FRPA Resource Evaluation Program
Scientifically Valid Evaluations of Forest Practices under the *Forest and Range Practices Act*

Evaluation of Cutblock Sizes Harvested Under the Forest Practices Code: 1996-2002

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Executive Summary

As part of the FRPA Resource Evaluation Program, this evaluation project was initiated 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?

Historical data from the Ministry of Forests' Reporting Silviculture Updates and Landstatus Tracking System (RESULTS) was used to analyze nearly 43 000 cutblocks harvested in British Columbia from 1996–2002. In addition, a survey was circulated to 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. The 40/60 rule limits maximum cutblock size to 40 hectares in the Coast Forest Region (except the North Coast Forest District (NCFD) 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*.

Historical data from the Pacific Forestry Centre of the Canadian Forest Service was compiled for wildfires (1920–1950) and insect pests (1920–2002). 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 results of the evaluation showed that average cutblock sizes varied significantly across the province. The average cutblock size in British Columbia for all sivicultural systems from 1996–2002 was 23.1 ha. 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 greatest variation in average cutblock size occurred with broad partial cutting systems as compared to broad clearcutting-type systems (clearcuts and clearcuts with reserves). From 1996 to 2002, there was a trend towards 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 clearcuting-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%.

The 40/60 rule had a significant impact on cutblock size over the seven-year period from 1996–2002. 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%.

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.

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.

Some of the major recommendations that came out of the evaluation include:

- 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.
- Encourage industry to use ecologically appropriate cutblock sizes that more closely resemble regional natural disturbance patterns.
- Encourage industry to increase both the number and size of cutblocks harvested using partial cutting systems, where appropriate.

Acknowledgements

This report was prepared by Klasen Forest Consulting and Sandy Currie, Forest Practices Branch. Funding was provided by the Forest Practices Branch, Ministry of Forests. The author thank the following individuals for their valuable contributions: Steve Taylor of the Canadian Forest Service; Bruce Bell, Ian Miller, John Parminter and Ralph Winter of the Ministry of Forests (MoF); and Sheldon Gagne previously of the MoF. Thanks are also extended to the MoF district staff and various licensees who responded to the cutblock size survey.

The authors appreciate the thorough review of this report by the Ministry of Forests.

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1.0 Introduction

This evaluation project was conducted under the FRPA Resource Evaluation Program. The primary purpose of the project is 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 of British Columbia Act* for largely political rather than scientific or biological reasons (see Appendix 1). It was intended to reduce the numbers and sizes of large progressive clearcuts that were occurring thoughout the province. 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* (see Appendix 2).

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. The average and maximum size of natural disturbances are provided by forest region and district based on the administrative boundaries of the 40/60 rule (see Appendix 3).

2.0 Methods

This project consisted primarily of a broad survey-style evaluation. Historical data from the Ministry of Forests' Reporting Silviculture Updates and Landstatus Tracking System (RESULTS) provided the base information for the analysis. RESULTS tracks silviculture information for all types of Crown licences, including tree farm licences, timber sales and their associated cutting rights. Also, average cutblock size has been used in the charts throughout the report because it creates a simple type of visual representation and clearly demonstrates patterns or trends.

To qualify for inclusion in the study, harvesting on a cutblock had to begin no earlier than January 1, 1996 and be completed no later than December 31, 2002. This period was selected to include the majority of time between when the Forest Practices Code first came into effect to the beginning of the transition to the *Forest and Range Practices Act* (FRPA).

The 42 973 cutblocks used in the analysis represent approximately 80% of all cutblocks harvested in British Columbia under a variety of silvicultural systems from 1996 to 2002. The remaining 20% of cutblocks for that time period were not included in the analysis primarily due to coding errors in the RESULTS database. For example large openings creating by fire or other natural disturbances were included in the database even though they were not actually cutblocks. Similarly, smaller openings attributed to road clearings and other minor areas where trees were removed were also included in the database. These inconsistencies were removed from the database prior to conducting the analysis.

The RESULTS data was analyzed using Microsoft Excel pivot tables to determine average cutblock sizes for the province as a whole, for each forest region, for each forest district within the regions, and for each type of silvicultural system. The RESULTS data was further broken down to determine average cutblock size and silvicultural system trends based on the administrative boundaries of the 40/60 maximum cutblock size rule.

To assess the impact of the 40/60 rule on cutblock size and distribution, a survey was circulated to all 29 forest districts and major licensees. The survey was developed by Klasen Forest Consulting and approved by the Ministry of Forests. The purpose of the survey was to identify the reasoning behind cutblock size and distribution, and silvicultural systems used, as well as to assess the overall effectiveness of the 40/60 rule. A total of 25 survey responses were received from across the province – 16 from forest districts and nine from licensees. In cases where the surveys were incompletely filled out or did not provide enough information, Klasen Forest Consulting followed-up with the respondent to complete the required information. A copy of the survey and a summary of responses are provided in Appendix 4.

In addition, historical data from the Pacific Forestry Centre (PFC) of the Canadian Forest Service was compiled for wildfires (1920–1950) and insect pests (1920–2002). Only data up to 1950 was included in the analysis for wildfire because after that time, advances in suppression technology resulted in a substantive decrease in the size of lightening-caused fires due to earlier detection and more effective fire fighting techniques. The PFC data was analyzed using Microsoft Excel pivot tables to determine the average and maximum size of natural disturbances broken down by forest districts within the administrative boundaries of the 40/60 rule (see Appendix 5).

3.0 Results

The following results 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.) See Appendix 6 for current regional and district boundaries.

3.1 Average Cutblock Size

Results for average cutblock size are presented for the Province of British Columbia (BC), by forest region, by forest district, and by silvicultural system. Table 1 lists the common silvicultural systems used in BC from 1996–2002. Definitions for each silvicultural system are provided in the glossary.

Table 1. Silvicultural systems used in BC from 1996–2002

Clearcutting Systems	Partial Cutting Systems
Clearcut	Coppice
Clearcut with reserves	Intermediate cut*
	Patch
	Retention
	Seed Tree
	Selection
	Shelterwood

* Note that 'intermediate cut' is not a true silvicultural system, but is included under partial cut systems for convenience purposes.

Table 2 provides an overview of average cutblock sizes for the Province of BC, forest regions and forest districts, by year, by silvicultural system, as well as for all years and all silvicultural systems.

Highlights for the Province of BC are presented first, followed by highlights for the Coast Forest Region (CFR), Northern Interior Forest Region (NIR), and Southern Interior Forest Region (SIR), along with each region's respective forest districts.

Table 2. Average cutblock size summary table

Silvicultural System(s)	Location	Years	Ave. Size (ha)	Chart #
For all Silvicultural Systems (SS) combined...	...in BC, CFR, NIR and SIR...	...for the entire period 1996–2002...	...the average size was 16.0–30.7 ha...	See Chart 1
For all SS combined	in BC	by year from 1996 to 2002	21.4–24.2	See Chart 2
For each individual SS	in BC	for the entire period 1996–2002	15.4–26.9	See Chart 3
For each individual SS	in BC	by year from 1996 to 2002	12.6–40.0	See Chart 4
For all SS combined	in CFR	by year from 1996 to 2002	15.0–17.2	See Chart 5
For each individual SS	in CFR	for the entire period 1996–2002	9.0–19.8	See Chart 6
For each individual SS	in CFR	by year from 1996 to 2002	2.8–26.9	See Chart 7
For all SS combined	in each forest district in CFR	for the entire period 1996–2002	12.8–18.3	See Chart 8
For all SS combined	in NIR	by year from 1996 to 2002	27.4–32.8	See Chart 9
For each individual SS	in NIR	for the entire period 1996–2002	8.6–38.4	See Chart 10
For each individual SS	in NIR	by year from 1996 to 2002	1.2–40.9	See Chart 11
For all SS combined	in each forest district in NIR	for the entire period 1996–2002	21.8–40.6	See Chart 12
For all SS combined	in SIR	by year from 1996 to 2002	19.8–23.4	See Chart 13
For each individual SS	in SIR	for the entire period 1996–2002	15.3–23.6	See Chart 14
For each individual SS	in SIR	by year from 1996 to 2002	7.0–35.9	See Chart 15
For all SS combined	in each forest district in SIR	for the entire period 1996–2002	13.4–34.3	See Chart 16

Province of British Columbia

Chart 1 presents the average cutblock size for the Province of BC and each forest region for all silvicultural systems for the entire study period 1996–2002.

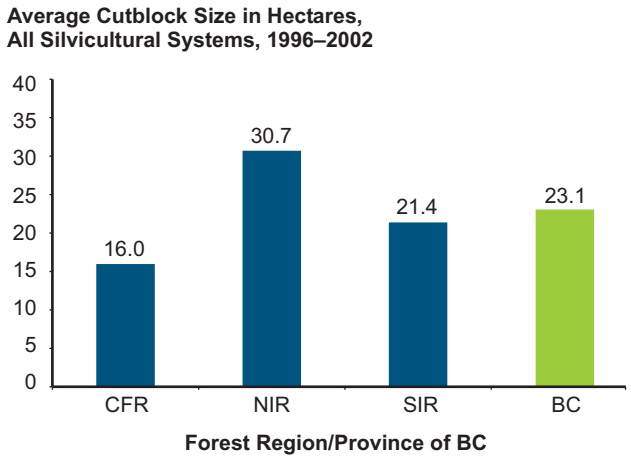


Chart 1. Average cutblock size by forest region and Province of BC for all silvicultural systems 1996–2002 (total sample size = 42 973 cutblocks).

The average cutblock size for the Province of BC for all silvicultural systems for the entire period 1996–2002 was 23.1 ha. The SIR was closest to the provincial average at 21.4 ha. The CFR had the lowest average cutblock size of the three forest regions at 16.0 ha. The average cutblock size in the NIR was 30.7 ha, the highest average for the three forest regions. The large difference in average size between the CFR and the NIR is likely due to the different maximum cutblock size rules (40 hectares in the CFR and 60 hectares in the NIR), the challenging terrain and increased public concerns/pressures associated with harvesting on the coast, and the increasing areas of beetle-kill salvage operations in the north.

Chart 2 presents the average cutblock size for the Province of BC for all silvicultural systems by year and for the entire study period 1996–2002.

The size differences year-to-year varied up to 7%, with 2001 having the lowest average cutblock size at 21.4 ha on approximately 6600 cutblocks, and 1999 having the highest average size at 24.2 ha on over 6800 cutblocks.

There was a general upward trend in average cutblock size from 1996 (22.2 ha on nearly 4500 blocks) to 1999 (24.2 ha on 6800 blocks). After 1999, average cutblock sizes trended lower until 2001 (21.4 ha), but then increased again in 2002 (23.6 ha).

Of note is that by far the lowest total area cut in any one year was 1996 at 100 000 ha, whereas nearly 166 000 ha were cut in 1999, representing a significant increase of 66%. Since 1999, the total area cut has decreased steadily, culminating in a 19% drop to 134 000 ha in 2002.

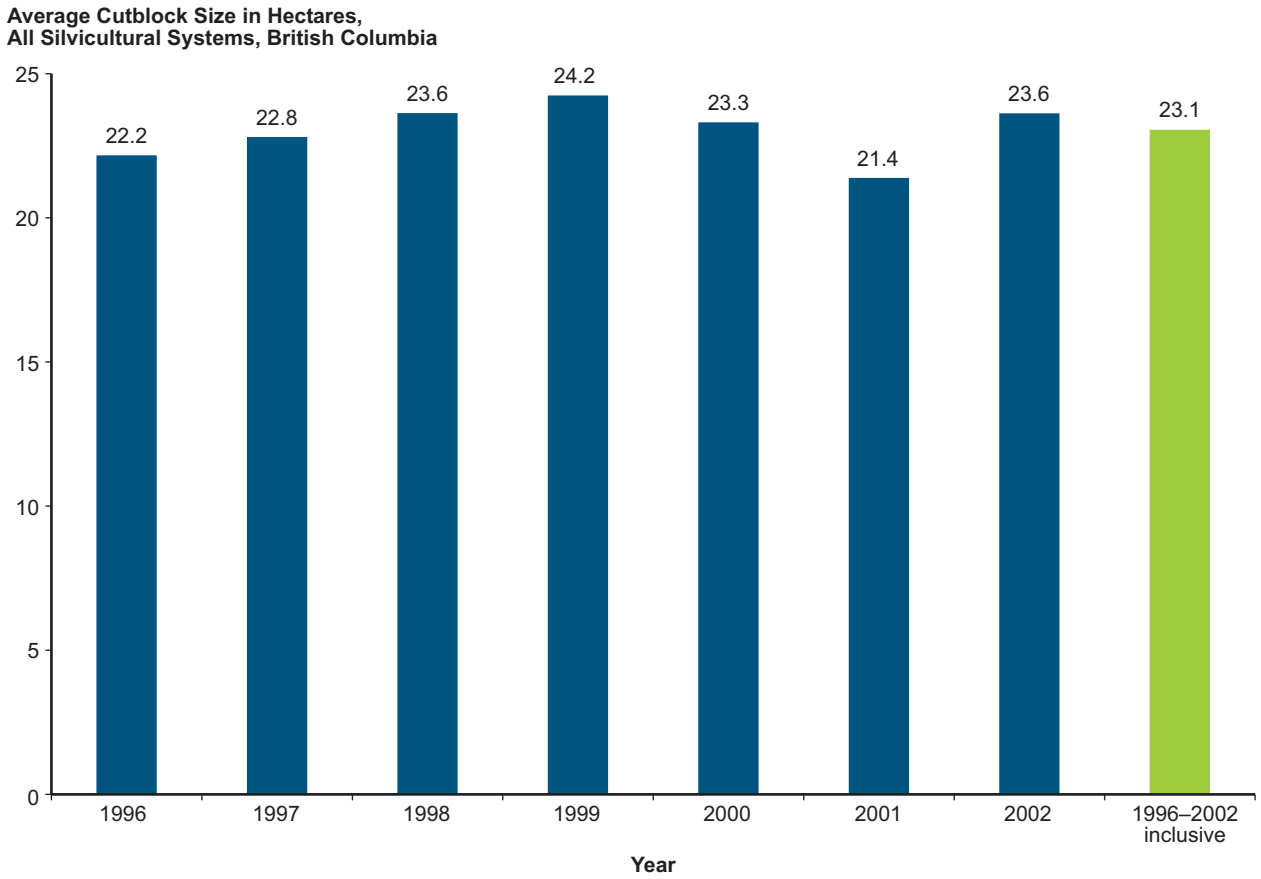


Chart 2. Average cutblock size for the Province of BC, all silvicultural systems by year, and all years 1996–2002 (total sample size = 42 973 cutblocks).

Chart 3 presents the average cutblock size for the Province of BC by individual silvicultural system and all silvicultural systems for the entire study period 1996–2002.

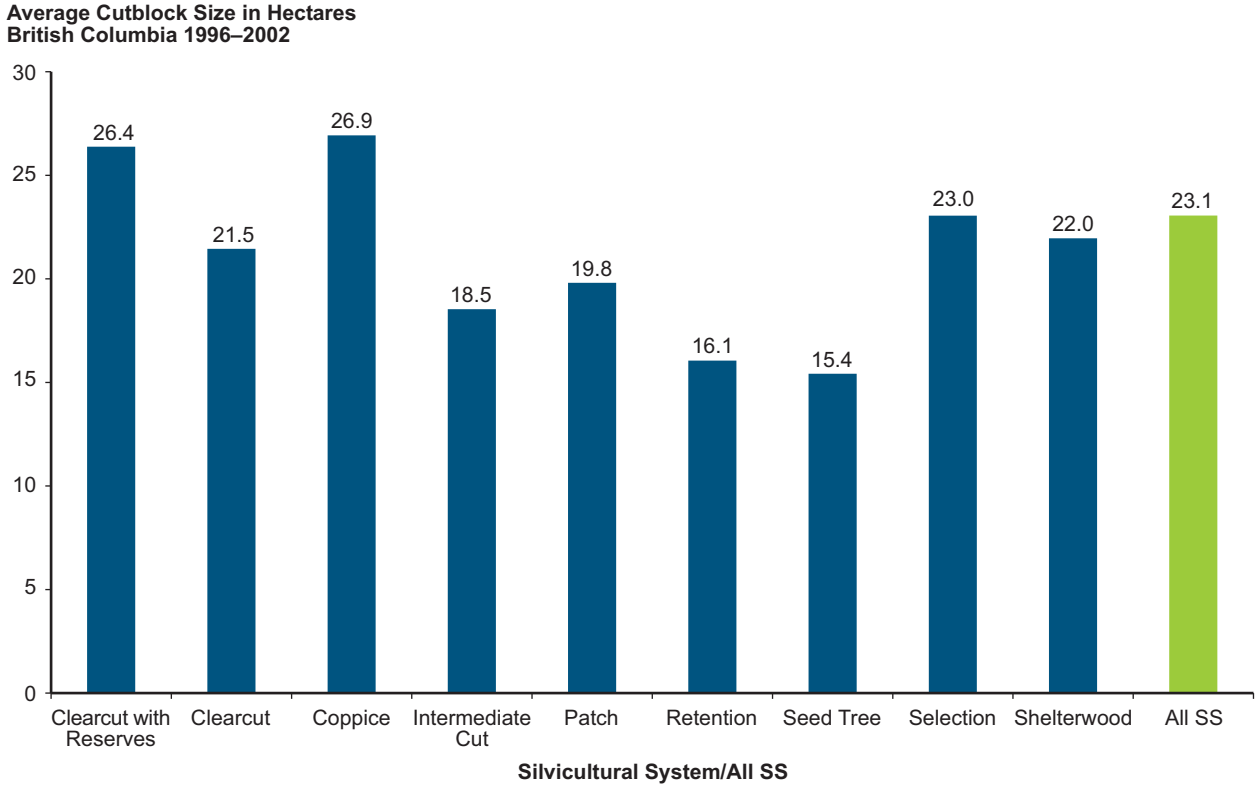


Chart 3. Average cutblock size for each silvicultural system (SS) and all SS for the Province of BC 1996–2002 (total sample size = 42 973 cutblocks).

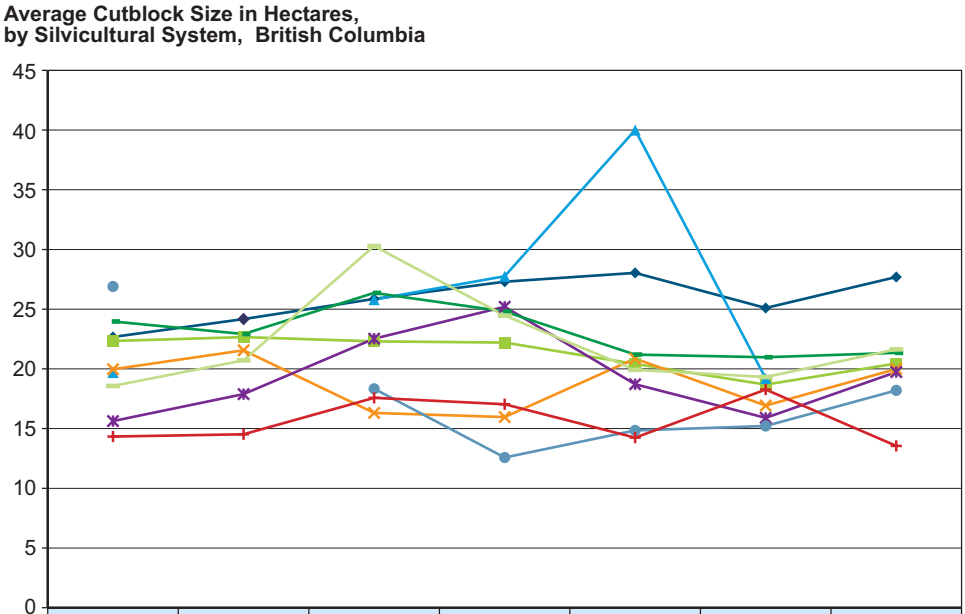
For the entire study period 1996–2002, the average cutblock size varied considerably from one silvicultural system to another, ranging from an overall low of 15.4 ha for the seed tree system to a high of 26.9 ha for the coppice system. As compared to these two partial cutting systems, the clearcut system had an average cutblock size of 21.5 ha, and the clearcut with reserves system had an average size of 26.4 ha.

Table 3 provides a breakdown of the harvest area in BC and the number of cutblocks harvested in the three forest regions from 1996–2002 by silvicultural system. Clearcutting systems accounted for almost 91% of the harvest area in BC during the study period.

Table 3. Average cutblock sizes, total area harvested, and number of cutblocks harvested from 1996–2002

Silvicultural System	Average Size (ha)	Total Area Harvested (ha)	Number of Blocks (BC)	Number of Blocks (CFR)	Number of Blocks (NIR)	Number of Blocks (SIR)
Clearcut	21.5	505 693	23 575	4 004	7 199	12 372
Clearcut with Reserves	26.4	392 665	14 886	2 548	4 394	7 944
All Clearcut Systems	23.4	898 358	38 461	6 552	11 593	20 316
Coppice	26.9	269	10	0	9	1
Intermediate Cut	18.5	4 226	228	111	8	109
Patch	19.8	10 518	531	71	109	351
Retention	16.1	10 914	680	615	19	46
Seed Tree	15.4	6 027	391	38	1	352
Selection	23.1	37 731	1 637	68	214	1 355
Shelterwood	22	22 726	1 035	75	150	810
All Partial Cut Systems	20.5	92 411	4 512	978	510	3 024
All Systems	**23.1**	**990 769**	**42 973**	**7 530**	**12 103**	**23 340**

Chart 4 illustrates the average cutblock size by silvicultural system by year for the Province of BC.



	1996	1997	1998	1999	2000	2001	2002
Clearcut with Reserves	22.7	24.2	25.9	27.3	28.0	25.1	27.7
Clearcut	22.3	22.7	22.3	22.2	20.4	18.7	20.4
Coppice	19.7	–	25.8	27.8	40.0	19.2	–
Intermediate Cut	20.0	21.6	16.3	16.0	20.9	16.9	20.0
Patch	15.6	17.9	22.5	25.2	18.7	15.9	19.7
Retention	26.9	–	18.3	12.6	14.8	15.2	18.2
Seed Tree	14.3	14.5	17.6	17.0	41.2	18.3	13.6
Selection	24.0	22.9	26.4	24.8	21.2	21.0	21.3
Shelterwood	18.6	20.7	30.3	24.5	19.9	19.3	21.6

Chart 4. Average cutblock size by silvicultural system for Province of BC by year (total sample size = 42 973 cutblocks).

From 1996 to 2002, the coppice silvicultural system had the highest overall average cutblock size in any one year at 40.0 ha in 2002. However, this result is based on only one cutblock harvested under that system in that year. The shelterwood system had the next highest average cutblock size in any one year at 30.3 ha in 1998 (based on 127 cutblocks harvested under the system). The retention system had the lowest overall average cutblock size in any one year at 12.6 ha for 1999, based on 14 blocks harvested under that system for that year.

There is no record of any cutblocks being harvested using coppice or retention silvicultural systems in 1997, or for the coppice system again in 2002. Nevertheless, coppice system cutblocks had the broadest range of average cutblock sizes at 19.2 ha (1 block) to 40 ha. In addition, this system had the highest variability in average size range of all the silvicultural systems. In 1999, five coppice system cutblocks were harvested for an average size of 27.8 ha, representing half of the 10 coppice system cutblocks that were harvested during 1996–2002.

The seed tree system showed the least overall variability in cutblock size year-to-year. The patch and shelterwood systems trended upwards (15.6 ha in 1996 to 19.7 ha in 2002, and 18.6 ha in 1996 to 21.6 ha in 2002, respectively). The retention and selection systems trended downwards (26.9 ha in 1996 to 18.2 ha in 2002, and 24.0 ha in 1996 to 21.3 ha in 2002, respectively). The intermediate cut system had average cutblock sizes of 20 ha in both 1996 and 2002, with lows of near 16.0 ha for 1998 and 1999.

The results for clearcutting silvicultural systems were interesting in that there was an almost steady rise in average cutblock size for the clearcut with reserves system from 22.7 ha in 1996 (on 730 cutblocks) to 27.7 ha in 2002 (on 2547 cutblocks). Whereas, the average cutblock size for the clearcut system generally declined from 22.3 ha in 1996 (on 3284 cutblocks) to 20.4 ha in 2002 (on 2489 cutblocks). This may be related to the fact that the clearcut with reserves system became recognized in 1995, and there may have been an increased interest in using this 'new' system from 1996 to 2002.

Coast Forest Region (CFR) and Districts

Chart 5 provides the average cutblock size in the CFR for all silvicultural systems from 1996–2002.

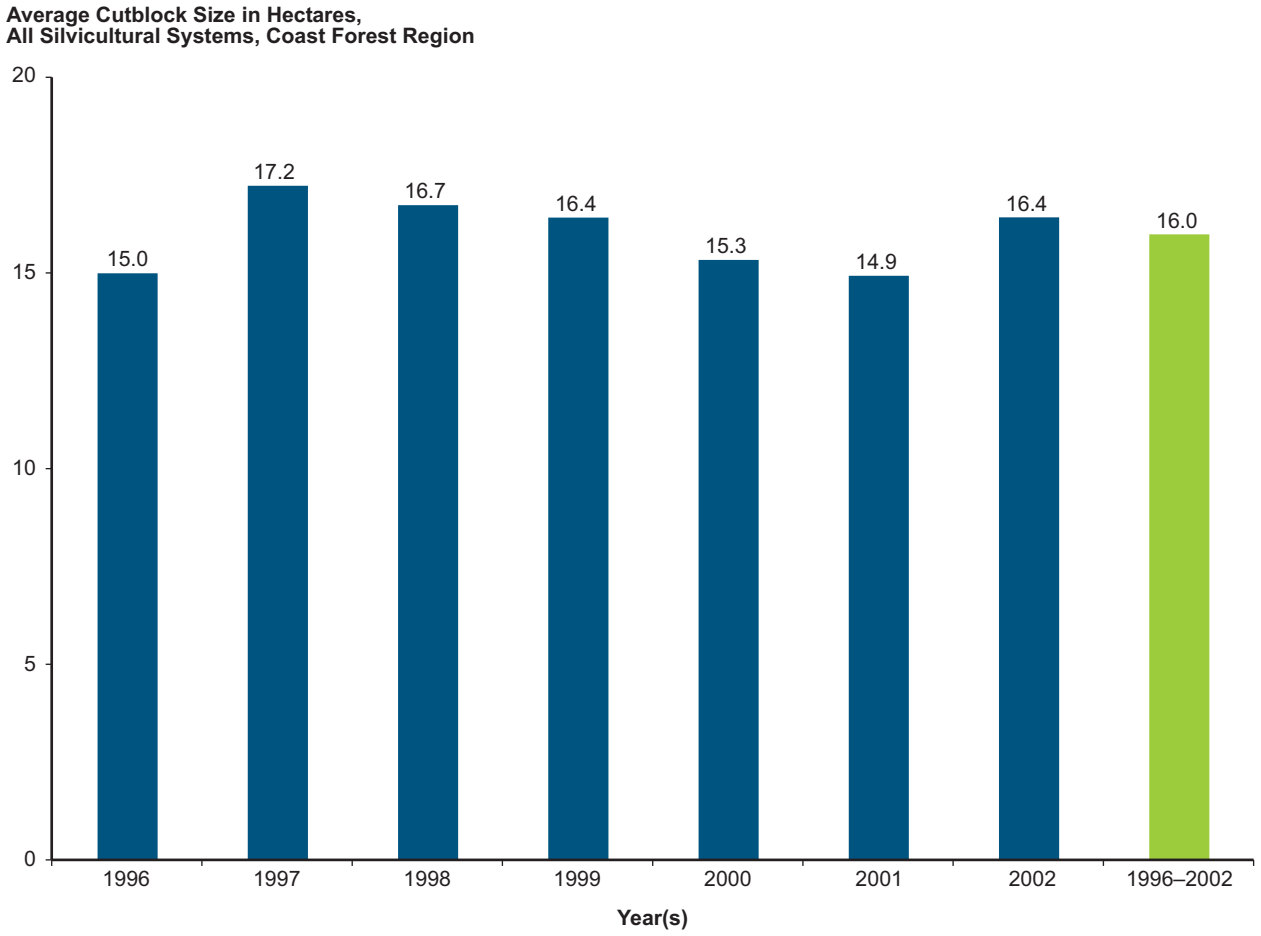


Chart 5. Average cutblock size for all silvicultural systems for the coast forest region, by year and all years 1996–2002 (total sample size = 7530 cutblocks).

The average cutblock size in the Coast Forest Region (CFR) for all silvicultural systems (7530 cutblocks harvested) for the period 1996–2002 was 16.0 ha, which is almost 31% lower than the provincial average of 23.1 ha (see Chart 1). The size differences year-to-year varied up to 7.5%, with 2001 having the lowest average cutblock size of 14.9 hectares on 1265 cutblocks and 1997 having the highest average size of 17.2 hectares on 1031 cutblocks.

Average cutblock sizes increased from 1996 (15 ha on 547 cutblocks) to 1997 (17.2 ha on 1031 cutblocks). From 1997 to 2001, average cutblock sizes for all silvicultural systems trended lower, bottoming at 14.9 ha in 2001 on 1265 cutblocks and rebounding to 16.4 ha in 2002 on 980 cutblocks.

Of note is that by far the lowest total area harvested in any one year was 8189 ha in 1996, which was also the lowest year of harvest for the Province of BC. The highest total area harvested in the CFR was 23 733 ha in 2000, which is one year later than the highest harvest level recorded for BC.

Chart 6 provides average cutblock size by silvicultural system for the CFR.

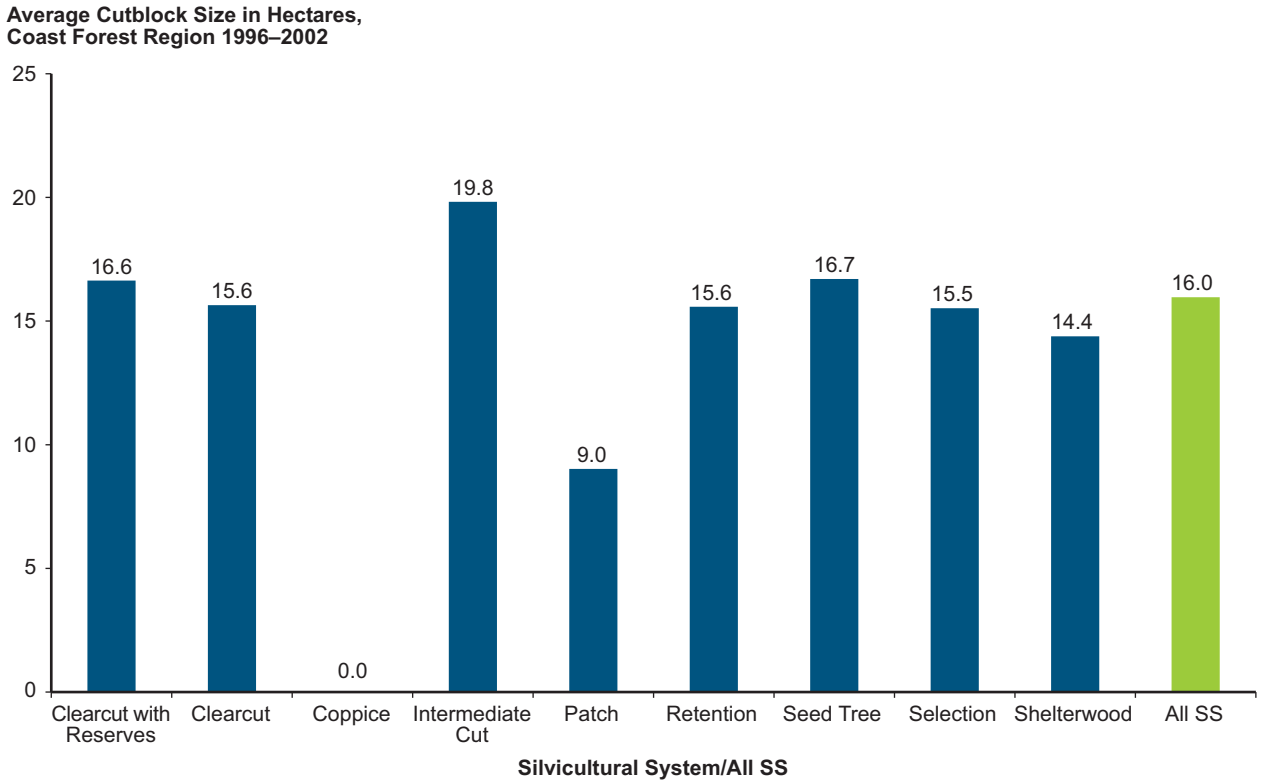
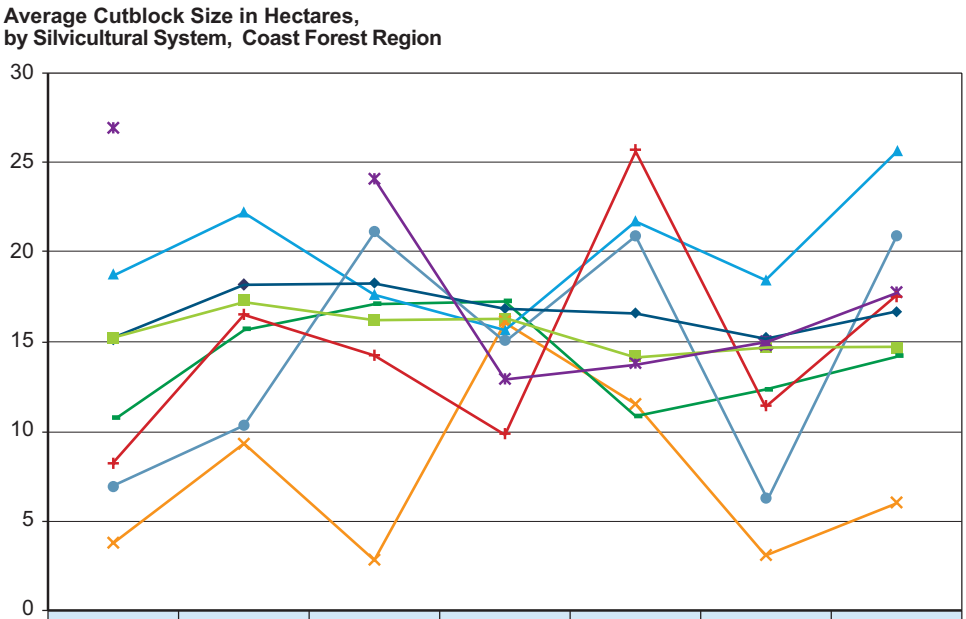


Chart 6. Average cutblock size by silvicultural system (SS) and all SS for the Coast Forest Region 1996–2002 (total sample size = 7530 cutblocks).

From 1996–2002, average cutblock sizes in the CFR varied considerably from one silvicultural system to another, ranging from an overall low of 9.0 ha for the patch system to a high of 19.8 ha for the intermediate cut system. The average cutblock size for clearcutting systems ranged from 15.6 ha for the clearcut system to 16.6 ha for the clearcut with reserves system. There were no cutblocks harvested in the CFR using the coppice silvicultural system during the study period. Additional information on the number of cutblocks harvested by silvicultural system in the CFR from 1996–2002 can be found in Table 3.

Chart 7 provides average cutblock size by silvicultural system by year for the CFR.



	1996	1997	1998	1999	2000	2001	2002
Clearcut with Reserves	15.3	18.2	18.2	16.9	16.7	15.2	16.7
Clearcut	15.1	17.1	16.3	16.3	14.1	14.7	14.7
Intermediate Cut	18.7	22.3	17.8	15.7	21.8	18.5	25.6
Patch	3.9	9.4	2.8	16.2	11.5	3.1	6.0
Retention	26.9	–	24.0	13.0	13.7	15.0	17.7
Seed Tree	7.0	10.4	21.0	15.1	20.9	6.2	20.9
Selection	8.2	16.5	14.4	9.9	25.6	11.4	17.5
Shelterwood	10.7	15.6	17.1	17.3	11.0	12.4	14.2

Chart 7. Average cutblock size by silvicultural system for the coast forest region, by year (total sample size = 7530 cutblocks).

As was the case with the province as a whole, the range of average cutblock sizes in the CFR from 1996 to 2002 was greatest under partial cutting silvicultural systems. The retention system had the highest overall average cutblock size of 26.9 ha in 1996; however, this was based on only one cutblock harvested under that system for that year. The next highest overall average size (and likely a more valid result) was for the selection and intermediate cut systems – both at 25.6 ha in 2000 and 2002, respectively, based on 15 cutblocks harvested under selection and 16 cutblocks harvested under intermediate cut.

The patch system had the lowest overall average cutblock size in 1998 at 2.8 ha, based on 10 cutblocks harvested under that system.

There was no record of any cutblocks being harvested under the coppice system from 1996 to 2002. The only other system that had no record of any cutblocks being harvested in a year was the retention system where no blocks were cut in 1997.

The intermediate cut, patch, seed tree, selection and shelterwood systems all exhibited a great deal of variability in average cutblock size from year to year, and all had greater or much greater average size cutblocks in 2002 compared to 1996.

The range of average cutblock sizes for clearcutting silvicultural systems was much less variable in the CFR. The average cutblock size and the number of blocks cut under the clearcut with reserves system increased from 1996 (15.3 ha on 58 cutblocks) to 2002 (16.7 ha, on 439 cutblocks). The average cutblock size using the clearcut system declined from 15.1 ha on 463 blocks in 1996 to 14.7 ha on 294 blocks in 2002 (similar to the trend for the province as a whole).

Chart 8 provides average cutblock size for all silvicultural systems by forest district in the CFR.

