



Use of Glyphosate in Forestry in BC and Current Silviculture Developments

The Silviculture Challenge

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November 3rd 2021

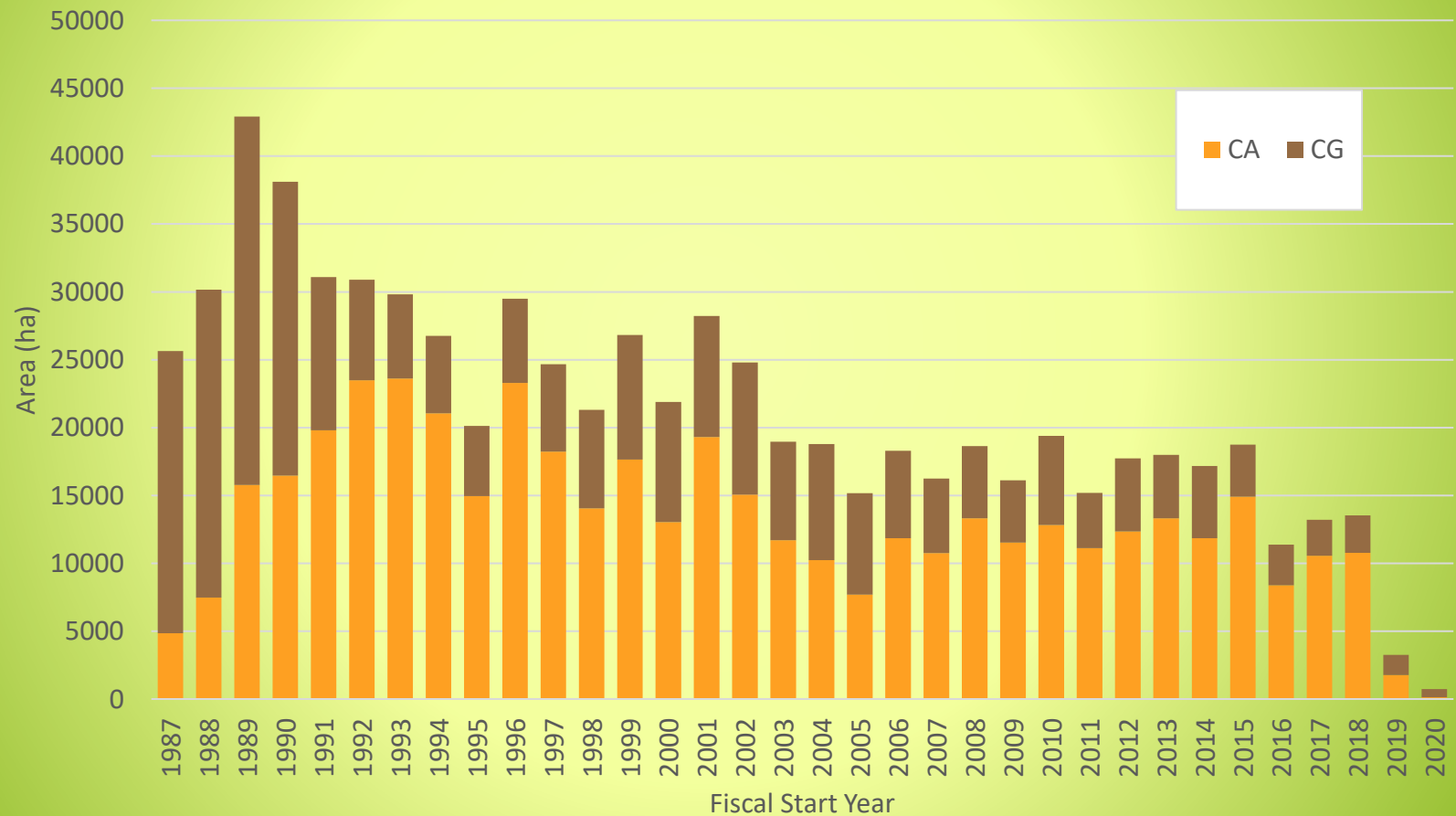
Know Your Subject

- 1. Know the Business – the Basics**
- 2. Be up to date with both the domestic and international situation**
- 3. Understand Trends and Pattern of use in BC**
- 4. Understand the Impacts and Effects of herbicide treatments on vegetation complexes**

