

**REPORTING ON LOCAL LEVEL INDICATORS:  
BARRIERS AND SOLUTIONS**

**DRAFT**  
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## 1. Introduction

This report provides a concise summary of the experience learned in compiling the Western Newfoundland Model Forest's first *State of the Forest Report*. It is intended to document the achievements made in carrying out the Model Forest's initiatives towards identifying, measuring and reporting on locally relevant indicators of sustainable forest management. At the same time, it provides a commentary that is intended to be relevant to other agencies involved in monitoring and reporting on criteria and indicators of sustainable forest management. In particular, the following groups are potential readers of this report:

- the Western Newfoundland Model Forest's Criteria and Indicators Steering Committee;
- other people and agencies that have contributed to this initiative;
- District Managers and Planning Teams across Newfoundland and Labrador who are engaged in monitoring and reporting on local level indicators;
- other Model Forests across Canada;
- the Local Level Indicators working Group of the Canadian Model Forest Network; and
- agencies using the Canadian Standards Association's SFM Guidance Document (Z808).

This report is based firstly on the specific experiences gained by chief compiler and writer of the Western Newfoundland Model Forest's first *State of the Forest Report*, and more generally on the author's previous extensive experience with the development of local level indicators across the Canadian Model Forest Network. It does not presume to represent or reflect the experience of the many other people who devoted considerable efforts towards completing the *State of the Forest Report*. Its usefulness will ultimately depend on the extent to which issues discussed in the report resonate with readers who are involved in their own initiatives to monitor and report on criteria and indicators of sustainable forest management.

This report is intended to be read as a companion piece to the *State of the Forest Report*, and will refer to that report throughout (usually shortened to SOFR) for illustrative examples. Numbers in parentheses correspond to indicators in the SOFR.

It is important to note that the SOFR was intended to be accessible to any interested person. The decision to target the report to a broad audience had a number of implications that affected how it was researched and written, such as the need to craft concise and accessible summaries of a few key indicators. The comments below should be seen in the light of this decision.

All in all, the experience of compiling the SOFR was a valuable and rewarding experience. The commentary that follows in the subsequent sections focuses on problems, but this should in no way be seen as a negative reflection on the validity of the entire exercise. It is intended to stimulate opportunities for networking and sharing information with others about how to resolve particular challenges.

## 2. Overcoming Challenges in Data Collection

This section reviews some of the difficulties that were encountered in data collection, as well as the solutions that were found.

### 2.1 Data not available for the indicator selected

This turned out to be a surprisingly common problem. When selecting indicators, people would often say “Yes, that information is available,” yet when it came time to actually collect the information it often proved to be unavailable for a variety of reasons. Examples are given below, along with how we resolved this gap.

**Population levels of selected species.** This is a common indicator. The fact is, however, that it is costly and difficult to carry out rigorous censuses of animal populations on a regular basis. Biologists tend to rely on indirect methods, such as relative abundance and the like. We resolved this problem in a number of ways:

- a) We used figures on relative abundance to show trends in snowshoe hare and lynx populations (2.2). This has the disadvantage of being a very rough figure, with a high degree of subjective judgement, and it provides no information about actual numbers of animals. In this case, however, our interest was primarily in showing the relationship between fluctuations in hare populations and trends in lynx abundance - showing that under ordinary circumstances lynx are expected to thrive when hares thrive. Statistics on relative abundance do show this relationship quite nicely.
- b) For pine marten (1.5), we used distribution maps based on available habitat. In this way it was possible to show trends over a long period of time. While research is still ongoing as to the precise habitat requirements of marten, the sequence of distribution maps shows at least why marten distribution is an area of concern for forest managers interested in sustainable forest management. The distribution maps do not give a definitive “explanation” for the decline of marten populations, but this trend is understood to be a significant part of the overall picture.
- c) In the case of caribou populations (1.4) there are no accurate census figures on the total numbers of caribou within the Western Newfoundland Model Forest. However, two significant and distinct populations (the Gros Morne and Corner Brook Lake herds) have been studied and counted in recent years, and we decided to report on this information because it is accurate and up-to-date. In these cases we are unable to show long-term trends, but provide a “snapshot” that can serve as a baseline to compare with future censuses.

