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In Reply Refer To:  
AESO/SE  
22410-2006-F-0113

September 15, 2006

Mr. Hector Montalvo  
Director, National Logistics Center  
Customs and Border Protection  
Department of Homeland Security  
24000 Avila Road  
P.O. Box 30090  
Laguna Niguel, California 92607-0080

Dear Mr. Montalvo:

RE: Biological Opinion for the Permanent Vehicle Barrier Project on the Barry M. Goldwater Range and Cabeza Prieta National Wildlife Refuge, Arizona

Thank you for your request for formal consultation and 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 May 4, 2006, and received by us on May 4, 2006. At issue are impacts that may result from your proposed permanent vehicle barrier (PVB) project on the Barry M. Goldwater Range (BMGR) plus adjacent lands managed by the Bureau of Reclamation (BR) and Cabeza Prieta National Wildlife Refuge (CPNWR) in Yuma and Pima counties, Arizona. The proposed action may affect Sonoran pronghorn (*Antilocapra americana sonoriensis*) and lesser long-nosed bats (*Leptonycteris curasoae yerbabuenae*).

Though we initiated formal conference on project effects to the flat-tailed horned lizard (*Phrynosoma mcallii*), a species proposed for threatened status, on May 19, 2006, we are not providing you with a Conference Opinion because the proposal to list the species as threatened was withdrawn on June 28, 2006. Just as we did for the cactus ferruginous pygmy-owl in our May 19, 2006 initiation letter, we continue to strongly encourage you to implement conservation measures developed for the flat-tailed horned lizard during our informal consultation process and included in the BA. We also invite you to participate as a signatory agency in the species' conservation agreement.

This biological opinion is based on information provided in the "Final Biological Assessment Permanent Vehicle Barriers Barry M. Goldwater Range and Cabeza Prieta National Wildlife Refuge, Yuma and Pima Counties - U.S. Customs and Border Protection, Office of Border Patrol, Yuma and Tucson Sectors, February 2006" (BA) and other sources of information as

described in the consultation history. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern; vehicle barrier installation and maintenance activities and their effects; road improvement and maintenance activities and their effects; or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at the Phoenix, Arizona, Ecological Services Office (AESO).

### CONSULTATION HISTORY

- July 19, 2005: We attended your Project Development Team meeting and public scoping meeting concerning your proposal to install border infrastructure, including a PVB, on the CPNWR. During these meetings, we discussed the proposed installation of border infrastructure on the CPNWR and the BMGR and recommended that for section 7 consultation purposes, you combine the projects and request consultation on the entire proposed infrastructure project from Yuma to the eastern edge of the CPNWR boundary. To minimize adverse effects to listed species, particularly Sonoran pronghorn, we also recommended that you complete the project in a phased manner so that no more than 10 miles of the vehicle barrier would be completed on the BMGR before at least 20 + miles on the CPNWR were completed.
- August - October, 2005: We corresponded by electronic mail and telephone regularly with your environmental representatives, Mr. Mark Doles of the U.S. Army Corps of Engineers (ACOE) and Mr. Howard Nass of Gulf South Research Corporation (GSRC), and also met with them and your office, to discuss the proposed project and to provide our recommendations on how to minimize adverse effects to species from the proposed project.
- November 22, 2005: We received your request for our review of and comments on the Preliminary Draft "Biological Assessment Permanent Vehicle Barriers Barry M. Goldwater Range and Cabeza Prieta National Wildlife Refuge, Yuma and Pima Counties - U.S. Customs and Border Protection, Office of Border Patrol, Yuma and Tucson Sectors, November 2005" (Draft BA). In the Draft BA you stated that the project may affect, but is not likely to adversely affect, the Sonoran pronghorn, lesser long-nosed bat, cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), and flat-tailed horned lizard.
- December 8, 2005: We spoke with Mr. Nass regarding the effects determinations in the Draft BA and stated we believed that some components of the proposed project would likely adversely affect the Sonoran pronghorn, lesser long-nosed bat, pygmy-owl, and flat-tailed horned lizard. Mr. Nass agreed with our determinations.
- December 13, 2005: We sent you our comment letter on the Draft BA.
- February 9, 2006: We had a conference call with your office to discuss our comment letter.

- March 2, 2006: We received your letter, dated February 28, 2006, requesting formal consultation on the proposed action and its effects on the Sonoran pronghorn, lesser long-nosed bat, and cactus ferruginous pygmy-owl, and formal conference on the flat-tailed horned lizard. In the letter, you also stated that the project may affect and is likely to adversely affect the cactus ferruginous pygmy-owl and lizard, but is not likely to adversely affect the Sonoran pronghorn and lesser long-nosed bat.
- March 17, 2006: Because of the discrepancy in your request for formal consultation and your effects determinations, we called Mr. Doles and Mr. Nass to clarify your request. We stated that though the proposed project will result in net beneficial effects to the Sonoran pronghorn and lesser long-nosed bat, we believed some components of the proposed project would likely adversely affect these species. We also stated that this was consistent with our recommendations written in our December 13, 2005 comment letter on your draft BA and stated during several telephone conversations, conference calls, and meetings.
- March – April, 2006: We sent Mr. Doles and Mr. Nass electronic mails inquiring about the status of your decision regarding the effects determinations.
- May 4, 2006: We received an electronic mail from Charles Parsons of the Department of Homeland Security – U.S. Customs and Border Protection (CBP) to clarify the earlier discrepancy in the effects determinations. Mr. Parsons stated that the CBP/Office of Border Patrol (OBP) recognize that the PVB project is likely to adversely affect the Sonoran pronghorn and lesser long-nosed bat and accordingly requested formal consultation for both species. Additionally, Mr. Parsons agreed to building no more than 25 miles of the PVB on BMGR before the CBP/OBP completes construction of 38 miles of PVB on CPNWR.
- May 19, 2006: We sent you a letter initiating formal consultation and conference (consultation period beginning on May 4, 2006). In this letter, we additionally stated that we would not be formally consulting on the pygmy-owl because it was removed from the Federal List of Endangered and Threatened Wildlife.
- June 28, 2006: We sent you our draft biological opinion for the PVB project.
- August 11, 2006: We received your written comments on the draft biological opinion.

## **BIOLOGICAL OPINION**

### **DESCRIPTION OF PROPOSED ACTION**

The U.S. Customs and Border Protection (CBP) and The Office of the Border Patrol (OBP) propose to install, maintain, and access permanent vehicle barriers on the BMGR (plus adjacent lands managed by BR) and CPNWR; construct, improve, and maintain all-weather patrol and drag roads on the BMGR; improve the border road for construction access within the CPNWR;

temporarily maintain the border road within the Organ Pipe Cactus National Monument (OPCNM); and patrol all of the aforementioned access and border roads, in Yuma and Pima counties, Arizona.

Activities such as drug smuggling and illegal border entries have substantially increased along the borderlands in southwestern Arizona within the last decade. Illegal traffic is increasingly affecting the human and biological environment of this remote area of the southwest. As stated in the BA, the proposed project is needed to stop illegal vehicle traffic at the BMGR and CPNWR, save lives, reduce impacts to military training, and prevent terrorists and their weapons from entering the U.S., improve national security, reduce OBP agent patrol and response time, and protect sensitive biological and cultural resources as well as public lands from illegal vehicle traffic.

The proposed action, summarized below, is described in detail in the “Final Biological Assessment Permanent Vehicle Barriers Barry M. Goldwater Range and Cabeza Prieta National Wildlife Refuge, Yuma and Pima Counties - U.S. Customs and Border Protection, Office of Border Patrol, Yuma and Tucson Sectors, February 2006” (BA) and the “Final Environmental Assessment for the Installation of Permanent Vehicle Barriers and Patrol Roads, Office of Border Patrol Yuma Sector, Arizona, July 2005” (FEA), as well as electronic mail correspondence from ACOE and GSRC to FWS, including an excerpt from the “Preliminary Draft Supplemental Final Environmental Assessment for the Installation of Permanent Vehicle Barriers and Patrol Roads, Office of Border Patrol Yuma Sector, Arizona”. The project corridor (Figure 1) encompasses over 100 linear miles of the U.S. - Mexico border (from Avenue C near San Luis, Arizona to the western boundary of the OPCNM); the entire project area is described in the BA (pages 14 to 37).

### **BMGR and BR**

Within the BMGR and adjacent BR lands, the proposed project includes the installation and maintenance of approximately 36 miles of PVBs, improvement of 25 miles of existing border road (west of the Tinajas Altas Mountains) to an all-weather patrol road, construction of 11 miles of an all-weather patrol road, construction of 36 miles of drag road, and maintenance of all roads. The PVB and all-weather patrol road will be installed beginning at Avenue C in San Luis, and it will proceed eastward and parallel to the U.S.-Mexico border through the BMGR and continue for approximately 35 miles to the base of the Tinajas Altas Mountains. The construction of PVBs will begin again on the eastern side of the Tinajas Altas Mountains and extend approximately one mile to the Sierra de la Lechuguilla near the western border of the BMGR. Construction is proposed to begin in 2006.

The all-weather patrol road (28 feet wide) will be constructed within the same general footprint as the existing border road where possible and will consist of a compacted base surface constructed using a cold material process. The driving surface will be prepared using aggregate

or native material, and a soil stabilizer/dust suppressant would minimize or reduce dust, ruts, and wash boarding that create unsafe driving conditions. An appropriate crown will be maintained for adequate drainage. It is anticipated the all-weather patrol road on the BMGR will require routine maintenance every five years.

The drag road (10-12 feet wide) will be constructed between the all-weather road and PVBs. The surface of the drag road will be prepared up to several times daily using a method known as “dragging”. “Dragging” is accomplished by the use of a 4-wheel drive vehicle towing several tires bolted together and pulled on sections of the road at speeds between five and seven miles per hour.

To provide construction access, 9.5 miles of existing north-south access roads will be improved and 0.2 mile of new road will be constructed east of the Tinajas Altas Mountains. Additionally, four miles of El Camino del Diablo and approximately 10 miles of Foothills Boulevard on the BMGR (west of the Tinajas Altas Mountains) will be maintained.

Road improvements will include grading, installation of drainage structures and low water crossings, widening of some areas to facilitate drainage structures and low water crossings, and application of new road material. The driving surface of the access roads will be widened to approximately 12 feet. The north-south access roads on the BMGR will be routinely maintained (grading, leveling, and addition of road material) on a biannual basis.

Five existing staging/bivouac areas will be used during construction activities. An additional three staging/bivouac areas and approximately 27 turnarounds will be constructed and used during construction. Up to eight water wells will be installed within the BMGR to be used for construction and maintenance.

The existing border and drag road along the international border within the BMGR is currently used by the OBP 24 hours a day, 365 days a year. After construction, the OPB will continue to patrol the all-weather road along the border 24 hours a day, 365 days a year within the BMGR.

### **CPNWR and OPCNM**

Within the CPNWR and OPCNM, the proposed project includes the installation and maintenance of approximately 36 miles of PVBs (CPNWR), improvements to approximately 37 miles of existing border road (CPNWR), installation of up to eight water wells, construction of 15 temporary staging or bivouac areas (up to 11 temporary sites may be bivouac areas), construction of 15 temporary turnarounds, and maintenance of approximately 17 miles of access road on the OPCNM during construction.

Construction of PVBs on the CPNWR, to the extent possible, will occur simultaneously with those at BMGR, and will begin at the CPNWR/OPCNM boundary and continue westward for up

to 38 miles to the base of the Tule Mountains. However, PVBs on the BMGR will likely be completed approximately six to ten miles ahead of PVBs on the CPNWR because the area where PVBs are to be installed on the CPNWR is more difficult to access than on the BMGR.

Additionally, PVBs on BMGR will be completed earlier than on CPNWR because approximately three miles of the BMGR PVBs were completed as a pilot project in 2006 and another approximately three miles have been contracted for calendar year 2006. The OBP will provide more agents, as necessary based on operational requirements that will be determined by the Tucson and Yuma Sectors, in response to potential increases in illegal traffic in unprotected areas (no PVBs) until approximately 38 miles of the CPNWR PVBs are constructed to the Tule Mountains.

On the CPNWR, the existing border road occasionally (approximately five miles) deviates north of the Roosevelt Reservation<sup>1</sup> to circumnavigate topographic features. In these areas, the PVBs would terminate at the east side of the topographic feature and continue from the west side of the topographic feature. This will result in a total of approximately two miles where PVBs will not be constructed. Up to two miles of temporary vehicle barriers will be installed on steep grades where PVBs can not be constructed.

Thirty-five miles of the existing border road within the Roosevelt Reservation will be improved, including widening the current eight foot driving surface to an 18-foot surface, grading, and installing low water crossings. With the exception of where the existing border road deviates to the north of the Reservation, the footprint of the road improvements will remain within the Reservation. The total width of disturbance from the construction of improved road and permanent vehicle barriers within the Reservation will be approximately 24 feet. However, from Monument 181 west to the Tule Mountains the total width of disturbance from construction will be 38 feet to allow for the installation of parallel drainage structures. North of the Reservation, road improvements will be limited to a total width of 16 feet. PVBs, border, and access roads will all be maintained on a regular basis. The border road will typically be graded and leveled biannually depending on rainfall.

Construction equipment and vehicles will access the CPNWR using the recently improved border road on the OPCNM. During construction on the CPNWR, the OBP will be responsible for maintaining approximately 17 miles of the border road on the OPCNM. Maintenance will likely include grading and the application of Lignosulfate, which is a soil binding agent used to stabilize road surfaces, eliminate dust, and increase the longevity of the driving surface, or an

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<sup>1</sup> The 60-foot wide Roosevelt Reservation along the border was set aside from public use, with the exception of public highways, as a protection against the smuggling of goods between the U.S. and Mexico by Presidential Proclamation in 1907 by President Theodore Roosevelt. The Roosevelt Reservation includes all lands under Federal ownership in California, Arizona and New Mexico at the time the proclamation was signed, creating a formal border enforcement zone between the U.S. and Mexico (International Boundary Commission 1936). On the BMGR, DOD also has a withdrawal in the Roosevelt Reservation for military purposes.

equivalent soil stabilizer. Upon completion of PVB construction on CPNWR, the OPCNM border road will be repaired to its pre-construction condition either by OBP or by the OPCNM with OBP funding. The OBP currently patrols the border road on the OPCNM and would continue to patrol the border road 24 hours a day, 365 days a year during and after construction of the PVB on CPNWR.

During construction and following completion of the project, the level of patrol activity in the action area will be limited by the availability of agents. Apprehension and pursuit operations will be shifted to areas of increased illegal activity. Though road improvements on CPNWR will not be as great they will be on BMGR, they will, none-the-less, improve the existing conditions. Therefore, following project construction, OBP agents will likely patrol the CPNWR border road more frequently than they do currently (not as often as on BMGR). OBP agents will likely traverse the CPNWR to patrol and check the integrity of the PVBs at least once a day.

### **BMGR/BR and CPNWR/OPCNM**

Because some work (construction of low water crossings and other drainage structures) will occur during pre-dawn hours during summer months, up to 50 portable lights will be used at any given time on the BMGR/BR and CPNWR. Following construction, all lights will be removed. To minimize potential impacts to wildlife and the environment from portable lights, drip pans (to catch leaking or spilled petroleum products) and shields (to prevent illumination of areas outside the project corridor) will be used. Also, the use of lighting during construction will be minimized to the extent practicable.

