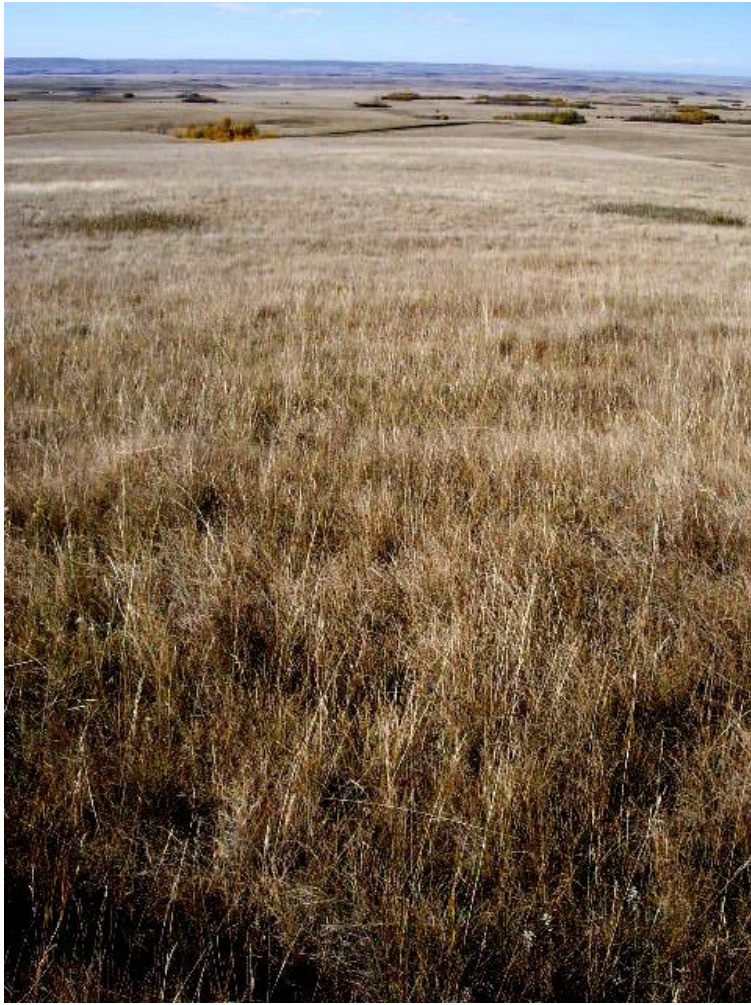




State of the Prairie Supplemental Data Technical Report

Agriculture and Agri-
Food Canada Land Use
Series 1990 - 2020 up-
date

Prairie Conservation Forum 2024



EXECUTIVE SUMMARY

This report uses the Agriculture and Agri-Food Canada's (AAFC) Semi-Decadal Land Use Time Series to analyze the change in native cover between the years 1990 and 2020 in the Grassland and Parkland Natural Regions of Alberta. The analysis standardizes the federal data to conform with an earlier change analysis produced by the Prairie Conservation Forum that quantifies the area of Graminoid, Treed, Water, and Wetland. Overall, the amount of native cover diminished by 1.6% in the two natural regions combined, and by 1.2% and 2.3% for the Grassland and Parkland Natural Regions, respectively. The remaining native cover is 45.7% for the Grassland Natural Region and 21.4% for the Parkland Natural Region. The analysis also covers smaller components of the natural and administrative landscape, including natural subregions, ecodistricts, Municipal Districts/Counties, First Nation Lands, Department of National Defense (DND) lands, and Cities/Towns. Of significance, the rate of native cover loss progressively diminishes over the three decades in all geographic configurations, with natural landscapes and administrative areas closer to the larger urban centers being the most prone to native cover loss. Specifically, the areas surrounding Calgary and Edmonton including the Black Diamond Upland, the Leduc Plain, and the Rocky View, Parkland, and Strathcona Counties, showing losses of upwards of 5%. The areas showing the greatest amount of native cover and least amount of loss over the 30 year period were the federal DND Bases of Suffield (97% native cover, 0.005% loss) and Wainwright (94% native cover, 0.009% loss). The amount of native cover was also analyzed from the private and public land perspective. The Grassland Natural Region has 69.7% in private tenure of which 30.1% is native cover, alternatively, 30.3% is public tenure of which 86.7% is native cover. The Parkland Natural Region has 90.5% in private tenure and of which 17.2% is native cover, alternatively, 9.5% is public tenure of which 61.9% is native cover. The report makes several recommendations, including: pursue the next iteration of the change analysis in 2030, including the Peace River Parkland; update the State of the Prairie Occasional Paper based on the 2030 results; update the Grassland Vegetation Inventory (GVI) by 2030; and, assess the feasibility of using a modified version of the Primary Land Vegetation Inventory to provide for a more comprehensive and complete coverage of the Parkland Natural Region.

Cover Photo: Plains Rough Fescue - Hand Hills Ecological Reserve

PERSONNEL

State of the Prairie Committee

Rylee Hewitt (chair), Megan Jensen, Brooke Kapeller, Ruiping Luo, Livio Fent, Katheryn Taylor

Supplemental Technical Report Subcommittee

Livio Fent, Patrick Wensveen, Ron McNeil

Reviewers: Barry Adams, Ian Dyson, Megan Jensen, Brooke Kapeller, Ed Karpuk, Ruiping Luo, Katheryn Taylor

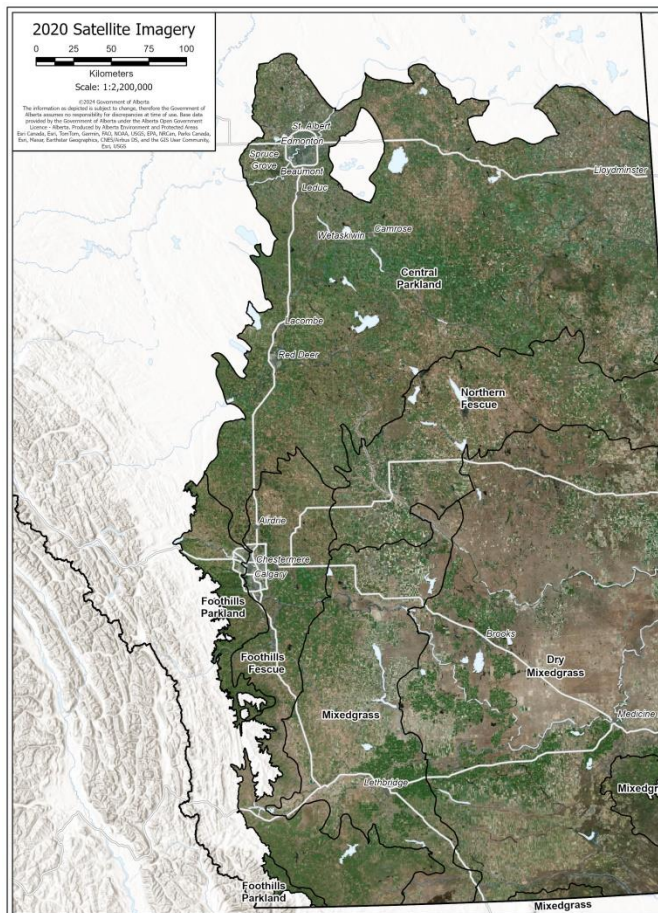


PHOTO 1. SATELLITE/AIRPHOTO COMPOSITE IMAGE PRODUCED BY ALBERTA ENVIRONMENT, TYPICAL OF THE SOURCE IMAGES USED BY AAFC TO CREATE THE CLASSIFIED PRODUCT ON THE RIGHT.

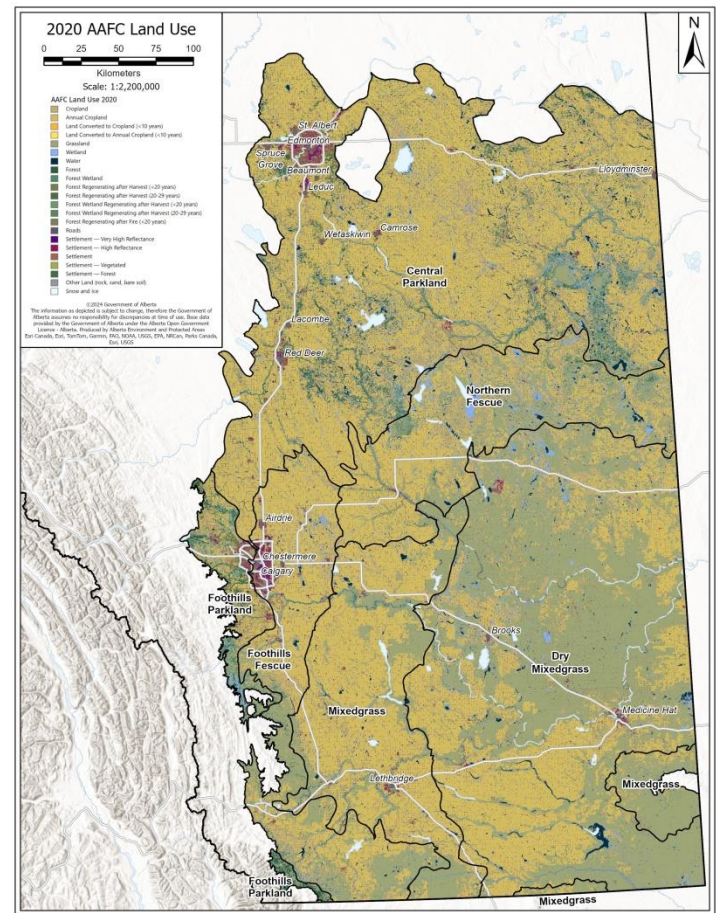


PHOTO 2. CLASSIFIED AAFC PRODUCT FOR THE GRASSLAND AND PARKLAND NATURAL REGIONS.

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BACKGROUND

In 2019, the Prairie Conservation Forum published a report entitled *State of the Prairie – Technical Report* (2019). The report was a comprehensive review of the data available for the southern Alberta Grassland and Parkland Natural Regions, with the goal of establishing how much native cover was left in these two natural regions. Another key component of the data analysis was determining how much native cover was lost from the earliest data compilation(s) to the most recently available, or more specifically, performing a change assessment.

The Technical Report compared and presented the results of several data sets and ultimately concluded that the Grassland Vegetation Inventory (GVI) produced between 2006 and 2016 was the most reliable and accurate assessment of determining how much native cover remained in the Grassland Natural Region. The GVI, however accurate and reliable, had many drawbacks. First, the Alberta Government, which owns the data, has not addressed the issue of periodically updating the database². It, therefore, remains a static view of the Grassland Natural Region's for the period

² The PCF is currently (2024) assessing the feasibility of updating the GVI.

2006-2016. The second issue was related to GVI's relational data model, which made it awkward to compare with the more common flat raster datasets associated with satellite-based inventories. Backward compatibility with the earlier data sets, such as the Native Prairie Vegetation Inventory (NPVI, 1991-'93) and Agriculture and Agri-Food Canada's (AAFC) land use raster dataset from 1990, also had their issues. Finally, a robust 'wall-to-wall' inventory for the Parkland Natural Region, similar to GVI, was unavailable.

The technical team's dataset investigations led them to consider AAFC's raster-based land use dataset as the best product for characterizing native cover change in the landscape. The earliest production of the data was in 1990 and was also produced in 2010, which allowed for a 20-year change analysis. It also covered the Grassland and Parkland Natural Regions, and had a consistent data model and acquisition characteristics. With active support from Agriculture and Agri-Food Canada in maintaining and producing the datasets at 5-10-year intervals into the future, the technical team deemed these datasets as the most appropriate to characterize landscape change at the time. Looking into the future, the number one recommendation in the Technical Report's concluding remarks was noted as follows:

"Pursue the AAFCLU³ analysis with the 2020 dataset to get a further 30-year perspective. Building on the effort, template, and process used in this document it would be a relatively easy, low cost and straightforward way to create a supplemental follow-up. Regular evaluations of status are essential to inform ongoing prairie conservation decision-making. An evaluation of native cover state and change by decade should be a PCF ongoing activity – preferably with the on-going support of the broader suite of collaborators that made this phase of the project possible. This will entail communicating to the federal level the robustness and effectiveness of the agricultural land use inventory as well as the importance of continuing it. There may also be opportunities to collaborate with Saskatchewan neighbours to get a more complete picture of state and change across the Canadian short grass prairies."

This current report enables the Technical Report's first recommendation but does more. With AAFC producing datasets not only for 2020 but also for 2000, a temporal four-point trend perspective of native cover change can now be compiled for 1990, 2000, 2010 and, of course, 2020 using the same landscape definitions (Regions, Subregions, ecodistricts, administrative areas

³ AAFCLU and AAFC are used interchangeably. Both refer to the same Agriculture and Agri-Food Canada Semi-Decadal Land Use Time Series data (https://agriculture.canada.ca/atlas/apps/aef/main/index_en.html?AGRIAPP=21).

etc.). In addition, with AAFC updating their 1990 version of the land use data, this newer version is used for this analysis. These are the main goals of this supplemental report.

THE AGRICULTURE AND AGRI-FOOD CANADA SEMI-DECADAL TIME SERIES LAND USE DATA (AAFC)

GENERAL CHARACTERISTICS OF AAFC LAND USE DATA

The AAFC is a culmination of a meta-analysis of several high-quality spatial datasets produced between 1990 and 2021 using various methods by teams of researchers as techniques and capabilities have evolved. The data offers a historical perspective, allowing for the identification of long-term trends, patterns, and changes in land use practices on Canada's landscape. This provides valuable insights into the evolving landscape and helps policymakers, researchers, and stakeholders make informed decisions regarding land management planning, environmental monitoring, and policy development.

The AAFC data of 1990, 2000, 2010, and 2020 are raster datasets that cover all areas of Canada south of 60 degrees north at a spatial resolution of 30x30 metres (see Photo 5). The land use classes follow the protocol of the Intergovernmental Panel on Climate Change (IPCC) and classify: Forest, Water, Cropland, Grassland, Settlement and Other land (barren land, ice, rock and unclassified). Each period in the Land Use Time Series represents the year named but should be considered circa that date. For this analysis, the geographic extent was limited to Alberta's Grassland and Parkland Natural Regions.

CLASSIFICATION FIELDS USED IN STATE OF THE PRAIRIE ANALYSIS

To standardize the data and to maintain consistent reporting that can be compared back to the original State of the Prairie Technical Report results, specific categories in the AAFC Land Use data were remapped to remain consistent with the original categories of the 2019 report⁴. Since the AAFC data is based on IPCC classes, this necessitated the elimination of the input classes "shrub" and "riparian"; in most cases, shrub (or shrubland) is included in other classes (primarily grassland or forest) based on factors such as location and proximity. Similarly, riparian areas are generally

⁴ The 2019 State of the Prairie Technical Report land cover classification was based on the 1991-1993 Native Prairie Vegetation Inventory (NPVI). A similar approach is used in this analysis: standardizing to the original NPVI.

incorporated into the wetland and forest wetland classifications. Table A indicates how the AAFC data was classified into the 4 main native/natural categories: Treed, Graminoid, Lake, and Wetland.

TABLE A RECLASSIFIED AND AGGREGATED AAFC LAND USE CATEGORIES. ITALICIZED TEXT IS ADDED ANNOTATION.

NPVI Attribute	AAFC Land Use Code	AAFC Definition
Shrub	Not Defined	Not Defined
Treed	41 (Forest)	Land covered by trees with a canopy of >10% and a minimum height of 5m, or capable of growing to those measurements within 50 years. <i>Category may contain taller shrubs; the AAFC classification does not account for shrubs</i>
Graminoid	61 (Grassland Managed)	Natural grass and shrubs used for cattle grazing.
	62 (Grassland Unmanaged)	Natural grass and shrubs with no discerned human intervention. ⁵ <i>Short shrubs are contained in this category.</i>
Lake	31 (Water)	Open water (includes river systems). <i>This category may be denoted as Lake/Water, Lake/River or Water in this analysis.</i>
Riparian	Not Defined	Not Defined. <i>This category is included in the ‘Wetland’ classes (42 and/or 71)</i>
Wetland	42 (Forest Wetland)	Wetland with a forest cover (canopy cover >40% and a minimum height of 5m, or capable of growing to those measurements within 50 years).
	71 (Wetland)	Wetland with vegetation at or above the surface of the water.

AAFC LAND USE TIME SERIES REVISIONS

Land use data undergoes updates and revisions as new information becomes available, data collection and analysis methodologies improve, or land use patterns change. As a result, older

⁵ This AAFC definition cover type may be rare in the study area. Steep slopes possibly?

time series may be replaced or updated with newer versions reflecting the most current and accurate information. Since the original State of the Prairie report was published in 2019, the AAFC datasets have all been replaced by newer versions with the older versions now considered obsolete. It is also important to note that the 1990 version of the AAFC is no longer available to the public (Melody Green (AAFC), 2023, personal communication).

SCALE OF ANALYSIS

The analysis was completed on the natural region, natural sub-region, ecodistrict and municipal district level allowing for data aggregation and, in theory, reducing the overall error propagating through the analysis. Aggregating data into larger areas in remotely sensed inventories can reduce error by smoothing out local variations and noise. The process helps generalize the representation of land use patterns, mitigating the effects of variability at the pixel level. Aggregation also helps to average spatial inconsistencies and reduce omission errors, leading to a more coherent picture of land use. However, it's important to consider that while aggregation reduces error, it also sacrifices finer-scale details and local variations (see Photos 4 and 5).

ACCURACY AND ERROR

Image classification is never without error, and many aspects of image classification can introduce errors and impact the accuracy of imagery-based land use inventories. These include image resolution limitations, where lower resolutions can hinder the identification and classification of fine-grained land use features, particularly invasive vegetation species interspersed with native species which only ground based survey techniques will identify. Additionally, errors can arise from human interpretation due to subjectivity and algorithmic confusion between different land use classes.



PHOTO 4. GOOGLE EARTH IMAGE OF LETHBRIDGE CENTERED ON THE OLDMAN RIVER VALLEY AND WHOOP UP DRIVE



PHOTO 5. THE AAFC CLASSIFICATION OF THE SAME AREA AS IN PHOTO 4. THIS CLASSIFICATION IS DERIVED FROM A MUCH COARSER (30X30M PIXELS) IMAGE DATA THAN WHAT CAN BE SEEN IN PHOTO 4, RESULTING IN A LOSS IN FINE SCALE DETAIL.

Spectral confusion poses challenges when similar spectral signatures among different land cover types lead to misclassifications. Cloud cover and atmospheric conditions, such as haze, smoke, or smog, can obstruct visibility and degrade image quality. Mixed pixels and multiple land cover types within a single pixel also introduce uncertainty when assigning accurate land use classes. Inaccurate or insufficient training data and inconsistent integration of ancillary data sources can introduce further inaccuracies. Lastly, inadequate validation procedures and a lack of ground truth data undermine the reliability and validity of the land use inventories.

An accuracy assessment remains to be completed for the AAFC Land Use data although efforts from AAFC are currently underway to improve the land use classification and create an accuracy assessment of change pixels needed to calibrate the results (Melody Green, 2023, personal communication). Due to this, any change reported in this analysis are known to be a combination of real change and error in the data.

In the absence of available accuracy assessment data for the AAFC dataset, we have taken the initiative to conduct our own accuracy assessment, utilizing the GVI as the authoritative dataset. Given the inherent challenges of comparing continuous data (as represented by GVI) with discrete data (as represented by AAFC), we employed a method involving aggregation and percent difference to facilitate a meaningful comparison. The aggregation process entailed combining and summarizing the GVI and AAFC data at a coarser level, aligning both datasets in terms of extent and time. The GVI data spans the period from 2006 to 2016. To estimate the accuracy of the AAFC data, we extracted GVI data from 10 townships interpreted from the 0.4m stereo softcopy photogrammetric 2006 color infrared (CIR) imagery and another 10 townships interpreted from the 2010 vintage CIR imagery. These two distinct timeframes were then directly compared to the corresponding 2005 and 2010 versions of the AAFC data (see Appendix 5). The resulting percent difference calculations indicated disparities specific to land use categories. For native/natural sites, the percent difference is -12.3%⁶ for the 2005 version and 1.2% for the 2010 version. It is essential to note that GVI has been previously assessed to have an overall accuracy of 80%; however, when only the native cover versus disturbed land is assessed, the accuracy is upwards of 93% (E. Karpuk, 2023; B. Adams, 2024, personal communication). Considering this accuracy benchmark, the percent difference calculations provide a quantitative measure of the disparities between the two datasets during the specified timeframes, offering insight into the performance of the AAFC dataset in relation to the quality-controlled accuracy of the GVI data. It is important to note that the AAFC's internal compilation consistency provides for more reliability on *temporal trends* rather

⁶ The negative value indicates an AAFC underestimation of native cover, positive values are an over estimation.

than the absolute values, nonetheless, the values do provide relative benchmarks of changing native cover through time.

THE GRASSLAND BIOME: ALBERTA'S GRASSLAND AND PARKLAND NATURAL REGIONS

EXTENT AND STATE OF THE GRASSLAND BIOME IN ALBERTA: 2020

The Grassland Biome (referred to as the 'biome' in this report) represents one of the six major natural regions of the earth. In Canada it is shared by Alberta, Saskatchewan, Manitoba, and British Columbia (Figure 1 and photo 6), the Alberta portion being just over 15.3 million hectares or about 23.2% of the province (Figure 2). The biome comprises the Grassland Natural Region proper and the Parkland Natural Region ecotone. An isolated area of Parkland is also found in the Peace River area (see photo 6) but is not included in this analysis. The biome, and in particular the temperate grasslands, are the earth's most endangered ecological region with much of the natural vegetation having been converted to agriculture. Alberta is no exception to this global condition with only 37.6% (5,753,135 ha) still in its natural state as of 2020 (Figure 3).

The original State of the Prairie Technical Report (2019) focused on the change from 1990 to 2010. With the latest data acquisition from AAFC, two more year totals were acquired; the 2020 data as presented earlier and the 2000 year values. We now have four points outlining the decadal changes from 1990 to 2020, enough to infer a trend and rate of change. Figure 3 clearly indicates the losses incurred over the 30 year period but also shows that the loss over the period between 1990 and 2000 was greater than the other two periods. Between 1990 and 2000, the loss amounted to 140,689 ha while the loss between 2000 and 2010 and 2020 was 66,071 ha and 47,027 ha respectively, in other words the rate of loss is diminishing.



