico borderlands area (Boydston and López González 2005, entire) and one in northeastern Mexico (Ortega-Huerta and Medley 1999, entire) incorporate slope as a factor in describing jaguar habitat. Although slope can provide some understanding of topography (steep slopes generally indicate a more rugged landscape), it is less descriptive in terms of quantifying terrain heterogeneity (diversity) (Hatten *et al.* 2005, pp. 1026–1027). Nonetheless, in these studies, jaguar distribution was found to be on steeper slopes than those slopes that were available for the study areas in general (Ortega-Huerta and Medley 1999, p. 261; Boydston and López González 2005, p. 54), indicating jaguars were found in more rugged areas in these studies.

Two modeling exercises have been conducted to determine existing jaguar habitat in the southwestern United States, one in Arizona and another in New Mexico. To examine the relationship between jaguars and landscape roughness in Arizona, Hatten *et al.* (2005, p. 1026) calculated a terrain ruggedness index (TRI; Riley *et al.* 1999, as cited in Hatten *et al.* 2005, p. 1026) measuring the slope in all directions of each 1-square-km (0.4-square-mi) cell (pixel) in their model. They divided the TRI data into seven classes according to relative roughness: level, nearly level, slightly rugged, intermediately rugged, moderately rugged, highly rugged, and extremely rugged. With respect to topography, they found that 92 percent of the 25 jaguar records used in their model (see “*Water*” in the “Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements” section, above) occurred in intermediately rugged to extremely rugged terrain (the remaining 8 percent were in nearly level terrain).

Menke and Hayes (2003, entire) attempted to evaluate potential jaguar habitat in New Mexico using methods similar to those described in Hatten *et al.* (2005, pp. 1025–1028). While patterns of habitat use for jaguars could not be determined (due to the small number of reliable and spatially accurate records within New Mexico, of which there were seven), all sighting locations occurred in areas that were assigned a highly rugged value, and terrain ruggedness was the single variable that appeared to have a high degree of correlation with locations of jaguar observations in New Mexico.

In addition, Sanderson and Fisher (2011, p. 9) determined that approximately 70 percent of the 333 locations used in their model for the Northwestern Recovery Unit of the jaguar were found in intermediately, moderately, or highly rugged terrain. Similarly, our analysis of 130 records of jaguar locations in the United States resulted in approximately 93 percent occurring in intermediately, moderately, or highly rugged terrain. Therefore, based on this information, we identify areas of intermediately, moderately, or highly rugged terrain as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

#### Habitats Protected from Disturbance or Representative of the Historical, Geographic, and Ecological Distributions of the Species

Human populations can impact jaguars directly by killing individuals through hunting, poaching, or depredation control, as well as indirectly through disturbance of normal biological activities, loss of habitat, and habitat fragmentation. Rangeland, illegal killing of jaguars is one of the two most significant threats to the jaguar (Nowell and Jackson 1996, p. 121; Núñez *et al.* 2002, p. 100; Taber *et al.* 2002, p. 630; Chávez and Ceballos 2006, p. 10), and, according to the July 22, 1997, clarifying rule (62 FR 39147), the primary threat to jaguars in the United States is illegal shooting (see listing rule for a detailed discussion). This, however, is no longer accurate, as the most recent known shooting of a jaguar in Arizona was in 1986 (Brown and Lopez González 2001, p. 7). Jaguars are protected by Federal law through the Act and by State law in Arizona and

New Mexico. Four of the individual jaguars most recently documented (since 1996) in Arizona and New Mexico have been documented by lion hunters, who took photographs of the jaguars and then reported them to the Arizona Game and Fish Department and the Service. No livestock predation has been attributed to jaguars since 1947; therefore, none have been killed in response to predating livestock. While illegal killing of jaguars continues to be a major threat to jaguars south of the U.S.-Mexico international border, it does not appear to be a significant threat within the United States.

In terms of human influence and impact on jaguars other than by direct killing, human populations have both direct and indirect impacts on jaguar survival and mortality. For example, an increase in road density and human settlements tends to fragment habitat and isolate populations of jaguars and other wildlife. For carnivores in general, the impacts of high road density have been well documented and thoroughly reviewed (Noss *et al.* 1996 and Carroll *et al.* 2001, as cited by Menke and Hayes 2003, p. 12). Roads may have direct impacts to carnivores and carnivore habitats, including roadkill, disturbance, habitat fragmentation, changes in prey numbers or distribution, and increased access for legal or illegal harvest (Menke and Hayes 2003, p. 12; Colchero *et al.* 2010, entire). Studies have also shown that jaguars selectively use large areas of relatively intact habitat away from certain forms of human influence. Zarza *et al.* (2007, pp. 107, 108) report that towns and roads had an impact on the spatial distribution of jaguars in the Yucatan peninsula, where jaguars used areas located more than 6.5 km (4 mi) from human settlements and 4.5 km (2.8 mi) from roads. In the state of Mexico,

Monroy-Vilchis *et al.* (2008, p. 535) report that one male jaguar occurred with greater frequency in areas relatively distant from roads and human populations. In some areas of western Mexico, however, jaguars (both sexes) have frequently been recorded near human settlements and roads (Núñez 2011, pers. comm.). In Marismas Nacionales, Nayarit, a jaguar den was recently located very close to an agricultural field, apparently 1 km (0.6 mi) from a small town (Núñez 2011, pers. comm.). Jaguar presence is affected in different ways by various human activities; however, direct persecution likely has the most significant impact.

Because jaguars are secretive animals and generally tend to avoid highly disturbed areas (Quigley and Crawshaw 1992, entire; Hatten *et al.* 2005, p. 1025), human density was a factor considered in jaguar habitat modeling exercises for Arizona (Hatten *et al.* 2005, p. 1025), New Mexico (Menke and Hayes 2003, pp. 9–13; Robinson *et al.* 2006, pp. 10, 15, 18–20), and the habitat model developed by Sanderson and Fisher (2011, pp. 5–11) for the northwestern Mexico and the U.S.-Mexico borderlands area. Hatten *et al.* (2005, p. 1025) excluded areas within city boundaries, higher density rural areas visible on satellite imagery, and agricultural areas from their Arizona habitat model, as recommended by jaguar experts. All of the jaguar locations used in their model fell outside of these areas, indicating jaguars are not found in highly developed or disturbed areas (Figure 6, p. 1031).

Menke and Hayes (2003, pp. 9–13) attempted to evaluate potential jaguar habitat in New Mexico using methods similar to those described in Hatten *et al.* (2005, p. 1025).

Because of a lack of comparable digital data for New Mexico, they instead created a data layer of road density per square km and classified it into habitat suitability categories. However, due to the small number of reliable and spatially accurate jaguar occurrence records within New Mexico (a total of seven), patterns of habitat use for jaguars could not be determined from their model, and they did not summarize the road density categories in which jaguars were found within the State. In the habitat model for New Mexico developed by Robinson *et al.* (2006), areas with continuous row crop agriculture, human residential development in excess of 1 house per 4 hectares (ha) (10 acres (ac)), or industrial areas were not considered jaguar habitat, and were therefore excluded from their model. Similarly to Menke and Hayes (2003, entire), patterns of habitat use for jaguars could not be determined from their model, and they did not summarize the human footprint categories in which jaguars were found within the State.

The habitat model developed by Sanderson and Fisher (2011, pp. 5–11) included a human influence index (HII) criterion developed by the Wildlife Conservation Society (WCS) and Center for International Earth Science Information Network (CIESIN) at the Socioeconomic Data and Applications Center (SEDAC) at Columbia University (SEDAC 2012, p. 1). Using procedures developed by Sanderson (2002, as described in SEDAC 2012, pp. 1-2), WCS and CIESIN combined scores for eight input layers (human population density per square km, railroads, major roads, navigable rivers, coastlines, stable nighttime lighting, urban polygons, and land cover) to calculate a composite HII for 1-square-km (0.4-square-mi) grid cells (pixels) worldwide. These numbers were then

normalized to fit within a scale from 1 to 100 within each of six world biomes (Africa, Asia, Europe, North America, South America, and Oceania). A score of 1 within a biome indicates that that grid cell is part of the one percent least influenced (or “wildest”) area in its biome, while a score of 100 indicates that that area is the most influenced within the biome. Within the region considered for their habitat model, Sanderson and Fisher (2011, pp. 5–11) found that roughly 90 percent of the 333 jaguar records used in their model were located in areas where the HII was less than 30. They therefore considered lands with a HII of less than 30 as potential jaguar habitat within their modeling exercise, while lands with a HII equal to or greater than 30 were excluded. Similarly, in our analysis of 130 reports of jaguar locations in the United States, we found that approximately 99 percent occurred in areas where the HII was 20 or less. Therefore, based on this information, we identify areas in which the HII calculated over 1-square km (0.4-square mi) is 20 or less as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States. These areas are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-square km (0.4-square mi) area.

#### Primary Constituent Elements for Jaguars

Under the Act and its implementing regulations, we are required to identify the physical or biological features essential to the conservation of jaguars 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 or 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.

The physical or biological feature we identified for the jaguar is: Expansive open spaces in the southwestern United States with adequate connectivity to Mexico that contain a sufficient native prey base and available surface water, have suitable vegetative cover and rugged topography to provide sites for resting, and have minimal human impact. Because habitat in the United States is at the edge of the species' northern range, and is marginal compared to known habitat throughout the range, we have determined that all of the primary constituent elements discussed, below, must be present in each specific area to constitute high-quality jaguar habitat in the United States, including connectivity to Mexico (but that connectivity may be provided either through a direct connection to the border or by other areas essential for the conservation of the species; see "Areas Essential for the Conservation of Jaguars Outside of Occupied Areas," below). Based on our current knowledge of the physical or biological feature and habitat characteristics required to sustain the jaguar's vital life-history functions in the Northwestern Management Unit and the United States, we determine that the primary constituent elements specific to jaguars are: Expansive open spaces in the southwestern United States of at least 84 to 100 square km (32 to 37 square mi) in size which:

- (1) Provide connectivity to Mexico;



(2) Contain adequate levels of native prey species, including deer and javelina, as well as medium-sized prey such as coatis, skunks, raccoons, or jackrabbits;

(3) Include surface water sources available within 20 km (12.4 mi) of each other;

(4) Contain 3 to 40 percent canopy cover within Madrean evergreen woodland, generally recognized by a mixture of oak, juniper, and pine trees on the landscape, or semidesert grassland vegetation communities, usually characterized by *Pleuraphis mutica* (tobosagrass) or *Bouteloua eriopoda* (black grama) along with other grasses;

(5) Are characterized by intermediately, moderately, or highly rugged terrain;

(6) Are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-square-km (0.4-square-mi) area.

Six units proposed to be designated as critical habitat are currently occupied by jaguars and contain the components of the primary constituent element in the appropriate quantity and spatial arrangement sufficient to support the life-history needs of the species. Two of these units also contain unoccupied subunits that provide connectivity to Mexico and are essential to the conservation of the species.

*Special Management Considerations or Protection*

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 which are essential to the conservation of the species and which may require special management considerations or protection.

