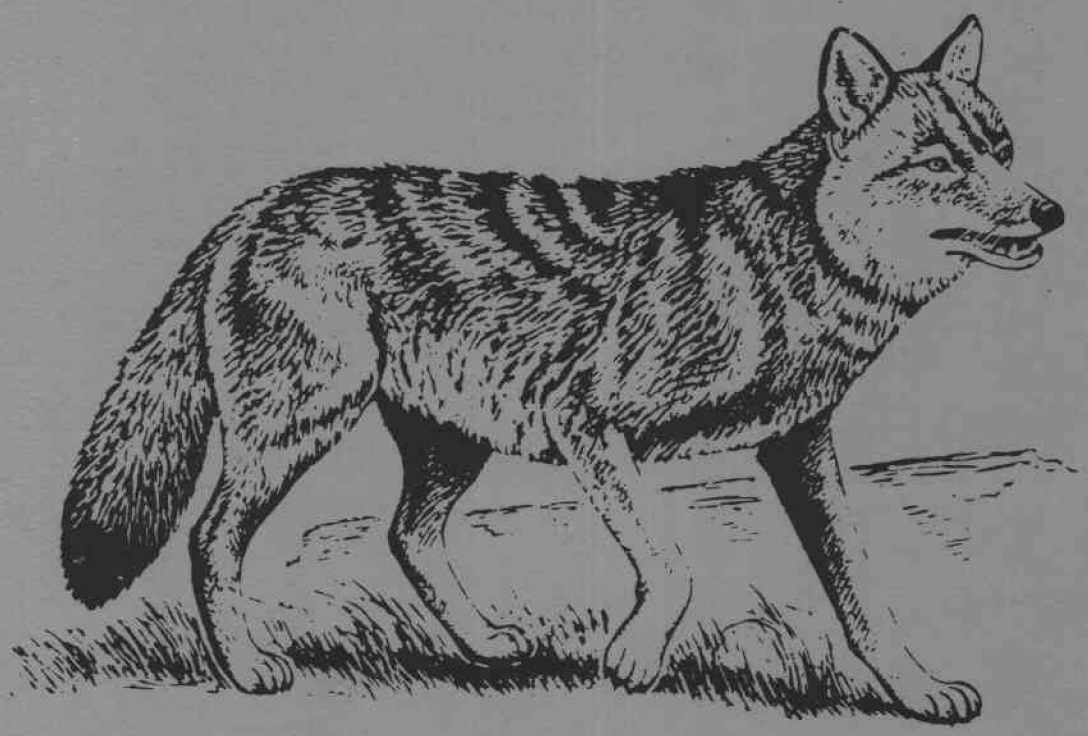
Documentation of LIVESTOCK LOSSES to Predators in Oregon



Special Report 501 February 1978

Oregon State University Extension Service

DOCUMENTATION OF LIVESTOCK LOSSES TO PREDATORS IN OREGON

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Loss of livestock to predators is the primary justification for predator control programs in Oregon. Magnitude of these losses influences decisions regarding the intensity of control methods used and monies spent. Historically, loss estimates have been made by livestock growers at the end of the calendar year. Loss estimates have been challenged by environmentalists and conservationists, who allege that the loss figures are inflated by growers to insure a continued high level of predator control. There was need, therefore, to obtain accurate estimates of losses of livestock to predators in Oregon. The 1975 Oregon Legislature recognized this need and appropriated funds to collect information on livestock losses to predation as part of a Predator Information and Education Program. This report presents the findings of a survey among sheep and cattle growers of losses of livestock to predators in Oregon.

As with any animal damage situation, control efforts are best utilized when characteristics of the loss are known. For livestock losses to predators, these characteristics include: animals most vulnerable to predation; time of the year of losses to predation; the predator involved; and livestock management practices associated with lowered loss rates. This information will provide input for better management of livestock to reduce losses to predation.

OBJECTIVES

1. To estimate and characterize losses suffered by sheep and cattle in Oregon to predators based on reports submitted by growers.
2. To validate the reliability of the reports, submitted by growers, of livestock losses to predators.
3. To derive management recommendations for decreasing livestock losses based on information gathered in this survey.

METHODS

Estimation of Livestock Losses

To estimate and characterize livestock losses to predators, I requested cooperating growers to submit monthly loss reports for a 17-month period (February 1976 - June 1977).

Information collected. For each cooperating grower, I recorded the type and numbers of cattle or sheep grown, location of the operation in the state, proximity of the operation to public land, type and intensity of management practices conducted against predators, date of the loss, predator(s) involved, losses to other causes, and the sex and age classes of animals lost.

