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**DRAFT ENVIRONMENTAL ASSESSMENT**  
**for the**  
**DESIGNATION OF CRITICAL HABITAT**  
**for the**  
**JAGUAR**



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Prepared by Mangi Environmental Group  
For the  
Department of the Interior  
U.S. Fish & Wildlife Service

1 **DRAFT ENVIRONMENTAL ASSESSMENT FOR THE DESIGNATION OF CRITICAL**  
2 **HABITAT FOR THE JAGUAR**

3 May 2013

4 **Lead Agency:** U.S. Department of the Interior (USDI)—United States Fish & Wildlife Service  
5 (USFWS or Service)

6 **Contact Person:**

7 Steve Spangle, Field Supervisor  
8 U.S. Fish and Wildlife Service  
9 Arizona Ecological Services Office  
10 2321 West Royal Palm Rd., Suite 103  
11 Phoenix, AZ 85021  
12 Telephone 602-242-0210; facsimile 602-242-2513  
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14 **SUMMARY**

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15 The purpose of this environmental assessment (EA) is to identify and disclose the environmental  
16 consequences resulting from the Proposed Action of designating critical habitat for the jaguar  
17 (*Panthera onca*), originally proposed on August 20, 2012 (77 FR 50214-50242) under the  
18 Endangered Species Act of 1973 (ESA), as amended, and revised in 2013.

19 The jaguar was listed as endangered in 1972 in accordance with the Endangered Species  
20 Conservation Act of 1969 (37 FR 6476). A final rule clarifying that endangered status for the  
21 species extended into the United States was published in 1997 (62 FR 39147). The 1997  
22 clarifying rule included a determination that designation of critical habitat for the jaguar was not  
23 prudent because of the possibility of “take” if jaguar locations were known was the most  
24 significant threat to the jaguar (62 FR 39147). Since that time, the issue of whether critical  
25 habitat should be designated for the jaguar in the United States has been the subject of ongoing  
26 litigation and subsequent findings (for a full history of previous Federal action, see the August  
27 20, 2012, proposed rule (77 FR 50215)).

28 Most recently, on March 30, 2009 the United States District Court for the District of Arizona  
29 issued an opinion in *Center for Biological Diversity v. Kempthorne*, CV 07-372- TUC JMR  
30 (Lead) and *Defenders of Wildlife v. Hall*, CV08-335 TUC JMR (Consolidated) (D. Ariz., Mar.  
31 30, 2009), that set aside the Service’s previous prudence determination and required a new  
32 determination as to “whether to designate critical habitat,” i.e., whether such designation is  
33 prudent, by January 8, 2010. On January 13, 2010, the Service published a notice of  
34 determination that reevaluated the previous “not prudent” finding regarding critical habitat  
35 designation for the jaguar and provided the information supporting the previous findings (75 FR  
36 1741). As a result, the Service determined that the designation of critical habitat for the jaguar  
37 would be beneficial. On October 18, 2010, the Service sent a letter to the Center for Biological  
38 Diversity and Defenders of Wildlife updating them on its process of developing a recovery plan  
39 and critical habitat for the jaguar. Additionally, the Service stated that, based on the unusual

1 situation where the best information on habitat in the United States essential to the conservation  
2 of the jaguar was being gathered through the recovery planning effort, it would postpone  
3 publishing a proposed critical habitat rule until spring 2012.

4 Three alternatives were considered: Alternative A – All Designated Areas, No Exclusions;  
5 Alternative B – Exclusion of the Tohono O’odham Nation’s (TON) tribal lands; and the No  
6 Action Alternative. Alternative A would designate approximately 347,275 hectares (ha)  
7 (858,137 acres) (ac) for designation as critical habitat for the jaguar in Pima, Santa Cruz, and  
8 Cochise Counties, Arizona, and Hidalgo County, New Mexico. The Service is proposing to  
9 designate six critical habitat units for the jaguar in Arizona and New Mexico as follows:

- 10 • Approximately 57,141 ha (141,200 ac) in the Baboquivari Mountains, Arizona.
- 11 • Approximately 58,624 ha (144,864 ac) in the Tumacacori, Atascosa, and Pajarito  
12 Mountains, Arizona.
- 13 • Approximately 148,363 ha (366,615 ac) in the Santa Rita, Patagonia, and Huachuca  
14 Mountains and Canelo Hills, Arizona.
- 15 • Approximately 38,451 ha (95,020 ac) in the Whetstone Mountains, including connections  
16 to the Santa Rita and Huachuca Mountains, Arizona.
- 17 • Approximately 41,570 ha (102,723 ac) in the Peloncillo Mountains, Arizona and New  
18 Mexico.
- 19 • Approximately 3,121 ha (7,714 ac) in the San Luis Mountains, New Mexico.

20 Alternative B is similar to Alternative A, but it excludes tribal lands of the Tohono O’odham  
21 Nation because they are managed under a tribal natural resource management plan that the  
22 Service believes may contain sufficient measures to provide equivalent habitat protection for the  
23 jaguar.

24 In addition, the U.S. Army’s Ft. Huachuca installation’s integrated natural resources  
25 management plan (INRMP) is being considered for exemption from designation, per the the  
26 National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108-136) which amended the  
27 Sikes Act (16 U.S.C. 670a) to limit areas eligible for designation as critical habitat. Specifically,  
28 section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: “The Secretary shall  
29 not designate as critical habitat any lands or other geographic areas owned or controlled by the  
30 Department of Defense, or designated for its use, that are subject to an integrated natural  
31 resources management plan [INRMP] prepared under section 101 of the Sikes Act, if the  
32 Secretary determines in writing that such plan provides a benefit to the species for which critical  
33 habitat is proposed for designation.” Fort Huachuca has a completed INRMP that addresses  
34 other endangered and threatened species, but currently does not include management actions  
35 specific to the jaguar or its habitat. The Service will review the conservation measures contained  
36 in the Fort Huachuca INRMP to determine whether they would provide a benefit to the jaguar  
37 and evaluate if the Fort would therefore be exempt under section 4(a)(3) of the Act..

38 The environmental issues identified by Federal agencies and the public during the initial public  
39 comment period and during resource analysis were those raised by the types of actions taken by  
40 public and private land managers in the region, including the impacts of critical habitat  
41 designation on border enforcement activities, water resources, vegetation, wildlife, wildland fire  
42 management, livestock grazing, land management and use, recreation, development, minerals  
43 and mining extraction, and hunting.

1 The role that jaguar habitat in the United States serves is to provide areas to support some  
2 transient individual jaguars during dispersal movements by providing patches of habitat (perhaps  
3 in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of  
4 the nearest core area and breeding population in the proposed Northwestern Recovery Unit.  
5 With respect to the impacts of designation on consultations and project modifications, the  
6 following scenarios could occur:

- 7 (1) Previously completed section 7 consultations for which project effects are ongoing or still  
8 occurring will need to reevaluate their impacts to the primary constituent elements  
9 (PCEs), and, in some cases, reinstate consultation if impacts to jaguar critical habitat  
10 were not sufficiently addressed;
- 11 (2) Consultations for new actions that may affect the jaguar will need to include  
12 consideration of effects to critical habitat and individual PCEs occurring in remote,  
13 rugged areas, in particular those that potentially could result in severing connectivity  
14 within a critical habitat unit or subunit; and
- 15 (3) Potentially, Federal agencies with responsibilities in critical habitat units considered  
16 unoccupied at the time of listing will now consider consultation on jaguar critical habitat,  
17 whereas they may not have considered consulting on jaguars in the past based on  
18 occupancy status. However, such incremental consultations are considered unlikely in  
19 actuality based on the current practice of Federal land managers, which subjects all areas  
20 proposed here as critical habitat to analysis of the impacts of their actions on jaguars.

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# 1 *Acronyms & Abbreviations*

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2	ac	acre
3	ADWR	Arizona Department of Water Resources
4	AGFD	Arizona Game and Fish Department
5	AMA	Active Management Area
6	AMP	Allotment Management Plan
7	AUM	Animal Unit Month
8	AWSA	Arizona Water Settlements Act
9	BIA	U.S. Bureau of Indian Affairs
10	BLM	U.S. Bureau of Land Management
11	BMPs	Best Management Practices
12	BO	Biological Opinion
13	CAP	Central Arizona Project
14	CBP	U.S. Customs and Border Protection
15	CEQ	Council on Environmental Quality
16	CFR	Code of Federal Regulations
17	CI	Conservation International
18	cm	Centimeter
19	CRBPA	Colorado River Basin Project Act
20	DHS	U.S. Department of Homeland Security
21	EA	Environmental Assessment
22	EIS	Environmental Impact Statement
23	EPA	Environmental Protection Agency
24	ESA	Endangered Species Act
25	FEMA	Federal Emergency Management Agency
26	FHWA	Federal Highway Administration
27	FMP	Fire Management Plan
28	FONSI	Finding of No Significant Impact
29	FR	Federal Register
30	ft	foot
31	ha	hectare
32	HCP	Habitat Conservation Plan
33	in	Inch
34	IEc	Industrial Economics
35	IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
36	INRMP	Integrated Natural Resources Management Plan
37	km	kilometer
38	LUP	Land Use Plan
39	m	meter
40	mi	mile
41	MRA	Multiple Resource Area
42	MSCP	Multispecies Conservation Program
43	NAICS	North American Industry Classification System
44	NCA	National Conservation Area

1	NEPA	National Environmental Policy Act
2	NMDGF	New Mexico Department of Game and Fish
3	NMOSE	New Mexico Office of the State Engineer
4	NPS	National Park Service
5	NRHP	National Register of Historic Places
6	NWR	National Wildlife Refuge
7	OHV	Off-highway vehicle
8	PBFs	Physical or Biological Features
9	PCEs	Primary Constituent Elements
10	RMP	Resource Management Plan
11	RU	Recovery Unit
12	SBINet	Secure Border Initiative
13	Secretary	Secretary of the Interior
14	Service	U.S. Fish and Wildlife Service
15	SHA	Safe Harbor Agreement
16	TES	Threatened, Endangered, or Sensitive Species
17	TON	Tohono O'odham Nation
18	UDWR	Utah Division of Water Rights
19	USACE	U.S. Army Corps of Engineers
20	USAF	U.S. Air Force
21	USBR	U.S. Bureau of Reclamation
22	USDA	U.S. Department of Agriculture
23	USFS	U.S. Forest Service
24	USFWS	U.S. Fish & Wildlife Service
25	USDI	U.S. Department of the Interior
26	USGS	United States Geological Survey
27	USIBC	U.S. International Boundary and Water Commission
28	WFLC	Wildland Fires Leadership Council
29	WSA	Wilderness Study Area
30	WUI	Wildland Urban Interface

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# 1 CHAPTER 1

## 2 PURPOSE OF AND NEED FOR ACTION

---

### 3 1.1 Introduction

4 The jaguar (*Panthera onca*) was listed as endangered in 1972 in accordance with the Endangered  
5 Species Conservation Act of 1969 (37 FR 6476). A final rule clarifying that endangered status  
6 for the species extended into the United States was published in 1997 (62 FR 39147), but did not  
7 include a critical habitat designation. According to Service regulations, designation of critical  
8 habitat is not prudent when one or both of the following situations exist: (1) the species is  
9 threatened by taking or other human activity, and identification of critical habitat can be  
10 expected to increase the degree of threat to the species; or (2) such designation of critical habitat  
11 would not be beneficial to the species. The 1997 clarifying rule determined that designation of  
12 critical habitat for the jaguar was not prudent because of the possibility of “take” if jaguar  
13 locations were known was the most significant threat to the jaguar (62 FR 39147). Since that  
14 time, the issue of whether critical habitat should be designated for the jaguar in the United States  
15 has been the subject of ongoing litigation and subsequent findings (for a full history of previous  
16 Federal action, see the August 20, 2012, proposed rule (77 FR 50215)).

17 Most recently, on March 30, 2009 the United States District Court for the District of Arizona  
18 issued an opinion in *Center for Biological Diversity v. Kempthorne*, CV 07-372-TUC JMR  
19 (Lead) and *Defenders of Wildlife v. Hall*, CV08-335 TUC JMR (Consolidated) (D. Ariz., Mar.  
20 30, 2009), that set aside the Service’s previous prudency determination and required a new  
21 determination as to “whether to designate critical habitat,” i.e., whether such designation is  
22 prudent, by January 8, 2010. On January 13, 2010, the Service published a notice of  
23 determination that reevaluated the previous “not prudent” finding regarding critical habitat  
24 designation for the jaguar and provided the information supporting the previous findings (75 FR  
25 1741). As a result, the Service determined that the designation of critical habitat for the jaguar  
26 would be beneficial. On October 18, 2010, the Service sent a letter to the Center for Biological  
27 Diversity and Defenders of Wildlife updating them on its process of developing a recovery plan  
28 and critical habitat for the jaguar. Additionally, the Service stated that, based on the unusual  
29 situation where the best information on habitat in the United States essential to the conservation  
30 of the jaguar was being gathered through the recovery planning effort, it would postpone  
31 publishing a proposed critical habitat rule until spring 2012.

### 32 1.2 Purpose and Need of the Action

33 Preservation of the habitat of an endangered species is a crucial element for the conservation of  
34 that species. A primary purpose of the ESA is to “provide a means whereby the ecosystems  
35 upon which endangered species and threatened species depend may be conserved” (section 2[b]).  
36 The purpose of critical habitat designation as specified in the ESA is to provide protection of  
37 habitat that is essential to the conservation of listed species.

38 The purpose of this Proposed Action is to designate critical habitat for the jaguar, a species  
39 listed as endangered under the ESA. Critical habitat designation identifies geographic areas

1 that are essential for conservation of the jaguar and that may also require special management.  
2 The designation also describes the physical and biological features that constitute the primary  
3 constituent elements (PCEs) of critical habitat.

4 The need for the action is to implement the Service’s finding, subsequent to the March 30, 2009  
5 order of the U.S. District Court for the District of Arizona, that designation of critical habitat for  
6 the jaguar would be “prudent,” pursuant to Section 4(a)(3) of the ESA, which states that critical  
7 habitat shall be designated “to the maximum extent prudent and determinable.”

## 8 **1.3 Proposed Action**

9 The Service is proposing six units as critical habitat for the jaguar. The critical habitat areas  
10 described below constitute the Service’s current best assessment of areas that meet the definition  
11 of critical habitat for the jaguar. The six units proposed as critical habitat are: (1) Baboquivari  
12 Unit divided into subunits (1a) Baboquivari-Coyote Subunit, including the Northern  
13 Baboquivari, Saucito, Quinlan, and Coyote Mountains, and (1b) the Southern Baboquivari  
14 Subunit; (2) Atascosa Unit, including the Pajarito, Atascosa, and Tumacacori Mountains; (3)  
15 Patagonia Unit, including the Patagonia, Santa Rita, Empire, and Huachuca Mountains and the  
16 Canelo and Grosvenor Hills; (4) Whetstone Unit, divided into subunits (4a) Whetstone Subunit,  
17 (4b) Whetstone-Santa Rita Subunit, and (4c) Whetstone-Huachuca Subunit; (5) Peloncillo Unit,  
18 including the Peloncillo Mountains both in Arizona and New Mexico; and (6) San Luis Unit,  
19 including the northern extent of the San Luis Mountains at the New Mexico-Mexico border. The  
20 revised proposed critical habitat designation includes lands under Federal (61%), state (15%),  
21 tribal (9%), and private (15%), land ownership. Much of the Federal land is managed by the  
22 U.S. Forest Service (USFS) in the Coronado National Forest.

23 The proposed areas are described in more detail in Section 2.3 (see Figure 2 on page 34) and  
24 mapped fully in the revised proposed rule, and incorporated herein by reference.

## 25 **1.4 Background**

### 26 **1.4.1 Critical Habitat**

#### 27 **1.4.1.1 Provisions of the ESA**

28 Section 4(a)(3) of the ESA states that critical habitat shall be designated to the maximum extent  
29 prudent and determinable and that such designation may be revised periodically as appropriate.  
30 Section 4(b)(2) of the ESA requires that critical habitat designation be based on the best  
31 scientific information available and that economic, national security, and other relevant impacts  
32 be considered. In section 3(5)(A) of the ESA, critical habitat is defined as:

- 33 (i) the specific areas within the geographical area occupied by a species, at the time it is  
34 listed in accordance with the provisions of section 4 of the ESA, on which are found  
35 those physical or biological features (PBFs) (1) essential to the conservation of the  
36 species and (2) which may require special management considerations or protection; and

1 (ii) specific areas outside the geographical area occupied by a species at the time it is listed in  
2 accordance with the provisions of section 4 of the Act, upon the determination by the  
3 Secretary of the Interior (Secretary) that such areas are essential for the conservation of  
4 the species. Section 3(5)(C) also states that critical habitat “shall not include the entire  
5 geographic area which can be occupied by the threatened or endangered species,” except  
6 when the Secretary of the Interior determines that the areas are essential for the  
7 conservation of the species.

#### 8 **1.4.1.2 Section 4(b)(2) Exclusion Process**

9 Section 4(b)(2) of the ESA allows the Secretary to exclude any area from the critical habitat  
10 designation after considering the economic, national security, or other relevant impacts of  
11 designating the area or if the Secretary determines that the benefit of excluding the area exceeds  
12 the benefit of designating it as critical habitat, unless the exclusion would result in the extinction  
13 of the species. After reviewing public comment on the critical habitat proposal, this draft EA,  
14 and the draft economic analysis, the Secretary could determine to exclude areas other than those  
15 addressed in this EA. This is as provided for in ESA section 4(b)(2) and in implementing  
16 regulations at 50 CFR Part 424.19.

#### 17 **1.4.1.3 Section 7 Consultation Process**

18 Section 7(a)(2) of the ESA requires Federal agencies to consult with the Service to “insure that  
19 any action authorized, funded, or carried out by such agency is not likely to jeopardize the  
20 continued existence of any endangered species or threatened species or result in the destruction  
21 or adverse modification of habitat of such species which is determined to be critical.” Each  
22 agency is required to use the best scientific and commercial data available. This consultation  
23 process is typically referred to as *section 7 consultation*. Section 7 of the ESA does not apply to  
24 state, local, or private land unless there is a Federal nexus (i.e., unless the action involves Federal  
25 funding, authorization, or permitting). Designation of critical habitat can help focus  
26 conservation efforts by identifying areas that are essential for the conservation of the species.  
27 Designation of critical habitat also serves to alert the public and land management agencies to  
28 the importance of an area for conservation of a listed species. As described above, critical  
29 habitat receives protection from destruction or adverse modification through required  
30 consultation under section 7 of the ESA. Aside from outcomes of consultation with the Service  
31 under section 7, the ESA does not automatically impose any restrictions on lands designated as  
32 critical habitat.

33 The section 7 consultation process begins with a determination of the effects on a listed species  
34 and designated critical habitat by a Federal action agency. If the Federal action agency  
35 determines that there would be no effect on listed species or designated critical habitat, then the  
36 section 7 process concludes at that point. If the Federal action agency determines that listed  
37 species or designated critical habitat may be affected, then consultation with the Service is  
38 initiated, and the agency and the Service may enter into informal section 7 consultation.  
39 Informal consultation is an optional process for identifying affected species and critical habitat,  
40 determining potential effects, and exploring ways to modify the action to remove or reduce  
41 adverse effects on listed species or critical habitat (50 CFR Part 402.13). During this process the

1 Service may make suggestions concerning project modifications, which then can be adopted by  
2 the action agency.

3 The informal section 7 consultation process concludes in one of two ways: (1) the Service  
4 concurs in writing that the proposed action, as modified, is not likely to adversely affect listed  
5 species or critical habitat or (2) the Service determines that adverse effects are likely to occur. If  
6 the Service determines that adverse effects on species or critical habitat are likely to occur,  
7 formal consultation is initiated (50 CFR Part 402.14). Formal consultation concludes with a  
8 Biological Opinion (BO) issued by the Service on whether the proposed Federal action is likely  
9 to jeopardize the continued existence of a listed species or to destroy or adversely modify critical  
10 habitat (50 CFR Part 402.14[h]).

11 In making a determination on whether an action will result in jeopardy, the Service begins by  
12 looking at the current status of the species, or "baseline." Added to the baseline are the various  
13 effects – direct, indirect, interrelated, and interdependent – of the proposed Federal action. The  
14 Service also examines the cumulative effects of other non-Federal actions that may occur in the  
15 action area, including state, tribal, local, or private activities that are reasonably certain to occur  
16 in the project area. The Service’s analysis is then measured against the definition of jeopardy.  
17 Under the ESA, jeopardy occurs when an action is reasonably expected, directly or indirectly, to  
18 diminish a species’ numbers, reproduction, or distribution so that the likelihood of survival and  
19 recovery in the wild is appreciably reduced.

20 Separate analyses are made under both the jeopardy and the adverse modification standards.  
21 While the jeopardy analysis evaluates potential impacts on the species as described above, the  
22 adverse modifications analysis specifically evaluates potential impacts on designated critical  
23 habitat.

24 The Ninth Circuit Court recently determined that there is an additional difference between the  
25 two standards. In *Gifford Pinchot Task Force v. United States Fish and Wildlife Service*, 378  
26 F.3d 1059 (9th Cir. 2004), the court held that while the jeopardy standard concerns the survival  
27 of a species or its risk of extinction, the adverse modification standard concerns the value of  
28 critical habitat for the recovery, or eventual delisting, of a species. As pointed out in the Ninth  
29 Circuit decision, survival of a species and recovery (or conservation) of a species are distinct  
30 concepts in the ESA. Implementation of the two standards, therefore, involves separate and  
31 distinct analyses based on these concepts. In light of the *Gifford Pinchot* decision, the Service no  
32 longer relies on the regulatory definition of “destruction of adverse modification” of critical  
33 habitat at 50 CFR 402.02. Instead, the Service relies on the statutory provisions of the ESA to  
34 complete the analysis with respect to critical habitat. The potential for destruction or adverse  
35 modification of critical habitat by a Federal action is assessed by determining the effects of the  
36 proposed Federal action on PBFs and PCEs of habitat qualities that are essential to the  
37 conservation of the species. These anticipated effects are then analyzed to determine how they  
38 will influence the function and conservation role of the affected critical habitat. This analysis  
39 provides the basis for determining the significance of anticipated effects of the proposed Federal  
40 action on critical habitat. The threshold for destruction or adverse modification is evaluated in  
41 the context of whether the critical habitat would remain functional to serve the intended  
42 conservation role for the species.

1 Before a destruction or adverse modification determination is reached, an activity adversely  
2 affecting critical habitat must be of such severity or intensity that the physical and biological  
3 features of critical habitat are compromised to the extent that the critical habitat can no longer  
4 meet its intended conservation function. A “non-jeopardy” or “no adverse modification” opinion  
5 concludes consultation, and the proposed action may proceed under the ESA. If the Service  
6 concludes that an action will result in incidental take of listed species, the Service may prepare  
7 an incidental take statement with reasonable and prudent measures to minimize take and  
8 associated, mandatory terms and conditions that describe the methods for accomplishing the  
9 reasonable and prudent measures. Discretionary conservation recommendations may be  
10 included in a BO based on the effects on the species. Conservation recommendations, whether  
11 they relate to the jeopardy or adverse modification standard, are discretionary actions  
12 recommended by the Service. These recommendations may address minimizing adverse effects  
13 on listed species or critical habitat, identifying studies or monitoring, or suggesting how action  
14 agencies can assist species under their own authorities and section 7(a)(1) of the ESA.

15 There are no ESA section 9 prohibitions for critical habitat. Therefore, a BO that concludes “no  
16 destruction or adverse modification of critical habitat” may contain conservation  
17 recommendations but would not include an incidental take statement (since only species can be  
18 “taken”), reasonable and prudent measures, or other terms and conditions for designated critical  
19 habitat. In a BO that results in a jeopardy or adverse modification conclusion, the Service  
20 develops mandatory reasonable and prudent alternatives to the proposed action. Reasonable and  
21 prudent alternatives are actions that the Federal agency can take to avoid jeopardizing the  
22 continued existence of the species or adversely modifying the critical habitat. Reasonable and  
23 prudent alternatives may vary from minimal project changes to extensive redesign or relocation  
24 of the project, depending on the situations involved. Reasonable and prudent alternatives must  
25 be consistent with the intended purpose of the proposed action, and they also must be consistent  
26 with the scope of the Federal agency’s legal authority. Furthermore, the reasonable and prudent  
27 alternatives must be economically and technically feasible.

#### 28 **1.4.2 Jaguar**

29 The following briefly summarizes key information about the physical and biological features  
30 (PBFs) of the jaguar and PCEs that determine its critical habitat. For more detail, and for a  
31 description of the species and information about its life history, habitat, and distribution, consult  
32 the final rule clarifying that endangered status for the species extended into the United States (62  
33 FR 39147) and the August 20, 2012, proposed critical habitat designation rule (77 FR 50213-  
34 50242), which are herein incorporated by reference.



**Figure 1. Jaguar**

**1.4.2.1 Physical and Biological Features for the Jaguar**

In determining which areas to propose as critical habitat within the geographical area occupied at the time of listing, the Service considered the PBFs essential to the conservation of the species that may require special management considerations or protection. The Service lists five categories of PBFs, but the specific PBFs required for a species are derived from the studies of this species' habitat, ecology, and life history as described below in Table 1.1. The specific needs for the jaguar are described in detail in the August 20, 2012, proposed critical habitat rule (77 FR 50213-50242) and the revised proposed rule, and additional information on jaguar ecology is provided in the Recovery Outline (Service 2012a).

**Table 1.1. Summary of the Physical and Biological Features Specific to the Jaguar**

PBF	Summary of Jaguar Specific PBFs
Space for individual and population growth and for normal behavior.	Jaguars have large home ranges and require a significant amount of space for individual and population growth and for normal behavior. They require connectivity between such areas in the U.S. and Mexico.
Food, water, air, light, minerals, or other nutritional or physiological requirements.	Areas containing adequate numbers of native prey, including deer, javelina, and medium-sized prey items (such as coatis, skunks, raccoons, or jackrabbits) are an essential component. In order to constitute high quality jaguar habitat, an area must be below 2,000 m (6,562 feet (ft)) in elevation and can be no more than 10 km (6.2 mi) from a year-round water source.
Cover or shelter.	<i>Vegetative cover</i> —Jaguars require vegetative cover allowing them to stalk and ambush prey, as well as providing areas in which to den and rest. The Service has identified Madrean evergreen woodlands and semidesert grasslands containing greater than 1 to 50 percent tree cover as essential for the conservation of the jaguar in the U.S. <i>Rugged topography</i> —Rugged topography (including canyons, ridges, and some

PBF	Summary of Jaguar Specific PBFs
	rocky hills to provide sites for resting) is an important component of jaguar habitat in the northwestern-most portion of its range. Areas of intermediately, moderately, or highly rugged terrain are essential for the conservation of the jaguar in the U.S.
Sites for breeding, reproduction, or development of offspring.	No specific PBF description for the jaguar.
Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a 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. Human density can affect the presence or absence of the jaguar because jaguars are secretive animals and generally tend to avoid highly disturbed areas. 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.

1 To summarize the PBFs in a single statement, the service has determined that the following PBF  
2 is essential for the jaguar: Expansive open spaces in the southwestern United States with  
3 adequate connectivity to Mexico that contain a sufficient native prey base and available surface  
4 water, have suitable vegetative cover and rugged topography to provide sites for resting, and  
5 have minimal human impact, as further described in the August 20, 2012 proposed rule (77 FR  
6 50213-50242).

7 **1.4.2.2 Primary Constituent Elements for the Jaguar**

8 Under the Act and its implementing regulations (50 CFR §424.12), the Service is required to  
9 identify the PBFs essential to the conservation of the jaguar in areas occupied at the time of  
10 listing, focusing on the features' PCEs. The Service considers PCEs to be the elements of  
11 physical and biological features that provide for a species' life-history processes, and are  
12 essential to the conservation of the species.

13 Based on the above needs and the Service's current knowledge of the life history, biology, and  
14 ecology of the species, and the habitat requirements for sustaining the essential life-history  
15 functions of the species, the Service has determined that the PCEs essential to the conservation  
16 of the jaguar are: expansive open spaces in the southwestern U.S. of at least 100 square  
17 kilometers (km<sup>2</sup>) (38.6 square mi (mi<sup>2</sup>)) in size which:

- 18 (1) Provide connectivity to Mexico;
- 19 (2) Contain adequate levels of native prey species, including deer and javelina, as well as  
20 medium-sized prey such as coatis, skunks, raccoons, or jackrabbits;
- 21 (3) Include surface water sources available within 20 km (12.4 mi) of each other;
- 22 (4) Contain from greater than 1 to 50 percent canopy cover within Madrean evergreen  
23 woodland, generally recognized by a mixture of oak, juniper, and pine trees on the  
24 landscape, or semidesert grassland vegetation communities, usually characterized by  
25 *Pleuraphis mutica* (tobosagrass) or *Bouteloua eriopoda* (black grama) along with other  
26 grasses;
- 27 (5) Are characterized by intermediately, moderately, or highly rugged terrain;

1 (6) Are characterized by minimal to no human population density, no major roads, or no  
2 stable nighttime lighting over any 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) area; and

3 (7) Are below 2,000 m (6,562 ft) in elevation.

4 Specific descriptions of these PCEs are found in the August 20, 2012, proposed rule (77 FR  
5 50213-50242) and this revised proposed rule. Six units proposed to be designated as critical  
6 habitat may be occupied by jaguars and contain the components of the PCEs sufficient to support  
7 the life-history needs of the species. Two of these units also contain subunits that provide  
8 connectivity to Mexico and are essential to the conservation of the species.

## 9 **1.5 Permits Required for Implementation**

10 No permits are required for critical habitat designation. Designation of critical habitat occurs  
11 through a rulemaking process under the Administrative Procedures Act (5 U.S.C. §551–59, 701–  
12 06, 1305, 3105, 3344, 5372, 7521) and the ESA.

## 13 **1.6 Related Laws, Authorizations, and Plans**

14 As mentioned, section 7 of the ESA require Federal agencies to consult with the Service when  
15 there are potential effects to endangered or threatened species, independent of critical habitat.  
16 The ESA also prohibits any person from “taking” the species without a permit from the Service.  
17 Other Federal laws address various aspects of conservations of fish and wildlife and their habitat,  
18 which apply to the jaguar:

- 19 1. Federal Land Policy and Management Act. The Federal Land Policy and Management  
20 Act of 1976 requires that “. . . the public lands be managed in a manner that will protect  
21 the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric,  
22 water resource, and archeological values; that. . . will preserve and protect certain public  
23 lands in their natural condition; (and) that will provide food and habitat for fish and  
24 wildlife . . .”.
- 25 2. National Forest Management Act. The National Forest Management Act of 1976 directs  
26 that the National Forest System “...where appropriate and to the extent practicable, will  
27 preserve and enhance the diversity of plant and animal communities.” Additionally, sec.  
28 219.12(g) requires the maintenance of viable populations of native vertebrates in National  
29 Forests.
- 30 3. Convention on International Trade in Endangered Species of Wild Fauna and Flora  
31 (CITES). CITES is an international agreement between governments to ensure that  
32 international trade in specimens of wild animals and plants does not threaten their  
33 survival. The jaguar is listed under Appendix I, meaning it is considered one of the most  
34 endangered among CITES-listed animals and plants. Because Appendix I animals and  
35 plants are threatened with extinction, CITES prohibits international trade in specimens of  
36 these species (with some exceptions).
- 37 4. The Lacey Act (16 USC §3371 et seq.), as amended in 1982. The Act prohibits the  
38 import, export, sale, receipt, acquisition, purchase, and engagement in interstate or  
39 foreign commerce of any species taken, possessed, or sold in violation of any law, treaty,  
40 or regulation of the United States, and Tribal law, or any law or regulation of any state.

- 1 5. Comprehensive Conservation Plans (CCP). The Service prepares a plan for each  
2 National Wildlife Refuge (NWR) which contains proposed critical habitat. These plans  
3 define the conservation goals and strategies and resulting land uses and activities within  
4 each NWR to best achieve those goals.
- 5 6. Arizona. The State of Arizona describes the jaguar as a “species of greatest conservation  
6 need” in the Arizona Game and Fish Department’s (AGFD) Wildlife Action Plan, and  
7 current penalties for unlawfully killing a jaguar are deferred to those that would apply  
8 through a violation of section 9 of the Act. However, increased penalties under State law  
9 for the unlawful killing of jaguars will apply in Arizona, if the jaguar is delisted.
- 10 7. New Mexico. The State of New Mexico describes the jaguar as a “restricted species,” the  
11 definition of which is “any listed large exotic cat species or subspecies.” Therefore, the  
12 State of New Mexico does not currently consider the jaguar as part of its native fauna,  
13 and does not manage for the species.

## 14 **1.7 Issues and Concerns from Public Comments**

15 The August 20, 2012, proposed designation was open for public comment from August 20, 2012  
16 through October 19, 2012. Comments received from the public and interested stakeholders  
17 raised the following issues:

### 18 *Extent of Critical Habitat*

- 19 • While illegal killing of jaguars continues to be a major threat to jaguars south of the U.S.-  
20 Mexico border, it does not appear to be a significant threat within the U.S. Thus, critical  
21 habitat should be focused in Mexico.
- 22 • Maintenance of the interconnectivity of U.S. habitat with habitat in Mexico as human  
23 population, road and urban density, and habitat fragmentation continue to increase.
- 24 • Several commenters requested an increase in the range of critical habitat in the U.S.:
  - 25 ○ Concerns that there are not enough water resources located within the designated  
26 critical habitat and suggest establishing 20 km wide corridors of critical habitat in  
27 valleys that are centered on surface water sources in valleys.
  - 28 ○ The following additional mountain ranges within the current boundary of the  
29 Northwestern Recovery Unit (as described in the April 2012 Recovery Outline for the  
30 jaguar) should be designated as critical habitat: in Arizona, the Chiricahua, Dos  
31 Cabezas, Dragoon and Mule mountains, and in New Mexico the Animas and  
32 adjoining Pyramid mountains.
  - 33 ○ The following additional “sky island” mountain ranges outside of the current  
34 boundaries of the Northwestern Recovery Unit should be designated as critical  
35 habitat: In New Mexico, the Alama Hueco, Big Hatchet, Little Hatchet, Florida, West  
36 and East Potrillo, Cedar and Big Burro mountains; in Arizona, the Galiuro, Santa  
37 Teresa, Pinaleno, Whitlock, Santa Catalina and Rincon mountains. Straddling both  
38 states, the Peloncillo Mountains north of the current boundaries of the Northwestern  
39 Recovery Unit should also be designated.
  - 40 ○ The following lowland areas between mountain ranges in the Sky Islands region (both  
41 within and outside of the current boundary of the Northwestern Recovery Unit)  
42 should be designated as critical habitat: In Arizona, the Buenos Aires NWR, and the

1 upper Santa Cruz River, San Pedro River, Sulpher Springs, San Bernadino and Falcon  
2 valleys; in New Mexico, the Animas, Playa, Hachita and Mimbres River valleys and  
3 the Lordsburg Mesa; and in both states the Gila River Valley.