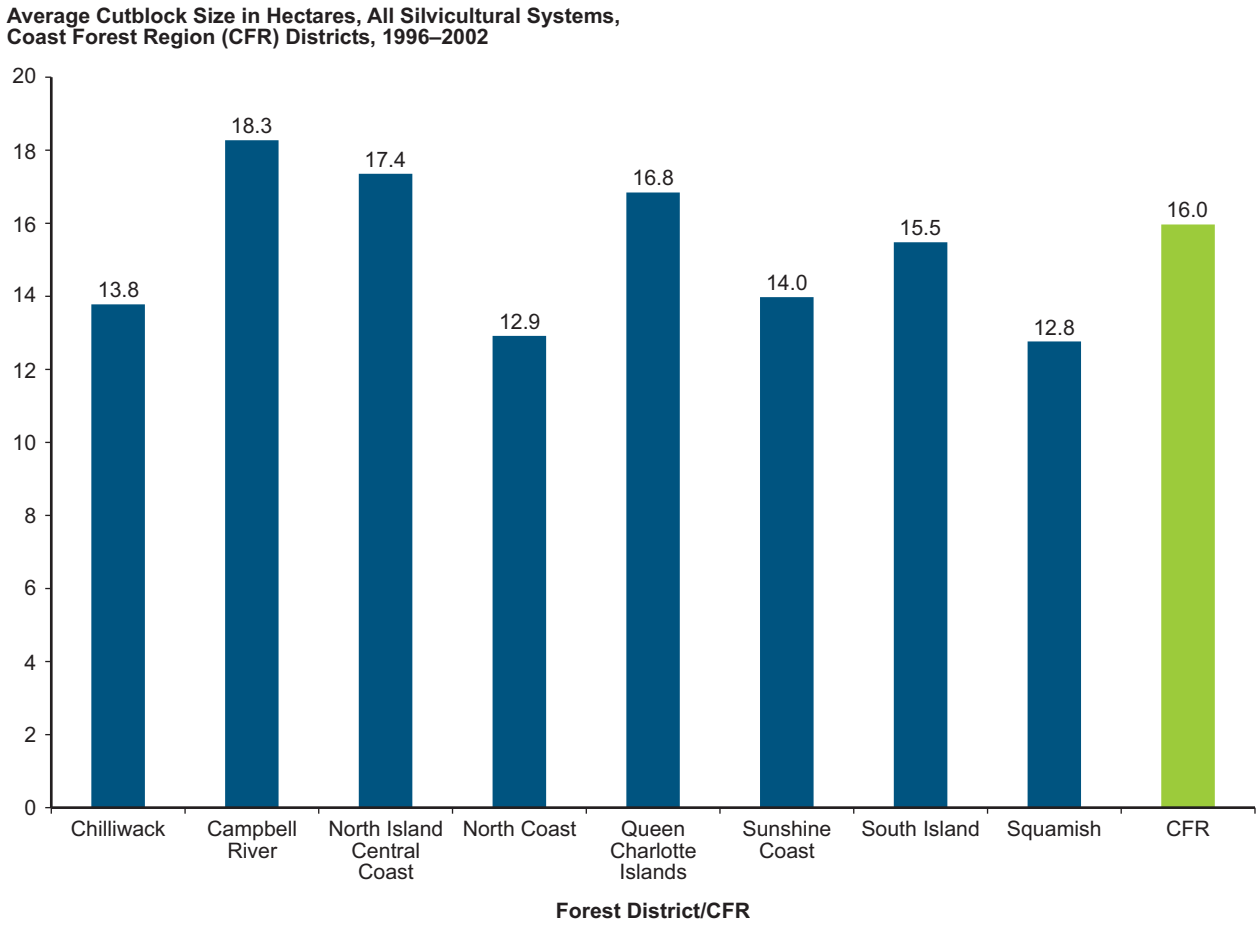


Chart 8. Average cutblock size, all silvicultural systems, by forest district in the coastal forest region (CFR) and for the CFR 1996–2002 (total sample size = 7530 cutblocks).

For the entire period 1996–2002, the average cutblock by forest district within the CFR varied considerably, ranging from a low of 12.8 ha in the Squamish Forest District to a high of 18.3 ha in the Campbell River district.

Five of the eight districts had average cutblock sizes that were below the seven-year CFR average cutblock size of 16.0 ha – North Coast (12.9 ha), Chilliwack (13.8 ha), Sunshine Coast (14.0 ha), South Island (15.5 ha) and Squamish (12.8 ha). The districts of Campbell River (18.3 ha), North Island-Central Coast (17.4 ha), and Queen Charlotte Islands (16.8 ha) all had average cutblock sizes greater than the regional average of 16.0 ha.

Northern Interior Forest Region (NIR) and Districts

Chart 9 provides the average cutblock size in the NIR for all silvicultural systems from 1996–2002.

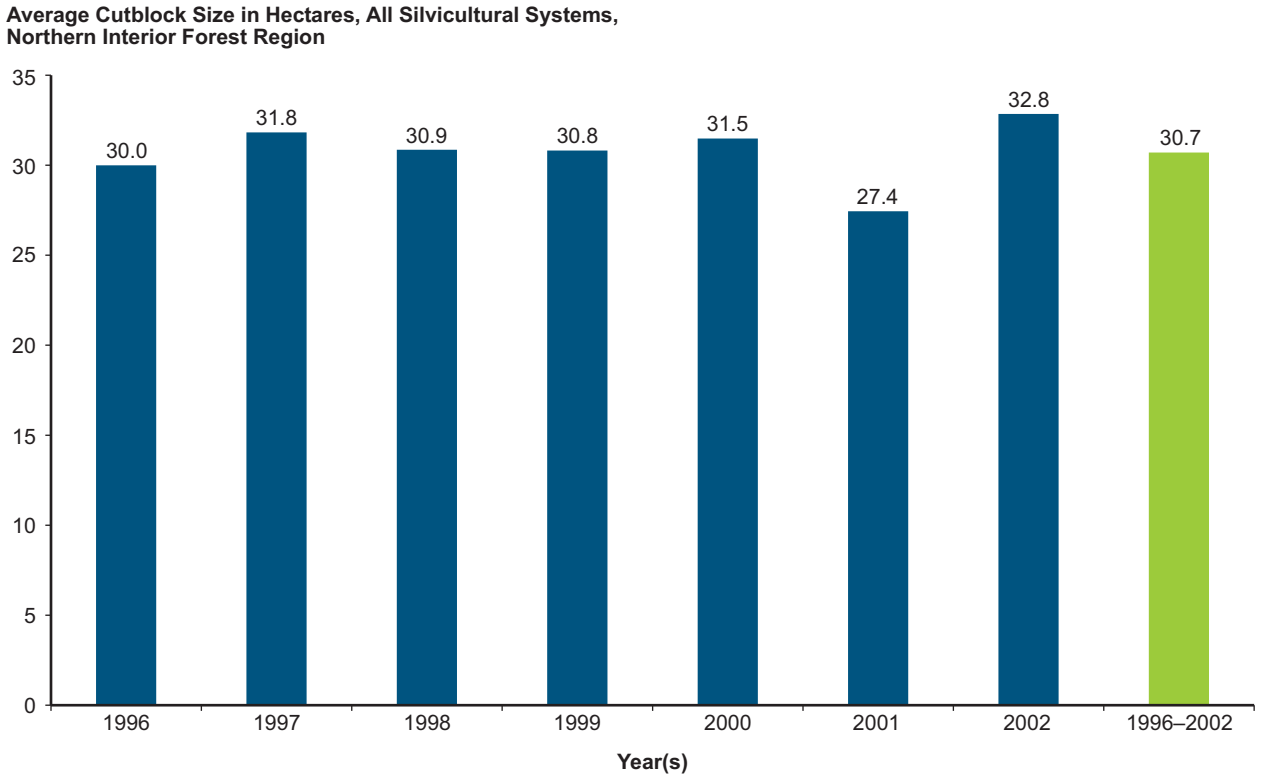


Chart 9. Average cutblock size, all silvicultural systems for the Northern Interior Forest Region by year and all years 1996–2002 (total sample size = 12103 cutblocks).

The average cutblock size in the NIR for all silvicultural systems (on 12 103 cutblocks) for the period 1996–2002 was 30.7 ha, which is 33% higher than the provincial average of 23.1 ha and nearly double that of the CFR (16.0 ha). The size differences year-to-year were relatively stable except for the period 2000–2002 where there was an 11% drop in average cutblock size from 2000 to 2001 (31.5 ha to 27.4 ha) and a 16% increase from 2001 to 2002 (27.4 ha to 32.8 ha). As was the case with the province as a whole and the CFR, 2001 had the lowest average cutblock size. The dramatic increase in average size in 2002 was likely in response to salvaging extensive areas of beetle-killed lodgepole pine.

The lowest total area harvested in one year occurred in 1996 (36 440 ha), similar to the lows experienced by the CFR and the province as a whole in that year. The highest total cut for the NIR was 61 997 ha in 1999, which is the same year that the Province of BC recorded its highest total area of harvest.

Chart 10 provides average cutblock size by silvicultural system for the NIR.

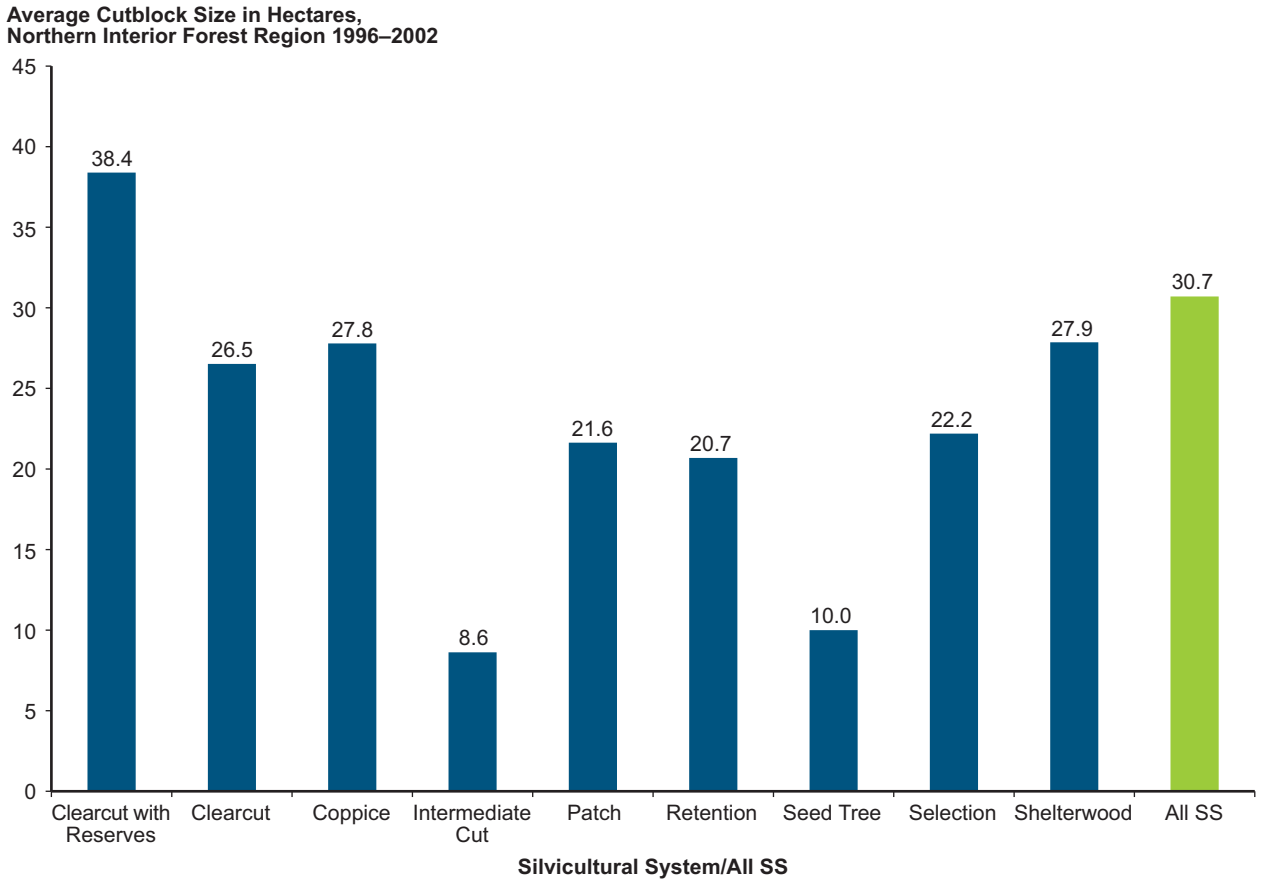


Chart 10. Average cutblock size by silvicultural system (SS) and all SS in the Northern Interior Forest Region 1996–2002 (total sample size = 12 103 cutblocks).

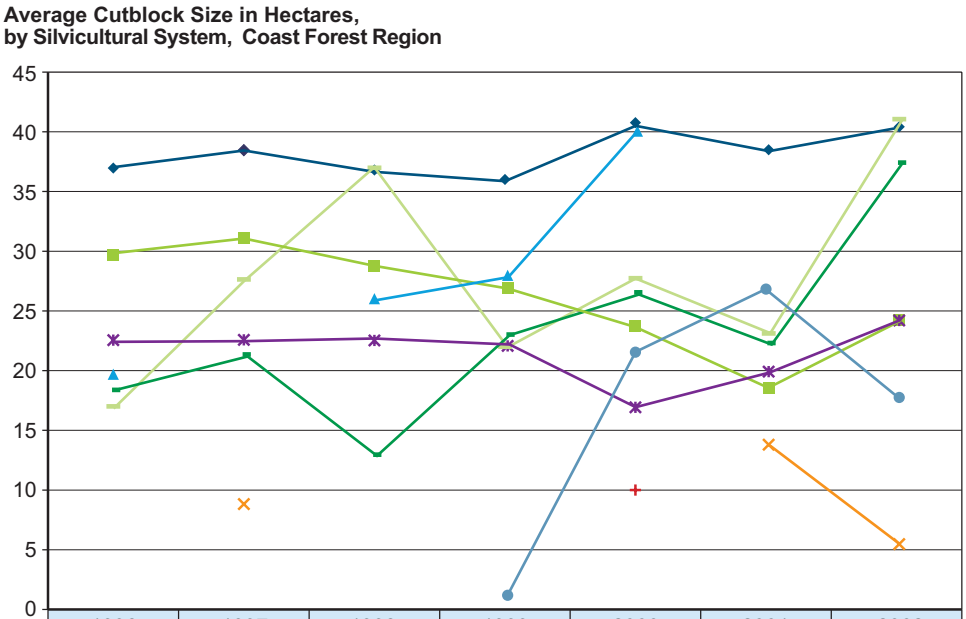
The average cutblock size varied greatly from one silvicultural system to another in the NIR, ranging from an overall low of 8.6 ha for the intermediate cut system to a high of 38.4 ha for clearcut with reserves.

It is important to note that the figure for intermediate cut is based on only eight cutblocks harvested during the period 1996–2002, all of which were from only two forest districts. The next lowest figure (10.0 ha), is for the seed tree system and is based on only one cutblock harvested from 1996–2002. There were also a very low number of cutblocks harvested under two other partial cutting silvicultural systems – the coppice system with nine blocks harvested for an average size of 27.8 ha all in one district, and the retention system with 19 blocks harvested in four districts for an average cutblock size of 20.7 ha.

The remaining three partial cutting systems were represented by at least seven forest districts each – the patch system with an average cutblock size of 21.6 ha on 109 blocks, the selection system (22.2 ha on 214 blocks), and the shelterwood system (27.9 ha on 150 blocks).

The average cutblock size for the clearcut system was 26.5 ha on 7199 blocks, which is almost 31% smaller than the average size for the clearcut with reserves system (38.4 ha on 4394 blocks).

Chart 11 provides average cutblock size by silvicultural system by year for the NIR.



	1996	1997	1998	1999	2000	2001	2002
Clearcut with Reserves	37.0	38.4	36.7	35.8	40.5	38.4	40.4
Clearcut	29.7	30.9	28.7	26.9	23.5	18.4	24.2
Coppice	19.7	–	25.8	27.8	40.0	–	–
Intermediate Cut	–	8.8	–	–	–	13.9	5.5
Patch	22.5	22.6	22.7	22.2	16.9	19.8	24.0
Retention	–	–	–	1.2	21.5	26.7	17.5
Seed Tree	–	–	–	–	10.0	–	–
Selection	18.3	21.2	12.8	22.8	26.4	22.2	37.4
Shelterwood	16.8	27.5	36.6	22.1	27.4	23.0	40.9

Chart 11. Average cutblock size by silvicultural system for the Northern Interior Forest Region by year 1996–2002 (total sample size = 12 103 cutblocks).

As with the province as a whole and the CFR, the range of average cutblock sizes in the NIR by year from 1996 to 2002 was greatest under partial cutting silvicultural systems. The shelterwood system in 2002 had the highest overall average cutblock size at 40.9 ha based on 22 cutblocks harvested. The lowest average size was 1.2 ha for the retention system in 1999, but this was based on only one block harvested during that year.

The coppice, intermediate cut, retention and seed tree silvicultural systems each had a number of years where no cutblocks were harvested under those systems. The Peace River

Forest District was the only district that used the coppice system (on nine cutblocks). Only two districts, Kalum and Prince George used the intermediate cut system over the seven-year period on a total of eight cutblocks. Four districts – Fort Nelson, Nadina, Peace and Prince George – used the retention system on a total of 19 cutblocks beginning in 1999. The seed tree system was only used in Fort Nelson for one cutblock in 2000.

The remaining three partial cut systems – patch, selection and shelterwood – were used in each year of the seven-year period. The patch system had the least variability year-to-year until 2000 where the average size fell to 16.9 ha, the recovered to the highest average cutblock size for the system of 24.0 ha in 2002.

The selection system had a high degree of variability, bottoming at an average cutblock size of 12.8 ha in 1998. Average cutblock size for selection more than doubled from 1996 (18.3 ha on 32 cutblocks) to 2002 (37.4 ha on 13 cutblocks). Similarly, the average cutblock size for the shelterwood system also more than doubled from 1996 (16.8 ha on four cutblocks) to 2002 (40.9 ha on 22 cutblocks).

The range of average cutblock size for clearcutting silvicultural systems was less variable than the range for partial cutting systems in the NIR. The average cutblock size and the number of blocks cut under the clearcut with reserves system increased from 1996 (37.0 ha on 121 cutblocks) to 2002 (40.4 ha on 799 blocks). The clearcut system showed a drop in average cutblock size and number of blocks harvested from 29.7 ha on 1047 cutblocks in 1996 to 24.2 ha on 698 blocks in 2002. The trends for both clearcuts with reserves and clearcuts mirrored provincial and CFR trends for the same period.

Chart 12 provides average cutblock size for all silvicultural systems by forest district in the NIR.

The average cutblock size varied considerably from one forest district to another in the NIR, ranging from a low of 21.8 ha in the Vanderhoof district to a high of 40.6 ha in the Fort Nelson district.

Five of the nine districts in the region had average cutblock sizes that were below the seven-year NIR average cutblock size of 30.7 ha. These were: Kalum (30.4 ha), Nadina (26.2 ha), Peace (30.6 ha), Skeena Stikine (24.5 ha), and Vanderhoof (21.8 ha). In total, these districts accounted for 55% or 6722 cutblocks out of the total of 12 103 cutblocks harvested in the NIR from 1996–2002.

The districts of Fort Nelson (40.6 ha), Fort St James (36.2 ha), Mackenzie (37.9 ha) and Prince George (34.1) all had average cutblock sizes greater than the regional average cutblock size of 30.7 ha.

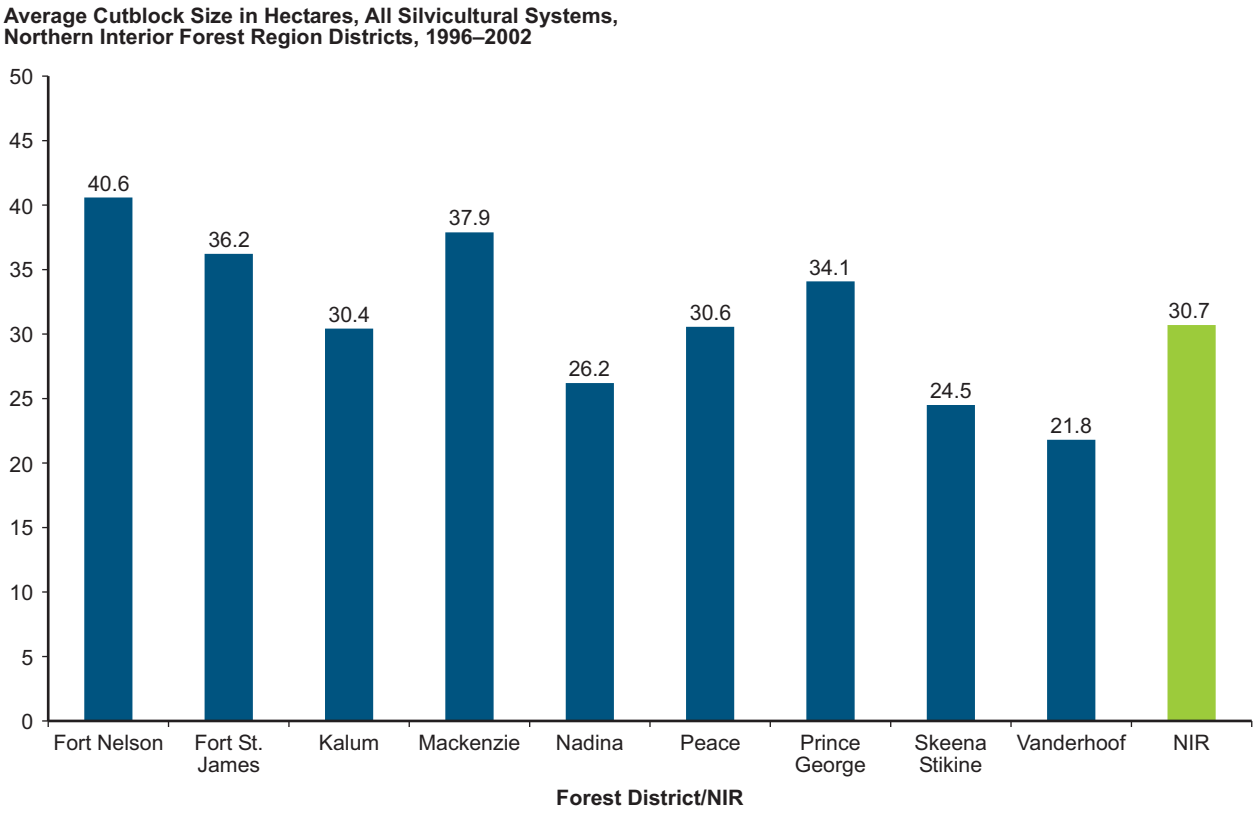


Chart 12. Average cutblock size, all silvicultural systems, by forest district in the Northern Interior Forest Region (NIR) and for NIR 1996–2002 (total sample size = 12 103 cutblocks).

Southern Interior Forest Region (SIR) and Districts

Chart 13 provides the average cutblock size in the SIR for all silvicultural systems from 1996–2002.

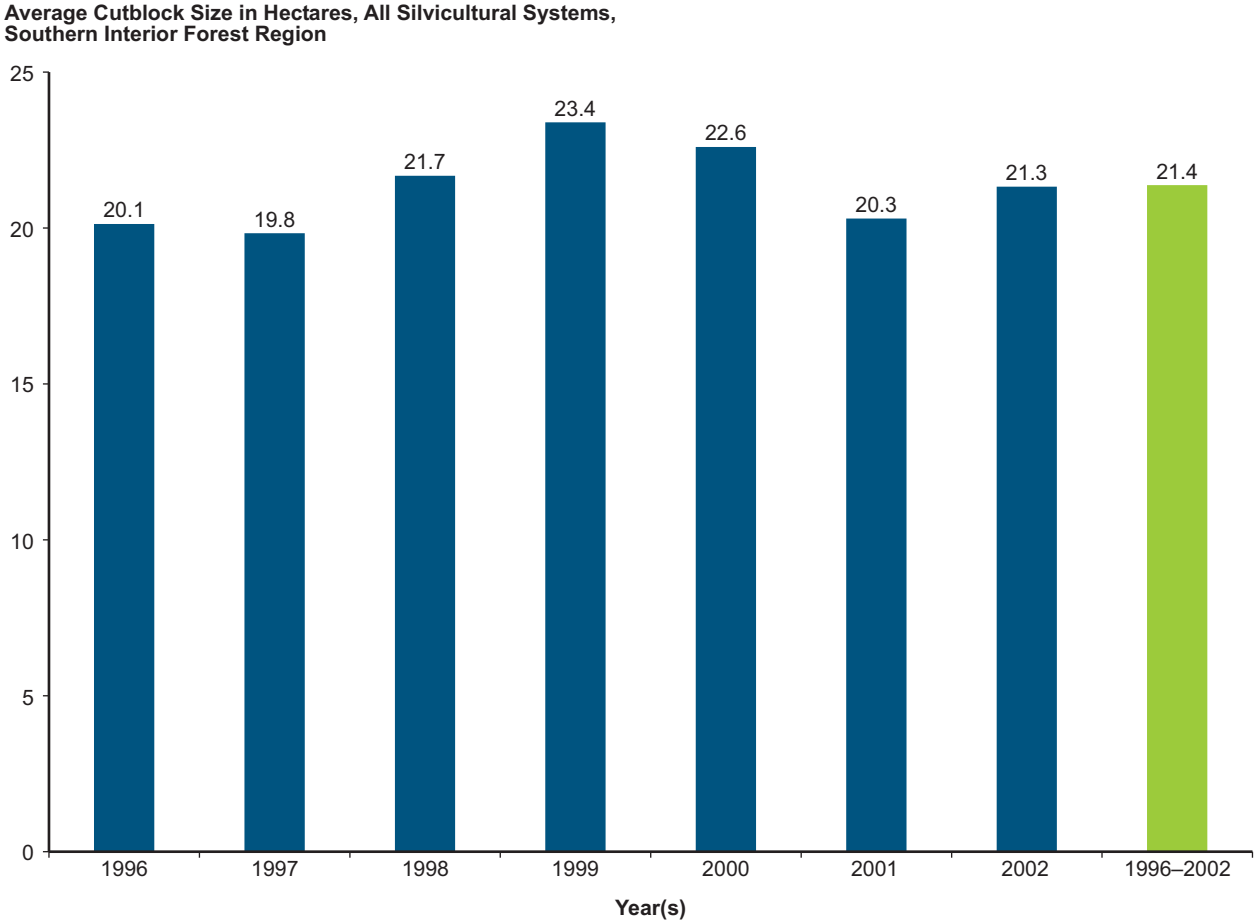


Chart 13. Average cutblock size, all silvicultural systems for the Southern Interior Forest Region by year and all years 1996–2002 (total sample size = 23 340 cutblocks).

The average cutblock size in the SIR for all silvicultural systems (on all 23 340 blocks harvested) for the period 1996–2002 was 21.4 ha, almost 9% lower than the provincial average of 23.1 ha. The size differences year-to-year varied up to 9%. The lowest average cutblock size occurred in 1997 at 19.8 ha on 3475 cutblocks. The highest average size occurred in 1999 at 23.4 hectares on 3524 cutblocks.

As was the case with the Province of BC and the CFR and NIR, the lowest total harvest area cut in any one year occurred in 1996 (54 950 ha). The highest total area harvested in the SIR was 82 627 ha in 2000. (Note: The total area harvested in 1999 was only marginally lower at 82 420 ha.) The increase in total area harvested from 1996 to 2002 in the SIR is likely a reflection of increased harvest operations in beetle-kill areas.

Chart 14 provides average cutblock size by silvicultural system for the SIR.

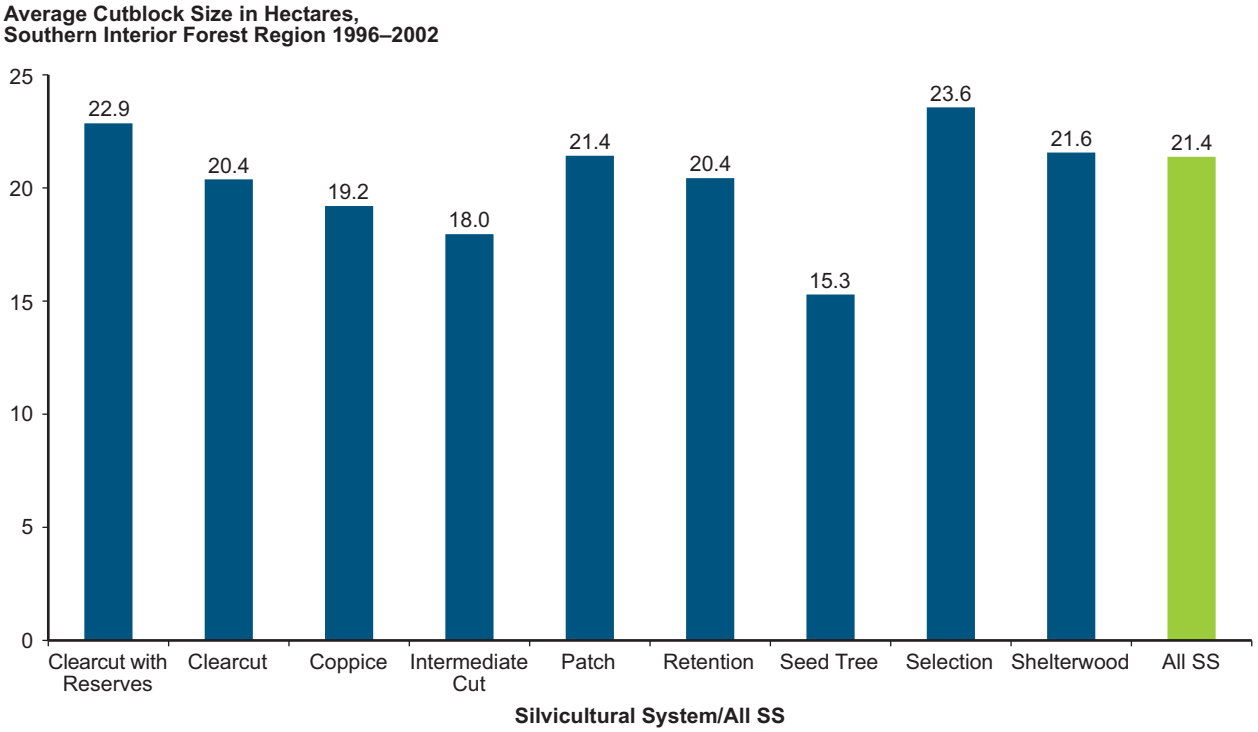


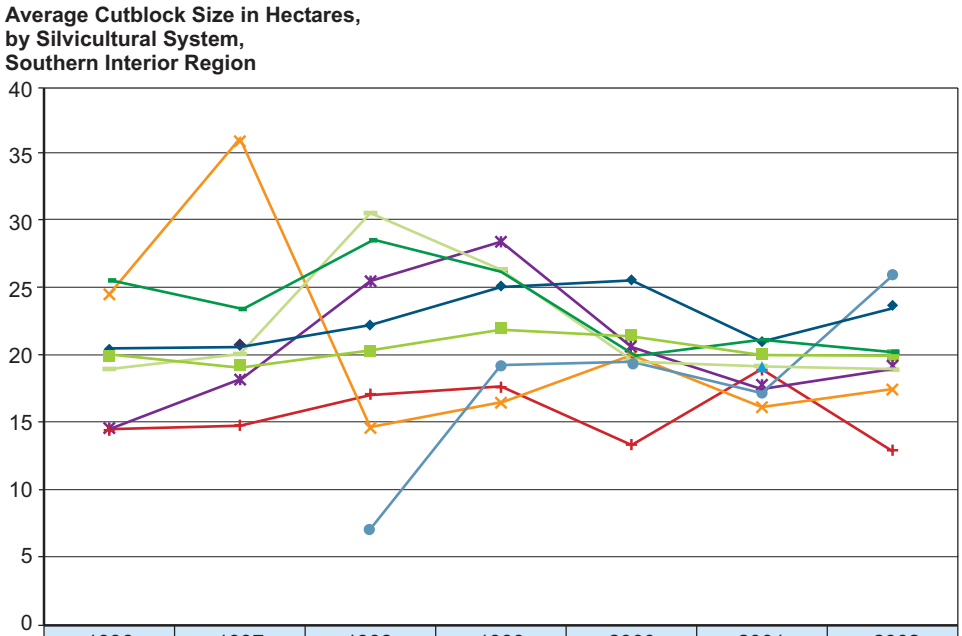
Chart 14. Average cutblock size by silvicultural system (SS) and all SS in the Southern Interior Forest Region 1996–2002 (total sample size = 23 340 cutblocks).

The average cutblock size varied greatly from one silvicultural system to another in the SIR, ranging from an overall low of 15.3 ha for the seed tree system to a high of 23.6 ha for the selection system. These figures represent the smallest spread (8.3 ha) between the highest and the lowest average cutblock sizes by silvicultural system for any area, including the province as a whole, the CFR or the NIR.

Except for just one cutblock being harvested in only one forest district (Headwaters) over the period under the coppice silvicultural system, all other partial cutting systems were well represented by the amount of cutblocks harvested, the total hectares cut, and the relatively large number of districts using partial cutting systems (minimum of eight). The selection system had the largest numbers for any partial cutting system, with 1355 cutblocks covering a total of 31 926 ha. Shelterwood was next, with 810 blocks covering 17 469 ha.

The average cutblock size for the clearcut system was lower than that for the clearcut with reserves system. Clearcuts averaged 20.4 ha (on 12 372 cutblocks), almost 11% smaller than clearcuts with reserves (22.9 ha on 7944 cutblocks).

Chart 15 illustrates the average cutblock size by silvicultural system by year for the SIR.



	1996	1997	1998	1999	2000	2001	2002
Clearcut with Reserves	20.3	20.7	22.1	25.0	25.4	20.9	23.6
Clearcut	19.9	19.2	20.3	22.0	21.4	19.9	19.8
Coppice	–	–	–	–	–	19.2	–
Intermediate Cut	24.2	35.9	14.7	16.6	19.9	16.0	17.5
Patch	14.5	18.3	25.6	28.3	20.7	17.6	19.0
Retention	–	–	7.0	19.2	19.5	17.1	25.8
Seed Tree	14.5	14.7	17.0	17.7	13.2	18.7	12.9
Selection	25.4	23.3	28.5	26.3	19.9	21.1	20.2
Shelterwood	18.9	19.9	30.5	26.3	19.5	19.1	18.9

Chart 15. Average cutblock size by silvicultural system for the Southern Interior Forest Region by year 1996–2002 (total sample size = 23 340 cutblocks).

Once again, the range of average cutblock sizes in the SIR by year from 1996 to 2002 was greatest under partial cut silvicultural systems. In 1997, the intermediate cut system had the highest overall average cutblock size in the SIR at 35.9 ha based on only four cutblocks in the Arrow Boundary district. The next highest average size was 30.5 ha for the shelterwood system based on 103 cutblocks harvested in nine districts in 1998. The lowest average cutblock size was 7.0 ha for the retention system in 1998, but this result is based on only one cutblock harvested during that year. The next lowest result is from a better sample – 12.9 ha on 22 cutblocks harvested under the seed tree system in four districts in 2002.

The only year the coppice system was used was in 2001, and there was no record of any cutblocks being harvested under the retention system for 1996 and 1997.

The intermediate cut system began with larger sized cutblocks on relatively few sites harvested in 1996 (24.2 ha on three cutblocks) and 1997 (35.9 ha on four blocks), followed by a significant decrease in average size (14.7 to 17.5 ha) and a substantial increase in the number of blocks harvested (up to 41 in each of the remaining years).

A large proportion of the harvesting under this system occurred in the Arrow Boundary district in the first two years, followed in later years by Kamloops, Columbia and Rocky Mountain forest districts.

For the patch system, average cutblock sizes began low in 1996 (14.5 ha), increased steadily to 1999 (28.3 ha), and then generally decreased to 19.0 ha by 2002. The Headwaters and Arrow Boundary forest districts had the largest proportion of blocks harvested under this system.

There was a steady decline in the number of cutblocks harvested using the seed tree system from 88 blocks in 1996 to 22 blocks in 2002. The Arrow Boundary and Rocky Mountain forest districts conducted most of the harvesting under this system.

The highest average cutblock size for the selection system peaked in 1998 at 28.5 ha, and gradually declined from there to 20.2 ha in 2002. The average number of cutblocks harvested per year remained relatively constant, ranging from 153 to 243 in any year. A significant amount of selection harvesting occurred in the Arrow Boundary, Central Cariboo, and Okanagan Shuswap forest districts.

For the shelterwood system, the highest average cutblock size also peaked in 1998 at 30.5 ha, declined significantly to 26.3 ha in 1999, gradually tapering off to 18.9 ha in 2002. Of significance is that of the 810 blocks harvested over the period using this system, almost half (400) were harvested in the Rocky Mountain Forest District. In fact, in each year of the seven-year period, the Rocky Mountain district harvested more cutblocks using shelterwood than any other district.

The range of average cutblock size for clearcutting silvicultural systems was less variable than partial cutting systems in the SIR. The average cutblock size and the number of blocks harvested under the clearcut with reserves system increased from 1996 (20.3 ha on 551 cutblocks) to 2002 (23.6 ha on 1309 cutblocks). The clearcut system showed a slight drop in average cutblock size and number of blocks harvested from 19.9 ha on 1774 cutblocks in 1996 to 19.8 ha on 1477 blocks in 2002. The trends for both clearcuts with reserves and clearcuts mirror provincial, CFR and NIR trends for the same period.

Chart 16 provides average cutblock size for all silvicultural systems by forest district in the SIR.

The average cutblock size in the SIR varied greatly from one district to another, from a low of 13.4 ha in the Kootenay Lake district to a high of 34.3 ha in the Chilcotin district. These results are not surprising, given the steep and rugged terrain of the Kootenay Lake district compared to the flatter terrain and increased incidence of mountain pine beetle in the Chilcotin district.

