# ESTIMATION OF MOOSE HARVEST FOR "SMALLER" MANAGEMENT UNITS IN THE YUKON

Wayne Kale
Department of Renewable Resources, Government of Yukon,
Box 2703, Whitehorse, Yukon.

Abstract: To manage wildlife effectively, information on habitat, population structure and harvest must be integrated at the local population level. The philosophy of subdividing existing management units into "smaller" units is discussed and the 450 Game Management Subzones (GMS) in the Yukon are described. Harvest estimates for each GMS are produced by using a computerized location gazetteer that automatically processes hunting locations reported on questionnaires. A phase mailing estimation procedure and other statistical techniques to improve hunter sample estimates are outlined. Small management units, computerized gazetteers and detailed harvest statistics can provide biologists with better quality data to more effectively manage our valuable wildlife resources.

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Most wildlife management agencies in North America use hunter sample questionnaires to assess annual harvests by resident hunters of game species in their jurisdictions. Questionnaires are generally mailed at the end of the hunting season to either a random sample or all licenced resident hunters. In some questionnaire surveys "follow-up" forms or reminders are sent to non-respondents. The





returned questionnairs are used to estimate a variety of management indices including harvest distribution, hunting pressure and hunter success.

One of the major limitations of these questionnaire programs is the large size of geographical areas upon which management indices are estimated. For example, Yukon 1973-77 harvest estimates were calculated for eleven Game Management Zones (GMZ) averaging 43,000 square kilometres. Those estimates were insensitive to local differences in game abundance, hunter access and hunting pressure as statistics for many local areas were combined into one overall estimate. Increasing harvests in one local area could be balanced by decreasing ones in others, thereby negating important changes in hunter access, habitat and climatic effects. Large scale hunter sample estimates are more like public relations statistics than management indicators.

To manage a particular wildlife species effectively, information on habitat, population structure and harvest must be systematically integrated at a level reflecting the biology of the species. For big game species, the unit of concern is usually the local population level, where every animal in the local population can be considered as "potentially" interacting with every other animal in the same local population. Needless-to-say, this definition of local population is somewhat arbitrary. For example, the entire Yukon moose herd cannot be considered as one local population since a moose on the North Slope of the Yukon has no chance of interacting with another moose inhabiting the south east corner of the Yukon. Similarly, all existing Yukon GMZs are too large to have all moose potentially interacting with each other. Some smaller unit had to be chosen.

This paper presents both the philosophy behind choosing "smaller" management units and techniques for estimating harvest parameters on the "smaller" units (Kale, 1979).





## RESULTS AND DISCUSSIONS

### The philosophy of Game Management Subzones

> "In dealing with the future,...., it is more important to be imaginative and insightful than to be one hundred percent 'right'. Theories do not have to be 'right' to be enormously useful. Even error has its uses. The maps of the world drawn by the medieval cartographers were so hopelessly inaccurate, so filled with factual error, that they elicit condescending smiles today when almost the entire surface of the earth has been charted. Yet the great explorers could never have discovered the New World without them. Nor could the better, more accurate maps of today been drawn until men, working with the limited evidence available to them, set down on paper their bold conceptions of worlds they had never seen."
>
> Alvin Toffler (Future Shock, 1970, p.6)

By 1978, Yukon wildlife management biologists began to suspect that the existing eleven GMZs did not adequately reflect local wildlife distribution or harvest patterns (Kale, 1978). Local populations of sheep, goats and grizzly bears were disappearing in many areas of the southern Yukon as a result of suspected, but not documented, over-harvests caused by uncontrolled access. In order to monitor and regulate harvests for those species, it was decided to subdivide each GMZ into smaller sub units called Game Management Subzones (GMS). Since sheep and goats are alpine species, and moose, caribou and bears tend to inhabit upland areas in the fall, upland blocks were chosen as GMS units. Upland blocks have the advantage over other possible units, such as watersheds, in that the former can be explicitly defined by recognizable topographical features such as creeks, rivers, lakes and roads. Following the advice of Toffler, many of the subzone boundaries were drafted without local knowledge of wildlife populations in the area; by imaginatively extrapolating information from known areas, the entire territory was subdivided. The 450 GMS in the Yukon now allow detailed management data to be collected and permit new hunting regulations to be tailored to specific needs of local wildlife populations (Table 1).

