WR 280 Practicum Report
WILDLIFE MANAGEMENT TECHNIQUES

by

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Wildland Recreation Program

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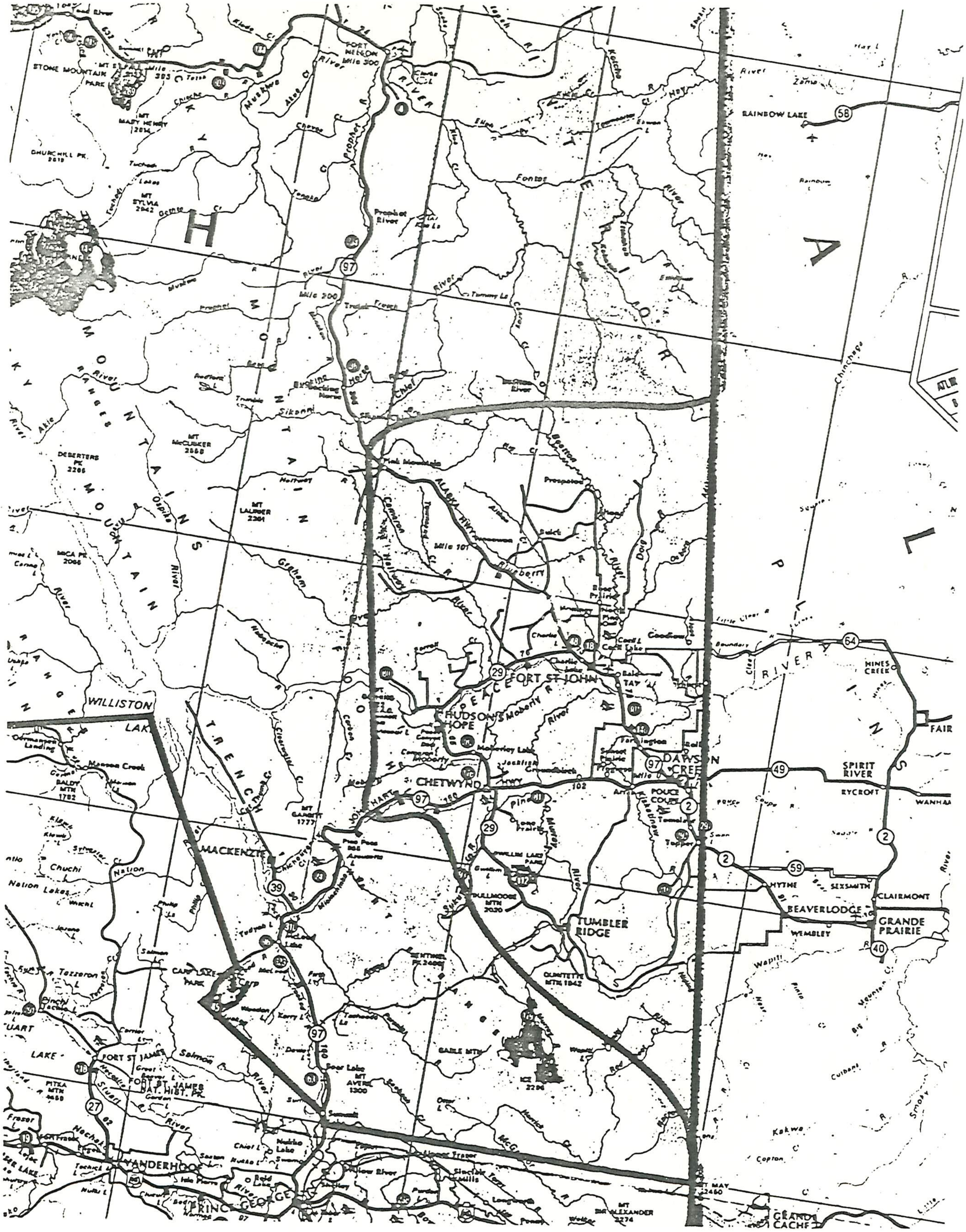
Submitted to Len Dunsford
in partial fulfillment
of the requirements of
WR 280

