



# EVALUATION OF WILDLIFE TREE RETENTION FOR CUTBLOCKS HARVESTED UNDER THE FOREST PRACTICES CODE (1996–2001)

## INTRODUCTION

During the 2001 field season, 128 cutblocks from 12 forest districts, representing each of British Columbia's forest regions<sup>1</sup> and seven of the province's 14 BEC zones, were evaluated for various aspects of wildlife tree retention.

The project had four main objectives:

- to assess how effectively current wildlife tree retention practices meet the ecological and administrative guiding principles specified in the *Provincial Wildlife Tree Policy and Management Recommendations*;
- to determine the timber supply impacts of current wildlife tree retention practices;
- to evaluate the structural and compositional changes of wildlife tree retention areas following harvest; and
- to identify wildlife tree retention practices that are achieving ecological objectives and minimizing costs.

The following is a summary of the full report, which can be viewed at: <http://www.for.gov.bc.ca/hfp/pubsmonitoring.htm>

## PROJECT DESIGN

Both pre- and post-harvest cutblocks were evaluated in the study. One hundred and eighteen (118) post-harvest cutblocks were randomly selected for sampling from a list generated by the Ministry of Forests' Integrated Silviculture Information System (ISIS).

Ten (10) non-randomly selected pre-harvest cutblocks were also assessed in order to compare areas designated for wildlife tree retention in the silviculture prescriptions with available stand structure in the cutblocks.

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<sup>1</sup> The Ministry of Forests regions and districts sampled during the evaluation reflect the administrative structure of the ministry at the time of the study.



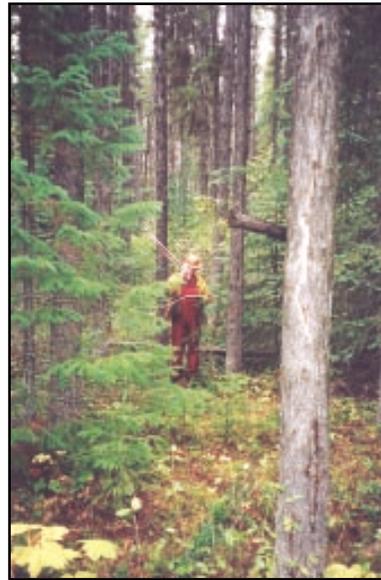
All field assessors conducting the surveys were very familiar with wildlife tree management in British Columbia. Sampling was conducted using prism plots, fixed-area plots, or complete counts. Pre-harvest cruise summaries were used to provide pre-harvest comparison information for the analyses.

Silviculture prescriptions described many different objectives for the reserves left within cutblocks, including wildlife tree retention, riparian reserves and management zones, temporary reserves, reserves associated with the retention silvicultural system, and visual reserves. In some instances, there were no objectives described in the silviculture prescription for reserves left on site.

## RESULTS

The results of the wildlife tree retention evaluation are summarized by BEC zone and cutblock.

The ecological value ratings for the sampled cutblocks are based on a synthesis of collected data, knowledge of the surrounding stand type, and the professional judgement of the field assessors. Reserves retained for reasons other than wildlife tree or riparian retention (e.g., temporary reserves, reserves associated with the retention silvicultural system, visual reserves, and reserves with undefined objectives) were considered to contribute to ecological value, but were not included in the timber



*Field assessor conducting survey.*

supply impact analysis. Only wildlife tree retention was considered for the timber supply impact analysis, as riparian reserves are already removed from the timber harvesting land base.

### BEC Zone Summary

Table 1 summarizes key evaluation results by BEC zone.

As can be seen in Table 1, there was considerable variability in the implementation of wildlife tree retention between the sampled BEC zones.