PHOTO 6 . THE NORTHERN EXTENT OF THE GRASSLAND BIOME IN NORTH AMERICA AS DEPICTED IN THIS GOOGLE EARTH COMPOSITE IMAGE. ALBERTA'S GRASSLANDS ARE BORDERED BY THE BOREAL FOREST TO THE NORTH AND NORTHWEST AND MONTANE/ALPINE TO THE SOUTHWEST. AN ISOLATED AREA OF PARKLAND IS ALSO LOCATED IN ALABERTA'S PEACE RIVER AREA BUT IS NOT INCLUDED IN THIS ANALYSIS.

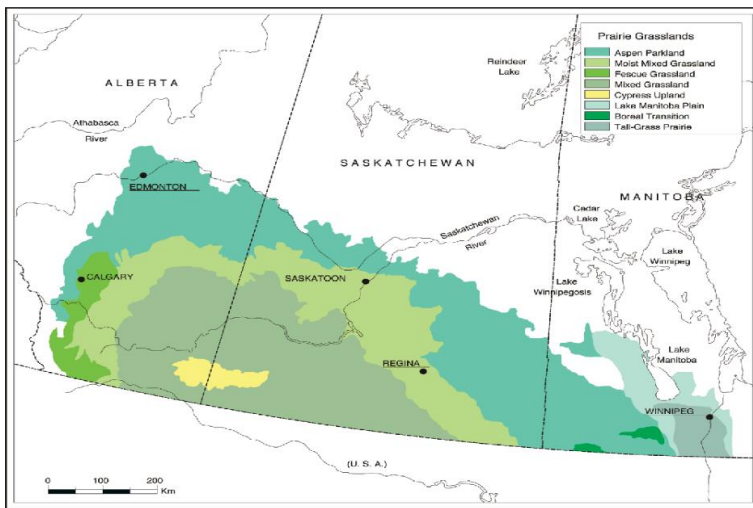


FIGURE 1. THE GRASSLAND BIOME IN CANADA (FLOATE ET AL, 2017).

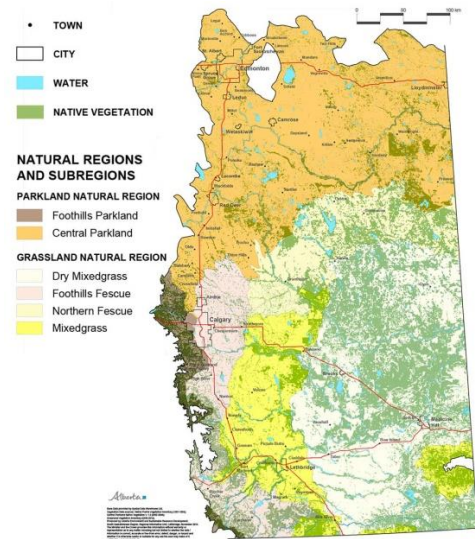


FIGURE 1. THE GRASSLAND BIOME IN ALBERTA.

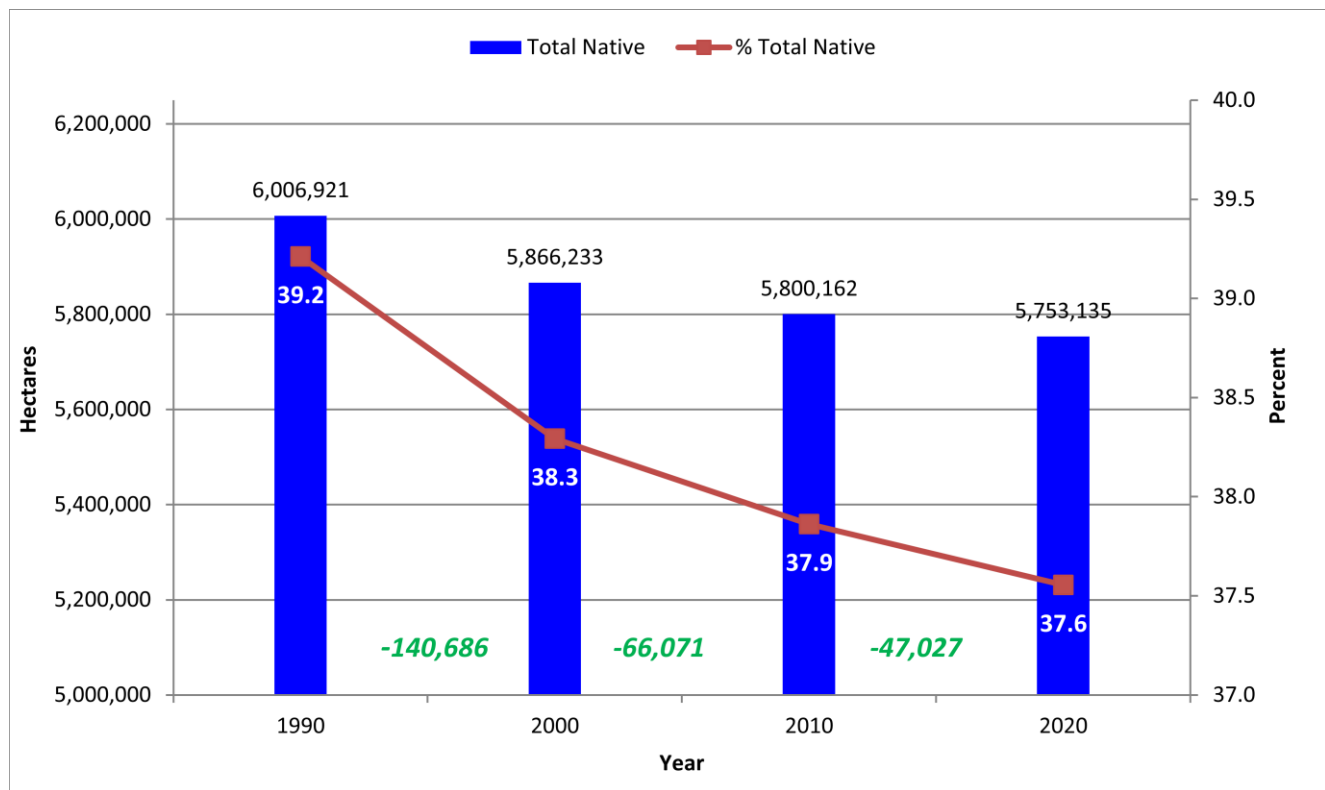


FIGURE 2. TOTAL NATIVE COVER (IN HECTARES) AND PERCENTAGES IN THE GRASSLAND BIOME IN ALBERTA. THE AMOUNT OF NATIVE VEGETATION REMAINING IN THE BIOME IS INDICATED BY THE BLUE BARS FOR EACH OF THE FOUR YEARS. THE PERCENTAGE OF NATIVE VEGETATION REMAINING IN THE BIOME IS INDICATED BY THE RED LINE. THE GREEN VALUES IN BETWEEN THE DECADAL POINTS INDICATE THE CHANGE (LOSS) IN THE INTERVENING DECADES.

VEGETATION 30 YEAR CHANGE

The 1.6% total loss in natural cover over 30 years (Figure 3) is mostly associated with losses in the Graminoid vegetation category (0.8% loss) and in the Treed category (0.7% loss) (Figures 4 and 5). The losses in the Wetland and Water categories are smaller but still have notable effects especially in a semiarid environment. Table B indicates that approximately 22,445 ha of wetland cover was lost in the 30-year span, an area roughly the size of Lethbridge and Red Deer combined. Also, note that the Lake category has the highest area cover in 2020.

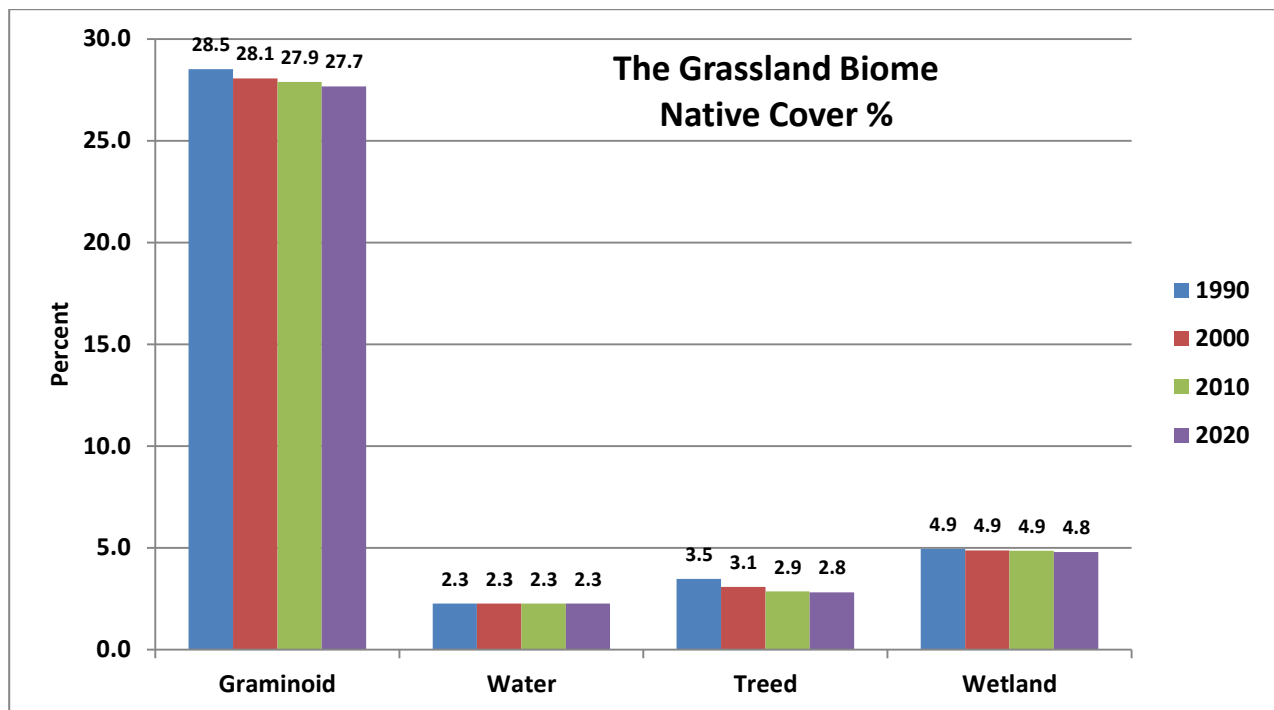


FIGURE 3. PERCENT NATIVE VEGETATION COVER IN THE GRASSLAND BIOME OF ALBERTA.

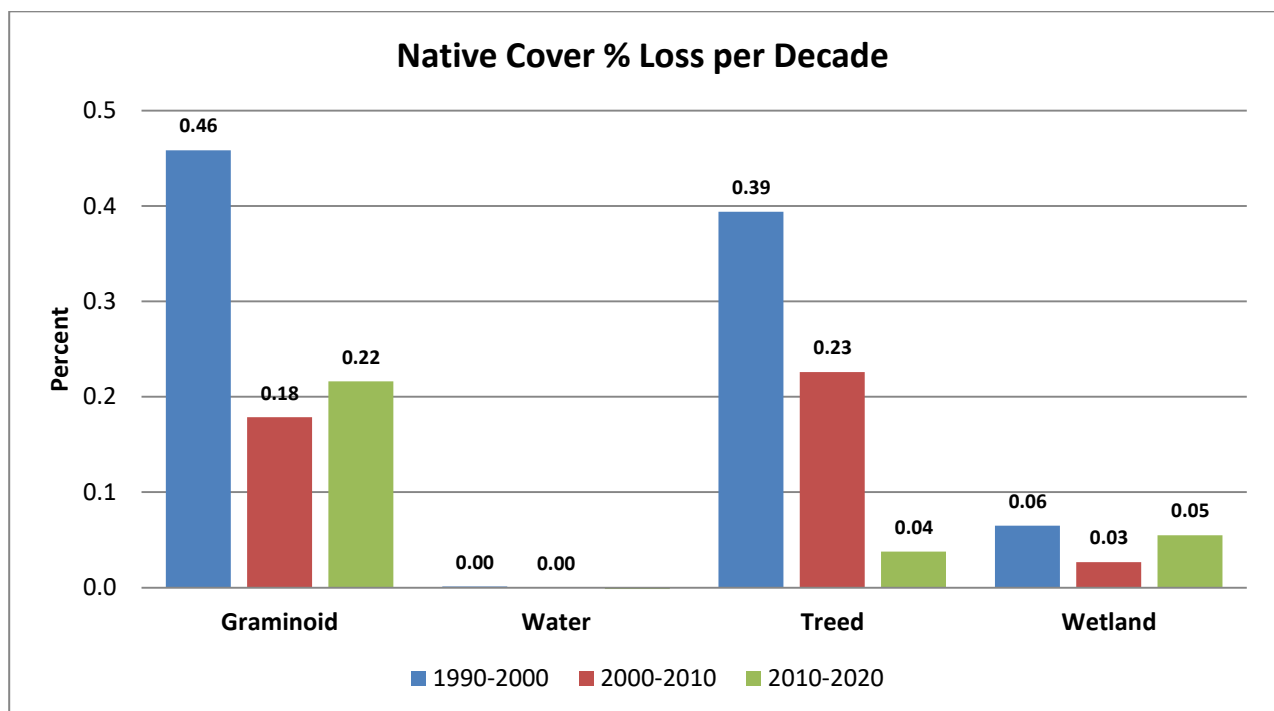


FIGURE 4. PERCENT LOSS IN NATIVE COVER TYPES PER DECADE IN THE GRASSLAND BIOME.

TABLE B. AREA IN HECTARES⁷ FOR EACH NATIVE COVER TYPE FOR THE GRASSLAND BIOME IN ALBERTA.

Year	Graminoid	Lake/Water	Treed	Wetland
1990	4,369,254	346,923	532,825	757,918
2000	4,299,029	346,753	472,478	747,972
2010	4,271,679	346,745	437,860	743,878
2020	4,238,572	346,991	432,098	735,474
Total Change	-130,682	68	-100,727	-22,445

THE GRASSLAND NATURAL REGION

STATE OF THE REGION: 2020

The Grassland Natural Region comprises approximately 62% of the Grassland Biome (not including the Peace River Parkland). It is a region in which water is a major limiting factor and in which the natural environment has strategically adapted to this significant constraint. The most significant anthropogenic modifying factor on this landscape has been agricultural conversion, irrigation infrastructure, and to a lesser extent, urbanization. In 2020, 45.7% of this natural region was still covered with some component of its natural cover type (Figure 6).

⁷ The values for hectares are rounded to the nearest whole number (no decimals) throughout the report. This may cause a slight discrepancy in some summed totals.

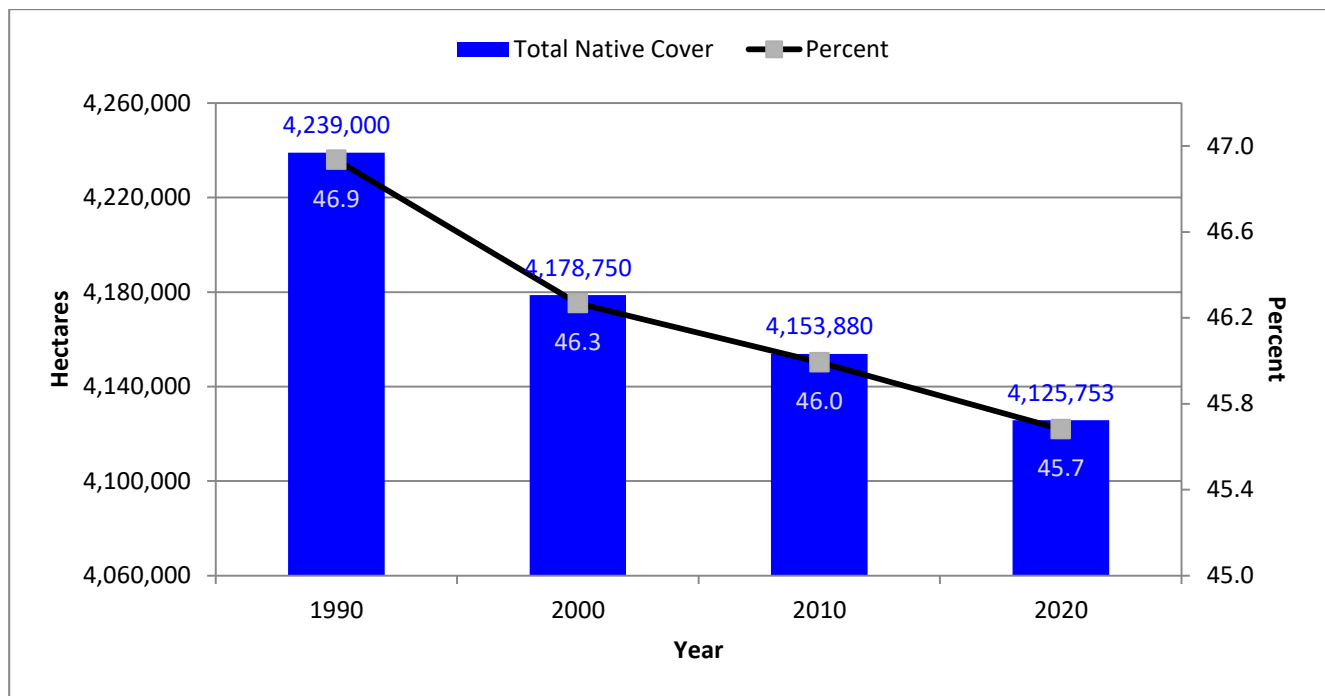


FIGURE 5. PERCENTAGE OF NATURAL COVER (LINE GRAPH) AND AREA (BAR GRAPH) OF THE GRASSLAND NATURAL REGION BETWEEN 1990 AND 2020.

30 YEAR CHANGE AND TREND

The Grassland Natural Region has lost approximately 1.2% of its native cover between 1990 and 2020 (Figure 6). This percentage equates to roughly 114,000 hectares or a little less than the size of Medicine Hat (125,000 ha). Figure 6 also shows that the rate of loss of native cover was higher between the years 1990 and 2000, but the trend continued in the subsequent decades.

VEGETATION 30-YEAR CHANGE

Not surprisingly, the greatest vegetation or native cover loss occurred in the Graminoid category, where almost 92,000 ha were lost in the 30-year period. However, as noted in the Biome section, a significant amount of wetland cover was also lost: over 14,000 ha (Figure 7). The Treed area also showed a loss of about 7,000 ha, presumably mostly in riparian zones. The Lake category (including rivers) has remained relatively constant. Figure 8 shows the percentage lost for each cover type per decade.

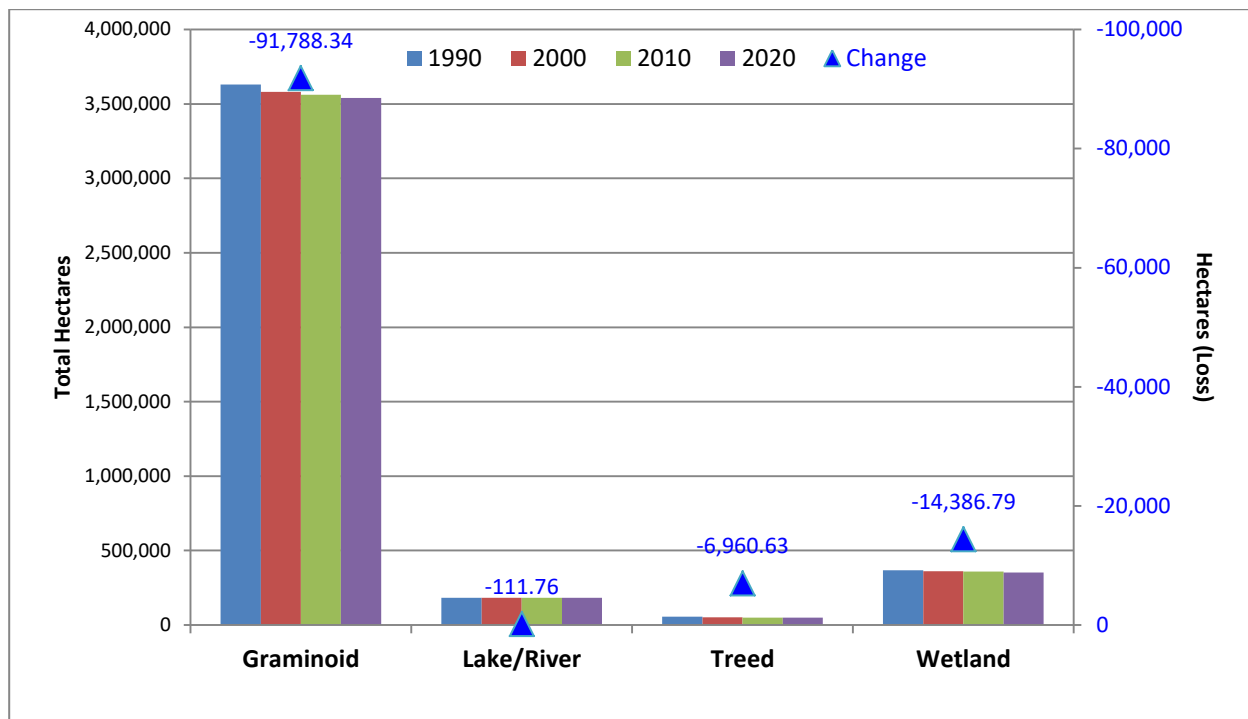


FIGURE 6. NATIVE VEGETATION AND LAKE (INCLUDING RIVERS) TOTAL COVER (BARS) AND CHANGE (TRIANGLES) IN THE GRASSLAND NATURAL REGION IN THE DECADES BETWEEN 1990 AND 2020.