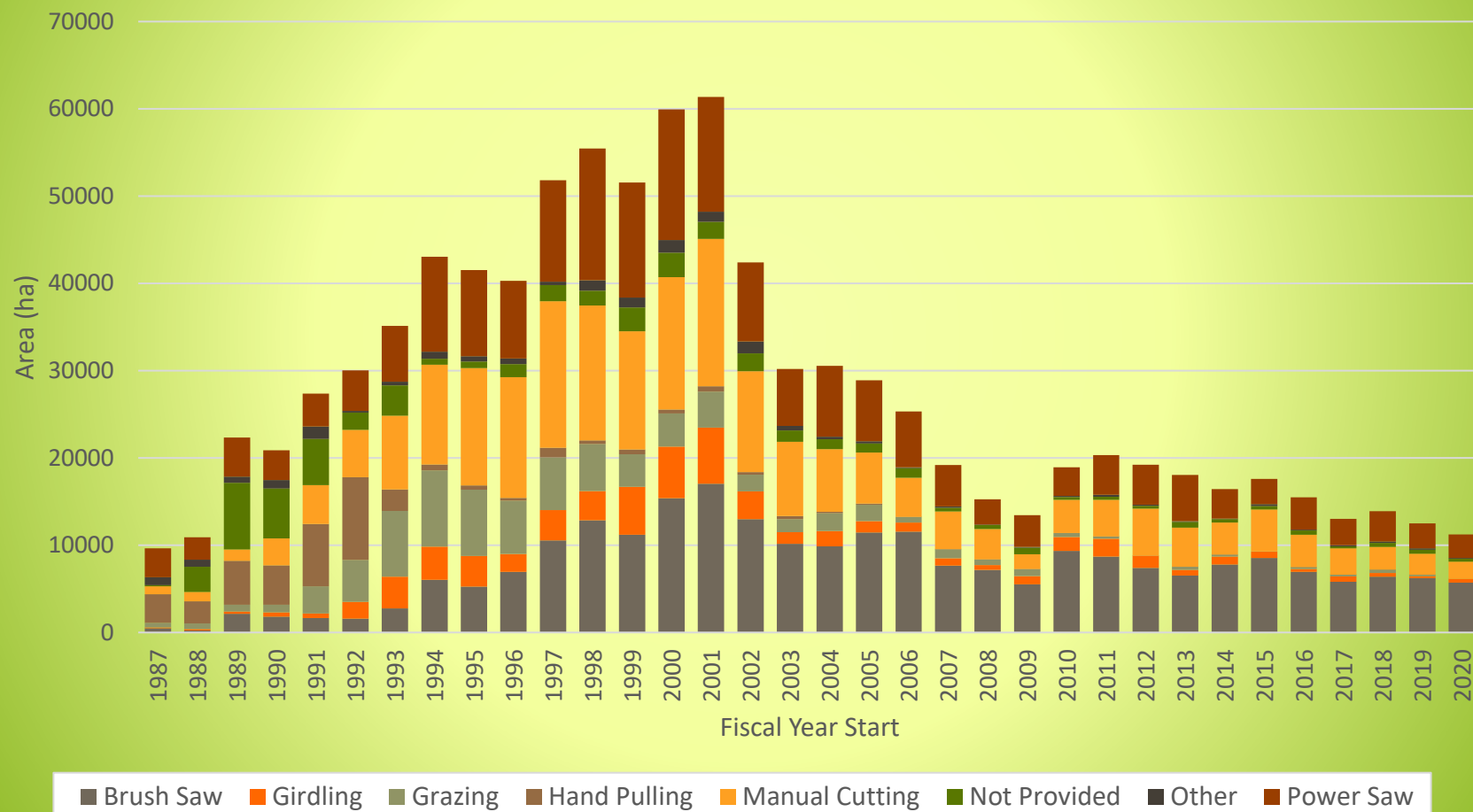
THE ANTI SPRAY RHETORIC

- Last year, 12,812 hectares of B.C. forest was sprayed with the herbicide glyphosate. It's an annual event — a mass extermination of broadleaf trees mandated by the province.
- At the end of the day, we have rules that make fire-resistant trees illegal in our forests. That's just nuts,
- ...“broadleaf trees cut from the ground, exterminated from the air”

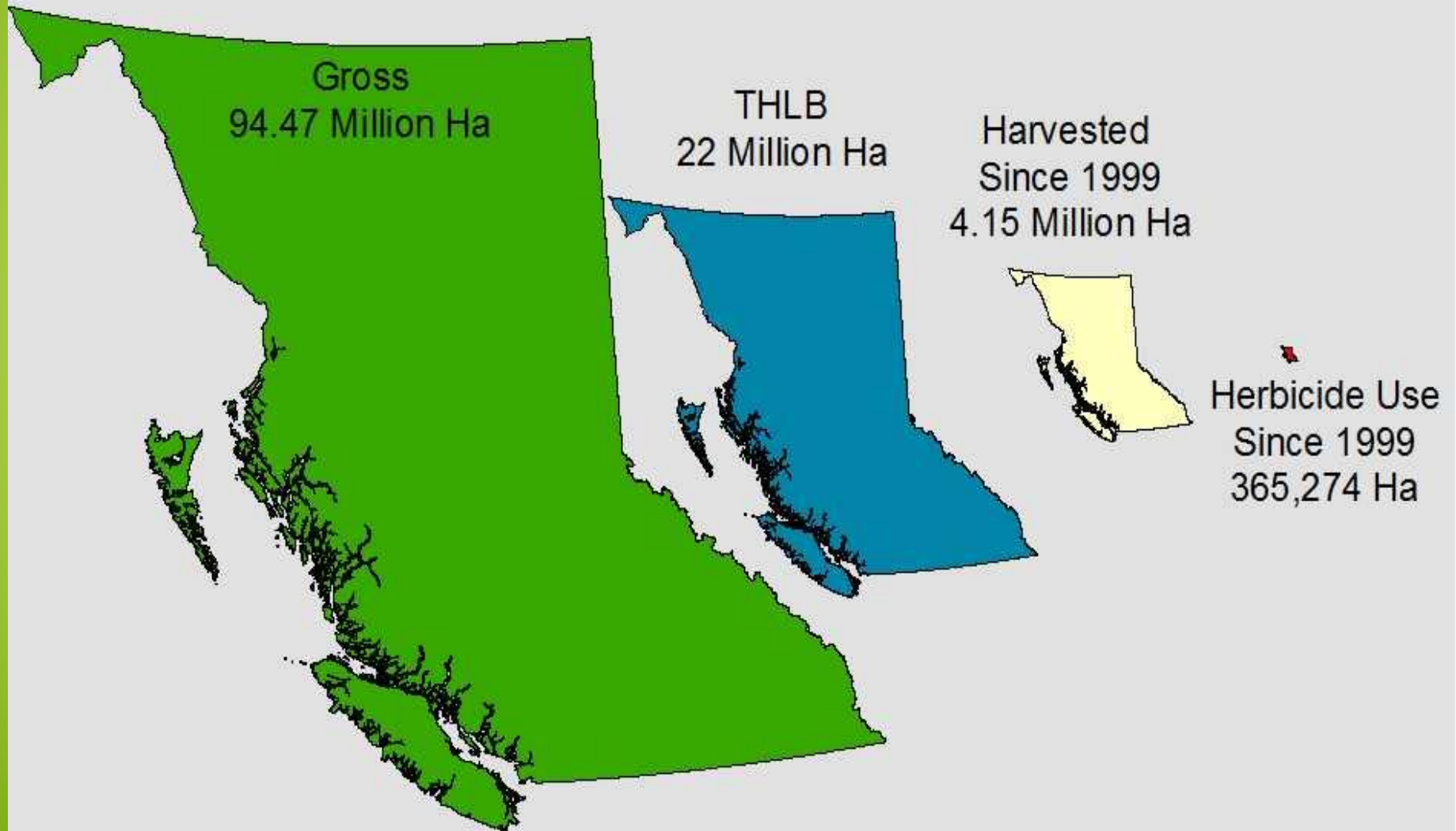
Herbicide treatments in BC since 1987: Aerial applications CA and Ground based backpack CG



Manual Brushing activities in BC since 1987.

