Lesson 5: Forest Planning Considerations

An Overview

45 minutes

Lesson Objectives

- To identify the level of detail out there in higher level plans.
- To provide guidance on how to use the higher level direction available.

Method: Introduce the Guidelines – Lecturette

- Go over the main sections outlined in the guidelines
- Begin the linkage to the "Structured Decision Process"

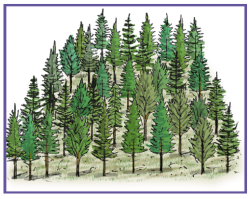
Forest Planning Considerations

Why a forest level strategy?

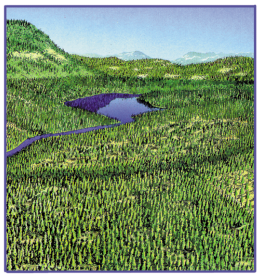
Points to ponder:

- **The road to nowhere in particular can be a windy one.**
- **If we treat a block to reduce its rotation length and yet have no need for the result at the forest level is it still a block?**

Forest Planning Considerations



Stand



Forest Estate

A couple of definitions:

Stand: **A homogeneous and distinguishable unit of a relatively uniform group of trees (opening type size).**

Forest Estate: **A collection of stands, administered as a unit. In BC they are sustained yield units – TFLs, TSAs and woodlot licences**

Forest Planning Considerations

The road to nowhere in particular can be a windy one.

If we treat a block to reduce its rotation length and yet have no need for the result at the forest level is it still a block?

What are these questions referring to?

Stand-by-stand silviculture often assumes that a series of individual stand treatments results in an additive impact on resource supply at the forest level. Baskerville (in Kelty *et al.* 1992) warns that the effects of stand-level actions are usually not additive at the forest level. He suggests that stand-by-stand silviculture ignores the complex interaction of factors influencing resource supply, and reduces the likelihood of successfully controlling forest dynamics to achieve management objectives. For example, harvest flow considerations may force the advance or delay of harvests from the planned harvest ages that would have maximized the gain from a particular treatment. Thus the expected yields from stand-level planning may not be realized at the forest level.

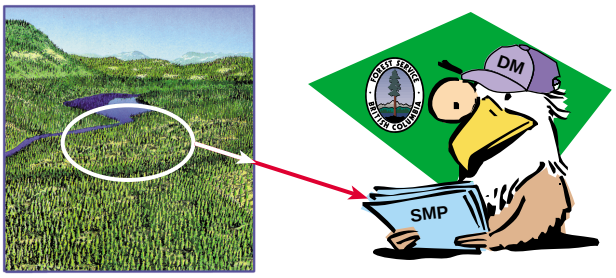
- A forest management strategy should be the guiding reference for stand-level silviculture (Reed and Baskerville1990).
- The relative "goodness" of a silvicultural intervention is difficult to judge unless viewed within a strategic context.
- In this context, even basic silviculture expenditures are difficult to evaluate objectively, except in terms of discharging legally binding reforestation obligations.

A comprehensive forest management strategy is therefore necessary before rational choices of stand-level interventions can be made. For example, without a strategic context, local stand density management interventions may result in:

- inappropriate amounts or types of silviculture investments being implemented
- cumulative forest-level effects that exacerbate a forest management problem
- large opportunity costs if actual forest management problems are ignored.

The purpose of this section is to describe the forest-level context within which stand-level density management decisions are made. Specifically, this section examines the nature of forest-level objectives, their relation-ship to higher level plans, the strategies developed to meet those objectives, and how these strategies govern the selection of stand density management activities.

Forest Planning Considerations



Forest Estate Planning

Stand Level Planning

Linkages between Planning Levels

Guidance from Estate to Stand – See Code plans

Timber – no perfect sources – best available – likely TSR and supporting documents

Non timber – again – may be in 'higher level plans' but TSR a good starting point

Employment – found in LRMPs and other forest level plans

Forest Planning Considerations

Linkages between levels of planning

Higher level planning, as used in forest management in BC today:

- refers to the hierarchical system of planning established under the *Forest Practices Code of British Columbia Act* (the Code).
- Under the Code, the following hierarchy has been established,
  - where the highest level of plan is objectives for resource management zones,
  - followed by objectives for landscape units,
  - objectives for sensitive areas, and objectives for interpretive forest sites, recreation sites and recreation trails.

In a hierarchical planning process, higher level plans guide plans lower in the hierarchy. For example, objectives established for a landscape unit are guided by the objectives established for a resource management zone. The Code also stipulates that operational plans, such as stand management prescriptions (which may include density management activities), must be consistent with higher level plans.

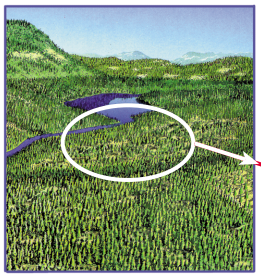
At the same time, actual operational conditions provide guidance to the levels higher in the hierarchy. For example, planning delays or limits in budgets or other resources may result in amendments to plans higher in the hierarchy.

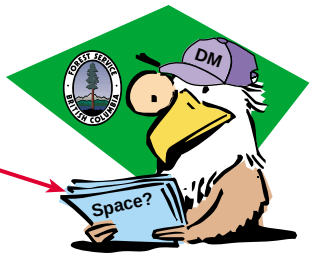
Forest-level objectives, which will guide stand-level activities, are embodied within resource management zone objectives and landscape unit objectives for all Crown land, and within management plans for TFLs and woodlots.

Guidance on timber, non-timber and employment are needed to guide stand-level treatments.

Sources of information include the Code plans in place as well as Timber Supply Reviews and TFL Management plans.

Forest Planning Considerations





Forest Estate Planning

Stand-level Planning

Objectives, opportunities and options

Find out what you need and determine what will help you achieve it.