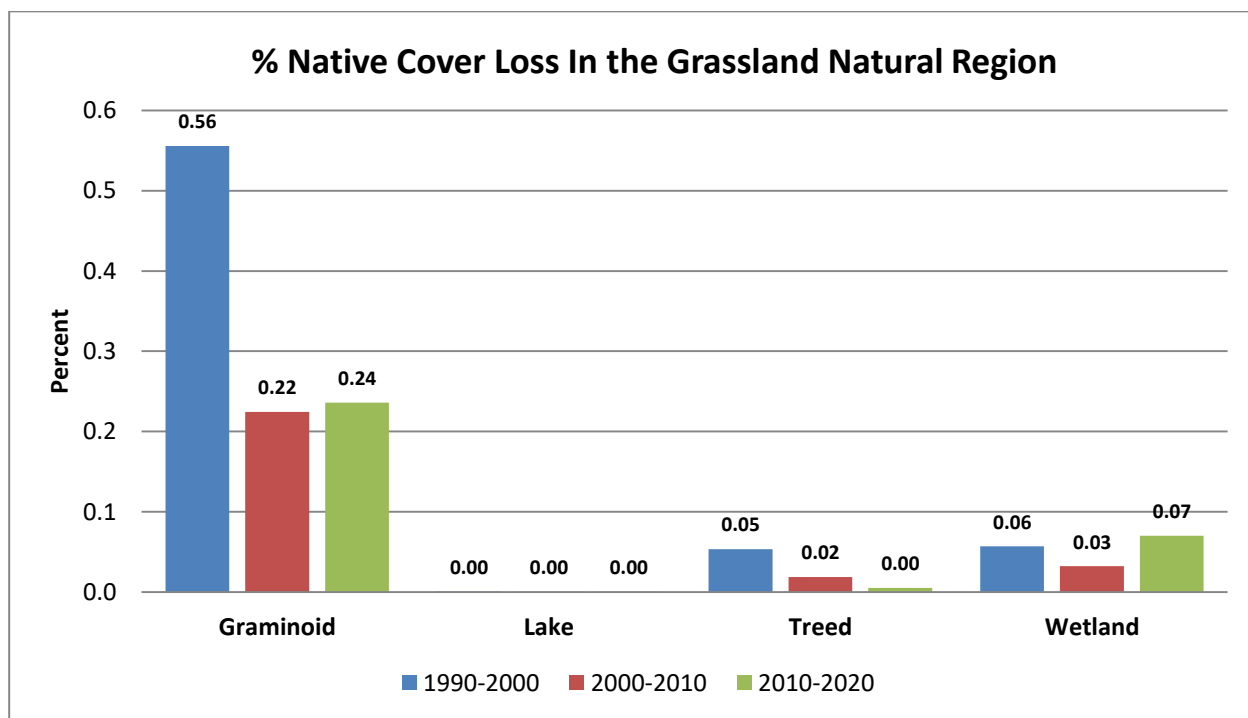


FIGURE 7. PERCENT NATIVE COVER TYPE LOSS PER DECADE IN THE GRASSLAND NATURAL REGION.

THE GRASSLAND NATURAL SUBREGIONS

STATE OF THE SUBREGIONS: 2020

The Grassland Natural Region contains four Subregions as shown in Figure 9. The Dry Mixedgrass is the largest of these Subregions at just under 4.7 million ha and, as Figure 9 shows, has the highest percentage of native cover: 58.4% in 2020. The Foothills Fescue is the smallest of these Subregions and has the lowest percentage of native cover at 31.5% in 2020. In general terms, the amount of native cover reflects development pressures of agriculture/irrigation/urbanization in the western subregions (Foothills Fescue and Mixedgrass) compared to the relatively more arid, remote (from population centres) and less modified subregions in the north and eastern part of the Natural Region (Dry Mixedgrass and Northern Fescue).

30 YEAR CHANGE AND TREND

As expected, the Natural Subregions reflect the overall change and trend noted for the Natural Region as a whole. Native cover diminished in all the Subregions by about 1.3% over the 30-year period (Figure 9), while the rate of loss, again, is higher in the 1990-2000 decade (0.6% – 0.9%) than the more recent decades (0.2% -0.3%) for all Subregions. Figure 10 shows the cumulative % increase in native cover loss in the 30-year time span.



PHOTO 7. WATERTON PARK FRONT (BLAIRMORE FOOTHILLS ECODISTRICT). A UNIQUE CONFLUENCE OF ALBERTA'S GRASSLAND, PARKLAND, AND ROCKY MOUNTAIN NATURAL REGIONS.

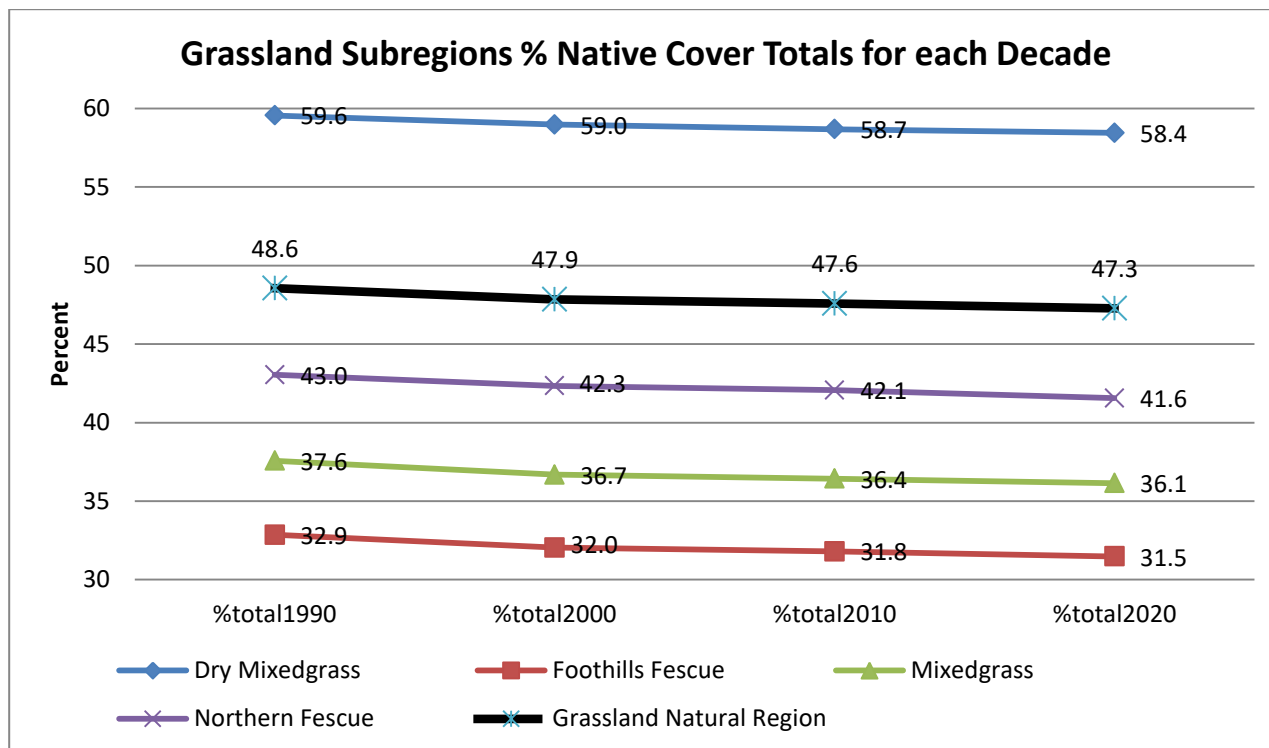


FIGURE 8. TOTAL NATIVE COVER PERCENTAGE FOR EACH GRASSLAND NATURAL SUBREGIONS (NATURAL REGION INCLUDED FOR COMPARISON) FOR EACH OF THE FOUR TIME PERIODS.

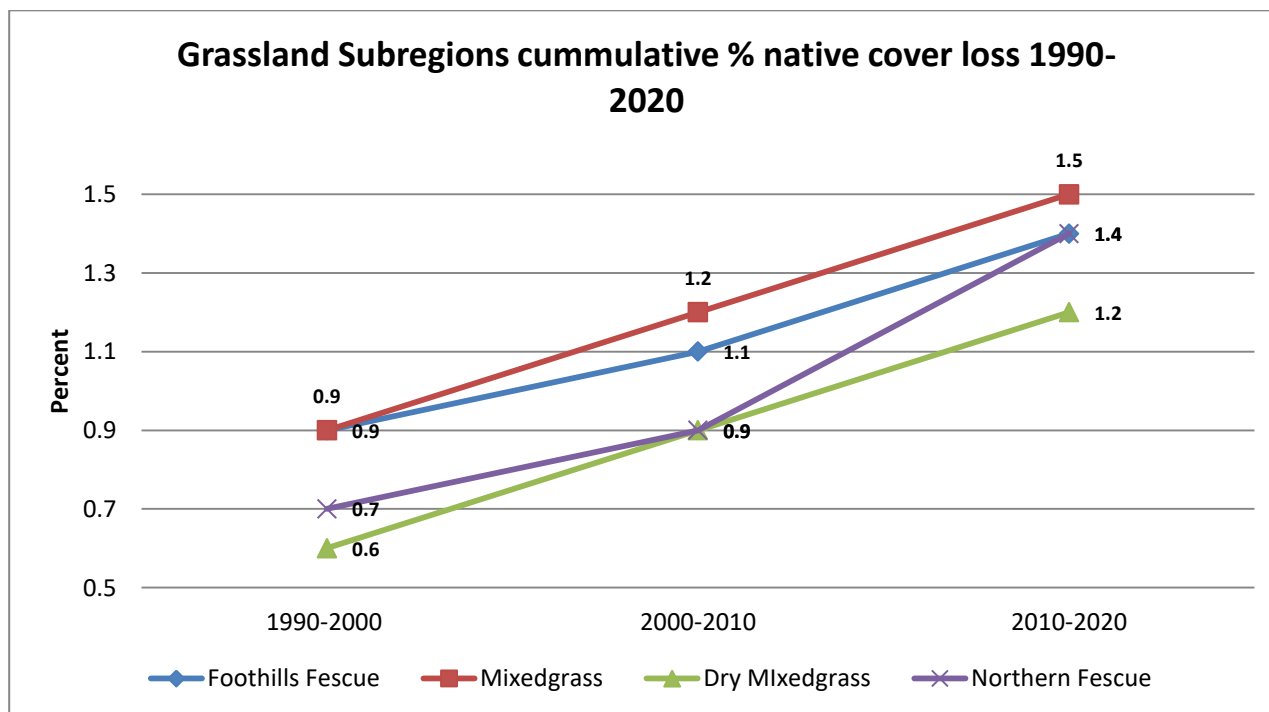


FIGURE 9. CUMMULATIVE PERCENT LOSS IN NATIVE COVER FOR THE GRASSLAND NATURAL SUBREGIONS FOR EACH DECADE.

VEGETATION 30 YEAR CHANGE

THE DRY MIXEDGRASS SUBREGION

The Graminoid vegetation cover dominates this natural subregion and is the natural cover type exhibiting the most significant loss. The rate of loss, however, is slowing in each of the decades following 1990 (Table C, 1990-2020 Changes'). The trend may be due to the diminished supply of arable land in the face of increased crop demand and agricultural land value. For example, the Special Areas may have likely a million plus acres of once cultivated land that is largely now native again (B. Adams, 2024, personal communication). The Treed category shows minimal change in a natural region where most trees and large shrubs are likely confined to river bottoms. The loss in the wetland category is variable with loss diminishing through to 2010 followed by an increase in 2020. The loss in wetland area (3,232 ha) in the period 2010-2020 is a little less than the area of the town of Coronation. The Lake/River category change is insignificant and likely within the error bounds of the data.

TABLE C. TOTAL NATIVE COVER (IN HECTARES) AND DECADAL CHANGE FOR THE YEARS 1990 TO 2020 FOR THE FOUR NATIVE COVER CATEGORIES FOR THE DRY MIXEDGRASS NATURAL SUBREGION.

Dry Mixedgrass	Graminoid	Lake/River	Treed	Wetland
1990	2,543,651	92,636	6,880	152,431
2000	2,518,760	92,616	6,476	150,304
2010	2,506,670	92,615	6,327	148,792
2020	2,498,914	92,613	6,227	145,561
1990 - 2000 Change	-24,891	-20	-405	-2,128
2000 - 2010 Change	-12,091	-1	-148	-1,511
2010 - 2020 Change	-7,756	-2	-100	-3,232

THE NORTHERN FESCUE SUBREGION

Native vegetation cover loss is mainly in the Graminoid category, with a decreasing trend from 1990-2010 followed by an increase in loss (Table D). Wetland cover loss shows a similar trend, while the Treed area loss diminishes throughout the period. The Lake/River category shows no change.

TABLE D. TOTAL NATIVE COVER (IN HECTARES) AND DECADAL CHANGE FOR THE YEARS 1990 TO 2020 FOR THE FOUR NATIVE COVER CATEGORIES FOR THE NORTHERN FESCUE NATURAL SUBREGION.

Northern Fescue	Graminoid	Lake/River	Treed	Wetland
1990	456,382	37,468	25,971	123,055
2000	448,641	37,466	24,577	121,692
2010	445,400	37,466	24,301	121,122
2020	439,174	37,467	24,198	119,702
1990 - 2000 Change	-7,741	-1	-1,393	-1,363
2000 - 2010 Change	-3,241	0	-276	-570
2010 - 2020 Change	-6,227	0	-102	-1,419

THE MIXEDGRASS SUBREGION

The Mixedgrass Subregion essentially mimics the previous two subregions with higher Graminoid cover loss in the 1990-2000 decade and higher wetland cover loss in the 2010-2020 decade (Table E). The Treed and Lake River categories show marginal loss over the 30-year period.

TABLE E. TOTAL NATIVE COVER (IN HECTARES) AND DECADAL CHANGE FOR THE YEARS 1990 TO 2020 FOR THE FOUR NATIVE COVER CATEGORIES FOR THE MIXEDGRASS NATURAL SUBREGION.

Mixedgrass	Graminoid	Lake/River	Treed	Wetland
1990	659,788	38,126	9,291	46,919
2000	643,211	38,089	8,854	46,211
2010	638,889	38,088	8,587	45,717
2020	634,310	38,101	8,540	44,531
1990 - 2000 Change	-16,576	-37	-437	-708
2000 - 2010 Change	-4,322	-1	-267	-494
2010 - 2020 Change	-4,579	14	-47	-1,186

THE FOOTHILLS FESCUE SUBREGION

The Foothills Fescue Subregion is the smallest area in the Grassland Natural Region and essentially displays the same trends as the other subregions. The greatest native cover loss is in the Graminoid category with the most significant loss occurring in all categories from the 1990–2000 decade (Table F). Wetland cover is still being lost over the decades but less so than the other subregions. The Treed area loss is also trending downwards but at a greater rate than the Mixedgrass or Dry Mixedgrass subregions. The significant diminishing rate of loss of Treed area in both the Northern Fescue and the Foothills Fescue may point to the dynamics of aspen clone encroachment where the Treed area is slowly encroaching onto native Graminoid as has been observed for over 50 years (Nature Conservancy of Canada, 2019; Resource Data Division, Technical Report No. 760, 1999; Bailey, A.W. and A.L. Wroe, 1974; Photo 8). As with the previous subregions, the loss of the Lake/River area is marginal.

TABLE F. TOTAL NATIVE COVER (IN HECTARES) AND DECADAL CHANGE FOR THE YEARS 1990 TO 2020 FOR THE FOUR NATIVE COVER CATEGORIES FOR THE FOOTHILLS FESCUE NATURAL SUBREGION.

Foothills Fescue	Graminoid	Lake/River	Treed	Wetland
1990	348,621	22,323	19,672	56,996
2000	341,322	22,254	16,940	55,930
2010	339,505	22,250	15,841	55,524
2020	335,909	22,258	15,652	54,965
1990 - 2000 Change	-7,299	-69	-2,732	-1,066
2000 - 2010 Change	-1,816	-5	-1,099	-406
2010 - 2020 Change	-3,596	8	-188	-559



PHOTO 8. PARKLAND/GRASSLAND NATURAL REGIONS TRANSITION AREA WITH FESCUE GRASSLAND INTERSPERSED WITH ASPEN CLONES IN THE WINTERING HILLS ECODISTRICT.

THE GRASSLAND NATURAL REGION: ECODISTRICTS

STATE OF THE ECODISTRICTS AND 30 YEAR CHANGE AND TREND

The Grassland Natural Region Ecodistricts generally show a similar pattern as with the Natural Subregions, with more minor losses of native cover in the region's eastern portion than in the western portion (Figure 11). The Lethbridge Plain ecodistrict shows the greatest amount of native cover loss, with a significant portion occurring during the 1990-2000 period. A relatively simple correlate would be to look at irrigation expansion in this ecodistrict. Alternatively, the highest native cover loss in the 2010-2020 period occurred in the Drumheller Plain ecodistrict (Figure 12). Generally, the total loss of native cover is most prominent during the 1990-2000 decade, with the loss abating in the latter two decades. The trend has some anomalies with loss increasing in the most recent decade, as noted in the Drumheller, Foremost, and Delacour Plains (Figure. 12). All the ecodistricts change data can be viewed in Appendix 1.

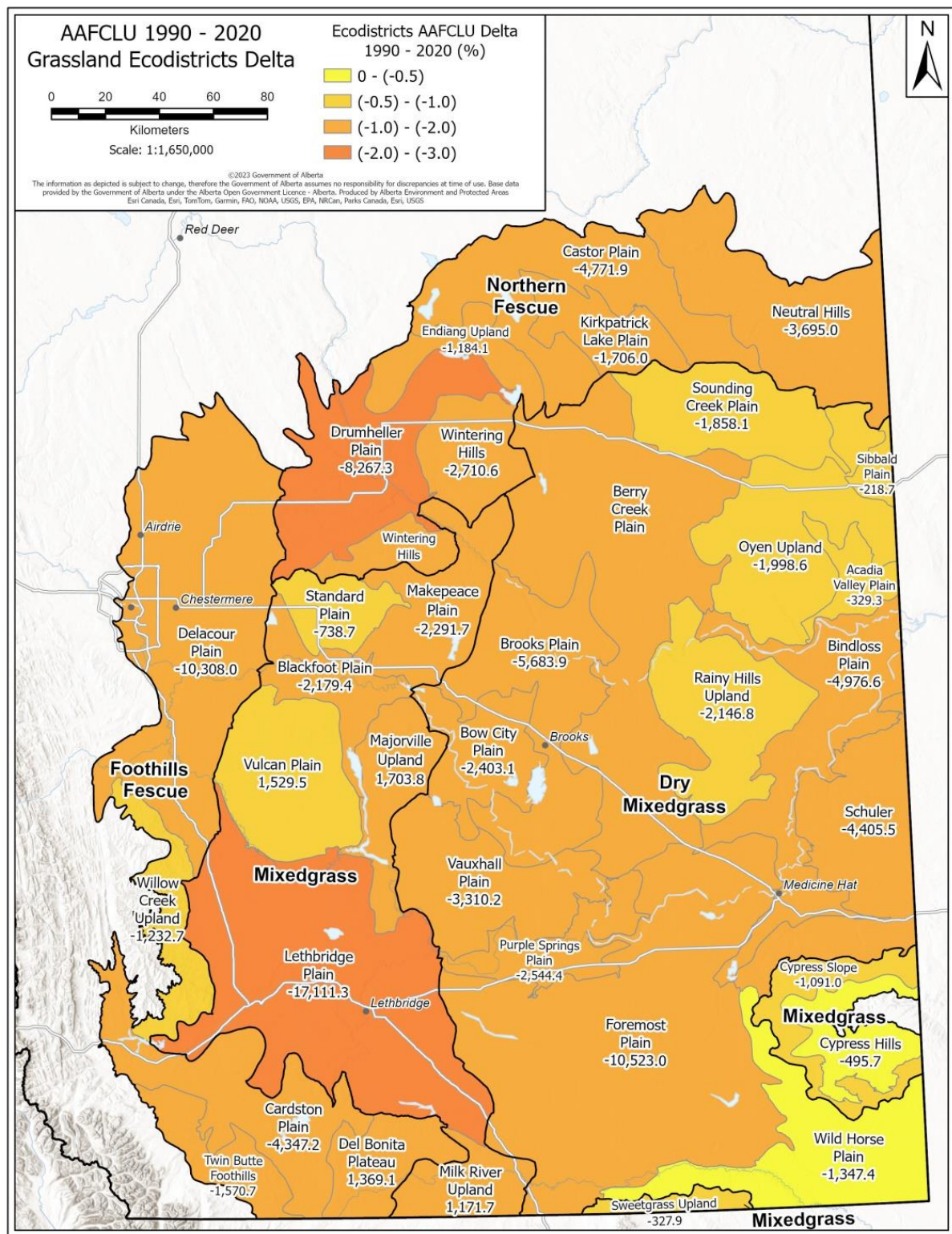


FIGURE 10. GRASSLAND NATURAL REGION ECODISTRICTS WITH PERCENT CHANGE GRADATION AND 30 YEAR CUMULATIVE LOSS OF NATIVE COVER IN HECTARES. THE TERM 'DELTA' REFERS TO CHANGE.

