

WESTERN NEWFOUNDLAND MODEL FOREST
PUBLIC SURVEY ON
SUSTAINABLE FOREST MANAGEMENT ISSUES
IN WESTERN NEWFOUNDLAND:

SURVEY DESIGN DOCUMENT

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ABSTRACT

The Western Newfoundland Model Forest (WNMF) was established, in part, to develop new and innovative ways of managing the forest resources of western Newfoundland. In recent years, this has come to mean the implementation of sustainable forest management practices. Public participation plays a key role in the development and implementation sustainable forest management, especially at the local level. It is the people who live and work in the WNMF who can make a difference in how the forest is managed. Their value system, behaviour, attitudes and beliefs are important to the success of the WNMF objectives and thus to the sustainable management of Newfoundland's forest resources. This current survey will attempt to determine the opinions of the people of western Newfoundland on sustainable forest management issues. This will aid in both developing educational and public awareness programs, and in reporting on the local level SFM indicators being developed by the WNMF and its partners.

This project involves the design and implementation of an attitudinal survey which will determine the attitudes and opinions of the people who live in the Western Newfoundland Model Forest on sustainable forest management issues. Opinions on the need for, and extent of, public involvement in forest management in western Newfoundland and the overall awareness of the WNMF will also be included in the questionnaire. The survey will be implemented through a mailed questionnaire. Approximately 55 questions, including socio-demographic questions, will be included in the questionnaire which is to be mailed out to approximately 800 persons residing in western Newfoundland.

This report outlines the methodology to be used, along with its associated rationale, in the implementation of the Western Newfoundland Model Forest Public Attitudinal Survey on Sustainable Forest Management Issues.

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Introduction

The Western Newfoundland Model Forest (WNMF) was established, in part, to develop new and innovative ways of managing the forest resources of western Newfoundland. In recent years, this has come to mean the implementation of sustainable forest management practices. Sustainable forest management (SFM) refers simply to the integration of the concept of sustainable development into forest management practices. Sustainability, in a natural resource management context, can be defined as balancing social, cultural and economic development with the need to ensure the long-term health and integrity of natural environmental systems. In practice, SFM requires an integrated approach to management which provides for the identification and balancing of key social, cultural, economic, and environmental values in the development of forest management plans and the implementation of forest management activities.

The concept of sustainability must necessarily be flexible to reflect local realities, conditions and concerns relating to the diversity of social, political and ecological conditions around the world. At the same time, all areas share some common elements of sustainable forest management. These include the conservation of biodiversity, the maintenance of soil and water quality and healthy forest systems, forests' contribution to global cycles, the important role forests play in society, and the need for public involvement in forest management decision-making, among others.

In an effort to both define sustainable forest management and measure progress towards achieving it in practice, the Canadian Council of Forest Ministers (CCFM) developed a series of Criteria and Indicators of Sustainable Forest Management. The six criteria essentially define SFM in the Canadian context; however, these criterion are very similar to other efforts worldwide. The indicators are used to measure progress towards attainment of SFM. It is recognized that no single criterion or indicator alone is an indication of sustainability; rather, all criterion and indicators must be considered in the context of the others.

The CCFM sustainable forest management framework defines SFM on a national scale, and not the local level. The Western Newfoundland Model Forest and its partner organizations are developing criteria and indicators for sustainable forest management in Newfoundland and Labrador. The local-level framework, while reflecting local conditions, will be based on and closely linked to, the CFM framework. Public participation plays a key role in the development and implementation sustainable forest management practices, especially at the local level. At the same time, there has been a growing expectation in society that resource management decisions must be made in a manner that is open, transparent and accountable.

The people who live and work in the WNMF are the ones who can make a difference in how the forest is managed. Their value system, behaviour, attitudes and beliefs are important to the success of the WNMF objectives and thus to the sustainable management of Newfoundland's forest resources. A 1996 survey by the Values Analysis Research Group at Sir Wilfred Grenfell College helped to define the forest-related value system of the public.

This current survey will attempt to determine the opinions of the people of western Newfoundland on sustainable forest management issues. This will aid in both developing educational and public awareness programs, and in reporting on the local level SFM indicators being developed by the WNMF and its partners.

This report outlines the methodology to be used, along with its associated rationale, in the implementation of the Western Newfoundland Model Forest Public Attitudinal Survey on Sustainable Forest Management Issues. The detailed documentation of the survey process will allow the WNMF, in the future, to repeat the survey in such a way as to allow for comparisons between surveys and to report on progress in public education and awareness programs. This document is also designed to be used as an education tool for the WNMF Management Group and its partner organizations in the development and implementation of public attitude surveys.

Project Methodology Overview

This project involves the design and implementation of an attitudinal survey which will determine the attitudes and opinions

of the people who live in the Western Newfoundland Model Forest on sustainable forest management issues. Opinions on the need for, and extent of, public involvement in forest management in western Newfoundland and the overall awareness of the WNMF will also be included in the questionnaire.

Identification of the attitudinal survey needs of the WNMF was accomplished through meetings with the members of the Project Steering Committee and several members of the WNMF Management Group. The results of these meetings were presented in a **summary report** *Identification of Survey Needs for a Public Attitudinal Survey Within the Western Newfoundland Model Forest* submitted to the WNMF in December 1998 and are reflected in the questionnaire.

The survey will be implemented through a mailed questionnaire. Approximately 55 questions, including socio-demographic questions, will be included in the questionnaire which is to be mailed out to approximately 800 persons residing in western Newfoundland.

It is important that the survey be designed to be 1) statistically valid, 2) replicable, 3) adequately meet the managerial needs of the WNMF, and 4) adequately generate the attitudinal information required by the WNMF. In order to ensure accurate and statistically valid analysis of the data collected through the survey, an appropriate research design will be implemented for the entire project and all data collation and analysis will be reviewed by the Project Steering Committee.

The overall survey design including the questionnaire will be reviewed by the Ethics Committee at Sir Wilfred Grenfell College. This document will be updated upon completion of the survey to include more detailed on some of the processes involved as well as an outline and analysis of the lessons learned through project implementation.

Surveys

Overview

A survey is simply a method of collecting information from people for either descriptive or predictive purposes (Leong and Austin 1996). An essential task of any survey is to obtain information from a sample of respondents that relates to the questions being studied (Drew and Hardman 1985). Survey research has four basic characteristics (Marans 1990):

1. It involves the systematic collection of information from a population using standardized questionnaires.
2. The information is about the population and the environment it occupies.
3. The information is collected from every person in the population, or from a representative sample of the population.
4. Most of the information is obtained by either personal face-to-face interviews, telephone interviews, or through self-administered questionnaires.

Surveys tend to be objective and replicable. They produce up-to-date information with which it is possible to make generalizations about a large number of people (population) based on a subset of that group (sample). As, numerical values can be assigned to people's attitudes, behaviours and environmental conditions, surveys are quantitative.

There are two types of survey designs (Marans 1990):

1. **Cross-Sectional Surveys:** Cross-sectional surveys are designed to collect data at a single point in time from a population or a sample of that population. They can be used to examine possible differences in attitudes and behaviours among subgroups of a population. This design is used most often because it is relatively simple to plan and inexpensive to execute.
2. **Longitudinal Surveys:** This survey design permits the collection and analysis of data over a period of time enabling the researcher to report changes in the characteristics of a population and its behavioural and attitudinal responses. The two types of longitudinal surveys are 1) the study of samples drawn from a population at different points of time (trend studies); and the collection of data at different times from the same people who make up a population or a sample of that population (panel studies).

