

Ontario's Timber Harvesting Levels

science or wishful thinking... ?

a surprising look at how little sustainability is accounted for in forest modeling

2007





HOW MUCH CAN WE LOG...?

has forest management in Ontario's Boreal forest lost its sustainability veneer...?

This report tests whether logging in Ontario's public forests is being determined sustainably. Until recently, the method for setting the amount of logging in individual forestry plans has been mysterious, technical, and inaccessible to the public. Now we have exposed this "black box" in order to better understand how decisions are made and what environmental goals are being sacrificed to keep harvests at current levels.

Our research begins with one case study, the Whiskey Jack forest, and ends on another, the English River forest. Along the way, six other forest management units were investigated to assess whether the modeling problems we encountered might possibly be systemic.

The regulatory system in place for forestry has long-term forest health as its primary goal. But forest management planning, including the

computer modeling, is downloaded to local implementation by industry beneficiaries, where economic priorities carry an enormous amount of impact upon decisions, and Ministry of Natural Resources (MNR) approval is often a political imperative. Unless the regulator can effectively oversee the system, important decisions such as how much of our public forests get logged are all too often dominated by economics, regardless of policy.

Our findings have confirmed this. The system used to set the harvest level targets for each forest unit is extremely susceptible to abuse. From inadequate information and poor documentation of rationale, to hopelessly optimistic inputs and lack of reasonable precaution, the harvest levels that are set do not deserve the confidence that they have been attributed. For this to be the basis of critical decision-making for a public resource is alarming.

mills call the shots...

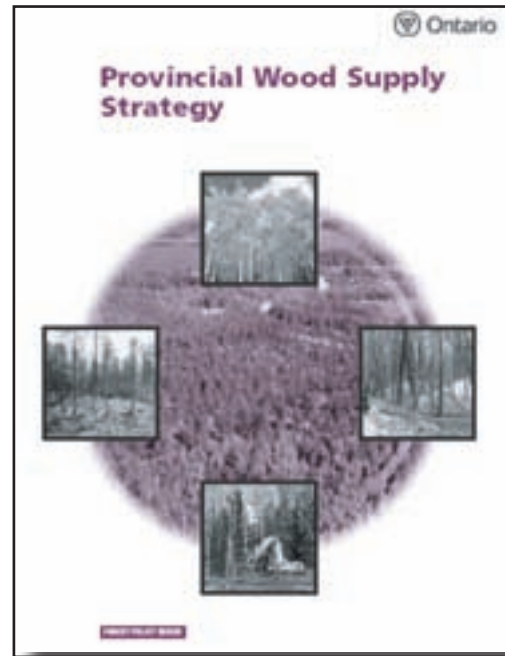
The heart of the problem is evident in the Provincial Wood Supply Strategy. Not surprising the prevailing theme is: maintain and increase the wood supply currently demanded by the mills. The notion of having to adjust demand to supply is not really explored, even though all licences are issued within the conditional bounds of "sustainability."

In step with this demand-based bias, the number of times that information shortcomings of the system are highlighted in this document is telling. Particularly since the current system does not seem to include very much in the way of safeguards to account for poor information being used at a forest management unit scale. Instead, sustainability appears to be somehow assumed, without any additional precaution to accommodate known information limitations.

For years, Ontario's Environmental Commissioner has been critical of the extent that sustainability goals are being met. This concern culminated in his 2004-05 annual report, which raises questions about the credibility of the MNR as a sustainability advocate. In this report the Commissioner points out that only 1 of 20 strategies proposed in the Wood Supply Strategy reflected the need to adjust mill demand.

Given the mandated role of the Ministry of Natural Resources as a custodian of Ontario's public forests, and the clear long-term forest health imperative of the Crown Forest Sustainability Act, it is becoming increasingly obvious that the system is not functioning as advertised.

We see an increasingly desperate industry being pressed by an unfavourable international market while clinging to a century old model, an extreme lack of precaution being used in determining how much logging can occur, and a regulator unable to adequately oversee the system with any level of rigor or accountability. The sustainability implications for our public resource are predictably grim should these trends persist.



[www.mnr.gov.on.ca]



KEY DIMENSIONS...

To understand the scope of the harvest level problem in Ontario several key dimensions cannot be ignored. These include: global economic pressures; a sustainability blindspot for many crown forest licensees; a regulator exhibiting conflicting priorities in its approach to overseeing industry; and a sharpening realization of past management catching up to us during a period signaling significant change for the industry.



1

global economics

These questions of whether public forests are being harvested sustainably are being posed during a time when the forest industry is suffering from the pressures of high costs, low demand for their products and intense international competition. Ontario's commodity-based industry just can't compete with faster growing trees and less ecologically and socially responsible jurisdictions. Despite this, there continues to be a lack of emphasis on alternatives, including value added manufacturing, green markets, and a general diversification of the forest economy.

Inflated harvest levels may result in short term industry benefit, but experience tells us that they can also produce long term social, economic, and resounding ecological detriment.

2

sustainability blindspot

Sustainability requirements that are entered as inputs into the harvest levels calculations are seen by many in industry simply as constraints to the level of harvest rather than as a tool in achieving the goal of long term forest health. There is a very vocal pressure by these elements of the industry to push back on any movement by the province to put in place sustainability safeguards where they are seen to impact their bottom line. While this might make some sense from a short-term business perspective, it highlights the need for appropriate government oversight when industry is delegated forest health responsibilities.

Leading forest product companies understand that they are operating with a social licence that goes beyond their legal one. They embrace sustainability by seeking out higher standards of practice to assure the public, their shareholders, financiers, insurers, and ultimately their markets, that they go the extra mile to safeguard the forest resource. These companies pursue certification of their operations acknowledged by its most ardent critics, the Forest Stewardship Council (FSC) certification.

By following this latter path, Ontario can turn sustainability from a constraint, into a market advantage that we can brand and dominate in the growing green market economy.



3

conflicted regulator

For the forest sector there is pressure to maintain harvest levels over time to fulfill fibre demands at their mills. Though this demand is a logistical reality for those mills, that demand is NOT a useful variable in determining the sustainable yield potential of forests, and is a dubious area for regulator involvement when that regulator is also the custodian of the forests from which the wood is drawn.

When our regulators become immersed in both the supply and demand sides of the equation, they can find themselves having to respond to industry pressure, such as the following example from the Ontario Forest Industries Association where industry will hold the ministry to supply projections, even when the Ministry is recognizing systemic problems in their sustainability.

“Industry does not believe the MROL (ministry recognized operating levels) for the Northwest should be reduced up to 10%... MROLs need to take into account the large capital investments that have been made, based on MNR approved business plans.”

(Ontario Forest Industries Association, ECO Supplement 2004-05)

Practice in Ontario tells us that mixing demand concerns into basic supply calculations is a powderkeg that can only be expected to undermine the long term health of our forests.

