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D.W. Darrah

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ASPEN HARVESTING: A GOVERNMENT PERSPECTIVE

D.W. Darrah
Alberta Forest Service
Whitecourt Forest
Whitecourt, Alberta

ABSTRACT

One can look ahead to the future of aspen harvesting by examining the current logging situation in the Whitecourt Forest in west-central Alberta. In this forest, the 100% allocation of overlapping coniferous and deciduous annual allowable cuts has created a situation destined to be repeated throughout the province in coming years. Considerable ingenuity and innovation to adjust to unforeseen problems and limited information will be required by tomorrow's forest managers. Policy will continue to evolve.

INTRODUCTION

Aspen management for the 21st century! What a dynamic, forward-thinking approach to our aspen resource. One could speculate freely on what will happen in the next century. As an aspen manager, however, I for one am still grappling with aspen in *this* century. In my career as a manager we have gone from ignoring aspen, to eradicating it or converting it to grass, to cautious utilization, to impending scarcity—in less than a decade! Given this rapid transformation, it isn't surprising that aspen management policies have been scrambling to keep up. In many cases, management tools are deficient or lacking.

CURRENT LEVEL OF ASPEN COMMITMENT

Alberta produced 1 297 809 m^3 of aspen in 1988-89, of a total annual allowable cut (AAC) of 10 400 000 m^3, although by now we have allocated (total committed under tenure or pending final approval) around 8.5 million m^3 (approximately 81.4%). As we head into the 21st century we are approaching the complete allocation of the aspen resource, taking the industry into new harvesting regions and overlapping into large areas where the coniferous cut has already been heavily allocated. What will this mean?

In the Whitecourt Forest, this situation has existed for several years now. The coniferous cut of 2.2 million m^3 is completely allocated. Deciduous harvesting commenced in 1982 for oriented strand board (OSB), expanded in 1986 for OSB, expanded again in 1987 for pulp, and in 1989 increased yet again for use in newsprint. Of a total aspen AAC of 804 520 m^3, 738 635 m^3 has been already allocated, and the remaining balance is allocated to a second product line. In essence, Whitecourt has virtually complete allocation of all merchantable species timber volume, although actual production has yet to attain these values. In most management units every merchantable tree is spoken for—it actually or potentially belongs to someone.

The rest of Alberta is headed toward the 21st century, but the Whitecourt Forest is already there. In Whitecourt, the future is now!

ASPEN MANAGEMENT ISSUES AND CONSTRAINTS

The province has been mainly successful in promoting aspen harvesting. The mills are in place, licenses have been issued, harvesting and management plans have been approved, and the wood is being cut. In accomplishing these things, however, a number of new situations have been encountered, forcing staff to adjust "on the fly" in the following areas:

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1. Inventory
2. Maps
3. Cruising
4. Integration of operations
5. Utilization
6. Incidental conifer
7. Spruce understory protection
8. Reforestation

INVENTORY

The province's current Phase III timber inventory, although generally suitable for coniferous management planning, was completed while aspen was still considered a weed. Not a lot of detail was given to aspen stands, volumes, or ages. Consequently, aspen inventory information is currently unreliable and subject to great variation from predicted values.

Field staff have had to adjust to these limitations through local enhancement projects, detailed cruising (more about this later), and especially by more intensive review of company harvest plans by Alberta Forest Service (AFS) field foresters and technicians.

The decision-making process has therefore been shifted downstream, and harvest planning has become more subjective than objective.

MAPS

Phase III 1:15 000 cover type maps are the generally accepted operational planning base maps. They are suitably enhanced by cruising by both the AFS and private companies. As part of the original Phase III inventory, these maps suffer the same aspen shortcomings as the volume data. The accurate determination of aspen timber types, stand make-up, ages, or merchantability was a low priority. Consequently, these maps are inadequate to determine aspen separate from other deciduous species and are inadequate alone to determine land-base questions. They tell little about understories and are insufficient to predict age class or timber condition.

As in the case of inventory constraints, field staff have countered with increased cruising, surveys, and detailed harvest plan review via photography, aerial, and ground field review.

