# Utah's Big Game, Livestock, and Range Relationship Research Project

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IN THE fall of 1946 state and federal agencies interested in big game-livestock range in Utah pooled their efforts in a cooperative research project. It was generally agreed that serious problems existed on big game-livestock ranges but there was wide divergence of opinion on the causes, effects and possible remedies. The objective of the study therefore was to gather facts and develop principles and concepts to form the basis for management of range lands from the standpoint of utilization by big game and livestock and for conservation of other values.

Agencies which entered into cooperative agreement are:

1. Utah State Fish and Game Department
2. Utah State Agricultural College
3. United States Fish and Wildlife Service
4. United States Forest Service
5. United States Bureau of Land Management

## Organization

An administrative committee consisting of one member from each cooperating agency was appointed to handle questions of policy, administration, and general supervision.

A project research committee consisting of the project leader from each agency actively engaged in research (first three agencies above and the Intermountain Forest and Range Experiment Station of the Forest Service) was established. This committee was instructed to make a problem analysis, develop a unified research program, coordinate detailed work plans and annual schedules, and carry out the program cooperatively.

Research has been conducted since January 1, 1947 in accordance with this cooperative agreement. The chief advantage of such cooperation is that talents and equipment found in the different agencies fit the various lines of work. For example, the State College is particularly well equipped to handle chemical analyses of forage plants and run digestion, nutrition, and feeding experiments. The State Fish and Game Department is set up to make statewide surveys, trap deer for migration studies, and check deer kill on study areas. The U. S. Fish and Wildlife Service have biologists qualified for making studies of life history, census methods, and herd productivity. The experience of the Intermountain Forest and Range Experiment Station in sampling and measuring range forage can be used to advantage in open range studies of condition and trend, game-livestock competition, and grazing capacity of range. The U. S. Bureau of Land Management and the regional administrative office of the Forest Service assist the project in an advisory capacity; the Utah Cooperative Wildlife Research Unit collaborates by assigning graduate students to specific phases of the project. Cooperation thus permits the functioning of a well-rounded research program. Wherever possible, the different lines of work are carried out together.

## The Big Game-Livestock Situation in Utah

In analyzing the big game-livestock range problems in Utah the research committee has compiled pertinent data, the highlights of which follow (Julander, *et al.*, 1950).

Fifty-four percent of the national forest range in Utah is recognized as problem area because of overgrazing. Of this total, 41 percent is charged to livestock, 10 percent to both deer and livestock, and the remaining 3 percent to deer alone (Fig. 1). Data for range conditions outside of national forests are not available but they are believed to be at least as serious as those inside.

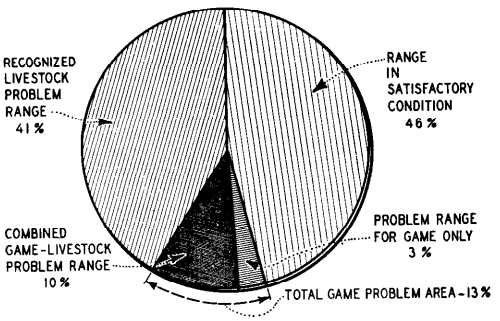


Fig. 1. Range condition on Utah National Forests in 1948. Most of the deer problem range is also overgrazed by livestock, but deer alone have depleted some areas.

Of the 53 deer herd units in Utah, 38 have recognized deer problem areas where the important deer forage is depleted by overstocking. In the northern part of Utah deer problem areas are confined largely to winter range but in southern and western Utah summer problem areas are not uncommon. Although problem ranges make up but small percentages of the total deer herd units they are key areas and limit deer production.

Most of the deer problem areas are overgrazed by livestock as well as deer. Since sheep grazing habits are believed to be similar to those of deer, it is reasonable to expect that more deer problem areas might be located on sheep or common-use range than on cattle range. However, data from national forests (Fig. 2) show that the kind of livestock use found on deer problem areas is roughly proportional to the kind of livestock use found on all national forest land in Utah. Apparently deer problem areas occur wherever deer populations are excessive regardless of class of livestock present although livestock have usually contributed to the range depletion. Much of the deer problem range shown in Figure 2 to be grazed by deer alone has in the past been overgrazed by livestock. However, there are game problem areas which have never been used by livestock and they show clearly that deer without the help of livestock can deplete a range. When deer alone deplete a range, grass usually thrives at the expense of choice deer forage. Therefore, destruction of protective soil cover is not as serious as when both deer and livestock overgraze an area.