PVBs will be installed using one or possibly two designs and methods. The typical installation method and design for PVBs is to place a steel pipe into the ground four to six feet, fill the pipe with concrete, and weld railroad rail or metal tubing along the tops of the pipes in a horizontal manner three feet above ground. Construction equipment necessary to complete the installation of the PVBs (typical design) include: welding machines, diesel generators, auger truck, concrete truck, water truck, crane, road grader, and flatbed truck.

An alternative PVB design may be used that would reduce the amount of ground disturbance and equipment necessary for construction. Vertical pipes would be installed on four foot centers using a system that augers the hole and places the pipe simultaneously. Therefore, there would be no need for concrete, welding machines, etc. The system is attached to a tracked excavator and the supply trailer can be pulled behind the excavator or a large wheeled tractor. This method has been tested for three miles from Avenue C to the east and will be used to install portions of the PVB west of the Tinajas Altas Mountains and on the CPNWR where applicable.

Temporary staging areas will be approximately one acre in size, temporary staging/bivouac areas will be approximately two acres, and the turnarounds will be approximately 0.5 acre.

Temporary staging/bivouac areas will be located within already disturbed areas to the extent practicable. To facilitate natural restoration of the areas and to avoid facilitating the establishment of non-native plant species, the staging and bivouac areas will not be graded or scraped. Any vegetation that must be cleared will be removed above the ground using hand tools. If the alternative barrier construction design is used, the number and size of staging areas may be reduced, because the design would not require as many vehicles and equipment as the typical PVB design requires.

Fewer wells will be required if the alternative barrier construction design is used. If the typical PVB design is used, however, water wells, necessary for road watering and concrete pouring, will be installed approximately five miles apart along the project corridor within two drainage basins: (1) the Yuma Desert Basin (YDB) extending approximately 50 miles eastward from the Lower Colorado River and; (2) the Western Mexican Drainage Basin (WMDB) extending from the YDB eastward into the CPNWR. Wells will be drilled at a depth of several hundred feet and each well site would impact approximately 0.5 acre of surface area. Well pumps will be powered by a diesel engine that can be moved from well to well.

Approximately 36 acre-feet of groundwater will be withdrawn from the YDB and approximately 18 acre-feet of groundwater would be withdrawn from the WMDB over the two to six year life of the project. The majority of the wells will be abandoned upon completion of the proposed action. One or two wells on the BMGR and the CPNWR will remain open to supply water for road maintenance needs. However, the OBP will leave additional wells open for wildlife management purposes if requested by the CPNWR. Well closures will be coordinated with the land managers responsible for the BMGR and CPNWR.

### **Conservation Measures**

To minimize impacts to wildlife and the environment, the CBP/OBP (and contractors where applicable) will: 1) construct PVBs on the CPNWR, to the extent possible, concurrently with PVBs on the BMGR; 2) provide more agents, as necessary based on operational requirements that will be determined by the Tucson and Yuma Sectors, in response to potential increases in illegal traffic in unprotected areas (no PVBs) until approximately 38 miles of the CPNWR PVBs are constructed to the Tule Mountains; 3) continue to minimize vehicle travel off-road and only proceed off-road in response to situations persons are known or suspected of being in distress; 4) use the least environmentally damaging PVB design where possible; 5) use best management practices, such as proper handling, storage, and/or disposal of hazardous and/or regulated materials during all construction activities; 6) have in place a Spill Prevention Containment and Countermeasures Plan prior to the start of project construction and brief all personnel on the implementation and responsibilities of this plan; and 7) will develop a protected lands environmental awareness training video with assistance from the FWS; all new OBP personnel will be provided training and a training completion form will become a part of their personnel file.

To minimize impacts to pygmy-owls on the CPNWR, no construction activities will occur in owl habitat (as identified by Scott Richardson, FWS) during the breeding season (February 1 to July 31). To minimize impacts to pygmy-owls and lesser long-nosed bats, saguaros and agaves will be avoided to the greatest extent practicable. OBP will salvage (remove and replant outside the project corridor) all saguaros and agaves less than 3-feet tall and will attempt to salvage all saguaros that are between 3-feet and 6-feet tall. OBP will follow established salvage guidelines.

Biological monitors will be present year-round during project construction activities to ensure that: 1) the project corridor within flat-tailed horned lizard habitat is surveyed for lizards before equipment is moved into a new area and individuals are removed from the project corridor; 2) all activities are stopped if pronghorn are sighted within 0.62 miles of project activities; 3) construction activities remain within the smallest footprint possible, particularly in washes, 4) no construction activities take place within 0.25 miles of suitable pygmy-owl breeding habitat during the breeding season (February 1 to July 31).

To aid in the conservation and recovery of pronghorn and to help offset potential impacts to pronghorn that may occur as a result of this project, the CBP will install one water well and supply materials (irrigation supplies, etc.) necessary to develop a forage enhancement plot for pronghorn in the area of the Point of the Pintas. The well will be installed and material provided to CPNWR as soon as possible; however, because of uncertainty regarding the availability of well-drilling unit, the well will be drilled within a maximum of 18 months from the date of this biological opinion. The CBP will coordinate this effort with the CPNWR; the exact location and timing of well and plot installation will be decided by CPNWR staff. Additionally, to help offset potential impacts to pronghorn and lesser long-nosed bats that may occur as a result of this project and to assist in the recovery and conservation of these species, the CBP will provide \$25,000 (or \$25,000 worth of equipment and supplies in accordance with the needs and requests of the CPNWR) to the CPNWR to be used for monitoring, restoration, and/or recovery efforts. The exact project(s) for which the money will be used will be decided by CPNWR with the approval of CBP.

A mitigation plan for the flat-tailed horned lizard, consistent with the 2003 “Flat-tailed Horned Lizard Rangeland Management Strategy” (Flat-tailed horned lizard Interagency Coordination Committee 2003), will be developed in coordination with BMGR – Marine Corps Air Station (MCAS) and the BR. Currently, OBP has an informal agreement with BR that biological monitors will be present during construction activities. During construction activities, the biological monitors will collect and remove all flat-tailed horned lizards within the project corridor to a nearby safe habitat. All construction personnel will be trained to identify the flat-tailed horned lizards and provided with a wallet size card identifying the flat-tailed horned lizard. The ground around equipment will be inspected by the equipment operators for flat-tailed horned lizards prior to moving equipment. The OBP has provided monetary compensation to BR for

project activities that likely disturbed flat-tailed horned lizards from Avenue E eastward to Avenue C, as part of the current Yuma Lights Project.

## **SONORAN PRONGHORN**

### **STATUS OF THE SPECIES**

#### **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 five subspecies of pronghorn (Nowak and Paradiso 1983). 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. Three sub-populations of the Sonoran pronghorn are extant: 1) a U.S. sub-population in southwestern Arizona, 2) a sub-population in the Pinacate Region of northwestern Sonora, and 3) a sub-population on the Gulf of California west and north of Caborca, Sonora. The three sub-populations are geographically isolated due to barriers such as roads and fences, and in the case of the two Sonora sub-populations, by distance.

The 1982 Sonoran Pronghorn Recovery Plan (U.S. Fish and Wildlife Service 1982) was revised in 1998 (U.S. Fish and Wildlife Service 1998). The recovery criteria presented in the revised plan entailed the establishment of a population of 300 adult pronghorn in one self-sustaining population for a minimum of five years, as well as the establishment of at least one other self-sustaining population in the U.S. to reclassify the subspecies to threatened. Actions identified as necessary to achieve these goals include the following: 1) enhance present sub-populations of pronghorn by providing supplemental forage and/or water; 2) determine habitat needs and protect present range; 3) investigate and address potential barriers to expansion of presently used range and investigate, evaluate, and prioritize present and potential future reintroduction sites within historical range; 4) establish and monitor a new, separate herd(s) to guard against catastrophes decimating the core population, and investigate captive breeding; 5) continue monitoring sub-populations and maintain a protocol for a repeatable and comparable survey technique; and 6) examine additional specimen evidence available to assist in verification of taxonomic status. In 2001 a supplement and amendment to the 1998 Final Revised Sonoran Pronghorn Recovery Plan was prepared (U.S. Fish and Wildlife Service 2001). We concluded that data do not yet exist to support establishing delisting criteria. Tasks necessary to accomplish reclassification to threatened status (as outlined in the 1998 plan) should provide the information necessary to determine if and when delisting will be possible and what the criteria should be.

#### **B. Life History and Habitat**

Sonoran pronghorn inhabit one of the hottest and driest portions of the Sonoran Desert. They forage on a large variety of perennial and annual plant species (Hughes and Smith 1990, Hervert

*et al.* 1997b, U.S. Fish and Wildlife Service 1998). During drought years, Hughes and Smith (1990) reported cacti were the major dietary component (44 percent). Consumption of cacti, especially chain fruit cholla (*Cylindropuntia fulgida*, Pinkava 1999), provides a source of water during hot, dry conditions (Hervert *et al.* 1997b). Other important plant species in the diet of the pronghorn include pigweed (*Amaranthus palmeri*), ragweed (*Ambrosia* sp.), locoweed (*Astragalus* sp.), brome (*Bromus* sp.), and snakeweed (*Gutierrezia sarothrae*) (U.S. Fish and Wildlife Service 1998). Pronghorn will move in response to spatial limitations in forage availability (Hervert *et al.* 1997a). Water intake from forage is not adequate to meet minimum water requirements (Fox *et al.* 2000), hence pronghorn need and readily use both natural and man-made water sources (Morgart *et al.* 2005).

Sonoran pronghorn rut during July-September, and does have been observed with newborn fawns from February through May. Parturition corresponds with annual spring forage abundance. Fawning areas have been documented in the Mohawk Dunes and the bajadas of the Sierra Pinta, Mohawk, Bates, Growler, and Puerto Blanco mountains. Does usually have twins, and fawns suckle for about 2 months. Does gather with fawns, and fawns sometimes form nursery groups (U.S. Fish and Wildlife Service 1998). Sonoran pronghorn form small herds of up to 21 animals (Wright and deVos 1986).

Telemetry locations of 35 Sonoran pronghorn demonstrated that during 1995-2002, pronghorn used creosote/bursage and palo verde/mixed cactus vegetation associations less than expected or equal to availability. Pronghorn use of palo verde/chain fruit cholla associations and desert washes occurred more than expected. However, during the cool and wet winter on 1997-1998, pronghorn were found in creosote/bursage associations more than expected (Hervert *et al.* 2005). In contrast, during 1983-1991, pronghorn used creosote/bursage and palo verde mixed cacti associations more than expected (deVos and Miller 2005). Differences between these study results may be due in part to differences in precipitation and forage patterns between these periods. The earlier period was wetter with greater forage availability in flats and valleys where creosote/bursage associations predominate. In wet winters and early spring pronghorn are often found in flats and valleys, such as Pinta Sands, the Mohawk Dunes west of the Mohawk Mountains, and the west side of the Aguila Mountains. In late spring and summer, pronghorn then move from the flats and valleys upslope into bajadas and often south or southeast where palo verde associations, chain fruit cholla, and washes are more common. Movements are most likely motivated by the need for thermal cover provided by leguminous trees and water available in succulent chain fruit cholla (Hervert *et al.* 1997b). Home range size of Sonoran pronghorn during 1995-2002 ranged from 16.6 to 1,109 mi<sup>2</sup>, with an average of 197 ± 257 mi<sup>2</sup> (Hervert *et al.* 2005).

From 1995-2002, adult mortality rates varied from 11-83%. Adults were killed by coyotes, bobcats, mountain lions, capturing efforts, drought, and unknown causes (Bright and Hervert 2005). However, during 1983-1991, apparently a more favorable period for pronghorn during which the population grew significantly, mean annual survival of females and males was 96% ±

0.04 and  $92\% \pm 0.04$  (DeVos and Miller 2005). Disease may affect mortality, but has not been thoroughly investigated (Bright and Hervert 2005). Hervert *et al.* (2000) found that the number of fawns surviving until the first summer rains was significantly correlated to the amount of preceding winter rainfall, and negatively correlated to the number of days without rain between the last winter rain and the first summer rain. Drought may be a major factor in the survival of adults and fawns (Bright and Hervert 2005). Three radio-collared pronghorn died in July and August of 2002 with no obvious cause of death. Given that 2002 was one of the driest years on record, the proximate cause of these mortalities was likely heat stress and/or malnutrition resulting from inadequate forage conditions due to drought.

### C. Distribution and Abundance

#### *United States*

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 2). Bright *et al.* (2001) defined the present U.S. range of the Sonoran pronghorn as bordered by Interstate 8 to the north, the International Border to the south, the Copper and Cabeza mountains to the west, and SR 85 to the east (see Figure 3). This area encompasses 2,508 mi<sup>2</sup> (Bright *et al.* 2001).

While Mearns (1907) suggested that pronghorn may have been common in some areas in the late 1800s, evidence suggests that the sub-population declined dramatically in the early 20<sup>th</sup> century. Sub-population estimates for Arizona, which only began in 1925, have never shown the pronghorn to be abundant (Table 1). Repeatable, systematic surveys were not conducted in Arizona until 1992. Since 1992, Sonoran pronghorn in the United States have been surveyed biennially (Bright *et al.* 1999, 2001) using aerial line transects (Johnson *et al.* 1991). Sub-population estimates from these transects have been derived using three different estimators (Table 2); currently the sightability model (Samuel and Pollock 1981) is considered the most reliable estimator (Bright *et al.* 1999, 2001). Table 2 presents observation data from transects and compares estimates derived from the three population models from 1992 through 2004.

The sightability model population estimates from 1992 to 2000 showed a 45 percent decrease in sub-population size (Table 2). The estimates indicate a steady decline in sub-population size, with the exception of the 1994 survey. The 1994 estimate may be somewhat inflated due to inconsistencies in survey timing (U.S. Fish and Wildlife Service 1998, Bright *et al.* 2001). High fawn mortality in 1995 and 1996 and the death of half (8 of 16) of the adult, radio-collared pronghorn during the 13 months preceding the December 1996 survey corresponded to five consecutive six-month seasons of below normal precipitation (summer 1994 through summer 1996) throughout most of the Sonoran pronghorn range, which likely contributed, in part, to observed mortality (Bright *et al.* 2001, Hervert *et al.* 1997b).

Mortality of Sonoran pronghorn in 2002 was exceptionally high (Bright and Hervert 2005). At the start of the year, seven radio-collared Sonoran pronghorn were at large in the U.S. sub-population. By December 2002, all but one of these had died. For most, drought stress was considered to be the proximate cause. For those animals that may have succumbed to predation, it was suspected that drought stress was again a factor, by making the animal more vulnerable to predation, due to an emaciated physical condition and being forced into predator habitats by drought. The 2002 drought was one of the driest on record. As an example, annual rainfall at the OPCNM visitor center was only 2.54 inches in 2002 (T. Tibbitts, Organ Pipe Cactus NM, pers. comm. 2002); *average* annual rainfall for the visitor center is 9.2 inches (Brown 1982). The November/December 2002 population survey revealed the U.S. sub-population had declined to the lowest level ever recorded. A total of 18 pronghorn were observed, in three groups (8, 9, and 1). The sightability model resulted in a population estimate of 21 animals, or a 79% decline from 2000. Also, very few fawns survived in 2002 to replace these dying adults.

