

The FRPA Evaluator

Extension Note #8
July 2005

Evaluation of Cutblock Sizes Harvested under the Forest Practices Code in British Columbia 1996–2002

Introduction

In the fall of 2003, Klasen Forest Consulting and Sandy Currie, Forest Practices Branch, undertook an evaluation project under the FRPA Resource Evaluation Program to answer the following questions:

1. What was the range and average size of cutblocks harvested under the Forest Practices Code from January 1, 1996 to December 31, 2002?
2. What were the trends in use for clearcutting versus partial cutting silvicultural systems from 1996–2002?
3. What impact did the 40/60 rule have on cutblock size and distribution from 1996–2002?
4. Did cutblocks larger than the maximum size specified by the 40/60 rule emulate regional natural disturbance patterns?

To address these questions, historical data from the Ministry of Forests' Reporting Silviculture Updates and Landstatus Tracking System (RESULTS) were analyzed for nearly 43,000 cutblocks harvested in British Columbia from 1996–2002. In addition to analyzing the RESULTS data, a survey was circulated to all 29 forest districts and major licensees to collect empirical information on cutblock size, trends in silvicultural systems, and the effectiveness of the 40/60 rule.

The 40/60 rule was established in 1995 under the Forest Practices Code to reduce the number and size of the large progressive clearcuts that were occurring across the province at that time. This action was in response to the international, national and provincial public concerns about clearcutting that had been strongly voiced during the 1980s. The 40/60 rule limits maximum cutblock size to 40 hectares in the Coast Forest Region (except the North Coast Forest District which was set at 60 hectares during the study period) and eight (8) districts in the Southern Interior Region. Maximum cutblock size is set at 60 hectares in the Northern Interior Region and five (5) districts in the Southern Interior Region. The 40/60 rule continues to apply today under the *Forest and Range Practices Act*.

A third component of the study involved compiling historical data for wildfires and insect infestations using records provided by the Pacific Forestry Centre of the Canadian Forest Service. This information was used to determine the average and maximum size of natural disturbances in forest districts within the administrative boundaries of the 40/60 rule.

The FRPA Evaluator is a regular publication of the FRPA Resource Evaluation Program designed to inform stakeholders on program development and implementation, and report on the results of evaluation projects.

The objective of the FRPA Resource Evaluation Program is to determine if forest and range policies and practices in British Columbia are achieving government's objectives for the resource values identified in FRPA, with a priority on environmental outcomes and consideration for social and economic parameters, where appropriate.

The resulting report is a broad survey-style evaluation of cutblock sizes harvested from January 1, 1996 to December 31, 2002.

Study Results

Cutblock Size - Province of British Columbia

Results for average cutblock size are presented based on the boundaries of the three current Ministry of Forests (MoF) forest regions and 29 forest districts as if they were in effect throughout the entire study period. (There were six regions and 40 districts prior to April 1, 2003.)

Average cutblock size was used in the following graphs because it creates a simple type of visual representation and clearly demonstrates patterns or trends.

Average cutblock sizes varied significantly across the province. The average cutblock size in British Columbia for all silvicultural systems from 1996–2002 was 23.1 hectares. The Southern Interior Region (SIR) was closest to the provincial average at 21.4 hectares. In the Coast Forest Region (CFR), the average cutblock size was 16.0 hectares, the lowest average for the three forest regions. The average cutblock size in the Northern Interior Region (NIR) was 30.7 hectares, the highest average for the three forest regions. The large difference in average size between the CFR and the NIR is largely due to the challenging terrain and increased public concerns/pressures associated with the coast, and the increasing areas of beetle-kill salvage operations in the north. See Figure 1 for the average cutblock size for the three forest regions and British Columbia as a whole.

**Average Cutblock Size in Hectares,
All Silvicultural Systems, 1996–2002**

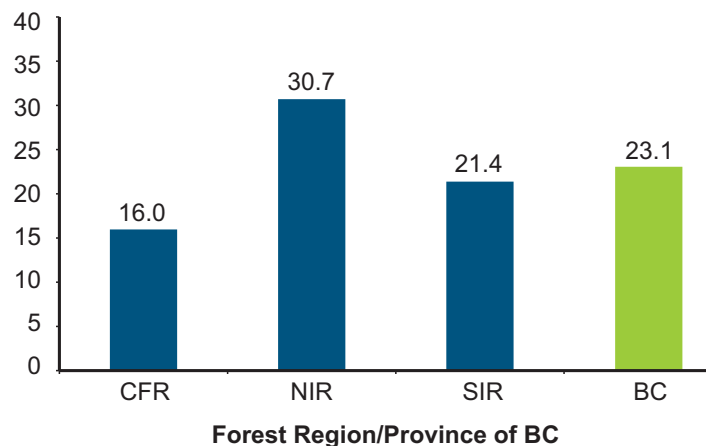


Figure 1. Average cutblock size by forest region and Province of BC for all silvicultural systems 1996–2002 (total sample size = 42 973 cutblocks).

