United States Department of the Interior

Fish and Wildlife Service

Arizona Ecological Services Office

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In Reply Refer to:
AESO/SE
02EAAZ00-2017-F-0039

May 3, 2017

Mr. Gordon Rogers
Garrison Manager
U.S. Army Garrison Yuma Proving Ground
301 C Street, Building 307
Yuma, Arizona 85365

RE: Formal Section 7 Consultation on the U.S. Army Yuma Proving Ground's Extended Range Cannon Artillery Test Program, Yuma and Maricopa Counties, Arizona

Dear Mr. Rogers:

Thank you for your request for formal consultation/conference with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1531-1544), as amended (Act). Your request was dated October 4, 2016, and received by us on October 5, 2016. At issue are impacts that may result from the proposed Extended Range Cannon Artillery (ERCA) Test Program on Barry M. Goldwater Range (BMGR) East and West located in Yuma and Maricopa Counties, Arizona. The proposed action may affect Sonoran pronghorn (*Antilocapra americana sonoriensis*).

One component of the ERCA will occur on the United States Army Yuma Proving Ground (YPG). Sonoran pronghorn at YPG are part of a nonessential experimental population under section 10(j) of the Act. The proposed ERCA program at YPG is covered by an existing Biological Opinion on Activities and Operations on YPG (# 02EAAZ00-2014-F-0161, dated September 9, 2014); therefore there will be no further analysis of ERCA program actions located on YPG in this document.

In your letter, you requested our concurrence that the proposed action is not likely to adversely affect the lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*). We concur with your determination. The basis for our concurrence is found in Appendix A.

This biological opinion is based on information provided in YPG's September 6, 2016 Biological Assessment of the Effects of the Extended Range Cannon Artillery (BA), 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, military activities 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

- October 5, 2016: We received your request for formal consultation.
- October 2016 to March 2017: Our office regularly corresponded regarding the proposed action.
- March 31, 2017: We sent you the draft biological opinion.
- April 25, 2017: We received your comments on the draft biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

A complete description of the proposed action is found in the BA and is summarized below. As part of the ERCA program, YPG proposes to test fire long-range artillery projectiles approximately 70 kilometers (km) (43.5 miles) within the BMGR (Figure 1). The BMGR is jointly administered by Marine Corps Air Station Yuma (MCASY), who manages the western portion of BMGR (BMGR West), and Luke Air Force Base (LAFB) 56th Range Management Office, who manages the eastern portion of the BMGR (BMGR East). Artillery projectiles will be fired from BMGR West and land in BMGR East. Test firings will be aimed at selected targets within existing air-to-ground target areas in the North Tactical Range (NTAC) and South Tactical Range (STAC) at BMGR East. Possible targets include: NTAC 106 and 111; STAC 208, 211, and 215. Target selection for each firing event will be based on allowable ordnance, surface danger zone, and Sonoran pronghorn presence. No target will be selected if the surface danger zone extends outside the boundaries of BMGR. Also, YPG will follow Operation Instruction (OI) 13-01 for monitoring Sonoran pronghorn near targets. If, during a pronghorn monitoring session at NTAC or STAC, any pronghorn are observed within 1.0 km (0.62 mile) of a target, that target will be closed for the day and a different target will be selected. During any firing event only one target will be impacted. All rounds fired for the ERCA test on BMGR will contain inert warheads.

The impulse (firing) noise from the cannon at 1 mile (1.6 km) is similar to that of thunder, but of shorter duration. This noise reduces over distance and at distances around 3 miles the sound is barely audible. Noise associated with the incoming rounds at BMGR East will be audible (sound like a “whoosh”) at less than 1 mile (1.6 km) from the flight line, but not nearly as loud as and shorter in duration than aircraft that regularly use the area. The sound of the impact of the round at the target will be limited to the sound of a large piece of solid metal hitting the ground. The projectile would have a very high elliptical trajectory (up to 75,000 feet) except on firing and landing.

On BMGR the duration of the test is indefinite, but will initially be 2 years and could only be extended with additional authorization from the Air Force and Marine Corps. The test firings will occur approximately 3 times per year. Testing may occur any time of year as range scheduling allows. Testing is preferred to occur during the day, but occasional night testing is possible. The duration of each test will be approximately 7 days, including 3 days for setup, 2 days for firing, and 2 days for teardown (setup and teardown activities will only occur on BMGR West). Approximately 12 rounds will be fired each of the two test-firing days. Consequently, about 24 rounds will be fired per event, for a total of 72 rounds fired per year. A survey crew consisting of YPG test personnel will access the target (on BMGR East) subsequent to the conclusion of each firing, if possible. In total, the survey crew will access targets approximately 3 times per year. Access will be by vehicle along authorized roads.

One new temporary gun position (TGP) will be established on BMGR West near Baker Peak. TGPs are generally semicircular in shape with an equipment footprint radius of approximately 60 meters (197 feet), encompassing about 1.5 acres. A TGP can be established anywhere with enough space to accommodate the equipment footprint and will preferably be in an area with previous surface disturbance. Establishment of a TGP may require some grading, leveling and/or backfilling. The same TGPs will be used for each test to the maximum extent possible. YPG will use existing Ground Support Areas (GSA) 71 or 76 as sites for TGPs and use previously disturbed areas as much as possible. One TGP will be established in each GSA. GSA 71 is located just west of the Sonoran pronghorn range, while GSA 76 is located just within the pronghorn range; however, both GSAs are over 3 miles from the nearest pronghorn location as documented from 2000 to 2016 (Figure 2). The temporary gun position at BMGR West will be used for a variety of test activities such as emplacement and firing of weapons systems; emplacement/operation of data collection equipment such as Kineto Tracking Mounts (KTMs), radars, metrological instrumentation, sensors (i.e. telemetry antennae) and staging of support vehicles and other test support equipment (i.e. blastshields). Additional areas may be used near the gun emplacements for multiple mobile temperature conditioning chambers for the artillery projectiles. No permanent infrastructure or utilities will be established at the TGPs for this project.

The cannon will be transported to and from the GSA during setup and teardown for each test on a trailer pulled by a truck (a total of 3 times per year). Transport vehicles will obey speed limits and stay on authorized roads at all times. Ingress and egress to/from the GSA will be from the north on authorized roads. Up to 2 mobile radar tracking devices may be deployed on roadsides in BMGR West or East along the trajectory of the projectile. The tracking units consist of a van with a trailer and generator. The vans may be parked near the roadside and on-board instruments will be operated from within the van to track the projectile during flight.

Conservation Measures

As part of the ERCA project, in addition to some new measures, all applicable conservation measures will be implemented as identified in the Biological Opinion for Ongoing Activities at the Barry M. Goldwater Range by the Marine Corps Air Station-Yuma (2015), and in the Biological Opinion for Military Training on the Barry M. Goldwater Range East (2010). These measures include but are not limited to:

