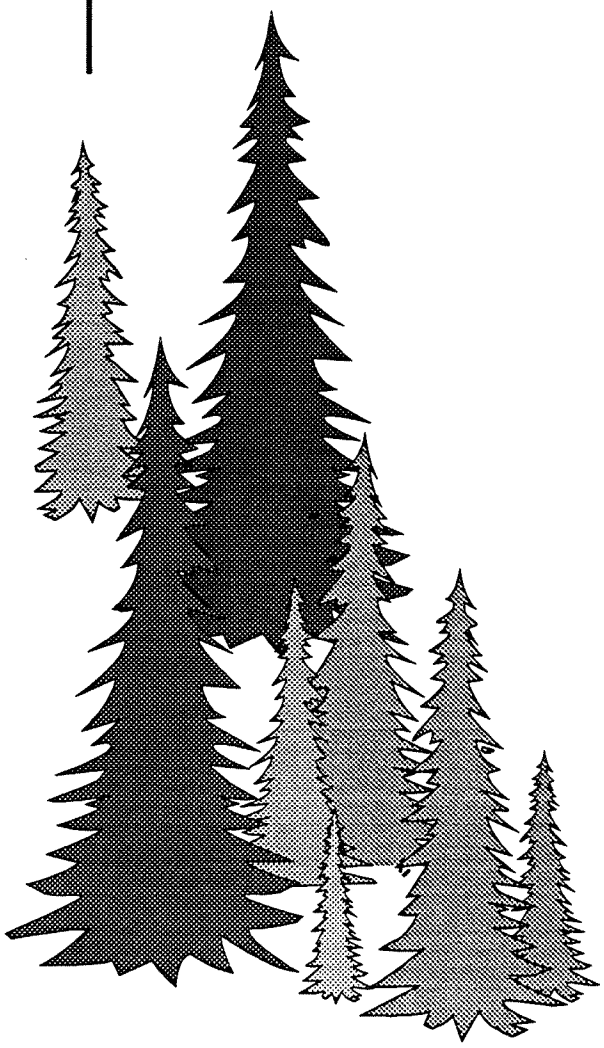
Examining the Effects of Forestry Activities on the Recreational Experience of Visitors to Duck Mountain Provincial Park

Management Recommendations



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Implementation of the Recommended Management Strategies

1.0 Background

The purpose of this study was to identify the attributes which contribute to campers' and cottagers' enjoyment of forested recreation areas in Duck Mountain Provincial Park and to try and determine the possible effects of forestry operations on these attributes and thus on recreational experience itself. An on-site survey was developed which incorporated a number of techniques to identify the factors behind recreational choices made by campers and cottagers and to determine the sensitivity of their choices to forestry operations as currently practiced in the Duck Mountain area.

As part of this survey, respondents were asked to rate a series of photographs, representing managed and unmanaged forest stands typical of the park and nearby forested areas, on the basis of their scenic beauty or visual appeal. These ratings were then combined with responses to various survey questions to determine if visitors' perceptions of scenic beauty were related to their reasons for recreating in the park, the activities they participated in or the opinions they held on certain park and forest management issues. The photo ratings were also compared with a number of forest attributes found within the stands present in the photographs, to determine if any particular characteristics of the forest stands or the forest management portrayed in the photographs could account for how visitors rated the photos.

Given the small sample of visitors surveyed (50 campers and 22 cottagers), the conclusions drawn from this study must be viewed as reflecting the opinions of the people spoken to as they may not be representative of the larger population. However it does appear from the analyses undertaken that the differences between campers and cottagers surveyed were small.

1.1 Overview of Survey Results

Most of those surveyed were repeat visitors to the park. They come to the park annually, with the average length of each visit being from one to two weeks. Most people were in a family group and the average party size ranged from 3.5 (cottagers) to 4.6 (campers).

The majority surveyed indicated that they came to the park for "Relaxation" or to "Enjoy Nature/Outdoors". The activities people participated in most while in the park were fishing, followed by boating/canoeing. When asked the main reason for making the current trip to the park, campers chose "Other", "Close to Home" and "Enjoyed Past Visits", while cottagers chose "Scenic Area" and "Close to Home".

The main factors attracting campers to the park were Fishing, Wilderness Atmosphere, Campground Facilities, Uncrowded and Enjoyed Past Visits. The main factors which attracted campers were Uncrowded, Wilderness Atmosphere, Fishing, Close to Home and Scenic Area.

Most people surveyed were satisfied with the location they had chosen for their camping trip or the purchase of their cottage. The majority indicated there was no where else they had considered. When rating the current trip, almost all respondents indicated it was very enjoyable.

The majority of those surveyed had used park trails in the past five years, mainly for hiking, and their enjoyment of these trails had not been reduced by the actions or evidence of other users. Cottagers tended to use the trails more often than campers. Other uses included biking, using ATV's, cross country skiing and snowmobiling. Most participants had not made an overnight trip into the backcountry in the past five years and were not likely to consider making one if facilities to support such trips were improved.

Most respondents supported an increase in hiking trails but no increases in ATV or road access. The majority indicated they knew logging took place in the park. Most had seen evidence of these activities, particularly access routes used for logging, forests that had been cut and logging trucks. The majority of cottagers surveyed had used forest access routes in the past, while most campers had not. Respondents commented that they used the trails with ATV's for recreational rides, to access hunting areas and to salvage fuelwood in cutovers, as well as using them as snowmobile trails in winter.

The majority of those surveyed now live in a Manitoba town ranging in size from small villages to towns the size of Swan River or Dauphin. Half of the respondents live in communities the same size as where they grew up. Most of the others grew up in smaller communities. Average time traveled by cottagers was 2.8 hours and 3.2 hours for campers.

Of the campers surveyed, most had at least a grade 12 education, were currently employed and had a total annual household income between $30,000 and $50,000. The majority were male, their average age was 41 and most did not belong to any outdoor, nature or environmental organization.

Of the cottagers surveyed, most had a university or college education, were currently employed or retired and had a total annual household income greater than $50,000. Most were female, their average age was 54 and the majority were members of an outdoor, nature or environmental organization.