The average cutblock size in British Columbia for all silvicultural systems by year, and all years combined, are provided in Figure 2.

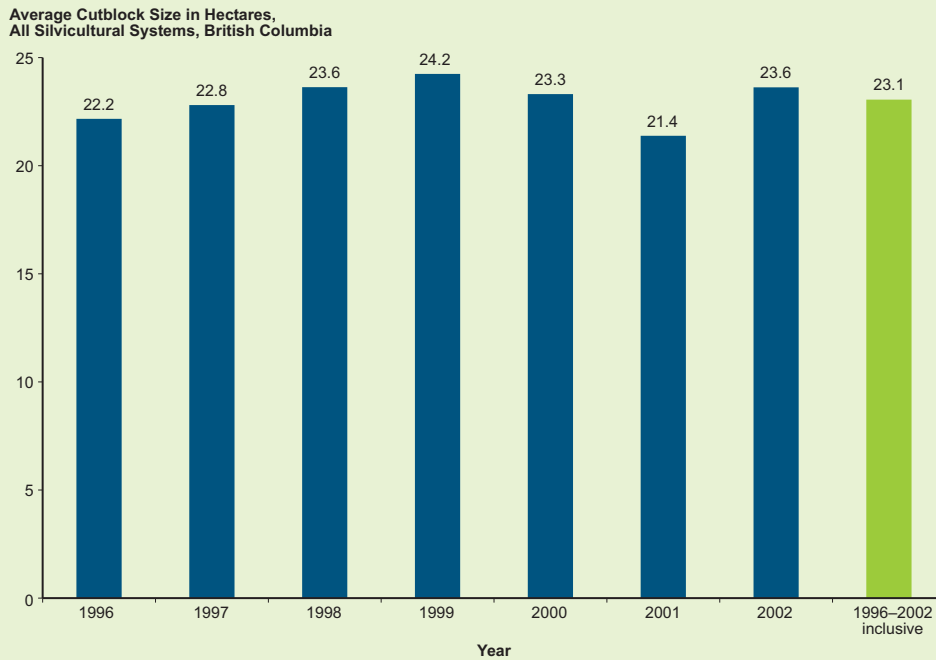


Figure 2. Average cutblock size for the Province of BC, all silvicultural systems by year, and all years 1996–2002 (total sample size = 42 973 cutblocks).

The average cutblock size in British Columbia for each silvicultural system, and all silvicultural systems combined, from 1996–2002 are provided in Figure 3.

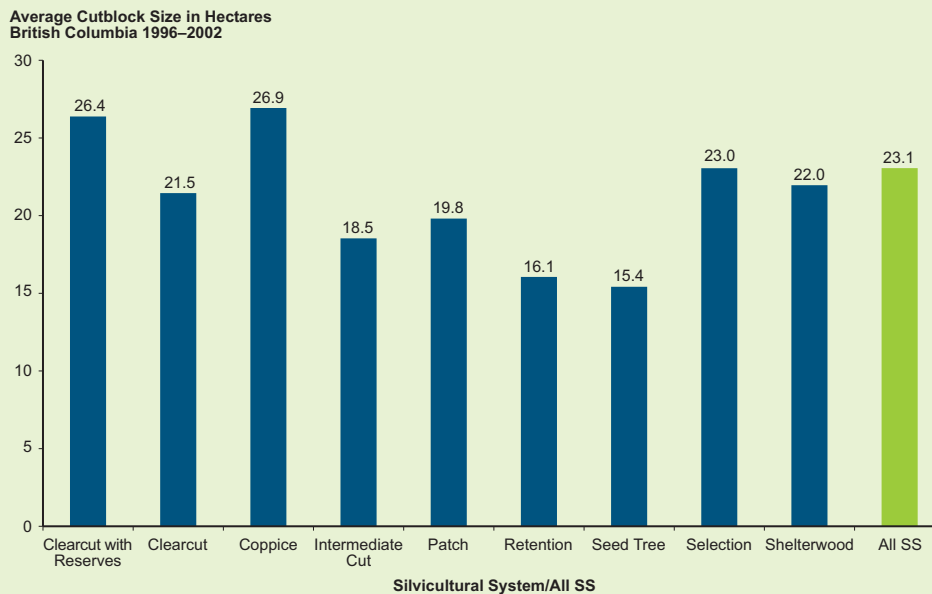


Figure 3. Average cutblock size for each silvicultural system (SS) and all SS for the Province of BC 1996–2002 (total sample size = 42 973 cutblocks).