1. All ground personnel will be briefed on the Sonoran pronghorn. The briefings cover the status of the species, the importance of reducing impacts to the species, and any mitigation measures the users must comply with while on the range, specifically OI 13-01.
2. All vehicles will be restricted to designated roads except as required by Explosive Ordnance Disposal (EOD), maintenance, emergency response, and environmental sciences personnel including authorized contractors while conducting required mission support activities. Vehicles will stay within pre-existing EOD clearance areas.
3. Every effort will be made to minimize surface disturbance and to restore the area to the previous condition when restoration is practicable.
4. The YPG will make every effort to minimize the impacts of operations to vegetation and friable soils, and for operations to be consistent with the conservation measures and terms and conditions of Biological Opinions 22410-1995-F-0114-R007 and 22410-1996-F-0094-R003.
5. All YPG personnel and any personnel associated with the ERCA project will obey speed limits on roadways to minimize the probability of a vehicle-pronghorn collision. The 56th RMO OI 13-01 specifies that vehicle speed limits for all ground personnel will be reduced when approaching known Sonoran pronghorn locations. OI 13-01 speed limits on BMGR-East within Sonoran pronghorn habitat are 45 mph on paved roads, 35 mph on major graded roads, and 25 mph on all other roads. If a vehicle is 1-2 km from a Sonoran pronghorn, the speed limit is 15 mph; if a vehicle is less than 1 km from a Sonoran pronghorn, every effort is made to use an alternate route; if none are available and movement is essential, then the speed limit is 15 mph; and if Sonoran pronghorn are observed running due to ground disturbance, vehicles near Sonoran pronghorn will stop until the animals have stopped running.
6. All discarded matter (including but not limited to human waste, trash, garbage, and chemicals) that is generated by test personnel will be disposed of and removed in a manner consistent with federal and State of Arizona regulations. All work sites will be maintained in a sanitary condition.
7. Vehicles or stationary equipment from which hazardous materials may be spilled or leaked that are parked for longer than 2 days will be placed over temporary containment as appropriate. Hazardous or toxic materials that are generated will be disposed of in a manner consistent with federal and State of Arizona guidelines.
8. ERCA testing will represent about 1% of the total munitions delivery on NTAC and STAC on BMGR East. Therefore, YPG will annually contribute 1% (about $2,100) of the funding that the Air Force provides annually (about $210,000) for Sonoran pronghorn recovery. These funds will be provided to the FWS or AGFD to implement priority Sonoran pronghorn recovery actions. Funding will be provided annually as long as the ERCA program is in effect on BMGR (annual funding may be combined in any given year to cover a number of years of ERCA testing).

Reporting

YPG will submit a report to the FWS-Arizona Ecological Services Office (AESO) annually; this report will, at a minimum, include: 1) the number of testing iterations on BMGR and the duration, number of shots, and dates and times (am or pm) of each test; 2) a description of

interactions with or observations of Sonoran pronghorn; and 3) a summary of conservation measures implemented.

STATUS OF THE SPECIES - SONORAN PRONGHORN

A. 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 Cabeza Prieta National Wildlife Refuge (CPNWR), Organ Pipe Cactus National Monument (OPCNM), Bureau of Land Management (BLM) – Ajo Block, and BMGR (endangered population; known as the "Cabeza" population), 2) a population in southwestern Arizona on Kofa NWR, 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 (Figured 3 and 4). 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 (U.S. Fish and Wildlife Service 1982) was revised in 1998 (U.S. Fish and Wildlife Service 1998) and again in 2016 (U.S Fish and Wildlife Service 2016). The 2016 plan (which can be accessed at https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/SonoranPronghorn/FINAL_Sonoran_Pronghorn_Recovery%20Plan_2nd%20Revision_11-16-16.pdf) 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.

B. Life History and Habitat

Life history and habitat is discussed extensively in the 2016 Final Recovery Plan for the Sonoran Pronghorn, Second Revision as well as in YPG's 2014 Biological Opinion.

C. Distribution and Abundance

United States

Endangered Wild Population

Historically, the Sonoran pronghorn ranged in the U.S. from approximately the Santa Cruz River in the east, to the Gila Bend and Kofa Mountains to the north, and to Imperial Valley, California, to the west (Mearns 1907, Nelson 1925, Monson 1968, Wright and deVos 1986, Paradiso and Nowak 1971; Figure 3). The current range of the endangered Sonoran pronghorn in Arizona is described in the 2016 Final Recovery Plan and depicted in Figure 4.

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 individuals in the endangered wild population in Arizona. Table 1 includes population estimates from 1992 to 2016.

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 5 for a map 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. As of January 2017, there are about 70 animals in the 10(j) population on and near Kofa NWR.

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. As of January 2017, there are about 41 animals in the Sauceda population.

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 January 2017 there were 58 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 January 2017, the Kofa pen contains 15 pronghorn (note this number changes frequently with births and releases).

Mexico

Historically, Sonoran pronghorn ranged in Sonora from the Arizona border south to Hermosillo and Kino Bay, west to at least the Sierra del Rosario, and east to the area south of the Baboquivari Valley on the Tohono O'odham Nation (Nelson 1925, Carr 1974, Monson 1968) (Figure 3). The distribution in Baja California is less clear, but observations by Mearns (1907) indicate they occurred in the Colorado Desert west of the Colorado River, as well (Figure 3). The current range of the endangered Sonoran pronghorn in Sonora is described in the 2016 Final Recovery Plan and depicted in Figures 3 and 4.

Abundance and population trends are described in the 2016 Final Recovery Plan. The November 2015 aerial surveys resulted in an estimated 979 (845 observed) individuals combined for both populations (including 862 pronghorn [749 observed] in the area southeast of Mexico Highway 8 known or the Quitovac population and 117 [96 observed] to the west of the highway or the Pinacate population) (Table 2). Table 1 includes population estimates from 2000 to 2015.

D. 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 rare, they have been documented, primarily on paved highways. These documented cases are discussed in the 2016 Recovery Plan.

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 and in YPG's 2014 Biological Opinion (the 2014 opinion can be accessed at https://www.fws.gov/southwest/es/arizona/Documents/Biol_Opin/140161_YPG.pdf).

Since the Recovery Plan was published, a study on the effects of human activities on Sonoran pronghorn was completed. 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).

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 and in YPG's 2014 Biological Opinion.

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.

E. 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 [AGFD], 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, AGFD, MCASY, LAFB, OPCNM, 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.

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 Ecologies 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

The environmental baseline includes past and present impacts of all Federal, state, or private actions in the action area; the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation; and the impact of state and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform from which to assess the effects of the action now under consultation.

Description of the Action Area

The "action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. Within the U.S. portion of the endangered Sonoran pronghorn's range, pronghorn interact to form one population in which interbreeding may occur. The U.S. endangered or "Cabeza" population is effectively separated from the Kofa and Sauceda populations by Interstate 8 and Highway 85, respectively; and the Pinacate and Quitovac populations by Mexico Highways 2 and 8. Activities that may affect animals in any portion of the U.S. range of the endangered pronghorn may affect the size or structure of the U.S. endangered population, or habitat use within the U.S. endangered population range. Therefore, the action area for this biological opinion is defined as the current range of the endangered pronghorn population in the U.S. (Figures 3 and 4).

Management within the endangered Sonoran pronghorn range portion of the action area is almost entirely by Federal agencies. The BMGR (roughly 1.6 million acres) is managed by LAFB and the MCASY primarily for military training. OPCNM manages 329,000 acres in the southeastern corner of the action area for scenic, ecological, natural, and cultural values. CPNWR lies along the border west of OPCNM and encompasses 860,000 acres. CPNWR is managed to protect, maintain, and restore the diversity of the Sonoran Desert. Most of the refuge and OPCNM are designated as wilderness. The BLM manages lands near Ajo for recreation, grazing, and other multiple uses in accordance with the Lower Gila Resource Management Plan. OPCNM and CPNWR are critically important for Sonoran pronghorn recovery because of their management for protection of natural resources. Lands on the BMGR are managed primarily for military training, however, important recovery is ongoing on these lands and the Department of Defense has generously contributed to the recovery program both on and off the BMGR.

A. 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. Sonoran pronghorn occupy nearly all of BMGR East (including NTAC and STAC) and the eastern portion of BMGR West (see Figure 4). In recent years, up to a third of the Cabeza population may occupy NTAC and STAC at any given time.

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 as well as in YPG's 2014 Biological Opinion.