Jaguar habitat and the features essential to their conservation are threatened by the direct and indirect effects of increasing human influence into remote, rugged areas, as well as projects and activities that sever connectivity to Mexico. These may include, but are not limited to: significant increases in border-related activities, both legal and illegal; widening or construction of roadways, power lines, or pipelines; construction or expansion of human developments; mineral extraction and mining operations; military activities in remote locations; and human disturbance related to increased activities in or access to remote areas.

Jaguars in the United States are understood to be individuals dispersing north from Mexico, where the closest breeding population occurs about 210 km (130 mi) south of the U.S.-Mexico border in Sonora near the towns of Huasabas, Sahuaripa (Brown and López González 2001, pp. 108–109), and Nacori Chico (Rosas-Rosas and Bender 2012, pp. 88–89). Therefore, impeding jaguar movement from Mexico to the United States would adversely affect the Northwestern Recovery Unit's ability to cyclically expand and

contract as jaguar populations in that unit recover.

Continuing threats from construction of border infrastructure (such as pedestrian fences and roads), as well as illegal activities and resultant law enforcement response (such as increased human presence, vehicles, and lighting), may limit movement of jaguars at the U.S-Mexico border (Service 2007, pp. 23–27; 2008, pp. 73–75). The border from the Tohono O’odham Nation, Arizona, to southwestern New Mexico has a mix of pedestrian fence (not permeable to jaguars), vehicle fence (fence designed to prevent vehicle but not pedestrian entry; it is generally permeable enough to allow for the passage of jaguars), legacy (older) pedestrian and vehicle fence, and unfenced segments (primarily in rugged, mountainous areas). Fences designed to prevent the passage of humans across the border also prevent passage of jaguars. However, there is little to no impermeable fence in areas proposed for designation as critical habitat, and we do not anticipate the construction of impermeable fence in such areas. Additionally, fences may cause an increase in illegal traffic and subsequent law enforcement activities in areas where no fence exists (such as rugged, mountainous areas). This activity may limit jaguar movement across the border and result in general disturbance to jaguars and degradation of their habitat. While current levels of law enforcement activity do not pose a significant threat, a substantial increase in activity levels could be of concern. We note that some level of law enforcement activity can be beneficial, as it decreases illegal traffic. Significant increases in illegal crossborder activities in the proposed critical habitat areas could pose a threat to the jaguar, and therefore, border security actions

provide a beneficial decrease in crossborder violations and their impacts. In summary, special management considerations or protection of the physical or biological features essential to the conservation of jaguar habitat may be needed to alleviate the effects of border-related activities, allowing for some level of permeability so that jaguars may pass through the U.S.-Mexico border.

Under section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), the Secretary of the Department of Homeland Security (DHS) is authorized to waive laws where the Secretary of DHS deems it necessary to ensure the expeditious construction of border infrastructure in areas of high illegal entry. As noted above, there are no known plans to construct additional security fences in the proposed critical habitat. However, if future national security issues require additional measures and the Secretary of DHS invokes the waiver, review through the section 7 consultation process would not be conducted. If DHS chooses to consult with the Service on activities covered by a waiver, special management considerations would occur on a voluntary basis.

Widening or construction of roadways, power lines, or pipelines (all of which usually include maintenance roads), construction or expansion of human developments, mineral extraction and mining operations, and military operations on the ground can have the effect of altering habitat characteristics and increasing human presence in otherwise remote locations. Activities that can permanently alter vegetation characteristics,

displace native wildlife, affect sources of water, and/or alter terrain ruggedness, such as construction and mining, may render an area unsuitable for jaguars. In addition, these activities, as well as military operations on the ground in remote areas, bring an increase in human disturbance into jaguar habitat, potentially fragmenting it further. As described in the “Habitats Protected from Disturbance or Representative of the Historical, Geographic, and Ecological Distributions of the Species” section, above, studies have also shown that jaguars selectively use large areas of relatively intact habitat away from human influence (Zarza *et al.* 2007, pp. 107, 108). Modeling exercises both in the United States (Menke and Hayes 2003, entire; Hatten *et al.* 2005, entire; Robinson *et al.* 2006, entire) and in northwestern Mexico and the U.S.-Mexico borderlands area (Sanderson and Fisher 2011, pp. 1–11) incorporate low levels of human influence when mapping potential jaguar habitat in the United States. Special management considerations of the physical and biological features essential to the conservation of the jaguar may be needed to alleviate the effects of road, power line, and pipeline projects; human developments; mining operations; and ground-based military activities on jaguar habitat. Future projects should avoid (to the maximum extent possible) areas identified as meeting the definition of critical habitat for jaguars, and if unavoidable, should be constructed or carried out to minimize habitat effects.

#### *Criteria Used To Identify Critical Habitat*

We reviewed available information and supporting data that pertains to the habitat requirements of the jaguar. Much of this information is compiled in the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, entire) and Digital Mapping in Support of Recovery Planning for the Northern Jaguar report (Sanderson and Fisher 2011, pp. 1–11), which we regard as the best available information for the jaguar and its habitat needs in the northern portion of its range. Additionally, we relied on information provided through modeling exercises for Arizona (Hatten *et al.* 2005, entire) and New Mexico (Menke and Hayes 2003, entire; Robinson *et al.* 2006, entire) to further refine the habitat features available in the United States. Other sources of information include, but are not limited to, Boydston and López González 2005, Brown and López González 2000, Brown and López González 2001, Cavalcanti 2008, Channell and Lomolino 2000, Chávez and Ceballos 2006, Colchero *et al.* 2010, Johnson *et al.* 2011, Lesica and Allendorf 1995, López González and Miller 2002, McCain and Childs 2008, Monroy-Vilchis *et al.* 2008, Núñez *et al.* 2000, Núñez *et al.* 2002, Ortega-Huerta and Medley 1999, Quigley and Crawshaw 1992, Rabinowitz 1999, Rosas-Rosas 2006, Rosas-Rosas *et al.* 2008, Rosas-Rosas *et al.* 2010, Rosas-Rosas and Bender 2012, Sanderson *et al.* 2002, Seymour 1989, Swank and Teer 1989, Taber *et al.* 2002, Zarza *et al.* 2007, and comments and information provided during the public comment period on our January 13, 2010, prudency determination (75 FR 1741).

We have defined the proposed critical habitat as areas with undisputed Class I records (see Occupied Area at the Time of Listing, below) containing all of the essential

elements of the physical or biological feature described above, and, in areas not connected directly to Mexico, unoccupied areas providing connectivity to Mexico (see “Areas Essential for the Conservation of Jaguars Outside of Occupied Areas,” below).

#### Occupied Area at the Time of Listing

Determining jaguar occupancy at the time of listing is particularly difficult. Jaguars were added to the list many years ago, and, by nature, are cryptic and difficult to detect, so assuming an area is occupied or unoccupied must be based on limited information that can be interpreted in several ways. For these reasons, we used the best information available to us and analyzed areas both as occupied as well as unoccupied but essential to the conservation of the jaguar. Based on our analysis, we are including areas which may have been occupied (meaning they contain an undisputed Class I record, described in the “Jaguar Sightings in the United States Since 1962” section, below) from 1962 to the present. Our reasons for using this time frame are based on the date the jaguar was listed as endangered under the ESCA, the biology of the species, and a lack of survey effort for the species at the time it was listed. However, we acknowledge the uncertainty and lack of concrete information (undisputed Class I records, described below) during the period we are defining as occupied at the time of listing. Therefore, we have evaluated these areas and have also determined these areas to be essential to the conservation of the jaguar. Our rationale is explained below.

While the jaguar was not explicitly listed in the United States until July 22, 1997 (62 FR 39147), we are using the date the jaguar was listed throughout its range as endangered in accordance with the ESCA, which is March 30, 1972 (37 FR 6476). Our rationale for using this date is based on our July 25, 1979, publication (44 FR 43705) in which we asserted that it was always the intent of the Service that all populations of these species, including the jaguar, deserved to be listed as endangered, whether they occurred in the United States or in foreign countries. Therefore, our intention was to consider the jaguar endangered throughout its entire range when it was listed as endangered in 1972, rather than only outside of the United States.

We are including areas in which reports of jaguar exist during the 10 years prior to its listing as occupied at the time of listing, meaning we are considering records back to 1962. Our rationale for including these records is based on expert opinion regarding the average life-span of the jaguar, the consensus being 10 years. Therefore, we assume that areas that would have been considered occupied at the time of listing would have included sightings 10 years prior to its listing, as presumably these areas were still inhabited by jaguars when the species was listed in 1972.

For this same reason, we are including areas as occupied at the time of listing in which reports of jaguar exist during the 10 years after listing, meaning we are considering records up to 1982. If jaguars were present in an area within 10 years after the time of listing in 1972, presumably these areas would have been inhabited by jaguars in 1982.



Additionally, we are including areas as occupied in which reports of jaguars exist from 1982 to the present. Our reasoning for including areas in which sightings have occurred after 1982 is that it is likely those areas were occupied at the time of the original listing, but jaguars had not been detected because of their rarity, the difficulty in detecting them, and a lack of surveys for the species, as described below.

By the time the jaguar was listed in 1972, the species was rare within the United States, making those individuals that may have been present more difficult to detect. The gradual decline of the jaguar in the southwestern United States was concurrent with predator control measures associated with the settlement of land and the development of the cattle industry (Brown 1983, p. 460). For example, from 1900 to 1949, 53 jaguars were recorded as killed in the Southwest, whereas only 4 were recorded as killed between 1950 and 1979 (Brown 1983, p. 460). When a species is rare on the landscape, individuals are difficult to detect because they are sparsely distributed over a large area (McDonald 2004, p. 11).

Jaguars, in particular, are territorial and require expansive open spaces for each individual, meaning large areas may be occupied by just a few individuals, thus reducing the likelihood of detecting them. As evidence, only six, possibly seven, individual jaguars have been detected in the United States since 1982, including one that was documented utilizing two distinct mountain ranges encompassing approximately 1,359

square km (525 square mi) (McCain and Childs 2008, entire) (see “Space for Individual and Population Growth and for Normal Behavior” section, above). Therefore, we believe that Class I records within mountain ranges from 1982 to the present indicate that these mountain ranges were likely occupied by transient jaguars from Mexico at the time the species was listed, but individuals remained undetected due to the jaguar’s ability to move long distances within and between mountain ranges.

In addition, many mobile species are difficult to detect in the wild because of morphological features (such as camouflaged appearance) or elusive behavioral characteristics (such as nocturnal activity) (Peterson and Bayley 2004, pp. 173, 175). This presents challenges in determining whether or not a particular area is occupied because we cannot be sure that a lack of detection indicates that the species is absent (Peterson and Bayley 2004, p. 173).

For example, the Sonoran desert tortoise is difficult to monitor in the wild because of its slow movement and camouflaged appearance, especially in the smaller hatchling and juvenile age classes. In addition, the habitat in which Sonoran desert tortoise population densities are the highest is complex, often with many large boulders, somewhat dense vegetation, and challenging topographic relief. These factors can significantly hamper a surveyor’s ability to detect them in the field (Zylstra *et al.* 2010, p. 1311).