Cutblock Size - Coast Forest Region (CFR)

The average cutblock size in the CFR for all silvicultural systems by year, and all years combined, are provided in Figure 4.

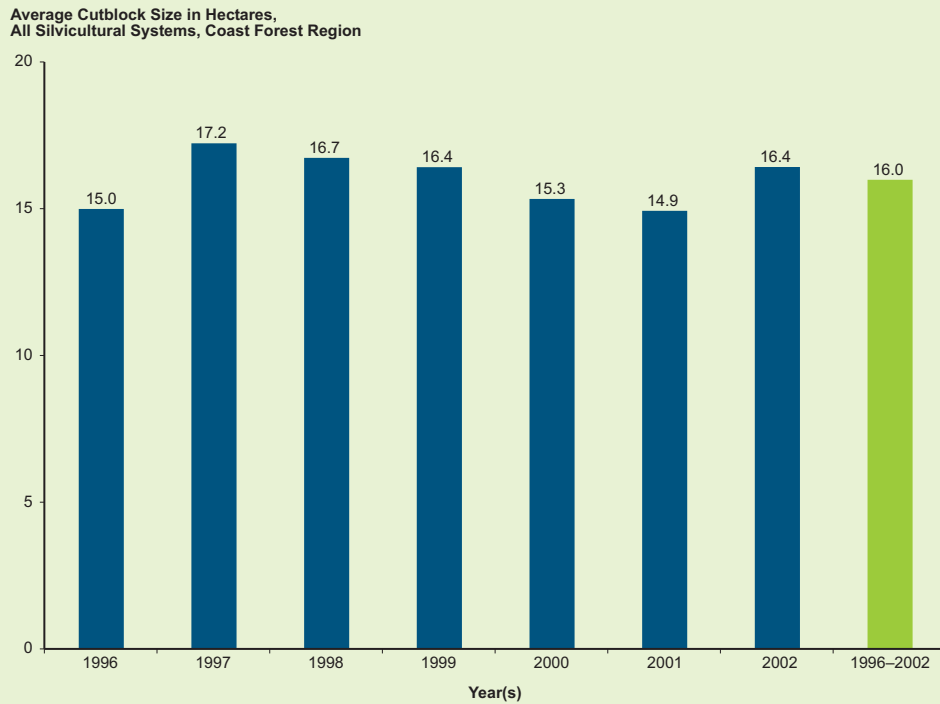


Figure 4. Average cutblock size for all silvicultural systems for the Coast Forest Region, by year and all years 1996–2002 (total sample size = 7530 cutblocks).

The average cutblock size in the CFR for each silvicultural system, and all silvicultural systems combined, from 1996–2002 are provided in Figure 5.

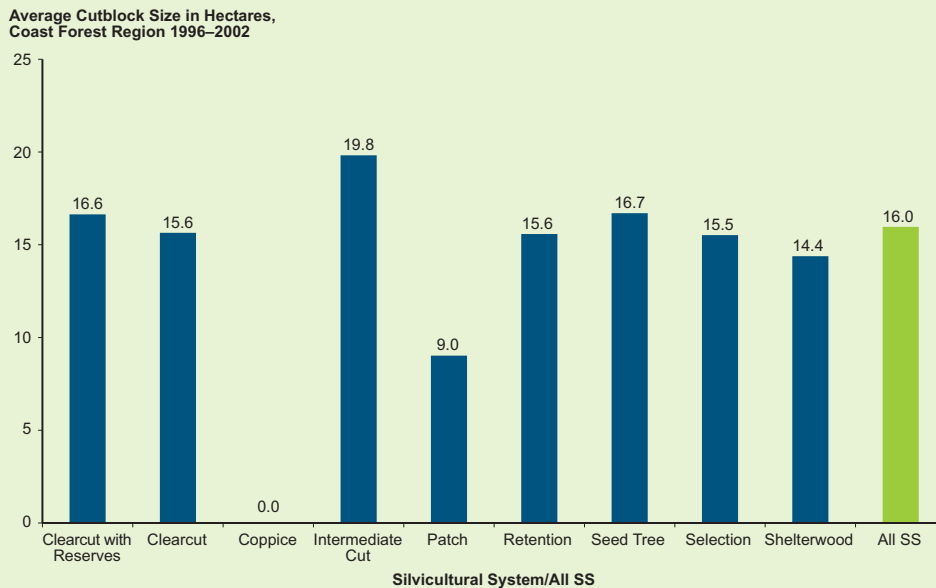


Figure 5. Average cutblock size by silvicultural system (SS) and all SS for the Coast Forest Region 1996–2002 (total sample size = 7530 cutblocks).

