Report: Intact Lands In British Columbia

Published: Monday, 25th March 2024

Apropos Information Systems Inc.
Calgary, Alberta
403-973-5901
www.aproposinfosystems.com

Table of Contents

1. Report Authorship

1.1 Authors

Trevor Wiens, Founder and CEO of Apropos Information Systems Inc.

Hiroko Wiens, Founder and GIS Analyst with Apropos Information Systems Inc.

1.2 Primary Contact

Questions regarding this report should be addressed to:

Trevor Wiens
President, Apropos Information Systems Inc.
403-973-5901
trevor.wiens@aproposinfosystems.com

2. Introduction and Summary

In the Yahey v British Columbia decision in June of 2021, the Supreme Court of British Columbia ruled that the Province of BC had unjustifiably infringed on the Treaty Rights of Blueberry First Nation. In terms of land disturbance the court accepted that as of 2018 that 85% of Blueberry's territory was within 250 m of industrial disturbance and that 91% was within 500 m of a disturbance. Justice Burke found that the province had taken up lands so extensively that there were not enough or appropriate lands for Blueberry to meaningfully exercise their treat rights (Hamilton and Ettinger 2023).

Apropos works with a variety of Indigenous clients in Alberta and BC and we often hear concerns about cumulative impacts. After seeing the results we found in Alberta in 2023 (Wiens 2023), we decided to repeat our intact area analysis for BC using the data from the BC Cumulative Effects Framework (GOBC 2021).

Prior to colonization the landscape was healthy and provided healthy food, medicines and water and all of the other necessities of life for the Indigenous people of what is now called Canada. Colonizers saw no value in land in a natural state but only saw value in land as a resource to be exploited. In order to exploit the land, colonizers created numerous systems to dislodge Indigenous people from the land such as the reserve system, the pass system, residential schools and so on. Land conversion from a healthy natural state to commercial production state is what is meant by disturbance in this report. Disturbed lands are less useful or often completely useless for the exercise of rights for Indigenous people so the amount of intact lands within a Nation's territory is a good indicator of whether the rights of a Nation have been infringed or are likely to be infringed in the future.

Within British Columbia there are large areas of intact lands but these are not evenly distributed or representative of all ecosystems. In order to protect the ecological integrity of the land and the rights of Indigenous people both conservation and restoration is needed.

3. Methods

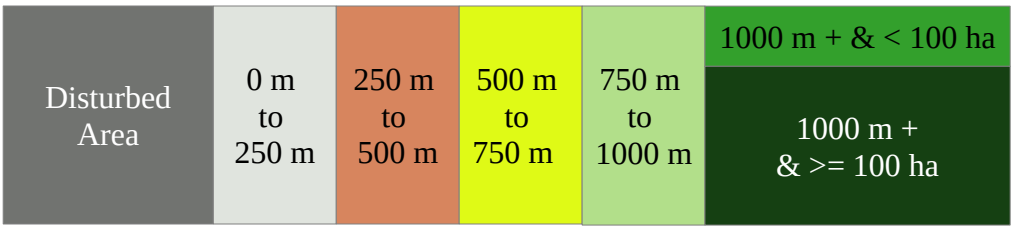
The BC Cumulative Effects Framework (GOBC 2021) has produced a GIS database that can be downloaded. The most recent publicly available version is from 2021 and from this the human footprint data were extracted.

The human footprint layer was buffered by 250 m, 500 m, 750 m and 1000 m. The first two values were selected to match the metrics in the Blueberry discussion. The second two distances were selected because they are relevant in wildlife management rules (GOA 2011) and in feedback from Indigenous land users and knowledge holders.

Discrimination between types of disturbances was not undertaken for this exercise because the primary focus of this exercise was to identify intact lands.

After buffering was completed, areas of water were removed from the buffer results using a GIS difference operation. Next the human footprint data and each buffered layer were compared against the provincial area using GIS difference operations to create layers of undisturbed areas. The resulting layers were in turn analyzed against the next farthest difference layer to create a series of nested rings around a disturbance. Lastly, areas that were 1000 m or more from a disturbance were grouped into those of 100 ha and more in size and those smaller than 100 ha. This arrangement is illustrated in the figure below.

Figure 1 – Buffer Zones Around Disturbances Based on Distance from the Disturbance



Next the areas within parks and protected areas were removed from each layer using a difference operation and the classification of the 1000 m areas by size was redone to account for areas that might be split along protected area boundaries.

The top four most valuable intact area classes, areas 500 m or more from a disturbance, were merged into a single layer for use within the LOUIS Toolkit platform so that clients can assess each project that they review with LOUIS Planner for its impact against the intact lands in BC. To add value to this analysis, this merged layer was intersected with a habitat classification layer so that general types of habitats within each intact area class could be assessed.

GIS operations were conducted using a combination of ArcGIS Pro 3.2, PostGIS 3.3.4 in PostgreSQL 13.13 and QGIS 3.28.

4. Results

The summaries of this GIS analysis are listed in the tables below.

4.1 BC

This section presents a summary of intact lands across BC including and excluding areas within parks and protected areas. The reason that parks and protected areas are excluded in most cases is because Indigenous people are not currently permitted to assert their jurisdiction and practice of rights in those areas.

Table 1 – Intact Land Classes Definition and Composition of BC in 2021 (excluding water areas)

Label	Description	Percent of BC Including Parks & Protected Areas	Percent in BC Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	51.13	45.7
2	Areas 1000 m from a disturbance and smaller than 100 ha	0.03	0.03
3	Areas between 750 m and 1000 m from a disturbance	3.03	3.18
4	Areas between 500 m and 750 m from a disturbance	4.26	4.58
5	Areas between 250 m and 500 m from a disturbance	7.14	7.85
6	Areas between 0 m and 250 m from a disturbance	19.53	22
7	Disturbed Lands	14.88	17

As expected that when protected areas are removed, the proportion of disturbed lands and lands within 250 m or 500 m of a disturbance increases.