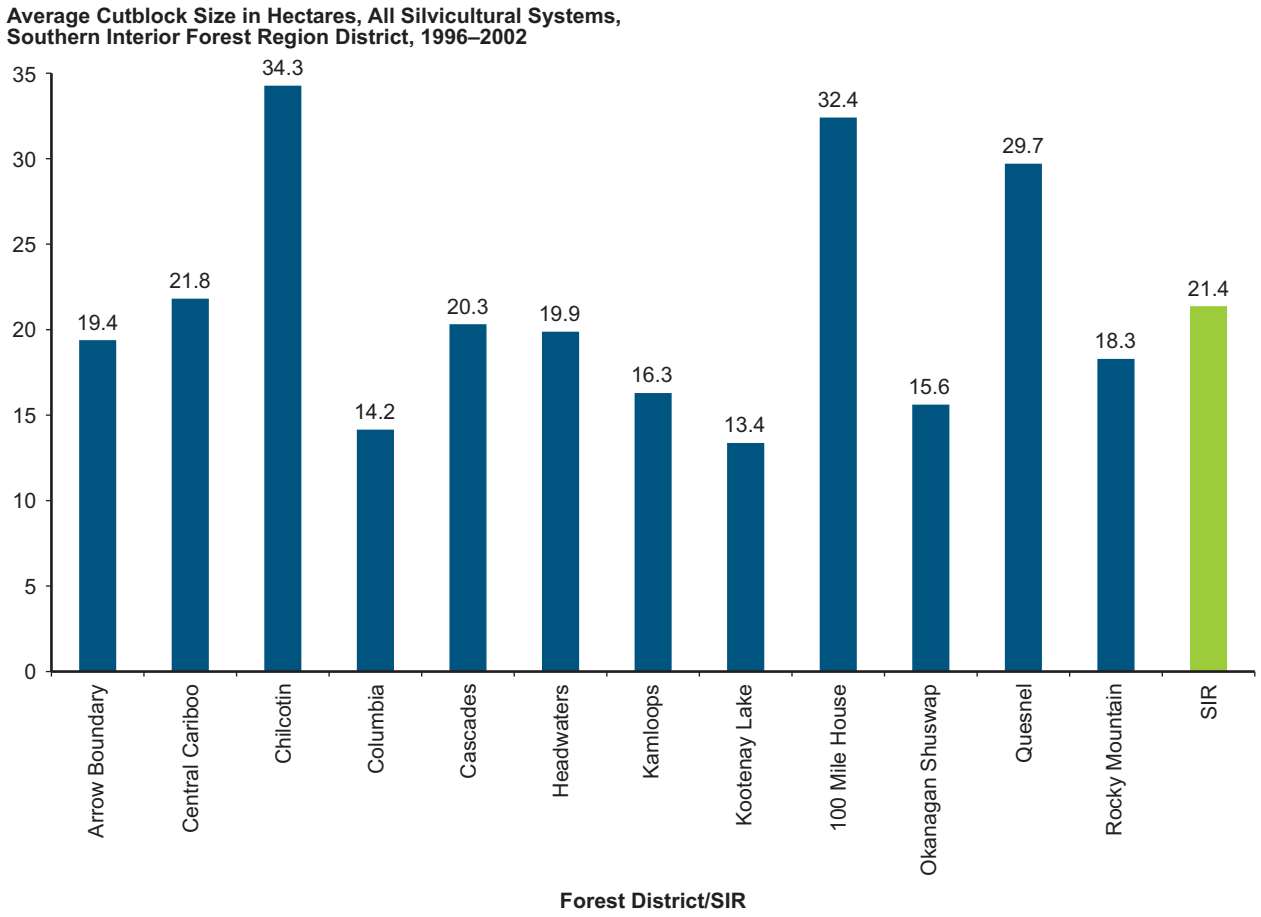


Chart 16. Average cutblock size, all silvicultural systems, by Forest District in the Southern Interior Forest Region (SIR) and for SIR 1996–2002 (total sample size = 23 340 cutblocks).

Eight of the 12 forest districts in the region had average cutblock sizes below the seven-year SIR average cutblock size of 21.4 ha. These were Arrow Boundary (19.4 ha), Columbia (14.2 ha), Cascades (20.3 ha), Headwaters (19.9 ha), Kamloops (16.3 ha), Kootenay Lake (13.4 ha), Okanagan Shuswap (15.6 ha) and Rocky Mountain (18.3 ha). In total, these forest districts harvested 76% or 17 761 cutblocks out of the SIR total of 23 340 cutblocks, and 65% or 323 544 ha out of the SIR total of 498 945 ha for the seven-year period.

The forest districts of Central Cariboo (21.8 ha), Chilcotin (34.3 ha), 100 Mile House (32.4 ha) and Quesnel (29.7 ha) all had average cutblock sizes greater than the regional average cutblock size of 21.4 for the SIR.

3.2 40/60 Rule Review

This section presents trends in the number and size of cutblocks broken down by the administrative boundaries of the 40/60 rule and two broad categories of silvicultural systems – clearcutting and partial cutting – for the period 1996–2002 based on data from RESULTS. It also provides highlights from Parts 2 and 3 of the survey circulated to MoF forest districts and major licensees related to the reasoning behind cutblock size and distribution, the choice of silvicultural system, and whether larger blocks emulated regional natural disturbance patterns. A copy of the survey and summarized comments from the other sections of the survey are provided in Appendix 4.

For the purposes of this study, the administrative boundaries of the 40/60 rule were defined 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. A map of the administrative boundaries for the 40/60 rule used in the study is provided in Appendix 5.

The administrative boundaries for the 40/60 rule used in the study 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.

Results are provided for each administrative boundary of the 40/60 rule, and include significant harvesting attributes for the period 1996–2002, observations and trends in clearcutting versus partial cutting, and a summary of related responses from survey results received from MoF district staff and licensees. Charts and tables of the data used in the analysis are provided at the end of each administrative boundary section.

Some of the survey responses in this section refer to various biogeoclimatic zones. For additional information on biogeoclimatic zones, refer to http://www.for.gov.bc.ca/hre/becweb/index.htm.

Coast Forest Region - CFR40

The Coast Forest Region contains eight forest districts, seven of which had a maximum cutblock size rule of 40 ha during 1996–2002. They include:

- Campbell River Forest District (DCR);
- Chilliwack Forest District (DCK);
- North Island-Central Coast Forest District (DIC);
- Queen Charlotte Islands Forest District (DQC);
- South Island Forest District (DSI);
- Squamish Forest District (DSQ); and
- Sunshine Coast Forest District (DSC).

The remaining district in the Coast Forest Region is the North Coast Forest District (DNC), which transferred from the Northern Interior Forest Region to the Coast Forest Region in April 2003. Since DNC had a maximum cutblock size rule of 60 hectares until October 31, 2002, it has been assigned a separate administrative boundary, and will be addressed individually in the next section (see DNC60).

Summary of Significant Harvest Attributes for CFR40 from 1996–2002

- *Cutblocks harvested:* 7223–6276 (87%) clearcutting; 947 (13%) partial cutting
- *Area harvested:* 116 259–101 655 ha (87%) clearcutting;
  14 605 ha (13%) partial cutting
- *Number of cutblocks harvested 40 ha and under in size:* 7119 (98.6% of total)
- *Area harvested in blocks 40 ha and under in size:* 110 648 ha (95.2% of total)
- *District with majority of total harvest:* DIC – 2224 cutblocks and 38 598 ha
- *District with least total harvest:* DQU – 501 cutblocks and 8438 ha
- *Harvest peak:* 2000 (1505 cutblocks and 23 128 ha)
- *Harvest low:* 1996 (519 cutblocks and 7864 ha)
- *Average cutblock size:* 16.2 ha (clearcut); 15.4 ha (partial cut); 16.1 ha (all)

Summary of Results by Cutblock Size Range Category

1. 0–14.9 ha – 3896 cutblocks harvested: 3319 (85%) clearcutting and 577 (15%) partial cutting

Observations and Trends: (See Chart 17 and Table 5)

The districts of DCR, DQC, DSI and DSQ all surpassed the CFR40 average of 15% for cutblocks harvested using partial cutting in this size category (0–14.9 ha). No district had an average rate lower than 5%. Only DQC had no partial cutting in any particular year (1996 and 1998), but it also had the highest rate of partial cutting in any year (51% in 2001).

Interestingly, DSI harvested 49 clearcuts in 1996 compared to 36 in 2002, while the number of partial cuts rose from 5 to 19 in those same years, resulting in an almost four-fold increase in the percentage of blocks harvested using partial cutting (9% to 35%). While no survey response was received from DSI, these results may be due to increased population/social pressures and associated forestry concerns.

Every district in CFR40 harvested at least twice as many partial cut blocks in 2002 than in 1996, resulting in an increased percentage of partial cuts from 6% in 1996 to 26% in 2002. This may be due to visual quality concerns and perhaps others reasons such as land-use plans and population/social pressures. In general terms, an increasing percentage of cutblocks were harvested using partial cutting in DQC, the southern portion of Vancouver Island, and in DSQ from 1996–2002.

2. 15–59.9 ha – 3310 cutblocks harvested: 2951 (89%) clearcutting and 359 (11%) partial cutting

Observations and Trends: (See Chart 17 and Table 5)

Once again, the districts of DCR, DQC, DSI and DSQ all surpassed the CFR40 average of 11% for cutblocks harvested using partial cutting in this size category (15–59.9 ha). No district had an average rate lower than 3%.

Five districts (DCK, DCR, DIC, DQC and DSC) had at least one year where there were no cutblocks harvested using partial cutting. The majority of these years were from 1996 to 1999. The last year for a district to have no partial cutting blocks in this size category was DCK and DSC in 2000.

Every district in the region harvested at least seven times as many partial cut blocks in 2002 than in 1996, resulting in an increased percentage of partial cuts from 3% in 1996 to 23% in 2002. This increase may have been due to the same issues noted in the 0–14.9 ha category described above. Again, an increasing percentage of cutblocks were harvested using partial cutting in DQC, the southern portion of Vancouver Island, and in DSQ from 1996–2002.

3. 60+ ha – 17 cutblocks harvested; 6 (35%) clearcutting and 11 (65%) partial cutting
   Largest cutblock: 228.1 ha (clearcut) and 136.7 ha (partial cut)

Table 4 details the size of cutblocks over 60 ha by silvicultural system for the years 1996–2002.

***Table 4.** Total harvest area (ha) of cutblocks over 60 ha in the CFR40 by silvicultural system, 1996–2002*

Year	CC	PC	Grand Total
1996		75.3	75.3
1997	71.2		71.2
1998		64.3	64.3
1999	74.1		74.1
2000	103.2	384.3	487.5
2001	395	82.3	477.3
2002	107.6	307.2	414.8
Total	751.1	913.4	1664.5
Area harvested in 60+ ha category as % of total harvest in all size categories	0.7%	6.30%	1.40%

Observations and Trends: (See Charts 17, 19 and 20, and Tables 5 and 6)

Five districts (DCK, DCR, DIC, DSC and DSI) each had at least one cutblock 60+ ha in size. All used partial cutting except DSC. DIC (5 blocks) and DSI (2 blocks) had 100% of their harvest area of this category size in partial cuts. DCK had 25% of its harvest area in this size category in partial cuts, whereas DCR had 60%. Only two districts (DIC and DSI) harvested more than one block 60+ ha in any single year. Most of the harvesting in this size category occurred after 1999 (13 blocks out of 17).

There was very little harvesting in this size category in the CFR40. When it did occur, it was mainly limited to partial cutting (65% of cutblocks). There appeared to be an increasing trend over time for both the number of cutblocks and the amount of area that was partially cut. Overall, partial cuts in this size category accounted for 6.3% of the total partial cut area for the CFR40, as compared to 0.7% for the total clearcut area.

Survey Highlights

The only survey response received for the CFR40 was from the North Island–Central Coast District (DIC).

The key factors that determined the range and distribution of cutblock sizes in DIC were the 40/60 rule, the Vancouver Island Land Use Plan (VILUP), forest health issues, and visual quality objectives. The VILUP allowed cutblocks over 40 ha in size since the year 2000 for reasons of recovering damaged timber and isolated timber, and for addressing forest health and economic issues in certain areas.

According to the survey response from DIC, harvesting of 60+ ha cutblocks only occurred in response to wind disturbances (cutblocks from 80–120 ha in size) in the CWHm1 and CWHvh1 biogeoclimatic variants. The cutblocks partially overlapped those natural disturbances, and often contained leave strips and islands. The areas were harvested to recover timber value and/or emulate natural disturbances. Cutblocks exceeding 60 ha in

DIC were also approved if a silvicultural system such as retention or clearcut with reserves was used, or if the blocks were consistent with the structural characteristics and temporal and spatial distribution of natural openings.

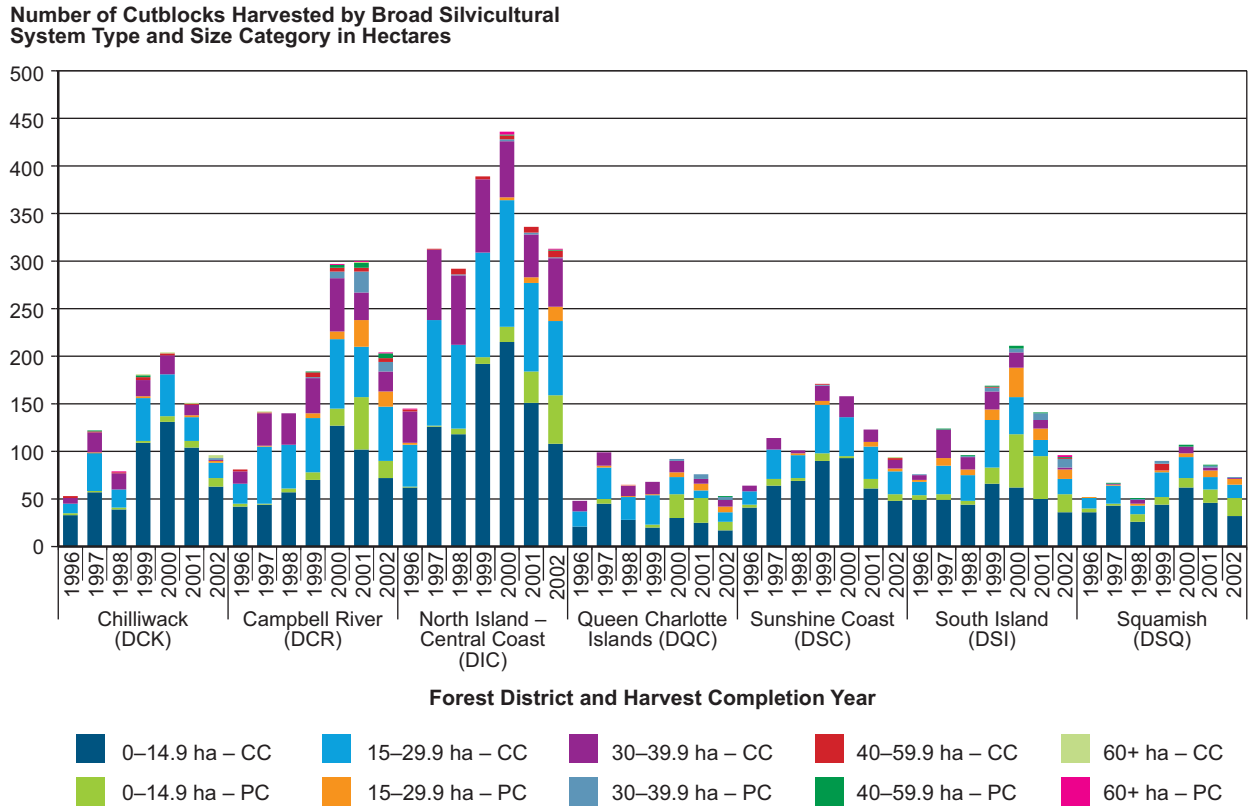


Chart 17. Number of cutblocks harvested by broad silvicultural system type and size category by forest district and harvest completion year (CFR40) (cc – clearcut; pc – partial cut) (total sample size = 7332 cutblocks).

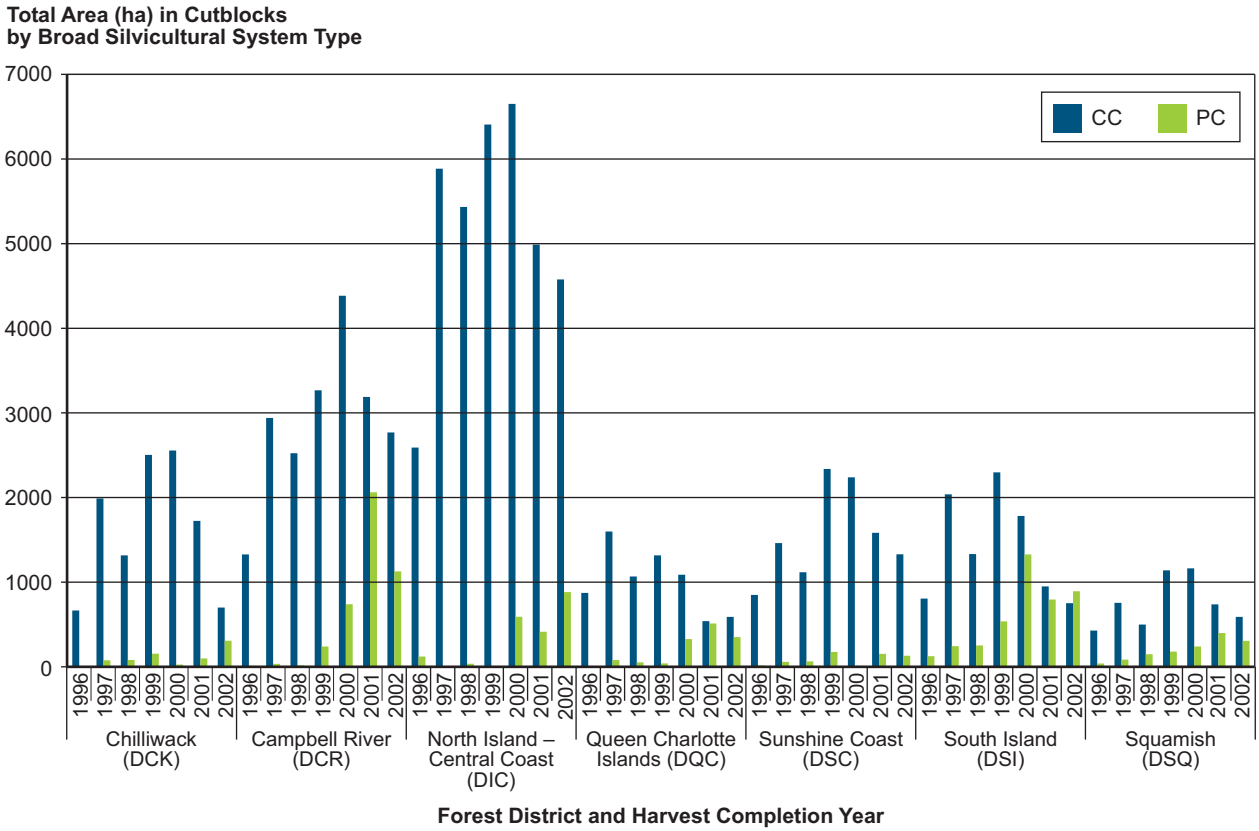


Chart 18. Total area (ha) in cutblocks by broad silvicultural system type by forest district and harvest completion year (CFR40) (cc – clearcut; pc – partial cut) (total sample size = 7223 cutblocks).

Table 5. CFR40 data for Charts 17 and 18 (cc – clearcut; pc – partial cut)

(DATA FOR CHART 17) (cc - clearcut; pc - partial cut silvicultural systems)																						(DATA FOR CHART 18) Total Area in Cutblocks - All Size Categories		
		0-14.9 ha				15-29.9 ha		30-39.9 ha		40-59.9 ha		15-59.9 ha SUMMARY				60+ ha								
Forest District	Year	CC	PC	CC+PC	PC/SUM	CC	PC	CC	PC	CC	PC	SUM CC	SUM PC	SUM CC+PC	SUM PC/ SUM ALL	CC	PC	SUM CC+PC	CC/ SUM	PC/SUM	Grand Total	CC	PC	CC+PC
CHILLIWACK (DCK)	1996	33	2	35	0.06	10		6		2		18	0	18	0.00			0.0	#DIV/0!	#DIV/0!	53	665.7	7.9	673.6
	1997	57	2	59	0.03	39	1	21		1	1	61	2	63	0.03			0.0	#DIV/0!	#DIV/0!	122	1988.9	76.4	2065.3
	1998	39	2	41	0.05	19		17		1		37	0	37	0.00		1	1.0	0.00	1.00	79	1316.2	81.6	1397.8
	1999	109	2	111	0.02	45	2	17		3	2	65	4	69	0.06	1		1.0	1.00	0.00	181	2504.7	154.9	2659.6
	2000	131	6	137	0.04	44		20		2		66	0	66	0.00	1		1.0	1.00	0.00	204	2556.0	26.0	2582.0
	2001	104	7	111	0.06	25	2	11		1		37	2	39	0.05	1		1.0	1.00	0.00	151	1724.8	98.9	1823.7
	2002	63	9	72	0.13	16	2	1	2		3	17	7	24	0.29			0.0	#DIV/0!	#DIV/0!	96	699.7	308.0	1007.7
DCK Total		536	30	566	0.05	198	7	93	2	10	6	301	15	316	0.05	3	1	4.0	0.75	0.25	886	11455.9	753.7	12209.6
CAMPBELL RIVER (DCR)	1996	42	3	45	0.07	21		13		2		36	0	36	0.00			0.0	#DIV/0!	#DIV/0!	81	1327.4	12.4	1339.8
	1997	44	1	45	0.02	60	1	34		1		95	1	96	0.01	1		1.0	1.00	0.00	142	2941.1	34.6	2975.7
	1998	57	4	61	0.07	46		33				79	0	79	0.00			0.0	#DIV/0!	#DIV/0!	140	2523.2	18.6	2541.8
	1999	70	8	78	0.10	57	5	37	1	5	1	99	7	106	0.07			0.0	#DIV/0!	#DIV/0!	184	3267.3	239.8	3507.1
	2000	127	18	145	0.12	73	8	56	7	4	3	133	18	151	0.12		1	1.0	0.00	1.00	297	4383.8	739.0	5122.8
	2001	102	55	157	0.35	53	28	29	22	4	5	86	55	141	0.39	1	1	2.0	0.50	0.50	300	3188.3	2062.3	5250.6
	2002	72	18	90	0.20	57	16	21	10	4	5	82	31	113	0.27		1	1.0	0.00	1.00	204	2769.5	1127.5	3897.0
DCR Total		514	107	621	0.17	367	58	223	40	20	14	610	112	722	0.16	2	3	5.0	0.40	0.60	1348	20400.6	4234.2	24634.8
NORTH ISLAND CENTRAL COAST (DIC)	1996	62	1	63	0.02	44	2	33		2		79	2	81	0.02		1	1.0	0.00	1.00	145	2590.8	122.0	2712.8
	1997	126	1	127	0.01	111		74		1		186	0	186	0.00			0.0	#DIV/0!	#DIV/0!	313	5884.9	10.0	5894.9
	1998	118	6	124	0.05	88		73	1	6		167	1	168	0.01			0.0	#DIV/0!	#DIV/0!	292	5433.3	36.5	5469.8
	1999	192	7	199	0.04	110		77		3		190	0	190	0.00			0.0	#DIV/0!	#DIV/0!	389	6407.4	7.4	6414.8
	2000	215	16	231	0.07	133	3	59	2	4	1	196	6	202	0.03		3	3.0	0.00	1.00	436	6650.7	591.2	7241.9
	2001	151	33	184	0.18	93	6	45	2	6		144	8	152	0.05			0.0	#DIV/0!	#DIV/0!	336	4987.9	414.8	5402.7
	2002	108	51	159	0.32	78	15	51	1	7	1	136	17	153	0.11		1	1.0	0.00	1.00	313	4577.2	883.6	5460.8
DIC Total		972	115	1087	0.11	657	26	412	6	29	2	1098	34	1132	0.03		5	5.0	0.00	1.00	2224	36532.2	2065.5	38597.7
QUEEN CHARLOTTE ISLANDS (DQC)	1996	21		21	0.00	16		11				27	0	27	0.00			0.0	#DIV/0!	#DIV/0!	48	873.3		873.3
	1997	45	5	50	0.10	33	2	14				47	2	49	0.04			0.0	#DIV/0!	#DIV/0!	99	1598.3	78.9	1677.2
	1998	28		28	0.00	24	1	11	1			35	2	37	0.05			0.0	#DIV/0!	#DIV/0!	65	1067.2	52.4	1119.6
	1999	20	3	23	0.13	31	1	13				44	1	45	0.02			0.0	#DIV/0!	#DIV/0!	68	1317.2	40.5	1357.7
	2000	30	25	55	0.45	18	5	12	2			30	7	37	0.19			0.0	#DIV/0!	#DIV/0!	92	1088.1	328.0	1416.1
	2001	25	26	51	0.51	8	7	5	5			13	12	25	0.48			0.0	#DIV/0!	#DIV/0!	76	539.7	512.3	1052.0
	2002	17	9	26	0.35	10	6	7	3		1	17	10	27	0.37			0.0	#DIV/0!	#DIV/0!	53	590.5	351.3	941.8
DQC Total		186	68	254	0.27	140	22	73	11		1	213	34	247	0.14			0.0	#DIV/0!	#DIV/0!	501	7074.3	1363.4	8437.7
SUNSHINE COAST (DSC)	1996	41	3	44	0.07	14		6				20	0	20	0.00			0.0	#DIV/0!	#DIV/0!	64	849.4	16.7	866.1
	1997	64	7	71	0.10	31		12				43	0	43	0.00			0.0	#DIV/0!	#DIV/0!	114	1462.6	58.8	1521.4
	1998	69	3	72	0.04	24	2	3				27	2	29	0.07			0.0	#DIV/0!	#DIV/0!	101	1117.9	63.6	1181.5
	1999	90	8	98	0.08	51	4	16	1	1		68	5	73	0.07			0.0	#DIV/0!	#DIV/0!	171	2338.6	176.3	2514.9
	2000	93	2	95	0.02	41		22				63	0	63	0.00			0.0	#DIV/0!	#DIV/0!	158	2238.5	13.0	2251.5
	2001	61	10	71	0.14	34	5	13				47	5	52	0.10			0.0	#DIV/0!	#DIV/0!	123	1583.5	153.2	1736.7
	2002	48	7	55	0.13	24	3	9		2		35	3	38	0.08	1		1.0	1.00	0.00	94	1328.9	130.7	1459.6
DSC Total		466	40	506	0.08	219	14	81	1	3		303	15	318	0.05	1		1.0	1.00	0.00	825	10919.4	612.3	11531.7
SOUTH ISLAND (DSI)	1996	49	5	54	0.09	14	2	5	1			19	3	22	0.14			0.0	#DIV/0!	#DIV/0!	76	806.5	125.0	931.5
	1997	49	6	55	0.11	30	8	30			1	60	9	69	0.13			0.0	#DIV/0!	#DIV/0!	124	2037.5	243.8	2281.3
	1998	44	4	48	0.08	27	6	13	1		1	40	8	48	0.17			0.0	#DIV/0!	#DIV/0!	96	1331.8	253.1	1584.9
	1999	66	17	83	0.20	50	11	19	4	1	1	70	16	86	0.19			0.0	#DIV/0!	#DIV/0!	169	2298.1	536.9	2835.0
	2000	62	56	118	0.47	39	31	16	4		3	55	38	93	0.41			0.0	#DIV/0!	#DIV/0!	211	1783.2	1328.3	3111.5
	2001	50	45	95	0.47	17	12	9	7		1	26	20	46	0.43			0.0	#DIV/0!	#DIV/0!	141	949.3	795.6	1744.9
	2002	36	19	55	0.35	16	10	2	9	1	1	19	20	39	0.51		2	2.0	0.00	1.00	96	751.7	893.1	1644.8
DSI Total		356	152	508	0.30	193	80	94	26	2	8	289	114	403	0.28		2	2.0	0.00	1.00	913	9958.1	4175.8	14133.9
SQUAMISH (DSQ)	1996	36	4	40	0.10	11	1					11	1	12	0.08			0.0	#DIV/0!	#DIV/0!	52	427.9	39.2	467.1
	1997	43	2	45	0.04	19	1	1			1	20	2	22	0.09			0.0	#DIV/0!	#DIV/0!	67	755.5	84.9	840.4
	1998	26	8	34	0.24	9	2	4	1		1	13	4	17	0.24			0.0	#DIV/0!	#DIV/0!	51	498.9	149.4	648.3
	1999	44	8	52	0.15	26	2	7	3			33	5	38	0.13			0.0	#DIV/0!	#DIV/0!	90	1140.3	180.2	1320.5
	2000	62	10	72	0.14	22	4	7			2	29	6	35	0.17			0.0	#DIV/0!	#DIV/0!	107	1162.9	239.6	1402.5
	2001	46	14	60	0.23	13	7	3	2		1	16	10	26	0.38			0.0	#DIV/0!	#DIV/0!	86	738.4	399.2	1137.6
	2002	32	19	51	0.37	14	6	1	1			15	7	22	0.32			0.0	#DIV/0!	#DIV/0!	73	590.1	306.9	897.0
DSQ Total		289	65	354	0.18	114	23	23	7		5	137	35	172	0.20			0.0	#DIV/0!	#DIV/0!	526	5314.0	1399.4	6713.4
REGION (CFR40)	1996	284	18	302	0.06	130	5	74	1	6		210	6	216	0.03		1	1.0	0.00	1.00	519	7541.0	323.2	7864.2
	1997	428	24	452	0.05	323	13	186		3	3	512	16	528	0.03	1		1.0	1.00	0.00	981	16668.7	587.4	17256.1
	1998	381	27	408	0.07	237	11	154	4	7	2	398	17	415	0.04		1	1.0	0.00	1.00	824	13288.5	655.2	13943.7
	1999	591	53	644	0.08	370	25	186	9	13	4	569	38	607	0.06	1		1.0	1.00	0.00	1252	19273.6	1336.0	20609.6
	2000	720	133	853	0.16	370	51	192	15	10	9	572	75	647	0.12	1	4	5.0	0.20	0.80	1505	19863.2	3265.1	23128.3
	2001	539	190	729	0.26	243	67	115	38	11	7	369	112	481	0.23	2	1	3.0	0.67	0.33	1213	13711.9	4436.3	18148.2
	2002	376	132	508	0.26	215	58	92	26	14	11	321	95	416	0.23	1	4	5.0	0.20	0.80	929	11307.6	4001.1	15308.7
Region (CFR40) Total		3319	577	3896	0.15	1888	230	999	93	64	36	2951	359	3310	0.11	6	11	17.0	0.35	0.65	7223	101654.6	14604.2	116258.8

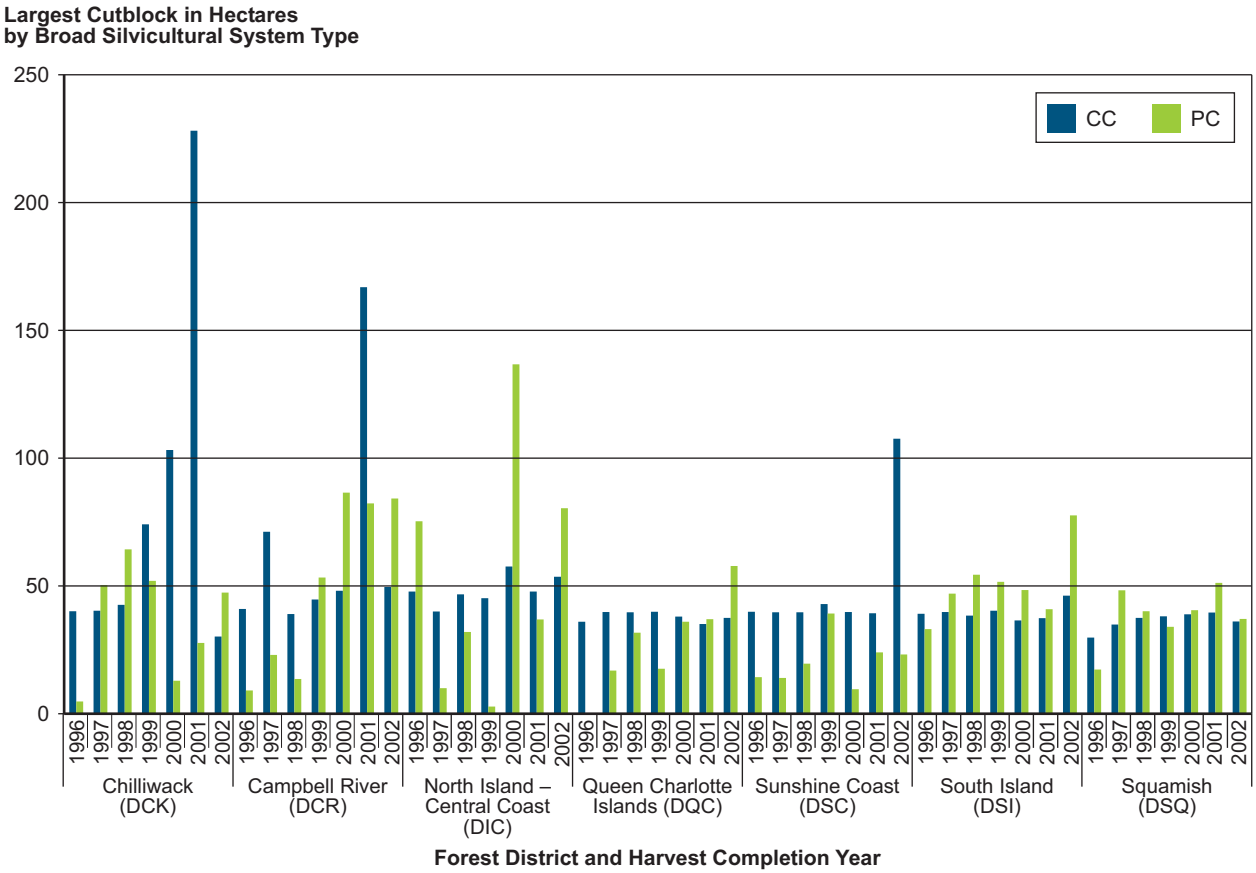


Chart 19. Largest cutblock (ha) by broad silvicultural system type by forest district and harvest completion year (CFR40) (cc – clearcut; pc – partial cut) (total sample size = 7223 cutblocks).

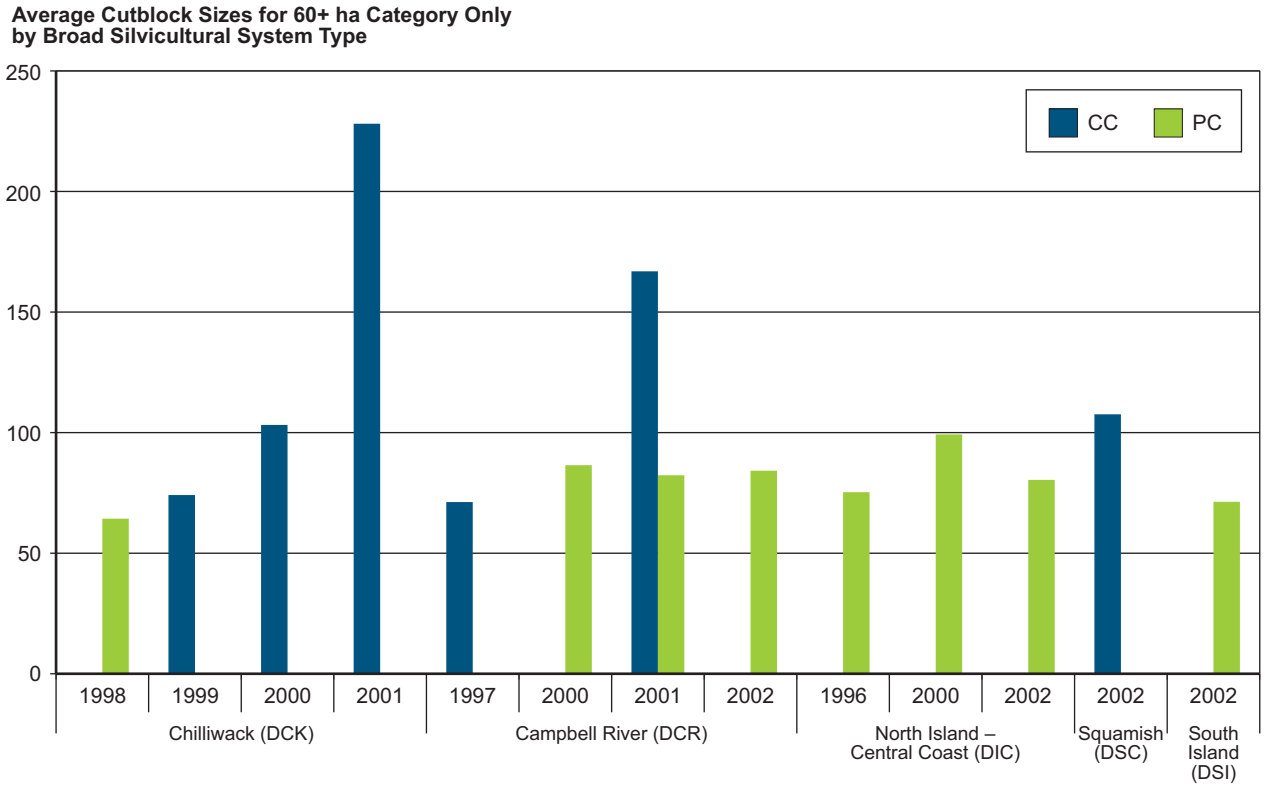


Chart 20. Average cutblock size for 60+ ha category by broad silvicultural system type by forest district and harvest completion year (CFR40) (total sample size = 7223 cutblocks).

