

UC Agriculture & Natural Resources

Proceedings of the Vertebrate Pest Conference

Title

Efficacy of predator damage control programs

Permalink

<https://escholarship.org/uc/item/99b08769>

Journal

Proceedings of the Vertebrate Pest Conference, 9(9)

ISSN

0507-6773

Author

Nass, Roger D.

Publication Date

1980

EFFICACY OF PREDATOR DAMAGE CONTROL PROGRAMS

ROGER D. NASS, Denver Wildlife Research Center, U.S. Fish and Wildlife Service, Twin Falls, Idaho 83301

ABSTRACT: Data about the efficacy of predator damage reduction programs are shown for predation loss studies with control, loss studies without control, complaint resolution or success rates, and predation-predator-capture sequences. This combined evidence indicates that animal damage control programs are reducing predation on livestock.

Predator control and the effectiveness of predator control practices are controversial subjects that frequently precipitate sharp debate between various groups of the American public. Opponents of predator control charge that livestock predation figures are vastly overestimated and that predator control is not necessary or effective in reducing losses. Livestock ranchers, especially sheepmen, claim that predator control is essential to their industry and that without controls many would go out of business.

Several types of data may be examined which reflect upon the effectiveness of predator control. Data presented here include: loss studies with predator control, loss studies without predator control, complaint resolution rates by time period, and predation-predator-capture sequences.

LIVESTOCK LOSSES WITH PREDATOR CONTROL IN EFFECT

Numerous livestock loss studies with predator control have been reported in the past few years. Predator control varies from area to area but may include shooting, trapping, aerial hunting, the M-44, and formerly, destruction of pups in dens.

Klebenow and McAdoo (1976) reported a 4% sheep loss to predation of a Nevada range flock. Predators killed 1.6% of the ewes in an Alberta study (Dorrance and Roy 1976) and 2.0% in an Oregon survey (deCalesta 1978). In Idaho, 2.5, 1.0, and 0.8% of the study ewes were killed in 1973, 1974, and 1975 respectively (Nass 1977) and Early and Roetheli (1974) reported 2.6 and 2.8% ewes lost to predators during 1972 and 1973. Lamb losses to predation, reported in various other studies (Table 1), ranged between 1.1% in California (Nesse et al. 1976) and 6.5% in a Nevada report by Klebenow and McAdoo (1976).

Table 1. Selected examples of lamb losses to predation with predator control in effect.

| AREA | YEAR | PERCENT LOSS |
|------------|---------|--------------|
| Nevada | 1973 | 6.5 |
| Oregon | 1976-77 | 4.8 |
| Idaho | 1970-71 | 4.0 |
| Idaho | 1972-73 | 3.8 |
| Idaho | 1974 | 3.3 |
| Idaho | 1973 | 3.1 |
| Alberta | 1974 | 2.8 |
| California | 1974 | 1.1 |

LIVESTOCK LOSSES TO PREDATION IN ABSENCE OF CONTROL

A limited number of these studies have been conducted due to high costs and difficulty with adjacent ranches or livestock range. Long-term (3-6 year) studies with replications and control areas for comparisons would be ideal for determining predator control effectiveness; however, lack of money and suitable sites precludes this approach in the near future.

Although considerable variation occurred in scope and duration of these studies on sheep and goats, predation on all sheep (ewes and lambs) ranged from 3.8 (McAdoo and Klebenow 1976) to 20.8% (Henne 1975). Munoz (1976) reported an overall predation rate of 17.6% and DeLorenzo and Howard (1976) found 5.4 and 6.0% losses for 1974 and 1975 respectively. Predation accounted for 49% of the adult goats in a Texas test (Guthery and Beasom 1978). Predation on lambs and kids (Table 2) is always greater than on adults when both age classes are present. All control lambs and kids were killed in four short-term fencing tests in Texas (Shelton et al. 1979).

