



United States Department of the Interior

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In reply refer to:

AESO/SE

02EAAZ00-2020-F-1057

July 29, 2020

Memorandum

To: Refuge Manager, Cabeza Prieta National Wildlife Refuge, Ajo, Arizona (Attn: Sid Slone)

From: Field Supervisor, Arizona Ecological Service Field Office, Phoenix, Arizona

Subject: Intra-Service Section 7 Biological Opinion on the Hunting of Big Game, Migratory Bird, Upland Game, and Predatory and Fur-bearing Mammals on Cabeza Prieta National Wildlife Refuge for the Sonoran pronghorn (*Antilocapra americana sonoriensis*)

This transmits the U.S. Fish and Wildlife Service's (Service, FWS) biological opinion pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*) for Hunting of Big Game, Migratory Birds, Upland Game, and Predatory and Fur-bearing Mammals on Cabeza Prieta National Wildlife Refuge. This biological opinion analyzes the effects of the proposed action. You have determined that this action "may affect" the Sonoran pronghorn (*Antilocapra americana sonoriensis*).

This biological opinion is based on information provided in the April 20, 2020 Intra-Service Section 7 Biological Evaluation Form (CPNWR 2020), July 28, 2020 Changes to the Biological Evaluation Document, telephone conversations, field investigations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, hunting and its effects, or on other subjects considered in this opinion. A complete record of this consultation is on file at this office.

Consultation History

- September 2019 through April 2020: Our offices regularly corresponded regarding the proposed action. Your office provided multiple draft biological evaluations for our review. Our office reviewed and provided input on the drafts.
- April 20, 2020: We received your request for formal consultation.

- July 8, 2020: We sent you the draft biological opinion for review.
- July 22, 2020: You sent us a document with changes to the Biological Evaluation.
- July 23, 2020: We sent you an updated draft biological opinion for review.
- July 28, 2020: You sent us a document with final changes to the Biological Evaluation.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

Regulations implementing the Act (50 CFR 402.02) define “action” as “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies of the United States or upon the high seas.”

The following is a summary of the proposed action and a detailed description can be found in April 20, 2020 Intra-Service Section 7 Biological Evaluation (BE) Form and July 28, 2020 Changes to the Biological Evaluation Document. Cabeza Prieta National Wildlife Refuge (CPNWR or Refuge) proposes to open hunting of additional species of big game, migratory birds, upland game, and predatory and fur-bearing mammals on the CPNWR (Tables 1-3). The Refuge will continue the current hunt program for desert bighorn sheep, the effects of which were previously analyzed in CPNWR’s Comprehensive Conservation Plan (CCP) and associated section 7 consultation (biological opinion # 22410-2006-F-0416, dated August 22, 2006). While no changes are proposed to bighorn sheep hunting, in order to comprehensively address hunting on CPNWR, bighorn sheep hunting will be included as part of the proposed action and addressed in this Biological Opinion.

Table 1. Common and scientific names of species included in the Cabeza Prieta National Wildlife Refuge Hunt Plan, Arizona.

Common Name	Scientific Name
Desert Bighorn Sheep	<i>Ovis canadensis mexicana</i>
Mule Deer	<i>Odocoileus hemionis</i>
Mountain Lion	<i>Puma concolor</i>
Gambel's Quail	<i>Callipepla gambelii</i>
Mourning Dove	<i>Zenaida macroura</i>
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>
Cottontail Rabbit	<i>Sylvilagus audubonii</i>
Antelope Jackrabbbit	<i>Lepus alleni</i>
Black-tailed Jackrabbbit	<i>Lepus californicus</i>
Coyote	<i>Canis latrans</i>
Bobcat	<i>Lynx rufus</i>
Kit Fox	<i>Vulpes macrotis</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>

Table 2. Hunts proposed on Cabeza Prieta National Wildlife Refuge, Arizona. If applicable, the number of tags issued per year is provided in parentheses. Unless otherwise specified, this refers to the total number of tags issued for the Refuge. Codes for legal methods of take are given in Table 3. If migratory game birds, including mourning dove, are taken by shotguns shooting shot, the shotgun must be 10-gauge or smaller and capable of holding no more than three shells. Desert bighorn sheep hunting is an ongoing activity.

Species	Hunt Season Dates	Legal Methods of Take	Legal Wildlife	Tag/Stamp Required (#)
Desert Bighorn Sheep (ongoing activity)	31 days in December	CR, CH, MZ, BR, BH, CB, AR, SL, PN	Any ram	Permit-tag (~6-12)
Desert Bighorn Sheep (ongoing activity)	Year-round (365 days)	CR, CH, MZ, BR, BH, CB, AR, SL, PN	Any ram	Commissioner's tag (1 issued for southern Arizona)
Mule Deer	~10 days in November	CR, CH, MZ, BR, BH, CB, AR, SL, PN	Any antlered deer	Permit-tag (up to 50)
Mule Deer	31 days in January	AR	Any antlered deer	Over-the-counter nonpermit-tag (unlimited number issued state-wide; expect 0-10 on the Refuge)
Mule Deer	Year-round (365 days)	CR, CH, MZ, BR, BH, CB, AR, SL, PN	Any antlered deer	Commissioner's tag (3 issued state-wide; start second year of hunt)
Mountain Lion	~281 days from August through May	CR, CH, MZ, BR, BH, CB, AR, SL, SS, PN	Any lion except spotted kittens or females accompanied by spotted kittens	Over-the-counter nonpermit-tag (unlimited number issued for the zone including the Refuge until the zone harvest limit of ~2 is fulfilled)

Species	Hunt Season Dates	Legal Methods of Take	Legal Wildlife	Tag/Stamp Required (#)
Mountain Lion	Year-round (365 days)	CR, CH, MZ, BR, BH, CB, AR, SL, SS, PN	Any lion except spotted kittens or females accompanied by spotted kittens	Commissioner's tag (up to 3 issued state-wide; start second year of hunt)
Gambel's Quail	~115 days from October to February	CB, AR, HS, SS, PW, SN, HP	Any	NA
Mourning Dove	~44 days in November, December, and January	CB, AR, SS	Any	AZ Migratory Bird Stamp
Eurasian Collared-Dove	Year-round (365 days)	CB, AR, HS, SS, PW, SN, HP	Any	NA
Cottontail Rabbit	Year-round (365 days)	CR, CH, MZ, BR, BH, CB, AR, HS, SL, MG, MR, SS, PW, SN, HP	Any	NA
Antelope and Black-tailed Jackrabbit	Year-round (365 days)	CR, CH, MZ, BR, BH, CB, AR, HS, SL, MG, MR, SS, PW, SN, HP	Any	NA
Coyote	Year-round (365 days)	CR, CH, MZ, BR, BH, CB, AR, HS, SL, MG, MR, SS, PW	Any	NA
Bobcat, Kit Fox, and Gray Fox	~243 days from August through March	CR, CH, MZ, BR, BH, CB, AR, HS, SL, MG, MR, SS, PW	Any	NA

Table 3. Codes for legal methods of take in Arizona.

Code	Method of Take
CR	Centerfire Rifle
CH	Centerfire Handgun
MZ	Muzzleloading Rifle
BR	Other Rifle Shooting Black Powder or Synthetic Black Powder
BH	Black Powder Handgun
CB	Crossbow
AR	Archery
HS	Handgun Shooting Shot
SL	Shotgun Shooting Slugs
MG	5 millimeter or .22 Magnum Rimfire
MR	.17 Magnum and .22 Rimfire
SS	Shotgun Shooting Shot
PN	Pre-charged Pneumatics .35 and Larger
PW	Pneumatic Weapons
SN	Slingshots
HP	Hand-held Projectiles

The Refuge is broken into two State game management units (GMUs), 46A and 46B, corresponding to Pima and Yuma Counties, respectively (Figure 1). For desert bighorn sheep hunts, the GMUs were further divided into four sub-hunt units (46A East, 46A West, 46B East, and 46B West) in 2015 to better disperse hunters (Figure 1). The open hunt area will encompass 850,066 acres, although only 846,473 acres will be open to hunting of all species in the hunt plan (Table 4). An area of 3,593 acres around Las Playas will be closed to hunting of all species except desert bighorn sheep, as described in updates to the BE.

Thus, most of the Refuge will be open to hunting with the exception of six formally defined no hunting buffer zones. One-half-mile no hunting zones will surround each of the following sites (Figure 2; affected acreage in parentheses):

- a. Sonoran Pronghorn Captive Breeding Pen (2,696 acres);
- b. U.S. Customs and Border Protection (CBP) – Camp Grip (655 acres);
- c. CBP – Boundary Camp Forward Operating Base (271 acres); and
- d. Papago Well (711 acres), Tule Well (594 acres), and Christmas Pass (567 acres) campgrounds.

The CBP Boundary Camp Forward Operating Base lies within Organ Pipe Cactus National Monument on the boundary of CPNWR. Therefore, the no hunting zone will extend approximately ½ mile onto the Refuge. Signs posted on the respective public access road(s) will formally define the no hunting zones. These zones are designed to protect ancestral areas important to the Tohono O’odham Nation, Sonoran pronghorn and personnel at the semi-captive breeding facility, and CBP personnel at their facilities on and adjacent to the Refuge, as well as provide a safe zone for visitors at Refuge campsites.

Table 4. Access and acreage to the sub GMUs on Cabeza Prieta National Wildlife Refuge, Arizona. In addition to the Refuge’s public access roads, which include Charlie Bell Road, El Camino del Diablo, and Christmas Pass Road, roads on Bureau of Land Management (BLM) lands and the Barry M. Goldwater Range (BMGR) lead to the Refuge boundary, providing additional access points for the public.

Sub GMU	Acreage	Access Roads	Primitive Campsites
46A EAST	189,717	Charlie Bell Road, BLM access roads (~6)	None
46A WEST	208,054	El Camino del Diablo	Papago Well
46B EAST	244,939	Christmas Pass Road, El Camino del Diablo	None
46B EAST SHEEP ONLY	3,595	El Camino del Diablo	None
46B WEST	204,763	Christmas Pass Road, El Camino del Diablo; BMGR access roads (~8)	Tule Well, Christmas Pass
TOTAL	850,066		

All hunters will be required to obtain a valid Arizona Game and Fish Department (AZGFD) hunting license and, if necessary, a tag (permit, nonpermit, or Commissioner’s) to hunt on CPNWR. Unlike other hunters, bighorn sheep hunters must obtain a Special Use Permit (SUP) from the Refuge. This enables the Refuge to coordinate with hunters on the location of their hunting (or base) camp to ensure hunters are dispersed, to help make their hunt a success, and to minimize environmental impacts of base camps. Base camps are allowed to be set up along public access routes within Sonoran pronghorn habitat, primarily in already disturbed areas. Within sub hunt unit 46A East, sheep hunters may be granted vehicular access to administrative trails in non-designated Wilderness areas of Childs Valley and to Childs Mountain. Depending on their hunt sub unit, some sheep hunters set up a base camp on adjacent federal lands and hike into the Refuge to hunt. Hunt parties are generally larger for bighorn sheep hunts than hunts for other species; on average, each hunt party consists of about 5.5 people per day. Some members of the hunt party may not leave base camp. Sheep hunters access the allowable hunting areas by foot, vehicle, or stock animal. In the backcountry, sheep hunters may establish spike camps (i.e., mobile camps where hunters hike and hunt all day and set up camp wherever they happen to be) in Sonoran pronghorn habitat, but most spike camps are likely established farther up canyons or in the mountains outside of pronghorn habitat. Spike camps are generally small, temporary

camps comprising about 1-3 people, and hunters may stay there for one night or several nights. Not all sheep hunters establish spike camps during their hunt.

All visitors, including hunters, would be required to obtain a visitor access permit (Department of Defense form/requirement) online at <https://luke.isportsman.net/> prior to accessing the Refuge. This permit would be valid from July 1 through June 30 of the following year. As a condition to obtaining the access permit, a Hold Harmless Agreement must be agreed to and signed by the applicant, indicating the applicant has read and will comply with Refuge regulations. Before each trip to the Refuge, visitors will be required to check in online at <https://luke.isportsman.net/>. At the boundary kiosks located at all Refuge entrances, visitors will need to complete Self-Clearing Visitor Registration via a modified version of FWS Form 3-2405. According to instructions on the form, a perforated section will be completed, removed, and placed in the designated collection box, and another section will be placed on the dash or attached to the rear-view mirror. This other section of the Self-Clearing Visitor Registration Form will include a Hunter Harvest Information section, which hunters will need to complete at the end of any hunt and deposit in a collection box when leaving the Refuge. The Self-Clearing Visitor Registration Form will also be available online, at the Refuge visitor center, and in bighorn sheep hunt SUP packets, and could also be submitted online or delivered to the Refuge visitor center. Because bighorn sheep hunters might be granted permission to use access routes not open to the public, excluding administrative trails in designated Wilderness, all bighorn sheep hunters will also be required to obtain a SUP. As described above, hunters will need to obtain a SUP to use stock animals.

Consistent with state regulations, hunters will be allowed to harvest any in-season species listed in Table 2 with any legal method of harvest for which a tag (nonpermit, permit, or Commissioner's) is not required, even when hunting for a different species requiring a tag. Scouting prior to hunting will be allowed year-round. Bag limits will be consistent with State regulations. The use of dogs for hunting will be prohibited except pointing and retrieving of quail and retrieving of dove. State law prohibits anyone from camping within ¼ mile of a wildlife water (A.R.S. 17-203). Additionally, hunters will be required to follow all other public use regulations, including, but not necessarily limited to the following:

- Target shooting or the discharge of a weapon is strictly prohibited except for active, legal harvest of wildlife.
- The use of electronic or photographic trail monitoring devices, including game cameras, is prohibited.
- Leaving any item on the Refuge is prohibited, including marking or flagging any plant or other Refuge feature with reflectors, paint, or other substance.
- Collecting or disturbing plants, wildlife, rocks, or artifacts such as arrowheads and pottery shards is prohibited.
- Pets must be leashed and under control at all times.
- Vehicle travel off of public use roads, including travel on any other roads, trails, or off-road, is prohibited. Vehicles include motorized and mechanical transport such as automobiles, motorcycles, all-terrain vehicles, and bicycles (human powered and electric).
- All vehicles must follow speed limits (25 mph unless otherwise posted). The Refuge has established a reduced speed zone on Charlie Bell Road north of the Sonoran Pronghorn

Captive Breeding Pen. The zone starts north of the northeast corner of the pen and ends north of the northwest corner of the pen, and the speed limit is 15 mph.

