

RESEARCH AND RESOURCE MANAGEMENT NEWSLETTER
PRELIMINARY RESEARCH REPORT
DALL SHEEP SURVEY: NOATAK NATIONAL PRESERVE
JULY 1987

Prepared by Lee Anne Ayres

1. PERSONNEL INVOLVED WITH THE PROJECT:

Lee Anne Ayres, NPS Bio.Tech. Project Coordinator, NPS Kotzebue, AK
David James, Area Game Biologist, Project Coordinator, ADF&G Kotzebue
Observers: Kate Roney, Pam Nelson, Sarah Watson, Doug Larsen,
Bob Toby, Warren Ballard, Patricia Barry, Jenny Zimmerman
Pilots: Jim Rood - Northwest Aviation, David James - ADF&G,
Bill Lentsch - Tamarak Air, Fairbanks, Richard Kemp
- OAS-NPS, Bill Roberts: Homer Helicopter/OAS- NPS

2. RESEARCH OBJECTIVES:

- A. Survey Dall sheep populations and compare results to previous survey figures in the Noatak Preserve and Wulik Peaks area.
- B. Determine the effect of observer/pilot bias on the sightability and enumeration of sheep.
- C. Investigate the effect of various survey intensities on sightability and enumeration of sheep.
- D. Test the feasibility of using a stratified /high altitude sampling approach to estimate population size or allocation of survey effort.

3. STUDY DESIGN: (by objective)

A. Survey: Count units were determined by two methods: 1. Previously established trend-count units (Agi/Eli) 2. Using natural boundaries to delineate 20-60 sq mile areas units for surveying in areas known to be utilized by sheep. Count units were small in order to aid pilots in assisting each other and communicating locations to the helicopter crew. Small unit size also allowed increased flexibility in adding or deleting count units based on available survey time and the abundance of sheep in a unit. A block of count units were assigned to each pilot and observer (4 teams) to survey at 2.5 min/sq mi. Only experienced pilots and observers were used. Aircraft flown were two supercubs, PA-12, Arctic Tern, Cessna 206 (stratification flight) and Jet Bell Ranger. Observers were instructed to obtain total counts and attempt detailed classifications. Time spent classifying sheep was not counted as survey time. If band sizes were large (over 15) or in inaccessible locations a helicopter crew was notified and completed the classification. Four planes spent four days (1 day - Wulik Peaks, 2 days - Delongs, 1 day Baird Mts.) completing a total of 55 hours surveying (commute time not included).

B. Multiple counts of the same unit were performed to test for differences due to observers and or pilot. Three different observers and two different pilots recounted one count unit using a standard survey effort of 2-2.5 min per sq. mi.

C. The effect of different survey intensities was investigated in two count units. Units were surveyed at the standard effort (2.0-2.5 min/sq mi) and then resurveyed by a different team at a higher intensity in two units and at both a higher and lower intensity in one unit.

D. In the DeLong Mts. more area existed than was within our ability to survey. To test if a C-206 could be used to determine if count units contained a high, low, or medium density of sheep 6 previously counted units and 6 unsurveyed units were surveyed at approximately 1 min/sq mi (half the standard effort). The observation team consisted of pilot, recorder, and two observers. Only total numbers of sheep were recorded. Numbers of sheep observed were compared to those observed during normal and high intensity surveys of the same units.

Project Costs: Approximately \$25,000 was spent on aerial costs for this survey (area surveyed = 1,630 sq miles, average commute time from base was 45 minutes.)

4. TEAM EVALUATION OF THE STUDY DESIGN:

I would recommend that the use of the helicopter be reduced or restricted for composition work in areas where high densities of sheep have already been documented. This would not necessarily have to be done in conjunction with the survey. The density and group sizes of sheep in the DeLong and Wulik Peak areas were too low to make having it available a benefit. Observers in supercubs seemed to see more sheep than the helicopter crew. I believe this is due to the terrain and behavioral characteristics of this population. I think it would be possible, and perhaps easier, to treat the enumeration of sheep and the recruitment/composition data acquisition as separate projects.

In areas of the Preserve where sheep presence and movements are unknown I think the stratification idea has potential for identifying areas to be surveyed. The borders of a designated study area is an example of an area where the C-206 could be used. A cost/time analysis should be done. Having the man and plane power available (4 pilot observer teams) to cover the areas in a minimum number of days reduced the problems imposed by artificial boundaries of the count units.

5. PRELIMINARY RESEARCH RESULTS:

A total of 1219 sheep were counted in the Baird, DeLong, and Wulik Peak study areas (1630 sq mi). The Baird population (665 sheep:592 sq mi) demonstrated no significant change in either overall number or composition of sheep from the counts done in 1983-6. The

ratio of legal to sublegal rams is representative of other counted populations that are considered stable or "healthy". The Delong Mts, in contrast was characterized by a lower density of sheep than was found during previous surveys (F. Singer, 1983). In 1983 and 1987 the density of sheep in the Delong's was lower than that for sheep in the Bairds Mts.

In the Delongs, the representation of the older age classes of rams was quite noticeable. This could be explained by either lack of hunting pressure or a dramatic recruitment loss in 1982-4. Survey results do not address or answer this question. Ram/Ewe and Legal/sublegal ram ratios were similar to those reported for unharvested populations.

6. IN YOUR OPINION, HOW COULD THIS INFORMATION BE USED BY THE PARK WHERE THE RESEARCH WAS PERFORMED?

The count units and methodology recommendations should be useful when designing following annual and Preserve wide surveys. Every effort should be made to standardize techniques. It is hoped that these recommendations and outlined needs regarding understanding why we see the population structures we do, be useful when requesting support for longterm monitoring of climatic conditions and predator populations. This is needed in order to understand the population trends resulting from annual survey work for several species.

7. WHAT FORM WILL THE FINAL RESEARCH RESULTS BE IN? WHERE WILL THESE FINAL DOCUMENTS AND THE RAW DATA BE LOCATED AND HOW CAN THEY BE ACCESSED BY INTERESTED MANAGERS AND SCIENTISTS?

Final results will be presented in ADF&G and NPS annual survey reports. Available at Kotzebue or Regional Offices (ADF&G- Anchorage/Nome, NPS- Anchorage). Raw data will be stored in Kotzebue NPS office with a duplicate copy in ADF&G, Kotzebue)

8. PLEASE LIST ANY INFORMATION THAT YOU FEEL WOULD BE HELPFUL TO FUTURE RESEARCHERS/MANAGERS WORKING ON THE SAME OR SIMILAR PROJECTS:

Sara Watson was an excellent source of advice, expertise on sheep behavior and survey techniques plus historical background of surveys and personnel involved in them. I would recommend any one planning on doing sheep surveys or working on a survey design to contact her. (ADF&G Fairbanks) Other people to contact that have been involved with sheep surveys are Layne Adams (NPS, Anchorage) Lyman Nichols (Former ADF&G biologist, Wayne Heimer (ADF&G, Fairbanks). I would like to stress the importance of having skilled observers. I think it is worth spending part of a survey day having different teams resurvey the same area to compare numbers and composition of sheep for a quick retraining for the season and easy way to evaluate observer/pilot teams. A video showing sheep as they would be observed from a survey plane would be another way of refreshing observers and assuring that classification and data recording methods are understood by those involved and standardized.