Although drought was likely the proximate cause of the dramatic decline of the U.S. sub-population in 2002, anthropogenic factors almost certainly contributed to or exacerbated the effects of the drought. Historically, pronghorn likely moved to wetted areas and foraged along the Rio Sonoyta, Sonora, and the Gila and probably Colorado rivers during drought. These areas are no longer accessible to the U.S. population due to fences, Interstate 8, Mexico Highway 2, and other barriers. The rate of decline in the U.S. sub-population from 2000-2002 (79 percent) was also much greater than that observed in either the sub-population southeast of Highway 8 (18 percent decline) or the El Pinacate sub-population (26 percent) during the same period (see discussion of Mexican sub-populations in the next section). Observations of forage availability suggest the El Pinacate sub-population experienced the same severe drought that occurred on the Arizona side (T. Tibbitts, J. Morgart, pers. comm. 2003). Yet that sub-population fared much better than its U.S. counterpart. The high level of human activities and disturbance on the U.S. side, particularly in regard to undocumented alien traffic, smugglers, and law enforcement response, as compared to what occurs in the El Pinacate area, is a likely contributing factor in the differing rates of decline observed north and south of the border. See the section entitled “Drought” in the Environmental Baseline and “Cumulative Effects” for further discussion.

The December 2004 survey resulted in an estimated 58 wild pronghorn in the U.S. population, a substantial increase brought on by favorable conditions since 2002. Based on casual surveys and estimated fawn survival, the population in 2005 was roughly 75 wild pronghorn. The winter of 2006 was very dry until March 11 when up to 2.5 inches of rain fell over most of the eastern range of the pronghorn. With favorable monsoon moisture, the wild population could continue to increase.

#### Semi-captive breeding facility

As part of a comprehensive emergency recovery program, adult pronghorn were first captured and placed into a semi-captive breeding facility at CPNWR in 2004. There are currently 27 pronghorn in the enclosure, including nine fawns born this year and six yearlings born in the enclosure last year. The objective is to produce 10-25 fawns each year to be released into the

U.S. sub-population, and potentially to establish a second U.S. sub-population at Kofa NWR. Four yearling rams are scheduled to be released this year.

### *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). The distribution in Baja California Norte is less clear, but observations by Mearns (1907) indicate they occurred in the Colorado Desert west of the Colorado River, as well. Sonoran pronghorn are currently extant in two sub-populations in Mexico, including: (1) Pinacate sub-population west of Highway 8 near the Pinacate Lava flow; and (2) north and west of Caborca and southeast of Highway 8.

Sub-populations of Sonoran pronghorn in Sonora had not been thoroughly surveyed until the December 2000 surveys (Bright *et al.* 2001), at which time 346 pronghorn were estimated to occur in Sonora. Although the 1993 estimate was approximate, survey results suggested a decline in the sub-populations of 16 percent from 1993 to 2000 (Table 3). The two Mexico sub-populations were resurveyed in December 2002. A grand total (both El Pinacate and southeast of Highway 8) of 214 pronghorn in 32 groups were seen for a tentative population estimate of 280, indicating further decline. Only 19 pronghorn were observed in the Pinacate area for an estimate of 25, which is a decline of 26% from the 2000 estimate. Surveys conducted in December 2004 and February 2005 demonstrated that the population southeast of Highway 8 increased to 625 (439 observed), while the Pinacate population increased to 59 (30 observed). In January 2006, surveys indicated that pronghorn numbers are remaining steady with an estimated total of 634 (486 observed) individuals (combined for both populations). Nine of these were captured, of which five were fitted with radio-collars and released and four were transferred to the semi-captive breeding facility in the U.S.

### *Population Viability Analysis*

In 1996, a workshop was held in which a population viability analysis (PVA) was conducted for the U.S. sub-population of Sonoran pronghorn (Defenders of Wildlife 1998). A PVA is a structured, systematic, and comprehensive examination of the interacting factors that place a population or species at risk (Gilpin and Soulé 1986). Based on the best estimates of demographic parameters at the time, the likelihood of extinction of Sonoran pronghorn was calculated as one percent in the next 25 years, 9 percent in the next 50 years, and 23 percent in the next 100 years. More severe threats include population fluctuation, periodic decimation during drought (especially of fawns), small present population size, limited habitat preventing expansion to a more secure population size, and expected future inbreeding depression. At populations of less than 100, population viability declined at an increasingly steep rate. To maintain genetic diversity over the long term, a population of at least 500 is desirable (Defenders of Wildlife 1998). The likelihood of extinction increased markedly when fawn mortality exceeded 70 percent. Thus, a 30 percent fawn crop (30 fawns/100 does) each year is necessary to ensure the continuance of the U.S. sub-population. The authors concluded that "this population of the Sonoran pronghorn, the only one in the U.S., is at serious risk of extinction."

The authors made these conclusions prior to the severe drought and decline in the species in 2002. On the other hand, Hosack *et al.* (2002) found that some management actions were possible that could improve the chances of population persistence significantly. Actions that would ameliorate the effects of drought or minimize mortality of pronghorn were of particular importance for improving population persistence.

## **E. Threats**

### *Barriers that Limit Distribution and Movement*

Highways, fences, railroads, developed areas, and irrigation canals can block access to essential forage or water resources. Highways 2 and 8 in Sonora, and SR 85 between Gila Bend and Lukeville, Arizona support a considerable amount of fast-moving vehicular traffic, and are fenced in some areas, and are likely a substantial barrier to Sonoran pronghorn. Interstate 8, the Wellton-Mohawk Canal, agriculture, a railroad, and associated fences and human disturbance near the Gila River act as barriers for northward movement of pronghorn. De-watering of reaches of the Río Sonoyta River and lower Gila River, and barriers to pronghorn accessing the Gila River, such as Interstate 8 and the Wellton-Mohawk Canal, have caused significant loss of habitat and loss of access to water (Wright and deVos 1986). Agricultural, urban, and commercial development at Sonoyta, Puerto Peñasco, and San Luis, Sonora; in the Mexicali Valley, Baja California Norte; and at Ajo, Yuma, and along the Gila River, Arizona, have further removed habitat and created barriers to movement.

### *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; increasing undocumented immigration and drug trafficking across the international border and associated law enforcement response; and roads, fences, canals, and other artificial barriers.

Studies of captive pronghorn, other than the Sonoran subspecies, have shown that they are sensitive to disturbance such as human presence and vehicular noise. Human traffic, such as a person walking or running past pronghorn in an enclosed pen, a motorcycle driving past, a truck driving past, a truck blowing its horn while driving past, or a person entering a holding pen, caused an increased heart-rate response in American pronghorn in half-acre holding pens (Workman *et al.* 1992). The highest heart rates occurred in female pronghorn in response to a person entering a holding pen, or a truck driving past while sounding the horn. The lowest heart rates occurred when a motorcycle or truck was driven past their pen. Pronghorn were more sensitive to helicopters, particularly those flying at low levels or hovering, than fixed wing aircraft. Other investigators have shown that heart rate increases 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). Hughes and Smith (1990) found that pronghorn immediately ran 1,310-1,650 feet from a vehicle. Krausman *et al.* (2001, 2004,

2005a) examined effects of military aircraft and ground-based activities on Sonoran pronghorn at the North and South 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) but the authors concluded that these changes were not likely to be detrimental to the animals. Sightings of 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.* 2005a). No conclusions could be drawn about effects of military activities on fawns due to poor fawn productivity during the Krausman *et al.* study. During times of drought, disturbances that cause pronghorns to startle and run would energetically have a more significant effect. Such energetic expenditures, particularly during times of stress, may lead to lower reproductive output and/or survival of individual animals (Geist 1971).

#### *Habitat Disturbance*

Livestock grazing has the potential to significantly alter pronghorn habitat and behavior (Leftwich and Simpson 1978, Kindschy *et al.* 1982, Yoakum *et al.* 1996). Overgrazing well into the 19th century by Spaniards and their descendants caused widespread habitat changes throughout much of the Sonoran Desert, particularly in more settled areas such as central Sonora, Mexico (Sheridan 2000). The effects of cattle grazing are largely historical; cattle were removed from OPCNM, CPNWR, and the BMGR in 1979, 1983, and 1986, respectively (U.S. Fish and Wildlife Service 1998, Rutman 1997). In 2004, the BLM closed the Cameron Allotment on the borders of CPNWR and OPCNM, but grazing still occurs in the nearby Childs and Coyote Flat allotments near Ajo. In Sonora, livestock grazing occurs at Pozo Nuevo and at Ejido Puerto Peñasco, but cattle typically stay close to feed and water except in seasons with abundant annual growth when cattle range widely in the Pinacate region.

Mining occurred historically throughout much of the U.S. range of the pronghorn, but is currently not a significant threat to Sonoran pronghorn in the U.S. During recent pronghorn surveys in Mexico, increasing effects from gold mining activities were noted in habitats used by the sub-population located southeast of Highway 8.

Illegal crossings by undocumented immigrants and drug smugglers in the U.S. range of the pronghorn have increased dramatically in recent years. In 2001, estimates of undocumented migrants traffic reached 1,000 per night in OPCNM alone (Organ Pipe Cactus National Monument 2001), and an estimated 150,000 people entered the monument illegally from Mexico (Milstead and Barns 2002). In fiscal year 2005, the Yuma Sector of the Border patrol apprehended record numbers of illegal immigrants and smugglers, and from October 1, 2005 to May 2006, 96,000 arrests have been made, which is a 13% increase over the same time period in 2005 (Gerstenzang 2006). Illegal border-related activities and Border Patrol response have resulted in widespread habitat degradation and increased human presence in remote areas. Increased enforcement in urban areas has pushed illegal traffic to remote areas, including Sonoran pronghorn habitat in southwestern Arizona.

#### *Fire*

The winter and spring of 2004/2005 was very wet, resulting in some of the highest productivity of cool season annual plants in recent memory. As these annual plants dried out, they created fuel for wildfire. In 2005, Mediterranean grass combined with high densities of the native woolly plantain (*Plantago ovata*) and other species created fuels adequate to carry fire. Military training, such as strafing and bombing in the tactical ranges, as well as fires set by illegal immigrants or smugglers, provided the ignition sources. Exact numbers are unknown; however, in 2005 roughly 7,500 acres of pronghorn habitat burned on the CPNWR (personal communication with Curtis McCasland, February 15, 2006) and more than 63,000 acres burned on the BMGR-East during that time. Approximately 29,260 acres of pronghorn habitat were consumed as a result of these fires.

Most Sonoran Desert trees, shrubs, and cacti are poorly adapted to fire (Brown and Minnich 1986, Schwalbe *et al.* 2000, Alford and Brock 2002). If areas burn repeatedly, permanent changes are likely in the flora. Even in the best scenario it is likely to be many years before trees once again provide thermal cover in wash communities and cholla recover to a point that they are useful forage plants for pronghorn.

#### *Small Population Size and Random Changes in Demographics*

At populations of less than 100, population viability declines at an increasingly steep rate. To maintain genetic diversity over the long term, a population of at least 500 is desirable (Defenders of Wildlife 1998). At an estimated 21 in 2002, and roughly 75 wild pronghorn in 2005, the U.S. sub-population is critically endangered and is going through a genetic bottleneck. At an estimated 25 in 2002 and 59 in 2004, the Pinacate sub-population is also well below desired numbers. At 625, the third sub-population (southeast of Highway 8) is marginally large enough to maintain genetic diversity. Loss of the U.S. sub-population would dramatically reduce our ability to manage or recover this subspecies. Populations at low levels may experience random variations in sex ratios, age distributions, and birth and death rates among individuals, which can cause fluctuations in population size and possibly extinction (Richter-Dyn and Goel 1972). In very sparse populations, males may have trouble finding females, reducing productivity (Ehrlich and Roughgarden 1987). Small populations are also sensitive to variations in natural processes, such as drought and predation (Hecht and Nickerson 1999).

#### *Disease*

Sonoran pronghorn can potentially be infected by a variety of viral and bacterial diseases. 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.

## **ENVIRONMENTAL BASELINE**

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.

### **A. 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 Sonoran pronghorn’s range, pronghorn interact to form one sub-population in which interbreeding may occur. The U.S. sub-population is effectively separated from sub-populations in the El Pinacate Region and on the Gulf Coast of Sonora by Mexico Highways 2 and 8. Activities that may affect animals in any portion of the U.S. range of the pronghorn may affect the size or structure of the U.S. sub-population, or habitat use within the U.S. range. The action area for this biological opinion is defined as the current range of the pronghorn within the U.S. (Figure 3), plus areas along the border in BMGR-West to Avenue C near San Luis.

Management of the action area is almost entirely by Federal agencies. The BMGR (roughly 1.6 million acres) is managed by Luke Air Force Base and MCAS-Yuma 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.

### **B. Terrain, Vegetation Communities, and Climate in the Action Area**

The action area is characterized by broad alluvial valleys separated by block-faulted mountains and surface volcanics. The Yuma Desert on the western edge of the BMGR is part of a broad valley that includes the Colorado River. Major drainages and mountain ranges run northwest to southeast. Major drainages flow mostly northward to the Gila River, although southern portions of OPCNM and the southern slope of the Agua Dulce Mountains drain south to the Río Sonoyta.

Climate is characterized by extreme aridity, mild winters, and hot summers. Approximately 2.7 inches of precipitation fall annually at Yuma, with slightly more than half of this occurring in the winter months (Brown 1982). Annual precipitation increases from west to east across the BMGR; at Aguajita/Quitobaquito, precipitation is 10.5 inches annually.

The vegetation community of the western portion of the BMGR has been classified as the lower Colorado River Valley subdivision of Sonoran Desert scrub (Brown 1982). It is the largest and most arid subdivision of Sonoran Desert scrub. The Arizona Upland subdivision of Sonoran

Desert scrub is found in the Growler, Puerto Blanco, Ajo and Bates mountains, and surrounding bajadas.

### **C. Status of the Sonoran Pronghorn in 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. sub-population. Life history, including demographics, chronology of breeding and movements, diet, and other factors were also described above for the U.S. population.

#### *Drought*

Rowlands (2000) examined trends in precipitation for southwestern Arizona and OPCNM from 1895-1999. For southwestern Arizona, no trend in precipitation was found for the period, but low precipitation occurred around 1895 and during the 1950s. Periods of high precipitation occurred in 1915-1920 and in the 1980s. For OPCNM, there was a slightly increasing trend in monthly and annual precipitation over the period 1895-1999, a strong drought occurred in the 1950s, and a lesser drought occurred in the 1970s. No discernable trend in precipitation in southwestern Arizona or OPCNM was found in the 1990s, which is when the current decline in the U.S. pronghorn population began.

Since Rowland's analysis, we have had one year characterized by above-average rainfall and abundant ephemeral forage (2001) followed by a year with virtually no precipitation or ephemeral forage (2002). Recruitment and survival were high in 2001 and very low in 2002 (Bright and Hervert 2005). Based on the lack of forage and water, and the condition of pronghorn observed, drought is considered the proximate cause of the 79% decline in the pronghorn population from 2000 to 2002. Currently, the western U.S. is in severe drought. Season-to-date basin precipitation (October 1, 2005-May 12, 2006) stands at 29-56% of normal (Miskus 2006). Despite this, since 2002, winter and summer precipitation has been adequate to maintain pronghorn reproduction and fawn survival. Anthropogenic climate change is causing warming trends in winter and spring, decreased frequency of freezing temperatures, lengthening of the freeze-free season, and increased minimum temperatures in winter (Weiss and Overpeck 2005). Although this alone is likely to cause some changes in vegetation communities and the types of forage available to pronghorn, future trends in precipitation, or whether the drought will continue or worsen, is unclear (Weiss and Overpeck 2005).