- Trapping, falconry, and night hunting are prohibited.
- The following activities or uses are prohibited in designated Wilderness (Figure 1): 1) commercial enterprises; 2) permanent roads; 3) temporary roads; 4) use of motor vehicles; 5) use of motorized equipment, including power tools; 6) use of motorboats; 7) landing of aircraft; 8) any form of mechanical transport, including use of wheeled carts or game carriers; 9) structures; and 10) installations. Exceptions may be made for item 1 if the managing agency determines it to be necessary and appropriate for realizing the recreational or other Wilderness purposes of the area; the Refuge currently allows commercial guide services for bighorn sheep hunting. Although limited exceptions may be made for items 3 through 10, through “minimum requirements analysis,” none have been made for hunter access or use of designated Wilderness.
- Humans and their stock will be prohibited from consuming water from any wildlife waters.

Current recreational use of the Refuge can be estimated from visitor responses to self-registration forms available at Refuge access points. Based on data from fiscal year (FY) 2013 through FY2019, the Refuge’s bighorn sheep hunt comprises 398 ± 22 hunter use days (mean \pm SE; range 313–468 hunter use days) during December (Table 5). A hunter use day is defined as one hunter on the Refuge for any part of a 24-hr period. For comparison, the Refuge had at least 1,698 visitor use days in FY 2019, 385 of which (23%) were hunter use days (1,313 non-hunter visitor use days). No hunter issued the Commissioner’s tag for a desert bighorn in southern Arizona has hunted on the Refuge yet.

Table 5. Estimated number of hunter use days per month associated with the hunting of bighorn sheep, mule deer, and small game. Small game includes quail, dove, rabbit, and predatory and fur-bearing mammals (coyote, bobcat and fox). For bighorn sheep, hunter use days will be the same as under the current management strategy. Approximately zero hunter use days are expected from hunting of mountain lion because harvest is expected to be incidental to other species. Approximately zero hunter use days are expected from May through September because most people avoid hunting in temperatures above 90°F.

Month	Bighorn Sheep	Mule Deer	Small Game	Total
October		200	72	272
November		675	72	747
December	398		72	470
January		200	72	272
February			72	72
March			54	54
April			36	36
Total	398	1,075	450	1,923

We estimate a total of 1,923 total hunter use days under the proposed action; this includes ongoing bighorn sheep hunting plus the addition of 1,525 hunter use days (see Table 5). Therefore, because of the proposed action, hunter use days will increase about 383% from 398 to 1,923. Compared to baseline conditions, visitor use days on the Refuge will increase by no more

than 90%, from 1,698 to 3,236 ($3,236=1,313 + 1,923$) visitor use days. Of all expected hunter use days, 92% would occur from October through January, when Sonoran pronghorn are typically experiencing less stress (i.e., it is outside fawning season, temperatures are cooler, and forage is typically available due to winter rainfall unless there is a serious drought). We generally define “serious drought” as less than 50% of average rainfall (FWS 2016). No hunter use days are expected May through September when Sonoran pronghorn are typically experiencing more stress because temperatures are warmer and forage availability is limited.

The expected increase in human activity on the Refuge associated with the proposed action is based on liberal estimates of hunter use. Due to the remoteness of the Refuge and limited public access, particularly to the Refuge’s mountain ranges, we believe human activity associated with hunting will be focused around public access roads, Refuge entry points (BLM and BMGR access roads), and major washes (M. Sumner, AZGFD, pers. comm.). For many of the entry points on the BMGR and BLM, vehicular travel must cease at the Refuge boundary. Given that most hunters generally stay within 1-3 miles of their vehicle (M. Sumner, AZGFD, pers. comm.), about 167,000 acres (19% of the Refuge) have the potential to be most affected by the proposed action (“affected acres”). At most 72,500 affected acres will be in Childs Valley along Charlie Bell Pass Road and around BLM access roads; about 75% of the valley will be potentially affected by human activity associated with the proposed hunting. Approximately 91,943 affected acres will be along El Camino del Diablo, Christmas Pass Road, and BMGR access road entry points, with minor potential to affect Sonoran pronghorn because based on the location of groups of Sonoran pronghorn observed on the Refuge during weekly to monthly telemetry flights from 1994 to 2013, only about 126 of 3,344 groups (4 percent) were within this area. Because Childs Mountain Road is not open to the public and the end of the public access road is about 0.5 mile from the Refuge boundary, this area is not likely to receive a significant portion of human activity associated with hunting of species other than bighorn sheep and mule deer. Additionally, the portion of Childs Mountain on the Refuge is outside of Sonoran pronghorn habitat.

No more than 1,075 hunter use days associated with mule deer hunting on the Refuge are anticipated, as explained below. During the general mule deer hunt in November, the average hunt party is expected to be 2.5 individuals or less (M. Sumner, pers. comm.), with each hunter spending about 7 days on the Refuge, including scouting during October and early November (J. Hervert, AZGFD, pers. comm.). Because no more than 50 hunt permit-tags will be issued, the general mule deer hunt will comprise at most 875 hunter use days ($2.5 \text{ individuals/party} \times 7 \text{ days} \times 50 \text{ tags} = 875$) during October and November. During the Archery-Only mule deer hunt in January, at most 10 hunters are expected, with smaller hunt parties (2 individuals) spending more time on the Refuge (about 10 days; J. Hervert, AZGFD, pers. comm.). Thus, no more than 200 hunter use days ($2 \text{ individuals} \times 10 \text{ days} \times 10 \text{ tags} = 200$) are anticipated during the January archery mule deer hunt. Because almost all mule deer hunters issued the Commissioner’s tag choose to hunt north of the Colorado River (A. Munig, AZGFD, pers. comm.), the liberal estimates of hunter use days for mule deer hunts above should incorporate the unlikely use by a mule deer hunter with a Commissioner’s tag. The total number of hunter use days is the number of hunter use days during the general hunt (875) plus the number during the archery hunt (200), which equals 1,075 hunter use days. About 75 percent of hunters participating in the general mule deer hunt will likely be concentrated in Childs Valley because it is the most accessible part

of the Refuge and has the highest density of mule deer (J. Hervert, AZGFD, pers. comm.). Thus, Childs Valley will likely receive no more than 650 hunter use days from October through mid-November and 150 hunter use days during January. Given that the majority of Childs Valley has the potential to be impacted by the majority of expected hunter use days, the Sonoran pronghorn in Childs Valley have the highest probability of being affected by human activity associated with hunting.

Because most people avoid hunting in temperatures above 90°F (D. Kuhn, AZGFD, pers. comm.), the hunting of mountain lion, quail, mourning dove, Eurasian collared-dove, rabbit, and predatory and fur-bearing mammals will predominantly occur from October to April or as the season allows. The few tags available for mountain lions and the prohibited use of dogs for hunting mountain lions will likely result in any mountain lion harvest being incidental to hunting of other species; therefore approximately zero hunter use days associated solely with mountain lion hunting on the Refuge are anticipated. According to AZGFD, quail hunting is likely to draw the most small game (quail, dove, rabbit, and predatory and fur-bearing mammal) hunters to the Refuge (M. Sumner, AZGFD, pers. comm.). Cottontail and jackrabbit hunting/harvesting is most likely be incidental with quail or big game hunting (M. Sumner, AZGFD, pers. comm.). Because the Refuge does not have high quality dove habitat (i.e., agricultural areas and large washes), we expect dove hunting on the Refuge to be a rare occurrence; most doves harvested by hunters will likely be incidental to quail hunting. The Eurasian collared-dove is not common on the Refuge (its preferred habitat is small towns and farmlands) so hunting of this species, including any associated use of dogs to hunt or retrieve them, will likely be only incidental to hunting of other species.

Small game hunters on CPNWR will predominantly comprise of people who already spend time on the Refuge (M. Sumner, AZGFD, pers. comm.). Approximately five small game hunters will spend about three days per week hunting on the Refuge for up to 30 weeks for an estimated 450 hunter use days from October to April (Table 5; D. Kuhn, AZGFD, pers. comm.). Because quail hunting from October through February is expected to draw the most hunters, about 80% of use by small game hunters will occur during these months (approximately 72 hunter use days estimated per month). Fewer species will be available to hunt in March (see hunt season dates in Table 2) so use will decrease to about 54 hunter use days (about 12% of small game hunting). Even fewer species will be available to hunt in April (see hunt season dates in Table 2) so use will decrease to about 36 hunter use days (about 8% of small game hunting).

Based on the estimated hunter use days associated with the different types of game as explained above and summarized in Table 5, we believe mule deer hunting will comprise the majority (about 70%) of new human activity related to the proposed action ($1,075/1,525 = 70\%$) or 56% of all hunting activity, including bighorn sheep hunting ($1,075/1,923 = 56\%$).

For the approximately 10-day general mule deer hunt in November, an average of 5 shots fired per day are anticipated if all hunters were to take one shot at a deer (D. Kuhn, AZGFD, pers. comm.). Given a hunter success rate around 30%, however, less than 2 shots fired per day on average are expected. These 20 shots (2 shots per day for 10 days) will be distributed across 167,000 acres, with the highest density (about 1 gunshot per 5,000 affected acres each day) occurring in Childs Valley. More gunshots per day are likely to occur during quail season from

October through mid-February, with 0 – 250 shots occurring per day during three days per week, generally in Childs Valley (D. Kuhn, AZGFD, pers. comm.).

Federal Wildlife Officers (FWOs) patrol the Refuge and make contact with hunters on a daily basis. The number of patrols by FWOs are expected to be similar to that occurring under current management except during the mule deer and quail hunts, when the patrols would be most likely to occur in Childs Valley due to the expected concentration of hunters in this area. Patrols by AZGFD Wildlife Managers (WMs) on CPNWR are expected to increase from semi-annual or no patrolling under current management to about one WM patrolling each GMU twice per month, particularly during the mule deer and quail hunts. FWO and WMs have the ability to issue citations to anyone in violation of Refuge rules and regulations, as well as other applicable laws and regulations.

Pack and saddle stock for hunting purposes will be allowed, but all use must be consistent with the requirements included in the CCP. To reiterate these requirements, pack and saddle stock will be allowed only by special use permit, and hunters are responsible for importing and providing water to their animals. Restrictions of the special use permit for pack and saddle stock will include: 1) a maximum of four horses, burros, or mules per party will be allowed; 2) travel will be allowed only on the administrative trails, dry washes, and along the base of the mountain ranges; 3) no grazing will be allowed on the CPNWR or use of CPNWR water holes, tinajas, tanks, etc. to water stock; 4) only pellets or processed and pelletized feed will be allowed while on the CPNWR and for three days prior to entry; 5) long-term stock camps (more than 2 nights) will be permitted only in the seven designated areas: Daniel's Arroyo, Lower Well, Agua Dulce, O'Neil Hills, Christmas Pass, Coyote Wash, and Tule Tank 1 mile east of Tule Well; 6) all surface disturbance at campsites must be restored following Leave No Trace protocols; and 7) all trash and animal waste must be removed from base camps.

Conservation measures

CPNWR will minimize adverse effects of the proposed action on Sonoran pronghorn by implementing the following conservation measures:

- 1) No night hunting will be permitted on the Refuge (defined as ½ hr after sunset and ½ hr before sunrise).
- 2) Hunters will be provided with educational materials (e.g., a hunt brochure), including information on how to distinguish Sonoran pronghorn from other big game species and what to do if a hunter encounters Sonoran pronghorn. For example, if on foot, a hunter will reverse course and walk quietly in the opposite direction until the Sonoran pronghorn is at least 150 yards away or it is no longer visible, whichever is farther, and then attempt to avoid the Sonoran pronghorn by walking around it, maintaining the same distance described above. If a hunter sees Sonoran pronghorn while driving in a motorized vehicle and the Sonoran pronghorn is standing still, the hunter will reduce speed to 10 mph or slower, if needed, until at least ¼-mile past the Sonoran pronghorn. If a hunter sees Sonoran pronghorn while driving in a motorized vehicle and the Sonoran pronghorn is running, the hunter will stop the vehicle and wait to continue until the Sonoran pronghorn is out of sight.
- 3) Dove hunting will be restricted to the late season hunt (~44 days in November, December, and January) to minimize the potential negative effects of human activity on the use of waters by wildlife species, particularly the Sonoran pronghorn.

- 4) All vehicles will be required to stay on public access roads unless specifically authorized through a special use permit (on administrative roads in non-Wilderness only). Vehicles include motorized and mechanical transport such as automobiles, motorcycles, all-terrain vehicles, and bicycles (human powered and electric). (Note: people with qualifying disabilities may use specially designed wheelchairs per the ADA (American with Disabilities Act).)
- 5) Consistent with the Wilderness Act, use of motor vehicles, motorized equipment, or any form of mechanical transport, including wheeled carts, are prohibited.
- 6) FWOs will enforce speed limits (maximum of 25 mph on the Refuge and 15 mph near the Sonoran pronghorn breeding pen).
- 7) Approximately five FWOs will patrol the Refuge on a daily basis and attempt to make contact with hunters whenever encountered. Up to two AZGFD WMs will patrol the Refuge and attempt to make contact with hunters at least twice per month, particularly from October through April.
- 8) The use of dogs for hunting will be prohibited except the pointing and retrieval of quail and retrieval of dove to reduce potential impacts on non-target species (e.g., Sonoran pronghorn, desert bighorn sheep). During these activities, dogs, although unleashed, will remain in the control of the hunters at all times. If, in the judgement of law enforcement officials, dogs used in the hunt are not under the control of the hunter, the hunter will be required to leash their dogs. This is the only exception to the Refuge requirement for all pets to be leashed.
- 9) The no hunting zone around the Sonoran pronghorn semi-captive breeding facility will prevent harm and/or harassment of Sonoran pronghorn and their caretakers in and near the facility. The zone will also minimize the negative effects of hunting-related human activity on captive Sonoran pronghorn.
- 10) All hunters will be required to follow Leave No Trace ethics, which include plan ahead and prepare, travel and camp on durable surfaces, dispose of waste properly, leave what you find, minimize campfire impacts, respect wildlife, and be considerate of other visitors.
- 11) No cultural or natural resources other than legally harvested wildlife will be permitted to be disturbed or collected with the exception of the use of local material for fire when the hunter is camping in the backcountry away from motorized transport.
- 12) Target shooting or the discharge of a weapon will continue to be strictly prohibited except for legal harvest of wildlife.
- 13) Humans and stock will be prohibited from consuming water from any wildlife waters.
- 14) CPWNR will use an adaptive management approach and make adjustments to any aspect of the hunt program to minimize impacts on Sonoran pronghorn. The Refuge and AZGFD will meet annually in February to discuss the Refuge hunt program. Prior to this meeting, the local WMs will send hunt and survey data to the Refuge for review. Throughout the year, Refuge staff and AZGFD will use telemetry flights, range-wide aerial surveys, weather station data, and other pertinent resources to assess range conditions and evaluate the trajectory of the Sonoran pronghorn population. If informal assessment raises concern that the hunt program could be negatively affecting pronghorn recovery efforts, then Refuge staff, Ecological Services, and AZGFD will explore potential changes to the hunt program to minimize impacts on Sonoran pronghorn. The Refuge manager may implement these changes consistent with Service regulations and policy.
- 15) The Refuge Manager, can consider, among other options, the temporary closure of important Sonoran pronghorn areas to public use, including hunting, if such a closure would

likely reduce the threat to recovery. The Refuge remains committed to the recovery of Sonoran pronghorn and will continue to lead and implement Sonoran pronghorn recovery efforts on and off the Refuge.