KEY MAP



Omineca-Peace Region

Scale= 1:2,500,000

SUMMARY

The Wildland Recreation Spring Practicum has provided me with some practical experience in the field of wildlife management. While under the supervision of Rob Woods, Habitat Protection Technician, of the Fort St. John Fish and Wildlife Branch of the Ministry of Environment and Parks, I assisted the agency with their normal activities. My two weeks of volunteer work with them has given me a good understanding of three wildlife management techniques: radio telemetry, classified counts, and ungulate aging/Harvest Cards. Radio telemetry provides information on habitat preference. Classified counts provide recruitment rates, and sex ratios. Ages of teeth, and the other information obtained from Harvest Cards can be used to determine the mean age of the population and the relative success of hunters in each Management Unit. All three of these wildlife management techniques provide wildlife managers with valuable data for managing wildlife populations, provided any assumptions made when interpreting the data are correct, and that the confidence levels of the data are within acceptable limits.

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WR 280 PRACTICUM REPORT

WILDLIFE MANAGEMENT TECHNIQUES

1.0 INTRODUCTION

1.1 Purpose

The Wildland Recreation Spring Practicum Project is designed to give the student some practical experience in his/her chosen field. This practicum provided the wildlife managers of the Fort St. John area with assistance in their daily activities, ungulate ages from the 1987 hunter harvest, and data for the classification of mule deer in Management Unit 7-34. This report discusses three wildlife management techniques used by the Fort St. John Fish and Wildlife Branch in their management of wildlife populations: radio telemetry, classified counts, and ungulate aging.

1.2 Description

The practicum was provided by the Fort St. John Fish and Wildlife Branch of the Ministry of Environment and Parks. Rob Woods, Habitat Protection Technician, supervised the practicum. The two-week practicum included aging 250+ ungulate teeth from the 1987 hunter harvest, participating in three classified mule deer counts, assisting in locating eight radio-collared mule deer, and assisting with other miscellaneous daily activities.

1.3 Objectives

The objectives of the practicum are as follows:

1. To assist the agency with their ordinary activities.
2. To finish aging the remaining teeth from the 1987 hunter harvest.
3. To provide data for the classified mule deer counts in M.U. 7-34.

2.0 MULE DEER TELEMETRY

2.1 Background

The population of mule deer (Odocoileus hemionus hemionus) in the Fort St. John region is flourishing. Because these animals are numerous and easily accessible by vehicle due to the many fields and cut-lines in the area, they lend themselves well to telemetry studies. In February, 1987 the Fish and Wildlife Branch captured and collared twenty mule deer does. One animal died within hours due to capture-related stress and two more animals were shot in the September, 1987 Limited Entry Hunt. The seventeen remaining deer have been studied and their movements recorded for fourteen months. This mule deer telemetry study is being done to determine the following:

1. home range size for comparison with deer of other regions,
2. migration patterns and routes, and
3. seasonal distribution and habitat preferences.

2.2 Study Area

The seventeen mule deer in this study are all located in ranching and agricultural areas scattered throughout the northern and eastern portions of the Fort St. John district. The terrain, characteristically, ranges from rolling to flat. The vegetation of the area is a mixture of agricultural field crops such as hay and grain, shrub/grassland, aspen forest, and a few scattered conifer stands. Roads and cut-lines crisscross the entire area, making it very accessible to the public, hence the deer are accustomed to frequent human disturbance.

2.3 Methods

The locations of the seventeen radio-collared mule deer are determined through the use of a hand-held antenna/receiver. Each radio collar sends out a signal on a different wavelength, and the receiver can be adjusted to pick up each individual signal separately. The triangulation method will be used to locate the radio-collared deer. The steps to follow are listed below (Ommundson 1988):