Compounding this problem is the fact that in many animal populations, not all individuals can be detected using one particular sampling method. Pollock *et al.* (2004, p. 43) present the example of the dugong (sea cow) off the coast of Australia. Using one method of detection—aerial surveys—some dugongs may be underwater and invisible to the observers searching for them from aircraft, or the observer may miss detecting them due to his or her uncertain perception process. Similarly, terrestrial salamanders in North Carolina and Tennessee most often occur below the surface of the ground, making detection particularly difficult, especially when using standard sampling protocols that only sample the surface population (Pollock *et al.* 2004, p. 53). Sampling salamanders subsurface, however, can be problematic because they require cool, moist conditions, and are prone to desiccating (drying out) while being handled. Attempting to detect rare species by using multiple sampling methods or surveying multiple times is often prohibitively time-consuming and expensive, and may not always be feasible because of the sensitivity of the species.

Jaguars, specifically, are secretive and nocturnal in nature (Seymour 1989, p. 2; 62 FR 39147, p. 39153; McCain and Childs 2008, p. 5) and, in the United States and northern Mexico, inhabit rugged, remote areas that are logistically difficult to survey. Even in studies designed to detect jaguars using both camera traps and track surveys in northern Mexico, neither method was completely effective in identifying individuals due to logistical problems related to rugged topography, hard soils, absence of roads, and harsh weather conditions (Rosas-Rosas and Bender 2012, pp. 95–96). In the United

States specifically, most of the recent occurrences of jaguars (after 1996) would not have been known but for a substantial amount of time and effort being invested by the Borderlands Jaguar Detection Project (BJDP) (Johnson *et al.* 2011, p. 40). From 1997 to 2010, the BJDP maintained 45–50 remote-camera stations across three counties in Arizona, conducted track and scat (feces) surveys opportunistically, and followed up on credible sighting reports from other individuals, resulting in 105 jaguar locations representing two adult male jaguars and possibly a third of unknown sex (Johnson *et al.* 2011, p. 40). From the time the jaguar was listed in 1972 until 1997, no effort was made to detect jaguars in the United States, and so we cannot be sure that a lack of detection indicates the species was absent.

Based on the above information, we determine that areas in which jaguars have been documented from 1982 to the present may have been occupied at the time of the original listing (March 30, 1972; 37 FR 6476) because: (1) Jaguars were rare on the landscape and distributed over large, rugged areas, meaning they were difficult to detect; (2) jaguars are cryptic and nocturnal by nature, making them difficult to detect; and (3) no survey effort was made to detect them in 1972, meaning we cannot be sure that a lack of detection indicates the species was absent. Therefore, based on the best available information related to jaguar rarity, biology, and survey effort, we determine that areas containing undisputed Class I records from 1982 to the present may have been occupied by jaguars at the time of listing.

However, to the extent that uncertainty exists regarding our analysis of these data, we acknowledge there is an alternative explanation as to whether or not these areas were occupied at the time the jaguar was listed in 1972 (37 FR 6476). The lack of jaguar sightings at that time, as well as some expert opinions cited in our July 22, 1997, clarifying rule (62 FR 39147) (for example, Swank and Teer 1989), suggest that jaguars in the United States had declined to such an extent by that point as to be effectively eliminated. Therefore, there is an argument to be made that no areas in the United States were occupied by the species at the time it was listed, or that only areas containing undisputed Class I records from between 1962 and 1982 (see “Jaguar Sightings in the United States Since 1962,” below) were occupied.

For this reason, we also analyzed whether or not these areas are essential to the conservation of the species. Through our analysis, we determine that they are essential to the conservation of the species for the following reasons: (1) They have demonstrated recent (since 1996) occupancy by jaguars; (2) they contain features that comprise suitable jaguar habitat; and (3) they contribute to the species’ persistence in the United States by allowing the normal demographic function and possible range expansion of the Northwestern Recovery Unit, which is essential to the conservation of the species (as discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* section, above). Therefore, we include them in the proposed critical habitat designation.

Jaguar Sightings in the United States Since 1962

We are only considering undisputed Class I reports as valid records of jaguar locations. Class I reports are those for which some sort of physical evidence is provided for verification (such as a skin, skull, or photograph); they are considered “verified” or “highly probable” as evidence for a jaguar occurrence. Class II records have detailed information of the observation provided but do not include any physical evidence of a jaguar. Class II observations are considered “probable” or “possible” as evidence for a jaguar occurrence. This classification protocol was developed by adapting criteria published by Tewes and Everett (1986, entire), based on work in Texas with jaguarundis and ocelots (*Leopardus pardalis*). The Arizona-New Mexico Jaguar Conservation Team (for a description and history of this team, see Johnson *et al.* 2011, pp. 37–40) reviewed and endorsed the protocol in 1998, for use in evaluating jaguar occurrence reports for Arizona and New Mexico. Therefore, we are using the same criteria to evaluate jaguar occurrence reports in the United States, and consider undisputed Class I records as the best available information.

Recently (1996 through 2011), five, possibly six, transient male jaguars have been documented in the United States. Two of these six male jaguars were photographed in 1996 in the United States: One on March 7, 1996, in the Peloncillo Mountains, located along the Arizona-New Mexico border (Glenn 1996, entire; Brown and López González 2001, p. 6), and another on August 31, 1996, in the Baboquivari Mountains in southern Arizona (Brown and López González 2001, p. 6; McCain and Childs 2008, p. 2). In

February 2006, a jaguar was observed and photographed on the northern end of San Luis Mountains of southwestern New Mexico, very close to the U.S.-Mexico border (McCain and Childs 2008, p. 2; Arizona Game and Fish Department 2011a, p. 2). Using remote cameras, jaguars were photographed in the Pajarito, Atascosa, Tumacacori, Baboquivari, and Coyote Mountains near the Arizona-Mexico border from 2001 through 2009 (McCain and Childs 2008, entire; Arizona Game and Fish Department 2011a, pp. 1–3). The most recently confirmed jaguar sighting occurred on November 19, 2011, where a jaguar was observed and photographed in the Whetstone Mountains in southern Arizona (Arizona Game and Fish Department 2011b, p. 1; and unpublished data).

Other jaguars documented in the United States since 1962 include the following: (1) A photograph of a jaguar track taken on April 19, 1995, in the Peloncillo Mountains near the Arizona-New Mexico border; (2) a male jaguar killed after being tracked by dogs on December 15, 1986, in the Dos Cabezas Mountains in southeastern Arizona; (3) a male jaguar killed by boys duck hunting along the Santa Cruz River on October 16, 1971, south of Highway 82 and north of Nogales, Arizona; and (4) a male jaguar killed during a deer hunt on November 16, 1965, in the Patagonia Mountains in southern Arizona (Brown and López González 2001, pp. 6–7; Arizona Game and Fish Department 2011a, pp. 3–4).

There are three jaguar records from 1962 forward that we are not considering in our analysis. One of these is a female shot on September 28, 1963, in the White

Mountains of east-central Arizona, and another is a male trapped on January 16, 1964, near the Black River in east-central Arizona. As described in Johnson *et al.* (2011, p. 9), as well as from information provided during the public comment period on our January 13, 2010, prudence determination (75 FR 1741), the validity of these locations is questionable because of the suspicion that these animals were released for “canned hunts” (hunts involving release of captive animals). Therefore, we are not including them as undisputed Class I records. The third exception is a recent sighting of a jaguar in the Santa Rita Mountains by a border patrol agent in a helicopter during the summer of 2011. Because the Coronado National Forest was closed to public entry at that time due to an extremely volatile fire season, this location could not be verified, and therefore it is not considered a Class I record.

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. We review available information pertaining to the habitat requirements of the species. In accordance with the Act and its implementing regulations at 50 CFR 424.12(e), the Secretary shall designate as critical habitat areas outside the geographical area presently occupied by a species only when a designation limited to its present range would be inadequate to ensure the conservation of the species. We are proposing to designate critical habitat for the jaguar within the geographical area occupied by the species 10 years prior to the time of listing in 1972. We also are proposing to designate specific areas outside the geographical area occupied by the species at the time of listing that provide connectivity to Mexico, or to another occupied



area that provides connectivity to Mexico (see “Areas Essential for the Conservation of Jaguars Outside of Occupied Areas,” below), because such areas are essential for the conservation of the species.

Consequently, we are defining areas occupied by jaguars 10 years prior to the time of its listing as rugged mountain ranges in southeastern Arizona and extreme southwestern New Mexico: (1) In which an undisputed Class I record has been documented, and (2) that currently contain the physical or biological features described above (see below for the steps we followed to delineate critical habitat boundaries). Therefore, occupied areas include the Baboquivari, Quinlan, Coyote, Pajarito, Atascosa, Tumacacori, Patagonia, Canelo Hills, Huachuca, Santa Rita, Whetstone, and Peloncillo Mountains of Arizona, and the Peloncillo and San Luis Mountains of New Mexico.

All undisputed Class I records of jaguars documented in the United States since 1962 have been within the aforementioned mountain ranges, with the following two exceptions. We are not including the Dos Cabezas Mountains in Arizona (one male jaguar killed in 1986) as occupied because, while this mountain range contains some of the primary constituent elements of the physical or biological feature required for critical habitat, by itself it is not of an adequate size to meet the expansive open spaces primary constituent element. Additionally, the 1971 record of a male jaguar killed by hunters was along the Santa Cruz River, not within a mountain range. As described above under “Space for Individual and Population Growth and for Normal Behavior,” this is the only

record found in a valley bottom since the species was listed, and likely represents a jaguar moving between areas of higher quality habitat found in the surrounding isolated mountain ranges. Therefore, because we are unable to describe or delineate the features of areas connecting mountain ranges in the United States due to a lack of information, this record does not fall within or near the physical or biological features described above.

#### Areas Essential for the Conservation of Jaguars

As described in the “Occupied Area at the Time of Listing” section, above, we acknowledge that the lack of jaguar sightings at the time the species was listed as endangered in 1972 (37 FR 6476), as well as some expert opinions cited in our July 22, 1997, clarifying rule (62 FR 39147) (for example, Swank and Teer 1989), suggest that jaguars in the United States had declined to such an extent by that point as to be effectively eliminated. Only two undisputed Class I records (described above) exist for jaguars between 1962 and 1982, both of which were males killed by hunters. To the extent that areas described above may not have been occupied at the time of listing, we determine that they are essential to the conservation of the species for the following reasons: (1) They have demonstrated recent (since 1996) occupancy by jaguars; (2) they contain features that comprise suitable jaguar habitat; and (3) they contribute to the species’ persistence in the United States by allowing the normal demographic function and possible range expansion of the Northwestern Recovery Unit, which is essential to

the conservation of the species (as discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* section, above). Therefore, we include them in the proposed critical habitat designation.

Additionally, as discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* and “Space for Individual and Population Growth and for Normal Behavior” sections, above, connectivity to Mexico is essential for the conservation of jaguars. Jaguars in the United States are understood to be individuals dispersing from the nearest core population in Mexico, which includes areas in central Sonora, southwestern Chihuahua, and northeastern Sinaloa (Jaguar Recovery Team 2012, p. 21). The closest known breeding population occurs about 210 km (130 mi) south of the U.S.-Mexico border in Sonora near the towns of Huasabas, Sahuaripa (Brown and López González 2001, pp. 108–109), and Nacori Chico (Rosas-Rosas and Bender 2012, pp. 88–89). In several of our **Federal Register** documents pertaining to the jaguar, including the notice in which we determined that designating critical habitat was prudent (75 FR 1741, p. 1743), we discussed the need to develop and maintain travel corridors for jaguars between the United States and Mexico to enable a few, possibly resident individuals to persist north of the international border. Therefore, we conclude that maintaining travel corridors to Mexico is essential for the conservation of jaguars in the Northwestern Recovery Unit, and therefore for the species as a whole.