If properly conducted, surveys are very well suited for describing people's attitudes and opinions on a wide range of topics (Shaughnessy and Zechmeister 1990). In fact, surveys are the major means by which researchers such as social psychologists attempt to assess the general public's attitudes, beliefs and values (Dawes and Smith 1985). The most commonly used forms of surveys include the self-administered, personal or face-to-face interviews, and telephone interviews. Table 1 outlines a comparison of the three main survey forms.

Table 1: Comparison of Data Collection Methods

	Personal	Telephone	Mail
Data collection costs	High	Med	Low
Data collection time required	Med	Low	High
Sample size for a given budget	Small	Med	Large
Data quantity per respondent	High	Med	Low
Reaches widely dispersed sample	No	Maybe	Yes
Reaches special locations	Yes	Maybe	No
Interaction with respondent	Yes	Yes	No
Degree of interviewer bias	High	Med	None
Severity of non-response bias	Low	Low	High
Presentation of visual stimuli	Yes	No	Maybe
Field worker training required	Yes	Yes	No

(Source: Alreck and Settle 1985)

Mail Surveys

The mail survey is only one form, and probably the most common form, of the self-administered survey. In general, the terms mail and self-administered have been used interchangeably in this report. It is easy to see from Table 1 that the mail survey is highly appropriate for situations involving low budgets, large samples, wide geographic coverage, and the desire for ease of use. The questionnaire is probably the single most common research tool in the social sciences (Fife-Schaw 1995). The mailed questionnaire has been selected as the survey tool to be utilized in the WNMF survey on sustainable forest management issues in western Newfoundland.

Advantages

Table 1 lists some of the relative advantages of conducting a mail or postal survey over personal or telephone interviews. The mail survey has the following additional advantages (Berdie *et al* 1986; Miller 1991; Moser and Kalton 1972; Oppenheim 1992; Shaughnessy and Zechmeister 1990):

- allows people to complete the survey in their own time and where they like;
- provides people with the time to search through personal records (if they desire) to find information needed to answer questions. This allows for more considered rather than immediate responses;
- appropriate in situations requiring information on several members of a household;
- promotes honesty through confidentiality or anonymity;
- avoids the problem of non-contacts (i.e. no one at home).

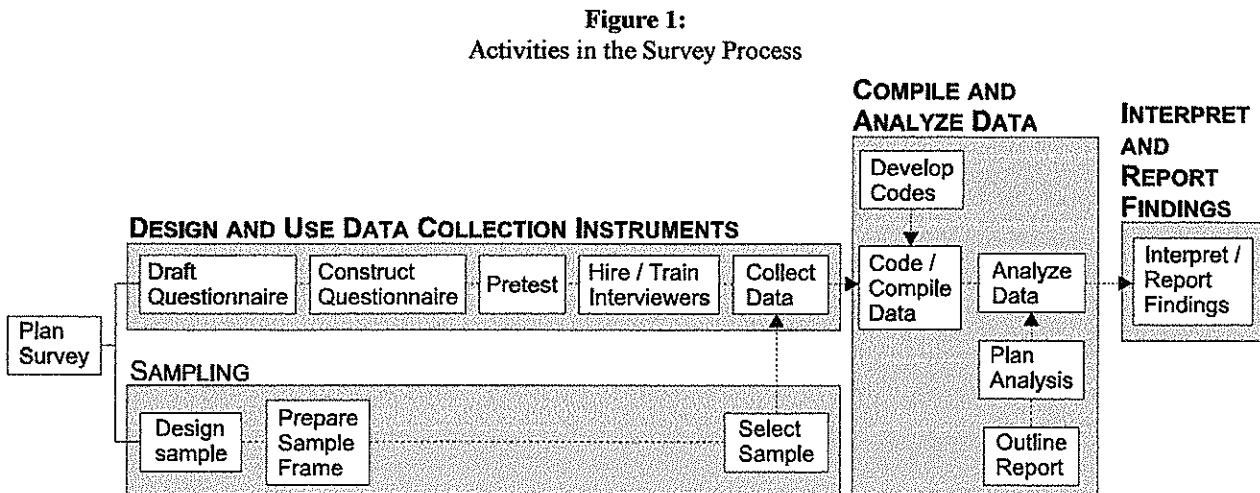
Disadvantages

The greatest disadvantage in the mailed questionnaire is the amount of non-response or unreturned questionnaires (Raj 1972). The generally low response rates can introduce bias into the results of the survey (see "Sampling Error and Bias"). The following additional disadvantages have been listed by Miller (1991), Moser and Kalton (1972), Oppenheim (1992) and others:

- questions must be sufficiently simple and straightforward to be understood with the help of printed instructions;
- unsuitability for respondents of poor literacy, for the visually handicapped, the very old or for young children, and often unsuitable for people with language difficulties;
- no opportunities to correct misunderstandings or to probe or to offer explanations or help (answers must be accepted as final);
- no control over the order in which questions are answered (therefore answers cannot be treated as independent);
- no check on incomplete responses, incomplete questionnaires or the passing on of questionnaires to others;
- no opportunity to collect ratings or assessments based on observations; and
- inappropriate where immediate or spontaneous answers are required.

Survey Research Design

Figure 1 provides an overview of the activities involved in the survey process.



(Adapted from Marans 1990)

The Western Newfoundland Model Forest opinion survey on sustainable forest management issues will follow the basic process outlined in Figure 1.

Design and Use Data Collection Instruments

Preparing the Draft Questionnaire

This questionnaire was designed over several weeks with periodic reviews by the Project Steering Committee. A small pretest is to be conducted before full implementation. In the initial design phase, a number of members of the WNMF Management Group were contacted to determine issues of concern that they had which might be able to be addressed through a public attitude survey on sustainable forest management. The results of this phase were summarized in the report, *Identification of Survey Needs for a Public Attitudinal Survey Within the Western Newfoundland Model Forest*, submitted to the WNMF in December 1998. Once this was completed, several other public attitude surveys were reviewed. These included:

-
- Department of Forestry and Agriculture, and The Protected Areas Association. 1991. Public Attitude Survey on the Use, Management and Protection of Forests and Natural Areas in Newfoundland and Labrador.
 - Bath Associates. 1995. Public Attitudes Toward Water Quality Issues in the Humber Arm. Report prepared for the Humber Arm Environmental Association Inc.
 - Values Analysis Research Group, Sir Wilfred Grenfell College. 1996. Value Analysis Survey. Prepared for the Western Newfoundland Model Forest.
 - Robinson, D., M. Robson and A. Hawley. 1997. Social Valuation of the McGregor Model Forest: Assessing Canadian Public Opinion on Forest Values and Forest Management - Results of the Canadian Forest Survey '96. Prepared for The McGregor Model Forest Association.
 - Bath Associates. 1998. Winter Recreation Issues in Gros Morne National Park.

Based on the surveys needs identified by WNMF Management Group members and a review of the above surveys, a draft questionnaire was developed. This was reviewed by a Project Steering Committee established for the WNMF Public Attitude Survey Project. Membership on this committee included:

- Sean Dolter, Western Newfoundland Model Forest
- Martin von Mirbach, Centre for Forest and Resource Studies
- Len Moores, Department of Forest Resources and Agrifoods
- Jim Taylor, Western Newfoundland Model Forest
- Dr. Sandra Tomsons, Sir Wilfred Grenfell College

Dr. Tom Beckley of the Canadian Forest Service also provided comments on the initial draft.

