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Risk of brush to conifer establishment and growth in the Cariboo Region

Shelley Barlow, David Majcher, Kristi Iverson

The Cariboo Region has determined that the risk of brush, including shrubs, forbs, and broadleaf tree species, at the time of a free growing (FG) assessment hindering conifer growth in the IDF biogeoclimatic (BEC) zones of the Cariboo Region is unlikely. To provide assurances that the benefits of broadleaf trees on the ecosystems and landscapes are preserved and to streamline the assessment procedures at FG, the Cariboo Region Stocking Standards supporting documentation "CRSS general assessment procedures" now allows all brush to be non-deleterious to conifers. This will require the establishment of conifers according to the stocking standards for all units including ensuring minimum heights are achieved by the specified date. Brushing may therefore be required to ensure growth of the conifers. However, if the stand is established as per the stocking standards for the standards unit, no amount of brush at any height will affect the status of the unit at FG.

In order to assess the risk to timber supply, an analysis of the proportion of broadleaf trees presence in each IDF biogeoclimatic subzone and site series combination in the region was performed. Only broadleaf tree brush was considered for this analysis because it is expected that at the time of FG assessments, very rarely would other types of brush affect the assessment. It was noted that there is high risk of competition from other shrubs particularly in the IDFdk3 08, IDFxm 08, IDFxw 06, and IDFxw 07. These are primarily riparian areas and should be preferred for retention and reserved from harvest. As the data presented below in Table 1 demonstrates, there is very little harvesting activity in those BEC-site series combinations, and therefore the risk continues to be very small despite the abundance of other shrubs.

The Cariboo Region notes the importance of diversity in stands and on the landscape and especially broadleaf trees in these drier ecosystems. Not only is the risk to timber supply extremely low, but the benefits include reduced wildfire risk, increased biodiversity, wildlife habitat benefits, nutrient benefits, riparian stability, and nurse traits including thermal modulation that assist in conifer establishment and soil preservation.

Most district-BEC-site series combinations cover very small percentages of each district as seen in Table 1. The IDF makes up 17.8% of the landbase in the Cariboo region, and 44.5% of 100 Mile House (DMH). The 01 site series is most prevalent across all IDF BEC zones as noted in figure 1. Therefore, the greatest risk to timber supply is in the IDFdk3 01 in DMH. Just over one percent (1.1%) of harvest openings in the Cariboo IDF have been reported as brushed. In the most high-risk category (IDFdk3 01) the rate of brushing is 1.4%. This further demonstrates that the impact of brush on FG stands is negligible.

If you have questions please contact Shelley Barlow, Regional Silviculture Specialist, 236-713-2244.

Table 1, IDF brush risk assessment:

IDF brush risk assessment Cariboo Region

Risk*Proportion >100 = concern; 50-100 watch; <50 no concern

At: Trembling aspen, *Populus tremuloides*; Ep: Paper Birch, *Betula papyrifera*; Ac: Black Cottonwood, *Populus Balsamifera ssp.trichocarpa*

Site Index (SI) for At from conversion tables; adjusted where SI of other species is intermediate. Did not convert for Ep or for Ac as minimal impact expected.

Table does not include sites with sparce vegetation complexes or where deciduous is not ecologically adapted. Data ignores THLB.

BEZone/subzone/variant	Site Series	Site Index (SIBEC) Fd/Pl/Sx/At	Total area in region	Broadleaf tree ecologically adapted	Establishment of Broadleaf trees limited by	Incidence in mature stands	Expected Risk of brush hindering conifer establishment (l-1, M-5, H-10)		Proportion of BEC	Proportion of Region	Risk* Proportion Region	Proportion of DMH	Risk* Proportion DMH	Proportion of DCC	Risk* Proportion DCC	Proportion of DQU	Risk*Proportion DQU	Comments	Proportion of BEC with brushing activity reported since 2008 against all harvested openings from earliest date of harvest for brushing activity
IDFdk3	01	17/20/19/20	574,856	At		Small (Sm) pockets	M - localized concerns	2.5	68%	7.0%	17	27.4%	69	4.6%	12	0.4%	1	Risk is between low and because broadleaf trees are concentrated in localized areas	1.4%
IDFdk3	04	12/-/-/12	2,648	At	Moisture deficit (def)	most stunted	L	1	0%	0.0%	0	0.2%	0	0.0%	0	0.0%	0		0.0%
IDFdk3	05	15/15/-/17	3,040	At		Rarely develops stands	L	1	0%	0.0%	0	0.2%	0	0.0%	0	0.0%	0		2.9%
IDFdk3	06	17/18/-/20	76,744	At		Rarely develops stands	L	1	9%	0.9%	1	3.8%	4	0.6%	1	1.3%	1		13.2%
IDFdk3	07	20/21/20/27	121,945	At, Ep	Light deficit	Ep scattered	M	5	14%	1.5%	7	5.9%	30	1.0%	5	2.3%	11		4.7%
IDFdk3	08	22/18/21/28	37,639	At, Ep, Ac	Vegetation competition (Veg Comp), cold soils	Scattered Ep and At in lower canopy	M	5	4%	0.5%	2	1.9%	10	0.3%	1	0.7%	3		0.4%
IDFdk3	09	-/18/15/20	26,906	Ac	Veg comp, cold soils, high water table		L	1	3%	0.3%	0	1.4%	1	0.2%	0	0.4%	0		0.0%

