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Editorial: Notes on the Cost of Coyote Meat in Arizona

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NOTES ON THE COST OF COYOTE MEAT IN ARIZONA

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Since 1935, Federal monies augmented by "co-operative funds" of diverse origins have been used to kill about 70,000 coyotes in Arizona. In attempting to present the physical dimensions of this carnage I am frustrated by problems of quantitating the geometry of protruding legs set at various angles within the heap of corpses. A more compact arrangement of the bodies involves converting a reasonable estimate of mass, 10 kg per coyotes, to a comparable mass and volume of water. From this we can construct an image of 770 tons of coyote material in a square-meter column rising 700 meters (almost one-half mile) above the desert floor. What does it cost each year as we add roughly another 20 meters to this column?

Before me lies an official report of native Arizona mammals destroyed by the U.S. Division of Wildlife Services during the fiscal year of 1969. Listed are 3,125 individuals trapped, snared, despatched by baited cyanide devices, shot, poisoned, and run down by dogs. The tally a decade ago was about the same, 3,533 victims in 1959, and so it has been throughout the last 35 years. The total expenditure for this program in 1969 was \$252,763. It cost, therefore, \$80.88 to kill an animal whether porcupine or black bear. No single "target species" is designated within the report, but I suspect the coyote was the principal quarry. This is the numerically predominant victim, and a substantial portion of the 25.1 man-years of effort from July 1968 to July 1969 must have been devoted to acquiring the 1,864 coyote trophies reported. If the other 1,261 mammals are considered no more than incidental, the outlay was \$135.60 to kill an Arizona coyote last year. This may not be a fair appraisal — perhaps badgers and raccoons are as noxious pollutants of the ecosystem. Therefore, I shall keep the original figure of \$80.88, pro-rating \$157,603 as the sum spent for eliminating the coyote alone.

Reliable data pertaining to domestic stock made away with by coyotes are difficult to obtain despite a plethora of sanguine accounts. Some figures appearing in the *Arizona Daily Star*, 16 January 1969, are the best available for recent years. The State Supervisor of the U.S. Wildlife Services was quoted there as estimating the following Arizona stock destroyed by coyotes during 1968: 539 sheep; 375 poultry; 182 cattle; 41 pigs; 17 goats; 3 dogs and cats; and 2 horses. Bearing in mind the inaccuracies of newspaper accounts, I shall accept these figures. The number of sheep, for example, represents about 0.10% of the sheep and lambs present on Arizona ranches, and

that proportion compares favorably with the 0.12% lost to predators on the Lava Beds National Monument, Calif., where no control measures are aimed at flourishing coyote and bobcat populations. I cherish, however, a quiet admiration for both the wool-growers who differentiate coyote from dog damage, and the prowess of those coyotes that pulled down the two steeds.

The U.S. Census of Agriculture for 1964 contains statistics that permit approximation of cash values for Arizona ranch animals; data in the Arizona Statistical Review, 1969, imply a factor of 1.3 to convert these worths to 1968 levels. The total loss for 1964 would have been \$32,470; corrected for 1968 this is \$42,211. The unfortunate cats and dogs are tossed in now to round off the figure at \$42,225, although I suspect that wandering and feral house cats have a negative value. These computations fix the net cost of killing coyotes during fiscal year 1969 at \$115,378.

Some Wildlife Services effort is directed against rodents, and I have taken this into account in reckoning the price of predator control. There is little here to complicate matters. I submit that the removal of 287 bobcats, 73 badgers, 378 foxes, 350 skunks, and 1,864 coyotes from the Arizona scene in 1969 upheld the need for rodent control. Moreover, as raptorial birds succumb to insecticides, mammalian enemies of the rodents may be increasing in relative worth.

That coyotes occasionally feed on individuals designated as game species has been known for many years; no one will gainsay this. Discussion of whether or not significant damage is done to game populations by predation is a different story; here one finds controversy. There is an abundant literature on Arizona game species, based firmly on research performed by Arizona Game and Fish personnel, and others. There is no direct evidence that predation is an important factor in human hunter success or failure with respect to deer, javelina, bighorn, quail, and wild turkey. Published accounts of the pronghorn herd are conflicting, but some words of Wendel G. Swank, former Director of the Arizona Game and Fish Department, have broad application and probably apply to antelope as well as to deer and quail. In a paper read before the North American Wildlife Conference in 1956, his first sentence was, "Food is the primary factor controlling game population levels."

The value of predators to their prey is a part of enlightened wildlife theory. The well-documented vicissitudes of the Kaibab North deer herd and the

(Continued on Page 85)

COST OF COYOTE MEAT

(Continued from Page 2)

importance of predators in shielding their quarry from far more disastrous limiting factors has become a textbook illustration; it belongs to the ages. Furthermore, if we accept some principles set forth by Charles Darwin, the coyote serves his prey populations by cropping the disabled and diseased, and eliminating faulty genetic information from the throng of young animals.

The classical studies of C. T. Vorhies and Walter P. Taylor during the early 1930's in Arizona pertain to the economics of killing coyotes. These workers found that 148 black-tailed jackrabbits consume the forage that could support one cow or five sheep, and Allen's jack, restricted to the southern part of the state, has twice the food requirements of the ubiquitous black-tail. Moreover, jackrabbits thrive especially on depleted and overgrazed range, competing with cattle at the very time common resources are critical. Rabbit in the coyote diet has been assessed variously

from 10-20%. I am assuming a conservative estimate of five coyotes destroying a total of 148 black-tailed jackrabbits per annum. If so, the 1,864 coyotes bagged during 1969 were equivalent to range forage for 373 cattle (worth about \$53,000) on the basis of jack-rabbit elimination alone. Perhaps this is why Dr. Vorhies wrote in 1937, "Cattlemen, generally, are not much concerned over coyotes and their ranges, and more than one has said frankly, 'I'd rather leave the coyotes to take care of the jackrabbits and other rodents.'"

The destruction of Kit Foxes is an item in the budget, an intangible to be added to the cost of killing a coyote. Because these beneficial little canines are particularly susceptible to poison and trapping campaigns, at least one Southwestern race appears in the *Red Data Book* of rare and endangered species. I would be at a complete loss to reckon the price of eliminating coyotes from Arizona, if Kit Fox extinction were to become part of the accounting. Aesthetics, I've learned, have little import, but with or without them our disbursements for coyote flesh are lavish.

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