Questionnaire Design

The Western Newfoundland Model Forest sustainable forest management questionnaire contains five sections: forest management; public involvement in forest management; current issues in forest management; the Western Newfoundland Model Forest; and socio-demographic (statistical classification) data. A description of the types of questions used throughout the questionnaire is outlined in below. The final questionnaire will be printed in booklet form and contain a cover letter signed by the Project Director. A draft version is contained in Appendix 8.

“The questions that are asked of respondents are the ultimate core of the survey project...The reliability and validity of survey results depend on the way that every aspect of the survey is planned and executed, but the questions that are addressed to the respondents are the most essential component. *Their performance ordinarily has a more profound effect on the survey results than has any other single element of the survey [emphasis added]*” (Alreck and Settle 1985).

In a survey, questions are *measures*, and each question is used as a measurement of a particular variable (Oppenheim 1992). Questions about a respondent’s *opinions* seek to determine what he or she thinks or feels at a particular point in time about a particular subject. Questions designed to tap *attitudes*, on the other hand, seek understanding about people’s basic personality orientation acquired over many years of experience and learning (Backstrom and Hursh 1963).

There are three basic components to attitudes: the knowledge component, what the person knows or believes about a topic; the feeling component, how the person feels about a topic and how it is valued; and the action component, the likelihood that the person will take action based on their attitude (Alreck and Settle 1985). In order to tap a person’s attitudes, survey questions must address all three components. It should be noted that attitude and opinion are used interchangeably throughout much of the literature on survey design.

The Western Newfoundland Model Forest survey is designed to gage public opinion on various sustainable forest management issues. As such, it address the first two components of attitudes outlined above, and not the third. The questions in the WNMF survey ask respondents about their knowledge of sustainable forest management issues and how *strongly* they feel towards certain issues. There are only two questions relating to a respondent’s actions; one of which ask about past actions:

-
24. *Over the past year, in which ways have you expressed your views on how the forests of western Newfoundland should be used?*

and the other on the willingness to engage in a potential future action:

32. *If you have not used the new snare, would you be willing to use it in order to protect the pine marten?*

For survey questionnaires, there are numerous types of questions which can be used to gather different types of information about a particular subject. However, it is the wording of the question itself that considerable attention must be given to (de Vaus 1996) as the wording of an individual question may seriously affect the kind of response it triggers. Bias can be introduced to the survey results through poor wording of questions. Bias introduced through questionnaire instructions, questions, scales or response sets is referred to as instrumentation bias (Alreck and Settle 1985). Ambiguity, misperception, and loading can easily creep into questions (Backstrom and Hursh 1963). If a question is ambiguous, it loses its validity as the subtleties are lost upon the respondent. Words that lie outside a respondent's experience have no meaning for him or her and thus misperceptions arise, and a question is loaded when something in the question suggests to the respondent that one particular response is more desirable than another. Avoidance of these three factors through careful question wording is probably the most important method of avoiding instrumentation bias in a survey.

Careful question wording can also reduce the potential of response bias being introduced into a survey. Response bias is introduced through the mentality or predispositions of respondents (Alreck and Settle 1985). Figure 2 outlines the most common sources of response bias.

Figure 2:
Sources of Response Bias in Questionnaires

-
1. *Social Desirability.* Response based on what is perceived as being socially acceptable or respectable.
 2. *Acquiescence.* Response based on respondent's perception of what would be desirable to the sponsor.
 3. *Yea- and Nay-saying.* Response influenced by the global tendency toward positive or negative answers.
 4. *Prestige.* Response intended to enhance the image of the respondent in the eyes of others.
 5. *Threat.* Response influenced by anxiety or fear instilled by the nature of the question.
 6. *Hostility.* Response arises from feelings of anger or resentment engendered by the response task.
 7. *Auspices.* Response dictated by the image or opinion of the sponsor, rather than the actual question.
 8. *Mental Set.* Cognitions or perceptions based on previous items influence response to later ones.
 9. *Order.* The sequence in which a series is listed affects the responses to the items.
 10. *Extremity.* Clarity of extremes and ambiguity of midrange options encourage extreme responses.
-

(Source: Alreck and Settle 1985)

Question Types

The most basic question types are classified as either open- or closed-ended. A closed question is one in which a number of alternative answers are provided from which respondents are to select one or more whereas in open-ended questions, no choices are offered and the respondent must formulate their own answers. Open-ended questions are good for judging how well informed people are on an issue (Raj 1972) but generally do not work well in mail questionnaires (Berdie *et al* 1986). Closed questions are generally easier and quicker (Oppenheim 1992) making them well suited to the mail or self-administered questionnaire.

There are only three open-ended question within the Western Newfoundland Model Forest survey on sustainable forest management issues in western Newfoundland. Two of these deal with the collection of statistical classification data, that is in which industry does the respondent work, and the number of people within their household. For these it was thought that an open-ended format would be best. The third open-ended question,

2. "In your own words, what is meant by sustainable forest management?"

was left open in order to better gauge respondents' knowledge of what sustainable forest management is. A closed question would have been too leading in this instance and not provided the information desired.

The majority of the WNMF survey questions measure the level of *intensity* of a respondent's feelings through the use of various 'attitude' scales. An attitude scale is type of question series designed to indicate a person's opinion on a topic. These scales have been one of the most widely used techniques for measuring attitudes. Although there are numerous types of attitude scales, they have at least two things in common (Diab in Sherif and Sherif 1967):

1. They all represent the individual's attitude towards an object by a single preference score or average "most acceptable" position on a continuum of positions ranging from highly favourable to highly unfavourable; and
2. In every case, the individual is fully aware that his or her attitude on the issue in question is being measured.

The Likert scale is one type of attitude scale containing statements that are clearly favourable or clearly unfavourable (Sommer and Sommer 1991) and is the most common format used in the survey. The respondent is asked to indicate their level of agreement or disagreement with a set of statements through the following response set:

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not Sure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The Likert Scale is frequently used by researchers because of its simplicity, flexibility, ease of composition, and is generally quick and easy for respondents (Alreck and Settle 1985). Statements can be short or long, vocabulary can be technical and sophisticated or simple and primary, and one set of instructions and scale can serve many items. For example,

37. Please indicate your level of agreement or disagreement with each of the following statements by placing a check (✓) in the appropriate box.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not Sure
a) Domestic wood cutting is being adequately managed by the provincial government.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I would like to see more conservation officers in the woods monitoring domestic wood cutting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I have never seen a conservation officer in the woods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) There is not enough forest available for domestic wood cutting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) More forest should be made available for domestic wood cutting even if it means reducing the amount of wood available for the paper mills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) The provincial government should enforce commercial harvesting regulations more effectively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Forest harvesting in the Corner Brook water supply area has had an impact on water quality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Three questions in the WNMF survey use a force ranking scale. This is a type of scale in which the respondent has to rank each of the response alternatives relative to one another (Alreck and Settle 1985). For example,

12. Which group or use do you think should get the greatest priority in wood supply distribution in western Newfoundland. Begin by placing a "1" to the side of the group or use which you think should get the greatest priority in wood supply distribution, a "2" next to the second highest priority in distribution, etc., until all have been ranked.

	Ranking
Small sawmills	
Large pulp and paper companies	
Protection in a series of parks and reserves	
Firewood cutters	

The wording of the instruction segment of the other two forced ranking questions provide examples of how this type of scale can be used:

- 5. Whose information on forest management in western Newfoundland do you consider to be the most accurate. Begin by placing a "1" to the side of the type of individual you consider to have the most accurate information, a "2" next to the second highest level of accuracy, etc., until all have been ranked.

- 7. Please rank the importance of the following uses of the forests of western Newfoundland. Begin by placing a "1" to the side of the use you consider the most important, a "2" next to the second most important use, etc., until all of the statements have been ranked.