Again as in the case of inventory, this places more burden on professional and technical field staff "downstream" and makes the experience and competency of these people of paramount importance. Through subjective decisions made by these people, much of the province's aspen policy is being implemented.

CRUISING

Variable (prism) plot sampling (PPS) has been standard for coniferous licenses, done primarily for timber dues appraisal. Cruising methods were designed primarily for coniferous timber and hence are not always appropriate for aspen.

Aspen licenses are not appraised because all dues are at one provincial rate.

Aspen ages and heights are difficult to determine accurately.

Aspen cull is difficult if not impossible to estimate on the stump.

Aspen stem sizes may not be appropriate for the selected BAF Prism factors.

Greater aspen stand and stem variability requires more-intensive sampling to accurately estimate variables.

Field staff have increased the intensity of aspen cruising and presampling reconnaissance. They have switched methods from PPS to fixed area (6-m radius) or strip (2-m) cruising to attempt to gain increased coverage or a more representative sample. Industry cruises as well.

Interior cull is still not adequately addressed and is largely ignored. A regression formula based on tree size appears to have some promise and is being investigated at this time.

INTEGRATION OF OPERATIONS

As stated earlier, overlapping allocations of coniferous and deciduous timber, especially

where different companies are involved, creates the need to integrate harvest plans for both species. Because the companies each have their own management plans and cutting sequences which have not been meshed, the first company in a given area must not only plan harvesting for its timber but must also incorporate harvest plans for the alternate species into one integrated harvest plan. This plan is referred to the alternate company for general approval. The secondary species blocks can either be harvested by the first company and the wood sold or traded to the second, or the blocks simply left for a second-pass removal.

In its extremity, integration of harvest plans includes pure coniferous cut blocks, pure deciduous blocks, and mixedwood blocks. This includes alternating first and second cuts of all species, road use and reclamation agreements, log exchanges, coordination of timber flow, determination of land base and timber dues, as well as reforestation responsibility. The process can be both frustrating and tortuous, although thankfully in most cases we are able to come to some resolve with industry.

UTILIZATION

Aspen, of course, has traditionally been left behind on mixedwood cut blocks and either ignored or subsequently destroyed during silvicultural treatment.

With the advent of overlapping deciduous cutting rights, we could be faced with the possibility of harvesting pure aspen on one side of the road while cats are smashing and piling mixedwood aspen residual on the other. To prevent this, the AFS has required from the beginning that all aspen residual be utilized before it approves pure aspen harvest, even when there are two companies involved. This has not always been easy due to intercompany negotiating tactics, but by preventing pure aspen harvest as well as any reforestation of the mixedwood block until all aspen is removed, we have achieved substantial success in this area.

As much as possible, the AFS promotes one-pass removal of both species for efficient utilization. Two-pass removal is also accepted providing it is timely (within 2 years of initial harvest). This reduces aspen fiber losses to wind, drying, and decay.

There remains a fast-disappearing attitude that aspen is a low-value weed species whose salvage and total utilization should not be pushed—until recently it was (and occasionally still is) piled and burned. Fortunately, with impending shortages, this attitude is much less prevalent. With multiple aspen users and purchasers, a highly competitive situation is developing for aspen salvage. This bodes well for total utilization in future.

INCIDENTAL CONIFER

Few aspen stands are absolutely pure. A large number contain some conifers scattered throughout the canopy. By definition, coniferous volumes in a "pure" aspen stand must be less than 50 m^3/ha and must be labelled *incidental conifer*—mainly spruce but some pine as well.

There has been considerable attention paid to the allocation of this wood, as interests compete for ownership.

Incidental coniferous volumes have not been inventoried, so volumes are not known precisely, no formal allocations have been made, and the volume is considered nonsustainable because coniferous reforestation will not be done in aspen cutovers.

Field staff have used discretion in managing these volumes. Where volumes are light and no local demand for the wood exists, the aspen operator has been allowed to take it. Where local demand is great, however, the wood is left standing, for follow-up second-pass removal, usually by Miscellaneous Timber Use (MTU) operators with a local timber permit or commercial timber permit.

