ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AMALD01012
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Antilocapra americana sonoriensis*
COMMON NAME: Sonoran Pronghorn, Sonoran Pronghorn Antelope
SYNONYMS:
FAMILY: Antilocapridae

AUTHOR, PLACE OF PUBLICATION: E.A. Goldman. 1945. Proc. Bio. Soc. of Wash., 58:3-4.

TYPE LOCALITY: A ranch on north side of Río de Sonora, 40 miles north of Costa Rica, southwest of Hermosillo, Sonora, Mexico, by Vernon Bailey and Frederic Winthrop on December 11, 1932.

TYPE SPECIMEN: USNM 256938 (original number 11291), Holotype.

TAXONOMIC UNIQUENESS: *Antilocapra americana* is the only genus and species of the family Antilocapridae. *Antilocapra* signifies that pronghorn share some characteristics of true antelopes (*antilo*) and goats (*capra*), although they are placed in a separate family; *americana* indicates this is a North American animal. *Antilocapra americana sonoriensis* is one of four extant subspecies of *A. Americana* (Lee et al. 1994, Stephen et al 2005), and one of three that occur in Arizona, including *A.a. americana* and *A.a. mexicana*. The relationships and taxonomic validity of these subspecies are poorly known, and many uncertainties exist about their ranges. The subspecific integrity of pronghorn populations was complicated by restocking that took place after many populations were eliminated in the early twentieth century.

Genetic work indicates that *A.a. peninsularis* and *A.a. sonoriensis* have significant genetic divergence, and supports subspecies status (Klimova et al. 2014)

DESCRIPTION: For the species: a proportionately long-legged, small-bodied artiodactyl with conspicuous pronged sheath although the horn-core is unbranched. Horny sheath is shed annually. Conspicuous white areas of hair present, especially on the rump, sides of face, two bands on throat, underparts, and part way up sides; otherwise color of animal is yellowish tan except for blackish on top of nose. The skull, which has 32 teeth, has lacrimal and nasal bones separated by vacuity. Males are distinguished from females by a distinct black cheek patch, deep brownish-black color on top of nose, and by their much larger horns, the tips of which curve inward as they mature and have a forward projecting prong. Males average larger than females in size of the skull, although there is overlap between individuals

(Hoffmeister 1986). Average height is 3 ft. (91 cm); weight 75-130 lb. (33.7 - 58.5 kg); record spread of horns is 22 5/16 in. (57 cm). Each foot (hoof) has two toes, and lack the declaws common to most ruminants. There are 4 mammae.

For the subspecies: This animal has been described as being the smallest of the 5 subspecies. It has a generally paler coloration, and distinctive cranial features that include a skull decidedly smaller, frontal depression shallower, molar teeth shorter and narrower, rostrum more slender, premaxilla less extended posteriorly along the median line, and auditory bullae more flattened and less projecting below level of basioccipital. Some females lack horns.

AIDS TO IDENTIFICATION: The skull of *A. a. americana* is broad across the orbits, zygomata, and palate. The skulls of *A. a. mexicana* and *A. a. sonoriensis* are narrower. *A. a. sonoriensis* is smaller in zygomatic width, than *A. a. americana* and *A. a. mexicana*. See description of subspecies for other differences.

Four specimens collected in 1969 from northwest Sonora, Mexico, and deposited in the USNM #347452-347455, had marked similarities to the holotype, but differed from the other four subspecies (Paradiso and Nowak 1971).

In comparison with similar species: Bighorn Sheep has massive coiled horns, and no white bands across the throat; Mule Deer has black on tail, and no white along sides; Whitetail Deer does not have a white rump patch, and no white along sides.

ILLUSTRATIONS: Colored drawing of species (Burt and Grossenheider, 1976: plate 23)
B&W photos (AGFD 1981 Fig. 3-4, 10-14)

TOTAL RANGE: Historically, Sonoran pronghorn ranged from the area between the Baboquivari Mountains and the Santa Cruz River in the east; to the vicinity of present-day Interstate 10 and no farther than the Bill Williams River in the north; to the main coastline of the Gulf of California to near Kino Bay and east to Hermosillo in the south; and into the Imperial Valley of California and the northern Gulf of California Coast of Baja California in the west, a range of about 55,0000 mi^2 (142,450 km^2) (USFWS 2010a).