Historically, pronghorn populations must have weathered many 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 those, 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.”

#### *Emergency Recovery Actions*

A number of critically important emergency recovery projects have been recently initiated in an attempt to reverse the decline of the U.S. sub-population of the Sonoran pronghorn (Krausman *et al.* 2005b). These projects are designed to increase availability of green forage and water during dry periods and seasons 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. Nine emergency water sources, with plans for an additional five, have been constructed in recent years throughout the range of the U.S. sub-population. Five forage enhancement plots, each consisting of a well, pump, pipelines and irrigation lines, are used to irrigate the desert and produce forage for pronghorn. Two additional plots will be installed over the next five years, and it is hoped that a total of 10 plots will eventually be constructed. A semi-captive breeding facility at CPNWR, was first stocked with pronghorn in 2004 and now contains 27 animals. As described above, this facility will be used to augment the current U.S. sub-population, and potentially to establish a second herd at Kofa NWR. These crucial projects, which we hope will pull the U.S. population back from the brink of extinction, have been cooperative efforts among the Service, Arizona Game and Fish Department, MCAS-Yuma, Luke Air Force Base, and OPCNM, with volunteer efforts from the Arizona Desert Bighorn Sheep Society, Arizona Antelope Foundation, and the Yuma Rod and Gun Club.

#### **D. Past and Ongoing Non-Federal Actions in the Action Area**

The Status of the Species section describes a variety of human activities that have affected the Sonoran pronghorn since initiation of livestock grazing over 300 years ago (Officer 1993). Most non-Federal activities that have affected the pronghorn are historical in nature, and pronghorn have been all but extirpated from private, state, and Tribal lands.

#### **E. Past and Ongoing Federal Actions in the Action Area**

Because of the extent of Federal lands in the action area, most activities that currently, or have recently, affected the U.S. sub-population or their habitat are Federal actions. The primary Federal agencies involved in activities in the action area include the MCAS-Yuma, Luke Air Force Base, Fish and Wildlife Service, BLM, Organ Pipe Cactus NM, and Border Patrol. In the following discussion, 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*

##### 1) Tucson Sector of the Border Patrol

We have been in informal consultation with the Tucson Sector Border Patrol regarding development of a biological assessment for some time (consultation number 02-21-99-I-0138). This consultation will encompass all field activities conducted by the Tucson Sector under their program to detect, deter, and apprehend undocumented immigrants and drug traffickers. Activities within the Ajo Station of the Tucson Sector have the greatest potential to adversely affect pronghorn; although currently that Station is being operated out of the Yuma Sector. Adverse effects may result from patrol road activities, drag road activities, off-road operations, aircraft overflights, and the use and maintenance of sensors. About 180 miles of illegal roads have been created in wilderness areas of CPNWR in the last four years (Segee and Neeley 2006). These routes have likely been created both by Border Patrol and smugglers, and all are probably used by Border Patrol. Furthermore, the potential for disturbance to pronghorn due to human presence may increase in areas where agents live on site (i.e., Operation Grip). Border Patrol activities can be beneficial as well, in that they deter illegal border crossings, foot traffic, and off-road vehicles in pronghorn habitat associated with undocumented aliens and smuggling. At the same time, effectiveness of Border Patrol operations elsewhere along the U.S./Mexico border have driven illegal activities into remote areas, such as CPNWR.

## 2) Smuggler/Drug Interdiction

We are aware of U.S. Customs, Drug Enforcement Authority, and Arizona Army National Guard smuggler or drug interdiction activities in pronghorn habitat, including vehicle and helicopter activities. However, none of these agencies have provided information to us about the extent or types of activities they conduct, and no consultation has occurred on these activities. Impacts are probably similar in scope to those described for the Tucson Sector activities.

### *Federal Actions Addressed in Section 7 Consultations*

As part of our comprehensive discussion of all past and present actions affecting pronghorn within the action area, we describe below all biological opinions issued to date on actions that may affect the pronghorn.

Several opinions addressed projects with minor effects to the pronghorn (capture and collaring of pronghorn for research purposes, consultation numbers 02-21-83-F-0026 and 02-21-88-F-0006; installation of a water source in the Mohawk Valley for pronghorn, consultation number 02-21-88-F-0081; implementation of the CPNWR Comprehensive Conservation Plan, consultation number 22410-2006-F-0416; a 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; and the following projects at OPCNM: widen North Puerto Blanco Road project, consultation number 02-21-01-F-0109; roadway and drainage improvements to SR 85, consultation 02-21-01-F-0546; vehicle barrier, consultation number 02-21-02-F-237; and improvement, maintenance, and use of the West Boundary Route, consultation number 02-21-05-M-0100 (this opinion has not yet been finalized)). 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 Luke Air Force Base's activities on the BMGR, discussed below. All of these formal consultations can be viewed on our website at <http://www.fws.gov/arizonaes/Biological.htm>.

Seven biological opinions evaluated major projects with greater effects to pronghorn:

Border Patrol Activities in the Yuma Sector, Wellton Station, Yuma, Arizona

This biological opinion (consultation number 02-21-96-F-0334), issued September 5, 2000, addressed all Border Patrol activities along the United States/Mexico border in Yuma County from the Colorado River to about the area of Pinta Sands at the south end of the Sierra Pinta Mountains. The Yuma Sector requested reinitiation of consultation; we delivered a draft biological opinion in 2004. We are awaiting comments from the Border Patrol and hope to conclude reinitiation in 2006. Border Patrol activities within the Yuma Sector/Wellton Station include helicopter and ground patrols; drag road preparation and assessment of road maintenance; remote sensor installation and maintenance; apprehensions and rescues; and assistance to other sectors and agencies. Disturbance to pronghorn was anticipated as a result of on-the-ground Border Patrol operations, and direct injury or mortality of pronghorn as a result of collision with Border Patrol vehicles or by low-level helicopter flights abruptly approaching and startling pronghorn, which may result in injury or energetic stress, particularly during drought. Pronghorn may also be adversely affected by noise and visual impacts of helicopter overflights. To reduce adverse effects on pronghorn, the Border Patrol agreed to implement a number of conservation measures. We determined that the proposed action was not likely to jeopardize the continued existence of the pronghorn. We anticipated take in the form of harassment that is likely to injure up to one pronghorn in 10 years. The following reasonable and prudent measures were provided: 1) minimize injury of pronghorn; 2) monitor and study reactions of pronghorn on BMGR to Border Patrol activities; and 3) provide a means to determine the level of incidental take that results from Border Patrol activities. Several conservation recommendations were also provided. We are not aware of any incidental take attributable to Yuma Sector activities.

BLM's Lower Gila South Management Area

Three biological opinions address BLM's Lower Gila South Management Area. The Lower Gila South Resource Management Plan-Goldwater Amendment (consultation number 02-21-90-F-0042), proposed specific and general management guidance for non-military activities on the BMGR. The non-jeopardy biological opinion, issued April 25, 1990, was programmatic, requiring BLM to consult when site-specific projects are proposed. No incidental take was anticipated. The Lower Gila South Habitat Management Plan (HMP) (consultation number 02-21-89-F-0213) provided management guidance for both specific and general actions in southwestern Arizona. Four actions were addressed in the HMP, including an exchange of 640 acres near Ajo, rehabilitation work on two catchments, and assessment of livestock removal from pronghorn habitat. Exchange of land out of public ownership may facilitate development or other uses that would preclude use by pronghorn. The non-jeopardy opinion was issued on May 15, 1990. The biological opinion for the Lower Gila South Resource Management Plan and Amendment (consultation number 02-21-85-F-0069) addressed programmatic management of lands in southwestern Arizona, including livestock grazing, wilderness, cultural resources, fire, minerals and energy, recreation, wildlife management, wood cutting, Areas of Critical Environmental Concern, and other land uses. The non-jeopardy biological opinion was issued on March 27, 1998; no incidental take was anticipated. In regard to management on the BMGR,

these three opinions have been replaced by the opinion on the BMGR's Integrated Natural Resources Management Plan (INRMP) (see below). The Air Force and MCAS-Yuma have assumed BLM's management responsibilities on the BMGR.

#### BLM grazing allotments in the vicinity of Ajo, Arizona

The original biological opinion (consultation number 02-21-94-F-0192), issued December 3, 1997, addressed effects to pronghorn resulting from issuance of grazing permits on five allotments, four of which were located near Ajo and Why (Cameron, Childs, Coyote Flat, and Why allotments); and the fifth near Sentinel (Sentinel allotment). All but portions of allotments east of Highway 85 were considered to be within the current distribution of the Sonoran pronghorn. Reinitiations resulted in revised biological opinions dated November 16, 2001, September 30, 2002, June 21, 2004, and March 3, 2005. Under the current proposed action, the Cameron Allotment is closed, the Sentinel Allotment has been in non-use for several years, the Coyote Flat and Why allotments were combined into one (Coyote Flat Allotment), and the Childs Allotment remains relatively unchanged in terms of management. Effects of livestock grazing activities included reduced forage availability for pronghorn, human disturbance due to livestock management, barriers to movement caused by pasture and allotment fences, and potential for disease transfer from cattle to pronghorn. The March 3, 2005 opinion concluded that the proposed action was not likely to jeopardize the continued existence of the pronghorn. No incidental take was anticipated, and none is known to have occurred.

#### Organ Pipe Cactus National Monument General Management Plan

The original biological opinion (consultation number 02-21-89-F-0078), issued June 26, 1997, addressed implementation of OPCNM's General Management Plan (GMP). This opinion was reinitiated four times, resulting in revised biological opinions dated November 16, 2001, April 7, 2003, and March 10 and August 23, 2005. GMP plan elements included: 1) continuing travel and commerce on SR 85 while enhancing resource protection, 2) seeking designation of OPCNM as the Sonoran Desert National Park, 3) establishment of partnerships, 4) increased wilderness and an interagency wilderness and backcountry management plan, 5) changes in trails, facilities, and primitive camping, and 6) implementation of a Cultural Resources Management Plan. Included were a number of conservation measures to minimize impacts to pronghorn. Effects of the action included human disturbance to pronghorn and habitat due to recreation and management activities. We determined that the proposed action was not likely to jeopardize the continued existence of the pronghorn. In the latest versions of the opinion, no incidental take of pronghorn was anticipated. No incidental take is known to have occurred.

#### Marine Corps Air Station-Yuma in the Arizona Portion of the Yuma Training Range Complex

The original biological opinion (consultation number 02-21-95-F-0114), was issued on April 17, 1996. That opinion was reinitiated and revised opinions were issued November 16, 2001 and August 6, 2003. These opinions addressed all proposed and authorized actions on the BMGR by MCAS-Yuma, including ongoing and proposed changes to military flights over CPNWR and the BMGR, operation of various training facilities such as landing strips, a rifle range, targets, a parachute drop zone, a transmitter/telemetry system, ground support areas, and Weapons Tactics

Instructor courses, conducted twice a year (March-April and October-November) that involve overflights, ground-based activities, and deliverance of ordnance at targets in BMGR-East. Ground-based activities, such as those of troops and vehicles at ground-support areas were determined to adversely affect pronghorn habitat use. In areas where helicopters fly particularly low and create noise and visual stimuli, disturbance of pronghorn was anticipated. Ordnance delivery at North and South TACs could disturb pronghorn, and ordnance, live fire, and shrapnel could potentially strike and kill or injure a pronghorn. MCAS-Yuma proposed measures to reduce the direct and indirect impacts of the proposed action, including measures to reduce or eliminate take of Sonoran pronghorn and to minimize destruction and degradation of habitat. We determined that the proposed action was not likely to jeopardize the continued existence of the pronghorn. In the 2003 version of the BO, no incidental take of pronghorn was anticipated and none is known to have occurred.

#### Luke Air Force Base Use of Ground-Surface and Airspace for Military Training on the BMGR

The original biological opinion (consultation number 02-21-96-F-0094), issued August 27, 1997, addressed military use of the airspace above and the ground space on BMGR-East and Cabeza Prieta NWR by Luke Air Force Base. Military activities within the area of overlap with the Cabeza Prieta NWR were limited to use of airspace and operation of four Air Combat Maneuvering Instrumentation sites. Military activities occurring within BMGR-East included: airspace use, four manned air-to-ground ranges, three tactical air-to-ground target areas, four auxiliary airfields, Stoval Airfield, and explosive ordnance disposal/burn areas. Primary potential effects of the action included habitat loss due to ground-based activities, harassment and possible mortality of pronghorn at target areas, and disturbance of pronghorn due to military overflights. We determined that the proposed action was not likely to jeopardize the continued existence of the pronghorn. This opinion was reinitiated in 2001 and 2003, resulting in revised opinions dated November 16, 2001 and August 6, 2003. In the latest (2003) opinion, no incidental take was anticipated. We are not aware of any take of pronghorn confirmed attributable to Luke Air Force Base use of the ground-surface and airspace on the BMGR. A pronghorn found dead near a target may have been strafed, but it may also have died from other causes (see "Effects of the Proposed Action" in the 2003 opinion for a full discussion of this incident).

During the development of these opinions, Luke Air Force Base made substantial commitments to minimize the effects of their activities on the Sonoran pronghorn, and additionally committed to implementing a variety of recovery projects recommended by the Sonoran Pronghorn Recovery Team.

#### Western Army National Guard Aviation Training Site Expansion Project

The non-jeopardy biological opinion for WAATS (consultation number 02-21-92-F-0227) was 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. The purpose of WAATS is to provide a highly specialized environment to train ARNG personnel in directed individual aviator qualification training in attack helicopters. The WAATS expansion project included: 1) expansion of the existing Tactical Flight Training Area, which

includes establishing four Level III touchdown sites, 2) development of the Master Construction Plan at the Silver Bell Army Heliport, and 3) establishment of a helicopter aerial gunnery range for use by the ARNG on East TAC of the BMGR. All activities that are part of the proposed action occur outside the current range of the pronghorn, with the exception of training at North TAC. Training at North TAC only occurs when East TAC is closed for annual maintenance and EOD clearances (4-6 weeks each year). Effects to pronghorn at North TAC are minimized by monitoring protocols established by Luke Air Force Base. Training at East TAC could preclude recovery of historical habitat if the many other barriers that prevent pronghorn use of East TAC were removed. The November 16, 2001 and August 6, 2003 opinions found that the proposed action was not likely to jeopardize the continued existence of the pronghorn. No incidental take was anticipated and none is known to have occurred as a result of the proposed action. ARNG included the following conservation measures as part of their proposed action: 1) they proposed to study the effects of low-level helicopter flights on a surrogate pronghorn population at Camp Navajo, and 2) they committed to funding up to five percent of emergency recovery actions on the BMGR.

