
RAY LEE - A WORKING HYPOTHESIS FOR DESERT BIGHORN SHEEP MANAGEMENT

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Abstract: An overview of desert bighorn sheep is presented covering history and distribution; patterns and probable causes of population declines; influences of water developments and transplant programs; hunting and special tags; management practices; and limiting factors.

History: Mountain sheep of North America apparently descended from wild sheep of central Asia. From the highlands of Tibet and the deserts of Mongolia, ancestral mountain sheep crossed the Bering land bridge to North America. Ice age glaciers eventually forced them southward through the western mountains to Mexico. Mountain sheep are thought to have arrived in the more arid "Southwest" only during the last 10,000 years or so.

The original distribution of mountain sheep is not well known because many populations declined rapidly and disappeared at an early date. At their peak, it is thought that North American mountain sheep ranged throughout most western mountain ranges, and extended eastward as far as North Dakota, Nebraska, and Texas. Populations were so large that as late as 1910 mountain sheep were still being commercially harvested. From the crude estimates of "millions" of animals pre-settlement, in 1960 it was estimated that only 25,000 mountain sheep remained on the continent.

Distribution: There are essentially 2 types of mountain sheep in North America. The thinhorns, *Ovis dalli*, are found in Alaska and western Canada. The bighorns, *Ovis canadensis*, are found throughout western North America. Desert bighorn sheep currently range from northwestern Sonora, particularly in those mountain ranges along the Sea of Cortez north of Kino Bay, and north of La Paz, Baja Sur, to the middle of Nevada and Utah.

Desert bighorns, so called due more to their habitat than morphological characteristics, are possibly comprised of 5 subspecies. Recent genetic work indicates that some of these groups are likely conspecifics and that "races" would be a more accurate classification. Nevertheless, Baja California is considered to have 2 subspecies, *O. c. weemsi* and *O. c. cremnobates*.

Bighorn sheep in Sonora are of the *mexicana* subspecies. Desert bighorn sheep are distributed throughout most of the mountainous areas of western Arizona, with transplanted populations becoming established in some central and southeastern mountain ranges. In Arizona, the *nelsoni* subspecies occurs primarily in the northwestern portion of the state, while the *mexicana* subspecies occurs primarily in the southwestern portion of the state. In California, the *cremnobates* subspecies occurs in the southwestern ranges in Imperial, Riverside, and San Diego counties, and the *nelsoni* subspecies occurs in the Transverse Ranges and the mountains in the Mojave, Sonoran, and Great Basin deserts. California also supports a small population of *californiana* in the Sierra Nevadas. Utah and Nevada both support populations of *nelsoni* in their southern mountain ranges. Small populations of desert bighorn sheep also occur in a few ranges in west Texas (the result of transplants of both *mexicana* and *nelsoni*), a few ranges in southwestern New Mexico (from *mexicana* transplants), and a few ranges in southwestern Colorado (from *nelsoni* transplants).

At present, occupying only a small portion of their historic range, the desert bighorn sheep population is approximately 23,000. Of these, about 18,000 are found in the United States; with Arizona supporting approximately 5,900, Nevada 5,250, California 3,350, Utah 2,600, Colorado 450, New Mexico 315, and Texas 275. The remainder are found in Baja California (3,000) and Sonora (2,000).

Merely providing the distribution for desert bighorn sheep tells little about the densities at which they occur. The number of animals observed per unit of survey effort represents a method for comparing bighorn sheep densities. In southern Sonora, the mean observation rate has averaged 40 animals per helicopter hour. Observation rates in both Sierra Viejo and Sierra Kun-Kaak, both in Sonora, exceed 90 bighorn sheep per survey hour. By comparison, in Arizona, observation rates traditionally average 10 bighorn sheep per hour.

Population Decline: The decline in desert bighorn sheep populations occurred primarily between 1850 and 1900. Causes for these declines included persistent and unregulated harvest; competition for water; and, most importantly, livestock associated diseases and parasites.

The evidence linking the reduction and elimination of bighorn sheep populations with the arrival of man's livestock is overwhelming. Domestic sheep were recognized as a source of disease as early as 1895 in Arizona, when a Territorial Act established an inspector with authority to inspect all domestic sheep entering the territory, and to impound any sheep with infectious disease. The diseases most responsible for impacting bighorn sheep populations were scabies, chronic sinusitis, and pneumonia. Scabies was one of the first diseases reported in bighorn sheep. This is because effects of the disease are easily observed and a large number of animals were affected. The presence of scabies was so severe that in some areas local residents reported that it was difficult to find bighorn sheep that were fit to eat.