If protected areas are considered then 34% percent of the province has been disturbed or is within 250 m of a disturbance. If protected areas are removed from consideration then 39% of the province is disturbed or is within 250 m of a disturbance. For disturbed areas and areas within 500 m of a disturbance the numbers are 42% if protected areas are included and 47% if protected areas are excluded.

The lands that will clearly have the most potential for the meaningful practice of rights are those 500 m or greater from a disturbance; for simplicity we will refer to these as priority intact lands. The priority intact lands outside protected areas only constitute 53% of the land area outside protected areas in BC.

Table 2 provides a breakdown of intact areas by land cover for the priority intact lands.

Figure 1 – Map of Disturbed and Intact Lands in BC outside of Protected Areas

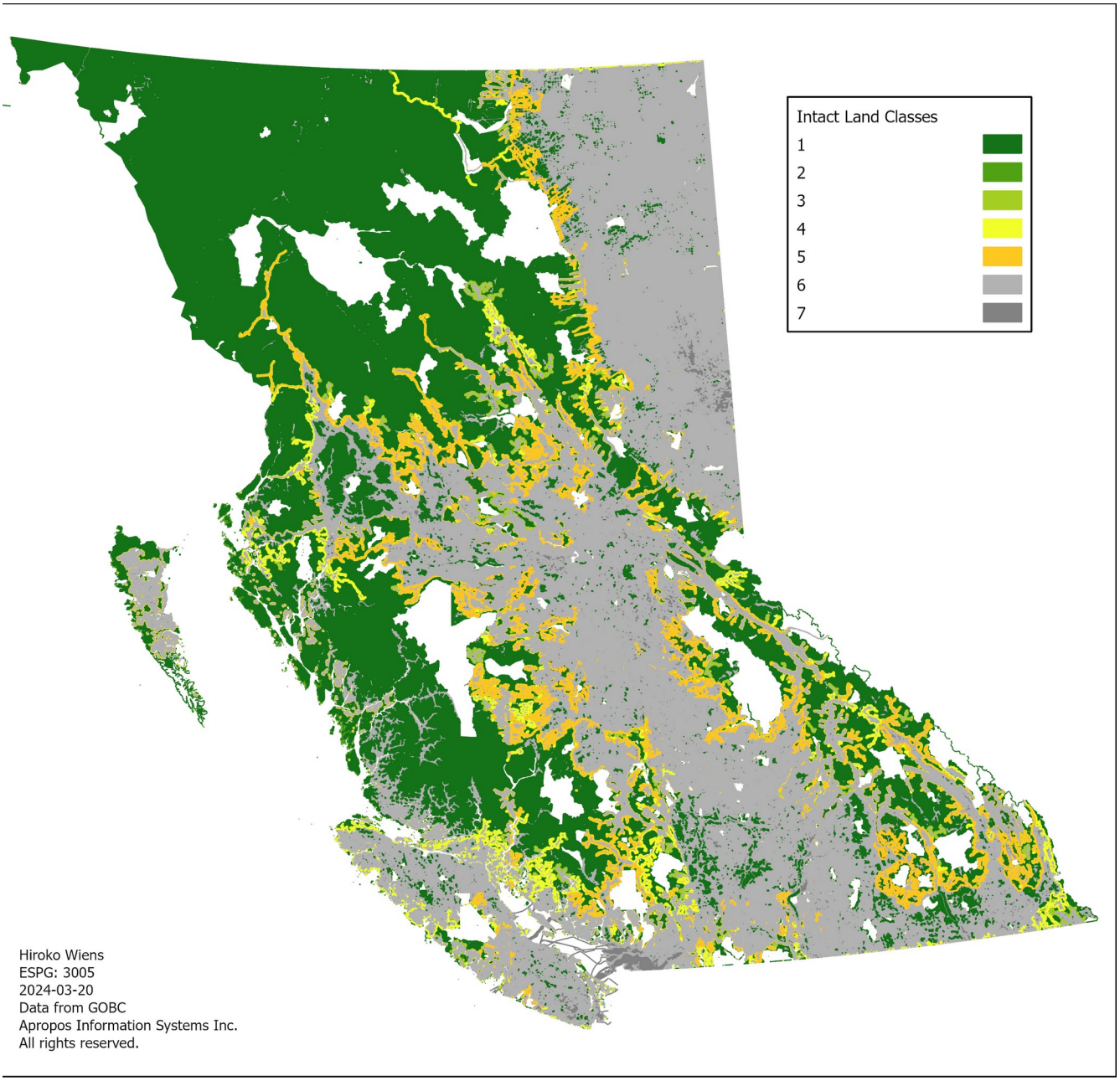


Table 2 – Area of Priority Intact Lands in BC by Intact Class and Land Cover Class (SQ km)

Land Cover Type / Intact Class	1	2	3	4
Alpine	98506.19	0.00	2051.94	1428.11
Barren Surfaces	6175.28	2.46	403.53	502.38
Estuaries	12.11	0.86	3.21	4.37
Fresh Water	8638.06	0.3	1590.79	2121.98
Glaciers & Snow	27388.08	0.00	39.85	28.43
Old Forest	111330.62	113.65	9270.73	12798.89
Range Lands	2129.66	0.00	531.33	761.46
Recently Burned	7228.49	0.00	428.36	566.74
Shrubs	13575.97	0.00	170.78	210.92
Sub Alpine Avalanche Chutes	36633.03	0.00	1407.51	1377.08
Wetlands	8020.86	0.16	843.88	1828.29
Young Forest	59767	20.29	9673.76	16374.01