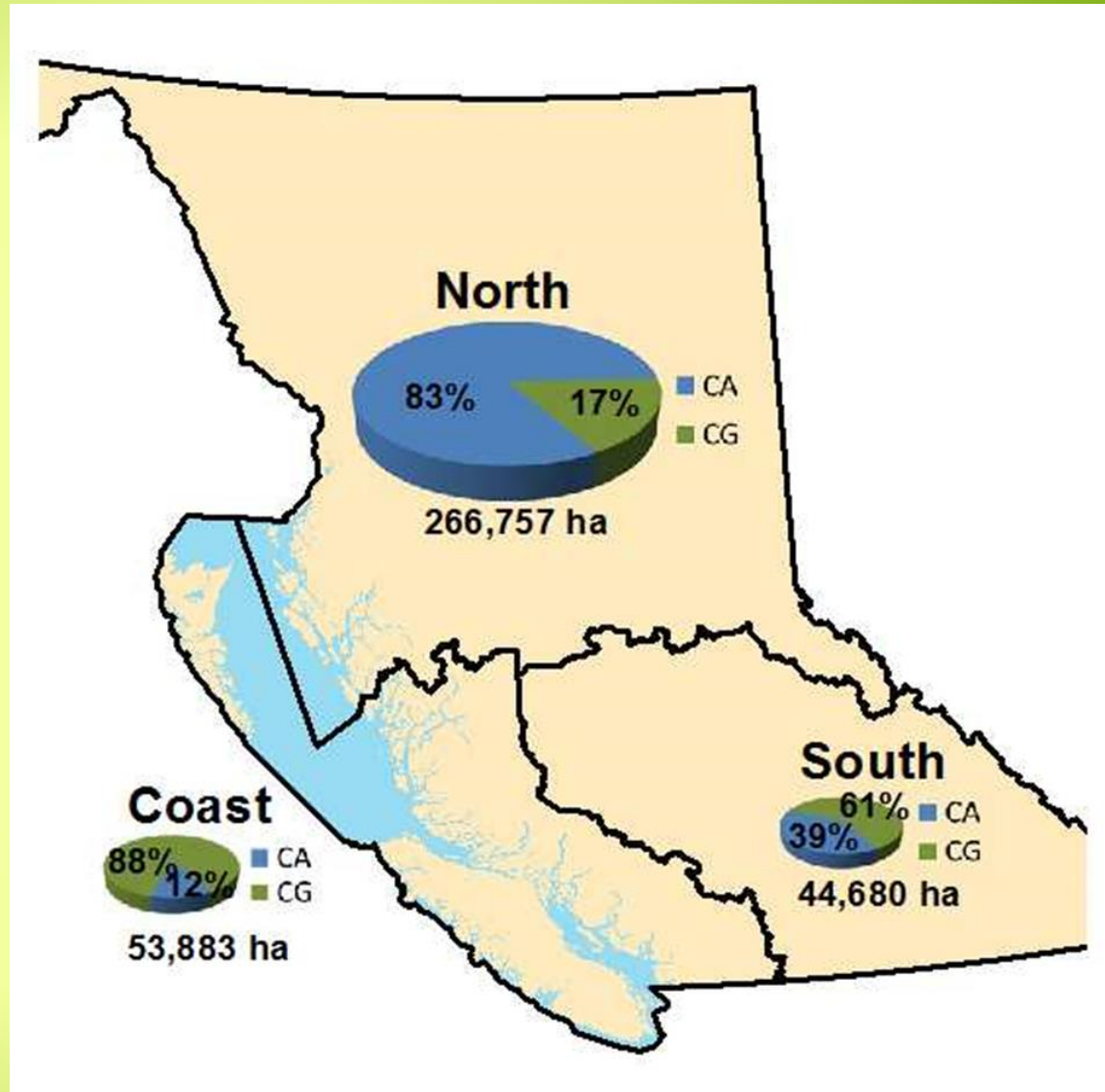


Provincial Land Area



Distribution of Herbicide Use since 1999

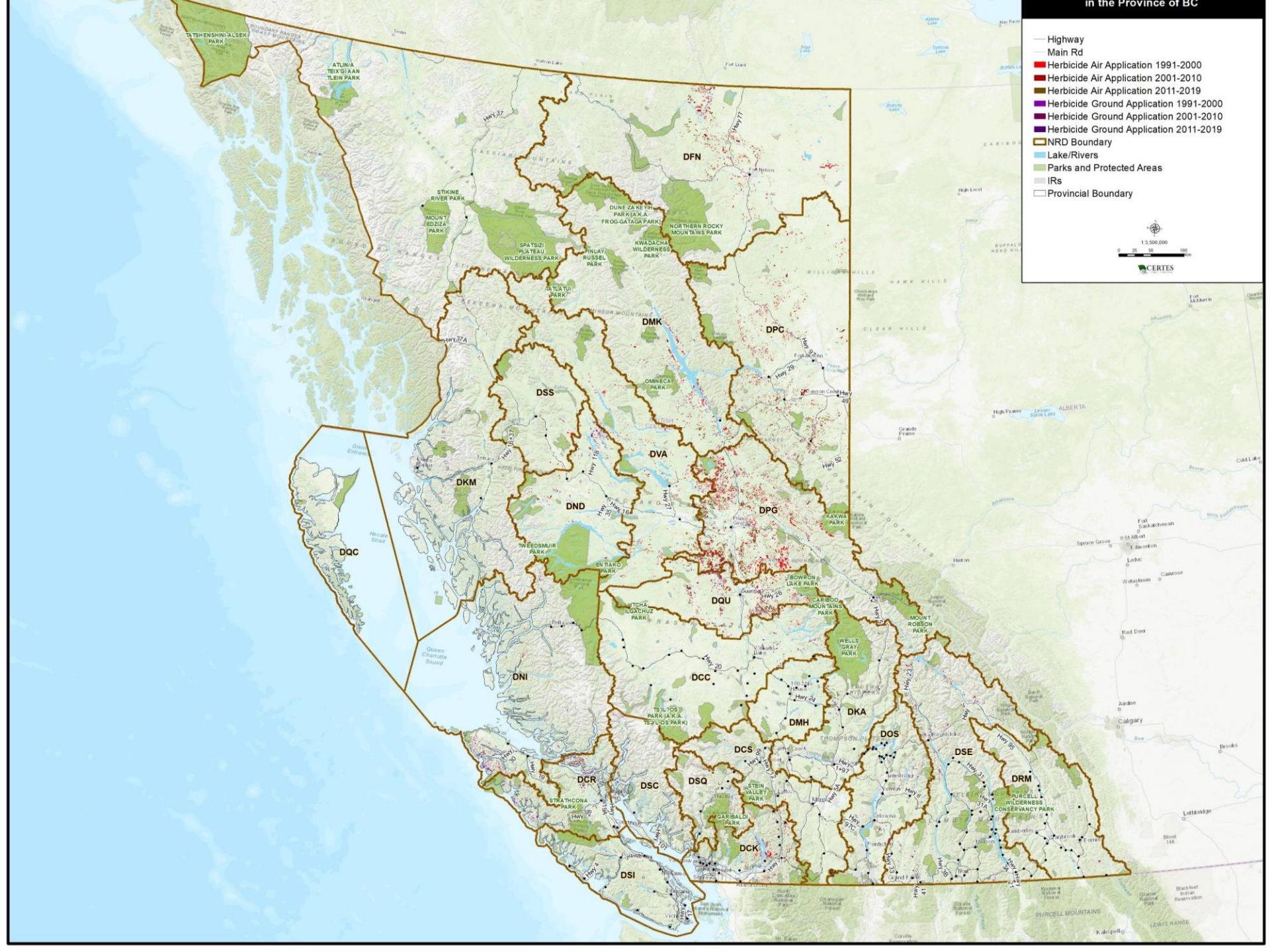