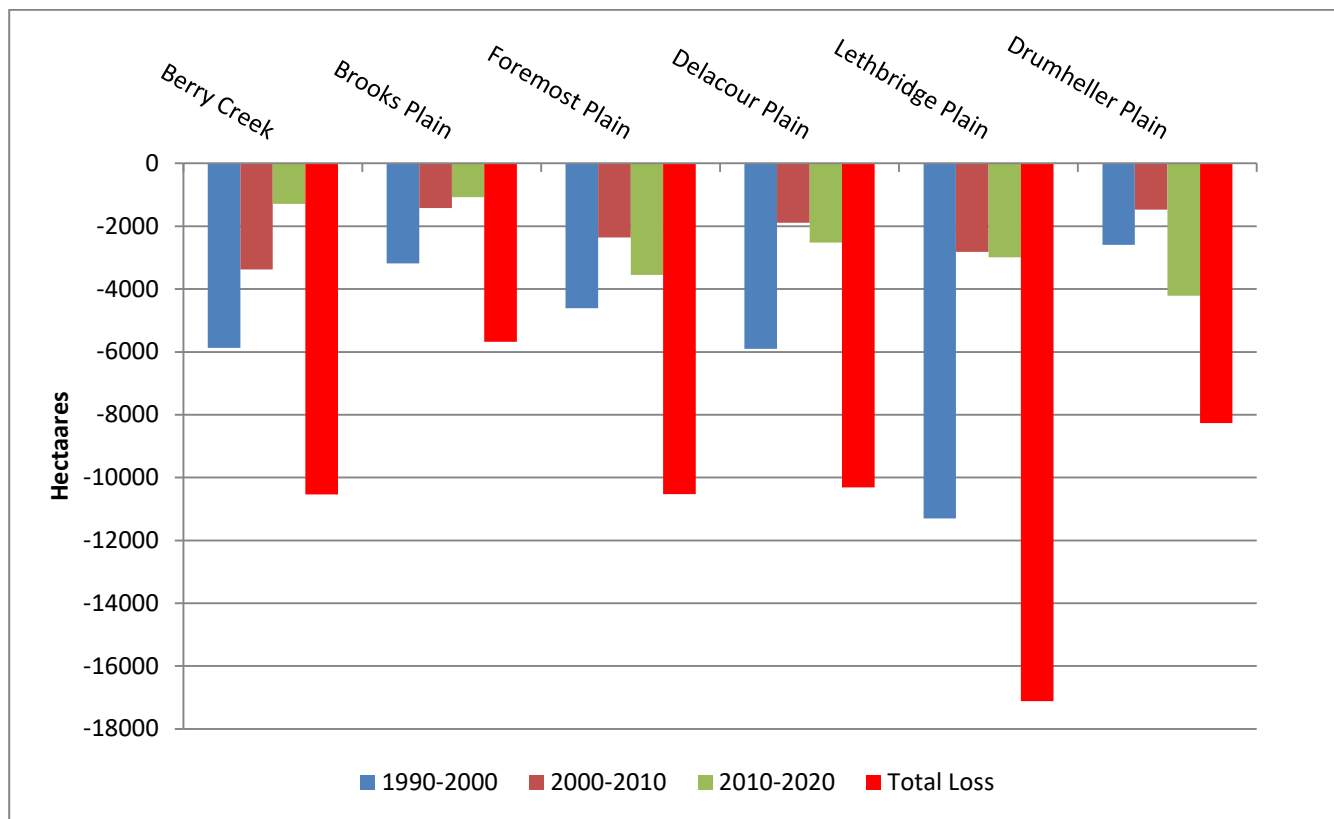


FIGURE 11. TOP SIX ECODISTRICTS IN THE GRASSLAND NATURAL REGION SHOWING THE HIGHEST AMOUNT OF TOTAL NATIVE COVER LOSS IN HECTARES (RED BAR) INCLUDING PROGRESSIVE DECADAL LOSSES.

THE GRASSLAND NATURAL REGION: LAND TENURE

PRIVATE AND PUBLIC LAND 30 YEAR CHANGE AND TREND

The trend of incremental native cover loss that is seen when the data is stratified by natural subdivisions or administrative subdivisions is also seen when the data is partitioned into private and public land holdings. Figure 13 shows that although private tenure occupies over two thirds (69.7%) of the Grassland Natural Region, less than a third of the private land (30.1% in 2020) is native. The public land native coverage was 86.7% in 2020 but, correspondingly, less than a third (30.3%) of the Region is public land. The total of that loss

in native cover over the 30 years is similar whether the land is private or public: about 1.3% (Figure 14).

Figure 15 provides the actual areal context in hectares for each of the four time periods for both private and public lands (shown in the bars). The results show that the majority of native cover is in the public lands; however, the private lands also have large amounts of native cover; the difference amounting to about half a million hectares or so, roughly the same size as Banff National Park.

Figure 16 shows that the loss rate varies over the three decades for private and public lands. Although the amount of native cover lost is lower for both holdings following the 1990-2000 period, in the case of public lands the loss continues to diminish progressively to 2,273 ha in the 2010-2020 period, while for private lands, the actual value reverses in the last period from a loss of 14,894 ha in the 2000-2010 period to a loss of 26,699 ha in the 2010-2020 period (Figure 16). For context, Lethbridge is about 12,700 ha and Medicine Hat is about 11,200 ha. Overall, the loss between 1990 and 2020 is 85,875 ha in private tenure and 36,313 ha in public tenure with Public Land losses closely linked with the development of irrigation on Provincial Grazing Reserves.

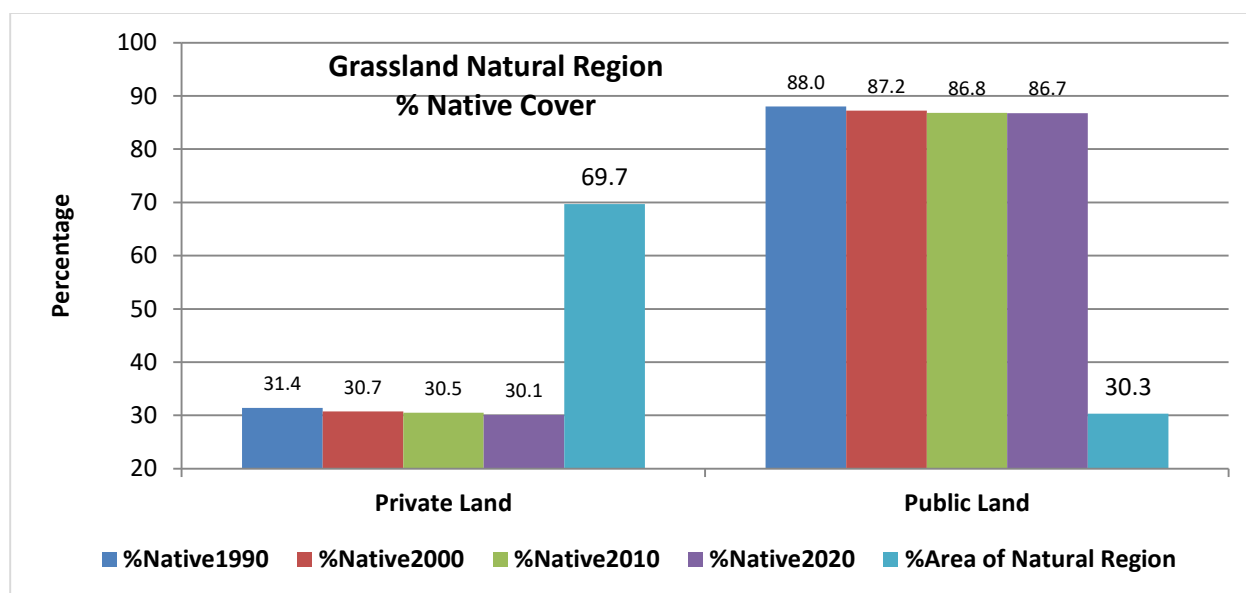


FIGURE 12. PERCENTAGE OF NATIVE COVER FOR PRIVATE AND PUBLIC LAND TENURE IN EACH OF THE FOUR TIME PERIODS. THE RED BARS INDICATE THE TOTAL PERCENTAGE OF ALL LAND TENURE, FOR EXAMPLE, 69.7% OF LAND IN THE GRASSLAND NATURAL REGION IS PRIVATELY OWNED.

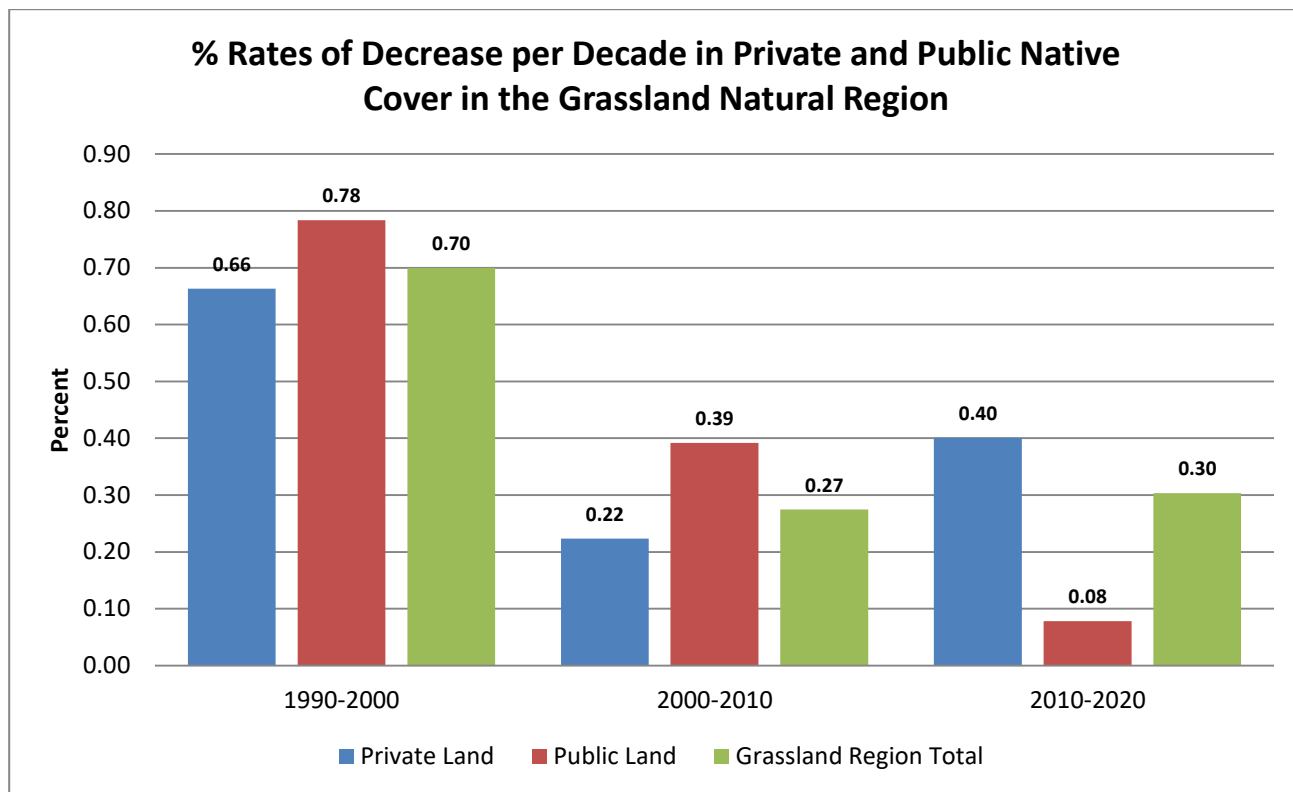


FIGURE 13. PERCENT RATES OF DECREASE IN PRIVATE AND PUBLIC NATIVE COVER FOR EACH DECADE IN THE GRASSLAND NATURAL REGION.

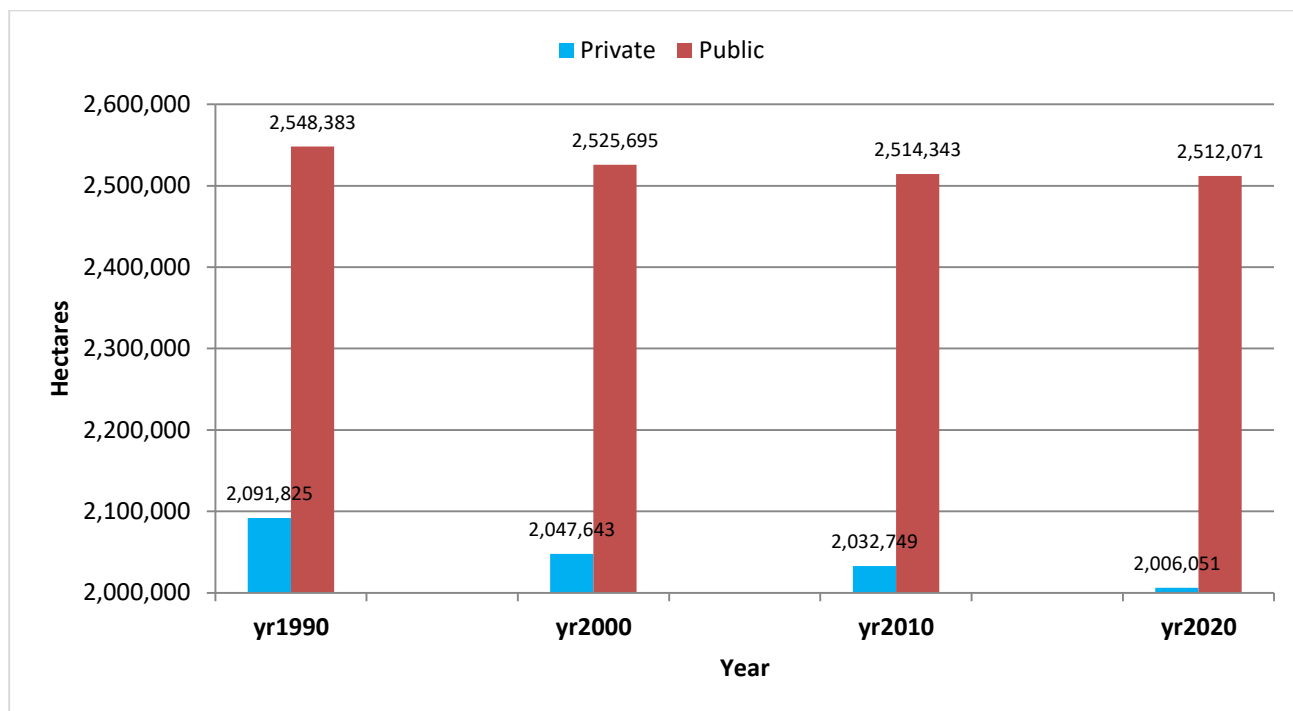


FIGURE 14. GRASSLAND NATURAL REGION AREA (IN HECTARES) OF NATIVE COVER FOR EACH FOUR YEARS BY PRIVATE AND PUBLIC LAND TENURE.

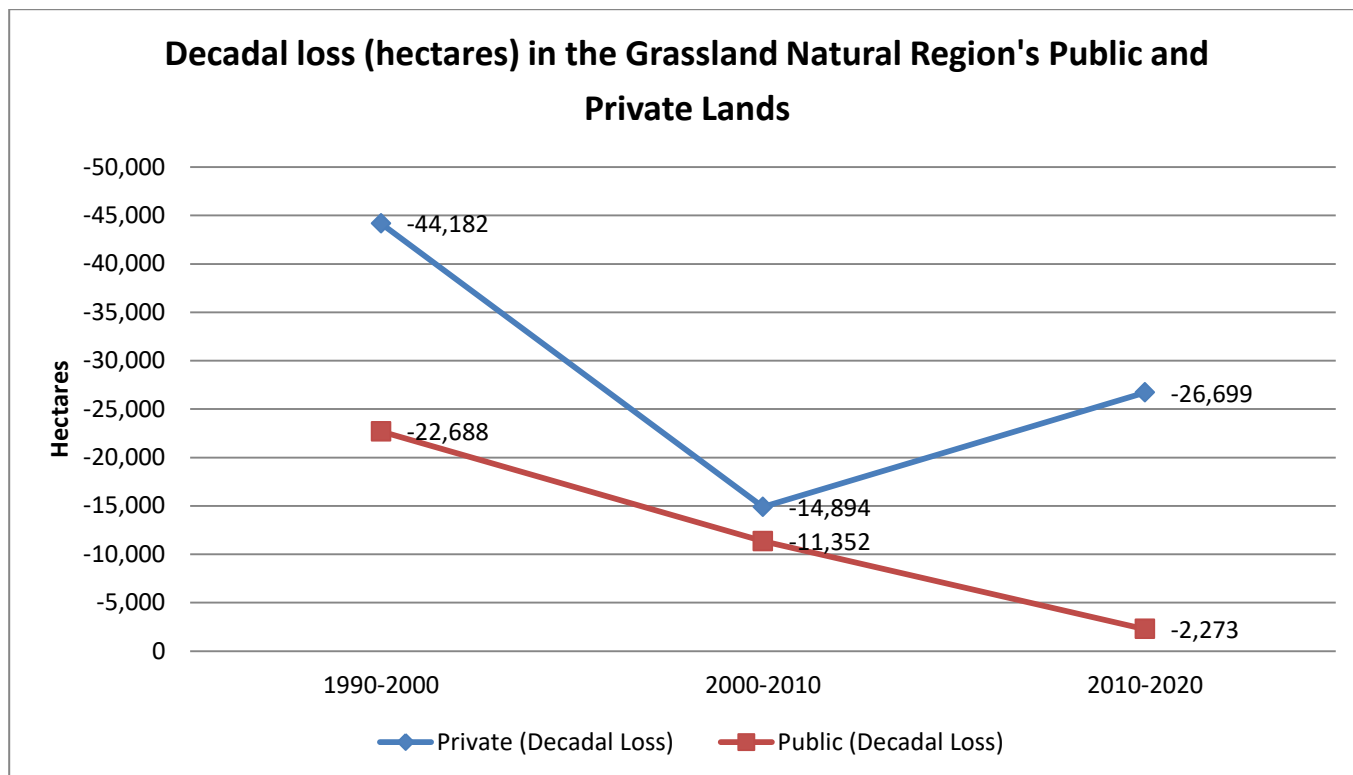


FIGURE 15. DECADAL LOSS (HECTARES) IN THE GRASSLAND NATURAL REGION'S PUBLIC AND PRIVATE LANDS.

PRIVATE AND PUBLIC LAND VEGETATION 30 YEAR CHANGE

The pattern noted for the overall change in native cover for private and public land is replicated when the cover data is divided into basic vegetation and water components. That pattern is evident in the Graminoid category because it is the largest component of native land cover for both tenure types but when one observes the other categories the characteristics of native cover loss differ in some cases. For example, wetlands under private tenure show the greatest loss in the 2010-2020 period (Figure 17), while the loss of Treed area generally decreases at a constant rate throughout all three periods for both private and public tenure (Figures 17 and 18). Water cover change is insignificant.

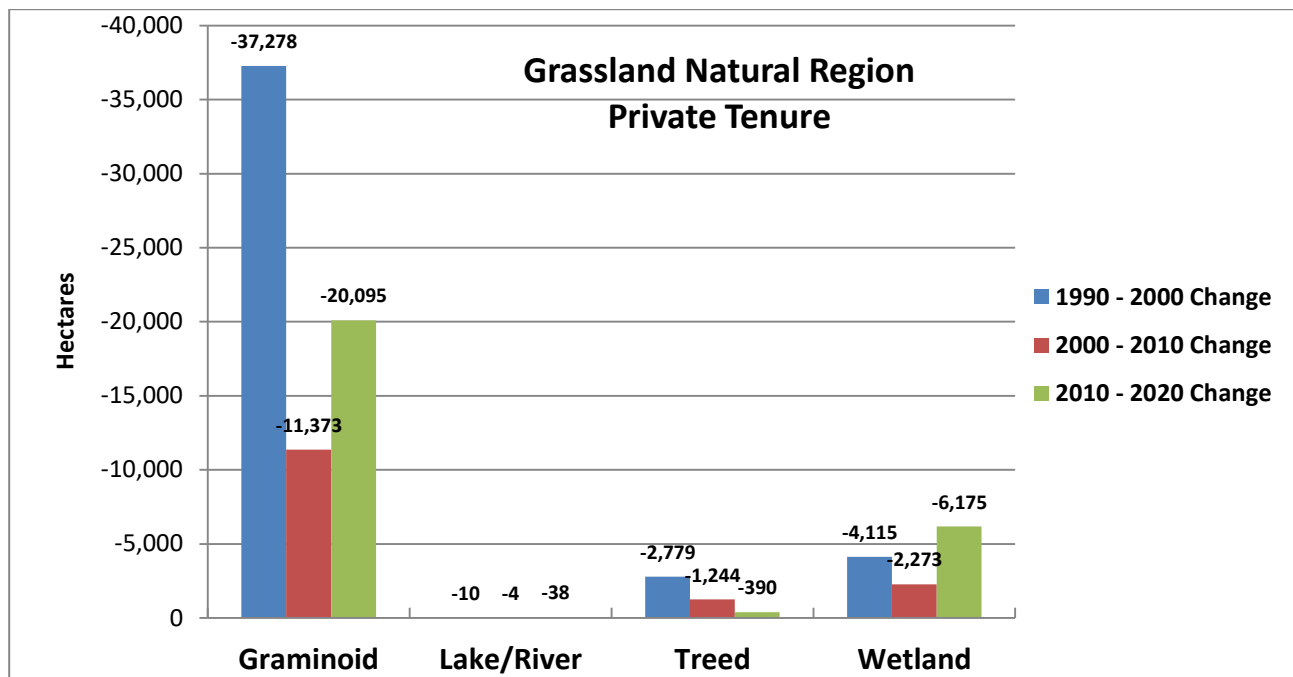


FIGURE 16. NATIVE COVER CHANGE (IN HECTARES) FOR PRIVATE LAND FROM 1990 TO 2020.