- 4 ○ The following vast region north of the current boundary of the Northwestern  
5 Recovery Unit should be designated as critical habitat: In Arizona, the Mogollon Rim  
6 along with adjoining spurs and canyons; in New Mexico, the contiguous lands of the  
7 Gila National Forest along with the Plains of San Augustin, the Zuni Plateau, the El  
8 Malpais National Monument and National Conservation Area (NCA), and the San  
9 Mateo, Magdalena, Chupadera, Datil, Sawtooth, Luera and Summit mountains.
  - 10 ○ The Rosemont Copper Project is located within Ce:wi Duag, which is within the  
11 historic Papagueria of the Tohono O’odham Nation. Ce:wi Duag is a Traditional  
12 Cultural Place used by the Tohono O’odham that is eligible for listing in the National  
13 Register of Historic Places (NRHP). The Rosemont Copper Project would harm the  
14 cultural and environmental resources of this area; therefore, the final critical habitat  
15 designation should include Federal lands within Ce:wi Duag.
  - 16 ○ The PCEs of jaguar critical habitat should also include less rugged lands, extremely  
17 rugged lands, the vegetation associated with Rocky Mountain montane conifer forest  
18 and Great Basin conifer woodlands, and areas with human influence index of 30, if  
19 not more.
- 20 ● Desire to exclude Tohono O’odham Nation trust lands from critical habitat designation.
  - 21 ● Fort Huachuca is requesting exemption from critical habitat designation based on the  
22 Fort’s INRMP, prepared under section 101 of the Sikes Act (16 U.S.C. 670a) and which  
23 currently provides a benefit to the jaguar.

#### 24 *Decision to Designate Critical Habitat*

- 25 ● FWS should not list the proposed area as critical habitat due to:
  - 26 ○ Lack of sufficient water sources.
  - 27 ○ Lack of prey density.
  - 28 ○ Lack of breeding population.
  - 29 ○ Flaws in the jaguar model.
  - 30 ○ National security concerns.
- 31 ● There was insufficient involvement of, and coordination with, local governments in the  
32 plans to designate critical habitat.

#### 33 *Impacts of Designating Critical Habitat*

- 34 ● Concerns for human health and safety from the protection of large predators.
- 35 ● Prohibiting, severely restricting, delaying, or curtailing the following activities, which  
36 contribute to Arizona's employment base and the local and Federal tax base, could  
37 potentially result in an economic impact through loss of use of public lands:
  - 38 ○ Timber harvesting.
  - 39 ○ Quarrying or mineral extraction.
  - 40 ○ Recreation.

- 1 • The jaguar’s dependence on year-round water availability within 10 km could have  
2 severe economic impacts on agriculture and grazing; specifically, on the small family  
3 ranches and farms that make up the bulk of New Mexico’s agricultural producers
- 4 • Private land owners expressed concern about adverse affects to their livelihoods due to  
5 ranches being included in critical habitat, including their future willingness to participate  
6 in conservation programs from the Natural Resource Conservation Service (NRCS)  
7 where they received NRCS funding for improvements or general conservation activities.  
8 Such adverse affects deserve compensation.

## 9 **1.8 Topics Analyzed in Detail in this Environmental Assessment**

10 Based on comments received during the public comment period, internal scoping within the  
11 Service, and a review of the previous consultation history of the species, the Service analyzed the  
12 potential impacts of critical habitat designation on the following resources:

- 13 • Land Use and Management;
- 14 • Fish, Wildlife, and Plants (including Threatened & Endangered species);
- 15 • Fire Management;
- 16 • Water Resources (including water management projects and groundwater pumping);
- 17 • Livestock Grazing;
- 18 • Construction/Development (including roads, bridges, dams, infrastructure, residential);
- 19 • Tribal Trust Resources;
- 20 • Soils;
- 21 • Recreation & Hunting;
- 22 • Socioeconomics;
- 23 • Environmental Justice;
- 24 • Mining & Minerals Extraction; and
- 25 • National Security.

### 26 **1.8.1 Topics Dismissed from Detailed Analysis**

27 Federal regulations (40 CFR §1500 et seq.) require that certain topics be addressed as part of a  
28 National Environmental Policy Act (NEPA) analysis. The Service reviewed the mandatory  
29 topics listed below and determined that the action alternatives have no or negligible potential to  
30 affect them. These topics have been dismissed from detailed analysis in this document because,  
31 as a regulatory action that does not itself mandate or authorize any specific agency actions, the  
32 designation of critical habitat for the jaguar is likely to have no or, at most, negligible effect on  
33 them.

- 34 • *Energy requirements and conservation potential (1502.16)*. Additional section 7  
35 consultations resulting from critical habitat designation of the jaguar would not require  
36 any increase in energy consumption in the form of fuel for vehicles or from other  
37 conservation actions.
- 38 • *Urban quality and design of the built environment (1502.16)*. The proposed critical  
39 habitat segments are not located in urban or other built environments and would not  
40 affect the quality of such environments.

- 1 • Important scientific, archeological, and other cultural resources, including historic  
2 properties listed in or eligible for the NRHP (1508.27). The proposed designation would  
3 not result in any ground-disturbing activities that have the potential to affect  
4 archeological or other cultural resources. As stated in the proposed rule, the proposed  
5 boundaries of critical habitat were delineated so as to avoid land covered by existing  
6 structures. There are a total of four sites listed on the NRHP that lie within proposed  
7 critical habitat:

- 8 1. Cady Hall (Patagonia, AZ—Unit 3)—This structure was built between 1901 and 1912  
9 by John H. Cady as the Patagonia Hotel. During the 1930s the building housed  
10 offices and apartments. In 1947 the Patagonia Women’s Club purchased the building  
11 and in 1957 opened a one-room library. In 1977, the complex was designated a  
12 Historic Site, and it was restored from 1989-1997.
- 13 2. Coronado National Memorial (Cochise County, AZ—Unit 3)—The Memorial,  
14 managed by the National Park Service (NPS), commemorates the first major  
15 expedition of Europeans into the American Southwest, which followed a route along  
16 the San Pedro Valley. The Valley can be overlooked at several key scenic viewing  
17 points at the Memorial. The Memorial is managed for visitor use and resource  
18 preservation under the Final General Management Plan /Environmental Impact  
19 Statement (EIS) for the Memorial.
- 20 3. James Finley House (Patagonia, AZ—Unit 3)—The Finley House is located in the  
21 ghost town of Harshaw. It was built around 1877 as the residence of the Hermosa  
22 Mine superintendent, but was later occupied by the mine’s owner, James Finley. The  
23 Finley House is significant not only as one of the few remaining buildings from  
24 Harshaw’s mining boom period, but also as a good example of early Territorial  
25 architecture.
- 26 4. Ruby (Santa Cruz County, AZ—Unit 2)—Ruby is a ghost town in Santa Cruz  
27 County, AZ, originally founded as a mining town and “filled with history, including  
28 lawlessness, murder, and mayhem” (Legends of America 2012). It is now available  
29 for public visitation.

30 Also of note is that Atascosa Lookout House (Nogales Ranger District of the Coronado  
31 National Forest) was burned in a June 2011 wildfire.

32 There have been no jaguar consultations on listed historic structures since the final 1997  
33 rule clarifying that endangered status for the species extended into the United States (62  
34 FR 39147), and none would be anticipated, based on the likelihood that no ground-  
35 disturbing activities would be conducted as a result of a proposed action that would cause  
36 adverse impacts to these structures. For this reason, the topic of impacts to historic  
37 cultural resources is not analyzed further in this document.

- 38 • *Ecologically critical areas, Wild and Scenic Rivers, or other unique natural resources*  
39 *(1508.27)*. There are no designated or proposed Wild and Scenic Rivers within the  
40 proposed critical habitat designation.

41 Several areas under special protection, managed by BLM, are included within the  
42 proposed designation: Guadalupe Canyon Outstanding Natural Area (an Area of Critical  
43 Environmental Concern), Coyote Mountain Wilderness, Baker Canyon Wilderness Study

1 Area (WSA), Baboquivari Peak Wilderness, the Las Cienegas NCA, and Appleton-  
2 Whittell Area of Critical Concern.

3 Activities proposed by the Federal land managers in these areas would be expected to  
4 maintain or improve the health of these areas, and thus they would be anticipated to help  
5 recover or sustain the PCEs on these lands. Therefore no consultations would be  
6 expected, and no adverse impacts to critical habitat would be anticipated.

- 7 • *Public health and safety (1508.27)*. Foreseeable activities with potential risks to public  
8 health and safety include mining operations and activities related to fire management,  
9 particularly in the wildlife-urban interace (WUI) areas and areas where vegetation fuel  
10 loading has created conditions for catastrophic fire. These issues, along with fire  
11 management and fire-related health and safety risk reduction, are discussed in Sections  
12 3.9 Mining, and 3.4 Fire Management, respectively.
- 13 • *Climate Change*. The Jaguar Recovery Team found that “[t]he degree to which climate  
14 change will affect jaguar habitat in the United States is uncertain, but it has the potential  
15 to adversely affect the jaguar within the next 50 to 100 years (Jaguar Recovery Team  
16 2012). The proposed designation rule discusses the potential for fewer frost days,  
17 warmer temperatures, greater water demand by plants, animals, and people; and an  
18 increased frequency of extreme weather events, such as heat waves, droughts, and floods  
19 (77 FR 50219). It states, “The impact of future drought, which may be long-term and  
20 severe (Seager *et al.* 2007, pp. 1183-1184; Archer and Predick 2008, entire), may affect  
21 jaguar habitat in the U.S.-Mexico borderlands area, but the information currently  
22 available on the effects of global climate change and increasing temperatures does not  
23 make sufficiently precise estimates of the location and magnitude of the effects.”

24 The Council on Environmental Quality (CEQ) released draft guidance in 2010 that  
25 explains climate change impact analysis from proposed actions that create greenhouse  
26 gases (CEQ 2010). A threshold of 25,000 metric tons of carbon dioxide equivalent  
27 emissions from an action was proposed as the trigger to further quantitative analysis. A  
28 designation of critical habitat does not create or develop projects that produce emissions,  
29 and therefore would not be subject to quantitative analysis.

30 The U.S. Department of the Interior (USDI) released Secretarial Order 3289 in 2010  
31 which details two additional departmental actions to mitigate climate change: (1) USDI  
32 Carbon Storage and (2) USDI Carbon Footprint (USDI 2010). The USDI Carbon Storage  
33 project was created to develop methodologies for geologic and biologic carbon  
34 sequestration. The U.S. Geological Survey (USGS) is the lead agency for research while  
35 additional agencies within the department are cooperating agencies. The USDI Carbon  
36 Footprint project has the goal of developing a unified greenhouse gas emission reduction  
37 program to mitigate climate change activities. USDI has created Climate Change  
38 Response Centers to conduct impact analysis and data collection for the program.  
39 Specific Landscape Conservation Cooperatives would work with the Centers by  
40 supplying the on-the-ground data derived from each specific locale.

41 In addition to these two projects, Secretarial Order 3289 also states that avoidance of  
42 climate change and mitigation of its effects should also be addressed by prioritizing the  
43 development of renewable energy (USDI 2010). BLM has separately published  
44 programmatic EISs for solar and wind energy development on its managed lands (BLM

1 2005; BLM 2011a). While currently there are no plans for solar or wind energy  
2 development that overlap with proposed critical habitat units, future projects could spur  
3 section 7 consultations if they had the potential to adversely affect critical habitat.

4 The Forest Service issued a document titled “Climate Change Considerations in Project  
5 Level NEPA Analysis” in 2009, to guide the analysis of climate change for future  
6 projects (USFS 2009). It discusses the two types of effects of climate change: (1) the  
7 effect of the proposed action on climate change; and (2) the effect of climate change on  
8 the proposed action. As stated above, the designation of critical habitat units would not  
9 impact climate change as it would not initiate or implement projects that produce  
10 greenhouse gas emissions. Regarding the second type of effect, expected shifts in rainfall  
11 patterns are an example of such an effect, and would have the potential to affect jaguar  
12 critical habitat units. The Forest Service would conduct its own NEPA climate change  
13 analysis of its proposed actions, as appropriate.

14 Therefore, while the Service believes that long-term climate trends associated with a drier  
15 climate could have an overall negative effect on the available rangewide habitat for  
16 jaguars through alteration of rainfall cycles, increased frequency of wildfires carried by  
17 nonnative plants, and increased frequency and duration of drought, the designation of  
18 critical habitat itself will neither create impacts to climate change (since it does not  
19 initiate or implement projects that create emissions) nor contribute to the expected  
20 adverse impacts of climate change on critical habitat (since it would not contribute to the  
21 changes in temperature or hydrologic cycles). To the extent that designation of habitat  
22 contributes to the maintenance of jaguar PCEs, it may produce beneficial impacts by  
23 improving the resilience of PCEs to the adverse impacts of climate change.  
24

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## 1 CHAPTER 2

## 2 ALTERNATIVES, INCLUDING THE NO ACTION ALTERNATIVE

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3 This section describes the alternatives for critical habitat designation for the jaguar. For the  
4 purposes of this EA, alternatives provide a clear basis for choice by the decision-maker and the  
5 public for critical habitat designation, as described in Chapter 1, which can be summarized as  
6 determining which areas meet the definition of critical habitat for the jaguar. In addition, the  
7 analysis of alternatives can provide information in an evaluation if any of the proposed critical  
8 habitat units should be excluded from the final designation.

### 9 2.1 Development of Alternatives

10 A detailed discussion of the Service's rationale for identifying and including such areas is  
11 contained in the proposed designation rule (77 FR 50228).

12 When determining proposed critical habitat boundaries, the Service made every effort to avoid  
13 including developed areas such as lands covered by buildings, pavement, and other structures  
14 because such lands lack the PBFs necessary for jaguars.

15 The boundaries represented in the revised proposed designation reflect changes from the original  
16 proposed designation of August 20, 2012, based on new information received by the Service,  
17 which is detailed in the accompanying Notice of Availability.

#### 18 *Exclusions*

19 Under section 4(b)(2) of the Act, the Service considered relevant impacts, including economic  
20 impacts, impacts on national security, and other factors in weighing the costs and benefits of  
21 excluding areas from critical habitat designation. The factors considered by the Service include  
22 whether the landowners have developed any habitat conservation plans (HCP) or other  
23 management plans for the area, or whether there are conservation partnerships that would be  
24 encouraged by designation of, or exclusion from, critical habitat. In addition, the Service looked  
25 at tribal management in recognition of their capability to appropriately manage their own  
26 resources, and considered the government-to-government relationship of the United States with  
27 tribal entities. The Service also considered potential social impacts that might occur because of  
28 the designation.

29  
30 For this EA, the Service constructed an alternative in which all potential exclusions are  
31 combined within a single action alternative—Alternative B, which excludes only lands within  
32 the Tohono O'odham Nation. In developing its final designation, the Service will continue to  
33 evaluate individual exclusions according to the criteria mentioned above.

#### 34 2.1.1 Exemptions

35 The National Defense Authorization Act for Fiscal Year 2004 (Pub. L.108-136) amended the  
36 Endangered Species Act (Act) to limit areas eligible for designation as critical habitat.

1 Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: “The  
2 Secretary shall not designate as critical habitat any lands or other geographical areas owned or  
3 controlled by the Department of Defense, or designated for its use, that are subject to an  
4 integrated natural resources management plan [INRMP] prepared under section 101 of the Sikes  
5 Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to  
6 the species for which critical habitat is proposed for designation.”

7 The Department of Defense manages habitat for the jaguar on Fort Huachuca, located in  
8 proposed Unit 3 and Subunit 4c. Fort Huachuca (Fort) is home to the U.S. Army Intelligence  
9 Center and School, Network Enterprise Technology Command, Joint-services Unmanned Aerial  
10 Vehicle Program, Joint Interoperability Test Command, the Electronic Proving Ground, and the  
11 Intelligence and Electronic Warfare Test Directorate. The Fort specializes in research,  
12 development, testing, and evaluation of intelligence, electronic warfare, and information  
13 systems. The Service will review the conservation measures contained in the Fort Huachuca  
14 INRMP to determine whether they would provide a benefit to the jaguar and evaluate if the Fort  
15 would therefore be exempt under section 4(a)(3) of the Act.

## 16 **2.2 No Action Alternative**

17 The No Action Alternative is defined here as no designation of critical habitat for the jaguar. An  
18 analysis of a No Action Alternative is required by NEPA and provides a baseline for analyzing  
19 effects of the action alternatives. Analysis of this alternative requires consideration of the  
20 continued consequences of listing the jaguar as endangered, without a designation of critical  
21 habitat in the United States. This alternative would not be consistent with the Service’s finding,  
22 subsequent to the March 30, 2009 order of the U.S. District Court for the District of Arizona, that  
23 designation of critical habitat for the jaguar would be “prudent,” pursuant to Section 4(a)(3) of  
24 the ESA. It is included for the purpose of comparison of potential impacts of alternative  
25 designations.

## 26 **2.3 Alternative A—Critical Habitat Designation with no Exclusions**

27 The Service is proposing six units as critical habitat for the jaguar. The critical habitat areas  
28 described below constitute the Service’s current best assessment of areas that meet the definition  
29 of critical habitat for the jaguar. The six units proposed as critical habitat are:

- 30 (1) Baboquivari Unit divided into subunits (1a) Baboquivari-Coyote Subunit, including the  
31 Northern Baboquivari, Saucito, Quinlan, and Coyote Mountains, and (1b) the Southern  
32 Baboquivari Subunit;
- 33 (2) Atascosa Unit, including the Pajarito, Atascosa, and Tumacacori Mountains;
- 34 (3) Patagonia Unit, including the Patagonia, Santa Rita, Empire, and Huachuca Mountains  
35 and the Canelo and Grosvenor Hills;
- 36 (4) Whetstone Unit, divided into subunits (4a) Whetstone Subunit, (4b) Whetstone-Santa  
37 Rita Subunit, and (4c) Whetstone-Huachuca Subunit;
- 38 (5) Peloncillo Unit, including the Peloncillo Mountains both in Arizona and New Mexico;  
39 and
- 40 (6) San Luis Unit, including the northern extent of the San Luis Mountains at the New  
41 Mexico-Mexico border.

1 Table 2.1 lists the proposed critical habitat units.

2  
3

**Table 2.1. Proposed Critical Habitat Units  
(All units are in Arizona unless otherwise noted)**

<b>Proposed Unit</b>
<b>1 Baboquivari Unit</b>
<b>1a Baboquivari-Coyote Subunit</b>
Coyote Mountains
Quinlan Mountains
Saucito Mountains
Northern Baboquivari Mountains
<b>1b Southern Baboquivari Subunit</b>
Southern Baboquivari Mountains Connection
<b>2 Atascosa Unit</b>
Tumacacori Mountains
Atascosa Mountains
Pajarito Mountains
<b>3 Patagonia Unit</b>
Empire Mountains
Santa Rita Mountains
Grosvenor Hills
Patagonia Mountains
Canelo Hills
Huachuca Mountains
<b>4 Whetstone Unit</b>
<b>4a Whetstone Subunit</b>
Whetstone Mountains
<b>4b Whetstone-Santa Rita Subunit</b>
Whetstone-Santa Rita Mountains Connection

<b>Proposed Unit</b>
<b>4c Whetstone-Huachuca Subunit</b>
Whetstone-Huachuca Mountains Connection
<b>5 Peloncillo Unit</b>
Peloncillo Mountains (Arizona and New Mexico)
<b>6 San Luis Unit</b>
San Luis Mountains (New Mexico)

1 Table 2.2 shows the approximate area of each proposed critical habitat unit.

2 **Table 2.2. Area of Proposed Critical Habitat Units for the Jaguar**

Unit or Subunit	Federal		State		Tribal		Private		Total	
	Ha	Ac	Ha	Ac	Ha	Ac	Ha	Ac	Ha	Ac
1a – Baboquivari-Coyote Subunit	4,396	10,862	9,239	22,831	20,764	51,308	3,290	8,130	37,689	93,130
1b – Southern Baboquivari Subunit	624	1,543	6,157	15,213	10,829	26,759	1,843	4,555	19,453	48,070
2 – Atascosa Unit	53,807	132,961	2,296	5,672	0	0	2,522	6,231	58,625	144,864
3 – Patagonia Unit	107,471	265,566	11,847	29,274	0	0	29,046	71,775	148,364	366,615
4a – Whetstone Subunit	16,066	39,699	5,445	13,455	0	0	3,774	9,325	25,284	62,478
4b – Whetstone-Santa Rita Subunit	532	1,313	4,612	11,396	0	0	0	0	5,143	12,710
4c – Whetstone-Huachuca Subunit	1,654	4,088	2,981	7,366	0	0	3,391	8,379	8,026	19,832
5 – Peloncillo Unit	28,393	70,160	7,861	19,426	0	0	5,317	13,138	41,571	102,723
6 – San Luis Unit	0	0	0	0	0	0	3,122	7,714	3,122	7,714
<b>Grand Total</b>	<b>212,943</b>	<b>526,191</b>	<b>50,437</b>	<b>124,633</b>	<b>31,593</b>	<b>78,067</b>	<b>52,304</b>	<b>129,246</b>	<b>347,277</b>	<b>858,137</b>

3 Note: Area sizes may not sum due to rounding.

4 **Subunit 1a: Baboquivari-Coyote Subunit**

5 Subunit 1a consists of 37,689 ha (93,130 ac) in the northern Baboquivari, Saucito, Quinlan, and  
6 Coyote Mountains in Pima County, Arizona. This subunit is generally bounded by the eastern  
7 side of the Baboquivari Valley to the west, State Highway 86 to the north, the western side of the  
8 Altar Valley to the east, and up to and including Leyvas and Bear Canyons to the south. Land  
9 ownership within the unit includes approximately 4,395 ha (10,862 ac) of Federal lands; 20,764  
10 ha (51,308 ac) of Tohono O’odham Nation lands; 9,239 ha (22,831 ac) of Arizona State lands;  
11 and 3,290 ha (8,130 ac) of private lands. It contains all elements of the PBF essential to the  
12 conservation of the jaguar, except for connectivity to Mexico. The Federal land is administered  
13 by the Service and U.S. Bureau of Land Management (BLM).

1     **Subunit 1b: Southern Baboquivari Subunit**

2     Subunit 1b consists of 19,453 ha (48,070 ac) in the southern Baboquivari Mountains in Pima  
3     County, Arizona. This subunit is generally bounded by the eastern side of the Baboquivari  
4     Valley to the west, up to but not including Leyvas and Bear Canyons to the north, the western  
5     side of the Altar Valley to the east, and the U.S.-Mexico border to the south. Land ownership  
6     within the unit includes approximately 624 ha (1,543 ac) of Federal lands; 10,828 ha (26,759 ac)  
7     of Tohono O’odham Nation lands; 6,157 ha (15,213 ac) of Arizona State lands; and 1,843 ha  
8     (4,555 ac) of private lands. The Federal land is administered by the Service and BLM. The  
9     Southern Baboquivari Subunit provides connectivity to Mexico and is essential to the  
10    conservation of the jaguar because it contributes to the species’ persistence by providing  
11    connectivity to occupied areas.

12    **Unit 2: Atascosa Unit**

13    Unit 2 consists of 58,625 ha (144,864 ac) in the Pajarito, Atascosa, and Tumacacori Mountains  
14    in Pima and Santa Cruz Counties, Arizona. Unit 2 is generally bounded by the eastern side of  
15    San Luis Mountains (Arizona) to the west, roughly 4 km (2.5 mi) south of Arivaca Road to the  
16    north, Interstate 19 to the east, and the U.S.-Mexico border to the south. Land ownership within  
17    the unit includes approximately 53,807 ha (132,961 ac) of Federal lands; 2,296 ha (5,672 ac) of  
18    Arizona State lands; and 2,522 ha (6,231 ac) of private lands. The Federal land is administered  
19    by the Coronado National Forest. It contains all elements of the PBF essential to the  
20    conservation of the jaguar.

21    **Unit 3: Patagonia Unit**

22    Unit 3 consists of 148,364 ha (366,615 ac) in the Patagonia, Santa Rita, Empire, and Huachuca  
23    Mountains, as well as the Canelo and Grosvenor Hills, in Pima, Santa Cruz, and Cochise  
24    Counties, Arizona. Unit 3 is generally bounded by a line running roughly 3 km (1.9 mi) east of  
25    Interstate 19 to the west; a line running roughly 6 km (3.7 mi) south of Interstate 10 to the north;  
26    Cienega Creek and Highways 83, 90, and 92 to the east, including the eastern slopes of the  
27    Empire Mountains; and the U.S.-Mexico border to the south. Land ownership within the unit  
28    includes approximately 107,471 ha (265,566 ac) of Federal lands; 11,847 ha (29,274 ac) of  
29    Arizona State lands; and 29,046 ha (71,775 ac) of private lands.. The Federal land is  
30    administered by the Coronado National Forest, BLM, and Fort Huachuca. The mountain ranges  
31    within this unit contain all elements of the PBF essential to the conservation of the jaguar.

32    **Subunit 4a: Whetstone Subunit**

33    Subunit 4a consists of 25,284 ha (62,478 ac) in the Whetstone Mountains in Pima, Santa Cruz,  
34    and Cochise Counties, Arizona. Subunit 4a is generally bounded by a line running roughly 4 km  
35    (2.5 mi) east of Cienega Creek to the west, a line running roughly 6 km (3.7 mi) south of  
36    Interstate 10 to the north, Highway 90 to the east, and Highway 82 to the south. Land ownership  
37    within the subunit includes approximately 16,066 ha (39,699 ac) of Federal lands; 5,445 ha  
38    (13,455 ac) of Arizona State lands; and 3,774 ha (9,325 ac) of private lands. The Federal land is  
39    administered by the Coronado National Forest and BLM. The mountain range within this

1 subunit contains all elements of the PBF essential to the conservation of the jaguar, except for  
2 connectivity to Mexico.

### 3 **Subunit 4b: Whetstone-Santa Rita Subunit**

4 Subunit 4b consists of 5,143 ha (12,710 ac) between the Santa Rita Mountains and northern  
5 extent of the Whetstone Mountains in Pima County, Arizona. Subunit 4b is generally bounded  
6 by (but does not include): the eastern slopes of the Empire Mountains to the west, a line running  
7 roughly 6 km (3.7 mi) south of Interstate 10 to the north, the western slopes of the Whetstone  
8 Mountains to the east, and Stevenson Canyon to the south. Land ownership within the subunit  
9 includes approximately 532 ha (1,313 ac) of Federal lands; and 4,612 ha (11,396 ac) of Arizona  
10 State lands. The Whetstone-Santa Rita Subunit provides connectivity from the Whetstone  
11 Mountains to Mexico and is essential to the conservation of the jaguar because it contributes to  
12 the species' persistence by providing connectivity to occupied areas.

### 13 **Subunit 4c: Whetstone-Huachuca Subunit**

14 Subunit 4c consists of 8,026 ha (19,832 ac) between the Huachuca Mountains and southern  
15 extent of the Whetstone Mountains in Santa Cruz and Cochise Counties, Arizona. Subunit 4c is  
16 generally bounded by Highway 83, Elgin-Canelo Road, and Upper Elgin Road to the west;  
17 Highway 82 to the north; a line running roughly 4 km (2.5 mi) west of Highway 90 to the east;  
18 and up to but not including the Huachuca Mountains to the south. Land ownership within the  
19 subunit includes approximately 1,654 ha (4,088 ac) of Federal lands; 2,981 ha (7,366 ac) of  
20 Arizona State lands; and 3,391 ha (8,379 ac) of private lands. The Federal land is administered  
21 by the Coronado National Forest, BLM, and Fort Huachuca. The Whetstone-Huachuca Subunit  
22 provides connectivity from the Whetstone Mountains to Mexico and is essential to the  
23 conservation of the jaguar because it contributes to the species' persistence by providing  
24 connectivity to occupied areas.

### 25 **Unit 5: Peloncillo Unit**

26 Unit 5 consists of 41,571 ha (102,723 ac) in the Peloncillo Mountains in Cochise County,  
27 Arizona, and Hidalgo County, New Mexico. Unit 5 is generally bounded by the eastern side of  
28 the San Bernardino Valley to the west, Skeleton Canyon Road and the northern boundary of the  
29 Coronado National Forest to the north, the western side of the Animas Valley to the east, and the  
30 U.S.-Mexico border on the south. Land ownership within the unit includes approximately  
31 28,393 ha (70,160 ac) of Federal lands; 7,861 ha (19,426 ac) of Arizona State lands; and 5,317  
32 ha (13,138 ac) of private lands. The Federal land is administered by the Coronado National  
33 Forest and BLM. It contains all elements of the PBF essential to the conservation of the jaguar.

### 34 **Unit 6: San Luis Unit**

35 Unit 6 consists of 3,122 ha (7,714 ac) in the northern extent of the San Luis Mountains in  
36 Hidalgo County, New Mexico. Unit 6 is generally bounded by the eastern side of the Animas  
37 Valley to the west, a line running roughly 1.5 km (0.9 mi) south of Highway 79 to the north, an  
38 elevation line at approximately 1,600 m (5,249 ft) on the east side of the San Luis Mountains,

1 and the U.S.-Mexico border to the south. Land ownership within the unit is entirely private land.  
2 Unit 6 contains almost all elements (PCEs 2–7) of the PBF essential to the conservation of the  
3 jaguar except for PCE 1 (expansive open space). This unit is included because, while by itself it  
4 does not provide at least 100 square km (38.6 square mi) of jaguar habitat in the United States,  
5 additional habitat can be found immediately adjacent south of the U.S.-Mexico border, and  
6 therefore this area represents a small portion of a much larger area of habitat.

## 7 **2.4 Alternative B—Critical Habitat Designation minus Exclusions**

8 The criteria considered by the Service for exclusion are described in section 2.1. The Service  
9 considers a current land management or conservation plan (HCPs as well as other types) or other  
10 conservation partnership to provide adequate management or protection if it meets the following  
11 criteria:

- 12 1. The plan is complete and provides the same or better level of protection from adverse  
13 modification or destruction than that provided through a consultation under section 7 of  
14 the Act;
- 15 2. There is a reasonable expectation that the conservation management strategies and  
16 actions will be implemented for the foreseeable future, based on past practices, written  
17 guidance, or regulations; and
- 18 3. The plan provides conservation strategies and measures consistent with currently  
19 accepted principles of conservation biology.

20 In the case of the jaguar, the Service has a reasonable expectation that it will receive a Jaguar  
21 Management Plan from the Tohono O’oldham Nation before the end of this public comment  
22 period, and therefore is considering the exclusion of Nation lands in Alternative B. The Service  
23 will make a final decision on exclusion after fully considering the plan submitted by the Nation.

## 24 **2.5 Comparison of Potential Impacts of Jaguar Proposed Critical** 25 **Habitat Designation**

26 The following table (Table 2.3) summarizes the potential effects of the alternative critical habitat  
27 designations. Potential effects on resources are summarized from the analyses presented in  
28 Chapter 3.