4

dynamic system

As our commercial forest continues to be harvested, one thing is becoming clearer - the impact of industrial forestry on Ontario's landscape has been monumental. Anyone "google-earthing" their way across Ontario by internet satellite can recognize our commercial forest as a heavily impacted landscape. This trajectory was set a long time ago, without the knowledge that we now have about the forest, but does it meet the sustainability test now that we have this knowledge?

The century old paradigm that has left that landscape is also changing in its global context, but into what? What role will Ontario's forest sector play in its next iteration?

Further, as climate change impacts develop, we can expect to see changes in forest values, product types (including services) and the composition of our forests themselves.

There are plenty of reasons to suggest that now is the time to re-think our relationship with Ontario's Boreal forest. It would be reasonable to suggest that more precaution and a higher degree of stewardship would be prudent ingredients in keeping our long-term options open.

A fundamental starting place is in how we calculate how much of our public forests we log.

VIRTUAL FORESTS...

forest management planning in Ontario

The public lands that are allocated for commercial logging in Ontario are currently divided into 46 Forest Management Units. The management of these publicly owned forests has, for the purposes of industrial forestry, been largely entrusted to private companies through licence agreements that are overseen by the Ontario Ministry of Natural Resources (MNR).

Ontario's forest management system does not transfer ownership of the land or forests to these companies. Rather, companies are given the right to cut trees in these licenced areas if they agree to take on the responsibility of developing Forest Management Plans (FMPs) in keeping with government regulations and policies and properly undertake all logging and regeneration activities. The land is effectively rented by the companies and they are obligated to keep it as a healthy forest ecosystem on behalf of the people of Ontario.

These obligations are embodied in the Crown Forest Sustainability Act - provincial legislation which lays out how forestry is to occur in our public forests. The primary purpose of this policy framework is to ensure the sustainability of the resource - from a long-term forest health perspective.

harvest levels

Harvest levels are the estimated amount of wood that can be logged in a particular forest management unit. Determining these levels is a fundamental part of the forest management planning for each unit, involving the use of a complex computer model, a data inventory of the forest, and applied forestry knowledge. The critical sustainability challenge for forest managers is to identify how much timber can be cut, while also retaining sufficient habitat for wildlife and protecting other forest values such as biodiversity, landscape integrity, natural heritage, traditional use, and recreation.

computer modeling

The model that is used to predict harvest levels for Ontario's forest management units is the Strategic Forest Management Model, or SFMM.

This model assumes many things about how the forest will grow and change over time under different management scenarios. It is used to grow a computer-world forest for up to 160 years into the future. Imagine the difficulty in accurately predicting the behaviour of a complex ecosystem with thousands of assumptions.

Models are necessarily simplified versions of reality. They embody many assumptions, intrinsically involve error, and are usually only as good as the information fed into the model. Modelers are quick to point out that "garbage in equals garbage out." The importance of being honest about the state of the inputs, and cautious about any conclusions made upon them, is the backbone of reliable modeling.



"Forest management planners must take steps to ensure that the assumptions made and information used in the modeling process are as accurate **as possible, in order to reduce** modeling errors in the prediction of long-term wood supply."

(MNR Wood Supply Strategy, 2004)

Case Study:

The Whiskey Jack forest (licenced to Abitibi)

Our first case study, the Whiskey Jack forest, was released as its own report "Out of Balance" (see www.wildlandsleague.org).

What we found in our three year assessment of the Whiskey Jack forest were unrealistic assumptions about the forest's ability to sustain high levels of logging, poor implementation of MNR guidelines for the protection of caribou and marten habitat and inadequate accounting for the past impacts of logging on wildlife and habitat.

In fact, our assessment shows that rather than focusing on much needed ecological restoration for the Whiskey Jack forest, the current plan is focused on maintaining cutting rates based on overly optimistic wood-supply calculations. Combined with serious gaps in basic ecological information about the forest, this is preventing the development of a much-needed new approach to management (and restoration) of this forest.

With the Kenora mill now closed, there is a good opportunity to revisit the harvest levels on this unit. However, the same volume is being immediately re-assigned to industrial



[www.wildlandsleague.org]

consumption via a Request for Proposal for the full volume (issued by the Ontario Ministry of Natural Resources in fall of 2006). Announcements are expected soon.

The Wildlands League used the opportunity to formally request a review of the wood allocation system through the Ontario Environmental Commissioner (to view this request, please see our website), given the large number of mills that have closed and the expectation that new opportunities will continue to emerge to utilize this timber. Our request was refused.

Christian Peacemakers Team, 2003



Kenora Pulp and Paper mill
1920 - 2005

Whiskey Jack forest 2006



OUR INVESTIGATION...

sampled forests

We looked at a sample of seven forest management units in the Boreal Forest to investigate how diligently effort was being applied to inputting key sustainability information into the harvest prediction modeling for each unit. There were five units in the northwest and two in the northeast. This study covered a total of over 5 million ha. There are 36 million ha in Ontario's managed Boreal Forest divided between 36 forest management units.

We included the Whiskey Jack as a comparison point because of our three years of more intensive study on that unit. It was that work that introduced us to the possibility of shortcomings of current modeling assumptions in practice.

We chose these units for a variety of reasons: presence of Caribou habitat, existing relationships with forest managers, previously identified sustainability challenges, a desire to engage several different companies and geographical locations in both northwestern and northeastern Boreal Forest. While our sample is not representative or random, our study has been sufficient to identify weaknesses in sustainability determination in all seven units. This seems to confirm our original concern that these problems are likely to be systemic in scope.

These units have now passed into the next cycle of forest management planning. We continue to be in dialogue with their forest managers and we hope to continue to positively influence future forest management planning on these units through this continued engagement.

Because these problems are unlikely to be unique to these units, and due to the largely positive gains made in this exchange to date, we felt it unnecessary to identify these units specifically.

benchmarks used

This research compared the assumptions that forest managers used in their modeling processes and the extent of background research around these assumptions. The default benchmarks we used were existing MNR forestry rules. We also looked at those of the Forest Stewardship Council (FSC), the recognized leader in standards for sustainable forestry as a best-practice benchmark, where applicable, though none of the units had been FSC certified at the time of our assessment.

sustainability criteria selected

By having access to the computer model SFMM we were able to see exactly what many of assumptions that went into calculating the harvest levels were. These assumptions include such things as the length of the interval between fires, how the forest would grow and change over time (growth, yield and succession), the amount of land that should be available for logging and the inventory of what is in the forest.

We researched the forest management plans for documentation to support the assumptions and dialogued with industry and MNR foresters about how the assumptions were arrived at.