Selection and preparation of cooperators. The sample of growers was obtained from lists of sheep and cattle growers in Oregon. Every third grower from each list was contacted by letter and invited to cooperate in the program. A self-addressed postcard allowed growers to characterize their operations and to indicate whether they would cooperate in the program.

To cooperating growers, I sent another letter detailing how they would report losses, a key to help them identify the predator responsible for unobserved livestock kills, and reporting forms. Each month cooperators were to return a form noting losses to predators, disease, accidents, and other causes, and summarizing control steps taken against predators.

Reliability of Reported Livestock Losses

To assess the reliability of losses reported by growers I compared losses reported by a group of growers with those from the same group that were observed by impartial documenters.

Selection and preparation of documenters. For each of the 10 growers selected for documentation, I chose a minimum of three documenters (county extension agents, Oregon Department of Fish and Wildlife biologists, and Oregon State Police Game Officers). Documenters were selected on the basis of willingness to cooperate, and proximity to the grower. Each documenter received the same materials sent to cooperating growers, and was requested to report monthly.

When growers within the documenter group discovered a loss, they contacted one of the three documenters assigned their ranch. The documenter identified the predator responsible for the loss, and reported it on the monthly livestock report loss form.

DATA ANALYSIS

Participation

I recorded numbers of participating growers by number initially

agreeing to participate, numbers sending in forms each month, and numbers withdrawing from the survey for a variety of reasons.

Overall Loss Figure

To obtain a rough estimate of total losses I totaled numbers of animals reported lost to various causes and divided these figures by total numbers of animals reported.

Monthly Loss Figures

I computed monthly loss rates of livestock to predators by dividing the number of losses for each mortality agent, by total number of livestock for that month.

Identified Predators

I computed percentages of losses attributable to the various predators for the entire survey period and for three periods during the year: 1) January through May, representing lambing, calving and weaning, 2) June through September (summer), and 3) October through December (fall and early winter).

Reliability of Loss Reports

I compared frequency of occurrence of losses and percentage of losses to predators and other causes between ranches where the reporting was done by the growers and ranches where the reporting was done by documenters.

RESULTS AND DISCUSSION

Participation

Sample size and respondents. The initial response of growers was good, with over 30 percent returning the postcards (Table 1).

Table 1. Sample sizes of growers in survey.

	Sheep growers	Cattle growers
Total growers	3002	3242
Initial sample	1000	1070
Growers responding	387	345
Respondents not participating	206	204
Out of business	33	28
Had no losses	12	27
Declined to participate	19	23
Too few livestock	3	2
Dropped out after agreeing to participate	139	124
Respondents participating	181	141

However, a disappointing proportion of growers (over 50 percent) initially indicating they would participate dropped out without sending any report forms. Approximately 18 percent of the sheep growers and 13 percent of the cattle growers initially contacted sent in one or more loss forms. This participation involved approximately 6 percent of sheep growers and 4 percent of cattle growers in the state.

Characteristics of response. There was high initial interest in reporting, followed by a gradual decline in numbers of growers reporting every month (Fig. 1). On the average, 68 reports were received each month from sheep growers, and 39 reports were received monthly from cattle growers. When I discerned that the number of reports received began to decline, I sent out follow-up letters, exhorting the growers to continue to send in their reports, stressing the importance of getting as complete a record of losses as possible. For two months following the sending of the first follow-up letter, reports received from growers increased, and then returned to the previous declining level (Fig. 1). Proportion of growers sending in a smaller number of forms greatly exceeded the proportion sending the maximum number (17) of reports (Fig. 2). Mean number of reports sent in per grower was 6.5 for sheep and 5.2 for cattle growers.

Bias. I was concerned that the data generated by this survey might overestimate losses. I suspected that persons not experiencing loss would be less inclined to send in reports than those experiencing some degree of losses of livestock to predators, resulting in overestimation of loss. Impact of this possible source of bias may be evaluated by noting the number of respondents to the initial request who declined to participate because they had no losses. These growers formed 6 percent of the sheep growers and 8 percent of cattle growers declining to participate. The potential for overestimation of loss in this report probably is slight because of the small proportion of growers with no losses among non-participating growers. Another potential source of loss overestimation is that growers might respond more frequently