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**Table 2.3. Comparison of Potential Effects of Proposed Critical Habitat Designation for the Jaguar**

Resource	No Action	Alternative A—No Exclusions	Alternative B— with Exclusion
<b>Land Use and Management</b>	<ul style="list-style-type: none"> <li>No impacts beyond those resulting from the listing of the jaguar and associated requirements of section 7, ESA.</li> </ul>	<ul style="list-style-type: none"> <li>Minor impacts anticipated from expansion of section 7 consultations related to land use management activities in newly designated habitat.</li> </ul>	<ul style="list-style-type: none"> <li>Minor impacts anticipated from increase in section 7 consultations related to land use management activities in newly designated habitat.</li> </ul>
<b>Fish, Wildlife, Plants</b>	<ul style="list-style-type: none"> <li>No impact beyond those conservation measures resulting from the listing of the jaguar and associated requirements of section 7, ESA.</li> </ul>	<ul style="list-style-type: none"> <li>Compared with No Action Alternative, a small number of reinitiated section 7 consultations.</li> <li>Addition of adverse mod analyses to section 7 consultations that would be undertaken for the species.</li> <li>Likely beneficial impacts on wildlife, especially for species that require expansive tracts of undisturbed land or connectivity to Mexico.</li> </ul>	<ul style="list-style-type: none"> <li>Minor adverse impacts similar to Alternative A, but slightly fewer consultations, given the exclusion.</li> <li>Beneficial impacts roughly equivalent to Alternative A, owing partly to participation in the jaguar recovery plan by the Tohono O’odham Nation.</li> </ul>
<b>Fire Management</b>	<ul style="list-style-type: none"> <li>No impact beyond those conservation measures resulting from listing of the jaguar and associated requirements of section 7, ESA.</li> </ul>	<ul style="list-style-type: none"> <li>Compared with No Action Alternative, a small unknown number of reinitiated section 7 consultations.</li> <li>Addition of adverse mod analyses to section 7 consultations that would be triggered by the listing of the</li> </ul>	<ul style="list-style-type: none"> <li>Minor adverse impacts similar to Alternative A, but fewer consultations given the exclusion.</li> </ul>

Resource	No Action	Alternative A—No Exclusions	Alternative B— with Exclusion
		<p>jaguar.</p> <ul style="list-style-type: none"> <li>Minor impacts from delays, increased costs, or project alterations resulting from additional section 7 consultations.</li> </ul>	
<b>Water Resources</b>	<ul style="list-style-type: none"> <li>No adverse effects anticipated beyond any conservation measures or project modifications resulting from the listing of the jaguar and associated requirements of section 7 of the ESA.</li> <li>If consultations occur, no consideration of adverse modification.</li> </ul>	<ul style="list-style-type: none"> <li>Compared with No Action Alternative, a small number of reinitiated section 7 consultations.</li> <li>Addition of adverse modification analyses to section 7 consultations that would be undertaken for the species.</li> <li>Minor impacts from delays, increased costs, or project alternations resulting from additional section 7 consultations.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate (less than significant) adverse impacts similar to Alternative A, but fewer consultations, given the exclusion.</li> </ul>

<b>Resource</b>	<b>No Action</b>	<b>Alternative A—No Exclusions</b>	<b>Alternative B— with Exclusion</b>
<b>Livestock Grazing</b>	<ul style="list-style-type: none"> <li>• No adverse effects anticipated beyond any conservation measures or project modifications resulting from the listing of the jaguar and associated requirements of section 7 of the ESA.</li> <li>• If consultations occur, no consideration of adverse modification.</li> </ul>	<ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small number of reinitiated section 7 consultations, including on BLM and USFS land</li> <li>• Addition of adverse modification analyses to section 7 consultations that would be undertaken for the species.</li> <li>• Minor impacts from delays, increased costs, or project alternations resulting from additional section 7 consultations including determining the distribution of jaguar habitat within a project area, or re-vegetating jaguar habitat loss.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor adverse impacts similar to Alternative A, but fewer consultations, given the exclusion.</li> </ul>

Resource	No Action	Alternative A—No Exclusions	Alternative B— with Exclusion
<b>Construction/Development</b>	<ul style="list-style-type: none"> <li>• No adverse effects anticipated beyond any conservation measures or project modifications resulting from the listing of the jaguar and associated requirements of section 7 of the ESA.</li> <li>• If consultations occur, no consideration of adverse modification.</li> </ul>	<ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small number of reinitiated section 7 consultations, including on Coronado National Forest, BLM land, Coronado National Memorial, and Buenos Aires NWR.</li> <li>• Addition of adverse modification analyses to section 7 consultations that would be undertaken for the species.</li> <li>• Moderate (less than significant) impacts from delays, increased costs, or project alternations resulting from additional section 7 consultations, including creating permeable highways by including wildlife crossings appropriate to jaguars in the project design.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate (less than significant) adverse impacts similar to Alternative A, but fewer consultations, given the exclusion.</li> </ul>

<b>Resource</b>	<b>No Action</b>	<b>Alternative A—No Exclusions</b>	<b>Alternative B— with Exclusion</b>
<b>Tribal Trust Resources</b>	<ul style="list-style-type: none"> <li>No direct impacts on tribal resources beyond any conservation measures or project modifications resulting from the listing of the jaguar and section 7 of the ESA.</li> </ul>	<ul style="list-style-type: none"> <li>No adverse effects anticipated because few projects would be subject to reinitiation or expanded consultations.</li> </ul>	<ul style="list-style-type: none"> <li>No adverse effects anticipated because no section 7 consultations are likely to occur due to the exclusion of tribal trust resources.</li> </ul>
<b>Mining</b>	<ul style="list-style-type: none"> <li>No additional impacts beyond any conservation measures or project modifications resulting from listing of the jaguar.</li> </ul>	<ul style="list-style-type: none"> <li>Depends on outcome of Rosemont Mine consultation.</li> <li>Minor adverse impacts from increased number of reinitiated consultations for ongoing projects within designated critical habitat.</li> <li>Minor adverse impacts to agencies and project proponents from time and monetary costs of reinitiated consultations, including developing alternatives and/or mitigation.</li> </ul>	<ul style="list-style-type: none"> <li>Similar to A, but exclusions would reduce these, due to decreased number of reinitiated section 7 consultations.</li> <li>Similar indirect impacts as A, but fewer because of reduced administrative and monetary costs.</li> </ul>
<b>Socioeconomics</b>	<ul style="list-style-type: none"> <li>No additional adverse effects beyond any conservation measures or project modifications resulting from listing of the jaguar.</li> <li>These measures would also create</li> </ul>	<ul style="list-style-type: none"> <li>Compared with No Action Alternative, a small number of reinitiated section 7 consultations for actions within proposed critical habitat.</li> <li>If Rosemont Mine goes forward: Minor adverse impacts from</li> </ul>	<ul style="list-style-type: none"> <li>Compared with No Action Alternative, a small increase in reinitiated section 7 consultations for actions within newly proposed critical habitat.</li> <li>Minor impacts from increased costs or project</li> </ul>

Resource	No Action	Alternative A—No Exclusions	Alternative B— with Exclusion
	<p>minor, beneficial impacts from visual aesthetics, jaguar education, and property values.</p>	<p>increased costs or addition of adverse modification analysis in section 7 consultations for newly proposed critical habitat.</p> <ul style="list-style-type: none"> <li>• Same beneficial socioeconomic impacts as No Action.</li> </ul>	<p>modifications resulting from expanded section 7 consultations.</p> <ul style="list-style-type: none"> <li>• Same beneficial impacts as No Action and Alternative A.</li> </ul>
<b>Recreation</b>	<ul style="list-style-type: none"> <li>• No additional adverse effects beyond any conservation measures or project modifications resulting from listing of the jaguar.</li> <li>• Negligible to minor, indirect, adverse impacts to recreation opportunities related to such conservation measures benefiting the habitat values for the jaguar.</li> <li>• These measures would also create minor, beneficial impacts to birding, wildlife viewing, or day hiking due to increased conservation measures to help conserve PCEs.</li> </ul>	<ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small number of reinitiated section 7 consultations for actions within proposed critical habitat.</li> <li>• If Rosemont Mine goes forward: Minor adverse impacts from increased costs or addition of adverse modification analysis in section 7 consultations for newly proposed critical habitat.</li> <li>• Same beneficial impacts as No Action.</li> </ul>	<ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small increase in new and reinitiated section 7 consultations for actions within newly proposed critical habitat.</li> <li>• Minor impacts from increased costs or project modifications resulting from additional section 7 consultations.</li> <li>• Same beneficial impacts as No Action and Alternative A.</li> </ul>
<b>Environmental Justice</b>	<ul style="list-style-type: none"> <li>• No additional impacts beyond any conservation</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on outcome of Rosemont Mine</li> </ul>	<ul style="list-style-type: none"> <li>• Same as A, but fewer impact-producing</li> </ul>

<b>Resource</b>	<b>No Action</b>	<b>Alternative A—No Exclusions</b>	<b>Alternative B— with Exclusion</b>
	measures or project modifications resulting from listing of the jaguar.	consultation. If mine goes forward: Minor adverse impacts, in the context of the entire designation, because: (1) the economic impacts associated with any individual relevant projects would be relatively small; and (2) there would be only a small number of projects throughout the designation which would create such impacts.	projects due to fewer consultations.
<b>National Security</b>	<ul style="list-style-type: none"> <li>• No impacts beyond those resulting from the listing of the jaguar and associated requirements of section 7, ESA.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor impacts anticipated from reinitiation or expansion of section 7 consultations related to border security activities in newly designated habitat.</li> </ul>	<ul style="list-style-type: none"> <li>• Same as A, but fewer impact-producing projects due to fewer consultations.</li> </ul>

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1 **CHAPTER 3**  
2 **AFFECTED ENVIRONMENT AND ENVIRONMENTAL**  
3 **CONSEQUENCES**

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4 **3.1 Introduction**

5 This chapter is organized by resource categories that may potentially be affected by designating  
6 critical habitat for the jaguar. These resource categories were selected based on issues and  
7 concerns identified by the Service in the August 2012 proposed critical habitat rule (77 FR  
8 50212-50242), public comments submitted for the proposed rule, and a review of the  
9 consultation history for the species. Within each resource category, a description of the existing  
10 condition and threats is followed by an evaluation of potential environmental consequences  
11 resulting from the designation of critical habitat. Potential effects are evaluated for each  
12 alternative described in Chapter 2, including the No Action Alternative.

13 Under the No Action Alternative, no designation of critical habitat for the jaguar would be made.

14 **3.1.1 Methodology**

15 Descriptions of existing conditions presented in sections 3.2 through 3.13 of this document are  
16 based on a number of sources. These include:

- 17 • Published literature;
- 18 • Available state and Federal agency reports and management plans;
- 19 • The final 1997 rule clarifying that endangered status for the species extended into the  
20 United States (62 FR 39147);
- 21 • Formal and informal section 7 consultations conducted since the species was listed;
- 22 • Service-issued BOs for multispecies consultations that included the jaguar; and
- 23 • The 2012 draft economic analysis for the proposed designation of critical habitat  
24 ((Industrial Economics (IEc) 2013)).

25 *Agencies and Projects Likely to Undergo Consultation*

26 A variety of Federal agencies and projects could cause adverse impacts to the species and  
27 therefore would likely go through the section 7 consultation process whether or not critical  
28 habitat is designated. These include:

29 **Table 3.1. Likely Agency Consultations Regardless of Critical Habitat**

Agency	Project Types
U.S. Department of Defense (Ft. Huachuca)	Fort Huachuca INRMP, facilities development and maintenance

Agency	Project Types
U.S. Bureau of Land Management	Fire suppression, fuel reduction treatments, land resource management plans, livestock grazing and management plans, mining permits, renewable energy development
U.S. Army Corps of Engineers	Bridge projects, stream restoration, vegetation management
U.S. Department of Homeland Security	Border security infrastructure and operations
U.S. Department of Transportation	Highway and bridge construction and maintenance
U.S. Fish & Wildlife Service	Issuance of section 10 enhancement of survival permits, HCPs, and safe harbor agreements; NWR planning; Partners for Fish and Wildlife program projects
U.S. Forest Service	Fire management plans, fire suppression, fuel-reduction treatments, forest plans, livestock grazing allotment management plans (AMP), mining permits, travel management plans
U.S. Bureau of Indian Affairs	Renewable energy development, road projects, utility development and upgrades
Natural Resource Conservation Service	Wildlife habitat improvements
National Park Service (Coronado National Memorial)	General management plans, fire management plans, border security infrastructure, recreation management, travel management

1 There was one formal consultation with the U.S. Department of Agriculture (USDA) Wildlife  
2 Services on predator control activities. Because that consultation was related to direct effects to  
3 the species and did not affect habitat, the Service does not expect it to be reinitiated.

4 Because the PBF and PCEs are so closely tied to the survival of the species, the Service does not  
5 anticipate that different or new agencies will be consulting on previously unknown activities as a  
6 result of this proposed revision. Therefore, the same Federal agencies listed above are also  
7 anticipated to be the primary agencies that would consult with the Service on jaguar critical  
8 habitat under section 7.

9 *Approach to Analyzing Impacts*

10 There are numerous activities within lands proposed for critical habitat that could potentially be  
11 affected by the designation. Activities that may adversely affect the PCEs could trigger section 7  
12 consultation, including large-scale habitat clearing, the construction of facilities (such as border  
13 enforcement infrastructure), minerals exploration or extraction operations, or expansion of linear  
14 projects (such as power lines or pipelines) that reduce the amount of habitat available. Those  
15 activities that also sever essential movement between the United States and Mexico or within a  
16 given critical habitat unit could result in destruction or adverse modification of critical habitat  
17 (see below).

1 With respect to critical habitat, the purpose of section 7 consultation is to ensure that actions of  
2 Federal agencies do not destroy or adversely modify critical habitat. Individuals, organizations,  
3 local governments, states, and other non-Federal entities are potentially affected by the  
4 designation of critical habitat *only* if their actions have a connection to Federal actions, called a  
5 “nexus”; that is, only if those actions occur on Federal lands, require a Federal permit or license,  
6 or involve Federal funding. The designation of critical habitat imposes no universal rules or  
7 restrictions on land use, nor does it automatically prohibit or alter any land use or water  
8 development activity.

9 The potential for destruction or adverse modification of critical habitat by a Federal action is  
10 assessed by determining the effects of the proposed Federal action on the PBFs and PCEs of  
11 habitat that are essential to the conservation of the species. These anticipated effects are then  
12 analyzed to determine how they will influence the function and conservation role of the affected  
13 critical habitat. This analysis provides the basis for determining the significance of anticipated  
14 effects of the proposed Federal action on critical habitat. The threshold for destruction or  
15 adverse modification is evaluated in the context of whether the critical habitat would remain  
16 functional to serve the intended conservation role for the species.

17 Within jaguar critical habitat, destruction or adverse modification of critical habitat could occur  
18 if the function of one or more critical habitat units is affected by, for example, the construction of  
19 impenetrable fencing across a portion of the currently open areas of vegetated, rugged terrain at  
20 the U.S.-Mexico border. This could create a situation in which a unit of critical habitat could  
21 become inaccessible to jaguars. The loss of one critical habitat unit would not constitute  
22 jeopardy to the species, but it could constitute destruction or adverse modification; therefore, any  
23 modifications the Service would recommend in these scenarios would be related to adverse  
24 modification of critical habitat, rather than jeopardy of the species.

25 Additionally, major road construction projects (such as new highways or significant widening of  
26 existing highways) or the construction of large facilities (such as large mining operations) could  
27 constitute adverse modification to jaguar critical habitat subunits if connectivity within a critical  
28 habitat unit is severed.

29 For the jaguar, the Service’s classification of whether a particular area was occupied at the time  
30 of listing or not (for the purpose of determining whether it can be properly considered critical  
31 habitat) has no relevance to determining section 7 consultation outcomes and the impacts of  
32 critical habitat designation. Given the secretive and transient nature of the jaguar, Federal land  
33 managers currently take steps to protect the jaguar even without critical habitat in proposed areas  
34 that are considered by the Service to be both occupied and unoccupied at the time of listing. In  
35 determining whether there is a possibility that a project or action would jeopardize the species,  
36 the Service considers what impact may occur to actual members of the species. It does not  
37 matter whether the area in question was occupied at the time of listing or whether it was  
38 occupied at a later time; the key question is whether the geographical area is occupied at the time  
39 the section 7 consultation is held. Therefore, because of current Federal land management  
40 practices, the Service does not anticipate that designation of critical habitat would result in  
41 consultations that would not otherwise take place for jeopardy analysis in all proposed areas.

42 In the context of an Environmental Assessment, the evaluation of the impacts of critical habitat  
43 designation focuses on outcomes of the potential increase in section 7 consultations resulting

1 from the designation, since the designation does not itself produce or authorize direct physical  
2 impacts. Where consultations occur, impacts could include the following:

- 3 • Additional expenditures of time and money by Federal agencies (including the Service)  
4 and non-Federal proponents to complete new, re-initiated, or expanded consultations.
- 5 • Additional time and costs to implement the reasonable and prudent alternatives and  
6 (possibly) discretionary conservation recommendations specified in BOs in which  
7 adverse modification was concluded.
- 8 • Additional time and costs to implement conservation measures that are part of an  
9 agency's proposed action to minimize adverse effects to critical habitat.
- 10 • A greater probability that the PBF and PCEs identified in section 1.4.2 would be  
11 maintained, thus increasing the likelihood of species survival.
- 12 • Action agencies and project proponents may alter their proposals to reduce, minimize, or  
13 avoid impacts on PBF and PCEs. Such alterations may obviate the need for consultation.  
14 If a consultation is initiated, then the impact of critical habitat designation could be the  
15 modification of the proposal to limit the impacts on PBF and PCEs or the imposition of  
16 reasonable and prudent alternatives that would reduce impacts on PBF and PCEs.

### 17 *Consultation History*

18 The Service cannot predict with certainty or detail what the effects of new, expanded, or  
19 reinitiated section 7 consultations would be. However, the record of past conservation measures  
20 and consultations provides some basis for predicting what kinds of actions would be subject to  
21 consultation and the outcome of those consultations.

22 From 1995 through mid-2012, the Service completed four formal section 7 BOs (1997, 1999,  
23 2007, and 2008) and approximately 82 informal consultations for the jaguar, all within Arizona,  
24 resulting in an average of five informal (range 1-12) and <1 formal (range 0-1) each year. All of  
25 these have addressed effects to more than one species, with the exception of the 1999 BO that  
26 only addressed effects to the jaguar. The Service further anticipates one formal consultation on  
27 effects to the jaguar (as well as other species) to be completed within 2013 for the proposed  
28 5,000-acre Rosemont Mine, discussed in section 3.9 (Service 2012c).

### 29 **3.1.2 Economic Analysis**

30 A separate analysis was conducted by Industrial Economics Incorporated (IEc 2013) to assess  
31 the potential economic impacts associated with designation of critical habitat for the jaguar.  
32 Where appropriate, information from the draft economic analysis has been incorporated into this  
33 Environmental Assessment. The draft Economic Analysis estimates the costs of conservation  
34 activities related to the jaguar, considering both the baseline costs (i.e., those impacts expected to  
35 occur absent the designation of critical habitat) and incremental costs (i.e., those impacts  
36 expected to occur as a result of critical habitat designation).

1 **3.2 Land Use and Management**

2 **3.2.1 Existing Conditions**

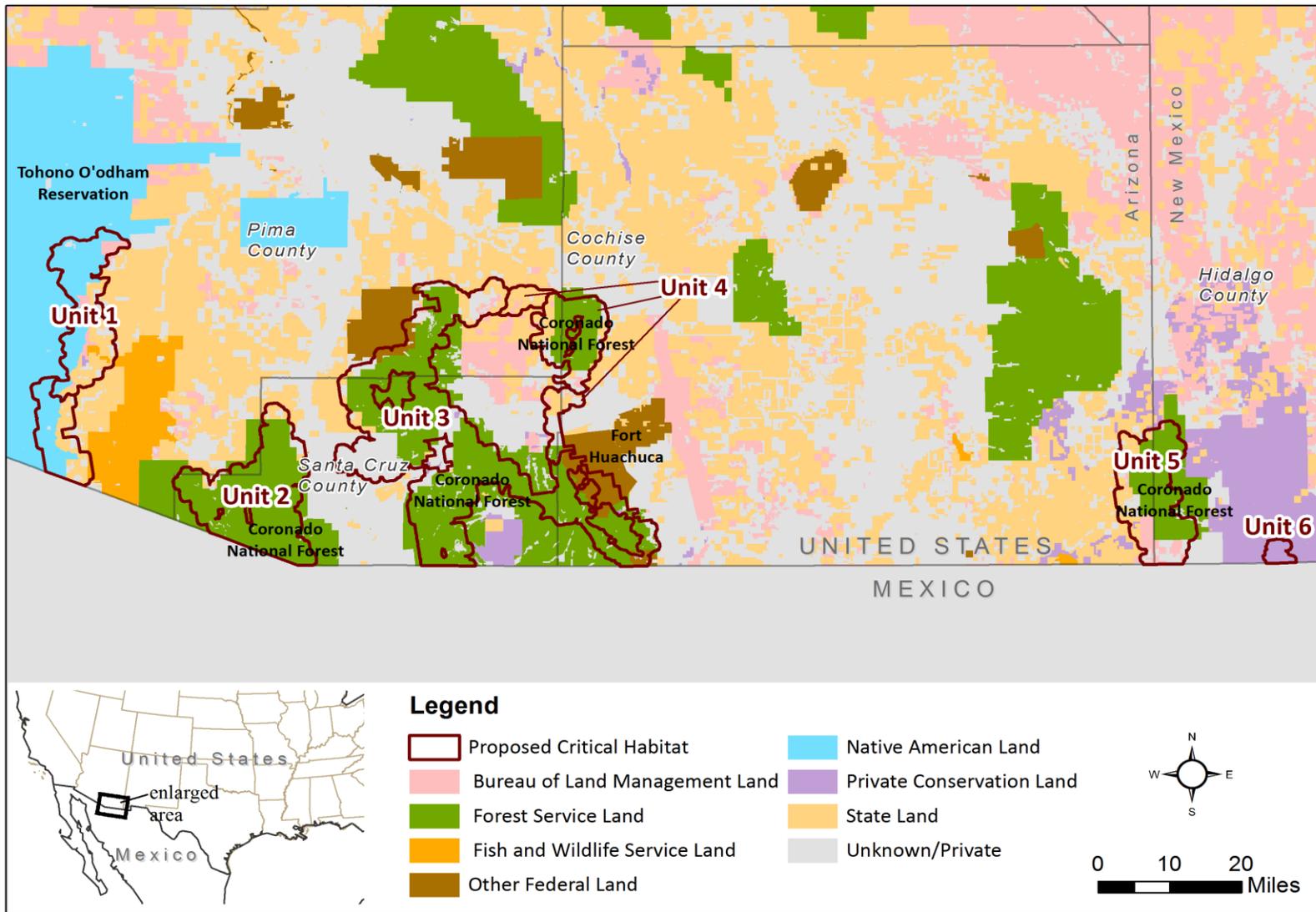
3 The revised proposed critical habitat designation includes lands under Federal (61%), state  
4 (15%), tribal (9%), and private (15%) land ownership. Much of the Federal land is managed by  
5 the USFS in the Coronado National Forest (see Figure 2, next page). Federal lands are managed  
6 according to the pertinent Management Plan for each Forest Service district office and BLM  
7 field office. Table 3.2 summarizes the land ownership status for the six designated critical  
8 habitat units.

9 **Table 3.2. Approximate Proposed Critical Habitat by Land Ownership and State**

<b>Land Owner</b>	<b>Arizona ha (ac)</b>	<b>New Mexico ha (ac)</b>	<b>Total ha (ac)</b>
Federal	194,648 (480,986)	18,294 (45,206)	212,943 (526,192)
State	50,437 (124,633)	0 (0)	50,437 (124,633)
Tribal	31,593 (78,067 )	0 (0)	31,593 (78,067 )
Private	46,620 (115,200)	5,685 (14,046)	52,304 (129,246)
<b>Total</b>	<b>323,298 (798,886)</b>	<b>23,979 (59,253)</b>	<b>347,275 (858,137)</b>

10 Note: Area sizes may not sum due to imprecision of specific land use information.

11  
12 The lands proposed as critical habitat are predominantly owned by the USFS, the Tohono  
13 O’odham Nation (tribal land), and Arizona State Trust Lands. There is a variety of land uses in  
14 proposed critical habitat units. USFS lands comprise approximately ninety of the Federal lands,  
15 with BLM comprising another four percent, Department of Defense comprising another four  
16 percent, and USFWS land (within the Buenos Aires NWR) and NPS lands (within the Coronado  
17 National Memorial) comprising less than one percent each (77 FR 50213-50242). Figure 2  
18 (next page) shows landownership for the proposed critical habitat units.



1  
2

**Figure 2. Land Ownership of Proposed Critical Habitat Units**

1 The Forest Service manages habitat for the jaguar on the Coronado National Forest in the  
2 Douglas, Nogales, and Sierra Vista Ranger Districts in Units 2 and 3; Subunits 4a, 4b, and 4c;  
3 and Unit 5. On Forest Service lands, the principal land management activities affecting critical  
4 habitat units include fire and fuels management, livestock grazing, habitat restoration, road  
5 maintenance and construction, land acquisition, recreation management, and vegetation  
6 management. These activities and their impacts are discussed in the individual resource sections  
7 of this chapter.

8 The BLM manages habitat for the jaguar in Subunits 1a and 1b; Units 2 and 3; Subunits 4a, 4b,  
9 and 4c; and Unit 5. These lands are managed for multiple use and sustained yield, including  
10 habitat restoration, fire management, grazing, and recreation. BLM manages road development  
11 through the BLM National Travel Management Plan, which strives to address the effects that  
12 population increases, explosive growth in the use of off-highway vehicles (OHV), and the  
13 advances in technology have had on public lands. BLM's goal is to improve trails and OHV  
14 management through land use planning in order to minimize impacts to wildlife habitat resulting  
15 from the expansion of roads and trails on public lands (BLM 2012a). BLM land within jaguar  
16 critical habitat includes Guadalupe Canyon Outstanding Natural Area, Coyote Mountain  
17 Wilderness, BLM Public Lands, Baker Canyon WSA, Baboquivari Peak Wilderness, the Las  
18 Cienegas NCA (Arizona), and Appleton-Whittell Area of Critical Concern. BLM lands within  
19 proposed critical habitat are managed by the Tucson or Safford Field Offices.

20 The Coyote Mountain and Baboquivari Peak Wilderness areas are managed under a joint  
21 management plan. Under the Wilderness Act commercial enterprise, roads, motor vehicles,  
22 motorized equipment, mechanical transport, structures, or installations are prohibited in  
23 wilderness areas. Although these activities are prohibited, the Wilderness Act and many  
24 subsequent laws designating wilderness areas contain provisions authorizing activities that do  
25 not conform to these general prohibitions. There are no special provisions within the Coyote  
26 Mountain Wilderness, and special provisions for the Baboquivari Peak Wilderness involve  
27 recreation activities (BLM 2012a).

28 The Guadalupe Canyon Outstanding Natural Area as well as the Baker Canyon WSA are areas  
29 without roads that BLM manages to maintain their wilderness character (BLM 2010a). The  
30 Whittell Area of Critical Concern is managed by the BLM to protect and prevent irreparable  
31 damage to important historical, cultural, and scenic values, fish, or wildlife resources or other  
32 natural systems or processes; or to protect human life and safety from natural hazards (BLM  
33 2011b). Major construction and development projects do not currently occur in these areas.

34 NPS land includes the Coronado National Memorial in Cochise County, Arizona, in Unit 3. The  
35 Memorial commemorates the first major expedition of Europeans into the American Southwest,  
36 which followed a route along the San Pedro Valley. The Valley can be overlooked at several key  
37 scenic viewing points at the Memorial. The Memorial is managed for visitor use and resource  
38 preservation under the Final General Management Plan /EIS for the Memorial. Land  
39 management activities at the Coronado National Memorial include livestock grazing, fire and  
40 fuels management, and recreation (NPS 2012a).

41 There is one NWR within proposed critical habitat: the Buenos Aires NWR (Refuge), in Pima  
42 County, Arizona. The overall goal of the Refuge is to provide habitat management and  
43 commitment to benefit a wide array of species. Management activities that occur at this Refuge

1 include habitat protection and restoration for endangered and non-endangered species, prescribed  
2 burning, erosion control, fence removal, the construction of water impoundments, and vegetation  
3 management (Service 2012a).

4 The proposed jaguar designation includes 52,304 (129,246 ac) of private land, which supports a  
5 variety of land uses:

- 6 • Conservation land—Lands managed by The Nature Conservancy include the Patagonia-  
7 Sonoita Creek Preserve (163 ha/4021 ac of proposed critical habitat), the Ramsey Canyon  
8 Preserve (130 ha/322 ac of proposed critical habitat), and the San Rafael Ranch Natural  
9 Area (25 ha/63 ac of proposed critical habitat). These areas are managed for preservation  
10 of natural features and species. Other Nature Conservancy areas within proposed critical  
11 habitat units include the Baboquivari and Cottonwood Springs fee lands.
- 12 • Local land trust preserve—the Malpai Borderlands Group owns a local land trust  
13 preserve/easement in the San Bernadino Valley, Peloncillo Mountains, and Animas  
14 Valley along the border of Arizona and New Mexico and the United States/Mexico  
15 border. This land is managed as natural wildlife habitat and productive rangeland (MBG  
16 2012). Critical habitat is proposed for 3,310 ha (8,179 ac) of this area.
- 17 • Research area—the University of Arizona College of Agriculture owns the 3,238 ha  
18 (8,002 ac) Santa Rita Experimental Range, used for pioneer range research on the  
19 improvement and management of semiarid grasslands in the Southwest (Medina 1996).  
20 Other research land within proposed critical habitat area includes the 5 ha (14 ac)  
21 Appleton-Whittell Research Ranch, owned by the National Audubon Society. The  
22 Research Ranch is a cooperative partnership among the National Audubon Society, USF  
23 S, BLM, The Nature Conservancy, Swift Current Land & Cattle, and The Research  
24 Ranch Foundation. The Research Ranch provides three key functions: ecosystem  
25 conservation, research, and regional education and outreach (Audubon 2012).

26 Of the six designated units where critical habitat is proposed, two (Units 1 and 4) are divided into  
27 subunits:

- 28 • Subunit 1b, the Southern Baboquivari Subunit provides connectivity to Mexico through  
29 the southern extent of the Baboquivari Mountains. This subunit consists of 19,453 ha  
30 (48,070 ac) in the southern Baboquivari Mountains in Pima County, Arizona. Land  
31 ownership within the unit includes approximately 624 ha (1,543 ac) of Federal lands;  
32 10,829 ha (26,759 ac) of Tohono O’odham Nation lands; 6,157 ha (15,213 ac) of Arizona  
33 State lands; and 1,843 ha (4,555 ac) of private lands. The Federal land is administered by  
34 the Service and BLM. The primary land uses within Subunit 1b include ranching,  
35 grazing, border-related activities, Federal land management activities, and recreational  
36 activities throughout the year.
- 37 • Subunit 4b provides a northern connection between subunit 4a and Unit 3 (a unit  
38 providing connectivity to Mexico). This subunit consists of 5,143 ha (12,710 ac)  
39 between the Santa Rita Mountains and northern extent of the Whetstone Mountains in  
40 Pima County, Arizona. Land ownership within the subunit includes approximately 531  
41 ha (1,313 ac) of Federal lands; and 4,612 ha (11,396 ac) of Arizona State lands. The  
42 primary land uses within Subunit 4b include grazing and recreational activities.

- Subunit 4c, the Whetstone-Huachuca Subunit provides a southern connection between subunit 4a and Unit 3. Subunit 4c consists of 8,026 ha (19,832 ac) between the Huachuca Mountains and southern extent of the Whetstone Mountains in Santa Cruz and Cochise Counties, Arizona. Land ownership within the subunit includes approximately 1,654 ha (4,088 ac) of Federal lands; 2,981 ha (7,366 ac) of Arizona State lands; and 3,391 ha (8,379 ac) of private lands. The Federal land is administered by the Coronado National Forest, BLM, and Fort Huachuca. 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.

## 3.2.2 Environmental Consequences

Land management activities on critical habitat units include livestock management; fire suppression and prescribed fire; surface-disturbance activities including road construction and maintenance; recreation developments and activities including off-road vehicle use; habitat restoration projects; and fence construction and removal.

### 3.2.2.1 No Action

Under the No Action Alternative, no critical habitat would be designated for the jaguar. The section 7 consultation process would continue as presently conducted without analysis of destruction or adverse modification of habitat. Section 7 consultations would be initiated only for actions that *may affect* the jaguar. Such consultations would analyze relevant land, resource, and fire management plans (FMPs) on Federal lands currently occupied by the species. As they relate to land use and management, such consultations would likely include:

- National Park Service—for general management plan and FMP activities, border security infrastructure, recreation management, and travel management (at Coronado National Memorial);
- Natural Resource Conservation Service—for wildlife habitat improvements and for establishing technical guidelines and program criteria and priorities necessary to carry out conservation provisions of the Farm Bill in Arizona;
- U.S. Army Corps of Engineers (USACE)—for bridge projects, stream restoration, vegetation management, and urban development along the U.S.-Mexico border in Arizona and New Mexico;
- U.S. Bureau of Indian Affairs (BIA)—for renewable energy development, road projects, and utility development and upgrades (Tohono O’odham Nation);
- U.S. Bureau of Land Management—for fire suppression, fuel-reduction treatments, land and resource management plans, livestock grazing and management plans, recreation, mining permits, nonnative invasive species treatments, and renewable energy development (the Baboquivari Peak Wilderness, Coyote Mountains Wilderness Area, Las Cienegas NCA, Baker Canyon WSA, Guadalupe Canyon Outstanding Natural Area, Guadalupe Canyon Isa, etc.);
- U.S. Department of Homeland Security (DHS)—for border security infrastructure and operations, particularly as related to fencing projects along the U.S.-Mexico border in Arizona and New Mexico;

- 1 • U.S. Department of Transportation—for highway and bridge construction and  
2 maintenance, particularly along the U.S.-Mexico border in Arizona and Mexico;
- 3 • U.S. Forest Service—for FMPs, fire suppression, fuel-reduction treatments, forest plans,  
4 livestock grazing AMPs, mining permits, and travel management plans (Coronado  
5 National Forest, Elgin Research Ranch, Elgin Research Natural Area, Gooding Research  
6 Natural Area, Guadalupe Canyon Zoological Area, Miller Peak Wilderness, Mt.  
7 Wrightson Wilderness, Pajarita Wilderness, Wild Chili Botanical Area); and
- 8 • U.S. Fish and Wildlife Service—for issuance of section 10 enhancement of survival  
9 permits, HCPs, and safe harbor agreements (SHA); NWR planning; and Partners for Fish  
10 and Wildlife program projects.

11 Therefore, this alternative would not add any impacts on land use and management beyond those  
12 conservation measures or project modifications resulting from the listing of the jaguar and  
13 associated requirements of section 7 of the ESA.

### 14 **3.2.2.2 Alternative A**

15 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
16 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
17 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
18 anticipate that designation of critical habitat would result in consultations that would not  
19 otherwise take place for jeopardy analysis in all proposed areas. However, as a result of the  
20 jaguar critical habitat designation, Federal agencies will need to reevaluate ongoing projects and  
21 those that are not yet completed for their effects to PCEs, and, in some cases, may need to  
22 reinstate previously completed section 7 consultations for actions that only addressed the jaguar  
23 under the jeopardy standard (due to its listing as an endangered species) in areas proposed as  
24 critical habitat.

25 Therefore, compared to the No Action Alternative, Alternative A (which includes all proposed  
26 units, no exclusions) would result in (1) a small but unknown number of reinstated section 7  
27 consultations for land management actions based solely on the presence of designated critical  
28 habitat; and (2) the addition of an analysis of adverse modification of critical habitat to future  
29 section 7 consultations on the jaguar in critical habitat.

#### 30 *Reinstated Consultations*

31 Because modifications to the PCEs of critical habitat are closely tied to adverse effects to the  
32 species, activities that would require consultation for critical habitat are primarily the same  
33 activities that currently require consultation for the species, as described above. Based on  
34 previous activity in designated units, such project proponents could include the BLM, the Forest  
35 Service, the NPS, and the State of Arizona (through a Federal nexus if it receives Federal funds  
36 for conservation or restoration of state-owned lands), although specific locations of projects  
37 within these properties containing units of critical habitat are unknown at this time.

38 Reinstated consultations are consultations that have been completed for impacts to the species,  
39 but which might need to be re-opened to consider the likelihood of destruction or adverse  
40 modification to critical habitat. As it relates to land use and management, such consultations  
41 could include:

- 1 • Border security infrastructure—Department of Defense, National Park Service, U.S.  
2 Department of Homeland Security;
- 3 • Road/highway construction—U.S. Department of Transportation ;
- 4 • Mining permits—U.S. Bureau of Land Management, Forest Service; and
- 5 • Actions on recreation lands—U.S. Bureau of Land Management, Forest Service, National  
6 Park Service.

7 These potential actions triggering consultation are discussed in the individual resource sections  
8 within this chapter.

### 9 *Addition of Adverse Modification Analysis to Future Consultations*

10 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
11 in many respects and are parallel processes because the health of a species cannot be  
12 disassociated from the health of its habitat. The outcomes of these future consultations would  
13 depend on the details of project proposals and the analysis of effects, which are unknown at this  
14 time.

15 The additional consultations, and the additional time required to complete consultations that  
16 would only have considered effects on the species, would increase administrative costs to the  
17 Service and to the action agencies. Implementing conservation measures resulting from those  
18 additional consultations would also increase costs for action agencies. Outcomes of  
19 consultations for critical habitat could also include reasonable and prudent alternatives and other  
20 conservation measures designed to maintain jaguar PCEs. These outcomes cannot be predicted  
21 precisely; however, based on past consultations for the jaguar, types of additional management  
22 actions that may be required include, but are not limited to:

- 23 • Revising resource and habitat management plans;
- 24 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring  
25 reports;
- 26 • Limiting construction of fencing in occupied jaguar habitats or in areas where fences are  
27 likely to impact jaguar habitat;
- 28 • Limiting roadway widening and construction projects;
- 29 • Limiting the construction of new powerlines and pipelines;
- 30 • Minimizing mineral extraction and mine operation within occupied habitat; and
- 31 • Establishing burn buffers or limiting prescribed burning within closed vegetative  
32 structures offered by forests and used by jaguar and jaguar prey.

33 Major construction projects (such as new highways, significant widening of existing highways,  
34 or construction of large facilities) that could sever connectivity within these critical habitat  
35 subunits could constitute adverse modification. The most likely subunits in which these  
36 activities may occur are 4b and 4c, although no projects of this kind are currently proposed.  
37 Such projects might also include the proposed Rosemont Copper Mine in Unit 3, which is  
38 described in Section 3.9 Mining.

39 In summary, the effects of critical habitat designation on land use and management are expected  
40 to be minor because (1) new consultations based solely on the presence of designated critical  
41 habitat are unlikely, and because land managers are already consulting on jaguar throughout the

1 proposed critical habitat areas; (2) any reasonable and prudent alternatives developed under  
2 jeopardy analysis would not likely be changed substantially with the addition of adverse  
3 modification analysis; and (3) very few if any additional conservation measures would be  
4 proposed to address critical habitat. As such, the incremental economic effects of designation  
5 are limited to the administrative costs of expanded or reinitiated consultation. These costs are  
6 estimated to be \$180,000 in total, or \$16,000 annualized (IEc 2013).