**Water quality.** Figures on water quality are difficult to report on, because each watershed has its own characteristics. It is rarely practical or possible to monitor each watershed - even each major watershed - and in any case there is a risk of being overwhelmed with a huge amount of data, with trends not easily discernible. Our solution (3.2) will be to report on some of the

findings from a study that the Model Forest had participated in, evaluating the impacts on water quality of various logging methods and riparian buffers. This is, in effect, a kind of “case study,” rather than a long-term monitoring commitment. The disadvantage is that it is a “one-off” initiative; when the study is completed there will be no long-term commitment to data gathering. On the other hand, the information has been carefully gathered, and reporting on it in this report helps to ensure that its findings are more widely disseminated.

**Soil disturbance.** The impact of logging activities on the soil is one area of critical interest in any framework of C&I. However, there is no routine and systematic *quantitative* assessment of this impact. One indirect method of measurement is to record the number of infractions or areas of concern noted in post-harvest assessments, but several concerns have been expressed with this method of measurement (e.g., the focus on “negative” measurement, and the possibility that an increase in citations is due to increased enforcement rather than on-the-ground changes). The method used in the SOFR (3.1) was to simply report on the results of a systematic assessment that was carried out from 1990-95, and is currently in the process of being repeated.

## **2.2 Data not available at the spatial scale required**

In preparing a *State of the Forest Report* for the Western Newfoundland Model Forest our goal was to report on indicators that applied to that area. Often this requires an approximation, because administrative districts do not precisely overlap. Whenever possible, we used the appropriate administrative district: Forest Management Districts 14, 15 and 16 (for information about forest disturbances); Snoeshoe Hare Zone 4 and Furbearer Zone 10 (for snowshoe hare and lynx figures respectively). The Model Forest’s attitudinal survey, used for a number of indicators, deliberately expanded its scope to include communities in western Newfoundland that are outside the Model Forest. And in some cases - such as marten distribution - we determined that it was preferable to look at trends across the Island, since it is the survival of the Newfoundland marten that is the real issue, and not simply its viability within the Model Forest boundaries.

## **2.3 Inconsistencies in temporal scale**

Ideally, a *State of the Forest Report* would show all data for a particular time period. This is not always possible, however, because for some indicators the information is gathered irregularly. In general, we were guided by the following principles:

- a) provide the most up-to-date accurate information; and
- b) where possible, show trends over time.

As a result, each indicator is handled differently. This approach has the significant benefit of reporting the *best* and *most meaningful* information for each indicator; an advantage that significantly outweighs the disadvantage of having inconsistencies between indicators.

## **2.4 Technical challenges in merging different digitized data sets**

The Newfoundland Forest Service maintains a forest inventory that includes information on species and age class for most areas of “productive” forest across the province, but does not include the area within Gros Morne National Park, which maintains its own digitized inventory. *In theory*, these

databases are compatible; however, merging them to produce a single map has proved to be a significant challenge. This is a technical barrier that the Model Forest could play a role in helping to overcome, since it is clear that “Integrated Forest Management” decision-making would be aided by the better integration of these data sets.

### **2.5 Too much work, not enough staff time**

Some of the indicators seemed to be relatively straightforward but when actually requesting the information it became evident that answering the request would be considerably more time-consuming than had been anticipated. These requests often ended up on the desks of people who were already busy with their “regular” responsibilities. This is, of course, not really a new issue; nor is it a “solvable” problem. However, the publication and distribution of the SOFR should help to generate increased understanding and appreciation of the value of reporting on forests and forest management in this way, generating commitment and enthusiasm towards updating and improving on the information contained in the report. The critical task is to provide a report that is genuinely useful to the people and agencies supplying the information; once they understand this then their active collaboration is a matter of enlightened self-interest rather than a tiresome extra task.

### **2.6 Data “hoarding”**

Sometimes people or agencies with information show a reluctance to readily share that information, and on occasion this resulted in some resistance to providing information on certain indicators. There are a number of potential reasons for this reluctance, and below are a few observations on how best to address two potential factors.