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 2017, rainfall and Sonoran pronghorn range conditions have varied, but have improved overall when compared to 2002. The February 2017 short-term and the January 2017 long-term drought status maps indicate that southwestern Arizona is experiencing conditions of moderate drought to abnormally dry conditions (http://www.azwater.gov/azdwr/StatewidePlanning/drought/DroughtStatus2.htm). However, current conditions of the endangered Sonoran pronghorn range, as of March 2017, are good.

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. 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. 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. Additionally, the semi-captive breeding at CPNWR has been successful at augmenting existing and helping to establish new populations of Sonoran pronghorn.

B. 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.

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), and USBP. In the lists below, we have categorized Federal actions affecting the pronghorn as: 1) those actions that have not yet undergone section 7 consultation (although in some cases consultation has been completed on components of the Federal activity), and 2) Federal actions that have undergone consultation.

Federal Actions For Which Consultation Has Not Been Completed

Examples of Federal actions for which consultation has not been completed include:

1) U.S. Border Patrol Activities in the Tucson and Yuma Sectors, Arizona
2) CBP Hybrid Fence on BMGR and Vehicle Fence on CPNWR
3) CBP Vehicle Fence on CPNWR (another small portion of the fence)

Federal Actions Addressed in Section 7 Consultations

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 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 and March 14, 2014.
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 reinitations 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. Activities and Operations at the United States Army Garrison Yuma Proving Ground, Yuma and La Paz Counties, Arizona, consultation number 02EAAZ00-2014-F-0161,

issued on September 9, 2014. We anticipated incidental take of four Sonoran pronghorn over the life of the project (10-20 years), including two in the form of direct mortality or injury and two in the form of harm.

25. 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.
26. 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.

In summary, the current biological opinions that anticipate incidental take are:

1. the Yuma Sector opinion, in which we anticipated take in the form of harassment that is likely to injure up to one pronghorn in 10 years;

2. the Ajo 1 Tower opinion, in which 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;

3. the Luke Air Force Base Opinion, in which 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;

4. the TIMR opinion, in which we anticipated 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;

5. the Yuma Proving Ground opinion, in which we anticipated take of four pronghorn in the form of direct mortality or injury and harm;

6. the WSFR opinion in which we anticipated take of 26 Sonoran pronghorn, including 20 pen-raised and 6 wild animals, over 5 years, and

7. the U.S. Marine Corps Air Station-Yuma opinion, in which 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.

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 helped the Sonoran Pronghorn Recovery Team construct pronghorn waters and forage enhancement plots, build a captive breeding pen at Kofa NWR, and collar and monitor pronghorn.

C. Summary of Activities Affecting Sonoran Pronghorn in the Action Area

The Cabeza 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 emergency recovery actions, the Cabeza population increased to 228 in 2016. At 228, however, the wild population is still as risk 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 Cabeza population range of the species, 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. Additionally, vehicle barriers on the international border on CPNWR and OPCNM are facilitating recovery of pronghorn by reducing the amount of CBV vehicle traffic in pronghorn habitat.

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 facility at CPNWR and recently established 10(j) populations, provide hope that recovery of the Sonoran pronghorn in the U.S. is achievable. Key to achieving recovery in Arizona will be a reduction in human disturbance to pronghorn and their habitat caused by CBV and corresponding enforcement activities.

EFFECTS OF THE PROPOSED ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

The proposed ERCA project on BMGR may result in intermittent disturbance to Sonoran pronghorn and their habitat for the duration of the proposed project (the duration of the test is indefinite, but will initially be 2 years and could only be extended with additional authorization from the Air Force and Marine Corps). For example, ground support activities and artillery fire may result in visual and/or auditory disturbance of Sonoran pronghorn and projectiles or 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, and the ongoing study by Doerries 2014). 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%). During direct overflights (less than or equal to 100 m to the side of animals), pronghorn changed behavior (e.g., from bedded to standing, walking to bedded, foraging to bedded) 45 times (41%) with 4 changes from any other activity to trotting or running (3.7 %). During overflights greater than 100 m to the side of animals, pronghorn changed behavior 105 times (34%), with 5 changes to trotting or running (1 .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.

Sonoran pronghorn have been documented to exhibit responses to human activity, particularly vehicles traveling on a road within several kilometers (email from Stephanie Doerries, University of Arizona, May 7, 2014). Although some instances were noted where a pronghorn did not exhibit a visual response (for example, one buck did not appear disturbed by three vehicles driving at least 25 miles per hour about 1.5 kilometers away); most observations indicate that pronghorn exhibit a spectrum of responses, from standing vigilant to running from the stimulus. 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).

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).

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.

<u>Effects to Sonoran Pronghorn from ERCA on BMGR West</u>

The effects of ERCA activities on BMGR West may include intermittent disturbance for the duration of the project to Sonoran pronghorn from ground-based activities, as well as from noise produced by the cannon fire. Ground-based activities may also degrade Sonoran pronghorn

habitat. In the past, military interaction with Sonoran pronghorn was rather limited. However, due to recent pronghorn population growth, the likelihood of interactions has increased. That said, most ground-based activities outside or on the edge of the Sonoran pronghorn range are less likely to create exposure to pronghorn and, therefore, less likely to impact them.

Disturbance – Noise and Visual

Noise associated with the firing rounds may intermittently disturb pronghorn and could cause them to flee and temporarily avoid areas affected by noise of the artillery being fired. As discussed above, pronghorn may use select areas with the lower noise levels and avoid areas with the higher noise levels. Additionally, the presence of work crews and vehicles associated with the project may result in visual and auditory disturbance of Sonoran pronghorn. Testing may occur any time of the year; if testing occurs during the fawning season or during seasons or years that are hot and dry, effects of possible disturbance could have more severe consequences for Sonoran pronghorn as explained above. Because testing will occur indefinitely, it is likely that testing will fall during the fawning season or during extreme heat or drought conditions at some point in the future.

Use of GSAs 71 or 76 should reduce potential visual and noise impacts to Sonoran pronghorn because these GSAs are at the western edge of pronghorn range. According to historical pronghorn locations (1994-2015) most pronghorn occur south and west of GSAs 71 and 76. Pronghorn have not been observed within 3 miles of GSA 71 or 76 since 2000; however, this could change if the Cabeza pronghorn population continues to grow and possibly expand its range or if climate factors cause a shift in the pronghorn range. YPGs use of these areas three times per year (7 days per test, for a total of 21 days of total activity) does not represent a large increase in activity on BMGR West or a substantial change in how the GSAs are used. Additionally, vehicles will use authorized roads that already receive regular use.

Habitat disturbance

The ERCA program on BMGR West may result in some Sonoran pronghorn habitat disturbance, however, the amount of disturbance should be minimal. Establishment of the new temporary gun position (TGP) may impact about 1.5 acres per TGP; however, to the extent possible, the TGPs will be placed in previously disturbed areas (within existing GSAs) and same TGPs will be used for each test. Additionally, no permanent infrastructure or utilities will be established at the TGPs for this project. Furthermore, only existing, authorized roads will be used for project implementation.

Collision with vehicles

Vehicles associated with setup and teardown at GSAs on BMGR West could collide with pronghorn during ingress and egress to the target site. However, the risk of collisions should be reduced as all access will be on authorized roads that already see regular use and crews will follow speed limits (see Conservation Measure #5). Additionally, the survey crew will access targets approximately 3 times per year which does not represent a large increase in vehicle traffic on BMGR West compared to baseline levels. The mobile tracking van could also collide with

pronghorn, however, it will also follow speed limits and use authorized roads, thereby reducing risk of collision. The duration of the proposed project is indefinite and we anticipate the Cabeza pronghorn population will 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.