20 years of forestry use

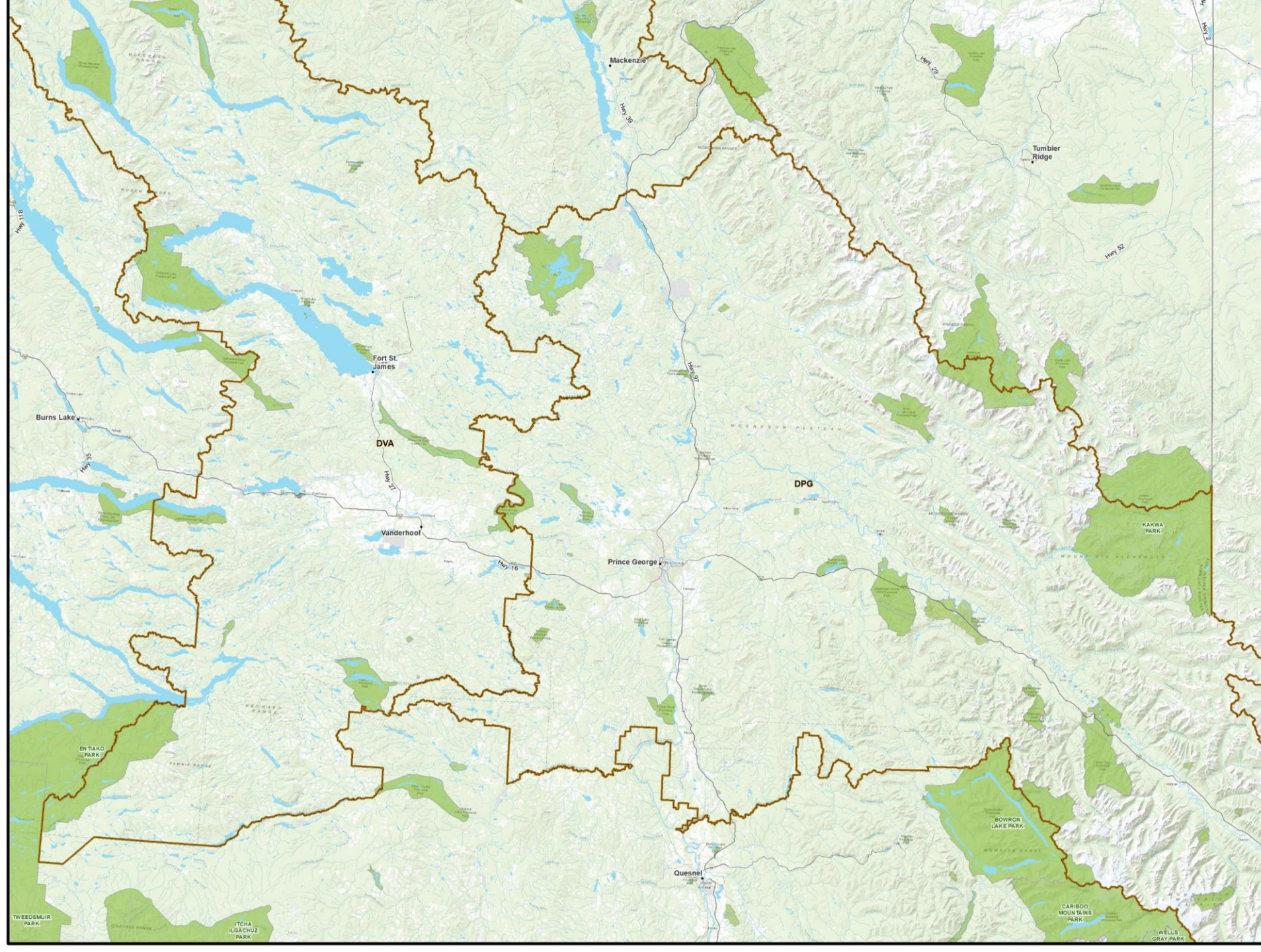


Average area (ha) of herbicide treatment in the last 10 years by natural resource area and region