- a) **Concerns with possible misuse of the information.** This is a significant and legitimate concern. The way it was addressed in compiling the *State of the Forest Report* was that every effort was made to ensure that people who provided information received a draft copy of what was written and the opportunity to comment on it before it was circulated further. This method worked well, and sources were generous in offering suggestions for improving how the information was presented and interpreted, and in giving their blessing to the result. It is important to continue to honour the relationship of trust that is established in this way; any further changes to how each indicator is reported on or interpreted should be done with the collaboration and approval of the agency or person supplying the information.
- b) **Proprietary “ownership” of information.** There is sometimes an unfortunate tendency to fear that sharing information means losing power over how that information is used, and to therefore avoid releasing the information except in tightly controlled circumstances. This attitude is antithetical to what the Model Forest stands for. Moreover, the Model Forest can demonstrate that this notion is false and counterproductive, by helping to enhance the visibility and profile of agencies that do share their information readily. A good *State of the Forest Report*, after all, will be read and understood by a broader audience than the comparatively small world of specialized experts in a particular field. Model Forest partners have a role to play in supporting the principle of transparent decision-making, by providing high-level support for the effective sharing of information.

### 3. Interpretation

This section contains a few observations on the difficulties that are encountered whenever trying to use specific indicators to draw general conclusions about sustainable forest management.

#### 3.1 Practical limitations to interpretation

As a result of the flexible approach to collecting data that was described in the previous section, we found that there were a number of limitations to how the data could be interpreted. Some of the problems we encountered included, with examples provided for illustration:

- a) small sample sizes (such as relative abundance of lynx, 2.2);
- b) only one data set, which doesn't allow for reporting on trends (results from the attitudinal survey);
- c) insufficient time between data collection points to provide meaningful trend lines (caribou populations, 1.4);
- d) "noisy data" where it is difficult to say with certainty what factors are influencing the trend (drinking water quality, 3.3);
- e) uncertain relationship to sustainable forest management (community sustainability); and
- f) no clear conclusions to be drawn (sources of public information on forestry issues, 6.3).

All of these limitations are significant. However, these limitations all point to one important and inescapable fact: the "system" that is understood by the concept of "sustainable forest management" - encompassing at one and the same time aspects of ecological integrity, economic viability and social acceptability - is far more complex than anything that human ingenuity has ever succeeded in fully understanding, defining and quantifying. This is extremely significant for any exercise in gathering indicators of sustainable forest management, since it ensures that *every effort to report definitively and without uncertainty on sustainable forest management is doomed to fail*. This should in no way stop us from trying or paralyze us in our tracks, however, since it is these very "failures" that will help to sharpen our thinking, deepen our understanding, guide us in refining our indicators, and ultimately improve our decision-making.

#### 3.2 Interpreting "negative" trends

The breadth of interests that are included in sustainable forest management means that there are always trade-offs that must be made between competing values. This means that "negative trends" are inevitable. This is, in general, understood and accepted by forest managers and political decision-makers, as well as by most citizens who give the subject serious consideration. What is more difficult to reach agreement on, however, is how to report on these negative trends. Within almost all institutions or organizations - be they government, private sector or non-profit - there is a resistance to reporting data that reflects poorly on the activities, aims or objectives of that organization. The Model Forest, representing as it does a variety of different and sometimes conflicting interests, must remain responsive to the sensitivities of a broad range of partners.

This issue is best explored by reviewing the history of discussions within the Western Newfoundland Model Forest's criteria and indicators initiative on the issue of employment and production efficiency, which is a significant issue in Newfoundland due in part to a number of vocal concerns that have been raised due to job loss through mechanization. Below are the various indicators that have been proposed to address this issue, with some commentary on them.

**Jobs per cubic metre harvested.** This was the original indicator proposed at a workshop that took place in October 1998, in which some thirty people from diverse backgrounds participated.

**Person-hours per cubic metre harvested.** This reformulated indicator was proposed during discussions of the Criteria and Indicators Steering Committee, presumably to reflect the fact that the industry was moving away from seasonal to more full-time employment, and did not want this trend to be added on top of a trend towards increasing productivity. This revised formula corrects for the inflation of employment figures that occurs when no distinction is made between part-time and full-time jobs<sup>1</sup>.

**Safety statistics.** Industry representatives proposed that figures on worker injuries should also be reported in any statistics on community sustainability, arguing that the trend towards mechanization had the significant benefit (whether intended or indirect) of reducing the average worker injury rate, and was therefore a positive factor in contributing to community sustainability.

**Total employment, total payroll.** These are dry and "neutral" figures, relatively unobjectionable to both sides on the debate over mechanization. While employment figures might show a downward trend, this trend was expected to be balanced by a rise in average weekly earnings.