The average cutblock size by forest district, and the CFR as a whole, for all silvicultural systems from 1996–2002 are provided in Figure 6.

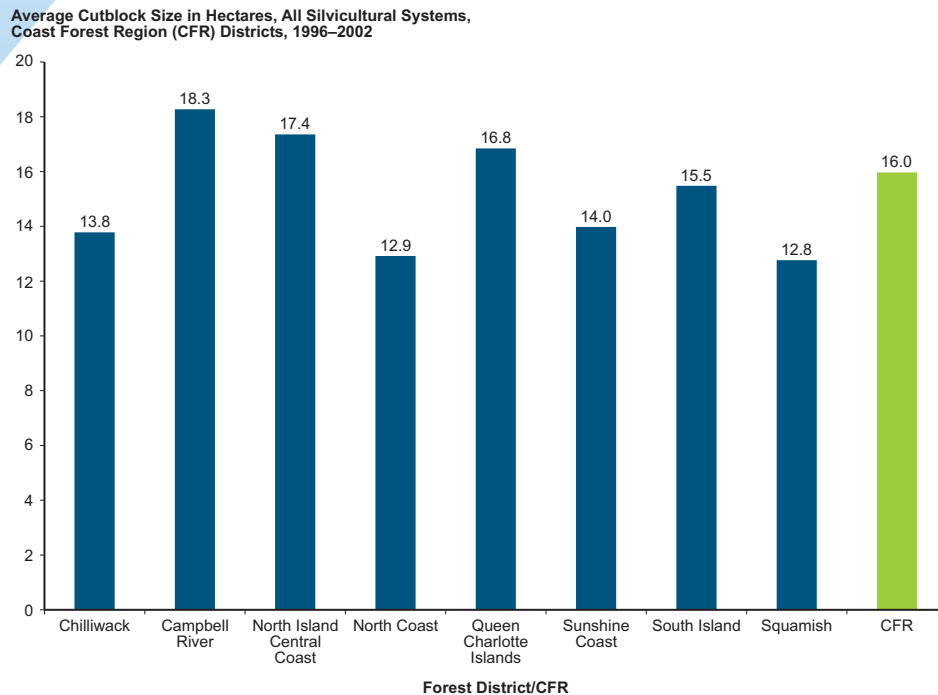


Figure 6. Average cutblock size, all silvicultural systems, by forest district in the Coastal Forest Region (CFR) and for the CFR 1996–2002 (total sample size = 7530 cutblocks).

Cutblock Size - Northern Interior Region (NIR)

The average cutblock size in the NIR for all silvicultural systems by year, and all years combined, are provided in Figure 7.

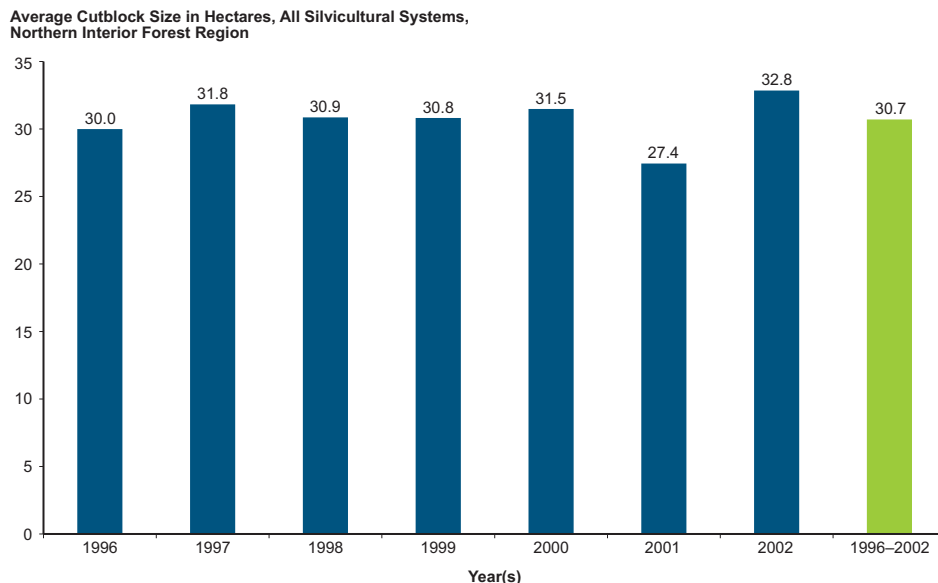


Figure 7. Average cutblock size, all silvicultural systems for the Northern Interior Forest Region by year and all years 1996–2002 (total sample size = 12 103 cutblocks).