*Table 1: Summary of key evaluation results by BEC zone.*

Results	BEC zone						
	BWBS	CWH	ESSF	ICH	IDF	SBPS	SBS
# of cutblocks sampled	8	31	30	30	14	6	9
% cutblocks rated as high ecological value by field assessors	12.5%	71%	13%	53%	50%	0%	33%
% cutblocks rated as medium ecological value by field assessors	75%	22.5%	33%	34%	36%	50%	34%
% cutblocks rated as low ecological value by field assessors	12.5%	0%	37%	10%	7%	17%	22%
% of cutblocks with no retention	0%	6.5%	17%	3%	7%	33%	11%
% cutblocks with no high-value wildlife trees	38%	13%	60%	20%	43%	67%	22%
% cutblocks with $\geq 4$ sph of high-value wildlife trees	38%	45%	20%	27%	0%	0%	22%



Results	BEC zone						
	BWBS	CWH	ESSF	ICH	IDF	SBPS	SBS
% of retained area in riparian reserves (dispersed and patch)	1%	19%	19%	4%	6%	0%	76%
% of retained area in wildlife tree retention (dispersed and patch)	70%	53%	77%	46%	92%	100%	13%
% of retained area other than riparian or wildlife tree retention	29%	28%	4%	50%	2%	0%	11%
%TAUP in PW $\geq$ 2 ha	4.6%	5.9%	3.7%	3.1%	2.2%	0%	0%
Average size of patch retention (PW) (ha)	1.4	1.8	1.8	1.4	1.6	1.1	1.0
Average # of sph with internal decay	2.1	8.8	1.1	14.4	1.6	0.6	0.1
% cutblocks containing trees with internal decay	63%	81%	33%	70%	57%	33%	33%
Average # of sph of live wildlife trees (classes 1 and 2), and % of total stems	117(76%)	88(90%)	100(88%)	102(82%)	49(82%)	48(87%)	75(93%)
Average # of sph of dead wildlife trees (classes 3 to 9), and % of total stems	36(24%)	10(10%)	14(12%)	22(18%)	11(18%)	7(13%)	6(7%)
% cutblocks with $\leq$ 5% of stems windthrown in reserves	71%	81%	68%	80%	50%	67%	38%
% reserves within 100 m of mature forest cover	73%	70%	77%	88%	95%	78%	50%
% of TAUP in wildlife tree and riparian retention	15.6%	12.1%	7.4%	7.4%	11.8%	3.0%	7.7%
% of TAUP in retention other than wildlife tree and riparian	6.4%	4.7%	0.3%	7.5%	0.3%	0%	1.0%
% of retained stems considered dangerous during harvesting	0%	0.1%	0%	0.3%	0%	0%	0.1%
% volume timber supply impact (weighted for the sampled strata)	14.2%	3.4%	3.5%	7.1%	10.0%	1.3%	0.9%
% area timber supply impact (weighted for the sampled strata)	16.3%	4.6%	4.9%	7.5%	14.0%	1.6%	1.1%

BWBS: Boreal White and Black Spruce; CWH: Coastal Western Hemlock; ESSF: Engelmann Spruce–Subalpine Fir; ICH: Interior Cedar Hemlock; IDF: Interior Douglas-fir; SBPS: Sub-boreal Pine–Spruce; SBS: Sub-boreal Spruce.



## Cutblock Summary

Of the 128 cutblocks surveyed in the study, 116 (90.6%) contained some form of retention. Of the 116 cutblocks with retention, 20 (15.6%) contained retention with undefined objectives or reserves for purposes other than stand-level biodiversity. Twelve of the 128 sampled cutblocks (9.4%) had no retention. When combined, 25% of the sampled cutblocks either had no retention, contained retention with undefined objectives, or contained reserves for purposes other than stand-level biodiversity.

Approximately 41.4% of the sampled cutblocks contained reserves rated as having high ecological value; 34.4% were rated as having medium ecological value; 14.8% were rated as having low ecological value; and 9.4% had no retention.

Dispersed retention accounted for approximately 20% of the total area of retention across the sampled cutblocks; patch retention accounted for the remaining 80%. High-value wildlife trees are being retained with both dispersed and patch retention; however, patches generally provide more high-value wildlife trees than dispersed retention.