Table 6. CFR40 data for Charts 19 and 20, and average sizes in hectares (cc – clearcut; pc – partial cut)

Forest District	Year	(Chart 19) Largest cutblock in ha (over 300 ha bolded) CC	PC	(Chart 20) Average Area Sizes - Blocks 60 ha+ only CC	PC	(No Chart) Average Size (ha) - All Blocks CC	PC	ALL
CHILLIWACK (DCK)	1996	40.1	4.8			13.1	4.0	12.7
	1997	40.3	50.3			16.9	19.1	16.9
	1998	42.6	64.3		64.3	17.3	27.2	17.7
	1999	74.1	52	74.1		14.3	25.8	14.7
	2000	103.2	12.9	103.2		12.9	4.3	12.7
	2001	228.1	27.7	228.1		12.1	11.0	12.1
	2002	30.2	47.4			8.7	19.3	10.5
DCK			**Average**	135.1	64.3	13.6	16.4	13.8
CAMPBELL RIVER (DCR)	1996	41	9.1			17.0	4.1	16.5
	1997	71.2	23	71.2		21.0	17.3	21.0
	1998	39	13.6			18.6	4.7	18.2
	1999	44.7	53.3			19.3	16.0	19.1
	2000	48.1	86.5		86.5	16.9	20.0	17.2
	2001	166.9	82.3	166.9	82.3	16.9	18.6	17.5
	2002	49.6	84.2		84.2	18.0	22.6	19.1
DCR			**Average**	119.1	84.3	18.1	19.1	18.3
NORTH ISLAND CENTRAL COAST (DIC)	1996	47.8	75.3		75.3	18.4	30.5	18.7
	1997	40	10			18.9	10.0	18.8
	1998	46.7	32			19.1	5.2	18.7
	1999	45.2	2.8			16.8	1.1	16.5
	2000	57.6	136.7		99.3	16.2	23.6	16.6
	2001	47.8	36.9			16.9	10.1	16.1
	2002	53.6	80.4		80.4	18.8	12.8	17.4
DIC			**Average**		90.7	17.6	13.4	17.4
QUEEN CHARLOTTE ISLANDS (DQC)	1996	36				18.2		18.2
	1997	39.8	16.9			17.4	11.3	16.9
	1998	39.7	31.7			16.9	26.2	17.2
	1999	39.9	17.6			20.6	10.1	20.0
	2000	38	36			18.1	10.3	15.4
	2001	35.1	37			14.2	13.5	13.8
	2002	37.5	57.8			17.4	18.5	17.8
DQC			**Average**			17.7	13.4	16.8
SUNSHINE COAST (DSC)	1996	39.9	14.3			13.9	5.6	13.5
	1997	39.7	14			13.7	8.4	13.3
	1998	39.7	19.6			11.6	12.7	11.7
	1999	42.9	39.2			14.8	13.6	14.7
	2000	39.8	9.6			14.3	6.5	14.3
	2001	39.3	24			14.7	10.2	14.1
	2002	107.6	23.2	107.6		15.8	13.1	15.5
DSC			**Average**	107.6		14.2	11.1	14.0
SOUTH ISLAND (DSI)	1996	39.1	33.1			11.9	15.6	12.3
	1997	39.8	47			18.7	16.3	18.4
	1998	38.4	54.4			15.9	21.1	16.5
	1999	40.3	51.6			16.9	16.3	16.8
	2000	36.5	48.4			15.2	14.1	14.7
	2001	37.4	40.9			12.5	12.2	12.4
	2002	46.2	77.6		71.3	13.7	21.8	17.1
DSI			**Average**		71.3	15.4	15.6	15.5
SQUAMISH (DSQ)	1996	29.8	17.3			9.1	7.8	9.0
	1997	34.9	48.3			12.0	21.2	12.5
	1998	37.5	40.1			12.8	12.5	12.7
	1999	38.1	34			14.8	13.9	14.7
	2000	38.9	40.5			12.8	15.0	13.1
	2001	39.6	51.2			11.9	16.6	13.2
	2002	36.1	37.1			12.6	11.8	12.3
DSQ			**Average**			12.5	14.0	12.8
REGION (CFR40)	1996	47.8	75.3		75.3	15.3	12.9	15.2
	1997	71.2	50.3	71.2		17.7	14.7	17.6
	1998	46.7	64.3		64.3	17.1	14.6	16.9
	1999	74.1	53.3	74.1		16.6	14.7	16.5
	2000	103.2	136.7	103.2	96.1	15.4	15.4	15.4
	2001	228.1	82.3	197.5	82.3	15.1	14.6	15.0
	2002	107.6	84.2	107.6	76.8	16.2	17.3	16.5
CFR40			**Average**	125.2	83.0	16.2	15.4	16.1

North Coast Forest District - DNC60

As noted in the CFR40 section, the North Coast Forest District (DNC) was transferred from the NIR to the CFR in April 2003. Since DNC is the only district of the CFR that had a maximum cutblock size rule of 60 ha for the majority of the study period (January 1, 1996 to October 31, 2002), it is analyzed separately in its own section and is referred to as DNC60.

Summary of Significant Harvest Attributes for DNC60 from 1996–2002

- *Cutblocks harvested:* 307–276 (90%) clearcutting; 31 (10%) partial cutting
- *Area harvested:* 3966–3379 ha (85%) clearcutting; 587 ha (15%) partial cutting
- *Number of cutblocks harvested 60 ha and under in size:* 306 (99.7% of total)
- *Area harvested in blocks 60 ha and under in size:* 3890 ha (98.1% of total)
- *Harvest peak:* 2001 (52 cutblocks) and 2002 (764 ha)
- *Harvest low:* 1996 (28 blocks and 325 ha)
- *Average cutblock size:* 12.2 ha (clearcut); 18.9 ha (partial cut); 12.9 ha (all)
- *Largest cutblock:* 42.9 ha (clearcut) and 75.6 ha (partial cut)

Summary of Results by Cutblock Size Range Category

1. 0–24.9 ha – 261 cutblocks harvested: 236 (90%) clearcutting and 25 (10%) partial cutting

Observations and Trends: (See Chart 21 and Table 7)

The lowest number of cutblocks harvested in this size category (0–24.9 ha) on an annual basis was in 1996 (25 blocks). The highest was in 1997 at 45 cutblocks. The number of partial cuts increased from one in 1996 (zero for 1997–1999) to a high of 11 blocks in each of 2001 and 2002.

2. 25–89.9 ha – 46 cutblocks harvested: 40 (87%) clearcutting and 6 (13%) partial cutting

Observations and Trends: (See Chart 22 and Table 7)

The lowest number of cutblocks harvested in this size category (25–89.9 ha) on an annual basis was in 1996 and 1998 with three blocks each. The highest was in 1999 with 11 cutblocks. No cutblocks were harvested with partial cutting until 2001 (one block) and 2002 (four blocks).

3. 90+ ha – 0 cutblocks harvested (See Chart 23 and Table 8)

DNC60 did not harvest any cutblocks in this size category (90+ ha) during the study period. The largest cutblocks in DNC60 therefore belong to the 25–89.9 ha size category. The largest cutblocks were 42.9 ha (clearcut) and 75.6 ha (partial cut).

Survey Highlights

One survey response was received from the North Coast Forest District (DNC60).

The key factors that determined the range and distribution of cutblock sizes in the DNC60 were: existing infrastructure (part of another long-term issue); physical constraints such as soils, slope and water bodies; economic and cultural constraints such as trappers and First Nations interests; and scenic areas. There is no higher level plan for DNC60.

According to the survey response, cutblocks larger than the 60-hectare rule could have been approved if the proposed silvicultural system was retention (including variable retention) or clearcut with reserves. Another potential reason was if the proposed cutblock was consistent with the structural characteristics and temporal and spatial distribution of natural openings; however, this was rarely used as it requires supporting documentation and the temporal distribution of natural openings has been subject to controversy.

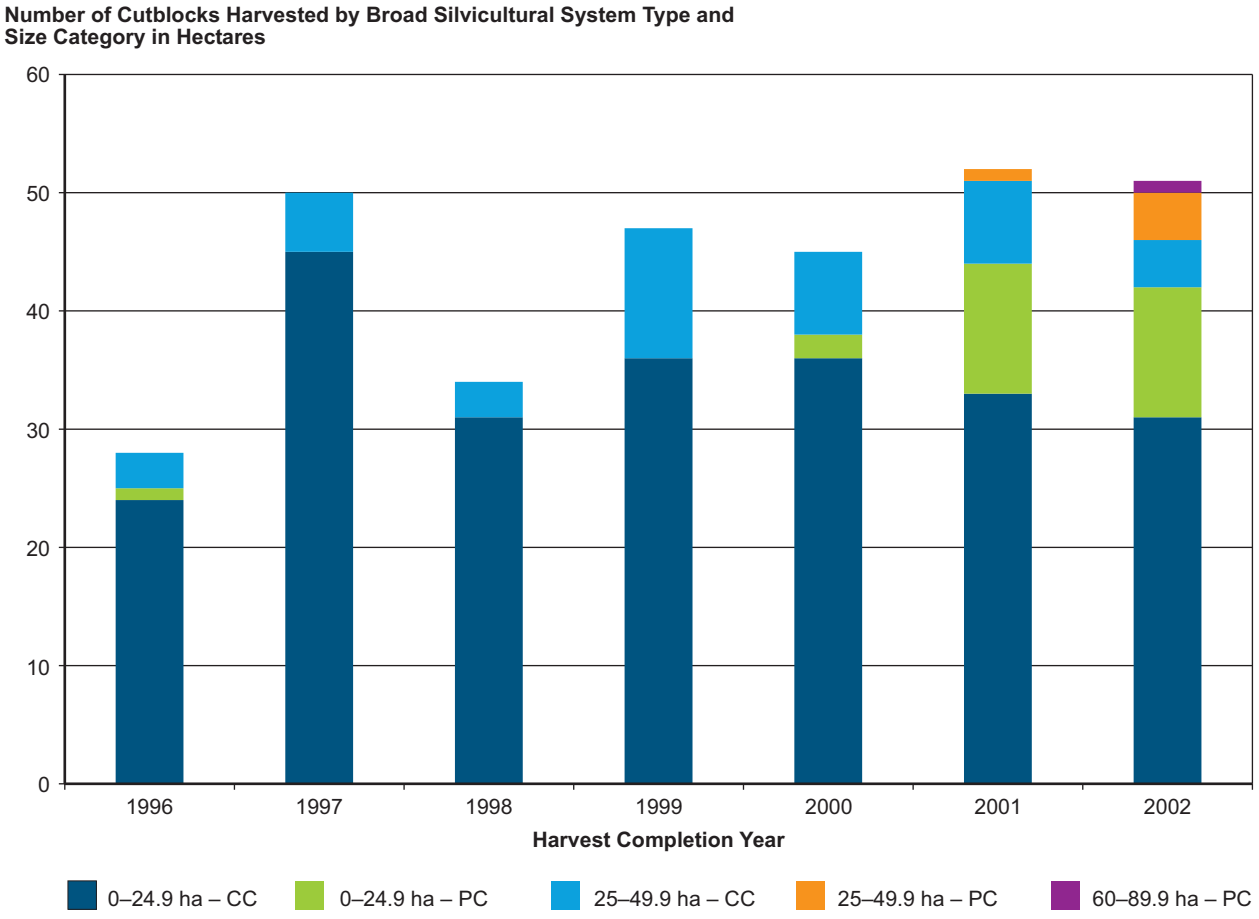


Chart 21. Number of cutblocks harvested by broad silvicultural system type and size category by harvest completion year (DNC60) (cc – clearcut; pc – partial cut) (total sample size = 307 cutblocks).

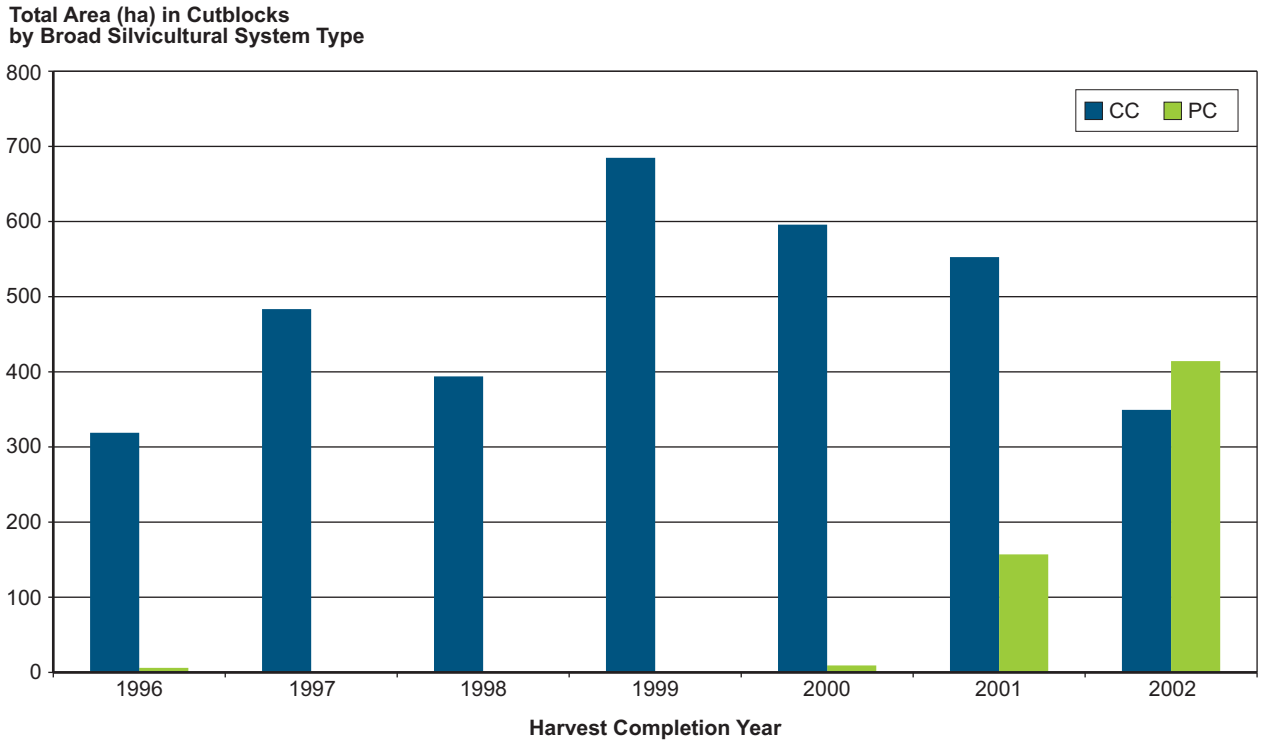


Chart 22. Total area (ha) in cutblocks by broad silvicultural system type by harvest completion year (DNC60) (cc – clearcut; pc – partial cut) (total sample size = 307 cutblocks).

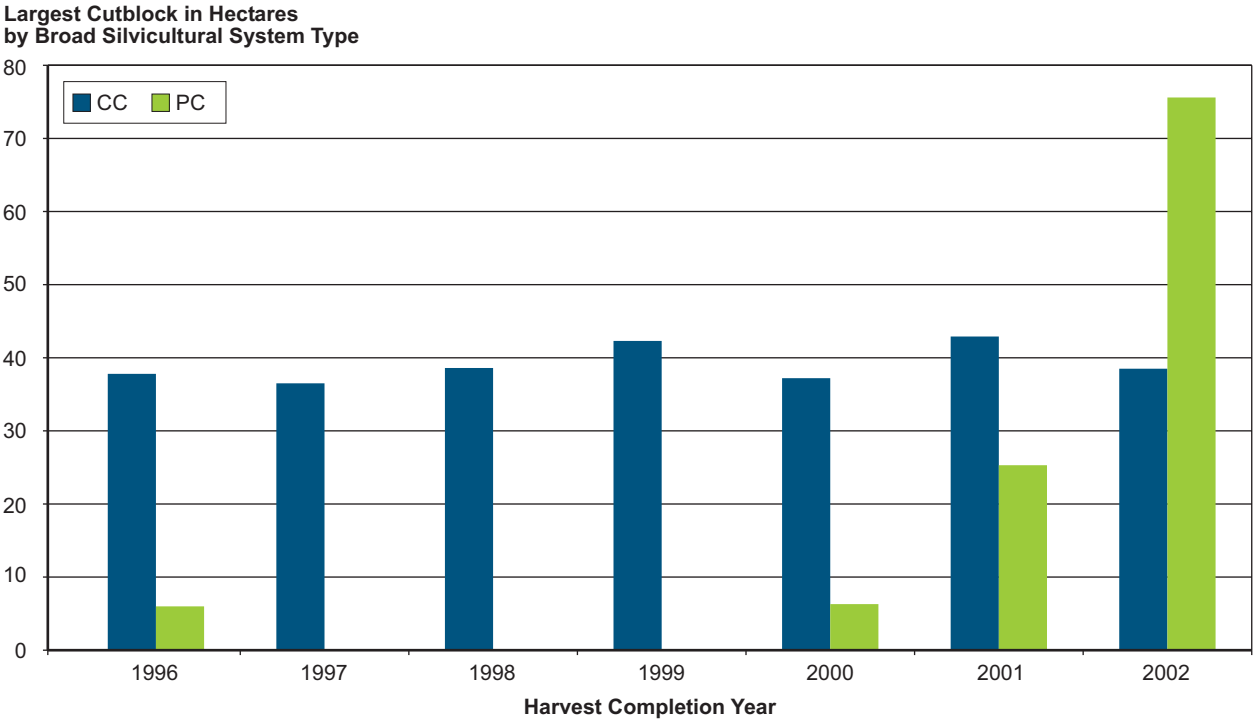


Chart 23. Largest cutblock (ha) by silvicultural system by harvest completion year (DNC60) (cc – clearcut; pc – partial cut) (total sample size = 307 cutblocks).

Table 7. DNC60 data for Charts 21 and 22

(Data for Chart 21)																(Data for Chart 22)		
(cc - clearcut; pc- partial cut silvicultural systems)																Total Area in Cutblocks -		
	0-24.9 ha				25-49.9 ha		60-89.9 ha		60-89.9 ha SUMMARY				90+ ha			All Size Categories		
YEAR	CC	PC	CC+PC	PC/SUM	CC	PC	CC	PC	SUM CC	SUM PC	SUM CC+PC	PC/SUM ALL	CC	PC	Grand Total	CC	PC	CC+PC
1996	24	1	25	0.04	3				3	0	3	0.00			28	318.9	6	324.9
1997	45		45	0.00	5				5	0	5	0.00			50	483.5		483.5
1998	31		31	0.00	3				3	0	3	0.00			34	393.9		393.9
1999	36		36	0.00	11				11	0	11	0.00			47	684.8		684.8
2000	36	2	38	0.05	7				7	0	7	0.00			45	595.8	9.3	605.1
2001	33	11	44	0.25	7	1			7	1	8	0.13			52	552.7	157.1	709.8
2002	31	11	42	0.26	4	4		1	4	5	9	0.56			51	349.3	414.2	763.5
Total	236	25	261	0.10	40	5		1	40	6	46	0.13			307	3378.9	586.6	3965.5

Table 8. DNC60 data for Chart 23 and average cutblock size (ha)

	(Chart 23)		(No Chart)		
	Largest Cutblock in ha		Average Size (ha) - All Blocks		
YEAR	CC	PC	CC	PC	ALL
1996	37.8	6	11.8	6.0	11.6
1997	36.5		9.7		9.7
1998	38.6		11.6		11.6
1999	42.3		14.6		14.6
2000	37.2	6.3	13.9	4.7	13.4
2001	42.9	25.3	13.8	13.1	13.7
2002	38.5	75.6	10.0	25.9	15.0
Grand Total		Average	12.2	18.9	12.9

Note that Table 8 includes information regarding average cutblock sizes for all size categories combined. No chart is provided.

Northern Interior Forest Region - NIR60

The Northern Interior Forest Region contains nine forest districts, all of which have a maximum cutblock size rule of 60 ha. They include:

- Fort Nelson Forest District (DFN);
- Fort St. James Forest District (DJA);
- Kalum Forest District (DKM);
- Mackenzie Forest District (DMK);
- Nadina Forest District (DND);
- Peace Forest District (DPC);
- Prince George Forest District (DPG);
- Skeena Stikine Forest District (DSS); and
- Vanderhoof Forest District (DVA).

The North Coast Forest District (DNC) used to be included in the Northern Interior Forest Region, but it was transferred to the Coast Forest Region in April 2003. Since DNC had a maximum cutblock size rule of 60 hectares until October 31, 2002, it has been assigned

a separate administrative boundary for the purpose of this analysis, and is addressed individually in the previous section (see DNC60).

Summary of Significant Harvest Attributes for NIR60 from 1996–2002

- *Cutblocks harvested:* 12 103–11 593 (96%) clearcutting; 510 (4%) partial cutting
- *Area harvested:* 371 602–359 593 ha (97%) clearcutting; 12 009 ha (3%) partial cutting
- *Number of cutblocks harvested 60 ha and under in size:* 11 348 blocks (94% of total)
- *Area harvested in blocks 60 ha and under in size:* 294 408 ha (79% of total)
- *District with majority of total harvest:* DPG – 2483 cutblocks and 84 639 ha
- *District with least total harvest:* DFN – 641 cutblocks and DKM – 21 295 ha
- *Harvest peak:* 1999 (2012 cutblocks and 61 997 ha)
- *Harvest low:* 2002 (1554 cutblocks) and 1996 (36 440 ha)
- *Average cutblock size:* 31 ha (clearcut); 23.5 ha (partial cut); 30.7 ha (all)

Summary of Results by Cutblock Size Range Category

1. 0–24.9 ha – 5671 cutblocks harvested: 5334 (94%) clearcutting and 337 (6%) partial cutting

Observations and Trends: (See Chart 24 and Table 10)

All districts located in the centre of the NIR60 (DFN, DJA, DND and DVA) either practiced less than the regional average of 6% for cutblocks harvested using partial cutting in this size category (0–24.9 ha), or they did not practice partial cutting at all (DMK). DSS practiced the highest average partial cutting rate at 18% and this rate was increasing annually. The next highest average partial cutting rate of 10% occurred in DPG; however, this rate was generally decreasing on an annual basis. The remaining districts in the region were at 8% or less for partial cutting, with a somewhat stable annual trend.

Regionally, there was a trend towards fewer cutblocks being harvested, but with an increasing percentage of clearcuts in this size category.

2. 25–89.9 ha – 6136 cutblocks harvested: 5977 (97%) clearcutting and 159 (3%) partial cutting

Observations and Trends: (See Chart 24 and Table 10)

Only DPC, DPG and DSS practiced more partial cutting than the regional average of 3% for cutblocks harvested using partial cutting in this size category (25–89.9 ha). DSS practiced by far the highest average partial cutting rate for this size category at 12%, with a 2002 rate of 39%, the latter being by far the highest year for partial cutting in the region. The next highest average percentage was 6% in DPC. All other districts were at 3% or less, with DMK not practicing partial cutting at all.

Regionally, there was no significant change in the rate of partial cutting from year-to-year, with an annual range of 2–4%.

3. 90+ ha – 296 blocks harvested; 282 (95%) clearcutting and 14 (5%) partial cutting
   Largest cutblock: 489.6 ha (clearcut) and 220 ha (partial cut)

Observations and Trends: (See Charts 24, 26 and 27, and Table 11)

Table 9 details the amount of harvesting (ha) in the NIR60 by silvicultural system for cutblocks over 90 hectares in size for the years 1996–2002.

Table 9. Total harvest area (ha) for cutblocks in the NIR60 by silvicultural system, 1996–2002

Year	CC	PC	Grand Total
1996	945.6	123.5	1069.1
1997	3044.8	93	3137.8
1998	3379.6	143.5	3523.1
1999	6336.4	354.1	6690.5
2000	8368	518.2	8886.2
2001	8068.7	246.8	8315.5
2002	12228.7	620.7	12849.4
Total	42371.8	2099.8	44471.6
Area harvested in 90+ ha category as % of total harvest in all size categories	11.8%	17.5%	12.0%

Only DPG (13%), DPC (10%) and DND (6%) practiced more partial cutting than the regional average of 5% for this size category (90+ ha). DFN had an average rate of 4%, while the remaining districts (DJA, DKM, DMK, DSS and DVA) did not practice partial cutting at all. Of interest is that DSS did not practice any partial cutting in this size category even though it had the highest rate of partial cutting in both of the smaller categories.

Only DPG (87%) and DND (94%) practiced lower levels of clearcutting than the regional average of 95% for this size category. DJA, DMK and DPG had the highest number of 90+ ha clearcuts with 57, 62 and 52, respectively. DKM, DSS and DVA had the fewest number of 90+ ha clearcuts with 5, 6 and 13, respectively.

Regionally, except for 1996, there was no significant change in the rate of partial cutting, with an annual range of 4–5%. The year 1996 had a partial cutting rate of 11%, although this was based on only one cutblock harvested. Again, except for 1996, there was no significant change in the rate of clearcutting, with an annual average of 95–96%.

For the 90+ ha size category, there was a ten-fold increase in the number of clearcuts and a four-fold increase in the number of partial cuts from 1996 to 2002. This resulted in 12 times as much area being harvested from 1996 to 2002. The main reason for this increase in cutblock size and area as indicated by survey respondents (see next section) was to recover timber damaged by fire, spruce beetles, mountain pine beetles, Douglas-fir beetles, spruce budworms and blowdown.

Survey Highlights

A total of 11 survey responses were received for the NIR60 – five from forest districts (DFN, DJA, DND, DPG and DVA) and six from licensees operating within DJA, DND, DPC (2 responses), DPG and DVA.

A variety of key factors determined the range and distribution of cutblock sizes in the NIR60, including mountain pine beetle and spruce bark beetle salvage, which two responses cited as the driving force behind cutblocks over 60 ha in size after the year 2000. Timber types was a factor cited for cutblocks under 60 ha in size prior to 2000. Other key factors included:

- the natural range of variation and disturbance;
- public opinion, especially within well-travelled transportation corridors (generally leading to smaller cutblocks);
- application of the Biodiversity Guidebook and/or natural disturbance pattern research;
- Sustainable Forest Management Plan commitments;
- Local Resource Management Plan guidance; and
- Code requirements (60 ha maximum rule).

The main reason for significantly larger cutblocks than the 60 ha maximum was the emulation of natural disturbances (six respondents), three of which indicated mountain pine beetle and other insect pests as the main reason.

According to the respondents, harvesting of large cutblocks occurred in response to fire; the three prominent bark beetles in the NIR60 (spruce, mountain pine, and Douglas-fir beetle), spruce budworm and wind disturbances. Sizes of natural disturbances varied from a low of 70 ha for wind disturbances, 125 ha for the Douglas-fir beetle, 200–300 ha for the spruce beetle, to a high of 1500 hectares for the mountain pine beetle. The majority of the respondents indicated that the size of a cutblock in response to fire was in the range of 100 to 1000 ha.

Some respondents indicated that cutblocks larger than the 60 ha maximum were approved because the blocks were consistent with "structural characteristics and temporal and spatial distribution of natural openings," in accordance with Code requirements. No respondents indicated that silvicultural systems "other than clearcut or seed tree that retains 40%+ of pre-harvest basal area" was a reason for blocks larger than the 60 ha maximum.

All respondents indicated that there were no higher level plans guiding cutblock sizes in the NIR60. However, one respondent in the DPC indicated that the Graham Integrated Resource Management (IRM) Plan, while not a higher level plan, was allowing "clustering" of harvesting patterns with blocks permitted to be any size greater than 60 hectares. The Graham IRM Plan was developed with stakeholder input and approved by the MoF and the Ministry of Environment, Lands and Parks. No mention was made regarding the success of this plan.

Significantly larger cutblocks (90+ ha) occurred in numerous biogeoclimatic zones or variants as follows:

- DFN – BWBSmw2;
- DJA – two responses: mainly SBS in the south part of the district, and on the central plateau dominated by the SBS biogeoclimatic zone;
- DND – variants mc2, dk, wk3 of the SBS, and ESSFmc;
- DPC – Chetwynd portion – all variants, but silvicultural system changes in some variants (partial cuts in wet mountain zones including ESSF wk and mv, BWBSmw and wk and SBS wk;
- DPC – Fort St. John portion – BWBS mw1 and mw2, and ESSF mv2 and mv4;
- DPG – all geographic areas, but most prevalent on the central plateau dominated by the SBS biogeoclimatic zone; and
- DVA – two responses: throughout the district and all variants, and on the central plateau dominated by the SBS biogeoclimatic zone.

Within the NIR60, cutblocks may have been located in the same area or adjacent to areas of natural disturbances, partially overlapping disturbances, or were located in the general vicinity of disturbances. Cutblocks were either irregular or regular in shape, and contained leave strips and islands.

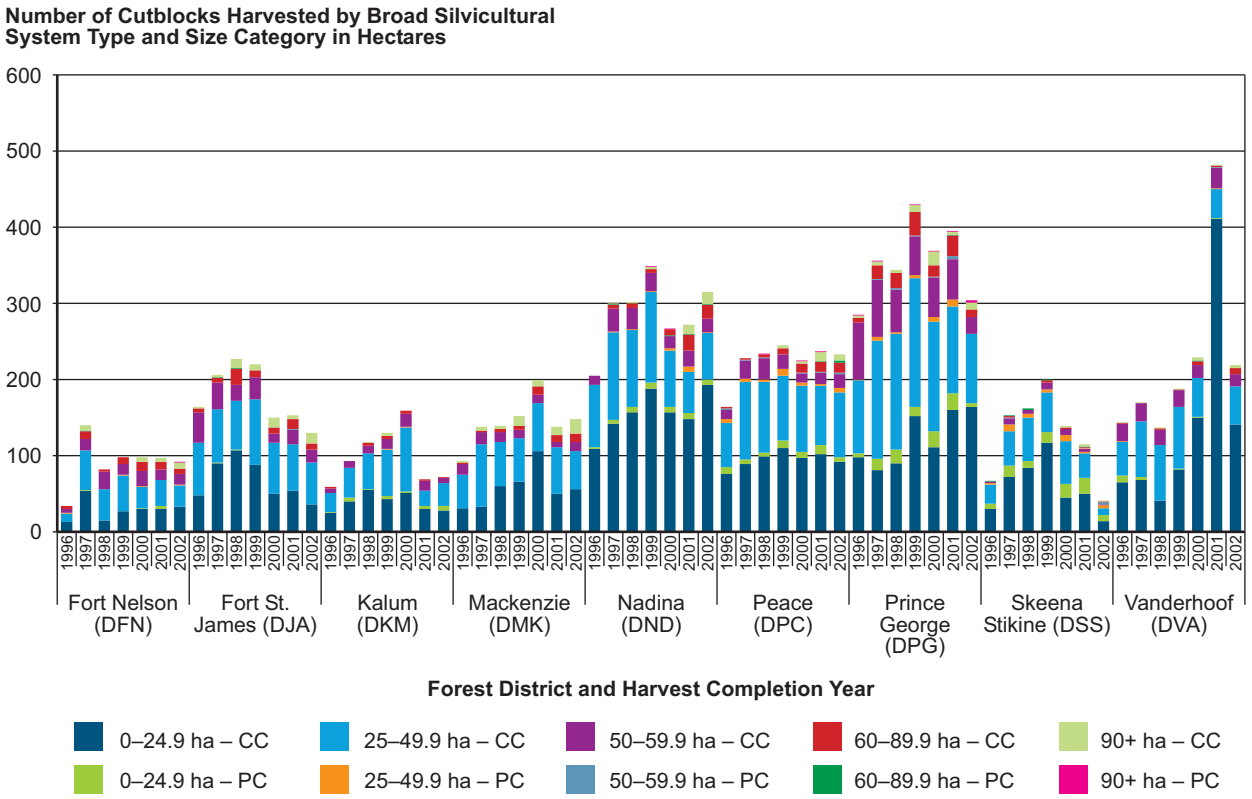


***Chart 24.** Number of cutblocks harvested by broad silvicultural system type and size category by forest district and harvest completion year (NIR60) (cc – clearcut; pc – partial cut) (total sample size = 12 103 cutblocks).*

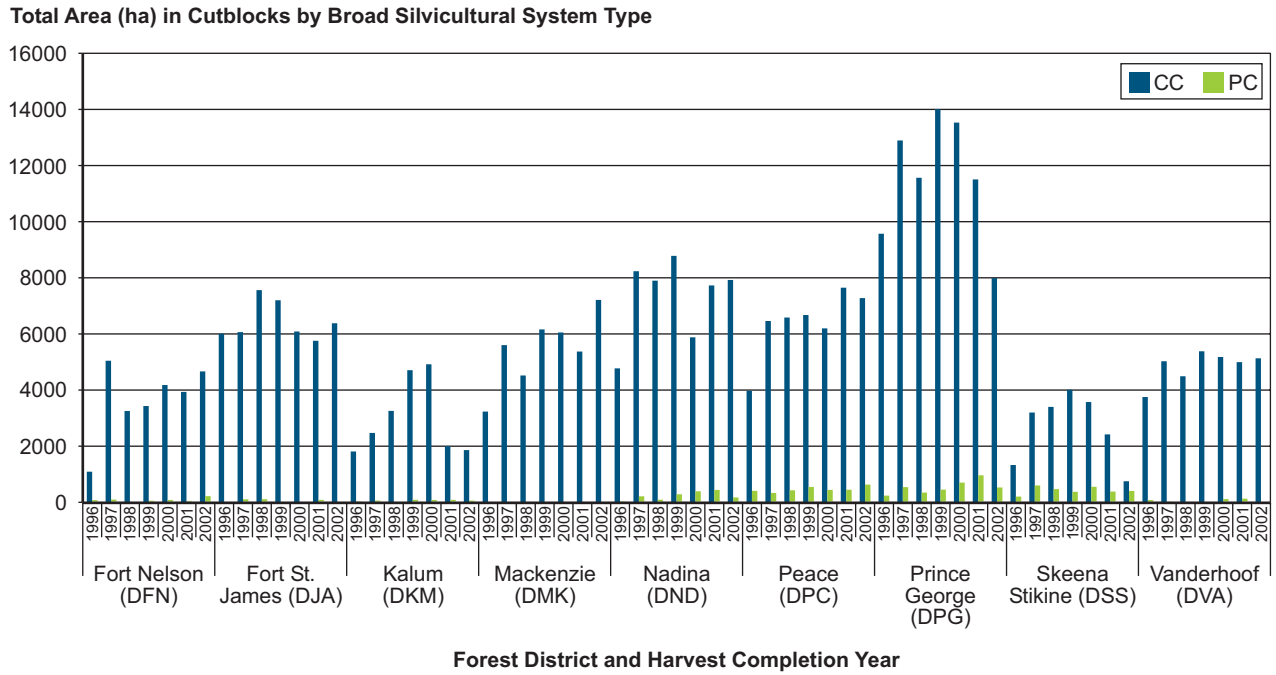


Chart 25. Total area (ha) in cutblocks by broad silvicultural system type by forest district and harvest completion year (NIR60) (cc – clearcut; pc – partial cut) (total sample size = 12 103 cutblocks).