The average cutblock size in the NIR for each silvicultural system, and all silvicultural systems combined, from 1996–2002 are provided in Figure 8.

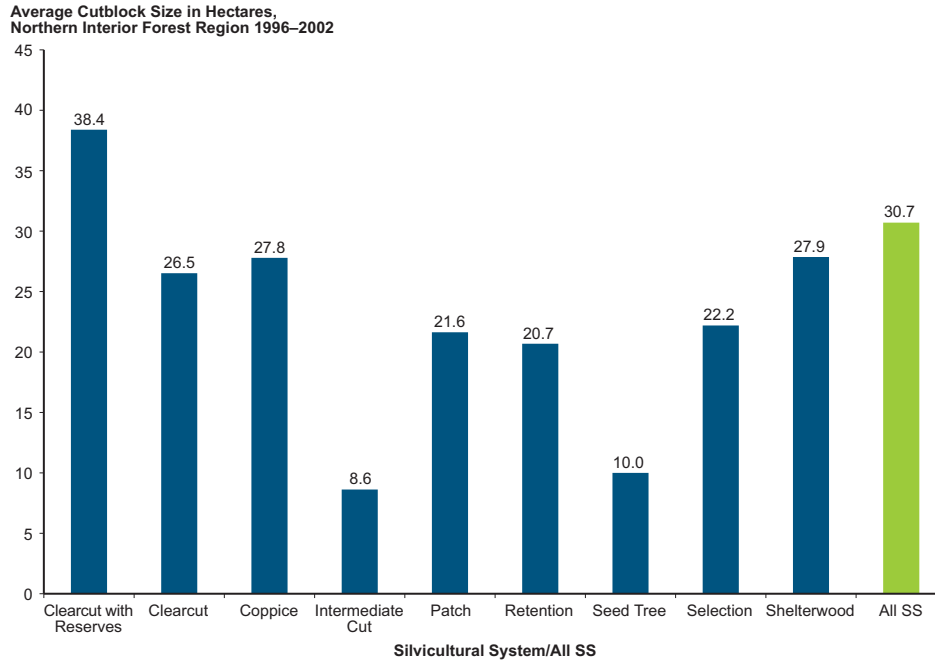


Figure 8. Average cutblock size by silvicultural system (SS) and all SS in the Northern Interior Forest Region 1996–2002 (total sample size = 12 103 cutblocks).

The average cutblock size by forest district, and the NIR as a whole, for all silvicultural systems from 1996–2002 are provided in Figure 9.

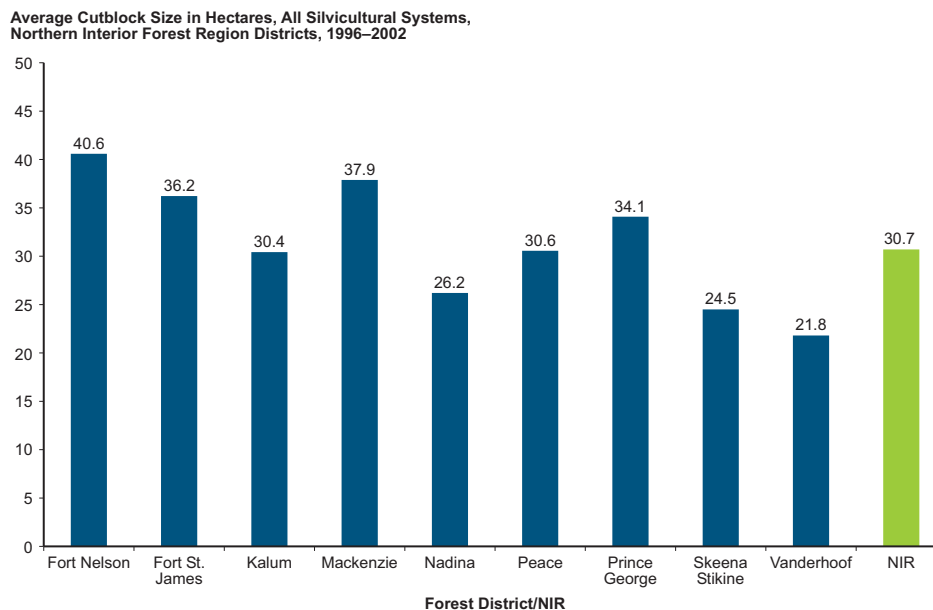


Figure 9. Average cutblock size, all silvicultural systems, by forest district in the Northern Interior Forest Region (NIR) and for NIR 1996–2002 (total sample size = 12 103 cutblocks).

