



United States Department of the Interior  
NATIONAL PARK SERVICE  
WUPATKI – SUNSET CRATER VOLCANO – WALNUT CANYON  
NATIONAL MONUMENTS  
6400 North Highway 89  
Flagstaff, Arizona 86004



IN REPLY REFER TO:  
H4217 (FLAG-RM)

September 30, 2015

Dear Interested Citizen,

Wupatki National Monument (Wupatki NM) is proposing to capture and perform Global Positioning System (GPS) telemetry on American pronghorn to determine if previous barrier mitigations to improve pronghorn connectivity/permeability have been successful. To accomplish this task the National Park Service (NPS) in cooperation with the Arizona Game and Fish Department (AZGFD) proposes to place GPS collars on no more than 15 pronghorn within Wupatki's eligible wilderness. This project would occur over a three year period, beginning in the winter of 2015-2016. The ear tags would remain on the animal indefinitely, and the GPS collars would remain on the animal for approximately 24-35 months, after which they would fall off and be collected by NPS and/or AZGFD staff.

The American pronghorn (*Antilocapra americana*), also known as "antelope" is an iconic grassland species in northern Arizona. The animals are nomadic, and typically range long-distances in search of nutritious forage and available water, which are highly variable from year-to-year in southwestern landscapes (Yoakum and O'Gara 2000). Once roaming the grasslands of the American west in vast herds totaling around 35 million, pronghorn suffered severe population reductions due to over-hunting and habitat loss, with the continental population reaching an estimated low of 30,000 animals in 1924 (Yoakum 1986). In Arizona, the total pronghorn population has declined from an estimated 45,000 individuals in the late 19th century (Knipe 1944) to a recent low of 7,500 in 2002 (Arizona Game & Fish Department (AGFD), unpublished data). Currently, American pronghorn are species of conservation need in Arizona.

Since 1992, a series of pronghorn telemetry studies in and around Wupatki NM have highlighted the habitat barrier effect of U.S. Highway 89 (US 89) on the local pronghorn population. Recent genetic research (Sprague 2010) confirms US 89 and other major highways across the plateau are critical long-term movement barriers, with distinct pronghorn subpopulations developing within the habitat blocks they form. Pronghorn commonly experience great difficulty crossing conventional range and highway right-of-way (ROW) fences. The animals typically do not jump, but instead crawl under the lowest strand of wire. This is hazardous as the bottom strand is typically barbed and strung low to the ground. Combining fences, roads, and relatively high traffic volumes can further increase habitat fragmentation. Pronghorn are naturally averse to

crossing highways, with recent research in Arizona showing few crossing attempts even at moderate daytime traffic volumes (Dodd et al. 2011).

Beginning in 2004 the NPS in cooperation with AZGFD began modifying fences within and surrounding Wupatki NM. These modifications included rebuilding approximately 25 miles of the fence using pronghorn friendly standards. These standards include replacing wooden posts with T-posts spaced 16 ft. apart; removing the two lowest strands of barbed wire and replacing these with a single strand of smooth wire placed at least 16 in. above the ground; and placing a minimum of 8 PVC pipe “goat bars” or pronghorn passes every mile. In 2009, the right-of-way fence within Wupatki NM, along US Highway 89 was removed. As part of the fence modification project, a pronghorn telemetry study was conducted from 2007 to 2010. Initial findings from this study indicated that pronghorn were beginning to use these newly opened paths for migration within the area.

In 2011, NPS, working with 20 additional stakeholders, including AGFD, proposed to continue telemetry studies for the next three years to determine if the few modifications implemented have increased pronghorn connectivity. Without substantial increases to the measured permeability of US 89, it is probable that the local population of pronghorn would continue to diminish, or face negative results of long-term inbreeding; these ecologically unique pronghorn could face continued decline and functional extinction if adequate resources and escape terrain are not accessible. Telemetry studies as part of this proposal are anticipated to start in the winter of 2015-2016.