Although the pneumonia complex was also among the first diseases described that led to large scale die-offs of bighorn sheep, it is one of the least understood. One of the difficulties in understanding the role of pneumonia in bighorn sheep populations is determining the factor that causes the pneumonia. A variety of bacteria have been isolated from pneumonic bighorn sheep. Stress, in combination with bacterial and viral agents, plays an important role in "triggering" the onset of pneumonia in bighorn sheep.

Due to the marked declines in bighorn sheep populations, most states closed their hunting seasons on bighorn sheep. California was the first in 1878. This action was followed in Arizona when the first game laws enacted by the Territorial government in 1887 provided punishment for the unlawful taking of bighorn sheep from February to October. In 1897, an Amendment of the Penal Code was made to close the bighorn sheep season until such time as judged appropriate by the legislature. New Mexico closed its hunting season for bighorn sheep in 1889, Texas in 1903, Nevada in 1917, and Mexico in 1921.

Concern for desert bighorn sheep gained national attention. Federal Wildlife Refuges were established in Nevada (Desert Game Range), New Mexico (San Andres National Wildlife Refuge), and in Arizona. In 1939, the creation of the Kofa and Cabeza Prieta Game Ranges set aside 1.5 million acres of southwestern Arizona for bighorn sheep and other wildlife. Although state governor's ridiculed these "federal takeovers" as "billy goat pastures," these actions were considered essential if bighorn sheep were going to be saved from extinction. These areas would be patrolled, and most importantly, livestock would be eliminated. Habitat protection, the primary means of retaining viable populations of any wildlife species, had been addressed. Populations outside of these refuges, however, continued to decline. It took active management programs to reverse this trend.

Waters: Providing water sources for bighorn sheep, though sometimes questioned, has been a

hallmark of desert bighorn sheep management activity. Each state with desert bighorn sheep has developed partnerships with conservation organizations to help in the construction of wildlife waters. In Arizona, the Game and Fish Department (AGFD), in cooperation with the Bureau of Land Management and the Arizona Desert Bighorn Sheep Society, and more recently with Desert Wildlife Unlimited, develops up to 10 bighorn sheep waters annually. These water projects vary from simple *tinaja* modifications, to extensive artificial water collection and storage systems. The goal is to develop the most cost-effective, environmentally sensitive, maintenance free waters possible. In Nevada, 113 bighorn sheep waters have been developed in this fashion. Water development projects for the benefit of desert bighorn sheep are also common in other states.

Transplants: Transplanting bighorn sheep from areas of high density into historic habitat is a management activity used to enhance bighorn sheep populations. Arizona has been involved in an aggressive bighorn sheep transplant program since 1955. Arizona has transplanted 1,210 desert bighorn sheep, with 206 being sent to other states. Nevada has been even more active; since 1968, Nevada has transplanted 1,268 animals, with 280 being sent to other states. In both Arizona and Nevada approximately 1/3 of the hunting permits available are for populations that have been started by transplant within the past 20 years. Beginning in 1973, Utah has been involved in the transplant of 546 animals. Colorado, where there is little evidence that desert bighorn sheep ever existed, has transplanted 216 animals since 1979. California has transplanted 387 desert bighorn sheep since 1983.

In Sonora, a 1975 transplant of desert bighorn sheep was made with animals from the adjacent mainland to Tiburon Island. This transplant eventually resulted in a large population of bighorn sheep on the island. In the last 2 years, 3 transplants totaling nearly 150 animals have occurred from Tiburon Island to the mainland.

Hunting: Bighorn sheep have always been one of the most sought after hunting trophies. From prehistoric man to the modern hunter, the "King of the Mountain" has proven to be an elusive, even mystical, prey. Bighorn sheep, like most North American ungulates, have been hunted since their first interaction with man. Aboriginal hunters avidly pursued bighorn sheep. Bighorn sheep bones have been found in archaeological sites dated over 8,000 years old. After the invention of the bow and arrow, ungulate harvest, determined from bones found in archaeological sites, increased nearly 3-fold. Prehistoric men set up rock walls and drove bighorn sheep past concealed hunters. Several groups even built "dummy" hunters out of stone to help drive bighorn sheep into their traps. Bighorn sheep played an important role in Indian mythology. More bighorn sheep related petroglyphs are found in the west than any other animal. While early hunters were primarily seeking food, bighorn sheep, especially the desert varieties, have developed into perhaps the most coveted trophy animal of all time.

