

Varmint Control in Cochise County Over the Years

Barbara Tellman (retired)

University of Arizona Water Resources Research Center, Tucson, AZ

Abstract—Varmint control has a long history in the area, going back at least to the 18th century. More than 125 years of systematic varmint control in Cochise County has had mixed success. Two large predators, the grizzly bear and the Mexican wolf, were eliminated from the area. Coyotes have maintained their numbers despite hundreds killed annually. While organized government efforts have played a major role, individual efforts by hunters, farmers, homeowners, and others have been far more significant.

Introduction

In March 2004 Tucsonans argued, sometimes vehemently, about what to do about mountain lions that seemed not to fear people in and around Sabino Canyon. A lion was caught live and sent to a rehabilitation center, a result that many thought unsatisfactory for various reasons. This was just the latest in a long series of attempts to reduce conflicts between predators and humans. Many people were probably not aware that this lion fit into the context of some 385 mountain lions killed in Arizona in 2001, of which 34 were disposed of under governmental predator control programs.

The Spanish Period

From the earliest days of European occupation, settlers worked to eliminate species they deemed undesirable. Native people dealt with nuisance animals, especially those that ate their crops, but when Spaniards introduced livestock, predator control became important.

Ignaz Pfefferkorn (1989) described customs in mid-18th century Mexico south of the Sky Islands: “I have told above how skillfully Indians kill tigers with arrows... Deep pits are dug and covered over with brush and a small amount of earth so that the animal does not notice the deception. A lamb or calf is tied at a spot, which the animal cannot reach without stepping on the trap. When he ventures onto them, the weak boughs break and the thief lies in the hole where he is stoned or shot to death.”

Another missionary said: “Stock raising in Sonora and in Spanish America in general suffers about as much from the coyote or coyotl as from the aforementioned animals. ... When hunger plagues him [the coyote] and no smaller prey presents itself, he does not hesitate to attack a grown calf or colt” (Treutlein 1965: 110-11).

Pfefferkorn found bats “nasty” (1989: 119) and said, “In my room I killed and chased away ten or twelve, and more, and in my church I sometimes killed two to three hundred with the help of some Indians...”

The American Period

Reasons for Varmint Control

The major incentives for varmint control (whether justified or not) are: livestock predation, attacks on humans, crop destruction, elimination of nuisances, and rabies. Once livestock had arrived in the area, predators viewed these animals as just another food source, not unlike deer. Ranchers, on the other hand, viewed livestock as private property. This dichotomy was often resolved in favor of the rancher.

Fear of attacks on humans was fed by widely circulated stories such as one from 1858: “They are a large brown species [of bear] and the hunters say they are as fierce as the grizzly. They will generally attack a man whenever they meet him without waiting to be provoked. I felt more afraid of them than I did of the Indians ... They are very hard to kill, and a dangerous enemy” (Way 1960: 283).

The rare attack on a human was sometimes viewed as a reason to try to eliminate the species. A 1991 study of cougar attacks on humans, however, shows that fear of attack was much greater than the number of attacks would justify (Beier 1991: 404-406). Mech (1970: 289-293) found little evidence that wolves ever attacked humans unprovoked. Table 1 shows General Accounting Office estimates. Some 19th century settlers at Tres Alamos (north of Benson) and St. David complained that beaver dams spoiled their irrigation projects so farmers destroyed dams as they were built. By 1890 only the occasional beaver lived along the upper San Pedro, although they continued in the lower river. Farmers constantly battled rodents and some kinds of birds.

One major reason for control was rabies. The first documented case of rabies in North America is from the East Coast in 1785 (Jackson and Wunner 2002; Kiple 2002). A description of what appears to be rabies comes from the Tubac area in 1858. “The wolves are numerous here and in July and August they sometimes go mad and in that condition they will enter a town or even a house if the door is left open and bite everything in their course. At this season the Mexicans ... sleep on top of their houses out of reach of this danger” (Way 1960: 291).

Table 1—Estimated annual human fatalities and injuries in the United States by animals (General Accounting Office 2001).

Animal	Injuries	Fatalities
Rodents	22,000	Unknown
Various snakes	8,000	15
Skunk	750	0
Fox	500	0
Bear	30	1
Coyote	2	0
Cougar	2	0.4

After three confirmed cases of rabies in Cochise County in 1961, the government imposed a quarantine and pet leash law. Seventy-three man-days of hunting resulted in killing 164 skunks, 118 feral cats, 33 raccoons, 10 coyotes, and 11 miscellaneous critters in Santa Cruz and Cochise Counties (ADC 1961).