We selected 10 of the key assumptions that SFMM relies upon to set harvest limits for each management unit, as it generates the virtual forest that industry expects to be able to cut.

Each assumption can influence the accuracy of harvest levels predictions. We assessed each assumption as having either a sound, questionable or insufficient level of precaution applied.

"Better information helps forest managers make better decisions concerning the sustainability of the forest, both for wood supply and for other forest values."

(MNR Wood Supply Strategy, 2004)



OUR SUSTAINABILITY CHECKLIST...

1 **Natural Forest Condition**
Has a study been done on what the forest would look like in the absence of logging and fire suppression? This estimates the characteristics of the forest (e.g. age, species composition) either before industrial logging occurred (pre-industrial condition) or projects what the forest would look like in the future without modern activities.

SOUND
completed a comprehensive pre-industrial condition analysis (FSC boreal standard)

QUESTIONABLE
completed a comparison with unaccessed portion of the landbase (best current practice)

INSUFFICIENT
SFMM natural benchmark model used as a comparison (standard current practice)

2 **Forest Inventory**
Does the unit have an up-to-date Forest Resource Inventory? This is an accounting of the amount, age, species composition, quality, and distribution of trees and other ecological features in the management unit.

SOUND
completed a recent inventory, regularly updated and is linked to non-timber ecological features, e.g. ecosites, non-tree species and habitat classification (FSC boreal standard)

QUESTIONABLE
completed an inventory within the last 20 years and updated it regularly (best current practice)

INSUFFICIENT
failed to regularly update the inventory or it is older than 20 years

3 **Natural Disturbance**
Is the anticipated amount of forest fire, wind throw and insect damage on the unit based on credible data? This is the assumption about how much area will burn every year and needs to take into account local information on climate, history, and fire suppression.

SOUND
accounted for credible estimates of the rate and extent of natural depletion of all types (FSC boreal standard)

QUESTIONABLE
utilized the most conservative fire cycle estimates (best current practice)

INSUFFICIENT
relied on optimistic MNR regional fire cycles provided in SFMM



Are forest managers appropriately considering these parameters when calculating harvest levels...?

4 **Growth and Yield**
Have growth and yield studies been carried out locally and well documented? This is the predicted average volume of wood fibre that is produced for each hectare of forest. It varies greatly with tree species, local soil and climate conditions.

SOUND
based their estimates on credible, documented local data (best current practice & FSC boreal standard)

QUESTIONABLE
based their estimates on a variety of information including local data, but documentation is not available (standard current practice)

INSUFFICIENT
relied on standard yield direction without local input

5 **Succession**
Are the succession rules based on credible, well documented local research? These are the rules that govern how forests change from one type to another in the absence of disturbance in the computer world forest.

SOUND
based on credible, documented local data (FSC boreal standard)

QUESTIONABLE
based on a variety of information including local data, but documentation is not available (best current practice)

INSUFFICIENT
not based on local data (standard current practice)

6 **Biodiversity**
Has the planning considered required amounts for old growth and wildlife habitat?

SOUND
accommodated the habitat needs of species at risk and maintained amounts of old forests (FSC boreal standard)

QUESTIONABLE
have met provincial guidelines for old growth and wildlife habitat(standard current practice)

INSUFFICIENT
have not met the intent of provincial guidelines for old growth and wildlife habitat

7 **Residual Trees and Stands**
What is the volume of residual trees left standing after clearcutting? These are the individual trees that are required to be left for wildlife habitat, seed trees or that are not suitable for the mill or larger stands of trees that are required to be left for wildlife habitat structure.

SOUND - *have clearly accounted for residual patches and trees in harvest level calculations (best current practice and FSC boreal standard)*

QUESTIONABLE - *some doubt that forest managers have accounted for residual patches and trees in harvest level calculations*

INSUFFICIENT - *clearly did not account for adequate residual in harvest calculations*

8 Loggable Landbase

Have all required reserves been subtracted from the landbase? Any areas off-limits to logging, like parks or buffers around non-timber forest values that are identified in the initial planning or discovered during field operations such as sensitive soils or wildlife habitat sites, or stands of inaccessible or non-merchantable trees can be counted as reserves.

SOUND - have subtracted all areas not available for logging from the land available for the harvest calculation: e.g. protected areas, long term residual retention at the stand level, riparian reserves (best current practice and FSC boreal standard)

QUESTIONABLE - have not adequately accounted for sensitive ecosites or have a low amount of permanent protection

INSUFFICIENT - have not yet fulfilled outstanding protected area commitments



9 Deferred Areas

Are large intact forest patches being set aside to provide habitat through time? These are areas set aside from harvesting for a specified number of years, required for marten conservation in all boreal forest units, and caribou where applicable.

SOUND - have accounted for enough large patches set aside for long enough to provide habitat through time (best current practice)

INSUFFICIENT - have not accounted for enough large patches set aside for long enough to provide habitat through time.

10 Conversion of Forest

Has the planning process adequately considered the amount of conversion of forest to non-forest that will ensue with the construction of roads and landings for accessing and transporting timber? This needs to consider that this rate will be higher in areas that do not yet have an established road network.

SOUND - have accounted for 4% or more of the landbase being converted to roads and landings (best current practice)

QUESTIONABLE - accounted for 2- 4% in areas that are already extensively roaded (standard current practice)

INSUFFICIENT - accounted for 2% or less in areas that have not yet been extensively roaded.

WHAT WE FOUND...

FOREST MANAGEMENT UNIT

SUSTAINABILITY CHECKLIST

	unit # 1	unit # 2	unit # 3	unit # 4	unit # 5	unit # 6	unit # 7
1 Natural Forest							
2 Forest Inventory							
3 Fire Cycle							
4 Growth & Yield							
5 Succession							
6 Biodiversity							
7 Residual							
8 Loggable Land							
9 Deferrals							
10 Forest Conversion							

/ 70

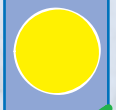
What level of precaution did we feel was applied in the assumptions used for these sustainability criteria...?

insufficient



41

questionable



27

sound



2

IMPLICATIONS OF THE CHECKLIST...



1 Natural Forest Condition
By using the Natural Forest Condition, managers will have a better understanding of an ecologically appropriate forest management. For now managers are only required to consider the SFMM projections for the next 160 years, assuming an absence of fire suppression and logging. This one projection is inadequate given that there are many other tools available for managers and in light of our present critique. Other tools include multiple projections based on new models and science (including historical survey records) developed by MNR. These projections forecast far enough into the future so that the footprint of modern human activity is essentially removed. Managers in northern units can compare areas that have had sustained logging with areas that have been relatively unaffected by logging or fire suppression. Pollen analysis and fire scar studies may also be useful.