### 7 **3.2.2.3 Alternative B**

8 For Alternative B (all units proposed in Alternative A minus the exclusion of Tohono O’odham  
9 Nation lands), the impacts associated with the designation of critical habitat would be similar to  
10 those identified for Alternative A. The exclusion is wholly tribal land. If Tohono O’odham  
11 Nation land is excluded, designation of critical habitat affects this area only to the extent that  
12 tribal activities have effects on critical habitat may require a Federal license, permit, or funding.  
13 Therefore, this exclusion could reduce the economic impacts of designation on land management  
14 activities in this area overall, by requiring fewer consultations. This would reduce administrative  
15 costs as well for the Service. The overall impacts on land management would be less than those  
16 in Alternative A, and still characterized as minor.

## 17 **3.3 Fish, Wildlife, Plants, Threatened and Endangered Species**

### 18 **3.3.1 Existing Conditions**

19 This section describes the animals, plants, and their habitats that would be affected by the  
20 designation of critical habitat for the jaguar. The critical habitat boundaries were calculated with  
21 mapping software to include PCEs 3, 4, 5, 6, and 7: water availability, vegetation community,  
22 tree cover, ruggedness, lack of human influence, and elevation (note that data describing  
23 distribution of native prey (PCE 2) was not used, as wildlife management agencies in Arizona  
24 and New Mexico have a history of effective game management strategies resulting in prey  
25 species’ persistence within occupied areas). They are described in detail in the August 20, 2012,  
26 and revised proposed rules. The two vegetation communities included in the critical habitat units  
27 are Madrean evergreen woodland and semidesert grassland. This discussion will focus on those  
28 species that would be found within the constraints of the jaguar PCEs that were used to  
29 determine the critical habitat boundaries.

30 The Madrean evergreen woodland originates in the Sierra Madre mountain range of Mexico and  
31 extends north into southeastern Arizona and southwestern New Mexico ((Arizona Game and  
32 Fish Department (AGFD 2012)). The climate of the woodland is characterized by mild winters  
33 with some rain and occasional snow and wet, warm summers. The historically low-intensity fire  
34 regime of this community has favored the fire resistant plant species and the area is dominated  
35 by Madrean evergreen pines intermingled with patchy shrublands on most mid-elevation slopes  
36 (1500-2300 m elevation). Fires are frequent, with perhaps more crown fires than ponderosa pine  
37 woodlands, which tend to have more frequent ground fires on gentle slopes (AGFD 2012). This  
38 ecosystem has been labeled a hotspot of biological diversity by Conservation International (CI)  
39 and sustains over 120 endemic animal species and almost 4,000 endemic plant species (CI 2012).

1 The semidesert grassland community of southern Arizona and New Mexico is composed mostly  
2 of perennial grasses with some mixed shrub-succulent and dry oaks (NatureServe 2012). Some  
3 areas are essentially pure stands of grass. In other places, an open savanna with grasses beneath  
4 oaks or mesquites is common. Most areas are characterized by short-grasses interspersed with a  
5 variety of low-growing trees, shrubs, and cacti. This vegetation system has adapted to a frequent  
6 fire regime (every 2.5 – 10 years), though more recently the lack of fire and pressure from  
7 grazing has converted much of the original grassland to desert scrub habitat (AGFD 2012).  
8 Originally, tree cover and shrub cover together comprised less than 10% of the area  
9 (NatureServe 2012). Currently, moderate levels of shrub invasion (10-35% cover) affect about  
10 39% of the semi-desert grassland, and the remaining 52% is dominated by shrubs or nonnative  
11 grasses, or suffers from severe erosion (AGFD 2012).

### 12 **3.3.1.1 Fish**

13 While the jaguar is not an aquatic species, water is one of the important PCEs that can determine  
14 presence or absence of jaguars, and they are not usually found farther than 10 km (6.2 mi) from a  
15 water source (Service 2012b). In general, riparian and aquatic communities in Arizona and New  
16 Mexico have experienced impacts from drought, livestock grazing, and invasive species  
17 introduction (AGFD 2012). As a result of predation and competition with nonnative species,  
18 native fish in Arizona are considered the most threatened taxa among Arizona native species  
19 (AGFD 2012). See Section 3.3.1.4 in this document for a description of threatened and  
20 endangered fish species that occur in the proposed critical habitat areas.

21 The proposed critical habitat is located within the Gila River basin, which includes a large part of  
22 Arizona and extends into New Mexico, and is part of the larger Colorado River water basin.  
23 This basin contains several sub-basins and drains rivers such as the San Pedro and Santa Cruz  
24 and their tributaries. These rivers, streams, and lakes are important ecological features in the  
25 desert. They provide habitat for native species such as the loachminnow (*Tiaroga cobitis*), desert  
26 pupfish (*Cyprinodont macularius*), Gila chub (*Gila intermedia*), razorback sucker (*Xyrauchen*  
27 *texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), gila topminnow (*Poeciliopsis*  
28 *occidentalis*), and spikedace (*Meda fulgida*) ((U.S. Bureau of Reclamation (USBR) 2009a).  
29 These native species and the aquatic community they live in have been impacted by the  
30 introduction of nonnative aquatic species such as mosquitofish (*Gambusia affinis*), smallmouth  
31 bass (*Micropterus dolomieu*), carp (*Cyprinus carpio*), American bullfrog (*Rana catesbeiana*),  
32 and crayfish (*Orconetes* spp. and *Procambarus* spp.) (USBR 2009b).

### 33 **3.3.1.2 Wildlife**

34 The Madrean vegetation community supports several species that are not found elsewhere or in  
35 only one or a few habitat types, including talussnail (*Sonorella* spp.), barking frog (*Craugastor*  
36 *augusti*), brown vine snake (*Oxybelis aeneus*), ridge-nosed rattlesnake (*Crotalus willardi*),  
37 Gould's turkey (*Megleagris gallopavo mexicana*), Montezuma quail (*Cyrtonyx montezumae*),  
38 Mexican jay (*Aphelocoma wollweberi*), bridled titmouse (*Baeolophus wollweberi*), and southern  
39 pocket gopher (*Thomomys umbrinus*) (AGFD 2012). The best-known invertebrates in the  
40 Madrean pine-oak woodlands are the approximately 160-200 butterfly species, of which about  
41 45 are native to the region. The grasslands provide habitat for the pronghorn antelope  
42 (*Antilocapra americana*), deer (*Odocoileus* spp.), prairie dogs (*cynomys* spp.), and kangaroo rats

1 (*Dipodomys spp.*). See Section 3.3.1.4 of this document for a description of threatened and  
2 endangered wildlife species that are likely to occur in the critical habitat areas.

3 Most jaguar experts believe that collared peccary (*Pecari tajacu*) and deer are mainstays in the  
4 diet of jaguars in the United States and Mexico borderlands, although other available prey,  
5 including coatis (*Nasua narica*), skunk (*Mephitis spp.*, *Spilogale gracilis*), raccoon (*Procyon*  
6 *lotor*), jackrabbit (*Lepus spp.*), domestic livestock, and horses are taken as well (77 FR 50213-  
7 50242). The peccary can be found in dense scrubby vegetation, often near water, and rests in  
8 caves, rock crevices, and mine shafts during the day (NatureServe 2012). The deer species found  
9 in the southwest desert include mule deer (*Odocoileus hemionus*) and white tailed deer  
10 (*Odocoileus virginianus*). They feed on grasses and forbs in the spring and summer but are  
11 primarily browsers and consume bark, twigs, leaves, and nuts (AZGFD 2009). Mule deer are  
12 found in desert shrub, grasslands, pinon-juniper, pine, aspen-fir, and mountain meadows, while  
13 white tailed deer habitats include oak-grasslands, chaparral, and pine forests (AZGFD 2009).

### 14 **3.3.1.3 Plants**

15 The Madrean forest is dominated by Madrean pines such as Arizona pine (*Pinus arizonica*),  
16 Apache pine (*Pinus engelmannii*), Chihuahua pine (*Pinus leiophylla*), Chihuahua white pine  
17 (*Pinus strobiformis*) and evergreen oaks such as Arizona white oak (*Quercus arizonica*), Emory  
18 oak (*Quercus emoryi*), and gray oak (*Quercus grisea*) (AGFD 2012). The forest provides the  
19 vegetative cover that the jaguar needs for stalking and ambushing prey, as well as habitat for  
20 target prey species (77 FR 50213-50242). These oaks and pines intermingle with patchy  
21 shrublands on most mid-elevation slopes (1,500-2,300 m elevation). Other tree species include  
22 Arizona cypress (*Cupressus arizonica*), alligator juniper (*Juniperus deppeana*), Mexican pinyon  
23 (*Pinus cembroides*), border pinyon (*Pinus discolor*), ponderosa pine (*Pinus ponderosa*) and  
24 Douglas fir (*Pseudotsuga menziesii*). Subcanopy and shrub layers may include typical encinal  
25 and chaparral species such as yucca (*Agave spp.*), Arizona madrone (*Arbutus arizonica*),  
26 manzanitas (*Arctostaphylos spp.*), silverleaf oak (*Quercus hypoleucoides*), netleaf oak (*Quercus*  
27 *rugosa*), and Sonoran scrub oak (*Quercus turbinella*). Some stands have moderate cover of  
28 perennial grasses such as bullgrass (*Muhlenbergia emersleyi*), longtongue muhly (*Muhlenbergia*  
29 *longiligula*), kunth (*Muhlenbergia virescens*), and Texas bluestem (*Schizachyrium cirratum*).

30 The semi-desert grassland community consists of regions of open grassland and regions of open  
31 savanna with oaks (*Quercus spp.*) or mesquites (*Prosopis spp.*). These grasslands are  
32 characterized by the presence of tobosagrass (*Pleuraphis mutica*) or black grama (*Bouteloua*  
33 *eriopoda*). Though jaguars are more commonly found in dense forested regions, they have been  
34 documented in these open grasslands that have some tree cover. Semi-desert grasslands with  
35 greater than 1 to 50% tree cover were included in determining the boundaries of the proposed  
36 critical habitat (77 FR 50213-50242). Other common grass species within the semi-desert  
37 grassland include hairy grama (*B. hirsuta*), Rothrock's grama (*B. rothrockii*), sideoats grama (*B.*  
38 *curtipendula*), blue grama, plains lovegrass (*Eragrostis intermedia*), bush muhly (*Muhlenbergia*  
39 *porteri*), curlyleaf muhly (*Muhlenbergia setifolia*), James' galleta (*Pleuraphis jamesii*), and  
40 alkali sacaton (*Sporobolus airoides*) (AGFD 2012). More conspicuous species present include  
41 acacias (*Acacia spp.*), prickly-pear cactus (*Opuntia spp.*), century plant (*Selaginella spp.*), cholla  
42 (*Cylindropuntia spp.*), and yuccas (*Yucca spp.*). See Section 3.3.1.4 of this document for a

1 description of threatened and endangered wildlife species that are likely to occur in the critical  
 2 habitat areas.

3 **3.3.1.4 Threatened and Endangered Wildlife Species**

4 There are a number of endangered and threatened species inhabiting the proposed critical habitat  
 5 for the jaguar. Table 3.3 lists the federally endangered, threatened, sensitive, and candidate  
 6 species likely found in the proposed jaguar critical habitat units. Of those species listed, critical  
 7 habitat units for four species overlap with the proposed critical habitat for the jaguar and are  
 8 discussed briefly below.

9 The Chiricahua leopard frog occurs in a wide variety of habitats at a wide range of altitudes in  
 10 pine and pine-oak forests with permanent water ponds of moderate depth as well as montane  
 11 streams (NatureServe 2012). Based on the jaguar’s PCE need for water availability and use of  
 12 Madrean evergreen woodlands, there is likely overlap in jaguar and Chiricahua leopard frog  
 13 habitat use.

14 The Mexican spotted owl is a medium sized owl with ashy-chestnut brown feathers and white  
 15 and brown spots on their abdomen, back, and head (NatureServe 2012). These owls are  
 16 commonly found in old-growth or mature forests and commonly near water; therefore, they may  
 17 frequent some of the proposed critical habitat units for the jaguar. This species’ critical habitat  
 18 overlaps with sections of the proposed jaguar units 2, 3 and 4a.

19 The Sonora chub is a small (25cm) fish whose range within the United States is restricted to a  
 20 few small streams in Santa Cruz County, AZ (NatureServe 2012). These streams, including  
 21 critical habitat segments, are found within the proposed jaguar critical habitat unit 3.

22 The Huachuca water-umbel is a semi-aquatic carrot-like plant found in mid-elevation wetlands  
 23 (ciengas) in Cochise and Santa Cruz counties in Arizona (NatureServe 2012). This plant is  
 24 sensitive to disturbance and competition and has designated critical habitat that overlaps with the  
 25 proposed jaguar critical habitat unit 3.

26 **Table 3.3. Federally Endangered, Threatened, and Candidate Wildlife Species**  
 27 **within the Proposed Recovery Units for the Jaguar**

Species	Status	Counties
AMPHIBIANS		
Sonora tiger salamander <i>Ambystoma tigrinum stebbinsi</i>	Endangered	Cochise, Santa Cruz
Arizona treefrog <i>Hyla wrightorum</i>	Candidate	Cochise, Santa Cruz
Chiricahua leopard frog <i>Lithobates chiricahuensis</i>	Threatened	Cochise, Hidalgo, Pima, Santa Cruz
BIRDS		
Yellow-billed cuckoo <i>Coccyzus americanus</i>	Candidate	Cochise, Pima, Santa Cruz

Species	Status	Counties
Mexican spotted owl <i>Strix occidentalis lucida</i>	Threatened	Cochise, Hidalgo, Pima, Santa Cruz
Southwestern willow flycatcher <i>Empidonax trailii extimus</i>	Endangered	Cochise, Hidalgo, Pima, Santa Cruz
Sprague's pipit <i>Anthus spragueii</i>	Candidate	Cochise, Hidalgo, Santa Cruz
Masked bobwhite (quail) <i>Colinus virginianus ridgewayi</i>	Endangered	Pima
California Least tern <i>Sterna antillarum</i>	Endangered	Pima
<b>MAMMALS</b>		
Grey wolf <i>Canis lupis</i>	Experimental non-essential population	Hidalgo
Sonoran pronghorn <i>Antilocapra americana sonoriensis</i>	Endangered	Pima
Ocelot <i>Leopardus pardalis</i>	Endangered	Cochise, Pima, Santa Cruz
Lesser long-nosed bat <i>Leptonycteris curasoae yerbabuena</i>	Endangered	Cochise, Hidalgo, Pima, Santa Cruz
Mexican long-nosed bat <i>Leptonycteris nivalis</i>	Endangered	Hidalgo
<b>REPTILES</b>		
New Mexican ridge-nosed rattlesnake <i>Crotalus willardi obscures</i>	Threatened	Cochise, Hidalgo,
Northern Mexican Garter Snake <i>Thamnophis eques megalops</i>	Candidate	Cochise, Pima, Santa Cruz
Sonoran desert tortoise <i>Gopherus morafkai</i>	Candidate	Pima, Santa Cruz
Sonoyta mud turtle <i>Kinsternon sonoriense longifemorale</i>	Candidate	Pima
Tucson shovel-nosed snake <i>Chionactis occipitalis klauberi</i>	Candidate	Pima
<b>INVERTEBRATES</b>		
Stephan's Riffle Beetle <i>Heterelmis stephani</i>	Candidate	Santa Cruz
Huachuca springsnail <i>Pyrgulopsis thompsoni</i>	Candidate	Cochise, Santa Cruz
Rosemont talussnail <i>Sonorella rosemontensis</i>	Candidate	Pima

Species	Status	Counties
San Bernardino springsnail <i>Pyrgulopsis thompsoni</i>	Endangered	Cochise
FISH		
Gila topminnow <i>Poeciliopsis occidentalis</i>	Endangered	Cochise, Hidalgo, Pima, Santa Cruz
Sonora chub <i>Gila ditaenia</i>	Threatened	Santa Cruz
Gila chub <i>Gila intermedia</i>	Endangered	Cochise, Pima, Santa Cruz
Desert pupfish <i>Cyprinodon macularius</i>	Endangered	Cochise, Pima, Santa Cruz
Yaqui catfish <i>Ictalurus pricei</i>	Threatened	Cochise
Yaqui chub <i>Gila purpurea</i>	Endangered	Cochise
Loachminnow <i>Tiaroga cobitis</i>	Threatened	Cochise, Hidalgo
Beautiful shiner <i>Cyprinella Formosa</i>	Threatened	Cochise
Spikedace <i>Meda fulgida</i>	Threatened	Cochise, Hidalgo
PLANTS		
Huachuca water-umbel <i>Lilaeopsis schaffneriana</i>	Endangered	Cochise, Pima, Santa Cruz
Canelo Hills ladies' tresses <i>Spiranthes delitescens</i>	Endangered	Cochise, Santa Cruz
Pima pineapple cactus <i>Coryphantha scheeri var rodustispina</i>	Endangered	Pima, Santa Cruz
Kearny's blue star <i>Amsonia kearneyana</i>	Endangered	Pima
Lemmon fleabane <i>Erigeron lemmonii</i>	Candidate	Cochise
Cochise pincushion cactus <i>Coryphantha robbinsorum</i>	Threatened	Cochise

1 Source: NatureServe 2012; Service No Date

1 **3.3.2 Environmental Consequences**

2 **3.3.2.1 No Action Alternative**

3 Under the No Action Alternative, critical habitat for the jaguar would not be designated under  
4 the ESA. The section 7 consultation process would continue as presently conducted without  
5 analysis of destruction or adverse modification of habitat. Section 7 would be initiated only for  
6 *may affect* determinations of impacts on the jaguar. Such consultations would analyze relevant  
7 land management plans, grazing management plans, fire management plans, conservation plans,  
8 and include both site-specific and programmatic projects within the proposed area. As they  
9 relate to vegetation and wildlife, such consultations would likely include:

- 10 • Department of Defense—such as the Fort Huachuca INRMP;
- 11 • U.S. Customs and Border Protection (CBP)—for fencing or other barriers to reduce  
12 illegal trafficking of peoples or goods;
- 13 • U.S. Army Corps of Engineers—for bridge projects, stream restoration, vegetation  
14 management, and urban development;
- 15 • U.S. Bureau of Land Management—for fire suppression, fuel-reduction treatments, land  
16 and resource management plans, livestock grazing and management plans, recreation,  
17 mining permits, nonnative invasive species treatments, and renewable energy  
18 development;
- 19 • U.S. Department of Transportation—for highway and bridge construction and  
20 maintenance;
- 21 • U.S. Fish & Wild Service—for issuance of section 10 enhancement of survival permits,  
22 HCPs, and SHAs; NWR planning; and Partners for Fish and Wildlife program projects;
- 23 • U.S. Forest Service—for FMPs, fire suppression, fuel-reduction treatments, forest plans,  
24 livestock grazing amps, mining permits, and travel management plans;
- 25 • National Park Service—for general management plans, FMPs, border security  
26 infrastructure, recreation management, and travel management; and
- 27 • Natural Resource Conservation Service—for wildlife habitat improvements.

28 Consequently, this alternative would have no impact on fish, wildlife, and plants, including  
29 candidate, proposed, or listed species, beyond those conservation measures resulting from the  
30 original listing of the jaguar and associated requirements of section 7 of the ESA.

31 **3.3.2.2 Alternative A**

32 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
33 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
34 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
35 anticipate that designation of critical habitat would result in consultations that would not  
36 otherwise take place for jeopardy analysis in all proposed areas. However, compared to No  
37 Action Alternative, the Alternative A (all proposed units, no exclusions) would result in (1) a  
38 small but unknown number of reinitiated section 7 consultations based solely on the presence of  
39 designated critical habitat and (2) the addition of an adverse modification of critical habitat  
40 analysis to section 7 consultations for the jaguar with in the proposed critical habitat.

1 *Reinitiated Consultations*

2 Because the PCEs that make up each critical habitat units are closely tied to adverse effects to  
3 the species, activities that would require consultation for critical habitat are primarily the same  
4 activities that currently require consultation for the species. Reinitiated consultations may  
5 include fire management, land management, conservation management plans, and livestock  
6 management plans.

7 *Addition of Adverse Modification Analysis to Future Consultations*

8 The consultations from the addition of adverse modification analysis, and the additional time  
9 required to complete consultations that would only have considered effects on the species, would  
10 increase administrative costs to the Service and to the action agencies. Implementing  
11 conservation measures resulting from those additional consultations would also increase costs for  
12 action agencies. Outcomes of consultations for critical habitat could also include reasonable and  
13 prudent alternative alternatives and other conservation measures designed to maintain jaguar  
14 PCEs. These outcomes cannot be predicted precisely; however, based on past consultations  
15 types of additional management actions that may be required include, but are not limited to  
16 (Service 2012c):

- 17 • Revising resource management plans (RMP);
- 18 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring  
19 reports;
- 20 • Properly identifying animals during predator control activities to ensure jaguars were not  
21 subject to control actions;
- 22 • Maintaining jaguar habitat in major corridors to prevent fragmentation or blocking of  
23 corridors;
- 24 • Minimizing stable nighttime lighting;
- 25 • Closure and restoration of unauthorized roads;
- 26 • Minimizing vehicles and human presence in the area; and
- 27 • Investigating reports of jaguar observations.

28 Major construction projects (such as new highways, significant widening of existing highways,  
29 or construction of large facilities) that could sever connectivity within these critical habitat  
30 subunits could constitute adverse modification. The most likely subunits in which these  
31 activities may occur are 4b and 4c, although no projects of this kind are currently proposed.  
32 Such projects might also include the proposed Rosemont Copper Mine in Unit 3, which is  
33 described in Section 3.9 Mining.

34 A potential outcome of section 7 consultations for critical habitat would be increased efforts to  
35 maintain and restore the jaguar PCEs through conservation measures within designated critical  
36 habitat. These project modifications include creating permeable highways with wildlife  
37 crossings, habitat restoration, eliminating stable nighttime lighting, and minimizing human  
38 presence (Service 2012c). These actions would serve to maintain habitat and habitat  
39 connectivity for the jaguar as well as reduce the perceived human presence in critical habitat  
40 areas. As a result, native fish, wildlife, and plants, including candidate, proposed, or listed  
41 species would benefit. The species most likely to benefit are migratory species that also depend  
42 on connectivity between large tracts of habitat, such as the Mexican spotted owl. In addition, the

1 availability of natural jaguar prey species would be maintained. Native vegetation would benefit  
2 through measures to restore, enhance and protect habitat within the critical habitat units. The  
3 beneficial effects of Alternative A on fish, wildlife, and plants are expected to be minor because  
4 the outcomes of consultations for critical habitat are not likely to substantially change  
5 management practices, proposed and existing projects, or various uses of proposed critical  
6 habitat segments.

7 In summary, the effects of critical habitat designation with regards to wildlife are expected to be  
8 minor because: (1) new consultations based solely on the presence of designated critical habitat  
9 are unlikely, because land managers are already consulting on jaguar throughout the proposed  
10 critical habitat areas; (2) any reasonable and prudent alternatives developed under jeopardy  
11 analysis would not likely be changed substantially with the addition of adverse modification  
12 analysis; and (3) very few, if any, additional conservation measures would be proposed to  
13 address critical habitat beyond those already proposed in jeopardy consultations.

### 14 **3.3.2.3 Alternative B**

15 Impacts associated with Alternative B (proposed units minus the exclusion of Tohono O’odham  
16 Nation lands) would be similar to those identified for Alternative A, but with fewer section 7  
17 consultations. Because the potential exclusion is tribal land, only projects requiring a Federal  
18 license, permit, or funding would be required to consult with the Service in this area. This  
19 exclusion would slightly decrease potential consultations. Therefore, these exclusions could  
20 reduce the economic impacts of designation on wildlife related activities in these areas by  
21 requiring fewer consultations overall. This would reduce administrative costs as well for the  
22 Service. Impacts to wildlife from this alternative would still be expected to be minor.

## 23 **3.4 Fire Management**

### 24 **3.4.1 Existing Conditions**

25 Current Federal fire management practices conform to the National Fire Plan, which was  
26 developed by Federal agencies in 2001 to address the causes of changing fire regimes and to  
27 guide wildland fire management (FY 2001 Interior and Related Agencies Appropriations Act  
28 [Public Law 106–291]). The implementation plan for this collaborative effort, called the 10-year  
29 Comprehensive Strategy, outlines a comprehensive approach to the management of wildland  
30 fire, hazardous fuels, and ecosystem restoration and rehabilitation on Federal and adjacent state,  
31 tribal, and private forest and range lands in the United States. The four primary goals of this  
32 strategy are to (1) improve prevention and suppression, (2) reduce hazardous fuels, (3) restore  
33 fire-adapted ecosystems, and (4) promote community assistance. Possible fire management  
34 actions depend on specific circumstances and may include:

- 35 • Reduction of hazardous fuel loads by mechanical, chemical, or biological means;
- 36 • Reduction of hazardous fuel loads or habitat restoration with prescribed fire, which is any  
37 fire ignited by management actions to meet specific objectives;

- 1 • Wildland fire use, which is the management of naturally ignited wildland fires to  
2 accomplish specifically stated resource management objectives in predefined geographic  
3 areas; and
- 4 • Wildland fire suppression.

5 Federal land in the proposed jaguar critical habitat area includes primarily National Forest land  
6 and BLM land. Fire management on the National Forest land is guided by the Coronado  
7 National Forest FMP, which was developed in accordance with the National Fire Plan (USFS  
8 2010a). It includes the goals of:

- 9 • Managing naturally-occurring fires which sustain the forest ecosystems;
- 10 • Maintaining fuel conditions for low-risk fires; and
- 11 • Improving habitat for the protection of threatened and endangered species.

12 Fire management on the land managed by BLM is guided by the Arizona Statewide Land Use  
13 Plan Amendment, Fire, Fuels, and Air Quality Management, also developed to be consistent with  
14 the National Fire Plan. The amendment includes similar goals of maintaining and improving  
15 habitat, and reducing fuel loads (BLM 2004a).

16 Consistent with national policy, the focus of fire management has increasingly been on the WUI,  
17 which comprises areas where flammable wildland fuels meet or intermingle with structures and  
18 other human development. The PCEs of the proposed critical habitat are characterized by  
19 minimal-to-no human population density and no major roads, so the areas of WUI within the  
20 proposed critical habitat are minimal.

21 Section 7 consultations regarding fire management are often programmatic in nature, covering  
22 broad-based FMPs and programs, but consultations may be required for individual burn and  
23 rehabilitation plans. Emergency section 7 consultations for wildland fire suppression are  
24 typically conducted after the fact. However, since its listing, there have been no formal, and an  
25 unknown number of informal, Section 7 consultations for the jaguar regarding fire management.

## 26 **3.4.2 Environmental Consequences**

### 27 **3.4.2.1 No Action Alternative**

28 Under the No Action Alternative, jaguar critical habitat would not be designated under the ESA.  
29 The section 7 consultation process would continue as presently conducted without analysis of  
30 destruction or adverse modification of habitat. Section 7 consultations could be triggered only  
31 for *may affect* determinations of impacts on the jaguar. Such consultations would analyze  
32 relevant land, resource and FMP on Federal lands currently occupied by the species. As they  
33 relate to fire management, such consultations would likely include:

- 34 • U.S. Bureau of Land Management—fire suppression and fuel-reduction treatments;
- 35 • U.S. Forest Service—FMPs, fire suppression, and fuel-reduction treatments in Coronado  
36 National Forest (Douglas Ranger District, Sierra Vista Ranger District, and Nogales  
37 Ranger District);
- 38 • National Park Service—general management plans and FMPs in Coronado National  
39 Memorial; and

- Therefore, this alternative would not have any impacts on fire management beyond any conservation measures or project modifications resulting from the listing of the jaguar and associated requirements of section 7 of the ESA.

#### 3.4.2.2 Alternative A

Given the secretive and transient nature of the jaguar, Federal land managers currently take steps to protect the jaguar even without critical habitat in proposed areas considered by the Service to be both occupied and unoccupied at the time of listing. Therefore, the Service does not anticipate that designation of critical habitat would result in consultations that would not otherwise take place for jeopardy analysis in all proposed areas. However, compared to No Action Alternative, the Alternative A (all proposed units, no exclusions) would result in: (1) a small but unknown number of reinitiated consultations for fire management actions based solely on the presence of designated critical habitat, and (2) the addition of an adverse modification of critical habitat analysis to section 7 consultations for the jaguar in critical habitat. Most FMPs are programmatic in nature and these plans may be required to reinitiate consultation. The additional new section 7 consultations would most likely be for new FMPs or for after-the-fact (emergency) consultations for wildland fire suppression and rehabilitation activities in those areas.

Fuel-management activities, either mechanical treatments or prescribed burns, reduce the risks posed by heavy fuels loads. They intend to restore the forest ecosystem by reducing the risk of catastrophic wildland fire, lessening post-fire damage, and limiting the spread of invasive species and diseases. These activities would help maintain the jaguar PCE for greater than 1 to 50 percent canopy cover. Fuel-management and prescribed burning that are discountable, insignificant, or wholly beneficial to the PCEs do not require formal consultation; however, the action agency would need to confirm their finding of no adverse impact to jaguar critical habitat with the Service through informal consultation (Service 1998a). The primary impact of the additional formal or informal consultations would be increased administrative costs to the Service and action agencies.

##### *Reinitiated Consultations*

Because the PCEs that make up each critical habitat unit are closely tied to adverse effects to the species, activities that could trigger consultation for critical habitat are primarily the same activities that currently trigger consultation for the species. Based on previous activity within designated units, such project proponents could include the Forest Service and BLM.

There have been no formal consultations for the jaguar regarding fire management activities, so these would be the re-opening of informal consultation and the possible need to initiate a formal consultation. As it relates to fire management, such consultations could include:

- Fire Management Plans—BLM, USFS;
- Fuels Reduction—BLM, USFS; and
- Fire Suppression—BLM, USFS.

1 *Addition of Adverse Modification Analysis to Future Consultations*

2 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
3 in many respects and are parallel processes because the health of a species cannot be  
4 disassociated from the health of its habitat. The outcomes of these future consultations would  
5 depend on the details of project proposals and the analysis of effects, which are unknown at this  
6 time.

7 The additional time required to complete consultations that would only have considered effects  
8 on the species would increase administrative costs to the Service and to the action agencies.  
9 Implementing conservation measures resulting from those additional consultations would also  
10 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
11 include reasonable and prudent alternative alternatives and other conservation measures designed  
12 to maintain jaguar PCEs. These outcomes cannot be predicted precisely; however, based on past  
13 consultations, types of additional management actions that may be required include, but are not  
14 limited to:

- 15 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring  
16 reports;
- 17 • Implementing conservation measures for fire management activities in riparian and  
18 aquatic habitats to eliminate adverse effects to dense riparian jaguar habitats; and
- 19 • Maintaining dense, low vegetation in major riparian or xero-riparian corridors (BLM  
20 2004b).

21 In summary, the effects of critical habitat designation on fire management activities are expected  
22 to be minor because: (1) new consultations based solely on the presence of designated critical  
23 habitat are unlikely, because land managers are already consulting on jaguar throughout the  
24 proposed critical habitat areas; (2) any reasonable and prudent alternatives developed under  
25 jeopardy analysis would not likely be changed substantially with the addition of adverse  
26 modification analysis; (3) very few, if any, additional conservation measures would be proposed  
27 to address critical habitat; and (4) many fire management activities generally are seen as  
28 negligible or beneficial to the PCEs and are likely to not trigger formal consultation.

29 **3.4.2.3 Alternative B**

30 Alternative B includes the proposed units described with the exclusion of the Tohono O’odham  
31 Nation land. The impacts associated with the designation of critical habitat would be similar to  
32 those identified for Alternative A. Tohono O’odham Nation land is tribal land and consultation  
33 is only triggered for activities that require a Federal permit, license, or funding. Therefore, its  
34 exclusion may reduce consultations slightly, to the extent proposed actions would include fire  
35 management activities that impact the Nation’s land. The overall impacts to fire management  
36 would still be characterized as minor.

1 **3.5 Water Resources**

2 **3.5.1 Existing Conditions**

3 The open, dry habitat of the southwestern United States has been characterized as marginal  
 4 habitat for jaguars in terms of water availability. Jaguar studies have shown that jaguars require  
 5 surface water within a reasonable distance year round. Also, jaguars are more likely to be found  
 6 in areas with a water supply, although the distance to the water supply is not defined. The jaguar  
 7 Recovery Team determined that high-quality habitat for jaguars in both the proposed  
 8 Northwestern Recovery and Northwestern Management Units include water availability within  
 9 10 km (6.2 mi) year-round. Available surface water is also listed as a physical or biological  
 10 feature that is essential to the conservation of the species and which may require special  
 11 management considerations or protection. Lastly, the Service listed surface water sources  
 12 available within 20 km (12.4 mi) of each other as a PCE of jaguar critical habitat, meaning that  
 13 high quality jaguar habitat includes a surface water source such that a jaguar will never be more  
 14 than 10 km (6.2 mi) from it. Activities that can permanently affect sources of water may render  
 15 an area unsuitable for jaguars (77 FR 50213-50242).

16 *Watersheds (surface and groundwater)*

17 The proposed critical habitat locations are distributed between 12 different watershed drainage  
 18 areas within Arizona and New Mexico. Each of the watershed drainage areas has specific  
 19 characteristics unique to that particular location. Table 3.4 lists the critical habitat units, the  
 20 watersheds they are located in, and the amount of land in each watershed.

21 **Table 3.4. Critical Habitat Units and Watersheds**

<b>Critical Habitat Units</b>	<b>Watersheds</b>	<b>Critical Habitat within Watershed Hectares (Acres)</b>
<b>Subunit 1a</b>	Aguirre Valley Watershed	5,742 (14,188)
	Brawley Wash Watershed	23,089 (57,053)
	San Simon Wash Watershed	8,858 (21,889)
<b>Subunit 1b</b>	Brawley Wash Watershed	5,283 (13,056)
	San Simon Wash Watershed	12,341 (30,495)

<b>Critical Habitat Units</b>	<b>Watersheds</b>	<b>Critical Habitat within Watershed Hectares (Acres)</b>
	Rio De La Concepcion Watershed	1,780 (4,398)
<b>Unit 2</b>	Brawley Wash Watershed	7,447 (18,402)
	Upper Santa Cruz Watershed	35,329 (87,299)
	Rio De La Concepcion Watershed	15,870 (39,216)
<b>Unit 3</b>	Upper Santa Cruz Watershed	105,560 (260,846)
	Rillito Watershed	19,157 (47,337)
	Upper San Pedro Watershed	23,645 (58,428)
<b>Subunit 4a</b>	Rillito Watershed	10,637 (26,284)
	Upper San Pedro Watershed	14,647 (36,194)
<b>Subunit 4b</b>	Rillito Watershed	5,144 (12,710)
<b>Subunit 4c</b>	Upper San Pedro Watershed	8,026 (19,832)
<b>Unit 5</b>	San Bernardino Valley Watershed	24,700 (61,036)
	San Simon Watershed	10,408 (25,718)
	Animals Valley Watershed	3,251

Critical Habitat Units	Watersheds	Critical Habitat within Watershed Hectares (Acres)
		(8,034)
	Cloverdale Watershed	3,209 (7,929)
<b>Unit6</b>	Cloverdale Watershed	1,617 (3,995)
	Playas Lake Watershed	1,463 (3,616)

1 Source: USGS 2005

2 To control the overdraft of groundwater supplies from its growing economy, the Arizona Ground  
3 Water Management Code (Code) was passed in 1980. The Arizona Department of Water  
4 Resources (ADWR) set up Active Management Areas (AMAs) for areas with a heavy reliance  
5 on mined groundwater. In addition to controlling overdraft, the Code also allocates groundwater  
6 resources and increases water supply development. Surface water rights are attached to the  
7 landowner and any changes in use must be approved by the ADWR (ADWR 2011).