As we discussed under “Space for Individual and Population Growth and for

Normal Behavior,” above, describing these areas of connectivity within the United States is difficult because of a lack of information about what these features encompass.

However, in some areas there may be a level of connectivity to Mexico that could be provided because these areas contain some, but not all, of the PCEs described above. In the jaguar habitat model developed for northwestern Mexico and the U.S.-Mexico borderlands area, Sanderson and Fisher (2011, p. 11) described how low human influence is perhaps the most important feature defining jaguar habitat, as jaguars most often avoid areas with too much human pressure. Furthermore, their model describes a level of uncertainty regarding jaguar use of areas with moderate tree cover (in their model, this is from 3 to 60 percent) and intermediate to high ruggedness, as jaguars could potentially be found in areas meeting only one of these habitat qualities. Therefore, we have determined the most likely areas providing connectivity from occupied areas in the United States to Mexico are those in which the human influence is low, and either or both moderate tree cover or intermediately to highly rugged terrain is present.

Consequently, we are further defining areas essential for the conservation of jaguars outside of occupied areas as those areas that: (1) Connect an area that may have been occupied that is isolated within the United States to Mexico, either through a direct connection to the international border or through another area that may have been occupied; and (2) contain low human influence and impact, and either vegetative cover or rugged terrain. Based on these criteria, we identified three subunits outside of occupied areas that are essential for the conservation of jaguars in the United States because they

provide connectivity to Mexico. They include the southern extent of the Baboquivari Mountains, an east-west connection area between the Santa Rita Mountains and northwestern extent of the Whetstone Mountains (including the Empire Mountains), and a north-south connection area between the southern extent of the Whetstone Mountains and the Huachuca Mountains (including the Mustang Mountains).

Therefore, we delineated critical habitat boundaries using the following steps:

(1) We mapped areas containing PCEs 3, 4, 5, and 6 as determined from GIS data on water availability, vegetation community, tree cover, ruggedness, and human influence. We did not use data describing distribution of native prey, as wildlife management agencies in Arizona and New Mexico have a history of effective game management strategies resulting in prey species' persistence within occupied areas (for State philosophies of game management, see Arizona Game and Fish Department 2011c, p. 6 and New Mexico Department of Game and Fish 2007, p. 4; for survey information and hunter success rates in Arizona, see Arizona Game and Fish Department 2011d, pp. 10, 15–40, 98–116). Areas (also called polygons) that were adjacent to each other (for example, touching at corners) were merged into one polygon. We then selected polygons containing an undisputed Class I record of a jaguar from 1962 forward. We also selected polygons that fell partially or entirely within 1-km (0.4-mi) of these polygons because most of the GIS datasets we used were of a 1-square-km (0.4-square-mi) resolution (pixel size), and therefore we determined that this was the distance within which some mapping

error may have occurred. If the area within the selected polygons surrounding a jaguar record did not meet the minimum size criterion of 84 square km (32 square mi) when added together, we removed those polygons from further consideration.

We placed a 1-km (0.4-mi) buffer around the remaining polygons to account for mapping error, but did not apply this buffer to areas in which the vegetation community was other than Madrean evergreen woodland or semidesert grassland, or areas in which the Human Influence Index (HII) was greater than 20 (see “Habitats Protected from Disturbance or Representative of the Historical, Geographic, and Ecological Distributions of the Species,” above). The vegetation community data we used were not mapped at a 1-square-km (0.4-square-mi) resolution, and therefore we determined the 1-km (0.4-mi) buffer did not apply to this dataset. Our rationale for ensuring only areas in which the HII was 20 or less (as described in the “Habitats Protected from Disturbance or Representative of the Historical, Geographic, and Ecological Distributions of the Species” section, above) were included in the proposed designation was based on Sanderson and Fisher (2011, p. 11), in which they described low human influence as being essential to the jaguar; we therefore did not include any areas in which this PCE was absent because of its importance in describing jaguar habitat. Small areas of 1 square km (0.4 square mi) or less (our tolerance buffer as described above) that were excluded within the polygons were then included, as these areas were of a size in which a mapping error could have occurred.

(2) If a polygon described in step 1, above, was not connected to Mexico, we selected and added areas containing low human influence and impact and either or both vegetative cover or rugged terrain to connect these areas directly to Mexico or to another occupied area.

When determining proposed critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack the physical or biological feature necessary for jaguars. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this proposed rule have been excluded by text in the proposed rule and are not proposed for designation as critical habitat. Therefore, if the critical habitat is finalized as proposed, a Federal action involving these lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological feature in the adjacent critical habitat.

Based on our analyses of areas as both occupied and unoccupied (but essential for the conservation of the species), we are proposing for designation of critical habitat lands that we have determined were occupied at the time of listing and contain sufficient elements of the physical or biological feature to support life-history processes essential

for the conservation of the species, and lands outside of the geographical area occupied at the time of listing that we have determined are essential. In our analysis we also evaluated the areas we proposed as occupied at the time of listing and determine that these same areas are also essential for the conservation of jaguars in the Northwestern Recovery Unit, and therefore for the species as a whole.

In summary, while we understand there may be alternative explanations as to whether or not areas were occupied at the time the jaguar was listed, we are required to make an administrative decision regarding occupancy status for purposes of delineating critical habitat units and applying the policy as described in the Act. Based on our analyses as discussed under the *Criteria Used To Identify Critical Habitat* section, above, it is our determination that the lands described under “Occupied Area at the Time of Listing” were occupied at the time of listing, and thus are described in the unit descriptions, below, as being occupied. However, these same areas are also considered essential, based on our analysis, above. In addition, we are proposing unoccupied lands outside of the geographical area occupied at the time of listing because those lands provide connectivity to Mexico, making them essential for the conservation of the jaguar.

Therefore, six units are proposed for designation based on sufficient elements of physical or biological feature being present to support jaguar life-history processes. The occupied mountain ranges within the units contain all of the identified elements of the physical or biological feature necessary for jaguars. The unoccupied areas denoted as



Subunits 1b, 4b, and 4c are essential for the conservation of the species, as they provide the jaguar connectivity with Mexico and the Northwestern Recovery Unit.

### **Proposed Critical Habitat Designation**

We are proposing six units as critical habitat for the jaguar. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the jaguar. The six units we propose as critical habitat are: (1) Baboquivari Unit divided into subunits (1a) Baboquivari-Coyote Subunit, including the Northern Baboquivari, Saucito, Quinlan, and Coyote Mountains, and (1b) the Southern Baboquivari Subunit; (2) Atascosa Unit, including the Pajarito, Atascosa, and Tumacacori Mountains; (3) Patagonia Unit, including the Patagonia, Santa Rita, and Huachuca Mountains and the Canelo Hills; (4) Whetstone Unit, divided into subunits (4a) Whetstone Subunit, (4b) Whetstone-Santa Rita Subunit, and (4c) Whetstone-Huachuca Subunit; (5) Peloncillo Unit, including the Peloncillo Mountains both in Arizona and New Mexico; and (6) San Luis Unit, including the northern extent of the San Luis Mountains at the New Mexico-Mexico border. Table 1 lists both the occupied and unoccupied units.

TABLE 1.—Occupancy of Jaguars by Proposed Critical Habitat Units (All units are in Arizona unless otherwise noted).

Unit	Occupied at Time of Listing
<b>1 Baboquivari Unit</b>	
<b>1a Baboquivari-Coyote Subunit</b>	
Coyote Mountains	Yes
Quinlan Mountains	Yes
Saucito Mountains	Yes
Northern Baboquivari Mountains	Yes
<b>1b Southern Baboquivari Subunit</b>	
Southern Baboquivari Mountains Connection	No
<b>2 Atascosa Unit</b>	
Tumacacori Mountains	Yes
Atascosa Mountains	Yes
Pajarito Mountains	Yes
<b>3 Patagonia Unit</b>	
Santa Rita Mountains	Yes
Patagonia Mountains	Yes
Canelo Hills	Yes
Huachuca Mountains	Yes
<b>4 Whetstone Unit</b>	
<b>4a Whetstone Subunit</b>	
Whetstone Mountains	Yes
<b>4b Whetstone-Santa Rita Subunit</b>	
Whetstone-Santa Rita Mountains Connection	No
<b>4c Whetstone-Huachuca Subunit</b>	
Whetstone-Huachuca Mountains Connection	No
<b>5 Peloncillo Unit</b>	

Peloncillo Mountains (Arizona and New Mexico)	Yes
<b>6 San Luis Unit</b>	
San Luis Mountains (New Mexico)	Yes

The approximate area of each proposed critical habitat unit is shown in Table 2.

TABLE 2.—Area of Proposed Critical Habitat Units for the Jaguar.

Unit or Subunit	Federal		State		Tribal		Private		Other		Total	Total
	Ha	Ac	Ha	Ac	Ha	Ac	Ha	Ac	Ha	Ac	Ha	Ac
1a – Baboquivari-Coyote Subunit	4,360	10,775	8,483	20,962	20,036	49,511	3,003	7,420	0	0	35,882	88,667
1b – Southern Baboquivari Subunit	644	1,591	7,005	17,310	10,853	26,818	1,857	4,589	0	0	20,359	50,308
2 – Atascosa Unit	53,335	131,793	2,295	5,670	0	0	2,475	6,115	0	0	58,104	143,578
3 – Patagonia Unit	116,080	286,839	5,618	13,883	0	0	17,115	42,291	8	20	138,821	343,033
4a – Whetstone Subunit	16,406	40,541	4,684	11,575	0	0	2,921	7,219	0	0	24,012	59,335
4b – Whetstone-Santa Rita Subunit	1,577	3,897	6,543	16,168	0	0	2,566	6,341	0	0	10,686	26,406
4c – Whetstone-Huachuca Subunit	1,575	3,892	3,009	7,436	0	0	3,411	8,428	0	0	7,995	19,756
5 – Peloncillo Unit	27,387	67,673	7,582	18,736	0	0	5,321	13,150	0	0	40,290	99,559
6 – San Luis Unit	0	0	0	0	0	0	3,071	7,590	0	0	3,071	7,590
Grand Total	221,364	547,000	45,220	111,741	30,889	76,329	41,740	103,143	8	20	339,220	838,232

Note: Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for jaguar, below.