Currently Sonoran pronghorn occupy approximately 12% of their historic range. Five populations are extant, three in Arizona, and two in northwestern Sonora, Mexico. Populations in Arizona include the Cabeza Prieta, Kofa and Sauceda populations. The Cabeza Prieta population is an endangered population which generally occurs south of Interstate 8, west of Highway 85, and east of the Copper and Cabeza Prieta Mountains. The Kofa population is an experimental population that is found within the larger nonessential experimental population area in the vicinity of Kofa National Wildlife Refuge, north of Interstate 8. The Sauceda population is an experimental population initiated in December, 2015 within the larger nonessential experimental population area in the vicinity of Barry M. Goldwater Range East, east of Highway 85. Populations in Sonora include the Quitovac and Pinacate populations. The Quitovac population occurs south and east of Mexico Highway 8

and west and north of Caborca near Quitovac, Sonora, Mexico. The Pinacate population occurs in the El Pinacate y Gran Desierto de Altar Biosphere Reserve of northwestern Sonora, Mexico. These populations are predominately geographically isolated due to barriers such as roads and fences.

RANGE WITHIN ARIZONA: See "**Total Range**."

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Pronghorn are the fastest land animal in North America, with speeds recorded up to 54 miles per hour (87 km per hour), and are capable of sustaining speeds of 40 to 45 miles per hour (64 to 72 km per hour) (USFWS 2016). They have keen eyesight, with large eyes. The eyes are set high and on the sides of the head to give a field of view of almost 300 degrees. They use their speed and eyesight as their main defense against predation, and thus are most suited for flat to rolling topography.

Based on a study conducted in 1984 (AGFD 1986) using collared Sonoran pronghorn, 4 males had home ranges ranging from 64.5 km² - 1213.6 km² (avg. 799.7 km²), while 6 females had home ranges ranging from 40.7 km² - 1143.7 km² (avg 465.7 km²). The large variation in home range size for this study appears to be tied to forage and possible water availability. Hervert (1996) states that they are exhibiting a "nomadic behavior that is typical of other desert dwelling animals like the oryx of the Serengeti Desert or the Dorcas gazelle of the Saharai Desert. These animals must use large tracts of land to obtain adequate forage. These desert ungulates at times appear to be wandering randomly, but this movement is associated with living in desert conditions, where resources may be widely scattered or ephemeral."

Sonoran pronghorn exhibit the same social doe/fawn, territorial, and flight behaviors as noted for the other 4 subspecies. A heightened response to human traffic has been noted. Once aware of an observer, Sonoran pronghorn are quick to leave the area (AGFD 1986). As with the northern subspecies, hair on the large white rump patch erects and makes the animal more conspicuous, thus signaling other animals in the herd of potential danger (a type of alarm call) of predators.

Mortality in the Arizona Sonoran pronghorn population has been documented to include coyotes and bobcats. Other predators possibly in the area include mountain lions and golden eagles. The most common cause of fawn deaths has not been able to be determined, but appears to be the result of environmental conditions such as hot, dry weather and poor forage conditions rather than coyote predation (AGFD 1986). Annual mortality rates of collared adult Sonoran pronghorn in Arizon average 13% in wet years and 30% in dry years (Bright and Hervert 2005).

Pronghorn have difficulty jumping or going through fences constructed to control livestock. Historically, habitat occupied by pronghorn contained no similar obstacles. Fences can be a

significant factor of pronghorn mortality when they restrict the animals' movements to procure food and water, or to escape predation (Yoakum 1978).