Table 10. NIR60 data for Charts 24 and 25

(Data for Chart 24) (cc - clearcut; pc - partial cut silvicultural systems)																						(Data for Chart 25) Total Area in Cutblocks - All Size Categories		
		0-24.9 ha				25-49.9 ha		50-59.9 ha		60-89.9 ha		25-89.9 SUMMARY				90+ ha								
FOREST DISTRICT	YEAR	CC	PC	CC+PC	PC/SUM	CC	PC	CC	PC	CC	PC	SUM CC	SUM PC	SUM CC+PC	SUM PC/ SUM ALL	CC	PC	SUM CC+PC	CC/ SUM	PC/ SUM	Sum All	CC	PC	CC+PC
FORT NELSON (DFN)	1996	13		13	0.00	11	1	5		4		20	1	21	0.05			0	#DIV/0!	#DIV/0!	34	1092.3	49.1	1141.4
	1997	54	1	55	0.02	52		15		10	1	77	1	78	0.01	7		7	1.00	0.00	140	5044.8	69.3	5114.1
	1998	15		15	0.00	41		23		3		67	0	67	0.00			0	#DIV/0!	#DIV/0!	82	3255.6		3255.6
	1999	27		27	0.00	47	1	14		9		70	1	71	0.01			0	#DIV/0!	#DIV/0!	98	3430.4	28.2	3458.6
	2000	30	1	31	0.03	28	1	20		12		60	1	61	0.02	6		6	1.00	0.00	98	4179.8	56.7	4236.5
	2001	30	4	34	0.12	34		14		10		58	0	58	0.00	5		5	1.00	0.00	97	3935.8	20.8	3956.6
	2002	33		33	0.00	28	1	14		7		49	1	50	0.02	8	1	9	0.89	0.11	92	4665.1	191.0	4856.1
DFN Total		202	6	208	0.03	241	4	105		55	1	401	5	406	0.01	26	1	27	0.96	0.04	641	25603.8	415.1	26018.9
FORT ST JAMES (DJA)	1996	48		48	0.00	69		40		5		114	0	114	0.00	2		2	1.00	0.00	164	6006.8		6006.8
	1997	90	1	91	0.01	70		35		6	1	111	1	112	0.01	3		3	1.00	0.00	206	6064.6	80.9	6145.5
	1998	107	1	108	0.01	64		21		21	1	106	1	107	0.01	12		12	1.00	0.00	227	7561.9	82.1	7644.0
	1999	88		88	0.00	86		29		9		124	0	124	0.00	8		8	1.00	0.00	220	7198.4		7198.4
	2000	50		50	0.00	67		12		8		87	0	87	0.00	13		13	1.00	0.00	150	6086.8		6086.8
	2001	54		54	0.00	61		19	1	13		93	1	94	0.01	5		5	1.00	0.00	153	5757.2	59.2	5816.4
	2002	36		36	0.00	55		17		8		80	0	80	0.00	14		14	1.00	0.00	130	6381.2		6381.2
DJA Total		473	2	475	0.00	472		173	1	70	2	715	3	718	0.00	57		57	1.00	0.00	1250	45056.9	222.2	45279.1
KALUM (DKM)	1996	25	1	26	0.04	25		6		2		33	0	33	0.00			0	#DIV/0!	#DIV/0!	59	1811.3	15.0	1826.3
	1997	40	5	45	0.11	39		9				48	0	48	0.00			0	#DIV/0!	#DIV/0!	93	2472.2	34.3	2506.5
	1998	55	1	56	0.02	47		10		4		61	0	61	0.00	1		1	1.00	0.00	118	3259.5	1.1	3260.6
	1999	43	4	47	0.09	61	1	13		4		78	1	79	0.01	4		4	1.00	0.00	130	4708.2	60.3	4768.5
	2000	51	2	53	0.04	84	1	17		4		105	1	106	0.01			0	#DIV/0!	#DIV/0!	159	4917.5	54.5	4972.0
	2001	30	4	34	0.12	20		13		2		35	0	35	0.00			0	#DIV/0!	#DIV/0!	69	2004.2	60.1	2064.3
	2002	28	6	34	0.18	30		7		1		38	0	38	0.00			0	#DIV/0!	#DIV/0!	72	1862.2	34.3	1896.5
DKM Total		272	23	295	0.08	306	2	75		17		398	2	400	0.01	5		5	1.00	0.00	700	21035.0	259.6	21294.6
MACKENZIE (DMK)	1996	31		31	0.00	44		14		2		60	0	60	0.00	2		2	1.00	0.00	93	3234.2		3234.2
	1997	33		33	0.00	82		16		2		100	0	100	0.00	5		5	1.00	0.00	138	5600.0		5600.0
	1998	60		60	0.00	58		13		4		75	0	75	0.00	4		4	1.00	0.00	139	4520.5		4520.5
	1999	66		66	0.00	57		11		5		73	0	73	0.00	13		13	1.00	0.00	152	6161.6		6161.6
	2000	106		106	0.00	63		11		11		85	0	85	0.00	8		8	1.00	0.00	199	6052.3		6052.3
	2001	50		50	0.00	61		7		9		77	0	77	0.00	11		11	1.00	0.00	138	5372.0		5372.0
	2002	56		56	0.00	50		12		11		73	0	73	0.00	19		19	1.00	0.00	148	7212.8		7212.8
DMK Total		402		402	0.00	415		84		44		543	0	543	0.00	62		62	1.00	0.00	1007	38153.4		38153.4
NADINA (DND)	1996	109	2	111	0.02	82		12				94	0	94	0.00			0	#DIV/0!	#DIV/0!	205	4771.8	15.0	4786.8
	1997	142	5	147	0.03	115	1	30		5	1	150	2	152	0.01	1		1	1.00	0.00	300	8235.0	184.3	8419.3
	1998	157	7	164	0.04	101	1	28		6		135	1	136	0.01	2		2	1.00	0.00	302	7898.9	65.8	7964.7
	1999	188	8	196	0.04	119	1	24		5		148	1	149	0.01	3	1	4	0.75	0.25	349	8783.2	257.7	9040.9
	2000	157	7	164	0.04	74	3	16	1	8		98	4	102	0.04		1	1	0.00	1.00	267	5877.9	365.7	6243.6
	2001	148	8	156	0.05	54	7	21		21	1	96	8	104	0.08	12		12	1.00	0.00	272	7728.9	413.7	8142.6
	2002	193	7	200	0.04	61	1	18		18	1	97	2	99	0.02	16		16	1.00	0.00	315	7922.7	145.2	8067.9
DND Total		1094	44	1138	0.04	606	14	149	1	63	3	818	18	836	0.02	34	2	36	0.94	0.06	2010	51218.4	1447.4	52665.8
PEACE (DPC)	1996	76	9	85	0.11	58	5	12	2	2		72	7	79	0.09			0	#DIV/0!	#DIV/0!	164	3974.4	379.7	4354.1
	1997	89	6	95	0.06	102	4	24	1	2		128	5	133	0.04			0	#DIV/0!	#DIV/0!	228	6462.0	306.0	6768.0
	1998	99	5	104	0.05	93	3	28	1	4		125	4	129	0.03		1	1	0.00	1.00	234	6584.5	398.9	6983.4
	1999	110	10	120	0.08	85	9	19		8		112	9	121	0.07	4		4	1.00	0.00	245	6674.1	517.8	7191.9
	2000	97	8	105	0.08	87	4	12	1	12		111	5	116	0.04	3	1	4	0.75	0.25	225	6197.5	413.7	6611.2
	2001	102	12	114	0.11	78	2	15	1	13	1	106	4	110	0.04	12	1	13	0.92	0.08	237	7648.5	418.9	8067.4
	2002	92	6	98	0.06	85	6	18	2	13	3	116	11	127	0.09	8		8	1.00	0.00	233	7277.9	602.3	7880.2
DPC Total		665	56	721	0.08	588	33	128	8	54	4	770	45	815	0.06	27	3	30	0.90	0.10	1566	44818.8	3037.3	47856.1
PRINCE GEORGE (DPG)	1996	98	5	103	0.05	96	1	75		6		177	1	178	0.01	3	1	4	0.75	0.25	285	9571.3	209.7	9781.0
	1997	81	15	96	0.16	155	5	75	1	18		248	6	254	0.02	5	1	6	0.83	0.17	356	12892.4	513.4	13405.8
	1998	90	18	108	0.17	152	2	56	2	20		228	4	232	0.02	4		4	1.00	0.00	344	11563.5	317.2	11880.7
	1999	152	12	164	0.07	169	4	51	1	31		251	5	256	0.02	9	1	10	0.90	0.10	430	14010.4	424.0	14434.4
	2000	111	21	132	0.16	144	6	52	1	15		211	7	218	0.03	18	1	19	0.95	0.05	369	13531.6	673.9	14205.5
	2001	160	22	182	0.12	114	9	53	4	27	1	194	14	208	0.07	4	1	5	0.80	0.20	395	11506.2	933.8	12440.0
	2002	164	5	169	0.03	91		22		10		123	0	123	0.00	9	3	12	0.75	0.25	304	7990.0	501.7	8491.7
DPG Total		856	98	954	0.10	921	27	384	9	127	1	1432	37	1469	0.03	52	8	60	0.87	0.13	2483	81065.4	3573.7	84639.0
SKEENA STIKINE (DSS)	1996	30	7	37	0.19	25	2	2			1	27	3	30	0.10			0	#DIV/0!	#DIV/0!	67	1328.6	177.3	1505.9
	1997	72	15	87	0.17	45	9	8	1	2	1	55	11	66	0.17			0	#DIV/0!	#DIV/0!	153	3200.2	573.2	3773.4
	1998	84	9	93	0.10	57	5	5			2	62	7	69	0.10			0	#DIV/0!	#DIV/0!	162	3401.6	442.1	3843.7
	1999	117	14	131	0.11	52	4	9		3	1	64	5	69	0.07			0	#DIV/0!	#DIV/0!	200	4013.7	346.7	4360.4
	2000	45	18	63	0.29	56	8	8		2		66	8	74	0.11	2		2	1.00	0.00	139	3572.0	525.6	4097.6
	2001	50	21	71	0.30	32	2	4	1	1	1	37	4	41	0.10	3		3	1.00	0.00	115	2420.4	356.7	2777.1
	2002	14	8	22	0.36	9	4	1	3	1		11	7	18	0.39	1		1	1.00	0.00	41	749.9	377.4	1127.3
DSS Total		412	92	504	0.18	276	34	37	5	9	6	322	45	367	0.12	6		6	1.00	0.00	877	18686.4	2799.0	21485.4
VANDER-HOOF (DVA)	1996	65	9	74	0.12	44	1	23		1		68	1	69	0.01	1		1	1.00	0.00	144	3751.4	52.5	3803.9
	1997	68	4	72	0.06	73		24				97	0	97	0.00	1		1	1.00	0.00	170	5026.2	10.4	5036.6
	1998	41		41	0.00	73		20		2		95	0	95	0.00	1		1	1.00	0.00	137	4492.0		4492.0
	1999	82	1	83	0.01	81		22		1		104	0	104	0.00	1		1	1.00	0.00	188	5381.7	1.1	5382.8
	2000	150	1	151	0.01	51		17		5	1	73	1	74	0.01	4		4	1.00	0.00	229	5178.1	88.0	5266.1
	2001	411	1	412	0.00	38	1	27	1	2		67	2	69	0.03	1		1	1.00	0.00	482	4995.7	102.7	5098.4
	2002	141		141	0.00	50		16		8		74	0	74	0.00	4		4	1.00	0.00	219	5130.1		5130.1
DVA Total		958	16	974	0.02	410	2	149	1	19	1	578	4	582	0.01	13		13	1.00	0.00	1569	33955.2	254.7	34209.9
REGION (NIR60)	1996	495	33	528	0.06	454	10	189	2	22	1	665	13	678	0.02	8	1	9	0.89	0.11	1215	35542.0	898.3	36440.3
	1997	669	52	721	0.07	733	19	236	3	45	4	1014	26	1040	0.03	22	1	23	0.96	0.04	1784	54997.5	1771.8	56769.3
	1998	708	41	749	0.05	686	11	204	3	64	3	954	17	971	0.02	24	1	25	0.96	0.04	1745	52538.0	1307.2	53845.2
	1999	873	49	922	0.05	757	20	192	1	75	1	1024	22	1046	0.02	42	2	44	0.95	0.05	2012	60361.6	1635.8	61997.3
	2000	797	58	855	0.07	654	23	165	3	77	1	896	27	923	0.03	54	3	57	0.95	0.05	1835	55593.5	2178.1	57771.6
	2001	1035	72	1107	0.07	492	21	173	8	98	4	763	33	796	0.04	53	2	55	0.96	0.04	1958	51368.8	2365.9	53734.7
	2002	757	32	789	0.04	459	12	125	5	77	4	661	21	682	0.03	79	4	83	0.95	0.05	1554	49191.9	1851.9	51043.8
NIR60 Total		5334	337	5671	0.06	4235	116	1284	25	458	18	5977	159	6136	0.03	282	14	296	0.95	0.05	12103	359593.3	12009.0	371602.3

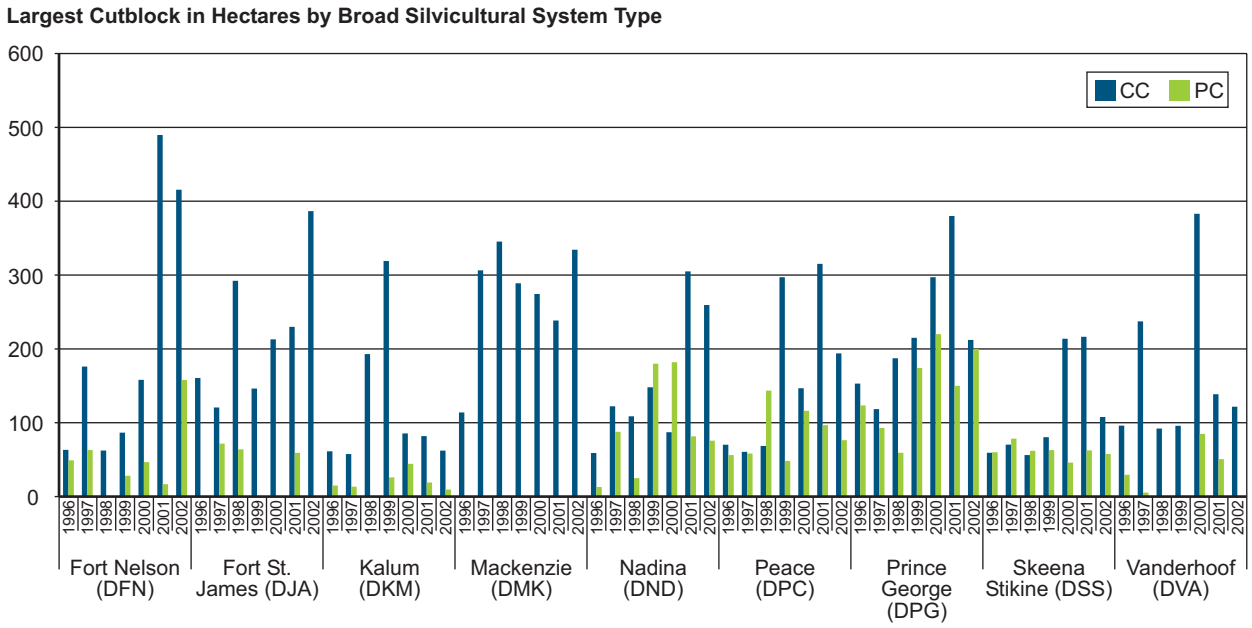


Chart 26. Largest cutblock (ha) by broad silvicultural system type by forest district and harvest completion year (NIR60) (cc – clearcut; pc – partial cut) (total sample size = 12 103 cutblocks).

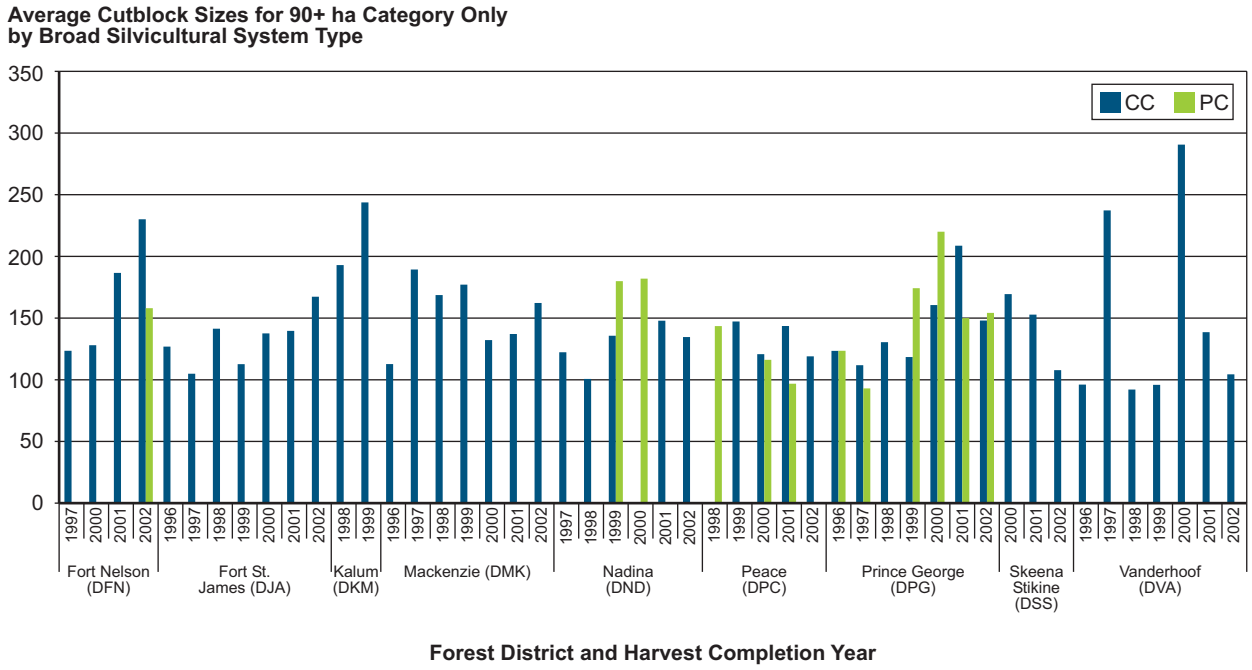


Chart 27. Average cutblock sizes for 90+ ha category by broad silvicultural system type by forest district and harvest completion year (NIR60) (cc – clearcut; pc – partial cut) (total sample size = 12 103 cutblocks).

Table 11. NIR60 data for Charts 26 and 27 and average sizes in hectares

		(Chart 26) Largest cutblock in ha over 300 ha bolded		(Chart 27) Average Area Sizes - Blocks 90+ ha only		(No Chart) Average Size (ha) - All Blocks		
FOREST DISTRICT	Year	CC	PC	CC	PC	CC	PC	CC+PC
FORT NELSON (DFN)	1996	63.3	49.1			33.1	49.1	33.6
	1997	176.1	63.1	123.5		36.6	34.7	36.5
	1998	62.4				39.7		39.7
	1999	86.6	28.2			35.4	28.2	35.3
	2000	158.1	46.7	128.0		43.5	28.4	43.2
	2001	**489.6**	16.8	186.6		42.3	5.2	40.8
	2002	**415.6**	158	230.1	158.0	51.8	95.5	52.8
DFN			Average	169.5	158.0	40.7	34.6	40.6
FORT ST JAMES (DJA)	1996	160.7		126.9		36.6		36.6
	1997	120.7	71.7	104.9		29.7	40.5	29.8
	1998	292.2	64	141.4		33.6	41.1	33.7
	1999	146.3		112.7		32.7		32.7
	2000	213		137.6		40.6		40.6
	2001	229.9	59.2	139.7		37.9	59.2	38.0
	2002	**386.6**		167.3		49.1		49.1
DJA			Average	140.3		36.2	44.4	36.2
KALUM (DKM)	1996	61.3	15			31.2	15.0	31.0
	1997	57.6	13.5			28.1	6.9	27.0
	1998	193	1.1	193.0		27.9	1.1	27.6
	1999	**319**	26	243.7		37.7	12.1	36.7
	2000	85.6	44.4			31.5	18.2	31.3
	2001	81.9	19.1			30.8	15.0	29.9
	2002	62.3	9.5			28.2	5.7	26.3
DKM			Average	233.6		31.2	10.4	30.4
MACKENZIE (DMK)	1996	113.9		112.8		34.8		34.8
	1997	**306.4**		189.4		40.6		40.6
	1998	**345.3**		168.6		32.5		32.5
	1999	288.9		177.1		40.5		40.5
	2000	274.4		132.2		30.4		30.4
	2001	238.5		137.1		38.9		38.9
	2002	**334.3**		162.2		48.7		48.7
DMK			Average	158.0		37.9		37.9
NADINA (DND)	1996	59	13			23.5	7.5	23.4
	1997	122.3	87.8	122.3		28.1	26.3	28.1
	1998	108.7	25	100.7		26.9	8.2	26.4
	1999	148	179.9	135.7	179.9	25.9	25.8	25.9
	2000	87.2	182		182.0	23.1	30.5	23.4
	2001	**305**	81.6	147.9		30.2	25.9	29.9
	2002	259.4	75.7	134.6		25.9	16.1	25.6
DND			Average	137.0	181.0	26.3	22.6	26.2
PEACE (DPC)	1996	70.2	56.2			26.9	23.7	26.5
	1997	60.6	58.3			29.8	27.8	29.7
	1998	68.6	143.5		143.5	29.4	39.9	29.8
	1999	297.1	48.3	147.3		29.5	27.3	29.4
	2000	146.8	116.2	120.8	116.2	29.4	29.6	29.4
	2001	**315.2**	96.8	143.6	96.8	34.8	24.6	34.0
	2002	193.9	76.4	119.0		33.7	35.4	33.8
DPC			Average	134.3	118.8	30.7	29.2	30.6
PRINCE GEORGE (DPG)	1996	153	123.5	123.4	123.5	34.4	30.0	34.3
	1997	118.5	93	111.8	93.0	38.6	23.3	37.7
	1998	187.3	59.3	130.5		35.9	14.4	34.5
	1999	215	174.2	118.5	174.2	34.0	23.6	33.6
	2000	297.1	220	160.5	220.0	39.8	23.2	38.5
	2001	380	150	208.7	150.0	32.1	25.2	31.5
	2002	212.1	200	148.0	154.2	27.0	62.7	27.9
DPG			Average	145.6	152.9	34.6	25.0	34.1
SKEENA STIKINE (DSS)	1996	59.3	60			23.3	17.7	22.5
	1997	70.4	78.5			25.2	22.0	24.7
	1998	56.2	62			23.3	27.6	23.7
	1999	80.5	63			22.2	18.2	21.8
	2000	213.8	46	169.5		31.6	20.2	29.5
	2001	216.4	62.6	152.8		26.9	14.3	24.1
	2002	107.8	57.7	107.8		28.8	25.2	27.5
DSS			Average	150.9		25.3	20.4	24.5
VANDERHOOF (DVA)	1996	96.1	29.6	96.1		28.0	5.3	26.4
	1997	237.3	5.5	237.3		30.3	2.6	29.6
	1998	92.1		92.1		32.8		32.8
	1999	95.9	1.1	95.9		28.8	1.1	28.6
	2000	**383**	85	290.6		22.8	44.0	23.0
	2001	138.6	50.7	138.6		10.4	34.2	10.6
	2002	121.7		104.4		23.4		23.4
DVA			Average	172.3		21.9	12.7	21.8
REGION (NIR60)	1996	160.7	123.5	118.2	123.5	30.4	19.1	30.0
	1997	306.4	93	138.4	93.0	32.3	22.4	31.8
	1998	345.3	143.5	140.8	143.5	31.2	22.2	30.9
	1999	319	179.9	150.9	177.1	31.1	22.4	30.8
	2000	383	220	155.0	172.7	31.8	24.8	31.5
	2001	489.6	150	152.2	123.4	27.8	22.1	27.4
	2002	415.6	200	154.8	155.2	32.9	32.5	32.8
NIR60			Average	150.3	150.0	31.0	23.5	30.7

Note that Table # 11 includes information regarding average cutblock sizes for all size categories combined. No chart is provided.

Southern Interior Forest Region - SIR40

The Southern Interior Forest Region contains 12 forest districts in total, eight of which have a maximum cutblock size rule of 40 ha. They include:

- Arrow Boundary Forest District (DAB);
- Columbia Forest District (DCO);
- Cascades Forest District (DCS);
- Headwaters Forest District (DHW);
- Kamloops Forest District (DKA);
- Kootenay Lake Forest District (DKL);
- Okanagan Shuswap Forest District (DOS); and
- Rocky Mountain Forest District (DRM).

Note that only the portion of the Headwaters Forest District that used to be in the old Clearwater Forest District is subject to the 40 ha maximum cutblock size rule. The eight districts are a reflection of the new MoF organizational structure that took effect in April 2003, and are referred to here as SIR60.

Summary of Significant Harvest Attributes for SIR40 from 1996–2002

- *Cutblocks harvested:* 14 697–12 393 (84%) clearcutting; 2304 (16%) partial cutting
- *Area harvested:* 253 154–204 355 ha (81%) clearcutting; 48 799 ha (19%) partial cutting
- *Number of cutblocks harvested 40 ha and under in size:* 14 306 (97% of total)
- *Area harvested in blocks 40 ha and under in size:* 212 679 ha (84% of total)
- *District with majority of total harvest:* DOS – 3697 cutblocks and 57 718 ha
- *District with least total harvest:* DKL – 888 cutblocks and 11 876 ha
- *Harvest peak:* 1999 (2205 cutblocks and 43 733 ha)
- *Harvest low:* 1996 (1831 cutblocks and 25 068 ha)
- *Average cutblock size:* 16.5 ha (clearcut); 21.2 ha (partial cut); 17.2 ha (all)

Summary of Results by Cutblock Size Range Category

1. 0–14.9 ha – 8430 cutblocks harvested: 7174 (85%) clearcutting and 1256 (15%) partial cutting

Observations and Trends: (See Chart 28 and Table 13)

The districts of DAB, DCO, DHW and DRM all surpassed the SIR40 average percentage rate of 15% of cutblocks harvested using partial cutting in this size category (0–14.9 ha). No other district had an average rate for partial cutting lower than 7%. The highest rate

for any year was DRM at 44% in 1996, but by 2002 that rate had declined to 23%. DHW also decreased from 1996–2002 (29% to 5%). DCO (0 to 26%) and DKL (6% to 20%) both showed an increase in partial cutting from 1996 to 2002. The districts of DAB, DCS, DKA and DOS showed no significant changes in the rate of partial cutting over the seven-year period.

There was a slight decrease in the percentage of partially cut blocks over the period, from 17% to 14%. Generally, more cutblocks were partially cut in or near the Rocky Mountain Trench than anywhere else in the SIR40.

2. 15–59.9 ha – 5870 cutblocks harvested: 4951 (84%) clearcutting and 919 (16%) partial cutting

Observations and Trends: (See Chart 28 and Table 13)

The districts of DAB, DCO, DHW, DRM and DKL all surpassed the SIR40 average percentage rate of 16% for cutblocks harvested using partial cutting in this size category (15–59.9 ha). DRM again had the highest rate of partial cutting for any year at 48% in 1996, but by 2002 the rate had declined to 22%. Also, DHW again showed a decrease in the use of partial cutting, from 31% in 1996 to 8% in 2002. DKA and DAB both showed a decrease in the use of partial cutting (12% to 8% and 28% to 17%, respectively) from 1996–2002.

There was a moderate decrease in the percentage of blocks partially cut over the period, from 18% to 13%. Generally, more blocks were partially cut in or near the Rocky Mountain Trench area than anywhere else in the SIR40.

3. 60+ ha – 397 cutblocks harvested; 268 (68%) clearcutting and 129 (32%) partial cutting
   Largest cutblock: 431.7 ha (clearcut) and 691 ha (partial cut)

Table 12 details the size of cutblocks over 60 ha by silvicultural system for the years 1996–2002.

Table 12. Total harvest area (ha) for cutblocks over 60 ha in the SIR40 by silvicultural system, 1996–2002

Year	CC	PC	Grand Total
1996	86.8	815.5	902.3
1997	746	1715.3	2461.3
1998	1309.7	3063.4	4373.1
1999	6208.3	3040	9248.3
2000	7730.7	1578.8	9309.5
2001	5308.2	1807.2	7115.4
2002	5332.1	1642.9	6975
Total	26721.8	13663.1	40384.9
Area harvested in 60+ ha category as % of total harvest in all size categories	13.1%	28.0%	16.0%

Observations and Trends: (See Charts 28, 30 and 31, and Tables 13 and 14)

A total of five districts (DAB, DCO, DHW, DKL and DRM) all had a greater percentage of partial cuts than the SIR40 average of 32% for this size category (60+ ha). DAB had the highest rate at 51%. The other three districts (DCS, DKA and DOS) all had rates of 25% or less. However, every district in the SIR40 had declining percentages of cutblocks being harvested with partial cuts. The most significant was DKA, with rates of 100% in 1996 and 1997, falling to 0% in 2000, 2001 and 2002.

Survey Highlights

A total of seven survey responses were received – five from MoF forest districts (DAB, DCS, DHW, DKA and DKL) and two from licensees operating in the DOS.

There was a wide variety of key factors determining the range and distribution of cutblock sizes in the SIR40, including harvesting responses to mountain pine beetle infestations, particularly following 1998 in DKM and perhaps also in DAB, DCS, DHW, DOS and DRM. Other key factors included: patch size distribution requirements of the *Biodiversity Guidebook*, economic and environmental feasibility, various unnamed resource value constraints, the location and extent of timber types, landscape analysis and natural disturbance types, to improve timber availability, to reduce environmental impacts of landscape fragmentation, and range ecosystem restoration.

The main reasons for approving cutblocks larger than the 40 ha maximum were for insect damage (particularly mountain pine beetle and to a lesser extent spruce beetle), fire and snow-caused windthrow events, and emulation of natural disturbances. Other reasons included the higher level plan direction of the Kamloops LRMP, which includes patch-size distribution targets and no maximum cutblock size. In addition, the use of patch cutting, selection and shelterwood silvicultural systems were also cited as reasons for approving larger cutblocks.

Sizes of disturbances varied from a low of 10 ha for spruce beetle and wind disturbances to a high of 500 hectares for mountain pine beetle. The respondents indicated that the size of a cutblock in response to fire was in the range of 30 to 250 ha.

Significantly larger cutblocks (60+ ha) occurred in numerous biogeoclimatic zones or variants as follows:

- DAB – ICHmw2 and ESSF;
- DCS – MSDm;
- DHW – not specified;
- DKA – predominantly in zones within the NDT3 disturbance type;
- DKL – all zones with operable timber and judged feasible as per the *Biodiversity Guidebook;*
- DOS – first respondent: MSdm2, xk and IDFmw2, dk1 and dk2
  - second respondent: ESSFdc1, wc, wc2, wc4; ICHmw2, mk1, mk2; IDFmw1, mw2; IDFxh1, dk1; MSdm1,dm2;
- DRM – NDT3, NDT4.

Significantly larger cutblocks were mostly located in the same area as natural disturbances. Cutblocks were both regular and irregular in shape, and contained leave strips and islands.

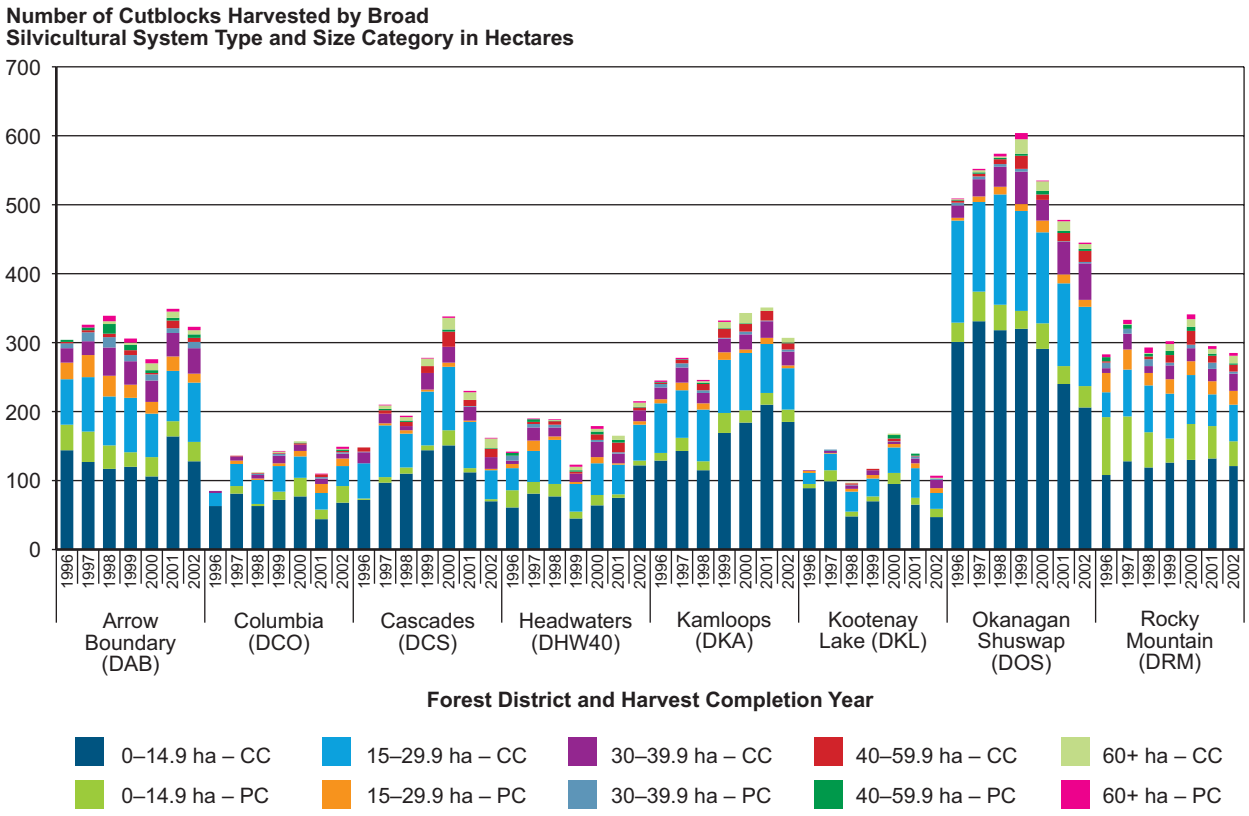


Chart 28. Number of cutblocks harvested by broad silvicultural system type and size category by forest district and harvest completion year (SIR40) (cc – clearcut; pc – partial cut) (total sample size = 14 697 cutblocks).

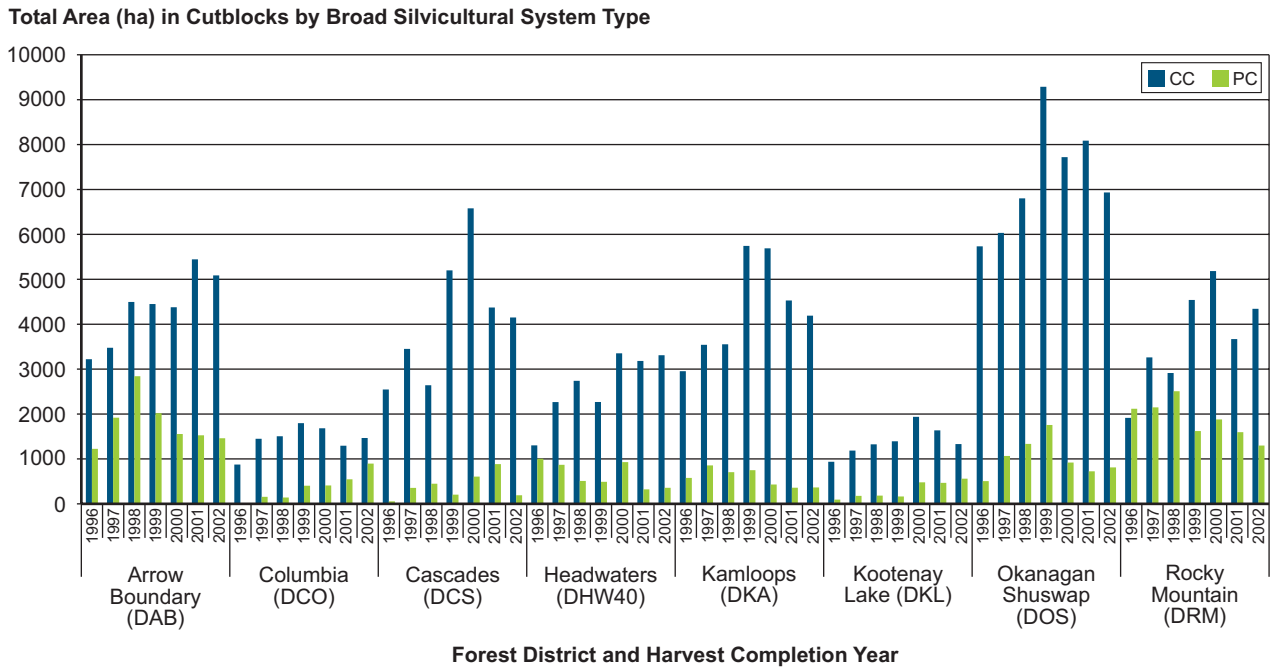


Chart 29. Total area (ha) in cutblocks by broad silvicultural system type by forest district and harvest completion year (SIR40) (cc – clearcut; pc – partial cut) (total sample size = 14 697 cutblocks).

Table 13. SIR40 data for Charts 28 and 29

(Data for Chart 28)																						(Data for Chart 29)		
NUMBER OF CUTBLOCKS - HARVESTING COMPLETED																						Total Area in Cutblocks -		
Forest		0-14.9 ha				15-29.9 ha		30-39.9 ha		40-59.9 ha		15-59.9 SUMMARY				60+ ha						All Size Categories		
District	Year	CC	PC	CC+ PC	PC/ SUM	CC	PC	CC	PC	CC	PC	SUM CC	SUM PC	SUM CC +PC	SUM PC/ALL	CC	PC	SUM CC+PC	CC/ SUM	PC/ SUM	Sum All	CC	PC	CC+ PC
ARROW BOUNDARY (DAB)	1996	144	37	181	0.20	66	24	21	7	2	3	89	34	123	0.28			0	#DIV/0!	#DIV/0!	304	3220.8	1225.1	4445.9
	1997	127	44	171	0.26	79	32	20	13	3	4	102	49	151	0.32		4	4	0.00	1.00	326	3475.3	1917.7	5393.0
	1998	117	34	151	0.23	71	30	41	15	5	14	117	59	176	0.34	4	8	12	0.33	0.67	339	4496.6	2841.1	7337.7
	1999	120	21	141	0.15	79	19	34	9	7	8	120	36	156	0.23	3	6	9	0.33	0.67	306	4449.6	2019.5	6469.1
	2000	106	28	134	0.21	63	17	31	9	2	4	96	30	126	0.24	10	6	16	0.63	0.38	276	4377.5	1555.2	5932.7
	2001	164	22	186	0.12	73	21	34	7	11	4	118	32	150	0.21	9	4	13	0.69	0.31	349	5443.6	1527.0	6970.6
	2002	128	28	156	0.18	86	13	37	9	6	5	129	27	156	0.17	6	5	11	0.55	0.45	323	5087.0	1460.9	6547.9
DAB Total		906	214	1120	0.19	517	156	218	69	36	42	771	267	1038	0.26	32	33	65	0.49	0.51	2223	30550.4	12546.5	43096.9
COLUMBIA (DCO)	1996	63		63	0.00	19		3				22	0	22	0.00			0	#DIV/0!	#DIV/0!	85	874.6		874.6
	1997	81	11	92	0.12	32	5	6		1		39	5	44	0.11			0	#DIV/0!	#DIV/0!	136	1448.5	156.8	1605.3
	1998	63	3	66	0.05	35	2	5	2	1		41	4	45	0.09	1		1	1.00	0.00	112	1504.2	141.6	1645.8
	1999	72	12	84	0.14	37	4	11	3	1		49	7	56	0.13	2	1	3	0.67	0.33	143	1796.8	403.3	2200.1
	2000	77	27	104	0.26	31	8	9		2	1	42	9	51	0.18	2		2	1.00	0.00	157	1682.0	409.7	2091.7
	2001	44	14	58	0.24	24	13	8	2	4		36	15	51	0.29		1	1	0.00	1.00	110	1294.5	547.3	1841.8
	2002	68	24	92	0.26	29	11	7	2	2	2	38	15	53	0.28	1	3	4	0.25	0.75	149	1466.9	897.4	2364.3
DCO Total		468	91	559	0.16	207	43	49	9	11	3	267	55	322	0.17	6	5	11	0.55	0.45	892	10067.4	2556.1	12623.5
CASCADES (DCS)	1996	72	2	74	0.03	51		16	1	6		73	1	74	0.01			0	#DIV/0!	#DIV/0!	148	2547.2	56.6	2603.8
	1997	97	8	105	0.08	75	3	14		5	2	94	5	99	0.05	5	1	6	0.83	0.17	210	3451.2	355.9	3807.1
	1998	110	9	119	0.08	49	5	6		6	2	61	7	68	0.10	5	2	7	0.71	0.29	194	2641.2	448.8	3090.0
	1999	144	7	151	0.05	78	3	24		10		112	3	115	0.03	11	1	12	0.92	0.08	278	5199.7	205.6	5405.3
	2000	151	22	173	0.13	92	6	23		22	3	137	9	146	0.06	17	2	19	0.89	0.11	338	6581.2	606.3	7187.5
	2001	112	6	118	0.05	67	2	20	1	9		96	3	99	0.03	11	2	13	0.85	0.15	230	4371.6	884.3	5255.9
	2002	70	3	73	0.04	42	2	17		12	1	71	3	74	0.04	14	1	15	0.93	0.07	162	4150.0	191.0	4341.0
DCS Total		756	57	813	0.07	454	21	120	2	70	8	644	31	675	0.05	63	9	72	0.88	0.13	1560	28942.0	2748.5	31690.5
HEAD-WATERS (DHW40)	1996	61	25	86	0.29	32	6	5	7		4	37	17	54	0.31		2	2	0.00	1.00	142	1301.9	1005.1	2307.0
	1997	81	17	98	0.17	45	15	19	5	3	4	67	24	91	0.26		1	1	0.00	1.00	190	2265.7	869.8	3135.5
	1998	77	18	95	0.19	64	5	13	4	5	1	82	10	92	0.11	1	1	2	0.50	0.50	189	2740.4	509.7	3250.1
	1999	45	10	55	0.18	40	3	12		3	2	55	5	60	0.08	5	3	8	0.63	0.38	123	2268.4	490.9	2759.3
	2000	64	15	79	0.19	46	9	22	3	8	4	76	16	92	0.17	4	4	8	0.50	0.50	179	3352.4	930.2	4282.6
	2001	75	5	80	0.06	43	2	14	2	14	4	71	8	79	0.10	6		6	1.00	0.00	165	3182.9	323.2	3506.1
	2002	122	7	129	0.05	52	5	16		4	1	72	6	78	0.08	6	2	8	0.75	0.25	215	3309.4	356.9	3666.3
DHW40 Total		525	97	622	0.16	322	45	101	21	37	20	460	86	546	0.16	22	13	35	0.63	0.37	1203	18421.0	4485.8	22906.8
KAMLOOPS (DKA)	1996	129	11	140	0.08	72	6	17	5	2	1	91	12	103	0.12		2	2	0.00	1.00	245	2953.9	578.5	3532.4
	1997	143	19	162	0.12	69	11	22	6	5	1	96	18	114	0.16		2	2	0.00	1.00	278	3542.1	855.4	4397.5
	1998	115	13	128	0.10	75	9	15	4	9	2	99	15	114	0.13	2	2	4	0.50	0.50	246	3553.2	706.1	4259.3
	1999	169	29	198	0.15	77	11	20	1	13	1	110	13	123	0.11	9	2	11	0.82	0.18	332	5744.1	749.8	6493.9
	2000	184	18	202	0.09	83	5	22	4	11	1	116	10	126	0.08	15		15	1.00	0.00	343	5690.3	430.6	6120.9
	2001	210	17	227	0.07	71	9	24	1	14		109	10	119	0.08	5		5	1.00	0.00	351	4529.1	360.0	4889.1
	2002	185	18	203	0.09	60	4	20	3	9	1	89	8	97	0.08	7		7	1.00	0.00	307	4189.7	364.2	4553.9
DKA Total		1135	125	1260	0.10	507	55	140	24	63	7	710	86	796	0.11	38	8	46	0.83	0.17	2102	30202.4	4044.6	34247.0
KOOTENAY LAKE (DKL)	1996	89	6	95	0.06	16	3	1				17	3	20	0.15			0	#DIV/0!	#DIV/0!	115	936.3	95.3	1031.6
	1997	99	16	115	0.14	24	1	3	2			27	3	30	0.10			0	#DIV/0!	#DIV/0!	145	1186.8	177.7	1364.5
	1998	48	7	55	0.13	29	4	5	1	2		36	5	41	0.12	1		1	1.00	0.00	97	1325.7	183.8	1509.5
	1999	70	7	77	0.09	26	5	7		2		35	5	40	0.13			0	#DIV/0!	#DIV/0!	117	1393.9	164.6	1558.5
	2000	95	16	111	0.14	37	5	3	1	4	5	44	11	55	0.20	2		2	1.00	0.00	168	1937.6	478.3	2415.9
	2001	65	10	75	0.13	43	7	7	3	1	3	51	13	64	0.20			0	#DIV/0!	#DIV/0!	139	1636.2	468.1	2104.3
	2002	47	12	59	0.20	23	7	12	2			35	9	44	0.20	1	3	4	0.25	0.75	107	1330.7	561.2	1891.9
DKL Total		513	74	587	0.13	198	32	38	9	9	8	245	49	294	0.17	4	3	7	0.57	0.43	888	9747.2	2129.0	11876.2
OKANAGAN SHUSWAP (DOS)	1996	301	28	329	0.09	148	4	18	4	3	1	169	9	178	0.05	1	1	2	0.50	0.50	509	5734.6	506.6	6241.2
	1997	331	43	374	0.11	130	8	25	4	4	2	159	14	173	0.08	3	2	5	0.60	0.40	552	6033.6	1065.8	7099.4
	1998	318	37	355	0.10	160	11	29	4	7	2	196	17	213	0.08	2	4	6	0.33	0.67	574	6801.6	1335.6	8137.2
	1999	320	26	346	0.08	145	10	47	4	19	3	211	17	228	0.07	21	9	30	0.70	0.30	604	9287.7	1756.8	11044.5
	2000	291	37	328	0.11	132	17	30		8	5	170	22	192	0.11	14	1	15	0.93	0.07	535	7719.4	919.3	8638.8
	2001	240	26	266	0.10	120	13	47	1	12	3	179	17	196	0.09	14	2	16	0.88	0.13	478	8087.8	724.5	8812.3
	2002	206	31	237	0.13	115	10	53	2	16	3	184	15	199	0.08	7	2	9	0.78	0.22	445	6933.9	811.2	7745.1
DOS Total		2007	228	2235	0.10	950	73	249	19	69	19	1268	111	1379	0.08	62	21	83	0.75	0.25	3697	50598.7	7119.7	57718.3
ROCKY MOUNTAIN (DRM)	1996	108	84	192	0.44	36	28	7	8	2	6	45	42	87	0.48		4	4	0.00	1.00	283	1914.1	2117.8	4031.9
	1997	128	65	193	0.34	68	29	23	7		6	91	42	133	0.32	1	6	7	0.14	0.86	333	3260.3	2149.3	5409.6
	1998	119	51	170	0.30	68	18	10	10	4	4	82	32	114	0.28	1	8	9	0.11	0.89	293	2913.8	2507.0	5420.8
	1999	126	35	161	0.22	65	21	20	4	11	6	96	31	127	0.24	10	4	14	0.71	0.29	302	4541.1	1620.0	6161.1
	2000	130	52	182	0.29	71	20	19	5	20	6	110	31	141	0.22	11	7	18	0.61	0.39	341	5183.8	1879.6	7063.4
	2001	132	47	179	0.26	46	19	18	9	10	3	74	31	105	0.30	7	4	11	0.64	0.36	295	3669.6	1596.5	5266.1
	2002	121	36	157	0.23	53	20	25	3	10	2	88	25	113	0.22	11	4	15	0.73	0.27	285	4343.1	1299.2	5642.3
DRM Total		864	370	1234	0.30	407	155	122	46	57	33	586	234	820	0.29	41	37	78	0.53	0.47	2132	25825.8	13169.4	38995.1
REGION (SIR40)	1996	967	193	1160	0.17	440	71	88	32	15	15	543	118	661	0.18	1	9	10	0.10	0.90	1831	19483.4	5585.0	25068.4
	1997	1087	223	1310	0.17	522	104	132	37	21	19	675	160	835	0.19	9	16	25	0.36	0.64	2170	24663.5	7548.3	32211.8
	1998	967	172	1139	0.15	551	84	124	40	39	25	714	149	863	0.17	17	25	42	0.40	0.60	2044	25976.6	8673.6	34650.2
	1999	1066	147	1213	0.12	547	76	175	21	66	20	788	117	905	0.13	61	26	87	0.70	0.30	2205	34681.2	7410.4	42091.7
	2000	1098	215	1313	0.16	555	87	159	22	77	29	791	138	929	0.15	75	20	95	0.79	0.21	2337	36524.2	7209.2	43733.4
	2001	1042	147	1189	0.12	487	86	172	26	75	17	734	129	863	0.15	52	13	65	0.80	0.20	2117	32215.2	6430.9	38646.1
	2002	947	159	1106	0.14	460	72	187	21	59	15	706	108	814	0.13	53	20	73	0.73	0.27	1993	30810.7	5942.0	36752.7
SIR40 Total		7174	1256	8430	0.15	3562	580	1037	199	352	140	4951	919	5870	0.16	268	129	397	0.68	0.32	14697	204354.8	48799.6	253154.4