- 16) CPNWR will electronically submit a brief report to the FWS-Arizona Ecological Services Office (AESO) annually; this report will, at a minimum, include: 1) the number of hunter days per month and, if possible, by species or game type (e.g., mule deer, bighorn sheep, upland game) on CPNWR; 2) a description of hunter interactions with or observations of Sonoran pronghorn, if they are reported voluntarily to CPNWR; and 3) a summary of conservation measures implemented and if any challenges were encountered.

Action Area

The action area is defined at (50 CFR 402.02) as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. There are three populations of Sonoran pronghorn in Arizona, United States, and two populations in Sonora, Mexico (Figure 3). In the U.S., the endangered population, known as the Cabeza population, is effectively separated from the Kofa and Saucedo populations by Interstate 8 and Highway 85, respectively. The two populations in Sonora, known as the Pinacate and Quitovac populations, are separated from the U.S. populations by Mexico Highways 2 and 8 and border barriers and activities.

The Cabeza population in Arizona, which includes all Sonoran pronghorn occurring on CPNWR, interact to form one population in which interbreeding may occur. Activities that may affect animals in any portion of the U.S. range of the endangered pronghorn (i.e., the Cabeza population) may affect the size or structure of the U.S. endangered population, or habitat use within the U.S. endangered population range. For example, if Sonoran pronghorn are excluded from using important habitat due to human activity, they will move to find other resources. This movement, particularly during drought periods, could cause pronghorn to die of dehydration or malnutrition (FWS 2016, p. 70). If this occurs, fewer Sonoran pronghorn are available for breeding and the pronghorn population may decline resulting in, among other effects, a decrease in genetic diversity within the population. The Service has determined that the action area for this project is defined as the current range of the endangered pronghorn population in the U.S. (Figures 2 and 3). Although the entire action area is affected, at least indirectly, by the proposed action, potential effects of the proposed action are likely to occur where hunting activities occur on CPNWR (Figure 1).

STATUS OF THE SPECIES - SONORAN PRONGHORN

Description, Legal Status, and Recovery Planning

The Sonoran subspecies of pronghorn (*Antilocapra americana sonoriensis*) was first described by Goldman (1945) and is the smallest of the four subspecies of pronghorn (Nowak and Paradiso 1983, Brown and Ockenfels 2007). The subspecies was listed throughout its range as endangered on March 11, 1967 (32 FR 4001) under the Endangered Species Preservation Act of October 15, 1966 without critical habitat. Five populations (three in the U.S. and two in Mexico) of the Sonoran pronghorn are extant: 1) a population in southwestern Arizona on CPNWR, OPCNM, BLM – Ajo Block, and BMGR (endangered population; known as the “Cabeza”

population), 2) a population in southwestern Arizona on Kofa NWR, Yuma Proving Ground (YPG), and surrounding areas (nonessential experimental 10(j) population; known as the “Kofa population”) (established in 2013), 3) a population in southwestern Arizona on BMGR-East, east of Highway 85 (nonessential experimental 10(j) population; known as the “Sauceda” population) (initiated in December 2015); 4) a population in the Pinacate Region of northwestern Sonora (known as the “Pinacate” population), and 5) a population on the Gulf of California west and north of Caborca, Sonora (known as the “Quitovac” population (Figures 2 and 3). The five populations are predominantly geographically isolated due to barriers such as roads and fences; however, some animals have crossed highways.

The 1982 Sonoran Pronghorn Recovery Plan (FWS 1982) was revised in 1998 (FWS 1998) and again in 2016 (FWS 2016). The 2016 plan (which can be accessed at [Sonoran Pronghorn Recovery Plan](#)) addresses Sonoran pronghorn populations both in Mexico and the U.S. and identifies demographic and threats-based recovery criteria. The final recovery plan contains recovery criteria based on maintaining and protecting all current populations in the wild, expanding the size of populations, and managing or eliminating threats to meet the plan’s goal of downlisting and delisting the species. To downlist the Sonoran pronghorn to threatened, six criteria must be met. These criteria are abbreviated below.

- 1) At least three free-ranging populations are viable for at least five out of seven years.
- 2) A minimum of 90% of current Sonoran pronghorn habitat is retained and contiguous. This Sonoran pronghorn habitat is protected.
- 3) Threats to Sonoran pronghorn habitat quality in three units are stable or decreasing.
- 4) Human disturbance is alleviated such that a minimum of 90% of Sonoran pronghorn habitat can be occupied by Sonoran pronghorn.
- 5) Genetic diversity for three populations has been retained.
- 6) Laws are in place to ensure that killing of Sonoran pronghorn is prohibited or regulated.

After accomplishing all criteria for downlisting to threatened, Sonoran pronghorn can be delisted when at least three free-ranging populations are viable for at least 10 out of 14 years, and the other downlisting criteria have also been met.

Life History and Habitat

Life history and habitat is discussed extensively in the 2016 Final Recovery Plan for the Sonoran Pronghorn, Second Revision.

Distribution and Abundance

The historical range of Sonoran pronghorn is described in the 2016 Final Recovery Plan and depicted in Figure 2. The current range of the endangered Sonoran pronghorn is described in the 2016 Final Recovery Plan and depicted in Figure 3.

United States

Endangered Wild Population

Abundance and population trends are described in the 2016 Final Recovery Plan. In summary, however, the endangered population in Arizona declined from an estimated 99 animals in 2000 to 21 animals in 2002, due primarily to severe drought. The December 2016 aerial surveys resulted in an estimated 228 (216 observed) individuals in the endangered wild population in Arizona (AZGFD 2018). Most recently, the December 2018 aerial surveys resulted in an estimated 215 individuals (160 pronghorn observed). Following survey protocol, the 2018 estimate did not include 17 pronghorn that moved between survey blocks. Had this group not moved between blocks and been counted, the 2019 estimate would have been 232 animals, indicating very little change in population size since the 2016 survey (AZGFD 2018). Poor recruitment in 2018 was likely offset by a decent fawn crop in 2017 (AZGFD 2018). Table 6 includes population estimates for this population from 1992 to 2018.

10(j) Wild Population

A final Environmental Assessment and final 10(j) rule (FWS 2011) were published in April and May, 2011, respectively, to establish a nonessential experimental population of Sonoran pronghorn in Arizona. See Figure 3 for a depiction of 10(j) Nonessential Experimental Population area for Sonoran pronghorn in southwestern Arizona. In 2013, the first wild population was established under the 10(j) rule on Kofa NWR with captive-bred animals from CPNWR. The population continues to be augmented with captive bred animals and additionally, fawns have been born in the wild population. In February 2020, the estimated population of free ranging pronghorn in the Kofa Subunit was approximately 120 (Table 6).

To establish a third population in Arizona, in December 2015, 26 Sonoran pronghorn were released on BMGR East, east of Highway 85, under the 10(j) rule. In February 2020, the estimated population within the Saucedo Subunit was approximately 60 (Table 6).

Semi-captive Breeding Facilities

Cabeza Prieta National Wildlife Refuge

As part of a comprehensive emergency recovery program, a total of 11 adult pronghorn (10 females and one male) were initially captured (from Sonora and Arizona) and placed into a semi-captive breeding pen at CPNWR in 2004. The breeding program has been very successful and as of May 2020 there were 102 pronghorn in the enclosure at CPNWR (note this number changes frequently with births and releases). Since establishing the program, a number of pronghorn have died in the pen due to various causes, including epizootic hemorrhagic disease, malnutrition (prior to the introduction of alfalfa hay in the pen), bobcat predation, entanglement in the fence, and capture operations. Sonoran pronghorn have been released from the pen every year since 2006, many into the endangered population and others to establish the two nonessential experimental populations.

The objective is to produce at least 20 fawns each year to be released into the endangered U.S. population; supplement 10(j) populations at Kofa NWR and BMGR East, east of Highway 85; and establish any additional populations needed for pronghorn recovery.

Kofa National Wildlife Refuge

In December 2011, 13 Sonoran pronghorn were moved from the CPNWR breeding pen to the newly built breeding pen in the King Valley on Kofa NWR to initiate the breeding program on the Refuge. As with the CPNWR pen, the Kofa breeding program has been successful and produced pronghorn for release into the wild. As of May 2020, the Kofa pen contains 49 pronghorn (note this number changes frequently with births and releases).

Mexico

Abundance and population trends are described in the 2016 Final Recovery Plan. The February 2020 aerial survey resulted in an estimated 736 (393 observed) individuals in the area southeast of Mexico Highway 8 (or the Quitovac population) and 126 (54 observed) to the west of the highway (or the Pinacate population). The estimates yielded from this survey likely overestimated the populations in Sonora due to a number of factors, including the timing of the survey in February when pronghorn group sizes are much smaller than in November and December, when aerial survey are typically conducted (AZGFD 2020). Nonetheless, in 2020 a large number of Sonoran pronghorn were seen in both Sonora areas suggesting the two populations remain in good condition relative to historical counts (AZGFD 2020). Table 6 includes population estimates from 2000 to 2020.

Threats

Sonoran pronghorn face numerous threats throughout their range. These threats are discussed in detail in the Reasons for Listing/Threats Assessment of the 2016 Final Recovery Plan for the Sonoran Pronghorn, Second Revision, and are summarized below.

Barriers that Limit Distribution and Movement

Barriers that limit the distribution and movement of pronghorn, such as highways, fences, railroads, developed areas, and canals, are considered a major threat to the species and are discussed extensively in the 2016 Recovery Plan.

Vehicular Collision with Sonoran Pronghorn

Although vehicle collisions with Sonoran pronghorn are fairly rare, they have been documented, primarily on paved highways. Some of these documented cases are discussed in the 2016 Recovery Plan, however, since reported in the plan, at least 8 more Sonoran pronghorn deaths due to vehicle collisions have been documented, 6 of which occurred on Highway 95, 1 occurred on Highway 85, and 1 occurred on State Route 238.

Human-caused Disturbance

A variety of human activities occur throughout the range of the pronghorn that have the potential to disturb pronghorn or its habitat, including livestock grazing in the U.S. and Mexico; military activities; recreation; poaching and hunting; clearing of desert scrub and planting of buffelgrass (*Pennisetum ciliare*) in Sonora; gold mining southeast of Sonoyta, dewatering and development along the Gila River and Río Sonoyta; cross-border violator (CBV) activity across the international border and associated required law enforcement response; and roads, fences, canals,

and other artificial barriers. Human disturbance of Sonoran pronghorn is discussed at length in the 2016 Recovery Plan.

Since the Recovery Plan was published, a study on the behavioral and physiological effects of human activities on Sonoran pronghorn was completed (the study was conducted 2013 to 2016). As reported in Christianson (2017), initial analysis of the data collected during the study showed evidence for several anthropogenic effects on Sonoran pronghorn suggesting the species is sensitive to human activity in the U.S. portion of its range. Responses to sources of disturbance such as roads and vehicles were widespread across the landscape and this study confirms that managers should consider impacts of vehicles on Sonoran pronghorn when resource planning (Christianson 2017). Behavioral observations confirmed that interactions with vehicles occur frequently and elicit strong behavioral responses while interactions with humans on foot occur far less often (Christianson 2017).

For example, of 342 behavioral observations 33-60 minutes in length, 15.2% involved at least one potential interaction with humans (CPNWR 2020). In comparison, only 8% of observations involved at least one potential interaction with another species of wildlife (mule deer or coyote). Seventy percent of potential interactions with humans involved a motorized vehicle; 30% involved a human on foot. Approximately 61% of motorized human activity with the potential to affect Sonoran pronghorn was produced by CBP; 22% was from civilians and 17% was from land managers. Civilians are restricted to three public access roads, while CBP may drive administrative trails, even in designated Wilderness. Thus, in terms of numbers and area, CBP has more potential for widespread impacts associated with motorized human activity than civilians or land managers. Focusing on motorized vehicles, adult female Sonoran pronghorn spend more time vigilant as distance to the nearest road decreases, particularly when a motorized vehicle is present. Adult female pronghorn trade off foraging and walking for vigilance, which could have nutritional costs. Also, stress hormone levels in pronghorn feces increase with off-road vehicle tracks, which suggests pronghorn may exhibit a stress response to off-road vehicle traffic (S. Doerries, unpublished data). Although motorized human activity causes behavioral and physiological changes in adult female Sonoran pronghorn, it is unknown whether these changes significantly affect survival and reproduction. Available demographic data lack the accuracy and/or precision for any relationship with human activity to be assessed. There were not enough potential interactions with humans on foot to examine how non-motorized human activity affects the behavior of adult female Sonoran pronghorn (CPNWR 2020).

Habitat Disturbance

A number of threats, including livestock grazing, mining (in particular, La Herradura mine in the range of the Quitovac population in Sonora), and off-road vehicle and pedestrian activity can alter, destroy, and fragment Sonoran pronghorn habitat. These are discussed in the 2016 Final Recovery Plan.

Fire

Fire, which can be a threat to Sonoran pronghorn and their habitat, is discussed in the 2016 Final Recovery Plan.

Drought and Climate Change

Drought limits the availability of quality forage and water. Drought may be a major factor in the survival of adults and fawns (Bright and Hervert 2005) as demonstrated by the major decline in 2002, which was driven by drought. Drought and climate change and their effects on Sonoran pronghorn are discussed in the 2016 Final Recovery Plan.

Disease

Sonoran pronghorn can potentially be infected by a variety of viral and bacterial diseases, as well as parasites. Epizootic hemorrhagic disease and Bluetongue virus are the most common cause of disease-caused die-offs in wild pronghorn (Brown and Ockenfels 2007). Blood testing has shown pronghorn exposure to these diseases by increases in antibody titers over time. The diseases relevant to pronghorn can be transmitted indirectly through vectors, such as infected midges or ticks, or directly via aerosolized or direct contact of infected fluids or tissues. Diseases that potentially infect pronghorn are all serious diseases of cattle, which can act as vectors. Cattle within the current range of the pronghorn have not been tested for these diseases. See the 2016 Final Recovery Plan for more information on disease in Sonoran pronghorn.