Table 3 – Proportion of Priority Intact Lands in BC by Intact Class and Land Cover Class (% of priority intact areas*)

Land Cover Type / Intact Class	1	2	3	4
Alpine	22.18	0	0.46	0.32
Barren Surfaces	1.39	<1	0.09	0.11
Estuaries	<1	<1	<1	<1
Fresh Water	1.95	<1	0.36	0.48
Glaciers & Snow	6.17	0	0.01	0.01
Old Forest	25.07	0.03	2.09	2.88
Range Lands	0.48	0	0.12	0.17
Shrubs	3.06	0	0.04	0.05
Sub Alpine Avalanche Chutes	8.25	0	0.32	0.31
Wetlands	1.81	<1	0.19	0.41
Young Forest	13.46	<1	2.18	3.69

* Percentages shown are of the proportion of BC outside of protected area that is most intact

At a provincial scale BC, using numbers alone the province of BC appears to be relatively intact with large areas of land in the highest intact class. It is however noteworthy that the amount some land cover types is relatively rare suggesting that they deserve special attention for protection and responsible management, notably wetlands, shrubs and range lands.

In addition to specific habitat types, the maps make it abundantly clear that that intact lands are not evenly distributed across BC or its ecosystems. The variation of intact lands across BC makes it clear that local approaches to protecting the ecological integrity of the land in BC and the rights of Indigenous people will require both the protection of existing intact areas as well as the restoration of disturbed lands.

4.2 Caribou Region

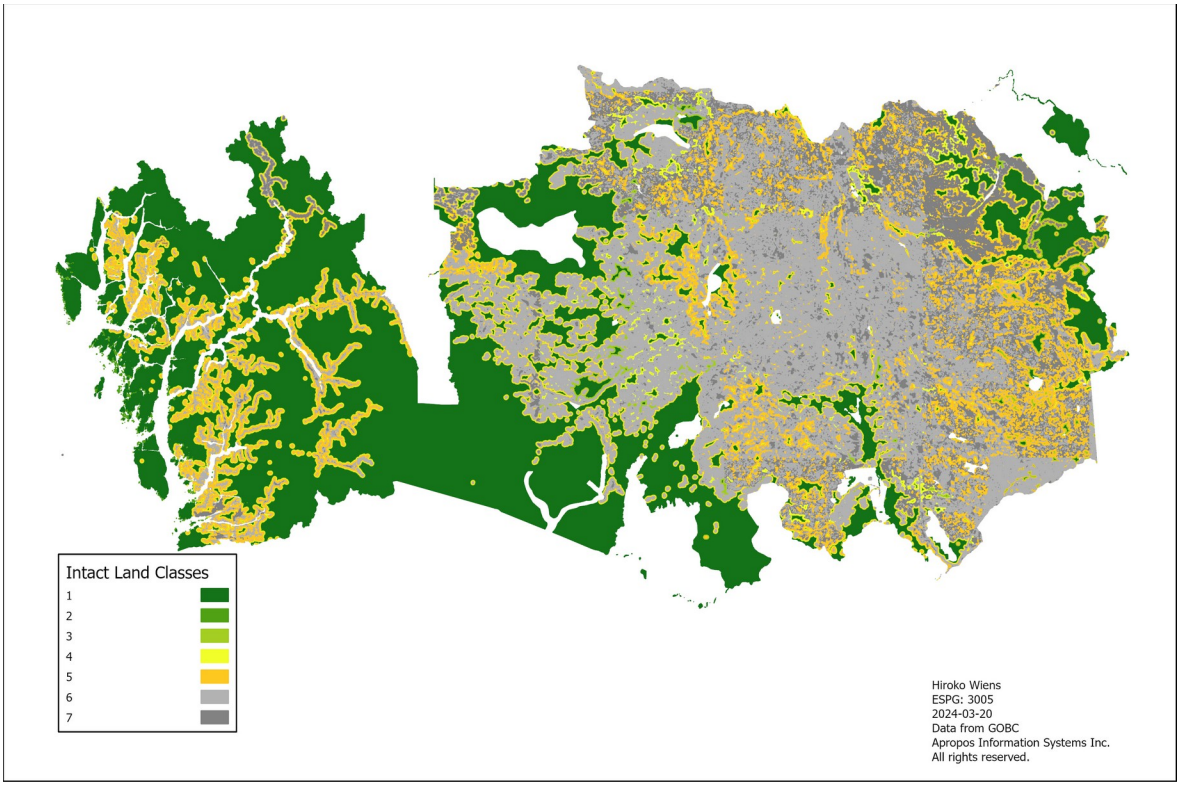
In this region 45% of the land is disturbed or within 250 m of a disturbance if protected areas are excluded from consideration. In this region 53% of the land is disturbed or within 500 m of a disturbance. This level of disturbance represents a significant loss of use to the exercise of rights. The details are found in Table 4.

Table 4 – Caribou Region Intact Land Classes Definition and Composition in 2021 (excluding water areas)

Label	Description	Percent of Area Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	38.23
2	Areas 1000 m from a disturbance and smaller than 100 ha	0.06
3	Areas between 750 m and 1000 m from a disturbance	3.55
4	Areas between 500 m and 750 m from a disturbance	5.08
5	Areas between 250 m and 500 m from a disturbance	8.57
6	Areas between 0 m and 250 m from a disturbance	20.83
7	Disturbed Lands	23.67

Although the amount of intact land is relatively large, the map shows that these intact lands are concentrated in a few areas, so in areas of higher disturbance attention will be required to identify areas for restoration to ensure that intact lands exist in all ecosystems and are accessible to all Indigenous people in this region.