IDFdk4	01	15/16/-/17	226,301	At		Sm pockets	M	5	66%	2.7%	14	0.0%	0	4.6%	23	0.0%	0		0.2%
IDFdk4	05	13/9/-/12	15,115	At		Rarely develops stands	L	1	4%	0.2%	0	0.0%	0	0.3%	0	0.0%	0		0.0%
IDFdk4	06	-/9/-/10	21,611	At	nutrient def	Uncommon	L	1	6%	0.3%	0	0.0%	0	0.4%	0	0.0%	0		0.0%
IDFdk4	07	12/12/-/12	6,510	At		Rarely develops stands	L	1	2%	0.1%	0	0.0%	0	0.1%	0	0.0%	0		0.0%
IDFdk4	08	-/12/15/20	6	At		Rarely develops stands	L	1	0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		0.0%
IDFdk4	09	15/15/17/17	53,703	At	Veg comp, cold soils	Scattered in mixed stands	H	10	16%	0.7%	7	0.0%	0	1.1%	11	0.0%	0		0.0%
IDFdk4	10	-/-/19/27	11,100	At, Ac	Summer frost, Veg comp, cold soils		M	5	3%	0.1%	1	0.0%	0	0.2%	1	0.0%	0		no harvest openings
IDFdw	06		5,318	At, Ep		Scattered in mixed stands	M	5	7%	0.1%	0	0.0%	0	0.3%	2	0.0%	0		no harvest openings
IDFdw	07		1,253	At, Ep, Ac		Scattered in mixed stands	M	5	2%	0.0%	0	0.0%	0	0.1%	1	0.0%	0		no harvest openings
IDFdw	08		7,969	Ep	cold soils	Occasional in mixed stands	L	1	10%	0.1%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFmw2	01	23/21/18/30	4,598	At, Ep		Limited to successional Ep, At, occurs as early seral species	M	5	55%	0.1%	0	0.4%	2	0.0%	0	0.0%	0		2.2%
IDFmw2	02	15/18/-/17	8	At			L	1	0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFmw2	03	18/21/-/21	196	At, Ep			M	5	2%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFmw2	04	21/21/-/28	353	At, Ep, Ac			H	10	4%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFmw2	*05	-/18/18/23	955	At, Ep, Ac			L	1	11%	0.0%	0	0.1%	0	0.0%	0	0.0%	0		no harvest openings
IDFww	Only exists in Klinaklini river conservancy						Nil	0											
IDFxh2	101	15/-/-/17	60	At		limited	L	1	30%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFxh2	110/111	12/-/-/12	39	At		limited	L	1	20%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFxh2	112	21/-/18/28	0	At, Ep, Ac		Ep scattered	M	5	0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFxh2	113	21/-/21/28	24	At, Ep, Ac		Ac in mixed stands	M	5	12%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFxm	01	16/-/-/18	112,868	At	Moisture def	Sm pockets	L	1	67%	1.4%	1	0.5%	0	2.1%	2	0.2%	0		0.0%
IDFxm	04	15/-/-/17	10,063	At		Scattered in mixed stands	L	1	6%	0.1%	0	0.1%	0	0.2%	0	0.0%	0		0.0%

IDFxm	05	15/-/-/17	12,163	At		Rarely develops stands	L	1	7%	0.1%	0	0.1%	0	0.2%	0	0.0%	0		0.0%
IDFxm	06	15/-/-/17	4,893	At	Light def		L	1	3%	0.1%	0	0.0%	0	0.2%	0	0.0%	0		0.0%
IDFxm	07	15/-/-/17	12,222	Ep, At	moisture and light def	Ep in mixed stands	L	1	7%	0.1%	0	0.0%	0	0.2%	0	0.0%	0		0.0%
IDFxm	08	18/-/19/21	5,245	At, Ac	Light def		L	1	3%	0.1%	0	0.0%	0	0.1%	0	0.0%	0		0.0%
IDFxm	09	-/-/18/26	1,624	At, Ac	cold soils, light def, summer frost		L	1	1%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFxw	01	17/-/-/20	15,660	At	moisture def, pinegrass comp	Sm pockets	L	1	62%	0.2%	0	1.3%	1	0.0%	0	0.0%	0	very little deciduous on the landscape	0.0%
IDFxw	04	9/-/-/8	4,089	At	moisture def – pinegrass comp	Rarely develops stands	L	1	16%	0.0%	0	0.3%	0	0.0%	0	0.0%	0		no harvest openings
IDFxw	05	15/-/-/17	605	At	moisture def – pinegrass comp	Rarely develops stands	L	1	2%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings
IDFxw	06	21/-/18/28	2,371	At, Ep, Ac	Veg comp	Rarely develops stands	L	1	9%	0.0%	0	0.2%	0	0.0%	0	0.0%	0		no harvest openings
IDFxw	07	21/-/18/28	73	At, Ep, Ac	Veg comp	Rarely develops stands	L	1	0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0		no harvest openings