Recovery Actions

Many critically important recovery projects have been implemented in an attempt to reverse the decline of the Sonoran pronghorn throughout their range. See the section on Previous and Ongoing Conservation Efforts in 2016 Final Recovery Plan for the Sonoran Pronghorn for a comprehensive discussion of recovery actions. For example, developed and emergency water sources and forage enhancement plots (developed to irrigate the desert and produce forage for pronghorn) have been constructed in recent years throughout the range of the U.S. endangered population and developed waters have also been constructed in the range of the Kofa population. These projects are designed to increase availability of green forage and water during dry periods and to offset to some extent the effects of drought and barriers that prevent pronghorn from accessing greenbelts and water, such as the Gila River and Río Sonoyta.

Plots and waters located in areas with little human activity and better range conditions appear to be more effective (i.e., contribute to fawn and adult survival to a greater degree) than those located in areas of high human activity and poor range condition (i.e., experiencing drought) (personal communication with John Hervert, Arizona Game and Fish Department [AZGFD], September 16, 2009). Therefore, to ensure success of these measures, it is critical that human activity is avoided or significantly minimized near the plots and waters.

As described above, semi-captive breeding facilities at CPNWR and Kofa NWR were established and are being used to augment and establish new populations. These crucial projects, which are helping pull the U.S. population back from the brink of extinction, have been cooperative efforts among many agencies and organizations, including FWS, AZGFD, Marine Corps Air Station-Yuma (MCAS), Luke Air Force Base (LAFB), OPCNM, U.S. Customs and Border Protection (CBP), Arizona Desert Bighorn Sheep Society, Arizona Antelope Foundation, the Yuma Rod and Gun Club, the University of Arizona, the Los Angeles and Phoenix Zoos, and others.

Prior to the initiation of intensive recovery efforts, the biennial population growth rate of endangered Sonoran pronghorn population in the U.S. was directly related to biennial precipitation from 1992 to 2002; in other words, the population increased under wetter conditions

and decreased under drier conditions. (CPNWR 2020). After the initiation of these intensive recovery efforts (e.g., captive breeding program, Sonoran pronghorn waters), no relationship was observed between population growth rate and biennial precipitation from 2004-2016. This suggests recovery efforts are reducing the effect of at least one environmental factor (i.e., precipitation) on Sonoran pronghorn survival and thus may be helping to stabilize the population (CPNWR 2020).

In Mexico, a recovery plan for pronghorn was developed in 2009 and is currently being implemented. For example, in 2015, the Comisión Nacional de Areas Naturales Protegidas (CONANP; National Commission of Natural Protected Areas) installed waters for Sonoran pronghorn in Sonora, although pronghorn use of these waters has not been documented likely due to cattle exclusion fences around the tanks. CONANP is continuing to experiment with the waters until pronghorn can successfully use them. CONANP is also working with the local communities to educate people about pronghorn and the highway department to improve undercrossings of Highway 2 to encourage pronghorn passage. CONANP and the Comisión de Ecologías y Desarrollo Sustentable del Estado de Sonora (CEDES; Commission of Ecology and Development of the State of Sonora) also conduct Sonoran pronghorn surveys and work with the La Herradura mine and other landowners to reduce their impacts on pronghorn and their habitat.

ENVIRONMENTAL BASELINE – SONORAN PRONGHORN

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

Status of Sonoran pronghorn within the action area

Distribution, Abundance, and Life History

The distribution and abundance of the Sonoran pronghorn in the action area is the same as that described above in the Status of the Species for the U.S. endangered population, referred to as the Cabeza population. Life history, including demographics, chronology of breeding and movements, diet, and other factors are discussed extensively in the 2016 Final Recovery Plan for the Sonoran Pronghorn, Second Revision.

Climate Change and Drought

The threats of climate change and drought on Sonoran pronghorn are discussed extensively in the 2016 Final Recovery Plan for the Sonoran Pronghorn, Second Revision. In summary, however, the most significant potential impact of global climate change on Sonoran pronghorn is its

potential to increase the frequency and severity of drought. More dry days, warming temperatures, and increased evapotranspiration are expected to result in more severe drought in the Southwestern United States (Gershunov 2013). Future droughts are expected to become more frequent and severe, with 100-year droughts common in the second half of this century (Gershunov 2013). Drought was the factor causing the extreme mortality event of Sonoran pronghorn in 2002, and drought is the most important predictor of survivorship and recruitment (FWS 2016). From 2003 to 2020, rainfall and Sonoran pronghorn range conditions have varied, but have improved overall when compared to 2002. As of June 2020, Sonoran pronghorn habitat conditions are better than average for this time of year.

Historically, pronghorn populations must have weathered severe droughts in the Sonoran Desert, including many that were more severe and longer term than what has occurred recently. Given that pronghorn populations survived the droughts of the 1890s, 1950s, 1970s, and others before, it is unreasonable to solely attribute recent declines in the U.S. pronghorn population to drought. OPCNM (2001) concluded, “If (individual) recent dry years have had an impact on Sonoran pronghorn, it is most likely because in recent decades Sonoran pronghorn have much more limited options for coping with even brief moderate drought. Because of restrictions on their movements and range, and increasing human presence within their range, pronghorn are less able to employ their nomadic strategy in search of relief. It is not that drought itself is an impact, but possibly that drought has *become* an impact, due to other factors confounding the species’ normal ecological strategy.”

Recovery Actions

As explained above, many critically important recovery projects have been successfully implemented in an attempt to reverse the decline of the U.S. endangered population of the Sonoran pronghorn. See the section on Previous and Ongoing Conservation Efforts in 2016 Final Recovery Plan for the Sonoran Pronghorn for a comprehensive discussion of recovery actions in the range of the U.S. endangered population (i.e., the Cabeza population). For example, many developed and emergency water sources and forage enhancement plots (developed to irrigate the desert and produce forage for pronghorn) have been constructed in recent years throughout the range of the U.S. endangered population, including many on CPNWR. These projects are designed to increase availability of green forage and water during dry periods and to offset to some extent the effects of drought and barriers that prevent pronghorn from accessing greenbelts and water, such as the Gila River and Río Sonoyta. At some water sources, supplemental forage is provided in the form of alfalfa hay beginning in late spring when range conditions start to decline until arrival of monsoon rains. Additionally, the semi-captive breeding facility at CPNWR has been successful at augmenting existing and helping to establish new populations of Sonoran pronghorn.

Factors affecting species environment and critical habitat within the action area

Past and Ongoing Non-Federal Actions in the Action Area

Many non-Federal activities that have affected the Sonoran pronghorn are historical in nature, and pronghorn have been all but extirpated from private, state, and Tribal lands. As explained in the Status of the Species, highways, fences, railroads, developed areas, and irrigation canals can

block access to essential forage or water resources. Highways and railroads can also lead to vehicular and train collisions with Sonoran pronghorn. Additionally, canals can lead to Sonoran pronghorn drowning. In the endangered Sonoran pronghorn range in the U.S., illegal border activities have likely had a significant impact on Sonoran pronghorn in the U.S. in recent times, particularly since the turn of the millennium. Disturbance of Sonoran pronghorn and their habitat by illegal border activities is discussed in the 2016 Recovery Plan.

Federal Actions

Because of the extent of Federal lands in the action area, with the exception of CBV activities, most activities that currently, or have recently, affected the U.S. populations or their habitat are Federal actions. The primary Federal agencies involved in activities in the action area include the MCAS-Yuma, LAFB, FWS (CPNWR), BLM, NPS (OPCNM), Customs and Border Protection (CBP), and U.S. Border Patrol. Some actions of CBP and USBP have not undergone section 7 consultation. For example, construction and maintenance of portions of the border wall along the U.S.-Mexico border have not undergone section 7 consultation because all environmental laws were waived.

As part of our discussion of all past and present actions affecting pronghorn within the action area, we list below all biological opinions issued to date on actions that may affect the Cabeza population of Sonoran pronghorn; we also explain any incidental take associated with the opinions. All of these formal consultations can be viewed on our website at <http://www.fws.gov/arizonaes/Biological.htm>.

1. Capture and collaring of pronghorn for research purposes, consultation number 02-21-83-F-0026. No incidental take was anticipated.
2. Capture and collaring of pronghorn for research purposes, consultation number 02-21-88-F-00060. No incidental take was anticipated.
3. Installation of a water source in the Mohawk Valley for pronghorn, consultation number 02-21-88-F-0081. No incidental take was anticipated.
4. Implementation of the CPNWR Comprehensive Conservation Plan, consultation number 22410-2006-F-0416, with reinitiations issued on November 21, 2013 and March 14, 2014. No incidental take was anticipated.
5. Change in aircraft type from the F-15A/B to the F-15E on BMGR-East [F-15E Beddown Project], consultation number 02-21-89-F-0008. Incidental take was anticipated only for the Beddown Project in the form of harassment as a result of aircraft overflights. This project was later incorporated into the biological opinion on LAFB's activities on the BMGR, listed below.
6. Widening of North Puerto Blanco Road, consultation number 02-21-01-F-0109, with a reinitiation issued on March 14, 2014. No incidental take was anticipated.
7. Improvements to SR 85 roadway and drainages, consultation 02-21-01-F-0546. No incidental take was anticipated.
8. Construction of a vehicle barrier on OPCNM, consultation number 02-21-02-F-237. No incidental take was anticipated.
9. U.S. Border Patrol Activities in the Yuma Sector, Wellton Station, Yuma, Arizona, consultation number 02-21-96-F-0334, issued September 5, 2000. Incidental take was

anticipated in the form of harassment that is likely to injure up to one pronghorn in 10 years.

10. The BLM Lower Gila South Resource Management Plan-Goldwater Amendment, consultation number 02-21-90-F-0042, issued April 25, 1990. No incidental take was anticipated.
11. The BLM Lower Gila South Habitat Management Plan, consultation number 02-21-89-F-0213 issued on May 15, 1990. No incidental take was anticipated.
12. BLM Lower Gila South Resource Management Plan and Amendment, consultation number 02-21-85-F-0069, issued on March 27, 1998. No incidental take was anticipated.
13. BLM grazing allotments in the vicinity of Ajo, Arizona, consultation number 02-21-94-F-0192, issued on December 3, 1997, with reinitiations issued on November 16, 2001, September 30, 2002, June 21, 2004, March 3, 2005, March 8, 2007, and March 14, 2014. No incidental take was anticipated.
14. Organ Pipe Cactus National Monument General Management Plan, consultation number 02-21-89-F-0078, issued June 26, 1997, with reinitiations issued on November 16, 2001, April 7, 2003, March 10 and August 23, 2005, March 8, 2007, December 10, 2009, and March 14, 2014. In the latest versions of the opinion, no incidental take of pronghorn was anticipated.
15. U.S. Marine Corps Air Station-Yuma in the Arizona Portion of the Yuma Training Range Complex (Barry M. Goldwater Range West), consultation number 02-21-95-F-0114, issued on April 17, 1996, with reinitiations issued on November 16, 2001, August 6, 2003, October 21, 2009, and November 3, 2015. In the 2003 and 2009 versions of the biological opinion, no incidental take of pronghorn was anticipated. In the 2015 opinion, we anticipated take of one Sonoran pronghorn every 10 years in the form of direct mortality or injury and one pronghorn every 7 years in the form of harassment.
16. Luke Air Force Base Use of Ground-Surface and Airspace for Military Training on the BMGR, consultation number 02-21-96-F-0094, issued August 27, 1997, with reinitiations issued on November 16, 2001, August 6, 2003, May 3, 2010, and March 2014. In 2010 opinion, we anticipated take of one wild Sonoran pronghorn every 10 years, one pen-raised (free ranging) female pronghorn every 10 years, and four pen-raised (free ranging) male pronghorn every 10 years in the form of direct mortality or injury; and one wild Sonoran pronghorn of either sex, one pen raised (free ranging female) every 10 years, and two pen-raised (free ranging) male pronghorn every 10 years in the form of harassment.
17. Western Army National Guard Aviation Training Site Expansion Project, consultation number 02-21-92-F-0227, issued on September 19, 1997; however, Sonoran pronghorn was not addressed in formal consultation until reinitiations and revised opinions dated November 16, 2001 and August 6, 2003. No incidental take was anticipated.
18. BMGR Integrated Natural Resources Management Plan, consultation number 22410-2005-F-0492, issued on August 26, 2005, with reinitiations issued on January 7, 2013, March 14, 2014, and May 2, 2018. No incidental take was anticipated.
19. CBP and USBP Permanent Vehicle Barrier from Avenue C to OPCNM, Arizona, consultation number 22410-2006-F-0113, issued September 15, 2006. No incidental take was anticipated. Subsequent to issuing the biological opinion, the action was changed to include the installation of a section of hybrid-style fence designed to prevent the passage of pedestrians. Because all environmental laws were waived (as permitted by the Real ID Act of 2005) by Secretary of the Department of Homeland Security, CBP never

- reinitiated consultation with us regarding this change to their proposed action.
20. CBP and USBP 5.2-Mile Primary Fence near Lukeville, Arizona, consultation number 22410-2008-F-0011, issued February 11, 2008. No incidental take was anticipated.
 21. *SBI*net Ajo-1 Tower Project, Ajo Area of Responsibility, USBP Tucson Sector, Arizona, consultation number 22410-F-2009-0089, issued December 10, 2009, with reinitiations issued on March 15, 2010, April 29, 2011, September 16, 2011, and December 15, 2011. We anticipated take of three Sonoran pronghorn due to harassment within the first year of towers becoming operational and two every 5 years thereafter; and one due to direct mortality over the life of the project.
 22. Tactical Infrastructure Maintenance and Repair Program (TIMR) along the U.S./Mexico international border in Arizona, consultation number 02EAAZOO-2012-F-0170, issued on November 6, 2012, with a reinitiation issued on July 13, 2016. In the 2012 opinion, we anticipated incidental take of one Sonoran pronghorn every 10 years for the duration of the TIMR Program in the form of harassment; and one Sonoran pronghorn over the total duration of the TIMR Program in the form of direct mortality. Incidental take remained the same in the 2016 opinion.
 23. Land Mobile Radio Modernization for Tactical Communications at Buck Peak, Christmas Pass, Granite Mountain (CPNWR), and Cobre along the U.S./Mexico international border in Pima, Santa Cruz, and Yuma counties, Arizona, consultation number 02EAAZOO-2012-F-0200, issued April 23, 2013. No incidental take was anticipated.
 24. Implementation of the Ecological Restoration Plan on OPCNM, CPNWR, and BLM Ajo Block, Pima County, Arizona, consultation number 02EAAZ00-2014-F-0538, issued on October 2, 2014, with a reinitiation issued on August 28, 2015. No incidental take was anticipated.
 25. Granting of Wildlife and Sport Fish Restoration (WSFR) Program Funds to the Arizona Game and Fish Department to Implement Aspects of Sonoran Pronghorn Recovery, consultation number 02EAAZ00-2015-F-0045, issued on November 18, 2014. We anticipated incidental take of 26 Sonoran pronghorn over the life of project (5 years), including: 1) incidental take of a total of 20 pen-raised Sonoran pronghorn over the life of the project in the form of directly mortality or injury due to capture and release operations associated with the captive breeding pens; 2) incidental take of a total of 4 Sonoran pronghorn over the life of the project in the form of directly mortality or injury due to capture and release operations of wild pronghorn; and 3) incidental take of two wild Sonoran pronghorn over the life of the project in the form of harassment from project activities that disturb Sonoran pronghorn (e.g., surveys, monitoring, pen maintenance) and/or direct injury or mortality from collision with a vehicle associated with the project.
 26. Yuma Proving Ground Extended Range Cannon Artillery Test Program on BMGR, Arizona, consultation number 02EAAZ00-2017-F-0039, issued on May 3, 2017, with a reinitiation issued on September 30, 2019. We anticipated incidental take of one Sonoran pronghorn on BMGR over the life of the action (the length of the action is indefinite) in the form of direct mortality or injury from strikes with vehicles or artillery or in the form of harassment from project activities that may disturb Sonoran pronghorn (artillery fire, vehicle and human presence).