Figure 2 – Map of Disturbed and Intact Lands in the Caribou Region outside of Protected Areas



4.3 Kootenay Region

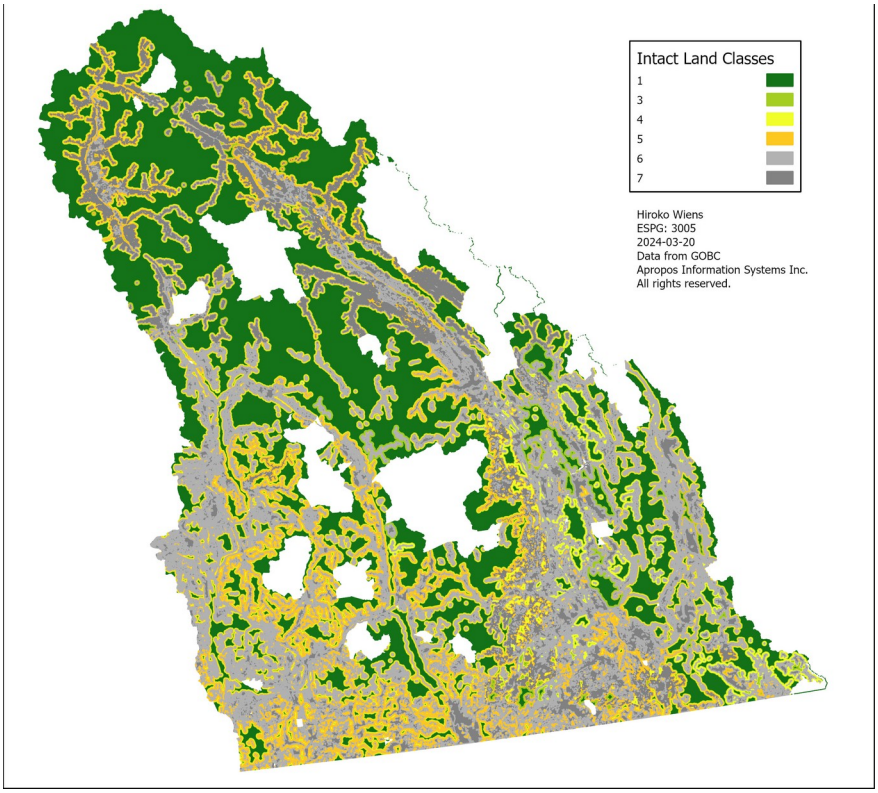
In this region 41% of the land is disturbed or within 250 m of a disturbance if protected areas are excluded from consideration. In this region 51% of the land is disturbed or within 500 m of a disturbance. This level of disturbance represents a significant loss of use to the exercise of rights. The details are found in Table 4.

Table 5 – Kootenay Region Intact Land Classes Definition and Composition in 2021 (excluding water areas)

Label	Description	Percent of Area Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	36.79
2	Areas 1000 m from a disturbance and smaller than 100 ha	0
3	Areas between 750 m and 1000 m from a disturbance	5.63
4	Areas between 500 m and 750 m from a disturbance	7.08
5	Areas between 250 m and 500 m from a disturbance	9.78
6	Areas between 0 m and 250 m from a disturbance	19.31
7	Disturbed Lands	21.42

Although the amount of intact land is relatively large, the map shows that these intact lands are concentrated in a few areas, so in areas of higher disturbance attention will be required to identify areas for restoration to ensure that intact lands exist in all ecosystems and are accessible to all Indigenous people in this region.

Figure 3 – Map of Disturbed and Intact Lands in the Kootenay Region outside of Protected Areas



4.4 Lower Mainland Region

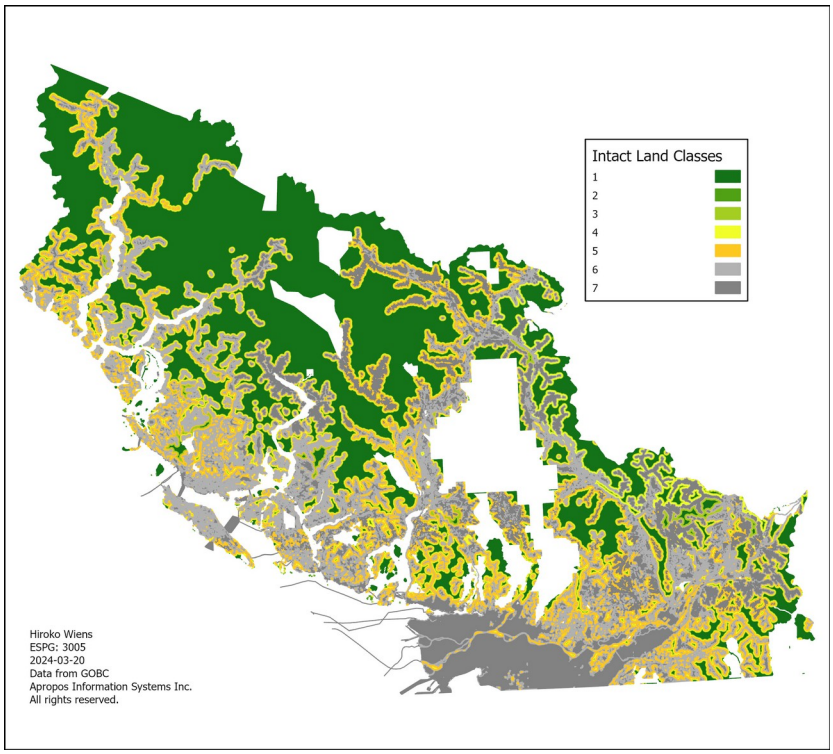
In this region 40% of the land is disturbed or within 250 m of a disturbance if protected areas are excluded from consideration. In this region 50% of the land is disturbed or within 500 m of a disturbance. This level of disturbance represents a significant loss of use to the exercise of rights. The details are found in Table 4.