REPRODUCTION: Pronghorn are polygamous; does usually breed for the first time at 16-17 months of age (O'Gara 1978). The gestation period averages 252 days, although a 1986 AGFD report states that the gestation period averages 240 days. Northern populations breed from mid-September to early October, while southern populations breed from July to October (July - September for Sonoran pronghorn). Fawning for Sonoran pronghorn takes place from February to May, and as early as January for populations in Mexico. Although the stress of summer rutting on pronghorn is higher, spring drop is desirable to coincide with temperate weather and spring forage. Sonoran pronghorn fawns are nursed for 60 days, unlike northern populations, which nurse up to 90 days.

During the rutting season, large bucks join herds of does and defend their territory. Territory defense has been observed earlier in northern herds (April), and continues until the end of rut. After the rut, they return to their home ranges. Does maintain herd units year-round until the fawning period, when they break away individually to seek out areas of dense ground cover, where fawns will be best protected from predators. After a few weeks, when the fawns are mobile, the does rejoin other does to form nursery herds.

FOOD HABITS: Diet composition varies between years and seasons. Forbs appear to be selected for when available, consisting of 33-69% of pronghorn diets across several studies (USFWS 1998, Hughes 1991, Hervert et al. 2000). Browse is the most frequently consumed forage type when forbs are unavailable, making up 43-53% of the diet in seasons except wet summers, when forb consumption increases. Cacti make up 7-14% of the diet, and grasses make up 3-13% of the diet. Cacti consumption appears to increase in times of drought (USFWS 2016).

Free-standing water is limited within range of the Sonoran pronghorn in Arizona. Pronghorn in this range have evolved with little or no permanent drinking water; apparently adapting to living with low quantities and infrequent access to free water, relying mostly on preformed and metabolic water (Lee et al. 1998). In 1984, collared Sonoran pronghorn were observed at water troughs in November, January, and August. Tracks were observed leading up to, then away from seasonal potholes during the monsoon season. The collared pronghorn exhibit movements apparently tied to water, as well as forage, availability. The observation of tracks and pronghorn around potholes and water sources, as well as the seasonal proximity of collared pronghorn to maintained water sources, suggests Sonoran pronghorn are opportunistic drinkers (AGFD 1986). During a study conducted in 1995 using collared animals, Sonoran pronghorn were observed using an ephemeral supply of water on a daily basis in a crater on the Barry M. Goldwater Gunnery Range, supporting the opportunistic drinker suggestion (Hervert et al. 1995).

HABITAT: Regional topography typifies that of the Basin and Range physiographic province of the western and southwestern U.S. and northern Mexico (Nations and Stump 1981 in

AGFD 1986). The physiography of Sonoran pronghorn habitat is characterized by broad alluvial valleys separated by block-faulted mountains. These valleys are partially filled with clay, silt and alluvium deposited from sheet erosion and ephemeral streams. The valleys are fairly level, with drainage to the north and west through a braided wash system in the center of the valleys. Mountain ranges generally run in a northwest to southeast direction. The range of Sonoran pronghorn in Arizona is approximately 1 million ha in size.

The flat, sandy desert offers little protection from the excessive summer heat and provides little free water under today's conditions. Food plants are common throughout most of the Sonoran pronghorn's habitat, but often these food plants are in a dormant stage and are less desireable than they would be if rain had fallen and triggered fresh new growth. Rainfall is scanty and sporadic. The climate is characterized by winter rains, spring drought, summer rains and fall drought. Almost one-half of the normal yearly precipitation (avg. 12.7 cm), falls from July-September, in the form of intense localized thunderstorms. Winter storms from the Pacific Ocean sweep across southern Arizona via southern California. These storms usually produce the heaviest, most widespread and effective precipitation. Heat and aridity are dominant climatic characteristics. During July-August, daily maximum temperatures exceed 110 Fº, with temperatures of 120 Fº not uncommon. Winter daytime temperatures range in the mid 60's -70's, while nighttime temperatures remain above freezing (USFWS 1982).

ELEVATION: Mean elevations of the valleys vary from 400 - 1,600 feet (122 - 488 m).