As a result of the 2007-2010 telemetry studies an additional three miles of fence along the Wupatki NM boundary were modified using pronghorn friendly standards in 2012. In 2013 an additional three miles of fence was removed along the park entrance road and another one mile of fence was set back from US Highway 89 by 1/10<sup>th</sup> of a mile. The proposed telemetry study anticipated to start in the winter of 2015-2016 would look at these modified/removed fence areas to see if pronghorn migration has increased in these areas. The proposed telemetry study would also identify new areas that need to be addressed.

In 2013, the NPS completed a wilderness eligibility assessment for Wupatki National Monument. This assessment concluded that 34,194 acres, or 96.5% of the monument’s acreage, is eligible for wilderness designation at some point in the future. Wupatki’s eligible wilderness contains one of the largest intact grasslands in Arizona, which is critical habitat for the American pronghorn. Now that the NPS has made a wilderness eligibility determination, we must evaluate our proposed actions under the Wilderness Act and agency policies for how the Act is implemented.

Accordingly, the NPS is looking at several methods to accomplish this project to gather data on pronghorn movement. These options are: 1) No Action; 2) Pronghorn Capture Using a Helicopter and Fixed Wing Aircraft; 3) Pronghorn Capture by Darting from the Ground; 4) Pronghorn Capture Using Drop Nets; and 5) Pronghorn Capture Using Net/Corral Traps.

**Option 1) No Action:** No pronghorn would be captured in Wupatki’s eligible wilderness. The implementation of the No Action alternative would have long-term impacts to the overall study.

This alternative would result in a lack of pronghorn mobility data in the area located east of US89. The lack of data would hamper evaluating the effectiveness of prior modifications to pronghorn barriers, such as roads and fences.

**Actions Common to Options 2-5:** All options except for the No Action option would use GPS collars. These have a battery life of 24-35 months and all collars would have VHF beacons, mortality sensors, and programmed release mechanisms to allow recovery without recapture. Upon release, collars would be recovered by navigating to them in the field using their VHF broadcast signal. As pronghorn are generally active during the day, GPS collars would be programmed to receive 8 fixes/day between 05:00 and 19:00 hours (1 fix every 2 hours); this time interval between fixes would yield up to 8,500 locations per pronghorn. GPS locations should be sufficient to determine highway and fence interaction, habitat selection and identify fine-scale movement corridors. An ear tag and tissue sample would also occur in options 2-5. Each pronghorn would have an ear tag attached to their ear, this would help researchers and NPS staff identify an individual pronghorn once the GPS collar has fallen off. The tissue sample would be taken from the ear of the animal and would be subjected to genetic disease testing. A veterinarian would be on-site to monitor the well-being of the pronghorn.

**Option 2) Pronghorn Capture Using a Helicopter and Fixed Wing Aircraft:** A fixed-wing aircraft, ground spotters, helicopter, capture team, and processing team would be utilized in this alternative to capture pronghorn within the Wupatki eligible wilderness. The majority of the captures would take place over a 1-3 day period within the first year. Captures would occur within an additional two years if more pronghorn telemetry data is required. The additional captures would not exceed the total number of 15 proposed captures for the entire length of the project. The fixed-wing aircraft would travel at an elevation of 2,000 ft. (no lower than 500 ft.), and numerous ground spotters, located on designated roads or on foot, would search for pronghorn to minimize helicopter search time. To minimize the risk of shock, stress, and overheating, pursuit times are monitored and the capture team adheres to minimum and maximum chase times which are set in accordance with ambient temperatures. Within the acceptable window, the net-gunner, positioned in the seat behind the helicopter pilot, fires the canister-held combustion-propelled net over the target animal that has been separated from the herd. If the net-gunner cannot get a shot off within the allotted time, or if the animal appears overexerted, then the chase is terminated and another target herd is selected.

Upon successful netting of the targeted pronghorn, the helicopter would land and the capture team would exit the helicopter and complete the physical immobilization. The helicopter would leave to collect the processing team. The captured pronghorn would be immediately blindfolded, untangled from the capture net, and hobbled. The helicopter would return to the site, land to pick up the capture team and drop off the processing team. Pronghorn would then be fitted with a GPS collar and marked with a numbered, colored ear tag. Tissue samples would be taken from the animals' ear with a biopsy punch and preserved for future genetic analysis. This entire process should take no more than 20 minutes from the time the animal is captured. The use of a helicopter and fixed wing air plane would cause disturbance to all wildlife in the area for a limited time.

