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ATTITUDES OF NEBRASKA SHEEP PRODUCERS TOWARD PREDATORS

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The economy of the State of Nebraska is highly dependent on the agricultural industry. When factors arise that complicate and threaten facets of the industry, those involved, particularly producers, often express a high degree of concern toward those threatening factors.

The sheep producers of Nebraska experience this situation with predation. Predators can often cause economic and emotional losses for producers. In 1987, Johnson and Timm estimated that coyotes *(Canis latrans)* cause $630,000 in damage annually to the sheep industry in Nebraska. Nationally, losses of sheep and lambs to predation is estimated at $21.7 million with coyotes responsible for 63.7% of all losses (Agricultural Statistics Board 1991). These losses affect the attitudes of sheep producers toward predators. These attitudes may in turn, conflict with the attitudes of other segments of the public, such as environmental and conservation groups.

We conducted a survey of Nebraska sheep producers to determine: 1) the impacts of predators on the sheep industry of Nebraska, and 2) the attitudes of Nebraska sheep producers toward predators.

METHODS

During winter 1991, we obtained a list of 2,647 Nebraska sheep producers from the Nebraska Agricultural Statistics Service (NASS) and randomly sampled 435 producers from 4 population strata. The 4 strata were developed according to the number of sheep maintained annually by individual producers. Those strata included: 1-99 head (12% sampling rate (SR), n = 250); 100 to 499 head (36 % SR, n = 150); 500 to 999 head (100 % SR, n = 23); and >1,000 head (100% SR, n = 12).

We mailed a questionnaire, which consisted of 16 questions, with a cover letter and stamped return envelope to the selected producers on 15 February 1991. A number code system was used to account for returned surveys. We issued a second mailing of the same questionnaire on 1 March 1991 to all initial non-respondents. We conducted a telephone survey on 13-14 March 1991 of the remaining non-respondents to determine if there was a non-response bias.

Statistical analysis of survey data was conducted at the University of Nebraska-Lincoln, Department of Biometrics. The program SAS 20 was used to develop

descriptive statistics, cross-tabulations, and conduct chi-square analyses.

RESULTS AND DISCUSSION

Of the 435 sheep producers selected from the NASS mailing list for the survey, 61 had not raised sheep for 3 years and 19 were not available for comment. Sixty-one percent (215) of the remaining 355 producers surveyed returned useable questionnaires. Seventy-two percent (102) of the 141 non-respondents were reached by telephone and provided responses to the questionnaire. Nebraska sheep producers lost an estimated 6,599 sheep and lambs to predators in 1990. The average cost per sheep and lamb lost was reported at $66 and $49, respectively, resulting in a total estimated loss of $366,305. Thirty-eight percent of all sheep producers surveyed had experienced losses to predators in 1990.

Thirty-nine percent of the sheep producers in the mail surveys experienced losses of sheep or lambs in 1990, while 36% of the producers in the telephone survey experienced losses. Chi-square analysis revealed there were no significant differences between the mail and telephone surveys for questions regarding number of producers who lost sheep or lambs to predators in 1990 ($P < 0.000$), the value of sheep and lambs lost to predators in 1990 ($P = 0.001$), and the perceived severity of damage ($P = 0.001$). Since there were no apparent differences between the 2 groups, we pooled the mail and telephone survey data for the remaining analyses.

Producers that experienced sheep or lamb losses were asked to identify the predators that caused damage. Coyotes were identified as causing 86% of sheep losses with 11% due to dogs and 3% unknown (Fig. 1). Lamb losses to predators were similar: 90% to coyotes, 7% to dogs, and 3% were unknown. Coyotes are, by far, perceived to be the major predator problem for the sheep industry in Nebraska. Some caution must be used in interpreting these data, however, since there is potential for bias in landowner reports of predation. It is often difficult, even for trained and experienced field personnel, to discern between actual predation and scavenging with complete confidence, and to determine the species of predator responsible for damages. Although coyote population data are not available, there is a common perception among the public and natural resource agency personnel in Nebraska, that the coyote population has increased dramatically through the 1980s. In addition, there was a substantial increase in the number of requests for assistance for coyote control made to Nebraska Animal Damage Control in the late 1980s (C. Brown, pers. commun.). Associated factors most commonly cited include the reduced statewide harvest of coyotes because of low pelt prices and the increased availability of secure habitats on land enrolled in the Conservation Reserve Program.