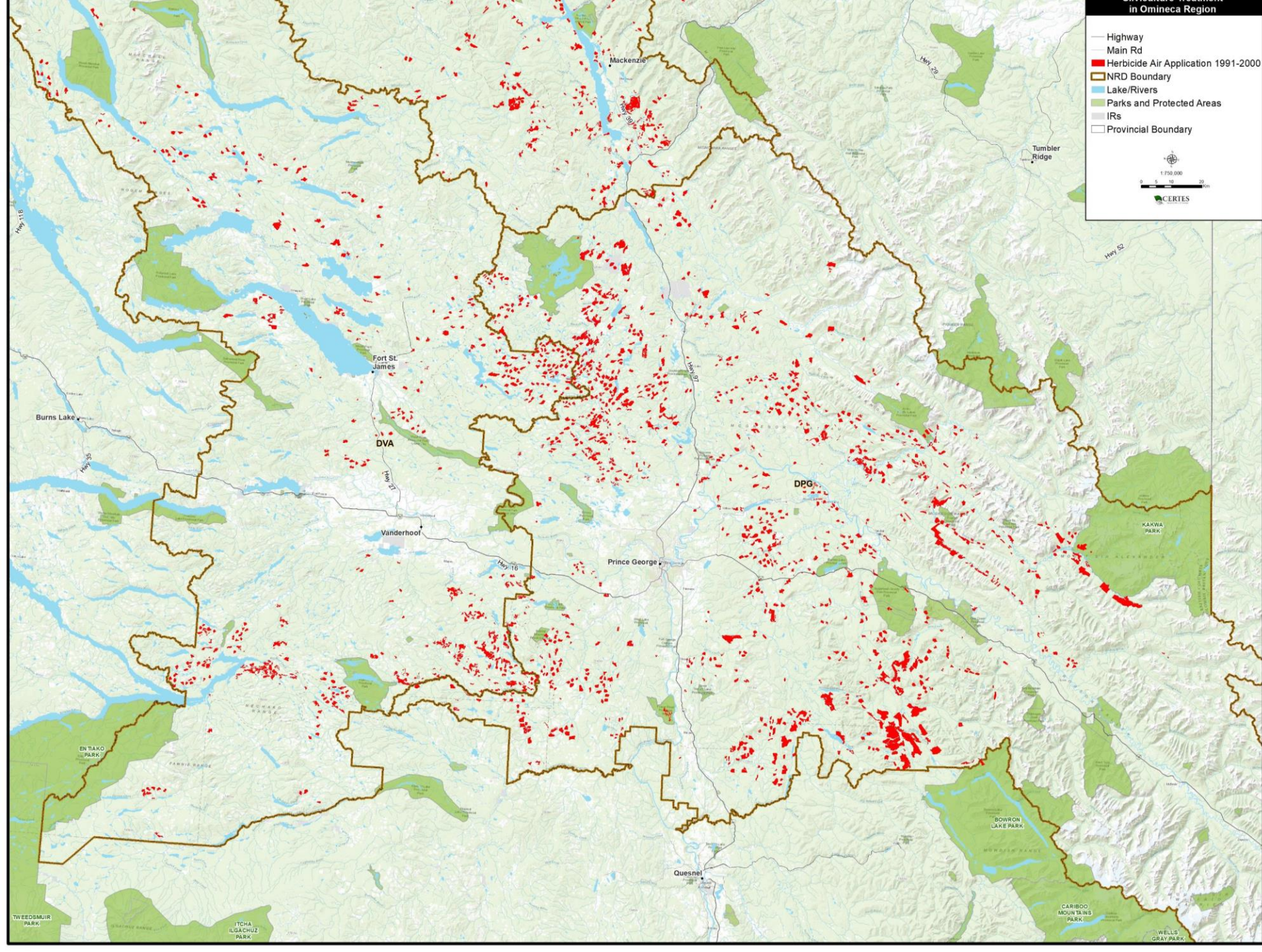
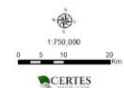
Area	Region	CA	CG	Total
North Area				
	North East	4,290	342	4,632
	Omineca	5,828	584	6,412
	Skeena	-	138	138
South Area				
	Cariboo	821	448	1,269
	Kootenay-Boundary	-	267	267
	Thomson Okanagan	256	250	506
Coast Area				
	South Coast	203	986	1,189
	West Coast	62	1,252	1,314
Total Amount		11,460	4,267	15,727

- Highway
- Main Rd
- Herbicide Air Application 1991-2000
- Herbicide Air Application 2001-2010
- Herbicide Air Application 2011-2019
- Herbicide Ground Application 1991-2000
- Herbicide Ground Application 2001-2010
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- NRD Boundary
- Lake/Rivers
- Parks and Protected Areas
- IRs
- Provincial Boundary

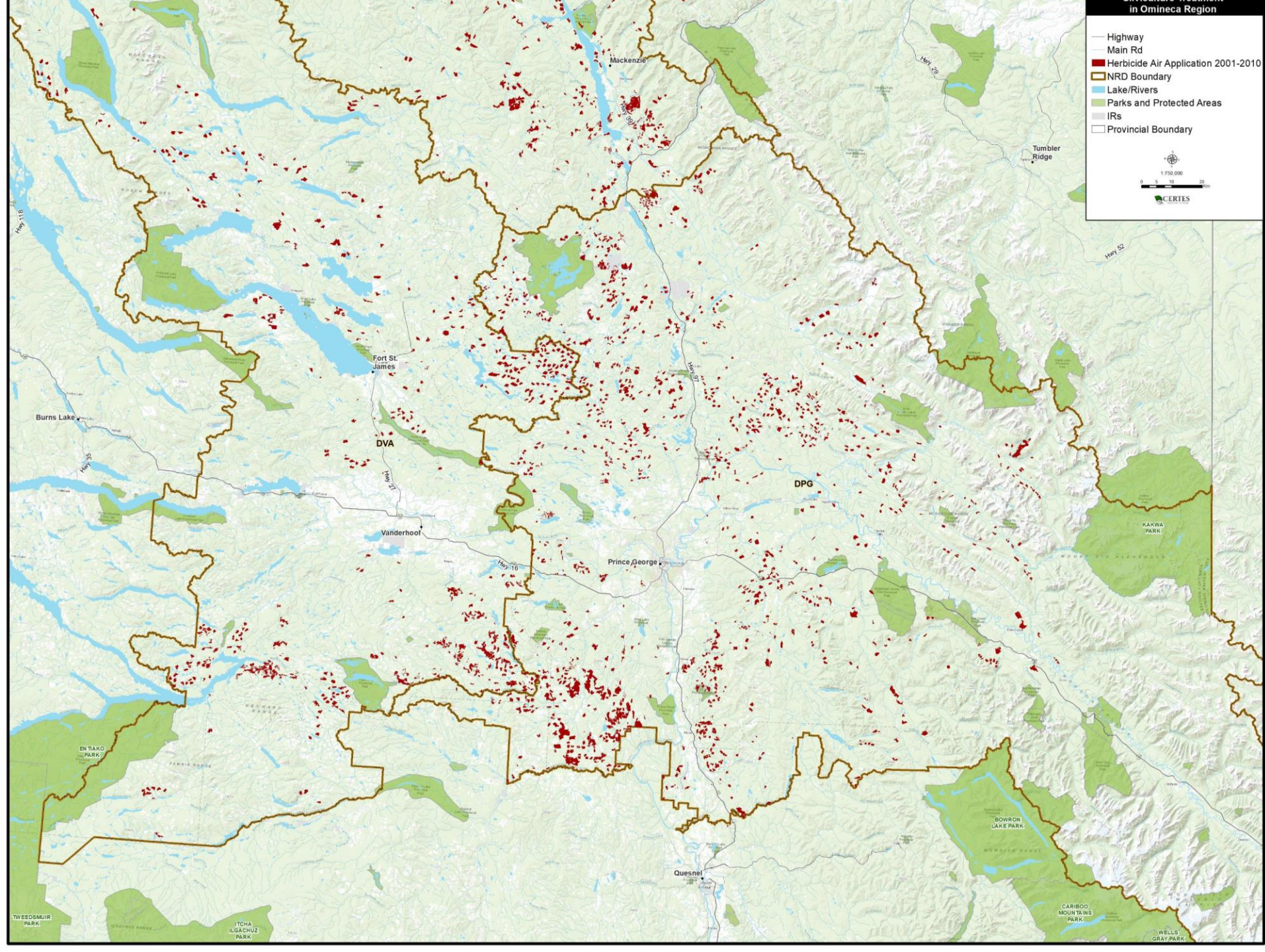
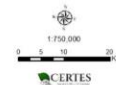