Our Study: Our assessment showed that none of the forest units analyzed would fully satisfy FSC requirements for the Pre Industrial Condition (PIC). Some managers did indicate that historical survey records would be utilized in the future. One unit did a comparison using its relatively natural northern reaches, while another analyzed aerial photos that predated significant logging and effective fire suppression.

2 Inventory
The Forest Resource Inventory (FRI) was originally intended as an extensive survey to provide general information on forest conditions. It is generally recognized by forest practitioners as being limited by technology, a lack of ground verification plots and a failure to link it meaningfully to ecosites or wildlife habitat.

Only the forest canopy is captured in traditional aerial photography, while masking the understory. Furthermore, this data can be up to 20 years out of date. Regularly updating this inventory with records of disturbance (harvest, wind, fire) and renewal is even more important given the long interval between photo flights. If regular updating fails to occur, foresters may have questionable information on how much mature forest exists or how well a younger forest is growing to replace logged over areas.

A recent study in northeastern Ontario found that FRI species composition matched field plots in only 54% of stands and 56% of area, concluding that "Low level of agreement between FRI and field data indicate a need for more extensive studies on FRI validation prior to its use for forest management planning." (Pinto et al, 2007)

Our Study: Four forest management units in our study had a recent Forest Resource Inventories completed using aerial photography. Given the acknowledged limitations in the FRI, we could only give a question mark for those units. A backlog in regeneration surveys in three units has been documented, meaning that the inventory could not be properly updated and thus failing to meet requirements for sustainability.

3 Fire Cycles

Two fire cycles assumptions are utilized in SFMM. The 'natural' fire cycle attempts to predict how often the forest would burn if there was no fire suppression. It determines the forest composition of the natural benchmark run - the predicted natural forest without human intervention. The managed fire cycle estimates how often burns occur when fire protection and forestry operations exist on the landscape. If managed forest fire cycle estimates are too long, (being overly optimistic in the province's fire fighting capability), the model may incorrectly predict more forest being available to harvest than is actually on the landscape.

One limitation with SFMM is that it only considers fire, when in reality wind and insect infestation can combine with fire to create even larger natural disturbances than the model would predict. We compared our study forest units with a recent MNR report (Spatial and Temporal Variations in the Fire Cycle Across Ontario, OMNR 2001) that generally showed shorter cycles than those previously utilized. If forest unit fire cycles exceeded those in the MNR report, they were deemed too long, having disregarded the precautionary approach. This problem is further exacerbated by the fact that SFMM does not consider other disturbances besides fire.

Our Study: Only one of the study units had a managed fire cycle that we considered defensible: they had reduced the length of fire cycles in their Forest Management Plan reflecting the MNR study.

4 Growth and Yield

When companies use unrealistically high growth and yield projections, this may inflate the amount of forest available for cutting. In the short term, these high targets may be attainable, but eventually the company will run out of productive forest. This can result in significant drops in production, forcing hardship on local communities dependent on high volumes of trees for their mills. Under this scenario, ecological values will suffer for many years.

Current benchmark yield curves are based on work that covered limited types of forest. Users can input local condition information, but these inputs are largely undocumented. Without proper documentation, it is difficult to assess or justify yield curves. Overharvesting appears to be a common outcome of poor growth and yield analysis.

Meanwhile, MNR is attempting to standardize yield curves based on permanent sample plots reflecting a variety of conditions. Unfortunately, this information has yet to be distributed to all forest management units.

Thankfully, the new Forest Management Planning Manual will require better documentation of local adjustments to yield projections beginning with 2007 management plans. Because a limited number of plans are written every year, it will take until 2011 before this becomes standard practice in all units.



Our Study: We were unable to obtain accessible, documented evidence of locally derived growth and yield for any of the units we looked at. Without such information, it is difficult to assess the validity of such an important assumption. In two units, it was clear that local information was not utilized. In some instances, like the English River, information was obviously inflated.

5 Succession

Similar to growth and yield, succession rules are not all based on sample plots and documented, rigorous science. There is no guarantee that the forest succession analysis prepared through this computer model will be like the one that is actually on the ground.

Our Study: Although we were assured by auditors that companies in general are moving towards using better data on this, we were unable to obtain accessible, documented, and therefore defensible evidence of locally derived succession rules for any of the units we looked at. One IFA stated conclusively that it was difficult to assess whether the succession rules were realistic, since they have not been verified with local information.

6 Biodiversity

The quantity and quality of wildlife habitat is both a determiner of harvest levels and a result. If over harvesting occurs, wildlife dependent on mature forest will suffer. But if such wildlife habitat is deliberately conserved in the model considerations, harvest levels will have to be reduced. A compounding difficulty when predicting wildlife habitat with SFMM is a lack of confidence in the way the model differentiates wildlife habitat. One review of the habitat component of SFMM pointed out that the model doesn't consider how habitat is distributed across the landscape. Also, SFMM doesn't consider populations, only the predicted supply of habitat. In addition, a recent as yet unpublished paper from work led by Natural Resources Canada, was critical of the data quality used on 22 bird species (Management of Old Growth Pine and Provision of Associated Habitat in Algonquin

“Analysis for the Forest Resource Assessment has shown that relatively small changes in natural succession rules can cause significant changes in available timber supply.” (Best Practices for Wood Supply Modeling, MNR, 2004)



Park, 2007). This lack of confidence confuses the picture so that it is hard to know if reality will be better or worse than the model's predictions.

Our Study: We concluded that none of the units properly considered either wildlife or older forests when calculating harvest levels. SFMM predicts forest conditions for simulated natural conditions and the chosen management regime for 160 years into the future.

In our study the natural condition produced more old forest (>100 years) than the managed forest. In fact, the natural condition is predicted to contain on average, 25% more: a difference of over 300,000 ha.

Such a discrepancy may have profound effects on species like caribou and marten that rely on older forest for their survival. This means that at any particular point in time these species have to make do without an area of prime habitat equal to five cities the size of Toronto.

We are also concerned that the mosaic approach to managing for caribou (see Deferrals and Figure 1) will not leave enough intact older forest over time to conserve these threatened animals in logged over forests.