Effects to Sonoran Pronghorn from ERCA on BMGR East

The effects of ERCA activities on BMGR East may include intermittent disturbance to Sonoran pronghorn for the duration of the project from the sound of the artillery in the air and hitting the target and from the mobile tracking van and vehicles accessing the targets. Additionally, there is a small likelihood that the artillery or a vehicle associated with the project may strike a pronghorn. In the past, military interaction with Sonoran pronghorn was rather limited. However, due to recent pronghorn population growth, the likelihood of interactions has increased.

Disturbance – Noise and Visual

Noise impacts associated with the incoming rounds at BMGR East will be audible (sound like a "whoosh") at less than 1 mile (1.6 km) from the flight line, but not nearly as loud as and shorter in duration aircraft that regularly use the area. The sound of the impact of the round at the target will be limited to the sound of a large piece of solid metal hitting the ground. Firing of the gun will barely be audible from BMGR East depending on atmospheric conditions. Noise associated with the incoming rounds may intermittently disturb pronghorn and could cause them to temporarily avoid areas affected by noise of the artillery. As discussed above, pronghorn may use select areas with the lower noise levels and avoid areas with the higher noise levels. That said, the BMGR is already subject to a considerable amount of military noise. Currently, the airspace and targets on BMGR East are used on a daily basis, with aircraft and munitions that are much louder than the proposed ERCA. Additionally, the ERCA project will fire six days per year which does not represent a large increase in activity on BMGR East.

Vehicle and personnel access to targets may cause intermittent visual and auditory disturbance of Sonoran pronghorn. Vehicles can cause pronghorn to startle and/or flee, potentially reducing fitness. However, accessing targets approximately 3 times per year will not represent a large increase in ground-based activities that already occur at BMGR East.

Testing may occur any time of the year; if testing occurs during the fawning season or during seasons or years that are hot and dry, effects of possible disturbance (from projectile noise, vehicles, and personnel) could have more severe consequences for Sonoran pronghorn as explained above. Because testing will occur indefinitely, it is likely that testing will fall during the fawning season or during extreme heat or drought conditions at some point in the future.

Habitat disturbance

The ERCA program will fire at selected existing targets within existing air-to-ground target areas (NTAC and STAC). Therefore, there will be no additional habitat disturbance within the Sonoran Pronghorn range on BMGR East associated with the targets. Projectile impact will be

limited to a 3 to 6 foot (0.91 to 1.8 meter) crater and there will be little risk of fire ignition because the rounds will be inert. Additionally, all access to the targets will be along authorized, existing roads. Therefore, the ERCA project will have no to little additional impact to Sonoran pronghorn compared to baseline levels.

Collision with vehicles

The survey crew accessing the target in a vehicle subsequent to the conclusion of each firing could collide with pronghorn during ingress and egress to the target site. However, the risk of collisions should be reduced as all access will be on authorized roads and crews will follow speed limits (see Conservation Measure #5). Additionally, the survey crew will access targets approximately 3 times per year which will not represent a large increase in vehicle traffic on BMGR East. The mobile tracking van could also collide with pronghorn, however, it will also follow speed limits and use authorized roads, thereby reducing risk of collision. That said, the duration of the proposed project is indefinite and we anticipate the Cabeza pronghorn population will 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.

Strikes with artillery

At BMGR East, in 2015, there were 6,742 munitions drops into targets in NTAC and 7,051 drops on STAC. While ordnance delivery varies by target and ordnance type, some individual target arrays received as many as 1,000 rounds annually. Assuming that a single ordnance delivered from the ERCA program is comparable to one munitions drop, the proposed action under ERCA will deliver up to 72 rounds annually onto existing targets, contributing approximately 1% to munitions deliveries in NTAC and STAC (Berry 2016).

Firing inert artillery projectiles (about 72 rounds per year) into the existing targets on NTAC and STAC poses a risk to pronghorn using the tactical ranges. Artillery projectiles could strike and injure or kill pronghorn; however, we believe the likelihood of this occurring is low because 1) the munitions are inert (i.e., ordnance or pieces thereof would have to fall on or otherwise strike an animal to kill or injure it), and 2) OI 13-01 specific to target closures will be followed. No known incidents of pronghorn being struck by inert artillery on BMGR East have occurred. That said, the duration of the proposed project is indefinite and we anticipate the Cabeza pronghorn population will grow beyond the current estimated size. Therefore, the likelihood of a pronghorn being struck by a projectile could increase over time as the population increases.

<u>Effects to Sonoran Pronghorn Recovery with the Project</u>

The 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 Prieta 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., Sauceda 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 (Sauceda 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 Sauceda 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 Sauceda 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 richness[1] 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 heterozygosity[2] 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

[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.

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.

The proposed action may or may not affect the recovery criteria from the Recovery Plan for the Sonoran Pronghorn, Second Revision in the following ways:

1. The proposed action may adversely affect Sonoran pronghorn, including possibly injuring or killing and disturbing (stressing) pronghorn. However, ongoing conservation measures help to minimize many of those effects. Therefore, 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.

2. The proposed action does not include new construction or roads 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 does not include activities that will considerably increase the amount of human disturbance in Sonoran pronghorn habitat and the action will occur in areas with regular military activity; therefore, proposed activities by YPG that may disturb Sonoran pronghorn are considered stable.

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.

<u>Summary</u>

In summary, the proposed action is anticipated to have some adverse effects on Sonoran pronghorn, but not a substantial amount above existing baseline levels. As the Sonoran pronghorn population continues to grow, the likelihood of encounters between pronghorn and YPG activities (which will occur for an indefinite amount of time) will increase, as well as the possibility that incidental take will result from these activities. The most significant potential

adverse effects to the endangered U.S population from YPG activities include fleeing, increased stress, and exclusion from habitat due to project activities, and the possible injury or death from munitions delivery and vehicle strikes. A number of conservation measures reduce the potential for adverse effects from these activities.

CUMULATIVE EFFECTS - SONORAN PRONGHORN

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

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. MCASY (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.

Of most significant concern to pronghorn is the high level of CBV activity in the action area. CBV activity and its effects to pronghorn are described in the 2016 Final Recovery Plan for the Sonoran Pronghorn. CBV activity has resulted in route proliferation, off-highway vehicle activity, increased human presence in backcountry areas, discarded trash, abandoned vehicles, 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. Although CBV activity levels are still high, the trend in overall CBV apprehensions and drive-throughs has declined in recent years within the action area likely due to increased law enforcement presence, the border fence, and the status of the economy in the U.S. Despite high levels of CBV activity and law enforcement response throughout the action area, pronghorn in the U.S. have managed to increase since 2002 in part due to releases from the captive breeding pen and the construction of forage plots and waters. However, pronghorn use of areas subject to high levels of CBV and law enforcement activity appear to have declined. We expect CBV activities and their effects on pronghorn to continue for the foreseeable future.

CONCLUSIONS - SONORAN PRONGHORN

After reviewing the current status of the Sonoran pronghorn, the environmental baseline for the action area, the effects of the proposed ERCA 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 project-related activities may disturb, injure, or kill Sonoran pronghorn (from vehicular activity or artillery). However, 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 BMGR from project-related activities. Among these measures are adherence to speed limits and OI 13-01.

2. The proposed project will not result in new impacts to or further fragment Sonoran pronghorn beyond baseline levels.

3. Although populations throughout the species' range continue to be at risk, the proposed project will not have an appreciable impact on the population at the rangewide scale. Thus, the proposed action is not expected, directly or indirectly, 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.

4. Recovery is the process that stops the decline of an endangered or threatened species by removing or reducing threats. Recovery ensures the long-term survival of the species in the wild. At that point, the species is recovered, and protection of the ESA is no longer necessary. As discussed above, we do not anticipate that the proposed project will appreciably reduce the likelihood of recovery of the Sonoran pronghorn.