Governmental Programs

The first American travelers and settlers took care of varminting themselves. “Yesterday 2 of our men ... had an encounter with a large cinnamon [grizzly] bear. They were cutting timber at the foot of a mountain close by, when they saw a bear on the side of the mountain feeding upon acorns. They crept up slightly within a hundred yards of him without being seen. When Mr. Randall raised his rifle, took deliberate aim and fired, the monster dropped on his knees, roared with pain, but recovered himself in an instant and discovered his enemies and darted like lightning down the mountain. They saw him coming and knew their danger. McCoy sprang into the fork of a low mesquite tree and he had hardly done this before the bear was at the foot of the tree with his mouth wide open, ready to drag him down.” (Way in 1858 published 1960: 355-356). After more adventures, they shot the bear.

Cochise County paid bounties ranging from \$1 for skunks to \$10 for lions. A pregnant female merited bounties for herself

and each of the “unborn.” The Federal government gradually entered the picture. The Bureau of Biological Survey (BBS), founded in 1885, initially conducted biological surveys and did scientific work. The law emphasized “economic agriculture” and stressed bird and rodent-caused agricultural damage. Gradually “practical” work became a larger part of its mission and problem wildlife a focus. By 1917 the Bureau had a full-blown predator and rodent control program (PARC) and issued its first annual report for Arizona. Detailed records by bounty hunter and county exist for the early years, with kills recorded by home town of the bounty hunter. In 1931, for example, E. E. Anderson of Tombstone killed and collected bounties on 111 coyotes, 27 bobcats, and 6 foxes (table 2).

The program evolved from a bounty system to salaried hunters. It has continued under several names, first in the Department of Agriculture, then in the Department of the Interior and finally back to Agriculture in 1987. In the 1960s, questions about the value of the program, especially use of poisons, led to a 1963 official report by A. S. Leopold that was critical of the goals and method. Another by S. A. Cain followed in 1971. Both resulted in changes in methodology and control methods.

The program, under its current name, Wildlife Services, includes a variety of control and research activities, including reducing wildlife damage to aviation, invasive species, reducing human exposure to rabies and plague, preventing beaver damage, and reducing damage to livestock and wildlife.

Cooperators

The Arizona Game and Fish Department (AGFD) has long been a cooperator in Federal programs and has primary legal responsibility for the State’s wildlife. It is responsible for problem game animals such as bears that can be legally hunted under a permit system.

Cochise County has also been a cooperator. In 1996-1997, for example, Cochise County contributed about \$17,000 to the predator control program, about half the total cost of the program there. Table 3 indicates the number of animals destroyed

Table 2—Animals killed by bounty hunters in Cochise County in selected years (PARC and USDA Division of Wildlife Services annual reports).

Year	Coyotes	Wolves	Bobcats	Mountain Lions
1917 ^a	67	11	5	0
1927	2	0	0	0
1931 ^a	110	1	27	6
1936 ^a	388	1	39	0
1939	282	0	43	4
1940	383	0	78	0
1943	515	2	130	2
1945	504	1	22	1
1950	325	0	42	10
1956	287	0	27	
1958	467	0	1	
1960	329	0	8	
1962	520	0	33	
1965	522	0	19	

^a Incomplete report for the year.

Table 3—Animals destroyed in Cochise County under the Animal Damage Control program and reported domestic animals damaged by predators during FY 1996-1997 (ADC records).

Animals destroyed		Animals claimed damaged		Suspected culprit
Feral dogs	106	Sheep	22	Coyotes
Feral pigs	379	Emus	2	Feral dogs, coyotes
Coyotes	722	Cattle	1	Coyote
Skunks	34	Chickens	4	Coyotes, feral dogs
Other	29	Other	3	Coyotes, feral dogs
Total	1,241	Total	32	

under the program and claimed damages. Other cooperators included ranchers, and the Arizona Departments of Agriculture and Health Services.

The role of individuals

Although government programs have for years played significant roles in varmint control, individuals actually eliminate many more animals. Cochise County had some locally famous hunters. Ila Healy, for example, who ranched in the Huachuca Mountains during the first half of the 20th century, was described as “our resident lion hunter.” The Arizona Republic (August 6, 1979) added, “that’s a bit like calling Johnny Cash merely a guitar player. It simply doesn’t define the subject,” and said that Ila had been in on more than 200 lion kills in the Huachucas.