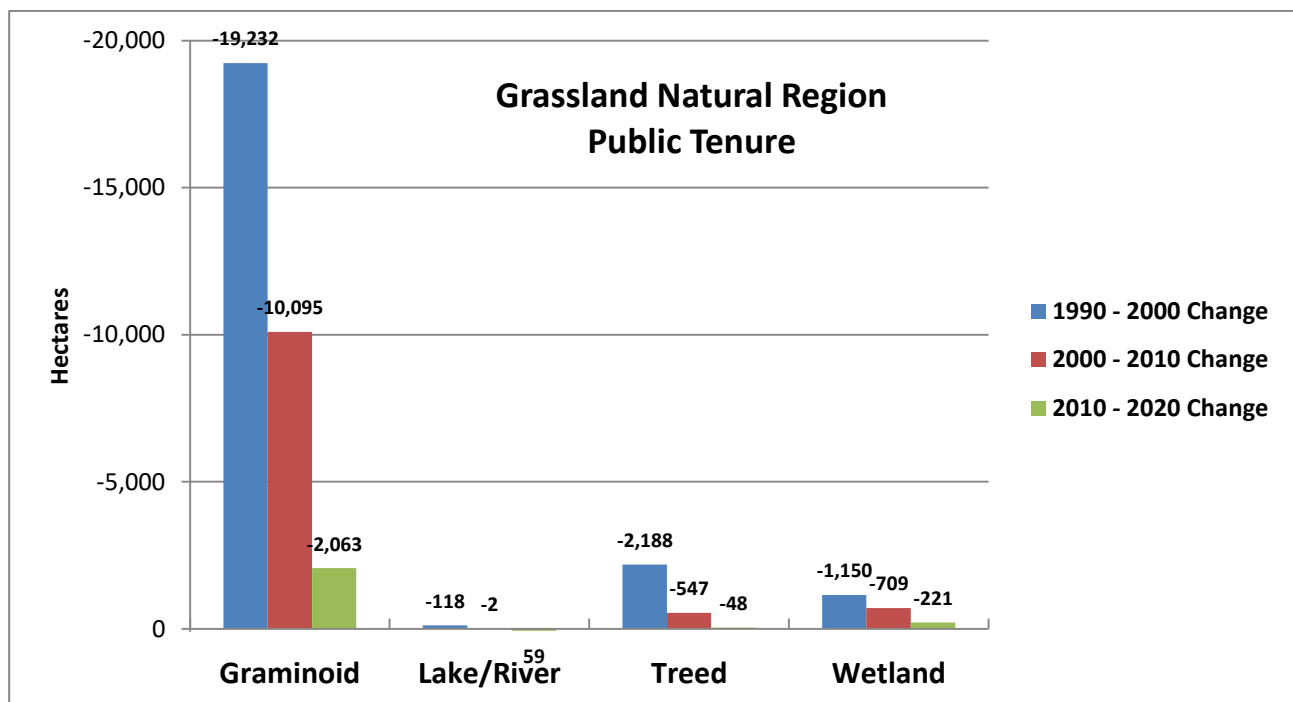


FIGURE 17. NATIVE COVER CHANGE (IN HECTARES) FOR PUBLIC LAND FROM 1990 TO 2020.

THE PARKLAND NATURAL REGION

STATE OF THE REGION: 2020

The Parkland Natural Region comprises approximately 38% of the Grassland Biome. As an ecotone region straddling the Boreal forests to the north and the Grasslands to the south it exhibits elements of both biomes; however, its climate, soils and vegetation categorizes the region in the Grassland Biome. Generally interspersed with fescue grasslands, aspen stands, and abundant wetlands, this region has significant biodiversity, but its ecological richness is also why it is the most modified natural region in Alberta. Agriculture and urbanization (Alberta's two major urban centres are primarily located in the Parkland) have converted its natural landscape into a region where only about 21.4% still exists in its native cover state (Figure 19).

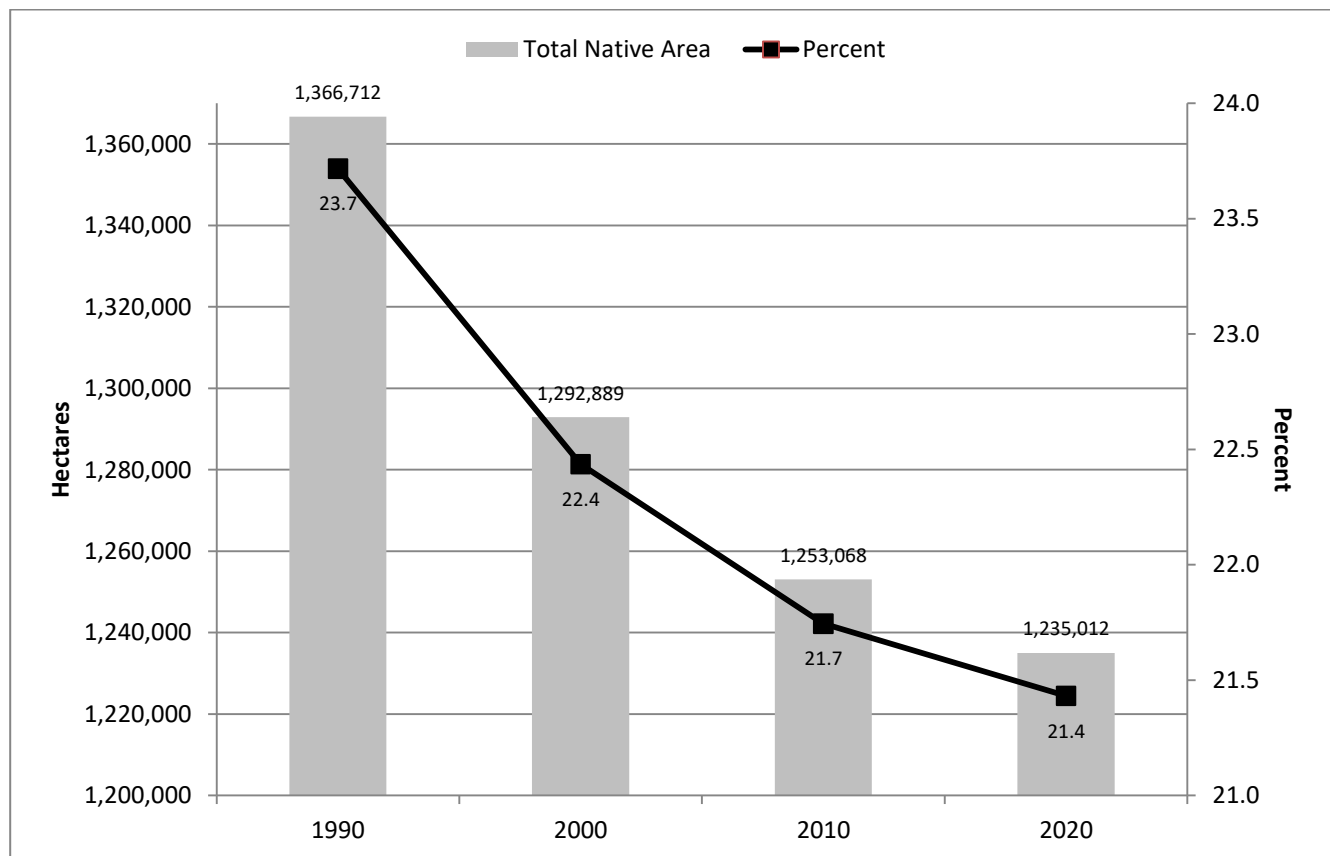


FIGURE 18. PERCENTAGE OF NATURAL COVER (LINE GRAPH) AND AREA (BAR GRAPH, IN HECTARES) OF THE PARKLAND NATURAL REGION BETWEEN 1990 AND 2020 (Y-AXIS SCALED TO SHOW THE RATE OF CHANGE).

30 YEAR CHANGE AND TREND

The Parkland Natural Region lost approximately 2.3% of its native cover between 1990 and 2020 (Figure 19). This percentage equates to roughly 131,000 hectares, or a little more than the size of Lethbridge (127,000 ha). Figure 19 also shows that the rate of loss of native cover was higher between the years 1990 and 2000 (74,000 ha lost), although losses still continued in the subsequent decades, they were smaller (39,000 ha and 18,000 ha lost).

VEGETATION 30 YEAR CHANGE

The most prominent native cover loss in the Parkland Natural Region is of the Treed area where approximately 93,532 ha of this cover was lost over 30 years (Figure 20). These would be the aspen groves that feature prominently throughout the landscape; the loss of these trees is roughly equivalent to the area of Red Deer (104,300 ha). Also significant is the loss in the Graminoid category (30,547 ha, Figure 20) where that loss would likely be predominantly plains and foothills rough fescue. As noted earlier, wetlands are widespread in this region, only slightly lower in area coverage than the Treed category; however, unlike the Treed and Graminoid categories, the 30-year loss in wetlands is much less at 7,802 ha.

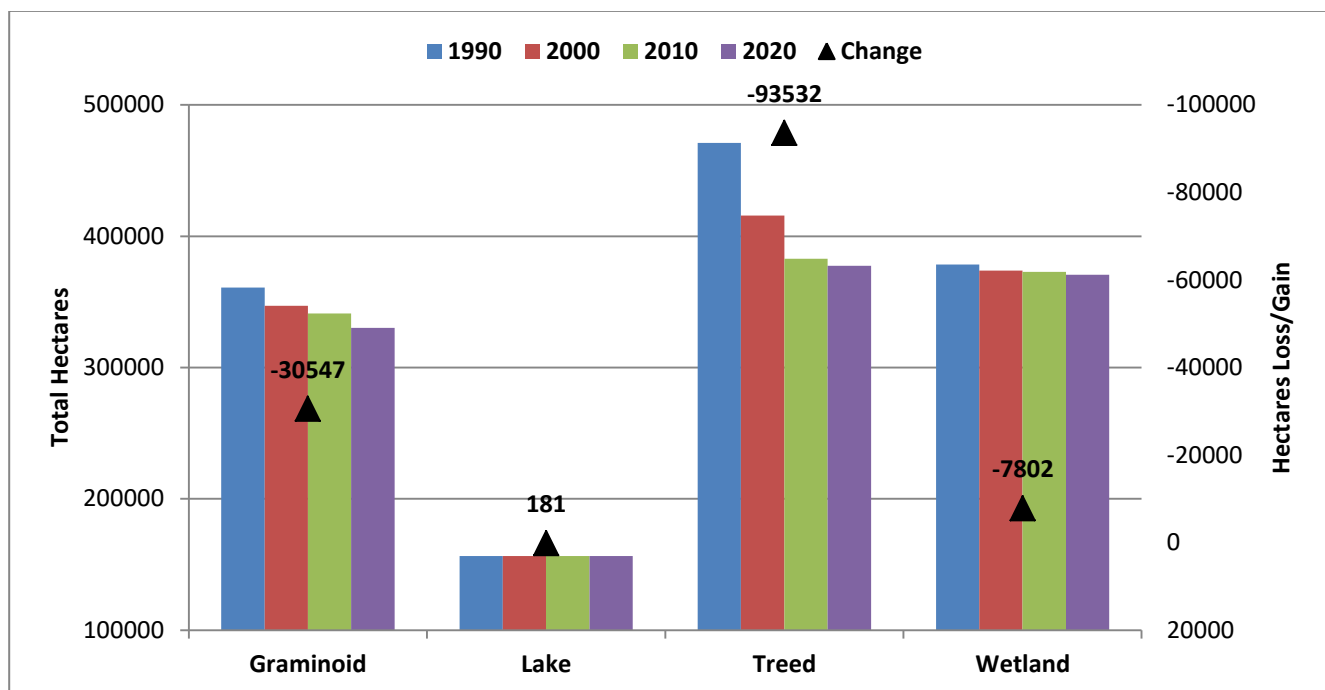


FIGURE 19. VEGETATION AND LAKE (INCLUDING RIVERS) TOTAL COVER AND CHANGE (IN HECTARES) IN THE PARKLAND NATURAL REGION IN THE DECADES BETWEEN 1990 AND 2020.

THE PARKLAND NATURAL SUBREGIONS

STATE OF THE SUBREGIONS: 2020

The Parkland Natural Region contains two Subregions with the Central Parkland (sometimes referred to as the Aspen Parkland) significantly larger than the Foothills Parkland (5.37 million ha and 390,000 ha, respectively). In 2020, 19.3% of the Central Parkland area was covered with native vegetation cover while 50.6% of the Foothills Parkland had some combination of Graminoid, Lake/water, Treed and Wetland native cover (Figure 21).

30 YEAR CHANGE AND TREND

As the Central Parkland Subregion dominates the Parkland Natural Region, the 30-year native cover change is similarly exhibited in this subregion. Central Parkland has lost about 2% of its native cover, with smaller trending losses posted in the latter decades (1.1% in 1990-2000, 0.2% in 2010-2020; Figure 21). In the Foothills Parkland, the percent loss of native cover has been more acute in the 30-year period showing a loss of about 6.8%. Because the Foothills Parkland is a much smaller subregion the total loss in hectares is much lower than the Central Parkland (Table G).



PHOTO 9. LOOKING IN AN EASTERLY DIRECTION ALONG THE SOUTH-FACING SLOPE OF A NORTH BATTLEFORD DUNE IN THE RIBSTONE HERITAGE RANGELAND NATURAL AREA (PHOTO: ED KARPUK, USED WITH PERMISSION: P. PORTER).

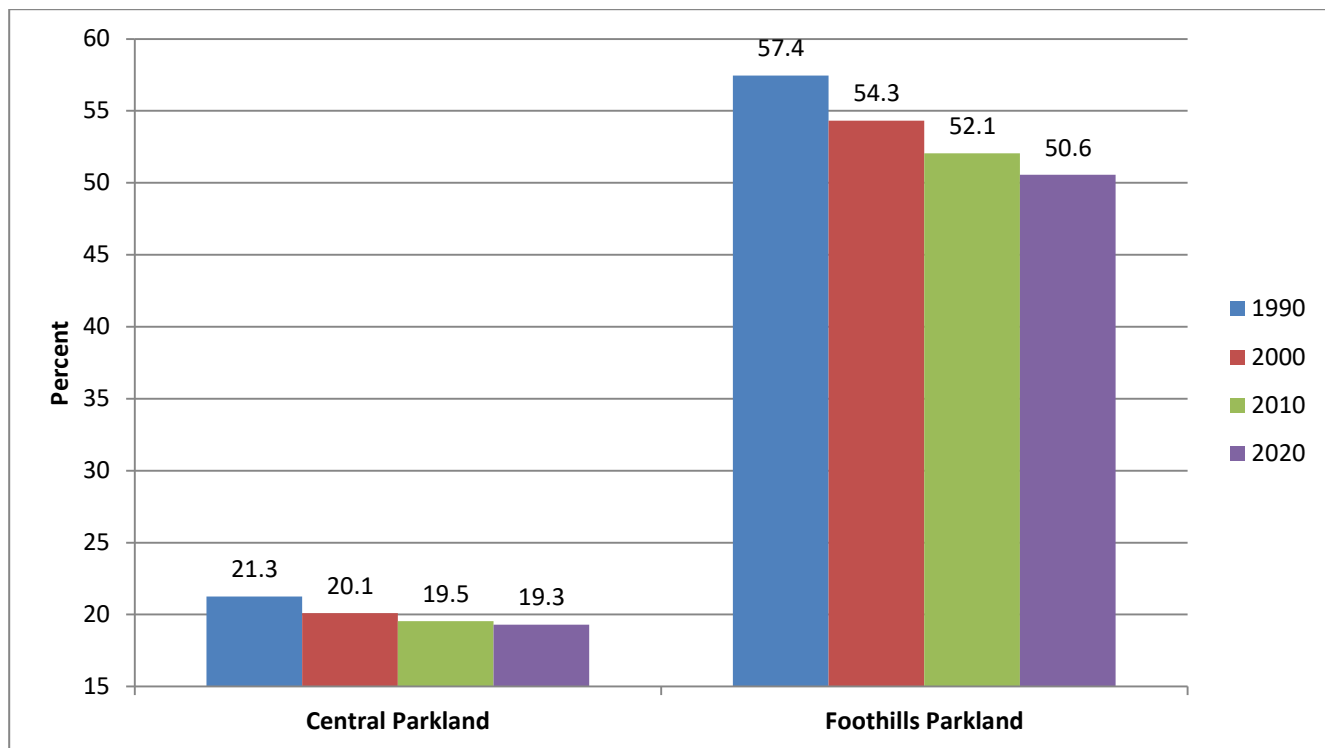


FIGURE 20. TOTAL NATIVE COVER PERCENTAGE FOR EACH PARKLAND NATURAL SUBREGION FOR THE FOUR TIME PERIODS.

TABLE G. TOTAL NATIVE COVER AREA IN HECTARES FOR EACH PARKLAND NATURAL SUBREGION AND EACH OF THE FOUR TIME PERIODS.

Year	Central Parkland	Foothills Parkland
1990	1,141,436	225,276
2000	1,079,852	213,037
2010	1,048,943	204,124
2020	1,036,754	198,258
30 Year Change	-104,682	-27,017

VEGETATION 30 YEAR CHANGE

THE CENTRAL PARKLAND SUBREGION

The Central Parkland's vegetational change mirrors the pattern as noted for the Parkland Natural Region as a whole, with the greatest amount of loss in the Treed category followed by the Graminoid category (Table H). These losses are likely geographical in nature, with the Treed losses being more so in the western and

northern areas of the region and the Graminoid losses being more so in the southern and eastern areas. Although over 7,000 ha of wetlands were lost over the 30-year period, that loss represents about half the Graminoid amount and a tenth of the Treed areas.

TABLE H. NATIVE COVER CATEGORIES AREA AND CHANGES (IN HECTARES) FOR THE CENTRAL PARKLAND SUBREGION.

Central Parkland	Graminoid	Lake/Water	Treed	Wetland
1990	261,915	152,071	393,767	333,683
2000	254,306	152,032	344,302	329,212
2010	251,724	152,031	316,986	328,202
2020	245,337	152,259	312,794	326,364
1990 - 2000 Change	-7,609	-39	-49,465	-4,471
2000 - 2010 Change	-2,582	-1	-27,316	-1,010
2010 - 2020 Change	-6,387	228	-4,192	-1,838
Total Change	-16,578	188	-80,973	-7,319

TABLE I. NATIVE COVER CATEGORIES AREA AND CHANGES (IN HECTARES) FOR THE FOOTHILLS PARKLAND SUBREGION.

Foothills Parkland	Graminoid	Lake/Water	Treed	Wetland
1990	98,897	4,300	77,245	44,834
2000	92,788	4,296	71,329	44,624
2010	89,490	4,295	65,818	44,522
2020	84,928	4,293	64,686	44,351
1990 - 2000 Change	-6,109	-4	-5,916	-210
2000 - 2010 Change	-3,299	-2	-5,511	-102
2010 - 2020 Change	-4,561	-2	-1,132	-171
Total Change	-13,969	-7	-12,559	-483

THE FOOTHILLS PARKLAND SUBREGION

The Foothills Parkland pattern of native cover loss differs from the Central Parkland. In this subregion, the greatest loss is found in the Graminoid category followed by the Treed category (Table I). The amount of Graminoid loss in the Foothills Parkland is relatively close to the loss in the Central Parkland, a region over 10 times its size, however, the Treed loss in the Central Parkland is significantly greater: 80,973 ha vs. 12,559 ha in the Foothills Parkland. The wetland and Lake/river changes are relatively low in this subregion. Of all the subregions in the Grassland and Parkland Natural Regions the Foothills Parkland is the subregion with the highest native cover loss percentage (6.8%, Figure 21). Its relatively smaller size and location between the eastern slopes of the Rocky Mountains and Alberta's largest city, Calgary, places significant development pressure on the natural ecosystem.

THE PARKLAND NATURAL REGION: ECODISTRICTS

STATE OF THE ECODISTRICTS AND 30 YEAR CHANGE AND TREND

As with the Grassland Natural Region ecodistricts, the Parkland Region ecodistricts exhibit the same pattern of higher native cover loss from east to west over the 30-year period. The greatest change (loss) is noted in the Black Diamond Upland and the Leduc Plain, while the Provost Plain shows relatively minimal change (Figure 22). Whereas in the Grassland Natural Region, those ecodistricts with the highest losses were showing an uptick in the native cover loss for the 2010-2020 decade (recall the Foremost, Delacour and Drumheller Plains), in the Parkland Natural Region, those ecodistricts with the highest loss in native cover all trend downwards in loss over the 30 years.

The loss of native cover in the Grassland and Parkland in high change ecodistricts can also be associated with a couple of well-known dynamics operating in the whole biome. In the Grassland, a likely driver of loss as one moves from east to west is the effect of irrigation agriculture, whereas in the Parkland, with three of Alberta's largest cities within or adjacent to the higher loss ecodistricts, the peripheral effects of urbanization (e.g. country residential, industrial development), are driving factors. In fact, the ecodistricts in the whole biome with the largest loss over the 30-year period are the Black Diamond Upland (25,518 ha) and the Leduc Plain (27,138 ha) both adjacent to, or containing Calgary and Edmonton, respectively (Figures 22 and 23). All the Parkland ecodistricts change data can be viewed in Appendix 2.

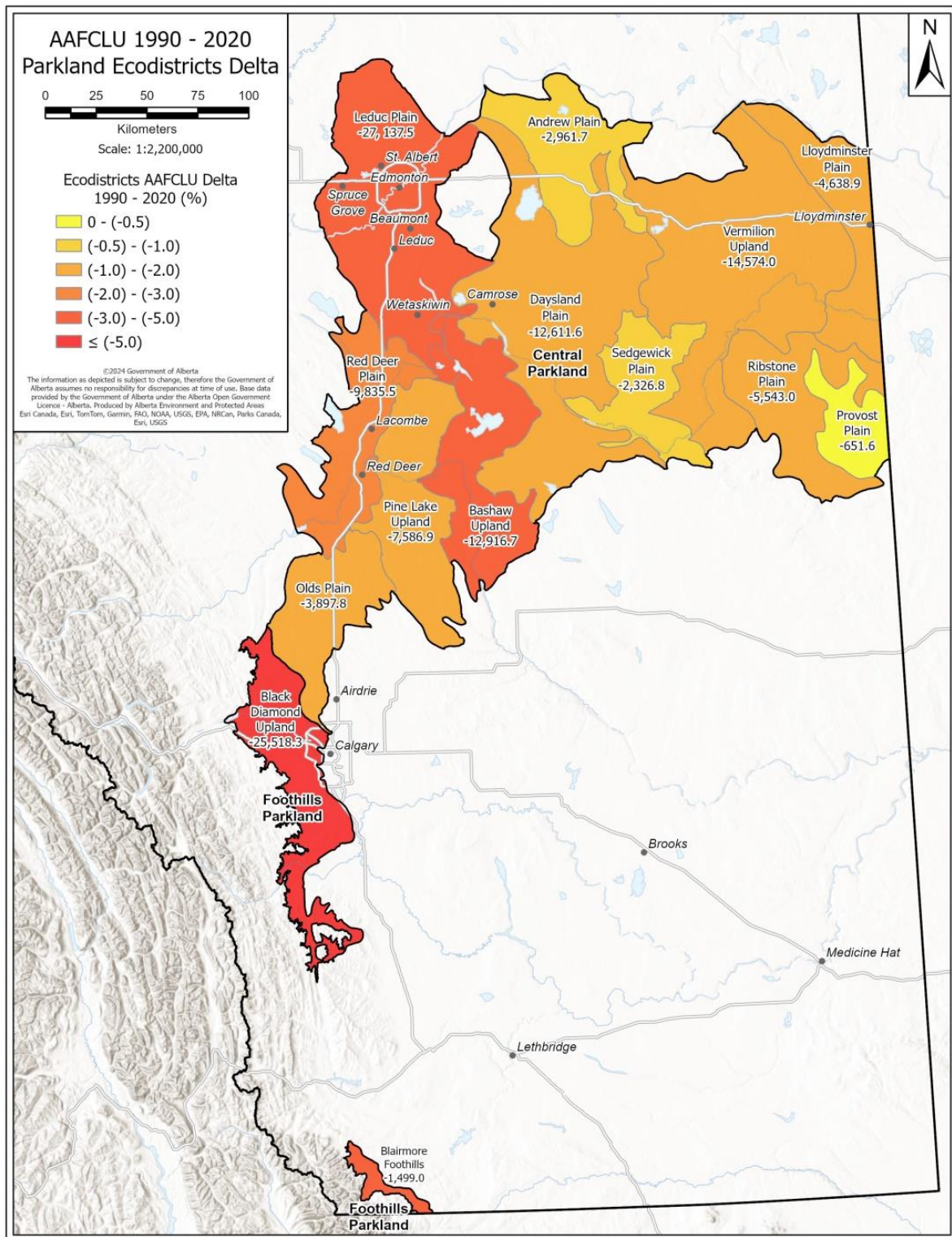


FIGURE 21. PARKLAND NATURAL REGION ECODISTRICTS WITH PERCENT CHANGE GRADATION AND 30 YEAR CUMULATIVE LOSS OF NATIVE COVER IN HECTARES. THE TERM 'DELTA' REFERS TO CHANGE.