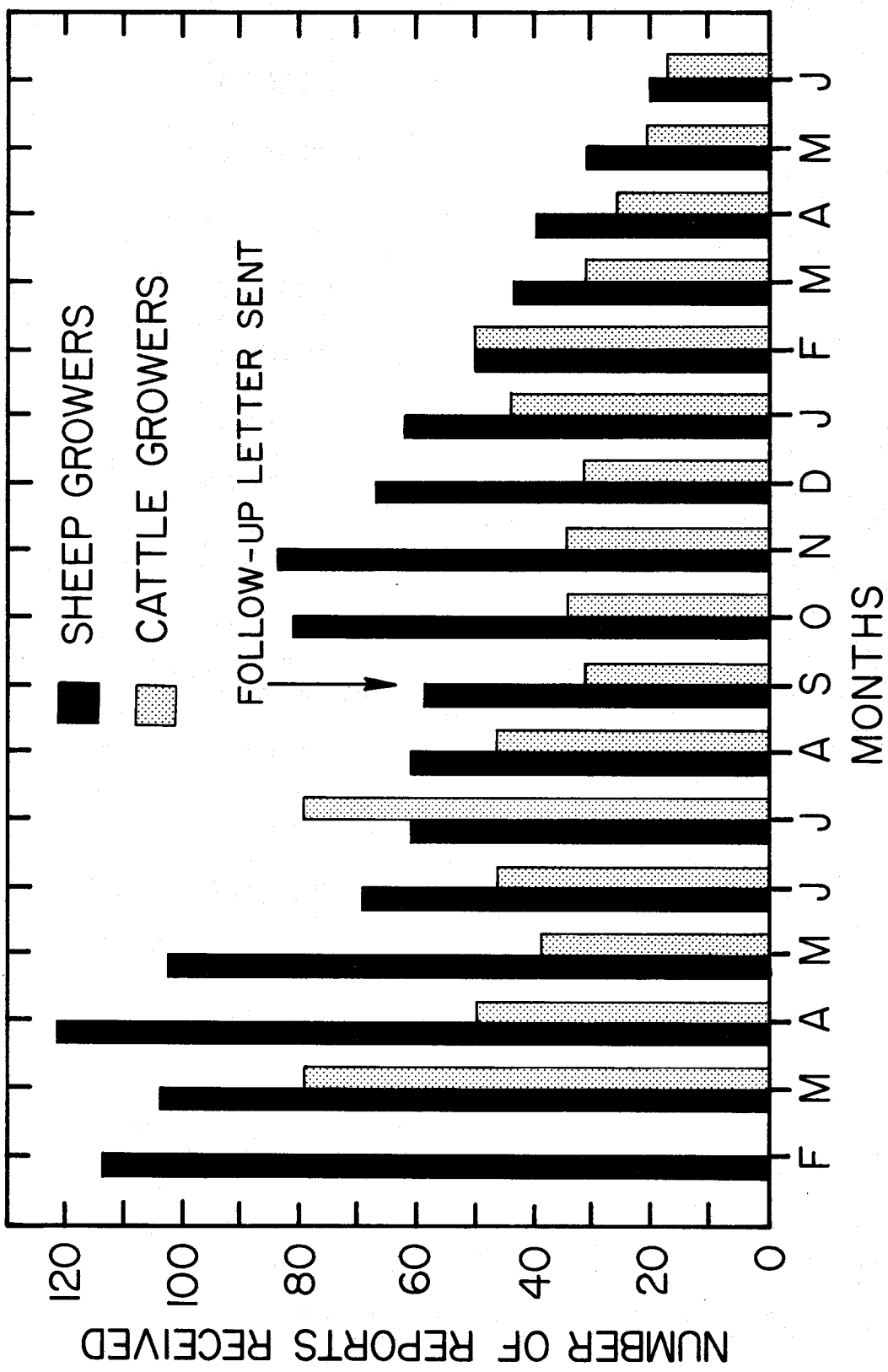

Figure 1. Number of reports received each month from livestock growers.