Table 6 – Lower Mainland Region Intact Land Classes Definition and Composition in 2021 (excluding water areas)

Label	Description	Percent of Area Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	38.6
2	Areas 1000 m from a disturbance and smaller than 100 ha	0.02
3	Areas between 750 m and 1000 m from a disturbance	5.08
4	Areas between 500 m and 750 m from a disturbance	6.55
5	Areas between 250 m and 500 m from a disturbance	9.27
6	Areas between 0 m and 250 m from a disturbance	18.46
7	Disturbed Lands	22.02

Although the amount of intact land is relatively large, the map shows that these intact lands are concentrated in a few areas, so in areas of higher disturbance attention will be required to identify areas for restoration to ensure that intact lands exist in all ecosystems and are accessible to all Indigenous people in this region.

Figure 4 – Map of Disturbed and Intact Lands in the Lower Mainland Region outside of Protected Areas



4.5 Okanagan Region

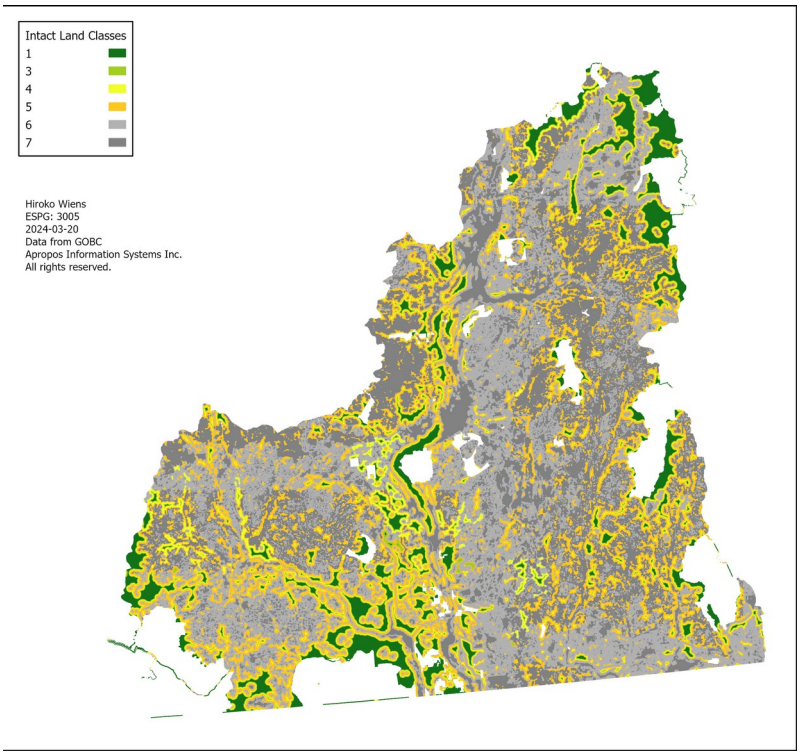
In this region 71% of the land is disturbed or within 250 m of a disturbance if protected areas are excluded from consideration. In this region 82% of the land is disturbed or within 500 m of a disturbance. This level of disturbance represents a significant loss of use to the exercise of rights. The details are found in Table 4.

Table 7 – Okanagan Region Intact Land Classes Definition and Composition in 2021 (excluding water areas)

Label	Description	Percent of Area Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	7.69
2	Areas 1000 m from a disturbance and smaller than 100 ha	0
3	Areas between 750 m and 1000 m from a disturbance	3.75
4	Areas between 500 m and 750 m from a disturbance	6.23
5	Areas between 250 m and 500 m from a disturbance	11.67
6	Areas between 0 m and 250 m from a disturbance	31.84
7	Disturbed Lands	38.83

Unlike other regions of the province, less than 10% of the region in in the highest value protected areas and intact areas 500m or greater from a disturbance total only 18% of the region and they are unevenly distributed. Compared to the rest of BC, significant effort is needed to prevent further development and degradation of the remaining intact areas as well as the restoration of disturbed lands.

Figure 5 – Map of Disturbed and Intact Lands in the Okanagan Region outside of Protected Areas