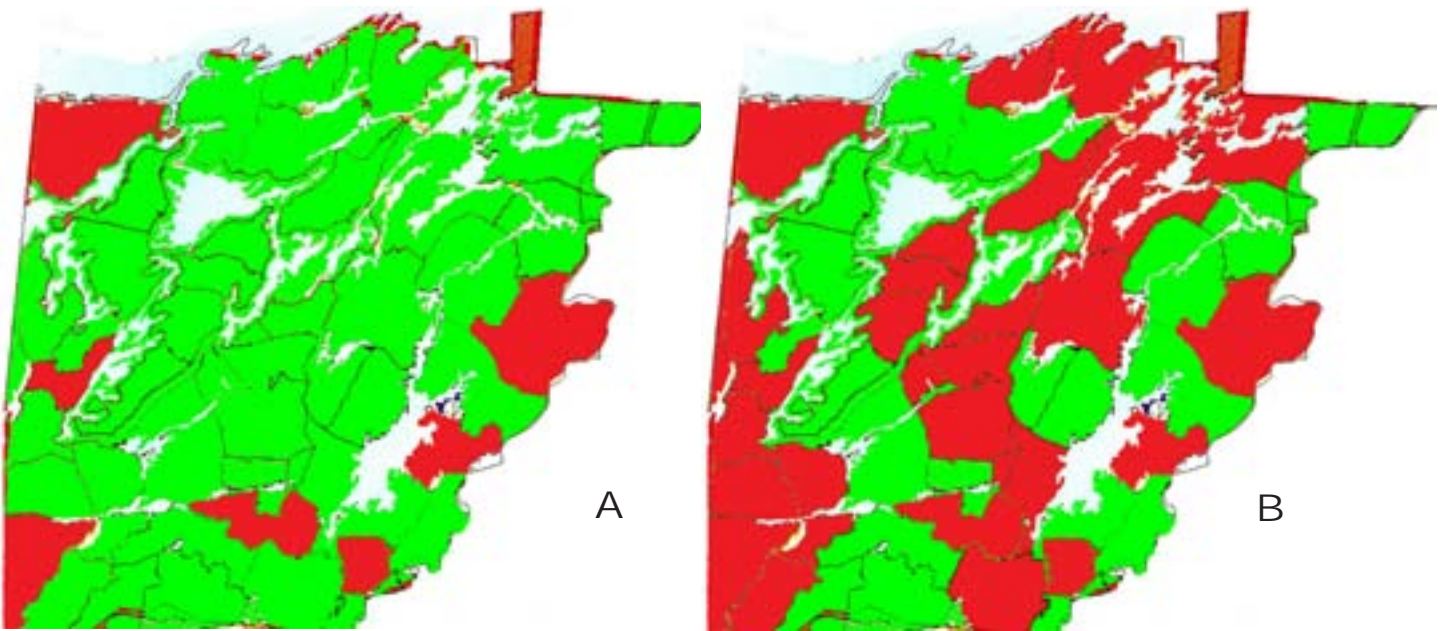
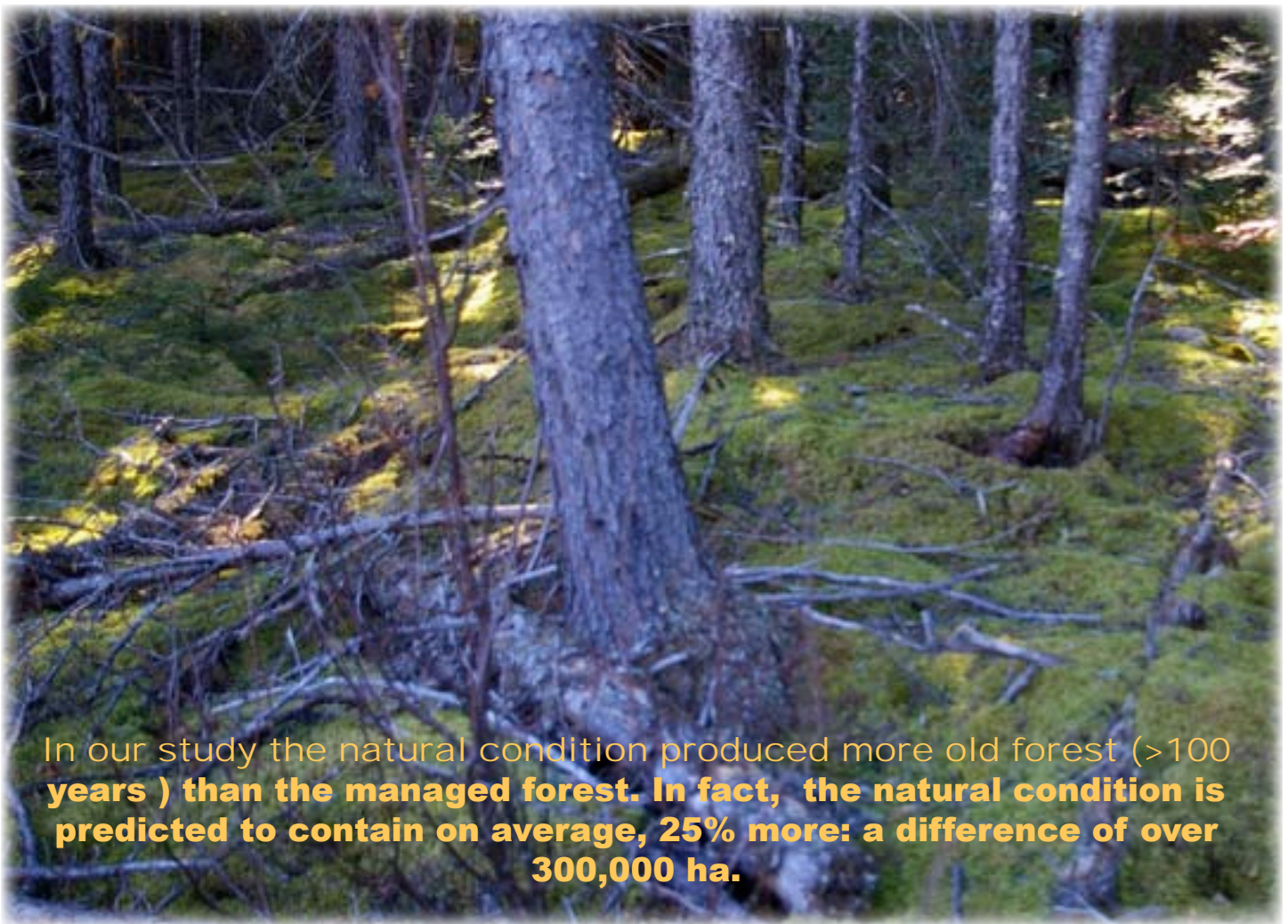


Figure 1: amount of uncut forest (green) on a typical forest management unit A) currently and B) after 60 years of mosaic approach. Given that Caribou are thought to prefer forest at least 60 years old, the impact of this logging (red) on their habitat is significant.



In our study the natural condition produced more old forest (>100 years) than the managed forest. In fact, the natural condition is predicted to contain on average, 25% more: a difference of over 300,000 ha.

7 Residual

Recent forest management guides now require that more trees must be left standing for wildlife purposes. The intent is to leave a remnant that is representative of the previous stand to provide some habitat for species that require larger trees until the new stand is mature. There are always unmarketable trees also left standing either because of quality or species type.