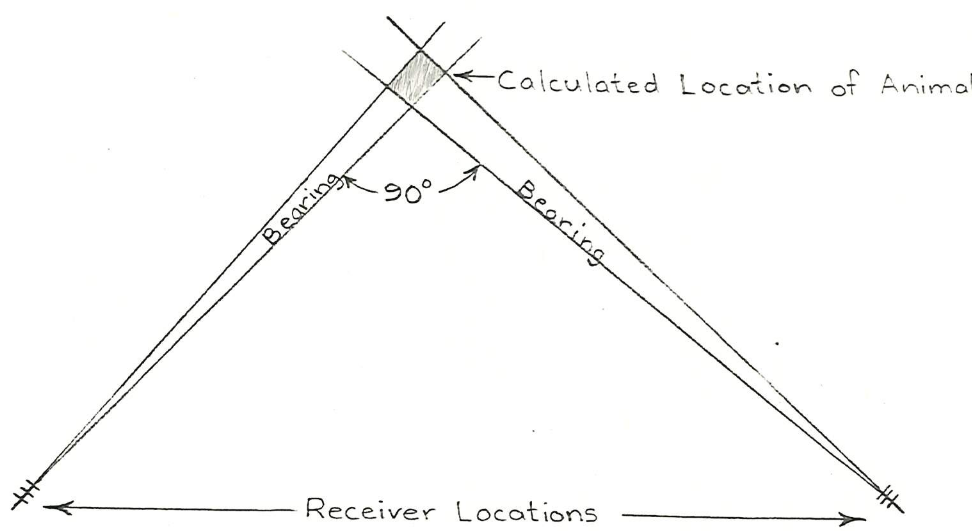
1. Go to a location where a signal will be received from the animal you wish to track.
2. Make sure that the receiver is on the proper frequency to receive a signal from that particular animal.
3. Find the bearing of the direction that the animal is located. This is done by pointing the antenna horizontally and then rotating it on the spot until the loudest signal is received. The signal is loudest when the antenna is pointed directly

at the animal. Usually a bearing range of about 5° is as precise a location as one can get.

4. Move to another location where it is possible to get a bearing that is at a 90° angle to the first bearing as Figure 1 illustrates. The closer the two bearings are to a 90° angle, the more precise the calculated location will be.

5. Remember to record the bearings taken as well as the locations they were taken from. The receiver locations and bearings can then be plotted on a map and the animal's location determined.

Figure 1. Triangulation method of telemetry



A reading for each animal should be taken at least every two weeks. After the animal locations are plotted on a map, the UTM grid reference for each location is calculated and entered into a computer program which calculates the area, shape, and location of each animal's home range.

Because the study area is relatively flat, it is well suited to the triangulation method of wildlife telemetry. Mountainous terrain can cause signals to bounce or reflect and makes this method much less accurate.

2.4 Interpreting the Results

As mentioned previously, the mule deer in this study have only been monitored for fourteen months. Before any conclusions or results are used for interpretation, the animals should be monitored for at least twenty-eight months. This is a sufficient amount of time for seasonal patterns in the animals' movements to show up (Woods 1988).

However, even fourteen months of study have shown that some of the deer are migratory (see Figure 2), and that some occupy a small year-round home range (see Figure 3).