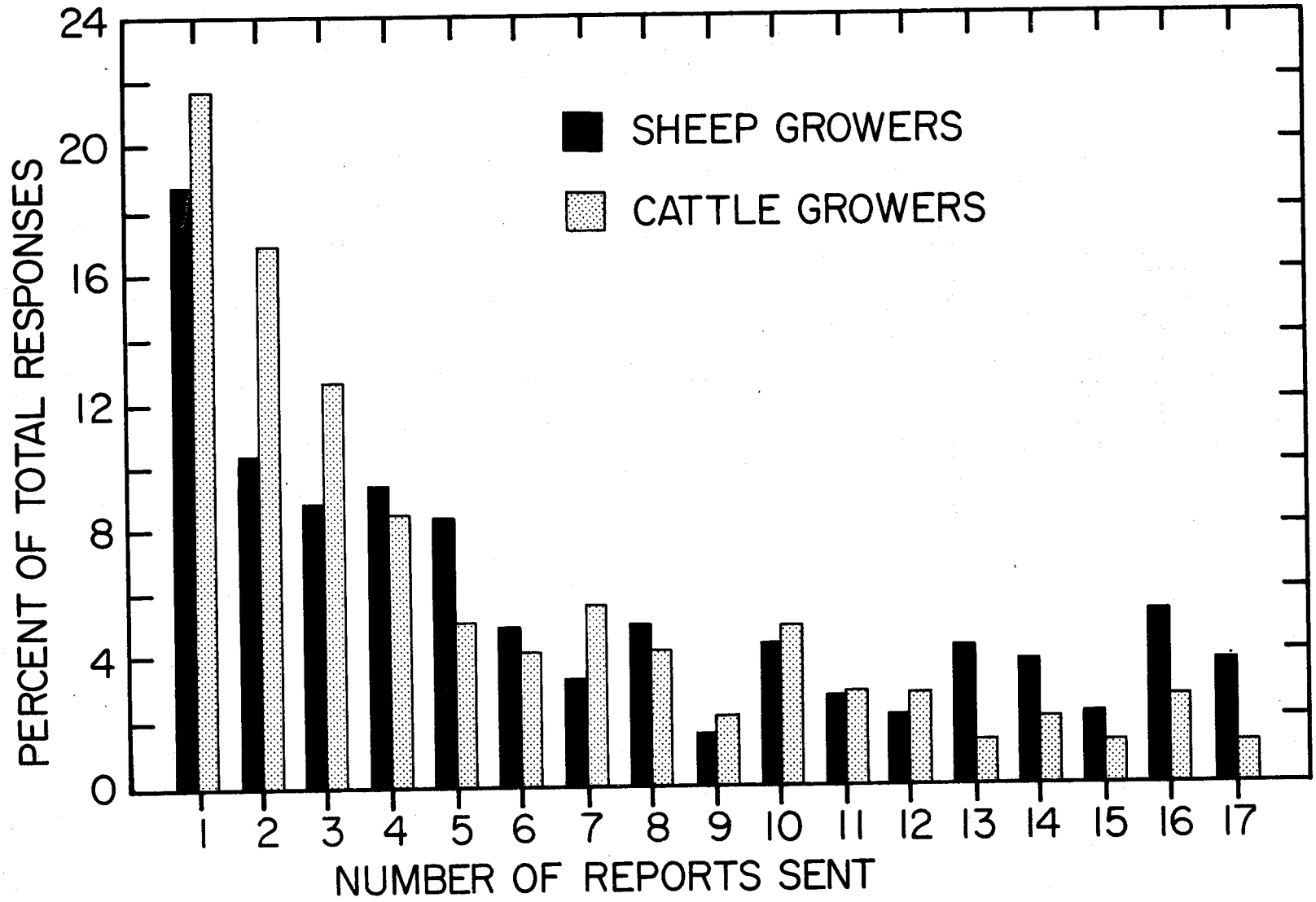

Figure 2. Proportion of total responses represented by number of reports sent.

if they had losses, whereas those without loss might send in fewer reports. Examination of the relationship between frequency of growers experiencing loss of livestock to predators and the number of reports filed (Fig. 3) reveals a significant upward trend in the percent of sheep growers (but not cattle growers) experiencing loss related to the number of reports sent in. Thus, number of reports sent by sheep growers was related to frequency of loss to predators, and this potential source of bias may have resulted in some overestimation of loss rates of sheep to predation.

Loss Estimate

Losses of livestock to disease, accidents, predation and unknown causes were expressed as a percentage of total animals (Table 2). Losses to disease and accidents were greater than to predators. Greater proportions of ewes and lambs were lost to all causes than proportions of cattle. For every calf killed by predators in my survey 4.5 ewes and 10.9 lambs were killed by predators. This result agrees well with livestock losses reported by the Fish and Wildlife Service's Animal Damage Control branch for Oregon for the same period of time: for every calf loss to predators there were 3.4 ewes and 14.5 lambs reported lost to predators. Loss rates were adjusted by apportioning unknown losses to disease and accidents and predation to obtain an estimate of maximum rates of loss to these mortality agents. Losses to predators occurred while standard predator control activities were being conducted. Losses undoubtedly would have been higher in the absence of predator control: a study in Montana noted losses of 29.0 percent lambs and 8.4 percent ewes in the absence of predator control (Henne 1975).

