

SCENIC RESOURCES OF  
THE WEST NEWFOUNDLAND  
MODEL FOREST

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Keith Nicol

1995

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## ABSTRACT

This study examines the scenic resources of the West Newfoundland Model Forest (WNMF) based on a technique developed by Millward and Allen (1989) of St. Mary's University in Halifax. Their model was used to map the scenic resources of the province of Nova Scotia. Since no established technique exists for assessing scenery at small scales (1:250,000 and greater) the Millward and Allen technique was used with some modifications. The model forest was divided into over 300 - 5 km<sup>2</sup> squares and a scenic ranking based on relative relief, percentage of water, and variation in land cover was calculated from 1:50,000 topographic maps. These three components are well established as being important components of scenery. Slight changes to the model were made after systematically sampling 100 Corner Brook residents and incorporating their scenery preferences into the model. These results indicate that highly ranked scenery accounts for 14% of the WNMF. These areas are found near Lark Harbour, Bottle Cove and Blow-me-down Mountains as well as other locations in the North Arm Mountains and Lewis Hills. Thirty-four percent of the WNMF is classed as moderate to highly ranked scenery with 43% of the area having moderately ranked scenery. Just 8% of the land base is classed as less scenic.

This study indicates where the most scenic areas are located and care should be taken to ensure that these areas retain this high scenic quality. It suggests that apart from the well known scenic areas of Bottle Cove and Blow-me-down Mountains that other very scenic areas exist although at present they are only accessible on foot or by boat. It is further envisioned that this information will form part of another study in the outdoor recreational potential of this area since scenery is an important component of many outdoor activities. Also it is recommended that these highly ranked scenic resources be conserved through appropriate regulatory methods.

## DISCLAIMER

The study on which this report is based was funded in part by the Western Newfoundland Model Forest Corporation.

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## Introduction

The terms of reference for this study is to develop an inventory of scenic resources for the W.N.M.F. Since there is no commonly established technique for mapping scenic resources , the methodology employed to map the scenic resources of Nova Scotia was used. (Millward and Allen, 1989). This method was used because the general landscape and terrain is similar between the 2 provinces and it made use of easily accessible 1:250,000 maps. This model was subsequently modified to account for land cover differences like logging which weren't considered in the Nova Scotia context. The model was validated by using photographs of the W.N.M.F. and interviewing 100 Corner Brook residents as to their landscape preferences. This study suggests that 14% of the WNMf is ranked as highly scenic, 34% is moderately highly ranked, 43% is moderately ranked and 8% is ranked as less scenic. Various recommendations are listed to help conserve the highest quality visual resources.

## Scenic Resources of the West Newfoundland Model Forest

By Keith Nicol

### Background

A study of the scenic resources of the model forest has been completed based on a technique developed by Hugh Millward and Dawn Allen of St. Mary's University in Halifax. They used this technique to map the scenic resources of the entire province of Nova Scotia (Millward and Allen, 1989). The technique used in Nova Scotia involved assessing 10 km<sup>2</sup> blocks of land for various scenic attributes. Although no well established technique for analysing scenery exists (pers. commun., P. Dearden, 1995 and T. Daniel, 1995) there are many aspects of the Nova Scotia model which make it appealing. First of all it uses information that is readily available (they used 1:250,000 topographic maps). Also there is a need to develop techniques involved in the WNMF Integrated Resource Plan which can easily be applied to other regions in the province. Techniques which rely on specialized computer programmes or involve sophisticated statistical techniques aren't as likely to be used elsewhere in the province as simpler techniques involving basic data requirements. Secondly this model uses attributes that most experts agree is important in defining scenic appeal of the landscape. These attributes are (1) relative relief (2) percentage of water and (3) variation in surface land cover. In looking at other techniques which have attempted to deal with quantifying scenic resources, these 3 elements appear repeated suggesting that these attributes have more or less universal appeal. (Linton, 1968, Dearden, 1980, Brown and Daniel, 1986, Catherine Berris and Associates, 1993). In the case of Nova Scotia the highly ranked areas of Cape Breton agree with many peoples impression of the most scenic areas of that province. Hence there is general support for the model's validity. (At present I know of no other areas where this model has been applied.)