*Subunit 1a: Baboquivari-Coyote Subunit*

Subunit 1a consists of 35,882 ha (88,667 ac) in the northern Baboquivari, Saucito, Quinlan, and Coyote Mountains in Pima County, Arizona. This subunit is generally bounded by the Baboquivari Valley to the west, State Highway 86 to the north, the Altar Valley to the east, and Three Peaks to the south. Land ownership within the unit includes approximately 4,360 ha (10,775 ac) of Federal lands; 20,036 ha (49,511 ac) of Tohono O’odham Nation lands; 8,483 ha (20,962 ac) of Arizona State lands; and 3,003 ha (7,420 ac) of private lands. The Federal land is administered by the Service and Bureau of Land Management. We consider the Baboquivari-Coyote Subunit occupied at the time of listing (37 FR 6476; March 30, 1972) based on one photo of a jaguar in 1996, and multiple photos of this same jaguar from 2001–2009 (described in “Occupied Area at the Time of Listing,” above), and it may be currently occupied. It contains all elements of the physical or biological feature essential to the conservation of the jaguar, except for connectivity to Mexico.

The primary land uses within Subunit 1a include ranching, grazing, border-related activities, Federal land management activities, and recreational activities throughout the year, including, but not limited to, hiking, birding, horseback riding, and hunting. Special management considerations or protections needed within the unit would need to address increased human disturbances in remote locations through construction of impermeable fences and widening or construction of roadways, power lines, or pipelines to ensure all PCEs remain intact.

*Subunit 1b: Southern Baboquivari Subunit*

Subunit 1b consists of 20,359 ha (50,308 ac) in the southern Baboquivari Mountains in Pima County, Arizona. This subunit is generally bounded by the Baboquivari Valley to the west, Three Peaks to the north, the Altar Valley to the east, and the U.S.-Mexico border to the south. Land ownership within the unit includes approximately 644 ha (1,591 ac) of Federal lands; 10,853 ha (26,818 ac) of Tohono O'odham Nation lands; 7,005 ha (17,310 ac) of Arizona State lands; and 1,857 ha (4,589 ac) of private lands. The Federal land is administered by the Service and Bureau of Land Management. The Southern Baboquivari Subunit provides connectivity to Mexico and was not occupied at the time of listing, but is essential to the conservation of the jaguar because it contributes to the species' persistence by providing connectivity to occupied areas that support individuals during dispersal movements during cyclical expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit.

The primary land uses within Subunit 1b include ranching, grazing, border-related activities, Federal land management activities, and recreational activities throughout the year, including, but not limited to, hiking, birding, horseback riding, and hunting.

*Unit 2: Atascosa Unit*

Unit 2 consists of 58,104 ha (143,578 ac) in the Pajarito, Atascosa, and Tumacacori Mountains in Pima and Santa Cruz Counties, Arizona. Unit 2 is generally bounded by the San Luis Mountains (Arizona) to the west, Arivaca Road to the north, Interstate 19 to the east, and the U.S.-Mexico border to the south. Land ownership within the unit includes approximately 53,335 ha (131,793 ac) of Federal lands; 2,295 ha (5,670 ac) of Arizona State lands; and 2,475 ha (6,115 ac) of private lands. The Federal land is administered by the Coronado National Forest. We consider the Pajarito-Tumacacori Unit occupied at the time of listing (37 FR 6476; March 30, 1972) based on multiple photos of two, possibly three, jaguars from 2001–2009 (described in “Occupied Area at the Time of Listing,” above), and it may be currently occupied. It contains all elements of the physical or biological feature essential to the conservation of the jaguar.

The primary land uses within Unit 2 include Federal forest management activities, border-related activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting. Special management considerations or protections needed within the unit would need to address increased human disturbances into remote locations through construction of impermeable fences and widening or construction of roadways, power lines, or pipelines to ensure all PCEs remain intact.

*Unit 3: Patagonia Unit*

Unit 3 consists of 138,821 ha (343,033 ac) in the Patagonia, Santa Rita, and Huachuca Mountains, as well as the Canelo Hills, in Pima, Santa Cruz, and Cochise Counties, Arizona. Unit 3 is generally bounded by Interstate 19 to the west; Interstate 10 to the north; Cienega Creek, the Mustang Mountains, and Highways 90 and 92 to the east; and the U.S.-Mexico border to the south. Land ownership within the unit includes approximately 116,080 ha (286,839 ac) of Federal lands; 5,618 ha (13,883 ac) of Arizona State lands; 17,115 ha (42,291 ac) of private lands; and 8 ha (20 ac) of other lands. The Federal land is administered by the Coronado National Forest, Bureau of Land Management, and Fort Huachuca. We consider the Patagonia Unit occupied at the time of listing (37 FR 6476; March 30, 1972) based on the 1965 record from the Patagonia Mountains (described in “Occupied Area at the Time of Listing,” above), and it may be currently occupied. The mountain ranges within this unit contain all elements of the physical or biological feature essential to the conservation of the jaguar.

The primary land uses within Unit 3 include military activities associated with Fort Huachuca, as well as Federal forest management activities, border-related activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting. Special management considerations or protections needed within the unit would need to address human disturbances through such activities as military ground maneuvers and increased human presence in remote locations through mining and development activities,



construction of impermeable fences, and widening or construction of roadways, power lines, or pipelines to ensure all PCEs remain intact.

*Subunit 4a: Whetstone Subunit*

Subunit 4a consists of 24,012 ha (59,335 ac) in the Whetstone Mountains in Pima, Santa Cruz, and Cochise Counties, Arizona. Subunit 4a is generally bounded by Cienega Creek to the west, Interstate 10 to the north, Highway 90 to the east, and Highway 82 to the south. Land ownership within the subunit includes approximately 16,406 ha (40,541 ac) of Federal lands; 4,684 ha (11,575 ac) of Arizona State lands; and 2,921 ha (7,219 ac) of private lands. The Federal land is administered primarily by the Coronado National Forest. We consider the Whetstone Subunit occupied at the time of listing (37 FR 6476; March 30, 1972) based on photographs taken in 2011 (described in “Occupied Area at the Time of Listing,” above), and it may be currently occupied. The mountain range within this subunit contains all elements of the physical or biological feature essential to the conservation of the jaguar, except for connectivity to Mexico.

The primary land uses within Subunit 4a include Federal forest management activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting. Special management considerations or protections needed within the subunit would need to address increased human disturbances through development activities, and

widening or construction of roadways, power lines, or pipelines to ensure all PCEs remain intact.

*Subunit 4b: Whetstone-Santa Rita Subunit*

Subunit 4b consists of 10,686 ha (26,406 ac) between the Santa Rita Mountains and northern extent of the Whetstone Mountains in Pima County, Arizona. Subunit 4b is generally bounded by the Santa Rita Mountains to the west, Interstate 10 to the north, the Whetstone Mountains to the east, and Wood Canyon to the south. Land ownership within the subunit includes approximately 1,577 ha (3,897 ac) of Federal lands; 6,543 ha (16,168 ac) of Arizona State lands; and 2,566 ha (6,341 ac) of private lands. The Whetstone-Santa Rita Subunit provides connectivity from the Whetstone Mountains to Mexico and was not occupied at the time of listing, but is essential to the conservation of the jaguar because it contributes to the species' persistence by providing connectivity to occupied areas that support individuals during dispersal movements during cyclical expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit.

The primary land uses within Subunit 4b include grazing and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting.

*Subunit 4c: Whetstone-Huachuca Subunit*

Subunit 4c consists of 7,995 ha (19,756 ac) between the Huachuca Mountains and southern extent of the Whetstone Mountains in Santa Cruz and Cochise Counties, Arizona. Subunit 4c is generally bounded by Highway 83 to the west, Highway 82 to the north, Highway 90 to the east, and the Huachuca Mountains to the south. Land ownership within the subunit includes approximately 1,575 ha (3,892 ac) of Federal lands; 3,009 ha (7,436 ac) of Arizona State lands; and 3,411 ha (8,428 ac) of private lands. The Federal land is administered by the Coronado National Forest, Bureau of Land Management, and Fort Huachuca. The Whetstone-Huachuca Subunit provides connectivity from the Whetstone Mountains to Mexico and was not occupied at the time of listing, but is essential to the conservation of the jaguar because it contributes to the species' persistence by providing connectivity to occupied areas that support individuals during dispersal movements during cyclical expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit.

The primary land uses within Subunit 4c include military activities associated with Fort Huachuca, as well as Federal forest management activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting.

*Unit 5: Peloncillo Unit*

Unit 5 consists of 40,290 ha (99,559 ac) in the Peloncillo Mountains in Cochise County, Arizona, and Hidalgo County, New Mexico. Unit 5 is generally bounded by the San Bernardino Valley to the west, the San Simone Valley and northern boundary of the Coronado National Forest to the north, the Animas Valley to the east, and the U.S.-Mexico border on the south. Land ownership within the unit includes approximately 27,387 ha (67,673 ac) of Federal lands; 7,582 ha (18,736 ac) of Arizona State lands; and 5,321 ha (13,150 ac) of private lands. The Federal land is administered by the Coronado National Forest and Bureau of Land Management. We consider the Peloncillo Unit occupied at the time of listing (37 FR 6476; March 30, 1972) based on a track documented in 1995 and photographs taken in 1996 (described in “Occupied Area at the Time of Listing,” above), and it may be currently occupied. It contains all elements of the physical or biological feature essential to the conservation of the jaguar.

The primary land uses within Unit 5 include Federal forest management activities, border-related activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting. Special management considerations or protections needed within the unit would need to address increased human disturbances in remote locations through construction of impermeable fences and widening or construction of roadways, power lines, or pipelines to ensure all PCEs remain intact.

*Unit 6: San Luis Unit*

Unit 6 consists of 3,071 ha (7,590 ac) in the northern extent of the San Luis Mountains in Hidalgo County, New Mexico. Unit 6 is roughly bounded by the Animas Valley to the west, Highway 79 to the north, above approximately 1,600 m (5,249 ft) to the east, and the U.S.-Mexico border to the south. Land ownership within the unit is entirely private land. We consider the San Luis Unit occupied at the time of listing (37 FR 6476; March 30, 1972) based on photographs taken in 2006 (described in “Occupied Area at the Time of Listing,” above), and it may be currently occupied. Unit 6 contains almost all elements (PCEs 2–7) of the physical or biological features essential to the conservation of the jaguar except for PCE 1 (expansive open space). This unit is included because, while by itself it does not provide at least 84 square km (32 square mi) of jaguar habitat in the United States, additional habitat can be found immediately adjacent south of the U.S.-Mexico border, and therefore this area represents a small portion of a much larger area of habitat.

The primary land uses within Unit 6 include border-related activities, grazing, and some recreational activities throughout the year, including, but not limited to, hiking, horseback riding, and hunting. Special management considerations or protections needed within the unit would need to address increased human disturbances into remote locations through construction of impermeable fences and widening or construction of roadways, power lines, or pipelines to ensure all PCEs remain intact.

## **Effects of Critical Habitat Designation**

### *Section 7 Consultation*

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

Decisions by the 5<sup>th</sup> and 9<sup>th</sup> Circuit Courts of Appeals have invalidated our regulatory 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 (9<sup>th</sup> Cir. 2004) and *Sierra Club v. U.S. Fish and Wildlife Service et al.*, 245 F.3d 434, 442 (5<sup>th</sup> 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 continue to serve its intended conservation role for the species.