Hunter Questionnaire Program

The implementation of the GMS system was accompanied by the computerization of the Yukon's harvest monitoring system. All Yukon hunting licences are keypunched onto a computer file that is used for the following administrative services:

1) edits all source documents for improperly issued licences,
2) produces all accounting records,
3) provides up-to-date records for enforcement checks, and
4) provides address labels for mail surveys.

The cost of keypunching each licence is compensated by time saved during the data edit and accounting procedures alone.

The hunter sample program uses the computerized list of all hunting licence holders to send questionnaires to all Yukon resident



hunters. Non-resident harvest data is collected by mandatory outfitter declarations . Each licenced hunter receives up to three different letters and questionnaires until such time as he either returns one or the post office returns the form as undeliverable. The first two mailings encourage licence holders to respond by offering them prizes totalling over $2,000. The third mailing informs them that it is mandatory to return the questionnaire (although the regulation has never been enforced). About seventy percent of the questionnaires are returned each year (Table 2).

T A B L E 1

Number of Game Management Subzones (GMS) in the Yukon by Game Management Zone (GMZ) showing the average size of subzones.

| GMZ | Area (km$^2$) | Number of GMS | Average size of GMS (km$^2$) |
|---|---|---|---|
| 1 | 96,980 | 72 | 1,350 |
| 2 | 91,980 | 93 | 990 |
| 3 | 26,830 | 20 | 1,340 |
| 4 | 63,210 | 50 | 1,260 |
| 5 | 50,570 | 50 | 1,010 |
| 6 | 6,860 | 13 | 530 |
| 7 | 11,200 | 36 | 310 |
| 8 | 26,540 | 27 | 980 |
| 9 | 5,960 | 11 | 540 |
| 10 | 38,550 | 32 | 1,200 |
| 11 | 57,090 | 46 | 1,240 |
| Total | 475,770 | 450 | 1,060 |



T A B L E 2

1980 Yukon hunter questionnaire response rates by questionnaire mailing.

| | 1st mailing | | 2nd mailing | | 3rd mailing | | overall mailing | |
|---|---|---|---|---|---|---|---|---|
| | number | % | number | % | number | % | number | % |
| Total mailed | 4677 | | 2690 | | 1596 | | 8963 | |
| Response | 1804 | 39 | 1030 | 38 | 414 | 26 | 3248 | 69 |
| Undeliverable | 183 | 4 | 64 | 2 | 59 | 4 | 306 | 7 |
| No response | 2690 | 58 | 1596 | 59 | 1123 | 70 | 1123 | 24 |

The hunter questionnaire collects both hunting locations and kill locations by specific geographical area to encourage respondents to answer the questions as completely and specifically as possible (Figure 1). This format results in the specific location data field becoming the smallest unit of data storage and analysis. Since specific locations can be combined into GMS, GMS can be summed into GMZ, and GMZ can be added to get Yukon totals, the storage of data by specific location can generate many levels of management statistics.

Hunter questionnaire location coding

Although most wildlife management agencies collect specific locations on their questionnaires, usually that information is used only during manual data editing to verify or add missing management unit information. Casual manpower is usually hired to look up each specific location name in a gazetteer and manually add or change the management unit data field. Although this technique is extremely time consuming and labour intensive, it does work when the management units are large. However, as the size of the management units decrease, there is a greater probability that specific locations will not fall into single management units. Therefore, it is impossible for manual "coders" to properly assign small management units during the questionnaire editing phase.

In the Yukon, the specific location data field is only edited for legibility and keypunched along with the other data fields,





FIGURE 1: Exerpt from Yukon Hunter Questionnaire showing address label, general information and moose hunting sections.