### Applications to Western Newfoundland

To apply this model to the Western Newfoundland Model Forest (WNMF), a number of changes were made to the original model. First of all 5 km<sup>2</sup> blocks (instead of 10 km<sup>2</sup> blocks) were chosen to create more detail and 1:50,000 topographic maps were used. Millward and Allen (1989) suggest that the system used in Nova Scotia should be fine for 5 km<sup>2</sup> blocks but is not suited to blocks smaller than 3 km<sup>2</sup>. Also changes were made to the relative relief component to deal with the slightly higher elevation

of our mountains. Changes were also made to land cover component. This was mainly done because of how the Nova Scotia model handled 'logged' landscapes. In the Nova Scotia model no allowance was made for logging and its impact on the visual resources. In the WNMf, logging was seen to cause a reduction in visual attractiveness. Hence logging within the past 5 years was used to reduce the land cover ranking. This 'reduction' was added to the percent "built-up" which was also seen to reduce an area's visual attractiveness. (See figure 1)

No changes were made to the 'percentage of water' attribute.

Figures 1 through 3 show how variations in each produced a ranking from 0 - 5. These were then added to produce a final composite score which theoretically ranged from 0 - 15. A 5 km<sup>2</sup> square which received a value of 15 would then be the most visually attractive in the region and a score of zero would indicate the least attractive areas.

Figure 1 Land Cover Component

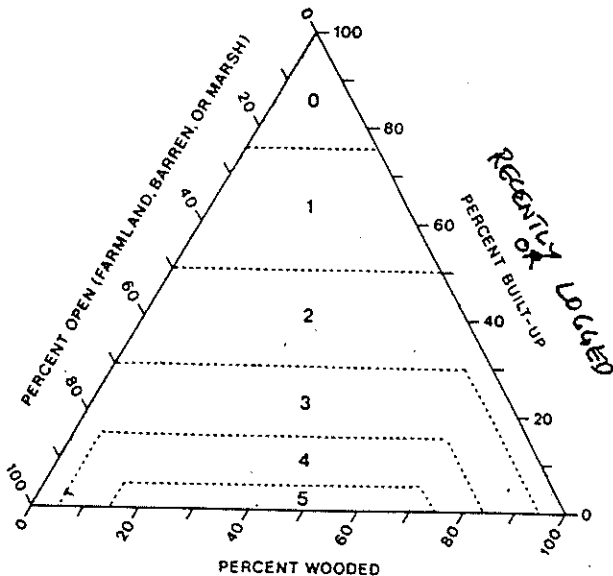


Figure 2 Percentage Water

Ranking	Percentage
0	<2%
1	2 to 5%
2	6 to 10%
3	11 to 20%
4	21 to 30%
5	>30%

Figure 3 Relative Relief

Ranking	Relative Relief (ft)
0	0 to 299
1	300 to 599
2	600 to 899
3	900 to 1199
4	1200 to 1499
5	>1499

### Results

Figure 4 shows the first draft visual resources map of the WNMF using the modifications just described. Although the model initially was not validated by an actual survey, indications are that it has identified the key scenic areas. Based on this model there are 6-5km<sup>2</sup> which have produced a score of 15. These areas are in the Bottle Cove, Little Port, and Blow Me Down Mountains areas of the South Shore of the Bay of Islands. Other blocks in North Arm Mountains and Lewis Hills also produced a score of 15. On the other end of the spectrum 3-5 km<sup>2</sup> blocks produced the lowest ranking of 3. These areas were found along the TCH south of Corner Brook and on either side of Deer Lake.



(a) Validation Process (Photographic Method)

Once an initial scenic resources map was produced, it was validated in 2 ways. The most complete 'test' was to use 8 photographs of the WNMF which depicted various combinations of water, forest, bog, clearcut forest and relative relief. One hundred systematically sampled residents of Corner Brook were asked to give a ranking to the 8 - 8"x10" photographs. These samples were taken from 24 streets which were randomly selected from 4 broad neighborhoods in Corner Brook. The neighborhoods were Country Road-Westside, Elizabeth Street area, Humber Heights -Humber Road area and Townsite. On average every 3-4 house on a street was sampled.