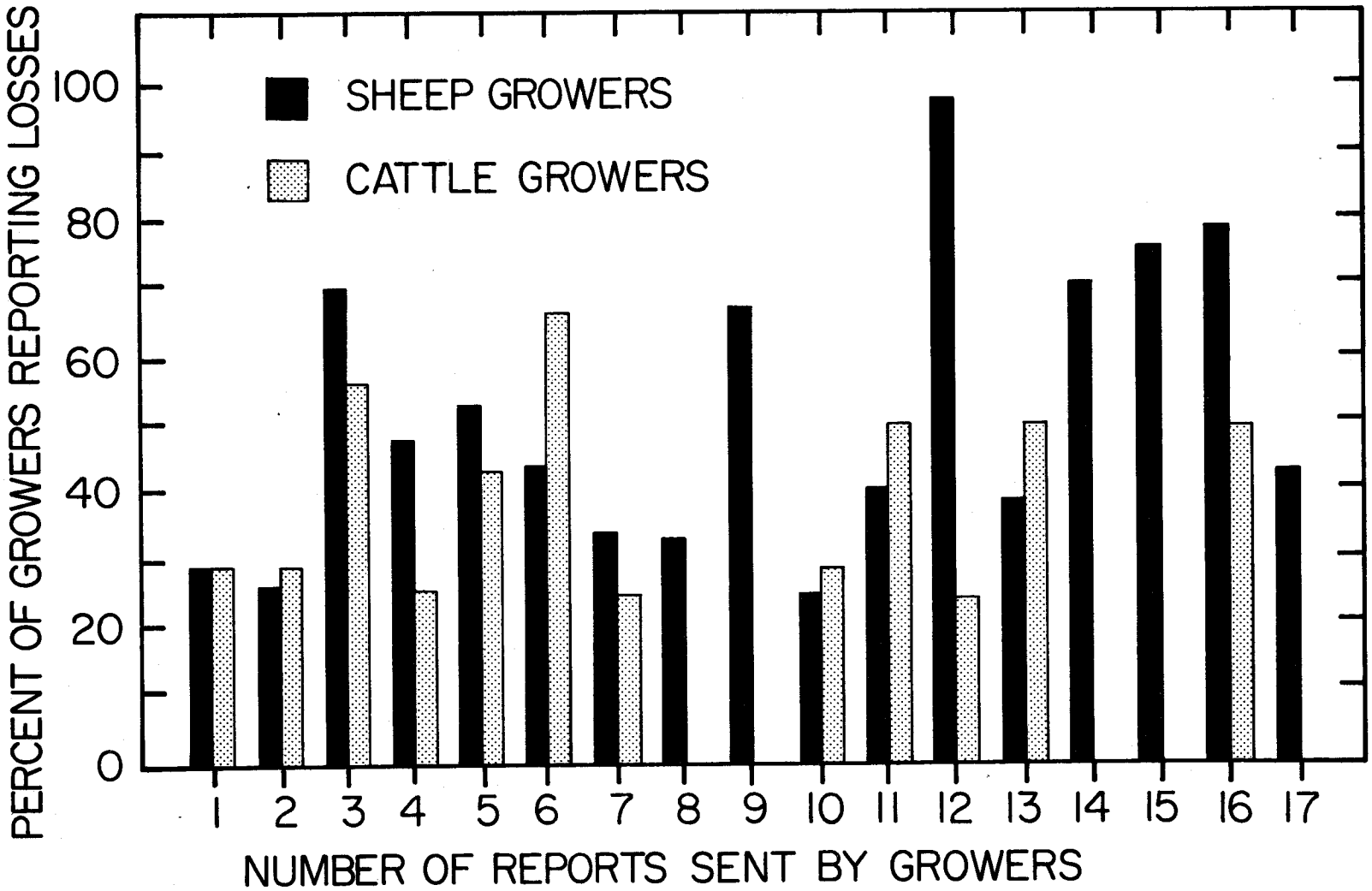

Figure 3. Percent of livestock growers reporting losses to predators as a function of number of reports returned.

Table 2. Percent of livestock lost to disease and accidents (D/A), predation (P), and unknown causes (U).