8 The Aguirre Valley Watershed is entirely in Arizona and drains approximately 2,033 km<sup>2</sup> (785  
9 mi<sup>2</sup>) of land (USGS 2005). A portion of proposed critical habitat in subunit 1a is found within  
10 this watershed (see Table 3.2). While the majority of this watershed is within the Tohono  
11 O’odham Nation, approximately nine percent is managed by the BLM (USGS 2011).

12 The Brawley Wash Watershed, also known as the Brawley Wash – Los Robles Wash Watershed  
13 or Altar Wash-Brawley Wash Watershed, drains approximately 3,644 km<sup>2</sup> (1,407 mi<sup>2</sup>) of land in  
14 Arizona. Portions of proposed critical habitat within subunit 1a, subunit 1b, and unit 2 are within  
15 this watershed (see Table 3.2). This area is drained by the Altar Wash, Brawley Washes, and  
16 Los Robles Wash to the confluence with the Santa Cruz River. While most of this area is owned  
17 by the State of Arizona, eleven percent is managed by the Service, ten percent is managed by  
18 BLM, eight percent is within the Tohono O’odham Nation, three percent is USFS land, and two  
19 percent is NPS land. Water quantity is a concern in this watershed due to surface water and  
20 groundwater diversion and pumping from agricultural, rangeland, and urban water uses. There  
21 are three major reservoirs in this watershed: Aguirre Lake, Arrivaca Lake, and BK Tank (NRCS  
22 et al. 2008). This watershed is part of the Tucson AMA (ADWR 2010).

23 The San Simon Wash Watershed is located entirely within the Tohono O’odham Nation in  
24 Arizona and drains an area of approximately 3,644 km<sup>2</sup> (2,300 mi<sup>2</sup>) of land. Portions of  
25 proposed critical habitat within subunit 1a and 1b are within this watershed (see Table 3.2).  
26 There are no perennial or intermittent streams, creeks, or springs in this watershed. Groundwater  
27 withdrawal is minimal (ADWR No Date) and the main surface water use is for irrigation for  
28 agricultural practices (ADWR 2010). Menegers Lake is the only reservoir in this watershed and

1 it is primarily used for irrigation. There are no surface water diversions within this watershed  
2 (ADWR 2010).

3 The Upper Santa Cruz Watershed in Arizona drains approximately 5,747 km<sup>2</sup> (2,219 mi<sup>2</sup>) of land  
4 (USGS 2005). Portions of proposed critical habitat in unit 2 and unit 3 are within this watershed.  
5 Approximately 48 percent of this watershed is within the Coronado National Forest, while  
6 approximately one percent is BLM land, one percent is managed by the Department of Defense,  
7 and one percent is managed by NPS.

8 The Rio De La Concepcion Watershed in Arizona drains approximately 373 km<sup>2</sup> (144 mi<sup>2</sup>) of  
9 land (USGS 2005). Portions of proposed critical habitat subunit 1b and unit 2 are within this  
10 watershed. Approximately seventy-five percent of this watershed is within the Coronado  
11 National Forest and twenty percent is within the Buenos Aires NWR (USGS 2011).

12 The Rillito Watershed, also known as the Pantano Wash – Rillito River Watershed, drains  
13 approximately 2,383 km<sup>2</sup> (920 mi<sup>2</sup>) of land in Arizona. Portions of proposed critical habitat in  
14 unit 3 and subunit 4a as well as all of subunit 4b are found within this watershed. The watershed  
15 is drained by Pantano Wash to the confluence with the Santa Cruz River. Major streams in this  
16 watershed include Cienega Creek, Tanque Verde Creek, Pantano Wash, Garden Canyon Stream,  
17 Sabino Creek, Drainage Way, Rincon Creek, Agua Caliente Wash, Agua Verde Creek, and  
18 Rillito Creek. While most of this land is privately owned, twenty-nine percent is Coronado  
19 National Forest land, nine percent is NPS land, seven percent is managed by the BLM, and one  
20 percent is military land. The main water uses in this watershed are from grazing, urban, forestry,  
21 and irrigation activities. Groundwater storage in this area has severely decreased and this area  
22 receives water from effluent sources and the Central Arizona Project (CAP). There are three  
23 major reservoirs in this watershed. Two are on the Agua Verde – Pantano Wash and one is  
24 located on Cienega Creek (NRCS 2007a). This watershed is part of the Tucson AMA (ADWR  
25 2010).

26 The Upper San Pedro Watershed drains approximately 4,727 km<sup>2</sup> (1,825 mi<sup>2</sup>) of land and  
27 portions of proposed critical habitat in unit 3 and subunit 4a, as well as all of subunit 4c, are  
28 within this watershed. The San Pedro River flows through this watershed and there are  
29 numerous perennial and intermittent streams throughout. While the majority of the land in this  
30 watershed is privately or state owned, approximately twelve percent is Coronado National Forest  
31 land, nine percent is managed by the BLM, seven percent is managed by the military, and less  
32 than one percent is NPS land. Ninety percent of all surface water diversion in this watershed  
33 comes from agricultural practices and over half of groundwater pumping is for municipal use  
34 (ADWR 2010).

35 The San Bernardino Watershed drains approximately 1,002 km<sup>2</sup> (387 mi<sup>2</sup>) of land in southeast  
36 Arizona. Black Draw is the only perennial stream in this watershed and it is located near the  
37 U.S.–Mexico Border. A portion of proposed critical habitat in unit 5 is found within this  
38 watershed. This watershed also includes a number of intermittent streams along the eastern  
39 boundary of the watershed. The majority of the land in this watershed is privately or state  
40 owned, though approximately seven percent is NF land, four percent is managed by the BLM,  
41 and one percent is managed by the Service. All water use in this area comes from a groundwater  
42 source for municipal use (ADWR 2010).

1 The San Simon Watershed is located along the San Simon River and drains approximately 5,827  
2 km<sup>2</sup> (2,250 mi<sup>2</sup>) of land in Arizona and New Mexico. A portion of proposed critical habitat in  
3 unit 5 is found within this watershed. Forty-one percent of this watershed is managed by the  
4 BLM and 13 percent is Coronado National Forest land. Groundwater levels have been declining  
5 in this watershed and the main water uses in this area consist of municipal use and irrigation for  
6 agricultural practices. There are four major reservoirs in this watershed: the Hot Well Draw and  
7 Gold Gulch #1, #2, and #3 (NRCS 2007b).

8 The Cloverdale and Animas Valley Watersheds drain approximately 407 km<sup>2</sup> (157 mi<sup>2</sup>) and  
9 5,786 km<sup>2</sup> (2,234 mi<sup>2</sup>) of land, respectively (USGS 2005). Portions of proposed critical habitat  
10 in unit 5 are found within these two watersheds. A portion of proposed critical habitat in unit 6  
11 is also found within the Cloverdale Watershed. The primary land uses that require water use in  
12 these watersheds are rangeland and irrigation for agricultural purposes (NRCS 2008). While the  
13 majority of land within the Cloverdale Watershed is privately owned, approximately one percent  
14 is managed by the BLM and twenty percent is managed by the USFS. Approximately forty three  
15 percent of Animas Valley Watershed is managed by the BLM and eight percent by the USFS  
16 (USGS 2011).

17 The Playas Lake Watershed in New Mexico drains approximately 4,462 km<sup>2</sup> (1,723 mi<sup>2</sup>) of land  
18 (USGS 2005). A portion of proposed critical habitat in unit 6 is found within this watershed.  
19 The primary land uses that divert water in this watershed are rangelands and irrigation for  
20 agricultural purposes (NRCS No Date). While approximately seventy percent of the land in this  
21 watershed is managed by BLM, the remaining thirty percent is privately or state-owned (USGS  
22 2011).

### 23 *Water Rights*

24 Surface and groundwater rights in New Mexico and Arizona follow the doctrine of prior  
25 appropriation: first in time, first in right. Prior appropriations are typically based on date of  
26 appropriation and beneficial use. The state entities responsible for managing surface and ground  
27 water management in these states are the New Mexico Office of the State Engineer (NMOSE)  
28 and the Arizona Department of Water Resources. These state agencies also oversee dam projects  
29 and other water projects in their respective states, as well as review and grant permits for new  
30 and changed water rights (ADWR 2011; NMOSE 2011).

31 Because available water sources within 20 km (12.4 mi) of each other is listed as a PCE for  
32 jaguar habitat, water rights that reduce the flow of water within streams and rivers within or near  
33 critical habitat could trigger section 7 consultation. A major water right that could affect water  
34 availability within critical habitat, including the San Pedro River, is the CAP.

35 In 1952, Arizona sued California over water supplied by the Colorado River. The dispute grew  
36 to include the settlement of water rights of and between New Mexico and Arizona on the Gila  
37 River system. In 1964, the U.S. Supreme Court (*Arizona v. California*) allocated water to  
38 California and Arizona based on future growth projections, but limited New Mexico's allocation  
39 to its "present use" developed as of 1957. New Mexico protested this allocation, and its State  
40 Engineer entered into negotiations with Arizona to improve its position. The State Engineer saw  
41 an opportunity to secure water for New Mexico as part of the CAP.

1 The Colorado River Basin Project Act of 1968 (CRBPA) authorized the CAP. The CAP delivers  
2 water from the Colorado River near Lake Havasu across Arizona through Phoenix and Tucson to  
3 several counties, including Pima County, which contains proposed critical habitat units 1, 2, 3,  
4 and subunits 4a and 4b. CAP “provides water for irrigation, municipal and industrial use,  
5 hydropower, flood control, recreation, environmental enhancement, and sediment control” (BLM  
6 2001).

7 The Arizona Water Settlements Act (AWSA) of 2004, in addition to settling several outstanding  
8 Indian water claims, authorizes water exchanges between the Gila River Indian Community and  
9 various parties in the State of Arizona, including the San Xavier and Shuck Toak Districts of the  
10 Tohono O’odham Nation, mining companies, and several municipalities in Arizona. Section  
11 212(d) of the AWSA modified Section 304(f) of the CRBPA to allow the Secretary of the  
12 Interior to contract with New Mexico water users or the State of New Mexico, with the approval  
13 of its Interstate Stream Commission, for water from the Gila River, its tributaries, and  
14 underground water sources in amounts that will permit consumptive use of water in New Mexico  
15 not to exceed an annual average in any period of 10 consecutive years of 14,000 acre-feet, over  
16 and above the consumptive uses provided for by Article IV of the decree of the U.S. Supreme  
17 Court in *Arizona v. California*. Such increased consumptive uses shall continue only so long as  
18 delivery of Colorado River water to downstream Gila River users in Arizona is being  
19 accomplished in accordance with the AWSA, in quantities sufficient to replace any diminution of  
20 their supply resulting from such diversion from the Gila River, its tributaries, and underground  
21 water sources.

22 Title I Section 107 and Title II Section 212 of the AWSA (Public Law 108–451) provides  
23 between \$66 and \$128 million in non-reimbursable funds for New Mexico to develop water  
24 supply alternatives, including a New Mexico Unit of the CAP if desired to accomplish the  
25 exchange. Funds will be deposited into the New Mexico Unit Fund, a State of New Mexico  
26 Fund established and administered by the New Mexico Interstate Stream Commission.  
27 Beginning in 2012, \$66 million, indexed to reflect changes since 2004 in the construction cost  
28 indices, will be deposited into the New Mexico Unit Fund in 10 equal annual payments.  
29 Following notification by December 31, 2014 that the State of New Mexico intends to have the  
30 New Mexico Unit constructed or developed, an additional \$34 to \$62 million may be available.  
31 A Record of Decision is to be issued in the *Federal Register* (FR) by the Secretary of the Interior  
32 no later than the end of 2019 (unless extended by the Secretary for reasons outside the control of  
33 the State of New Mexico) regarding the decision.

#### 34 *Recent Consultations*

35 Though there have been four formal section 7 consultations involving the jaguar that resulted in  
36 a BO since 1995 in Arizona, none of these involved water-related projects.

### 37 **3.5.2 Environmental Consequences**

38 Activities that occur on critical habitat units could affect water resources if they resulted in:  
39 channel alteration; prescribed fires; alterations of watersheds and floodplains; release of  
40 chemical or biological pollutants; release of effluents into the surface or groundwater at a point-  
41 source or non-point source; livestock waste pollution; aerial pesticide application; and fire  
42 retardant application. Actions that would alter the water quality or quantity so that sufficient

1 water sources are not available within 20 km (12.4 mi) of each other within a critical habitat unit  
2 could affect a PCE for the jaguar and trigger a section 7 consultation. These activities include:  
3 water diversions; groundwater pumping; and construction, operation, or destruction of dams or  
4 impoundments.

### 5 **3.5.2.1 No Action**

6 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
7 section 7 consultation process would continue as presently conducted. Section 7 consultations  
8 would be initiated only for *may affect* determinations of impacts to the jaguar. These  
9 consultations would analyze relevant land, resource, and FMPs proposed for Federal lands  
10 occupied by the jaguar. As they relate to water resources, such consultations would likely  
11 include:

- 12 • U.S. Fish and Wildlife Service—issuance of section 10 enhancement of survival permits,  
13 HCPs, SHAs; Buenos Aires NWR planning; and Partners for Fish and Wildlife projects.
- 14 • U.S. Army Corps of Engineers—stream restoration, vegetation management, and urban  
15 development.
- 16 • U.S. Bureau of Land Management—fire suppression, fuel-reduction treatments, land and  
17 resource management plans, mining permits, nonnative invasive species treatment, and  
18 renewable energy developments.
- 19 • Department of Defense—Fort Huachuca INRMP, facilities development and  
20 maintenance.
- 21 • National Park Service—general management plans, FMPs, and infrastructure  
22 management for the Coronado National Memorial.
- 23 • U.S. Bureau of Indian Affairs— utility development and upgrades and renewable energy  
24 development.
- 25 • U.S. Forest Service—FMPs, fire suppression, fuel-reduction treatments, forest plans, and  
26 mining permits in Coronado National Forest (Service 2012).

27 Therefore, this alternative would not have any impacts on water resource management beyond  
28 any conservation measures or project modifications resulting from the listing of the jaguar and  
29 associated requirements of section 7 of the ESA.

### 30 **3.5.2.2 Alternative A**

31 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
32 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
33 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
34 anticipate that designation of critical habitat would result in consultations that would not  
35 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No  
36 Action Alternative, Alternative A (all proposed units, no exclusions) would result in the  
37 following: (1) a small but unknown number of reinitiated section 7 consultations for proposed  
38 actions based solely on the presence of designated critical habitat; and (2) the addition of an  
39 analysis of adverse modification of critical habitat to future section 7 consultations on the jaguar  
40 within critical habitat. All proposed actions that could trigger section 7 consultation are required

1 to also take into consideration habitat (both riparian and aquatic) protection measures that would  
2 ensure compliance with the Clean Water Act.

### 3 *Reinitiated Consultations*

4 As a result of jaguar critical habitat designation, Federal agencies would need to reevaluate  
5 ongoing projects and those that are not yet completed for their effects to PCEs. Because the  
6 PCEs that make up each critical habitat units are closely tied to adverse effects to the species,  
7 activities that could trigger consultation for critical habitat are primarily the same activities that  
8 currently require consultation for the species. With respect to water resources, the relevant PCE  
9 is the availability of surface water sources within 20 km (12.4 mi) of each other within a critical  
10 habitat unit. The designation of critical habitat may require evaluation of water resource impacts  
11 beyond formerly analyzed locations.

12 Reinitiated consultations would increase administrative costs to the Service, the action agencies,  
13 and any project proponent involved in the consultation process. As it relates to water resource  
14 management, reinitiated consultations could be triggered by the same projects as those listed  
15 under the No Action Alternative.

### 16 *Addition of Adverse Modification Analysis to Future Consultations*

17 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
18 in many respects and are parallel processes because the health of a species cannot be  
19 disassociated from the health of its habitat. The analyses are distinct, however, in that the  
20 standard for determining jeopardy concerns only survival of the species, while the standard for  
21 determining adverse modification must also take into account habitat values essential for the  
22 recovery of the species. Adverse modification is considered a higher standard of preventing  
23 substantial loss of the conservation value of the critical habitat segment to allow for jaguar  
24 recovery goals to be met in a given critical habitat unit. As a result, there could be some limited  
25 instances where a proposed Federal action could result in adverse modification without resulting  
26 in jeopardy. This could result in additional or more restrictive conservation measures than those  
27 that would be otherwise applied.

28 The outcomes of these future consultations would depend on the details of project proposals and  
29 the analysis of effects, which are unknown at this time. The additional consultations, and the  
30 additional time required to complete consultations that would only have considered effects on the  
31 species, would increase administrative costs to the Service and to the action agencies.  
32 Implementing conservation measures resulting from those additional consultations would also  
33 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
34 include reasonable and prudent alternatives and other conservation measures designed to  
35 maintain jaguar PCEs.

36 These outcomes cannot be predicted precisely; however, based on past consultations, types of  
37 additional management actions that may be required include, but are not limited to:

- 38 • Reducing the footprint of large facilities to the maximum extent practicable;
- 39 • Providing conservation measures to restore, enhance, and protect habitat within the
- 40 critical habitat units;

- 1 • Offsetting permanent habitat loss, modification, or fragmentation resulting from agency  
2 actions with habitat that is permanently protected, including adequate funding to ensure  
3 the habitat is managed permanently for the protection of the species; and
- 4 • Providing resources to assess the effects of the action on jaguar habitat connectivity and  
5 function (Service 2012).

6 In summary, the effects of critical habitat designation on water resources are expected to be  
7 negligible because there have been no previous consultations on water management actions in  
8 the proposed critical habitat areas, and none are currently anticipated.

### 9 **3.5.2.3 Alternative B**

10 For Alternative B (proposed units minus the exclusion of Tohono O’odham Nation lands), the  
11 impacts associated with the designation of critical habitat would be similar to those identified for  
12 Alternative A. However, Tohono O’odham Nation lands would be excluded from critical habitat  
13 designation. If these areas are included, designation of critical habitat affects them only to the  
14 extent that activities that affect critical habitat may require a Federal license, permit or funding.  
15 Therefore, these exclusions could reduce the economic impacts of designation on water resource  
16 management activities in these areas overall, by requiring fewer consultations overall, although  
17 none are currently anticipated. This would reduce administrative costs as well for the Service.  
18 The overall impacts to water resource projects would still be characterized as minor.

## 19 **3.6 Livestock Grazing**

### 20 **3.6.1 Existing Conditions**

21 The more open, dry habitat of the southwestern United States is characterized as marginal habitat  
22 for jaguars in terms of cover and prey densities (77 FR 50213-50242). Livestock grazing and  
23 associated activities can impact jaguar critical habitat by clearing habitat, destroying riparian  
24 areas, and fragmenting or blocking of corridors due to fencing, which may subsequently prevent  
25 jaguars from recolonizing previously inhabited areas (Service 1997). The proposed rule states  
26 that the Service does not anticipate that grazing would have an adverse effect to jaguar critical  
27 habitat, nor therefore do they anticipate that grazing could constitute adverse modification.

28 Federal lands within the proposed designation consist of approximately 212,943 ha (526,191 ac)  
29 (61 percent of the revised proposed jaguar critical habitat), and livestock grazing occurs on both  
30 BLM and Coronado National Forest lands. Currently there are over 35,000 head of cattle  
31 permitted on almost 200 grazing allotments on the Coronado National Forest overall. The USFS  
32 manages these allotments under the Coronado National Forest Land and Resource Management  
33 Plan (USFS No Date). Revised proposed critical habitat for the jaguar occurs in BLM’s Tucson  
34 and Safford districts in Arizona and the Las Cruces district in New Mexico. BLM administers  
35 288 grazing allotments in the Tucson and Safford districts across more than 1.5 million acres  
36 (Service 1997). Both BLM and USFS administer grazing allotments within revised proposed  
37 critical habitat (BLM 2010b; USFS 2010b).

38 Livestock grazing in general has been in decline on BLM- and Forest Service-managed lands in  
39 the Southwest. Before the late 19<sup>th</sup> century, lands in this region were often overgrazed,

1 degrading watersheds and altering fire regimes (BLM 2012b). To address overgrazing, Federal  
2 grazing permits were established on USFS and BLM lands in the early 20<sup>th</sup> century. The USFS  
3 established a system of range regulation between 1906 and 1907 that included limits on herd  
4 sizes, grazing seasons, areas of use and grazing fees (Lester 2002). The BLM established  
5 grazing permits in 1934 under the Taylor Grazing Act of 1934 (BLM 2011c).

6 While livestock grazing historically occurred on the National Park Service's Coronado National  
7 Memorial in Arizona and the U.S. Army's Fort-Huachuca Military Reservation in Arizona,  
8 grazing was prohibited from the Memorial in 2004 under the National Memorial Final General  
9 Management Plan / EIS and from the Fort in 1930 because it was deemed not compatible with  
10 military activities (NPS 2004). Before the USFWS established the Buenos Aires NWR,  
11 livestock grazing also occurred on these Federal lands. With the establishment of the Refuge,  
12 livestock was prohibited (Service 2012a).

### 13 *Recent Consultations*

14 There have been a total of four formal section 7 consultations involving the jaguar that resulted  
15 in a BO since 1995 in Arizona, each of which resulted in a *no jeopardy* determination. Two of  
16 these consultations involved BLM and its livestock grazing program in southeastern Arizona.  
17 BLM initiated consultation in 1997 and reinitiated consultation in 2009 on the Effects of the  
18 Stafford/Tucson Field Offices' Livestock Grazing Program on the jaguar (this reinitiation is an  
19 addition to the four formal consultations noted above). In 2009, the Service agreed with their  
20 1997 conclusion in regard to jeopardy from the grazing program (Service 2009).

21 In 1997, the Service stated that the grazing program would have two overall effects to the jaguar:  
22 (1) loss of jaguar habitat and (2) take of jaguar from predator control activities. Grazing could  
23 adversely affect jaguar habitat by:

- 24 • Clearing vegetation, reducing understory and bank line vegetation;
- 25 • Destroying riparian areas and fragmenting or blocking corridors ,which could  
26 subsequently prevent jaguars from recolonizing previously inhabited areas (e.g., from  
27 fences and roads, and perhaps other range improvements);
- 28 • Increasing soil erosion, soil compaction, hydrologic and microclimate changes; and
- 29 • Changing plant community structure and function.

30 Mitigation measures proposed by the BLM to reduce adverse effects on jaguar habitat included:

- 31 • Jaguars will not be subjected to any predator control activities, by any entity, associated  
32 with the projects;
- 33 • Landowner education and outreach, so that permittees will be informed by the BLM of  
34 the status of the jaguar and the specifics of its protection under the Act;
- 35 • All appropriate permits will be obtained prior to any predator control activities associated  
36 with the project;
- 37 • Maintaining jaguar habitat in identified locations, including dense, low vegetation  
38 (mesquite, saltcedar, cottonwood, willow, etc.) in major riparian or xero-riparian  
39 corridors on Federal lands south of Interstate 10 and Highway 86; and
- 40 • Investigating reports of any and all observations of jaguars or their sign in the project  
41 area, and providing the Service with a report of such investigations.

1 Because of these mitigation measures, the Service determined that effects from grazing would  
2 not likely jeopardize the continued existence of the jaguar. The Service also recommended  
3 additional mitigation measures, including that BLM fund and/or carry out research to: (1)  
4 determine the distribution of jaguar habitat within the project area, (2) determine the possible or  
5 actual distribution of jaguars within that habitat, and (3) determine means by which jaguar  
6 habitat in the protected area can be maintained and protected (Service 1997).

7 In 1999, the USDAs Animal and Plant Health Inspection Service (APHIS) initiated Section 7  
8 consultation with the Service on effects to the jaguar from APHIS' animal damage control  
9 activities undertaken as part of their Wildlife Services (WS) program. Specific actions under this  
10 program include the use of hounds, snares (lethal or live capture), foot snares, foot-holds, cage  
11 traps, shooting, or aerial hunting. While the Service found that the WS activities would not  
12 jeopardize the continued existence of the jaguar, they required the following reasonable and  
13 prudent measures:

- 14 • Within the occupied range of the jaguar all animal damage control activities should be  
15 conducted in a manner so as to minimize any risk to the jaguar. This includes:
  - 16 ○ Identification of the target animal to species before control activities are carried out.  
17 If the identified animal is a jaguar, it shall not be subjected to any control actions, and  
18 the Service and appropriate State wildlife agency should be contacted immediately.
  - 19 ○ Restricting lethal traps to rubber-padded traps with a jaw spread equivalent to a #3  
20 Victor or smaller.
  - 21 ○ Conducting trapping on a limited, case-by-case basis, and notify the Service prior to  
22 the use of traps.
  - 23 ○ Using dogs when appropriate for mountain lion or black bear control.
  - 24 ○ Calling dogs off immediately if jaguars are inadvertently chased and/or treed.
  - 25 ○ Notifying the Service prior to using foot snares and restricting foot snare use to a  
26 case-by-case basis, only at confirmed lion or bear kills at fresh prey remains.
  - 27 ○ Checking foot snares dialing and requiring that the agent checking the snares carry  
28 appropriate equipment to release a jaguar unharmed.
  - 29 ○ Immediately contacting the Service when a jaguar is confirmed within the vicinity (50  
30 miles) of on-going or planned animal control activities.
  - 31 ○ Contacting the Service and appropriate State wildlife agency if any animal control  
32 activity results in the capture, injury, or death of a jaguar. WS activities using similar  
33 capture methods must be immediately stopped while consultation with the Service is  
34 reinitiated.
- 35 • Informing all project cooperators within the occupied range of the jaguar of the status of  
36 the jaguar and the specifics of its protection under the Act.
- 37 • Provide the Service with results of investigative reports of any and all observation of  
38 jaguars or signs of jaguar presence in the general vicinity (50 miles) of an active animal  
39 control activity which may affect the jaguar, in cooperation with the appropriate State  
40 wildlife agency and Jaguar Conservation team.
- 41 • Provide and require that all employees that may be expected to conduct activities which  
42 may affect jaguars receive adequate training.

1 In addition, the Service recommended that WS carry out the following conservation  
2 recommendations:

- 3 • Carry out and/or fund research in cooperation with the Jaguar Conservation Team to: (1)  
4 determine the distribution of jaguar habitat within the southwestern United States, and (2)  
5 determine the possible or actual distribution of jaguars within that habitat;
- 6 • Continue active participation on the Jaguar Conservation Team; and
- 7 • Seek opportunities to promote conservation of the jaguar through dissemination of  
8 education materials for WS agents, management agencies, and the public (Service 1999).

9 Because this consultation was related to direct effects to the species and did not affect habitat,  
10 the Service does not expect it to be reinitiated.

### 11 **3.6.2 Environmental Consequences**

12 Livestock activities that occur on and may affect critical habitat units include, but are not limited  
13 to, clearing of vegetation, which can degrade habitat by increasing soil erosion and compaction.  
14 Hunting can also adversely affect jaguar critical habitat by reducing the availability of prey  
15 species.

#### 16 **3.6.2.1 No Action**

17 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
18 section 7 consultation process would continue as presently conducted. Section 7 consultations  
19 would be initiated only for *may affect* determinations of impacts to the jaguar. These  
20 consultations would analyze relevant land, resource, and grazing plans proposed for Federal  
21 lands occupied by the jaguar. As they relate to livestock grazing and hunting, such consultations  
22 would likely include:

- 23 • Department of Defense—Fort Huachuca INRMP;
- 24 • U.S. Fish and Wildlife Service—issuance of section 10 enhancement of survival permits,  
25 HCPs, SHAs; NWRplanning; and Partners for Fish and Wildlife projects;
- 26 • U.S. Bureau of Land Management—land and resource management plans and livestock  
27 grazing AMPs; and
- 28 • U.S. Forest Service—forest plans and livestock grazing AMPs (Service 2012).

29 Therefore, this alternative would not have any impacts on livestock grazing beyond any  
30 conservation measures or project modifications resulting from the listing of the jaguar and  
31 associated requirements of section 7 of the ESA.

#### 32 **3.2.2.2 Alternative A**

33 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
34 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
35 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
36 anticipate that designation of critical habitat would result in consultations that would not  
37 otherwise take place for jeopardy analysis in all proposed areas. However, compared to No  
38 Action Alternative, the Alternative A (all proposed units, no exclusions) would result in the

1 following: (1) a small but unknown number of reinitiated section 7 consultations for proposed  
2 actions based solely on the presence of designated critical habitat; and (2) the addition of an  
3 analysis of adverse modification of critical habitat to future section 7 consultations on the jaguar  
4 in critical habitat.

#### 5 *Reinitiated Consultations*

6 As a result of jaguar critical habitat designation, Federal agencies would need to reevaluate  
7 ongoing projects and those that are not yet completed for their effects to PCEs. Because the  
8 PCEs that make up each critical habitat units are closely tied to adverse effects to the species,  
9 activities that could trigger consultation for critical habitat are primarily the same activities that  
10 currently require consultation for the species. As it relates to livestock grazing, the PCEs that  
11 could be adversely affected are: (1) availability of adequate levels of native prey species,  
12 including deer and javelina, as well as medium-sized prey such as coatis, skunks, raccoons, or  
13 jackrabbits; and (2) areas with greater than 1 to 50 percent canopy cover within Madrean  
14 evergreen woodland, generally recognized by a mixture of oak, juniper, and pine trees on the  
15 landscape, or semidesert grassland vegetation communities, usually characterized by tobosagrass  
16 or black grama along with other grasses.

17 Reinitiated consultations would increase administrative costs to the Service, the action agencies,  
18 and any project proponent involved in the consultation process. As it relates to livestock  
19 grazing, new and reinitiated consultations for adverse modification could be triggered by the  
20 same projects as those listed under the No Action Alternative.

#### 21 *Addition of Adverse Modification Analysis to Future Consultations*

22 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
23 in many respects and are parallel processes because the health of a species cannot be  
24 disassociated from the health of its habitat. The analyses are distinct, however, in that the  
25 standard for determining jeopardy concerns only survival of the species, while the standard for  
26 determining adverse modification must also take into account habitat values essential for the  
27 recovery of the species. Adverse modification is considered a higher standard of preventing  
28 substantial loss of the conservation value of the critical habitat segment to allow for jaguar  
29 recovery goals to be met in a given critical habitat unit. As a result, there could be some limited  
30 instances where a proposed Federal action could result in adverse modification without resulting  
31 in jeopardy. This could result in additional or more restrictive conservation measures than those  
32 that would be otherwise applied.

33 The outcomes of these future consultations would depend on the details of project proposals and  
34 the analysis of effects, which are unknown at this time. The additional consultations, and the  
35 additional time required to complete consultations that would only have considered effects on the  
36 species, would increase administrative costs to the Service and to the action agencies.  
37 Implementing conservation measures resulting from those additional consultations would also  
38 increase costs for action agencies.

39 These outcomes cannot be predicted precisely; however, based on past consultations, types of  
40 additional management actions that may be required include, but are not limited to:

- 1 • Maintaining jaguar habitat in identified locations including major riparian or xero-  
2 riparian corridors;
- 3 • Obtaining all appropriate permits (Federal, State, or other);
- 4 • Researching and investigating reports of jaguar habitat and occurrence in the project area;  
5 and
- 6 • Properly identifying animals during predator control activities to ensure jaguars were not  
7 subject to control activities (Service 2012; Service 1999).

8 Outcomes of consultations for critical habitat could also include reasonable and prudent  
9 alternatives and other conservation measures designed to maintain jaguar PCEs. The most  
10 prominent possible project modifications that may be sought to avoid adverse modification from  
11 livestock grazing are:

- 12 • Re-vegetating and restoring areas of large-scale habitat removal to a condition such that it  
13 would provide the PCEs required by the jaguar;
- 14 • Minimizing the amount or extent of human presence, vehicles, and/or traffic in a given  
15 areas;
- 16 • Conservation measures to restore, enhance, and protect habitat within the critical habitat  
17 units;
- 18 • Offsetting permanent habitat loss, modification, or fragmentation resulting from agency  
19 actions within habitat that is permanently protected, including adequate funding to ensure  
20 the habitat is managed permanently for the protection of the species;
- 21 • Providing resources to assess the effects of the action on jaguar habitat connectivity and  
22 function;
- 23 • Determining the distribution of jaguar habitat within the project area;
- 24 • Determining the possible or actual distribution of jaguars within habitat within the project  
25 area; and
- 26 • Determining means by which habitat in the project area can be maintained and protected  
27 (Service 2012).

28 In addition, public comments submitted in response to publication of the August 20, 2012,  
29 proposed critical habitat designation suggest that the possibility that some ranchers may  
30 withdraw applications for National Resource Conservation Service (NRCS) funding following  
31 jaguar critical habitat in order to avoid any potential obligations to consult with the Service. If  
32 this occurred, it could weaken overall conservation activities on private ranches within  
33 designated habitat and produce economic impacts to ranchers who chose to forego NRCS  
34 funding.

35 In summary, the effects of critical habitat designation on livestock grazing are expected to be  
36 minor because (1) new consultations based solely on the presence of designated critical habitat  
37 are unlikely, because land managers are already consulting on jaguar throughout the proposed  
38 critical habitat areas; (2) any reasonable and prudent alternatives developed under jeopardy  
39 analysis would not likely be changed substantially with the addition of adverse modification  
40 analysis; (3) few additional conservation measures could be proposed to address critical habitat,  
41 beyond those already proposed in jeopardy consultations; and (4) it is unlikely that livestock  
42 grazing would be excluded on Federal land due to the presence of critical habitat. The

1 incremental administrative costs of considering critical habitat in future grazing related  
2 consultations is projected to be \$24,000 in total, or \$2,100 annualized (IEc 2013).

### 3 **3.2.2.3 Alternative B**

4 For Alternative B (proposed units minus Tohono O’odham tribal lands), the impacts associated  
5 with the designation of critical habitat would be similar to those identified for Alternative A.  
6 However Tohono O’odham tribal lands would be excluded from critical habitat designation. If  
7 these areas are included, designation of critical habitat affects them only to the extent that  
8 activities that affect critical habitat may require a Federal license, permit or funding. Therefore,  
9 these exclusions could reduce the economic impacts of designation on grazing overall, by  
10 requiring fewer consultations overall. This would reduce administrative costs as well for the  
11 Service. The overall impacts to livestock grazing would still be characterized as minor.