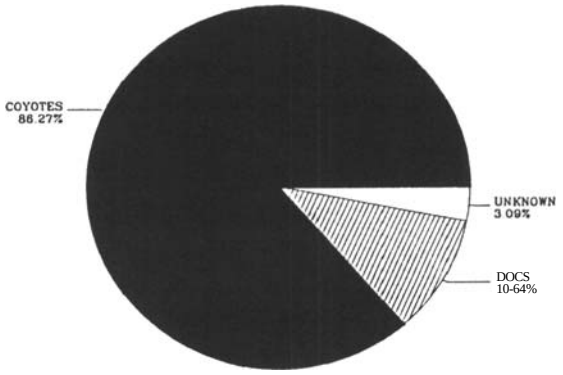

Fig. 1. Predators identified by Nebraska sheep producers as responsible for sheep losses (n=517), during 1990.

Sheep producers were asked if their losses to predators had changed since 1985; 54% reported an increase, 10% reported a decrease, and 35% said their predator losses remained the same (Fig. 2). Many factors such as local predator densities, predator behavior, type of farm/ranch operation, and damage control activities are associated with such perceptions.

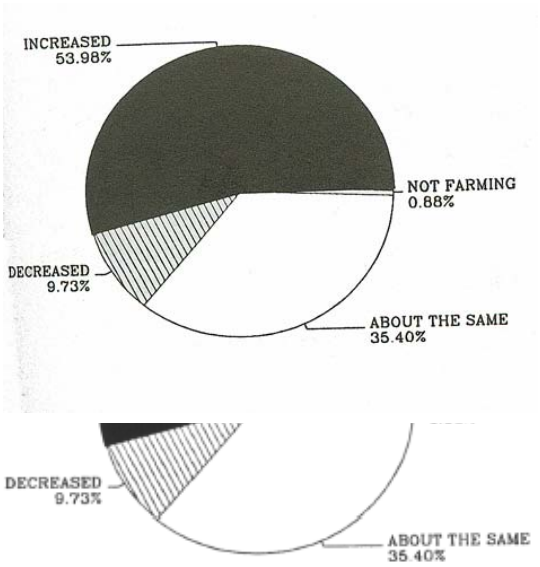

Fig. 2. Perceptions of Nebraska sheep producers toward the level of predator losses sustained since 1985 (n=113).

Producers were asked how they felt about the severity of the losses they experienced from predators. Thirty-seven percent of producers surveyed considered their losses light, 24% felt the losses were moderate, 27% substantial, and 13% severe (Fig. 3). These responses may reflect the actual severity of losses or the tolerance that producers have for predation. Attitudes can vary considerably, depending on past experience, market prices, general economic conditions and other environmental/social factors.

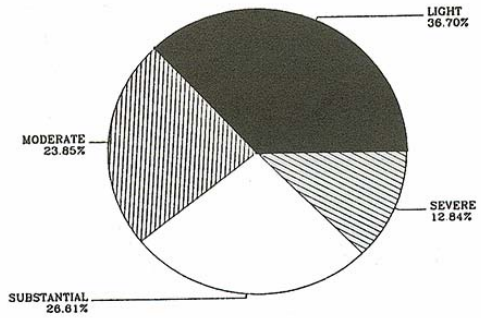

Fig. 3. Description of the severity of predator losses sustained by Nebraska sheep producers in 1990 (n=109).