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

AMOUNT OR EXTENT OF TAKE

The FWS anticipates one Sonoran pronghorn on BMGR will be taken as result of this proposed action (the length of the action is indefinite). We anticipate take 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).

We anticipate the above incidental take will be difficult to detect because: 1) dead or impaired individual Sonoran pronghorn are very difficult to find unless they are radio-collared, and even when they are radio-collared, cause of death is difficult to determine because remains are usually highly-scavenged; 2) the status of the species is changing over time through births and natural loss; and, 3) the species ranges over a relatively large area, and thus the same individual can be difficult to re-detect unless it is radio-collared or ear-tagged. However, monitoring and reporting requirements will allow us to assess the effects of proposed project activities on Sonoran pronghorn. In addition, YPG will report to us any mortality or injury of Sonoran pronghorn due to activities carried out or authorized by YPG.

EFFECT OF THE TAKE

In this biological opinion, the FWS determines that this level of anticipated take is not likely to result in jeopardy to the species for the reasons stated in the Conclusions section.

REASONABLE AND PRUDENT MEASURES and TERMS AND CONDITIONS

Because YPG has incorporated into their proposed action many design, conservation, and reporting measures to minimize impacts to Sonoran pronghorn, no Reasonable and Prudent Measures and Terms and Conditions are deemed necessary to further minimize the effects of take.

Review requirement: If, during the course of the action, the level of incidental take is exceeded, such incidental take would represent new information requiring review of the reasonable and prudent measures. YPG must immediately provide an explanation of the causes of the taking and review with the FWS-AESO the need for possible addition of reasonable and prudent measures.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS'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 2015 Final Incident Response Protocol for Sonoran pronghorn will be followed.

CONSERVATION RECOMMENDATIONS – SONORAN PRONGHORN

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA 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 actions:

1. Continue to participate on the Sonoran Pronghorn Recovery Team as staffing and funding permit.

2. Participate in the implementation of the Sonoran Pronghorn Recovery Plan, including providing or pursuing financial support, subject to the availability of funds, to implement recovery actions that are identified by the Sonoran Pronghorn Recovery Team as military mission allows.

3. Avoid and minimize adverse effects to Sonoran pronghorn from military and other activities to the extent practicable.

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

REINITIATION NOTICE

This concludes formal consultation on the action outlined in the request. As provided in 50 CFR 402.16, reinitiation of formal 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 opinion; 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.

We appreciate the YPG's efforts to identify and minimize effects to listed species from this project. 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 Scott Richardson (x242).

Sincerely,

for

Steven L. Spangle
Field Supervisor

cc (hard copy):

Field Supervisor, Fish and Wildlife Service, Tucson, AZ (2 copies)
Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ

cc (electronic copy):

Christa Weise, Refuge Manager, Kofa National Wildlife Refuge, Yuma, AZ
Sid Slone, Refuge Manager, Cabeza Prieta National Wildlife Refuge, Ajo, AZ
James Atkinson, Sonoran Pronghorn Recovery Coordinator, Cabeza Prieta National Wildlife Refuge, Ajo, AZ
Charles Buchanan, Director, 56th Fighter Wing Range Management Office, Luke Air Force Base, AZ
Randy English, Conservation Manager, Marine Corps Air Station Yuma, Yuma, AZ

Marlay Kay Henry, Assistant Director, Department of Natural Resources, Tohono O'odham Nation, Sells, AZ

Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ, pep@azgfd.gov
Regional Supervisor, Arizona Game and Fish Department, Yuma, AZ (Attn: John Hervert)
Raul Vega, Regional Supervisor, Arizona Game and Fish Department, Tucson, AZ

Filename: Final BO ERCA 5.3.17.ef.docx

LITERATURE CITED

Bright, J.L., and J.J. Hervert. 2005. Adult and fawn mortality of Sonoran pronghorn. Wildlife Society Bulletin 33(1):43-50.

Brown, D. E. and R. A. Ockenfels. 2007. Arizona's Pronghorn Antelope, A Conservation Legacy. Arizona Antelope Foundation. 190 pp.

Carr, J.N.. 1974. Complete report-Endangered species investigation. Sonoran pronghorn. Arizona Game and Fish Department, Phoenix, AZ.

Cherkovich, G.M., and S.K. Tatoyan. 1973. Heart rate (radiotelemetric registration) in macaques and baboons according to dominant-submissive rank in a group. Folia Primatol 20:265-273.

Christianson, D. 2017. Analysis of the effects of human activities on Sonoran pronghorn – a noninvasive approach. Final Report to the U.S. Fish and Wildlife Service, 31 January 2017. 58 p.

Culver, M. and E. Vaughn. 2015. Determine Genetic Variability within Wild and Captive Populations of Sonoran Pronghorn. Unpublished report to U.S. Fish and Wildlife Service. 38 pp.

Gershunov, A., B. Rajagopalan, J. Overpeck, K. Guirguis, D. Cayan, M. Hughes, M. Dettinger, C. Castro, R. E. Schwartz, M. Anderson, A. J. Ray, J. Barsugli, T. Cavazos, and M. Alexander. . 2013. Future Climate: Projected Extremes. Pages 126-147 in A. J. G. Garfin, R. Merideth, M. Black, and S. LeRoy, editor. Assessment of Climate Change in the Southwest United States: A Report Prepared for the National Climate Assessment, A report by the Southwest Climate Alliance. Island Press, Washington, DC.

Hughes, K.S., and N.S. Smith. 1990. Sonoran pronghorn use of habitat in Southwest Arizona. Report to Cabeza Prieta National Wildlife Refuge, Ajo, AZ.

Kerley, L. L., J. M. Goodrich, E. N. Smirnov, D. G. Miquelle, H. B. Quigley, and M. G. Hornocker. 2002. Effects of roads and human disturbance on Amur tigers. Conservation Biology 16:97-108.

Krausman, P.R., L.K. Harris, C.L. Blasch, K.K.G. Koenen, and J. Francine. 2004. Effects of military operations on behavior and hearing of endangered Sonoran pronghorn. Wildlife Monographs 157:1-41.

Krausman, P.R., L.K. Harris, S.H. Haas, K.K.G. Koenen, P. Devers, D. Bunting, and M. Barb. 2005. Sonoran pronghorn habitat us on landscapes disturbed by military activities. Wildlife Society Bulletin 33(1):16-33.

Landon, D.M., P.R. Krausman, K.K.G. Koenen, and L.K. Harris. 2003. Pronghorn use of areas with varying sound pressure levels. The Southwestern Naturalist 48(4):725-728.

Mearns, E.A. 1907. Mammals of the Mexican boundary of the United States, Part 1. Bulletin of the U.S. National Museum 56:XVT530.

Moen, A.N., M.A. DellaFera, A.L. Hiller, and B.A. Buxton. 1978. Heart rates of white-tailed deer fawns in response to recorded wolf howls. Canadian Journal of Zoology 56:1207-1210.

Monson, G. 1968. The desert pronghorn. *In* Desert Bighorn Council Transactions. Las Vegas, NV.

Nelson, F.W. 1925. Status of the pronghorn antelope, 1922-1924. U.S. Department of Agriculture Bulletin No. 1346.

Nowak, R.M., and J.L. Paradiso. 1983. Walker's mammals of the world. 4th Ed. Vol. II. Johns Hopkins University. Press, Baltimore, MD.

Paradiso, J.L., and R.M. Nowak. 1971. Taxonomic status of the Sonoran pronghorn. Journal of Mammalogy 52(4):855-858.

Thompson, R.D., C.V. Grant, E.W. Pearson, and G.W. Corner. 1968. Cardiac response of starlings to sound: effects of lighting and grouping. American Journal of Physiology 214:41-44.