Residents were told that one photograph should receive a "1" (the least scenic picture) and the most scenic photograph should receive an "11". The remaining 6 photographs could receive any number in between. These rankings were compared to the actual rankings the photographs received based on the criteria in Figures 1-3. Table 1 summarizes the results of the photo rankings based on the Corner Brook residents perceptions and the photos actual score:

Table 1 - Photo Comparison

Photo #	Photo Content	Average Rank of photos from Residents	Actual photo 'Score' based on Figures 1-3	Std. Deviation of Resident Scores
1	(logged hillside pond)	2.95	4.5	1.31
2	(all forest)	6.14	2.5	1.64
3	(logged knob and pond)	5.54	8	1.67
4	(bog/forest)	4.82	5.5	1.95
5	(Humber Valley)	9.28	8	1.20
6	(flat logged area)	1.31	1	0.75
7	(Pinchgut Lake)	9.39	6.5	1.29
8	(Blow-me-down Mountains)	10.39	11	0.96

A comparison of various readings showed that in some instances there was very good agreement between actual and perceived rankings (photo 5,6, and 8). However where there was continuous forest cover with or without water the perceived readings were much higher than actual readings. This suggests that continuous forest cover in fact is just as desirable as a mix of vegetation types shown in figure 1. Hence figure 1 was changed to produce a high land cover score of 5 for continuous forest cover (this would increase the actual score for photo 2 and 7 from 2.5 to 5.5 and 6.5 to 9.5 respectively). The perceived rank for these photos from the Corner Brook residents was 6.14 and 9.39 respectively which provides a much better agreement. Just as local residents over-rated forested scenes they under-rated scenes with fresh logging in them (photos 1, 3, and 6). This suggests that recent logging has an even more important visual impact than initially allowed for. Hence based on the percentage of logging in the photo a reduction in score was made as follows : 2-10% logging - reduce score by 1, 10-30% - reduce the score by 2 and 30% or more logging reduce score by 3. This would tend to correct the over-estimate of the actual photo score and bring them inline with ratings given to the photo by the sampled residents. Figure 5 shows the 'new' land cover component based on the results of this survey.