	Sheep						Cattle					
	Ewes			Lambs			Cows, heifers, and steers			Calves		
	D/A	P	U	D/A	P	U	D/A	P	U	D/A	P	U
unadjusted	3.55	1.60	1.37	5.83	3.91	1.65	1.32	0.04	0.48	4.78	0.74	1.12
adjusted[a]	4.52	2.00	----	6.72	4.68	----	1.79	0.05	----	5.75	0.89	----
1974 SRS Report (Oregon)	4.11	6.04	2.31	7.41	9.03	3.02						

[a] adjusted loss rates = unknown losses apportioned to losses for disease and accidents and predation.

It is interesting to compare loss rates obtained from our survey with those obtained from similar studies. In a 1974 survey conducted by the Statistical Reporting Service (SRS) of the United States Department of Agriculture (USDA) questionnaires were sent to sheep growers in 15 western states (Gee et al. 1977). Growers were requested to estimate their losses over a 1-year period. Loss estimates from the SRS survey for Oregon for disease and accidents were similar to those from my survey, but ewe losses to predation were three times as great and lamb losses were twice as great (Table 2). Losses to disease and accidents ranked second behind losses to predation in the SRS survey, whereas the order was reversed in my survey.

Combined lamb and ewe loss rates to predation from my survey (2.8 percent unadjusted) are in close agreement with herd loss rates (0.5 - 7.9 percent) reported for other western states (Early et al. 1974 a, 1974 b, Klebenow and McAdoo 1976, Nielson and Curie 1970, Reynolds and Gustad 1971, Tigner and Larson 1977).

Frequency of growers reporting loss to predators in my survey was 46 percent of sheep growers and 28 percent of cattle growers. The 46-percent figure of sheep growers in my survey agrees closely with the 50 percent of sheep growers reporting loss in the SRS survey. None of the cattle growers reported losses of steers or heifers to predators. Loss rates of cattle to predators are lower than those for sheep, probably because the primary predators, coyotes and dogs, rarely prey on adult cattle. I did not separate losses to predation between feedlot and range cattle. Presumably, feedlot cattle would experience lower rates of predation than range cattle.

Characteristics of Loss

Loss rates of livestock to predators were similar between eastern and western Oregon ranches. Lambs and calves suffered higher losses, respectively, to predators than did ewes and cows (Table 2). Sheep growers practicing more intensive predator management (utilizing three or more practices, including use of trappers, shed lambing, checking sheep daily, confining sheep nightly and other steps) had 78 percent fewer ewe losses and 64 percent fewer lamb losses than did growers practicing less intensive predator management (using two or less practices). Thirty-eight percent of sheep growers practicing more intensive predator management had losses of sheep to predators whereas 63 percent of growers practicing less intensive predator management lost sheep to predators. No single predator management practice was fool-proof: 38 percent of growers that confined their sheep nightly in barns or corrals experienced losses to predators. There were no testable differences of predator management employed among cattle growers; losses to predators are so low that few steps against predators are taken, other than using government trappers when losses occur, and, in eastern Oregon, shooting coyotes from helicopters on ranches with histories of loss.

Growers adjacent to public lands did not suffer higher loss rates to predators than growers more remote from public lands.

Most losses occurred during lambing/calving and weaning periods (January-May) (Fig. 4). For cows, calves, and lambs, 82 to 86 percent of losses to predators occurred during January-May, 12 to 18 percent

occurred during summer (June-September) and 0 to 6 percent occurred in fall/early winter (October-December). For ewes, 58 percent of losses to predators were in January-May, 12 percent in summer and 30 percent in fall/early winter.

The coyote was responsible for the majority of livestock kills, but proportion of loss to different predators varied between eastern and western Oregon (Table 3). Dogs killed a greater proportion of sheep in western than eastern Oregon, probably because densities of dogs are higher in western Oregon.

Few livestock losses were credited to bears, pumas, foxes, ravens or bobcats. Eagles were the third most frequent predator of sheep in western Oregon, but magnitude of losses to eagles was low. Eagles killed only lambs, and only during January - April when lambs were smallest.

Table 3. Apportionment of total predation loss among species of predators.