GOVERNMENT OF YUKON TERRITORY
DEPARTMENT OF RENEWABLE RESOURCES

Do not remove label. Please note: Hunt locations are confidential.

Dear Hunter:

Management of wildlife in the Yukon depends on the cooperation of all hunters. This form requests information about your hunting activities.

PLEASE COMPLETE AND MAIL THIS FORM EVEN IF YOU DID NOT HUNT THIS PAST SEASON.

Only answer questions about game species you hunted. Report only your kills and not those of any other hunter with whom you may have hunted.

Please indicate all locations you hunted, the Game Management Subzone (eg. GMS 7-99) if known, and the number of days you hunted at each location. Then, if you shot an animal, please specify the location, type of kill, and kill date.

YOUR FAVOURITE HUNTING SPOTS WILL NOT BE REVEALED.

THANK YOU.

**A** M O O S E H U N T I N G 1982

1. DID YOU HUNT MOOSE IN 1982? ☐ Yes ☐ No If 'no' go to section B
2. HOW DID YOU GET TO THE PLACES WHERE YOU HUNTED MOOSE? ☐ By backpacking ☐ By motor vehicle ☐ By 4-wheel drive ☐ By boat ☐ By aircraft ☐ By ATV ☐ By horse

| 3. WHERE DID YOU HUNT MOOSE? (distance & direction to nearest landmark) | GMS | 4. HOW MANY DAYS DID YOU HUNT THERE? in Aug. | in Sept. | in Oct. |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

5. DID YOU KILL A MOOSE IN 1982? ☐ Yes ☐ No If 'no' go to section B

| 6. WHERE DID YOU KILL YOUR MOOSE? (distance & direction to nearest landmark) | GMS | 7. TYPE OF KILL Bull | Cow | Calf | 8. KILL DATE? Month | Day |
|---|---|---|---|---|---|---|
| | | ☐ | ☐ | ☐ | | |

such as reported GMZ - GMS and kill data. A set of FORTRAN character manipulation routines are used to change and compare character alphanumeric data string (Mair and Leigh, 1977). The Yukon hunter sample program uses the following algorithms to manipulate specific location data fields into usable geographical information (Figure 2):

1. Step 1: All questionnaire records are sorted into ascending order on the specific location data field. (This organizes the data file so that all identical specific location names are adjacent in the data file.)

2. Step 2: All the reported specific location names are transcribed into proper name sequence with all standard abbreviations being replaced by full word names. For example, "MT HUNT" is changed to "HUNT MOUNTAIN".

3. Step 3: The modified location name data file is then sorted into ascending order on the specific location data field.

4. Step 4: Each record in the sorted modified data file is then compared in a stepwise fashion to records in another file called the computerized gazetteer (Table 3). The computerized gazetteer contains standard location names along with a location code index number and information indicating to which GMSs the standard location name may apply. If a reported location name matches a standard location name exactly, the questionnaire record is transferred to a coded data file along with the