1.2 Overview of Photo Ratings

Seven forest attributes present in the photos rated by survey participants were evaluated to determine their effect on the overall photo ratings (combination of camper and cottager ratings for the same photographs). Statistical analyses using multiple regression indicated that all these attributes were significantly different from zero at the 10% probability level. That is, it is highly unlikely that these results occurred by chance.

1. Visible Dead Material

   The presence of visible dead material lowered the raw photo rating scores by 1.20 (i.e. the raw photo scores or ratings given by participants from one to ten), the largest change of any of the seven attributes tested. Not surprisingly, the lowest photo ratings were given to the two photographs with the largest amounts of visible standing dead timber.

2. Evidence of Being Previously Cut

   Forests were considered less visually appealing if they had evidence of being previously cut. This attribute reduced photo ratings by .45. This was evident in photos taken of an area where decadent jack pine had been cleared out along the highway near Shallow and Beautiful Lakes in 1989, leaving some mature aspen. Those who commented on these photos indicated they had given them a low rating because the forests had been logged out. The only photograph of a larger clear-cut area also received a low rating because it had been cut, even though approximately 20 years of black spruce regrowth was shown in the photograph.

3. Dense Growth

   Generally, dense growth reduced a photo's rating by .30. Some photos of dense forests, particularly mature black spruce, were rated quite low and people commented that the dark, dense forest cover would be hard to walk through and would harbour mosquitoes. Interestingly, dense new growth in stands regenerating after fire were often seen as a lush, healthy forest and given moderate to high ratings.

4. Stands ≤ 20 Years Old

   The presence of very young stands reduced the ratings by .42. Generally, people rated mature stands higher than young stands.

5. Fire Origin Stands

   The presence of ire origin stands reduced ratings by .21 even though the evidence of fire was only visible in two of these photographs. The fact that all fire stands depicted in the photographs were of jack pine may have contributed to this reduction, since cottagers generally found jack pine stands less appealing.

6. Planted Stands

   The presence of planted stands provided the largest increase in the photo ratings, .85. The photos rated the highest by both cottagers and campers were of planted white spruce. Given the visual appeal of white spruce to most respondents, and that most of the planted stands in the photographs were white spruce, it is not surprising that planted stands had increased photo scores.

7. Presence of Mixed Wood Stands

   The presence of predominantly mixed wood stands increased photo ratings by a factor of .13. Mixed stands greater than 20 years old were generally rated favourably. Respondents remarked on the appeal of the variety of species, particularly the contrast of the white bark of the hardwoods against the dark greens of the conifers.

1.3 Overview of Photo Ratings and Visitor Attributes

Limited statistical analyses incorporating visitor attributes, the seven forest stand attributes described above and the photo scores was possible. These analyses indicated that female respondents generally rated photos slightly higher (by .29) than male respondents. Those surveyed who had traveled overnight in the backcountry in the past five years rated photos lower by a factor of .38 than those who had not made such trips. While those who had used forest access routes in the past five years rated photos higher by a factor of .77. A factor of .18 was added to a photo rating for each step increase in income and an extra year in age added .02 to the photo ratings. All of these factors were significantly different from zero at the 10% probability level.

1.4 Visitor Response to Forestry Practices within the Park

Note: The following section and section 1.5 have been reprinted from the final report submitted for this project (Marr Consulting & Communications, December, 1994).

As shown in Table 5, participants' responses to statements about forestry practices in the park generally indicated they were in agreement with the forestry activities as described in the survey statements and most did not agree with banning all logging in provincial parks. However, most also agreed that logging in the park would reduce their enjoyment of the park. These divergent responses are difficult to interpret on their own. In order to clarify the opinions of those surveyed it is important to also review the qualifying comments made by many respondents as they answered these questions.

When asked if logging would reduce their enjoyment of the park, some of those who agreed with this statement qualified it by adding comments such as "if it was more visible to us or you could hear it", "if it was extensive", "if it was in the immediate area", "clear cutting would, selective cutting would not", etc. These comments would seem to indicate that forest operations as currently practiced do not affect these visitors' enjoyment of the park. However, not all those who agreed that logging would reduce their enjoyment of the park provided such comments.

Comments provided by those respondents who disagreed with the statement seemed to point to a similar interpretation:
"not if it's done the way it is now - small and selective";
"not if it's away from the recreation areas so they don't interfere with recreation activities";
"no problem if controlled";
"depends on degree of cutting";
"as long as reforested and done properly";
"not as currently practiced - no large clear cuts or massive cutting, maintain adequate buffers".

Overall respondents seemed to view current forestry operations favourably and concerns were related to undesirable changes to these practices such as clear cutting, moving closer to recreational areas and not reforesting. Only two campers made particular reference to the cutting of aspen, indicating their enjoyment would be reduced if large cuts or clear cutting of aspen were allowed.

Perhaps the most qualified statement was the second, which indicated logging in the park was okay if done away from major recreation areas. These comments followed several themes, particularly the exclusion of clear cutting with proper

management of selective cutting and replanting. One comment representative of these themes said: "if no clear cutting, mature timber only, done properly so don't devastate a whole area". Some people felt current practices were acceptable but indicated by their comments that they thought current operations included no clear cutting, just selective cutting only.

More cottagers than campers would be willing to use a logging road to access new areas in the park. This coincides with the increased use of forest access routes by cottagers when compared with campers noted in the survey results in Section 4.1.3. There were some comments made indicating people would be more likely to use these roads once they were no longer traveled by forestry equipment. A few respondents also specified that their potential use of these should not be considered an excuse to create more. Comments such as: "only if abandoned from past use" or "if they already exist and can be used - don't put new ones in" clarified this point.

The fourth statement regarding cutting of large areas in the major recreation use zones being okay to control disease and insects received an interesting range of comments. Some indicated that respondents were skeptical of the intent of the cutting or questioned whether or not it would indeed work for the purpose intended. Comments such as "if legitimate", "monitor and react sooner so large areas are not affected", "as long as its cleaned up and it actually exists", "if no other method is available", "if those are the real reasons" all point out the skepticism with which some respondents (more cottagers than campers surveyed) viewed the idea embodied in this statement. One camper felt that it was "okay if it is an introduced pest - if its part of nature than leave it alone and it will run its course".