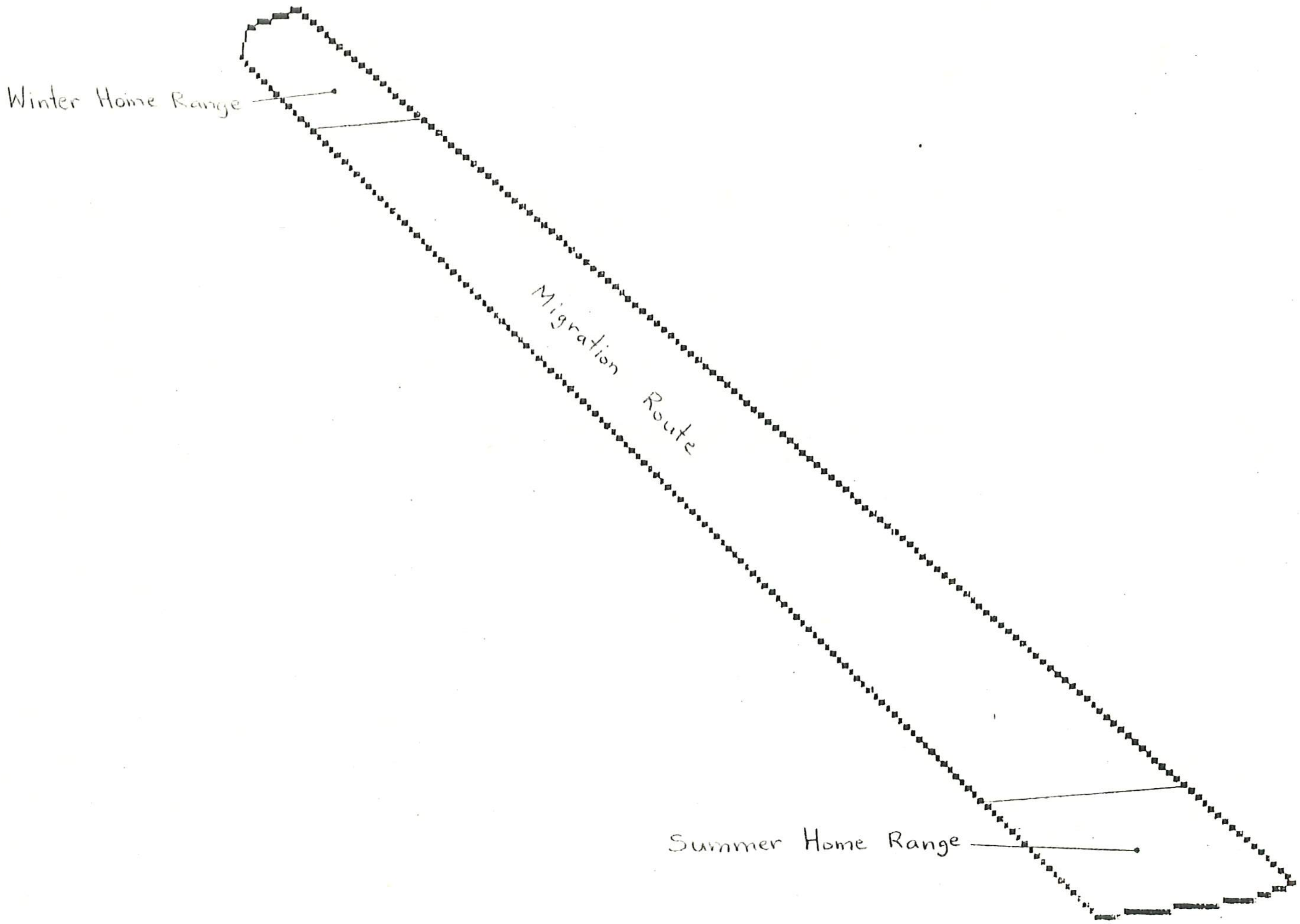
A deer's home range size may indicate relative food availability, and/or population density, both important things to know when managing wildlife. Seasonal movement and habitat preference are also very important pieces of information that can be gathered through telemetry studies. A specific example of how this knowledge may affect the management decisions of a wildlife manager is as follows:

> After the fourteen months of monitoring radio-collared deer north of Fort St. John, it was discovered that the deer in one area were often located within a heavy stand of lodgepole pine during periods of severe winter weather. In March, 1988 that stand was logged. No pine trees were

Minimum Convex Polygon

FIGURE 2. Computer printout of a migratory radio-collared deer's home range.