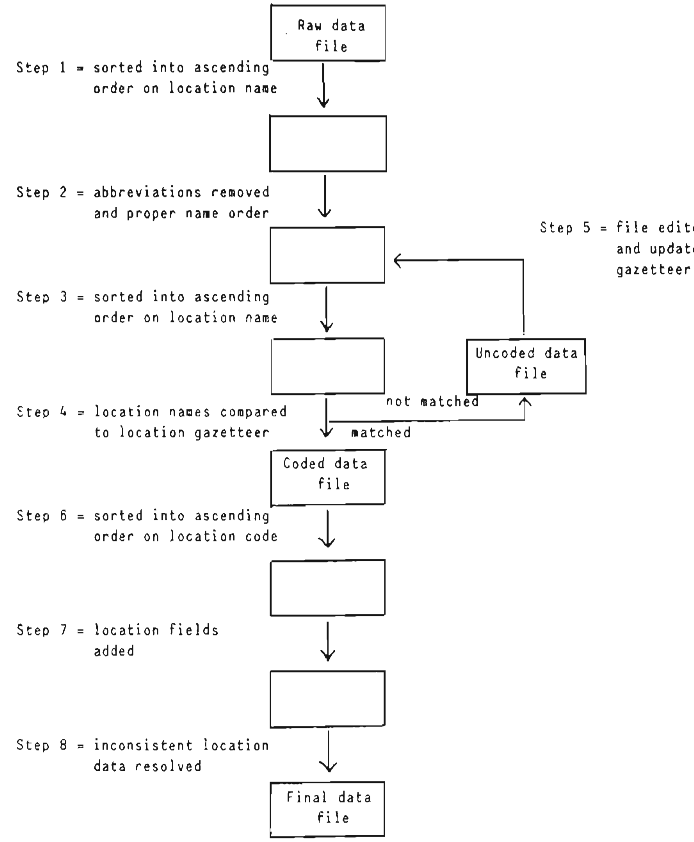


Figure 2: Algorithms for computerized location coding using character manipulating routines.

TABLE 3

Excerpts from the Yukon computerized gazetteer file showing location names sorted alphabetically along with location code, number of location fields and location fields.

| Location code | Location name | Number of location fields | Location fields #1 | #2 | #3 | #4 | #5 |
|---|---|---|---|---|---|---|---|
| 176 | BIG CREEK CARMACKS | 3 | 5-22* | 5-23 | 5-24 | | |
| 1565 | BIG CREEK GMS 10-31 | 1 | 10-31 | | | | |
| 1383 | BIG CREEK GMZ 2 | 2 | 2-39 | 2-40 | | | |
| 9007 | GMZ 7 | 1 | 7-00 | | | | |
| 715 | HUNT MOUNTAIN | 1 | 11-23 | | | | |
| 810 | ROSE LAKE | 3 | 7-22 | 7-23 | 7-30 | | |
| 945 | TESLIN LAKE | 4 | 10-22 | 10-23 | 9-11 | 9-10 | |
| 9000 | UNSPECIFIED | 1 | 0-00 | | | | |
| 1009 | YUKON RIVER | 5 | 2-00 | 3-00 | 4-00 | 5-00 | 8-00 |

* locations are indicated as GMZ-GMS





location code from the appropriate record from the computerized gazetteer. If the reported location name is not found, the questionnaire record is transferred to an uncoded data file.

5. Step 5: The uncoded data file is then edited using a computer file editor to remove obvious spelling errors. For example, if "HUNT MOUNTAIN" was mispelled as "HUNNT MOUNTAIN", the file editor would be used to delete the extra "N". In addition, the uncoded data file can be examined to determine if some of the reported location names should be added to the computerized gazetteer file. By repeating steps 3 through 5, eventually all location names can be coded (N.B.: Unrecognizable location names are changed to "UNSPECIFIED" which is a location name on the gazetteer that cannot be assigned at either the GMS or GMZ level).

6. Step 6: The coded data file is then sorted by ascending order on the location code data field.

7. Step 7: Each record in the sorted coded data file is then compared in a stepwise fashion to records in the computerized gazetteer. When the location code on the coded data files matches the location code on the computerized gazetteer, all geographical information from the gazetteer is appended to the record in the coded data file. For the Yukon gazetteer, a maximum of 9 location fields can be used to describe location names.

8. Step 8: After the location field information is stored on the same record as the reported GMZ - GMS data field, the two sets of information can be compared for consistency. The computer program automatically removes location field information that is not consistent with the report GMZ-GMS. For example, the specific location "TESLIN LAKE" is on the boundary of GMZs 9 and 10 and hunters specifying TESLIN LAKE may have hunted in GMS 10-22, 10-23, 9-10 or 9-11. If a hunter indicated on his questionnaire that he hunted at "TESLIN LAKE" and in GMZ 9, then only GMS 9-10 and 9-11 would be saved as possible hunt locations. If, on the other hand, he specifies "TESLIN LAKE" and GMS 8-27, no location fields are compatible with the reported GMZ-GMS data. In this case, the person running the program will be prompted to choose either the reported specific location name and its location fields or the reported GMZ-GMS.