The 1999 Finding of No Significant Impact for the Federal program on non-Federal lands in Arizona states that only some seven percent of all coyote kills in Arizona are done under the cooperative program—the remainder by individuals. The 1998 Environmental Assessment for the program on Federal lands make similar claims. Table 4 shows 2001 Arizona estimated figures.

Brief Summaries of Species

Wolves (*Canis lupus*)

Wolves were pursued relentlessly. By 1920 few remained. The 1922 PARC report stated: “I believe the most striking piece

of work accomplished this year was the wolf work along the Mexican border where we destroyed thirty wolves, not allowing a wolf to drift more than twenty five miles into the United States and, with the possible exception of one wolf, we did not allow a wolf to get back into Mexico.... There are five passes where wolves cross from Mexico in the State of Arizona ... One of these places is the Huachuca Mountains... Men are kept continually on these ranges.”

The 1926 PARC report declared: “The fiscal year 1926 has been our banner year for real success in control and extermination of predatory animals in the State of Arizona. This year marks the end of the lobo wolf for there are no wolves left inside the border of our state.”

By the 1930s the number of wolves killed had dropped to zero most years, although some did make it across the border from time to time. The 1940 report said: “Wolves frequently visited the State from Mexico and were unusually troublesome in the border country northwest of Nogales.... As a general rule, wolves would appear, make a kill or two, and if not trapped, they would immediately return to Mexico.... A trapper employed by the New Mexico district took a pack of wolves depredating on cattle in the extreme southeastern corner of the State of Arizona and southwestern New Mexico.”

In 1945 hunters took the last breeding wolves in Arizona at Fort Huachuca. The program had apparently succeeded in its goal of eliminating the species in Arizona. According to PARC, reports from Sonora indicated that the “wolf problem” had been solved there too.

The 1951 report concluded: “It took eight years for a few Biological Survey [employees] working under a well planned program, to completely eliminate resident wolf populations in Arizona. In doing so they virtually did away with a problem that had plagued stockmen ever since livestock were first brought into the State. The elimination of resident wolves is believed to have been the first conservation program ever completed in Arizona....”

In 1954, however, Hoffmeister said: “Wolves are present rather frequently in the Huachucas, principally, if not exclusively, at the present time on the western side” (Hoffmeister and Goodpaster 1954).

In 1957 two wolves were taken with “coyote-getters” near Elgin and Redington. “It may well be that wolves enter the State more frequently than is supposed and are taken by coyote getters or other methods and are never found (PARC 1957). David Brown said, “More than fifty years of constant effort finally destroyed the wolf. That it took that long is a fitting testimonial to his tenacity” (1984: 175).

Table 4—Animals killed in Arizona in 2001 under the Federal Predator Control program (source: Wildlife Services Annual Report).

Animal	Number killed under program	Total estimated killed all sources
Bear	8	179
Birds ^a	1,200+	
Feral cat	64	
Coyote	821	42,526
Feral dog	118	
Cougar	43	385
Jackrabbit	34	
Skunk	110	
Others ^b		

^a Pigeons, grackles, English sparrows, ravens.

^b Badgers, beaver, bobcat, fox, raccoon.

Coyotes (*Canis latrans*)

Coyotes, too, were targeted from early territorial days, but their fate was quite different from that of the wolf. Coyote kills under the program in Cochise County ranged from 67 in 1917 to 552 in 1965. The 1918 PARC report said: "Coyotes, on account of their queer habits and nature, create a rather puzzling problem. Although vast numbers are killed annually ... yet, with a lapse of a short period of time, the ranks of the missing have been filled. ... we realize that the straight trapping of coyotes is an uncertain method of reducing the great supply. Coyotes appear to keep a close check on suitable range and when the number are reduced migratory movements soon adjust the distribution to about normal, considering local food conditions. The taking of 8,000 to 10,000 of the animals in a year seems only to encourage the remainder to breed more freely and to re-establish their numbers."

In 1927 PARC reported: "Great inroads were made into the population of these animals during the past fiscal year, with the result that losses in lambs on the lower desert ranges were very slight." Over the years, as can be seen from table 1, coyote kills fluctuated but remained relatively steady.

Ranchers generally liked coyote control, but some farmers did not. One farmer said, "Now that you have killed off the coyotes what are you going to do about rabbits and rodents? I would just as soon have the coyotes on my range" (PARC 1956).

Connolly and Longhurst's 1975 study helped explain coyote tenacity. The authors concluded that the primary effect of killing coyotes is to reduce population density, thereby stimulating changes in birth and mortality rates. If 75 percent of the population is killed each year, it would take more than 50 years to reach extermination, assuming no influx of coyotes from nearby areas.