4.6 Omineca Region

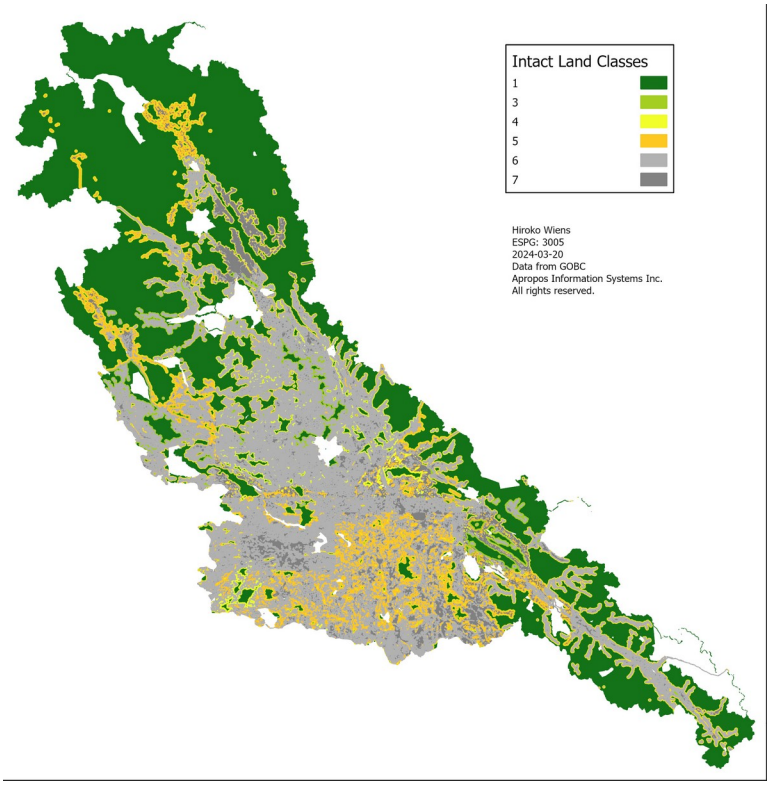
In this region 38% of the land is disturbed or within 250 m of a disturbance if protected areas are excluded from consideration. In this region 45% of the land is disturbed or within 500 m of a disturbance. This level of disturbance represents a significant loss of use to the exercise of rights. The details are found in Table 4.

Table 8 – Omineca Region Intact Land Classes Definition and Composition in 2021 (excluding water areas)

Label	Description	Percent of Area Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	47.07
2	Areas 1000 m from a disturbance and smaller than 100 ha	0
3	Areas between 750 m and 1000 m from a disturbance	3.31
4	Areas between 500 m and 750 m from a disturbance	4.46
5	Areas between 250 m and 500 m from a disturbance	7.1
6	Areas between 0 m and 250 m from a disturbance	16.24
7	Disturbed Lands	21.83

Although the amount of intact land is relatively large, the map shows that these intact lands are concentrated in a few areas, so in areas of higher disturbance attention will be required to identify areas for restoration to ensure that intact lands exist in all ecosystems and are accessible to all Indigenous people in this region.

Figure 6 – Map of Disturbed and Intact Lands in the Omineca Region outside of Protected Areas



4.7 Peace Region

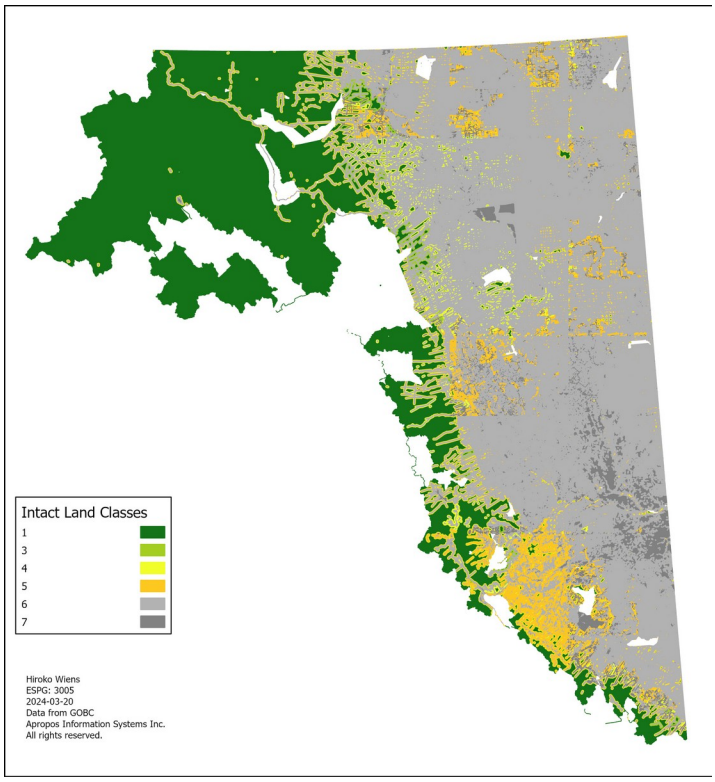
In this region 53% of the land is disturbed or within 250 m of a disturbance if protected areas are excluded from consideration. In this region 63% of the land is disturbed or within 500 m of a disturbance. This level of disturbance represents a significant loss of use to the exercise of rights. The details are found in Table 4.

Table 9 – Peace Region Intact Land Classes Definition and Composition in 2021 (excluding water areas)

Label	Description	Percent of Area Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	30.44
2	Areas 1000 m from a disturbance and smaller than 100 ha	0
3	Areas between 750 m and 1000 m from a disturbance	2.4
4	Areas between 500 m and 750 m from a disturbance	4.47
5	Areas between 250 m and 500 m from a disturbance	10.13
6	Areas between 0 m and 250 m from a disturbance	42.85
7	Disturbed Lands	9.71

Although the amount of intact land is relatively large, the map shows that these intact lands are concentrated in a few areas, so in areas of higher disturbance attention will be required to identify areas for restoration to ensure that intact lands exist in all ecosystems and are accessible to all Indigenous people in this region.