Livestock	Predator	Eastern Oregon	Western Oregon
Sheep	coyote	89.7	70.4
	dog	8.1	16.8
	eagle	0.0	3.6
	bobcat	0.0	2.5
	other (puma, bear, raven, fox)	0.0	1.3
	unidentified	2.2	5.4
		Eastern Oregon	Western Oregon
Cattle	coyote	67.3	75.0
	dog	5.5	0.0
	bobcat	5.5	0.0
	unidentified	21.7	25.0

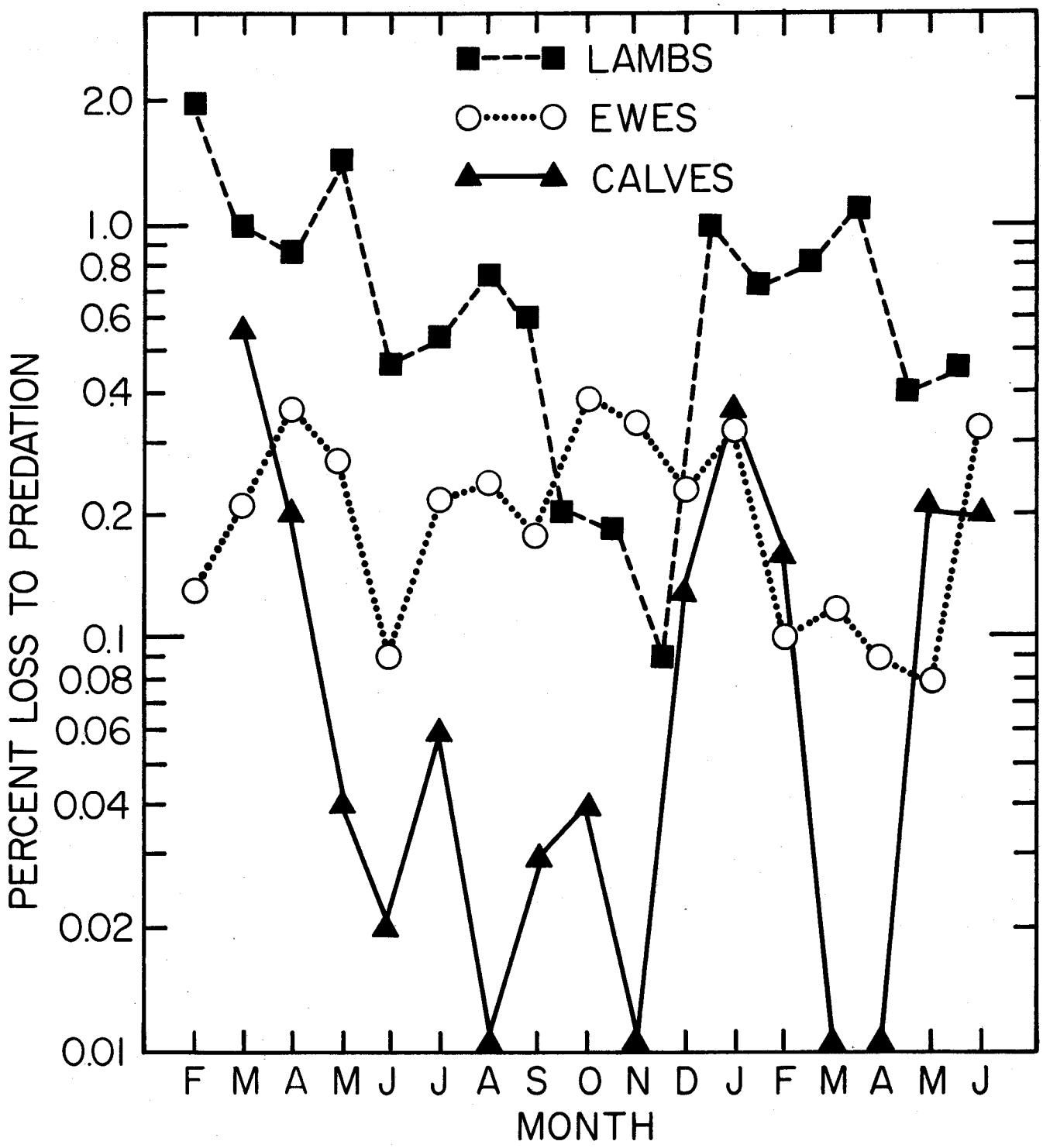

Figure 4. Monthly loss rates of lambs, ewes and calves to predators (cow losses too low to fit on graph).

Reliability of Grower-Reported Losses

Losses reported by sheep growers were nearly identical to losses observed on similar ranches by impartial observers (Table 4).

Table 4. Comparison of sheep loss rates (percentages) reported by growers and by impartial observers.

	Ewes		Lambs	
	disease/accidents	predators	disease/accidents	predators
ranchers	2.1	0.3	2.1	1.9
impartial observers	2.6	0.8	1.6	1.8

Fifty percent of ranches observed by impartial observers had losses to predators, and 54 percent of growers reported losses to predators. These data indicate that reports of losses to predators by growers (at least on a monthly basis) are accurate and not inflated.