Our Study: We found that most units were not adequately accounting for the amount that should be left behind. Trees left behind should represent up to three cubic metres per hectare or 2% of harvest volumes. The intent here is to emulate natural disturbance patterns that would usually leave the largest and most disturbance resistant trees standing. One IFA recorded a unit as leaving mostly small diameter conifer and unmerchantable species on site. While this might have met the volume criteria, clearly the quality was questionable. We were only confident that one unit had adequately accounted for the residual left behind.



8 Loggable Landbase

Total land available for harvesting should be based on a realistic landbase with only certain areas available for harvesting. Areas not available to forestry like private land, rock, water and protected areas are taken out of the calculation. Logging levels must only be determined by using the remainder of the landbase. There has been concern expressed that unmerchantable forest (trees that are too small or poor quality or of the wrong species) inaccessible areas and shallow sensitive sites have been poorly accounted for here. This can result in a kind of highgrading, where only the best forest ever gets cut yet the harvest amount is based on a larger forest area. Eventually the forest industry runs out of the good stuff, while the leftovers are marginal forest. Marginal forests should also be subtracted in the equation for the loggable landbase.

Our study: Forest management professionals have expressed concern that unmerchantable and inaccessible forests are being included in the harvest calculation. One IFA recommended that the entire North West Region MNR should omit extremely shallow and rocky portions of sensitive ecosites from harvest. Until this is done, we cannot be confident that enough reserve land has been accounted for. Other questionable units had a low percentage of area in permanent protection.

One unit has yet to fulfill protected area commitments and so was considered insufficient in the level of precaution taken.



9 Deferrals

Current guidelines call for a patchwork of large harvest and intact blocks of mature forest that will be rotated through over time. This is meant to provide continuous habitat for marten and caribou into the future. However, if the deferral period is too short, the forest patches may never stick around long enough to provide prime habitat for these species. Also the amount of deferred habitat needs to be constantly accounted for in the model. Otherwise, when the deferral comes to an end, the model will think that there is extra wood that can be cut.

Our study: After 60 years on a typical unit, undergoing a cutting cycle of 100 years, a maximum of only 40% of the forest will ever be over 60 years old (thought to be the minimum age for caribou to use a forest). Figure 1 illustrates what a typical forest will look like after 60 years of harvesting. There are concerns that the work needed to regenerate a conifer forest and commitment to rehabilitate roads are lacking. In addition, the 100 year window for harvesting the entire unit is regarded as the minimum needed for caribou to have a chance at survival, but companies are pushing for even shorter time between harvests. Under the current scenario, it is doubtful that the mosaic approach will retain caribou in their current range.

Marten may fare somewhat better, but the blocks deferred to maintain them on the landscape were typically retained for a maximum of 60 years, after which no marten areas are modeled. This results in a sudden influx of available timber. To be realistic a similar area should be set aside for marten in the model for the whole planning time.

We concluded that all units dealt with deferrals with an insufficient level of precaution.

10 Conversion of Forest

Industrial forestry relies on roads, trails and landings to extract, process and load trees onto trucks. These areas can permanently convert to a non forested condition or inhibit regrowth for many years. A significant amount of the landbase needs to then be considered non productive for the model to be accurate.

Our Study: None of the units properly considered the impact of converting forest to roads and infrastructure used for logging. The estimates were typically around 2% of the entire management unit. However, other MNR information suggests that a minimum of 4% be accounted for (The Effects of Forest Management on Carbon Storage in Ontario's Forest, 2006).



Case Study:

The English River forest (licensed to Bowater)

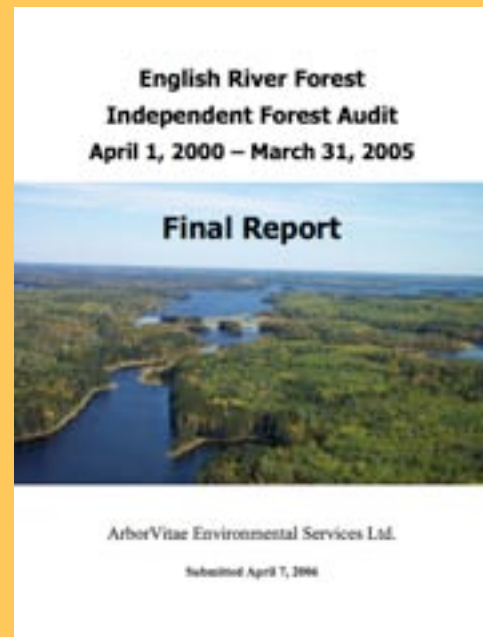
Our second case study, the English River forest, was the subject of a regular third party audit in 2005. The report, "English River Independent Forest Audit, 2005" (see ontariosforests.mnr.gov.on.ca) was recently released to the public.

What makes this audit report particularly compelling is how well it has captured how sensitive the current system is to abuse. The English River forest is an unfortunate example of how Ontario's forest management planning system, for all of its complexity, has failed the long-term health of a public forest.

As with the other units that we researched, the audit revealed a substantial lack of precaution in the modeling of the future forest condition in the English River forest, but in this instance the degree to which prudence has been ignored is particularly troubling. The "harvest now - reduce later" approach apparent here is the very antithesis of sustainability.

Maps released recently by Global Forest Watch Canada (GFWC - available at global-forestwatch.ca) have also shown that this tenure was among the heaviest logged units in Ontario between 1989 and 2001. Satellite image interpretation by GFWC indicates that the English River forest, experienced 11.27-13.88% land-cover change to human impacts during this period alone.

The Independent Forest Audit found the forest to be managed unsustainably, with predictable and negative impacts to both long-term wood supply and to the biodiversity of the forest. The situation was so grave that the auditors recommended that Bowater's forest licence **not be extended**.



[ontariosforests.mnr.gov.on.ca]

It is a situation where a company's short-term interests have clearly dominated the process, where the mechanisms have been bent to accommodate these interests, and where the regulator has failed in its responsibilities to the public to effectively oversee the management of the forest.

The computer simulations used to assist in these decisions are valuable tools - when their inputs are carefully considered and their limitations fully appreciated. However, this case study showcases a whole suite of flaws in the prediction of the effects of management activities on the English River forest. Together these actions have contributed to the substantial sustainability problems that this forest is now facing.

The English River forest is an unfortunate example of how Ontario's forest management **planning system, for all of its complexity, has failed the** long-term health of a public forest.



“the Company has increased the present harvest at the expense of the future harvest level”

(English River IFA, 2005)

This forest is being operated under a Ministry-approved Plan which used modeling that has permitted ongoing sustainability problems:

A 20% over-estimate of how much wood is actually there

By doing a few intuitive checks the auditors were able to reveal that an unreasonably high assumption of how much timber existed was being used. This included: (a) checking the yields from the original two units that the current forest contains, (b) checking the yields used in adjacent forests, and (c) checking what volumes were actually being logged against the numbers being used in the model.