Although most agreed with the fifth statement about cutting large areas in the major recreation zones to reduce the future risk from forest fires, it was also viewed skeptically by some. Comments such as "sounds like an excuse to log by a forest company", "has regenerated itself for thousands of years" and "should just remove the dead trees instead" were made by both campers and cottagers, however more cottagers than campers disagreed with the statement. Generally, the percentage of cottagers against both statements related to cutting in major recreation areas was higher than the percentage of campers. Perhaps this is a reflection of their long term investment within the major recreation areas where these types of forest management are being proposed.

The last statement - all logging should be banned from provincial parks - also was qualified by many respondents. Even those who disagreed with the statement provided comments like "no clear cutting - clean up the wood they don't want that's left on the ground", "ok in backcountry if done without clear cutting" and "not if properly controlled and replanted", which echoed earlier comments made in regards to the first two statements. Of those who did agree

Table 5: Response to Forest Management Statements

Grouped Percentages

	Campers			Cottagers		
Statements	Agree	Disagree	Neutral	Agree	Disagree	Neutral
Logging in the park would reduce my enjoyment of the park	53.1	47.0	0.0	68.2	31.8	0.0
Logging is okay in the park as long as it is done in remote areas away from major recreation use areas	63.3	36.7	0.0	77.3	22.7	0.0
I would be willing to use a logging road to access new areas of the park	55.1	36.7	8.2	72.7	22.7	4.5
Cutting of large areas of forest in major recreation use areas is okay if it is done to control the spread of disease or insects	85.7	12.2	2.0	71.5	19.1	9.5
Gradual cutting and replanting of forests along roads and major recreation use areas is okay if it is done to reduce the future danger from forest fires	73.4	22.4	4.1	68.2	18.1	13.6
All logging should be banned in Provincial Parks	32.0	66.0	2.0	42.9	57.1	0.0

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with the statement, comments were made such as "have to leave something for people to enjoy and for children", "the wasted wood and trees while selective cutting is upsetting and even the roads they make to create access" and "the purpose of the park is to leave stands of forest as they were; there are lots of other places to log - if that's all the timber that's left it's sad".

1.5 Study Conclusions

Reviewing the results of the survey, the photographic rating and the statistical analyses of these data, some general conclusions can be drawn. The people surveyed, both campers and cottagers, tend to have a long history of park use, coming back over many years to enjoy the amenities and natural attractions in particular areas of the park. For some campers it is their annual major vacation stop, a place where they know the other campers and enjoy socializing, similar to those cottagers who, over the years, have spent their summers at the cottage and come to know their neighbours. The majority of those surveyed were enjoying their current trip to the park and would definitely be returning in the future.

Because of their long history of use, most respondents were aware that forestry operations took place in the park. However, their comments indicated that most believed these operations to be practicing only selective cutting, with most areas being replanted. Most respondents appeared to have limited concerns with forestry as it was currently being practiced in the park, or with how they understood it to be practiced. They generally agreed with allowing various forest management practices in major recreation areas for the control of disease, insects or to prevent future devastation from forest fires, but they cautioned that the forestry practices used should be proven to be effective, be undertaken only if and when required, with proper replanting and restoration of cut areas.

However, when asked about increasing access into the park, or whether they would use logging roads or forestry routes to gain access to new areas, most respondents felt that current access, particularly for ATV's and vehicles, was sufficient and that no new forestry access roads should be created solely on the basis of whether or not they would use them.

Respondents' ratings of the photographs are another indication of their general tolerance of managed or disturbed (i.e. fire) forests once a certain amount of regrowth had occurred. Factors such as the amount of visible dead material and the dominant species (e.g. black spruce, jack pine) tended to be important indicators of forests with low scenic beauty, while stands which were planted, particularly with white spruce, were considered to have greater visual appeal. Certainly younger forests ($\leq$ 20 years) were not as appealing as those from 25 to 50 years of age, and areas where the effects of cutting were still clearly visible

also received lower ratings. However, older forests with increased amounts of dead material also were not as appealing. The general results of these photographic ratings, as described within this document, are consistent with those reported in the literature.

The incorporation of what has been learned about recreationists' visual preferences in forested areas, particularly their preference for no visible dead material, will present some challenges to forest managers, park managers and forest ecologists working to preserve biodiversity within forest ecosystems. As forestry practices move towards onsite delimbing and less removal of debris from the cutting area, it will take longer before forests regrowing on cut areas reach an age where the debris is hidden or has decomposed somewhat, making these areas more visually acceptable to recreationists. There may be a need to educate those recreating in managed forest areas about the desirability of leaving debris within cut areas, otherwise they may continue to regard the "mess" created in cut areas as a sign of poor forest management and a lack of control over forest operators.

While those surveyed in Duck Mountain Provincial Park may be familiar with the area and be fairly tolerant of the idea of forestry operations being conducted in the park, they are certainly sensitive to how these operations are undertaken. They are also somewhat concerned about any forest management practices potentially used in the major recreation areas around the campgrounds, cottage subdivisions, popular fishing lakes and along the major roads. Many have a particular idea of how forestry operations are currently being practiced and would potentially be quite concerned if they encountered anything which contradicted their understanding of what is occurring when cutting takes place in the park.

2.0 Review of Draft Recommendations

A series of five draft recommendations were developed, based on the survey results and the comments provided by survey respondents. These have been reviewed with forest and park managers from across Manitoba through a series of phone interviews. Pertinent portions of the report (Marr Consulting & Communications, 1994) outlining the survey results and conclusions (including the sections reprinted above in 1.4 and 1.5) were distributed prior to the interview, to allow participants to review the information upon which the draft recommendations were based.