#### BMGR Integrated Natural Resources Management Plan

The non-jeopardy opinion for this action was issued on August 26, 2005. The Military Lands Withdrawal Act (MLWA) of 1999 required that the Secretaries of the Air Force, Navy, and Interior jointly prepare an INRMP for the BMGR, the purpose of which was to provide for the “proper management and protection of the natural and cultural resources of [the range], and for sustainable use by the public of such resources to the extent consistent with the military purposes [of the BMGR].” The proposed action was comprehensive land management, including public use restrictions, authorizations, and permitting on portions of the BMGR regarding camping, vehicle use, shooting, entry into mines, firewood collection and use, rockhounding, and other activities; natural resources monitoring, surveys, and research; habitat restoration; wildlife water developments; development of a wildfire management plan; law enforcement; limitations on the locations of future utility projects and the Yuma Area Service Highway; control of trespass livestock; and designation of special natural/interest areas, while allowing other designations to expire. The proposed action included many land use prescriptions that would improve the baseline for the pronghorn. No incidental take was anticipated, and none is known to have occurred from the proposed action.

#### **F. Summary of Activities Affecting Sonoran Pronghorn in the Action Area**

Historically, livestock grazing, hunting or poaching, and development along the Gila River and Río Sonoyta were all probably important factors in the well-documented Sonoran pronghorn range reduction and apparent population decline that occurred early in the 20th century. Historical accounts and population estimates suggest pronghorn were never abundant in the 20th century, but recently, the estimated size of the wild population in the action area declined from 179 (1992) to 21 (December 2002) and roughly 75 (2005). At 21 and 75, genetic diversity could erode, and the sub-population is in imminent danger of extirpation due to human-caused impacts, or natural processes, such as predation or continued drought. Although the proximate cause of the decline during 2002 was drought, human activities limit habitat use options by pronghorn and increase the effects of drought on the sub-population. The U.S. pronghorn sub-population is

isolated from other sub-populations in Sonora by a highway and the U.S./Mexico boundary fence, 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 severed.

Within its remaining range, the pronghorn is subjected to a variety of human activities that disturb the pronghorn and its habitat, including military training, increasing recreational activities, grazing, increasing presence of undocumented immigrants and smugglers, and in response, increased law enforcement activities. MCAS-Yuma (2001) quantified the extent of the current pronghorn range that is affected by various activities and found the following: recreation covers 69.6 percent of the range, military training on North and South TACs covers 9.8 percent, active air-to-air firing range covers 5.8 percent, proposed EOD five-year clearance areas at North and South TACs and Manned Range 1 cover 1.0 percent, and MCAS-Yuma proposed ground support areas and zones cover 0.29 percent. OPCNM (2001) identified 165 human activities in the range of the pronghorn, of which 112 were adverse, 27 were beneficial, 26 had both adverse and beneficial effects, and four had unknown effects. OPCNM (2001) concluded that in regard to the pronghorn, “while many projects have negligible impacts on their own, the sheer number of these actions is likely to have major adverse impacts in aggregate.”

Although major obstacles to recovery remain, since 2002, numerous crucial recovery actions have been implemented in the U.S. range of the species, including nine emergency waters and five forage enhancement plots, with additional waters and forage plots planned. The projects tend to offset the effects of drought and barriers to prevent movement of pronghorn to greenbelts such as the Gila River and Río Sonoyta. A semi-captive rearing facility, built on Cabeza Prieta NWR, currently holds 27 pronghorn. This facility will provide pronghorn to augment the existing sub-population and hopefully to establish a second U.S. sub-population at Kofa NWR.

The current range of the 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. However, illegal, unauthorized foot traffic and off-road vehicle activity, but also Federal law enforcement response have been and continue to be significant threats to the pronghorn and its habitat. Prior to November 2001, in seven of 12 biological opinions issued by FWS that analyzed impacts to the pronghorn, we anticipated that take would occur. In total, we anticipated take of five pronghorn in the form of direct mortality every 10-15 years, and an undetermined amount of take in the form of harassment. Given the small and declining population of pronghorn in the U.S. at the time the opinions were written, take at the levels anticipated in the biological opinions would constitute a substantial impact to the population.

Changes made in proposed actions and reinitiated biological opinions from 2001 to the present, plus the findings in other recent opinions, reduced the amount or extent of incidental take anticipated to occur from Federal actions. Significantly, we have been successful working with action agencies to modify proposed actions and to include significant conservation measures that reduce adverse effects to the pronghorn and its habitat. The only current opinion that anticipates incidental take is 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. 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 resulting from the Federal actions described here (although a pronghorn may have been strafed near one of the targets on BMGR-East – see above).

We believe the aggregate effects of limitations or barriers to movement of pronghorn and continuing stressors, including habitat degradation and disturbance within the pronghorn's current range resulting from a myriad of human activities, exacerbated by periodic dry seasons or years, are responsible for the present precarious status of the Sonoran pronghorn in the action area. However, collaborative, multi-agency and multi-party efforts to develop forage enhancement plots and emergency waters, combined with the success of the semi-captive breeding facility, plus planned future recovery actions, including establishment of a second U.S. sub-population, provide hope that recovery of the Sonoran pronghorn in the U.S. is achievable.

## **EFFECTS OF THE 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.

### **Sonoran Pronghorn**

The proposed PVB project may result in degradation of pronghorn habitat and/or disturbance to pronghorn. Construction and maintenance of the PVB, roads, and staging areas as well as patrol activity and possible temporary increased illegal vehicle activity will result in permanent and temporary removal, destruction, and disturbance of vegetation that may provide forage and cover to pronghorn and may visually and auditorily disturb pronghorn. Though activities associated with the proposed project may be detrimental to pronghorn, conservation measures included in the project description will minimize and help offset disturbance to pronghorn and degradation of their habitat. Furthermore, the PVB, once completed, and improvements to the border roads will likely have long-term beneficial effects to pronghorn throughout the action area if it is successful in reducing the number of illegal vehicles and pedestrians that currently cross into the pronghorn range from Mexico. Habitat damage and disturbance of pronghorn in the western portion of their range may temporarily (until PVB construction is completed) increase if illegal traffic is redirected through the eastern portions of BMGR and western portions of CPNWR as the PVBs are being constructed (PVBs will be constructed from west to east on the BMGR and east to west on CPNWR). However, impacts to pronghorn should be minimized by OBP's commitment to provide more agents in response to potential increases in illegal traffic in unprotected areas (no PVBs) until the PVBs are completed.

#### *Habitat Loss and Degradation*

The proposed project would result in the direct disturbance of approximately 167 acres of pronghorn habitat (east of the Tule Mountains), nearly all of which is immediately adjacent to

the international border (the southern edge of the pronghorn's current range within Arizona). Of this, about 95 acres of vegetation will be permanently disturbed by general project activities (e.g., road improvements) and 72 acres will be temporarily disturbed by project activities associated with temporary construction easements (42 acres), temporary staging areas (22 acres), and temporary turn-arounds (8 acres). These impacts will decrease the amount of thermal cover and forage available to pronghorn; this will likely adversely affect pronghorn, especially in drought situations like we are currently experiencing when less forage is already available. The size of the loss, however, is small in the context of the approximately 2 million acres of potentially suitable habitat available to the U.S. population of Sonoran pronghorn. However it is still extremely important that impacts to thermal cover and forage resources are minimized.

The 167 acres of disturbed ground will be susceptible to colonization by invasive exotic plants such as buffelgrass. Exotic species may outcompete native species, upon which pronghorn rely, and may also carry fire which could also impact pronghorn habitat. As stated in the "Status of the Species", most Sonoran Desert trees, shrubs, and cacti, which provide thermal cover and forage for pronghorn, are very fire intolerant. However, OBP plans to minimize disturbance to vegetation by conducting project activities within previously disturbed areas to the extent practicable, not grading or scraping the staging and bivouac areas, and removing any vegetation that must be cleared above the ground using hand tools. These measures should facilitate natural restoration of the areas and prevent facilitating the establishment of exotic plants. However, because the CBP/OBP has no plans to monitor or control exotic plants, the extent to which areas will be restored or invaded by exotics will likely remain unknown unless monitoring is conducted by CPNWR.

#### *Barriers to Pronghorn Movement*

The majority of the proposed project overlays an existing barrier to Sonoran pronghorn movement, the international boundary. It is thought that pronghorn currently do not cross the international boundary due to the combined barrier effects of: (1) the international-boundary livestock fence; (2) Mexican Highway 2; (3) right-of-way fencing and livestock fencing that is intermittent along Highway 2 between Sonoyta and San Luis; and (4) human settlements and activity concentrations, which are expanding linearly along the boundary. The proposed PVB will be located near the deteriorating livestock fence present in some areas of the southern boundary of the CPNWR. The Department of Agriculture is responsible for maintaining the fence, however, currently does not inspect or repair it due to border safety concerns. CPNWR may provide labor and materials to install and maintain a new livestock fence, if it can be incorporated into the design of the PVB. If the PVB is constructed using the typical design, the horizontal member of the vehicle barrier would be set at 36". The recommended height of the lower strand of wire for a pronghorn-passable fence is 18" to 20". Although the horizontal member of the typical PVB may be railroad rail, much heavier than fence wire, we think that by being 16" higher than the recommended height for a pronghorn fence the PVB will be less of a physical barrier than a pronghorn-friendly wire fence. The typical design, if it serves as a barrier to livestock and prevents their trespass into pronghorn habitat, may benefit pronghorn by preventing or minimizing impacts livestock may have on pronghorn (e.g., degradation of pronghorn habitat, transmission of disease, etc.). If it is constructed using the alternative design, there will be no horizontal member and the vertical posts will be installed on four foot centers. We do not anticipate the alternative design will prevent the passage of pronghorn as the vertical

posts will have sufficient space between them for pronghorn travel. This would appear to be a moot question however, considering the strong evidence that the international border is already a barrier to pronghorn movement. Because the alternative design will not likely serve as a barrier to livestock, pronghorn may be impacted by trespass livestock unless a livestock fence is installed with the PVB.

#### *Project Construction Schedule*

We expect illegal vehicle activity will decrease or be halted in areas where the PVBs are completed. The proposed action will probably result in the redirection of (and subsequent increase) in illegal traffic between the two sections of PVBs on the BMGR and CPNWR. As construction continues, there will be a shrinking gap between PVBs until construction is completed – leaving an area without vehicle barriers from the western boundary of CPNWR to the eastern edge of the Tinajas Altas Mountains, which will be the remaining pathway for vehicles coming north from Sonora. This area is outside of occupied pronghorn habitat. Simultaneous construction of PVBs on the BMGR and CPNWR will occur to the greatest extent possible, but PVBs on the BMGR will likely be completed six to 10 miles ahead of those on CPNWR. Any acceleration of construction on the BMGR in relation to the CPNWR PVB will shift the gap between the PVBs to the east, potentially into pronghorn habitat. But, the most important pronghorn use areas occur in the eastern portion of the project area (including fawning habitat and forage enhancement plot and pronghorn water sites, as well as in Child’s Valley, where the semi-captive breeding pen is located). So, if PVBs are completed first on the BMGR, then diverted vehicle traffic will likely pass through the gap in the western portions of CPNWR and in the BMGR between the western refuge boundary and the Tinajas Altas Mountains. The western portions of CPNWR are less important for pronghorn and the area west of the refuge is not considered occupied habitat. Hence, the best pronghorn use areas should be mostly protected by the PVB, even if the BMGR PVB is completed six to 10 miles ahead of the CPNWR PVB. Nonetheless, simultaneous construction is preferred because it would minimize impacts to pronghorn and its habitat as illegal activity is diverted to the gap between the CPNWR and BMGR vehicle barriers.

Increased illegal activity in pronghorn habitat could cause pronghorn to flee and result in short-term denial of access to habitat, both of which would likely result in severe adverse physiological effects to pronghorn. As discussed in the “Status of the Species” and below, Sonoran pronghorn are sensitive to human disturbance. Vehicle traffic is disturbing to pronghorn and will often cause flight or startle responses with associated adverse physiological changes. Hughes and Smith (1990) found that pronghorn immediately ran 1,310-1,650 feet from a vehicle. Krausman *et al.* (2001) found that Sonoran pronghorn reacted to ground disturbances (vehicles or people on foot) with a change in behavior 37 percent of the time, resulting in the animals running or trotting away 2.6 percent of the time. Wright and deVos (1986) noted that Sonoran pronghorn exhibit “a heightened response to human traffic” as compared to other subspecies of pronghorn. 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), which may be exacerbated in harsh environments such as those occupied by Sonoran pronghorn. Disturbance may also lead to mortality, including increased vulnerability to predator attack and susceptibility to heat stress and malnutrition. Because pronghorn are rare, as described in the “Status of the Species”, encounters

with illegal immigrants and smugglers should be a relatively rare event. The likelihood of encounters will certainly increase however if illegal traffic increases. Illegal vehicles could also collide with pronghorn causing injury and/or death. However, we believe the likelihood of collisions with illegal vehicles are probably low because vehicles will not likely be traveling at high speeds (due to traveling primarily along unimproved routes); we are not aware of any such collisions in the U.S., or along unpaved routes anywhere within the range of the Sonoran pronghorn; and pronghorn are relatively rare. Increased illegal activity could also degrade pronghorn habitat. Off-road travel can crush and destroy vegetation and can cause soil erosion and changes in surface hydrology (from channelization of water in entrenched vehicle track prisms) which may substantially impact vegetation that provides forage and cover to pronghorn. There are currently about 250 miles of illegal roads on CPNWR<sup>2</sup>, many of which are within the current range of Sonoran pronghorn (see figure 7 in the BA). If traffic increases on the CPNWR, the number of illegal routes will likely increase, and existing illegal routes and legal roads may become more severely degraded causing even greater changes in surface hydrology and creating additional area for exotic species to invade.

However, we expect that potential increases in illegal traffic should be greatly minimized by OBP's assignment of additional agents to unprotected areas (no PVBs) as necessary until construction of the PVBs is completed. Consequently, adverse effects to pronghorn in the western portion of their range should be reduced. If some temporary increases in illegal traffic do occur, we anticipate that adverse effects to pronghorn from the increased traffic will be offset to some extent by the emergency pronghorn recovery actions that CPNWR and partners, including the CPB/OBP, are implementing or will implement in the near future.

Once PVB installation is completed, we anticipate that illegal cross-border vehicle traffic on the CPNWR will be virtually eliminated which will likely result in reduced disturbance to pronghorn and should facilitate the restoration and recovery of pronghorn habitat that has been damaged by illegal off-road driving. The proposed PVB should eliminate or greatly reduce use of illegal roads, resulting in the eventual restoration of at least 250 miles of illegal roads, many of which are within the current range of Sonoran pronghorn in the CPNWR. Assuming an average width of about eight feet, this equates to restoration of approximately 242 acres. Though again, because OBP/CPB has no plans to monitor future ecological conditions in the action area, the degree to which areas will be restored will likely remain unknown, unless monitoring is conducted by CPNWR. Additionally, once the PVB is completed, disturbance to pronghorn from illegal pedestrian and law enforcement activity should decrease as described under "Effects from Pedestrian Traffic and Patrol Activities".

#### *Effects from Pedestrian Traffic and Patrol Activities*

Though the vehicle barrier will not prevent illegal immigrants and smugglers from crossing the border on foot, the improved patrol road along the border should also facilitate increased apprehension of illegal pedestrians at the border. As a result, we anticipate all illegal immigrant/smuggler activities, including disturbance to pronghorn and pronghorn habitat, will

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<sup>2</sup> Because resources at the CPNWR are limited, monitoring and estimating the number and length of routes/tracks created by illegal vehicle activity is difficult. The recent estimate of 250 miles of routes/tracks created by illegal immigrant vehicle traffic is likely conservative as it only attempts to account for illegal roads that have received multiple trips (electronic mail from Roger DiRosa, June 1, 2006).

decrease to some extent in the action area. Also, increased patrol along the border road, decreased illegal vehicle traffic, and potential decreased illegal pedestrian traffic should reduce the frequency of law enforcement pursuits through the action area which will additionally minimize disturbance to pronghorn and degradation of their habitat.