U.S. Fish and Wildlife Service. 1982. Sonoran pronghorn recovery plan. U.S. Fish and Wildlife Service, Region 2, Albuquerque, NM. U.S. Fish and Wildlife Service.

_____. 1998. Final revised Sonoran pronghorn recovery plan. U.S. Fish and Wildlife Service, Albuquerque, NM.

_____. 2011. Endangered and threatened wildlife and plants; final rule for the establishment of a nonessential experimental population of Sonoran Pronghorn in southwestern Arizona. Federal Register 76(87): 25593-25611.

_____. 2016. Recovery Plan for the Sonoran pronghorn Recovery Plan, Second Revision. U.S. Fish and Wildlife Service, Albuquerque, NM.

Workman, G.D., T.D. Bunch, J.W. Call, F.C. Evans, L.S. Neilson, and E.M. Rawlings. 1992. Sonic boom and other disturbance impacts on pronghorn antelope (*Antilocapra americana*). Report to the U.S. Air Force, Hill Air Force Base, UT.

Wright, R.L. and J.C. deVos. 1986. Final report on Sonoran pronghorn status in Arizona. Contract No. F0260483MS143, Arizona Game and Fish Department, Phoenix, AZ

TABLES AND FIGURES

Table 1. Wild and captive Sonoran pronghorn estimates after adoption of standard field surveys and sightability model for wild population estimations (numbers in parentheses are 95% confidence intervals) (USFWS 2016; AGFD Data).

Year	Sonora, Mexico (Pinacate)	Sonora, Mexico (Quitovac)	Arizona, U.S. (Cabeza wild)	Arizona, U.S. (Nonessential Experimental Population wild)	Arizona, U.S. (Captive)[a]
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)		7
2005	-	-	-		15
2006	67 (54-195)	567 (445-1530)	68 (52-117)		25
2007	50 (36-162)	354 (327-852)	-		37
2008	-	-	68		51
2009	101 (57-321)	381 (268-1158)	-		73
2010	-	-	76 (58-210)		70
2011	52 (32-183)	189 (168-435)	-		75
2012	-	-	159 (111-432)		98
2013	No survey	434 (376-1105)	-	9	117
2014	122 (79-464)		202 (171-334)	30	119
2015	117 (98-224)	862 (759-2129)			130
2016			228 (196-616)	70 at Kofa 41 at Sauceda	

Figure 1. Map of the proposed ERCA project on BMGR and YPG, Arizona (credit: YPG).

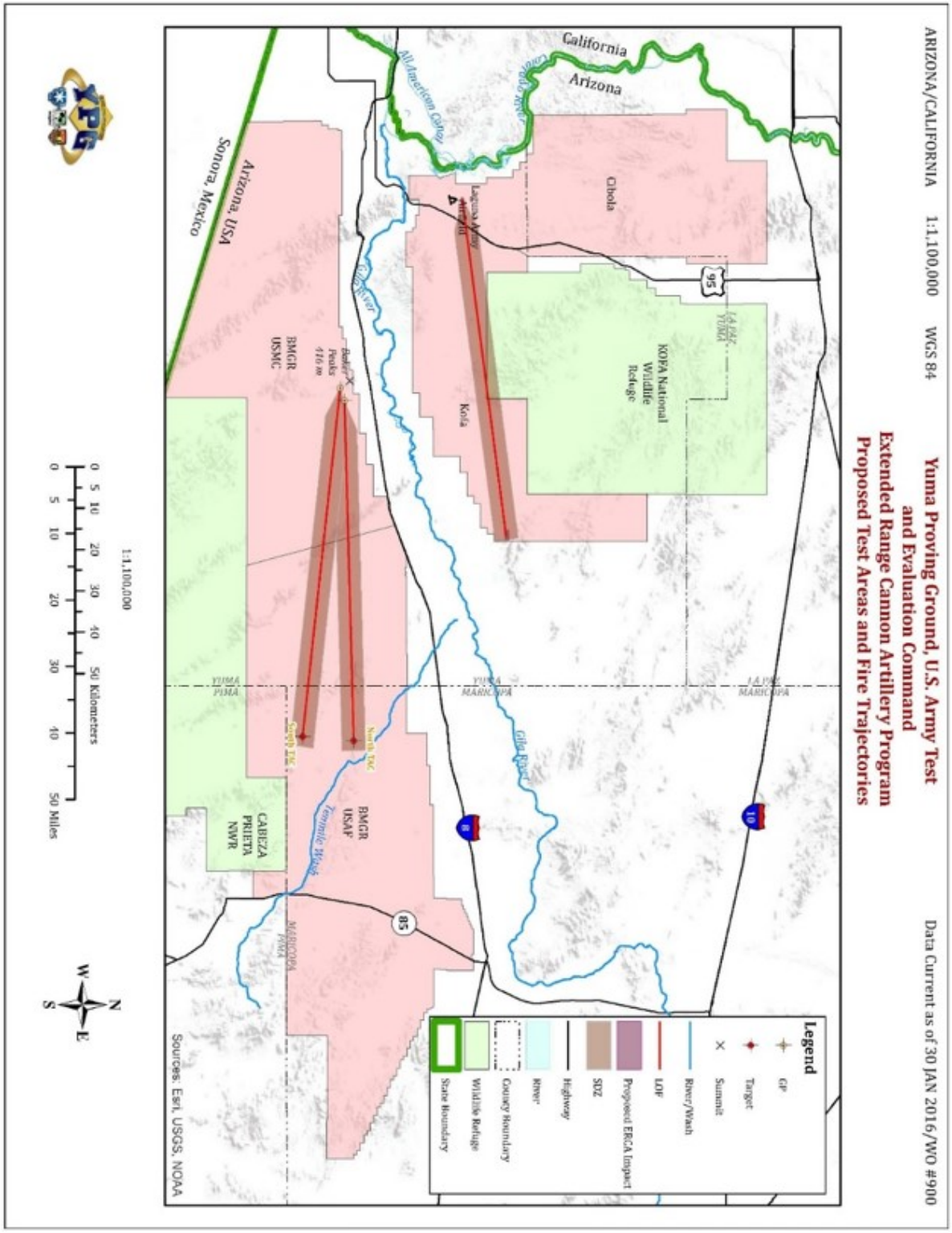


Figure 2. GSAs 71 and 76 on BMGR West, Arizona (credit: YPG).