Figure 5 Revised Land Cover Component

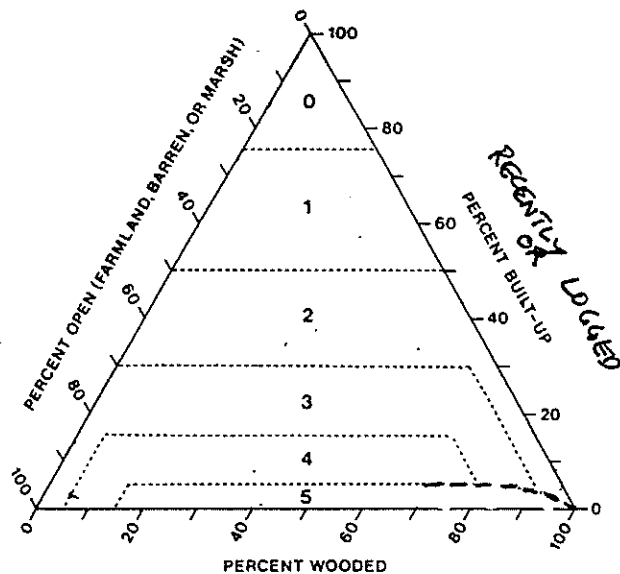
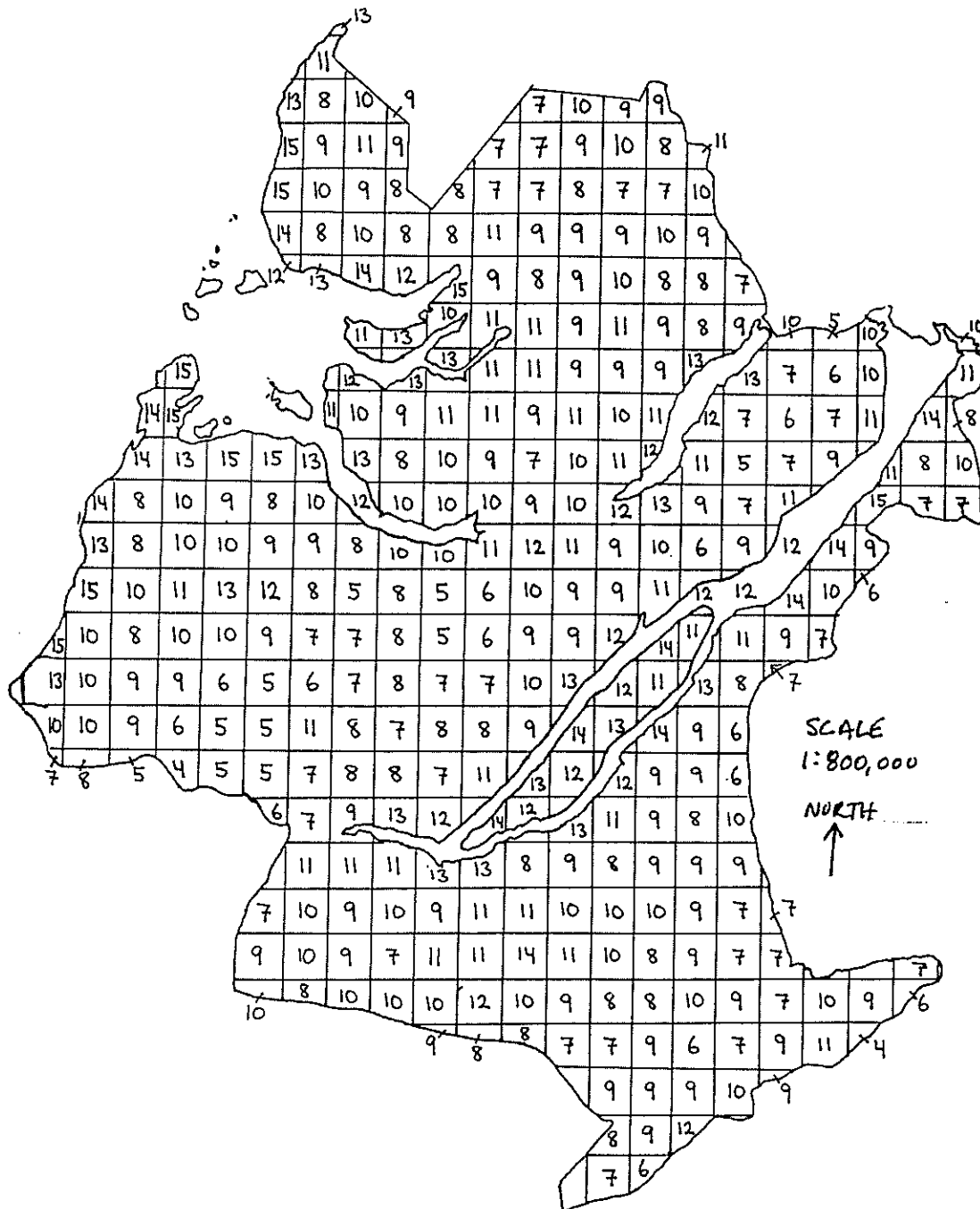


Figure 6 shows the final version of the scenic resources map of the WNMF based on this new 'corrected' land cover component. This shows a similar pattern to the initial map (Figure 4) although many 5 km<sup>2</sup> squares have new values. The highly ranked scenery locations continue to be in the Little Port, Bottle Cove, Blow-me-down Mountains area of the Bay of Islands as well as along the coast in the North Arm Mountains and Lewis Hills. The lowest ranked areas are found south of Corner Brook along the Trans Canada Highway and west of Gallants near the southern boundary of the WNMF. Overall 14% of the WNMF is ranked as highly scenic, (values 13-15) 34% as moderate-highly ranked (values 10-12), 43% is moderately scenic (values 7-9) and 8% is less scenic (values 4-6).

Figure 6 Final Scenic Resources Map



(b) Validation Process - Mapping perceived areas of most and least attractiveness in the Western Newfoundland Model Forest

To further validate the model a second technique was also used. In the same interview as the residents were questioned about photo ranking, they were asked to mark on a map of the Western Newfoundland Model Forest - where they thought the most scenic and least scenic areas were. To ensure some familiarity with parts of the Western Newfoundland Model Forest, the map was only given to residents who were familiar with the Trans Canada Highway from Gallants to Deer Lake and who had been along Highway 440 and 450 within the past 2-3 years. According to Figure 6 these roads ran through the highest and lowest rated scenery in the Western Newfoundland Model forest. Generally respondents could mark the most attractive sites more easily than the least attractive sites and that explains why the total number of responses differs between the 2 maps. This approach assumes that the respondents can use maps to accurately mark in their perceived areas of most and least scenic attractiveness.