- **Spacing may not create the desired conditions to achieve what you need!**
- **Identify Strategic Silvicultural Opportunities to meet your needs!**
- **Monitor and adapt accordingly!**

Forest Planning Considerations

Objectives, opportunities and options

This is pretty straightforward – once you identify what you are trying to achieve, try to match that with your opportunities and options.

- Stand density management is only one of a number of possible silviculture practices capable of influencing forest-level factors.

What are some others?

_____

_____

_____

_____

- **Any stand treatment which contributes to the achievement of forest objectives is a silvicultural opportunity**.
- The structure (e.g., species, age class distribution, density) and site quality of the forest estate and the complexity of management objectives are the major determinants of **silvicultural opportunities.**

These may require silviculturists to consider a wide variety of treatment or regime options to satisfy management objectives.

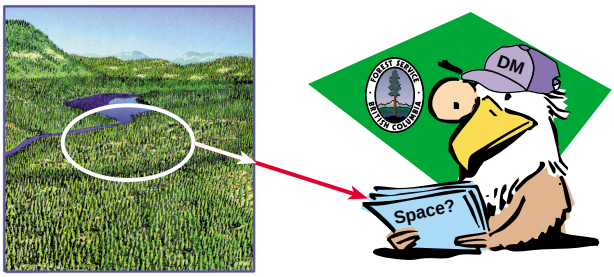
- Once density management opportunities have been identified, and stand treatment options have been selected and implemented in the forest, the biological effects should be evaluated periodically and compared with expected responses. Actual departures from expected results may require reconsideration of the silviculture options, opportunities or both. This adaptive density management approach encourages continuous validation of assumptions, and incorporation of new information and experience.

REMEMBER

What does spacing do? – Grows fewer trees faster, provides open space for non-crop vegetation to grow, creates employment.

The rest depends on opportunities – what stands are available, what age, what site potential, where are they and the like.

Forest Planning Considerations



Forest Estate Planning

Stand-level Planning

Steps in identifying strategic silvicultural opportunities

1. **Obtain and assess existing forest-level analyses.**

   If needed...

2. **Conduct additional forest-level modeling analysis.**

How do I Identify Strategic Silvicultural Opportunities?

- Identifying silviculture activities which assist the meeting of forest-level objectives requires, at least, an assessment of existing information pertaining to the forest level.
- Note – It may stop there.
- Forest-level modeling is neither necessary nor recommended if there are sufficient materials and expertise available to formulate silvicultural opportunities.

Use experts when available

It is recommended that the identification of silvicultural opportunities which help meet forest-level objectives follow a two-step process:

1. **Obtain and assess existing forest-level analyses.**
2. **Conduct additional forest-level modeling analysis.**

The first step is essential. Completion of the second step may not always be possible, nor is it always necessary.

For each, an understanding of forest-level concepts is important, and it is recommended that expertise in forest-level concepts or forest-level modeling be sought, where necessary.

To better understand silvicultural opportunities for your forest estate:

- review all relevant existing materials.
- You can expect this review to provide useful insights and possibly sufficient information for identifying strategic silvicultural opportunities.

The results of the most recent TSR timber supply analyses and the AAC rationales provide a rich source of information on forest-level objectives, at least those perceived to impact timber supply.

An especially valuable section of the timber supply analysis document describes the sensitivity of the forecast harvest flow to changes in key variables, some of which might be affected by density management decisions.

- **For example, the TSR timber supply analysis may note that short term timber supply is increased substantially if the minimum harvest age is reduced by five years.**
- **This might be interpreted as an opportunity to use density management to decrease the age at which high value forest products (e.g., sawlogs) can be obtained from the stand.**
- **In addition to reviewing documents, spreadsheet models that incorporate timber supply sensitivity analysis from the TSR can be useful for estimating the impact of stand density management activities on short- and long-term timber supply.**

We will go over an example in the next section – A structured decision process.

Forest-level Modeling

Remember: Use qualified people on your team to get reliable results.

Forest-level modeling is an analytical process that will assist the identification and quantification of strategic silvicultural opportunities.

- A forest-level analysis may help determine a set of silvicultural regimes that best meets the combined objectives, subject to harvest flow requirements and forecast silviculture budgets.
- This set of regimes constitutes the strategic silvicultural opportunities for the forest.

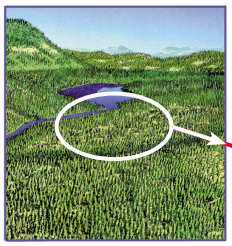
Forest-level models can help determine the sensitivity of the forest-level objectives to each strategic silvicultural opportunity. This information may be used in the process of allocating funds to projects.

Any such modeling exercises undertaken should be integrated with other exercises such as those being conducted as part of formal planning processes.

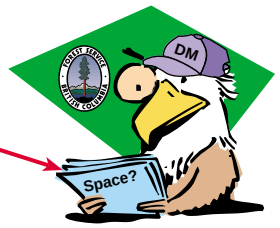
- In the guidelines Table 3 in "Density management planning tools" lists commonly available forest estate models.
- Often a considerable investment of time and resources is necessary before operators acquire the necessary experience to be able to use such models competently. An alternative is to make use of services available within and outside the Forest Service.

Three important considerations need to be made when conducting forest-level analyses for the purpose of assisting the determination of silvicultural regimes that are designed to impact the timber supply for the forest estate.

Forest Planning Considerations



Forest Estate Planning



Stand-level Planning

Forest-level Modeling

Three important considerations for regimes designed to impact timber supply:

1. **Consider AAC determination when making decisions**
2. **Consider the desired harvest flows for the entire SYU**
3. **The future is uncertain – treat the results with caution and use only as an aid to decision making – Thinking is still required**