COMPLAINT RESOLUTION RATES

Complaint resolution rates, by time period, are compiled by U.S. Fish and Wildlife Service Animal Damage Control personnel in some states. A 14-day period for stopping or adequately reducing predation was used in three categories: extension type service, corrective action, and preventive control, to

Table 2. Lamb and kid losses to predation without predator control or limited predator control in effect.

| AREA | YEAR | PERCENT LOSS |
|------------|---------|--------------|
| Texas | 1978-79 | 100.0 |
| Texas | 1975-76 | 33.0-95.0 |
| Montana | 1974 | 29.3 |
| Montana | 1975 | 24.4 |
| New Mexico | 1975 | 15.6 |
| New Mexico | 1974 | 12.1 |
| California | 1976 | 6.3 |

determine if a complaint was successfully resolved. Corrective control action was taken in direct response to livestock depredation or harassment. When corrective actions did not resolve predation problems within 14 days they were considered preventive control. Idaho preventive data was based on management units where control was applied before arrival of livestock and success was evaluated by predation during the first 14 days following livestock presence.

During fiscal year 1979 California recorded a 78% resolution rate for all requests for assistance, Oregon showed an 81% resolution rate, and Idaho posted a 79% success rate for resolution of livestock predation complaints. Oregon data showed resolution or success rates of 100% for extension action, 49% for corrective work, and 96% for preventive control (Tom Nicholls, personal communication). Table 3 shows a breakdown of success in resolving 490 livestock complaints and preventive control on 39 management units in Idaho (Jim Harris, personal communication).

Table 3. Idaho animal damage control resolution rates during initial 14-day control periods by type of complaint response.

| Type of control action | Number of projects or units | % resolved | % not resolved |
|------------------------|-----------------------------|------------|----------------|
| Extension | 9 | 78 | 22 |
| Corrective | 481 | 79 | 21 |
| Preventive | 39 | 95 | 5 |

Other complaint resolution data not associated with specific time periods are available from Kansas and North Dakota. A 1973 tabulation of 42 North Dakota cases of livestock predation, where corrective action was carried out with aircraft, showed a 100% resolution rate with a maximum of three visits. The first aircraft visit resolved 71.4%, the second 21.4%, and the third 7.2% of the complaints (William Pfeifer, personal communication). A report of extension type success from Kansas by Henderson et al. (1977) showed 52% of the trainees completely stopped their livestock losses and there was a 79% reduction in sheep losses between pre- and post-extension training periods.

SHEEP PREDATION - COYOTE CAPTURE SEQUENCE

The sequence of livestock predation and predator captures may provide data on control efficacy. A 1979 random sample of 14 sheep ranches in Polk and Yamhill counties, Oregon, showed that 12 (86%) did obtain relief from predation or harassment after coyotes were captured or M-44 pulls were recorded. One or more coyotes were captured on nine ranches, M-44 pulls occurred on three ranches, but coyote carcasses were not found and no coyotes were taken on two ranches (Table 4). Heavy vegetation in these counties frequently precludes recovery of coyotes killed with the M-44. Due to small acreages in this area, predation on specific ranches is often stopped by capturing coyotes on adjacent ranches.

Numbers of sheep killed per ranch did not seem to be related to the numbers of coyotes captured per ranch. Ranches with high numbers of coyotes captured sustained average sheep losses similar to ranches with low numbers of coyotes captured.

During 1978 in Polk County, at least 96 coyotes were taken on 58 cooperating ranches (Table 5). Confirmed predation (not total predation) losses to livestock included 162 sheep, 12 goats, and 1 calf. Missing lambs, disposition unknown, are not included nor are an estimated 75-100 coyotes probably killed by M-44's, but not recovered. About 41% of the recorded coyote catch occurred on approximately 10% of the ranches, however, the known capture distribution could significantly be altered by the large number of unrecovered coyotes. Again, distribution of livestock losses among the ranches did not seem to be correlated with the number and distribution of captured coyotes. Livestock loss-predator capture sequences were similar to those shown for 1979 in Table 4.

Table 4. Sheep predation - coyote capture relationships for 14 western Oregon ranches, 1979.

| Rancher number | Sequence of sheep killed (S) or harassed (H) and coyote captures (X) |
|----------------|--|
| 1 | X S S S S S S S S S S S S S X |
| 2 | S S S S S S X S S X S X X X |
| 3 | S S S S S S S X |
| 4 | S S X X X X X |
| 5 | X S S S S X |
| 6 | S X X X X |
| 7 | S S X |
| 8 | S X |
| 9 | H X |
| 10 | S S S S S S S S (M-44 pulls) |
| 11 | S S S S S S S S |
| 12 | S S S S S S (M-44 pulls) |
| 13 | S S S S (M-44 pulls) |
| 14 | H |