MANAGEMENT IMPLICATIONS

Control efforts based on extermination and population control over vast tracts of land for coyotes and other predators are relics of the past. Public outcry against the use of poisons to reduce coyote populations and the 1972 Presidential Executive Order banning use of predacides on public lands greatly restricted the use of poisons for control of coyote predation. Current predator control programs emphasize removal of individual predators responsible for killing livestock. Future control efforts probably will emphasize reacting to on-going losses and attempting to reduce the vulnerability of livestock to predator attack.

Loss rates of lambs to predators are approximately five times greater than those for calves. However, market price of calves generally is 4-5 times as great as that for lambs, so the economic impact of predator losses upon the sheep and cattle industries probably is similar. Efforts to reduce losses of sheep and cattle should be expended primarily for protection of lambs and calves, prior to and during the period of greatest susceptibility to predator attack.

The primary period of lamb and calf loss is from January through March and this is when the greatest expenditure of control efforts should be made. However, losses of livestock are a year-round problem and must be addressed on a continuing basis.

Principal predators of livestock are coyotes and dogs. Control by government trappers and county dog control officers of coyotes and dogs, respectively, should form the core of any predator damage control program.

Because of limitations on manpower and money, much of the efforts by government trappers are in response to already-occurring losses rather than of a preventive nature. In some situations, trappers are able to anticipate losses and can mount an aggressive predator control program aimed at elimination of coyotes from a narrow zone surrounding ranches. Such programs work best in areas with many adjoining ranches where control efforts can be administered efficiently. In eastern Oregon, helicopter gunning of coyotes on adjacent cattle ranches with histories of losses to predators is thought to be effective.

Efforts by growers should be spent on preventive management to reduce the susceptibility of lambs and calves primarily during the January through March period. Highest losses of lambs and particularly of

calves occurs when the animals are less than 1 week old. If growers concentrate breeding programs within short periods of time, lambs and calves will be born within a shorter period of time, the period of greatest susceptibility to predator losses will be considerably shortened, and lower loss rates should occur. Such management practices as use of deterrents (De Lorenzo 1977) and fencing (De Lorenzo 1976) should be combined with the use of trappers in an overall preventive management program. As an adjunct to the government trappers, growers may wish to trap in response to coyotes causing loss or, as part of their preventive management program, to trap coyotes throughout the year.

Predation by dogs on sheep is a growing problem in western Oregon. The problem results from irresponsibility of dog owners, and inadequate regulations and enforcement of leash-type laws for dogs. Stiffer leash laws, extending into county areas, rather than being restricted to urban areas, coupled with required licensing of dogs in urban and rural areas would provide legal leverage and sufficient funds for aggressive dog control programs.

Control of lamb losses to eagles is controversial and inadequate at present. Overall loss rate is low, but individual growers suffer high losses. On two ranches in Montana, golden eagles killed an estimated 1,092 lambs (76 percent of all lamb deaths) (O'Gara 1976). Golden eagles are protected by federal law and are a symbol of wilderness to many Americans. Killing eagles for control of sheep predation is an explosive issue: illegal poisoning and aerial gunning of eagles in Wyoming in the early 1970's was a contributing factor in the 1972 Executive Order banning use of predacides on federal lands.

Attempts by federal agents to trap and transport eagles away from sheep ranches with losses to eagles have been associated with only minimal reductions in eagle kills of lambs and were too expensive to be practical (O'Gara 1976). Confining ewes and lambs in barns and corrals (shed lambing) for the first few weeks after parturition will reduce losses of lambs to eagles, but not all growers do this.

The results of this survey indicate that losses of livestock to predation, while lower than losses to disease and accidents are never the less a prevailing source of loss (nearly half of the sheep growers and a third of the cattle growers suffered losses to predators) that will not be eliminated even with aggressive management. These losses should be expected and estimates made of them when operating costs of livestock growing operations are calculated. It is unrealistic (and costly) to expect that current or future management to control losses to predators will prevent all losses.

Lowest rates of livestock loss are exhibited by growers exercising several management steps to reduce predation. Included in these steps are both methods for killing coyotes and methods for reducing vulnerability of livestock to predators. However, even with aggressive programs for combatting predator damages, over a third of sheep growers experienced losses to predators. Without the current efforts by government trappers to kill marauding coyotes losses of livestock probably would be higher.

Growers need to maintain agressive programs to reduce losses to predation, integrating as many management techniques as they can. The programs should include optional use of deterrents, fencing and herd management and lethal methods for eliminating coyotes from lands on and immediately adjacent to livestock operations.

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