The evaluation showed a trend towards smaller average heights and diameters in reserve trees compared to

average pre-harvest heights and diameters. Of the 51 zone/species combinations, 94% showed reductions in average height; 59% showed decreases in average diameter.

Approximately 70% of sampled cutblocks had less than 5% windthrow in the reserves, 96% had less than 20% windthrow, and only 4% had windthrow levels greater than 20%. None of the sampled cutblocks had windthrow levels greater than 40%.

The percent of retained trees considered dangerous to forest workers was low for all BEC zones (less than 0.4%).

The estimated timber supply impacts due to wildlife tree retention weighted by the sample strata are 3.5% by volume and 4.3% by area. Broken down by Coast and Interior: Coast – 3.3% by volume and 4.5% by area; Interior – 3.6% by volume and 4.2% by area.

Mitigating factors, such as designating patches  $\geq 2$  hectares as old-growth management areas (OGMAs) where the retention contains appropriate old-growth attributes, moving the location of wildlife tree patches following each rotation, and allocating some large wildlife tree patches to more than one cutblock, have the potential to reduce the short- and long-term timber supply volume impacts associated with wildlife tree retention.



*Dispersed retention in the SBS.*



*Wildlife tree patch in the ESSF.*



The level of windthrow, insects/disease, and salvage in the sampled cutblocks does not appear to have impacted the structure, composition or ecological value of wildlife tree reserves over the period evaluated by this study (1996–2001).

A number of methods to achieve ecological objectives and minimize costs were identified in the evaluation, including: anchoring reserve areas on high-value attributes and operationally difficult sites, using larger versus smaller patch reserves, and ensuring effective communications between planners and logging crews. No new or unexpected practices were observed during the evaluation.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

From the results of the evaluation, it appears that wildlife tree retention has been widely implemented across the province. Wildlife tree retention was observed in 75% of the sampled cutblocks. However, 25% of the sampled cutblocks either had no retention (9.4%), or contained retention with undefined objectives or reserves for purposes other than wildlife tree or riparian retention (15.6%).

Forty-one percent of the sampled cutblocks were rated as having high ecological value, indicating that the trees retained on those cutblocks were considered representative of the available habitat by the field assessors. From this result, it appears there is room for

improvement in the quality of wildlife tree retention in British Columbia. However, further work is required to accurately assess the contribution of current wildlife tree retention in meeting the habitat requirements of specific species in order to determine the actual ecological value of these reserves.

There is an estimated 3.5% volume impact on the provincial THLB due to wildlife tree retention. The area impact of wildlife tree retention is estimated at 4.3% of the provincial THLB. As expected, the area impact is somewhat larger than the volume impact because there is not a one-to-one relationship between pre-harvest volume per hectare and post-harvest reserve volume per hectare.

### Recommendations

The following are some of the recommendations that came out of the evaluation of wildlife tree retention:

- Develop best management practices (BMPs) and related extension materials to reflect the importance of retaining large (both height and diameter) wildlife trees.
- Continue to provide field staff the flexibility to make site-specific decisions on wildlife tree retention.
- Document the location, size, purpose, objectives and longevity of all retention areas.
- Create a provincial database to facilitate effective future evaluations and/or audits, monitoring and timber supply analyses.
- Re-confirm and communicate the current wildlife tree policy requirement that licensees should retain wildlife trees on every cutblock.



*Wildlife tree patch in the CWH showing variable stand structure.*



- Ensure the lessons learned from this evaluation are adequately communicated to the right audiences.
- Adequately train individuals planning to conduct and manage future effectiveness evaluations prior to initiating projects to ensure efficient and effective use of resources.
- Work with stakeholders to review existing wildlife tree retention policy and BMPs to ensure they are clear and consistent.
- Revise and publish the methodology for this evaluation project to help improve the efficiency of future evaluations.
- Develop a proposal for the next phase of this project to evaluate the effectiveness of current wildlife tree policy.

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Range and Integrated Resources  
**NOTES TO THE FIELD**

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