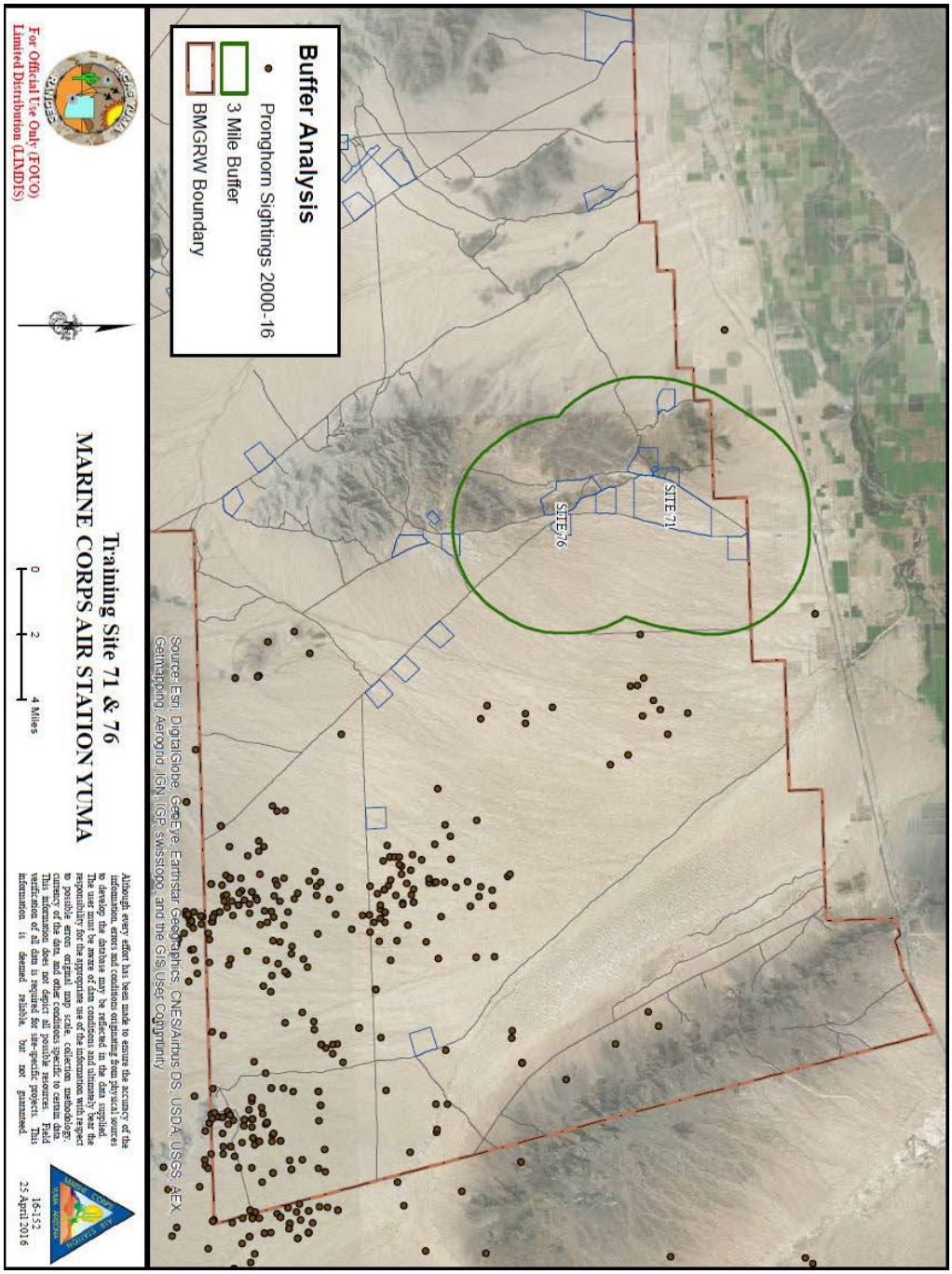


Figure 3. Historical and current ranges of Sonoran pronghorn in the United States and Mexico (USFWS 2016).

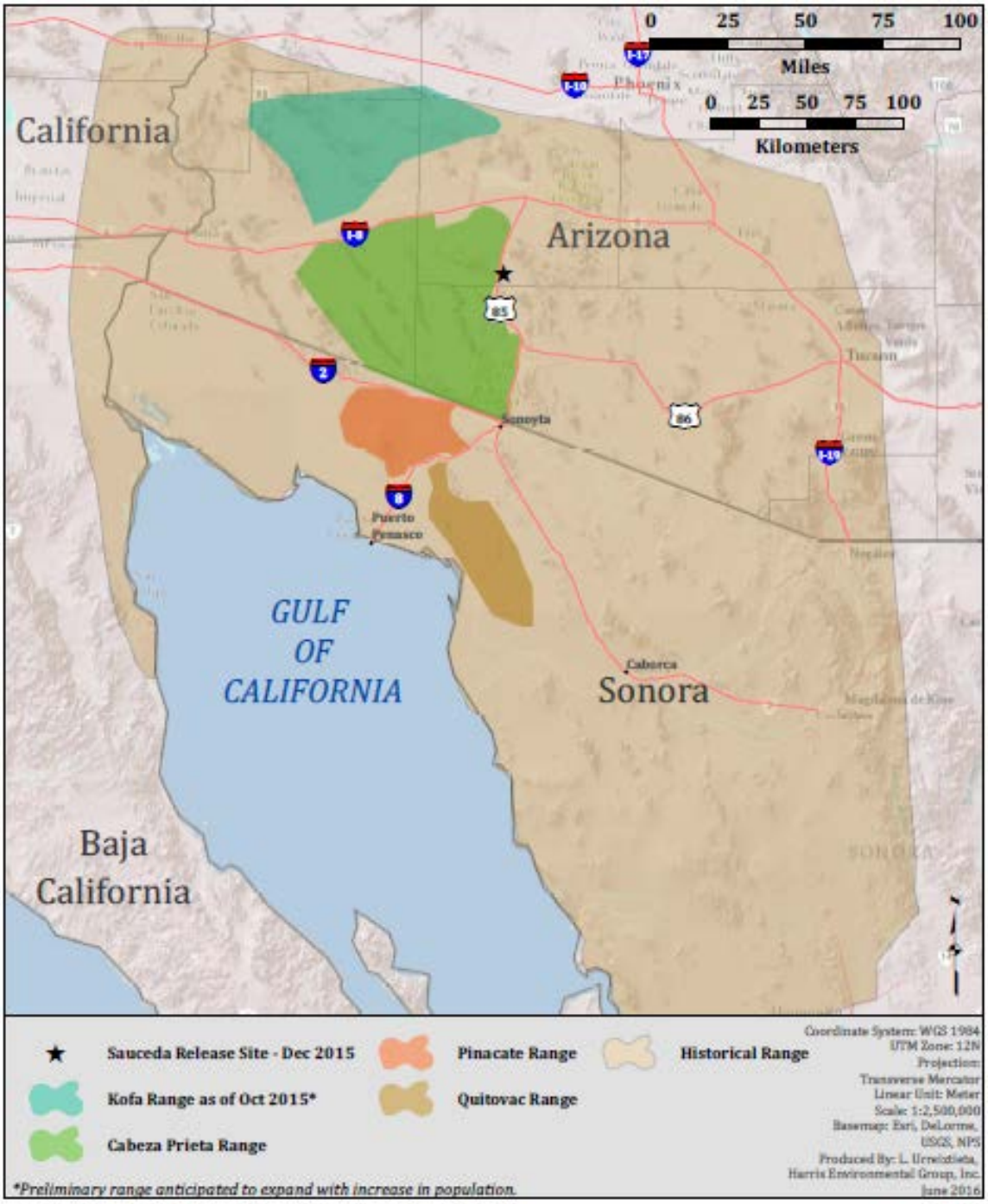


Figure 4. Endangered Sonoran pronghorn range in southwestern Arizona, United States, depicted in yellow cross-hatching (USFWS 2016).