The major advantage of the forced ranking scale is the relationship between items is measured, however, the "...major disadvantage is the fact that the absolute standing and the interval between items is not measured" (Alreck and Settle 1985). Another disadvantage is the limited number of items that can be included in the response set for ranking.

A number of other scales are utilized throughout the WNMF survey. These scales are generally variations of the Likert Scale. For example,

19. In your opinion, how much opportunity do the pulp and paper companies provide people like you to express your views on the use of the forests of western Newfoundland?

A great deal of opportunity	Some opportunity	Little opportunity	No opportunity	Not sure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. How important is it to you to have a say in directing how the forests of western Newfoundland are used?

Extremely important	Somewhat important	Not very important	Not at all important	Not sure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

34. a) The Newfoundland pine marten becoming extinct is...

Extremely bad	Bad	Doesn't matter	Good	Extremely good	Not sure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

39. b) How likely do you think it is that a paper mill will close in Newfoundland?

Extremely unlikely	Unlikely	Neither	Likely	Extremely likely	Not sure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Several questions do not have a scale or ranking response set and require the respondent to choose only one of the responses. These are referred to as single response questions and "...can only be used when: (1) the choice criterion is

clearly stated or (2) the criterion actually defines a single category” (Alreck and Settle 1985). For example,

4. *In your opinion, how do Newfoundland’s forest management practices compare with the rest of Canada?*
- Newfoundland has the best forest management in Canada
 - Newfoundland is no better or no worse than other provinces in its forest management
 - Newfoundland has the worse forest management in Canada
 - Not sure

In other cases, explicit instructions are included within the question to ensure that respondent selects only one response from the list. For example,

24. *In your opinion, the most appropriate role for the public in directing how the forests are used is to (please check (✓) only one):*
- Have no role; let the resource professionals set all management goals
 - Suggest goals and let the resource professionals decide their priority
 - Serve on advisory boards that review and comment on management goals
 - Act as a full and equal partner with resource professionals in setting management goals
 - Set the goals and their priority, and have resource professionals carry them out
 - Other (please specify) _____
 - Not sure

Sometimes the respondent is directed to select one or more response alternatives. In this, the multiple response question, “...each alternative becomes a ‘variable’ to be analyzed. Thus, this one item actually asks [several] questions” (Alreck and Settle 1985). For example,

45. *Which of the following sources are important to you for obtaining information on forestry issues? (please check (✓) all that apply)*
- | | | |
|--|-------------------------------------|--|
| <input type="checkbox"/> Newspaper | <input type="checkbox"/> Television | <input type="checkbox"/> Nature and Bus Tours |
| <input type="checkbox"/> Local environmental groups | <input type="checkbox"/> Radio | <input type="checkbox"/> Magazines and books |
| <input type="checkbox"/> College / university educators | <input type="checkbox"/> Internet | <input type="checkbox"/> Government agencies |
| <input type="checkbox"/> Business and industry representatives | <input type="checkbox"/> Library | <input type="checkbox"/> Friends and relatives |
| <input type="checkbox"/> Other (please specify) _____ | | |

In a number of questions, such as number 45 above, an “Other (please specify)” category has been provided in the response set allowing the respondent to formulate his or her own answer to the question. This is used in areas where the items listed may not encompass all possibilities. In essence, it lessens the chances that information will not be missed and that the respondent will become frustrated through response sets that may not reflect his or her opinions or activities.

It is extremely important to include a “don’t know”, “not sure”, or “not applicable” category to allow for the possibility that the respondent does not know or is unsure of an answer to a particular question, and thus not force an opinion (Oppenheim 1992). However, the questions should be worded such that the respondent rarely has to use these categories. If many respondents utilize the “not sure”, “don’t know” or “neutral” categories, it may indicate either the item is not of major concern to them or they do not have enough information to take a position (Leong and Austin 1996).

“Rather than be used as a source of data, some questions may be used to fill in gaps in the process making the conversation flow smoothly from topic to topic” (Gray and Guppy 1994). For example, the following question

13. *Do you regularly use forest access roads (woods roads)?*

Yes No Not sure

is used to introduce a new topic to the respondent. Although this question may provide some limited data, the key questions on forest access roads follow question 13. In fact, by answering question 14,

14. *For what purposes do you use forest access roads (woods roads)? (please check (✓) all that apply)*

question 13 is essentially answered, but it provides for a more continuous flow of ideas than if it was not included.

The final section of the WNMF survey contains questions regarding the respondent. The mainly socio-demographic data gathered through these questions will be used to classify the main survey data for statistic purposes. Some examples of these questions are as follows:

46. *Do you have any formal training or experience in forestry or related fields?*

47. *In which of these age-ranges did your last birthday fall?*

50. *What is your educational background?*

54. *Do you or any of your immediate family derive income from non-timber activities (selling of rabbits or berries, guiding, trapping, etc) on forested land?*

56. *To the best of your knowledge, what was the total income your household last year before taxes? (please check (✓) one category)*

57. *Do you volunteer your time with any of the following types of groups or organizations? (please check (✓) all that apply)*

Question Ordering

Almost as important as the wording of individual questions and their response sets, is the order that the questions appear in a survey (de Vaus 1996; Miller 1991). Dillman (1978) outlines several principles of ordering questions based on his Total Design Method for questionnaires:

- First, questions are ordered along a descending gradient of social usefulness (or importance); those which the respondent is most likely to see as useful come first, and those least useful come last.
- Secondly, questions that are similar in content together, and within content areas, are grouped by type of question.
- The third principle involves taking advantage of cognitive ties that respondents are likely to make among groups of questions with which a sense of flow or continuity can be built.
- The final ordering principle is that questions in any topic area that are most likely to be objectionable to respondents should be positioned after the less objectionable ones. This does not necessarily mean that they are delegated to the end of the survey.

Several authors (Berdie *et al* 1986; de Vaus 1996; Miller 1991) outline a few other guidelines for ordering questions:

- 1) Start with easy questions that the respondent will enjoy answering and that will get his or her attention and interest.
- 2) Where possible try to utilize a variety of question formats so that the questionnaire remains interesting.

3) Decide whether one or several questions will best obtain the desired information.

The above are guidelines only and some compromises will have to be made in the ordering of questions.

In some surveys, respondents are redirected past questions if they do not meet certain criteria. This is usually accomplished through the use of a filter question. However, it is important to avoid constructing sections in the questionnaire which are to be answered by a subset of the respondents only as it "...may lead respondents to believe the [questionnaire] is not appropriate [for them] or it may cause frustration and result in fewer completions" (Berdie *et al* 1986). In the WNMF survey, filter questions with redirection were not used. Instead, to reduce the potential confusion caused by redirecting respondents to various questions, an additional category was added to some response sets to allow the respondent to answer every question if he or she wished to. In the following question sequence, the extra category "I do not snare rabbits" has been added to questions 31 and 32 to allow those who do not snare rabbits an opportunity to provide an answer for the questions instead of redirecting them past those questions in question 29 or 30.

29. Do you snare rabbits?

Yes No

30. Have you heard about a new rabbit snare which protects the pine marten?

Yes No

31. Have you used the new snare that protects the pine marten?

I do not snare rabbits Yes No Not sure

32. If you have not used the new snare, would you be willing to use it in order to protect the pine marten?

I do not snare rabbits	Definitely yes	Probably yes	Probably no	Definitely no	Not sure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

There is only one question in the WNMF survey which is to be answered by only a subset of the respondents. Within the question the subset is explicitly defined and any respondent who does not fall within that definition are expected to go to the next question.