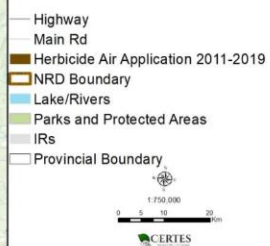
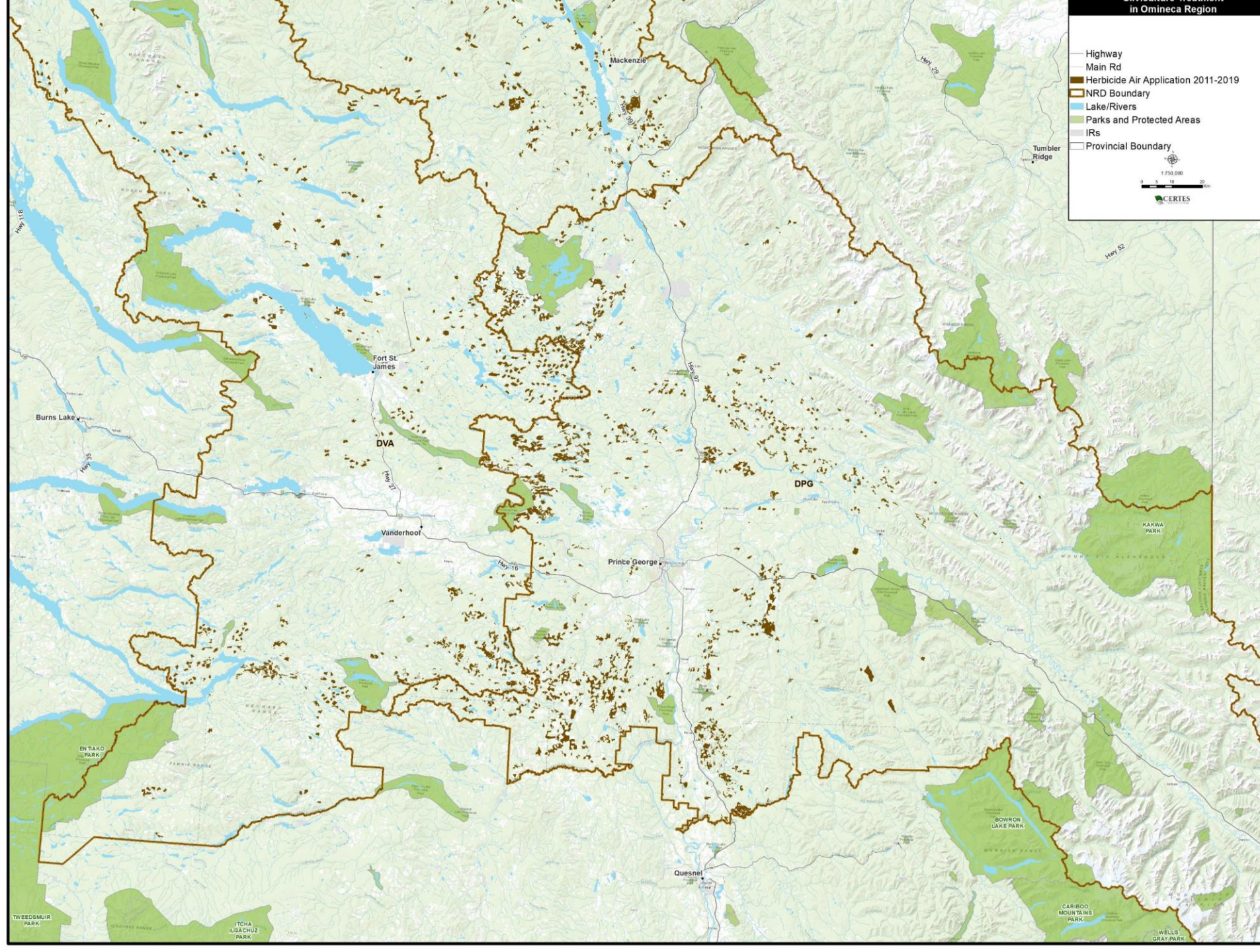