Arizona and Nevada began hunting bighorn sheep in the early 1950s. Other western states subsequently legalized bighorn sheep hunting. California opened its bighorn sheep hunting season in 1987. Texas opened hunting in 1988, though the initial season was not available to the general hunting public. Colorado also opened its hunting season in 1988. New Mexico opened for desert bighorn sheep hunting in 1995.

Since Arizona's first season in 1953, 2,363 permits have been authorized. A total of 2,309 hunters have harvested 2,014 rams for a hunter success of 87%. Hunter success rates have varied considerably over the years. From 1955 to 1965, the hunter success averaged 33%. Since 1980, the hunter success has averaged over 91%.

For the 1998 season in Arizona, 7,790 sportsmen applied for 107 permits, a 1 in 73 chance of obtaining a permit. Hunters harvested 100 rams. In Nevada, 109 permits were issued, resulting in the harvest of 85 rams. Hunters in Utah took 29. More

limited hunts took place in the other states with a harvest of 14 rams in California, 5 in Colorado, 4 in Texas, and 2 in New Mexico.

In all the United States, from 1952 to 1998, fewer than 5,000 desert bighorn rams have been legally harvested. Desert bighorn sheep hunting opportunities are now found in Arizona, Nevada (with approximately 1,900 total rams having been harvested since modern seasons were opened), Utah (approximately 300), California (90), Texas (17), and New Mexico (8).

The Mexican Government issued 7 bighorn sheep hunting permits for Sonora in 1995/96. These permits sold for up to \$60,000 and 6 sheep were harvested. There were 13 permits authorized for 1996/97, 25 for 1997/98, and 43 for the 1998/99 season. The value of these permits has decreased from nearly \$60,000 to approximately \$25,000. In Baja Sur, 4 permits were issued in 1996/97, with 3 rams being harvested. Permits in Baja Sur were reduced to 3 in 1997/98, and subsequently increased to 5 in 1998/99. These tags are available only through auction or raffle. One permit was issued for Baja California for the 1998 season.

The world's largest desert bighorn sheep, found in Baja California, scored 205-1/8 Boone and Crockett points. Arizona produced a pick-up skull scoring 201-3/8 points, and produced the largest ram taken by a sport hunter at 197-1/8 points in 1988. The various other sport harvest records for each state are as follows: Baja California 192-5/8; Sonora 187-3/8; Nevada 187-2/8; New Mexico 181-4/8 (1995); California 182-0/8 (1998); Texas 176-1/8 (1997); and Utah 168-2/8 (1997).

Due to the high demand for permits (in some cases exceeding 400 applicants for each permit), some states place limitations on the number of bighorn sheep that can be harvested by an individual hunter. In Arizona, hunters are allowed to take only 1 desert bighorn sheep and 1 Rocky Mountain bighorn sheep in their lifetime. Other states limit hunters to 1 bighorn sheep every 10 years.

Special Tags: The dollars generated by the sale of bighorn sheep permit tags annually do not begin to support even a small portion of bighorn sheep management programs. In 1998, a total of 7,790 sportsmen paid the AGFD \$3 each for an opportunity to enter the computer drawing for bighorn sheep permit tags, a total of \$23,370. Of the 107 tags issued, 10 were to non-residents. This produced \$7,500 in tag sales (\$750 each) from the non-residents and \$14,550 from the 97 resident tags (\$150 each) for a total \$45,420 of revenue to the AGFD. At the current contract price for helicopter surveys (\$550/hour), only 83 hours of flight time, not including personnel costs, could be purchased; less than needed to survey the bighorn sheep distribution in only southwestern Arizona.