Figure 7 – Map of Disturbed and Intact Lands in the Peace Region outside of Protected Areas



4.8 Skeena Region

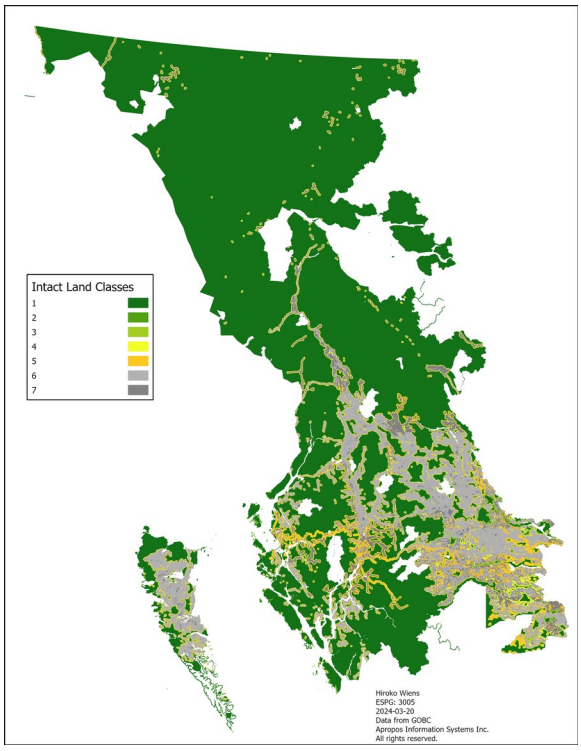
In this region 14% of the land is disturbed or within 250 m of a disturbance if protected areas are excluded from consideration. In this region 17% of the land is disturbed or within 500 m of a disturbance. This level of disturbance represents a significant loss of use to the exercise of rights. The details are found in Table 4.

Table 10 – Skeena Region Intact Land Classes Definition and Composition in 2021 (excluding water areas)

Label	Description	Percent of Area Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	77.95
2	Areas 1000 m from a disturbance and smaller than 100 ha	0.04
3	Areas between 750 m and 1000 m from a disturbance	2.03
4	Areas between 500 m and 750 m from a disturbance	2.5
5	Areas between 250 m and 500 m from a disturbance	3.54
6	Areas between 0 m and 250 m from a disturbance	7.04
7	Disturbed Lands	6.91

This region is unique with over 80% of the area being intact and 500m or further from a disturbance and 78% of the area being intact and 1000m or greater from a disturbance. This unique area merits being treated as an environmental refuge for a planet marred by unmitigated destructive development. In areas of high disturbance areas suitable for restoration need to be identified and restoration activities need to be conducted.

Figure 8 – Map of Disturbed and Intact Lands in the Skeena Region outside of Protected Areas



4.9 Thompson Region

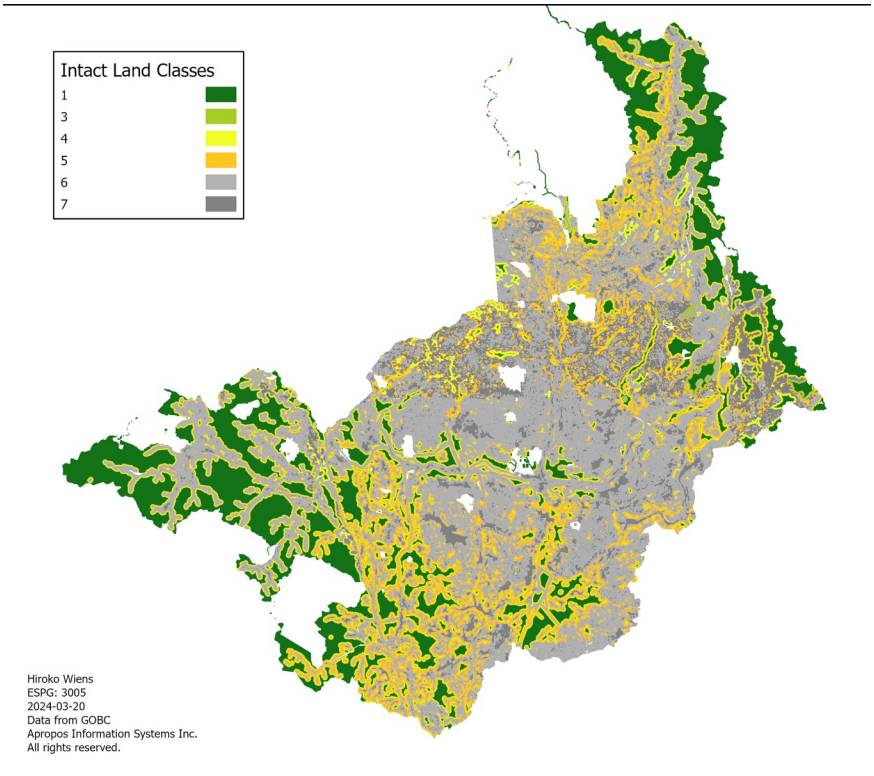
In this region 57% of the land is disturbed or within 250 m of a disturbance if protected areas are excluded from consideration. In this region 68% of the land is disturbed or within 500 m of a disturbance. This level of disturbance represents a significant loss of use to the exercise of rights. The details are found in Table 4.

Table 11 – Thompson Region Intact Land Classes Definition and Composition in 2021 (excluding water areas)

Label	Description	Percent of Area Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	20.93
2	Areas 1000 m from a disturbance and smaller than 100 ha	0
3	Areas between 750 m and 1000 m from a disturbance	4.64
4	Areas between 500 m and 750 m from a disturbance	6.63
5	Areas between 250 m and 500 m from a disturbance	10.78
6	Areas between 0 m and 250 m from a disturbance	26.99
7	Disturbed Lands	30.04

Although the amount of intact land is moderate, the map shows that these intact lands are concentrated in a few areas, so in areas of higher disturbance attention will be required to identify areas for restoration to ensure that intact lands exist in all ecosystems and are accessible to all Indigenous people in this region.