33. If you have used the new rabbit snare, please indicate your level of agreement or disagreement with each of the following statements by placing a check (✓) in the appropriate box.

It should also be noted that the use of section headings with short descriptions provides visual cues in a self-administered survey indicating that a new topic is being introduced (Gray and Guppy 1994). The WNMF questionnaire has been divided into five sections, each beginning with a section heading similar to the following:

SECTION 2: This section deals with public involvement in forest management. We would like to know what you think of your own involvement, and that of the public, in the management of the forests of western Newfoundland.

Pilot Testing

Conducting a pilot test prior to full survey implementation is one of the most important steps in survey design and is crucial irrespective of whether a questionnaire is administered by trained interviewers or self-administered (Marans 1990). A pilot test, sometimes called pilot work or pretesting, is administered to a small number of people to refine all aspects of the survey methodology including sampling procedures, introductions and cover letter, and the questionnaire. It allows "...investigators to determine whether the questions are clear and understandable to the respondents, and whether the questions are asking what the investigators think they are asking (i.e., are the questions valid?)" (Denenberg 1976). They can also help determine the length of time it takes to administer the questionnaire. Often the pilot test will reveal serious

defects in the questionnaire or other parts of the experimental procedure which might not otherwise be detected (Lathrop 1969).

Oppenheim (1992) suggests that "...every aspect of a survey has to be tried out beforehand to make sure that it works as intended." This included such things as questionnaire layout and the colour of the paper, in addition to the instructions and various question wordings.

Pilot work is especially critical with a mail survey as the inclusion of even a single awkward question might result in a high rate of non-response (Moser and Kalton 1972). The problems associated with non-response are discussed elsewhere in this report. It is also important that the respondents of the pilot work be a judgement sample, that is, as similar as possible to those in the main study. In the pilot work, the questionnaire is administered to volunteers who, upon completion of the questionnaire, are asked if they had any difficulties with questions, response categories, instructions, and other items. At the same time, the completed questionnaires are reviewed by the researcher to determine patterns of response along individual questions (e.g., if all the volunteer respondents answer a question in the same way, then that question may have to be dropped or changed).

Participation Solicitation

Although personal interviewing will not be used to actually collect the survey data, initial contact by telephone to solicit participation will be conducted. The potential respondent's name and mailing address will be collected at this stage once he or she has agreed to participate.

During this initial contact, information about the survey, the sponsor agency, and how the potential respondent was selected will be provided. Each interviewer will be given a standardized introduction (Appendix 4) to minimize possible interviewer bias and refusal rates. The introduction should contain enough information to reduce as much as possible any nervousness on the part of the person answering the telephone who hears that a stranger is calling to conduct a survey. It should be brief and, at a minimum, contain the following information (Lavrakas 1993):

- 1) identification of the interviewer, the interviewer's affiliation, and the survey's sponsor;
- 2) a brief explanation of the purpose of the survey and its sampling area (and how they were selected);
- 3) some positively worded phrase to encourage cooperation; and
- 4) verification of the telephone number dialled by the interviewer.

"The first 30 to 60 seconds of contact are crucial, particularly from the standpoint of minimizing nonresponse" (Lavrakas 1993). It is important that the credibility of the interviewer, and thus the survey, be established as soon as possible. It is also important to have a series of "fallback statements". These are prepared in case potential respondents request further information on the telephone. A series of fallback statements for the Western Newfoundland Model Forest survey are contained in Appendix 5.

Effective interviewing requires trained interviewers (Brenner *et al* 1985). Billiet and Loosveldt (1988) found that trained interviewers have typically high response rates. As such, an information and training session will be held for the selected interviewers. During this session, the interviewers will receive information about the study, answers to commonly asked questions (fallback statements), expected refusal rates, and a standardized statement of introduction. Most of the interviewers will be female as several researchers have suggested that females may be better interviewers as they are perceived to be less threatening than males.

In order to ensure careful tracking of the telephone interviews, call sheets (Appendix 6) and disposition codes for use with the call sheets (Appendix 7) will be utilized.

As with similar surveys (Bath Associates 1995), it can be expected that 5-10% of the telephone numbers will no longer be in service due to the transitory nature of the Corner Brook population, 5% of the numbers will not be reached after three attempts, and approximately 10% of the individuals contacted will refuse to participate.

In an effort to increase responses, placement of advertisements in the local papers announcing the survey and encouraging

participation if contacted will be investigated.

Data Collection

Data will be collected through a questionnaire which will be mailed out to potential respondents.

Mail-out Format

Dillman (1978) in his "Total Design Method" clearly outlines how a mail survey should be implemented. Special attention is paid to the cover letter, the envelopes, postage, and follow-ups.

Cover Letter:

The accompanying cover letter is very important in a mailed questionnaire as it represents "...virtually the only opportunity the researcher has for anticipating and countering respondent questions" (Dillman 1978). It effectively takes the place of the interview opening. It is usually the first thing examined by the respondent upon opening the survey package and serves to introduce the survey and hopefully motivate the respondent to immediately complete the questionnaire and return it promptly. The cover letter must also overcome any prejudice the respondent may have against surveys (Moser and Kalton 1972).

Appendix 2 contains the cover letter for the WNMF survey along with an outline of its various components as suggested to be included by Dillman (1978). One crucial component is an indication of why the respondent should take the trouble to reply. "Surveyors are all too ready to *expect* people to answer their questions without being told what it is hoped to gain from the survey" (Moser and Kalton 1972).

Dillman (1978) sums up the importance of carefully drafting the cover letter by stating "...its crucial role in serving as the main, and perhaps the only, communication link between researcher and respondent makes such time well spent."

Preparing the Envelope:

The role of the envelope is to entice the respondent to open it and to convey an impression consistent with the message contained inside. The envelope should be the smallest possible with a regular business size envelope being ideal as it gives the impression that normal business mail is being sent and that the questionnaire is small and should not take very long to complete. A small envelope will also aid in reducing the amount of postage to be paid. For the WNMF survey, the envelope is not as critical as would normally be the case as the respondent will be expecting the survey; that is, receipt of the envelope will not be the first indication that they are being asked to participate in a survey. An appropriate sized envelope that will both reduce postage and unnecessary hassles in mailing will be chosen for this survey.

Stamped, first-class mail is always used in a mail questionnaire (Dillman 1978). Firstly, it has been found to present a better impression than bulk mailings. As well, it gets a very high handling priority within the Postal Service. If a recipient has moved, it can be forwarded and if it cannot be delivered it will be returned to the sender aiding in determining causes for nonresponse.

Identifying the Questionnaire:

Each questionnaire will be stamped with an individual identification number. The use of this number may cause some respondents to doubt the guaranteed confidentiality of their responses. However, the following statement, included in the cover letter, should aid in alleviating these concerns:

The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off of the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire.

The rationale for the identification number is partially explained in the above statement. Once a respondent's name has been removed from the mailing list, follow-up mailings need not be sent to those individuals, only to those whose responses have not been received. The number is prominently displayed on the first page of the questionnaire and not 'hidden' within. As well, the respondent may remove the identification number if they choose without resulting in any loss of data. Dillman (1978) stresses the importance of being very careful with any identification process in order to be open about using

it and to reduce any potential frustrations on the part of respondents who send in their completed questionnaire but continue to receive follow-ups.

Preparing Return Envelopes:

The final element in the mailout package is the preaddressed, postage-paid return envelope. According to Dillman (1978), response rates would suffer significantly without it.