27. U.S. Customs and Border Protection, Block 1 Replacement Project, Ajo Station (AJO-1), Arizona, consultation number 02EAAZ00-2018-F-0354, issued on February 15, 2018. We anticipated incidental take of one Sonoran pronghorn (over the indefinite length of the action) in the form of direct mortality or injury from strikes with vehicle or in the form of harassment from project activities that may disturb Sonoran pronghorn.

With the exception of likely capture-related deaths during telemetry studies (which were addressed in 10(a)(1)(A) recovery permits), we are unaware of any confirmed incidental take in the form of direct mortality or injury resulting from the Federal actions described here. That said, we are aware of numerous instances of harassment of Sonoran pronghorn. For example, Christianson (2017) reported that behavioral observations of Sonoran pronghorn confirmed that interactions with vehicles occur frequently and elicit strong behavioral responses and responses to sources of disturbance such as roads and vehicles were widespread across the landscape. Action agencies, as part of their proposed actions, have committed to implementing or providing funding to implement a variety of recovery projects recommended by the Sonoran Pronghorn Recovery Team. For example, these significant commitments have supported the construction of pronghorn waters and forage enhancement plots in various locations, construction of a captive breeding pen at Kofa NWR, and collaring and monitoring of Sonoran pronghorn.

Summary of Activities Affecting Sonoran Pronghorn in the Action Area

The Cabeza Sonoran pronghorn population is isolated from other populations by highways and interstates, and access to the greenbelts of the Gila River and Río Sonoyta, which likely were important sources of water and forage during drought periods, has been blocked. Since 2002, due to improved drought status and implementation of recovery actions, the Cabeza population has increased and remained at approximately the target abundance for recovery (225 individuals) for 3 years (CPNWR 2020). At 225, however, the wild population is still at risk of extinction due to, among other factors, human-caused impacts and drought and climate change.

Although obstacles to recovery remain, since 2002, numerous crucial recovery actions have been implemented in the range of the Cabeza population, including pronghorn waters and forage enhancements plots. These projects help to offset the effects of drought and barriers that prevent movement of pronghorn to greenbelts such as the Gila River and Río Sonoyta. The semi-captive breeding facility on CPNWR helps provide pronghorn to augment the existing endangered population and establish and augment additional U.S. nonessential experimental (10(j)) populations.

The current range of the endangered pronghorn in the U.S. is almost entirely comprised of lands under Federal jurisdiction; thus, authorized activities that currently affect the pronghorn in the action area are almost all Federal actions. Action agencies have worked with us to include significant conservation measures that reduce and offset adverse effects to the pronghorn and its habitat. The current opinions that anticipate incidental take are listed above.

We believe the aggregate effects of limitations or barriers to movement of Sonoran pronghorn and continuing stressors, including habitat degradation and disturbance within the Cabeza pronghorn population's range resulting from a myriad of human activities, exacerbated by periodic dry seasons or years, are responsible for the endangered status of the Sonoran

pronghorn. However, collaborative, multi-agency and multi-party efforts to develop forage enhancement plots and waters and reduce human disturbance of pronghorn and their habitat, combined with the success of the semi-captive breeding facilities at CP and Kofa NWRs and recently established 10(j) populations, provide hope that recovery of the Sonoran pronghorn in the U.S. is achievable.

EFFECTS OF THE PROPOSED ACTION

In accordance with 50 CFR 402.02, effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of all other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see §402.17).

Opening new hunting opportunities on CPNWR may result in disturbance to Sonoran pronghorn and their habitat for the duration of the proposed project (the duration of the hunting on CPNWR is indefinite). For example, hunter presence, vehicle access, and gunfire may result in visual and/or auditory disturbance of Sonoran pronghorn and vehicles associated with the project could strike and injure or kill pronghorn. Conservation measures included in the proposed action, however, will help avoid and minimize potential impacts to Sonoran pronghorn.

Summary of Effects of Human Activities on Sonoran Pronghorn

It has been well documented that human presence in wildlands can disturb animals, causing them to unnecessarily expend energy avoiding people, thereby potentially reducing reproductive success (e.g., Manville 1983, van Dyke et al. 1986, Goodrich and Berger 1994, Primm 1996; as cited by Kerley et al. 2002) or increasing the likelihood of fatal encounters with humans (Kasworm and Manley 1990, Saberwal et al. 1994, Khramtsov 1995, Mattson et al. 1996; as cited by Kerley et al. 2002). Range abandonment has been documented in response to human disturbance (Jorgenson 1988), and investigators have shown that heart rate increases in wildlife in response to auditory or visual disturbance in the absence of overt behavioral changes (Thompson et al. 1968, Cherkovich and Tatoyan 1973, Moen et al. 1978).

A number of studies have specifically investigated the effects of human activities on Sonoran pronghorn (Hughes and Smith 1990, Landon et al. 2003, Krausman et al. 2004 and 2005, OPCNM 2013, Christianson 2017). Landon et al. (2003) evaluated whether Sonoran pronghorn used areas, as defined by noise levels produced by military aircraft, in proportion to their availability on the BMGR. Using 15% of the Arizona Sonoran pronghorn population, they studied pronghorn use of areas with varying sound pressure (ambient sound) levels and found that pronghorn did not use the areas with different ambient sound levels in proportion to their availability. In general, they found that Sonoran pronghorn select areas with the lower noise levels and avoid areas with the higher noise levels; however, they did not consider habitat in their analysis. Whether pronghorn avoid these areas because of the noise or because of some other human-related factor is unknown; however, the various potential factors (i.e. noise levels, human presence, reduced vegetation or cover, disturbance) are interrelated. Hughes and Smith

(1990) found that Sonoran pronghorn immediately ran 1,310- 1,650 feet from a vehicle, and that military low-level flights (less than 500 feet above the ground) over three pronghorn caused them to move about 330 feet from their original location.

Krausman et al. (2004) examined effects of military aircraft and ground-based activities on Sonoran pronghorn at the North and South tactical ranges (TACs) on the BMGR and concluded that military activities, both ground-based and aerial, were associated with some changes in behavior (e.g., from standing to trotting or running, or bedded to standing). On days with stimuli, adult pronghorn bedded more than they foraged (Krausman et al. 2004). On days without stimuli, adult pronghorn foraged more and bedded less. Ground stimuli, including the presence of vehicles or people, comprised the majority (65%) of all anthropogenic stimuli. Ground stimuli were associated with 866 instantaneous changes in behavior (39%), with 56 of these changes resulting in trotting or running (2.6%). In response to stimuli, Krausman et al. (2004) only considered a change in behavior to trotting or running in response to stimuli as biologically significant. The authors concluded that these changes were not likely to be detrimental to the animals; however, sightings of Sonoran pronghorn were biased towards disturbed habitats on the TACs and other areas of military activities, which also corresponded to areas of favorable ephemeral forage production (Krausman et al. 2005). No specific conclusions could be drawn about effects of military activities on fawns during the Krausman et al. (2004) study, but the data suggests that fawns and their mothers may be more sensitive to anthropogenic stimuli than other pronghorn. In general, the study did not detect differences in the behavior of pronghorn with and without military stimuli; however, Krausman et al. (2004) recommends that all ground stimuli and activities that alerts or startles females and their fawns should be terminated.

Wright and deVos (1986) noted that Sonoran pronghorn exhibit “a heightened response to human traffic” as compared to other subspecies of pronghorn. They noted that “once aware of an observer, Sonoran pronghorn are quick to leave the area. One herd was observed 1.5 hours later 11 miles north of the initial observation in October 1984. Other pronghorn have run until out of the observer’s sight when disturbed.” Hughes and Smith (1990) noted that on all but one occasion, Sonoran pronghorn ran from the observer’s vehicle and continued to run until they were out of sight.

Staff at OPCNM (2013) documented that during their typical morning activity period (post-sunrise), pronghorn on OPCNM experienced some form of potential disturbance once every 4 hours 10 minutes. Actual disturbance responses took place once every 6 hours 15 minutes. Potential disturbance events resulted in the pronghorn running, about once every 8 hours 20 minutes. Helicopter overflights took place once every 6 hours 15 minutes; one out of four overflights resulted in pronghorn running, and one in four resulted in vigilance (standing, alert, watching disturbance source). Vehicles approaching within one mile occurred once every 12 hours 30 minutes. Half of these resulted in pronghorn running, but for the other half, the driver was contacted by radio and advised to drive slowly (<10 mph) past the observation area.

As reported in Christianson (2017), initial analysis of the data collected during the study showed evidence for several anthropogenic effects on Sonoran pronghorn suggesting the species is sensitive to human activity in the U.S. portion of its range. Responses to sources of disturbance

such as roads and vehicles were widespread across the landscape and this study confirms that managers should consider impacts of vehicles on Sonoran pronghorn when resource planning (Christianson 2017). Behavioral observations confirmed that interactions with vehicles occur frequently and elicit strong behavioral responses (e.g., standing vigilant to running from stimulus) while interactions with humans on foot occur far less often (Christianson 2017). For example, eight Sonoran pronghorn were observed running a short distance and then remaining vigilant towards the utility vehicle noise 3.4 kilometers away. Another eight Sonoran pronghorn were observed running from several trucks traveling fast (> 25 mph). Pronghorn were initially vigilant when the vehicles were 1.3 kilometers away but soon started running, travelling over 3.6 kilometers in under five minutes until they were out of sight of the observers (email from Stephanie Doerries, University of Arizona, May 7, 2014). Adult female Sonoran pronghorn spend more time vigilant as distance to the nearest road decreases, particularly when a motorized vehicle is present (CPNWR 2020). Adult female pronghorn trade off foraging and walking for vigilance, which could have nutritional costs (CPNWR 2020).

Disturbance and flight of ungulates are known to result in a variety of physiological effects that are adverse, including elevated metabolism, lowered body weight, reduced fetus survival, and withdrawal from suitable habitat (Geist 1971, Harlow et al. 1987). Frequent disturbance imposes a burden on the energy and nutrient supply of animals (Geist 1971), which may be exacerbated in harsh environments such as those occupied by Sonoran pronghorn. Human presence may cause Sonoran pronghorn to move from an area, thereby denying pronghorn access to that specific site for what may be crucial behaviors or functions (e.g. foraging, bedding, breeding, fawning, avoiding predators). Causing pronghorn to move also increases their physiological demands by expending calories and metabolic water. These may be critical stressors in seasonal hot-dry periods and in extended periods of low forage availability. Disturbance may also lead to mortality. Causing a pronghorn to be alarmed or agitated, or to flee from a disturbance, may also make it vulnerable to predation. This is especially true for fawns and females during the fawning season. Krausman et al. (2004) found that fawns and their mothers were more sensitive to human disturbance than other Sonoran pronghorn.

Effects to Sonoran Pronghorn from Proposed Hunting on CPNWR

The effects of hunting activities on CPNWR may include intermittent but indefinite disturbance to Sonoran pronghorn from hunter presence, vehicular access, and noise from gunfire. Direct harm or mortality to Sonoran pronghorn from vehicle strikes or accidental shooting may occur, but is anticipated to be very rare. Vehicle and foot traffic may also result in very limited degradation of Sonoran pronghorn habitat.

Disturbance

Increased human activity associated with hunting and scouting, including vehicle and foot traffic, camping, and noise from gunshots may disturb Sonoran pronghorn. This disturbance can cause pronghorn to startle and/or flee, travel farther distances to find suitable foraging, watering, and resting areas, and result in stress and short-term denial of access to habitat, all of which can result in adverse physiological effects or injury to pronghorn. Fleeing behavior can cause fawns to be abandoned or separated from their mothers, which can leave them vulnerable to predator attack or cause physiological stress that results in death. Sonoran pronghorn are particularly susceptible to stress caused by disturbance during the fawning season due to increased energetic

demands during this period. Particularly during drought years, due to the low availability of forage and water resources and consequent decreased fitness of adults and fawns, disturbance may result in fawn and adult mortality. Furthermore, disturbance during the fawning season may cause fawns to be separated from their mothers which can also result in death.

Increase and Timing in Hunter/Visitor Use Disturbance

The proposed action will at most have 1,525 more hunter use days than under current management (1,525 additional hunter use days = 1,923 total anticipated hunter use days – 398 current bighorn sheep hunter days; see Table 5). Therefore, hunter use days will increase about 383% from 398 to 1,923. Compared to baseline conditions, visitor use days on the Refuge will increase by no more than 90%, from 1,698 to 3,236 (3,236 total anticipated visitor use days = 1,313 FY2019 non-hunter visitor use days + 1,923 total anticipated hunter use days) visitor use days. This increased visitor use is likely to cause disturbances to Sonoran pronghorn, including visual and auditory disturbance from gunshots, human presence, and vehicles (the effects of these disturbances are discussed in sections below). Of all expected hunter use days, however, 92% would occur from October through January, when Sonoran pronghorn typically experience less stress (i.e., it is outside fawning season, temperatures are cooler, and forage is typically available due to winter rainfall unless there is a severe drought that results in poor range conditions). No hunter use days are expected May through September because most people avoid hunting in temperatures above 90°F (CPNWR 2020). Minimizing potential hunter disturbance of Sonoran pronghorn during these months is extremely important because Sonoran pronghorn typically experience much more stress during these months due to warmer temperatures, limited forage availability, and increased energetic costs of raising fawns. In addition to no anticipated hunting disturbance in the hot, dry season, Conservation Measure #15 (ability to temporarily close portions of the Refuge to public use under certain circumstances) can ensure potential disturbance to Sonoran pronghorn from hunters in times of severe, prolonged drought is eliminated.