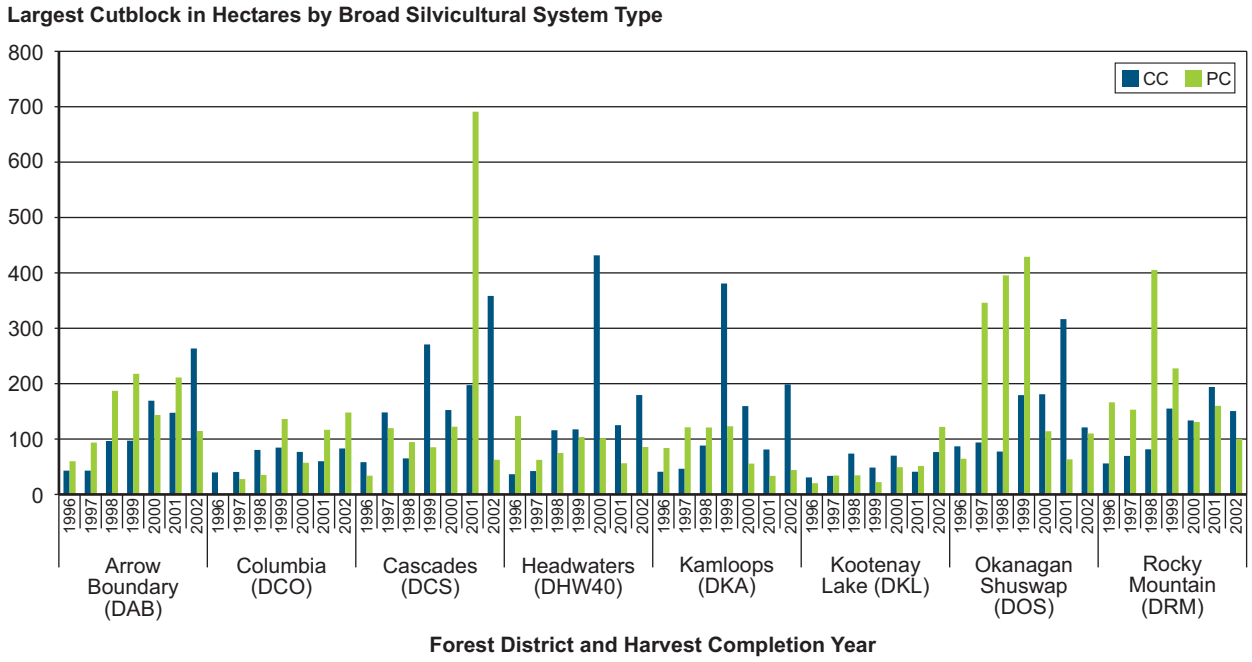


Chart 30. Largest cutblock (ha) by broad silvicultural system type by forest district and harvest completion year (SIR40) (cc – clearcut; pc – partial cut) (total sample size = 14 697 cutblocks).

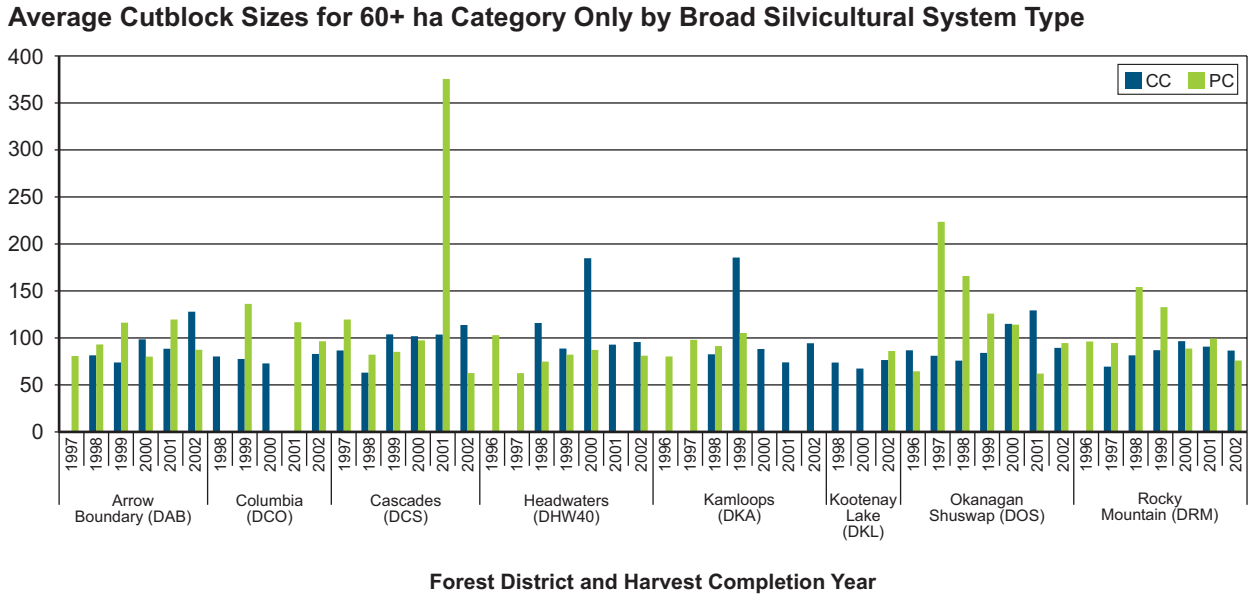


Chart 31. Average cutblock sizes for 60+ ha category by broad silvicultural system type by forest district and harvest completion year (SIR40) (cc – clearcut; pc – partial cut) (total sample size = 14 697 cutblocks).

Table 14. SIR40 data for Charts 30 and 31, and average sizes in hectares

		(Chart 30)		(Chart 31)		(No Chart)		
		Largest cutblock in ha		Average Area Sizes -				
		(over 300 ha bolded)		Blocks 60+ ha only		Average Size (ha) - All Blocks		
Forest District	Year	CC	PC	CC	PC	CC	PC	CC+PC
ARROW BOUNDARY (DAB)	1996	42.9	59.9			13.8	17.3	14.6
	1997	42.9	93.7		80.7	15.2	19.8	16.5
	1998	96.4	187	81.5	93.0	18.9	28.1	21.6
	1999	97.1	217.8	73.9	116.3	18.3	32.1	21.1
	2000	169.3	143.5	98.5	80.1	20.6	24.3	21.5
	2001	147.4	211.1	88.5	119.6	18.7	26.3	20.0
	2002	263.5	114.5	127.9	87.4	19.3	24.3	20.3
DAB			Average	96.8	95.8	17.9	24.4	19.4
COLUMBIA (DCO)	1996	39.7				10.3		10.3
	1997	40.6	27.7			12.1	9.8	11.8
	1998	80.3	35.2	80.3		14.3	20.2	14.7
	1999	84.5	136.2	77.6	136.2	14.6	20.2	15.4
	2000	76.8	57.2	72.9		13.9	11.4	13.3
	2001	59.9	116.7		116.7	16.2	18.2	16.7
	2002	83	147.9	83.0	96.5	13.7	21.4	15.9
DCO			Average	77.4	108.5	13.6	16.9	14.2
CASCADES (DCS)	1996	58.2	33.8			17.6	18.9	17.6
	1997	148.1	119.6	86.7	119.6	17.6	25.4	18.1
	1998	65	94.4	63.1	82.2	15.0	24.9	15.9
	1999	270.8	85.2	103.8	85.2	19.5	18.7	19.4
	2000	152.4	122.2	101.8	97.4	21.6	18.4	21.3
	2001	197.4	**691**	103.5	375.5	20.0	80.4	22.9
	2002	**358.5**	62.6	113.8	62.6	26.8	27.3	26.8
DCS			Average	100.8	153.1	19.8	28.3	20.3
HEAD-WATERS (DHW40)	1996	36.5	141.7		103.0	13.3	22.8	16.2
	1997	42.2	62.5		62.5	15.3	20.7	16.5
	1998	115.9	74.8	115.9	74.8	17.1	17.6	17.2
	1999	117.4	103.6	88.7	82.2	21.6	27.3	22.4
	2000	**431.7**	101.6	184.8	87.2	23.3	26.6	23.9
	2001	125.1	56.2	92.9		20.9	24.9	21.2
	2002	179.5	85.6	95.6	81.2	16.5	23.8	17.1
DHW40			Average	110.4	84.7	18.3	22.9	19.0
KAMLOOPS (DKA)	1996	41	83.8		80.3	13.4	23.1	14.4
	1997	46.3	121.1		98.0	14.8	21.9	15.8
	1998	88.3	120.9	82.6	91.4	16.4	23.5	17.3
	1999	**380.9**	123.1	185.6	105.3	19.9	17.0	19.6
	2000	159.5	55.7	88.3		18.1	15.4	17.8
	2001	81.1	33.5	74.0		14.0	13.3	13.9
	2002	198.8	44.1	94.3		14.9	14.0	14.8
DKA			Average	110.2	93.7	16.0	18.5	16.3
KOOTENAY LAKE (DKL)	1996	30.7	20.3			8.8	10.6	9.0
	1997	33.5	34.1			9.4	9.4	9.4
	1998	73.8	34.4	73.8		15.6	15.3	15.6
	1999	48.5	22.3			13.3	13.7	13.3
	2000	70	49.2	67.5		13.7	17.7	14.4
	2001	41	51.5			14.1	20.4	15.1
	2002	76.5	121.9	76.5	86.1	16.0	23.4	17.7
DKL			Average	71.3	86.1	12.8	16.9	13.4
OKANAGAN SHUSWAP (DOS)	1996	86.8	64.5	86.8	64.5	12.2	13.3	12.3
	1997	93.8	**346**	81.0	223.5	12.2	18.1	12.9
	1998	77.4	**395.5**	75.8	165.9	13.2	23.0	14.2
	1999	179.3	**429**	84.1	125.9	16.8	33.8	18.3
	2000	180.8	114.1	114.9	114.1	16.3	15.3	16.1
	2001	**316.5**	63.4	129.3	62.1	18.7	16.1	18.4
	2002	121	110	89.5	94.6	17.5	16.9	17.4
DOS			Average	101.5	130.3	15.2	19.8	15.6
ROCKY MOUNTAIN (DRM)	1996	55.9	166.3		96.2	12.5	16.3	14.2
	1997	69.5	153	69.5	94.6	14.8	19.0	16.2
	1998	81.5	**405.3**	81.5	154.2	14.4	27.5	18.5
	1999	155	227.5	87.0	132.7	19.6	23.1	20.4
	2000	133.6	130.7	96.6	88.7	20.7	20.9	20.7
	2001	194	160	90.8	99.3	17.2	19.5	17.9
	2002	150.6	100	86.6	76.0	19.7	20.0	19.8
DRM Total			Average	89.5	109.1	17.3	20.5	18.3
REGION (SIR40)	1996	86.8	166.3	86.8	90.6	12.9	17.5	13.7
	1997	148.1	**346**	82.9	107.2	13.9	18.9	14.8
	1998	115.9	**405.3**	77.0	122.5	15.3	25.1	17.0
	1999	**380.9**	**429**	102.8	116.9	18.1	25.6	19.1
	2000	**431.7**	143.5	103.1	87.9	18.6	19.3	18.7
	2001	**316.5**	**691**	102.1	143.6	17.6	22.3	18.3
	2002	**358.5**	147.9	100.6	85.1	18.1	20.7	18.4
SIR40			Average	99.9	108.2	16.5	21.2	17.2

Note that Table 14 includes information regarding average cutblock sizes for all size categories combined. No chart is provided.

Southern Interior Forest Region - SIR60

The Southern Interior Forest Region has 12 forest districts in total, five of which had a maximum cutblock size rule of 60 ha. They are:

- Central Cariboo Forest District (DCC);
- Chilcotin Forest District (DCH);
- Headwaters Forest District (DHW);
- 100 Mile House Forest District (DMH); and
- Quesnel Forest District (DQU).

Note that only the portion of the Headwaters Forest District that used to be in the old Robson Valley Forest District is subject to the 60-hectare rule. The five districts are a reflection of the new MoF organizational structure that took effect in April 2003, and are referred to here as SIR60.

Summary of Significant Harvest Attributes for SIR60 from 1996–2002

- *Cutblocks harvested:* 8643–7923 (92%) clearcutting; 720 (8%) partial cutting
- *Area harvested:* 245 790–229 376 ha (93%) clearcutting; 16 414 ha (7%) partial cutting
- *Number of cutblocks harvested 60 ha and under in size:* 7949 (92% of total)
- *Area harvested in blocks 60 ha and under in size:* 171 299 ha (70% of total)
- *District with majority of total harvest:* DCC – 2764 cutblocks and DCH – 72 241 ha
- *District with least total harvest:* DHW – 300 cutblocks and 6974 ha
- *Harvest peak:* 1998 (1368 cutblocks) and 1999 (40 328 ha)
- *Harvest low:* 1996 (899 cutblocks and 29 882 ha)
- *Average cutblock size:* 29 ha (clearcut); 22.8 ha (partial cut); 28.4 ha (all)

Summary of Results by Cutblock Size Range Category

1. 0-24.9 ha – 4926 cutblocks harvested: 4454 (90%) clearcutting and 472 (10%) partial cutting

Observations and Trends: (See Chart 32 and Table 16)

The district of DCC practiced the highest average rate of partial cutting (16%), and was the only district that surpassed the SIR60 average of 10% for this size category (0–24.9 ha). DCH had the lowest average rate of partial cutting at 3%, yet also had the largest increase from a low of 0% in 1996 to 21% in 2002. DHW also increased during the same period, going from 3% to 11% from 1996–2002. On the other hand, DMH and DQU had the largest decreases in the use of partial cutting, dropping from 27% and 11% in 1996 to 2% and 8% in 2002, respectively.

2. 25–89.9 ha – 3419 cutblocks harvested: 3187 (93%) clearcutting and 232 (7%) partial cutting

Observations and Trends: (See Chart 32 and Table 16)

Again, DCC practiced the highest average rate of partial cutting (15%) and was the only district that surpassed the SIR60 average of 7% for this size category (25–89.9 ha). The next highest rate for partial cutting was DMH at 6%. DQU had the lowest rate at 3%. All districts, except DCH, were trending 50–75% lower for using partial cutting over the seven-year period, with DHW having the greatest decrease (25% to 0%) from 1996–2002.

Within the SIR60, there was a significant annual decrease in the percentage of partial cut blocks (10% in 1996 to 4% in 2002). In terms of area, 19 368 ha were partially cut in 1996 compared to 16 193 ha in 2002, for a decrease of 3 175 ha.

3. 90+ ha – 298 cutblocks harvested; 282 (95%) clearcutting and 16 (5%) partial cutting
Largest cutblock: 641.4 ha (clearcut) and 256.7 ha (partial cut)

Table 15 details the size of cutblocks over 90 ha by silvicultural system for the years 1996–2002.

Table 15. Total harvest area (ha) for cutblocks over 90 ha in the SIR60 by silvicultural system, 1996–2002

Year	CC	PC	Grand Total
1996	5219.5	498.9	5718.4
1997	3453.5		3453.5
1998	6075.7	694.7	6770.4
1999	8216.7	197.8	8414.5
2000	8664.4	381.2	9045.6
2001	4986.2	389.2	5375.4
2002	7371.1	98.2	7469.3
Total	43987.1	2260	46247.1
Area harvested in 90+ ha category as % of total harvest in all size categories	19.2%	13.8%	18.8%

Observations and Trends: (See Charts 32, 34 and 35, and Table 17)

Only DCC (18%) and DMH (6%) practiced more partial cutting than the SIR60 average of 5% for this size category (90+ ha). The highest percentage of partial cutting for any year was DMH in 1996 (67%). The other districts were all below the regional average at 4% in DQU, 2% in DCH, and 0% in DHW. Harvesting in this size category appears to have peaked in 1998/1999 for all districts except DHW.

Survey Highlights

A total of four survey responses were received; three from MoF forest districts (DCH, DMH and DQU) and one from a licensee within DQU.

There was a wide variety of key factors determining the range and distribution of cutblock sizes in the SIR60, including mountain pine beetle salvage, fire, blowdown, Code requirements, adjacency and green-up issues, stumpage rates, market conditions, nearness to mills, and natural disturbance patterns.

The main reasons for approving cutblocks significantly larger than the 60-ha maximum were for mountain pine beetle (all districts) and catastrophic ice storms (DMH). The only other reason provided was to emulate natural disturbances. No respondents indicated that silvicultural systems "other than clearcut or seed tree and retention greater than 40%+ of the pre-harvest basal area" was a reason for cutblocks larger than the 60-ha maximum.

Sizes of disturbances varied from a low of 80 ha for ice and wind disturbances to a high of 1500 ha for mountain pine beetle. The majority of respondents indicated that the size of a cutblock in response to fire was in the range of 40 to1 500 ha.

Significantly larger cutblocks (90+ ha) occurred in numerous biogeoclimatic zones or variants as follows:

- DCH – MSxv; SBPSxc, mc, dc; IDFdk pine leading;
- DMH – MSxk; SBSdw1; SBPSmk;
- DQU – first respondent: ecosections located on the central plateau dominated by the SBS biogeoclimatic zone; second respondent: ESSFwk1; IDFdk3; MSxv; SBSdw1,dw2, mc2, mw, wk1; SBPSdc, mk.

Respondents indicated that cutblocks were usually located in the same areas as natural disturbances, or partially overlapped them (DCH, DMW, DQU). One respondent from DQU replied that cutblocks were also located adjacent to and in the general vicinity of natural disturbances. One-half of the cutblocks were irregular in shape and the other half had characteristics of both regular and irregular shapes. All contained leave strips and islands.

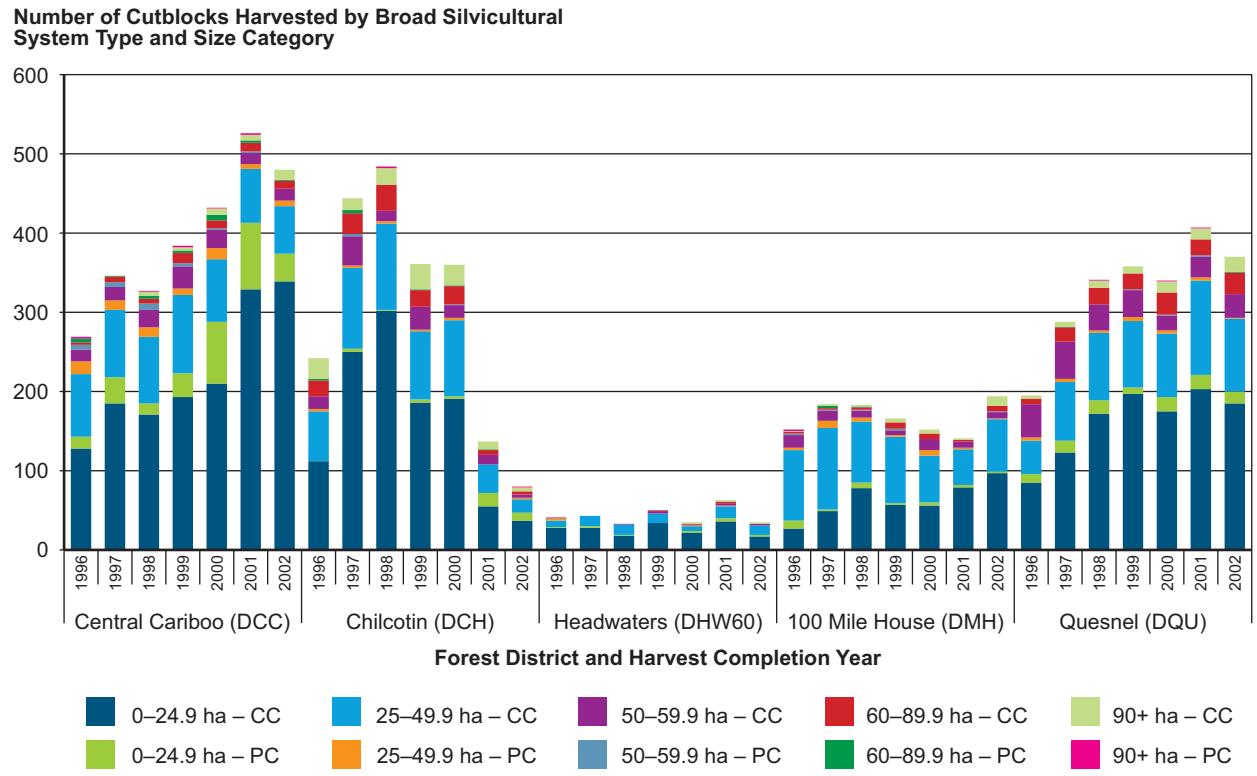


Chart 32. Number of cutblocks harvested by broad silvicultural system type and size category by forest district and harvest completion year (SIR60) (cc – clearcut; pc – partial cut) (total sample size = 8643 cutblocks).

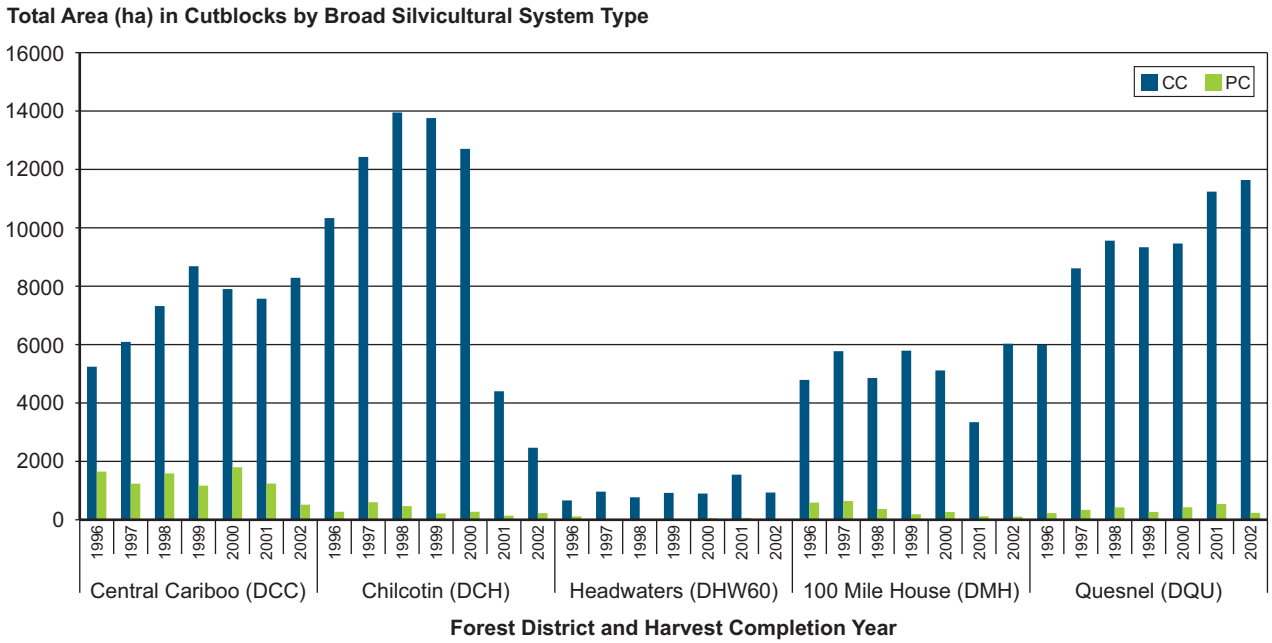


Chart 33. Total area (ha) in cutblocks by silvicultural system type by forest district and harvest completion year (SIR60) (cc – clearcut; pc – partial cut) (total sample size = 8643 cutblocks).

Table 16. SIR60 data for Charts 32 and 33

(Data for Chart 32)																						(Data for Chart 33)		
(cc - clearcut; pc - partial cut silvicultural systems)																						Total Area in Cutblocks -		
Forest		0-24.9 ha				25-49.9 ha		50-59.9 ha		60-89.9 ha		25-89.9 SUMMARY				90+ ha						All Size Categories		
District	Year	CC	PC	CC+PC	PC/ SUM	CC	PC	CC	PC	CC	PC	SUM CC	SUM PC	SUM CC+PC	SUM PC/ SUM	CC	PC	SUM CC +PC	CC/ SUM	PC/ SUM	Sum All	CC	PC	CC + PC
Central Cariboo (DCC)	1996	128	15	143	0.10	79	16	15	6	3	5	97	27	124	0.22		2	2	0.00	1.00	269	5242.5	1650.2	6892.7
	1997	185	33	218	0.15	85	12	17	6	7	1	109	19	128	0.15			0	#DIV/0!	#DIV/0!	346	6091.7	1234.8	7326.5
	1998	171	14	185	0.08	84	12	22	8	6	4	112	24	136	0.18	5	1	6	0.83	0.17	327	7318.3	1585.9	8904.2
	1999	193	30	223	0.13	99	8	28	4	13	3	140	15	155	0.10	4	2	6	0.67	0.33	384	8683.7	1168.2	9851.9
	2000	210	78	288	0.27	79	14	23	2	10	7	112	23	135	0.17	8	1	9	0.89	0.11	432	7903.0	1796.5	9699.5
	2001	329	84	413	0.20	68	6	14	2	11	3	93	11	104	0.11	7	2	9	0.78	0.22	526	7573.1	1240.1	8813.2
	2002	339	35	374	0.09	60	7	15		10	1	85	8	93	0.09	13		13	1.00	0.00	480	8288.6	517.0	8805.6
DCC Total		1555	289	1844	0.16	554	75	134	28	60	24	748	127	875	0.15	37	8	45	0.82	0.18	2764	51100.9	9192.7	60293.6
Chilcotin (DCH)	1996	112		112	0.00	63	3	16		20	2	99	5	104	0.05	26		26	1.00	0.00	242	10333.8	274.1	10607.9
	1997	250	4	254	0.02	102	3	37	3	26	4	165	10	175	0.06	15		15	1.00	0.00	444	12429.4	599.0	13028.4
	1998	302	1	303	0.00	109	3	13		33		155	3	158	0.02	21	2	23	0.91	0.09	484	13950.1	465.7	14415.8
	1999	186	4	190	0.02	86	2	29		21	1	136	3	139	0.02	32		32	1.00	0.00	361	13759.2	216.6	13975.8
	2000	191	3	194	0.02	96	3	16	1	23	1	135	5	140	0.04	26		26	1.00	0.00	360	12704.4	273.8	12978.2
	2001	55	17	72	0.24	36		12		6	1	54	1	55	0.02	10		10	1.00	0.00	137	4402.4	139.5	4541.9
	2002	37	10	47	0.21	17	2	4		4		25	2	27	0.07	5	1	6	0.83	0.17	80	2467.9	225.5	2693.4
DCH Total		1133	39	1172	0.03	509	16	127	4	133	9	769	29	798	0.04	135	3	138	0.98	0.02	2108	70047.1	2194.2	72241.3
Headwaters (DHW60)	1996	28	1	29	0.03	8	3	1				9	3	12	0.25			0	#DIV/0!	#DIV/0!	41	662.5	116.0	778.5
	1997	28	2	30	0.07	13						13	0	13	0.00			0	#DIV/0!	#DIV/0!	43	961.6	26.2	987.8
	1998	18	1	19	0.05	13		1				14	0	14	0.00			0	#DIV/0!	#DIV/0!	33	770.1	6.7	776.8
	1999	34		34	0.00	12		3		1		16	0	16	0.00			0	#DIV/0!	#DIV/0!	50	919.8		919.8
	2000	22	2	24	0.08	6	1	1		1		8	1	9	0.11	2		2	1.00	0.00	35	896.2	52.4	948.6
	2001	36	4	40	0.10	15	1	3		2		20	1	21	0.05	2		2	1.00	0.00	63	1544.0	61.3	1605.3
	2002	17	2	19	0.11	12		2				14	0	14	0.00	2		2	1.00	0.00	35	933.8	23.2	957.0
DHW60 Total		183	12	195	0.06	79	5	11		4		94	5	99	0.05	6		6	1.00	0.00	300	6688.0	285.8	6973.8
100 Mile House (DMH)	1996	27	10	37	0.27	89	3	16	2	2		107	5	112	0.04	1	2	3	0.33	0.67	152	4790.6	587.9	5378.5
	1997	49	2	51	0.04	103	9	13	1	2	3	118	13	131	0.10	2		2	1.00	0.00	184	5773.5	642.7	6416.2
	1998	78	7	85	0.08	77	5	9	1	3	1	89	7	96	0.07	2		2	1.00	0.00	183	4857.1	368.4	5225.5
	1999	57	2	59	0.03	84	2	6	2	8		98	4	102	0.04	5		5	1.00	0.00	166	5790.7	188.7	5979.4
	2000	56	4	60	0.07	59	7	14		7		80	7	87	0.08	5		5	1.00	0.00	152	5114.8	263.4	5378.2
	2001	79	3	82	0.04	45	2	8		2		55	2	57	0.04	2		2	1.00	0.00	141	3344.4	119.7	3464.1
	2002	97	2	99	0.02	66	1	8	1	7		81	2	83	0.02	12		12	1.00	0.00	194	6030.6	107.1	6137.7
DMH Total		443	30	473	0.06	523	29	74	7	31	4	628	40	668	0.06	29	2	31	0.94	0.06	1172	35701.7	2277.9	37979.6
Quesnel (DQU)	1996	85	11	96	0.11	42	4	42		7		91	4	95	0.04	4		4	1.00	0.00	195	5994.5	229.4	6223.9
	1997	123	15	138	0.11	74	4	47		18	1	139	5	144	0.03	6		6	1.00	0.00	288	8611.8	339.9	8951.7
	1998	172	17	189	0.09	85	3	33		21		139	3	142	0.02	9	1	10	0.90	0.10	341	9561.5	421.8	9983.3
	1999	197	8	205	0.04	84	5	34	1	20		138	6	144	0.04	9		9	1.00	0.00	358	9333.5	267.7	9601.2
	2000	175	18	193	0.09	80	4	19	1	28		127	5	132	0.04	14	1	15	0.93	0.07	340	9461.0	428.3	9889.3
	2001	203	18	221	0.08	119	4	26	2	20		165	6	171	0.04	14	1	15	0.93	0.07	407	11239.6	537.4	11777.0
	2002	185	15	200	0.08	92	1	30		27	1	149	2	151	0.01	19		19	1.00	0.00	370	11636.8	238.9	11875.7
DQU Total		1140	102	1242	0.08	576	25	231	4	141	2	948	31	979	0.03	75	3	78	0.96	0.04	2299	65838.7	2463.4	68302.1
REGION (SIR60)	1996	380	37	417	0.09	281	29	90	8	32	7	403	44	447	0.10	31	4	35	0.89	0.11	899	27023.9	2857.6	29881.5
	1997	635	56	691	0.08	377	28	114	10	53	9	544	47	591	0.08	23		23	1.00	0.00	1305	33868.0	2842.6	36710.6
	1998	741	40	781	0.05	368	23	78	9	63	5	509	37	546	0.07	37	4	41	0.90	0.10	1368	36457.1	2848.5	39305.6
	1999	667	44	711	0.06	365	17	100	7	63	4	528	28	556	0.05	50	2	52	0.96	0.04	1319	38486.9	1841.2	40328.1
	2000	654	105	759	0.14	320	29	73	4	69	8	462	41	503	0.08	55	2	57	0.96	0.04	1319	36079.4	2814.4	38893.8
	2001	702	126	828	0.15	283	13	63	4	41	4	387	21	408	0.05	35	3	38	0.92	0.08	1274	28103.5	2098.0	30201.5
	2002	675	64	739	0.09	247	11	59	1	48	2	354	14	368	0.04	51	1	52	0.98	0.02	1159	29357.7	1111.7	30469.4
SIR60 Total		4454	472	4926	0.10	2241	150	577	43	369	39	3187	232	3419	0.07	282	16	298	0.95	0.05	8643	#######	16414.0	245790.5

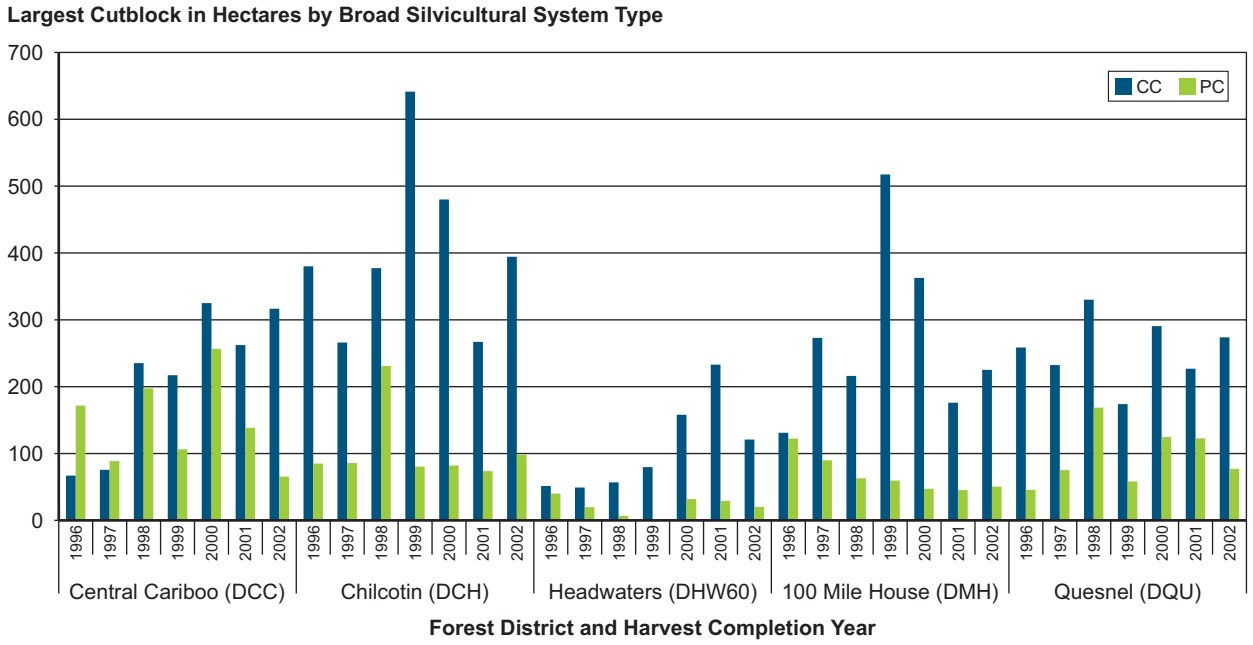


Chart 34. Largest cutblock (ha) by broad silvicultural system type by forest district and harvest completion year (SIR60) (cc – clearcut; pc – partial cut) (total sample size = 8643 cutblocks).