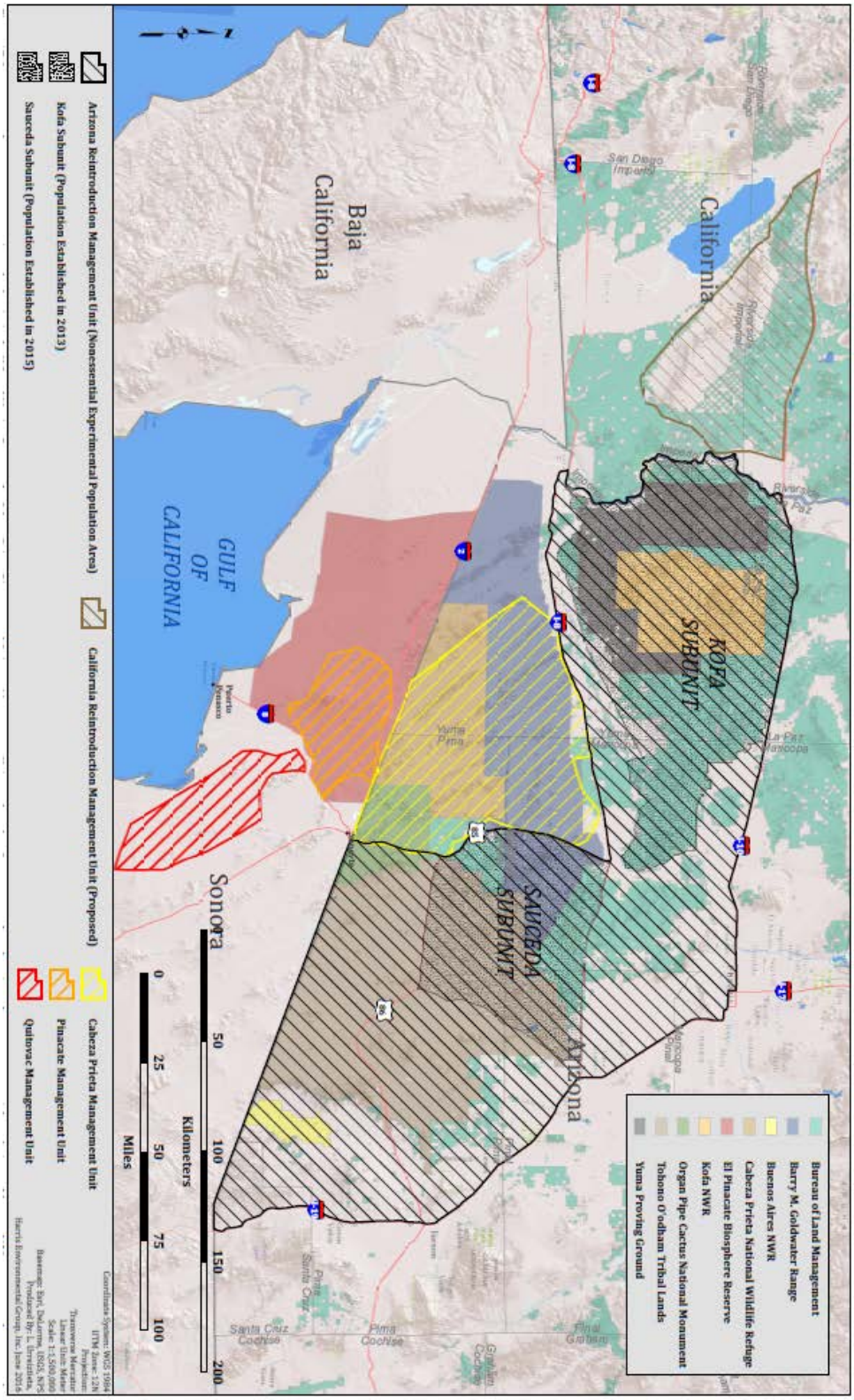
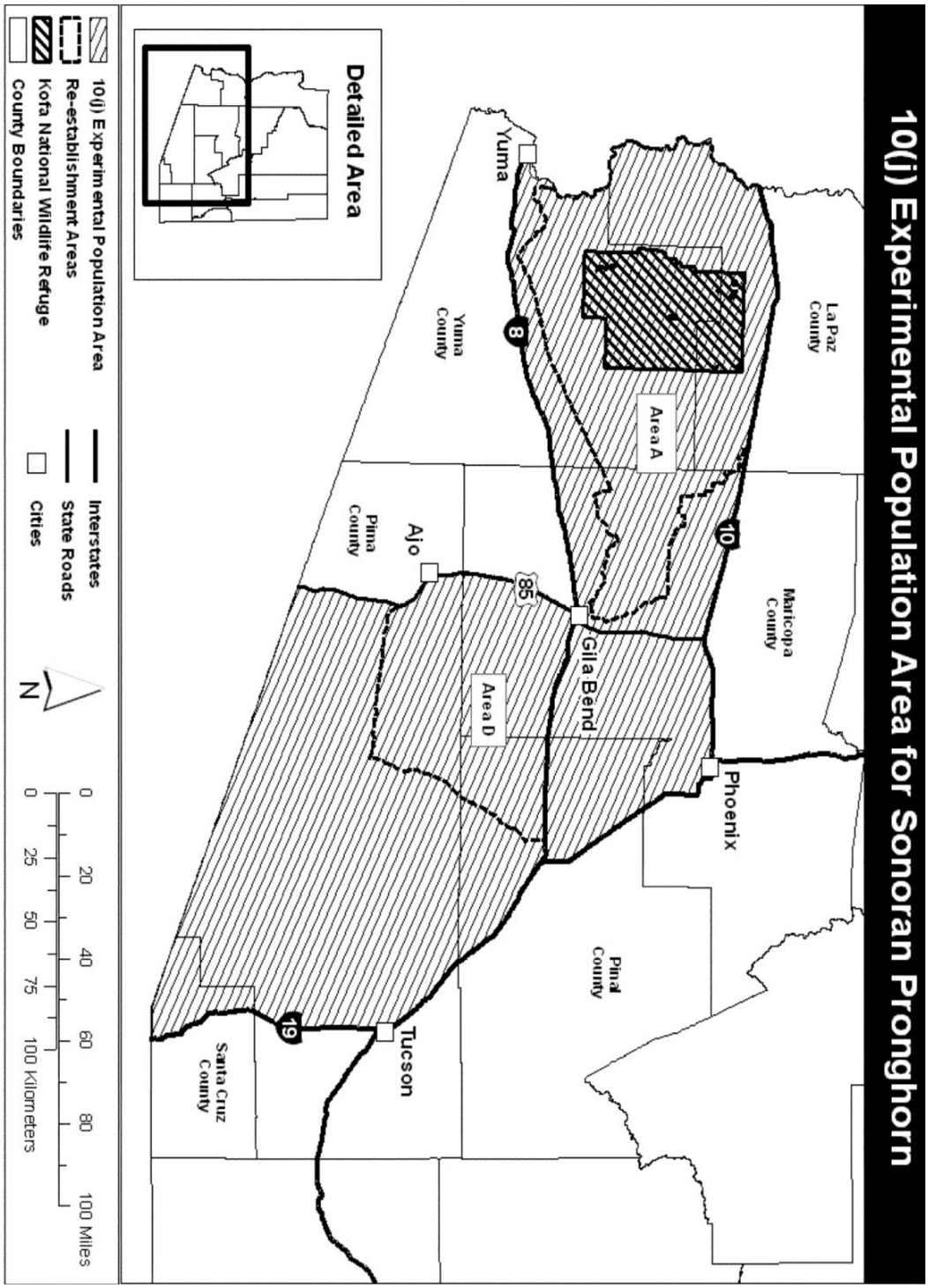


Figure 5. 10(j) Nonessential Experimental Population area for Sonoran pronghorn in southwestern Arizona, United States (USFWS 2011).



Appendix

Concurrences

Lesser long-nosed bat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the lesser long-nosed bat for the following reasons:

- Although some test firing could occur at night when lesser long-nosed bats are foraging, it is highly unlikely that a projectile would strike and kill a foraging lesser long-nosed bat because, except on firing and landing, the projectile will have flight trajectory well above the flight level of bats. Therefore, potential direct effects to lesser long-nosed bats from begin struck by a projectile are discountable.

- The selected gun positions, target areas, and access roads do not contain any lesser long-nosed bat roosts or foraging habitat. Therefore, potential effects to lesser long-nosed bats in the form of habitat destruction or alteration are discountable.

- It is possible that foraging lesser long-nosed bats could hear the projectile in flight (primarily on firing and landing) if shots are fired at night; however, such noise will occur infrequently and will be short in duration. Therefore, potential effects to bats in the form of noise and auditory disturbance from projectile noise are insignificant.