Data file
ROS.FOR

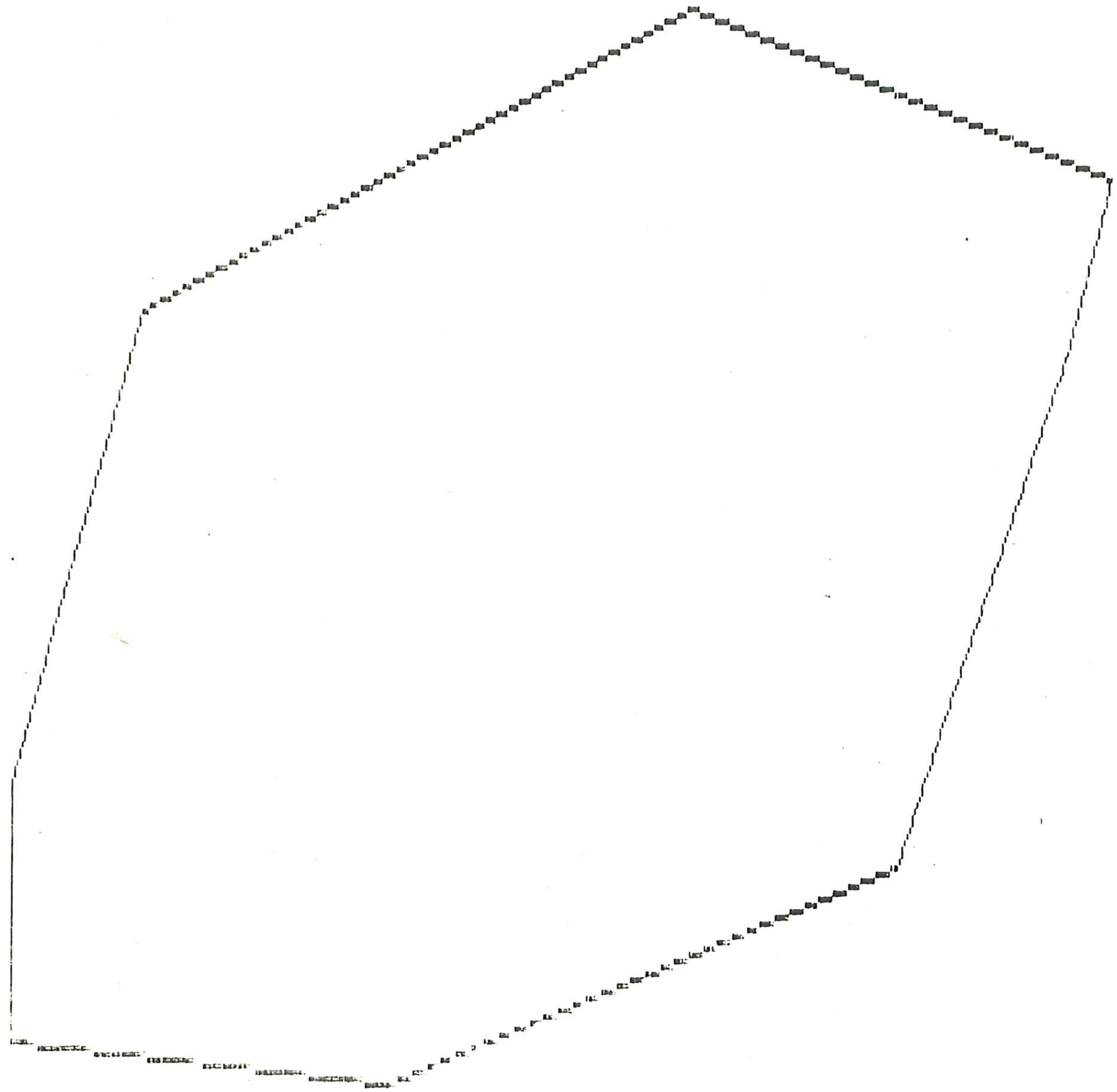


AREA:
129.6250
Sq. kilometer

Press any key to continue.

Minimum Convex Polygon

FIGURE 3. Computer printout of a non-migratory radio-collared deer's home range.



Data file
ELL.FOR

AREA:
4.4950
Sq. kilometers.

Press any key to continue.

left standing. There is now only one conifer stand remaining in this area. If further telemetry study reveals that the deer now utilize this stand during severe weather, then the wildlife managers will know that this stand must be preserved in order to accommodate the deer displaced from their previous stand of sheltering conifers.

Seasonal migration is another factor that influences wildlife management. If you know that animals are moving out of a certain area into another during certain seasons, then you know that something is causing them to move, such as human disturbance or lack of food. In either case the problem should be studied and proper steps taken to correct the problem.

3.0 CLASSIFIED MULE DEER COUNTS

3.1 Background

Management Unit 7-34, in the Cache Creek area northwest of Fort St. John, has a high density of mule deer, numerous access roads, and tends to be fairly flat, open country, and thus is ideally suited for spring classified counts.

In April/May, 1988, the Fort St. John Fish and Wildlife Branch conducted three classified mule deer counts in M.U. 7-34. These counts were conducted in order to estimate this year's recruitment rate and sex ratio for mule deer.

Counts are commonly conducted from aircraft, but spring deer counts are an exception. By spring, fawns are very difficult to distinguish from adults. It would be virtually impossible to classify them from an aircraft; therefore, these counts were done from vehicles on the ground. This method facilitates careful observation through binoculars or spotting scopes to correctly classify the deer.