**Option 3) Capture Pronghorn by Darting from the Ground:** A ground crew, of at least four people, using pick-up trucks on designated roads and pedestrian travel within the eligible wilderness would dart the pronghorn using tranquilizers. In order to locate the pronghorn, the capture/processing teams would drive on accessible roads near the wilderness. Upon locating a pronghorn herd they would travel on foot to shoot the pronghorn with a tranquilizer gun, they would need to be within 75 meters of the animal to safely tranquilize it. Once the pronghorn is successfully darted, it would then take an additional 15 minutes for the tranquilizer to take effect. There are increased safety risks to the animal and personnel during this period between darting and the full effect. This alternative would: take several months to complete; may result in added stress to the pronghorn; increase processing time from capture to release; would result in fewer pronghorn captures than Option 2; and would increase impacts to the Wupatki eligible wilderness due to cross country travel.

**Option 4) Capture Pronghorn Using Drop Nets:** This method would occur in heavily disturbed areas near a water source previously grazed by livestock. A drop net entails using a large, square net hung from poles in each corner, larger nets (>25' x 25') require a fifth, center-pole. The net has weights on it that secure it to the poles by an electromagnet under constant 12V current. To deploy the net, a wireless remote-control turns the power off to silently drop the net. Another mechanism used is a hand operated trip wire triggered by an observer on-site that releases the drop net. The poles can slide over a stake which is pounded into the ground, or secured by a rope attached to a stake at each corner. The stake used is a masonry stake which is about 1 inch in diameter and varies in length from 1-3 feet. This method appears to have worked for the Utah Department of Wildlife for a particular heard of pronghorn that was trapped in a shrinking suburban parcel. Pronghorn in areas without this pressure to habituate to anthropogenic structures are unlikely to walk under the net where they can be captured. Any potential for successful captures would require establishment of long-running bait stations and associated activities would have much greater potential for ground disturbance. This method is typically used for the translocation of an entire herd of pronghorn. Additionally, in order to achieve the desired distribution of collar deployments in various herds, multiple iterations of this effort would be required over a period of several months. One thing to note is that the hand operated trip wire by an on-site observer is likely to substantially reduce the success even for species for which drop-nets are more appropriate. Baiting pronghorn near a water source is also unreliable due to arid/dry lands in Wupatki.

**Option 5) Drive Net/Corral Traps:** A semi-permanent trap (net) made of woven nylon mesh and two guide fences made of wire (supported by ~250 t-posts) would be constructed at the capture site. One helicopter is typically used in this method to drive the pronghorn into the guide fences and eventually into the net at the base of the guide fences. When pronghorn enter the guide fences they are pushed further into the trap until they enter the actual net, at which time, support crew from the ground (muggers) close a gate on the trap to prevent escape. The ground support crew then pushes the pronghorn into half the corral trap area. Pronghorn would be mugged a dozen or so at a time, be subdued by muggers, and have blindfolds placed on them to calm them down. Approximately 45-50 department personnel and volunteers would be involved with handling the captured pronghorn. The corral trap, drive nets, and guide nets would be removed immediately after completion of the capture. Drive nets/corral traps are a useful capture method for Arizona pronghorn capture. But, requires a substantial amount of ground disturbance and

still entails a helicopter flying at low levels. In order to achieve the desired distribution of collar deployments, multiple iterations of this effort would be required. This method is typically used for the translocation of an entire herd of pronghorn. It would need to be repeated several times over a period of several months to years in order to achieve the desired result of capturing 15 pronghorn from different herds.

Please submit your online comments through the Planning, Environment, and Public Comment (PEPC) program or contact Karla Jageman, Planning and Compliance Program Manager, directly via (928) 526-1157 x270 or at [Karla\\_Jageman@nps.gov](mailto:Karla_Jageman@nps.gov).

We appreciate working with you to determine the best ways to protect Wupatki National Monument's many and varied resources.

Sincerely,



Kayci Cook Collins  
Superintendent

Enclosures: Pronghorn Habitat Study Plan