Hunting and Sonoran Pronghorn Distribution Overlap and Foot Traffic/Camp Disturbance

Scouting for and hunting of mule deer and small game have the greatest likelihood of disturbing Sonoran pronghorn because the habitats of these species overlap with that of Sonoran pronghorn. Remoteness of the Refuge, lack any permanent source of water for human consumption, and the difficult terrain, however, are expected to limit impacts associated with the proposed action to 167,000 acres along public access roads and around Refuge entry points. See Figure 1 for a map of public access roads and Refuge entry points. The western half of GMU 46B West is outside the range of Sonoran pronghorn. All of GMUs 46A East, 46A West, and 46B East and the eastern half of 46B West are within Sonoran pronghorn range. The proximity of Childs Valley in 46A East to Ajo, AZ (less than 5 miles) and its multiple public entry points make this area likely to receive the majority of hunting activity on the Refuge. Approximately 102 captive Sonoran pronghorn adults reside within the captive breeding pen in Childs Valley. Additionally, about 25 wild Sonoran pronghorn utilize this area for some time period each year; this represents about 11% of the current wild population of endangered Sonoran pronghorn in Arizona (the “Cabeza” population is estimated at approximately 225 animals). The no hunting zone surrounding the captive breeding pen is likely to minimize impacts to captive Sonoran pronghorn and wild Sonoran pronghorn within ½ mile of the pen because this area will be free from hunter-related activities that may disturb Sonoran pronghorn.

Of all Sonoran pronghorn on the Refuge, the wild Sonoran pronghorn in Childs Valley more than ½ mile from the pen will be the most likely to experience effects of human activity associated with scouting and hunting. They will have the highest likelihood of being impacted by scouters on foot in October and early November and hunters on foot during the ten days of the November mule deer hunt, when the quail hunt is also occurring (quail hunt season is ~115 days from October to February). Likely potential impacts include temporary changes in habitat selection (i.e., the Sonoran pronghorn could be displaced by hunter activity), activity budgets (i.e., how much time an animal spends in various activities such as eating, resting, sleeping, and moving), and physiology (e.g., stress hormone levels). However, adverse effects of such disturbance in October and November should be less severe compared to during hotter, drier periods of the year because Sonoran pronghorn experience less stress from environmental conditions during cooler, wetter weather.

Human activity associated with the quail hunt alone would be expected to have the second highest potential to impact Sonoran pronghorn in Childs Valley. Compared to the mule deer hunt, fewer, more dispersed quail hunters are expected from October through mid-February. While quail hunters and their dogs may disturb Sonoran pronghorn, particularly in Child's Valley, environmental conditions during these months are less stressful to Sonoran pronghorn than hotter, drier times of the year (for more information on the effects of hunting dogs on Sonoran pronghorn, see the *Hunter Use of Dogs* section below). Should severe, prolonged drought pose a threat to Sonoran pronghorn recovery, even during the cooler fall or winter months, the option of temporary closures of the Refuge to public use, including hunting (Conservation Measure #15), can eliminate the risk of hunter disturbance to Sonoran pronghorn during these stressful periods.

The majority of the Sonoran pronghorn (89% of the Cabeza population) live outside of Childs Valley, including on lands adjacent to the Refuge. A lower density of hunters are expected in this area, specifically the western portion of GMU 46A East, 46A West, 46B East, and the eastern half of 46B West, due to limited access and lower densities of huntable wildlife species associated with the decrease in rainfall from east to west across the Refuge. For example, only 25% of hunter use days associated with mule deer hunting (225 hunter use days in October and November and 50 in January) are expected in these areas. Because Sonoran pronghorn are sparsely distributed over large areas of the Refuge and adjacent lands, the Sonoran pronghorn outside of Childs Valley are less likely to be exposed to any human activity associated with hunting.

The effects of foot traffic from bighorn sheep hunters on Sonoran pronghorn will be limited because most foot traffic will be in the mountains. However, base and spike camps for sheep hunters may be established in Sonoran pronghorn habitat and therefore human activity associated with these camps may disturb pronghorn. The extremely low density of sheep hunters and deliberate dispersion of base camps by the Refuge via the SUP system will minimize the risk of disturbance to pronghorn. Additionally, bighorn sheep scouting and hunting (and associated camping) will occur in November and December, when Sonoran pronghorn are typically experiencing less stress (i.e., it is outside fawning season, temperatures are cooler, and forage is typically available due to winter rainfall unless there is a serious drought). Although there is the

potential for a sheep hunter with a Commissioner's tag to choose to hunt on the Refuge year-round, this has never happened and is unlikely to occur.

Vehicle Traffic Disturbance

Additional vehicle traffic from hunters and patrolling FWOs and WMs may cause intermittent but indefinite visual and auditory disturbance of Sonoran pronghorn. The greatest risk of vehicle traffic disturbance is expected to occur in Childs Valley because, as explained above, this is where the majority of hunter use is expected. Disturbance can affect Sonoran pronghorn behavior, including altering habitat use (e.g., avoiding or discontinuing use of otherwise suitable habitat) and activity budgets (e.g., spending more time vigilant and/or moving and less time foraging). Vehicles can cause pronghorn to startle and/or flee, potentially reducing fitness. Because adult female pronghorn are more vigilant closer to roads, particularly when a motorized vehicle is present, and trade off foraging and walking for vigilance (S. Doerries, unpublished data), higher levels of vehicle traffic may result in nutritional costs for Sonoran pronghorn. Disturbance during the fawning season and hotter, drier times of the year is more likely to result in adverse impacts to pronghorn compared to other times of the year due to the physiological stress pronghorn are under when it is hot and dry and the increased energetic demands of caring for fawns. Because the majority of hunting will occur outside of the fawning season and during the cooler fall and winter months, disturbance from vehicle traffic associated with hunting will mostly occur when Sonoran pronghorn are less vulnerable and less physiologically stressed. No vehicle disturbance to Sonoran pronghorn off of public roads and administrative roads in non-Wilderness will occur because no off-road vehicle traffic will be authorized for hunting activities (Conservation Measure #4). Should severe, prolonged drought pose a threat to Sonoran pronghorn recovery, even during the cooler fall or winter months, the option of temporary closures of the Refuge to public use, including hunting and hunter vehicle traffic (Conservation Measure #15), can eliminate the risk of hunter vehicle disturbance to Sonoran pronghorn during this stressful period, if this option is implemented.

Gunshot Noise Disturbance

For the approximately 10-day general mule deer hunt in November, an average of 5 shots fired per day are anticipated if all hunters were to take one shot at a deer (CPNWR 2020). Given a hunter success rate around 30%, however, less than 2 shots fired per day on average are expected (CPNWR 2020). These 20 shots (2 shots per day for 10 days in November) will be distributed across 167,000 acres, with the highest density (about 1 gunshot per 5,000 affected acres each day) occurring in Childs Valley (CPNWR 2020). More gunshots per day are likely to occur during quail season from October through mid-February, with 0 – 250 shots occurring per day during three days per week, generally in Childs Valley. Therefore, Sonoran pronghorn using Childs Valley (up to approximately 25 wild animals or 11% of the endangered Sonoran pronghorn population in Arizona) in October through mid-February have the greatest likelihood of being exposed to gunshot noise disturbance. Sonoran pronghorn using areas outside of Childs Valley are less likely to be exposed to gunshot noise disturbance because Sonoran pronghorn are sparsely distributed over large areas of the Refuge. Therefore, the chance of Sonoran pronghorn occurring within the auditory range of the fewer than 20 shots is likely low. Noise from any gunshots by bighorn sheep hunters will be limited to mountain ranges, outside of suitable Sonoran pronghorn habitat, and therefore should not result in disturbance to pronghorn.

Noise associated with gunshots in or near Sonoran pronghorn habitat may intermittently disturb pronghorn and could cause them to flee and temporarily avoid areas affected by noise. As discussed above, pronghorn may use select areas with the lower noise levels and avoid areas with the higher noise levels. According to CPNWR, however, gunshots should be barely audible above background noise at distances greater than 0.75 mile. Habituation to sonic booms, which are comparable to gunshots in sound pressure level, has been documented in American pronghorn (Krausman et al. 2004), suggesting the potential for Sonoran pronghorn to become habituated to gunshots. Furthermore, various conservation measures will be implemented to minimize the effects of gunshot noise on Sonoran pronghorn. No night hunting will be permitted on the Refuge (Conservation Measure #1), therefore Sonoran pronghorn will not be exposed to any noise from gunshots between about ½ hr after sunset and ½ hr before sunrise the following day. Target shooting or the discharge of a weapon will continue to be strictly prohibited (Conservation Measure #12) except for legal harvest of wildlife such that any impacts associated with noise from gunshots would be minimized. Should severe, prolonged drought pose a threat to Sonoran pronghorn recovery, even during the cooler fall or winter months, the option of temporary closures of the Refuge to public use, including hunting (Conservation Measure #15), can eliminate the risk of gunshot noise to Sonoran pronghorn during this stressful period.

Hunter Disturbance at Sonoran Pronghorn Waters and Forage Enhancement Plots

Out of 12 Sonoran pronghorn waters, two are within one mile of a public access route, four waters within two miles, and five within three miles. So that means that 5 of 12 Sonoran pronghorn waters are within the general distance hunters move away from the vehicles (i.e., hunters usually stay within 1-3 miles of their vehicle) (CPNWR 2020). Because no buffers around Sonoran pronghorn waters or forage enhancement plots are included as part of the proposed action, hunters could disturb Sonoran pronghorn using waters or could exclude them from waters due to hunter presence. Hunter disturbance of Sonoran pronghorn at waters and forage enhancement plots could cause severe physiological stress (e.g., dehydration) to Sonoran pronghorn, particularly during times of extended drought. We anticipate, however, that this will rarely occur for the following reasons. The most popular game species, mule deer and quail, seldom utilize waters during these hunting seasons (October to February) (CPNWR 2020; personal communication with S. Doerries, CPNWR, July 7, 2020). Sonoran pronghorn use of waters and forage enhancement plots is also generally low during these hunts (October through February) (CPNWR 2020; personal communication with S. Doerries, CPNWR, July 7, 2020). Sonoran pronghorn typically use waters from April through September, but no hunter use days are expected May through September because most people avoid hunting in temperatures above 90°F (CPNWR 2020). Therefore disturbance of Sonoran pronghorn at waters during this stressful period should be very rare. Should severe, prolonged drought pose a threat to Sonoran pronghorn recovery, even during the cooler fall or winter months, the option of temporary closures of the Refuge to public use, including hunting (Conservation Measure #15), can eliminate the risk of hunter disturbance to Sonoran pronghorn at waters and forage enhancement plots during the stressful period. Refuge visitors and their stock are prohibited from consuming water from wildlife waters (Conservation Measure #13) and State law prohibits anyone from camping within ¼ mile of any wildlife water. Additionally, placement of game cameras at waters is prohibited (Conservation Measure #10), so there will be no disturbance to Sonoran pronghorn at waters due to hunter placement and maintenance of cameras.

Hunter Use of Dogs

The use of hunting dogs may disturb Sonoran pronghorn, however, Conservation Measure #8 will greatly minimize the risk of disturbance by limiting the use of dogs to pointing and retrieving of quail and retrieving of dove. While the use of hunting dogs has been limited, the use of dogs for quail and dove retrieval (quail and dove season lasts from October to February) may still result in disturbance to Sonoran pronghorn. The late season dove hunt will not overlap with fawning season and very little, if any, hunting of Eurasian collared-dove will occur on the Refuge; therefore, dogs associated with these two hunts will not affect fawning of Sonoran pronghorn, which typically occurs from January to May, with the peak in March or April depending on the year. Quail season will overlap with about the first two weeks of Sonoran pronghorn fawning season, therefore dogs associated with this hunt will have the greatest chance of affecting does with fawns or fawns. Very young fawns could not flee from a dog and could be vulnerable to being injured or killed by a dog, however, Conservation Measure #8 (dogs will remain in the control of the hunters at all times) will reduce the risk of direct harm to fawns from dogs. Because control of dogs by voice command can fail, if Refuge law enforcement determines that hunting dogs are not under the control of the hunter, the officer can request that the hunter leash their animals. While this may help reduce the risk of harm to Sonoran pronghorn, it will not eliminate the risk because law enforcement is not likely to detect all instances of dogs not under control of hunters.

Even if dogs are under control of hunters, the presence of dogs with hunters during quail and dove season could lead to general disturbance (e.g., increased vigilance, fleeing) of all Sonoran pronghorn (not just does with fawns and fawns as discussed above). As explained in previous sections, because the majority of hunting will during the cooler fall and winter months, disturbance from hunting dogs will mostly occur when Sonoran pronghorn are less physiologically stressed. Should severe, prolonged drought pose a threat to Sonoran pronghorn recovery, even during the cooler fall or winter months, the option of temporary closures of the Refuge to public use (Conservation Measure #15) can eliminate the risk of hunting dog disturbance to Sonoran pronghorn during this stressful period, if this option is implemented.

Predator removal

Because coyote, bobcat, and mountain lion are known predators of Sonoran pronghorn, their removal via hunting may have a beneficial effect on the Sonoran pronghorn population. However, the level and timing of predator removal needed to confer a benefit to the Sonoran pronghorn population have not been rigorously studied.

Vehicle strikes

Hunter, FWO, and WM vehicles have the potential to collide with pronghorn causing injury and/or death, but the risk of such collisions should remain low under the existing speed limits on the Refuge (i.e., 25 mph), including a reduced-speed zone near the Sonoran pronghorn captive breeding pen in Childs Valley. The greatest risk of vehicle strikes is expected to occur in Childs Valley because, as explained above, this is where the majority of hunter use is expected. While Sonoran pronghorn mortalities due to vehicle strikes have been documented numerous times on highways, no mortality associated with a vehicle collision has ever been documented on the Refuge. Refuge roads are unpaved, poorly maintained, and of native material therefore highway speeds are not attainable. Evidence suggests that one Sonoran pronghorn was struck and killed

by a vehicle dirt road north of the BMGR, but this dirt road was a high speed, two-lane well maintained dirt road. Conservation measures #2 (slower vehicle speeds if Sonoran pronghorn are encountered), #4 (vehicle use of authorized roads only), and #6 (speed limit enforcement, including a reduced speed zone near the Sonoran pronghorn captive breeding pen) will further minimize the risk of hunter collisions with Sonoran pronghorn. The duration of the proposed project is indefinite and we anticipate the Cabeza pronghorn population may grow beyond the current estimated size. Therefore, the likelihood of a pronghorn being struck by a vehicle could increase over time as the population increases.