Figure 9 – Map of Disturbed and Intact Lands in the Thompson Region outside of Protected Areas



4.10 Vancouver Island Region

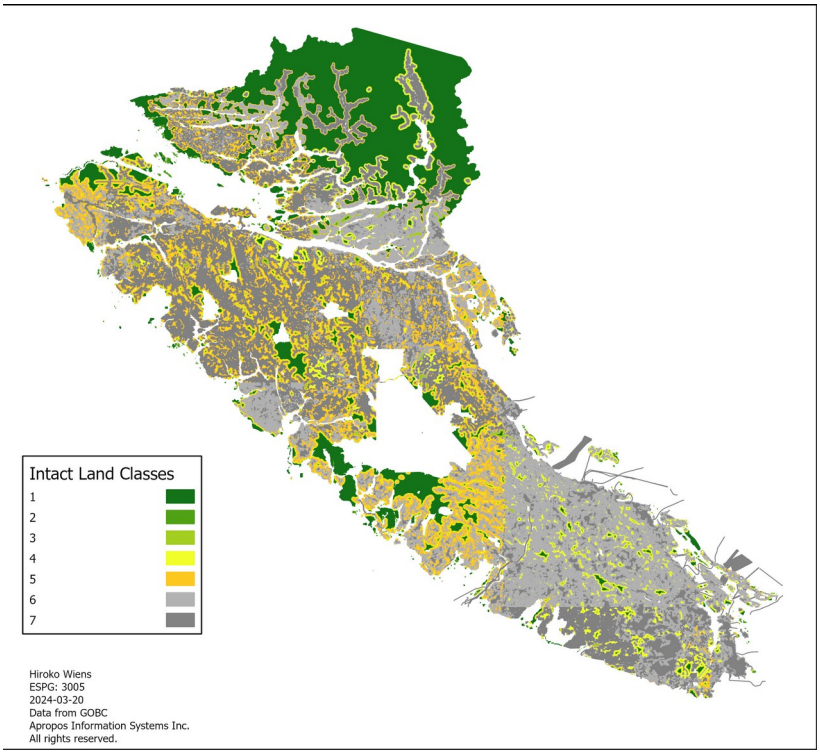
In this region 59% of the land is disturbed or within 250 m of a disturbance if protected areas are excluded from consideration. In this region 71% of the land is disturbed or within 500 m of a disturbance. This level of disturbance represents a significant loss of use to the exercise of rights. The details are found in Table 4.

Table 12 – Vancouver Island Region Intact Land Classes Definition and Composition in 2021 (excluding water areas)

Label	Description	Percent of Area Excluding Parks & Protected Areas
1	Areas 1000 m from a disturbance and 100 ha in area or larger	19.11
2	Areas 1000 m from a disturbance and smaller than 100 ha	0.14
3	Areas between 750 m and 1000 m from a disturbance	3.74
4	Areas between 500 m and 750 m from a disturbance	6.19
5	Areas between 250 m and 500 m from a disturbance	11.52
6	Areas between 0 m and 250 m from a disturbance	28.82
7	Disturbed Lands	30.48

Although the amount of intact land is moderate, the map shows that these intact lands are concentrated in a few areas, so in areas of higher disturbance attention will be required to identify areas for restoration to ensure that intact lands exist in all ecosystems and are accessible to all Indigenous people in this region.

Figure 10 – Map of Disturbed and Intact Lands in the Vancouver Island Region outside of Protected Areas



5. Discussion and Recommendations

Using the metrics from the Blueberry decision, this analysis suggests that Province of BC not only failed the Blueberry First Nation but has failed to adequately protect lands in other parts of BC, such as in the Okanagan region. The Thomson and Vancouver Island Regions merit special attention to preserve remaining intact lands given their relatively low amount of intact lands compared to other regions of BC.

First Nations are the fastest growing population within Canada and there is a concerted effort within Indigenous communities to reclaim their languages, culture and practices. These laudable goals requires lands where rights can be practised. Although there are large areas within BC, the proximity and accessibility of these lands for individual First Nations will vary greatly. For individual Nations lacking sufficient intact lands, the following actions are recommended:

1. Legal protection for remaining intact lands so they are not lost.
2. Previously disturbed lands that can be restored should be identified by Indigenous people. The cost of restoration should be funded by the industry operator responsible for the disturbance and degradation of those lands. Indigenous people of those areas should be funded to do that restoration work to ensure its quality and to support the rightful land stewardship by Indigenous people. Note that Indigenous metrics of restoration are much more robust than the legal requirements of reclamation which do not meet the need of lands of sufficient quality for the safe and meaningful exercise of rights.

In addition to these region specific solutions the revitalization of Indigenous led burning practices should be implemented to help mitigate fire risk which threatens both commercial and intact areas.

6. Summary

As stated in the methods, this analysis was done with a focus on intact lands. Within British Columbia there are large areas of intact lands but these are not evenly distributed or representative of all ecosystems. In order to protect the ecological integrity of the land and the rights of Indigenous people both conservation and restoration is needed.

More complex analyses could be done to look at issues such as the variation in impact of different types of disturbance or the ecological connectivity for different species. Those more complex analyses are needed to assess the amount of accessible lands for individual Nations and what types of restoration projects or changes in land use practices would be needed to ensure a viable land base.

Bibliography

Government of British Columbia. 2021. Cumulative Effects Framework. https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/cumulative-effects-framework

Government of Alberta. 2011. Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta.

Hamilton, Robert and Nicholas P. Ettinger. 2023. The Future of Treaty Interpretation in Yahey v British Columbia: Clarification on Cumulative Effects, Common Intentions, and Treaty Infringement, 2023 54-1 Ottawa Law Review 109, 2023 CanLIIDocs 876, https://canlii.ca/t/7n3xt