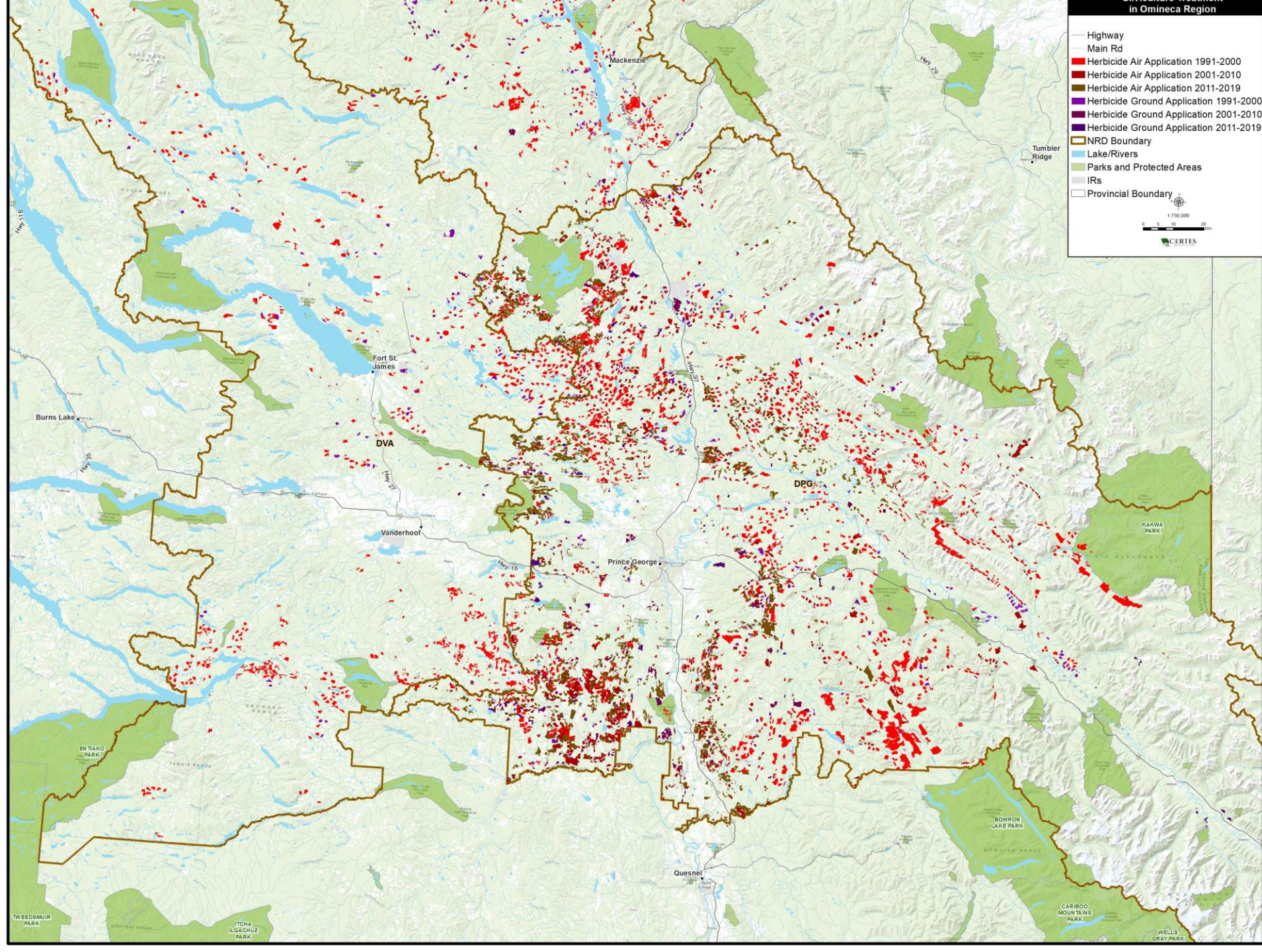
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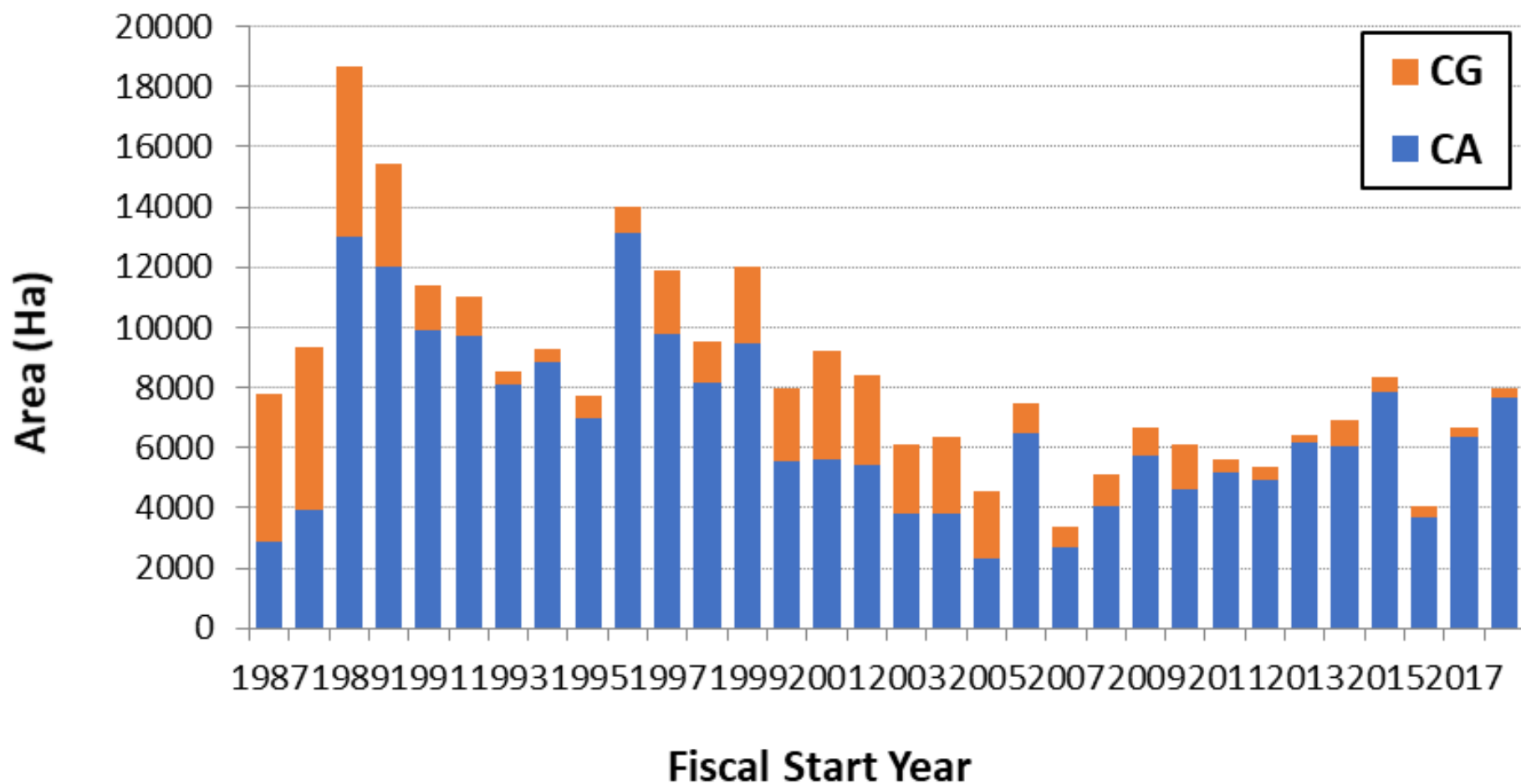


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Herbicide application in Omineca during the period 1987-2017 in hectares.