## 12 **3.7 Construction/Development—Roads, Bridges, Dams, 13 Infrastructure, Residential**

### 14 **3.7.1 Existing Conditions**

15 The proposed rule lists construction and maintenance (e.g. widening) of roads, power lines,  
16 pipelines and construction or expansion of human development as a threat to jaguar critical  
17 habitat (77 FR 50213-50242). The proposed rule also states that critical habitat does not include  
18 any manmade structures already in place at the time of listing (such as buildings, aqueducts,  
19 runways, roads, and other paved areas) and the land on which they are located. Widening or  
20 construction of roadways, power lines, or pipelines (all of which usually include maintenance  
21 roads) and construction or expansion of human developments can alter habitat characteristics,  
22 increase human presence in otherwise remote locations, and may sever connectivity to Mexico or  
23 within a critical habitat unit such that movement of jaguars between habitat in the United States  
24 and Mexico is impeded or eliminated.

25 Areas proposed for jaguar critical habitat are characterized by minimal- to-no human population  
26 density and no major roads. As a PCE of jaguar critical habitat, connectivity to Mexico is  
27 considered essential to the recovery of the species (77 FR 50213-50242). At this time the  
28 Service is unaware of any major construction projects planned within proposed critical habitat  
29 (Service 2012). Special management considerations or protections could be needed within the  
30 unit to address increased human disturbances in remote locations through widening or  
31 construction of roadways, power lines, or pipelines, or other construction or development  
32 projects to ensure all PCEs remain intact.

33 While several Federal agencies manage land within jaguar critical habitat, major construction  
34 and development projects would be inconsistent with many of the Federal management plans and  
35 goals.

36 The Forest Service manages habitat for the jaguar on the Coronado National Forest in the  
37 Douglas, Nogales, and Sierra Vista Ranger Districts in Units 2 and 3; Subunits 4a, 4b, and 4c;  
38 and Unit 5. The current Land and Resource Management Plan for the CNF includes Standards

1 and Guidelines that could minimize effects from construction and development projects within  
2 jaguar critical habitat. These Standards and Guidelines include:

- 3 • Low total miles of roads and low road density;
- 4 • Closing and reseeded temporary logging roads;
- 5 • Establishing tolerance levels for state- and federally-listed threatened and endangered  
6 species for new road construction throughout the forest;
- 7 • Prohibition of cross-country travel in vehicles;
- 8 • Placing utility lines underground when necessary unless it is not feasible because of  
9 overriding environmental concerns, costs and technical considerations;
- 10 • Placing existing utility lines underground that do not meet the visual quality objective  
11 when reconstruction becomes necessary; and
- 12 • Restricting the clearing of vegetation for utility lines to areas which pose a hazard to  
13 facilities and operational efficiency (Service 2012; USFS 1988).

14 The Department of Defense manages habitat for the jaguar on Fort Huachuca, located in Unit 3  
15 and Subunit 4c. Although construction and development projects have occurred on the Fort,  
16 public activities on lands owned and managed by the Fort are limited (Service 2012).

17 The BLM manages habitat for the jaguar in Subunits 1a and 1b; Units 2 and 3; Subunits 4a, 4b,  
18 and 4c; and Unit 5. BLM manages road development through the BLM National Travel  
19 Management Plan, which strives to address the effects that population increases, explosive  
20 growth in the use of OHVs, and the advances in technology have had on public lands. BLM's  
21 goal is to improve trails and OHV management through land use planning in order to minimize  
22 impacts to wildlife habitat resulting from the expansion of roads and trails on public lands (BLM  
23 2012a). BLM land within jaguar critical habitat includes Guadalupe Canyon Wilderness Study  
24 Area (WSA) and Outstanding Natural Area, Coyote Mountain Wilderness, BLM Public Lands,  
25 Baker Canyon WSA, Baboquivari Peak Wilderness, and Appleton-Whittell Area of Critical  
26 Concern. These are discussed in section 3.2 on Land Management and Land Use.

27 The Guadalupe Canyon WSA and Outstanding Natural Area as well as the Baker Canyon WSA  
28 are roadless areas that BLM manages to maintain their wilderness character (BLM 2010a). The  
29 Whittell Area of Critical Concern is managed by the BLM to protect and prevent irreparable  
30 damage to important historical, cultural, and scenic values, fish, or wildlife resources or other  
31 natural systems or processes; or to protect human life and safety from natural hazards (BLM  
32 2011b). Major construction and development projects do not currently occur in these areas.

33 The NPS manages habitat for the jaguar in Unit 3 on the Coronado National Memorial. The  
34 purpose of the memorial is to preserve and interpret the natural and human history of the area.  
35 Park facilities and trails were proposed under the Final General Management Plan/EIS (Service  
36 2012; NPS 2004).

37 The Buenos Aires N WR manages habitat for the jaguar in Subunits 1a and 1b. Large and major  
38 construction and development projects do not currently occur on the Refuge (Service 2012).

39 Unit 3 contains Salero Ranch, an area of approximately 8,100 ha (20,000 ac) that is under  
40 development for residential use, in parcels of 36 acres or more. Water infrastructure will consist  
41 of private wells and individual septic systems, permitted by the Arizona Department of Water

1 Resources, which regulates all groundwater in the state. Further, Arizona has been granted  
2 authority by the USEPA to issue National Pollutant Discharge Elimination System (NPDES)  
3 permits under Clean Water Act Section 402 (b) and 40 CFR Part 123. For these reasons, there is  
4 unlikely to be any Federal nexus for activities associated with this residential development.  
5 Therefore, it would not trigger consultations for adverse modification of critical habitat (although  
6 section 9 take prohibitions would apply to the jaguar).

### 7 *Recent Consultations*

8 There have been four formal section 7 consultations involving the jaguar that resulted in a BO  
9 since 1995 in Arizona, each of which resulted in a *no jeopardy* determination. Formal  
10 consultation to analyze effects on jaguar from construction activities has been conducted by the  
11 CBP on the Secure Border Initiative (SBInet) Tucson West Tower Project. The SBInet Tucson  
12 West Tower Project included the construction of 56 communication and sensor towers;  
13 construction of 29 new road segments; and repairing 19 roads. CBP species-specific  
14 conservation Best Management Practices (BMPs) for the jaguar included:

- 15 • Designing roads to minimize animal collisions and fragmentation of jaguar habitat;
- 16 • Developing a road closure/restoration plan that:
  - 17 ○ Identifies and maps new roads where barriers would be placed to prevent public
  - 18 access,
  - 19 ○ Identifies and maps unauthorized roads near potential jaguar movement corridors,
  - 20 ○ Specifies that USFWS would use jaguar monitoring results to assist CBP in
  - 21 determining which unauthorized roads to close, and
  - 22 ○ Specifies potential road closure methods, and includes a schedule and content of
  - 23 annual report;
- 24 • Funding a road closure/restoration plan, in coordination with landowners and/or
- 25 management agencies and FWS; and
- 26 • CBP will complete an annual report until all Conservation BMPs for jaguars are
- 27 completed summarizing the implementation of the proposed actions, number of miles
- 28 closed and/or restored.

29 The Service determined that the proposed action could result in degradation of jaguar habitat due  
30 to construction and maintenance of towers, roads, and ground sensors, as well as from patrol  
31 activities. These activities would result in removal, destruction, and degradation of vegetation  
32 that may provide cover to jaguar and their prey. Though the Service found that the proposed  
33 project may result in degradation of jaguar habitat, the Service concluded that conservation  
34 measure included in the project description would minimize and help offset disturbance to  
35 jaguars and degradation of their habitat (Service 1998b).

### 36 **3.7.2 Environmental Consequences**

37 Construction and maintenance of roads, power lines, pipelines and construction or expansion of  
38 human development could include removal, destruction, degradation, and fragmentation of  
39 jaguar habitat. Adverse effects of roads, power lines, pipelines and construction or expansion of  
40 human development on the jaguar could result in severing the jaguar's U.S. habitat connection to  
41 Mexico, reducing prey populations, and reducing canopy cover.

1 **3.7.2.1 No Action**

2 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
3 section 7 consultation process would continue as presently conducted without analysis of  
4 destruction or adverse modification of habitat. Section 7 consultations would be initiated only  
5 for *may affect* determinations of impacts to the jaguar. These consultations would analyze  
6 relevant land, resource, and other management projects proposed for Federal lands occupied by  
7 the jaguar. As they relate to roads, power lines, pipelines and construction or expansion of  
8 human development, such consultations would likely include:

- 9 • Department of Defense—Fort Huachuca facilities development and maintenance;
- 10 • National Park Service—general management plans, border security infrastructure, and  
11 travel management plans;
- 12 • U.S. Army Corps of Engineers—bridge projects and urban development;
- 13 • U.S. Bureau of Indian Affairs—renewable energy development, road projects, and utility  
14 development and upgrades;
- 15 • U.S. Bureau of Land Management—land and resource management plans, mining  
16 permits, and renewable energy development;
- 17 • U.S. Department of Homeland Security—border security infrastructure;
- 18 • U.S. Department of Transportation—highway and bridge construction and maintenance;
- 19 • U.S. Forest Service—forest plans, mining permits, and travel management plans; and  
20 • U.S. Fish and Wildlife Service—NWR planning.

21 Therefore, this alternative would not have any impacts on construction and maintenance of  
22 roads, power lines, pipelines and construction or expansion of human development beyond any  
23 conservation measures or project modifications resulting from the listing of jaguar and associated  
24 requirements of section 7 of the ESA.

25 **3.7.2.2 Alternative A**

26 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
27 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
28 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
29 anticipate that designation of critical habitat would result in consultations that would not  
30 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No  
31 Action Alternative, Alternative A (all proposed units, no exclusions) would result in a small but  
32 unknown number of reinitiated section 7 consultations for land management actions based solely  
33 on the presence of designated critical habitat; and (2) the addition of an analysis of adverse  
34 modification of critical habitat to future section 7 consultations on the jaguar in critical habitat.

35 *Reinitiated Consultations*

36 As it relates to construction and development projects, reinitiated consultations could be  
37 triggered by the same projects as those listed under the No Action Alternative. The additional  
38 consultations would increase administrative costs to the Service, the action agencies, and any  
39 project proponent involved in the consultation process.

1 *Addition of Adverse Modification Analysis to Future Consultations*

2 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
3 in many respects and are parallel processes because the health of a species cannot be  
4 disassociated from the health of its habitat. The analyses are distinct, however, in that the  
5 standard for determining jeopardy concerns only survival of the species, while the standard for  
6 determining adverse modification must also take into account habitat values essential for the  
7 recovery of the species. Adverse modification is considered a higher standard of preventing  
8 substantial loss of the conservation value of the critical habitat segment to allow for jaguar  
9 recovery goals to be met in a given critical habitat unit. As a result, there could be some limited  
10 instances where a proposed Federal action could result in adverse modification without resulting  
11 in jeopardy. This could result in additional or more restrictive conservation measures than those  
12 than would be otherwise applied.

13 The outcomes of these future consultations would depend on the details of project proposals and  
14 the analysis of effects, which are unknown at this time. The additional consultations, and the  
15 additional time required to complete consultations that would only have considered effects on the  
16 species, would increase administrative costs to the Service and to the action agencies.  
17 Implementing conservation measures resulting from those additional consultations would also  
18 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
19 include reasonable and prudent alternative alternatives and other conservation measures designed  
20 to maintain jaguar PCEs. These outcomes cannot be predicted precisely; however, based on past  
21 consultations, types of additional management actions that may be required include, but are not  
22 limited to:

- 23 • Designing roads to minimize animal collisions and fragmentation of jaguar habitat;
- 24 • Developing a road closure/restoration plan ;
- 25 • Funding road closure/restoration plan, in coordination with landowners and/or
- 26 management agencies and FWS;
- 27 • Creating permeable highways by including wildlife crossings appropriate to jaguars in
- 28 the project design;
- 29 • Re-vegetating and restoring areas of large-scale habitat removal to a condition such that it
- 30 would provide the PCEs required by the jaguar;
- 31 • Modifying or eliminating the presence of stable nighttime lighting;
- 32 • Reducing the footprint of large facilities to the maximum extent practicable;
- 33 • Minimizing the amount or extent of human presence, vehicles, and/or traffic in a given
- 34 area;
- 35 • Providing conservation measures to restore, enhance, and protect habitat within the
- 36 critical habitat units;
- 37 • Offsetting permanent habitat loss, modification, or fragmentation resulting from agency
- 38 actions with habitat that is permanently protected, including adequate funding to ensure
- 39 the habitat is managed permanently for the protection of the species; and
- 40 • Providing resources to assess the effects of the action on jaguar habitat connectivity and
- 41 function (Service 2012; Service 1998).

42 Major construction projects (such as new highways, significant widening of existing highways,  
43 or construction of large facilities) that could sever connectivity within these critical habitat

1 subunits could constitute adverse modification. The most likely subunits in which these  
2 activities may occur are 4b and 4c, although no projects of this kind are currently proposed.

3 In summary, the effects of critical habitat designation on construction and development are  
4 expected to be minimal because: (1) new consultations based solely on the presence of  
5 designated critical habitat are unlikely, because land managers are already consulting on jaguar  
6 throughout the proposed critical habitat areas ; and (2) while reasonable and prudent alternatives  
7 may be developed under an adverse modification analysis rather than a jeopardy analysis, no  
8 projects are proposed in the foreseeable future. The incremental administrative costs of  
9 considering potential critical habitat impacts in future construction and development  
10 consultations are projected to be \$5,900 total, or \$520 annualized (IEc 2013).

### 11 **3.7.2.3 Alternative B**

12 For Alternative B (proposed units minus Tohono O’odham tribal lands), the impacts associated  
13 with the designation of critical habitat would be similar to those identified for Alternative A;  
14 however, Tohono O’odham tribal lands would be excluded from critical habitat designation.  
15 These exclusions could reduce the economic impacts of designation on construction and  
16 development activities in these areas by requiring fewer consultations overall. This would  
17 reduce administrative costs as well for the Service. The overall impacts would still be  
18 characterized as moderate.

## 19 **3.8 Tribal Trust Resources**

### 20 **3.8.1 Existing Conditions**

21 Tribal trust resources are natural resources retained by or reserved for Indian tribes through  
22 treaties, statutes, judicial decisions, and executive orders. Indian lands are not Federal public  
23 lands or part of the public domain, and thus are not subject to Federal public land laws. Indian  
24 tribes manage Indian land in accordance with tribal goals and objectives, within the framework  
25 of applicable laws; however, the U.S. holds most Tribal land and resources produced from tribal  
26 land in trust for the benefit of Indian tribes.

27 The Tohono O'odham Nation (TON) is a Federally-recognized, sovereign tribe in the Sonoran  
28 Desert of southeastern Arizona and northwest Mexico. "Tohono O'odham" means "Desert  
29 People." Important uses of tribal lands include economic activities such as timber harvest,  
30 livestock grazing, fuel-wood collection, recreation, and commercial and residential development.

31 Approximately nine percent, or 31,593 ha (78,067 ac), of the approximately 347,277 ha (858,137  
32 ac) of land proposed as critical habitat occurs on a portion of the Tohono O’odham Nation in  
33 Pima County, Arizona. Proposed critical habitat occurs in both the Baboquivari-Coyote Subunit  
34 (1a) and the Southern Baboquivari Subunit (1b). Critical habitat represents 20,764 ha (51,308  
35 ac) of Tohono O'odham Nation lands in Subunit 1a; and 10,829 ha (26,759 ac) in Subunit 1b (see  
36 revised proposed rule).

37 Table 3.5 shows socioeconomic information for the main portion of the Tohono O’odham Nation  
38 in Pima County that would be affected by jaguar critical habitat designation.

1  
2

**Table 3.5. Socioeconomic Profile of Tohono O’odham Nation – Pima County**

<b>Location</b>	<b>Population Density (persons/sq. mile, 2010)</b>	<b>Population (2010)</b>	<b>% of Statewide Population (2010)</b>	<b>% Change (2000-2010)</b>	<b>Per Capita Income (2010 dollars)*</b>	<b>Poverty Rate (2010)</b>
<b>Arizona</b>	<b>56.3</b>	<b>6,392,017</b>	<b>100%</b>	<b>24.6%</b>	<b>\$25,680</b>	<b>15.3%</b>
Pima County	106.7	980,263	15.3%	16.2%	\$25,093	16.4%
Tohono O’odham Nation	1.65	7,174	0.1%	-14.4%	\$9,298	45.2%

3 Source: U.S. Census Bureau, 2010 Census and American Community Survey

4 The Tohono O'odham Nation gains most of its income from its three Desert Diamond casinos.  
5 Major sources of employment for its citizens include tribal and government services, cattle  
6 ranching, and farming, as well as self-employed artisans (TON 2004). Small business is a vital  
7 component in the Tohono O'odham Nation's private sector economy, providing jobs and  
8 developing career-related opportunities for its members (TON 2012).

9 Secretarial Order #3206 outlines the responsibilities of the USFWS when actions taken under the  
10 authority of the Act may affect Indian lands and tribal trust resources. The agency’s  
11 responsibilities include ensuring that Indian tribes do not bear a disproportionate burden for the  
12 conservation of listed species.

13 In this context, while the Tohono O’odham Nation has not presented its Jaguar Management  
14 Plan as of this writing, the Service will review the Management Plan when it is received (during  
15 the upcoming comment period) to determine if they provide sufficient protection to the jaguar  
16 (TON 2004; UA 2011).

17 Also, the 2012 Baboquivari Peak Wilderness and Coyote Mountains Wilderness Draft  
18 Wilderness Management Plan and Environmental Assessment provides conservation measures  
19 for the jaguar, and objectives to coordinate with the BLM, the Tohono O’odham Nation, Buenos  
20 Aires NWR and interested public and adjacent private landowners (BLM 2012c). Baboquivari  
21 Peak, located on the Baboquivari Peak Wilderness, has been called “the physical and spiritual  
22 center of the Tohono O’odham universe” (BLM 2012c). According to a Tohono O’odham elder,  
23 his people “have always had the greatest respect for the jaguar and seldom hunted it. If a man  
24 killed a jaguar, he risked contracting a sickness and would have to undergo an all-day ceremony.  
25 In this ceremony the medicine man or shaman used jaguar parts, including the skin and tail  
26 (Mahler 2009).” Cultural uses of the land by tribal members may include ceremonial uses of  
27 specific sites and other traditional practices. The jaguar has been integrated into cultural beliefs  
28 and rituals of the Tohono O'odham.

29 *Previous Consultations*

30 In 2007 the DHS requested formal consultation on the jaguar for a pedestrian fence proposed  
31 along the U.S. and Mexico border. As it relates to the Tohono O’odham Nation, the BO  
32 stipulated conservation measures to develop survey and monitoring methods and conservation

1 and recovery measures through coordination with Arizona Game and Fish Department, and the  
2 Tohono O’odham Nation (Service 2007b).

3 In 2008 the DHS requested formal consultation on the jaguar for the SBInet Tucson West Tower  
4 Project. The 1.5 mile segment along the U.S-Mexico border on the Tohono O’odham Nation  
5 included an unauthorized road – a direct result of illegal traffic being funneled from fencing to  
6 the east and west (Service 2008).

7 Both BOs concluded the pedestrian fence is not likely to jeopardize the continued existence of  
8 the jaguar. Conservation recommendations for CBP included assistance with the implementation  
9 of the Jaguar Conservation Framework and participation on the Jaguar Conservation Team (a  
10 team which has not met since February 2009) (Service 2007b; Service 2008).

### 11 **3.8.2 Environmental Consequences**

12 Tribal activities on critical habitat units 1a and 1b include economic development; livestock  
13 management; fire suppression and prescribed fire; surface disturbance construction activities  
14 including road construction and maintenance; habitat restoration projects; and fence removal.

#### 15 **3.8.2.1 No Action Alternative**

16 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
17 section 7 consultation process would continue as presently conducted without analysis of  
18 destruction or adverse modification of habitat. Section 7 consultations would be initiated only  
19 for *may affect* determinations of impacts to the jaguar. Such consultations would analyze  
20 relevant land use, natural resource, economic development, and FMPs on Federal lands currently  
21 occupied by the species. As they relate to tribal resources, such consultations, to the extent that  
22 they could cause impacts to the nearby Tohono O’odham Nation, would likely include:

- 23 • U.S. Bureau of Indian Affairs—for renewable energy development, road projects, utility  
24 development and upgrades;
- 25 • U.S. Bureau of Land Management—for fire suppression, fuel-reduction treatments, land  
26 and resource management plans (Baboquivari Peak Wilderness and Coyote Mountains  
27 Wilderness Draft Wilderness Management Plan and Environmental Assessment),  
28 livestock grazing and management plans, recreation, mining permits, nonnative invasive  
29 species treatments, and renewable energy development;
- 30 • U.S. Department of Homeland Security—for border security infrastructure and  
31 operations;
- 32 • U.S. Department of Transportation—for highway and bridge construction and  
33 maintenance; and
- 34 • U.S. Fish and Wildlife Service—for issuance of section 10 enhancement of survival  
35 permits, HCPs, and SHAs; NWR planning; Partners for Fish and Wildlife program  
36 projects.

37 This alternative would not have any direct impacts on tribal resources beyond any conservation  
38 measures or project modifications resulting from the listing of the jaguar and section 7 of the  
39 ESA.

1 **3.8.2.2 Alternative A**

2 The lands proposed as critical habitat for the jaguar are located near two Tohono O’odham  
3 Nation communities: the Fresnal Canyon Community is approximately 1.5 miles outside of  
4 proposed critical habitat, and the Pan Tak community is only half a mile outside of the proposed  
5 critical habitat boundary. The Tohono O’odham Nation has expressed concern that activities in  
6 these communities could be affected by the designation of critical habitat. Activities on Tribal  
7 lands that may be affected by the designation of critical habitat include developments and road  
8 construction associated with CBP; and land disturbance associated with the Kitt Peak National  
9 Observatory, which is located on land leased by the Tohono O’odham Nation. Ranching also  
10 occurs in limited areas throughout the Tohono O’odham Nation.

11 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
12 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
13 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
14 anticipate that designation of critical habitat would result in consultations that would not  
15 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No  
16 Action Alternative, Alternative A (all proposed units, no exclusions) would result in a small but  
17 unknown number of reinitiated section 7 consultations for land management actions based solely  
18 on the presence of designated critical habitat; and (2) the addition of an analysis of adverse  
19 modification of critical habitat to future section 7 consultations on the jaguar in critical habitat.

20 *Reinitiated Consultations*

21 Because modifications to the PCEs of critical habitat are closely tied to adverse effects to the  
22 species, current activities and activities that would trigger consultation for critical habitat are  
23 largely the same.

24 Reinitiated consultations are consultations that have been completed for impacts to the species,  
25 but which might need to be re-opened to consider the likelihood of destruction or adverse  
26 modification to critical habitat. As it relates to tribal resources, such consultations could include:

- 27
- 28 • Border security infrastructure—U.S. Department of Homeland Security;
  - 29 • Road/highway construction—U.S. Department of Transportation; and
  - 30 • Actions on recreation lands—U.S. Bureau of Land Management and the State of Arizona  
if it receives Federal funds for conservation or restoration of state-owned lands.

31 Indirect, potentially adverse impacts that could result from critical habitat designation on the  
32 Tohono O’odham Nation lands would include: (1) increased Federal control and involvement in  
33 tribal land management of land containing critical habitat; and (2) decreased control or ability by  
34 the Tohono O’odham to manage their lands for their own benefit.

35 Activities that currently occur or are anticipated to occur on Tohono O’odham Nation lands  
36 within critical habitat for the jaguar include, but are not limited to, the following:

- 37
- 38 • Hunting;
  - 39 • Cultural uses;
  - 40 • Development (housing, roads, infrastructure);
  - Vegetation management (invasive plant removal and prescribed burns);

- 1 • Wildlife conservation activities;
- 2 • Riparian restoration activities;
- 3 • Agricultural and water use;
- 4 • Livestock grazing; and
- 5 • Flood control-related infrastructure and activities.

6 Although the proposed Rosemont Copper Mine (see Chapter 5) does not fall within Tohono  
7 O’odham Nation lands, the mine is located within the Papagueria region, which was historically  
8 inhabited by the Tribe. According to the public comment submitted by the Tribe, this area “has  
9 been used by tribes and their ancestors for at least 5,000 years. For hundreds of years, the  
10 Tohono O’odham specifically have used [this area] for living, hunting, gathering of medicinal  
11 plants and plants for food, gathering of materials for making baskets, and for the creation of  
12 sacred shrines.” The Nation is therefore concerned that the Rosemont Mine may threaten these  
13 cultural resources, absent the designation of critical habitat (IEc 2013).

14  
15 Additionally, the Tohono O’odham Nation’s economy is poorer than the regional economy,  
16 making it particularly vulnerable to economic impacts associated with increased regulatory  
17 burden, where such burden truly exists. Future impacts resulting from jaguar conservation  
18 efforts on Tohono O’odham Nation’s lands include administrative costs of section 7  
19 consultations, surveys and monitoring of habitat, development and implementation of jaguar  
20 management plans, modifications to development activities, and potential additional costs in  
21 time and money to implement project modifications to restoration activities and water projects.

22 The Service’s draft Economic Analysis projects that the incremental economic impacts of critical  
23 habitat designation for the jaguar on activities conducted on the Tohono O’odham Nation’s lands  
24 is estimated at \$3,500, the attributed cost of an incremental consultation (IEc 2013).

#### 25 *Addition of Adverse Modification Analysis to Future Consultations*

26 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
27 in many respects and are parallel processes because the health of a species cannot be  
28 disassociated from the health of its habitat. The outcomes of these future consultations would  
29 depend on the details of project proposals and the analysis of effects, which are unknown at this  
30 time.

31 The additional time needed to complete consultations that would have only considered effects on  
32 the species would increase administrative costs to the Service and to the action agencies.  
33 Implementing conservation measures resulting from those additional consultations could also  
34 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
35 include reasonable and prudent alternatives and other conservation measures designed to  
36 maintain jaguar PCEs. These outcomes cannot be predicted precisely; however, based on past  
37 consultations, types of additional management actions that may be recommended include, but are  
38 not limited to:

- 39 • Revising/drafting resource and habitat management plans;
- 40 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring
- 41 reports;

- 1 • Limiting construction of fencing in occupied jaguar habitats or in areas where fencing are
- 2 likely to impact jaguar habitat;
- 3 • Limiting roadway widening and construction projects;
- 4 • Limiting the construction of new powerlines and pipelines;
- 5 • Establishing burn buffers or limiting prescribed burning within areas that could easily
- 6 burn and are used by jaguar and jaguar prey;
- 7 • Limiting predator control activities, including snares for mountain lions, which pose a
- 8 potential threat to jaguars; and
- 9 • Maintenance of water sources and dense riparian areas.

10 In summary, the effects of critical habitat designation on tribal resources are expected to be  
11 negligible because (1) new consultations based solely on the presence of designated critical  
12 habitat are unlikely, because land managers are already consulting on jaguar throughout the  
13 proposed critical habitat areas; and (2) tribal-related activities that currently occur or are  
14 anticipated to occur are not likely to require reasonable and prudent alternatives developed to  
15 avoid adverse modification.

### 16 **3.8.2.3 Alternative B**

17 Alternative B includes the proposed units, but excludes Tohono O’odham Nation lands. Since  
18 the exclusion is wholly tribal land the impacts associated with the designation of critical habitat  
19 would disappear, although to the extent the designation affects the Rosemont mine (see next  
20 section), it may positively impact lands historically inhabited, and still culturally valued by, the  
21 Tribe. The overall impacts on tribal resources would be expected to be the same as those under  
22 the No Action Alternative.

## 23 **3.9 Mining**

### 24 **3.9.1 Existing Conditions**

25 Lands proposed for mining are located within proposed critical habitat Unit 3 (Patagonia Unit)  
26 (Service 2012b). A 2,023 ha (5,000 ac) open-pit copper mine (the Rosemont Mine) has been  
27 proposed in the northeastern portion of the Santa Rita Mountains, Pima County, Arizona. The  
28 mine extends onto 1,485 ha (3,670 ac) of Coronado National Forest, managed by the U.S. Forest  
29 Service, within the footprint of Unit 3. The proposed Rosemont mine Plan of Operations is for  
30 construction and operation of an open-pit mine to extract locatable materials such as copper,  
31 molybdenum, and silver (Rosemont 2007). A draft EIS was published for this proposed project  
32 in September 2011 and the Forest Service is currently reviewing public comments on the NEPA  
33 document. Formal consultation with the Service on effects to the jaguar (as well as other  
34 species) is anticipated to be completed for this proposed mine in 2013.

35 The Oracle Ridge Mine, located on private property in Unit 3 adjacent to the Coronado National  
36 Forest, is currently inactive but is in the permitting and detailed design stage of resuming copper  
37 mining operations that ceased in 1996 (Forest Service 2012).

38 The following proposed exploratory drilling projects also lie within Unit 3 on the Coronado  
39 National Forest (Forest Service 2012):

- 1 • Wildcat Silver has submitted a proposed Plan of Operations for exploratory drilling as  
2 part of the proposed Hermosa mine in the Sierra Vista Ranger District. This proposed  
3 project is currently in the NEPA process and Endangered Species Act section 7  
4 consultation phase.
- 5 • A proposed Plan of Operations has been submitted for the OZ Minerals Providencia  
6 minerals exploration project in the Sierra Vista Ranger District. The U.S. Fish and  
7 Wildlife Service has concurred with the Forest Service's determination that this copper  
8 exploration project is not likely to adversely affect the jaguar (Service 2012d).
- 9 • The Arizona Copper Corporation has submitted a proposed Plan of Operations to drill  
10 holes at five locations in the Huachuca Mountains of the Sierra Vista Ranger District to  
11 explore for copper mineralization. This proposal is under review by the Forest Service.
- 12 • Blue Fire Gem Company has submitted a proposed Plan of Operations to hand-drill  
13 shallow 3.5-foot deep holes to fracture rock for sampling/assay on its unpatented mining  
14 claim to obtain evidence of mineralization. This activity would occur in the Nogales  
15 Ranger District of the Coronado National Forest, and is under analysis by the Forest  
16 Service.
- 17 • Quartz Dreams has submitted a proposed Plan of Operation for short-term minerals  
18 exploration in the Nogales Ranger District that would involve fracturing rock within  
19 previously mined areas to expose the resource. This proposal is under analysis by the  
20 Forest Service.
- 21 • The Forest Service has proposed to approve a Plan of Operations that would authorize  
22 Sunnyside Exploratory Drilling to drill five exploratory holes to obtain evidence of  
23 mineralization in Humbolt Canyon on the Coronado National Forest in the Sierra Vista  
24 Ranger District. As of this writing, this proposal is on hold.
- 25 • The Forest Service has proposed to approve a Plan of Operations that would authorize  
26 Dice #8 to conduct a placer exploration on the Coronado National Forest in the Sierra  
27 Vista Ranger District. As of this writing, this proposal is on hold.
- 28 • Other proposed or existing sites for mineral exploration in Unit 3 include God's Claim,  
29 Moore and Moore, Dice #1, Patagonia Jewel, Red Mountain, Galiuro, Old Lemon, Alpha  
30 Calcit, Big Nugget, Margarita, Red Mountain, and Imerys.

### 31 *Recent Consultations*

32 There have been a total of four formal section 7 consultations involving the jaguar that resulted  
33 in a BO since 1995 in Arizona and New Mexico, each of which resulted in a *no jeopardy*  
34 determination. One formal consultation on effects to the jaguar (as well as other species) is  
35 anticipated to be completed within 2013 for the proposed 2,023 ha (5,000 ac) Rosemont Mine.

### 36 **3.9.2 Environmental Consequences**

37 Mining-related activities that either currently occur or would occur if proposed exploratory  
38 projects were approved within Unit 3 include, but are not limited to, construction and use of  
39 access roads, road improvements, clearing vegetation, drilling and blasting, and creation of mud  
40 pits or sumps. Activities associated with mining projects such as the Rosemont Mine include,  
41 but are not limited to, construction and use of access roads, road improvements, clearing  
42 vegetation, drilling and blasting, construction and operation of the mine pit, waste rock, and  
43 leach facilities. These activities can cause additional risk to public health and safety by affecting

1 roadways, air quality, and noise levels and by changing geological conditions. Some fencing  
2 could be installed to prohibit the public from accessing the mine property (Rosemont 2007).

3 The magnitude of the resulting effects of the proposed mining activities on the jaguar are part of  
4 upcoming consultation, but impacts may include changes in human activity level and an  
5 increased number and level of usage of access roads. Fences may also be installed in association  
6 with future mining activity. Jaguars typically require dense vegetative cover, connectivity, and  
7 low levels of human activity, development, and infrastructure (77 FR 50213-50242). The  
8 proposed Rosemont open-pit copper mine could decrease connectivity with the construction of  
9 infrastructure and roads and fences associated with the mining operation, increase human activity  
10 and development, reduce prey availability, and remove vegetation, making the introduction of  
11 new mining into proposed critical habitat for the jaguar a potentially significant threat.

### 12 **3.9.2.1 No Action**

13 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
14 section 7 consultation process would continue as presently conducted, but without analysis of  
15 destruction or adverse modification of habitat. Section 7 consultations would be initiated only  
16 for *may affect* determinations of impacts to the jaguar. These consultations would analyze  
17 relevant land, resource, and other management plans for their potential to jeopardize the survival  
18 of the jaguar. As mentioned, mineral exploration activities are occurring in remote rugged areas  
19 that are resulting in informal consultation on effects to the jaguar, with more exploration  
20 activities planned for the future. Depending on the results of these explorations and the potential  
21 for future mining activities, both formal and informal section 7 consultations could occur to  
22 address effects to the jaguar.

23 Jeopardy consultation with the U.S. Forest Service related to the Rosemont mine is currently  
24 underway for all areas proposed as critical habitat. The consultation includes possible  
25 conservation measures that could be recommended for the mine construction and operation.  
26 Recommended conservation measures could include measures such as:

- 27 • Development of an HCP for actions on private lands that could result in incidental take of  
28 Federally listed species;
- 29 • Limiting tree and tree limb removal;
- 30 • Minimizing nighttime lighting at work sites; and
- 31 • Avoiding or limiting activities that sever connectivity.

32 Therefore, this alternative would not have any impacts on mining beyond any conservation  
33 measures or project modifications resulting from the listing of the jaguar and associated  
34 requirements of section 7 of the ESA.

### 35 **3.9.2.2 Alternative A**

36 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
37 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
38 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
39 anticipate that designation of critical habitat would result in consultations that would not  
40 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No

1 Action Alternative, Alternative A (all proposed units, no exclusions) would result in: (1) a small  
2 but unknown number of reinitiated section 7 consultations for land management actions based  
3 solely on the presence of designated critical habitat; and (2) the addition of an analysis of adverse  
4 modification of critical habitat to future section 7 consultations on the jaguar in critical habitat.

#### 5 *Addition of Adverse Modification Analysis to Future Consultations*

6 Mining activities proposed in critical habitat units are within Unit 3. Consultations on proposed  
7 activities are already occurring for proposed areas in this unit, so there would be no new  
8 consultations. Such consultations will analyze whether or not these effects lead to destruction or  
9 adverse modification of critical habitat in the form of severing connectivity with Mexico or  
10 within a critical habitat unit, or degrading any PCEs to the point of adverse modification..