The following persons provided comments on the draft recommendations:

- Mr. Vince Keenan
  Pine Falls Paper Company Limited
- Mr. Chris Smith
  Repap Manitoba
- Mr. John Dyck
  Louisiana-Pacific Canada Ltd.
- Mr. John Dojack
  Manitoba Forestry Branch
- Mr. Dick Walker
  Spruce Products Ltd.
- Mr. Gary Ardron
  Synthen Resource Services
- Mr. Rod McFadyen
  Western Region, Manitoba Natural Resources
- Mr. Gord McColm
  Western Region, Manitoba Natural Resources
- Mr. Wilf Palaniuk
  Mountain Quota Holders Association

The five draft recommendations, the comments on these recommendations obtained from forest and park managers and additional information they provided are reviewed below.

Draft Recommendation 1: All buffers surrounding cut areas adjacent to roads, along recreational trails and lakes should be wide enough to effectively block the cut area from view by recreational users. The rolling topography prevalent in Duck Mountain Provincial Park will need to be considered in the design of buffers, particularly in areas surrounding scenic viewpoints;

In response to this recommendation, managers described the existing situation regarding establishment of buffers in cutting areas. Buffers are an existing part of forest management throughout Manitoba's forests. They are most commonly used to provide protection along water courses and to provide habitat or travel corridors for wildlife in cutting areas, and are developed based on guidelines for protection of aquatic habitat and wildlife. Managers also consider buffers necessary along public highways and major recreational access roads and visual buffers are established along recreational trails. One forest manager suggested that high traffic roads should have zero visibility buffers that meet this requirement even under winter conditions. Others agreed that routes with high recreational demand should also be buffered.

Managers noted that current requirements for buffers are discussed within the regional Integrated Resource Management (IRM) team on a site by site basis and the decisions are written directly onto the work permits issued for harvesting a site. The on-site supervisor of the cutting operation then ensures the edges of the buffer are properly flagged so that cutting crews know what must be left as the buffer. One manager noted some concerns with this approach, specifically that information about why a buffer is needed in a particular location or the extent of the buffer required, may not be fully communicated to the cutting operators on the site. This lack of communication may result in an inadequate buffer for the purposes being considered.

However, not all trails and roads put in for forest extraction purposes are buffered. These roads exist for a limited time and are generally planned for removal or closure once harvesting and forest regeneration activities are completed. In many cases the roads are closed to vehicular traffic shortly after site preparation and planting.

The recommendation to provide buffers at scenic viewpoints in elevated terrain drew several responses. Up to now, there have been no requests to harvest within view of the intensive recreation zone within Duck Mountain Provincial Park where some of these viewpoints are located. However, as demands for forest resources increase, it is inevitable that this issue will have to be addressed. Managing for the view or managing the "viewscape" may be an opportunity to use new technology employing digital orthographical imagery to create different harvesting scenarios within view of a particular scenic look out. This visual technique may enable forest managers to experiment with different cut block orientations and sequencing of cuts to maintain the views in a scenic area.

The need to manage recreational views in rolling terrain was considered an aspect of "landscape management" by one forest manager rather than an issue of buffer management. This would become a priority in park areas with high recreation values. It would also involve determining the appropriate cut block size and design to meet the priority landscape needs for a particular recreation area.

The greatest concern raised regarding buffers was the need to consider active buffer management, as the forest left within the buffers is subject to the same natural processes of aging, decay and death that affect all forest stands. It was noted that if these buffers are not managed, the forest stands within these buffers may not be able to adequately maintain themselves in the face of threats by fire, insects and disease.

Several methods for managing buffers were suggested. Some of these could be implemented fairly easily while others require sophisticated equipment beyond the financial capability of all but the largest operators. It was suggested that one of the simplest ways to manage buffers adjacent to cut and leave block harvesting areas was to apply a cut and leave block system to the buffers at the same time as the adjacent area was being cut. In a cut and leave block system, the landscape is divided into a number of various sized and shaped cutting blocks, separated by blocks of forest that

would be left and not cut until the new growth on the cutovers had regenerated to an acceptable size. Applying such a system to the buffers would involve removal of the buffer along the leave block at the same time as the adjoining cut block was harvested. Once the cut block and the buffer on the leave block had regenerated sufficiently, the leave block and the buffer on the cut block would be harvested. This method was suggested by several people, including the possibility of applying this system along forestry access routes which may be used for recreation.

Other buffer management options include selective cutting of particular species or removal of a percentage of certain stem sizes in buffers, while snag trees or a number of larger trees could be left for wildlife. New forest equipment is available that allows selective cutting of trees in areas of the buffer within reach of the machine. The newest designs from Europe feature light weight machinery with a 30 foot reach to either side, allowing access right to the edge of a buffer without creating soil compaction and erosion concerns. This may be particularly usefully for buffers along waterways where equipment access is restricted close to the shoreline.

Buffer management was also widely discussed by resource managers in response to recommendation 3.

Revised Recommendation 1:

All buffers surrounding cut areas adjacent to roads, along recreational trails and waterways should be wide enough to effectively block the cut area from view by recreational users. The rolling topography prevalent in Duck Mountain Provincial Park will need to be considered in the design of buffers, particularly in areas surrounding scenic viewpoints. In these cases buffer management should be considered part of a larger landscape management approach designed to incorporate consideration of recreational views in the management of forests and buffers in rolling terrain.

Regardless of the methods considered, if buffer management is to be implemented in recreational areas it must be planned and managed over the long term, in conjunction with long term cutting plans. Guidelines should be drawn up to govern cutting in buffers for the purposes of preventing or managing fire, insect and disease while ensuring buffers continue to function as intended whether their purpose is to protect water quality, to provide wildlife habitat or to effectively block forestry operations from view. Careful monitoring would also be required to determine the impacts of buffer management on the forest and to determine if the techniques used are effective in reducing the loss of forest buffers to fire, insects and disease. Public response to buffer management should also be monitored, particularly in conjunction with a consultation program.

As well, public consultation is recommended to ensure all users of forested recreation areas have the opportunity to review the options for buffer management and to

understand some of the difficulties of implementing buffer management. Recreational users must have the opportunity to participate in deciding under what conditions buffer management in recreational areas is acceptable to all parties.