Cutblock Size - Southern Interior Region (SIR)

The average cutblock size in the SIR for all silvicultural systems by year, and all years combined, are provided in Figure 10.

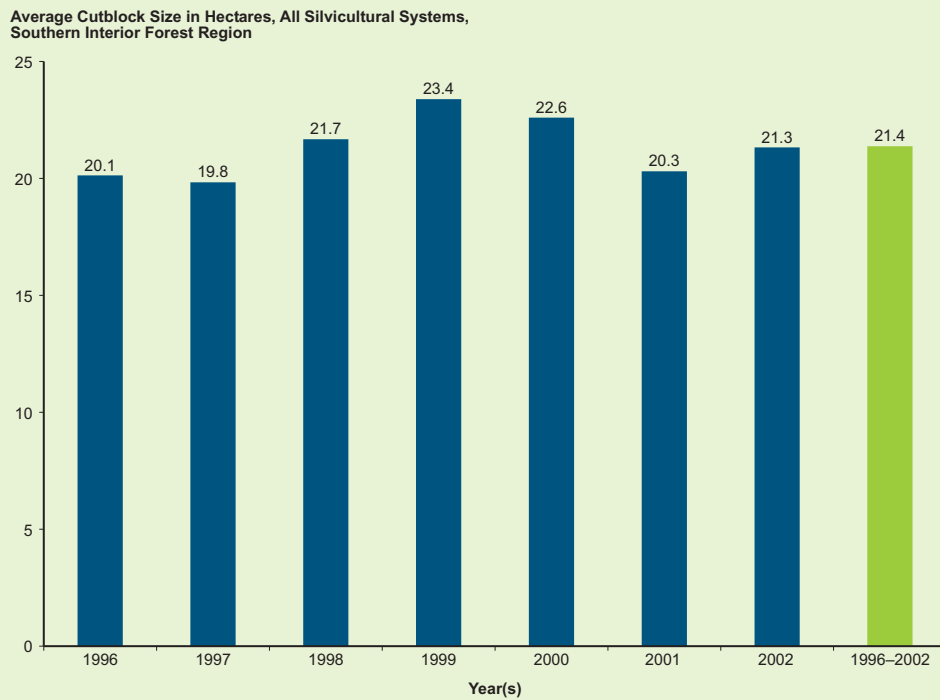


Figure 10. Average cutblock size, all silvicultural systems for the Southern Interior Forest Region by year and all years 1996–2002 (total sample size = 23 340 cutblocks).

The average cutblock size in the SIR for each silvicultural system, and all silvicultural systems combined, from 1996–2002 are provided in Figure 11.

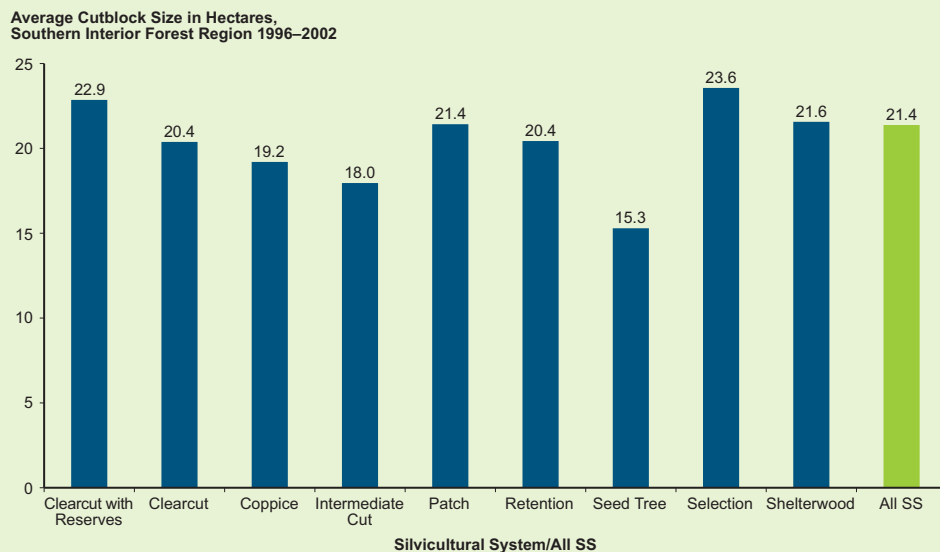


Figure 11. Average cutblock size by silvicultural system (SS) and all SS in the Southern Interior Forest Region 1996–2002 (total sample size = 23 340 cutblocks).