Follow-ups:

Without follow-ups, writes Dillman (1978), response rates would be less than half those normally attained regardless of how interesting the questionnaire or impressive the mailout package. He suggests the use of three carefully timed mailings: at one week, three weeks, and a final seven weeks after the initial mailing. The first is to be simple postcard reminder serving both as a thank you for those who have responded and as a friendly and courteous reminder for those who have not. Appendix 3 contains a sample postcard follow-up. The identification number will allow for the sending of follow-ups to only those whose responses have not been received thus reducing postage and other costs.

Dillman (1978) recommends that the second follow-up be a new cover letter and an additional copy of the questionnaire and the third similar to the second. It would also be possible, although time consuming and potentially costly, to conduct at least one follow-up by telephone. This could also provide an opportunity to determine why people did not respond.

Babbie (1996) recommends the construction of a return rate graph to track the number of returned questionnaires daily. The day the questionnaires were mailed represents Day 1 of the graph and each day thereafter the total number of returned questionnaires are logged on the graph cumulatively. This should aid in determining the most appropriate time to send out the follow-ups.

Methods of Increasing Response Rate

The issue with low response in mail questionnaires is “not the number or proportion of non-respondents, but the possibility of bias” being introduced (Oppenheim 1992). Therefore it is important to have the response rate as high as possible.

There is no doubt that “...the mail questionnaire is an imposition. To justify an imposition, to convince a potential respondent he [or she] should volunteer his [or her] time and energy to an unknown researcher, it is necessary to anticipate resistance and to design procedures calculated to overcome resistance” (Bachrack and Scoble 1967). Studies have found a number of factors which can increase response rates in mail questionnaires. Dillman (1978), Miller (1991), Moser and Kalton (1972), and Oppenheim (1992) outline factors such as giving advance warning of the survey, providing an explanation of the sampling method and how the respondent was chosen, indicating sponsorship of the survey, giving advance publicity of the survey in the local media, providing incentives for questionnaire completion, ensuring the questionnaire looks professional and is easy to follow and understand, and using stamps on the return envelopes rather than business reply mail or postage metres. Of course, the length of questionnaire also plays an important role in response rates and this is generally interrelated with the topic and its degree of interest to the respondent.

“...assuring respondents of absolute confidentiality has a small but significant and consistent effect on willingness to answer individual questions. Nonresponse rates for sensitive questions are consistently and sometimes significantly lower when people are told that their replies will be held in confidence...” (Bradburn and Sudman 1979). Confidentiality is usually honoured by reporting only aggregate (i.e., grouped) data so that individual responses to questions cannot be identified (Leong and Austin 1996). Anonymity (different from confidentiality) can also be used, but assuring anonymity eliminates the possibility of reminders or follow-ups.

Reminders, through follow-up phone calls or the sending out of postcards, are frequently utilized to increase response rates for surveys. As Dillman (1972) indicated, “Persistence pays off” and is “...especially crucial” in increasing mail questionnaire response rates.

There have been some studies on the effects of personalization on questionnaire response rates (Carpenter 1974-75). Oppenheim (1992) indicated that the appearance of the first envelope (i.e. addressed personally, professional look) can be an important factor in influencing response rates. There is a much greater chance of the questionnaire being unopened

or uncompleted if it has the appearance of junk mail rather than a personal and professional looking document. As well, through the use of computers, "...the appearance of personalization can be achieved without a substantial input of manual labor and at the same time maintaining high response" (Carpenter 1974-75). Overall appearance of the questionnaire can frequently determine whether it is read or discarded (Berdie *et al* 1986).

Although generally not applicable to a postal survey, rapport between the respondent and an interviewer can be another crucial factor in influencing response rates to questionnaires. With the Western Newfoundland Model Forest survey, rapport will be a factor as advance warning and the request for participation in the survey will be conducted by telephone.

Sampling

Sampling allows for the estimation of population parameters from information contained within a sample (Mendenhall *et al* 1971). Figure 3 outlines the logical sequence of going from a defined population to a sample in order to draw inferences about the population.

There are three main advantages for using a sample rather than a census of the entire target population (Berdie *et al* 1986; Silk 1979):

- 1) the survey can be done for less expense;
- 2) the survey can be done in less time; and
- 3) the quality of the data is usually better.

The major limitation of sampling, however, is *sampling error* which represents the difference between a sample estimate and a population parameter that are generally unavoidable. "Unless certain precautions are taken, sample estimates may be biased, thus tending systematically to over- or underestimate the quantities of interest..." within the target population (Silk 1979). Some form of probability sampling, in which every element of the population has a known, non-zero chance of being selected for the sample (Williamson *et al* 1982), must be utilized to ensure minimum bias and maximum precision given the available resources to conduct the survey (Silk 1979). The four most basic types of probability sampling are: simple random sampling, systematic sampling, stratified random sampling, and cluster sampling. It is only with probability sampling that the amount of error involved in sampling a small portion of a population be estimated (Backstrom and Hursh 1963).

The sample design refers to the overall plan that guides the selection of the survey sample which represents the population of interest. It identifies the target population, the geographic area to be covered by the sample, how the sampling pool will be generated from the sampling frame, how respondents will be chosen within a sampling unit, the size of the final sample, and any post-sampling weighting adjustments deemed necessary (Lavrakas 1993). The relationship among the various basic sampling terms is illustrated in Figure 4.

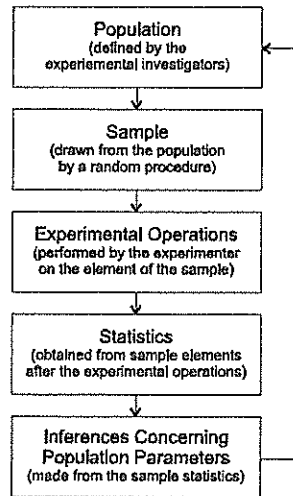
Sampling Frame

The *sampling frame* is the list of people in the target population from which those to be telephoned and subsequently sent the questionnaire is generated (Lavrakas 1993). The geographic area to be covered by the study was determined in consultation with the Project Steering Committee and included all residents who are living in or adjacent to the Western Newfoundland Model Forest. This region ranges from the communities within Gros Morne National Park, Deer Lake, the Humber Valley, Corner Brook, both the north and south shores of the Bay of Islands, and south to Stephenville and vicinity.

The November 1998 telephone directory for western Newfoundland will be used to generate the sampling frame. It contains all the exchanges for the above region. It should be noted that only those exchanges which fall within the region identified above will be used. A listing of those exchanges are contained in Appendix 1.

Figure 3:

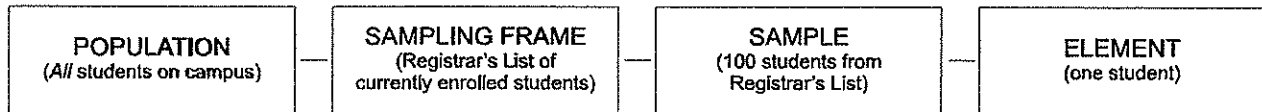
Logical Sequence of Going From a Defined Population to a Sample in Order to Draw Inferences About the Population



(Adapted from Denenberg 1976)

Although 100% of residents in an area are not listed in a telephone directory, the use of telephone directories is a widely accepted, reliable, and valid practice in social science research. “In survey samples drawn from a telephone directory, there is a danger that bias exists because first, not all people live in households that have a telephone, and second, not all telephone numbers are listed in the directory” (Berdie *et al* 1986). As well, they may either exclude portions of the study area and/or include unwanted territories (Sheskin 1985); however, a careful examination of the directories can reduce the potential for unwanted numbers being included in the sampling pool. Dillman (1978) has used telephone directories extensively and has suggested that phone directories have the advantage of being readily available, free of legal entanglements, and are fairly recent in their listings. In the Corner Brook area, approximately 99% of households have telephones. Residents 18 years of age and over in each household will have an equal chance of selection. Perry (1968) says that “...there is a distinct advantage in taking a sample from the telephone directory as soon as possible after it has been issued” as it will aid in minimizing the number of not-in-service numbers. The telephone directory to be used was effective from November 1998.