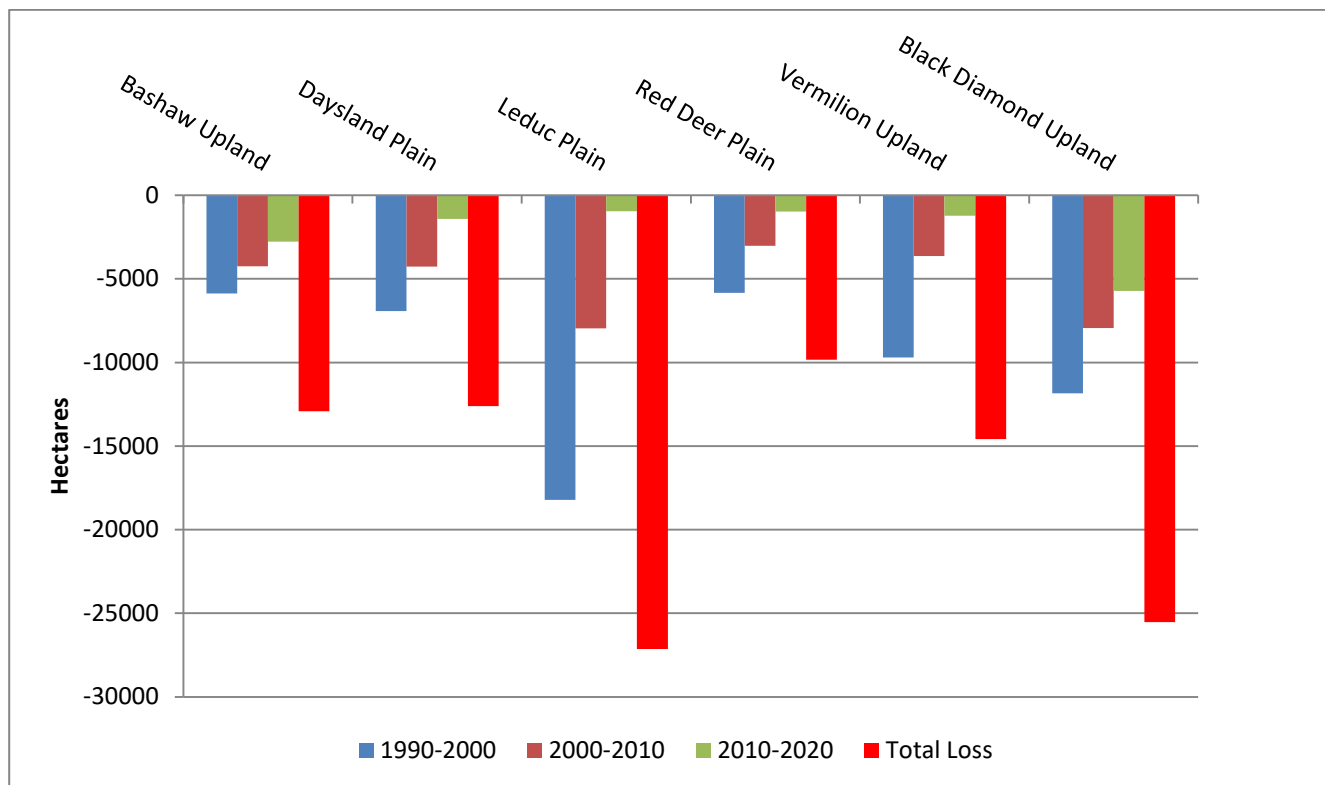


FIGURE 22. SELECTED ECODISTRICTS IN THE PARKLAND REGION SHOWING THE HIGHEST AMOUNT OF TOTAL NATIVE COVER LOSS (RED BAR) INCLUDING PROGRESSIVE DECADAL CHANGE (ALL TOTALS ARE IN HECTARES).

THE PARKLAND NATURAL REGION: LAND TENURE

PRIVATE AND PUBLIC LAND 30 YEAR CHANGE AND TREND

The loss of native cover noted in both natural and administrative stratifications is also seen in the private vs. public views of the data. Figure 24 shows that the loss over the 30-year period is about 2% for private lands and 4% for public lands, with the greater losses occurring between the 1990 and 2000 period for both land tenure types. Also prominently portrayed in the figure is the amount and difference in private land (90.5%) versus public land (9.5%) areas (the red bars) for the Natural Region. The difference in scale of native cover and its associated decline in the two types of tenure is shown in Figure 25. The preponderance of relatively low native cover percentages in private ownership skews the overall native cover statistic for the complete natural region to the low 20 percent figure as shown in Figure 24. The amount of native cover percentage in public lands, at first glance, seems unusually low (in the mid-60s), especially since the corresponding figures in the

Grassland Natural Region are in the mid-eighties. A cursory check of the Digital Integrated Dispositions (DIDs) system for areas associated with disturbance dispositions along with the accounting for road allowance disturbance confirms that the figure from the AAFC data is in the general ballpark and is due to significant agricultural dispositions, industrial disturbances such as pipelines, and roadway disturbances. Government of Alberta provincial land managers and Resource specialists, Felix Gebbink and Ed Karpuk, (personal communication, 2023) confirm that these types of activities are found in public lands and affect the amount of native cover.

The total native cover lost in the 30-year period in privately owned lands is about 109,889 ha, or roughly the size of Red Deer. The native cover loss in 30 years in public lands is 21,804 ha, or a little more the size of Wetaskiwin. In both land tenure types the rate of loss of native cover has been diminishing over the 30-year period with that rate significantly greater in private lands (Figures 26 and 27). Private lands diminished from a loss of over 61,000 ha (1.17%) in the first decade of the data to a loss of just over 16,000 ha (0.31%) in the most recent decade. Public lands diminished from a loss of less than 13,000 ha (2.34%) in the first decade to a loss of just under 2,000 ha (0.35%) in the most recent decade.



PHOTO 10. THE NEUTRAL HILLS LOOKING WEST WITH ROUGH FESCUE IN THE FOREGROUND AND MOSTLY ASPEN GROVES OUT TO THE HORIZON (PHOTO: ED KARPUK).

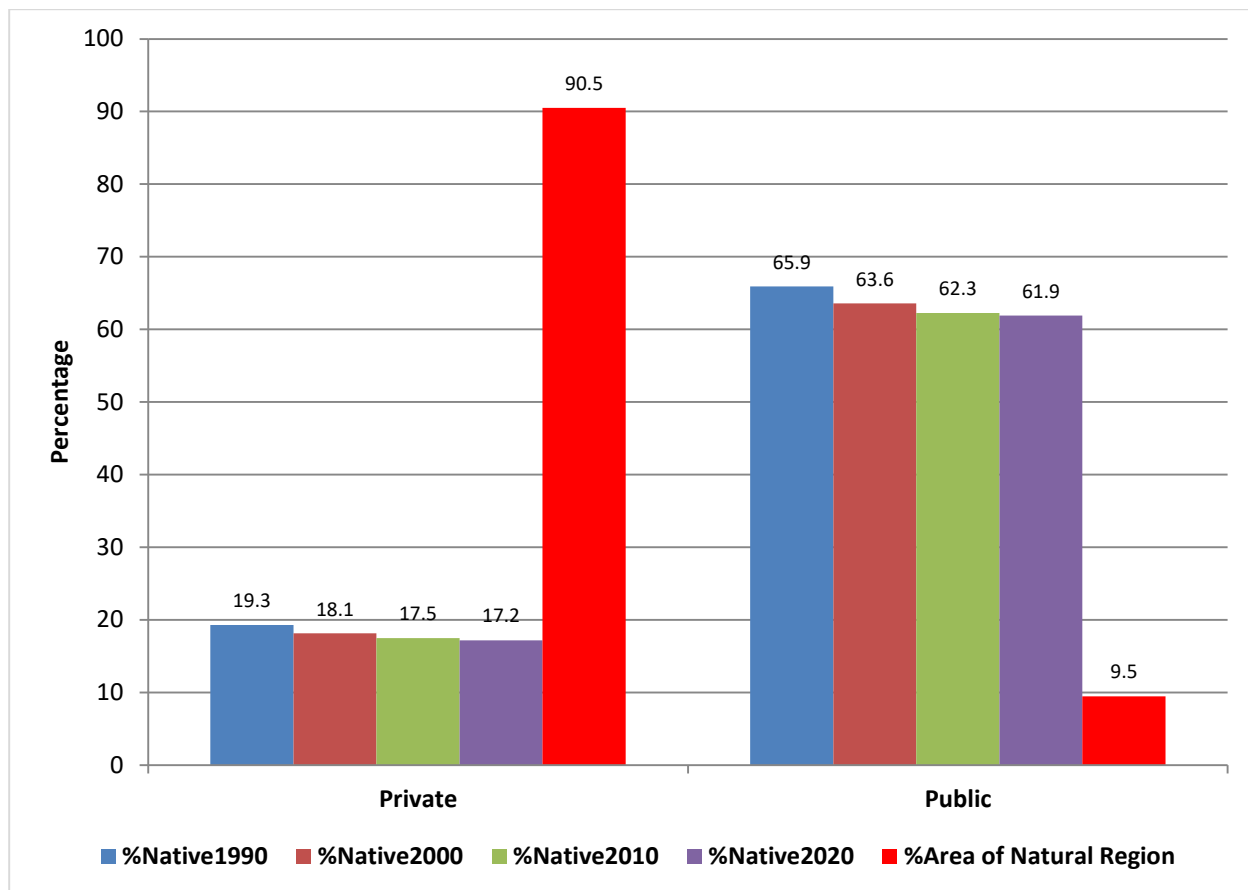


FIGURE 23. PERCENTAGE OF NATIVE COVER FOR PRIVATE AND PUBLIC LAND TENURE IN EACH OF THE FOUR TIME PERIODS. THE RED BARS INDICATE THE TOTAL PERCENTAGE OF ALL LAND TENURE; FOR EXAMPLE, 90.5% OF LAND IN THE PARKLAND NATURAL REGION IS PRIVATELY OWNED.

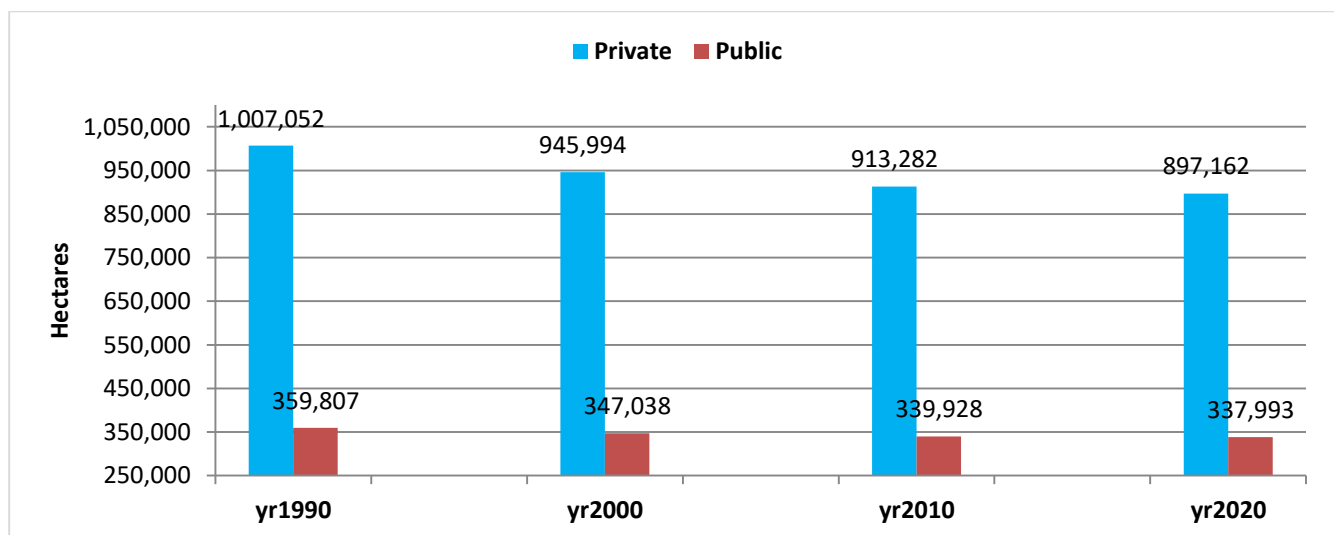


FIGURE 24. TOTAL AMOUNT OF NATIVE COVER (IN HECTARES) IN THE PARKLAND NATURAL REGION FOR EACH OF THE FOUR TIME PERIODS.

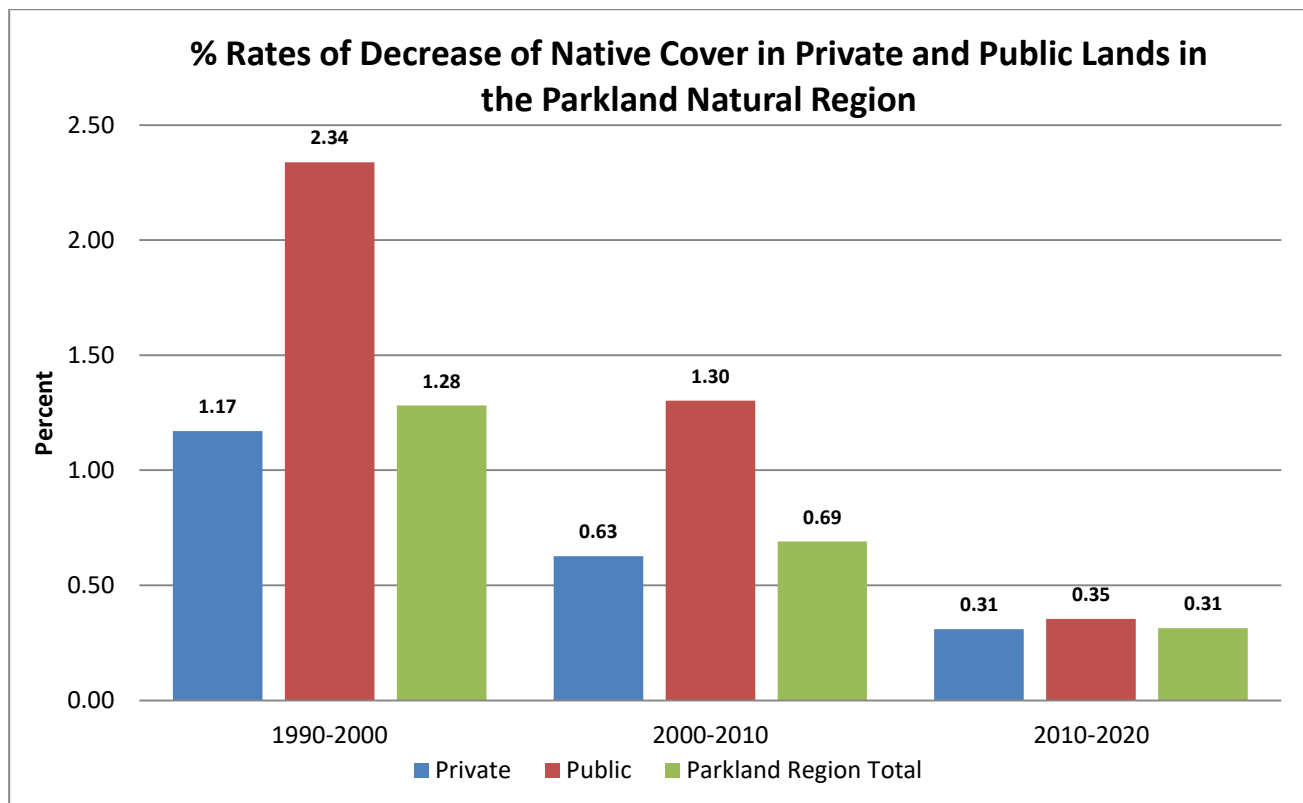


FIGURE 25. PERCENT RATES OF DECREASE IN NATIVE COVER ON PRIVATE AND PUBLIC LANDS BY DECADE.

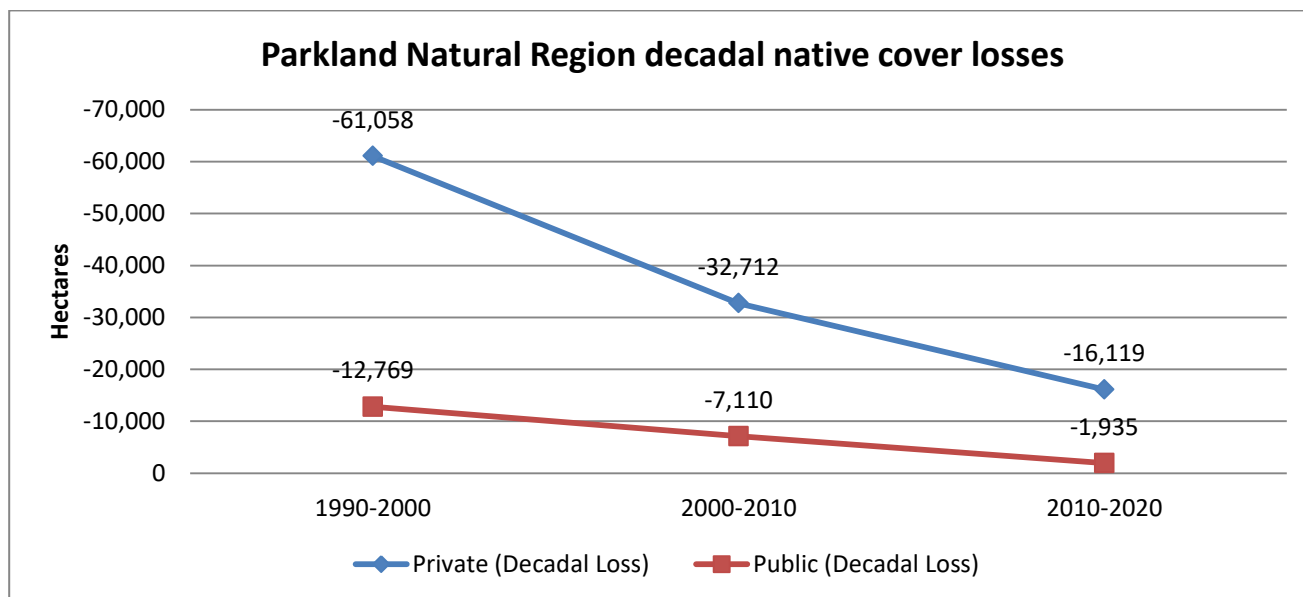


FIGURE 26. DECADAL PRIVATE AND PUBLIC LAND LOSS OF NATIVE COVER (IN HECTARES) IN THE PARKLAND NATURAL REGION.

PRIVATE AND PUBLIC LAND VEGETATION 30 YEAR CHANGE

The predominant vegetation type in the Parkland Natural Region is in the Treed category (Tables H and I) and since most of the Natural Region is privately owned (90.5%) most of the vegetation loss over the 30-year period in privately tenured lands is seen in this category (Figure 28). The rate of tree loss, however, diminished significantly over the 30-year period from over 45,000 ha in the earliest decade to just over 5,000 ha in the most recent decade. In fact, native cover loss is greater in the Graminoid category than in the Treed category from 2010 to 2020. Another noteworthy statistic regarding native cover loss in the Parkland's privately held lands is the relatively low amount of wetland loss, especially considering that this cover type is significant in this Region (second to the Treed category; see Tables H and I, Figure 28).

The public lands native cover change in the Parkland Natural Region essentially mimics what is seen in private lands except that the magnitude of the loss is much smaller (Figure 29). This is somewhat of a curiosity because the management of the two types of land tenures is fundamentally different. Although speculative, an explanation may be rooted in the fact that change pressures in the two land types may be similar; climate change, development (such as with pipeline disturbance), provincial constraints (such as with wetlands) and likely other overlapping factors may be the reason for the similarity.

The final peculiar statistic, already noted in the Grassland Natural Region, is the lack of significant change in the area of water bodies, including rivers. There has likely been more change than data suggests, but it is also likely that that change, or lack of, is within the error margins of AAFC overall dataset.