The computerized gazetteer minimizes manual coding labour because location names only have to be assigned to geographical units once. For example, one "HUNT MOUNTAIN" is assigned to GMS 11-23, all reported "HUNT MOUNTAIN" locations on all questionnaires in all years can be automatically assigned. At present, the Yukon gazetteer contains 1900 location names and is growing by 200 names a year.

The computerized gazetteer also allows reported location names that are represented by more than one management unit to





be accurately processed. For example, "ROSE LAKE" is on the boundary of three subzones (GMS 7-22, 7-23 and 7-30). If the GMS is not specified on the questionnaire, all three location fields are added to the questionnaire and some function of the number of location fields is used to process records with multiple locations during the analysis phase.

The potential problem of having two or more locations with the same name being improperly assigned can be avoided by appending other names to the duplicate location names in the gazetteer. For example, there are three "BIG CREEK's in the Yukon. Because the gazetteer saves them as "BIG CREEK CARMACKS", "BIG CREEK GMS 10-31", and "BIG CREEK GMZ 2", no "BIG CREEK"s will be automatically assigned. When the questionnaires are processed by the location coding programs, other information on the questionnaire such as hunter's residence and other hunt locations can usually be used to modify the reported hunt location to the appropriate location name.

The computerized gazetteer also can be used to store location names that cannot be specified to the GMS level. For example, since the Yukon River flows from the southern Yukon into Alaska through 5 GMZs, the location name "YUKON RIVER" is represented by GMS 2-00, 3-00, 4-00, 5-00 and 8-00 where the "00" indicates that the location could only be coded to the GMZ level. Furthermore, the location name "GMZ 7" is represented by GMS 7-00 while the location "UNSPECIFIED" is represented by GMS 0-00.

Many locations in the Yukon do not yet have specific names and because GMS are small, an average of 2.35 location fields are needed to assign each reported location name. As hunters become more familiar with the GMS system, this statistic will be lowered. However, hunters that hunt by driving the Yukon highway systems, will always generate multiple location fields.

Each year, over 20,000 reported hunt locations are processed using the methods described above. Although no statistics have been kept, approximately 15,000 (75%) are automatically matched to location names on the gazetteer during the first computer run. After editing for obvious spelling errors, another 3,000 location names are coded. The remaining 2,000 are examined for minor spelling errors and new location names until all reported location names are coded. The entire location coding process including assigning new location names to GMS usually takes less than 2 days and costs $500 including labour and computer rental charges.

Questionnaire analysis

The conventional method for estimating total wildlife harvests is to multiply the reported kill by the inverse of the sampling intensity. For example, if 10 moose were reported shot in a management unit and 200 out of 600 hunters were sampled, then it would be estimated that a total of 30 moose were shot. The estimation formula is

$$\text{total harvest} = \text{reported harvest} \times \frac{\text{total licence holders}}{\text{respondents}}$$





This estimation method assumes that all sampled hunters, whether successful or unsuccessful, have the same probability of response.

If several mailings of questionnaires are used to collect the data, the data are usually pooled before applying the above formula. However, more sophisticated techniques exist (Filion, 1980). The Yukon presently employs a phase mailing formula modified from Bartholomew (1961). Because many non-response biases arise due to some respondents being more "willing" to respond than others, Bartholomew proposed that the last sample taken be used to represent all non-respondents in the sample. The estimation formula for wildlife harvests in the Yukon is:

$$\text{Total harvest} = \text{rep. harv (1)} + \text{rep. harv (2)} + \text{rep. harv (3)} \times \frac{\text{total licence holders} - \text{resp (1)} - \text{resp (2)}}{\text{resp (3)}}$$

where rep. harv (n) and resp (n) are the reported harvest and number of respondents to the "nth" mailing. The formula assumes that the reported success of the last mailing respondents is representative of all licence holders that did not respond to the initial two mailings. The phase mailing formula must be modified if less than 100% of licence holders are sampled.