nb: ecosystems that have other brush as a concern for establishment of conifers are not considered here as the risk to FG is expected to be broadleaf trees only. In rare circumstances that other brush would affect FG assessments (ie FG ht 0.4m), provisions exist already to assess brush as non-deleterious. Conditions where other brush limits the FG assessment are expected to be very rare.

nb: wetter ecosystems with higher risk rating are more likely to be sensitive ecosystems that should be reserved from harvest, but if they are harvested will benefit from the diversity of having the broadleaf tree component.
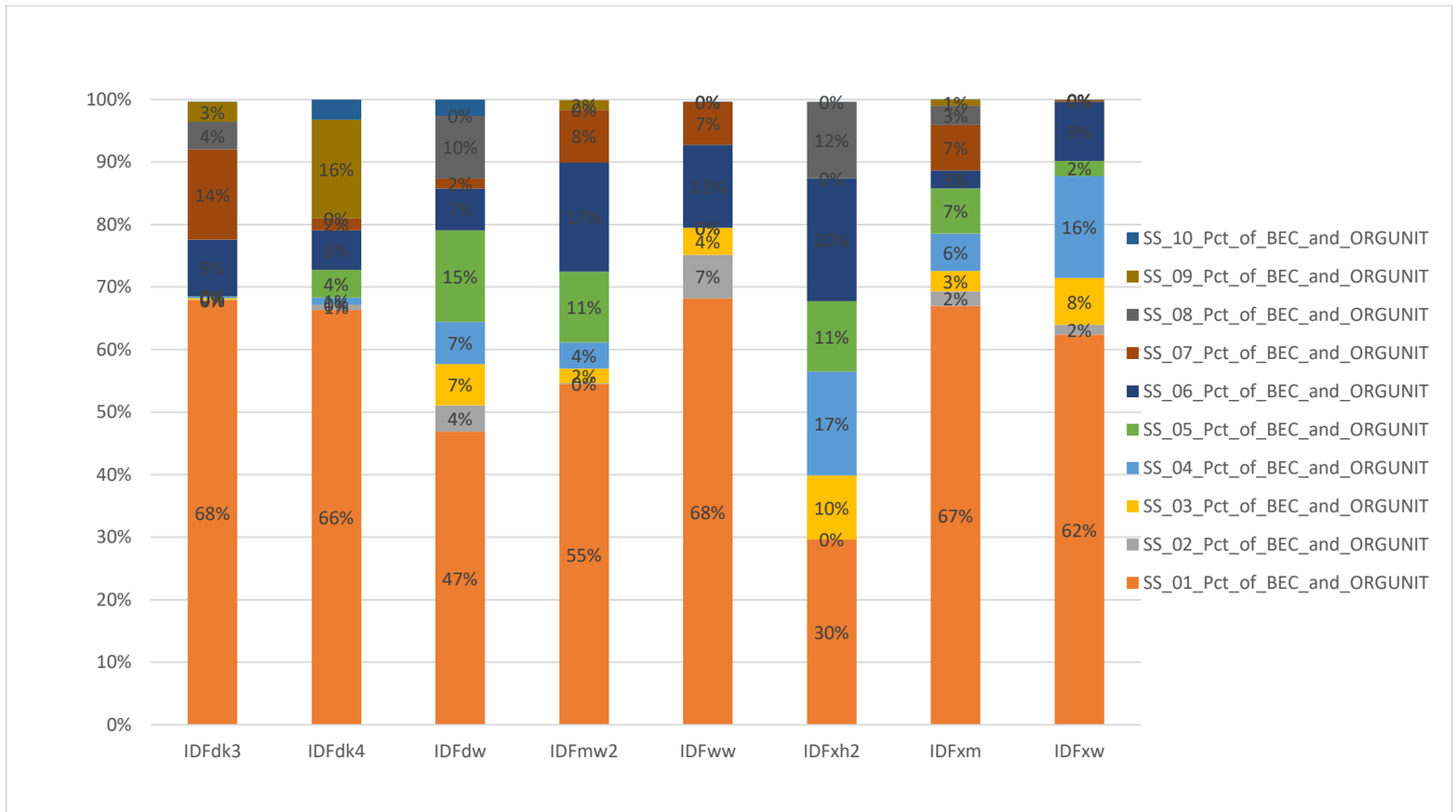
Figure 1: Proportion of Site Series in each IDF subzone or variant in the Cariboo Region