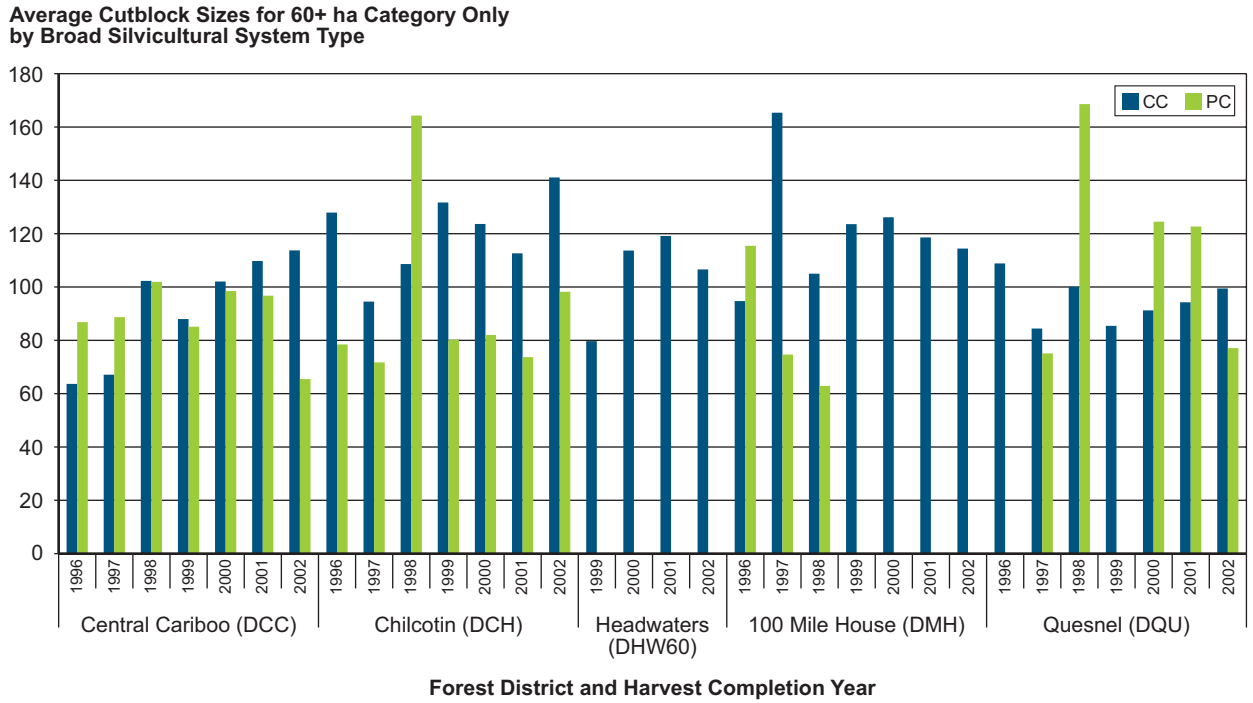


Chart 35. Average cutblock sizes for 60+ ha category by broad silvicultural system type by forest district and harvest completion year (SIR60) (cc – clearcut; pc – partial cut) (total sample size = 8643 cutblocks).

Table 17. SIR60 data for Charts 34 and 35, and average sizes in hectares

		(Chart 34)		(Chart 35)		(No Chart)		
		Largest cutblock in ha		Average Area Sizes -				
		(over 300 ha bolded)		Blocks 90+ ha only		Average Size (ha) - All Blocks		
Forest District	Year	CC	PC	CC	PC	CC	PC	ALL
Central Cariboo (DCC)	1996	67	171.8		134.0	23.3	37.5	25.6
	1997	75.7	88.7			20.7	23.7	21.2
	1998	235.2	197.5	141.2	197.5	25.4	40.7	27.2
	1999	217.1	106.3	149.2	98.9	25.8	24.9	25.7
	2000	325	256.7	141.4	256.7	23.9	17.6	22.5
	2001	262.2	138.5	167.7	133.3	17.7	12.8	16.8
	2002	**316.6**	65.5	146.3		19.0	12.0	18.3
DCC			**Average**	148.9	148.3	21.8	21.7	21.8
Chilcotin (DCH)	1996	380	85	168.7		43.6	54.8	43.8
	1997	266	85.8	140.1		28.9	42.8	29.3
	1998	**377.3**	231.1	164.0	164.3	29.2	77.6	29.8
	1999	**641.4**	80.3	171.1		38.9	30.9	38.7
	2000	**480**	82	172.1		36.1	34.2	36.1
	2001	267.1	73.7	137.4		37.0	7.8	33.2
	2002	**394.4**	98.2	196.9	98.2	36.8	17.3	33.7
DCH			**Average**	164.7	142.3	34.4	30.9	34.3
Headwaters (DHW60)	1996	51.4	40			17.9	29.0	19.0
	1997	49.2	19.8			23.5	13.1	23.0
	1998	56.8	6.7			24.1	6.7	23.5
	1999	79.7				18.4		18.4
	2000	158	31.9	134.9		28.0	17.5	27.1
	2001	233	29.3	165.8		26.6	12.3	25.5
	2002	120.9	20	106.6		28.3	11.6	27.3
DHW60			**Average**	135.8		23.6	16.8	23.2
100 Mile House (DMH)	1996	131.1	122.4	131.1	115.5	35.5	34.6	35.4
	1997	273	89.9	268.5		34.2	42.8	34.9
	1998	216.1	62.9	159.2		28.7	26.3	28.6
	1999	**517.4**	59.5	204.2		36.2	31.5	36.0
	2000	**362.8**	47.3	196.9		36.3	23.9	35.4
	2001	176	45.3	163.0		24.6	23.9	24.6
	2002	225.2	50.5	138.3		31.7	26.8	31.6
DMH			**Average**	171.6	115.5	32.5	31.6	32.4
Quesnel (DQU)	1996	258.6	45.6	175.5		33.3	15.3	31.9
	1997	232.3	75.1	136.0		32.1	17.0	31.1
	1998	**330.1**	168.6	178.6	168.6	29.9	20.1	29.3
	1999	174	58.2	124.7		27.1	19.1	26.8
	2000	290.6	124.5	128.9	124.5	29.9	17.8	29.1
	2001	226.9	122.7	127.2	122.7	29.4	21.5	28.9
	2002	273.8	77.1	137.5		33.0	14.1	32.1
DQU			**Average**	139.3	138.6	30.4	18.1	29.7
REGION (SIR60)	1996	**380**	171.8	168.4	124.7	33.2	33.6	33.2
	1997	273	89.9	150.2		28.2	27.6	28.1
	1998	**377.3**	231.1	164.2	173.7	28.3	35.2	28.7
	1999	**641.4**	106.3	164.3	98.9	30.9	24.9	30.6
	2000	**480**	256.7	157.5	190.6	30.8	19.0	29.5
	2001	267.1	138.5	142.5	129.7	25.0	14.0	23.7
	2002	**394.4**	98.2	144.5	98.2	27.2	14.1	26.3
SIR60			Average	156.0	141.3	29.0	22.8	28.4

Note that Table 17 includes information regarding average cutblock sizes for all size categories combined. No chart is provided.

4.0 Conclusion

Average cutblock sizes varied significantly across the province. The average cutblock size in British Columbia for all sivicultural systems from 1996–2002 was 23.1 ha. 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.

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 towards 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.

For British Columbia as a whole, broad partial cutting systems were used 9% of the time, as compared to 91% of the time for broad clearcutting-type systems. The following breakdown occurred within the administrative boundaries of the 40/60 rule:

- CFR40: broad partial cutting systems – 13%; broad clearcutting-type systems – 87%;
- DNC60: broad partial cutting systems – 10%; broad clearcutting-type systems – 90%;
- NIR60: broad partial cutting systems – 4%; clearcutting-type systems – 96%;
- SIR40: broad partial cutting systems – 16%; clearcutting-type systems – 84%; and
- SIR60: broad partial cutting systems – 8%; clearcutting-type systems – 92%.

The 40/60 rule had a significant impact on cutblock size over the seven-year period from 1996–2002. The percent of cutblocks that fell within the applicable maximum cutblock size are presented in Table 18.

Table 18. Impact of the 40/60 rule on cutblock size 1996–2002

Administrative boundary of 40/60 rule	% of cutblocks within applicable maximum size	% of cutblock area within applicable maximum size
CFR40	98.6	95.2
DNC60	99.7	98
NIR60	94	79
SIR40	97	84
SIR60	92	70

The greatest adherence to the 40/60 rule occurred in the DNC60 and CFR40, where very few cutblocks were harvested in excess of the applicable maximum cutblock size. The lowest adherence occurred in the SIR60, which survey respondents attributed to harvesting operations associated with wildfires, mountain pine beetle (up to 1500 ha infestations), and wind and ice storms.

Based on responses to the MoF 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.

Out of 25 responses to the survey, only two forest districts expressed support for the 40/60 rule – one district indicated that the rule was generally effective and the other stated that the rule has been generally accepted by industry. 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. Several respondents called for an elimination of the 40/60 rule, and one response in particular suggested that provisions be made to allow for a range of cutblock sizes instead of a set maximum.

5.0 Recommendations

In view of the findings of this analysis, and in consideration of the comments received from survey respondents, the following recommendations are provided:

- 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.

6.0 Bibliography

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7.0 Glossary

Biogeoclimatic zone – a geographic area having similar patterns of energy flow, vegetation and soils as a result of a broadly homogenous macroclimate.

Clearcut – a silvicultural system that removes the entire stand of trees in a single harvesting operation from an area that is one hectare or greater; and at least two tree heights in width, and is designed to manage the area as an even-aged stand.

Clearcut with reserves – a silvicultural system that is a variation of clearcutting in which trees are retained either uniformly or in small groups for purposes other than for regeneration.

Clearcutting – for the purpose of this analysis, is a general descriptive term that includes the clearcut and clearcut with reserves silvicultural systems.

Coppice – a silvicultural system where the majority or all of the existing trees are removed in one harvest, but with the major difference that regeneration comes primarily through the vegetative sprouting of shoots from cut stumps or the suckering of old root systems from cut trees. This system is limited to deciduous species management.

Intermediate cut – not a silvicultural system, but rather a means the harvesting some of the trees prior to the main cut, which may occur one or more times within various silvicultural systems depending on the management objectives for the area. Commercial thinning, beetle proofing and salvage are examples of intermediate cuts.

Natural disturbances – include the events of fire, insects, wind, landslides and other natural endemic or catastrophic processes in an area.

Patch cut – a silvicultural system that involves removing an entire stand of trees from an area less than one hectare in size in one harvest.

Partial cut or partial cutting – includes the following silvicultural systems: coppice, patch cut, retention, seed tree, selection, shelterwood and for the purposes of this analysis, intermediate cut (which is not a silvicultural system).

RESULTS – the Reporting Silviculture Updates and Landstatus Tracking System of the Ministry of Forests.

Retention – a silvicultural system designed to retain individual trees or groups of trees to maintain structural diversity over the area of the cutblock for at least one rotation, and leave more than half the total area of the cutblock within one tree-height from the base of a tree or group of trees, whether or not the tree or group of trees is inside the cutblock.

Seed tree – a silvicultural system where selected trees are excluded from harvesting in a cutblock, either uniformly or in small groups, to provide a natural seed source for regeneration over a designated period of time.

Selection – a silvicultural system that maintains a continuous uneven-aged forest stand cover by harvesting a limited number of trees, either singly or in groups, of various sizes and ages over time.

Shelterwood – a silvicultural system where mature trees are removed in a series of cuts designed to establish a new even-aged stand under the shelter of the remaining trees.

Silvicultural System – a planned program of activities by which a forest stand or a group of trees is harvested, regenerated and tended over an extended period to achieve a predictable yield of benefits.

Appendix 1. Section 11 of the Operational and Site Planning Regulation *(Forest Practices Code of British Columbia Act)*

Maximum cutblock size

11. (1) The maximum size of a cutblock must not exceed
    (a) 40 ha for the following areas:
        (i) Coast forest region;
        (ii) the following portions of the Southern Interior forest region:
            (A) Arrow Boundary forest district;
            (B) Cascades forest district;
            (C) Columbia forest district;
            (D) Headwaters forest district, except that portion of the district that is in the Robson Valley timber supply area;
            (E) Kamloops forest district;
            (F) Kootenay Lake forest district;
            (G) Okanagan Shuswap forest district;
            (H) Rocky Mountain forest district, and
    (b) 60 ha for the following areas:
        (i) Northern Interior forest region;
        (ii) the following portions of the Southern Interior forest region:
            (A) 100 Mile House forest district;
            (B) Central Cariboo forest district;
            (C) Chilcotin forest district;
            (D) that portion of the Headwaters forest district that is in the Robson Valley timber supply area;
            (E) Quesnel forest district.

(2) The maximum size for a cutblock specified under subsection (1) does not apply to a cutblock located within an area covered by a higher level plan if
    (a) the higher level plan specifies that cutblocks may be larger, or
    (b) the higher level plan specifies conditions that must be met in order for larger cutblock sizes to be approved and, the district manager is satisfied that the conditions are met.

(3) Despite subsection (1), the district manager may
    (a) refuse to approve a forest development plan that includes a cutblock that meets the requirements of that subsection if the district manager is of the opinion that a cutblock smaller than that specified in subsection (1) is required
        (i) for hydrological reasons,

(ii) to manage wildlife values,

(iii) to manage recreation or scenic values, or

(iv) for other similar reasons, or

(b) approve a forest development plan that includes a cutblock that is larger than that specified in subsection (1)

(i) if

(A) harvesting is being carried out to recover timber that was damaged by fire, insects, wind or other similar events and wherever possible, the cutblock incorporates structural characteristics of natural disturbance, or

(B) the silvicultural system proposed for the area

(I) is other than clearcut or seed tree, and

(II) retains 40% or more of the pre-harvest basal area, or

(ii) if the district manager is of the opinion that the larger cutblock is designed to be consistent with the structural characteristics and the temporal and spatial distribution of natural openings.

Appendix 2. Section 64 of the Forest Planning and Practices Regulation *(Forest and Range Practices Act)*

Maximum cutblock size

64 (1) Unless exempted under section 13 (b) *[when result or strategy not required]*, if an agreement holder other than a holder of a minor tenure harvests timber in a cutblock, the holder must ensure that the size of the net area to be reforested for the cutblock does not exceed

(a) 40 hectares, for the areas described in the Forest Regions and Districts Regulation that are listed in Column 1, and

(b) 60 hectares, for the areas described in the Forest Regions and Districts Regulation that are listed in Column 2:

Column 1 40 hectares	Column 2 60 hectares
Coast Forest Region	**Northern Interior Forest Region**
• Southern Interior Forest Region – Arrow Boundary Forest District; • Cascades Forest District; • Columbia Forest District; • Headwaters Forest District, except the portion of the forest district that is in the Robson Valley Timber Supply Area; • Kamloops Forest District; • Kootenay Lake Forest District; • Okanagan Shuswap Forest District; • Rocky Mountain Forest District	• Southern Interior Forest Region – 100 Mile House Forest District; • Central Cariboo Forest District; • Chilcotin Forest District; • the portion of the Headwaters Forest District that is in the Robson Valley; • Timber Supply Area; • Quesnel Forest District

(2) Subsection (1) does not apply to an agreement holder where

(a) timber harvesting

(i) is being carried out on the cutblock

(A) to recover timber damaged by fire, insect infestation, wind or other similar events, or

(B) for sanitation treatments, or

(ii) is designed to be consistent with the structural characteristics and the temporal and spatial distribution of an opening that would result from a natural disturbance, and

(b) the holder ensures, to the extent practicable, that the structural characteristics of the cutblock after timber harvesting has been substantially completed resemble an opening that would result from a natural disturbance.

(3) Subsection (1) does not apply if the timber harvesting that is being carried out on the cutblock retains 40% or more of basal area of the stand that was on the cutblock before timber harvesting.

(4) Subsection (1) does not apply if no point within the net area to be reforested is

(a) more than two tree lengths from either

(i) the cutblock boundary, or

(ii) a group of trees reserved from harvesting that is greater than or equal to 0.25 ha in size, or

(b) more than one tree length from a group of trees reserved from timber harvesting that is less than 0.25 ha in size.

Appendix 3. Wildfire and Pest Review

Background

Natural disturbances can have a significant impact on forests by influencing species composition and structure, timber supply and habitat availability, and can facilitate the potential for future disturbances. Natural disturbances include wildfires, insect outbreaks and other occurrences such as wind and ice storms, landslides and avalanches.

Natural disturbances are much more variable in terms of size and frequency than anthropogenic or human disturbances such as timber harvesting. In British Columbia, from 1913–1995 the total area affected by natural disturbances was 23.5 million ha out of 58 million ha of forested land. This is almost three times greater than the area disturbed by harvesting, which was approximately 8.7 million hectares from 1913–95 (Eng et al. 1997). Since the early 1960s, anthropogenic disturbances have generally overtaken natural causes as the dominant disturbances shaping B.C.'s forests at the landscape level (Steve Taylor, pers. comm.)

The Pacific Forestry Centre (PFC) of the Canadian Forest Service provided historical data on the size and location of areas affected by wildfire and insect pests in BC. This dataset is considered to be one of the best sets of natural disturbance data in Canada. In fact, no other province has a complete dataset of fire and pest information available digitally (Steve Taylor, pers. comm.).

The wildfire data covers the period 1920–1950, and is a record of all fires that were 20 ha or larger during this time. The pest data covers the period 1920–2002 for all areas that had infestations 0.1 ha or larger in size. The wildfire and pest data was broken down into the five administrative boundaries of the 40/60 rule – CFR40, DNC60, NIR60, SIR40 and SIR60.

Table 1 shows the natural disturbance types included in the PFC dataset under three broad categories – bark beetles, defoliators and fire. Bark beetles include the Douglas-fir bark beetle, mountain pine beetle, and spruce beetle. Defoliators include the black-headed budworm, two-year cycle budworm, western spruce budworm, eastern spruce budworm, forest tent caterpillar, Douglas-fir tussock moth, and western hemlock looper. The bark beetles tend to cause fairly high tree mortality, while the defoliators are not usually stand replacing. No information was available for other types of natural disturbances such as wind and ice storms, landslides, avalanches, or other natural processes.

Table 1. Natural disturbance types

Douglas-fir bark beetle	Eastern spruce budworm
Mountain pine beetle	Forest tent caterpillar
Spruce beetle	Douglas-fir tussock moth
Black-headed budworm	Western hemlock looper
Two-year cycle budworm	Fire
Western spruce budworm	

It is important to note that the fire data is for the period 1920–1950 only, to act as a more reliable indicator of historical natural disturbances due to the significant changes in suppression technology that occurred after 1950. Evidence of this can be found in the substantive decrease in the size of lightning-caused fires since 1950, which have become easier to detect and suppress through technological advances (Eng et al. 1997).

There are, however, limitations to the fire data. Only fires that were over 20 ha were recorded on the Ministry of Forests' central fire atlas and transferred to base maps during the period. In addition, the data is fairly complete for central and southern B.C. but less complete for northern areas, such as the Fort Nelson and Skeena Stikine forest districts, which were beyond the organized forest districts at that time. Furthermore, only reported fires were recorded on the atlas, therefore unreported fires did not make it onto the database. In addition, there were also many fires on the coast in the 1920s and 1930s in logging slash that may have gone unreported (Steve Taylor, pers. comm.).

Highlights

The results of the wildfire and pest review focuses on two major criteria:

1. Natural disturbances greater than 300 ha in size; and
2. Natural disturbances caused by mountain pine beetle or wildfire (the two types of natural disturbance most commonly emulated by timber harvesting according to responses from the forest district and licensee survey).

Wildfire (PFC data 1920-1950)

Each forest district in the province has experienced a wildfire greater than 300 ha in size. The largest wildfire for the period of record occurred in the Peace Forest District (DPC) in the NIR60 at 132 574 ha. DPC also had the highest average wildfire size at 4 272 ha. The Queen Charlotte Islands (DQC) in the CFR40 had the smallest average wildfire size at 202 ha.

Mountain Pine Beetle (PFC data 1920-2002)

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 occurred in the Chilcotin Forest District in the SIR60 at 257 009 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).

Additional Wildfire and Pest Charts and Tables

Additional data on wildfire and insect pests in BC are provided in the following charts and tables.

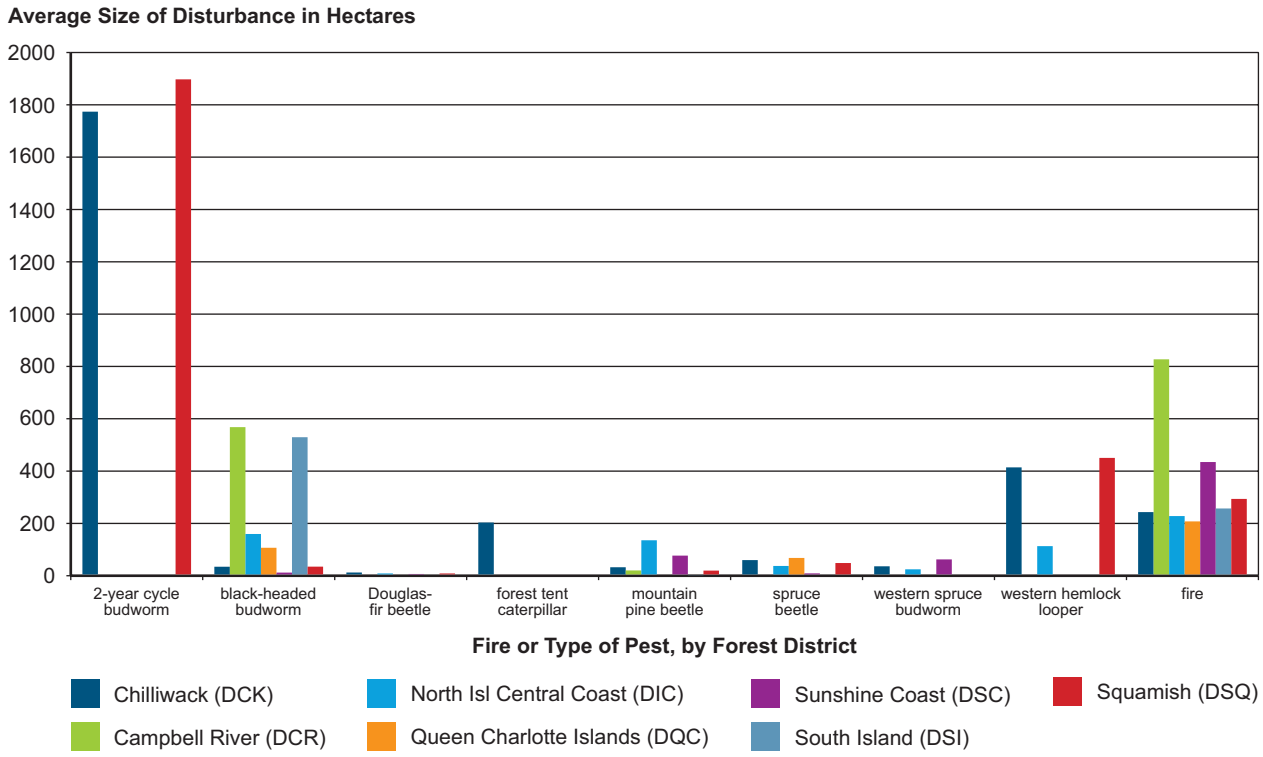

Chart 1. Average size of disturbance (ha) by fire or type of pest, by forest district (CFR40) (pest data 1920–2002; fire data 1920–1950).

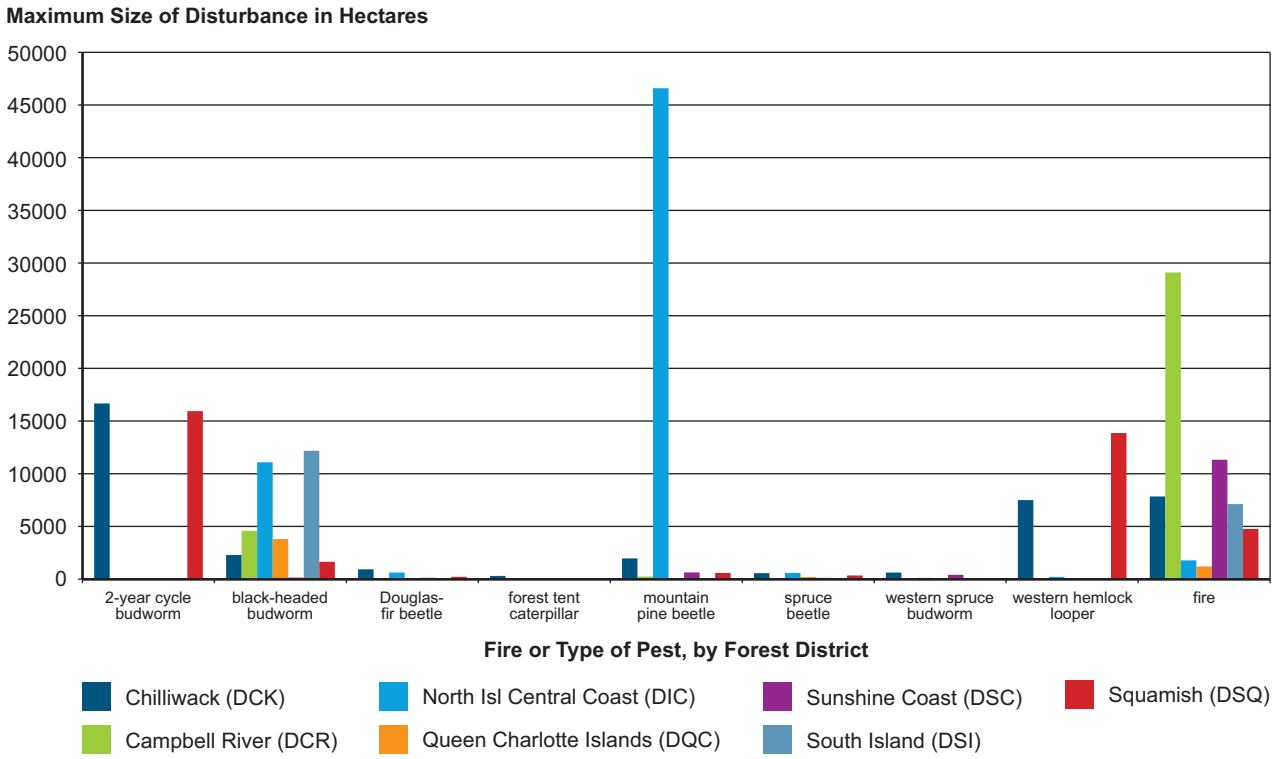

Chart 2. Maximum size of disturbance (ha) by fire or type of pest, by forest district (CFR40) (pest data 1920–2002; fire data 1920–1950).

Table 2. CFR40 data for Charts 1 and 2

	Forest District	2-year cycle budworm	black-headed budworm	Douglas fir beetle	forest tent caterpillar	mountain pine beetle	spruce beetle	western hemlock looper	western spruce budworm	fire	Total
Average Size	Chilliwack (DCK)	1768.7	29.3	7.4	198.2	27.5	54.5	30.9	409.1	238.0	2763.6
	Campbell River (DCR)		562.8			15.1				822.3	1400.1
	North Isl Central Coast (DIC)		154.6	3.6		130.4	32.4	19.5	108.0	223.0	671.6
	Queen Charlotte Islands (DQC)		101.8				62.8			202.4	367.1
	Sunshine Coast (DSC)		7.0	1.6		71.7	4.0	57.2		429.5	571.0
	South Island (DSI)		524.4			0.5				252.0	776.9
	Squamish (DSQ)	1892.2	29.8	3.6		14.6	43.5		445.2	288.5	2717.3
Maximum Size	Chilliwack (DCK)	16571.7	2179.6	819.6	198.2	1864.0	459.9	522.5	7395.1	7743.0	69656.8
	Campbell River (DCR)		4482.6			141.1				29004.1	117429.1
	North Isl Central Coast (DIC)		10988.1	522.0		46492.1	476.2	19.5	108.0	1671.8	262770.5
	Queen Charlotte Islands (DQC)		3694.6				98.4			1097.7	59747.7
	Sunshine Coast (DSC)		38.7	21.8		524.8	13.6	308.4		11224.3	12919.4
	South Island (DSI)		12080.2			0.5				7015.2	44607.5
	Squamish (DSQ)	15844.9	1538.9	113.0		479.5	238.0		13760.3	4657.8	174873.7

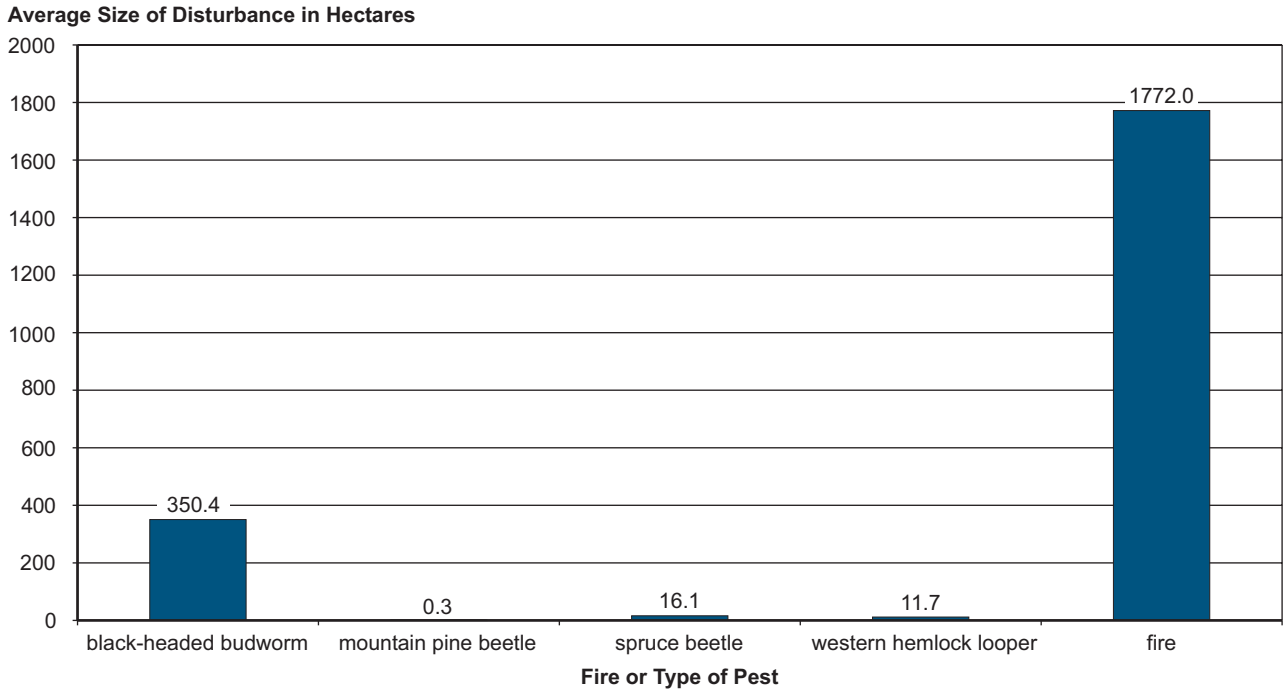

Chart 3. Average size of disturbance (ha) by fire or type of pest (DNC60) (pest data 1920–2002; fire data 1920–1950).

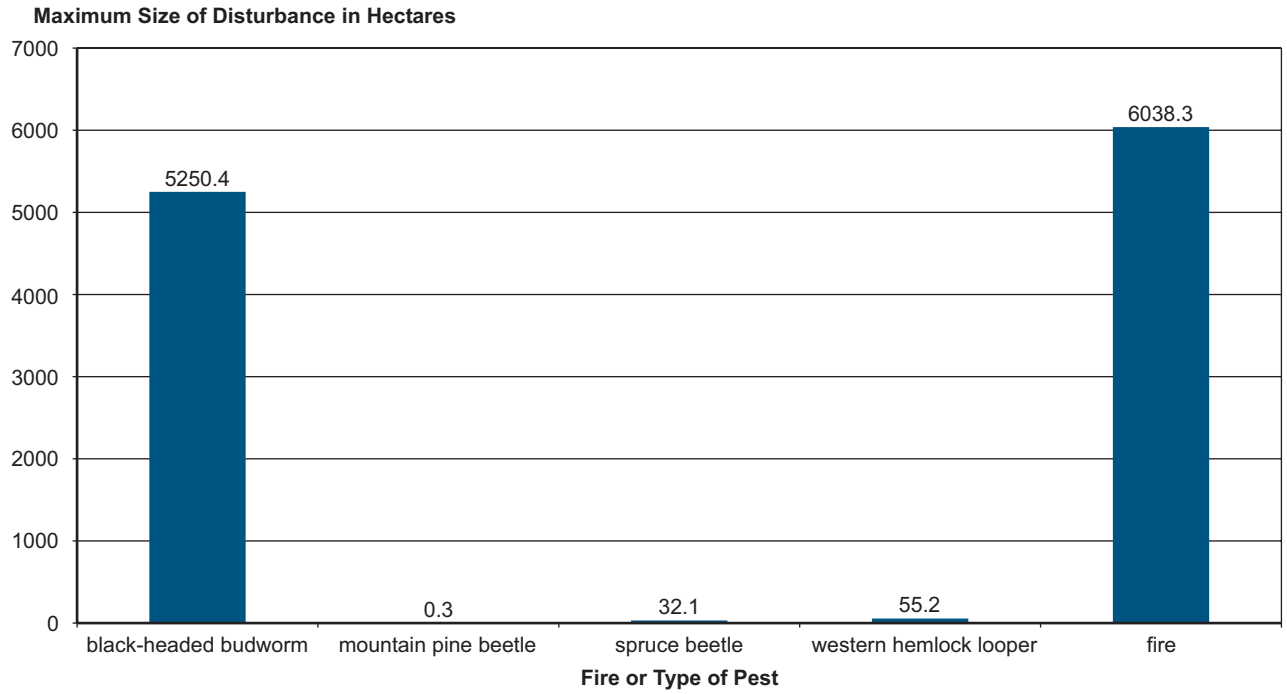

Chart 4. Maximum size of disturbance (ha) by fire or type of pest (DNC60) (pest data 1920–2002; fire data 1920–1950).

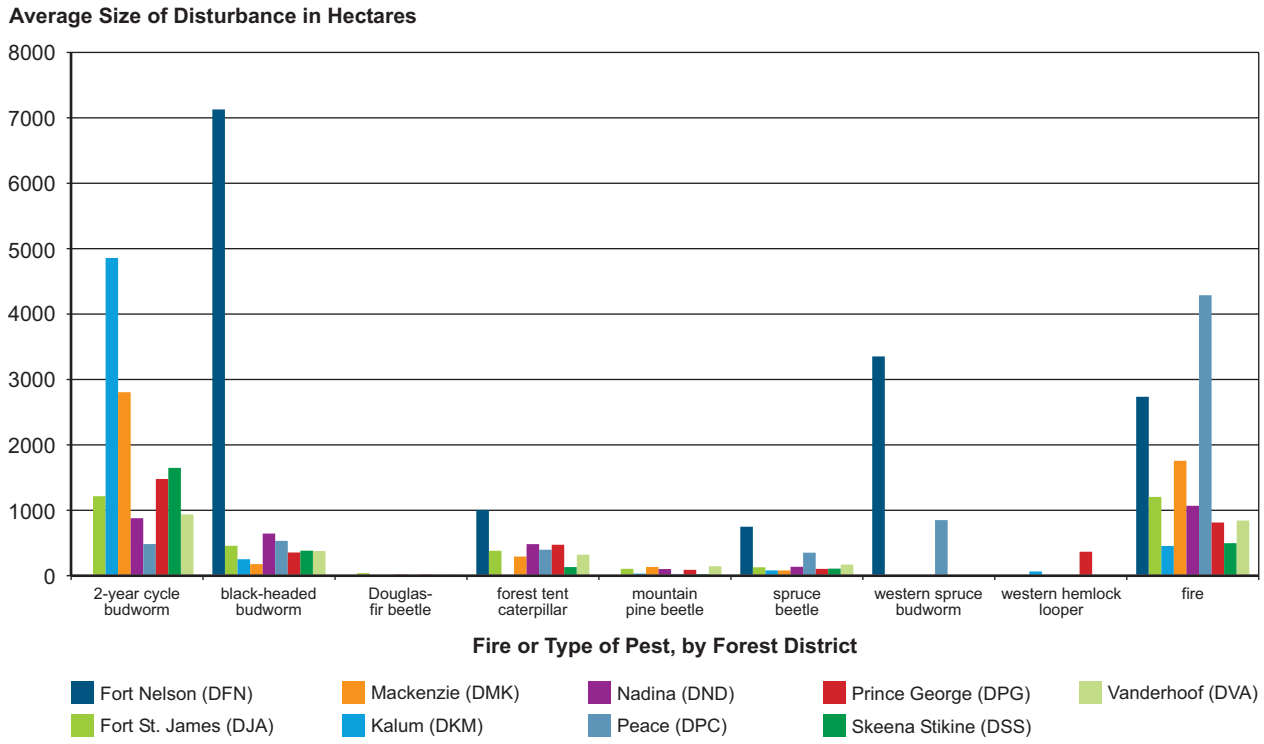

Chart 5. Average size of disturbance (ha) by fire or type of pest, by forest district (NIR60) (pest data 1920–2002; fire data 1920–1950).