In the end, the Model Forest ended up reporting only on the "compromise" set of indicators on total employment and average earnings (5.2). This information is not linked with productivity figures or safety statistics. As well, only recent information has been provided, which does not show trends over time. This is perhaps all that the Model Forest can do, but it does raise a number of touchy but significant questions regarding community sustainability and its complex relationship to sustainable forest management.

Are five ten-week jobs preferable to one full-time job? Preferable to whom? When unemployment insurance is used to supplement part-time income, does this contribute to or undermine community sustainability? Do higher wages contribute to or undermine community sustainability?

To what extent is the forest industry in Newfoundland forced to increase productivity with respect to labour costs in order to remain viable within an aggressively competitive international

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<sup>1</sup> However, it is worth noting that such "inflation" is precisely the point behind many employment generation programs. Part-time jobs generate more unemployment insurance benefits than full-time jobs, and whatever one might think of the practise such employment inflation is often a deliberate policy objective, and cannot simply be dismissed as invalid.

marketplace? If true, is this an inevitable “fact of life” in an era of globalization, or is it the result of political decisions that could be altered? Altered by whom?

How do factors such as the health, security and overall well-being of both workers and other residents affect community sustainability? Can this be measured? Is it a good thing for a community to be dependent on forest-based employment? What about a community that used to be dependent on the fishery, but is now increasingly dependent on forest-based employment? Is community out-migration “natural”?

What, exactly, do we mean by “community sustainability”?

Obviously, no set of indicators will ever completely succeed in untangling this complex knot of issues. They are all “loaded” questions, with significant political, economic, social and philosophical ramifications, and different people will answer them very differently. Different answers to the above questions call for a different mix of indicators in order to assess the elusive concept of community sustainability. It is the view of the author of this report, however, that it is far better for an organization such as the Model Forest (whose strength is in its diversity) to face these questions directly - and to use indicators to illuminate as many of them as possible - than to presume a single “correct” answer, or to simply sweep the whole discussion under the carpet because it is “too controversial.”

## 4 Reporting

In compiling its first *State of the Forest Report*, the Model Forest was faced with three challenges, briefly described below.

### 4.1 Ensuring that the indicators are broad in scope

A good framework of indicators will normally outline the scope that is expected. The Criteria (and critical elements) define the broad scope of what is understood to be encompassed within the concept of sustainable forest management. Nevertheless, when actually compiling information on these indicators there are a number of factors that often tend to limit the scope of useful indicators.

Getting good data on social indicators seems to be a perennial problem. There’s not necessarily a lack of information, but rather a lack of agreement on how best to use that information. The Criteria and Indicators Steering Committee received a number of ideas on how to gather this information<sup>2</sup>, but lacked a reliable way to determine which method or methods might be most suitable.

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<sup>2</sup> Examples include studies to determine the equivalent economic worth of non-timber values, detailed statistical analysis, use of Participatory Rural Appraisal, community values mapping, and conducting a wide variety of surveys, including people’s attitudes, beliefs, ethical principles and activities.

Successful work on local level indicators requires the active participation of a wide variety of specialized interests. These people are - almost by definition - highly focussed and dedicated to their particular area of expertise. While they usually understand and support the broader goal of reporting on a wide range of indicators, this support does not always readily translate into strong, ongoing commitment to make it happen.

The conclusion that can be drawn from these observations is that having a “broad scope” is not something that can be taken for granted. Simply having a broad-based partnership is not sufficient if the partners are participating at varying degrees of effectiveness, and even developing a broad framework of indicators provides no guarantee of actually obtaining good, useful, informative data on the full range of indicators. It seems as though any multistakeholder process of this kind must continually go through a critical process of self-assessment and, perhaps more importantly, assessment and input from people and organizations that are *not* involved, but have the potential to contribute.

#### **4.2 Keeping the report on indicators concise**

For many indicators there are literally reams of data. If all of this information were presented it would overwhelm everyone but the specialist in that particular field, and by doing so the report would fail in its goal of communicating and informing people about sustainable forest management. The challenge, therefore, is to select and highlight a few simple facts, figures or trends that tell a meaningful “story” about some aspect of sustainable forest management, and then to interpret that story carefully and clearly.