Patrol activities, which will likely increase along the improved border road, may disturb pronghorn and cause them to avoid or less frequently use the border area. However, because pronghorn are rare, encounters with patrol activities associated with use of the border road or other project routes, should be a relatively rare event. Also, adverse effects to pronghorn from patrol activities should be offset somewhat if, as explained above, illegal immigrant/smuggler activities and law enforcement pursuits decrease. Improvements to border and access roads will likely facilitate increased vehicular patrol speeds which may increase the likelihood of colliding with pronghorn. As mentioned above, however, because pronghorn are relatively rare and because we are not aware of any such collisions in the U.S., or along unpaved routes anywhere within the range of the Sonoran pronghorn, we believe the chance of such collisions will probably still be low.

#### *Effects from Construction and Maintenance Activities*

Construction and maintenance activities associated with the PVB project may result in some disturbance to Sonoran pronghorn. At least during the project construction phase, however, disturbance will be minimized by having biological monitors present year-round to ensure that all project construction activities are stopped if pronghorn are sighted within 0.62 mile of project activities. Just as with illegal and patrol vehicles, vehicles associated with construction and maintenance could also collide with pronghorn causing injury and/or death. However, we believe the likelihood of collisions with construction and maintenance vehicles are probably low for the same reasons stated in the section above. Access to the border area in CPNWR for construction and patrol will be along the OPCNM border road, west of Highway 85, approximately 300 feet north of Mexico Highway 2. This highway and associated truck stops, military checkpoints, residences, and other businesses already constitute a 24-hour, noisy, busy region of human activity. While use of the OPCNM road to access CPNWR to construct and maintain the PVB and border road will increase the activity level in the local area by a small increment, the effect already exists, at a scale greater than the proposed project, and due to activities that are not under the control of the CBP/OBP.

#### *Conservation Measures*

CBP's commitments to develop a forage enhancement plot for pronghorn (CBP will install the water well and supply the materials necessary to develop the plot and CPNWR will complete the construction of the plot) in the area of the Point of the Pintas and to provide \$25,000 to the CPNWR for pronghorn related monitoring, restoration, and/or recovery efforts help offset potential impacts to pronghorn that may occur as a result of this project and will generally aid in the conservation and recovery of pronghorn.

#### Pronghorn Status

The most recent formal Sonoran pronghorn survey in December 2004 resulted in an estimated 58 wild pronghorn in the U.S. population, which was a substantial increase from an estimated 18

wild pronghorn in the U.S in 2002. This increase was likely brought on by favorable habitat conditions since 2002 when a severe drought occurred. Based on casual surveys and estimated fawn survival, the population in 2005 was roughly 75 wild pronghorn in the U.S. This increase can also likely be attributed to continued favorable habitat conditions in 2005 as well as emergency recovery actions such as forage enhancement plots and waters (see details under the “Environmental Baseline”), which undoubtedly 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. We expect these recovery actions may also help offset adverse effects from this project as well as other activities within the action area that disturb pronghorn and their habitat. Because pronghorn remain critically endangered, however, it is imperative that all adverse effects to pronghorn from the proposed action and other activities are minimized and offset to the greatest extent possible.

### **CUMULATIVE EFFECTS**

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 (current range of the pronghorn within Arizona) 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 currently-occupied range of the 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 were acquired by the USAF. Continuing rural and agricultural development, recreation, vehicle use, grazing, and other activities on private and State lands adversely affect pronghorn and their habitat. MCAS-Yuma (2001) reports that 2,884 acres have been converted to agriculture near Sentinel and Tacna. These activities on State and private lands and the effects of these activities are expected to continue into the foreseeable future. Historical habitat and potential recovery areas currently outside of the current range are also expected to be affected by these same activities on lands in and near the action area in the vicinity of Ajo, Why, and Yuma.

Of particular concern are increasing illegal border crossings by undocumented immigrants and smugglers. In fiscal year 2005, the Yuma Sector of the OBP apprehended record numbers of illegal immigrants and smugglers, and from October 1, 2005 to May 2006, 96,000 arrests have been made, which is a 13% increase over the same time period in 2005 (Gerstenzang 2006). In 2001, estimates of undocumented migrant traffic reached 1,000 per night in OPCNM alone (National Park Service 2001 or OPCNM 2001) and an estimated 150,000 people entered the OPCNM illegally from Mexico (Milstead and Barns 2002). Increased presence of the Border Patrol in the Douglas, Arizona area, and in San Diego (Operation Gatekeeper) and southeastern California, have pushed illegal immigrant and smuggler traffic into remote desert areas, such as CPNWR, OPCNM, and BMGR (Klein 2000). Though the operation of Camp Grip within the CPNWR and the temporary camp detail at Bates Well on the OPCNM have reduced the number of illegal drive-throughs in the eastern portion of the CPNWR in FY 2005 (Hubbard 2005, as

cited in U.S. Customs and Border Protection 2005), drive-throughs have steadily increased on the BMGR and CPNWR over the past three years (U.S. Customs and Border Protection 2005). Over the past seven years, the number of illegal roads and foot trails created by illegal immigrants within the CPNWR has increased substantially (U.S. Customs and Border Protection 2005). These illegal crossings and law enforcement response have resulted in route proliferation, off-highway vehicle activity, increased human presence in backcountry areas, discarded trash, abandoned vehicles, cutting of firewood, illegal campfires, and increased chance of wildfire. Habitat degradation and disturbance of pronghorn almost certainly result from these illegal activities. Despite increasingly high levels of illegal activity throughout the action area, pronghorn in the U.S. have increased since 2002 as discussed above.

We expect illegal activities and their effects on pronghorn to continue, though they should be significantly reduced once the proposed PVB project is completed, as described in the “Effects of the Action”. Also a recent bill (S2611) passed by the Senate could create a guest worker program whereby Mexican nationals could legally cross the border to work in the U.S. If such a program is initiated, it might greatly reduce future illegal immigration and law enforcement response, with concomitant reductions in habitat degradation and suspected disturbance of pronghorn.

## **CONCLUSION**

After reviewing the current status of the Sonoran pronghorn, the environmental baseline for the action area, the effects of the proposed activities associated with the PVB project, and the cumulative effects, it is our biological opinion 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. Our conclusion is based on the following:

1. The Sonoran pronghorn population has increased since 2002, despite increasingly high levels of human use in the form of off- and on-road vehicle and foot travel by smugglers, illegal immigrants, and law enforcement.
2. Conservation measures included in the proposed action will reduce disturbance to pronghorn during project construction activities (i.e., simultaneous construction, to the greatest extent possible, of PVBs on the BMGR and CPNWR with the exception that PVBs on the BMGR will likely be completed six to 10 miles ahead of those on CPNWR; assignment of additional OBP agents to unprotected areas (no PVBs) as necessary until construction of the PVBs are completed; the presence of biological monitors year-round to ensure that all project construction activities are stopped if pronghorn are sighted within 0.62 mile of project activities).
3. Conservation measures included in the proposed action (i.e., development of a forage enhancement plot and providing \$25,000 to CPNWR for pronghorn related monitoring, restoration, and recovery activities) will help offset adverse effects to pronghorn that could result from implementation of the project.

4. Loss of pronghorn habitat resulting from this project is small in the context of the approximately 2 million acres of potentially suitable habitat available to the U.S. population of Sonoran pronghorn. Additionally, habitat disturbance will be minimized by conducting project activities within previously disturbed areas to the extent practicable.
5. Completion of forage enhancement plots, waters, and the semi-captive breeding facility have helped make the pronghorn population in the U.S. more secure and more resistant to drought and other stressors.
6. When added to the environmental baseline, the status of the species, and cumulative effects, the effects of the proposed action do not reduce appreciably the likelihood of survival and recovery of the subspecies in the wild. Therefore, the proposed action will not jeopardize the continued existence of the subspecies. Though illegal activity could increase in the western portion of pronghorn range as PVBs are constructed on the BMGR (west to east) and CPNWR (east to west), such activity should be reduced by CPB/OBP's assignment of additional agents to unprotected areas (no PVBs) as necessary until the PVBs are completed. Consequently adverse effects to pronghorn from possible increased illegal activity should be minimized. Additionally, once the PVB installation is completed we expect to see a dramatic decrease in illegal vehicle activity as well as some decrease in illegal pedestrian activity and law enforcement pursuits north of the border region. Decreased illegal and legal human activity within pronghorn habitat will be beneficial to pronghorn.
7. The likelihood of pronghorn crossing the international boundary with Mexico in the project area is currently very low because of current physical barriers (e.g., Mexico Highway 2) and human activities. Therefore, the presence of the PVB is unlikely to result in additional barriers to pronghorn movement across the international boundary.

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**

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.

### **AMOUNT OR EXTENT OF TAKE ANTICIPATED**

We do not anticipate the proposed action will result in incidental take of Sonoran pronghorn for the following reasons:

1. Measures included in the proposed action will reduce adverse effects of some PVB project activities.
2. Pronghorn are rare; making encounters with human activities (both legal and illegal) associated with the PVB project a relatively rare event.
3. Forage enhancement plots and water developments buffer the effects of drought when pronghorn are most sensitive to human disturbance.
4. No incidental take of Sonoran pronghorn is known to have occurred in Arizona due to CBP/OBP or illegal immigrant/smuggler activities.

### **LESSER LONG-NOSED BAT STATUS OF THE SPECIES**

#### **A. Species Description**

The lesser long-nosed bat is a medium-sized, leaf-nosed bat. It has a long muzzle and a long tongue, and is capable of hover flight. These features are adaptations for feeding on nectar from the flowers of columnar cacti (e.g., saguaro; cardon, *Pachycereus pringlei*; and organ pipe cactus, *Stenocereus thurberi*) and from paniculate agaves (e.g., Palmer's agave, *Agave palmeri*) (Hoffmeister 1986). The lesser long-nosed bat was listed (originally, as *Leptonycteris sanborni*; Sanborn's long-nosed bat) as endangered in 1988 (U.S. Fish and Wildlife Service 1988). No critical habitat has been designated for this species. A recovery plan was completed in 1994 (U.S. Fish and Wildlife Service 1997). Loss of roost and foraging habitat, as well as direct taking of individual bats during animal control programs, particularly in Mexico, have contributed to the current endangered status of the species. Recovery actions include roost monitoring, protection of roosts and foraging resources, and reducing existing and new threats.

#### **B. Distribution and Life History**

The lesser long-nosed bat is migratory and found throughout its historical range, from southern Arizona and extreme southwestern New Mexico, through western Mexico, and south to El Salvador. It has been recorded in southern Arizona from the Picacho Mountains (Pinal County) southwest to the Agua Dulce Mountains (Pima County), southeast to the Peloncillo Mountains (Cochise County), and south to the international boundary. Roosts in Arizona are occupied from late April to September (Cockrum and Petryszyn 1991) and on occasion, as late as November

(Sidner 2000); the lesser long-nosed bat has only rarely been recorded outside of this time period in Arizona (U. S. Fish and Wildlife Service 1997, Hoffmeister 1986, Sidner and Houser 1990). In spring, adult females, most of which are pregnant, arrive in Arizona gathering into maternity colonies. These roosts are typically at low elevations near concentrations of flowering columnar cacti. After the young are weaned these colonies disband in July and August; some females and young move to higher elevations, primarily in the southeastern parts of Arizona near concentrations of blooming paniculate agaves. Adult males typically occupy separate roosts forming bachelor colonies. Males are known mostly from the Chiricahua Mountains and recently the Galiuro Mountains (personal communication with Tim Snow, Arizona Game and Fish Department, 1999) but also occur with adult females and young of the year at maternity sites (U. S. Fish and Wildlife Service 1997). Throughout the night between foraging bouts both sexes will rest in temporary night roosts (Hoffmeister 1986).

Lesser long-nosed bats appear to be opportunistic foragers and extremely efficient fliers. They are known to fly long distances from roost sites to foraging sites. Night flights from maternity colonies to flowering columnar cacti have been documented in Arizona at 15 miles, and in Mexico at 25 miles and 36 miles (one way) (Dalton *et al.* 1994; personal communication with V. Dalton, 1997; personal communication with Y. Petryszyn, University of Arizona, 1997). Steidl (personal communication, 2001) found that typical one-way foraging distance for bats in southeastern Arizona is roughly 12.5 miles. A substantial portion of the lesser long-nosed bats at the Pinacate Cave in northwestern Sonora (a maternity colony) fly 25-31 miles each night to foraging areas in OPCNM (U.S. Fish and Wildlife Service 1997). Horner *et al.* (1990) found that lesser long-nosed bats commuted 30-36 miles round trip between an island maternity roost and the mainland in Sonora; the authors suggested these bats regularly flew at least 47 miles each night. Lesser long-nosed bats have been observed feeding at hummingbird feeders many miles from the closest known potential roost site (personal communication with Yar Petryszyn, University of Arizona, 1997).

Lesser long-nosed bats, which often forage in flocks, consume nectar and pollen of paniculate agave flowers and the nectar, pollen, and fruit produced by a variety of columnar cacti. Nectar of these cacti and agaves is high energy food. Concentrations of some food resources appear to be patchily distributed on the landscape and the nectar of each plant species used is only seasonally available. Cacti flowers and fruit are available during the spring and early summer; blooming agaves are available primarily from July through October. Columnar cacti occur in lower elevational areas of the Sonoran Desert region, and paniculate agaves are found primarily in higher elevation desert scrub areas, semi-desert grasslands and shrublands, and into the oak woodland (Gentry 1982). Lesser long-nosed bats are important pollinators for agave and cacti, and are important seed dispersers for some cacti.

### **C. Status and Threats**

Recent information indicates that lesser long-nosed bat populations appear to be increasing or stable at most Arizona roost sites identified in the recovery plan (AGFD 2005, Tibbitts 2005, Wolf and Dalton 2005). Lesser long-nosed bat populations additionally appear to be increasing or stable at other roost sites in Arizona and Mexico not included for monitoring in the recovery plan (Sidner 2005). Less is known about lesser long-nosed bat numbers and roosts in New

Mexico. Though lesser long-nosed bat populations appear to be doing well, many threats to their stability and recovery still exist, including excess harvesting of agaves in Mexico; collection and destruction of cacti in the U.S.; conversion of habitat for agricultural and livestock uses, including the introduction of bufflegass, an exotic, invasive grass species; wood-cutting; drought; fires; human disturbance at roost sites; and urban development.

Approximately 20 – 25 lesser long-nosed bat roost sites, including maternity and late-summer roosts, have been documented in Arizona (personal communication with Scott Richardson, FWS, 2006). Of these, 10 – 20 are monitored on an annual basis depending on available resources. Monitoring in Arizona in 2004 documented approximately 78,600 lesser long-nosed bats in late-summer roosts and approximately 34,600 in maternity roosts. Ten to 20 lesser long-nosed bat roost sites in Mexico are also monitored annually. Over 100,000 lesser long-nosed bats are found at just one natural cave at Pinacate National Park, Sonora, Mexico (Cockrum and Petryszyn 1991). The numbers above indicate that although a relatively large number of lesser long-nosed bats exist, the relative number of known large roosts is quite small.