11 The additional consultations to include adverse modification, and the additional time required to  
12 complete consultations that would only have analyzed jeopardy to the species, would increase  
13 administrative costs to the Service and to the action agencies for mining activities in Unit 3.  
14 Formal consultation on the Rosemont Mine regarding effects to the jaguar (as well as other  
15 species) is expected to be completed within the calendar year of 2013. Consultation to determine  
16 effects to all PCEs and potential adverse modification to critical habitat for all of these mining  
17 operations would be an incremental effect of the designation. Implementing conservation  
18 measures resulting from those additional consultations would also increase costs for action  
19 agencies. Outcomes of consultations could also include reasonable and prudent alternatives and  
20 other conservation measures designed to maintain jaguar PCEs, without increasing the potential  
21 impacts to public health or safety from mining operations. These specific outcomes (mitigation  
22 measures and modifications) cannot be predicted precisely, but they would likely be very similar  
23 to those recommended to avoid jeopardy to the species.

24 Characterizing the impacts of critical habitat designation on mining activities is not possible at  
25 this time, while the Rosemont Copper Mine consultation is ongoing. Conservation measures  
26 recommended to avoid destruction or adverse modification of critical habitat, however, would  
27 likely be similar in nature to those resulting from consultations for jeopardy to listed species.

28 If the mine were to go forward, the incremental administrative costs of considering critical  
29 habitat in consultations for the planned mining and mineral exploration projects are projected to  
30 be \$22,000 in total, or \$1,700 annualized (IEc 2013).

#### 31 **3.9.2.3 Alternative B**

32 For Alternative B (proposed units minus exclusions), the impacts associated with the designation  
33 of critical habitat would be the same as those identified for Alternative A. The exclusions are  
34 solely for tribal land associated with the Tohono O’odham Nation, which are not subject to  
35 existing or proposed mining activities. Units in the vicinity of existing and proposed mining  
36 operations discussed within this section are thus not proposed for exclusion, so the overall  
37 impacts related to mining would still be characterized as minor.

1 **3.10 Socioeconomics**

2 A separate economic analysis of critical habitat designation for the jaguar has been conducted  
 3 (IEc 2013) in response to the revised proposed rule. This analysis includes a description of  
 4 existing plans and regulations that provide protection for the jaguar and its habitat. These form  
 5 the “baseline” protections accorded the jaguar absent the designation of critical habitat. The  
 6 discussion of the regulatory baseline provides context for the evaluation of economic impacts  
 7 expected to result from critical habitat designation, which are the focus of the economic analysis.  
 8 The “incremental” economic impacts are those that will only occur with designation of critical  
 9 habitat for the jaguar.

10 **3.10.1 Existing Conditions**

11 The proposed critical habitat designation consists entirely of rural lands, in variously low levels  
 12 of development and population density. All the units are in counties with population densities  
 13 lower than their statewide average, with the exception of Pima County, which includes the city  
 14 of Tucson.

15 **Table 3.6. Socioeconomic Profile of Counties Containing Critical Habitat for Jaguar**

State	County	Population Density (persons/sq. mile, 2010)	Population (2010)	% of Statewide Population (2010)	% Change (2000-2010)	Per Capita Income (2010 dollars)*	Poverty Rate (2010)
Arizona	State Total	56.3	6,392,017	100%	24.6%	\$25,680	15.3%
	Pima	106.7	980,263	15.3%	16.2%	\$25,093	16.4%
	Santa Cruz	38.3	47,420	0.74%	23.6%	\$16,209	25.2%
	Cochise	21.3	131,346	2.1%	11.5%	\$23,010	15.7%
New Mexico	State Total	17.0	2,059,179	100%	13.2	\$22,966	18.4%
	Hidalgo	1.4	4,894	0.24%	-17.5%	\$17,451	22.6%

16 Source: U.S. Census Bureau, Census 2010 and State & County QuickFacts

17 \* In 2010 inflation-adjusted dollars

18 Table 3.7 provides an overview of the key economic sectors in the counties that comprise the  
 19 designation, as measured by number of enterprises and number of employees.

20 **Table 3.7. Economic Activity in Counties Containing Proposed Jaguar Critical Habitat**

Industry	Number of Employees and Establishments by industry (2010)							
	ARIZONA						NEW MEXICO	
	Pima County		Santa Cruz County		Cochise County		Hidalgo County	
	EMP.	EST.	EMP.	EST.	EMP.	EST.	EMP.	EST.
Agriculture, Forestry, Fishing, and Hunting	c	23	B	5	28	7	376	35
Mining, quarrying, and oil and gas extraction	G	33	A	2	C	11	2,767	46
Utilities	G	25	B	3	467	19	3,065	47
Construction	17,434	1,757	441	65	1,603	233	19,478	2,055
Manufacturing	27,401	651	399	32	447	50	28,247	733

Number of Employees and Establishments by industry (2010)								
Industry	ARIZONA						NEW MEXICO	
	Pima County		Santa Cruz County		Cochise County		Hidalgo County	
	EMP.	EST.	EMP.	EST.	EMP.	EST.	EMP.	EST.
Wholesale Trade	7,178	787	1,856	208	406	66	9,440	1061
Retail Trade	46,309	2,855	2,402	231	5,435	423	54,146	3509
Transportation & Warehousing	7,446	380	1,376	144	584	73	9,406	597
Information	6,474	289	92	10	383	34	6,949	333
Finance and Insurance	12,318	1,240	221	42	544	109	13,083	1,391
Real Estate and rental leasing	6,403	1,254	204	42	472	121	7,079	1,417
Professional, scientific, & technical services	15,837	2,635	147	63	5,806	228	21,790	2,926
Management of companies and enterprises	4,090	119	A	5	C	8	4,358	132
Administrative & Support & Waste Management & Remediation	23,300	1,246	535	36	1,886	107	25,721	1,389
Educational Services	6,294	341	82	12	511	36	6,887	389
Health Care and Social Assistance	56,098	2,778	1,020	75	4,788	282	61,906	3,135
Arts, entertainment, and recreation	6,964	290	b	11	316	38	7,379	339
Accommodation and food services	39,456	1,737	1,312	97	4,063	280	44,831	2,114
Other services (except public administration)	14,062	1,830	273	63	1,067	240	15,402	2,133
Industries not classified	B	49	a	3	a	4	137	56
<b>Total for all sectors</b>	<b>301,151</b>	<b>20,319</b>	<b>10,484</b>	<b>1,149</b>	<b>29,052</b>	<b>2,369</b>	<b>342,447</b>	<b>23,837</b>

Source: U.S. Census Bureau, 2010 County Business Patterns North American Industry Classification System (NAICS)

A: 0-19 employees

B: 20-99 employees

C: 100-249 employees

E: 250-499 employees

F: 500-999 employees

G: 1,000-2,499 employees

H: 2,500-4,999 employees

I: 5,000-9999 employees

J: 10,000-24,999 employees

K: 25,000-49,999 employees

L: 50,000-99,999 employees

M: 100,000 or more

S: Withheld because estimate did not meet public standards

D: Withheld to avoid disclosing data for individual companies; data are included in higher level totals

In the counties that contain designated habitat, those sectors providing principal sources of employment are health care, retail trade, and tourism (respectively). Within this context of overall economic activity, specific economic sectors that could be impacted by the designation of critical habitat are discussed below.

1 **3.10.2 Environmental Consequences**

2 **3.10.2.1 No Action**

3 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
4 section 7 consultation process would continue as presently conducted for proposed actions with a  
5 Federal nexus, but without consideration of PCEs. Those actions that could have impacts on  
6 socioeconomic resources include land use management, border protection, mining, transportation  
7 construction & development, and other activities, including grazing, recreation, and tribal  
8 activities. Such consultations would analyze relevant travel, economic, and recreation  
9 management plans on Federal lands currently occupied by the species. As they relate to  
10 socioeconomic resources, such consultations would likely include:

- 11 • U.S. Army Corps of Engineers—for bridge projects, stream restoration, urban  
12 development;
- 13 • U.S. Bureau of Indian Affairs—for renewable energy development, road projects, utility  
14 development and upgrades;
- 15 • U.S. Bureau of Land Management—for land and resource management plans, livestock  
16 grazing and management plans, recreation, mining permits, and renewable energy  
17 development;
- 18 • U.S. Department of Homeland Security—for border security infrastructure and  
19 operations;
- 20 • U.S. Department of Transportation—for highway and bridge construction and  
21 maintenance;
- 22 • U.S. Forest Service—for travel and forest plans, livestock grazing AMPs, and mining  
23 permits; and
- 24 • U.S. Fish and Wildlife Service—for issuance of section 10 enhancement of survival  
25 permits, HCPs, and SHAs; NWR planning; Partners for Fish and Wildlife program  
26 projects.

27 The outcomes of these consultations can include conservation measures that serve to limit the  
28 natural resource impacts, as described elsewhere throughout this document. These conservation  
29 measures may include specific modifications to mining operations, construction practices, or  
30 resource development activities, which may increase operational and/or administrative costs to  
31 action agencies or private parties applying for permits. These impacts of the No Action  
32 Alternative would continue to be minor, based on the consultation history for typical actions.

33 **3.10.2.2 Alternative A**

34 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
35 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
36 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
37 anticipate that designation of critical habitat would result in consultations that would not  
38 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No  
39 Action Alternative, Alternative A (all proposed units, no exclusions) would result in: (1) a small  
40 but unknown number of reinitiated section 7 consultations for land management actions based

1 solely on the presence of designated critical habitat; and (2) the addition of an analysis of adverse  
2 modification of critical habitat to future section 7 consultations on the jaguar in critical habitat.

3 Indirect socioeconomic impacts faced by project proponents, land managers and landowners  
4 could include the following:

- 5 • **Time Delays**—Both public and private entities may experience incremental time delays  
6 for projects and other activities due to requirements associated with the need to reinitiate  
7 the section 7 consultation process and/or compliance with other laws triggered by the  
8 designation. To the extent that delays result from the designation, they are considered  
9 indirect, incremental impacts of the designation.
- 10 • **Regulatory Uncertainty**—The Service conducts each section 7 consultation on a case-  
11 by-case basis and issues a BO on formal consultations based on species- and site-specific  
12 information. As a result, government agencies and affiliated private parties who consult  
13 with the Service under section 7 may face uncertainty concerning whether project  
14 modifications will be recommended by the Service and what the nature of these  
15 modifications will be. This uncertainty may diminish as consultations are completed and  
16 additional information becomes available on the effects of critical habitat on specific  
17 activities. Where information suggests that this type of regulatory uncertainty stemming  
18 from the designation may affect a project or economic behavior, associated impacts are  
19 considered indirect, incremental impacts of the designation.
- 20 • **Stigma**—In some cases, the public may perceive that critical habitat designation may  
21 result in limitations on private property uses above and beyond those associated with  
22 anticipated project modifications and regulatory uncertainty described above. Public  
23 attitudes about the limits or restrictions that critical habitat may impose can cause real  
24 economic effects to property owners, regardless of whether such limits are actually  
25 imposed. All else being equal, a property that is designated as critical habitat may have a  
26 lower market value than an identical property that is not within the boundaries of critical  
27 habitat due to perceived limitations or restrictions. As the public becomes aware of the  
28 true regulatory burden imposed by critical habitat, the impact of the designation on  
29 property markets may decrease. To the extent that potential stigma effects on markets are  
30 probable and identifiable, these impacts are considered indirect, incremental impacts of  
31 the designation.

32 Table 3.8 below summarizes the potential economic impacts of the proposed designation by  
33 category of activity (IEc 2013). The present value of potential economic impacts (using a 7%  
34 discount rate) is estimated at \$360,000 over a 20-year time period, or \$31,000 annually. This  
35 estimate does not include an assumption on the outcome of ongoing consultations regarding the  
36 Rosemont mine.

37 **Table 3.8. Summary of Forecast Incremental Economic Impacts by Activity**  
38 **(2013 Dollars, Seven Percent Discount Rate)**

Activity	Present Value	Annualized	Percent of Total Impacts
<b>Federal land management</b>	\$180,000	\$16,000	52.0%
<b>Border protection</b>	\$17,000	\$1,500	4.8%
<b>Mining (1)</b>	\$22,000	\$1,900	6.2%
<b>Transportation</b>	\$5,900	\$520	1.7%
<b>Development</b>	\$0	\$0	0%
<b>Military</b>	\$20,000	\$1,700	5.5%
<b>Grazing (2)</b>	\$24,000	\$2,100	6.8%
<b>Other</b>	\$82,000	\$7,300	23.0%
<b>Tribal</b>	\$0	\$0	0%
<b>Total:</b>	<b>\$360,000</b>	<b>\$31,000</b>	<b>100%</b>

- 1 (1) If mining plans move forward and an adverse modification decision is made, potential impacts on  
2 operations at Rosemont or Hermosa mine could result.  
3 (2) It is possible that some ranchers may withdraw applications for NRCS funding following jaguar  
4 critical habitat in order to avoid any potential obligations to consult with the Service.

5 This impact can be considered minor overall, although individual proponents or affected entities  
6 could experience project-specific impacts that could be considered moderate but not significant,  
7 as shown in Table 3.9.

8 In addition to potentially adverse economic impacts, the draft Economic Analysis identifies  
9 potential social and economic benefits from measures aimed at maintaining or improving habitat  
10 PCEs. While difficult to quantify in monetary terms, these benefits could include:

- 11 • **Aesthetic benefits**—Social welfare gains may be associated with enhanced aesthetic  
12 quality of habitat;
- 13 • **Educational benefits**—Surveying and monitoring activities for the jaguar add to the  
14 knowledge base about the species and could help better direct future conservation efforts;  
15 and
- 16 • **Property value benefits**—Open space preservation or decreased density of development  
17 may increase nearby property values.

### 18 *Impacts to Small Entities*

19 The draft Economic Analysis includes an analysis of the distributional impacts of the proposed  
20 critical designation on small entities and the energy industry. Table 3.9 (next page) presents the  
21 results of the threshold analysis developed to support the Service’s determination regarding  
22 whether the proposed rule will have a significant economic impact on a substantial number of  
23 small entities, as required by the Regulatory Flexibility Act (RFA), as amended by the Small  
24 Business Regulatory Enforcement Fairness Act (SBREFA). This analysis is intended to improve  
25 the Service's understanding of the potential effects of the proposed rule on small entities and to  
26 identify opportunities to minimize these impacts in the final rulemaking.

1  
2 Estimated incremental costs that may be borne by small entities consist of administrative impacts  
3 of section 7 consultations related to mining, transportation development, and agriculture and  
4 grazing. These are summarized in Table 3.9 below. Refer to the Economic Analysis for a full  
5 discussion of the assumptions and results of the study.

### 6 **3.10.2.3 Alternative B**

7 For Alternative B (proposed units minus Tohono O’odham lands), the impacts associated with  
8 the designation of critical habitat would be similar to those identified for Alternative A.  
9 Exclusion of the Tohono O’odham lands could reduce the economic impacts of designation by  
10 keeping future consultations focused on jeopardy to the species. The overall socioeconomic  
11 impacts of designation under Alternative B would be still characterized as minor and both  
12 beneficial and adverse.

## 13 **3.11 Recreation**

### 14 **3.11.1 Existing Conditions**

15 Recreational areas in the proposed critical habitat exist on tribal lands (Tohono O’odham  
16 Nation); Federally- and state-owned lands, including Coronado National Forest (US Forest  
17 Service), BLM lands, Buenos Aires NWR (USFWS), Coronado National Memorial (NPS land),  
18 and Arizona State lands.

19 Several types of recreational activities take place in or near proposed critical habitat areas for the  
20 jaguar. Recreational opportunities include hiking, hunting, boating, swimming, birding, wildlife  
21 viewing, photography, sight-seeing, pleasure-driving, angling, camping, horseback riding, and  
22 OHV use. Level of use and type of activity vary by site characteristics, landownership,  
23 management policy, and accessibility.

**Table 3.9. Summary of Upper-Bound Potential Impacts on Small Entities**

Activity	Industry	Small Entity Size Standard (Millions of Dollars)	Total Number of Entities	Number of Small Entities	Number of Affected Small Entities <sup>1</sup> (Percent of Total Small Entities)	Incremental Economic Impacts To Small Businesses <sup>2</sup>	Impacts as % of Annual Revenues <sup>3</sup>
Transportation	Highway, Street and Bridge Construction	33.5	120	110	9 (7%)	\$875 to \$7,875 <sup>4</sup>	0.09%
	Other Heavy and Civil Engineering Construction	33.5	30	28			
Agriculture and Grazing	Beef Cattle Ranching and Farming	0.75	80	74	0 (0%)	\$0 per entity <sup>5</sup>	0%
	Cotton Farming	0.75	3	1			
Mining	Iron Ore Mining	500 employees	0	0	4 (13%)	\$875 to \$2,625 <sup>6</sup>	-
	Gold Ore Mining	500 employees	6	6			
	Silver Ore Mining	500 employees	1	1			
	Lead Ore and Zinc Ore Mining	500 employees	6	6			
	Copper Ore and Nickel Ore Mining	500 employees	33	8			
	Uranium-Radium-Vanadium Ore Mining	500 employees	0	0			
	All Other Metal Ore Mining	500 employees	0	0			
	Support Activities for Metal Mining	7	9	8			
	Support Activities for Nonmetallic Minerals, except fuels	7	3	3			

Notes:

1. To estimate the number of affected small entities, this analysis assumes one small entity per forecast section 7 consultation. For Agriculture and Grazing, this assumes one small entity per NRCS funding instance.
2. For these activities, we conservatively estimate that all administrative costs of consultation will be incurred by a small entity in a single year. Therefore, we use the total, undiscounted third party incremental costs of a formal consultation.
3. Annual revenues are estimated using Risk Management Association (RMA), *Annual Statement Studies: Financial Ratio Benchmarks 2012 to 2013*, 2012. For each North American Industry Classification System (NAICS) code, RMA provides the net sales and the number of entities falling within several sales categories: \$0 to \$1 million, \$1 to 3 million, \$3 to \$5 million, \$5 to 10 million, or \$10 to \$25 million. Based on the number of entities and total net sales falling within each sales category, we developed an estimate of the weighted average net sales (revenues) per small entity: for transportation related firms, annual revenues were estimated to be approximately \$9 million; for companies involved in agriculture and grazing, revenues are estimated at \$430,000 annually; for mining firms, annual revenue information was not available, but due to the highly capitalized nature of the mining industry, mining firms are assumed to have high annual revenues such that per entity impacts of \$2,625 resulting from the designation of critical habitat are likely to be insignificant.
4. We are uncertain in what year consultations on transportation activities will occur over the next 20 years. For the purposes of this analysis, we assume affected small entities will participate in approximately nine consultations over 20 years, or less than one consultation per year. However, if we assume that a single small entity participates in multiple consultations in a single year, the administrative costs of such activity are still likely to be less than one percent of annual tax revenues (e.g., nine consultations x \$875/\$9,000,000 = 0.09 percent of annual revenues).
5. Potential impacts related to NRCS funding are not quantified.
6. We are uncertain in what year consultations on mining will occur over the next 20 years. For the purposes of this analysis, we assume affected small entities will participate in approximately 4 consultations over 20 years, one of which will be associated with the Hermosa Project and will involve Wildcat Silver Corporation. However, if we assume that a single small entity participates in multiple consultations in a single year, the administrative costs of such activity are still likely to be less than one percent of annual revenues. Although data on annual revenues for mining companies were unavailable, due to the highly capitalized nature of the mining industry companies involved in mining operations are likely to produce revenues large enough that the cost of undertaking three consultations in a single year would likely be less than one percent of annual revenues (e.g., 3 consultations x \$875 = \$2,625. \$2,625 represents one percent of annual revenues of \$262,500. Mining companies are likely to produce revenues of greater than \$262,500 annually).

**Source:** Dialog search of File 516, Dun and Bradstreet, "Duns Market Identifiers," on January 3, 2013.

1 Table 3.10 below lists critical habitat units that are at least partly within or adjacent to Federal  
 2 recreational sites.

3 **Table 3.10. Critical Habitat Units Within or Adjacent to Federal Recreation Sites**

<b>Federal Property</b>	<b>Critical Habitat Unit/Subunit</b>	<b>Recreational Area within or adjacent to unit</b>
Coronado NF	2	Nogales Recreation Area
Coronado NF	2	Atascosa Mountains
Coronado NF	2	Pajarito Mountains
Coronado NF	2	Tumacacori Mountains
Coronado NF	3	Santa Rita Mountains
Coronado NF	3	Sierra Vista Recreation Area
Coronado NF	3	Huachuca Mountains
Coronado NF	3	Canello Hills – Sierra Vista Ranger District
Coronado National Memorial (NPS)	3	Montezuma Pass; Joe’s Canyon; and Yaqui Trail
Coronado NF	2	Sycamore Canyon Hiking Trail and Border Hiking Trail
Coronado NF	5	Whitmire Canyon Wilderness Study Area
Buenos Aires NWR (FWS)	1a/1b	Refuge area (2 campsites)
Baboquivari-Coyote Wilderness Area	1a	Baboquivari Peak

4  
 5 The U.S. Forest Service manages 192,975 ha (476,851 ac) of habitat for the jaguar on the  
 6 Coronado National Forest (CNF) in the Douglas, Nogales, and Sierra Vista Ranger Districts in  
 7 Units 2 and 3; Subunits 4a, 4b, and 4c; and Unit 5.

8 The National Visitor Use Monitoring program provides estimates of the volume and  
 9 characteristics of recreation visitation to the National Forest System. A National Forest Visit is  
 10 defined as the entry of one person upon a national forest to participate in recreation activities for  
 11 an unspecified period of time. The most recent annual visitation data is presented in Table 3.11  
 12 below.

13 **Table 3.11. Annual Coronado National Forest Visitation Estimates**

<b>Visit Type</b>	<b>Visits</b>
Total Estimated Site Visits	2,793
Day Use Developed Site Visits	758
Overnight Use Developed Site Visits	439
General Forest Area Visits	1,108
Designated Wilderness Visits	488
Total Estimated National Forest Visits	2,453
Special Events and Organized Camp Use	74

14 Source: USFS 2007.

1 The activity most likely to be impacted by the designation of critical habitat is OHV use. OHV  
2 use is authorized on certain roads that pass near proposed critical habitat in Coronado National  
3 Forest, especially in units 2, 3, and 5. As displayed in the above Table 3.10, all of the Coronado  
4 NF recreational areas are within or adjacent to units 2, 3, and 5. Most of the proposed habitat  
5 segments receive relatively low-level recreational use because of their remoteness and/or  
6 difficult terrain. Many of these roads are used primarily to access dispersed camping (USFS  
7 2011).

8 There have been no previous consultations on Travel Management Plan actions involving the  
9 jaguar in Coronado National Forest, although changes to these plans are among actions that  
10 could trigger future consultations, regardless of whether critical habitat is designated. The U.S.  
11 Forest Service actively manages for the jaguar, and its designation of roads and trails is done  
12 within the context of its efforts to protect sensitive habitat (Service 2005).

13 On the single NWR within proposed critical habitat (the Buenos Aires NWR, in Pima County,  
14 AZ), popular recreation activities include camping, picnicking, mountain biking, horseback  
15 riding, hiking, and backpacking. Motorized vehicles are restricted to roadways. Hunting is  
16 permitted on approximately 90 percent of the refuge and is subject to both Refuge and Arizona  
17 State Hunting Regulations. Recreational uses in the NWR will likely increase with population  
18 growth in southern Arizona and in light of the stated goal of the 2003 Comprehensive  
19 Conservation Plan (CCP) to provide safe, accessible, high-quality wildlife-dependent  
20 recreational opportunities. Specific objectives in the CCP include:

- 21 • Implement Brown Canyon Visitor Center improvements to serve 2,000 existing visitors  
22 and 2,000 new visitors and meet watchable wildlife, photography, and public recreation  
23 interpretation objective levels.
- 24 • Provide 12 volunteer/research facilities on the Refuge to attract qualified and competent  
25 volunteers/researchers important to carrying out various Refuge programs.
- 26 • Provide a shuttle service for approximately 16 persons into Brown Canyon to preserve  
27 the uniqueness of the area and maintain the wildland/wildlife experience for visitors.
- 28 • Improve the Brown Canyon road for public and administrative access.
- 29 • Improve the Refuge Visitor Center facilities and roads to more efficiently meet the needs  
30 of 35,000 existing visitors and 20,000 new visitors annually (Service 2002).

31 The NPS manages the Coronado National Memorial in the southeast section of Unit 3.  
32 Recreational activities at the 1,922-ha (4,750 ac) Coronado National Memorial include auto  
33 touring, birding, caving, hiking, picnicking, and wildlife viewing. The scenic overlook,  
34 Montezuma Pass, is a three-mile drive from the visitor center. Visitors can hike from the  
35 Montezuma Pass to Coronado Peak (1.6 km/1 mi round trip). Additional trails include Joe's  
36 Canyon (5 km/3.1 mi each way) and Yaqui Trail (6.4 km/4 mi round trip). History and nature  
37 programs and tours of Coronado Cave are available, as are picnic sites. No hunting is allowed in  
38 this park (NPS 2012). In 2010, there were 136,284 total recreation visitors to the Coronado  
39 National Memorial (NPS 2010).

40 BLM lands include the Baboquivari and Coyote Wilderness areas in Subunit 1a (Service 2012c).  
41 The 2012 Draft Baboquivari-Coyote Wilderness Area Management Plan proposes to “provide  
42 for dispersed recreation use and wilderness preservation by maintaining appropriate signage, trail

1 maintenance, and regular BLM, or other authorized, wilderness patrol” as a primary objective.  
2 Currently, legal public access to the wilderness areas has not been obtained

### 3 *Hunting*

4 Besides suitable habitat, maintaining an adequate supply of prey species is important to the  
5 recovery of the jaguar. Maintaining adequate levels of native prey species, including deer and  
6 javelin, as well as medium-sized prey such as coatis, skunks, raccoons, or jackrabbits, is listed as  
7 a PCE of jaguar critical habitat. Home ranges of the jaguar need to provide available prey and  
8 sites for resting that are removed from the impacts of human activity and influence (77 FR  
9 50213-50242). Hunting activities that decrease native prey species for the jaguar could  
10 adversely affect critical habitat. While hunting is not allowed on the NPS’s Coronado National  
11 Memorial, it is allowed at Fort Huachuca, and on BLM land, USFS land, and the Buenos Aires  
12 NWR. Hunting activities on BLM land, Coronado National Forest, Fort Huachuca, and Buenos  
13 Aires NWR could be subjected to additional regulation to protect the jaguar critical habitat PCE  
14 of containing adequate levels of native prey species, including deer and javelina, as well as  
15 medium-sized prey such as coatis, skunks, raccoons, or jackrabbits. However, wildlife  
16 management agencies in Arizona and New Mexico have a history of effective game management  
17 strategies resulting in prey species’ persistence within these areas (77 FR 50228).

18 All individuals hunting on Fort Huachuca must obtain all licenses, stamps, and tags required by  
19 the AGFD as well as have a hunting permit from the Fort. While all hunters on the Fort must  
20 review jaguar identification guidelines and follow all state and Federal laws, prey species of the  
21 jaguar can be hunted (U.S. Army 2009).

22 Hunting is allowed on all Federal lands managed by the BLM and the USFS in New Mexico and  
23 Arizona, unless specifically prohibited. There are three main types of hunting available in New  
24 Mexico, upland game bird, small game, and big game (for example, deer, antelope, and elk).  
25 Varmint (non-game) hunting is also allowed. Big game hunting for mule deer, wild turkey,  
26 pronghorn, and bighorn sheep occurs each year in Arizona. All regulations set by the New  
27 Mexico’s Department of Game and Fish and AGFD must be followed (BLM 2011d; BLM  
28 2011e).

29 Hunting is allowed on approximately 90 percent of the Buenos Aires NWR. In addition to all  
30 Arizona State Hunting Regulations, there are several Refuge-specific regulations that are in  
31 effect and must be followed (Service 2013). In the Baboquivari and Coyote Wilderness areas in  
32 Arizona, hunting is regulated by the AGFD, whose regulations include a special provision  
33 allowing the use of hunting dogs in these areas (BLM 2012c).

### 34 *Previous Consultations*

35 The Biological and Conference Opinion on the Continued Implementation of the Land and  
36 Resource Management Plans for the Eleven National Forests and National Grasslands of the  
37 Southwestern Region concludes that continued implementation of the Standards & Guidelines  
38 (S&G) within the Coronado NF, as amended, may affect, but is not likely to adversely affect, the  
39 jaguar. Among those reasons:

- 40 • Low total miles and a low road density standard, which is beneficial to large carnivores  
41 such as the jaguar.

- 1 • The Coronado NF is a long standing member of the Jaguar Conservation Team (although  
2 this team has not met since February 2009), and the Coronado NF participates in the  
3 jaguar survey and monitoring project along the International Border with Mexico  
4 (Service 2005).

5 The 2002 BO for implementation of the Buenos Aires NWR CCP concurs with the Refuge's  
6 determination that the CCP may affect, but is not likely to adversely affect, jaguar (Service  
7 2002).

## 8 **3.11.2 Environmental Consequences**

### 9 **3.11.2.1 No Action Alternative**

10 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
11 section 7 consultation process would continue as presently conducted for proposed actions with a  
12 Federal nexus, but without analysis of destruction or adverse modification of habitat. Those  
13 actions that could have impacts on recreational resources include hunting and OHV use, and  
14 residential, commercial, and road development, respectively. Such consultations would analyze  
15 relevant travel, economic, and recreation management plans on Federal lands currently occupied  
16 by the species. As they relate to recreational resources, such consultations would likely include:

- 17 • National Park Service—for general management plan, recreation management, travel  
18 management;  
19 • U.S. Bureau of Land Management—for land and resource management plans, recreation  
20 development;  
21 • U.S. Forest Service—for travel and forest plans; and  
22 • U.S. Fish and Wildlife Service—NWR planning.

23 The conservation measures implemented as a result of section 7 consultations on survival of the  
24 species under the No Action Alternative may prompt specific modifications to recreation  
25 opportunities. However, this alternative would not add any recreational impacts beyond those  
26 conservation measures or project modifications resulting from the listing of the jaguar and  
27 associated requirements of section 7 of the ESA.

### 28 **3.11.2.2 Alternative A**

29 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
30 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
31 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
32 anticipate that designation of critical habitat would result in consultations that would not  
33 otherwise take place for jeopardy analysis in all proposed areas. However, compared to No  
34 Action Alternative, the Alternative A (all proposed units, no exclusions) would result in (1) a  
35 small but unknown number of reinitiated consultations for actions potentially affecting  
36 recreation, based solely on the presence of designated critical habitat and (2) the addition of an  
37 adverse modification of critical habitat analysis to section 7 consultations for the jaguar in  
38 critical habitat.

1 *Reinitiated Consultations*

2 Because modifications to the PCEs of critical habitat are closely tied to adverse effects to the  
3 species, current activities and activities that would trigger consultation for critical habitat are  
4 largely the same. Based on previous activity within designated units, such project proponents  
5 could include the BLM and the State of Arizona if it receives Federal funds for conservation or  
6 restoration of state-owned lands.

7 As it relates to recreational resources, reinitiated consultations could include:

- 8 • Road/highway construction—U.S. Department of Transportation;
- 9 • Actions on recreation lands—U.S. Bureau of Land Management; U.S. Fish & Wildlife  
10 Service; and
- 11 • Mining—U.S. Forest Service.

12 Consultations for critical habitat may also result in the establishment of reasonable and prudent  
13 alternatives and other conservation measures designed to maintain the jaguar PCEs.  
14 Conservation measures may adversely affect recreational opportunities where they overlap with  
15 critical habitat, primarily by limiting the activities such as OHV use in the Coronado National  
16 Forest and hunting in the Buenos Aires NWR. Conservation measures may also include  
17 restrictions on constructing recreational facilities in or near critical habitat to reduce impacts  
18 from construction, maintenance, and use by recreationists. A potential benefit of increasing  
19 section 7 consultations for recreation-related activities would be maintenance of jaguar PCEs  
20 through conservation measures within designated critical habitat. The conservation of habitat  
21 values that would result may benefit such recreational activities as birding, wildlife viewing,  
22 photography, and day hiking.

23 *Addition of Adverse Modification Analysis to Future Consultations*

24 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
25 in many respects and are parallel processes because the health of a species cannot be  
26 disassociated from the health of its habitat. The outcomes of these future consultations would  
27 depend on the details of project proposals and the analysis of effects, which are unknown at this  
28 time.

29 Hunting activities on BLM land, Coronado National Forest, Fort Huachuca, and Buenos Aires  
30 NWR could be subjected to additional regulation to protect the jaguar critical habitat PCE of  
31 containing adequate levels of native prey species, including deer and javelina, as well as  
32 medium-sized prey such as coatis, skunks, raccoons, or jackrabbits.

33 The additional time needed to complete consultations that would have only considered effects on  
34 the species, would increase administrative costs to the Service and to the action agencies.  
35 Implementing conservation measures resulting from those additional consultations would also  
36 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
37 include reasonable and prudent alternatives and other conservation measures designed to  
38 maintain jaguar PCEs. These outcomes cannot be predicted precisely; however, based on past  
39 consultations, types of additional management actions that may be triggered include, but are not  
40 limited to:

- 1 • Revising/drafting resource and habitat management plans;
- 2 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring
- 3 reports;
- 4 • Limiting construction of fencing in jaguar habitats or in areas where fences are likely to
- 5 impact jaguar habitat;
- 6 • Limiting roadway widening and construction projects;
- 7 • Limiting the construction of new powerlines and pipelines;
- 8 • Limit predator control activities, including snares for mountain lions, which pose a
- 9 potential threat to jaguars; and
- 10 • Maintenance of water sources and dense riparian areas.

11 Based on previous conservation measures that have addressed recreational opportunities on BLM  
12 land, Coronado National Forest, Fort Huachuca, and Buenos Aires NWR (see Previous  
13 Consultations above), there could potentially be minor adverse impacts from critical habitat  
14 designation on some recreational opportunities and activities within designated critical habitat  
15 (e.g., OHV use, hunting) from the limitations and restrictions imposed on recreational activities  
16 to preserve PCEs. However, other recreational activities and opportunities would be enhanced,  
17 and could benefit from critical habitat designation (e.g., birdwatching, wildlife viewing, day  
18 hiking), because of increased habitat conservation.

19 Both the adverse and beneficial effects of critical habitat designation on recreation-related  
20 activities are expected to be minor because recreational use of most critical habitat areas is light  
21 and (1) new consultations based solely on the presence of designated critical habitat are unlikely,  
22 because land managers are already consulting on jaguar throughout the proposed critical habitat  
23 areas; and (2) the likelihood that reasonable and prudent alternatives developed under the  
24 jeopardy standard would be changed substantially with the addition of critical habitat designation  
25 and application of the adverse modification standard is small.

### 26 **3.11.2.3 Alternative B**

27 For Alternative B (proposed units minus Tohono O’odham lands), the impacts associated with  
28 the designation of critical habitat would be similar to those identified for Alternative A.  
29 Exclusion of the Tohono O’odham lands could reduce the impacts to recreation from of  
30 designation by triggering fewer consultations and therefore reducing administrative costs. The  
31 overall impacts would be still characterized as minor and both beneficial and adverse.

## 32 **3.12 Environmental Justice**

33 As required by Executive Order 12898, an agency action must be evaluated to determine if any  
34 disproportionately high and adverse health or environmental effects would occur on minority or  
35 low-income populations from implementation of the Proposed Action or alternatives.