Accidental shooting

Although the number of hunters on CPNWR will increase under the proposed action, accidental shooting of a pronghorn would still be highly unlikely to occur. According to AZGFD, very rarely do hunters shoot the wrong species (CPNWR 2020). For example, hunting (including mule deer hunting) is allowed on Kofa NWR and there have been no documented accidental shootings of a Sonoran pronghorn since the subspecies' reintroduction to Kofa NWR in January 2013. Accidental shooting of a Sonoran pronghorn by a bighorn sheep hunter is very unlikely to occur because Sonoran pronghorn and bighorn sheep habitat typically do not overlap (most impacts from bighorn sheep hunters will be in the mountains away from suitable pronghorn habitat). Prohibiting night hunting (Conservation Measure #1) and conducting hunter education (Conservation Measure #2) will further minimize the likelihood of accidental shooting.

Habitat disturbance

The proposed hunting program may result in some unquantifiable amount of Sonoran pronghorn habitat disturbance and degradation. For example, vehicle use of roads can cause soil erosion, changes in surface hydrology (from channelization of water in entrenched vehicle track prisms), and spread non-native plant species, such as Sahara mustard, on the Refuge. Campfires made by hunters have the ability to start wildfires and backcountry hiking by hunters could result in some minor vegetation disturbance. Spike camps for bighorn sheep hunters may be established in Sonoran pronghorn habitat and therefore may disturb vegetation and soils in Sonoran pronghorn habitat. We anticipate the amount of habitat disturbance and degradation will be small because hunters will be required to follow all existing regulations regarding public use of the Refuge, like only using authorized roads. Furthermore, potential degradation of Sonoran pronghorn habitat by hunters, however, will be minimized by a number of conservation measures, like the continued implementation of the Leave-No-Trace program (Conservation Measure #10) and the prohibition on the use of wheeled carts (Conservation Measure #5). With regard to fires, the Refuge Manager has the ability to restrict campfires during times of high fire risk. The extremely low density of bighorn sheep hunters and deliberate dispersion of spike camps by the Refuge via the SUP system will also minimize impacts to Sonoran pronghorn habitat.

Conservation Measures

As described throughout the effects analysis, conservation measures included in the proposed action will minimize adverse effects to Sonoran pronghorn. In addition to many on-the-ground measures, importantly, the Refuge has committed to make adjustments to any aspect of the hunt program to minimize impacts on Sonoran pronghorn and ensure recovery efforts are not hindered by the hunting program (Conservation Measure #14). Also, the Refuge Manager may, if needed, temporarily close important Sonoran pronghorn areas to public use including hunting, if such a

closure would likely reduce the threat (e.g., severe, prolonged drought) to recovery. This is critical because it is certain that a severe, prolonged drought will occur sometime during the indefinite time period of the action.

Effects to Sonoran Pronghorn Recovery with the Project

The six recovery criteria in the 2016 Recovery Plan for the Sonoran Pronghorn, Second Revision are:

1. At least three free-ranging populations are viable. Two of these must be the Cabeza population and either the Quitovac or Pinacate population. The Recovery Team defines a viable population as one that has less than a 10% probability of extinction over 50 years and a growth rate that is stable or increasing. Furthermore, at least one new population must have been established, in addition to the Kofa subunit (e.g., Saucedá subunit). Established means that the population is stable and is no longer in need of augmentation from a captive breeding program.

A Population Viability Analysis (PVA) estimated abundance targets to meet the Recovery Team's definition of viability, which is different for each management unit due to different environmental conditions. To be considered viable, a population estimate must meet or exceed the abundance targets and demonstrate a population growth rate that is stable or increasing ($r \geq 0$) for at least 10 of 14 years. Abundance targets for each management unit are estimated from the PVA to be: a) 225 in the Cabeza Prieta Management Unit; b) 150 in the Kofa subunit or a new subunit (Saucedá or other future established subunit); c) 150 in the Pinacate Management Unit; and d) 450 in the Quitovac Management Unit. These population sizes must be estimated by monitoring (i.e., aerial surveys).

2. Within the Cabeza Prieta Management Unit, Pinacate Management Unit, Quitovac Management Unit and the Kofa and Saucedá subunits of the Arizona Reintroduction Management Unit, a minimum of 90% of current Sonoran pronghorn habitat within each unit is retained and contiguous. This Sonoran pronghorn habitat is protected through agency policies, land use regulations and plans, landowner agreements, incentives, and/or other programs and agreements. The 90% of retained and contiguous Sonoran pronghorn habitat includes key habitat features such as water sources.
3. Threats to Sonoran pronghorn habitat quality in three units are stabilized or decreasing as measured by indicators described in Appendix E. Threats must be stabilized or decreased in the three management units that correspond to the three populations that meet the population viability criteria in Recovery Criteria number 1. In particular, the threats of overgrazing; unauthorized routes, roads and trails; invasive plant and animal species threatening Sonoran pronghorn habitat; and spread of shrubby vegetation are minimized through agency policies,

land use regulations and plans, landowner agreements, incentives, and/or other programs and agreements.

4. Within the Cabeza Prieta Management Unit, Pinacate Management Unit, Quitovac Management Unit, and the Kofa and Saucedo subunits of the Arizona Reintroduction Management Unit, human disturbance is alleviated such that a minimum of 90% of Sonoran pronghorn habitat can be occupied by Sonoran pronghorn.
5. Genetic diversity for three populations, as measured by heterozygosity and allelic richness¹ for nuclear DNA markers, has been retained from levels indicated in Culver and Vaughn (2015). These three populations must meet the threshold of viability as described in Downlisting Criterion 1. The minimum level of heterozygosity² of any of the three populations must be 49% (i.e., within 20% of the average heterozygosity of population segments (10) estimated by Culver and Vaughn (2015)). The minimum level of allelic richness of any of the three populations must be 1.96 (i.e., within 20% of the average allelic richness of population segments (10) estimated by Culver and Vaughn (2015)).
6. Effective federal, state, tribal, and/or local laws are in place in the recovery conservation units that ensure that killing of Sonoran pronghorn is prohibited or regulated such that viable populations of Sonoran pronghorn can be maintained and are highly unlikely to need the protection of the ESA again.

Any action that significantly reduces the likelihood of achieving the aforementioned recovery criteria is likely to cause Sonoran pronghorn to pass the tipping point for recovery. The proposed action is not likely to significantly affect or preclude the achievement of these six recovery criteria, and therefore not likely to cause Sonoran pronghorn to reach the tipping point for recovery, for the following reasons:

1. The action should not affect the ability of the Cabeza Prieta Management Unit (i.e., the action area) to sustain a viable population of 225 Sonoran pronghorn. The “Cabeza” population estimate is currently approximately 225 and CPNWR remains the leader of Sonoran pronghorn recovery and will continue to implement recovery actions for the Cabeza population of Sonoran pronghorn. While the proposed action is likely to adversely affect the “Cabeza” population of Sonoran pronghorn, including disturbing and possibly injuring or killing pronghorn, conservation measures will help to significantly minimize the risk of these potential impacts.

¹ Allelic richness is a measure of the average number of alleles that takes into account rarity and commonness of alleles and provides an additional measure of genetic diversity that complements heterozygosity.

² Heterozygosity is a measure of the proportion of individuals in a population having two different alleles of the same gene.

2. The proposed action does not include new construction, roads, or other barriers in Sonoran pronghorn habitat; therefore it should not reduce the amount of, nor fragment current Sonoran pronghorn habitat.
3. The proposed action does not include activities that will affect Sonoran pronghorn habitat quality beyond baseline levels (i.e., threats to habitat quality with the project would be considered stable).
4. The proposed action will result in an increase in human activity in Sonoran pronghorn range and is likely to result in increased disturbance to Sonoran pronghorn. However, most of the human activity will occur in areas with regular human use and conservation measures (e.g., no hunting at night, dove hunting restricted to late season) will minimize the risk of disturbance, particularly during more stressful times of the year (i.e., fawning season, hot/dry season). Importantly, the Refuge has committed to make adjustments to the hunt program to minimize impacts on Sonoran pronghorn and ensure recovery efforts are not put at risk. Therefore, human activity associated with the proposed action is not anticipated to permanently preclude the use of Sonoran pronghorn in habitat opened to hunting (i.e., the habitat opened to hunting is likely to continue to be occupied by Sonoran pronghorn).
5. The proposed action will not significantly affect the retention of genetic diversity of the endangered U.S. Sonoran pronghorn, as it will not further fragment the Sonoran pronghorn populations or significantly reduce population size.
6. The proposed action will have no effect on laws that prohibit the killing of Sonoran pronghorn.

Therefore, while the proposed action may result in some adverse effects, including possible mortality, to Sonoran pronghorn, the proposed action is not anticipated to appreciably reduce the likelihood of recovery of the Sonoran pronghorn for the reasons explained above.

Changes in Pronghorn Status with the Project

Five populations of Sonoran pronghorn exist throughout their range, including two in Mexico (Quitovac and Pinacate) and three in Arizona (Cabeza, Kofa, and Saucedo) (Figure 3). Two of the populations (Kofa and Saucedo) in Arizona are nonessential experimental populations. Four of five populations (Cabeza, Kofa, Saucedo, and Pinacate) occur primarily within federally protected lands (in Sonora and Arizona). The largest population (Quitovac) occurs primarily outside of protected lands in Mexico and consequently, is at greatest risk (i.e., authorities have much less of an ability to control activities that may harm pronghorn outside of federally protected lands). The survival of the three endangered populations (i.e., Cabeza, Pinacate, and Quitovac) is critical to the survival of this species. However, because the largest population (Quitovac) occurs outside of a protected area, ensuring the survival of the two populations within federally protected areas (Cabeza and Pinacate), including the one in Arizona (Cabeza) located at CPNWR, BMGR, OPCNM, and BLM lands, is even more imperative.

Of the Cabeza and Pinacate populations, the one in Arizona (Cabeza population), which comprises approximately 20% of the total number of wild, endangered pronghorn, is the only one over which CPNWR has management authority. Additionally, critical recovery projects, including the CPNWR captive breeding pen, forage enhancement plots, and pronghorn waters, are located in the range of the Cabeza population. Therefore, although the majority (80%) of wild, endangered Sonoran pronghorn occur outside of the U.S. and will not be affected by the proposed action, because of the importance of the U.S. population, it is critical that project impacts are minimized to the greatest degree possible. Accordingly, as part of their proposed action, CPNWR will implement numerous conservation measures (discussed throughout the effects analysis) that will significantly minimize impacts of the proposed project and will help to ensure these impacts do not significantly affect the reproduction, numbers, and distribution of endangered Sonoran pronghorn in the wild in Arizona. CPNWR remains committed to the recovery of Sonoran pronghorn and will continue to lead and implement Sonoran pronghorn recovery on and off the Refuge, as discussed in the Recovery Action section of the Status of the Species. These efforts continue to improve pronghorn reproduction, numbers, and distribution.

In conclusion, although aspects of the proposed action will result in impacts to Sonoran pronghorn in the U.S., CPNWR's commitment to implement conservation measures and to continue to lead and implement recovery actions for Sonoran pronghorn will help to ensure these impacts do not significantly affect the reproduction, numbers, and distribution of Sonoran pronghorn and thus not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

CUMULATIVE EFFECTS - SONORAN PRONGHORN

Cumulative effects are those “effects of future State or private activities, not involving federal activities, that are reasonably certain to occur within the action area” considered in this Opinion (50 CFR 402.02).

Most lands within the action area are managed by Federal agencies; thus, most activities that could potentially affect pronghorn are Federal activities that are subject to section 7 consultation. The effects of these Federal activities are not considered cumulative effects. Relatively small parcels of private and State lands occur within the range of the endangered pronghorn near Ajo and Why, north of the BMGR from Dateland to Highway 85, and from the Mohawk Mountains to Tacna. State inholdings in the BMGR have been acquired by the Department of Defense. Continuing rural and agricultural development, recreation, vehicle use, grazing, and other activities on private and State lands adversely affect pronghorn and their habitat. The effects of the activities on Sonoran pronghorn are discussed in detail in the “Threats Assessment” section of the 2016 Final Recovery Plan for the Sonoran Pronghorn. In summary, however, these activities result in decreased habitat quantity and quality for Sonoran pronghorn, increased disturbance from human presence, and in some cases, may result in direct mortality of Sonoran pronghorn. For example, multiple Sonoran pronghorn deaths have been documented from vehicle strikes, as discussed in the “Threats” section of the “Status of the Species.” MCAS-Yuma (2001) reports that 2,884 acres have been converted to agriculture near Sentinel and Tacna. These activities on State and private lands and the effects of these activities are expected

to continue into the foreseeable future. Historical habitat and potential recovery areas currently outside of the current range are also expected to be affected by these same activities on lands in and near the action area in the vicinity of Ajo, Why, Yuma, and along the Gila River.

Cross-border violator (CBV) activity in the action area also results in various adverse effects to Sonoran pronghorn. CBV activity and its effects to pronghorn are described in detail in the 2016 Final Recovery Plan for the Sonoran Pronghorn. In summary, however, CBV activity has resulted in route proliferation, off-highway vehicle activity, increased human presence in backcountry areas, discarded trash, cutting of firewood, illegal campfires and arson fires, and increased chance of wildfire. Habitat degradation and disturbance of pronghorn have resulted from these CBV activities.