Maternity roosts, suitable day roosts, and concentrations of food plants are all critical resources for the lesser long-nosed bat. All of the factors that make roost sites useable have not yet been identified, but maternity roosts tend to be very warm and poorly ventilated (U.S. Fish and Wildlife Service 1997). Human presence/disturbance at roosts is clearly an important factor as bats appear to be particularly sensitive to human disturbance at roost sites. For example, the illegal activity, presumably by immigrants or smugglers, at the Bluebird maternity roost site, caused bats to abandon the site in 2002, 2003, and 2005. The presence of alternate roost sites may be critical when this type of disturbance occurs.

The lesser long-nosed bat recovery plan (U.S. Fish and Wildlife Service 1997) identifies the need to protect foraging areas and food plants such as columnar cacti and agaves. More information regarding the average size of foraging areas around roosts would be helpful to identify the minimum area around roosts that should be protected to maintain adequate forage resources.

The 2005 fires referred to under Sonoran Pronghorn “Status of the Species” affected some lesser long-nosed bat foraging habitat, though the extent is unknown. For example, the Goldwater, Aux, and Sand Tank Fire Complexes on BMGR-East burned through and around isolated patches of saguaros, but the immediate effects and longer term impacts of the fires on saguaros are not yet known. Monitoring of saguaro mortality rates should be done to assess the impacts on potential lesser long-nosed bat foraging habitat. Fire suppression activities associated with the 2005 fires could also have affected foraging habitat. For example, slurry drops may have left residue on saguaro flowers, which could have impacted lesser long-nosed bat feeding efficiency or resulted in minor contamination.

This year’s drought (see the “Environmental Baseline” for Sonoran pronghorn for further details regarding drought) may affect lesser-long nosed bat foraging habitat, though the effects of drought on bats are not well understood. The drought in 2004 resulted in near complete flower failure in saguaros throughout the range of lesser-long nosed bats. During that time however, in lieu of saguaro flowers, lesser-long nose bats foraged heavily on desert agave (*Agave deserti*) flowers, a plant not typically used by lesser long-nosed bats (personal communication with Scott

Richardson, FWS, March 20, 2006). Monitoring bats and their forage this year is needed to better understand the effects of drought on this species.

We have produced numerous biological opinions on the lesser long-nosed bat since it was listed as endangered in 1988, some of which anticipated incidental take. Incidental take has been in the form of direct mortality and injury, harm, and harass and has typically been only for a small number of individuals. Because incidental take of individual bats is difficult to detect, incidental take has often been quantified in terms of loss of forage resources, decreases in numbers of bats at roost sites, or increases in proposed action activities.

A few examples of more recent biological opinions that anticipated incidental take for lesser long-nosed bats are summarized below. The 2005 biological opinion for implementation of the Coronado National Forest Land and Resource Management Plan (U.S. Forest Service) included incidental take in the form of harm or harass. The amount of take for individual bats was not quantified; instead take was to be considered exceeded if simultaneous August counts (at transitory roosts in Arizona, New Mexico, and Sonora) drop below 66,923 lesser long-nosed bats (the lowest number from 2001 – 2004 counts) for a period of two consecutive years as a result of the action. The 2004 biological opinion for the Bureau of Land Management Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management included incidental take in the form of harassment. The amount of incidental take was quantified in terms of loss of foraging resources, rather than loss of individual bats. The 2003 biological opinion for Marine Corps Air Station (MCAS) – Yuma Activities on the Barry M. Goldwater Range included incidental take in the form of direct mortality or injury (five bats every 10 years). Because take could not be monitored directly, it was to be considered exceeded if nocturnal low-level helicopter flights in certain areas on the BMGR increased significantly or if the numbers of bats in the Agua Dulce or Bluebird Mine roosts decreased significantly and MCAS-Yuma activities were an important cause of the decline. The 2002 biological opinion for Department of the Army Activities at and near Fort Huachuca (Fort), Arizona anticipated incidental take in the form of direct mortality or injury (six bats over the life of the project), harassment (20 bats per year), and harm (10 bats over the life of the project).

## **ENVIRONMENTAL BASELINE**

### **A. Action Area**

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). The FWS has determined that the action area for the lesser long-nosed bat includes the areas directly impacted by the PVB installation (including the barrier and access roads) and an area around the project defined by a circle with a radius of 36 miles (the maximum documented one-way foraging distance of the lesser long-nosed bat). The action area represents only a small portion of the lesser long-nosed bat's range.

Management of the action area is largely by Federal agencies, as described in the "Action Area" for Sonoran pronghorn. The action area for the lesser long-nosed bat also includes part of the Tohono O'odham Indian Reservation (TOIR) and lands near the border in Sonora.

## **B. Terrain, Vegetation Communities, and Climate in the Action Area**

A description of the region encompassing the action area has been previously provided (see “Environmental Baseline”, part B. Terrain, Vegetation Communities, and Climate in the Action Area” for the Sonoran pronghorn).

The project is near the Tinajas Altas, Tule, and Agua Dulce mountains. Suitable day and night roosting potentially occur within the immediate project vicinity, however, these areas have not recently been surveyed for lesser long-nosed bat roosts.

## **C. Status of the Lesser Long-Nosed Bat in the Action Area**

Based on the known foraging distances for lesser long-nosed bats, it is likely that this species forages throughout portions of the BMGR, CPNWR, and OPCNM, where flowers and fruit of saguaro, organ pipe, prickly pear, and agave are available.

Three large maternity roosts occur in the action area, including Bluebird Mine, Copper Mountain Mine, and Pinacate Cave. Bluebird Mine, located along the eastern border of CPNWR in the Growler Mountains, is approximately 15 miles north of the nearest border portion of project site and generally supports an estimated 3,000 lesser long-nosed bats at the peak of annual occupancy (U.S. Fish and Wildlife Service 1997). The highest estimate of lesser long-nosed bats using Bluebird Mine from 2001-2005 was 4,500. They abandoned the mine however in 2002, 2003, and 2005 due to disturbance from illegal activities. In 2004, the bats returned to the mine after CPNWR staff placed a high steel fence around the mine to prevent disturbance. The bats returned to the mine in 2005, however abandoned the site once again after the fence was damaged, presumably by illegal immigrants or smugglers.

Copper Mountain Mine, located within the OPCNM, is about 20 miles northeast of the nearest border portion of the project and supports approximately 25,000 bats at the peak of annual occupancy (National Park Service 2002). The highest estimate of lesser long-nosed bats using Copper Mountain Mine from 2001-2005 was 35,000.

The largest maternity roost in the project area is Pinacate Cave in northern Sonora, Mexico. Approximately 30 miles south of the nearest border portion of project site, this roost is estimated to support 130,000 bats each year (U.S. Fish and Wildlife Service 1997). In May 2006, approximately 200,000 lesser long-nosed bats were counted at the Pinacate Cave.

Before they give birth, female bats probably occasionally move between the Bluebird and Copper Mountain roosts, and it has been recommended that these two roosts be censused simultaneously to avoid double-counting bats (U.S. Fish and Wildlife Service 1997). Observations at Copper Mountain and Pinacate Cave indicate that they are occupied from mid-April to early-to-mid-September (U.S. Fish and Wildlife Service 1997), although these roosts reach their peak occupancy in late spring/early summer.

Though OPCNM and CPNWR monitor the Copper Mountain and Bluebird roosts annually to determine the presence, abundance, and disturbance of lesser long-nosed bats, including examining the roost year round for evidence of human entry, the rest of OPCNM and CPNWR has not been well surveyed to determine the number of additional day and night roosts that might exist in natural caves and/or mineshafts. A small roost or roosts is known to occur in the Agua Dulce Mountains in the southeastern corner of the CPNWR, though the current status (i.e., whether lesser long-nosed bats are still using the site) of the roost is unknown. Smaller day roosts are known in other mine tunnels, and are also suspected in other mines and natural rock crevices and caves. Short-term night roosts are known in natural caves, under the eaves of buildings, and inside several abandoned buildings associated with past ranching activities. It is likely that there is within- and between-season interchange between these colonies, perhaps even within and between nights (U. S. Fish and Wildlife Service 1997).

Flowers and fruits of saguaro, organ pipe cactus, and cardon provide nearly all of the energy and nutrients obtained by pregnant and lactating females roosting in the Sonoran Desert in the spring and early summer (U.S. Fish and Wildlife Service 1997). Saguaro, which is common and abundant throughout much of the BMGR, CPNWR, and OPCNM; and organ pipe cactus, which is common at OPCNM and localized in the eastern portions of CPNWR and BMGR, flower in May and fruit mature in June and July (Benson and Darrow 1982). Lesser long-nosed bats feed on both the nectar and fruits of these cacti. When cacti fruit are scarce or unavailable in late July or early August, agave nectar may be the primary food resource for lesser long-nosed bats in BMGR, OPCNM, CPNWR, and TOIR. Agaves typically bolt or flower and provide a nectar resource for foraging bats from about July into October. Desert agave occurs in mountainous areas within the study area. As mentioned above under "Status of the Species", last year's fires and this year's drought may have affected/may affect some lesser long-nosed bat foraging habitat within the action area, though the extent is unknown.

A number of activities occur in the action area that could affect bats. In a September 30, 2002, biological opinion, we concurred with the BLM that management of grazing leases on the Ajo allotments may affect, but is not likely to adversely affect, the bat. Our 1997 biological opinion on the OPCNM General Management Plan, found that the proposed action could result in incidental take of bats from recreation; specifically from unauthorized human disturbance to the Copper Mountain maternity roost. The dramatic increases in undocumented immigrants (see "Environmental Baseline, part E. Threats" for the Sonoran pronghorn for further detail about undocumented immigrant activity) and the associated damage resulting to the landscape from their activities, as well the activities of law enforcement in pursuit of undocumented immigrants, is becoming an increasing threat, not just to lesser long-nosed bats but to all wildlife of the region. As stated earlier, the Bluebird Mine on CPNWR was vandalized by suspected illegal immigrants in June 2002, which resulted in at least four dead bats and abandonment of the roost. The bats returned to the mine in 2005; however, abandoned the site once again after the fence was damaged by illegal immigrants. Both OPCNM and CPNWR are planning to implement additional protective measures at Copper Mountain and Bluebird Mine, such as the construction of bat-friendly gates at roost entrances to prevent illegal human entry. However, lesser long-nosed bats are sensitive to bat gates and may not adapt readily to their use. Therefore, use of bat gates to protect these roosts may not be a feasible alternative.

## EFFECTS OF THE ACTION

### *Effects to Roosts*

No known or suspected roost sites will be directly impacted by the proposed action. At its closest point, the proposed project is approximately 15 miles from the Bluebird Mine roost on the CPNWR and about 20 miles from the Copper Mountain roost on the OPCNM, and will have no direct impact on these sites or the Pinacate Cave roost site. Neither will the proposed action directly impact any potential roosting habitat (mines, caves, etc.) on the BMGR, CPNWR, or OPCNM. As discussed in the “Effects of the Action” for the pronghorn, simultaneous construction of PVBs on the BMGR and CPNWR will occur to the greatest extent possible, with the exception that PVBs on the BMGR will likely be completed six to 10 miles ahead of those on CPNWR. This will probably result in the redirection of (and subsequent increase) in illegal traffic through the eastern portions of BMGR and western portions of CPNWR until PVB construction is completed (the CPNWR barrier would be built beginning at CPNWR/OPCNM boundary and continue westward). We expect illegal vehicle activity will decrease in areas where the PVBs are completed. Because the Bluebird Mine maternity roost occurs in the eastern portion of the project area, simultaneous PVB construction should reduce potential adverse effects to lesser long-nosed bats at the roost that could result if PVBs were completed on BMGR first (if PVBs were constructed on BMGR first, illegal traffic could shift to and increase in the eastern portions of the project area, potentially near or at the Bluebird Mine). However, even if the BMGR PVB is six to 10 miles ahead of the CPNWR PVB, most illegal routes leading towards Bluebird Mine lie in the eastern portions of CPNWR and should be blocked by the PVB fairly early in construction.

Though we do not anticipate increased illegal activity near the Bluebird Mine roost site (because of PVB construction schedules), should illegal activity occur near the roost site, potential impacts to lesser long-nosed bats at the site may be minimized by management measures already proposed by the CPNWR. As part of their “Working Final Cabeza Prieta National Wildlife Refuge Comprehensive Conservation Plan Environmental Impact Statement and Draft Wilderness Stewardship Plan, June 2006”, on which we formally consulted (Biological Opinion number 22410-2006-F-0416, issued August 22, 2006), the CPNWR plans to, among other conservation measures, protect the Bluebird Mine maternity roost from human disturbance through restricting access to, maintaining fencing (~ three meter steel fence to discourage human entry) around, and monitoring the roost site.

### *Effects to Foraging Habitat*

The proposed project will result in destruction of lesser long-nosed bat food plants; however, as stated in the “Description of the Proposed Action”, OBP will salvage (remove and replant outside the project corridor) all agaves and saguaros less than three feet tall and will attempt to salvage all saguaros that are between three and six feet tall. Construction activities associated with the proposed project will likely destroy up to 50 saguaros (18 on the CPNWR and 32 on the BMGR) and three organ pipe cacti (on the CPNWR). Approximately 200 saguaros within the project corridor will be avoided and/or salvaged. Seedlings that could have been missed during the surveys<sup>3</sup> will likely be destroyed by project activities. Additionally, the roots and rooting

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<sup>3</sup> Gulf South Research Corporation conducted in surveys in 2005 by walking, with 30 feet between surveyors, the project corridor and recording the species and location of each columnar cactus and agave seen.

areas of plants adjacent to the project corridor might also be damaged, which may affect plant vigor and cause increased plant mortality.

According to OBP, the proposed project would result in the direct disturbance of approximately 207 acres of potential lesser long-nosed bat foraging habitat, nearly all of which is immediately adjacent to the international border. Of this, project activities will permanently disturb about 135 acres and temporarily disturb 72 acres. The 207 acres of disturbed ground will be susceptible to colonization by invasive exotic plants such as buffelgrass. Exotic species may prevent the recruitment of lesser long-nosed bat forage species (columnar cacti and agaves) and may also carry fire that could also impact lesser long-nosed bat forage species. Most Sonoran Desert trees, shrubs, and cacti are very fire intolerant. For example, fires at Saguaro National Park resulted in greater than 20 percent mortality of mature saguaros (Schwalbe *et al.* 2000).

However, disturbance to vegetation will be minimized and will occur within previously disturbed areas minimized to the extent practicable. Additionally, the staging and bivouac areas will not be graded or scraped and any vegetation that must be cleared will be removed above the ground using hand tools. This should facilitate natural restoration of the areas and minimize the establishment of exotic plants. However, because the CBP/OBP has no plans to monitor or control exotic plants, the extent to which areas will be restored or invaded by exotics will remain unknown, unless monitoring is conducted by CPNWR.

Destruction of and damage to lesser long-nosed bat forage plants and disturbance of potential bat foraging habitat will reduce food available to the lesser long-nosed bat; this will likely adversely affect bats, especially in drought when forage availability is already impaired. It is difficult to evaluate the significance of the loss of foraging habitat; however, this loss is very small compared to the large amount of potentially suitable foraging habitat available to the lesser long-nosed bat throughout the action area. However, it is still extremely important that effects to forage resources are minimized.