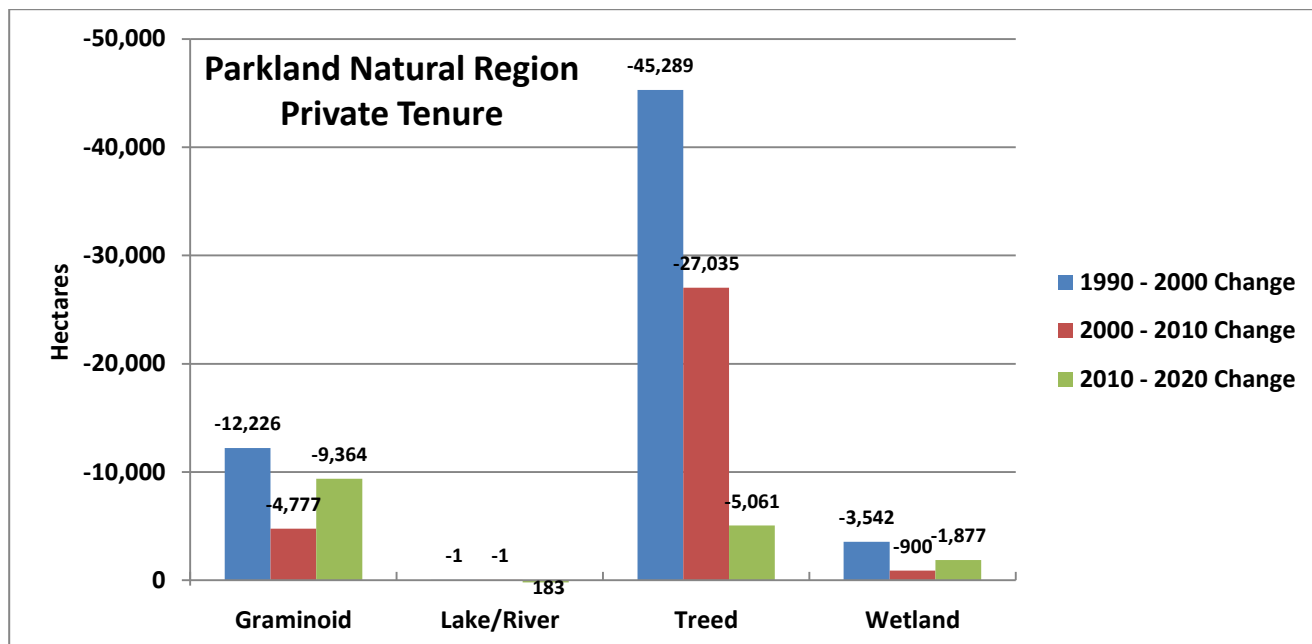


FIGURE 27. NATIVE COVER CHANGE IN HECTARES FOR PRIVATE LANDS IN THE PARKLAND NATURAL REGION FOR EACH OF THE FOUR COVER TYPES IN EACH OF THE THREE DECADES.

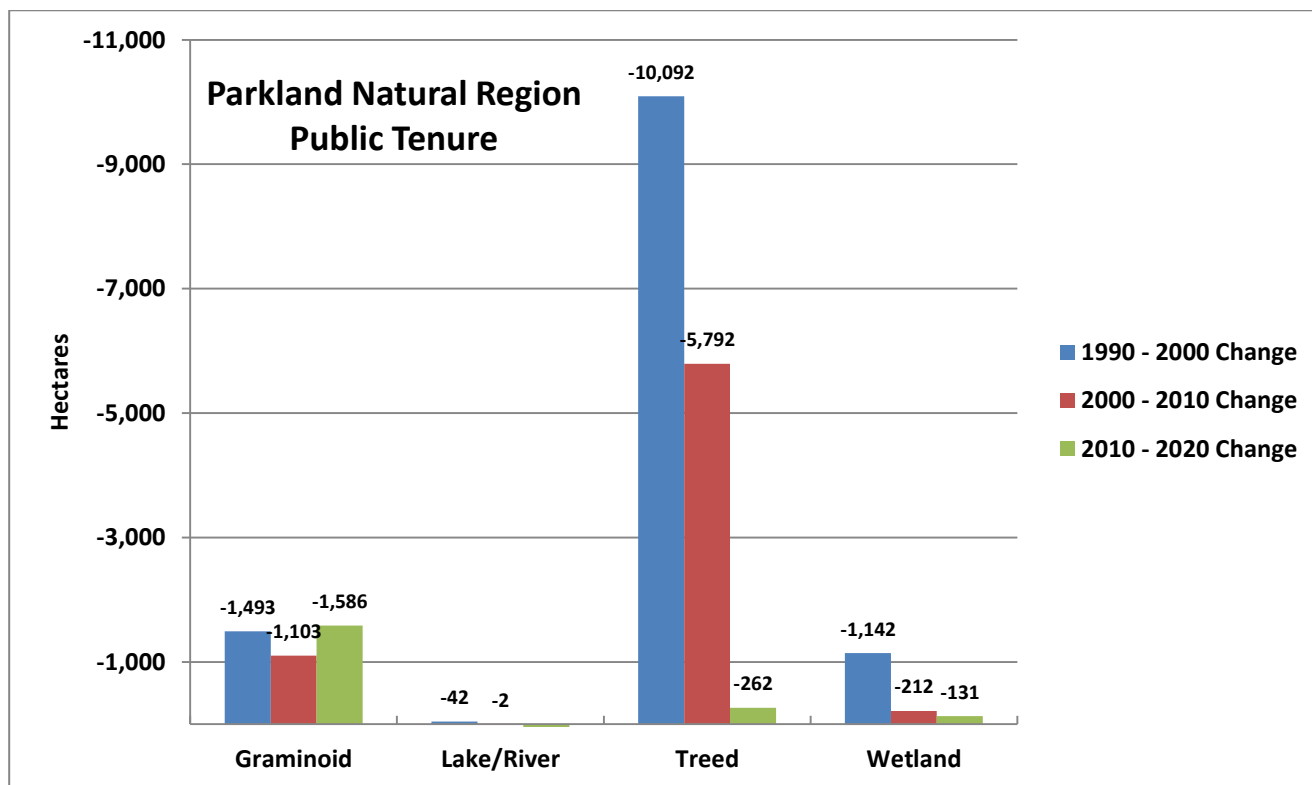


FIGURE 28. NATIVE COVER CHANGE IN HECTARES FOR PUBLIC LANDS IN THE PARKLAND NATURAL REGION FOR EACH OF THE FOUR COVER TYPES IN EACH OF THE THREE DECADES.

THE GRASSLAND BIOME: ADMINISTRATIVE AREAS (GRASSLAND/PARKLAND COMBINED)

STATE OF THE ADMINISTRATIVE AREAS: COUNTIES AND M.D.s

The presentation of the Administrative Areas is depicted for the Biome as a whole to accommodate those areas that straddle the two Natural Regions so as to avoid being bisected and analysed as two separate entities. However, if any of the administrative areas overlap with the Dry Mixedwood or the Montane Natural Sub-Regions, then those areas are removed from the analyses using GIS techniques.

A cursory glance at Figure 30 shows a familiar pattern of higher native cover loss; proximity to large urban areas is associated with more loss. Rocky View, Parkland, and Strathcona Counties (all surrounding the cities of Calgary or Edmonton) show percentage losses of 4.2%, 6.4% and 6.3%, with hectare losses of 16,994 ha, 4,617 ha, and 3,737 ha, respectively. Although the pressures of an ever-expanding urban population are significant, losses in other jurisdictions may be larger but percent losses are mitigated by a larger municipal area. Along with Rocky View County, Figure 30 shows the next seven Counties and Municipal Districts with the largest loss of native cover over the 30-year period. A consistent trend for this data is that in most cases the native cover loss diminishes with each subsequent decade. The complete dataset is listed in Appendix 3.

ADMINISTRATIVE AREAS LAND VEGETATION 30 YEAR TREND

Patterns of native cover loss in the administrative areas, as expected, mirror similar trends as noted in the natural view of the landscape, with the administrative areas resembling the landscape segmented into ecodistricts. However, the administrative area view of the landscape affords a more nuanced perspective of change, one in which political jurisdictions and decision-making may vary depending not only on the natural constraints of the landscape but also on the political and societal drivers of the over 40 administrative areas operating within the Grassland Biome. Native cover loss, viewed from a cover class perspective, narrows the anthropomorphic influence to specific areas of the landscape, and, often, economically viable ones. Human-driven changes such as urbanization, irrigation, industrial development, and agricultural expansion are activities typically incompatible with expression of natural systems. In contrast, natural recreation, grazing/ranching, so-called 'unproductive' soils, topographic constraints and even military

operations are often less influenced by anthropomorphic disturbance and allow more expression of natural landscapes. In fact, it is in these areas that most native cover still exists. A question that can be asked in reference to the cover class data is whether any of these activities/landscapes skew the cover class data?

Of key importance is that the data reflects a ‘good news’ story of diminishing native cover loss as the decades progress from 1990 to 2020. Figure 31, which represents those Counties and MDs with the greatest amount of native cover loss, shows that the loss change diminished significantly from the 1990-2000 decade to the 2010-2020 decade. For example, Cypress County, with one of the largest administrative areas, shows a loss diminishing from 7,503 ha in the 1990-2000 period to 2,741 in the most recent period, a decrease of about 64%. Delving into the details of the loss in Cypress County, Figure 32 shows that the overwhelming cover lost is of the Graminoid class with a small wetland component and almost nonexistent Treed class loss, as expected for an area mainly in the core of the Mixedgrass subregion. Again, using Cypress County as an example, of the over 14,000 ha native cover loss in this administrative area over the last 30 years, only some 5% of that loss was wetland (Figure 33) whereas in the County of Warner, approximately 24% of the close-to-5,000 ha 30-year loss was wetland.

The two examples serve to show that the land cover change data is, as noted, nuanced, depending on the drivers and dynamics of the change for each administrative area.

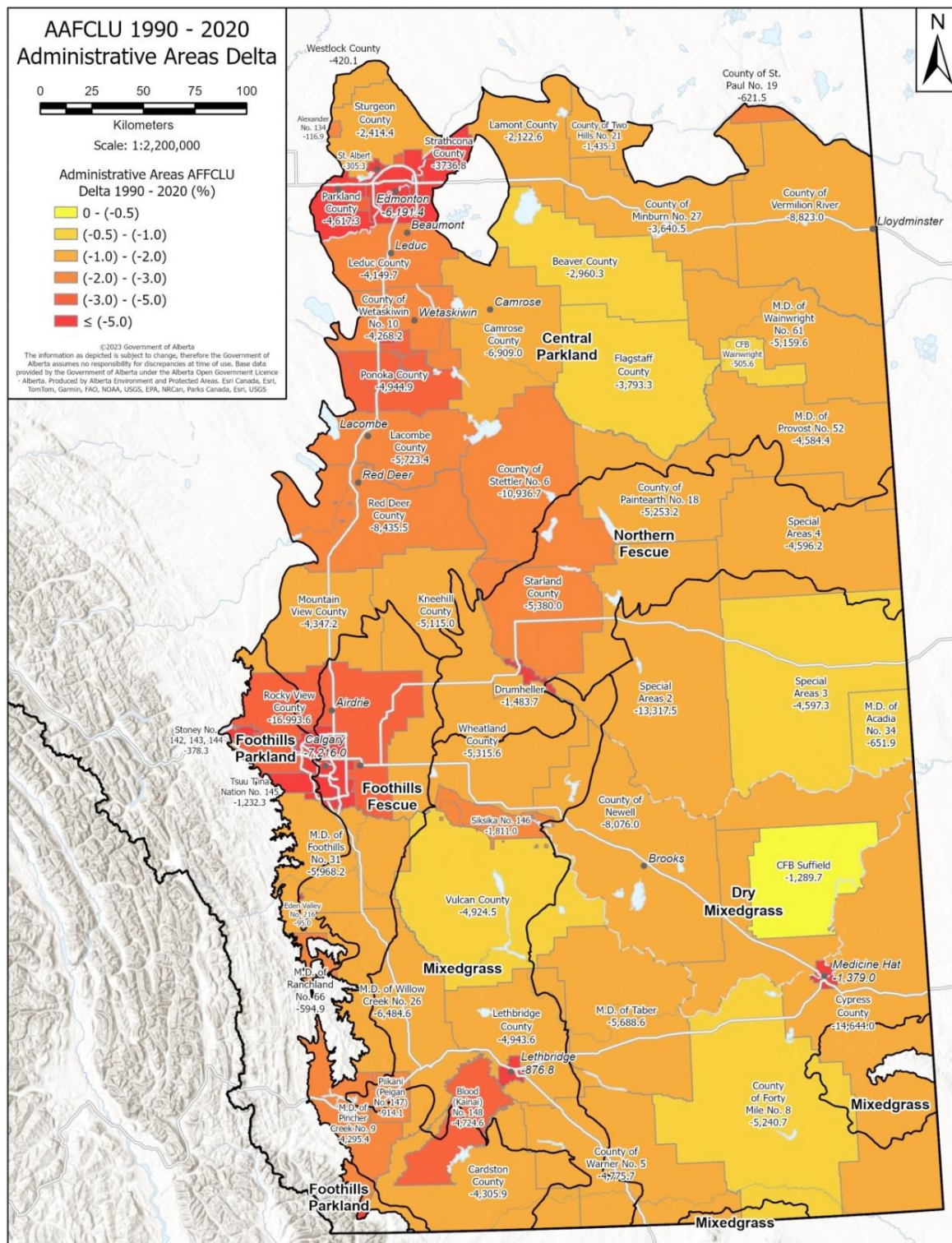


FIGURE 29. ADMINSTRATIVE AREAS OF THE GRASSLAND AND PARKLAND NATURAL REGIONS, ALSO INCLUDES FEDERAL, NATIVE AND CITY JURISDICTIONS. THE TERM 'DELTA' REFERS TO CHANGE.

Thirty Year County/M.D. Totals and Decadal Losses (ha)

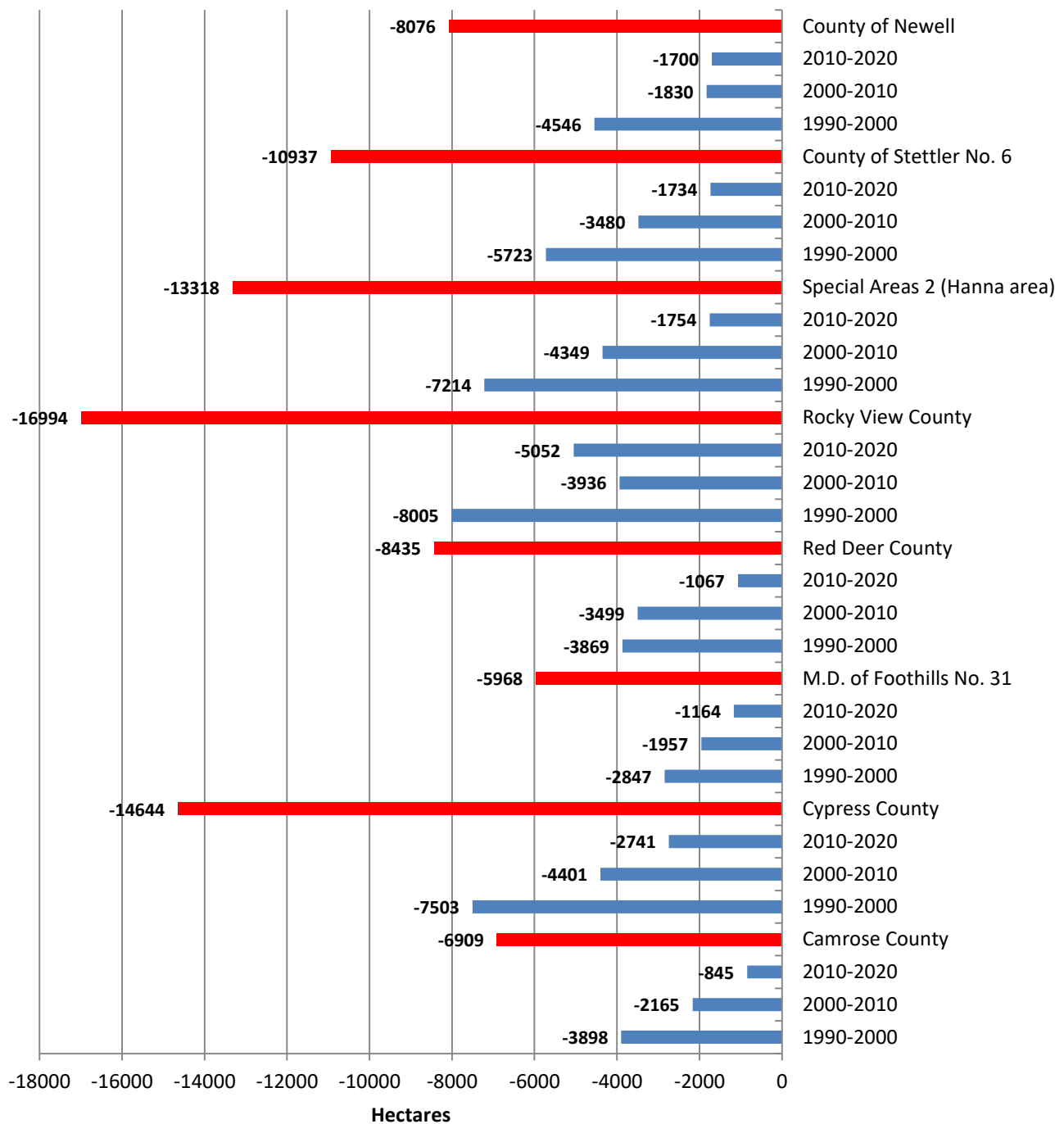


FIGURE 30. COUNTIES AND M.D.S WITH THE LARGEST LOSS IN NATIVE COVER (IN HECTARES) OVER 30 YEARS INCLUDING THE THREE DECADAL CHANGES. THE RED BARS REPRESENT MD/COUNTY TOTAL 30 YEAR CHANGE WHILE THE BLUE BARS REPRESENT EACH OF THE 10 YEAR CHANGE TOTALS.

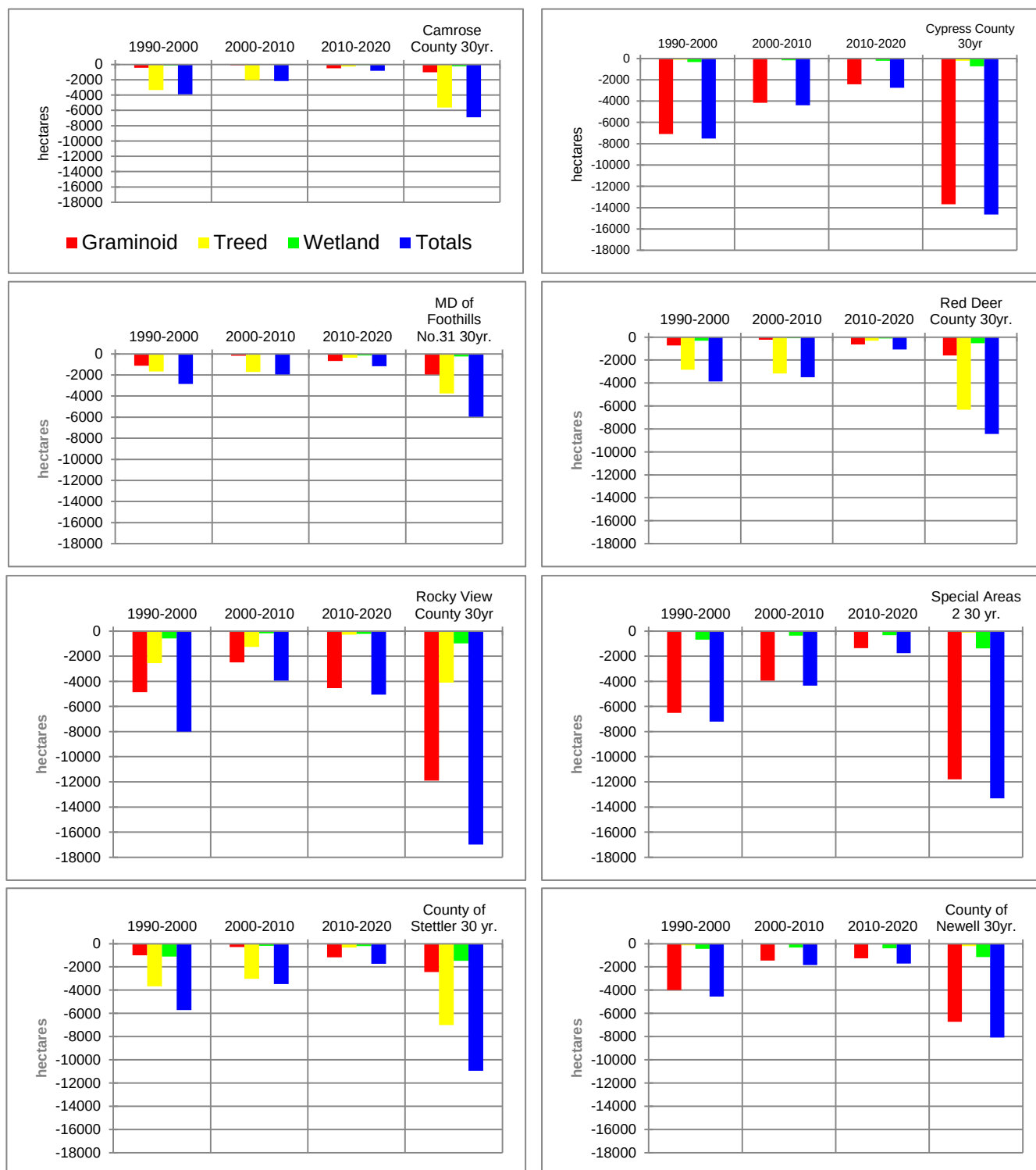


FIGURE 31. COUNTIES AND M.D.S WITH THE LARGEST LOSS IN NATIVE COVER (IN HECTARES) OVER 30 YEARS INCLUDING PROFILES FOR THREE VEGETATION COVER TYPES: WETLAND, TREED, AND GRAMINOID.