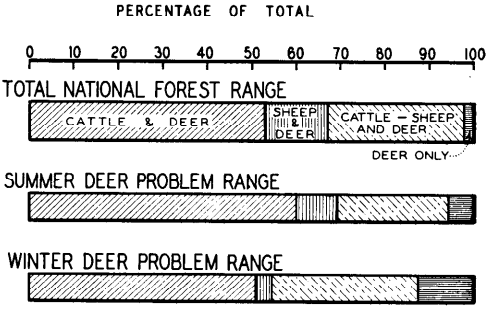


Fig. 2. Grazing use on Utah National Forests in relation to deer problem range. Deer problem range occurs where deer are too numerous, regardless of other kinds of livestock present.

The number of big game hunters in Utah has increased very rapidly and the trend is still upward as shown by Figure 3. With the present upward trend in numbers of deer hunters, the demand is soon likely to exceed the supply of deer. Since, Utah's deer ranges are believed to be fully

stocked and in many cases are known to be overstocked, additional conflict between sportsmen's and stockmen's interests might be expected.

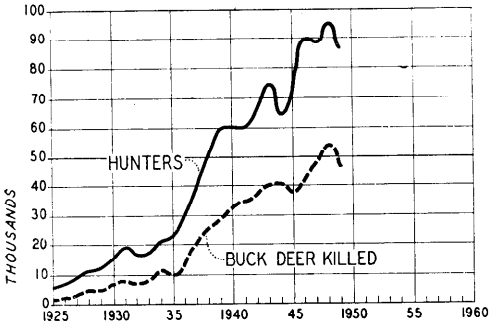


FIG. 3. Deer killed and numbers of hunters in Utah. The rapid upward trend in hunters increases demand for more deer on ranges already heavily overused.

Data from national forest ranges show a steady reduction in permitted livestock since 1924. Cuts have been made to relieve overgrazed range and protect watersheds. At the same time increases in big game use are recorded. Because of these compensating trends, total animal units of use apparently have not changed greatly. Much of the estimated increase in big game is a result of better censusing. However, recent counts of several herds and deer kill data for the State indicate that estimates of big game numbers are still too low. The fact that demands of both livestock men and sportsmen are far in excess of the capacity of the range to produce has created a problem of range allocation involving both economic and non-economic values.

About one-fifth of the deer range in Utah is privately owned. Many of the deer problem areas are on private grazing lands and orchards and farmlands are often adjacent to deer concentration areas. This has added to the controversial big game-livestock problem in Utah.

## PROBLEMS FOR RESEARCH

The project research committee on game-livestock studies in Utah lists the following questions to be answered by research:

1. What is the nature and extent of competition for forage between big game and livestock, and what are the limitations for maximum sustained yield production of both on multiple-use ranges?
2. To what degree can important game forage species be utilized to insure sustained forage yield on ranges in satisfactory condition or recovery on deteriorated ranges?
3. What are the indicators of range condition and trend that can be used as guides in administration of game-livestock ranges?
4. How can grazing capacity of range be determined for game and for combined use of game and livestock?
5. What are the effects of big game on watershed values?
6. How can game numbers be determined with reasonable accuracy?
7. What are the seasonal and permanent migrations of big game?
8. What annual production for hunter harvest can be expected from game herds?
9. What are the factors affecting big game productivity and how can these factors best be controlled by management?
10. What are the social and economic values involved in game-livestock production?

Another problem for research is to determine how depleted game range can be restored. What effect does grass seeding have on game forage supply? What are the possibilities of reseeding browse forage? How can game be managed to provide protection necessary for plant establishment on reseeded areas? Research which would lead to an action program of building up depleted game range might

accomplish two things—increase game forage and promote better cooperative management of game herds by reducing resentment of sportsmen against the present program of reducing game to balance with forage supply.