Draft Recommendation 2: The need for, and placement of, all future access routes for forestry operations in parks and other recreational use areas should be given intensive review when planning additions to the overall forestry access networks. Opportunities to minimize or remove roads should be considered;

Forest managers interviewed indicated general agreement with this recommendation and provided more background information as well as some modifications to the recommendation. All new forest access routes are currently reviewed by the IRM team as part of the annual and longer term operating plans developed for forest management units. These reviews consider the impacts of new access from a number of perspectives, including the maintenance of populations of game species. Building new access routes is a financial burden for any forest operator, therefore existing roads are used wherever possible. While the main access arteries are maintained over the long term, branches off the main routes are generally slated for closure and/or abandonment once all harvesting and site preparation activities have been completed. This usually occurs within one to two years of harvest. Often these routes are closed to reduce the access for those hunting from vehicles, so hunting pressure on game populations is not increased significantly in previously inaccessible areas.

Closure can consist of blocking the entrance to the route with large boulders, earth berms or gate systems. Culverts or water crossings can be removed to further inhibit vehicle access. However, in the event of fire, roads that are closed can be reopened to gain access for fire fighting. These routes could still be traveled by ATV, snowmobile and mountain bike, allowing them to be used to monitor stand regeneration. If roads are slated for abandonment, techniques are used to make them even more impassable (spreading debris or slash along road, seeding it, putting in water bars or cross ditching every 1/2 mile or less, etc.) and to allow vegetation cover to become reestablished.

In areas such as the Duck Mountains, where a long history of resource use has left a myriad of roads and access routes available for forestry operations, new routes may not be needed. In fact, some managers note that industry and government could be more active in closing down many of the old routes. One forest manager estimated that only 10% of the existing roads were needed to maintain access for forestry operations in the park. It was noted by another that in sensitive areas the IRM team will recommend road removal once harvesting is completed and regeneration is established. However, it was also noted that road closures were likely to continue to raise issues related to the right of traditional access for native hunters.

With the cut and leave block system of harvesting, access would be needed into the same area at different stages over a very long time period. In such cases, road access would have to be very carefully planned and such plans would have to consider the longer time frame while still incorporating regular closure of branch roads within the area.

A road classification system is currently being developed, through the Manitoba Model Forest, which includes management guidelines for three classes of roads. In the application of such a system, each new road would be classified, with its purpose and life span determined and agreed upon prior to its construction. This would include any requirements for buffers and possible buffer management. In this way the intent to close and/or abandon roads could be planned from the beginning, perhaps removing the opportunity for new roads to remain open indefinitely.

Revised Recommendation 2:

The need for, and placement of, all future access routes for forestry operations in parks and other recreational use areas should be given intensive review when planning additions to the overall forestry access networks. The development and application of a forestry road classification system and associated management guidelines should be considered for all forest routes in recreational areas. Opportunities to minimize or remove roads should be actively considered.

Draft Recommendation 3: If any forest management activities are required within high use recreation zones, or within the buffers between cutting areas and major recreation zones, information about the need for the proposed activities should be provided to recreational users in the area (e.g. through effective on-site signage) which directly addresses their concerns. Provision of this information prior to commencement of these activities may even garner the support of local users (i.e. those in surrounding areas or those who own cottages).

Discussion of this draft recommendation led to a more general discussion about large scale stand or buffer management in recreational areas, how it might occur and the role of education and stakeholder consultation. There also were some comments on the management activities undertaken in 1989 in decadent jack pine stands directly adjacent to the highway near Shallow and Beautiful Lakes. While the intensive use zones in the park are closed to forestry, the park's Interim Management Guidelines allow these areas to be managed in response to certain types of threats such as disease, insects or risk of fire. Selective cutting is carried out annually in the built up areas of the park to remove over mature timber from campgrounds, picnic areas and cottage subdivision hydro lines. The wood that is cut supplements the fuelwood purchased for use in the campgrounds.

Managers of park and forest resources are concerned about these unharvested stands and the potential for them to spread the impacts of forest disease, insects or fire throughout the park. Responses to the survey questions about stand management in high recreation use areas indicate a high degree of support by cottagers and campers for some form of buffer management for insect and disease control and to reduce the risk of fuel build up in these areas.

For example, currently a spruce budworm infestation is threatening to move through the intensive recreation zone near Child's Lake. Such an infestation has already affected large portions of eastern Manitoba and is now affecting the western forest stands as well. In the absence of controlled burns, the best options for controlling this type of occurrence are clear cutting the affected area and applying biological control sprays at the proper stage in the insect's development. These management actions also will have to be applied within the intensive recreation zone to be able to effectively control the spread of this insect.

A variety of options were offered by forest managers. The intensive use zone should be considered as special areas and only those operators with the best work practices should be allowed to operate there when it is required. Within these zones, sensitive areas would be identified where any cutting for management purposes may not be allowed due to their value for wildlife or other reasons. A long term management plan for these intensive use zones should be developed, with activities being staged over time throughout the park, to ensure any required harvesting is spread out over a sufficient period of time. Operations should be restricted to non-peak visitation periods, with special operating restrictions applied to areas adjacent to campgrounds, cottage subdivisions and lodges.

Options for management in the intensive use zones include both selective and clear cutting, depending on the dominant species in the stand being managed, the objective of the management plan and the potential impact on other forest values. A cut and leave harvesting system, as described for buffer management under draft recommendation 1, is one option. So is selective cutting in mixed stands. One example would be in a mixed age black and white spruce stand. Since white spruce generally needs more time to reach maturity, other species (i.e. black spruce) could be selectively harvested, leaving the white spruce to continue growing. The white spruce would then be harvested, if this is required, 40 years later, once it had matured and the cut trees had been replaced either naturally or through planting.

Another method is the group selective cut where cut blocks a couple of acres in size are spread throughout the stand in a 20 to 30 year program, starting with the overmature trees. Selective cutting, to get the mature timber out before it dies, is also an option if it is carried out with care. New equipment is now available that makes it easier to do a better job selective harvesting within buffers.

A variation of the cut and leave system was suggested for buffers in the intensive use zone which have some depth to them. The front 50 to 75 meters would be cut but the area behind this cut would not be harvested until new growth on the cut area had reached a height of 10 to 12 feet.