Currently, some 13,000 hunters take an average of between 30,000 and 40,000 coyotes a year in Arizona, (AGFD estimates). Trappers used to take a high percentage of the coyotes, but this has declined to only a little more than 1,000 a year (AGFD 2004), partly in response to citizen-initiated legislation passed in 1994 restricting the use of leghold traps, and partly due to decline in fur demand.

Mountain Lions, Bobcats, and Jaguars

Mountain lions (*Felis concolor*) have been a target for many years. In 1859, Kennerly wrote: "The Mexicans, who call it Leon, wage against it an unceasing warfare, on account of the ravages which it commits among the cattle. The most effective means used for their destruction, in the hands of the Sonorians, is strychnine. They poison with this substance the carcasses of the animals that have been slain, and not only often succeed in thus killing the Leones, but a great number of wolves also."

The territorial legislature declared mountain lions predatory and placed a bounty on them. In 1970 the mountain lion legally became a "big game" animal, subject to hunting regulation. The most killed in one year in Cochise County under the bounty program was 10 in 1951. The annual Arizona take now ranges between 250 and 350, about 15 percent of which is under governmental programs.

The number of bobcats (*Lynx rufus*) killed in Cochise County under the program rose until it peaked at 130 in 1943 and then declined. Arizona sport hunters report taking between 1,200 and 1,300 bobcats a year currently. As with other species, trapping has declined dramatically. In 1987, more than 6,500 were killed, and more than 5,000 export tags were issued to trappers and fur dealers wanting to ship bobcat pelts out of State. Less than 500 bobcats have been trapped each year since 1994 (AGFD 2004).

Jaguars (*Felis onca*) were seldom encountered, although in the 1850s Kennerly reported them as "very common" near the Santa Cruz River in Mexico. Lange (1960) collected records of 45 reported jaguar kills in Arizona from 1885-1959. The majority were within 90 miles of the border. These were nearly all kills by individuals or scientists, not by bounty hunters or government officials. Brown and Gonzales (2001) documented the decline of the jaguar in Mexico and Arizona.

Bears

The early settlers had conflicts with bears as described above. Carmony and Brown (1991: 182-83) concluded from historic reports that grizzly bears were rather common in south-east Arizona. Brown (1985) documented the grizzly's demise through hunting, some of it under the bounty program.

Early travelers reported few black bears along the San Pedro, but this may have been because people did not travel in the mountains where bears are most common. Encounters were more frequent along the Santa Cruz River.

The 1918 PARC annual report stated: "As the wolves and lions are killed out in certain districts, much light is thrown on the case against bears as predatory animals. Guilt is now being placed on them, where in years gone by it was generally supposed that bears did little killing of domestic stock. They are becoming more destructive to cattle in recent years. The dry seasons have probably added to their killing, since the shortage of food has created a demand for range everywhere, even in the highest and most heavily forested regions—the home of big bears—has thrown the helpless stock into the very haunts of the animals."

AGFD classified bears as game animals in the 1960s and developed hunting regulations. In 2004, Game and Fish allocated 75 permits for the spring male bear hunt in Game Management Unit 29 that includes eastern Cochise County. Few female bears may be killed legally.

Badgers, Foxes, and Rodents

Badger trapping was common into the 1980s when more than 1,000 per year were taken Statewide. Very few badgers are taken today. Currently about 3,500 foxes are killed annually Statewide, mostly gray foxes. Previously, trappers took far more foxes than did hunters, but trapping has almost disappeared in Arizona.

Rats, mice, ground squirrels, rabbits, and many other rodent species were targets of this program. Ranchers considered prairie dog (*Cynomys ludoviciana*) detrimental. For example, "up to this time one of the greatest drawbacks to farming and the stock business [in the Sulphur Springs Valley] has been the

prairie dog pest” (U.S. Biological Survey 1956). A 1917 bulletin claimed that there are “many sections of prairie dog-infested land in the San Pedro Valley near Hereford and westward to the Huachuca Mountains” and said the grass was rapidly being destroyed (Paschall 1917: 331). In the 1890s ranchers praised bisulfide of carbon which they said was “great stuff” to kill all burrowing animals. In the early 20th century PARC had great hopes of controlling rodents by introducing fatal epidemics, but experiments led to “nothing but disappointment” for the agency (Cameron 1929). Prairie dogs were nearly extirpated by the 1930s, although a small colony persisted near Fort Huachuca until 1938 (Hoffmeister 1986).