PLANT COMMUNITY: Sonoran pronghorn habitat is within the Lower Sonoran Desert life zone (Shreve and Wiggins 1964). They occur in two divisions in this life zone in Arizona; the first is the Arizona Upland subdivision of the Sonoran Desert, with a paloverde-saguaro association, and the second is the Lower Colorado subdivision of the Sonoran Desert, with primarily a creosote-bursage association.

Sonoran pronghorn browse on palo verde (*Parkinsonia microphylla*), mesquite (*Prosopsis* spp.), ironwood (*Olneya tesota*), chain fruit cholla (*Cylindropuntia fulgida*), the lavender-flowered four o'clock (*Ambronia villosa*), and desert broom-rape, (*Orobanche multiflora*), white ratany (*Krameria grayi*), silverbush (*Ditaxis* spp.), spurge (*Euphorbia* spp.), marigold (*Baileya* spp.), noseburn (*Stillingia linearifolia*), wire-lettuce (*Stephanomeria pauciflora*), white bursage *(Ambrosia dumosa*), blazing star (*Mentzelia* spp), ocotillo leaves (*Fouquieria splendens*), triangle-leaf bursage (*Ambrosia deltoidea*), mistletoe (*Phoradendron* spp.), false filaree (*Erodium texanum*), poverty weed (*Monolepis nuttalliana*), wooly plantain (*Plantago insularis*), wild carrot (*Daucus pusillus*), Arizona blanket-flower (*Gaillardia arizonica*), careless weed (*Amaranthus palmeri*), ragweed (*Ambrosia* spp.), brome (*Bromus* spp.), and broom snakeweed (*Guterrezia sarothrae*), buckwheat (*Eriogonum* spp.), milkvetch (*Astragalus* spp.), and borage (*Borago* spp.) species (USFWS 2016).

POPULATION TRENDS: Widespread decline of pronghorn in Arizona began in the mid- to late-1800s. Declines were caused by competition for forage with domestic livestock,

increased fencing causing barriers to movement, and overgrazing and drought resulting in altered vegetation communities, primarily encroachment of woody shrubland onto historical grasslands. The Arizona population of Sonoran pronghorn ranged from an estimated 50 to 100 animals from the 1920's to the mid-1980's (USFWS 2016). By 1994, the population had rebounded to approximately 280 pronghorn. A significant downward trend in the population was observed from 1994 to 2002. The Arizona population was nearly extirpated by a severe drought in 2002. 80% of collared pronghorn died, likely from malnutrition, and only 21 individuals remained in the population (Bright and Hervert 2005). Intensive conservation measures have helped the populations recover, and as of 2018, the wild endangered population in Arizona was estimated at 215 individuals (Doerries 2019). In addition to the wild population, the Kofa and Sauceda populations are stable to increasing.

In Mexico, populations declined between 2004 and 2011, from 683 to 241 individuals (Bright and Hervert 2011, Bright et al. 2011). During this time the Pinacate population remained stable, while the Quitovac population declined. From 2011 to 2015 the estimate of Quitovac population nearly quadrupled, from 189 to 862, while the Pinacate population estimates have varied widely, fluctuating from a low of 25 in 2002 to a high of 122 in 2014 (USFWS 2016).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: LE (USDI, FWS 1967, 1970)
XN (USDI, FWS 2011)
[PXN (USDI, FWS 2010b)]

STATE STATUS: 1 (AZGFD, AWCS 2022)
[1A (AGFD SWAP 2012)]
[WSC (AGFD, WSCA 1996 in prep)]
[Endangered (AGFD, TNW 1988)]

OTHER STATUS: P (Mexican Federal Endangered Species List, 1994, 2010, 2018)
Bureau of Land Management Sensitive (BLM AZ 2017)
Not Forest Service Sensitive (USDA, FS 2007, 2013)
[Forest Service Sensitive (USDA, FS 1999)]

MANAGEMENT FACTORS: Population decline is attributed mainly to loss of habitat, habitat fragmentation, climate change, and drought. Specific threats and stressors include mining; agriculture, livestock grazing, renewable energy development, habitat conversion, physical barriers, border activities, reduced availability of water, low annual rainfall, thermal stress, reduced forage quality, fire, increased cover of creosote bush, invasive plant encroachment, decreasing pollinator populations, military activity, disease interactions with cattle, lack of genetic diversity, recreation, poaching, and lack of redundancy of populations and small population side.