“When the actual harvest yields that were obtained on the Brightsand Forest (125 m³/ha) and the former English River Forest (131 m³/ha) are compared with the yields expected in the 2004 FMP, which range between 157 and 165 m³/ha through to year 2064, it is apparent that the magnitude of the overestimate is in the order of 20%.”

Stands not economical to log
Planning over the past two Plans has consistently overestimated the amount of area that is economically available for logging on this forest. The current Plan seems destined to repeat these mistakes yet again: “The audit team believes that not all of the timber that was considered to be available in the 2004 FMP is economically feasible to harvest.” By not being more cautious, this forces desperate choices by the end of each Plan cycle, and the premature casting of attention on additional areas to log.

A forced acceleration of logging
The fundamental premise for establishing harvest levels with the model is to see what levels could be sustained each year over the long term. This level may fluctuate slightly over time, but is intrinsically supposed to be stable across time. However, users of the provincial model have the ability to hypothetically force additional harvest earlier in the logging schedule to test the effects. Because it is intrinsically unsustainable it is not gener-

ally regarded as a legitimate alternative for a final plan. Despite this, the English River Plan has used this “binding volume requirements” setting to model their “Selected Management Alternative” for this forest, forcing the model to increase logging in the first part of the forecast period at the expense of future supply. Where this additional supply might come from is unclear.

“The planned harvest volume during the first three five-year periods, as indicated in the current FMP, exceeds the harvest target, and the company has increased the present harvest at the expense of the future harvest level.”
(English River IFA, 2005)

No accounting for Ministry Guideline

The audit team flagged that modeling for this forest included no accounting for at least one Ministry guide. The Natural Disturbance Pattern Emulation (NDPE) guide requires more residual trees to be left in the forest. Despite company determination that the net effects of the NDPE guidelines for tree retention amounted to 3m³/ha (or a 2% yield reduction), and reasonable effort to achieve this at harvest, these were excluded from the company’s calculation of planned harvest volume, further adding to the yield over-estimate.

Drastic declines in wildlife habitat

In the English River Independent Forest Audit, auditors pointed out the inadequacies of MNR direction to SFMM users, which allows declines below the benchmark (natural) minimums. In this particular case, given the Selected Management Alternative used in the current Plan on the English River forest, by 2044 the habitat levels for 75% of the indicator species will have declined by an average of 44%. For the majority of these species, habitat is predicted to fall below levels predicted at any point in the 100 year SFMM benchmark run. Surely, loss of habitat for of this magnitude cannot be considered sustainable?

Unreasonably low Old Growth targets

The auditors of the English River forest also raised concerns about how much old growth was being set as the modeling goals, but again they pointed out that the current system permits it. The means used to set the old growth targets are flawed - the targets are too low to be ecologically meaningful for many forest types.

“The audit team has concerns that the process used to identify old growth targets, and the targets themselves are deficient.”
(English River IFA, 2005)

MNR Team Members ignored

The MNR’s mandated role is to oversee the long-term health of our public forests. This includes ensuring that harvest levels are calculated accurately and consider biodiversity objectives adequately. We have heard anecdotal indications for years of concerns from area level staff that were ignored or overturned by higher level staff when plans were approved. The 2005 IFA of the English River documents one such instance, where MNR planning team members had outstanding biodiversity concerns regarding the Selected Management Alternative from the modeling performed, yet the plan was still approved.

*“It is the conclusion of this audit that the 2004 Forest Management Plan does not provide for sustainable management of the English River **Forest, and that the planning and reporting requirements of the SFL were not met by the Company.**”*
(English River IFA, 2005)

CONCLUSIONS...



This modeling of what wood our public forests can sustainably provide to industry is too important to not get it right.

Poor quality inputs

This research exercise has been extremely revealing, as it has demonstrated to us that an inordinate amount of faith is placed in the outputs of the provincial modeling tool, despite a general understanding that many of the inputs and assumptions are of poor quality, and do not adequately account for sustainability.

Irresponsible modeling

It would be one thing if these inputs were flagged at the appropriate confidence level, and precautionary thresholds employed. But what seems to happen too often with current SFMM implementation is that these poorly determined inputs and assumptions are used to generate outputs to which high levels of confidence are falsely attributed. These outputs then influence important management decisions such as harvest levels on our public forests.

Some situations, such as the two case studies showcased here, are allowed to persist for many planning cycles. This deferring of responsibility for sustainability is contrary to Ontario's policy, and to common sense.

Despite the voluminous quantity of policy, guidance, and a fancy computer modeling system, both of the case studies used here illustrate how susceptible the current forest management system is to abuse.

Better MNR oversight needed

It is clear that this critical part of forest management planning is not occurring consistently across the province, but equally clear that many systemic problems exist universally. Together, these point to an imperative need for MNR, as the custodian of Ontario's crown forests, to be more diligent in overseeing the application of the model. In fact, it makes extremely good sense for the Ministry to provide the modeling outputs to licence-holders and not the other way around. This is likely to be even more important as carbon considerations are introduced into the model and into our management of public forests.

Additionally, we are concerned that MNR is prevented from doing its vital job as the primary steward of public forests because of a lack of resources attributed to this role.

Less mill, more forest focus

By approving both mill licences and their volumes, and forest management plans, MNR finds itself in a difficult position when it is apparent that too much demand was approved. Despite its mandate to ensure long term forest health, nobody wants to negatively impact on northern community economies. So, Plan by Plan, necessary harvest reductions get deferred along with the sustainability of our public forests. This conflicted position of the MNR needs to be resolved.



tors. It would be informative to see what the actual SFI certificate said about the issues raised in the IFA audit, however, SFI has not made this available online. This scenario clearly flags the need for performance standards for acceptable certification systems in Ontario.

Setting our harvests too high

Many Ontarians have sensed that something is amiss in their public forests. It has seemed that the appetite of industry is excessive, yet we have been assured that the harvests are calculated sustainably. Now, with the capacity to observe how indeed they are calculated, it is fairly staggering how easy it is to end up with poor outputs - and sadly, sustainability is the inevitable victim.

Our survey of six units connecting the in-depth study of the Whiskey Jack and the independent audit of the English River suggests that optimistic, unverified and undocumented assumptions are likely to be supporting harvest levels that are simply too high in the province as a whole.

It is as if one had a bank account with an uncertain balance and yet were writing cheques as though it was inexhaustible. If the reckless spending continues, eventually the cheques will bounce.

Our public forests and future generations deserve better.

Similarly, MNR is under a tremendous amount of pressure to approve new industrial development. For example, it is hard to believe that the English River forest and its neighbouring tenures could possibly have been expected to provide for an additional mill. Yet, under pressure, MNR licensed a new mill in Thunder Bay. This mill was licensed at 850,000 m³ of capacity (a demand that could arguably utilize the entire sustainable volume available from the English River forest on its own) but was in addition to the existing demands at the time.