A relatively recent program that was developed to generate revenue to support wildlife conservation programs is the Special Permit, or Governor's Tag. Originally started in Wyoming in 1980, it is now used by almost every western state to varying degrees. Using Arizona as an example, 2 bighorn sheep permits are issued annually. For the past 14 years, the Game and Fish Department and the Arizona Desert Bighorn Sheep Society have entered into an agreement whereby the Society auctions 1 permit (at the Foundation for North American Wild Sheep convention) and raffles another to raise funds earmarked specifically for bighorn sheep management projects. Since the program started in 1984, \$3,301,805 has been raised from the 28 permits (\$2,066,500 from the 14 auction tags and \$1,235,305 from the 14 raffle tags). Special tags have been issued for bighorn sheep in virtually every state, Mexico, Canada, and various Indian Reservations. Much of the success of the various bighorn sheep management programs are dependent upon the funds derived from these special permits.

Management: Desert bighorn sheep are adapted to live under stable conditions at the carrying capacity of the habitat. Populations are dependent upon the ability of subsequent populations to maintain production on the range of their parents and to exploit stable plant communities. This

differs from deer, for example, which are adapted to exploit short lived opportunities for population expansion. Bighorn sheep have relatively low reproductive rates and don't respond well to changes in their habitat, therefore they can't be harvested at rates appropriate for deer.

Being considered a trophy animal has led to management principles uncommon for more utilitarian species. While most state game and fish agencies have mandates to provide maximum recreational opportunities for more common big game species, bighorn sheep are usually hunted in a more conservative fashion to maintain trophy quality.

A common concern in many states has been the harvesting of younger age rams. Each state has attempted to solve this problem by different methods. In Nevada, for example, a 1965 regulation specified that a legal ram must be 7-years old or score 144 Boone and Crockett points. Hunters were also required to carry a spotting scope and were given an indoctrination session to familiarize them with the techniques of judging the size and age of rams. This indoctrination session soon became mandatory. The new regulation and the indoctrination session appeared to help reduce the young ram harvest.

In Arizona, a similar path was taken. In 1966, the first bighorn sheep hunters clinic was held. This was an attempt to familiarize hunters with successful hunting methods and give them the ability to judge trophies in the field. The clinic also attempted to instill the desire to harvest older age rams. This clinic soon led to the formation of the Arizona Desert Bighorn Sheep Society, an organization dedicated to the preservation of bighorn sheep.

Bighorn sheep hunter clinics also provided aspiring hunters with information to help make their hunts more successful. The clinic not only provided a forum for exchange of information, in many cases it enabled a client-guide relationship to be formed.

Perhaps the greatest change seen in bighorn sheep hunting has been in human behavior. This, perhaps more than anything else, has led to the marked increase in hunter success rates. In the early 1950s, hunters commonly took to the field, relatively ill-prepared, and often by themselves. Today, well equipped camps are the norm. Frequently, these camps are manned by past year's permit holders for the unit, as well as friends and just plain sheep aficionados, who met at the sheep clinic and want to experience the hunt, if only vicariously. This results in many eyes scanning a mountain range to produce the best possible ram for the current permit holder.

Most states have developed operational plans to help manage their desert bighorn sheep populations. Arizona's plans call for the hunting permit allocation to result in the harvest of either 6% of the total number of rams estimated in the population, or 12% of the estimated number of older age rams, whichever number is lower. In California, permits are authorized for up to 15% of the estimated number of rams 2 years old or older. Other states have similar harvest strategies. It is doubtful that bighorn sheep populations will ever meet the demand for hunting opportunities; however, sportsmen will continue to have an important role to play in expanding bighorn sheep management programs.

Limiting Factors: The primary limiting factor for most desert bighorn sheep populations is adverse climatic conditions, primarily drought, resulting in the reduction in free standing water and succulent forage. While there has recently been considerable debate regarding the value of artificial waters to bighorn sheep populations, there is little question that without them desert mountain ranges would provide wildlife with less water than they did historically. A human related factor which impacts bighorn sheep is the removal of water from bighorn sheep habitat. The majority of natural springs have been modified to provide water for humans, their domestic animals, or for mining operations.

Drought is followed closely as a limiting factor by loss or fragmentation of habitat. This can occur

through direct losses to urban expansion into foothills areas, or indirectly through the expansion of human related recreational activities. The most insidious loss is that of seasonally preferred habitat. While not as obviously critical to bighorn sheep as escape and lambing terrain, the foothills areas, which produce the greatest forage, are much more important to the long term survival of bighorn sheep populations than has typically been considered. By providing protection from humans, the designation of large areas as "Wilderness" may prove beneficial to bighorn sheep - as long as these areas do not serve as attractants for large numbers of outdoor enthusiasts and wildlife management activities are allowed to continue.