We anticipated that coyotes would be responsible for the majority of predator-associated sheep losses in Nebraska. Therefore, we asked producers to reveal their attitudes toward the statement, "Coyotes are a serious threat to the sheep industry in Nebraska." Eighty-five percent agreed that coyotes were a serious threat, 8% disagreed, and 7% had no opinion (n=181).

To determine the effects of experience with predation losses on attitudes toward coyotes, we cross-tabulated responses that reported losses in 1990 with responses to the statement, "Coyotes are a serious threat to the sheep industry in Nebraska." Seventy-eight percent of the producers who had experienced sheep or lamb loss to predators in 1990, strongly agreed with the statement. An additional 20% agreed with the statement, 1% disagreed, 0% strongly disagreed, and 1% had no opinion (n=180). Most producers who reported no losses in 1990 also felt that coyotes were a threat: 35% strongly agreed, 40% agreed, 11% disagreed, 3% strongly disagreed, and 12% had no opinion. Sheep producers, who have

recently experienced sheep and lamb losses to predators, appeared to have highly polarized attitudes against coyotes. Producers who did not experience predator losses in 1990, may have developed their attitudes from previous experience with losses to coyotes, or influence from other producers or the media.

We also were interested in attitudes of Nebraska sheep producers toward the U.S. Department of Agriculture-Animal and Plant Health Inspection Service-Animal Damage Control (APHIS-ADC) program in Nebraska. In 1990, Nebraska's program involved 25 of 93 counties that participated in a cost-share agreement with APHIS-ADC. Landowners within cooperating counties received "hands-on" assistance from APHIS-ADC wildlife specialists in preventing and controlling damage from predators and other problem wildlife species. Twenty-nine percent (94) of the respondents owned operations that resided within cooperating counties in 1990. Thirty-five percent of all respondents were aware that they could or could not receive ADC assistance in their county in 1990. Twenty-one of the 94 producers who owned property in cooperating counties requested and received assistance in 1990. Seventeen of those 21 indicated that ADC had been successful in reducing their predator damage problems, 2 reported ADC was unsuccessful, and 2 did not report.

The survey was also used to determine sheep producers' attitudes toward a Legislative Bill (LB142) that was before the Nebraska State Legislature in spring 1991. If passed, LB142 would legislate an APHIS-ADC program that would provide operational and technical assistance to people with wildlife damage problems throughout the state of Nebraska. The bill would require a $300,000 cost-share for Nebraska. Thirty-one percent of these respondents strongly supported the bill; 33% supported, 9% opposed, 4% strongly opposed, and 25% had no opinion (H=282). Most of the respondents that had no opinion, expressed that they needed more information about LB142 before making a decision.

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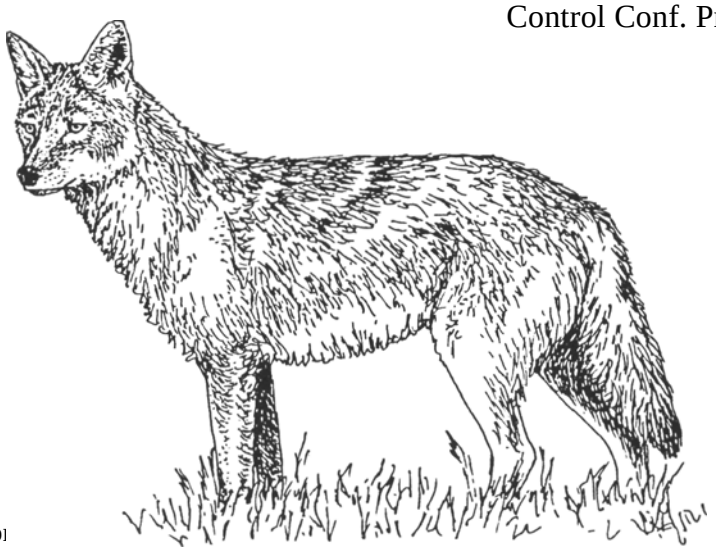

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