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USDA RESEARCH ON IMPACTS OF PREDATION
LOSSES AND OF ALTERNATIVE CONTROL STRATEGIES

by

Russell L. Gum
and
Richard S. Magleby

ABSTRACT*

This research by the U.S. Department of Agriculture, Economic Research Service, was done at the direct request of Congress, and with special funding in fiscal years 1974 and 1975.

Basic questions guiding the research were:

1. How sizable are predation losses? How many producers are effected?
2. What effect has predation had on the decline of the sheep industry?
3. What are benefits and costs of predator control programs?

Predation Losses

Predators, principally coyotes, were the major cause of lamb and sheep losses in the western United States in 1974, according to surveyed farmers and ranchers. Rates of loss to coyotes varied considerably among individual farmers and ranchers; while many had no or minor predation problems, others reported very high losses. Overall in the western United States, losses attributed to coyotes in 1974 numbered 728,000 lambs (more than 8 percent of all lambs born) and 229,000 adult sheep (more than 2 percent of the inventory), representing a third of the total lamb deaths. These losses cost U.S. sheep producers some \$27 million in lost returns in 1974, while consumers lost some \$10 million in benefits because of higher prices for lamb and reduced quantities available.

*Abstract of remarks given before the Third Great Plains Wildlife Damage Control Workshop, November 30 - December 1, 1977, Rapid City, South Dakota.

Affects on the Sheep Industry's Decline

Former sheep producers in Colorado, Texas, Utah, and Wyoming were surveyed to determine why they had discontinued sheep production. From 40 to 60 percent were found to have continued in some form of agricultural business, usually involving cattle. The others had retired or taken off-farm employment. Generally, the former sheep producers had smaller scale operations, more equity in the business, higher predation losses, lower earnings, and were older than producers continuing in the sheep business. Factors which they rated of greatest importance in their decisions to discontinue sheep production were high predation losses, low lamb and wool prices, shortage of good hired labor, and their own age.

Impacts of Coyote Control Alternatives

Present and alternative strategies for coyote control in the western United States were evaluated using a computerized simulation model, which predicted the economic and socio-environmental impacts of each. The results are tentative, being based upon hypotheses regarding important biological relationships which need further testing. However, the results do provide the most comprehensive analysis available for the guidance of decisions on coyote control.

Evaluations and comparisons were generated for three sets of alternative strategies to actual (1974) control:

1. Increases or decreases in total expenditure using the same basic mix of methods.
2. Increases in expenditures for one method at a time.
3. Simultaneous changes in both expenditures and mix of methods.

The predicted results of increased expenditures from the 1974 level of \$7 million up to \$20 million were a gradual decrease in lamb losses and an increase in social and net economic benefits. Beyond the \$20 million level of expenditures, net economic benefits decline slightly and socio-environmental benefits declined rapidly. At expenditures below 1974 levels, both economic and socio-environmental benefits declined substantially.

Changes in mixes of control methods were discovered which permitted both economic and socio-environmental benefits to increase. These alternatives included increased use of the M-44 and aerial gunning and decreased use of traps.

Copies of published reports from this research may be obtained by writing to Environmental Economic Studies, NRED-ERS, U.S. Department of Agriculture, Washington, D. C. 20250.