The average cutblock size by forest district, and the SIR as a whole, for all silvicultural systems from 1996–2002 are provided in Figure 12.

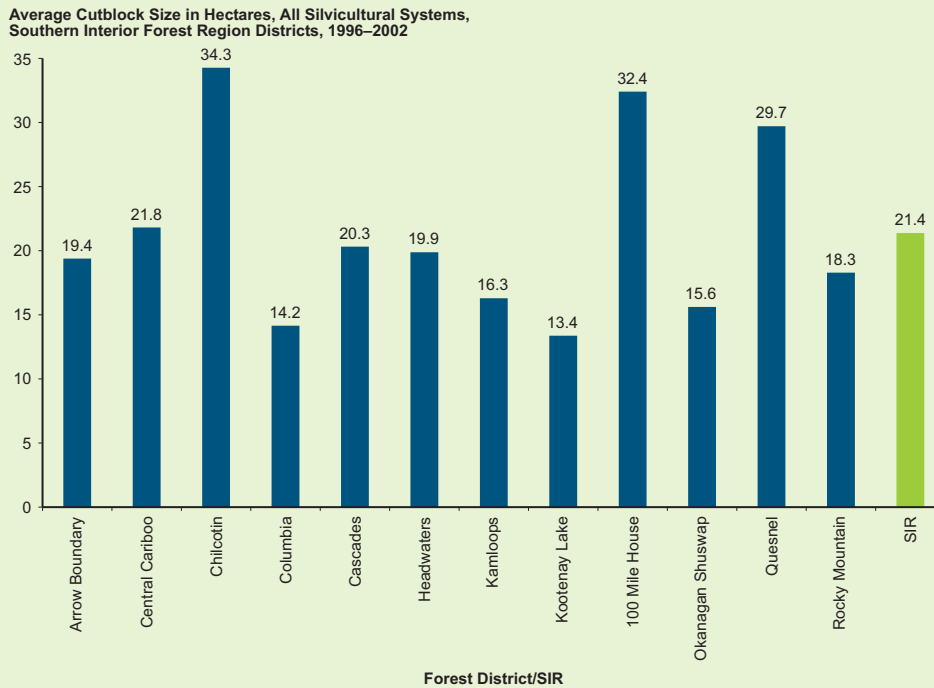


Figure 12. Average cutblock size, all silvicultural systems, by forest district in the Southern Interior Forest Region (SIR) and for SIR 1996–2002 (total sample size = 23 340 cutblocks).

40/60 Rule Review

The administrative boundaries for the 40/60 rule used in the evaluation were based on the areas where the 40/60 rule applied during 1996–2002 as if the present regional and district organizational structure of the MoF was in place at that time. The five administrative boundaries are:

- CFR40 – limits maximum cutblock size to 40 ha in all districts in the Coast Forest Region (except the North Coast Forest District where the maximum cutblock size was set at 60 ha during the study period).
- DNC60 – limits maximum cutblock size in the North Coast Forest District to 60 ha.
- NIR60 – limits maximum cutblock size in the Northern Interior Forest Region to 60 ha.
- SIR40 – limits maximum cutblock size in eight districts in the southern portion of the Southern Interior Forest Region (including the old Clearwater Forest District) to 40 ha.
- SIR60 – limits maximum cutblock size in five districts in the northern portion of the Southern Interior Forest Region (including the old Robson Valley Forest District) to 60 ha.

The greatest variation in average cutblock size occurred with partial cutting systems as compared to clearcutting-type systems (clearcuts and clearcuts with reserves). From 1996 to 2002, there was a trend toward fewer and smaller clearcuts across all areas of the province. At the same time, there was also a trend towards more and larger cutblocks harvested by the clearcut with reserves silvicultural system.