Within coniferous Forest Management Agreements (FMA), this wood belongs to the FMA holder, and formal arrangements with that company must be made for its harvest and use.

A large aspen operator will generate several thousands or even tens of thousands of cubic metres of high quality (very large) incidental conifer. Disputes over allocation of this wood

have been carried to the highest levels of AFS management and on occasion into the political arena, as well. Look for these conflicts to become more widespread in future.

SPRUCE UNDERSTORY PROTECTION

Following natural succession, aspen gives way over 60-100 years to later seral vegetation stages, usually spruce. Accordingly, very many mature aspen stands have a significant understory of spruce regeneration. Current provincial policy requires protection of this understory during aspen logging, where spruce regeneration densities exceed 250 stems/ha. This has not been easily accomplished, as the concept is new, costs and benefits are inequitably distributed, and reliable and effective techniques are still being researched.

A FERIC coordinated study dealing with methods and costs is now partially completed. A Forestry Canada long-term plot monitoring program is underway and will better identify impacts on the protected spruce seedlings.

This study notwithstanding, field staff have required protection measures applied by aspen harvesters as a condition of approval of harvesting plans. So far, low-intensity low-cost measures have been required to accomplish *some* level of protection with predictably mixed results. Several excellent successes have been achieved along with numerous failures.

With no protection emphasis, the spruce understory is totally eliminated; with moderate protection measures the understory can be reasonably protected (100-250 stems/ha); and with heavy protection it is possible to protect spruce regeneration to density levels approaching full stocking (500-800 stems/ha).

Understory protection issues have spread through central and northern forests over the last couple of years and will continue to spark considerable debate during the remaining years of this century. Maybe by the next century we will have sufficient knowledge, skills, and policies in place to deal with this issue.

REFORESTATION

Regeneration of aspen should be easily accomplished, but some problems are likely and indeed have already appeared. While aspen blocks usually resucker prolifically, roads and some landings compacted and cleared to C horizons do not adequately regenerate, and seedling growth rates are substantially reduced. Between 15% and 25% of the aspen block areas are thus affected, and the problem has been especially acute in processed (shortwood) operations. Space needed for slashing equipment and redecking has required double roading. (Recent modification to decking and slashing has reduced this requirement to single roading this last summer.)

Aspen regeneration has been a government responsibility pending recent changes in regulations, and the AFS, working with industry, has dealt with the road problem through decompaction (ripping, subsoiling), roll-back, and coniferous seeding or planting.

Because we are entering the 7th year from the first aspen harvest, and regeneration surveys are required, the AFS and industry are in the process of selecting a survey method (photos, aerial, ground), and dealing with reclamation and regeneration of nonstocked areas.

There may also be local restocking problems under dense balsam poplar residual and growth problems resulting from compacted soils in summer logged blocks. These require further assessment.

In future, aspen regeneration issues will become more operational. Planting aspen seedlings, triploid or exotic stock, or possibly introducing coniferous planting into the aspen land base will become more frequent.

In areas of overlapping coniferous or mixedwood quotas with pure aspen cutting, the possibility of land base swaps of aspen with coniferous areas will undoubtedly be discussed and perhaps implemented on a small scale (with due consideration for AACs).

SUMMARY AND CONCLUSIONS

It is apparent that there are many problematic "gray areas" in aspen harvesting; however, today's problems are tomorrow's solutions. As the 21st century nears, look for most of these problems to be resolved and for standard policies to be in place throughout the province. Better data, especially inventory and maps, are essential if appropriate aspen management is to be conducted. Cruising procedures must be tightened. Accurate aspen cull estimation methods must be available in the field. Integration of operations will be more difficult but will be a standard requirement. Utilization will continue to improve and will very soon attain coniferous levels. Disputes and demands for incidental conifer will increase greatly. Spruce understory protection will "come of age," and standards and policies will be better defined. Aspen reforestation will not always be easy and cheap.

Although progress is being made, new questions and issues are beginning to emerge: What about balsam poplar? Where is our birch? How do we integrate conifer layout with pure aspen, with mixedwood stands, with balsam poplar, with birch .....?

The 21st century will have challenges of its own.

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