Credible certification needed

It concerns us that the situation showcased in the English River example can occur under a certification system used in Ontario. Bowater Ontario operations, including operations on the English River forest were certified to the Sustainable Forest Initiative (SFI) in November of 2004.

Richard K. Hamilton, President of Bowater's Forest Products Division said, "The SFI certification by an independent outside auditing firm demonstrates to both the public and our customers that we are providing quality forest products while also protecting the forest resource for the future."
(Bowater press release Feb 3, 2003)

As a safeguard for sustainability, it seems that the industry-originated system has missed the substantial evidence discovered by the IFA audi-



RECOMMENDATIONS:

- 1** Improvements to baseline assumptions
Baseline assumptions need to be corrected: new and accurate inventories are needed, succession studies need to be undertaken, and natural disturbance predictions need to be fine tuned. MNR has recently reassumed the responsibility for FRI collection and interpretation. They should also be responsible for developing the other baseline assumptions. New technologies like LIDAR (an enhanced inventorying tool) should be utilized to the fullest extent possible.
- 2** Enhanced groundtruthing
We need to have effective monitoring to make sure we can adapt our management to reduce negative impacts. Sample plots need to be a cornerstone of monitoring and to calibrate the increasing reliance on computer models.
- 3** Enhancement of Ministry capacity and oversight
MNR, as the mandated custodian of Ontario's public forests, must better demonstrate its control over consistent inclusion of local forest sustainability determinants and should perform all forest modeling and sustainability analysis for all public forests. Resourcing for MNR field staff needs to be substantially increased to be able to fulfill its current stewardship responsibilities, including generating high quality information to contribute to responsible forest management.
- 4** Back to basics - the forest health imperative
MNR should review its involvement in licensing mills, and instead focus on getting the forest sustainability side of things right. This would: (a) better serve the public expectation of sustainability of our public forests, (b) reduce a Ministry liability in an area it is poorly equipped to serve, (c) streamline an unnecessarily complex regulatory system, and (d) enhance business stability by providing a more definitive and transparent understanding of what sustainable levels are.
- 5** Revisit the sustainability of current targets
With more reasonable levels of confidence around what SFMM outputs are providing to managers, it would be prudent to add a precautionary reduction of allowable harvest until such confidence can be demonstrated for each forest management unit. This would serve to conserve ecological functions and structure, and provide more options for the future of northern communities over the long term. Because mill demand is at an all-time low, this does not need to disadvantage operating mills if done at a woodbasket scale.





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Spatial modeling

The adoption of spatial modeling tools needs to be expedited.

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Maintenance and enhancement of Independent Forest Audits

The value of independent forest audits as an additional oversight tool for Ontario's public forests has been amply demonstrated to date. It could be further improved by focusing the audit protocol more precisely on the performance of management within the context of long-term public forest health. This role will be particularly important as long as the Ministry of Natural Resources remains under-capacity and immersed in economic development, and until credible minimum standards for certification systems are established.

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Credible third-party certification needed

It is a real concern that the situation showcased in the English River example can occur under a certification system used in Ontario. A performance standard for credible third party certification is necessary before the Ministry's target for certification for all crown forests will have any real meaning. Such a performance standard should establish, at a minimum, that certification will be:

(1) Balanced in development - the standard has been developed with broad-based stakeholder involvement, and not dominated by any one perspective, particularly the forest sector that it is intended to certify

(2) Performance-based - performance must be evaluated against consistent, independently established benchmarks

(3) Grounded in the field and community - Field audits and consultation of stakeholders are required during certification / audits

(4) Transparent - standards and summary reports are freely available online, annual reporting is required of certificate holders, and the system produces a well-defined chain of custody

9

More value - less wood: making it happen

To reduce industrial pressures upon our forests and provide more stable long-term benefits to our northern communities, we need to re-invent our forest products industry. This must involve investment in change and innovation, and not the subsidization of an old paradigm. We must move toward producing more value-added products with less wood. When assisting industry, and allocating public timber resources, it would be wise for governments to invest in more value per unit of wood, and place priority access to wood supply for such ventures.

references:

"2004-05 Annual Report," (and supplement), Environmental Commissioner of Ontario, 2005.

"Out of Balance: A revealing look at how public forests are managed in the Whiskey Jack Forest," Wildlands League, 2005.

"Request for Review, Crown Timber Allocation," Wildlands League, 2006.

"National Boreal Standard," Forest Stewardship Council Canada, 2004.

"Recent Anthropogenic Changes within the Boreal Forests of Ontario and their Potential Impacts upon Woodland Caribou," Global Forest Watch Canada, 2007.

"The 2005 Independent Forest Audit, English River Forest," ArborVitae Environmental Services Ltd., 2006.

"Provincial Wood Supply Strategy," MNR, 2004.

"Best Practices for Wood Supply Modeling," MNR, 2004.

"Validating tree species composition in forest resource inventory for Nipissing Forest, Ontario, Canada," Pinto, F, Rouillard, D, Sobze, J-M, Ter-Mikaelian, M; The forestry Chronicle, Mar/Apr 2007, Vol. 83 No.2.

"The Effects of Forest Management on Carbon Storage in Ontario's Forests" MNR, 2006.

"Spatial and Temporal Variations in the Fire Cycle Across Ontario," MNR, 2001.

"Management of Old Growth Pine and Provision of Associated Habitat in Algonquin Park," ArborVitae Environmental Services Ltd., 2007.

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Ontario's Timber Harvesting Levels science or wishful thinking...?

Summary

This report tests whether logging in Ontario's public forests is being determined sustainably. Until recently, the method for setting the amount of logging in individual forestry plans has been mysterious, technical, and inaccessible to the public. Now we have exposed this "black box" in order to better understand how decisions are made and what environmental goals are being sacrificed to keep harvests at current levels.

Ontario has a regulatory system in place with long-term forest health at its apex of purpose. But its forest management planning, including the computer modeling, is downloaded to local implementation by industry beneficiaries, where economic priorities carry an enormous amount of impact upon decisions, and Ministry of Natural Resources (MNR) approval is often a political imperative. Unless those involved in regulating the system can effectively oversee the system, important decisions such as how much of our public forests get logged are all too often dominated by economics, regardless of policy.

Our survey of six units connecting the in-depth study of the Whiskey Jack and the independent audit of the English River suggests that optimistic, unverified and undocumented assumptions are likely to be supporting harvest levels that are simply too high in the province as a whole.

It is as if one had a bank account with an uncertain balance and yet were writing cheques as though it was inexhaustible. If the reckless spending continues, eventually the cheques will bounce.

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