

SUMMARIES OF RESEARCH PROJECTS CARRIED OUT IN 1962

The Social Role of the Aging Ungulate Margaret Altmann University of Colorado Project Number 77

The research on the Social Role of the Aging Ungulates, sponsored by the National Institutes of Health through the University of Colorado, was carried out according to plan during the 1962 field work period. Evaluation and interpretation of data and observational materials are still in progress and shall yield extensive reports later on.

Some of the findings shed light on the differential role of the sexes as to behavioral pattern in old age. For instance, aged females in elk and bison occupy frequently a social position within the herd or group. This position permits the aged elk or bison to participate to an extent in the shielding, warning and defense activities of the herd. Participation in the care of the calves is also part of this pattern. Only during the stress period of the fall rutting season have we observed occasional cases in which aged elk cows drop out of a group and live alone or are joined by a few yearlings. Aged bison cows were never found in solitary positions.

In contrast to these behavior patterns in females we found that aged bison bulls show any of the following behavior types:

- 1) The bison which stays on in the herd in prominent position despite old age.
- 2) The aged bison which leaves the herd and lives a solitary life.
- 3) The aged bison yielding to threat or combat to stronger and younger bulls moves into marginal position to the herd, he lives as "outrigger". "Outrigger" position means that the bison herd is within scenting, hearing or visual distance and that the aged bull shares the movements of the herd. Temporary rejoining and leaving of the herd have been noticed in this type.
- 4) The aged bison which forms an outside small bull band or takes a single younger bison as a living partner.

In aged bull elk a tendency to solitary living and early migration to winter habitats has been observed.

Related research activities during the 1962 season concerned the writing of a book chapter on Naturalistic Observations on Maternal Behavior in Moose and Elk, a contribution to the Handbook on Maternal Behavior in Mammals edited by H. Rheingold, published by John Wiley & Sons (in Press).

Among the interested visitors to our research project during this summer and fall were: Professor John Emlen, University of Wisconsin; Professor W. C. Young, University of Kansas; Professor Erickson, University of Illinois;

Dr. S. Barron, N.I.H., Bethesda, Maryland; Professor K. Armitage, University of Kansas. These visitors precipitated many stimulating discussions and some were taken into the research areas for first-hand observations.

Assisted by John McLeod and Steve Martin, University of Wisconsin.
Supported by Grant No. M2599, National Institute of Mental Health.

Trends of Vegetation in the Near Six Elk Enclosures
on the Northern Yellowstone Wildlife Winter Range
Robert C. Bergstrom
University of Wyoming
Project Number 121

Four vegetation sampling methods used by Walter Kittams and Gail B. Denton in 1958 and duplicated and extended this year by the writer and William Barmore are listed below:

1. The Parker 3-step line transect.
2. 32" square quadrat.
3. Belt transect (50 and 100 ft.).
4. Photography (on all the above sampling methods).

At Junction Butte a new elk enclosure was located and erected during the summer and all of the above listed sampling techniques were used in setting up a permanent type sampling in the area. Conclusions drawn by the writer are summarized in the report submitted to Yellowstone National Park authorities for each of the six elk enclosures and similar vegetation near each enclosure. The more pertinent trends shown by the study are summarized below:

1. Grass species show little change since 1958. Apparently too much topsoil (1-3 inches) has been lost in the Gardiner-Stevens Creek area for good production on the most heavily used sites in or outside the enclosures.
2. Willow (several species of Salix) and aspen are being severely decreased in density in the Lamar-Horseshoe and in much of the northern elk range.
3. Big sage (Artemisia tridentata) is slowly, in most areas, but rapidly in the Gardiner-Stevens Creek area, being eliminated.
4. Other browse plants such as Lonicera sp., Prunus sp., Vaccinium sp., Chrysothamnus viscidiflorus, and Tetradymia canescens are less heavily damaged but are threatened in local areas.
5. Willow and Aspen are showing spectacular gains in height and diameter inside the elk enclosures.
6. On many small areas such as knolls and upper portions of south facing slopes, much of the total plant density consists of undesirable forage species such as Phlox multiflora and P. hoodi, Chrysothamnus sp., Antennaria sp., and Artemisia frigida. Increase of these species with loss of Agropyron spicatum and Festuca idahoensis is, of course, undesirable.