Closing Observations

Government programs played a role in supporting extirpation of some species and reduction of others, although in most cases the number of animals killed under the program was only a fraction of the total kill. The programs had varying success rates depending on the nature of the target species. Changing public attitudes influenced the direction of the programs, especially reduced use of poisons. Citizen-initiated restrictions on trapping and changing economics led to many fewer animals trapped. More attention is given today to the role that predators play in the balance of nature. Beaver have been reintroduced in Cochise County and wolves and prairie dogs elsewhere. Major problems remain however, in handling continuing human-wildlife conflicts as human populations continue to expand into wildlife habitat.

References

AGFD. 2004. Arizona Game and Fish Department web site. www.gf.az.us

Beier, P. 1991. Cougar attacks on humans in the U.S. and Canada. *Wildlife Society Bulletin* 19(4): 403-412.

Brown, D. E., ed. 1984. *The Wolf in the Southwest*. Tucson: University of Arizona Press.

Brown, D. E. 1985. *The Grizzly in the Southwest*. Norman: University of Oklahoma Press.

Brown, D. E.; Lopez Gonzalez, C. A. 2001. *Borderland jaguars*. Tucson: University of Arizona Press.

Brown, S. P. 1978. *The bobcat of North America*. Lincoln: University of Nebraska Press.

Cain, S. A. 1972. *Predator control*. Washington, DC: Council on Environmental Quality.

Cameron, Jenks. 1929. *The Bureau of Biological Survey: Its history, activities, and organization*. Baltimore, MD: Johns Hopkins Press.

Carmony, N.; Brown, D. E. 1991. *Mexican game trails*. Norman: University of Oklahoma Press.

Davis, G. P. 1986. *Man and wildlife in Arizona*. Phoenix: Arizona Game and Fish Department.

General Accounting Office. 2001. *Wildlife services program. Information on activities to manage wildlife damage*. Washington, DC : General Accounting Office.

Herrero, Stephen. 1985. *Bear attacks: Their causes and avoidance*. New York: Lyons & Burford.

Hoffmeister, D. F. 1986. *Mammals of Arizona*. Tucson: University of Arizona Press.

Hoffmeister, D. F.; Goodpaster, W. W. 1954. *The mammals of Fort Huachuca*. Champaign: University of Illinois.

Jackson, A. C.; Wunner, W. H. 2002. *Rabies*. New York: Academic Press.

Kiple, K. F. 2003. *The Cambridge historical dictionary of disease*. Cambridge UK: Cambridge University Press.

Lange, L. I. 1960. The jaguar in Arizona. *Transactions of the Kansas Academy of Science* 63(2): 96-101.

Leopold, A. S. 1963. *Predator and rodent control in the United States*. Washington DC: Secretary of the Interior.

Mech D. L. 1970. *The wolf: The ecology and behavior of an endangered species*. Garden City: American Museum of Natural History.

PARC. Various years. *Predator and rodent control (PARC) annual report for Arizona*. U.S. Bureau of Biological Survey. Phoenix.

Paschall, A. L. 1917. How to combat rabbits, gophers, prairie dogs, coyotes, ants and grasshoppers. Bull. 81. Tucson: University of Arizona Experiment Station.

Pfefferkorn, E. F. 1989. *Sonora: A description of the Province*. Tucson: University of Arizona Press.

Treutlein, T. E. 1965. *Missionary in Sonora*. San Francisco: California Historical Society.

USDA. 1998. *Final environmental assessment on predator damage management on Federal public lands in Arizona*. Washington, DC: USDA APHIS, Wildlife Services.

USDA. 1999. *Decision and finding of no significant impact for Federal damage management on nonfederal and private land in the Arizona Animal Damage Control Program*. Washington, DC: USDA APHIS, Wildlife Services.

USFWS. Various years. *Annual report*. Washington, DC: U.S. Fish and Wildlife Service.

Van Pelt, W. E. 1999. *The black-tailed prairie dog conservation assessment and strategy*. Phoenix: Arizona Game and Fish Department.

Way, Phocian. 1960. Overland via jackass mail in 1858: The diary of Phocian R. Way. Duffen, W. A., ed. *Arizona and the West* 2: 35-53, 147-164, 279-292, 353-370.

Young, S. P. 1951. *The clever coyote*. Washington, DC: Wildlife Management Institute.

Young, S. P. 1978. *The bobcat of North America*. Lincoln: University of Nebraska Press.