The AGFD recently completed a statewide bighorn sheep habitat evaluation. To address the planning requirements for major projects it will become necessary to work on a large scale to properly coordinate transplant, habitat modification, and habitat protection activities.

Predation, particularly upon small releases, has been implicated as the cause of failure for some transplants - and has even been implicated in behavioral changes in some ranges in California. Both Utah and Arizona have recently established predator control projects designed specifically to help desert bighorn sheep populations.

There are a number of factors limiting the distribution and abundance of desert bighorn sheep in Mexico. Perhaps the most important of these are related to economics. Use of bighorn sheep to meet basic food needs still occurs in some areas. As the economic value of these animals becomes more widely known and the proceeds more widely distributed, this type of loss will be reduced. Private landowners, who fully realize the value of bighorn sheep, have developed bighorn sheep breeding facilities on their land. Unfortunately, to ensure that the bighorn sheep stay on their holdings, many landowners have constructed fences. This precludes the bighorn sheep from using seasonally important habitat, reduces genetic exchange, and increases susceptibility to catastrophic events, particularly those disease related.

Cattle, sheep, and goats, along with their diseases and parasites, also compete with bighorn sheep for food and water.

The future for desert bighorn sheep looks relatively bright. Organizations such as the Foundation for North American Wild Sheep represent a large number of people who have been very supportive of programs to enhance bighorn sheep populations and their habitat, and these people have been willing to put both their money and their sweat into seeing that these programs are successful. That combination of money and sweat has put a lot of bighorn sheep back onto the mountains; it will take both to keep them there.

QUESTIONS, ANSWERS AND COMMENTS - RAY LEE PRESENTATION

FRANCES CASSIRER, IDAHO: How do you explain the high densities and large body sizes of the desert bighorns in Mexico versus Arizona? Is it just habitat?

RAY LEE: I didn't say that body sizes were larger in Mexico. The horn sizes in Baja appear more a genetic trait than anything else. You're looking at record rams in Arizona of 197 points, with a pick-up head of 201 points. Baja has produced a 205 point head.

When you look at sheep densities, yes, I consider it due to forage availability. There's just so much more for them to eat in parts of Mexico. There's a very different climatic pattern where the weather comes on to the mainland from the ocean, it supports a very rich, succulent forage.

Maybe you remember the pictures of Tiburon Island, which show you that more clearly. When we look at sheep in Arizona, there's a plant over there and there's a burro eating on it. In Mexico, you just don't have that same kind of competition and the forage is just much richer.

ROB RAMEY, COLORADO: Desert bighorn sheep didn't arrive down in the southwest until just 10,000 years ago. The fossil record shows that 500,000 to 750,000 years ago was the first *Ovis* fossil and 200,000 years ago in the Central Mojave. It's likely that the sheep have been in the southwest much longer than you originally realize there.

LEE: One of the things I'd like to reiterate is that what I was presenting here is still plastic. If any of the various state representatives heard me make statements about their state that were inaccurate, I'd like them to come by and pummel me afterwards. I'll admit that I am not a very good reader of the fossil record. I'll accept your wisdom on that. Thank you.

JIM BAILEY, NEW MEXICO: I want to point out, I think those early fossil records in the south were not in desert environments.

ROB RAMEY: Manix Lake is the central Mojave.

LEE: Was.

RAMEY: During the pluvial periods there were large lakes in those areas and fossils were in the sediment of the lakes. They're the Sonora sample. I think it's likely to say that there was probably desert in that area. I haven't actually looked at the data for the pack rat middens to say what it is. It's well known there was a desert-like habitat persisting through the Pleistocene.

BAILEY: I haven't looked at it in a long time. My recollection of the fossil records is the plants down there were species like spruce and megafloa.

LEE: My recollection of the fossil record as well is that the climatic conditions in the southwest that would support desert bighorn sheep have actually occurred relatively recently as shown by pack rat middens, but more by lake cores. Paleoecologists have cored down and gotten pollen out of lakes and looked at the plants in the lake. That's why I lean towards a younger arrival. However, as I said, I'll defer to your recollection.

RAMEY: Why don't we say deserts are 10,000 years old? We have good evidence of the opening of the Holocene and that's what's taken place down there. There's been a reduction of the juniper woodland and it's gone towards desertification. There's good evidence for that. It's likely sheep were there and simply adapted to the environment.

