Dog Predation of Domestic Sheep in Ohio

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Abstract

Questionnaires were mailed to 300 sheep producers in Ohio during spring 1979, and 218 returns were analyzed. Predation losses from dogs averaged 1.3% of the sampled sheep for a minimum statewide cost of $836,000 in 1978. Physiographic region, month, flock size, and management technique had no significant effect on number or percent killed per flock. Most attacks ($P<0.02$) occurred at night and morning, and ewes were more vulnerable than lambs or rams ($P<0.005$).

Dogs can cause serious losses to livestock (Denney 1974). Balser (1974) and Bogess et al. (1978) reported that the dog presents an analogous problem in the East to the coyote in the West. In 1973, $175,016.51 was paid for livestock loss from dogs in Ohio (Grimshaw 1974). Predation upon sheep by dogs was most common, but losses of other livestock were also reported (Getz 1975). Our study was designed to determine the magnitude of depredation by dogs on sheep in Ohio during 1978, and to describe the relationship between depredation and physiographic region, land use, management techniques, flock size, season, and time of day.

Methods

Questionnaires were mailed to 300 of 12,000 sheep producers in Ohio during spring 1979. Counties and producers were randomly selected from the mailing list of the Mid-State Wool Growers Association. Producers were asked for numbers of sheep and lambs in 1978; whether flocks were confined, seasonally confined or on range; number of sheep killed by dogs; and time and day of attacks. Explanatory cover letters, postage paid return envelopes, and three follow-up mailings were used to maximize response rate (Dillman 1978). Ohio was divided into five regions based on physiography and land use (Fig. 1). Analysis of variance and χ^2 were used to compare data at critical value 0.05.

Results and Discussion

Questionnaires were returned by 265 (88%) producers. Forty-seven respondents had no sheep in 1978, and their questionnaires were not used. Five (2%) respondents managed confined flocks, 56 (26%) had sheep on range and 156 (72%) confined their flocks only during inclement weather; 1 respondent did not note management. Forty-one producers (19%) lost 268 sheep (1.3% of total sample) to dogs. Flocks with predation losses had an average kill of 6.5 sheep (12%) (Table 1). Sixty-one percent of sheep killed by dogs were ewes, 38% were lambs and 1% were rams; these percentages were significantly different from expected. Cain et al. (1972) cite a study by Nielson and Curle (1968) done in Utah showing that of losses to coyotes lambs constituted 66% and ewes 33%. Lambs may have been less vulnerable in our study due to more attention by producers during and following lambing than at other times. Early marketing of lambs may have also reduced predation.

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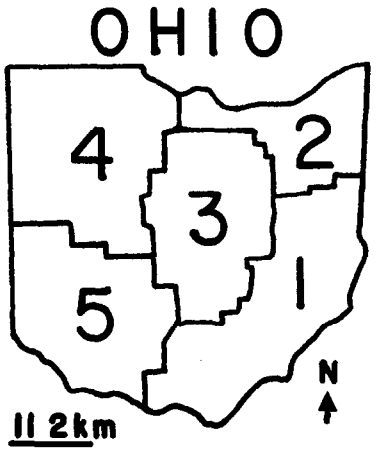

Fig. 1. *Ecological regions of Ohio.*

In 1978, 12,000 sheep producers held 350,000 sheep in Ohio. Thus, estimated sheep killed by dogs in Ohio during 1978 totals 2,776 ewes, 1,729 lambs, and 46 rams. Sheep losses to dogs in 1978 cost at least $836,000 based on an average value of commercial stock of $220 per ewe, $120 per lamb, and $400 per ram. This estimate is conservative because purebred sheep are more valuable than the averages we used.

Number of sheep killed per flock and predation rates did not differ between regions or management strategies. Dorrance and Roy (1976) found coyote predation of sheep in Alberta varied between ecosystems. Dorrance and Roy (1976) also determined that confined flocks suffered the highest losses from coyote predation and presumed that this was because the sheep could not escape.

Flocks were damaged during all months (Fig. 2), and no seasonal pattern emerged. Monthly and seasonal losses did not deviate significantly from expected. Bogess et al. (1978) found a similar chronology of sheep losses to dogs in Iowa. Flock size and

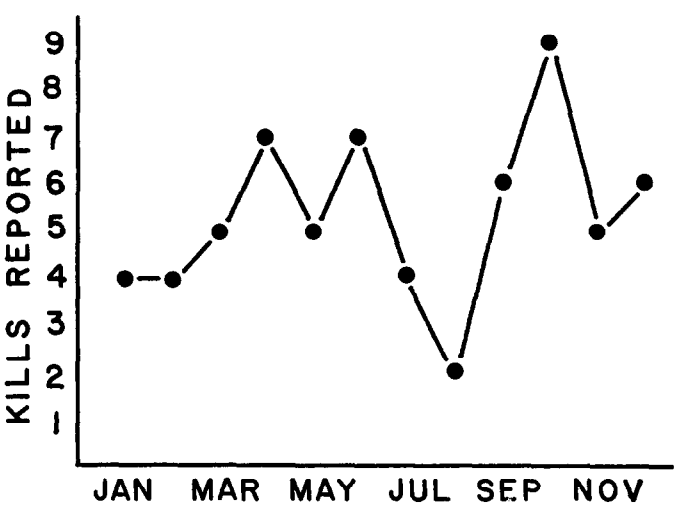

Fig. 2. *Monthly chronology of sheep losses to dogs.*

Table 1. Dog predation of domestic sheep in Ohio (1978).

	Physiographic Region					Regions Combined
	1	2	3	4	5	
Producers in sample	34	16	79	45	44	218
Mean flock	140 ± 56[1]	162 ± 108	86 ± 11	72 ± 10	60 ± 9	92 ± 13
Mean killed per flock	1.0 ± 0.44	2.3 ± 1.9	1.2 ± 0.48	0.62 ± 0.34	1.7 ± 0.62	1.2 ± 0.07
Mean % killed per flock	1.7 ± 0.39	4.9 ± 1.4	1.8 ± 0.17	1.6 ± 0.28	2.9 ± 0.39	2.2 ± 0.50
Number of damaged flocks	9	2	12	7	11	41
Mean killed per damaged flock	3.9 ± 1.3	18 ± 12	7.8 ± 2.4	4.0 ± 1.8	6.8 ± 1.8	6.5 ± 1.1
Mean % killed per damaged flock	6.7 ± 2.9	39 ± 34	12 ± 2.8	10 ± 4.6	11 ± 3.0	12 ± 0.8

[1]Standard error

number killed were not significantly correlated (R^2=0.03).

Incidences of dog kills were reported as 18 morning, 11 midday, 6 evening, 14 night, and 2 unknown. Differences were almost significant (P=0.06) with four categories, and significant when morning plus night and evening plus midday were tested. Cause of the problem was considered by 54% of respondents to be both stray dogs and local pets, by 26% to be strays, and by 20% to be pets. Dogs responsible were described by 60% as German shepherds and by 20% as large mongrels.

The problem of dog predation on livestock in the East has received little research attention. Our work confirms that the problem is serious; increasing abundance of coyotes and coyote-dog hybrids may worsen the situation. Further research to define more clearly the problem is needed, and research on management practices that show promise of alleviating predation impact should be initiated.

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