The Arizona Upland subdivision, which occurs primarily in the mountains and bajadas of the eastern-most portions of the CPNWR and BMGR-East, supports higher densities of lesser long-nosed bat forage plants than the Lower Colorado vegetation subdivision to the west. Because the proposed project is primarily located within the Lower Colorado subdivision, most project impacts will occur within what may be considered lower quality bat foraging habitat areas.

Though simultaneous construction is preferred because it would minimize the chance that lesser long-nosed bats may be disturbed at their maternity roost, this construction schedule will result in greater disturbance of lesser long-nosed bat foraging habitat in the western portion of their range as illegal activity is diverted westward (as the eastern portions of the PVB on CPNWR are completed) until the PVB is completed. Areas lying between the two completed PVBs (from the CPNWR boundary west to the Tinajas Altas Mountains), where vehicle traffic is likely to be diverted, is probably outside the range of the bat. Illegal routes and use of them, both by illegal immigrants/smugglers and pursuant law enforcement, do not often cause immediate mortality of mature individuals of saguaros and organ pipe. However, these routes may damage the shallow root systems of large individuals, causing loss of vigor or death later. Off-road driving by immigrants and law enforcement routinely also results in destruction of numerous small saguaro

and organ pipe cactus, and can be assumed to destroy large numbers of seedlings. Also, off-road travel can cause soil erosion and changes in surface hydrology (from channelization of water in entrenched vehicle track prisms), which can adversely affect vegetation, including lesser long-nosed bat forage species. However, we anticipate the potential impacts to lesser long-nosed bat foraging habitat by illegal immigrant vehicle traffic will be minimized by OBP's assignment of additional agents to unprotected border areas (no PVBs) to curtail potential shifts in illegal traffic to those areas until the PVBs are completed.

Once project construction is completed, the vehicle barrier should eliminate or greatly reduce use of illegal routes, resulting in the eventual restoration of at least 250 miles of illegal roads<sup>4</sup> in the CPNWR alone (we have no estimate of the amount of illegal roads in the BMGR). Assuming an average width of approximately eight feet, this equates to restoration of approximately 242 acres. We anticipate lesser long-nosed bat may benefit from road restoration, as some (unknown amount) of the illegal roads are within bat foraging habitat. Again, however, because OBP/CBP has no plans to monitor future ecological conditions in the action area, the degree to which areas will be restored will likely remain unknown unless monitoring is conducted by CPNWR. In addition to this anticipated habitat restoration, the proposed project will prevent future habitat degradation of this type.

Though illegal pedestrian and pursuant law enforcement patrol activities, particularly off-road patrols, will continue to result in some lesser long-nosed bat habitat degradation after the PVBs are constructed, the improved patrol road along the border should facilitate increased apprehension of illegal pedestrians at the border. As a result, we anticipate illegal pedestrian activities and the frequency of law enforcement pursuits through the action area will decrease to some extent which will minimize degradation of lesser long-nosed bat habitat.

Bat foraging behavior may be temporarily affected by nighttime patrol and construction activities within bat foraging habitat. Because bats are nocturnal, we do not anticipate that daytime patrol and maintenance activities will affect bat foraging behavior.

## **CUMULATIVE EFFECTS**

Most lands within the action area are managed by Federal agencies; thus, most activities that could potentially affect bats are Federal activities that are subject to section 7 consultation. The effects of these Federal activities are not considered cumulative effects. However, a small portion of the action area also occurs on Tohono O'odham Nation lands, on private lands in the U.S., and in Mexico. Residential and commercial development, farming, livestock grazing, surface mining and other activities occur on these lands and are expected to continue into the foreseeable future. These actions, the effects of which are considered cumulative, may result in small-scale loss or degradation of lesser long-nosed bat foraging habitat, and potential disturbance of roosts. Illegal immigrant/smuggler activities, described above under "Cumulative Effects" for pronghorn, can result in loss or degradation of potential lesser long-nosed bat

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<sup>4</sup> Because resources at the CPNWR are limited, monitoring and estimating the number and length of roads/tracks created by illegal vehicle activity is difficult. The recent estimate of 250 miles of roads/tracks created by illegal immigrant vehicle traffic is likely conservative as it only attempts to account for illegal roads that have received multiple trips (electronic mail from Roger DiRosa, June 1, 2006).

foraging habitat (impacts to foraging habitat have not been quantified however) and disturbance to and abandonment of roosts, as has been documented at the Bluebird Mine roost site. Though immigrant/smuggler activity has increased dramatically over the years in Arizona, lesser long-nose bat populations appear to be increasing or stable at many roost sites within and outside the action area.

## **CONCLUSION**

After reviewing the current status of the lesser long-nosed bat, the environmental baseline for the action area, the effects of the proposed activities associated with the PVB project, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the lesser long-nosed bat. No critical habitat has been designated for this species, therefore, none will be affected. Our conclusion is based on the following:

1. Lesser long-nosed bat populations appear to be increasing or stable at many roost sites in Arizona and Mexico.
2. The project will not directly affect any known bat roosts in the action area (Bluebird Mine, Copper Mountain Mine, and Pinacate Cave).
3. Planning is underway to address potential indirect effects (possible increased illegal immigrant/smuggler vehicle activity near the roost site until the PVB is completed), including preventing illegal entry into the Bluebird Mine.
4. The project will result in direct loss of lesser long-nosed bat foraging habitat, but the amount will be small relative to foraging habitat within the action area.
5. Disturbance to and loss of foraging habitat and forage plants will be minimized. Disturbance to vegetation will occur within previously disturbed areas to the extent practicable. Also, OBP will salvage (remove and replant outside the project corridor) all saguaros and agaves less than three feet tall and will attempt to salvage all saguaros that are between three and six feet tall. OBP estimates that 200 saguaros will be avoided and/or salvaged.
6. Once completed, the proposed PVB will eliminate or greatly reduce future foraging habitat degradation from illegal immigrant/smuggler vehicle activity.

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**

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.

### **AMOUNT OR EXTENT OF TAKE ANTICIPATED**

We do not anticipate the proposed action will result in incidental take of lesser long-nosed bat for the following reasons:

1. The project will not directly affect any known bat roosts.
2. Protective measures at the Bluebird Mine roost site will help prevent human disturbance of bats at these sites.
3. Direct impacts to bat foraging habitat and plants will be minimized.

### **CONSERVATION RECOMMENDATIONS**

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. Where the alternative design for PVB construction is used, install and maintain livestock fencing (the fence should be integrated into the PVB) to prevent trespass of livestock into Sonoran pronghorn and lesser long-nosed bat habitat. Installation of the livestock fence will prevent possible impacts trespass livestock may have on pronghorn and lesser long-nosed bats.
2. In conjunction with CPNWR, BMGR, and OPCNM, facilitate restoration (i.e., re-contour entrenched areas, ensure the establishment of native vegetation, etc.) of areas degraded by off-route travel (by illegal immigrants/smugglers and OBP) within the action area.
3. Monitor or provide funding to land managers to monitor future ecological conditions in the action area, including the overall success of active and passive restoration (i.e., the

degree to which native vegetation becomes reestablished on illegal routes, the degree to which exotic invasive plants have decreased or increased, etc.).

4. Assist agencies in the control of non-native plants that may alter fire frequencies and intensities within BMGR, CPNWR, and OPCNM and in developing methods for controlling these species (lesser long-nosed bat Recovery Plan task 2).
5. Provide annual financial assistance (at least until illegal immigrant/smuggle entry into southwestern Arizona is significantly reduced) to BMGR, CPNWR, and OPCNM to monitor the effects of illegal immigrants/smugglers on lesser long-nosed bat roosts and foraging habitat and to restore habitat and implement protective measures for lesser long-nosed bats.
6. Provide annual financial assistance (at least until illegal immigrant/smuggle entry into southwestern Arizona is significantly reduced) to BMGR, CPNWR, and OPCNM to monitor the effects of illegal immigrants/smugglers on pronghorn and their habitat, particularly near forage enhancement plots, water sites, and the semi-captive breeding pen, and to restore habitat and implement recovery actions for the Sonoran pronghorn.
7. Provide ongoing financial support to agencies to implement the Sonoran pronghorn and lesser long-nosed bat recovery plans, as appropriate.
8. Tucson and Yuma Sector offices should each have a full-time biologist or environmental specialist to ensure that OBP complies with ESA, NEPA, and other environmental requirements; to provide environmental training to agents; and to coordinate with agencies regarding environmental issues.
9. Complete reinitiation of consultation for Yuma Sector activities (biological opinion has been in review by OBP since 2004).
10. Initiate programmatic consultation on Tucson Sector activities.
11. Provide funding to FWS for a position dedicated to working with DHS and CBP/OBP on ESA compliance and species conservation and recovery.

In order for us to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

#### **REINITIATION - CLOSING STATEMENT**

This concludes formal consultation on the action outlined in this biological opinion. 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 that causes an effect to

the 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 a listed species or critical habitat that was 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.

We appreciate DHS's efforts to identify and minimize effects to listed species from the project. Once completed, the PVB will greatly reduce damage to natural resources, including threatened and endangered species and their habitats, from illegal activities and law enforcement response in the borderlands. For further information, please contact Erin Fernandez of our Tucson Suboffice at (520) 670-6150 (x238), or Jim Rorabaugh at (602) 242-0210 (x238). Please refer to the consultation number 22410-2006-F-0113 in future correspondence concerning this project.

Sincerely,

/s/ Steven L. Spangle  
Field Supervisor

cc: Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ  
Regional Supervisor, Arizona Game and Fish Department, Yuma, AZ  
Regional Supervisor, Arizona Game and Fish Department, Tucson, AZ  
Director, Range Management Department, Marine Corps Air Station, Yuma, AZ  
Refuge Manager, Cabeza Prieta National Wildlife Refuge, Ajo, AZ  
Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ  
Office of Border Patrol, Washington D.C. (Attn: John Fountain)  
Department of Homeland Security, Washington D.C (Attn: Kevin Feeney)  
Department of Homeland Security, Laguna Niguel, CA (Attn: Charles Parsons)  
U.S. Army Corps of Engineers, Fort Worth, TX (Attn: Mark Doles)  
Gulf South Research Corporation, Baton Rouge, LA (Attn: Howard Nass and Chris Ingram)  
Chairperson, Tohono O'Odham Nation, Sells, AZ

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## TABLES AND FIGURES

**Table 1.** Comparison of U.S. Sonoran pronghorn population surveys, 1992-2002.

Date	Pronghorn observed		Population estimates		
	On transect	Total observed	Density estimate using DISTANCE (95 percent CI) <sup>a</sup>	Lincoln-Peterson (95 percent CI)	Sightability model (95 percent CI)
Dec 92	99	121	246 (103-584)	---	179 (145-234)
Mar 94	100	109	184 (100-334)	---	282 (205-489)
Dec 96	71	82 (95 <sup>b</sup> )	216 (82-579)	162 (4-324)	130 (114-154)
Dec 98	74	86 (98 <sup>b</sup> )	---	172 (23-321)	142 (125-167)
Dec 00	67	69 <sup>b</sup>	---	---	99 (69-392)
Dec 02	18	0	---	---	21 (18-33) <sup>c</sup>

<sup>a</sup> Confidence interval; there is only a 5 percent chance that the population total falls outside of this range.

<sup>b</sup> Includes animals missed on survey, but located using radio telemetry.

<sup>c</sup> Jill Bright, Arizona Game and Fish Department, pers. comm. 2003

**Figure 1.** Proposed Permanent Vehicle Barrier Project corridor (BA, February 2006)

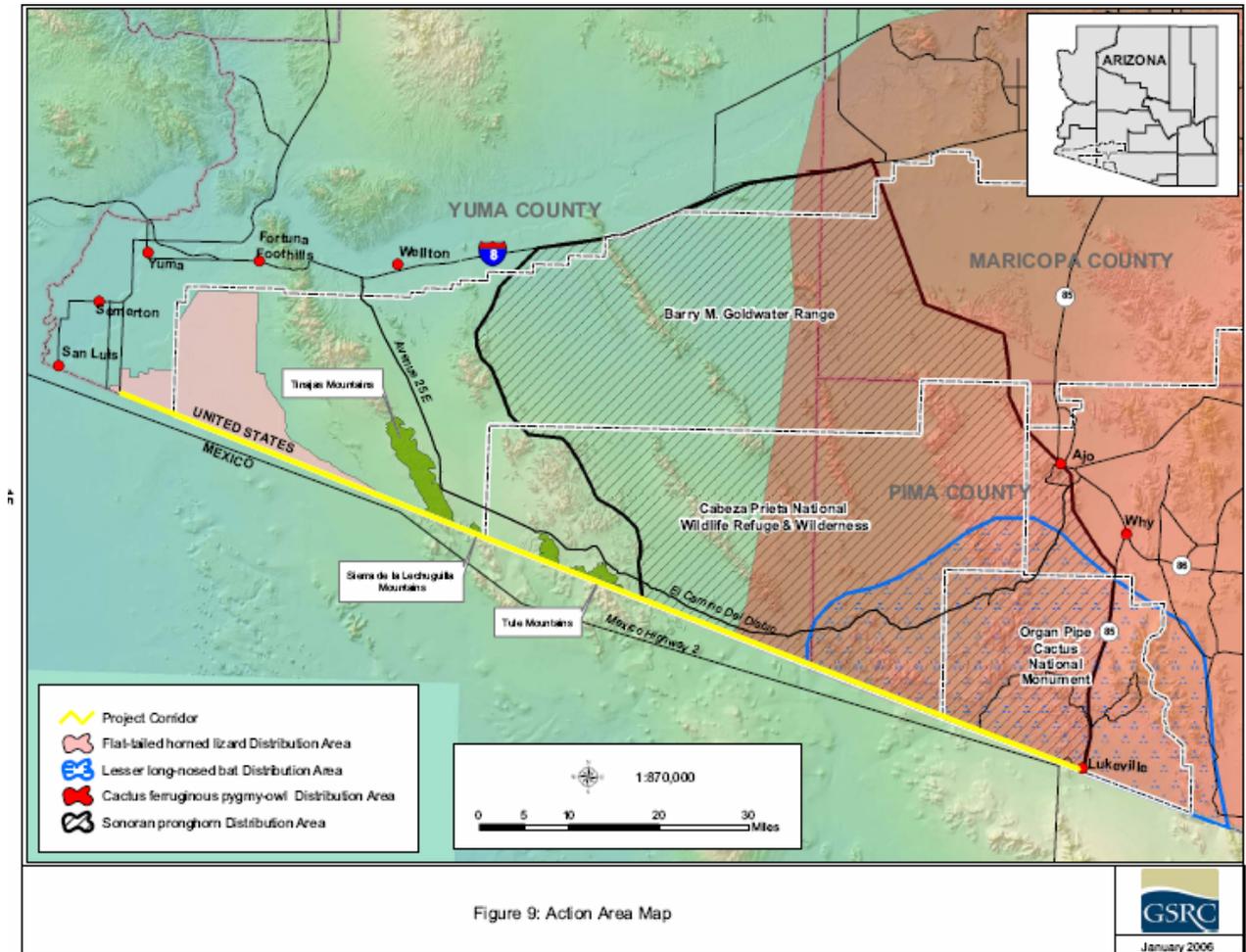


Figure 2. Historic range of Sonoran pronghorn in the Unites States and Mexico.



**Figure 3.** Current Sonoran pronghorn distribution in the United State: Records from 1994-2001.