3.2 Study Area

Management Unit 7-34 is a typical ranching area of Northeastern B. C. The terrain is undulating with wide flat valleys and low rounded shrub/grassland hills. Agricultural crops such as hay and grain dominate the valleys, while the upper meadows, ravines and side slopes are naturally vegetated with grasses and forbs, shrubs, or aspen and conifer stands. Roads are numerous, yet human settlement is relatively sparse.

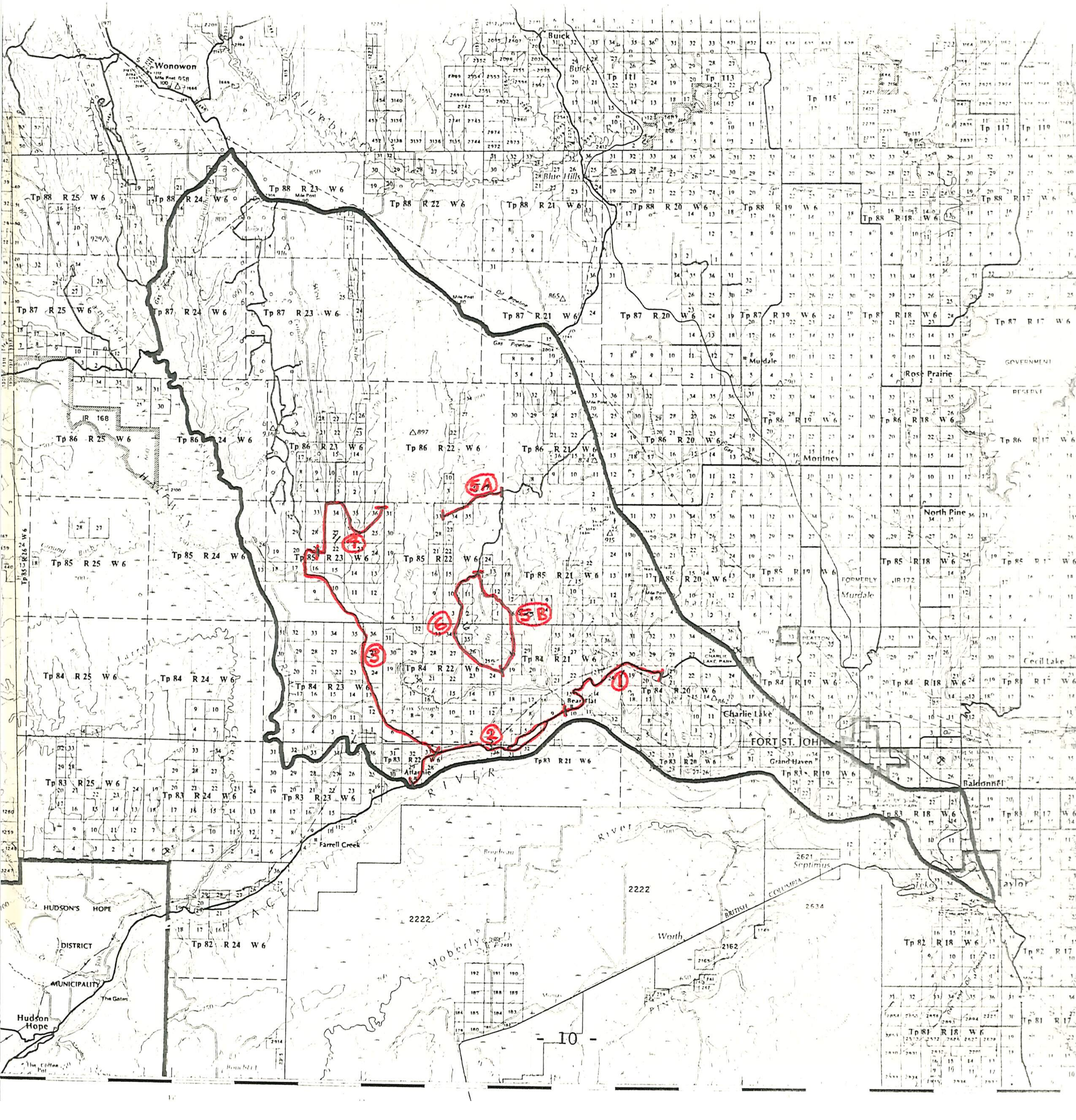
3.3 Methods

The three classified mule deer counts were conducted on three different days, commencing at 0430 hours each day. M.U. 7-34 was divided into seven transects ranging from 7 to 23km in length (see Figure 4). Transects were simply roads that accessed the area. Each transect was driven by a crew of one or two people. A total of eleven people conducted each count, with all transects being done simultaneously. For each transect, a standard form was used (see Appendix 1) to record the total number of deer in each group sighted, the number and sex of the adults in the group, the number of fawns in the group, the vegetation type that the group was located in and any additional comments that might be pertinent.