Since the third mailing respondents only responded when sent "threatening" letters, it is reasonable to assume that their success and effort better represent those attributes of non-respondents, than do the attributes of respondents that respond when offered prizes. Furthermore, by treating mailing data separately, differences in success rates and effort can be detected.

To preserve analysis flexibility, the sample weights are added to each data record. This allows estimated totals to be produced directly from the raw data file while allowing reported totals also to be calculated. All data records from the first two mailings have sample weights of 1.0, while third mailing data records have a sampling weight of:

$$\frac{\text{total licence holders} - \text{resp (1)} - \text{resp (2)}}{\text{resp (3)}}$$

In addition to sampling weights, location weights also are appended to each data record. Because hunting activities are reported by specific locations and specific locations may have more than one location field, some function of the number of location fields must be used to weight the data. At present, the Yukon uses the inverse of the number of location fields. For example, since "ROSE LAKE" is represented by 3 GMS, if a hunter reports shooting a moose after 10 days of hunting at "ROSE LAKE", it is estimated that he shot 1/3 of a moose after 3.33 days hunting in each GMS. Although the validity of this assumption may be questioned by the fact that the moose could only have been shot in one GMS, the assumption makes the best use of the reported information. In addition, since a moose living on the boundary of two GMS can be considered a "part-time" member of both local populations, it is reasonable to allocate part of his death to each population.





Tables showing hunter effort and harvest are produced by SPSS (Statistical Package for the Social Sciences, Nie et al: 1975) by calculating an overall case weight during analysis. The case weight is the product of the sampling attribute (e.g. number of kills or days hunted), sampling weight and location weight. For example, if the "ROSE LAKE" hunter responded on the third mailing (sampling weight = 2.71), then the appropriate case weight for hunting effort analyses would be 10 x 2.71 x 0.33 = 9.03.

Crosstabulations of GMZ and GMS are separately produced for hunter effort and harvest. The GMZ-GMS tables have unspecified cells corresponding to hunt locations that either can not be assigned at all or can only be assigned to GMZs. The GMZ-GMS table is "adjusted" to remove these unspecified cells by allocating the cells using the known distribution of specified cells. First, the completely unspecified cell is allocated to GMZs using the known distribution over GMZs. Then cells that are only specific to a GMZ are allocated using the known distribution of GMS within that GMZ. Finally, all cells in the GMZ-GMS table are rounded to the nearest integer. In the end, tables showing hunting effort and harvest for each GMS in the Yukon are produced in such a manner that GMS estimates may be summed to give either GMZ or Yukon totals.

The data manipulation procedures associated with assigning sampling weights, location weights and the re-classification of unspecified data make it virtually impossible to statistically define the confidence intervals for estimates. When the procedures were developed, it was decided that having realistic and "unbiased" estimates without confidence intervals was more valuable to wildlife managers than implementing statistical techniques that gave "biased" results with confidence intervals. Accordingly, the only insight into the accuracy of the harvest and effort estimates is the repeatability of estimates between years. Tables 4 and 5 show the 1978 to 1980 moose harvest and moose hunting effort for GMS in moose survey unit I (Larsen, 1982). Until more years of data are added to the tables, it is impossible to attribute the variation in estimates to sampling variation or yearly trends. It should be noted that estimates for all years for both harvest and effort are in the same general range of values.