## The Research Program

In an attempt to answer these questions the project research committee has outlined and is now working on the following cooperative research program for the State of Utah. Research work is correlated by the research committee so that duplication of effort is avoided and the different phases of study supplement each other.

In the following outline an asterisk indicates major responsibility or center of activity. Letters indicate the agencies participating in the various studies: FS= Forest Service, FG = State Fish and Game, AC = Utah State Agricultural College, FWL = Fish and Wildlife Service, RU = Utah Cooperative Wildlife Research Unit.

### *I Animal Phase*

A. *Census methods*
   1. Winter reconnaissance (FWL*, RU)
   2. Airplane counts (FWL*)
   3. Pellet group counts (FWL*, AC*, RU)
   4. Sex ratio (FWL*, RU)
   5. Lincoln index (FWL*, FG*)
   6. Strip census (FWL*, RU)

B. *Productivity studies*
   1. Legal kill and population trends (FWL*, FG*)
   2. Herd composition studies (FWL*, RU)
   3. Pregnancy studies (FWL*, FG)
   4. Mortality studies (FWL*, FG)

C. *Miscellaneous*
   1. Weights and measurements (FWL*, RU*, FG*)
   2. Migrations (FG*, FWL)
   3. Statewide inventory (FG*, FWL)
   4. Life history (FWL*, FG*)

### *II Range Phase*

A. *Big game-livestock food habits*
   1. Open range studies (FS*)
   2. Feeding native forage to confined animals (AC*, FG*)
   3. Paddock grazing studies (AC*, FG*)
   4. Nutritive values of game forage (AC*, FG)
   5. Techniques of determining forage habits (AC*, FS)

B. *Range and forage studies*
   1. Indicators of game-livestock range condition and trend (FS*)
   2. Utilization standards of game forage (FS*)

C. *Grazing capacity studies*
   1. Fenced paddocks with known numbers (AC*)
   2. Open range (FS*)

### *III Social and Economic Factors Involved in Game Livestock Production (AC*, FS)*

### *IV Evaluation of Results and Revision of Research Program*

## Discussion

From the foregoing information it is clear that Utah has unintentionally overexpanded in big game as well as livestock numbers. Ranges are depleted and because much-needed livestock and deer reduction programs are in progress, conflicts have developed which interfere with the application of good management practices.

There is mutual misunderstanding between many sportsmen and livestock men. Stockmen's interests on public lands and their legal rights on private lands are not fully appreciated by sportsmen. Likewise, recreational values important to sports-

men are not fully appreciated by all livestock men. The chief point of difference involves the extent of competition between game and livestock.

Experience has shown a general lack of understanding of game management problems: Concepts of proper stocking are often based on hunter success or comparison with previous peak numbers rather than on available forage; concepts of good hunting are often flavored by past experience on badly overstocked areas; proved practices such as sustained yield and multiple use are not well understood. This lack of understanding justifies an extensive, sustained program of public education.

Public land administrators are asking for more definite and reliable guides to good management of big game-livestock ranges. Their needs emphasize the desirability of a thorough-going program of research. Such a program is being undertaken by the Utah Big Game, Livestock, and Range Relationship Research Project.

## LITERATURE CITED

JULANDER, ODELL, W. L. ROBINETTE, A. D. SMITH, AND D. M. GAUFIN. 1950. A review of Utah's big game, livestock, and range relationship problems. Intermountain For. & Range Exp. Sta. Res. Paper 24, 53 pp. (Processed).

## CONSERVATION AS A MOVEMENT

Common sense is the type of knowledge the average fellow has about his job. Until the knowledge which the scientists have is converted into the folk knowledge or common sense of the people who are concerned day by day with the natural resources, not much happens. When, however, the concerns of the scientists and the concerns of the common people are recognized as the same concern, a movement gets going.

Dr. Carl C. Taylor
*in* Journal of Soil and Water Conservation, July 1950