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. Examples of actions that are subject to the section 7 consultation process are actions on State, tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

As a result of section 7 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, or 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 and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during consultation that:

- (1) Can be implemented in a manner consistent with the intended purpose of the action,
- (2) Can be implemented consistent with the scope of the Federal agency’s legal authority and jurisdiction,
- (3) Are economically and technologically feasible, and
- (4) Would, in the Director’s opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of 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.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency’s



discretionary involvement or control is authorized by law). Consequently, Federal agencies 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.

*Determinations of Adverse Effects and Application of the “Adverse Modification” Standard*

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.

Section 7(a)(2) of the Act requires Federal agencies to ensure their actions do not jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. The key factor involved in the destruction/adverse modification determination for a proposed Federal agency action is whether the affected critical habitat would continue to serve its intended conservation role for the species with implementation of the proposed action after taking into account any anticipated cumulative effects (U.S. Fish and Wildlife Service 2004, *in litt.* entire). Activities that

may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of critical habitat for the jaguar. 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.

In general, there are five possible outcomes in terms of how proposed Federal actions may affect the PCEs or physical or biological feature of jaguar critical habitat: (1) No effect; (2) wholly beneficial effects (e.g., improve habitat condition); (3) both short-term adverse effects and long-term beneficial effects; (4) insignificant or discountable adverse effects; or (5) wholly adverse effects.

Actions with no effect on the PCEs and physical or biological feature of jaguar critical habitat do not require section 7 consultation, although such actions may still have adverse or beneficial effects on the species itself that require consultation. Examples of these actions may include grazing, ranching operations, routine border security activities, or limited recreational activity, which we anticipate would not result in adverse effects or adverse modification to jaguar critical habitat, but may still require section 7 review for effects to the species itself.

Actions with effects to the PCEs or physical and biological feature of jaguar critical habitat that are discountable, insignificant, or wholly beneficial are considered as not likely to adversely affect critical habitat and do not require formal consultation if the

Service concurs in writing with that Federal action agency determination. Examples of these actions may include fuels-management activities, prescribed fire, or closing and re-vegetating roads.

Additionally, actions with adverse effects to the PCEs or physical or biological feature in the short term, but that result over the long term in an improvement in the function of the habitat to the jaguar would likely not constitute adverse modification of critical habitat. We anticipate actions consistent with the stated goals or recovery actions of the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012) or the future recovery plan for the species, once completed, would fall into this category.

Actions that are likely to adversely affect the PCEs or physical or biological feature of jaguar critical habitat require formal consultation and the preparation of a Biological Opinion by the Service. The Biological Opinion sets forth the basis for our section 7(a)(2) determination as to whether the proposed Federal action is likely to destroy or adversely modify jaguar critical habitat. Some activities may adversely affect the PCEs, but not result in adverse modification of critical habitat. Activities that may destroy or adversely modify critical habitat are those that alter the essential physical or biological features of the critical habitat to an extent that appreciably reduces the conservation value of the critical habitat for the listed species. As discussed above, the conservation role or value of jaguar critical habitat is to provide areas to support some individuals during transient movements by providing patches of habitat (perhaps in some

cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit.

Therefore, actions that could destroy or adversely modify jaguar critical habitat include those that would permanently sever connectivity to Mexico or within a critical habitat unit such that movement of jaguars between habitat in the United States and Mexico is eliminated. In general, such activities could include building impermeable fences (such as pedestrian fences discussed in *Special Management Considerations or Protection*, above) in areas of vegetated rugged terrain, or major road construction projects (such as new highways or significant widening of existing highways). Activities that may adversely affect the PCEs (such as permanently displacing native prey species, increasing the distance to water to more than 10 km (6.2 mi), removing tree cover, altering rugged terrain, or appreciably increasing human presence on the landscape), but may not destroy or adversely modify critical habitat could include habitat clearing, the construction of facilities, or expansion of linear projects (such as power lines or pipelines) that reduce the amount of habitat available but that do not permanently sever essential movement between the United States and Mexico or within a given critical habitat unit.

At this time, we do not anticipate activities such as grazing, ranching operations, or limited recreational activity would have adverse effects to jaguar critical habitat, nor do we anticipate activities consistent with the stated goals or recovery actions of the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012) or the future recovery plan for the species would constitute adverse modification. We also do not anticipate

further impermeable fencing being built in areas with rugged terrain, as technological solutions (such as video surveillance) for Homeland Security purposes are more likely to be applied in these areas. We also are unaware of any plans to expand highways through proposed jaguar critical habitat. However, we are aware of one large-scale mining operation (Rosemont Mine) that is being evaluated within jaguar proposed critical habitat. We will need to evaluate this project in the context of connectivity to Mexico to determine if adverse modification to jaguar critical habitat will likely result from this action.

## **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 (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

- (1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;
- (2) A statement of goals and priorities;

(3) A detailed description of management actions to be implemented to provide for these ecological needs; and

(4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

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 geographic 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 with a completed INRMP that specifically includes the jaguar within the proposed critical habitat designation. Fort Huachuca has a completed INRMP that addresses other endangered and threatened species, but currently it does not include management actions specific to the jaguar or its

habitat. For this reason, we are not currently considering Fort Huachuca lands as exempt from jaguar critical habitat designation. However, should Fort Huachuca's INRMP be amended to include the jaguar before the final critical habitat rule is completed, or should we receive information demonstrating the INRMP provides benefits to the jaguar through measures designed for other species (for example, the Mexican spotted owl), we would consider exempting lands owned and managed by the Fort in the final rule.

## **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 are preparing an analysis of the economic impacts of the proposed critical habitat designation and related factors. The proposed critical habitat areas include Federal, State, tribal, and private lands, some of which are used for mining and recreation (such as hiking, camping, horseback riding, and hunting). Other land uses that may be affected will be identified as we develop the draft economic analysis for the proposed designation.

We will announce the availability of the draft economic analysis as soon as it is completed, at which time we will seek public review and comment. At that time, copies of the draft economic analysis will be available for downloading from the Internet at



<http://www.regulations.gov>, or by contacting the Arizona Ecological Services Fish and Wildlife Office directly (see **FOR FURTHER INFORMATION CONTACT**). During the development of a final designation, we will consider economic impacts, public comments, and other new information, and areas may be excluded from the final critical habitat designation under section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19.

#### 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. Department of Defense lands eligible for exclusion include Fort Huachuca, as discussed above in *Application of Section 4(a)(3) of the Act* and lands on which the U.S. Customs and Border Protection (CBP) operates along the U.S.-Mexico border. CBP is tasked with maintaining national security interests along the nation's international borders. As such, the CBP's activities may qualify for exclusions under section 4(b)(2) of the Act. In order to achieve and maintain effective control of the United States border, CBP, through its component, the United States Border Patrol (USBP), requires continuing and regular access to certain portions of the area proposed for designation as critical habitat. Because CBP's border security mission has an important link to national security, CBP may identify impacts to national security that may result from designating critical habitat. While we do not have information currently indicating that the lands owned or managed

by the Department of Defense and the remaining lands within the proposed designation of critical habitat for the jaguar will have an impact on national security, we may consider excluding certain lands in the final rule. Consequently, the Secretary does not propose to exert his discretion to exclude any areas from the final designation based on impacts on national security at this time. However, should Fort Huachuca or another entity identify impacts to national security that may result from designating critical habitat on lands owned and managed by the Fort, or on the remaining lands within the critical habitat footprint, we may consider excluding those lands in the final rule.

#### 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.

We are not considering any areas for exclusion at this time from the final designation under section 4(b)(2) of the Act based on partnerships, management, or

protection afforded by cooperative management efforts. Some areas within the proposed designation are included in management plans or other large-scale HCPs such as the Malpai Habitat Conservation Plan and lands managed by the Tohono O'odham Nation. In this proposed rule, we are seeking input from the public as to whether or not the Secretary should exclude HCP areas or other such areas under management that benefit the jaguar from the final revised critical habitat designation. (Please see the **Public Comments** section of this proposed rule for instructions on how to submit comments.)

### **Peer Review**

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (59 FR 34270), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of peer review is to ensure that our critical habitat designation is based on scientifically sound data, assumptions, and analyses. We have invited these peer reviewers to comment during this public comment period on our specific assumptions and conclusions in this proposed designation of critical habitat.

We will consider all comments and information received during this comment period on this proposed rule during our preparation of a final determination. Accordingly, the final decision may differ from this proposal.

## **Public Hearings**

Section 4(b)(5) of the Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposed rule in the **Federal Register**. Such requests must be sent to the address shown in the **FOR FURTHER INFORMATION CONTACT** section. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing.

## **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 (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.

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 such businesses as 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 forestry and logging operations with fewer than 500 employees and annual business less than \$7 million. To determine whether small entities may be affected, we will consider 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.

Importantly, the incremental impacts of a rule must be *both* significant and substantial to prevent certification of the rule under the RFA and to require the preparation of an initial regulatory flexibility analysis. If a substantial number of small entities are affected by the proposed critical habitat designation, but the per-entity economic impact is not significant, the Service may certify. Likewise, if the per-entity economic impact is likely to be significant, but the number of affected entities is not substantial, the Service may also certify.

Under the RFA, as amended, and following recent court decisions, Federal agencies are only required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself, and not the potential impacts to indirectly affected entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action they authorize, fund, or carry out is not likely to adversely modify critical habitat. Therefore, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Under these circumstances, it is our position that only Federal action agencies will be directly regulated by this designation. Therefore, because Federal agencies are not small entities, the Service may certify that the proposed critical habitat rule will not have a significant economic impact on a substantial number of small entities.

We acknowledge, however, that in some cases, third-party proponents of the action subject to permitting or funding may participate in a section 7 consultation, and thus may be indirectly affected. We believe it is good policy to assess these impacts if we have sufficient data before us to complete the necessary analysis, whether or not this analysis is strictly required by the RFA. While this rule would not directly regulate these entities, in our draft economic analysis we will conduct a brief evaluation of the potential

number of third parties participating in consultations on an annual basis in order to ensure a more complete examination of the incremental effects of this proposed rule in the context of the RFA.

In conclusion, we believe that, based on our interpretation of directly regulated entities under the RFA and relevant case law, this designation of critical habitat would only directly regulate Federal agencies, which are not by definition small business entities. As such, we certify that, if promulgated, this designation of critical habitat would not have a significant economic impact on a substantial number of small business entities. Therefore, an initial regulatory flexibility analysis is not required. However, though not necessarily required by the RFA, in our draft economic analysis for this proposal we will consider and evaluate the potential effects to third parties that may be involved with consultations with Federal action agencies related to this action.

*Energy Supply, Distribution, or Use—Executive Order 13211*

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. Because there are no energy facilities within the footprint of the proposed critical habitat boundaries, and we are unaware of



energy projects currently proposed within the boundaries, we do not expect the designation of this proposed critical habitat 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. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment as warranted.

*Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)*

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

(1) This rule would 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 tribal 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.

(2) We do not believe that this rule would significantly or uniquely affect small governments. The lands we are proposing for critical habitat designation are predominantly owned by the U.S. Forest Service, Bureau of Land Management, and State of Arizona. None of these government entities fit the definition of “small governmental jurisdiction.” Therefore, a Small Government Agency Plan is not required. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment if appropriate.