Low intensity, controlled burns are a part of buffer management in other locations such as Banff National Park in Alberta. These types of fires are being used to eliminate overmature stands in buffers throughout the Bow Valley. Fires are set in early spring when they can burn deadfall and shrubs but die out before affecting the mature timber.

The 1989 Shallow Lake cut mentioned earlier was an attempt at buffer management which, with regards to public awareness, was not as well managed as it could have been. Several people raised it as an example to learn from and improve upon. To allow consultation to be effective, more stakeholder consultation is required early in the process of reviewing buffer management options, before decisions are made. Information provided to cottage associations may not be reaching the full membership. Longer term planning would allow other summer users (campers) to be involved in the discussion and field days could be carried out on the site to help inform interested members of the public about the options available for stand management within the intensive recreation zones. Any cutting could be carried out in a patchwork pattern throughout the stands and be phased over several years. There may even be an option for a small fuelwood clean-up as part of the management strategy for highly visible areas along major recreation routes.

More signage is needed on sites to better explain the reasons behind the buffer management option chosen. Several different signs will be needed as different species require different management strategies. Alternatively, a phone number could be placed on the signs to allow people with more questions to direct their calls to a regional or park staff person knowledgeable about the management activities being undertaken at the site. More information could be provided at campground offices, however limitations on both time and budget have reduced the ability of seasonal staff to prepare and provide this information. The Manitoba Forestry Association's Frank Marvin Interpretive Centre, located in the southern end of Duck Mountain Provincial Park, may provide another outlet for disseminating available information on buffer management to park users.

Revised Recommendation 3:

If any forest management activities are required within high use recreation zones, or within the buffers between cutting areas and major recreation zones, information about the need for the proposed activities should be provided to recreational users in the area which directly addresses their concerns (e.g. through effective on-site signage, use of the MFA Interpretive Centre, on-site field tours). Provision of this information and any other consultation should occur prior to commencement of these activities.

In addition, the following recommendation (#6) related to stand management within the intensive recreation zone has been developed:

Recommendation 6:

If stand mangement is considered necessary for the prevention or control of fire, insect or disease within the intensive recreation zones, these zones should be considered as special areas and only those operators with the best work practices should be allowed to operate there when it is required. Within these zones, sensitive areas would be identified where any cutting for management purposes may not be allowed due to their value for wildlife or other reasons. A long term management plan for these intensive use zones should be developed, with activities being staged over time throughout the park, to ensure any required harvesting is spread out over a sufficient period of time. Operations should be restricted to non-peak visitation periods, with special operating restrictions applied to areas adjacent to campgrounds, cottage subdivisions and lodges.

Draft Recommendation 4: The public does not fully understand forestry activities in Duck Mountain Provincial Park, however there is the potential to gain visitors' support through education programs which inform the public about current forest management practices and how they are evolving as more becomes known about the forest areas being managed. These programs should be developed and delivered to those recreating in managed forest areas. They should address key management issues such as clear cutting, debris management and buffer management;

It is obvious from the survey results and comments made by survey participants that many park visitors do not fully understand the nature of forest activities in the Duck Mountains. This lack of understanding may also apply to other forested recreational areas where harvesting activities occur. All the forest and park managers spoken to felt it was important to educate the public about forestry operations . However, traditional means for distributing information within parks are quickly disappearing, due to repeated reductions in staff time and budgets. In future, the responsibility for educational efforts may fall to the forestry companies and local operators, with some assistance from other organizations such as the Manitoba Forestry Association (MFA). Ultimately it is the operators and forestry companies who will benefit most from a park visitor's increased understanding of their operations and the forests in which they operate. One manager noted that education was critical in order to maintain the industry across the country.

Public open houses, such as those held to review annual cutting plans or to help develop longer term forest management plans, provide an opportunity to inform the interested public of the scope of forestry operations planned within recreational use areas. By holding open houses within the major urban centres, as well as in the towns

located near to the forest management license area, urban dwellers who visit the park for recreational purposes can be assured of a chance to become informed and provide their own opinion on the proposed harvesting activities. Recently, the Manitoba Forestry Branch has been hosting a number of open houses throughout rural and urban Manitoba with a particular focus on explaining how the Province's Annual Allowable Cut is calculated. Information is presented using a variety of media including a mini slide show, a brochure and display boards, while staff are also on hand to answer questions.

Through the process of developing the long term forest management plan for Louisiana Pacific Canada Ltd.'s forest management license area, stakeholders from a wide range of user groups have been involved in on-going consultation. A similar stakeholder committee was established as a condition of the environmental license awarded to the Pine Falls Paper Company Limited for their eight year forest management plan. These committees provide the opportunity to inform others of the current status of particular forestry operations and establish an on-going dialogue between different users who may otherwise have no contact and little chance to become informed about each other's perspectives. The board and various committees of the Manitoba Model Forest also provide a similar forum for such exchanges to occur.

Most managers noted the existence of the MFA Education Centre in Duck Mountain Provincial Park and the opportunities to increase use of the Centre through the development of partnerships. Displays, guided walks and off-site demonstration tours were mentioned as methods for providing education about forestry operations and forest ecosystems. Advertising of the Centre's existence and schedule of activities could also be improved, to try and attract a larger percentage of park visitors, including repeat visitors. The outdoor bulletin boards at campground offices may be one place to advertise the Centre's hours and attractions to park visitors.

Other opportunities for increased education were noted through the Swan Valley School environmental program and the annual loggers and haulers spring meeting which will include contests and displays about forestry operations aimed at attracting school children. Annual events held during Forestry Week also promote increased understanding of Manitoba's forests and the role of the forestry industry.

Individual companies can also develop their own educational programs. Louisiana Pacific Canada Ltd. is currently planning on establishing a number of educational programs directed at both staff, independent operators, schools and the general public. These will probably include a woodlot management program for private landowners, educational workshops for contractors to review environmental concerns and explain the techniques to be followed to ensure the least impact to the environment, school presentations, opportunities for school classes to learn about the company's GIS, displays and programs for forestry week, as well as the possible development of an interpretive drive or trail to expose visitors to different aged stands under a variety of management regimes. Repap Manitoba wants to set up demonstration tours, possibly

in every district, while the Pine Falls Paper Company Ltd. supports a two kilometer self-guiding interpretive trail which starts out in a clear cut and continues on into a mature forest.