TABLE 4

Example of Yukon hunter sample analyses:

1978-80 estimated moose harvests in GMS in Moose Survey Unit I (Larsen, 1982)

| | Estimated moose harvests | | |
|---|---|---|---|
| GMS | 1978 | 1979 | 1980 |
| 7-01 | 5 | 8 | 2 |
| 7-02 | 1 | 0 | 1 |
| 7-03 | 18 | 20 | 12 |
| 7-04 | 2 | 5 | 2 |
| 7-05 | 5 | 2 | 3 |
| 7-06 | 6 | 8 | 7 |
| 7-07 | 10 | 13 | 9 |
| 7-08 | 1 | 3 | 4 |
| 7-09 | 0 | 2 | 1 |
| 7-10 | 2 | 2 | 1 |
| 7-11 | 0 | 0 | 0 |
| Total | 50 | 63 | 42 |

TABLE 5

Example of Yukon hunter sample analyses:

1978-80 estimated days moose hunting effort in GMS in Moose Survey Unit I (Larsen, 1982)

| GMS | Estimated days moose hunting effort 1978 | 1979 | 1980 |
|---|---|---|---|
| 7-01 | 173 | 167 | 192 |
| 7-02 | 35 | 29 | 41 |
| 7-03 | 372 | 329 | 273 |
| 7-04 | 20 | 26 | 31 |
| 7-05 | 104 | 63 | 83 |
| 7-06 | 124 | 93 | 90 |
| 7-07 | 295 | 170 | 199 |
| 7-08 | 11 | 16 | 28 |
| 7-09 | 54 | 67 | 35 |
| 7-10 | 47 | 36 | 28 |
| 7-11 | 0 | 0 | 0 |
| Total | 1235 | 1009 | 1000 |





## CONCLUSION

The techniques described in this paper can be applied to other jurisdictions and species:

1. The subdivision of existing management units into smaller units provides wildlife managers with more detailed and site-specific data. Small management units can be used to detect factors affecting local populations, even if the subzones cannot be used to regulate harvest and hunting effort.

2. Computer gazetteers can be used to cost effectively process location names reported on hunter questionnaires. They can be developed for whole provinces or states or for specific administrative regions. Gazetteers not only enhance the value of current data bases, but have the flexibility to adapt historical data to future boundary changes. Since all location data are stored by specific location names, those names can be re-assigned if management boundaries are altered.

3. In most jurisdictions, harvest statistics can be produced for much smaller analysis units than are presently being used.

The estimation techniques presented in this paper may be criticized because they "push to the limit" the quality of the questionnaire data. At each stage of the analysis process, sampling error or allocation assumptions may affect the reliability of the estimates. All comments or suggestions on how to reduce these biases would be appreciated. However, the reader should recognize that the underlying objective of the estimation procedures, is to produce the "best possible" harvest estimates for local wildlife populations. Only when harvest, population, and habitat information are integrated at the local wildlife population level will wildlife managers be able to successfully manage our valuable wildlife resources.



## REFERENCES

BARTHOLOMEW, D. J. 1961. A method of allowing for 'not-at-home' bias in sample surveys. Applied Statistics 10(1): 52-59.

FILION, F. F. 1980. Human surveys in wildlife management. Chapter 23 in wildlife management techniques manual Fourth edition edited by S.D. Schemnitz. The Wildlife Society. Washington, D.C., U.S.A. p. 441-453.

KALE, L. W. 1979. An integrated data system for wildlife management. M.Sc. thesis. U.B.C. Vancouver, B.C. 197 pp + appendices.

KALE, W. 1978. A review of the data handling procedures in the Yukon Game Branch and a proposal for an integrated data system. Unpublish. Yukon Wildlife Branch report. Whitehorse, Yukon. 118 pp.

LARSEN, D. G. 1982. Moose inventory in the Southwest Yukon. Alces. Vol. 18. 1982.

MAIR, S. G. and J. L. LEIGH. 1977. UBC Character: Character manipulation in FORTRAN. Computing Centre. U.B.C. Vancouver, B.C. 53 pp.

NIE, N. H., C. H. HULL, J. G. JENKINS, K. STEINBRENNER, and D. H. BRENT. 1975. SPSS: Statistical package for the social sciences. McGraw-Hill Book Company. U.S.A. 675 pp.

TOFFLER, A. 1970. Future Shock. Random Books. U.S.A.