*Takings—Executive Order 12630*

In accordance with Executive Order 12630 (“Government Actions and Interference with Constitutionally Protected Private Property Rights”), this rule is not anticipated to have significant takings implications. As discussed above, the designation of critical habitat affects only Federal actions. 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. Due to current public knowledge of the species’ protections and the prohibition against take of the species both within and outside of the proposed areas, we do not anticipate that property

values would be affected by the critical habitat designation. However, we have not yet completed the economic analysis for this proposed rule. Once the economic analysis is available, we will review and revise this preliminary assessment as warranted, and prepare a takings implication assessment.

*Federalism—Executive Order 13132*

In accordance with Executive Order 13132 (Federalism), this proposed rule does not have significant Federalism effects. A Federalism summary impact 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 proposed critical habitat designation with appropriate State resource agencies in Arizona and New Mexico. The designation of critical habitat in areas currently occupied by the jaguar may impose nominal additional regulatory restrictions to those currently in place and, therefore, may have little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments because the areas that contain the physical or biological features essential to the conservation of the species are more clearly defined, and the elements of the features 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).

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. 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.

*Civil Justice Reform—Executive Order 12988*

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed designating critical habitat in accordance with the provisions of the Act. This proposed rule uses standard property descriptions and identifies the elements of physical or biological features essential to the conservation of the jaguar within the designated areas to assist the public in understanding the habitat needs of the species.

*Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)*

This rule does not contain any new collections of information that require

approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*).

This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

*National Environmental Policy Act (42 U.S.C. 4321 et seq.)*

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)). However, when the range of the species includes States within the Tenth Circuit, such as that of jaguar, under the Tenth Circuit ruling in *Catron County Board of Commissioners v. U.S. Fish and Wildlife Service*, 75 F.3d 1429 (10th Cir. 1996), we will undertake a NEPA analysis for critical habitat designation and notify the public of the availability of the draft environmental assessment for this proposal when it is finished.

*Clarity of the Rule*

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (1) Be logically organized;
- (2) Use the active voice to address readers directly;
- (3) Use clear language rather than jargon;
- (4) Be divided into short sections and sentences; and
- (5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

*Government-to-Government Relationship with Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily

acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes.

There are tribal lands in Arizona included in this proposed designation of critical habitat. Using the criteria found in the *Criteria Used To Identify Critical Habitat* section, we have determined that there are tribal lands that were occupied by jaguar at the time of listing that contain the features essential for the conservation of the species, as well as tribal lands unoccupied by the species at the time of listing that are essential for the conservation of the jaguar in the United States. We will seek government-to-government consultation with these tribes throughout the public comment period and during development of the final designation of jaguar critical habitat. We will consider these areas for exclusion from the final critical habitat designation to the extent consistent with the requirements of 4(b)(2) of the Act. The Tohono O'odham Nation (TON) is the main tribe affected by this proposed rule. We recently sent a notification letter to the TON describing the exclusion process under section 4(b)(2) of the Act, and we have engaged in conversations with the TON about the proposal to the extent possible without disclosing pre-decisional information. In addition, the TON has a representative on the



Jaguar Recovery Team and so the tribe has been aware that the Service was working on a critical habitat proposal. We will schedule a meeting with the TON and any other interested tribes shortly after publication of this proposed rule so that we can give them as much time as possible to comment. We will also send letters to all other tribes with interest in the general geographic area of the jaguar's range, including the following: Gila River Indian Community; Salt River-Maricopa Indian Community; Ak Chin Indian Community; San Carlos Apache Nation; Hopi Tribe; Pascua Yaqui Tribe; Mescalero Apache Tribe; and Yavapai-Apache Nation.

### **References Cited**

A complete list of references cited in this rulemaking is available on the Internet at <http://www.regulations.gov> and upon request from the Arizona Ecological Services Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

### **Authors**

The primary authors of this package are the staff members of the Arizona Ecological Services Fish and Wildlife Office.

### **List of Subjects in 50 CFR Part 17**

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

**Proposed Regulation Promulgation**

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

**PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS**

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

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

2. Amend § 17.11(h) by revising the entry for “Jaguar” under “Mammals” in the List of Endangered and Threatened Wildlife to read as follows:

**§ 17.11 Endangered and threatened wildlife.**

\* \* \* \* \*

(h) \* \* \*



Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						

MAMMALS

\* \* \* \* \*

Jaguar	<i>Panthera onca</i>	U.S.A. (AZ, CA, LA, NM, TX) Mexico, Central and South America	Entire	E	5, 622	17.95(a)	NA
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\* \* \* \* \*

3. In § 17.95, amend paragraph (a) by adding an entry for “Jaguar (*Panthera onca*),” 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.**

\* \* \* \* \*

(a) *Mammals.*

\* \* \* \* \*

Jaguar (*Panthera onca*)

(1) Critical habitat units are depicted for Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New Mexico, on the maps below.

(2) Within these areas, the primary constituent elements of the physical or biological feature essential to the conservation of jaguar consists of expansive open spaces in the southwestern United States of at least 84 to 100 square kilometers (32 to 37 square miles) in size which:

(i) Provide connectivity to Mexico;

(ii) Contain adequate levels of native prey species, including deer and javelina, as well as medium-sized prey such as coatis, skunks, raccoons, or jackrabbits;

(iii) Include surface water sources available within 20 km (12.4 mi) of each other;

(iv) Contain 3 to 40 percent canopy cover within Madrean evergreen woodland, generally recognized by a mixture of oak, juniper, and pine trees on the landscape, or semidesert grassland vegetation communities, usually characterized by *Pleuraphis mutica* (tobosagrass) or *Bouteloua eriopoda* (black grama) along with other grasses;

(v) Are characterized by intermediately, moderately, or highly rugged terrain; and

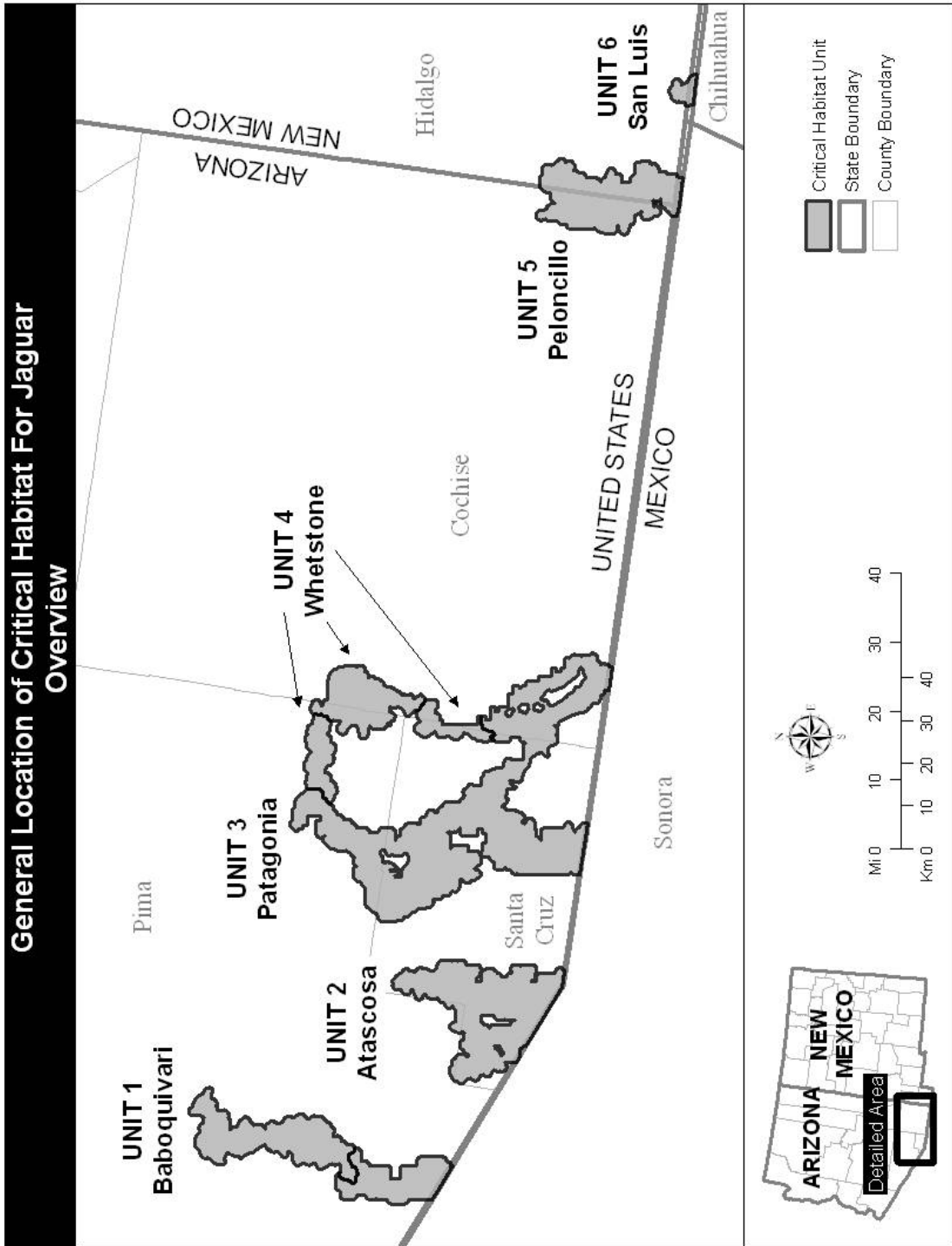
(vi) Are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-square-kilometer (0.4-square-mile) area.

(3) Critical habitat does not include manmade structures (such as buildings,

aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of this rule.

(4) Critical habitat map units. Digital data layers defining map units were created using hydrography data, vegetation biomes, tree cover, terrain ruggedness, Human Influence Index (HII) (see “Habitats Protected from Disturbance or Representative of the Historical, Geographic, and Ecological Distributions of the Species,” above), and undisputed Class I jaguar records from 1962 to the present, and were then mapped using Universal Transverse Mercator (UTM) coordinates.