### 36 **3.12.1 Existing Conditions**

37 Table 3.12 displays the minority and poverty level populations in counties with proposed critical  
38 habitat, in comparison to their state levels overall. All four counties containing designated  
39 habitat have higher concentrations of Hispanics than their respective states overall. Both

1 Arizona and New Mexico have slightly higher poverty rates within the counties containing  
 2 designated critical habitat than the state average overall.

3 **Table 3.12. Summary of Minority Populations and Income Statistics in Counties and**  
 4 **States Containing Proposed Critical Habitat for the Jaguar**

Location	Total Pop. (2010)	Minority (%)	American Indian and Alaska Native (%)	Black/ African American (%)	Asian (%)	Hispanic or Latino (%)	Median HH Income (2010 dollars)	Poverty Rate (2010)
<b>Arizona</b>	<b>6,392,017</b>	<b>41.3</b>	<b>4.6</b>	<b>4.1</b>	<b>2.8</b>	<b>29.6</b>	<b>\$50,448</b>	<b>15.3</b>
Cochise	131,346	40.0	1.2	4.2	1.9	32.4	\$44,876	15.7
Pima County	980,263	44.2	3.3	3.5	2.6	34.6	\$45,521	16.4
Santa Cruz	47,420	84.4	0.7	0.4	0.5	82.8	\$36,519	25.2
<b>New Mexico</b>	<b>2,059,179</b>	<b>59.3</b>	<b>9.4</b>	<b>2.1</b>	<b>1.4</b>	<b>46.3</b>	<b>\$43,820</b>	<b>18.4</b>
Hidalgo	4,894	58.5	0.8	0.6	0.5	56.6	\$36,733	22.6

5 Sources: U.S. Census Bureau State and County Quickfacts, 2010.

### 6 **3.12.2 Environmental Consequences**

7 Wherever a Federal agency action may have particular consequences for socioeconomic  
 8 resources or human health and safety, a potential for environmental justice impact could exist.  
 9 As it relates to environmental justice impacts, such actions could involve consultations on:

- 10 • Mining permits and operations;
- 11 • Water Resources development;
- 12 • Recreation Planning (OHV limitations);
- 13 • Border infrastructure and operations;
- 14 • Habitat restoration—stream restoration, vegetation management;
- 15 • Grazing and livestock management; and
- 16 • Construction/development activities—bridges, roads, pipelines.

17 Any environmental justice impacts of such actions would be localized in nature and could be  
 18 addressed by the action agency more effectively at the site-specific level. The potential for  
 19 differential and disproportionate impacts to minority populations or low-income populations  
 20 would increase in those areas where proposed actions are located near individual residential  
 21 communities in which populations of concern for environmental justice effects are found in  
 22 greater numbers. Given the low human populations in designated habitats, and the fact that the  
 23 Service has specifically chosen to avoid designation in developed areas, there would likely be  
 24 few instances where disproportionate natural resource impacts could be created. However, if the  
 25 Rosemont Copper Mine were to be delayed or terminated, its employment and economic impact  
 26 would likely be felt on environmental justice communities within Pima County, which has  
 27 34.6% Hispanic population, higher than the Arizona state average of 29.6%.

1 Since no specific projects are mandated or authorized by this designation of critical habitat, and  
2 the designation does not directly restrict land use or land management activities, it is not possible  
3 to predict whether such impacts will in fact occur. However, it is likely that any such impacts  
4 would be at most moderate, in the context of the entire designation, because: (1) the economic  
5 impacts associated with individual relevant projects or actions would of moderate size; and (2)  
6 there would be only a small number of projects throughout the designation which would create  
7 such impacts.

## 8 **3.13 National Security**

### 9 **3.13.1 Existing Conditions**

10 The jaguar's Northwestern Recovery Unit includes the core areas of: (1) Central Sonora,  
11 Southwestern Chihuahua, and Northeastern Sinaloa (Mexico); and (2) Central Sinaloa, Nayarit,  
12 and the coast and coastal sierras of Jalisco (Mexico) (Service 2012a).

13 Jaguars in the United States are understood to be individuals dispersing north from Mexico  
14 (Service 2012a). The closest breeding population occurs about 209 km (130 mi) south of the  
15 U.S.-Mexico border in Sonora near the towns of Huasabas, Sahuaripa, and Nacori Chico  
16 (Mexico). Portions of southeastern Arizona and southwestern New Mexico are included in the  
17 Northwestern Recovery Unit because they provide areas to support some individuals during  
18 transient movements by providing patches of habitat (perhaps in some cases with a few resident  
19 jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding  
20 population. The spatial and biological dynamics that allow this unit to function require  
21 connectivity between the northern Mexican population of jaguars in Sonora and jaguar habitat  
22 areas in the southeastern Arizona and southwestern New Mexico. Therefore, proposed critical  
23 habitat is necessary to maintain and enhance connectivity within the U.S. portion of the  
24 Northwestern Recovery Unit. The 2012 Recovery Outline also finds that it would benefit the  
25 jaguar species as a whole to allow further connectivity of the Northwestern Recovery Unit with  
26 other jaguar populations elsewhere in Mexico (Service 2012a).

27 Construction of border infrastructure (such as pedestrian fences and roads), as well as law  
28 enforcement response that results from or aims to deter illegal activities (such as increased  
29 human presence, vehicles, and lighting), may limit movement of jaguars through the U.S.-  
30 Mexico border (77 FR 50213-50242). Under section 102 of the Illegal Immigration Reform and  
31 Immigrant Responsibility Act (IIRIRA), the Secretary of the DHS (DHS) is authorized to waive  
32 laws where the Secretary of DHS deems it necessary to ensure the expeditious construction of  
33 border infrastructure in areas of high illegal entry.

34 The border from the Tohono O'odham Nation, Arizona, to southwestern New Mexico has a mix  
35 of pedestrian fence (not permeable to jaguars), vehicle fence (fence designed to prevent vehicle  
36 but not pedestrian entry; it is generally permeable enough to allow for the passage of jaguars),  
37 legacy (older) pedestrian and vehicle fence, and unfenced segments (primarily in rugged,  
38 mountainous areas). Proposed critical habitat units that provide connectivity to Mexico include  
39 Subunit 1B, Unit 2, Unit 3, Subunits 4b and 4c, and Units 5 and 6. Border security activities  
40 occur in all of these units (77 FR 50213-50242).

1 *Recent Consultations*

2 There have been two formal consultations for the jaguar since listing pertaining to actions  
3 proposed by the DHS, both of which resulted in a determination of *no jeopardy*. One of these  
4 consultations was the Tucson West Tower Project (part of DHS’s SBIInet, with actions proposed  
5 to occur in the Areas of Operations of the Ajo, Tucson, Casa Grande, Nogales, and Sonoita  
6 Stations of the U.S. Border Patrol, Tucson Sector, Arizona (Service 2008). This BO focused on  
7 the proposed construction, retrofitting, operation, and maintenance of 56 communication and  
8 sensor towers; the construction of 29 new road segments and repair of 19 roads; the use of  
9 mobile surveillance systems; and the deployment of unattended ground sensors. The other  
10 consultation focused on 31.4 miles of pedestrian fence proposed by the DHS along the U.S.-  
11 Mexico border near Sasabe, Pima County; Nogales, Santa Cruz County; and near Naco and  
12 Douglas, Cochise County (Service 2007b).

13 **3.13.2 Environmental Consequences**

14 Actions that could destroy or adversely modify jaguar critical habitat include those that would  
15 permanently sever connectivity to Mexico or within a critical habitat unit such that movement of  
16 jaguars between habitat in the United States and Mexico is eliminated, or those that might reduce  
17 the ability of the habitat to maintain its role as essential to the recovery of the species. In  
18 general, such activities could include building impermeable fences (such as pedestrian fences) in  
19 areas of vegetated rugged terrain, or major road construction projects (such as new highways or  
20 significant widening of existing highways) (77 FR 50213-50242).

21 **3.13.2.1 No Action**

22 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
23 section 7 consultation process would continue as presently conducted, but without analysis of  
24 destruction or adverse modification of habitat. Section 7 consultations would be initiated only  
25 for actions that *may affect* survival of the jaguar. There are no known plans to construct  
26 additional security fences in the proposed critical habitat at this time (77 FR 50213-50242).  
27 However, if future national security issues require additional measures and the Secretary of DHS  
28 invokes the IIRIRA waiver, review through the section 7 consultation process would not be  
29 conducted. If DHS chooses to consult with the Service on activities covered by a waiver, special  
30 management considerations would apply on a voluntary basis (77 FR 50213-50242).

31 Therefore, this alternative would not have any impacts on border security activities beyond any  
32 conservation measures or project modifications resulting from the listing of the jaguar and  
33 associated requirements of section 7 of the ESA.

34 **3.13.2.2 Alternative A**

35 There are no known plans to construct additional security fences in the proposed critical habitat  
36 at this time (77 FR 50213-50242). However, if future national security issues require additional  
37 measures and the Secretary of DHS invokes the IIRIRA waiver, the section 7 consultation  
38 process would not be conducted. If DHS chooses to consult with the Service on activities  
39 covered by a waiver, special management considerations could apply on a voluntary basis (77  
40 FR 50213-50242). The introduction of new fencing, other infrastructure, and an increased level

1 of border security activities within proposed critical habitat for the jaguar could pose a  
2 potentially significant threat to mobility of the species within its range. Such measures may  
3 result in changes in human activity level and an increased amount of impermeable fencing.  
4 Jaguars typically require low levels of human activity, development, and infrastructure, and a  
5 high degree of connectivity (77 FR 50213-50242).

6 If DHS chooses to consult with the Service on activities covered by a waiver of the IIRIRA,  
7 Alternative A (all proposed units, no exclusions) could result in (1) a small but unknown number  
8 of reinitiated consultations for fire management actions based solely on the presence of  
9 designated critical habitat and (2) the addition of an adverse modification of critical habitat  
10 analysis to section 7 consultations for the jaguar in critical habitat.

#### 11 *Reinitiated Consultations*

12 Two previous formal consultations for border security activities could be subject to reinitiation  
13 due to the designation of critical habitat. Consideration would be given to whether proposed  
14 actions could constitute adverse modification by severing connectivity to Mexico or within  
15 critical habitat units affected by border security activities, meaning that conservation measures  
16 recommended to avoid destruction or adverse modification of critical habitat may be different  
17 than those resulting from the previous consultations for jeopardy to listed species.

#### 18 *Addition of Adverse Modification Analysis to Future Consultations*

19 The additional consultations to include adverse modification, and the additional time required to  
20 complete consultations that would only have analyzed jeopardy to the species, would increase  
21 administrative costs to the Service and to the action agencies. Implementing conservation  
22 measures resulting from those additional consultations would also increase costs for action  
23 agencies. Outcomes of consultations could also include reasonable and prudent alternatives and  
24 other conservation measures designed to maintain jaguar PCEs. These outcomes cannot be  
25 predicted precisely. However, the two BOs described previously in this section can be used as a  
26 reference to anticipate the likely conservation measures that may be mandated as a result of  
27 future consultations.

28 As described in the 2008 BO on the SBInet Tucson West Tower Project, the CBP offered to  
29 close or restore unauthorized roads to help offset the border-related increase of improved or new  
30 roads at a ratio of 2:1—that is, 2 miles of road closed and/or restored for every 1 mile of road  
31 created or repaired. CBP is currently behind schedule on implementing this conservation  
32 measure for the jaguar.

33 Other conservation measures proposed for implementation in the BOs for the jaguar included  
34 (Service 2007b; Service 2008):

- 35 • Support USFWS in jaguar survey and monitoring efforts and conservation and recovery  
36 measures. Monitoring of jaguars may include a combination of satellite telemetry and  
37 camera survey techniques. Multiple techniques may be used to monitor jaguar habitat;  
38 however, one component of monitoring would likely include an assessment of indirect  
39 effects to jaguar movements and habitat from border traffic in areas where no fence is  
40 installed.

- 1 • Provide information to the USFWS on jaguar sightings obtained through remote video  
2 surveillance (or any other means like direct observation) along the border.
- 3 • Use security lighting for on-ground facilities and equipment that is down-shielded to keep  
4 light within the boundaries of the site.
- 5 • Site, design, and construct towers and related facilities to avoid or minimize habitat loss  
6 within and adjacent to the tower “footprint.” Minimize road access and fencing to reduce  
7 or prevent habitat fragmentation and disturbance.
- 8 • Remove new structures within 12 months of cessation of use. Restore footprint of towers  
9 and associated facilities to natural habitat.
- 10 • Use disturbed areas or areas that will be used later in the construction period for staging,  
11 parking, and equipment storage.
- 12 • Give particular importance to proper design and locating roads such that the potential for  
13 entrapment of surface flows within the roadbed due to grading will be avoided or  
14 minimized. Depth of any pits created will be minimized so animals do not become  
15 trapped.
- 16 • Within the designated disturbance area, limit removal of trees and brush in Federally  
17 listed species habitats to the smallest amount needed to meet the objectives of the project.

18 In summary, the effects of critical habitat designation on border security activities are expected  
19 to be minor. The jaguar has been listed since 1997; thus Federal border security activities have  
20 considered the jaguar since its listing. The incremental administrative costs of considering  
21 critical habitat in border security-related consultations are projected to be \$17,000 in total, or  
22 \$1,500 annually (IEc 2013).

23 While conservation measures recommended to avoid destruction or adverse modification of  
24 critical habitat may be different than those resulting from consultations for jeopardy to listed  
25 species, they are unlikely to be necessary based on current and anticipated future activities.

### 26 **3.13.2.3 Alternative B**

27 For Alternative B (proposed units minus exclusions), the impacts associated with the designation  
28 of critical habitat would be the same as those identified for Alternative A. The exclusions are  
29 solely for tribal land associated with the Tohono O’odham Nation. Unit 1 is on the border, so the  
30 TON experiences border security operations within the area that would be excluded under this  
31 alternative.. The overall impacts related to border security activities would still be characterized  
32 as minor.

## 33 **Cumulative Impacts**

34 The CEQ regulations define cumulative effects as “the impact on the environment which results  
35 from the incremental impact of the proposed action when added to other past, present, and  
36 reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or  
37 person undertakes such other actions” (40 CFR §1508.7).

38 The following species have critical habitat that overlaps with the jaguar:

- 39 • Chiricahua leopard frog in Units 2, 3, and 5;

- 1 • Sonora chub in Unit 2;
- 2 • Huachuca water-umbel in Unit 3; and
- 3 • Mexican spotted owl in Units 2, 3, and 4a.

4 In the context of critical habitat, cumulative impacts could be created if critical habitat  
5 designations for multiple species affect the same natural and human resources. Actions that  
6 could have cumulative impacts would include: (1) section 7 consultation outcomes and  
7 subsequent effects on other species; (2) the effects of designated critical habitat for other species;  
8 and (3) the effects of land management plans.

9 *Land Use*—The designation of critical habitat would likely result in reinitiated and expanded  
10 consultations, project modifications, and conservation measures based on critical habitat alone.  
11 Critical habitat is designated for other species throughout several of the units proposed as critical  
12 habitat for the jaguar. Chiricahua leopard frog critical habitat occurs in Units 2, 3, and 5, while  
13 critical habitat for the Sonora chub occurs in Unit 2, for the Huachuca water-umbel in Unit 3,  
14 and for the Mexican spotted owl in Units 2, 3, and 4a. All of these units are already being  
15 included in consultations on activities that may adversely impact jaguar, so there would be no  
16 new consultations. However, while some of these areas may have undergone some section 7  
17 consultation for the jaguar, the fact they are now being proposed as critical habitat will require  
18 reevaluation of effects to PCEs for ongoing or not yet completed Federal actions, which then  
19 may require reinitiating consultation. Such consultations will analyze whether or not these  
20 effects lead to destruction or adverse modification of critical habitat. No past species  
21 consultations related to land management projects have resulted in “adverse modification”  
22 findings for jaguar. Based on this consultation history, the Service anticipates that future  
23 consultations for critical habitat would likely result in minor project modifications. Therefore,  
24 when considering other present and future consultations and land management plans, this critical  
25 habitat designation will likely contribute minor cumulative impacts, given the number and nature  
26 of additional project modifications anticipated.

27 *Fish, Wildlife, and Plants*—The designation of critical habitat would result in reinitiated and  
28 expanded consultations, with a limited increase in project modifications and conservation  
29 measures. Based on previous consultation outcomes, additional project modifications would  
30 likely be minor, because habitat issues have been considered in species consultations and  
31 because all proposed units are already being included in consultations on activities that may  
32 adversely impact jaguar. Further, any such modifications or conservation measures to protect  
33 PCEs in critical habitat are likely to benefit native wildlife and vegetation, beyond their direct  
34 benefits to the jaguar. In addition to the protections from other species critical habitat and  
35 consultations, the designation of critical habitat would be expected to produce minor beneficial  
36 cumulative impacts to natural resources.

37 *Fire Management*—Because there are other threatened and endangered species and critical  
38 habitat in the area, Federal FMPs are already required to consult with the Service under the ESA.  
39 Past consultations in the area regarding FMPs included the BLM Arizona Statewide Land Use  
40 Plan Amendment for Fire, Fuels, and Air Quality Management.

41 Designation of critical habitat would result in some reinitiated and expanded consultations. It is  
42 likely that any future modifications requested on behalf of the proposed critical habitat would  
43 have already occurred based on the presence of critical habitat for species such as the Chiricahua

1 leopard frog, Sonora chub, Huachuca water-umbel, and the Mexican spotted owl. No previous  
2 species consultations on Federal lands have resulted in determinations of adverse modification,  
3 especially because fire management is beneficial to the jaguar. No reasonable or prudent  
4 alternatives have been required for FMPs or activities, though projects have incorporated actions  
5 that help prevent impacts, such as implementing conservation measures for fire management  
6 activities in riparian and aquatic habitats, including maintaining dense, low vegetation in major  
7 riparian or zero-riparian corridors in areas with dense riparian habitats where jaguars may occur.  
8 Such project modifications resulting from the proposed critical habitat designation would not  
9 likely impede the ability of any FMP to achieve its goals. On private and state land, designation  
10 of critical habitat does not limit fire management programs, except where a Federal license,  
11 permit, or funding may be sought or required or collaboration with state and local fire agencies  
12 occur. Therefore, when considered along with past consultation outcomes, this critical habitat  
13 designation would therefore contribute only minor cumulative impacts, given the small number  
14 and limited nature of additional project modifications.

15 *Water Resources*—As stated above in Section 3.5, past BOs on the jaguar have not been  
16 conducted for water-related projects. Future projects that could produce impacts to water  
17 resources would be conducted by agencies with responsibility for collecting, storing, and  
18 transporting water, habitat management, development, and fire management. With the expected  
19 project modifications, these projects are expected to have no more than moderate impacts on  
20 water resources. Therefore, when considering other present and future consultations and land  
21 management plans, this critical habitat designation will likely contribute at most moderate  
22 cumulative impacts, given the relatively small number and limited nature of additional project  
23 modifications anticipated.

24 *Livestock Grazing*—Because there are other threatened and endangered species and critical  
25 habitat in the area, livestock grazing actions with a Federal nexus could trigger consultations for  
26 those species with the Service under the ESA. Past species consultations on Federal land have  
27 resulted in project modifications that have not eliminated or fundamentally changed livestock  
28 grazing, as described above. Future consultations with potential impacts to grazing within  
29 critical habitat areas could be conducted by Federal land managers who grant grazing permits,  
30 and could result in minor project modifications to livestock grazing, as described above and  
31 producing only minor impacts.

32 The Service is aware there may be concerns from private ranchers about the cumulative impact  
33 of this designation on ranching activities. Public comments submitted in response to publication  
34 of the proposed critical habitat designation suggest that the possibility that some ranchers may  
35 withdraw applications for NRCS funding following jaguar critical habitat in order to avoid any  
36 potential obligations to consult with the Service. If this occurred, it could weaken overall  
37 conservation activities on private ranches within designated habitat and produce economic  
38 impacts to ranchers who chose to forego NRCS funding.

39 On some grazing allotments on Federal land, re-vegetating and restoring areas of large-scale  
40 habitat removal or offsetting habitat loss, modification, or fragmentation from agency livestock  
41 grazing actions may be required within habitat that is permanently protected, potentially  
42 impacting private ranchers who hold Federal grazing permits. Recommendations by Federal  
43 agencies to change the permitted or authorized AUMs in jaguar critical habitat areas could result  
44 from multiple considerations, including the jaguar, other endangered species, other regulatory

1 considerations, current prey availability, general health of the riparian corridor, and weather  
2 conditions. On private land, designation of critical habitat does not limit livestock grazing,  
3 except where a Federal license, permit, or funding may be sought or required. Therefore, when  
4 considering future consultations on livestock grazing, this designation will contribute only minor  
5 cumulative impacts given the small number and limited nature of additional project  
6 modifications anticipated and implementation of avoidance measures by the USFS and BLM.

7 *Construction/Development*—Several species have critical habitat that overlaps with the jaguar.  
8 Past species consultations on Federal lands have resulted in project modifications that have not  
9 eliminated or fundamentally changed construction projects. Designation of critical habitat could  
10 result in a small number of new and reinitiated consultations, with project modifications or  
11 conservation measures for construction projects, based on newly proposed critical habitat alone.

12 Therefore, when considering past, present and foreseeable future activities, this critical habitat  
13 designation will contribute only minor cumulative impacts to construction and development  
14 given the limited nature of additional project modifications anticipated.

15 *Tribal Trust Resources*—Cumulative impacts to tribal resources would not occur from adding  
16 the jaguar designation to overlapping critical habitat, as no other critical habitat exists on tribal  
17 lands in Unit 1.

18 *Socioeconomics*—Cumulative socioeconomic impacts could occur from overlapping critical  
19 habitat designations for the Chiricahua Leopard Frog in Units 2,3,and 5; the Sonora chub in Unit  
20 2; the Mexican spotted owl in Units 2,3, and 4a; and the Huachuca water-umbel in Unit 3. These  
21 consist of the accumulated administrative costs of considering additional species in consultations  
22 within these units. Cumulative impacts would be slightly less adverse under Alternative B, due  
23 to the exclusion of tribal lands and associated reduced administrative costs to the Service. The  
24 only major economic activity at potential risk from designation is the Rosemont Copper Mine,  
25 which is the subject of an ongoing section 7 consultation.

26 *Recreation*—The proposed designation could result in additional, minor restrictions to areas  
27 where these previous designations may have already led to limitations on recreational uses.  
28 These cumulative impacts are likely to be negligible, however, because any modifications or  
29 conservation measures recommended for the jaguar in these units would likely already be  
30 recommended to avoid adverse species impacts.

31 *Environmental Justice*—It is likely that any environmental justice impacts would be at most  
32 moderate because the economic impacts associated with individual projects or actions  
33 (Rosemont Copper Mine) would be themselves moderate, and there would be only a small  
34 number of projects throughout the designation that would create such impacts. Given that  
35 incremental impact from the proposed designation would likely be moderate, the cumulative  
36 impacts, when considering past, present, and reasonably foreseeable future actions, would  
37 likewise be expected to be moderate, at most. If the Rosemont mine goes forward, the  
38 environmental justice impact of this designation, and thus its cumulative impact, will be  
39 negligible.

40 *Mining*—Mining activities proposed in critical habitat units are within Unit 3, and are or will be  
41 subject to consultation on the jaguar regardless of designation. A formal consultation is already

1 underway for the proposed Rosemont Mine, planned in Unit 3. However, while this area may  
2 have undergone some section 7 consultation for the jaguar (and other species), the fact that it is  
3 now being proposed as critical habitat will require reevaluation of effects to PCEs. Such  
4 consultations are analyzing whether or not these effects lead to destruction or adverse  
5 modification of critical habitat in the form of severing connectivity with Mexico or within a  
6 critical habitat unit or degrading any PCEs to the point of causing adverse modification.  
7 Additionally, Unit 3 contains designated critical habitat for several other species: the Chiricahua  
8 leopard frog, the Huachuca water-umbel, and the Mexican spotted owl. The critical habitat  
9 designation for the jaguar will likely contribute only minor cumulative impacts, given the small  
10 number and limited nature of additional project modifications anticipated.

11 *National Security*—The designation of critical habitat could likely result in reinitiated and  
12 expanded consultations, project modifications, and conservation measures based on critical  
13 habitat alone. Additionally, critical habitat is designated for other species throughout several of  
14 the units proposed as critical habitat for the jaguar. Chiricahua leopard frog critical habitat  
15 occurs in Units 2, 3, and 5, while critical habitat for the Sonora chub occurs in Unit 2, for the  
16 Huachuca water-umbel in Unit 3, and for the Mexican spotted owl in Units 2, 3, and 4a. All  
17 proposed critical habitat units include areas which provide connectivity to Mexico and thus are  
18 subject to potential border-related activities (particularly in Units 3, 5, and 6). Based on this  
19 consultation history, the Service anticipates that future consultations for critical habitat would  
20 likely result in minor project modifications. Therefore, when considering other present and  
21 future consultations and land management plans, this critical habitat designation will likely  
22 contribute minor cumulative impacts, given the number and nature of additional project  
23 modifications anticipated.

## 24 **Relationship Between Short-Term and Long-Term Productivity**

25 Proposed designation of critical habitat is a programmatic action that would not impact short-  
26 term or long-term productivity.

## 27 **Irreversible and Irretrievable Commitment of Resources**

28 NEPA requires a review of irreversible and irretrievable effects that result from the Proposed  
29 Action. Irretrievable effects apply to losses of use, production, or commitment of non-renewable  
30 natural resources caused by the action. Irreversible effects apply primarily to the use of non-  
31 renewable resources, such as minerals or cultural resources, or to those resources that are only  
32 renewable over long periods of time, such as soil productivity and forest health. Irreversible  
33 effects can also include the loss of future opportunities in the area of impact. The types of  
34 impacts caused by the designation of critical habitat for the jaguar—new, reinitiated, and  
35 expanded consultations, additional conservation measures, and potential project modifications—  
36 would not result in lost production or use of non-renewable natural resources. There would be  
37 no loss of future opportunities resulting from designation of critical habitat, because designation  
38 does not limit activities on private land that are not authorized, funded, or permitted by a Federal  
39 agency.

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1 **CHAPTER 4**  
2 **ANALYSIS OF SIGNIFICANCE**

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3 The primary purpose of preparing an EA under NEPA is to determine whether a proposed action  
4 would have significant impacts on the human environment. If significant impacts may result  
5 from a proposed action, then an environmental impact statement is required (40 CFR §1502.3).  
6 Whether a proposed action exceeds a threshold of significance is determined by analyzing the  
7 *context* and the *intensity* of the proposed action (40 CFR §1508.27).

8 Context refers to the setting of the proposed action and potential impacts of that action. The  
9 context of a significance determination may be society as a whole (human, national), the affected  
10 region, the affected interests, or the locality. Intensity refers to the severity of the impacts.

11 Under regulations of the Council of Environmental Quality (CEQ), which is responsible for  
12 ensuring compliance with NEPA, intensity is determined by considering 10 criteria (CFR 40  
13 §1508.27[b]): (1) beneficial and adverse impacts; (2) the degree of impacts on health and safety;  
14 (3) impacts on the unique characteristics of the area; (4) the degree to which the impacts would  
15 likely be highly controversial; (5) the degree to which the proposed action would impose unique,  
16 unknown, or uncertain risks; (6) the degree to which the proposed action might establish a  
17 precedent for future actions with significant effects or represent a decision in principle about a  
18 future consideration; (7) whether the proposed action is related to other actions, which  
19 cumulatively could produce significant impacts; (8) the degree to which the proposed action  
20 might adversely affect locales, objects, or structures eligible for listing in the NRHP; (9) the  
21 degree to which the proposed action might adversely affect an endangered or threatened species  
22 or its habitat, as determined to be critical under the ESA of 1973; and (10) whether the proposed  
23 action threatens a violation of Federal, state, or local law.

24 The context of short- and long-term impacts of the proposed designation of jaguar critical  
25 habitat includes areas that encompass parts of three counties within Arizona and one in New  
26 Mexico. Impacts of critical habitat designation at these scales would be minor.

- 27 1. *Potential impacts to environmental resources, both beneficial and adverse, would be*  
28 *minor or moderate in all cases.* Analyses of impacts of critical habitat designation on  
29 sensitive resources within areas proposed as jaguar critical habitat were conducted and  
30 discussed in Chapter 3 of this EA, and it was concluded that designation of critical habitat  
31 would have both adverse and/or beneficial impacts on those resources. None of the  
32 specific resource or activity analyses found that the adverse impacts of critical habitat  
33 designation would be significant.
- 34 2. *There would be no or negligible impacts to public health or safety from the proposed*  
35 *designation of critical habitat.* Impacts of wildland fire on public health and safety were  
36 determined to be minor, as wildland fire suppression and wildland fire management  
37 within WUI areas would not be significantly impeded by the designation of critical  
38 habitat. The designation would not create or lead to additional mining operations, or the  
39 deposition of pollutants to the air or water. Border enforcement activities would still be  
40 conducted within proposed critical habitat, pursuant to section 102 of the IIRIRA, under

1 which the Secretary of the DHS is authorized to waive laws where the Secretary of DHS  
2 deems it necessary to ensure the expeditious construction of border infrastructure in areas  
3 of high illegal entry.

4 3. *Impacts on unique characteristics of the area would be negligible.* There are no  
5 designated Wild and Scenic River segments within the proposed critical habitat  
6 designation. There are designated Wilderness Areas within the proposed units; activities  
7 proposed by the Federal land managers in these areas would only be those specifically  
8 intended to improve the health of these ecosystems, and thus they would be anticipated to  
9 help recover or sustain the PCEs along these segments. Therefore any adverse impacts to  
10 critical habitat would be negligible at most.

11 4. *Potential impacts to the quality of the environment are not likely to be highly*  
12 *controversial.* Impacts are not likely to be highly controversial because, as the analysis  
13 of impacts of critical habitat designation has concluded, the quality of the environment  
14 would not be significantly modified from current conditions. This analysis was based  
15 on past consultations, past impacts of jaguar conservation on activities within the jaguar  
16 recovery area, and the likely future impacts from jaguar conservation. Past section 7  
17 consultations within designated critical habitat would likely be re-initiated. New  
18 activities could result in section 7 consultations. New consultations in unoccupied  
19 jaguar territories could be triggered. A number of activities, including wildland fire, fire  
20 management, and recreation could have jaguar conservation-related constraints or  
21 limitations imposed on them, although such measures would likely be the same as those  
22 under jeopardy consultations for the species.

23 Impacts to water management and resource activities are not expected to be  
24 controversial because, as discussed in the analysis of impacts on water resources, the  
25 constraints on current water management activities are expected to be limited.

26 It is also noted here, however, that designation of critical habitat for the jaguar has been  
27 historically subject to controversy, as described in Section 1.1. Most recently, on March  
28 30, 2009 the United States District Court for the District of Arizona issued an opinion  
29 that set aside the Service's previous prudency determination and required a new  
30 determination as to "whether to designate critical habitat," i.e., whether such designation  
31 is prudent, by January 8, 2010. On January 13, 2010, the Service published a notice of  
32 determination that reevaluated the previous "not prudent" finding regarding critical  
33 habitat designation for the jaguar and provided the information supporting the previous  
34 findings (75 FR 1741). As a result, the Service determined that the designation of critical  
35 habitat for the jaguar would be beneficial. On October 18, 2010, the Service sent a letter  
36 to the Center for Biological Diversity and Defenders of Wildlife updating them on its  
37 process of developing a recovery plan and critical habitat for the jaguar.

38 The Service believes that, based on the analysis in this Environmental Assessment, the  
39 likely impacts of the proposed designation would not be highly controversial. The  
40 Service understands that, given the prior history of designation, some level of controversy  
41 may result, especially if the outcome of the Service's consultation on the Rosemont  
42 Copper Mine leads to significant delays, re-evaluation, or termination of the project.

43 5. *The impacts do not pose any uncertain, unique, or unknown risks.* Past section 7  
44 consultations within proposed designated critical habitat would likely be reinitiated. New

1 activities in unoccupied areas would result in section 7 consultations. Conservation  
2 constraints or limitations related to proposed designated critical habitat would be similar  
3 to those imposed from species-related constraints.

4 6. The designation of critical habitat by the Service for the conservation of endangered  
5 species is not a precedent-setting action with significant effects. The agency has  
6 designated critical habitat for numerous other species.

7 7. *There would not be any significant cumulative impacts* because, as described above in  
8 Section 3, the cumulative impacts would be limited to section 7 consultation  
9 outcomes and subsequent effects on other species, the effects of designated critical  
10 habitat for other species, and the effects of land management plans.

11 8. This critical habitat designation is not likely to affect sites, objects, or structures of  
12 historical, scientific, or cultural significance. The proposed designation would not result  
13 in any ground-disturbing activities that have the potential to affect archeological or other  
14 cultural resources. There are several NRHP-listed historical sites within, or within close  
15 range of, critical habitat units, but they are human-built structures which the proposed  
16 designation specifically avoids. Potential conservation measures or project  
17 modifications to protect critical habitat PCEs would not modify or pose risk of harm to  
18 any historic properties listed in or eligible for the NRHP.

19 9. *The proposed designation of critical habitat for jaguar would have long-term, beneficial*  
20 *effects for this endangered subspecies.* The purpose of the Proposed Action is to  
21 designate critical habitat for the jaguar, listed as endangered under the ESA. Critical  
22 habitat designation would have long-term, beneficial, conservation-related impacts on  
23 jaguar survival and recovery through maintenance of PCEs.

24 10. *Proposed critical habitat designation would not violate any Federal, state, or local laws.*  
25 This designation of critical habitat was agreed to pursuant to a Court opinion that the  
26 Service needed to reevaluate the previous “not prudent” finding regarding critical habitat  
27 designation.

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1 **CHAPTER 5**  
2 **PREPARERS AND CONTRIBUTORS**

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3 This EA was prepared by Mangi Environmental Group under contract to the U.S. Fish and  
4 Wildlife Service, Region 2. The economic analysis was prepared by Industrial Economics, Inc.,  
5 under contract to U.S. Fish and Wildlife Service, Washington Office.

6 **Contributors**

7 Mangi Environmental Group, Inc.

8 Bruce Kaplan, MS, Environmental Law—Senior Environmental Professional, Project Manager

9 Chelsie Romulo, Masters of Natural Resource Management—Environmental Analyst—Fish,  
10 Wildlife, Vegetation, T&E

11 Carrie Oberholtzer, Masters in Forest Natural Resource Management—Environmental Analyst—  
12 Grazing, Construction, Water Resources

13 Julie Sepanik, BS, Environmental Mapping—GIS Specialist, Fire Management

14 Nathalie Jacque, B.S., International Relations (International Economics and Environmental  
15 Affairs) and Environmental Science—Socioeconomic Analyst

16 Marissa Staples Resnick, MS, Environmental Science & Policy—Environmental Analyst—Land  
17 Use, National Security, Mining

18

19 **Reviewers**

20 U.S. Department of the Interior

21 Janet Spaulding, Senior Attorney, Office of the Solicitor

22 U.S. Fish & Wildlife Service

23 Mima Falk, Listing Biologist

24 Marit Alanen, Fish & Wildlife Biologist

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