LEE: I was hoping that is what I was saying during this talk on desert sheep.

BAILEY: You said, somewhere along the way, that sheep are only occupying something like 10 to 15 percent of the habitat that was historically available. What are you basing it on?

LEE: In Arizona we have records of sheep occurring in various mountain ranges which currently have no sheep. These sorts of data are available from other states as well. Historical records indicate that we had sheep virtually everywhere in Arizona, other than the Chiricahua Mountains in the southeast and the Chuska Mountains in the northeast. We have records of sheep being nearly every place in the state. If you look today, their range is just cookie-cuttered down into the various desert ranges that don't have people living on them. You're looking at something on the order of 10 to 15 percent.

BAILEY: Really, I'm not debating it. I'm surprised you had to address transplants. Looking at your map, you reoccupied a lot of ranges, perhaps not with the densities or the distribution within the range as have been historically. I'm trying to figure you were up to 70 percent or something like that right now.

LEE: Look at two things. One, it shows how far down we were and two, it shows us how far we have to go. We have a lot of opportunities.

PHIL HEDRICK, ARIZONA: Are there plans to transplant to other areas that are old sheep habitats, you know, other than Sky Island areas in Arizona, for example?

LEE: November 15th.

HEDRICK: And where are they going to be?

LEE: They're going to come from near Lake Mojave and be put near Wickenburg.

HEDRICK: How about others in the southeastern part of the state?

LEE: We may eventually get to that. One of the things that we'll talk about in tomorrow's transplant session is that the number one thing you need is a population that you can transplant from, and Arizona's populations are relatively low at the moment. We don't currently have the transplant stock that we would like to transplant to the southeast. I imagine we will. There's talk of going to Pusch Ridge and doing something in the Catalina Mountains. That's not biological pressure, it's more political pressure to do more for wildlife in that area.

HEDRICK: Do you know the reason why this population has declined, and if you put new animals in there, what would be your chance of success, if you don't know what the problems have been?

LEE: I'll ask you to hold that till the transplant session tomorrow. Because that, of course, is the crux of any transplant issue. Do you go back to an area that you had sheep in; historic habitat, therefore it should be good. They don't have sheep there now, so do you put them in now without knowing why the original ones went out.

Look at the various transplant schemes. Some people say the later you have sheep documented in an area, the better that area would be. Other people would say, no, it's the worst, because whatever caused them to go out might still be affecting them now. Hopefully in the transplant session those issues will be addressed, because they are the paramount issues when you deal with transplants.

ROB RAMEY, COLORADO: One last question. You'll always be my slide presentation subject. I want to point out relative to the old taxonomic issues that die slowly, it is important to realize they're using morphometric data, this notion of *cremnobates* versus *nelsoni* was tested and refuted in the literature in '93. There was a follow-up in 1995 with *mexicana* and statistical tests done refuted that data. *Mexicana* was tested and refuted, but not synonymized. To keep you up with the literature, these issues have been tested and have been dealt with.

LEE: This is what we're looking at, old habits. To this point we have been talking about races, and we should give credit where credit is due. There's been a lot of good work done recently; however, until the entire body of bighorn sheep managers in North America comes up here lock step and agrees with you, and obviously that's not quite the case, they're still going to be conservatism in this area of wildlife management.

RAMEY: It depends if you want to base your management decisions on science or not, or hearsay and opinion. That's what it comes down to.

HARLEY METZ, COLORADO: What do you feel, in 25 words or less, has been the effect of wild burros on your desert bighorn population?

LEE: Bad.

METZ: Is it bad or is it getting better?

LEE: It's getting better. The Bureau of Land Management is an active cooperator in wildlife management activities in Arizona. The Desert Bighorn Council has a burro committee. Each year, they'll take a census of the various states to come up with the number of burros. The Bureau of Land Management is working harder and harder at achieving proper management levels for burros. For some people this is zero burros; however, there are large advocacy groups for burros.

What they're supposed to manage for is a population target in a particular area. We find in Arizona they're getting better and better at doing that. It may be because we're pounding on them harder and harder. But they are doing that. I would say that other than a couple of places in the state where burros are having a fairly adverse impact on the bighorn sheep, most of the areas that we felt had trespass animals are being cleaned out.