(5) Index map follows:



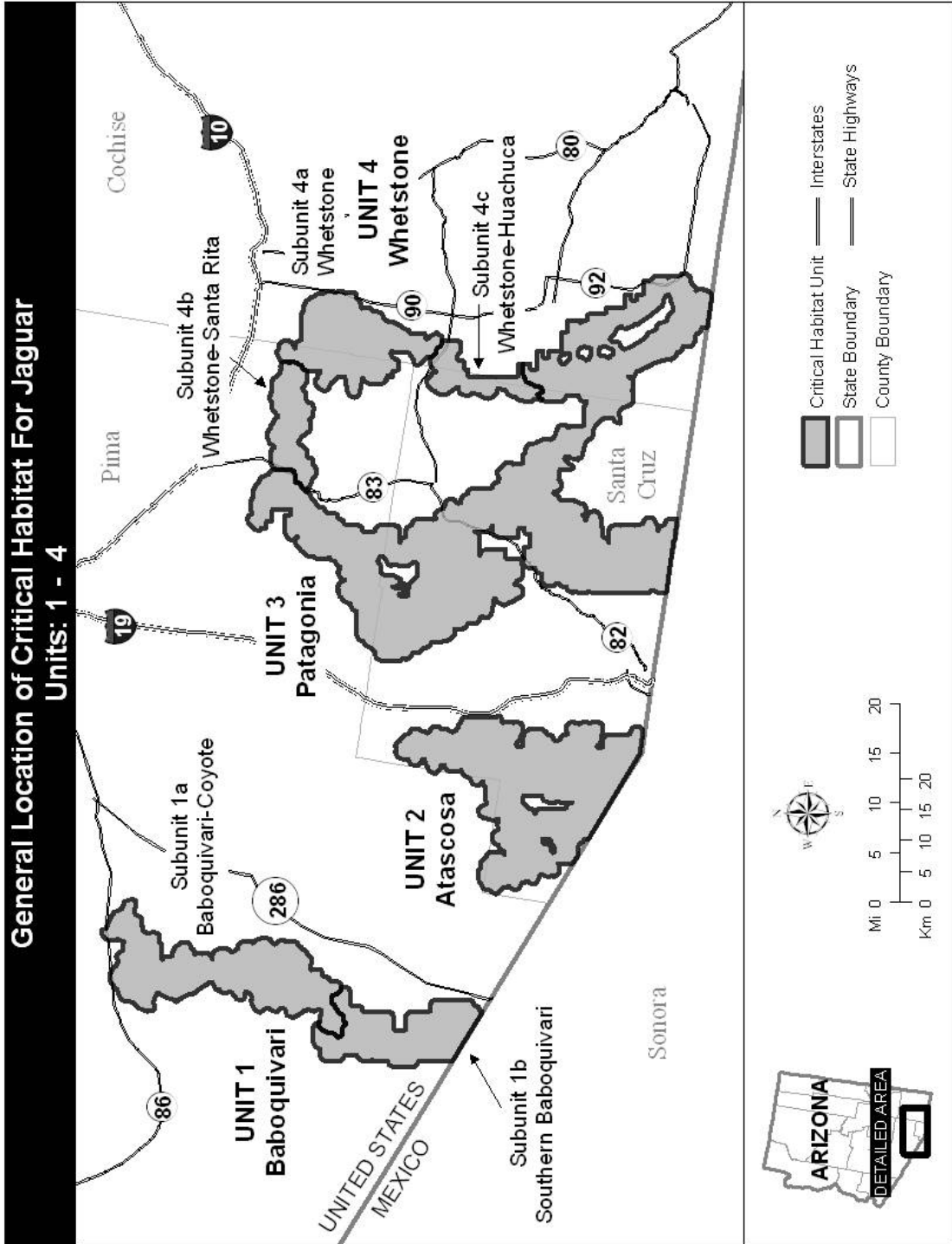


(6) Units 1, 2, 3, and 4: Baboquivari, Atascosa, Patagonia, and Whetstone Units, Pima, Santa Cruz, and Cochise Counties, Arizona.

(i) From USGS 1:24,000 scale digital ortho-photo quarter-quadrangles: Aguirre Peak NE; Aguirre Peak NW; Aguirre Peak SE; Aguirre Peak SW; Alamo Spring NE; Amado SW; Apache Peak NE; Apache Peak NW; Apache Peak SE; Apache Peak SW; Arivaca SE; Arivaca SW; Baboquivari Peak NE; Baboquivari Peak NW; Baboquivari Peak SE; Baboquivari Peak SW; Bartlett Mountain NE; Bartlett Mountain NW; Bartlett Mountain SE; Bartlett Mountain SW; Benson SW; Bob Thompson Peak NW; Canelo Pass NE; Canelo Pass NW; Caponera Peak NE; Caponera Peak NW; Caponera Peak SE; Chiuli Shaik NE; Chiuli Shaik SE; Corona de Tucson SE; Cumero Canyon NE; Cumero Canyon SE; Duchesne NE; Duchesne NW; Empire Ranch NE; Empire Ranch NW; Empire Ranch SW; Fort Huachuca SW; Green Valley SE; Green Valley SW; Haivana Nakya SE; Harshaw NE; Harshaw NW; Harshaw SE; Harshaw SW; Helvetia NE; Helvetia NW; Helvetia SE; Helvetia SW; Huachcua Peak NE; Huachcua Peak NW; Huachcua Peak SE; Huachcua Peak SW; Kino Springs NE; Kitt Peak NE; Kitt Peak NW; Kitt Peak SE; Kitt Peak SW; McGrew Spring NW; McGrew Spring SW; Mescal SE; Mescal SW; Mildred Peak NE; Mildred Peak NW; Mildred Peak SW; Miller Peak NE; Miller Peak NW; Miller Peak SE; Miller Peak SW; Montezuma Pass NE; Montezuma Pass NW; Mount Fagan SE; Mount Fagan SW; Mt. Hopkins NE; Mt. Hopkins NW; Mt. Hopkins SE; Mt. Hopkins SW; Mt. Hughes NE; Mt. Hughes NW; Mt. Hughes SE; Mt. Hughes SW; Mt. Wrightson NE; Mt. Wrightson NW; Mt. Wrightson SE; Mt. Wrightson

SW; Murphy Peak NE; Murphy Peak SE; Murphy Peak SW; Mustang Mountains NE; Mustang Mountains NW; Mustang Mountains SE; Mustang Mountains SW; Nicksville SW; O'Donnell Canyon NW; O'Donnell Canyon SE; O'Donnell Canyon SW; Pajarito Peak NE; Pajarito Peak NW; Palo Alto Ranch NW; Pan Tak SE; Pan Tak SW; Patagonia NE; Patagonia NW; Patagonia SE; Patagonia SW; Pena Blanca Lake NE; Pena Blanca Lake NW; Pena Blanca Lake SE; Pena Blanca Lake SW; Presumido Peak NW; Presumido Peak SE; Presumido Peak SW; Pyeatt Ranch NE; Pyeatt Ranch NW; Pyeatt Ranch SE; Pyeatt Ranch SW; Ruby NE; Ruby NW; Ruby SE; Ruby SW; San Cayento Mountains NE; San Juan Spring NE; San Juan Spring SE; San Pedro SW; Sasabe NW; Saucito Mountain SE; Sonoita NW; Sonoita SE; Sonoita SW; Spring Water Canyon NE; Spring Water Canyon NW; Spring Water Canyon SE; The Narrows SE; The Narrows SW; Tubac NE; Tubac NW; Tubac SE; Tubac SW; Arizona.

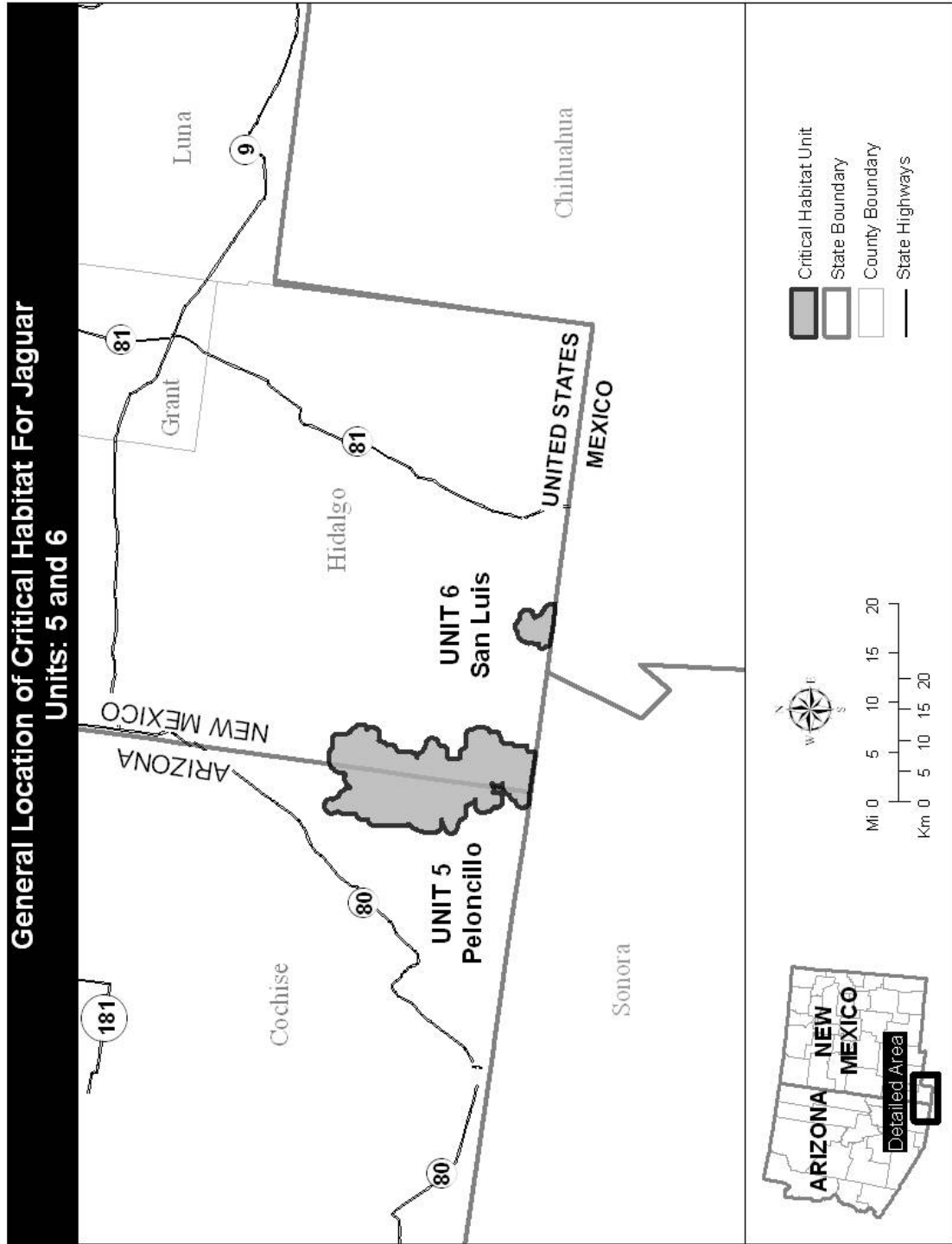
(ii) Map of Units 1, 2, 3, and 4 follows:



(7) Units 5 and 6: Peloncillo and San Luis Units, Cochise County, Arizona, and Hidalgo County, New Mexico.

(i) From USGS 1:24,000 scale digital ortho-photo quarter-quadrangles: Black Point NW; Black Point SW; Clanton Draw NW; Clanton Draw SW; Fitzpatrick's SE; Guadalupe Canyon NE; Guadalupe Canyon NW; Guadalupe Pass NW; Guadalupe Spring NE; Guadalupe Spring NW; Guadalupe Spring SE; Guadalupe Spring SW; Lang Canyon NE; Lazy J Ranch NE; Lazy J Ranch SE; Paramore Crater NE; Paramore Crater SE; San Luis Pass SW; Skeleton Canyon NE; Skeleton Canyon NW; Skeleton Canyon SE; Skeleton Canyon SW; Whitewater Creek NW; Arizona and New Mexico.

(ii) Map of Units 5 and 6 follows:



\* \* \* \* \*

Dated: August 2, 2012

Eileen Sobeck

Deputy Assistant Secretary for Fish and Wildlife and Parks

**[~~Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat  
for Jaguar~~]**