This calls for a delicate but firm editing and “pruning” of data. More importantly, this pruning process continues at all stages of work on local level indicators, from identifying indicators, refining those indicators into actual measures of real data, collecting the data, interpreting it and reporting on it. This may seem a bit surprising, since one might be tempted to think that problems with indicators can be resolved at the “front end,” at the time the indicators are initially selected. Experience has shown otherwise, however, and several of the indicators identified as “core” had to be jettisoned as impractical or not sufficiently meaningful. This means that although there is sometimes a fair amount of “grunt work” involved in collecting the data, it also requires a great deal of experience, overview, judgement and flexibility, or at least active supervision and involvement by someone with those abilities.

#### **4.3 Ensuring that the results are credible and meaningful**

The inherent risk in editing data too severely is that the results may lose important contextual information. The section in the SOFR on soil disturbance (3.1), for instance, is gleaned from a larger survey about wood utilization. Utilization rates, however, had not been selected as one of the “core” indicators for our first report, so this important information was set aside, at least for the time being. On the other hand, an early draft of the indicator simplified the data on soil disturbance even further, showing only the overall averages without breaking the results down by different logging methods. In this case the results seemed to have been simplified too much to be truly meaningful, and so the

decision was made to re-introduce the figures that describe the impacts of specific logging types. It's always a delicate balancing act to provide the right mix of figures that will inform without overwhelming. To ensure credibility, it is in general a good idea to have a draft writeup on a particular indicator reviewed by the source of the information before sharing it more widely.

#### 4.4 Summary

The three criteria discussed above - the need for a broad range of indicators, concisely presented and both credible and meaningful - all pull at each other to some extent. It is hard for a broad report to be both concise and credible. It is hard for a concise report to be both broad and credible. And it is difficult for a credible report to be both broad and concise. There are no clear guidelines as to how much data is "enough" and how much is "too much." Below are a few questions that might guide any writer or editor working on similar reports on local level indicators. In brackets is a brief summary of how these questions might be answered with respect to the SOFR, but it's important to acknowledge that other local level indicators initiatives will answer these questions differently. The answers to these questions will influence all manner of decisions about the report, especially the amount of detail included or left out.

- Who is the intended reader? A generalist or a specialist? *(An interested generalist.)*
- What level of education is required to read the report? *(A high school education should be sufficient to understand all technical content.)*
- Do you expect the reader to read the whole report, or only the indicators that are of particular interest to them? *(The report should be interesting enough that people will actually want to read the whole thing, and concise enough that they are able to.)*
- How long should it take a typical reader to "get" a particular indicator; to read the information and be left with a general understanding of why it's significant? *(The reader should not have to take more than a few minutes to read each indicator, but it should not be so facile that they can just skim the charts without reading the description and interpretation.)*

## 5. Conclusions

- Reporting on local level indicators offers a number of unique challenges. It requires information and input from a wide variety of specialized fields of knowledge, but to communicate effectively it must present that information in a way that's meaningful to a diverse audience.
- There is a need to identify a leader who can dedicate a considerable amount of time to organizing, compiling and interpreting the data across the full range of indicators. Without resources dedicated specifically to this task it is likely that the job will not get done. If the job is parcelled out to too many people there is an increasing likelihood of getting inconsistent results.
- It's very often not possible to split data gathering and data interpretation into two separate tasks.

In order to collect the data there must be a clear understanding of how it will be interpreted, or else you are likely to end up with useless data. And in gathering data, new interpretation possibilities are likely to arise.

- Data gathering and interpretation tends to be quite labour-intensive, with the need to have a solid overview and to exercise considerable judgement in order to be sure of getting the most useful information possible
- The process of monitoring and reporting on local level indicators needs to be flexible. It's not always possible to say with certainty what your final indicators will be until you've actually collected the information and done a preliminary interpretation.
- It is important to recognize the limitations of indicators on their own. It is easy to point out the flaws or weaknesses in any particular indicator, but it is important to be able to stand back and assess an entire suite of indicators for its overall worth in providing meaningful information about sustainable forest management.
- Any process of monitoring and reporting on local level indicators of sustainable forest management is likely, sooner or later, to come under two conflicting pressures; to demonstrate that forest management is "sustainable," and to show that the current situation is alarming and calls for radical change. The Model Forest is not the appropriate agency to promote either of these conclusions, and the Model Forest's work on indicators is likely best limited to providing solid, credible information that can be used by various interests to reach their own conclusions