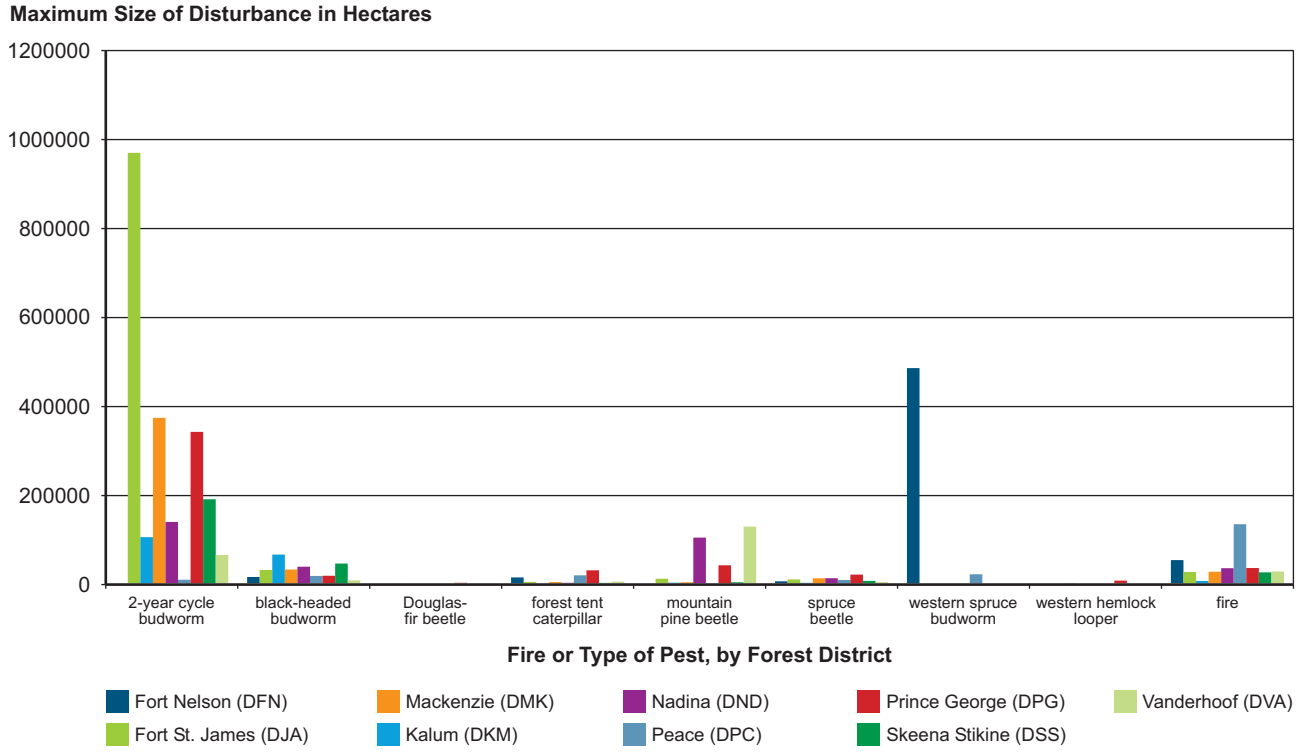

Chart 6. Maximum size of disturbance (ha) by fire or type of pest, by forest district (NIR60) (pest data 1920–2002; fire data 1920–1950).

Table 3. NIR60 data for Charts 5 and 6

	Forest District	2-year cycle budworm	black-headed budworm	Douglas fir beetle	forest tent caterpillar	mountain pine beetle	spruce beetle	eastern spruce budworm	western hemlock looper	fire	Total
Average Size	Fort Nelson (DFN)		7111.3		989.9	0.3	733.0	3335.6		2719.7	14889.9
	Fort St. James (DJA)	1199.4	441.0	21.9	364.8	89.3	112.1			1188.8	3417.4
	Kalum (DKM)	4841.4	235.5			15.9	65.1		49.4	438.5	5645.7
	Mackenzie (DMK)	2789.8	161.3		276.1	117.7	64.9			1740.5	5150.4
	Nadina (DND)	863.5	628.7	3.4	466.7	85.7	119.3			1052.4	3219.8
	Peace (DPC)	467.4	516.2		380.1	10.5	335.3	833.9		4271.9	6815.5
	Prince George (DPG)	1462.8	339.1	4.4	456.7	73.7	88.0		350.2	797.1	3571.8
	Skeena Stikine (DSS)	1632.2	366.5		116.4	8.9	92.1			481.5	2697.4
	Vanderhoof (DVA)	921.6	361.2	1.3	304.4	128.1	153.7			827.4	2697.8
Maximum Size	Fort Nelson (DFN)		14091.9		13061.6	0.3	4390.9	483305.3		51978.8	566828.7
	Fort St. James (DJA)	967239.4	29893.2	210.2	2974.0	10017.1	8422.1			25311.0	1044067.1
	Kalum (DKM)	103517.7	64384.7			1104.1	953.5		303.0	5056.0	175319.0
	Mackenzie (DMK)	371448.3	30747.1		2519.3	2190.5	11052.9			25933.6	443891.7
	Nadina (DND)	137651.2	37079.1	13.1	924.8	102623.0	11210.4			33851.6	323353.2
	Peace (DPC)	7992.0	16456.0		17879.3	150.8	7333.9	20184.8		132573.7	202570.5
	Prince George (DPG)	340080.7	16864.9	912.1	28957.4	40218.0	19443.5		5969.0	34174.7	486620.2
	Skeena Stikine (DSS)	188758.7	44227.3		719.8	2113.4	5430.7			24553.9	265803.8
	Vanderhoof (DVA)	63351.0	6560.1	53.5	3612.6	127190.0	2486.7			26209.9	229463.9

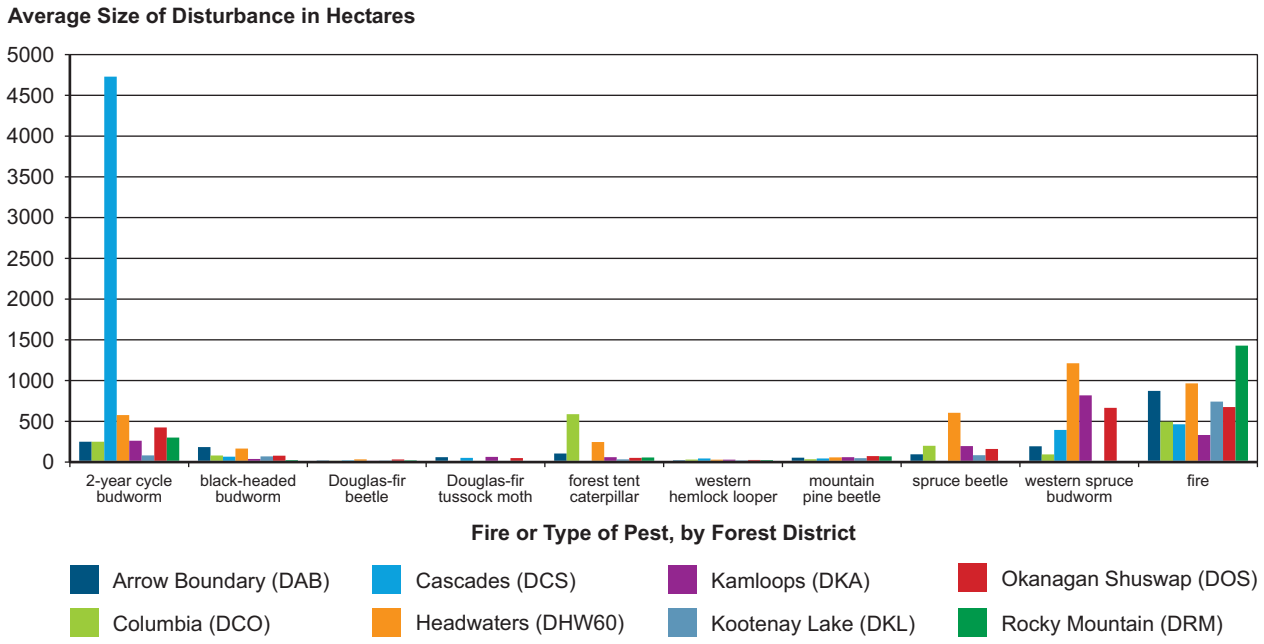

Chart 7. Average size of disturbance (ha) by fire or type of pest, by forest district (SIR40) (pest data 1920–2002; fire data 1920–1950).

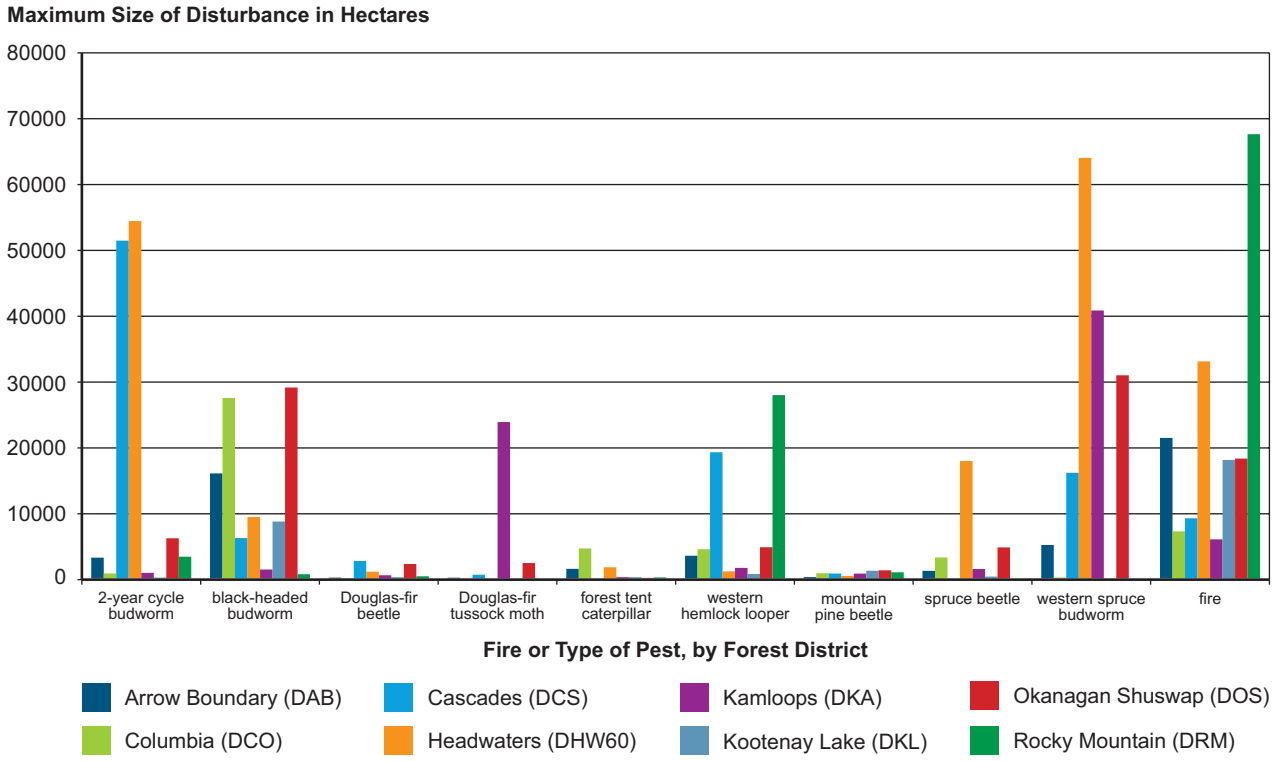

Chart 8. Maximum size of disturbance (ha) by fire or type of pest, by forest district (SIR40) (pest data 1920–2002; fire data 1920–1950).

Table 4. SIR40 Data for Charts 7 and 8

	Forest District	2-year cycle budworm	black-headed budworm	Douglas fir beetle	Douglas fir tussock moth	forest tent caterpillar	mountain pine beetle	spruce beetle	western hemlock looper	western spruce budworm	fire	Total
Average Size	Arrow Boundary (DAB)	233.0	167.8	3.6	43.9	89.0	6.3	38.1	79.1	177.6	857.1	1695.5
	Columbia (DCO)	233.2	64.8	1.7		571.4	14.9	17.8	183.0	78.4	479.3	1644.5
	Cascades (DCS)	4713.2	50.0	4.6	35.1		27.4	27.8		378.5	447.6	5684.1
	Headwaters (DHW60)	560.4	149.6	17.6		229.6	13.0	41.3	588.3	1196.4	949.8	3746.0
	Kamloops (DKA)	245.4	22.0	1.4	47.7	43.6	13.1	44.0	179.6	801.9	315.5	1714.2
	Kootenay Lake (DKL)	66.1	53.0	4.2		17.3	4.6	31.1	68.6		725.8	970.7
	Okanagan Shuswap (DOS)	408.4	61.4	16.0	32.7	35.8	9.6	57.6	145.2	649.3	658.5	2074.4
	Rocky Mountain (DRM)	284.2	8.1	5.7		39.9	8.5	53.0			1412.0	1811.4
Maximum Size	Arrow Boundary (DAB)	3135.8	15925.9	104.5	97.7	1433.5	3421.1	186.7	1128.3	5054.5	21321.5	51809.4
	Columbia (DCO)	734.7	27388.8	41.3		4527.2	4412.3	778.3	3166.1	116.6	7131.1	48296.4
	Cascades (DCS)	51273.4	6115.6	2626.1	544.6		19147.5	719.0		16025.8	9114.8	105566.8
	Headwaters (DHW60)	54251.0	9312.0	1003.5		1666.7	1060.4	351.7	17818.6	63841.6	32937.7	182243.3
	Kamloops (DKA)	829.7	1329.4	456.0	23726.7	165.0	1578.4	713.9	1406.5	40672.0	5919.0	76796.6
	Kootenay Lake (DKL)	105.5	8618.3	165.8		170.9	660.3	1144.6	261.2		17974.6	29101.4
	Okanagan Shuswap (DOS)	6073.9	28976.9	2167.8	2316.8	60.4	4718.1	1217.1	4683.8	30836.4	18181.0	99232.3
	Rocky Mountain (DRM)	3286.8	616.3	306.2		131.1	27820.5	913.9			67449.7	100524.5

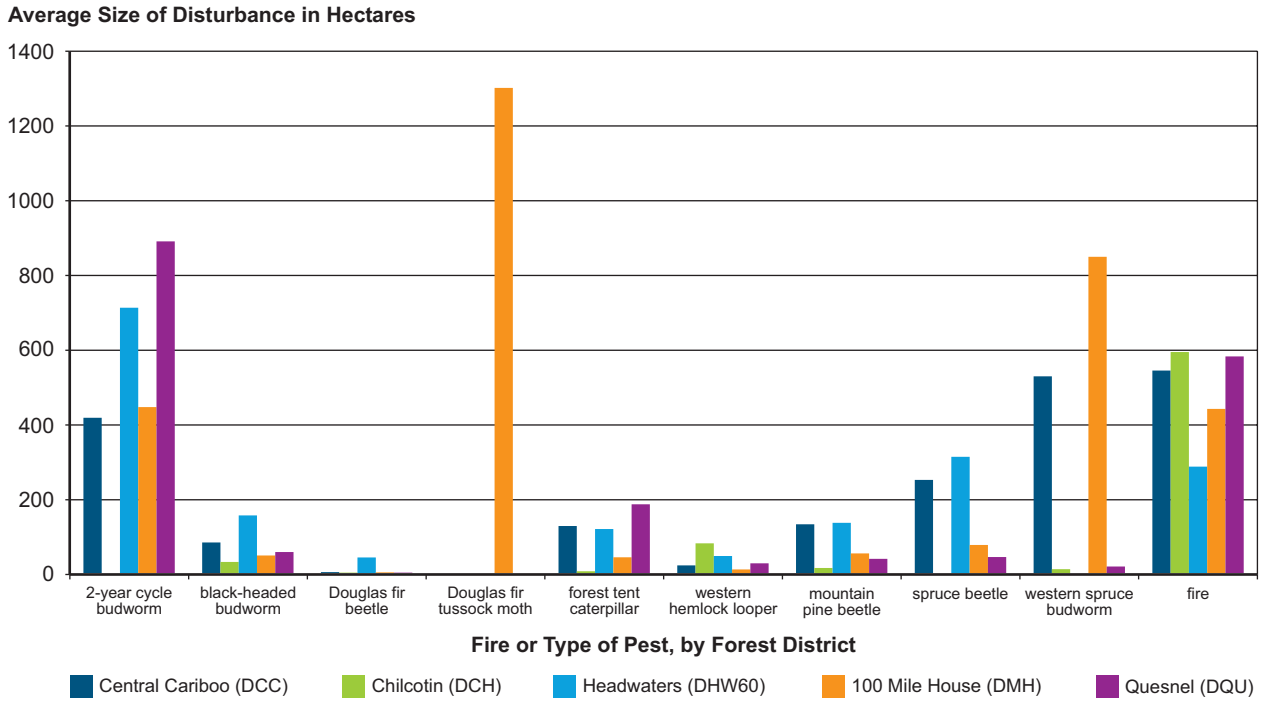

Chart 9. Average size of disturbance (ha) by fire or type of pest, by forest district (SIR60) (pest data 1920–2002; fire data 1920–1950).

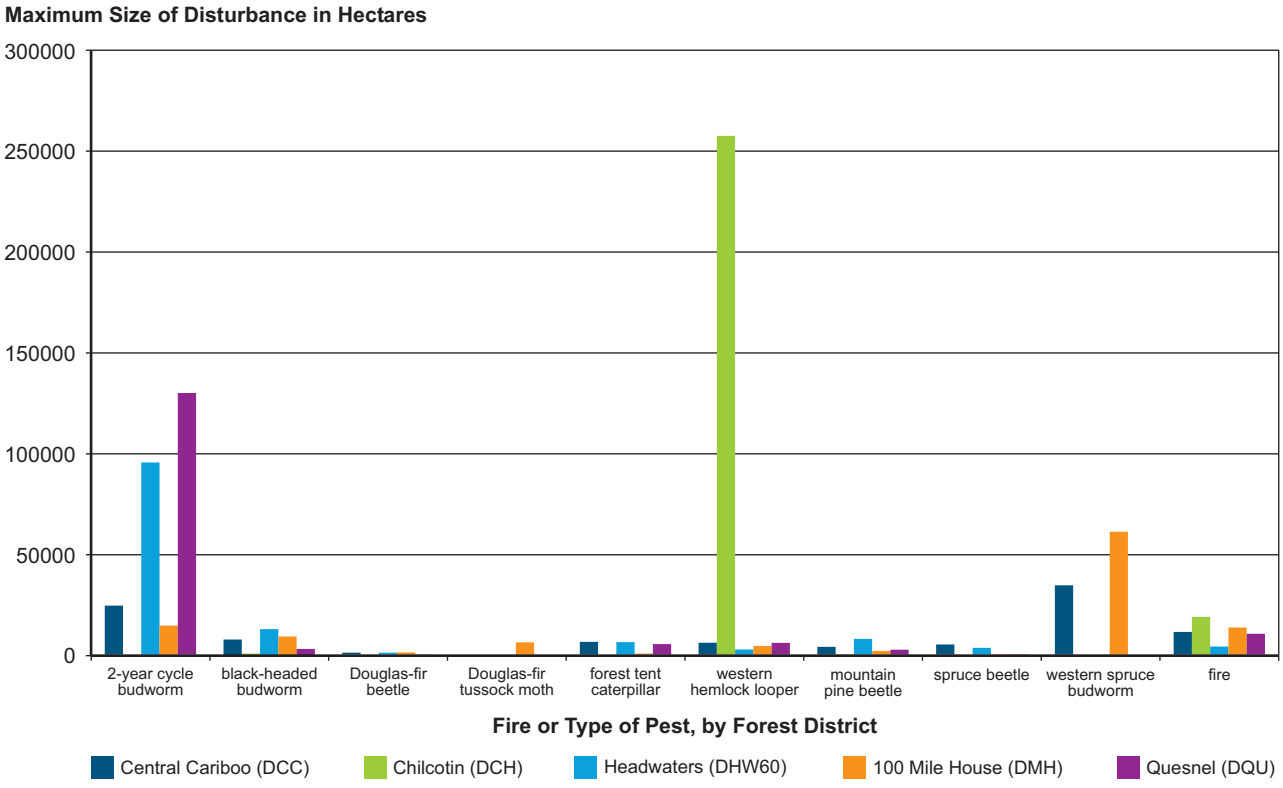

Chart 10. Maximum size of disturbance (ha) by fire or type of pest, by forest district (SIR60) (pest data 1920–2002; fire data 1920–1950).

Table 5. SIR60 data for Charts 9 and 10

	Forest District	2-year cycle budworm	black-headed budworm	Douglas fir beetle	Douglas fir tussock moth	forest tent caterpillar	mountain pine beetle	spruce beetle	western hemlock looper	western spruce budworm	fire	Total
Average Size	Central Cariboo (DCC)	415.8	82.1	2.9		126.2	20.7	130.8	249.4	526.7	542.1	2096.6
	Chilcotin (DCH)		29.9	1.4		5.1	79.8	13.8		10.7	591.7	732.4
	Headwaters (DHW60)	710.1	154.5	42.0		118.0	45.8	134.7	311.2		285.1	1801.6
	100 Mile House (DMH)	444.4	47.3	2.1	1298.3	42.3	9.9	52.8	75.3	846.5	439.5	3258.5
	Quesnel (DQU)	887.6	56.4	1.3		184.2	26.2	38.4	43.2	17.8	580.0	1835.0
	Forest District	2-year cycle budworm	black-headed budworm	Douglas fir beetle	Douglas fir tussock moth	forest tent caterpillar	mountain pine beetle	spruce beetle	western hemlock looper	western spruce budworm	fire	Total
Maximum Size	Central Cariboo (DCC)	24265.4	8003.2	977.5		6342.3	5875.4	3848.7	5009.0	34322.5	11246.6	99890.6
	Chilcotin (DCH)		992.3	72.6		12.3	257008.9	133.4		26.4	18700.8	276946.7
	Headwaters (DHW60)	95220.5	13161.9	964.2		6173.0	2513.4	7796.0	3345.3		4007.0	133181.2
	100 Mile House (DMH)	14338.2	9513.1	1039.6	6073.4	491.9	4258.9	1825.7	175.8	60850.3	13420.0	111987.0
	Quesnel (DQU)	129614.4	3328.7	69.7		5206.5	5792.9	2420.6	136.5	17.8	10337.9	156924.9

Appendix 4. Cutblock Size Survey

Copy of Survey

Welcome to the survey regarding cutblock size in British Columbia.

Please read the following before you start:

The survey covers the period of harvesting beginning no earlier than January 1, 1996 and ending no later than December 31, 2002. These dates were chosen to cover the majority of the time period from when the Forest Practices Code came into effect to the transition to the *Forest and Range Practices Act*.

The spreadsheet report posted on the MoF ftp site provides data, tables and charts on cutblocks by forest district for the above-noted period, and should be reviewed in conjunction with the survey.

Forest district information is based on current district boundaries. Data was provided by RESULTS.

Please ensure that you complete the survey for one forest district only.

Please consider any references to the now-repealed Operational and Site Planning Regulation (OSPR) as if the OSPR was still in force.

PLEASE DO NOT EDIT THE QUESTIONS. YOU MAY ADD MORE SPACE TO COMMENT SECTIONS AS YOU SEE FIT.

Please respond by Wednesday March 10th, 2004 to: sheldon.gagne@gems7.gov.bc.ca

You may now proceed with the survey. Thank you.

PART 1. Location and Licence

1. Forest District Name: _____

   (a) If operations in Headwaters Forest District only check (√):

   Robson Valley TSA _____

   Portion of Kamloops TSA _____

2. Major Licensee Name (licensee only): _____

3. Location: _____, B.C.

4. Licence(s) covered by this survey (√):

   Forest Licence _____ Tree Farm Licence ___ Community Forest Agreement_____
   Timber Licence_____ Woodlot Licence ___ Timber Sale Licence _____

5. Approximate total AAC of (1) or (4) above, as applicable _____m^3

PART 2. General Questions (All Blocks)

1. Maximum cutblock size as per the Operational and Site Planning Regulation (OSPR): _____ hectares.

2. For your area of responsibility, what are the key factors or conditions determining the range and distribution of cutblock sizes for the years 1996–2002?

   _____

3. A forest development plan may be approved if it includes a cutblock larger than the maximum as specified by the OSPR. If applicable, please specify (√) the reason(s) for approval of your FDP(s):

   _____ Recovery of timber damaged by fire, insects, wind or other similar events and wherever possible, the cutblock incorporated structural characteristics (emulated) of natural disturbance (specify fire, insect name, wind or event _____)

   _____ Silvicultural system is other than clearcut or seed tree and retains 40%+ of pre-harvest basal area (specify system used _____)

   _____ Larger cutblock is consistent with structural characteristics and temporal and spatial distribution of natural openings

4. Is there a higher level plan specifying that cutblocks may be larger than that specified by the OSPR?

   No____ Yes____ (please complete the following)

   Name of plan:_____

   Maximum size allowed: _____ hectares

   Earliest date that new maximum applied: _____

   Allowable reason(s) for exceeding maximum:_____

PART 3. Cutblocks Significantly Larger Than the Maximum Size

"Significantly larger" means 60+ hectares for OSPR maximum of 40 ha, and 90+ ha for OSPR maximum of 60 ha.

1. What are the reasons for the significantly larger cutblocks (e.g., to emulate or to not emulate natural disturbances)?

   _____

2. Where (e.g., biogeoclimatic variants) are the significantly larger cutblocks occurring?

   _____

3. For areas where the significantly larger cutblocks are developed to *emulate natural disturbance* (see 3(e) for examples):

   a. How does the location compare with the actual location of natural disturbances? (√)

      same _____ adjacent _____ partial overlap _____ general vicinity _____

      Other (please specify) _____

      Comment: _____

   b. What values are impacted positively and negatively? (N = negatively; P = positively)

      ___soils ___forage and associated plant communities
      ___visual quality ___wildlife
      ___timber ___biodiversity
      ___water ___resource features
      ___fish ___cultural heritage resources
      ___recreation resources

   c. Please explain how the negative impacts (where applicable) to these values may be mitigated.

      _____

   d. Are the openings irregular in shape with leave strips and islands?

      yes ___ no _____ some of both _____

      _____

   e. What natural disturbance is the cutblock trying to emulate (please indicate approximate size of block?

Disturbance	Hectares	Disturbance	Hectares
2-year cycle budworm		balsam bark beetle	
black-headed budworm		Douglas-fir tussock moth	
western spruce budworm		forest tent caterpillar	
Douglas-fir beetle		western hemlock looper	
mountain pine beetle		Fire	
spruce beetle		Wind	
		Other*	

*e.g., landslides, snow avalanche, flooding, ice storms, hail

4. For areas where cutblock sizes and patterns do not emulate natural disturbance, though evidence of historical natural disturbance would suggest frequent large openings:

   a. Name the factors preventing emulation of natural disturbance (e.g., social acceptability, economics).

   _____

   b. How can any of the inhibiting factors be overcome without negatively impacting other values?

   _____

PART 4. Other Cutblock Sizes

"At or near the maximum" means cutblocks 15–59.9 hectares in size for the OSPR maximum of 40 ha, and 25–89.9 ha for 60 ha maximum.

"Small cutblocks" means cutblocks less than 15 ha for the OSPR maximum of 40 ha and less than 25 ha for the OSPR maximum of 60 ha.

1. Name the key factors determining cutblock size at or near the maximum.

   _____

2. Name the key factors determining small cutblocks.

   _____

PART 5. Partial Cutting Silvicultural Systems

What apart from the silvics of tree species are some of the impediments to practicing partial cutting. For instance, are appraisal procedures and Section 11(3)(b) of the OSPR a factor (http://www.for.gov.bc.ca/tasb/legsregs/archive/fpc/fpcaregs/oplanreg/opr-3.htm#11)?

_____

PART 6. General Effectiveness of Maximum Allowable Cutblock Sizes

Please comment on the general effectiveness of the 40/60 rule in determining cutblock size and forest resource management in your area.

_____

PART 7. Any Other Comments You Would Like to Make Regarding this Survey or the Data, Tables and Charts

_____

****

THANK YOU!

We appreciate your time in completing this survey. We ask that you please provide the following information should we need to contact you.

Contact name _____ Affiliation _____

Email _____ Phone _____

Summary of Survey Results

The following is a summary of responses to some of the survey questions. Note that Part 2 and sections of Part 3 are discussed under 3.2 40/60 Rule Review in the main body of the report.

Part 3. Question 3 - Cutblocks Significantly Larger than the Maximum Size

Questions 3b and 3c of Part 3 of the survey dealt with cutblocks significantly larger than the maximum size identified by the 40/60 rule. Of the 25 respondents, 16 addressed whether there was a negative or positive impact or a combination of the two on the 11 resource values identified by government. Very few respondents assessed the impact on all of the values.

The results are presented in Table 1.

Table 1. Survey responses to resource value impacts on significantly larger blocks (>40 ha or >60 ha as applicable)

Value	Soils	Visual Quality	Timber	Water	Fish	Forage and Associated Plant Communities	Wildlife	Biodiversity	Resource Features	Cultural Heritage Resources	Recreation Resources
Positive impact (number of respondents)	6	2	9	5	6	13	11	10	5	4	3
Negative impact (number of respondents)	2	11	3	2	1	1	5	4	3	4	7
Multiplier net effect*	**3P**	5.5N	**3P**	**2.5P**	**6P**	**13P**	**2.2P**	**2.5P**	**1.7P**	1P/N	2.3N

* Multiplier net effect: e.g., for soils – 6 positives divided by 2 negatives = 3P; for visual quality – 11 negatives divided by 2 positives = 5.5N

Based on the responses in Table 1, the greatest positive impact of significantly larger cutblocks was to forage and associated plant communities. The values of fish, soils and timber received the next highest benefits from significantly larger blocks. Eight of the resource values were positively impacted by significantly larger blocks, while two were negatively impacted – visual quality and recreation resources. Cultural heritage resources appear to not be either positively or negatively impacted by significantly large cutblocks.

About half of the respondents provided supporting comments regarding impacts on the resource values. One of the more notable comments came from a licensee, who stated "It's not the size of the block that necessarily impacts these resources, but the rate of harvest in a local area is the real driver behind many of the positive/negative influences of harvesting. For example, one large cutblock over a single rotation would have less impact than 200 60-hectare blocks over a 20-year period."

Other general comments included:

- No negative impacts anticipated if the block was properly designed.
- Other than forest health-related situations (e.g., mountain pine beetle), if impacts were deemed to be negative, the proposal would likely have to be rejected.
- Ecologists indicate that larger patches in the central interior emulate natural disturbance patterns and would result in fewer impacts due to lower road construction and less time spent in an area.
- Many impacts that may be considered negative on a site-specific basis, may result in positive impacts to the resource value if considered at a landscape level.

Some specific comments were made regarding how negative impacts to certain resource values could be mitigated. Many of the comments were related to visual quality:

- For mountain pine beetle salvage, nothing can be done.
- Establish wildlife tree patches and individual wildlife tree.
- Use digital terrain modelling.
- Manage visual resources at the same scale as natural disturbances. Do not manage from each view point, but make sure the collective visual impact across the management unit is within acceptable limits.
- Use natural shapes and residual stand structure.
- More education.

Other comments were related to the trade-offs made between harvesting larger blocks as compared to smaller blocks. For instance, timber values may be more negatively impacted in larger blocks as more merchantable volume is often left in an effort to emulate natural disturbances. Other examples pertained to wildlife and soils. Large openings can be beneficial to some wildlife as forage production is increased, but may lead to a decrease in numbers through increased hunting pressures. For soils, larger blocks can lead to lower levels of soil disturbance due to fewer roads per unit area.

One district stated: "As is usually the case, the quality of the planning, layout, harvesting and post-harvest activity will determine the impact on other resource values whether the block is large or small."

Part 3. Question 4 - Emulation of Natural Disturbances

Questions 4a and 4b of Part 3 addressed factors that prevented the emulation of natural disturbances in determining cutblock size and how could they be overcome. Response to these questions was high.

Social acceptability was by far the highest noted factor that prevented emulation of natural disturbances (11 respondents). Interestingly and of significant note was that one district stated that public acceptability was less of an issue than originally expected, and that issues such as visual quality, watershed management, inoperable ground, and terrain stability restricted the ability to introduce large openings.

Other reasons in order of significance were economics (especially regarding the administrative workload associated with justifying larger blocks), forest health patterns and amount (e.g., beetle attack), short-term hunting and trapping values, community watersheds, poor timber quality, natural range barriers, legislation and policy, seral stage representation, landscape connectivity, and equivalent clearcut area.

In order to overcome these inhibiting factors without negatively impacting values, the most common responses were: education (nine), communication (three), ecological advocacy (one), a solid biological rationale (one) or social awareness (two). Other recommendations included minimizing soil disturbance, retention of in-block cover, consideration of terrain stability, spatially explicit forest estate modelling, and considering biodiversity over timber supply.

Part 4. Other Cutblock Sizes

Part 4 of the survey asked what the key factors were for determining cutblock size for cutblocks at or near the maximum size (15–59.9 ha for the 40 ha rule, and 25–89.9 ha for the 60 ha rule) or cutblocks that were smaller than the maximum size (<15 ha for the 40 ha rule, and <25 ha for the 60 ha rule).

Beetles were the number one factor in determining the size of cutblocks at or near the maximum (nine respondents), followed by the legislated maximums of the 40/60 rule and the related requirement for "extensive justification/rationalization" for cutblocks that exceed the maximums. Other factors included: ecological appropriateness, spatial and temporal distribution of cutblocks, timber types, timber type boundaries, terrain, total chance, landscape biodiversity constraints, forest ecosystem networks, old growth management areas, green-up requirements, operability, and stand characteristics.

Numerous factors were provided for determining the size of small cutblocks, including the "less than 2000 cubic metre requirement," which requires no cutting permit (two respondents), and the following reasons provided by one respondent each: small beetle infestations, requirements for ungulate winter range or critical deer winter range (as in the five-hectare maximum requirement in the Kamloops LRMP), visual quality, timber types, silvicultural and harvesting systems, natural patch sizes, wind firmness, public perception, blowdown salvage, closeness to community or transportation corridor, and the social pressures associated with biodiversity, landscape unit planning and certification requirements.

Part 5. Partial Cutting Silvicultural Systems

Part 5 of the survey asked: apart from the silvics of tree species, what are some of the impediments to practicing partial cutting?

Economics or the related comments "cost and appraisal allowances," "stumpage," "expense" or similarly worded statements were mentioned by 19 of 25 respondents as an impediment to practicing partial cutting. A few respondents named economics as the number one or major impediment.

A significant related comment was that the 40% basal area retention requirement under the Forest Practices Code can be "problematic in biogeoclimatic zones other than the

IDF. This sets quite a rigid rule for retention and may only be feasible in Douglas-fir uneven-aged management areas." As referred to by several other respondents, there is an inconsistency between the legislative requirement of the Code's 40% basal area retention and the appraisal specification of 30% volume retention for single tree selection.

Other comments regarding impediments to practicing partial cutting included: beetle salvage, root rot and western spruce budworm harvesting, terrain, blowdown potential, armillaria root rot and reduced timber supply, mistletoe, minimum volumes to remove, soils, safety, moisture regimes, new licence and permit utilization standards, unrealistic expectations as to the ability to accurately predict retention levels, and inadequate uneven-aged growth and yield models for the operating area.

Part 6. General Effectiveness of Maximum Allowable Cutblock Sizes

Part 6 of the survey requested comments on the general effectiveness of the 40/60 rule in determining cutblock size and forest resource management.

Only two respondents responded positively to the effectiveness of the 40/60 rule – one felt the rule was effective and the other stated that the rule has been accepted by industry. All other respondents were dissatisfied with the rule, labelling it largely irrelevant when it came to either beetle issues or where there was an extensive communications program to support the variety of cutblock sizes. Some of the comments included, "provided little foundation for good forest management" and "the rule was virtually eliminated in favour of targets related to natural disturbances." Others indicated problems with issues such as the checkerboard pattern of cutblocks that has been created because of the rule, associated high road densities and increased costs, reduced levels of interior forest habitat, and detrimental to biodiversity. One respondent suggested that provisions be made to allow for a range of cutblock sizes.

Part 7. Other Comments

Part 7 of the survey requested any other comments that respondents may have regarding the survey or the data upon which the survey was based.

There were several comments that the survey only considered the size of individual cutblocks, and not the overall size of openings created as a result of many contiguous, non-greened up cutblocks. Many of the respondents from the Interior who were salvaging beetle-infested timber indicated that many openings were now joined together to create extremely large cutblocks, some in the order of 1000–1500 hectares in size. It was pointed out that RESULTS focuses on single openings and is not capable of providing cutblock size information for two or more contiguous blocks. Another comment indicated that the natural disturbance unit concept is being used in the NIR60 and has been accepted as the "best" science.

Appendix 5. 40/60 Rule Boundaries

Appendix 6. Forest Regions and Districts Map

CFR – Coast Forest Region	NIR – Northern Interior Forest Region	SIR – Southern Interior Forest Region
DCR – Campbell River	DFN – Fort Nelson	DMH – 100 Mile House
DCK – Chilliwack	DJA – Fort St. James	DAB – Arrow Boundary
DNC – North Coast	DKM – Kalum	DCS – Cascades
DIC – North Island – Central Coast	DMK – Mackenzie	DCC – Central Cariboo
DQC – Queen Charlotte Islands	DND – Nadina	DCH – Chilcotin
DSI – South Island	DPC – Peace	DCO – Columbia
DSQ – Squamish	DPG – Prince George	DHW – Headwaters
DSC – Sunshine Coast	DSS – Skeena Stikine	DKA – Kamloops
	DVA – Vanderhoof	DKL – Kootenay Lake
		DOS – Okanagan Shuswap
		DQU – Quesnel
		DRM – Rocky Mountain