Figure 4. M.U. 7-34 showing 7 transects for mule deer classified count.

Transect

Management Unit Boundary



Bucks could be distinguished by their new antler growth, and fawns were distinguished by their short, compact bodies and short-nosed, compact heads. Deer not fitting those descriptions were obviously classified as does.

After the counts are completed, all the data is entered into the Ungulate Inventory Data Base (U.I.D.B.) Program. This program then calculates sex ratios, recruitment rate, and the confidence limits from the data.

3.4 Interpreting the Results

After three classified counts, 750+ mule deer were observed and, if possible, classified. At the time this report was written, the U.I.D.B. Program was not working properly, hence, no results could yet be derived from the data.

The greatest source of error in classifying deer in the spring is trying to distinguish between does and fawns. The fawns greatly resemble the does in spring, and thus deer may be incorrectly classified. This can be a serious problem. If incorrect classification occurs frequently enough, it can make all of the data useless. The only way to lessen the chance of incorrect classification is to use very experienced observers when doing the count--they are less likely to make a mistake.

As with all statistical analysis of data, certain assumptions must be made to make the data useful. In classified counts these assumptions are as follows:

1. all of the deer were classified correctly;

2. the sexes and ages of the deer are evenly distributed throughout the area, i.e. the bucks aren't congregating up on the higher slopes out of sight of the observers;
3. the results of the counts in this area (M.U. 7-34) correctly reflect what is true in other areas of similar vegetation, climate, and predation.

If all of these assumptions are true, then the results of the counts can provide wildlife managers with data on sex ratios and recruitment rate, both essential pieces of information to know for calculating the next year's hunter harvest.

4.0 AGING UNGULATES FROM HUNTER HARVEST

4.1 Background

Since 1984, the B. C. Ministry of Environment and Parks has issued Harvest Cards to all licenced hunters every season (see Figure 5). These Harvest Cards request that the hunter, if successful, send in the lower front incisor from his/her kill along with the completed Harvest Card. These teeth are aged, and the age is recorded and later entered into the provincial wildlife data base in Victoria. Any one of the eight provincial regions can then utilize this data base for its own specific needs. The age of the animal and a wildlife crest are sent to each hunter that submits a tooth to provide an incentive for more hunters to send in a tooth from their kill. In 1987, 750+ hunters sent in a tooth and completed Harvest Card in Region 7.

Figure 5. Sample 1987 Hunter Harvest Card

Please complete immediately after killing your animal.