CONCLUSIONS - SONORAN PRONGHORN

After reviewing the current status of the Sonoran pronghorn, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the Sonoran pronghorn. No critical habitat has been designated for this species; therefore, none will be affected. We base this conclusion on the following:

1. There is a risk that hunting-related activities may disturb, injure, or kill Sonoran pronghorn on or near CPNWR. However, conservation measures included in the proposed action help reduce disturbance to Sonoran pronghorn and their habitat, as well as the risk of injury or death of Sonoran pronghorn on CPNWR from hunting-related activities. Among these measures are prohibiting hunting at night, restricting dove hunting to the late season, and prohibiting the use of hunting dogs except for dove and quail retrieval. The Refuge has committed to make adjustments to the hunt program if necessary to minimize impacts on Sonoran pronghorn and ensure recovery efforts are not put at risk. This may include the temporary emergency closure of specific areas of the Refuge to public use, including hunting, if it is needed to reduce a threat to Sonoran pronghorn recovery. Thus, the project is not expected to significantly affect the distribution, numbers, and reproduction of Sonoran pronghorn in the wild.
2. The proposed action will not result in the loss of or further fragmentation of Sonoran pronghorn habitat beyond baseline levels.
3. The proposed action will occur within the range of the Cabeza Sonoran pronghorn population in Arizona, one of three endangered populations of Sonoran pronghorn in the United States and Mexico. The Cabeza population occurs primarily on federally protected lands in Arizona, including CPNWR, OPCNM, BMGR, and BLM lands, and represents approximately 20% of all endangered Sonoran pronghorn in the United States and Mexico. Conservation measures will minimize effects of the proposed action on this population of pronghorn. Therefore, the proposed action will not have an appreciable impact on the population at the rangewide scale. Thus, the proposed action is not expected to reduce appreciably the likelihood of both survival and recovery of the

Sonoran pronghorn in the wild by reducing the reproduction, numbers, or distribution of the species.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

INCIDENTAL TAKE STATEMENT – SONORAN PRONGHORN

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. “Harm” is defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3). “Harass” is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering (50 CFR 17.3). “Incidental take” is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Service for the exemption in section 7(o)(2) to apply. The Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Service (1) fails to assume and implement the terms and conditions or (2) fails to require any applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Service must report the progress of the action and its impact on the species as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

The Service anticipates three Sonoran pronghorn every 20 years will be taken as result of this proposed action (the length of the action is indefinite). Three pronghorn represent approximately 1% of the current total number of Sonoran pronghorn in the action area (i.e., 1% of the Cabeza population, the only endangered population in the U.S.) or approximately 0.28% of all endangered Sonoran pronghorn in the U.S. and Mexico. The incidental take is expected to be in the form of direct mortality or injury from strikes with vehicles **or** in the form of harassment from hunting activities that may disturb Sonoran pronghorn (gunfire and vehicle, human, and dog presence). The following amounts of incidental take are authorized:

1. One Sonoran pronghorn every 20 years in the form of direct mortality or injury from strikes with vehicles; and

2. Two Sonoran pronghorn every 20 years in the form of harassment due to disturbance from hunters, vehicles, dogs, and gunshots.

EFFECT OF THE TAKE

In the accompanying biological opinion, we have determined that the level of anticipated take is not likely to result in jeopardy to the Sonoran pronghorn. Although we anticipate some incidental take to occur, the implementation of the conservation measures proposed should ultimately result in avoidance and minimization of adverse effects.

REASONABLE AND PRUDENT MEASURES and TERMS AND CONDITIONS

All conservation measures including avoidance and minimization measures, status surveys, biological and compliance monitoring, and reporting measures are incorporated herein by reference as reasonable and prudent measures and terms and conditions to address the incidental take of Sonoran pronghorn. No additional reasonable and prudent measures or terms and conditions were identified during the consultation.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the Service's Law Enforcement Office, 4901 Paseo del Norte NE, Suite D, Albuquerque, NM 87113; 505-248-7889) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

In addition to the above, the 2020 (or most recent version) Final Incident Response Protocol for Sonoran pronghorn will be followed.

CONSERVATION RECOMMENDATIONS – SONORAN PRONGHORN

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We recommend implementing the following:

1. Continue to implement Sonoran Pronghorn recovery.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the hunting on CPWNR. As provided in 50 CFR §402.16, reinitiation of consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion or written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Certain project activities may also affect species protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. sec. 703-712) and/or bald and golden eagles protected under the Bald and Golden Eagle Protection Act (Eagle Act). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the FWS. The Eagle Act prohibits anyone, without a FWS permit, from taking (including disturbing) eagles, and including their parts, nests, or eggs. If you think migratory birds and/or eagles will be affected by this project, we recommend seeking our Technical Assistance to identify available conservation measures that you may be able to incorporate into your project.

For more information regarding the MBTA and Eagle Act, please visit the following websites. More information on the MBTA and available permits can be retrieved from <http://www.fws.gov/migratorybirds> and <http://www.fws.gov/migratorybirds/mbpermits.html>. For information on protections for bald eagles, please refer to the FWS's National Bald Eagle Management Guidelines (72 FR 31156) and regulatory definition of the term "disturb" (72 FR 31132) published in the Federal Register on June 5, 2007 (<http://www.fws.gov/southwest/es/arizona/BaldEagle.htm>), as well at the Conservation Assessment and Strategy for the Bald Eagle in Arizona (SWBEMC.org).

In keeping with our trust responsibilities to American Indian Tribes, we encourage you to continue to coordinate with the Bureau of Indian Affairs in the implementation of this consultation and, by copy of this biological opinion, are notifying the Tohono O'odham Nation of its completion. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department.

Please refer to the consultation number, 02EAAZ00-2017-F-0039, in future correspondence concerning this project. Should you require further assistance or if you have any questions, please contact Erin Fernandez (520) 670-6150 (x238) or Julie McIntyre (x223).

Approved:

Jeffrey A. Humphrey, Field Supervisor
Arizona Ecological Services Office

7.29.20

cc (electronic copy):

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Honorable Chairman, Ned Norris Jr., Tohono O'odham Nation, Sells, AZ (Attn: Alex
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TABLES AND FIGURES

Table 6. Wild and captive Sonoran pronghorn numbers. From 1992 to 2016, wild Sonoran pronghorn population estimates are provided after adoption of standard field surveys and sightability model for wild population estimations (numbers in parentheses are 95% confidence intervals) (FWS 2016; AZGFD Data). From 2017 to 2019, Sonoran pronghorn observed and estimated are provided. The numbers for the Cabeza population in 2020, as well as the Kofa and Saucedo populations in all years, are based on data collected during telemetry flights instead of the standard field survey and sightability model.

Year	Sonora, Mexico (Pinacate)	Sonora, Mexico (Quitovac)	Arizona, U.S. (Cabeza wild)	Arizona, U.S. (Nonessential Experimental Population wild, Kofa)	Arizona, U.S. (Nonessential Experimental Population wild, Saucedo)
1992	-	-	179 (147-234)	-	-
1994	-	-	282 (205-489)	-	-
1996	-	-	130 (114-154)	-	-
1998	-	-	142 (125-167)	-	-
2000	34 (27-48)	311 (261-397)	99 (69-392)	-	-
2001	-	-	-	-	-
2002	25 (21-33)	260 (216-335)	21 (18-33)	-	-
2003	-	-	-	-	-
2004	59 (32-171)	624 (454-2079)	58 (40-175)	-	-
2005	-	-	-	-	-
2006	67 (54-195)	567 (445-1530)	68 (52-117)	-	-
2007	50 (36-162)	354 (327-852)	-	-	-
2008	-	-	68	-	-
2009	101 (57-321)	381 (268-1158)	-	-	-
2010	-	-	76 (58-210)	-	-
2011	52 (32-183)	189 (168-435)	-	-	-
2012	-	-	159 (111-432)	-	-
2013	No survey	434 (376-1105)	-	9	-
2014	122 (79-464)		202 (171-334)	30	-
2015	117 (98-224)	862 (759-2129)			-
2016			228 (196-616)	70	41

2017	72 estimated; 52 observed	683 estimated; 559 observed			
2018			215 estimated; 160 observed	80 estimated; 71 observed	50 estimated; 46 observed
February 2020	126 estimated; 54 observed	737 estimated; 393 observed	225 estimated	120 estimated	60 estimated

Figure 1. Cabeza Prieta National Wildlife Refuge boundary, designated Wilderness, no hunting zones, and State GMUs.

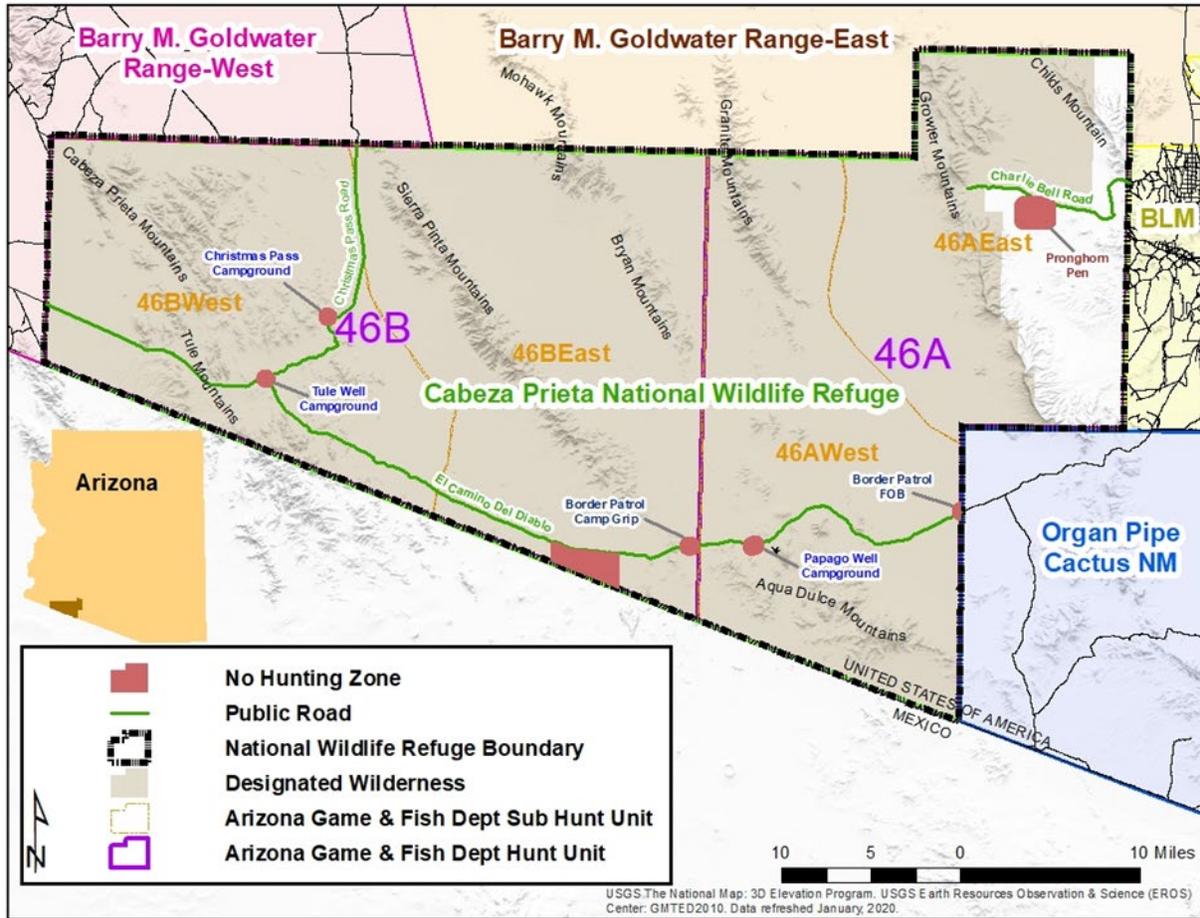


Figure 2. Historical and current ranges of Sonoran pronghorn in the United States and Mexico (FWS 2016).

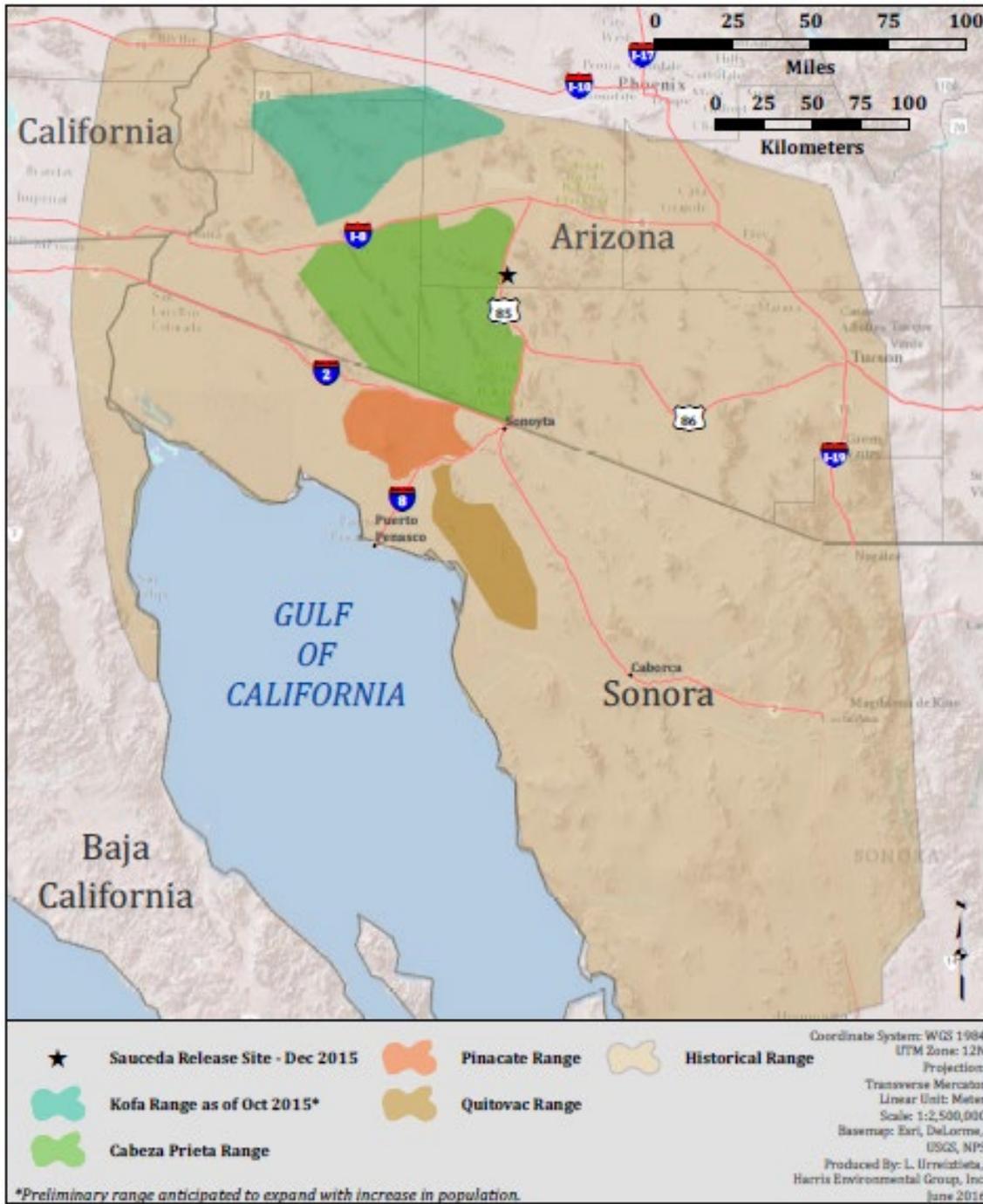


Figure 3. Sonoran pronghorn range in the United States and Mexico. The endangered Sonoran pronghorn range in southwestern Arizona, United States, is depicted in yellow cross-hatching (FWS 2016). The nonessential experimental population area, Arizona, is depicted in black cross-hatching. The endangered Sonoran pronghorn range in Sonora, Mexico, is depicted in orange and red cross-hatching.