Impacts to Vegetation and Ecosystems

- **What is being treated**
- **What is the impact upon vegetation complexes within the stands**
- **What are the impacts upon the landscape level ecology**

What are we treating ?

- **Herbaceous and Grass**
- **Shrubs**
 - **Salmonberry, thimbleberry**
 - **Alder / willow**
- **Deciduous trees**
 - **Aspen, Cottonwood and Birch**
 - **Alder and Birch**
 - **Bigleaf Maple**

Grass to shrubs to Closed canopy Spruce



Ongoing Studies and Considerations into Non-Target Impacts

- Persistence of Glyphosate / AMPA in plant tissue
- Long term chronic exposure for ungulates from low levels of glyphosate due to persistence in forage
- Variability of impacts to soil micro organisms

So What Is the Real Issue ?

Is It Spraying Herbicides

OR

Forest Management Objectives versus other
Non Timber Resource Values ??

Rapid Establishment to maximize Conifer Yield

Site Specific Prescriptions
Proper Site Preparation
A Class Seed and Big Stock Types
Timely Brushing and Fill Planting

Wall to wall conifer with maximum yield at rotation







Getting to Resilient Forests

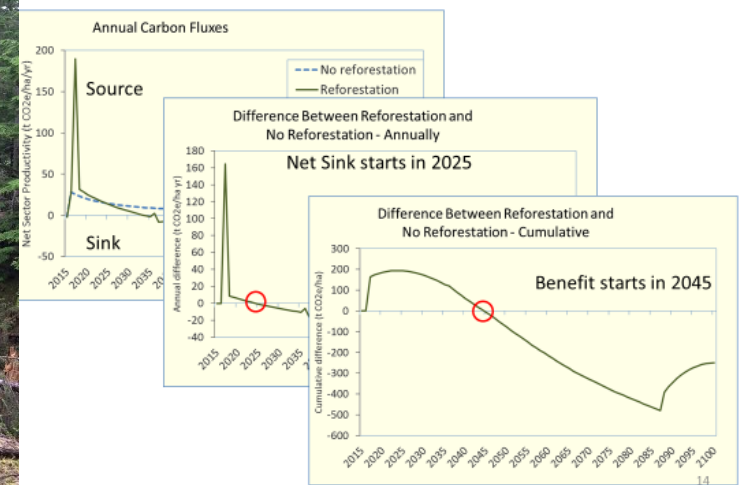
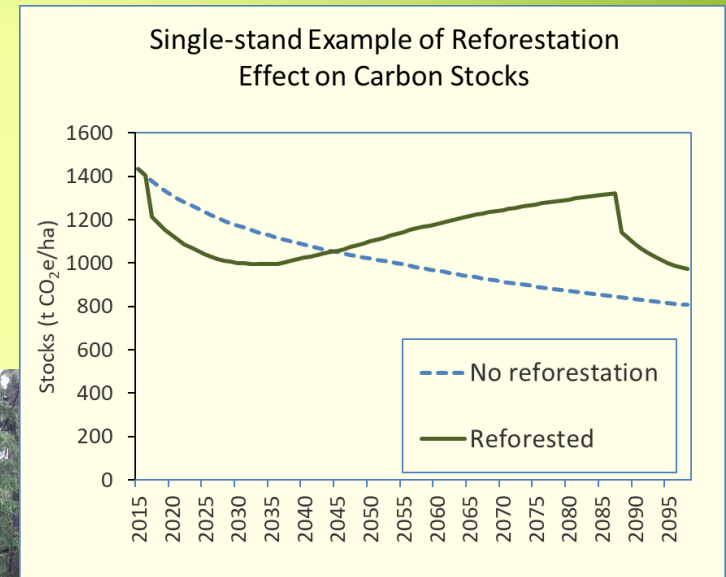
BRITISH COLUMBIA
Ministry of Forests, Lands and Natural Resource Operations

UPDATES TO THE REFERENCE GUIDE FOR FDP STOCKING STANDARDS (2014): CLIMATE-CHANGE RELATED STOCKING STANDARDS

Species use and Climate Change Guidance within Silviculture Strategies on what species to promote – which to demote
E.g., Williams Lake TSA

Table 7 Guidance for tree species deployment on harvested areas

BEC	Species	Current	Target	Trend	
ESSFav	PI	80/85	NT	---	Maintain trends for PI north caribou habitat
	Sx	20/10	NT	---	
	BI	0/1	NT	---	
ESSFwk	PI	17/50	10-20	---	PI maintaining the trend snow press. Plant Sx to become more suited, elevation south exposure mix within stand, water wish to plant BI on mo
	Sx	80/40	40-50	↓	
	Fd	0/1	0-5	↑	
ESSFwc	PI	0/60	NT	---	Maintain the trend of occurring, maintain tree manage BI with natural of Fd, Pw, and Cw wh of Fd.
	Sx	95/30	NT	---	
	Fd	0/1	NT	↑	



An aerial photograph of a vast, rolling forest landscape. The terrain is covered in dense green trees, with some areas showing yellowing foliage, suggesting autumn. In the distance, a small lake is visible among the trees. The sky is clear and blue. The text "Interior Broadleaf Working Group" is overlaid in white, centered on the image.

Interior Broadleaf Working Group

Prince George TSA: VRI Pure and Leading Ha

	1995	2020
Deciduous	291,060	294,367
Deciduous Leading	180,650	227,171
Conifer	5,781,885	6,016,421
Conifer Leading	234,980	344,851
Grand Total	6,488,575	6,882,810
% Deciduous	7.3%	7.6%

*Age class distribution for the **SBS BEC zone**, THLB and Non-THLB, 1995 (left) and 2020 (right) inventories, PG TSA*