Figure 4:
Relationships Among Basic Sampling Terms



(Adapted from Shaughnessy and Zechmeister 1990)

Sample Size

One of the first questions asked by many when a survey is to be conducted is, “How large must the sample be?” Although there are many other factors to consider in designing a survey, this question is crucial because the size of the sample will have major impacts on the amount of time and money that must go into data collection (Williamson *et al* 1982).

Sample size is affected by the extent to which the population is homogeneous, the kind of sampling procedure being used, the amount of time, money, and personnel available; and the number of categories by which the collected data are to be analyzed (Backstrom and Hursh 1963; Oppenheim 1992). It should be noted that the size of the population generally has little bearing on sample size whenever the sample size is to be less than 5% of the target population (Backstrom and Hursh 1963).

Another important factor in determining sample size is the degree of confidence, or the level of accuracy, desired by the sample. Degree of confidence is usually expressed as an assurance that in 95 (or 99) out of 100 samples like ours, the true value is within the estimated range of tolerated error (Backstrom and Hursh 1963). In other words, we mean that we are confident that our estimated value for the target population based on our sample is within $\pm 5\%$, for example, of the true value for that population 95% (or 99%) of the time.

Table 2:
Simple Random Sample Size for Several Degrees of Precision

Tolerated Error	Confidence Limits	
	95 samples in 100	99 samples in 100
1%	9604	16587
2%	2401	4147
3%	1067	1843
4%	600	1037
5%	384	663
6%	267	461
7%	196	339

(Source: Backstrom and Hursh 1963)

It is clearly evident from Table 2 that the price that must be paid for enhanced precision and confidence is grossly increased samples sizes and thus time and costs. How precise or reliable we demand the sample result to be depends on how much risk we want to afford to take in using the data and how much error we tolerate depends on the use we intend for the data (Backstrom and Hursh 1963).

For this survey, a confidence level of 95% with a confidence interval (range of tolerated error) $\pm 5\%$ is being sought. The degree of precision and confidence levels desired requires a sample size of at least 384 respondents (Table 2). Sample size here indicates the number of completed and return questionnaires, and not the number originally mailed. Therefore, our sampling pool must be much larger than the required sample size in order to account for data (i.e. questionnaires) that will not be returned (Backstrom and Hursh 1963). Previous mail survey response rates for the area indicate responses rates can be expected to be between 50-60%. As it is reasonable to expect a similar response rate with this survey as the topic is of importance to the target population, a minimum of 770 surveys must be mailed. In addition, the sampling pool itself should be slightly larger than this to account for refusals to participate during the telephone phase, out of service numbers and other telephone problems, and non-deliverables through mailing. Approximately 830 households will be selected from the sampling frame.

Sampling Error and Bias

Sampling error refers to the differences between sample statistics and their corresponding population parameters (Williamson *et al* 1982). These arise as the result of probability sampling and are unavoidable but measurable. There are, however, a number of other factors that can reduce the accuracy of estimates based on a sample. These are generally referred to as nonsampling errors or bias. Sources of bias include the failure to choose an appropriate sampling frame, nonresponse especially in mail or other self-administered surveys, and in improper respondent selection (Williamson *et al* 1982).

The main bias that is introduced in self-administered questionnaires arises from the generally low response rates. Low response rates in self-administered questionnaires (e.g. mail-out survey) can introduce bias into the sample because "...the

people who answer questionnaires may not be representative of the population of interest” (Mendenhall *et al* 1971). Indeed, Raj (1972) indicated that experiences in data collection in many fields has clearly shown that non-respondents often differ from the respondents in many respects and their exclusion may introduce errors or bias in the results.

Sampling Procedure

Once the target population has been identified and the sampling frame selected, a representative sample needs to be selected. When using a list as the sampling frame, a telephone book for example, it is important to utilize a technique that allows for selection throughout the entire listing (Lavrakas 1993). Systematic sampling will allow for this in addition to being convenient to use and easy to check whether the sample was drawn according to instructions (Raj 1972). Systematic sampling is a sampling technique in which a sample is obtained by selecting one element from the first k elements in the sampling frame and every k th element thereafter (Mendenhall *et al* 1971). The value of k will be such so as to allow for one complete pass through the sampling frame. The starting point within the first k elements will be determined by a random number. The principal rule in drawing a sample is “to leave as much as possible to chance” (Backstrom and Hursh 1963). In cases where a business is selected, the next residential address will be used. Systematic sampling is appropriate where the items in the sampling frame are more or less in random order (Silk 1979). “If the [sampling] frame is an alphabetical listing of names (e.g. telephone book) it is reasonable to assume that the names on the list are unrelated to the variable being measured” in the attitude survey (Mendenhall *et al* 1971).

Compile and Analyze Data

This stage of the survey process covers code book development, compilation of the raw data, planning the analysis of the data and the data analysis itself (Figure 1).

Coding the Questionnaire

Coding refers to the transformation of the raw questionnaire data into numerical scores which can be aggregated for statistical purposes (Sommer and Sommer 1991). In coding, a number or letter is assigned to each alternative response. It is these codes which are transferred to worksheets or, preferably, into a computer for processing. Coding can be done either on the questionnaire itself before it is sent out (pre-coding) or once the questionnaires have been returned (post-coding). Listing the codes on the questionnaire before data collection, pre-coding, avoids the labourious and time-consuming task of post-coding the response alternatives (Alreck and Settle 1985).

Coding is critical if open-ended questions are used (Schuman and Kalton 1985). As the responses can greatly vary in open-ended questions, it can be very difficult to pre-code potential alternatives even with pilot testing.

For each questionnaire, a code book should be developed. The code book is an assembly of three components: 1) the complete text of the original questionnaire; 2) the variable allocation document; and 3) the coding frames (Oppenheim 1992). The variable allocation document is a list outlining which variable numbers have been allocated to each question or response alternative. In other words, which questions or responses will aid in answering which of the original study questions. A coding frame is the system of categories which define the responses to questions and is very important for open-ended questions. It is also important to include codes for no answer, multiple answers, and don’t know or not sure. The codes for these responses should be the same for all questions.

The Western Newfoundland Model Forest questionnaire will be post-coded due to the number of “Other (please specify)” categories found throughout the questionnaire.

Interpret and Report Findings

The data will be interpreted based on the statistical analysis carried out and included in the final report for the project. Interpretation of the results will be reviewed by the Project Steering Committee. Reporting on the results will follow accepted social research reporting standards. As well, all raw data and summations will be made available to the Western Newfoundland Model Forest.

Ethical Considerations

Ethical practices are extremely important in all aspects of social science research (Schuman and Kalton 1985). In the mailed questionnaire, there are two main ethical considerations: 1) informed consent, and 2) confidentiality.

In the WNMF survey, the sampling pool will be generated with a random sampling procedure as outlined under "Sampling Procedure". All the potential respondents will be initially contacted by telephone to request their participation in the survey. At that time, they will be informed as to the objectives of the survey and the need for their participation. Their agreeing to participate and their subsequent completion of the questionnaire will all be voluntary.