On a provincial basis, broad partial cutting systems were used 9% of the time, as compared to 91% of the time for broad clearcutting-type systems. Within the administrative boundaries of the 40/60 rule, the following trends in silvicultural system use occurred:

- CFR (40 ha rule): broad partial cutting systems – 13%; broad clearcutting-type systems – 87%;
- NCFD (60 ha rule): broad partial cutting systems – 10%; broad clearcutting-type systems – 90%;
- NIR (60 ha rule): broad partial cutting systems – 4%; clearcutting-type systems – 96%;
- SIR (40 ha rule): broad partial cutting systems – 16%; clearcutting-type systems – 84%; and
- SIR (60 ha rule): broad partial cutting systems – 8%; clearcutting-type systems – 92%.

While the 40/60 rule had a significant impact on cutblock size over the seven-year period from 1996–2002, there were also other factors affecting cutblock size. These other factors included the impact of higher-level plans, forest health issues, windthrow, public/social pressures, economic and environmental considerations, timber types and market conditions. The percent of cutblocks that fell within the applicable maximum cutblock size were as follows:

- CFR (40 ha rule) – 98.6%;
- NCFD (60 ha rule) – 99.7%;
- NIR (60 ha rule) – 94%;
- SIR (40 ha rule) – 97%; and
- SIR (60 ha rule) – 92%.

Forest District/Licensee Survey

Based on the results of the forest district and licensee survey, a number of key factors determined the size and distribution of cutblocks. These factors include: the legislative requirements of the 40/60 rule, higher level plans, forest health issues, wildfire, windthrow, visual quality issues, public/social pressures, economic and environmental considerations, timber types, and market conditions. The most common reason for cutblocks larger than the 40/60 rule maximum size was to address insect infestations (primarily mountain pine beetle), wind and snow storms, wildfire, and to emulate the structural characteristics and distribution of natural disturbances.

Social acceptability was the most common reason given by respondents that prevented cutblock sizes from emulating natural disturbances. Economics was the second most common reason, especially in relation to the workload involved in justifying blocks that exceed the maximum cutblock size for the area. Economics was also cited as a major impediment to partial cutting, specifically in relation to cost and appraisal allowances.

Out of 25 responses to the survey, only two forest districts expressed support for the 40/60 rule. The vast majority of survey respondents felt the 40/60 rule did not achieve what it was intended to do and did not promote good forest management.

Wildfire and Insect Pest Review

Natural disturbances are much more variable in terms of size and frequency than harvested cutblocks. The two natural disturbance types most commonly emulated by timber harvesting are those caused by wildfire and mountain pine beetle.

While each forest district in the province has experienced a wildfire greater than 300 ha in size, these events were generally more frequent in the interior of the province. On the Coast there were fewer fires and those that have occurred have been less frequent than in the Interior. The largest wildfire for the period of record (1920–1950) occurred in the Peace Forest District (DPC) in the NIR60 and exceeded 132 000 ha. DPC also had the highest average wildfire size at approximately 4000 ha. The Queen Charlotte Islands District (DQC) in the CFR40 had the smallest average wildfire size at approximately 200 ha.

No forest district in the province had an average mountain pine beetle attack size of 300 ha or more. The largest mountain pine beetle infestation for the period of record (1920–2002) occurred in the Chilcotin Forest District in the SIR60 at approximately 257 000 ha. The Queen Charlotte Islands Forest District (DQC) in the CFR40 was the only district in the province to be unaffected by mountain pine beetle (0 ha).

Study Recommendations

Several key recommendations came out of the evaluation:

- Review the 40/60 rule with senior management in government and the forest industry to discuss its effectiveness, relevancy and possible elimination.
- Promote the benefits of a broader range of cutblock sizes to the public, stakeholders, and national and international markets.
- Conduct more research into natural disturbances and how harvesting practices may be adapted to emulate natural disturbances.
- Create and/or update policy regarding the lengthy rationalizations required for cutblock sizes larger than the allowable maximum, as this is seen as a major impediment by licensees.
- Change appraisal specifications to make them consistent with forest practices legislation (legal 40% basal area retention versus appraisal specification of 30% volume retention for single tree selection).
- Review cost and appraisal allowances for partial cutting silvicultural systems.
- Review the possibility of including adjacent cutblock areas in cutblock size data because the combined size of the cutblocks is much larger than what is currently recorded in RESULTS.
- Encourage the use of ecologically appropriate cutblock sizes that more closely resemble regional natural disturbance patterns (i.e., larger openings in ecosystems where large natural disturbances occur and smaller openings where small natural disturbances occur). In addition, encourage an increased number and size of cutblocks harvested using partial cutting systems, where appropriate.

Acknowledgements

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More Information

For additional information on FREP, or to view a copy of the full report, please refer to our website at: <http://www.for.gov.bc.ca/hfp/frep/>, or contact any member of the FRPA Resource Evaluation Working Group.



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