Other education initiatives which could be pursued include the use of radio announcements for park visitors, sent through a local transmitter. This type of information service is currently being established for an area within Grand Beach Provincial Park and Belair Provincial Forest. Its first message will be broadcast this spring and will explain recent clear cutting of jack pine stands along Highway 59 for mistletoe control through the Belair Provincial Forest. Once the system is established, messages can be changed whenever required, to suit local conditions.

Recommendation 4:

The public does not fully understand forestry activities in Duck Mountain Provincial Park, however there is the potential to gain visitors' support through education programs which inform the public about current forest management practices and how they are evolving as more becomes known about the forest areas being managed. These programs should be developed and delivered to those recreating in managed forest areas. They should address key management issues such as clear cutting, debris management and buffer management.

Draft Recommendation 5: Those surveyed in this study have indicated a strong preference for selective cutting methods and a strong response against clear cutting. It is evident from the comments made that they do not want large areas cleared. Because of the strong desire indicated by recreationists', and given Duck Mountain's provincial park status, all forestry operations in Duck Mountain Provincial Park should be carried out using selective cutting techniques.

This recommendation received the strongest response from all forest and park managers spoken to. All supported the use of selective cutting where appropriate, in mixed wood or uneven aged stands, to ensure proper regeneration of the target species, generally white spruce. The Duck Mountain area has a long history of selective cutting due to the mixed stand composition found over much of the area. Selective harvesting of white spruce has been carried out in the Duck Mountain area for over 100 years.

However eliminating the use of clear cutting as a harvesting system in Duck Mountain Provincial Park was not seen as a viable option, given the ecological requirements of several species widely harvested in the area. Pioneer species such as jack pine, black spruce and trembling aspen require certain conditions in order to promote successful regeneration. These include opening of the canopy to allow light and heat to reach the soil over the roots of the aspen, to promote regeneration through suckering. For jack

pine, the area must be cleared and scarified in order for the cones to reach mineral soil and get enough heat to be able to open and release the seeds. Black spruce also require mineral soil and direct sunlight for seedling establishment.

There was some concern about what survey respondents interpreted as a clear cut. As most respondents seemed satisfied with current forestry operations in the park, they may feel that the approach to clear cutting used here is satisfactory compared with what is often shown from other provinces like British Columbia. Clear cutting techniques used in Manitoba have evolved away from the large expansive cut blocks to cut and leave harvesting systems where the largest cut block is 100 hectares and most are smaller. While forest managers would not support elimination of clear cutting as a harvesting technique, they have been working to develop cutting systems which suit the species being harvested, provide for the needs of wildlife populations and fit the characteristics or topographic features of the existing landscape.

The result is a number of alternatives within the clear cutting system. These include cut and leave blocks scattered over larger areas, with smaller, irregularly shaped cut blocks, travel corridors and buffers. There are also modified clear cuts in which residual blocks of timber are retained within the cut block. In softwood cuts, the residuals are generally made up of any hardwood component found in the stand. In group selective cutting, a series of small cut blocks, two to five hectares in size, are cut throughout the stand. These are big enough so that if the species being cut are jack pine or black spruce there will be enough light getting into the stand to promote regeneration and the areas are large enough to get small equipment in to do site preparation. The sites may still require planting, but the areas cut would be large enough for a planting program to get into.

It was suggested that these new clear cutting techniques need to be evaluated to determine if they are working as well as hoped. Depending on the outcome, tighter restrictions on clear cuts and their sequencing may be necessary within provincial parks or other valued forest recreation areas in order to ensure all forest values are being adequately protected.

Revised Recommendation 5:

Given the strong public response against clear cutting and the suitability of selective cutting for many stands within Duck Mountain Provincial Park, the use of selective cutting must be favoured wherever possible within the park and in other highly valued recreational areas. Where clear cutting is appropriate, cuts must be carefully designed which suit the species being harvested, provide for the needs of wildlife populations and fit the characteristics or topographic features of the existing landscape. Emphasis should be on options which utilize smaller cut blocks such as: a cut and leave block system scattered over a larger area, with smaller, irregularly shaped cut blocks, travel corridors and buffers; modified clear cuts in which residual blocks of timber are

retained within the cut block; and group selective cutting where a series of small cut blocks, two to five hectares in size, are cut throughout the stand.

The use of these alternative clear cutting methods should be monitored and the results evaluated in terms of their ability to provide for the recreational and other forest values important to users in forested recreation areas, including Provincial Parks. The status of clear cutting should be reviewed within a reasonable time frame to decide if tighter restrictions on clear cuts and their sequencing may be necessary within provincial parks or other valued forest recreation areas, in order to ensure all forest values are being adequately protected.

2.1 Other Forestry Issues

The issue of debris management was also raised with the managers because of the strong response of survey participants against visible dead material within photographs of forests. As well, the current trend towards delimbing at the stump ensures that debris will be scattered throughout a cut over. Such debris may be able to be knocked down flat across the site to try and reduce its visibility.

Operators are expected to clean up a harvested site to a certain standard and all merchantable timber must be removed or they can be fined. However, potentially much diseased and dead material is left on the site, depending on the age and health of the stand. While some of this material would be good as fuelwood, often there is more debris than the market for fuelwood demands or it is not cost effective for the park to obtain all its fuelwood from this source.

Some pulp operations can use wood chips. Then the debris is chipped at the roadside, blown into a large truck box with screens and shipped to the mill. This method allows more usable wood volume to be shipped at one time, reducing hauling costs over long distances. It has been used by Repap Manitoba in the Porcupine Mountains and near Thompson.

Perhaps the most important aspect of debris management is education. By telling recreationists about the value of debris to a site and what it contributes to the health of other species, debris may come to be viewed as an important and acceptable component of the forest. Then once sufficient regrowth occurs on a harvested site, the debris will become less visible and no longer detract from the visual setting.