Figure 7 and 8 shows the results of the most and least attractive areas residents perception of the most scenic locations. Certainly most agree with the highest ranked areas of Figure 6. By far the most selected square was one including Blow-me-down Mountains which received 22 'votes'. That was followed by the 'Little Port' and 'Lark Harbour' square at the end of Highway 450 all of which were ranked at 15 according to Figure 6. Other areas in the Humber Valley near Steady Brook and Marble Mountain also were highly ranked by local residents as were areas taking in George's Lake and Old Man Pond. (These are both popular cottage areas). Overall the average rank of these squares according to Figure 6 was 12.41 suggesting that the model has generally picked out the most scenic areas.





Figure 8 shows the distribution of least scenic areas in the WNMF as indicated by the systematically sampled 100 Corner Brook residents. As in Figure 7 one square was chosen much more than the other (15 times) and it is located just south of Corner Brook along the Trans Canada Highway. According to Figure 6 this square is lowly ranked as are many of the adjacent squares. Other squares which were frequently chosen include one that includes the Corner Brook City Dump (although respondents were told to consider the entire 5 km<sup>2</sup> square in making their selection). Overall the average value of the least attractive square chosen was 8.03 (based on Figure 6) which is surprisingly high. This indicates that either people are less able to recall and accurately mark their least attractive locations in an area or that the Figure 6 needs further modification particularly in ranking less scenic areas. Also site specific features like a gravel pit or the city dump may be unduly influencing a choice which actually makes up a very small part of a 5 km<sup>2</sup> square. Because of these concerns it is felt that although Figure 7 and 8 are of interest, they are less reliable as true indicators of scenic attractiveness as were the photographs used to develop Figure 6. Nevertheless Figures 7 and 8 support the general patterns of scenery indicated by Figure 6.

### Conclusions and Recommendations

A scenic resources map of the W.N.M.F. has been created using a technique developed by Millward and Allen (1989) for Nova Scotia. The model was modified to consider various land cover factors (like logging) which weren't considered in the Nova Scotia context. The model was further validated and subsequently corrected by interviewing 100 systematically sampled Corner Brook residents in terms of their own landscape preferences. Eight 8"x10" photographs of the Model Forest were used to test the initial rankings. By adjusting the land cover component of the scenic resources map good agreement was reached between the mapped scenes and scenes obtained by the 100 interviews (Figure 5). A final scenic resources map was then produced (Figure 6). This map further agrees with local perceptions of the most and least scenic areas of the W.N.M.F.

This study fits in well with the first strategic goal established for the W.N.M.F. which is "The development of an integrated resource management planning process for general application throughout Newfoundland". It also indirectly has met strategic goal number 4 which is the "increased public awareness of forest resource management issues".

### Recommendations

- (1) It is recommended that resource management decisions consider this scenic resources map when determining commercial and residential cutting permits or other development that may impact on scenery. Since tourism is a growing part of Western Newfoundland's economy, conserving and protecting highly valued scenic resources is a necessity. This study should guide resources managers as to how land use practices can enhance or diminish visual quality.

Various techniques could be explored for maintaining the visual quality for highly ranked areas land use. Regulations could be developed which prevent resource uses which diminish visual quality. Alternately further research could be undertaken to determine how selective resource use might take place yet still maintain visual quality. In this case the nature, pattern and degree of land cover modification would be crucial. Resource managers could then implement the most suitable regulations depending on the impact. A visual landscape plan based on road and trail viewpoints could be prepared for the regions most highly ranked scenery.

- (2) This study should also be central to developing various types of tourism related developments since viewing high scenery is such an important component of the travel experience. For instance a final copy of Scenic Resources Map should be displayed at the Corner Brook Tourist Chalet so that visitors can see where the best scenery is in the local area. (At present the 1st draft 'Scenic Resources' map is on display at the Corner Brook Visitor's Chalet).

Also this visual resources map could be used to plan boat tours or hiking trails to the areas most scenic locations.

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