1. Species killed (please check ✓)

Mule Deer ☑ Elk ☐
White-tailed Deer ☐ Moose ☐

2. Sex of animal (please check ✓)

Male ☑ Female ☐

3. Date of kill (use numbers)

Day	Month	Year
13	10	1987

4. Management Unit (M.U.) of kill 7-34 ← also enter this number on front of envelope

Consult your Hunting Regulations for M.U. numbers

5. Nearest creek or landmark (print name of location of kill)

Cache Creek

6. Kill made during Limited Entry Hunt (please check ✓)

Yes ☐ No ☑

7. Your Hunter Number 123456

complete the *reverse* side

8. Guide-Outfitter's Name (if you were guided)

NA

9. Antler tine points (enter number of points on each side)

Left 5 Right 5

10. LAST NAME: SMITH INITIAL: J

NUMBER AND STREET: 1234-1ST STREET

TOWN/CITY: GREENTREE B.C. POSTAL CODE: V1T1A2

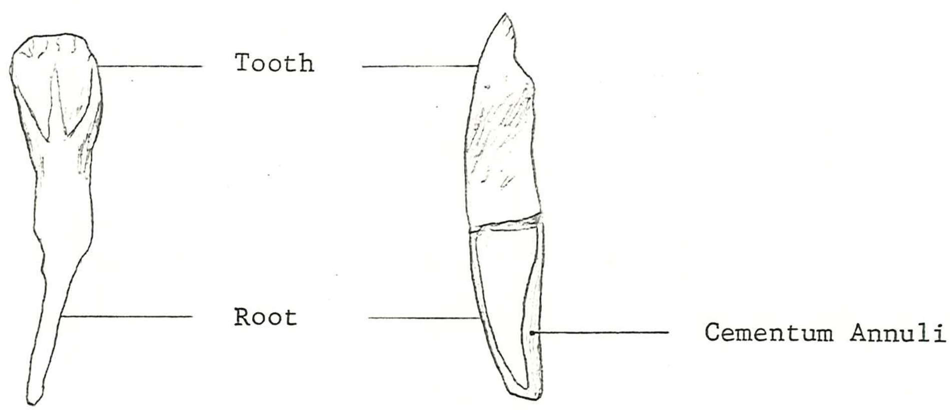
If you complete your name and address, a jacket crest and the age of your animal will be sent to you.

complete the reverse side

4.2 Methods

The root of each tooth is ground flat on two opposing sides until it is approximately 2-3mm thick. This is done using a stone-wheeled electric grinder. The tooth is then aged by counting the number of cementum annuli as shown below in Figure 6.

Figure 6. Side view and X-section of ground ungulate tooth



The cementum annuli are very difficult to see with the naked eye, so a 2X microscope is used to magnify the root and make counting easier. Each cementum annuli indicates one year of growth.

The age of the animal is then recorded on the top right corner of its corresponding Harvest Card. The Harvest Cards, complete with ages, are then sent to Victoria where they are entered into the provincial wildlife data base.

4.3 Interpreting the Results

Because an inventory of ungulate ages has only been kept for four years, there is not sufficient data to reveal any trends in hunter harvest, and age distribution. At least five years of data is required before accurate assumptions can be made from the data (Woods 1988). When sufficient data is available, however, a lot of significant information can be obtained from these Harvest Cards, such as the following:

1. Mean age of population (this assumes that hunters are not selective of age). If the mean age is very low, then one can assume that heavy hunting pressure has caused a severe reduction in the survival rate of that species, as predation and/or lack of forage is not age selective, like hunting, which allows only the killing of adults. If the mean age is high, then one can assume a poor recruitment rate in previous years.
2. Numbers of successful hunters in each area. If the number of successful hunters in an area drops drastically, then one can assume that the population in that area is suffering, and that action must be taken to prevent any further decline in the population.

The most important assumption that makes this data valid, is that the hunters that send in Harvest Cards are evenly distributed throughout the region and from year to year. Ages of animals will still be useful, but relative hunter success will be invalid.

CONCLUSION

The Wildland Recreation Spring Practicum has provided me with some practical experience in the field of wildlife management. While under the supervision of Rob Woods, Habitat Protection Technician, of the Fort St. John Fish and Wildlife Branch, I assisted the agency with their ordinary activities. The two weeks of volunteer work with the agency has given me a good understanding of three wildlife management techniques: radio telemetry, classified counts, and ungulate aging/Harvest Cards. All three of these techniques provide wildlife managers with valuable data for managing ungulate populations, providing any assumptions made when interpreting the data are correct, and that confidence levels of the data are within acceptable limits.

WORKS CITED

Ommundson, P. 1988. Lectures in Wildlife Management Techniques (Biology 272). Selkirk College, Castlegar, B. C.

Woods, R. 1988. Unpublished Personal Interview. Fort St. John, B. C.

APPENDIX 1

Deer Classification Count Form

Page ______

DEER CLASSIFICATION COUNT

M.U. 7-34

Date: ____________________ Transect No.: ____________ Driver: ____________________

Time Start: ____________ Hrs. Weather: ____________ Obs. 1: ____________________

Time Finish: ____________ Hrs.

Group No.	Total Deer	Sex/Age Comp. Buck	Doe	Fawn	Unclass.	Vegetation Type(C,S/G,A)*	Comments

* C=conifer; S/G=shrub grass; A=aspen; F=field