Table 5. Number of coyotes taken per ranch, Polk County, Oregon 1978.

| Coyotes taken per ranch | Number of ranches | Total coyotes taken |
|-------------------------|-------------------|---------------------|
| 0 | 19 | 0 |
| 1 | 17 | 17 |
| 2 | 9 | 18 |
| 3 | 6 | 18 |
| 4 | 1 | 4 |
| 5 | 3 | 15 |
| 6 | 2 | 12 |
| 12 | 1 | 12 |
| | <u>58</u> | <u>96</u> |

DISCUSSION

Comparisons between studies with and without predator control show that average livestock losses to predation can be quite high when livestock protection practices are abandoned. Average losses, 36%, have been far greater on areas that received no control than on those with predator control (3.4%). The differences exist for predation on both young and adult livestock; the exact differences depend upon which studies are included in the comparisons and how much influence is relegated to each study.

Resolution rates of livestock depredation complaints are other indicators that damage control programs can reduce losses at least on a short-term 14 day basis. The resolution rates listed in this report indicate that many complaints are satisfied with subsequent reduction or elimination of predation. Determination of losses to predation is still a perplexing problem, both during and after the 14 days of corrective action, and especially when only preventive type action is assessed. The Kansas data, showing a 79% reduction in predation on sheep after initiation of self-help control, are another indicator of damage reduction success.

The Oregon data on sheep predation-coyote capture sequences also show that livestock damage can be alleviated with control efforts. When predation was stopped after coyotes were taken or M-44 pulls were observed it is reasonable to assume that the control was reducing losses. These data are a small sample from the many case history records that could be tabulated from existing records.

Livestock depredation control is not always successful and significant losses can occur even when control measures are utilized. However, existing evidence indicates that livestock losses would be much greater if control were discontinued. The data and examples included here support the contention that livestock losses can be reduced by depredation control.

LITERATURE CITED

- DE CALESTA, D. 1978. Documentation of livestock losses to predators in Oregon. Report 501. Oregon State Ext. Serv.
- DE LORENZO, O.G., and V.W. HOWARD, JR. 1976. Evaluation of sheep losses on a range lambing operation without predator control in southeastern New Mexico. Final Rept. to U.S. Fish and Wildl. Serv. 34p.
- DORRANCE, M.J., and L.D. ROY. 1976. Predation losses of domestic sheep in Alberta. J. Range Manage. 29(6):457-460.
- EARLY, J.O., and J.C. ROETHELI. 1974. Idaho range sheep death losses. Univ. Idaho Agric. Exp. St. Rept. 255. 2p.
- GUTHERY, F.S., and S.L. BEASOM. 1978. Effects of predator control on Angora goat survival in south Texas. J. Range Manage. 31(3):168-173.
- HENDERSON, F.R., E.K. BOGGESS, and B.A. BROWN. 1977. Understanding the coyote. Kansas State Univ., Manhattan. Coop. Ext. Serv., Bull. C-578. 24p.
- HENNE, D.R. 1975. Domestic sheep mortality on a western Montana ranch. MS Thesis. Univ. Montana, Missoula. 53p.
- KLEBENOW, D.A., and K. MC ADOO. 1976. Predation on domestic sheep in northeastern Nevada. J. Range Manage. 29(2):96-100.
- MC ADOO, K., and D.A. KLEBENOW. 1976. Predation on range sheep with no predator control. U.S. Fish and Wildl. Serv. Rept., Contract 14-14-0008-2051. 31p.
- MUNOZ, J.R. 1976. Causes of sheep mortality at the Cook ranch, Florence, Montana, 1975-76. U.S. Fish and Wildl. Serv. Rept., Contract 14-16-0008-1135. 44p.
- NASS, R.D. 1977. Mortality associated with sheep operations in Idaho. J. Range Manage. 30(4):253-258.
- NESSE, G.E., W.M. LONGHURST, and W.E. HOWARD. 1976. Predation and the sheep industry in California, 1972-1974. Univ. Calif., Davis. Div. Agric. Sci. Bull. 1878. 63p.
- SHELTON, M., D. WADE, L. WARREN, and J. ARNOLD. 1979. Evaluating the use of electric fences to reduce coyote predation on sheep and goats. Minutes and Proc., Western Reg. Coord. Comm. WRCC-26, Management of predators in relation to domestic animals.