In Mexico, it is believed that economic exploitation of habitat (grazing and agriculture) and poaching are still causing population and habitat losses (USFWS 1982).

PROTECTIVE MEASURES TAKEN: One protective measure taken was the establishment of three large public land withdrawals in Arizona, which include Cabeza Prieta National Wildlife Refuge, Organ Pipe Cactus National Monument and Luke Air Force Gunnery Range (= Barry M. Goldwater Gunnery Range). The removal of hunting from these sites, and the restriction of vehicle traffic further protects the Sonoran pronghorn. The removal of fencing between the Cabeza Prieta NWR and Organ Pipe Cactus NM, and within the Cabeza Prieta NWR in the 1990's has allowed for easier natural movement of Sonoran pronghorn. Additionally, in 2004-2005, the Bureau of Land Management closed 55,000 acres (Cameron Allotment) to livestock grazing. Telemetry flights and population monitoring is ongoing. Monitoring of pronghorn before conducting military training activities has resulted in no known associated pronghorn mortalities (USFWS 2016).

In response to the abrupt decline of pronghorn in 2002, intensive conservation measures were enacted. Five forage enhancement plots were constructed to enhance fawn survival (3 on Cabeza Prieta NWR, one on the BMGR East, and one on BMGR West). Five supplemental feeding sites were developed for the Cabeza Prieta population, which are operated during the interval between winter and summer rains as needed. Water sources were constructed to assist pronghorn in times of water stress. Captive breeding pens were established at Cabeza Prieta and Kofa NWRs to produce animals to augment the wild population, establish additional U.S. populations, and provide stock to Mexico. Initiation of two nonessential experimental populations on Kofa NWR and BMGR East was conducted with animals from the captive breeding pens. The final rule designates nonessential experimental populations as those occurring in southwestern Arizona in an area north of Interstate 8 and south of Interstate 10, bounded by the Colorado River on the west and Interstate 10 on the east; and an area south of Interstate 8, bounded by Highway 85 on the west, Interstates 10 and 19 on the east, and the United States-Mexico border on the south.

An initial recovery plan was prepared in 1982, and a final plan was completed in 1998. This plan was further revised and finalized in 2016.

SUGGESTED PROJECTS: Continue collecting information on habitat use and preference, diet, dependence on free-standing water, and design configuration and/or habitat related variables of water developments.

Projects suggested in the 2016 revised Recovery Plan include; transfer animals among populations to maintain genetic diversity, vaccinate against Epizootic Hemorrhagic Disease and Blue Tongue, reduce mortality caused by canals, continue and increase the captive breeding population, establish additional populations, protect and increase existing habitat, restore habitat, reduce impacts of livestock grazing, manage invasive species, minimize impacts of border-related activity, protect or increase habitat connectivity, enhance forage

quality, increase access to and availability of water, minimize effect of human activities (recreation, military, and border-related activities), monitor populations, and identify and address research needs.

Reintroduction of a third population in California has been suggested, and there is interest among the Recovery Team and partners to establish this population.

LAND MANAGEMENT/OWNERSHIP: U. S. Fish and Wildlife, U. S. Air Force, National Park Service, Tohono O'odham Nation (Indian Reservation) and Bureau of Land Management.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

A major problem facing the recovery of the Sonoran pronghorn is that the recovery methods employed in Mexico may have to be quite different than those used in Arizona. The prime objective for recovery is to increase existing population numbers and distribution of Sonoran

pronghorn while developing techniques which will result in a U.S. population of 300 animals (average for 5 year period) or numbers determined feasible for the habitat. Another major problem is increasing the population to a point where it is safe to remove animals for transplant into historic habitats. Assessment of historic habitats for suitability for future transplant of pronghorn is difficult due to unsubstantiated assumptions regarding preferred habitat, reasons for extirpation, etc.

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