Increased public education about debris management has been included as part of recommendation 4.

3.0 Summary

The results of the survey conducted as part of this study have indicated that campers and cottagers to Duck Mountain Provincial Park have some concerns about the potential impacts of forestry operations and buffer management on their recreational enjoyment of the park. They also appear to have visual preferences for certain forest types, including managed forest stands planted with white spruce, as well as healthy developing stands that are more than 20 - 30 years old. Stands which are dominated by black spruce, show evidence of being previously cut or which have standing dead or visible dead material were not considered to be visually appealing. Visitor appreciation of younger forest stands not yet at maturity, as identified through their rating of the survey photographs, may increase opportunities for recreational use of younger, managed forest stands, particularly those dominated by white spruce.

The draft recommendations attempted to address the concerns raised by survey participants in their responses to questions about forestry practices within the park. Further review and response by forest and park managers has allowed a clearer picture of the state of forestry operations in the Duck Mountains to appear and has assisted in improving the final recommendations. Some of these recommendations are clearly being addressed at this time, particularly those regarding the establishment of buffers and the planning of forestry access routes. The issues raised in relation to buffer management within the intensive recreation zones and public education, particularly regarding the design and use of various cutting methods, have not yet been adequately addressed. The recommendations pertaining to these issues, and the suggestions made by managers for their implementation, need to be given adequate consideration in all future forestry operations within recreational areas.

Finally, the response of managers to the recommendation that all harvesting in Duck Mountain Provincial Park be carried out through the use of selective cutting has indicated the degree to which clear cutting techniques have been, and continue to be, modified. Through these modifications, forestry operations are trying to address the concerns raised by the public while meeting the needs of wildlife and considering the features of the landscapes where harvesting occurs. It will be necessary to evaluate the effects of using these methods on the health of the forest ecosystem, the opportunities to provide recreational use of managed forest stands, and the maintenance of wildlife populations.

The understanding gained through this study and the application of the recommendations will allow forest managers, park managers and the public to devise better forest management plans which are sensitive to the needs and values of park visitors as well as other forest values.

Revised Recommendations

1. All buffers surrounding cut areas adjacent to roads, along recreational trails and waterways should be wide enough to effectively block the cut area from view by recreational users. The rolling topography prevalent in Duck Mountain Provincial Park will need to be considered in the design of buffers, particularly in areas surrounding scenic viewpoints. In these cases buffer management should be considered part of a larger landscape management approach designed to incorporate consideration of recreational views in the management of forests and buffers in rolling terrain.

   Regardless of the methods considered, if buffer management is to be implemented in recreational areas it must be planned and managed over the long term, in conjunction with long term cutting plans. Guidelines should be drawn up to govern cutting in buffers for the purposes of preventing or managing fire, insect and disease while ensuring buffers continue to function as intended whether their purpose is to protect water quality, to provide wildlife habitat or to effectively block forestry operations from view. Careful monitoring would also be required to determine the impacts of buffer management on the forest and to determine if the techniques used are effective in reducing the loss of forest buffers to fire, insects and disease. Public response to buffer management should also be monitored, particularly in conjunction with a consultation program.

   As well, public consultation is recommended to ensure all users of forested recreation areas have the opportunity to review the options for buffer management and to understand some of the difficulties of implementing buffer management. Recreational users must have the opportunity to participate in deciding under what conditions buffer management in recreational areas is acceptable to all parties.

2. The need for, and placement of, all future access routes for forestry operations in parks and other recreational use areas should be given intensive review when planning additions to the overall forestry access networks. The development and application of a forestry road classification system and associated management guidelines should be considered for all forest routes in recreational areas. Opportunities to minimize or remove roads should be actively considered.

3. If any forest management activities are required within high use recreation zones, or within the buffers between cutting areas and major recreation zones, information about the need for the proposed activities should be provided to recreational users in the area which directly addresses their concerns (e.g. through effective on-site signage, use of the MFA Interpretive Centre, on-site field tours). Provision of this information and any other consultation should occur prior to commencement of these activitie.

4. The public does not fully understand forestry activities in Duck Mountain Provincial Park, however there is the potential to gain visitors' support through education programs which inform the public about current forest management practices and how they are evolving as more becomes known about the forest areas being managed. These programs should be developed and delivered to those recreating in managed forest areas. They should address key management issues such as clear cutting, debris management and buffer management.

5. Given the strong public response against clear cutting and the suitability of selective cutting for many stands within Duck Mountain Provincial Park, the use of selective cutting must be favoured wherever possible within the park and in other highly valued recreational areas. Where clear cutting is appropriate, cuts must be carefully designed which suit the species being harvested, provide for the needs of wildlife populations and fit the characteristics or topographic features of the existing landscape. Emphasis should be on options which utilize smaller cut blocks such as: a cut and leave block system scattered over a larger area, with smaller, irregularly shaped cut blocks, travel corridors and buffers; modified clear cuts in which residual blocks of timber are retained within the cut block; and group selective cutting where a series of small cut blocks, two to five hectares in size, are cut throughout the stand.

   The use of these alternative clear cutting methods should be monitored and the results evaluated in terms of their ability to provide for the recreational and other forest values important to users in forested recreation areas, including Provincial Parks. The status of clear cutting should be reviewed within a reasonable time frame to decide if tighter restrictions on clear cuts and their sequencing may be necessary within provincial parks or other valued forest recreation areas, in order to ensure all forest values are being adequately protected.

6. If stand mangement is considered necessary for the prevention or control of fire, insect or disease within the intensive recreation zones, these zones should be considered as special areas and only those operators with the best work practices should be allowed to operate there when it is required. Within these zones, sensitive areas would be identified where any cutting for management purposes may not be allowed due to their value for wildlife or other reasons. A long term management plan for these intensive use zones should be developed, with activities being staged over time throughout the park, to ensure any required harvesting is spread out over a sufficient period of time. Operations should be restricted to non-peak visitation periods, with special operating restrictions applied to areas adjacent to campgrounds, cottage subdivisions and lodges.