In addition, confidentiality will be ensured for all respondents. A rationale for this, in addition to being an ethical consideration, can be found under "Methods of Increasing Response Rates". Confidentiality of the responses will be highlighted during the initial telephone contact and in the cover letter to accompany the questionnaire:

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off of the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire.

In addition, confidentiality is further stressed in the heading for Section 5 (socio-demographic information) of the questionnaire:

Please note that all your responses will be confidential. Any information that may identify you will not be disclosed under any circumstances.

The overall survey design including the questionnaire will be reviewed by the Ethics Committee at Sir Wilfred Grenfell College.

APPENDIX 1:
Telephone Exchanges in the November 1998
Western Newfoundland Telephone Directory

Exchanges to be included in survey sampling frame:

Corner Brook	Rocky Harbour	Woody Point
Cow Head	Stephenville	
Deer Lake	Trout River	

Exchanges to be excluded from survey sampling frame:

Black Duck Cove	Great Harbour Deep	Port Saunders
Brig Bay	Green Island Cove	Raleigh
Burgeo	Hampden	Ramea
Conche	Hawke's Bay	Reef's Harbour
Cook's Harbour	Griquet	River of Ponds
Daniel's Harbour	Jackson's Arm	Roddickton
De Grau	Jeffrey's	Rose Blanche
Englee	Lapoile	Sop's Arm
Flower's Cove	Lourdes	St. Anthony
Grand Bruit	Main Brook	
Grandois	Port aux Basques	

APPENDIX 2:

Cover Letter for WNMF Survey on Sustainable Forest Management Issues

Introduction: what the study is about; its social usefulness	How the forests of western Newfoundland are used and managed is of concern to us all. These forests provide employment, opportunities for hunting and fishing, wood to heat our homes, berries to eat, and places to ski and snowmobile. However, forest managers do not really know what is thought about forest management issues in western Newfoundland.
How the recipient was selected and why he or she is important	You are one of a small number of people who are being asked to give their opinion on these issues. Your household was drawn in a random sample from the western Newfoundland telephone directory and subsequently called to ask for your participation. Thank you for agreeing over the phone to participate in this study. In order that the results will truly represent the thinking of the people of western Newfoundland, it is important that each questionnaire be completed and returned.
Promise of confidentiality; explanation of identification number	You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off of the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire.
Usefulness of study	This study is being funded by the Western Newfoundland Model Forest. The results of this research will be made available to forest managers and all interested citizens. You may receive a summary of results by writing "copy of results requested" on the back of the return envelope, and printing your name and address below it. Please do not put this information on the questionnaire itself.
"Token" reward for participation	
What to do if questions arise	I would be most happy to answer any questions you might have. Please write or call. The telephone number is (709) 639-1505. My address is included at the back of the survey.
Appreciation	Thank you for your assistance.
Pressed blue ball-point signature	Sincerely,
Title	Brian Bonnell Project Director

**APPENDIX 3:
Sample Postcard Follow-up for the
WNMF Survey on Sustainable Forest Management Issues**

Date mailed	[<i>Date</i>]
Tie to previous letter	Last week a questionnaire seeking your opinion about forest management in western Newfoundland was mailed to you. Your household was drawn in a random sample from the western Newfoundland telephone directory and subsequently called to ask for your participation.
Thanks to early responders	If you have already completed and returned it to us please accept our sincere thanks. If not, please do so today. Because it has been sent to only a small, but representative sample of western Newfoundland residents it is extremely important that yours also be included in the study if the results are to accurately represent the opinions of western Newfoundland residents.
Why recipient is important	
Invitation to get replacement questionnaire	If by some chance you did not receive the questionnaire, or it got misplaced, please call me right now, collect (709-639-1505) and I will get another one in the mail to you today.
Pressed blue ball-point signature	Sincerely,
Title	Brian Bonnell Project Director

APPENDIX 4:
Sample Telephone Introduction for Use
During Participation Solicitation Phase

Hello, my name is _____, and I'm calling from the Western Newfoundland Model Forest. We are conducting a random survey of 800 residents in western Newfoundland. The purpose of the survey is to determine how people feel about forest management in western Newfoundland so that managers can be made aware of your concerns and improve how our forests are being managed. Your cooperation is voluntary, but we'd greatly appreciate your help. As well, your responses will be completely confidential.

Before I continue, may I please verify that this is [*telephone number*].

If you decide to participate, the short questionnaire will be mailed to you within the next few days. May I please get your name and mailing address.

Thank you for your cooperation. You should receive the short questionnaire within a week.

**APPENDIX 5:
Fallback Statements for Use
During Participation Solicitation Phase**

1. What is the purpose of the survey and how will the findings be used?

This survey is trying to determine the opinions of the people of western Newfoundland on sustainable forest management issues. The results of this research will be made available to forest managers and all interested citizens. The information will be used by forest managers to aid in improving forest management in Newfoundland including how local residents can become more involved in deciding how the forests of the province are used.

Please remember that your answers to the questionnaire are confidential and your cooperation is voluntary but would be greatly appreciated.

2. How did you get my telephone number?

Your household was drawn in a random sample from the western Newfoundland telephone directory. You are one of a small number of people who are being asked to give their opinion on forest management issues in western Newfoundland. Please remember that your answers to the questionnaire are confidential and your cooperation is voluntary but would be greatly appreciated.

3. Who is conducting / sponsoring this survey?

This survey is being sponsored by the Western Newfoundland Model Forest, a non-profit organization which was established to develop new and innovative ways of managing the forest resources of western Newfoundland. They have asked Namita Environmental, an independent, private environmental consulting organization to implement this survey on their behalf.

Your cooperation is voluntary but would be greatly appreciated. Please remember that your answers to the questionnaire are confidential.

4. Why can't someone else in my household participate?

Your telephone number was selected from the western Newfoundland telephone directory through a random selection process. It is extremely important in conducting a survey that the respondent, you, be selected through a completely random process. This is to ensure that the people selected will be representative of the entire population of western Newfoundland. As well, for each household called, we ask the same question to select the person who is to respond again to ensure randomness.

Because only a small, but representative sample of western Newfoundland residents is being selected to participate, it is extremely important that your response also be included in the study if the results are to accurately represent the opinions of western Newfoundland residents. Please remember that your answers to the questionnaire are confidential and your cooperation is voluntary but would be greatly appreciated.

APPENDIX 6:
Sample "Call Sheet" for Recording Contact Attempts
During Participation Solicitation Phase

Telephone Number:

Contact Attempt	Date	Time	Disposition Code	Interviewer ID	Notes	Respondent Name and Address
1						
2						
3						

**APPENDIX 7:
Disposition Codes for Controlling Sample Pool
During Participation Solicitation Phase**

Disposition Code	Explanation
10	No answer after 7 rings
11	Busy, after one immediate redial*
12	Answering machine (residence)
13	Household language barrier
14	Answered by non-resident
15	Household refusal; use "15H" for immediate hang-up without comment*
20	Disconnected or otherwise not working
21	Temporarily disconnected
22	Business, other non-residence
23	No one meets eligibility criteria
30	Selected respondent temporarily unavailable
31	Selected respondent unavailable during survey period
32	Selected respondent unavailable due to physical / mental disability
33	Language barrier with selected respondent
34	Refusal by selected respondent*
35	Completed interview (name and address obtained)

(Adapted from: Lavrakas 1993)

*Busy signal - carefully redial to ensure number was correct the first time.

*Refusal - indicate reason for refusal, if known.

APPENDIX 8:
Survey Questionnaire on
Sustainable Forest Management Issues in Western Newfoundland