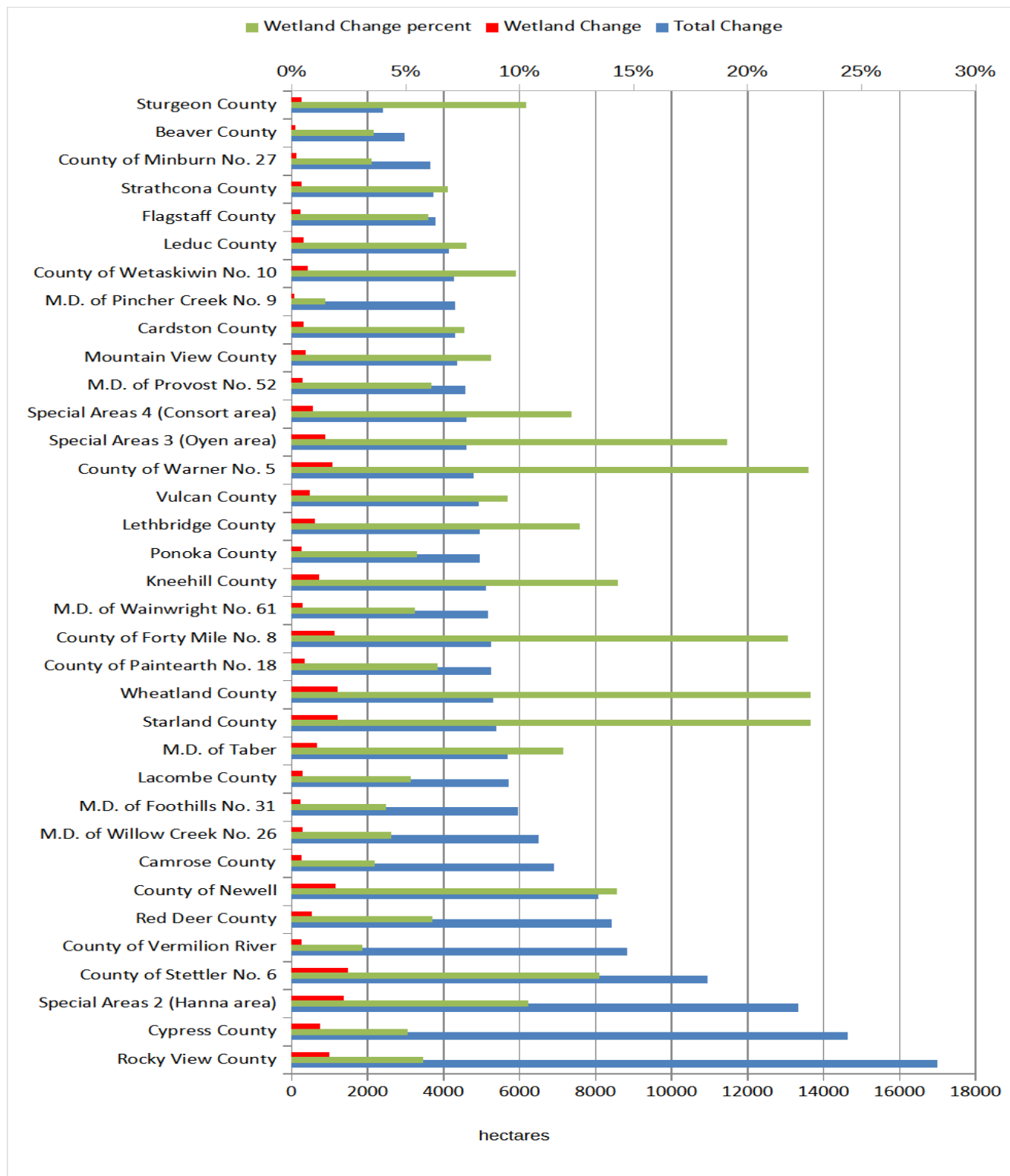


FIGURE 32. TOTAL LOSS OF NATIVE COVER (IN HECTARES) BY MUNICIPAL AREA FROM 1990-2020 (BLUE BARS IN HECTARES). WETLAND CHANGE/LOSS IS INDICATED BY THE ORANGE BARS (IN HECTARES) AND PERCENT OF WETLAND COVER CHANGE/LOSS IS SHOWN BY THE GREEN BARS.

STATE OF THE ADMINISTRATIVE AREAS: FIRST NATION LANDS

The current state of First Nation lands regarding native cover ranges from relatively high values associated with the Stoney, Piikani, and Siksika reserves (85%, 73%, and 70%, respectively) to the relative lows associated with Central Alberta⁸ and Stoney Plain reserves of 28% and 29%, respectively (Figure 34). Figures 35 and 36 depict the cumulative total loss of native cover for both the southern and north central First Nation Lands over the 30-year period from 1990 to 2020 (orange bar). Also shown is a percentage bar (dark blue bar) of that loss over the 30-year period. The loss in native cover is in the order of 2-4%, commensurate with what is noted at the Natural Regions and Subregions level. Eden Valley and Tsuut'ina⁹ stand out with higher percent losses of 6% and 15%, respectively.

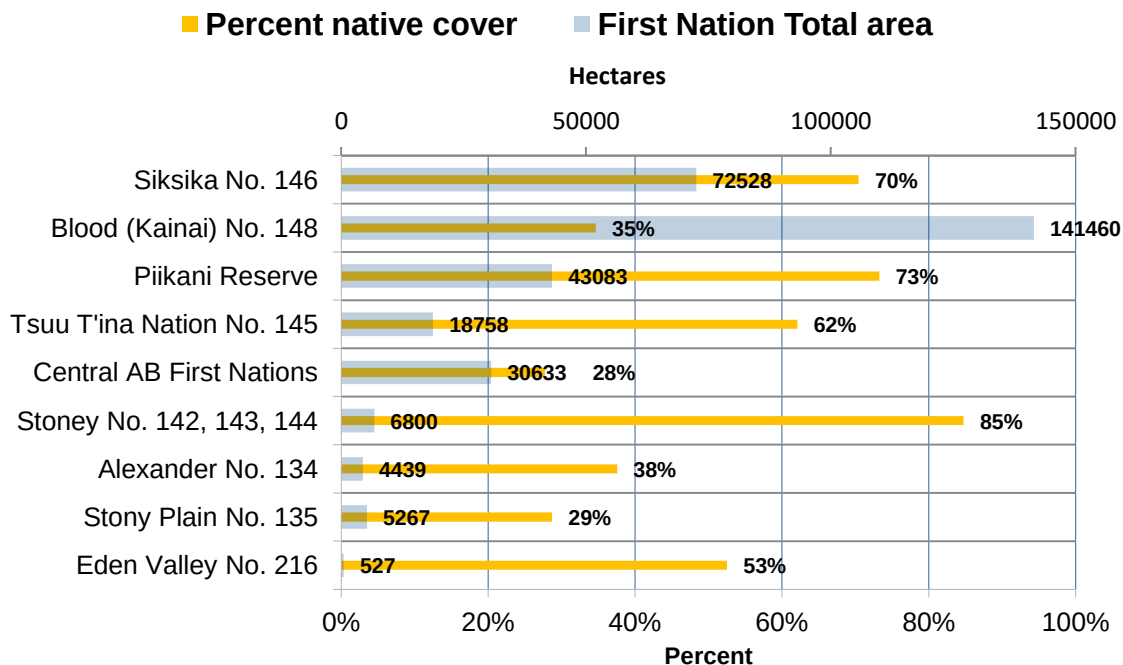


FIGURE 33. FIRST NATION AREAS (IN HECTARES) AND PERCENT OF NATIVE COVER REMAINING (2020). CENTRAL AB FIRST NATIONS INCLUDE ERMINESKIN NO. 138, LOUIS BULL NO. 138B, MONTANA (BOBTAIL) NO. 139, SAMSON NO. 137 & 137A AND PIGEON LAKE NO. 138A.

⁸ The 'Central Alberta' reserves include Ermineskin No.138, Louis Bull No.138B, Samson No.137 & 137A, and Pigeon Lake 138A and Montana (Bobtail) No.139. These are relatively small reserves which are either adjacent to one another or in close proximity. Representing them as unit provides for continuity on the landscape and makes them comparable to the larger Blackfoot reserves to the south.

⁹ There may be instances where the word, Tsuut'ina, may be indicated as Tsuu T'ina in the report

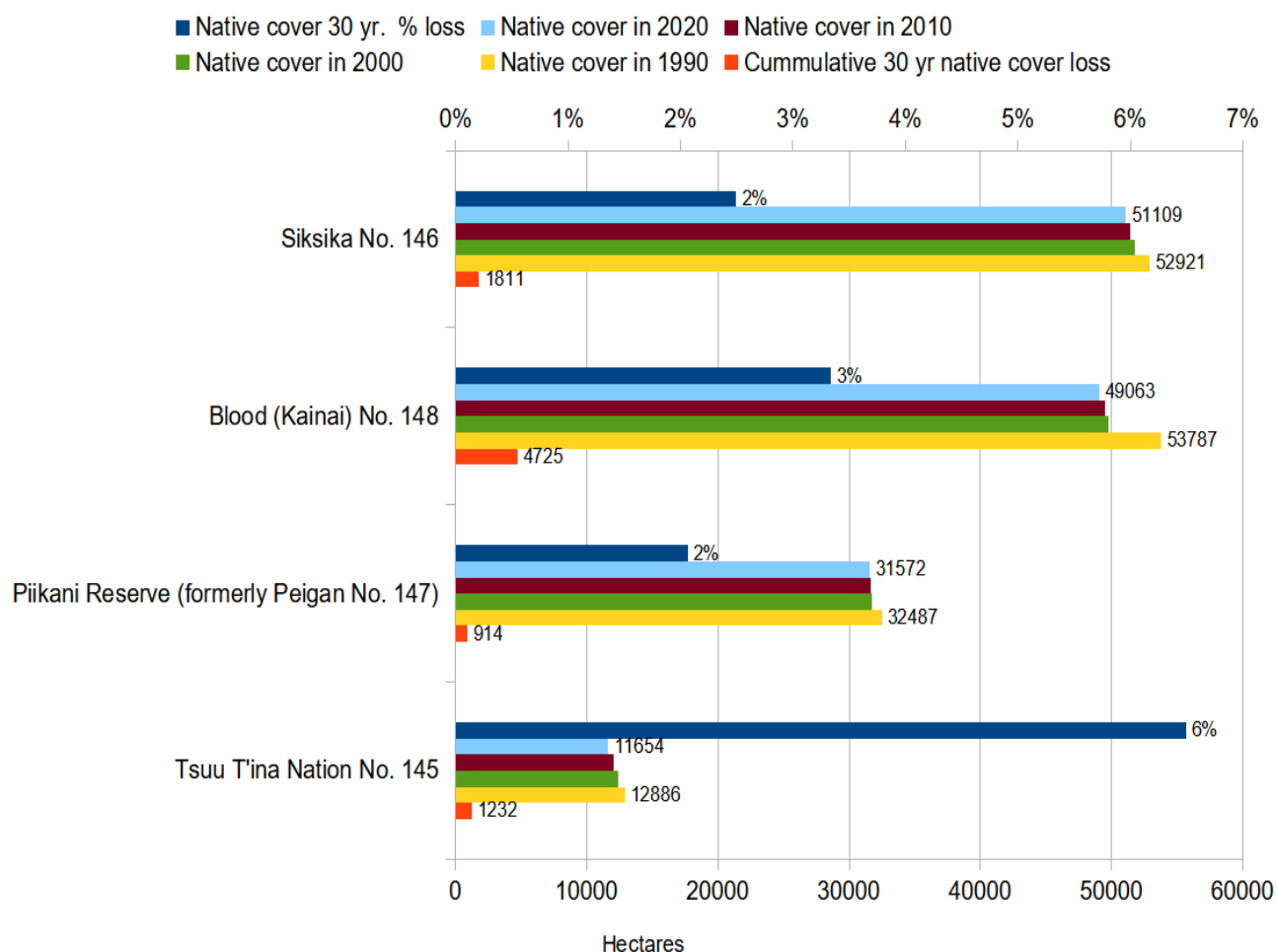


FIGURE 34. SOUTH-CENTRAL FIRST NATION LANDS 30 YEAR TOTAL NATIVE COVER LOSS (ORANGE BAR) WITH AMOUNT OF NATIVE COVER IN EACH OF THE FOUR TIME PERIODS. DARK BLUE BAR IS THE PERCENT LOST IN 30 YEARS.

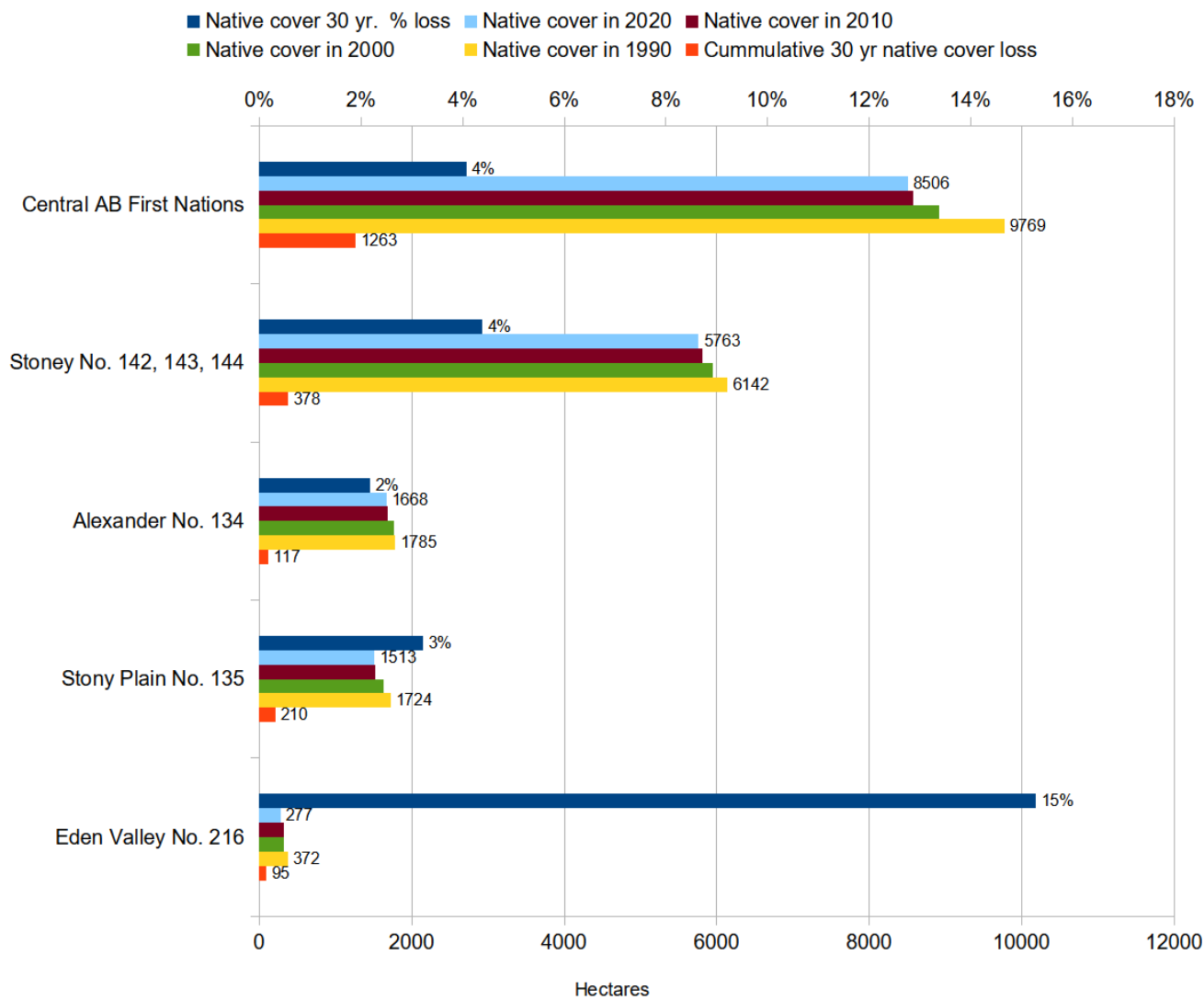
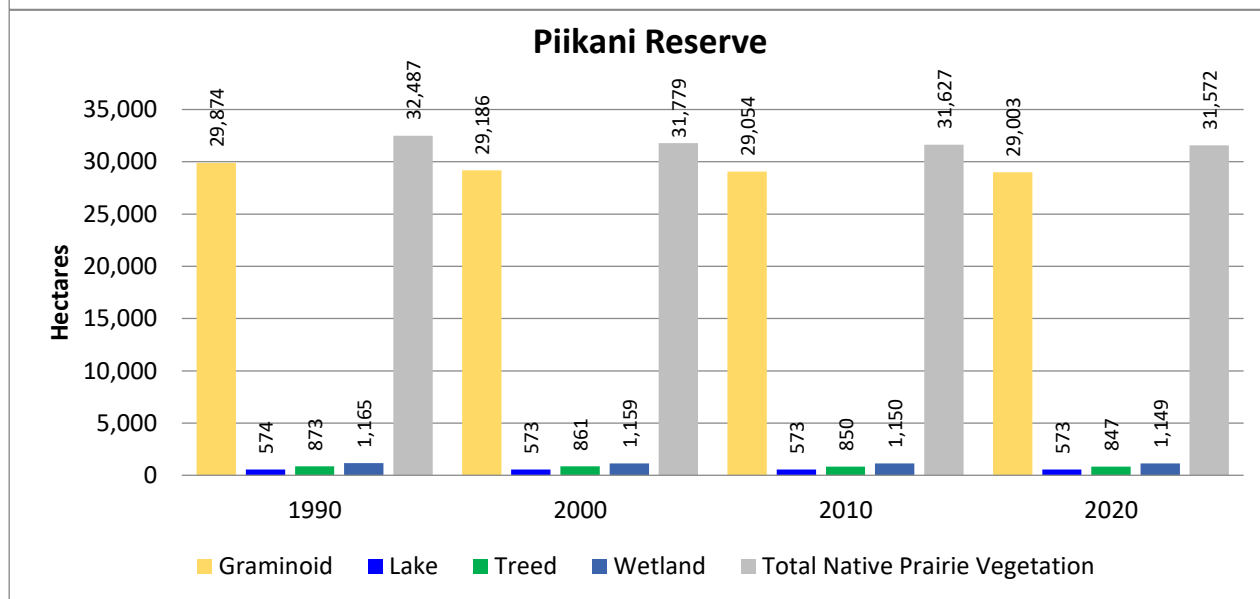
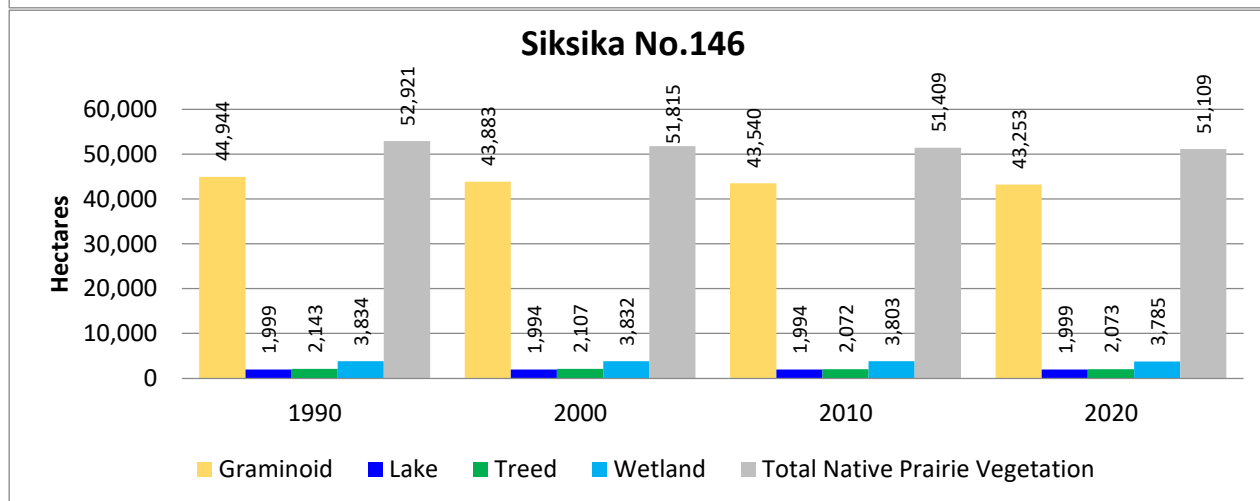
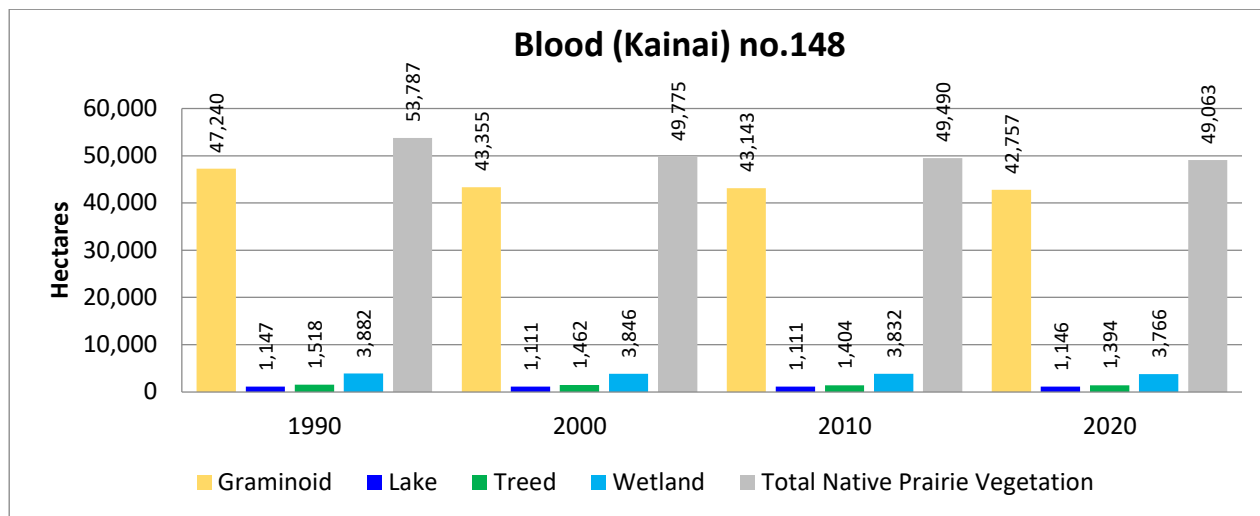
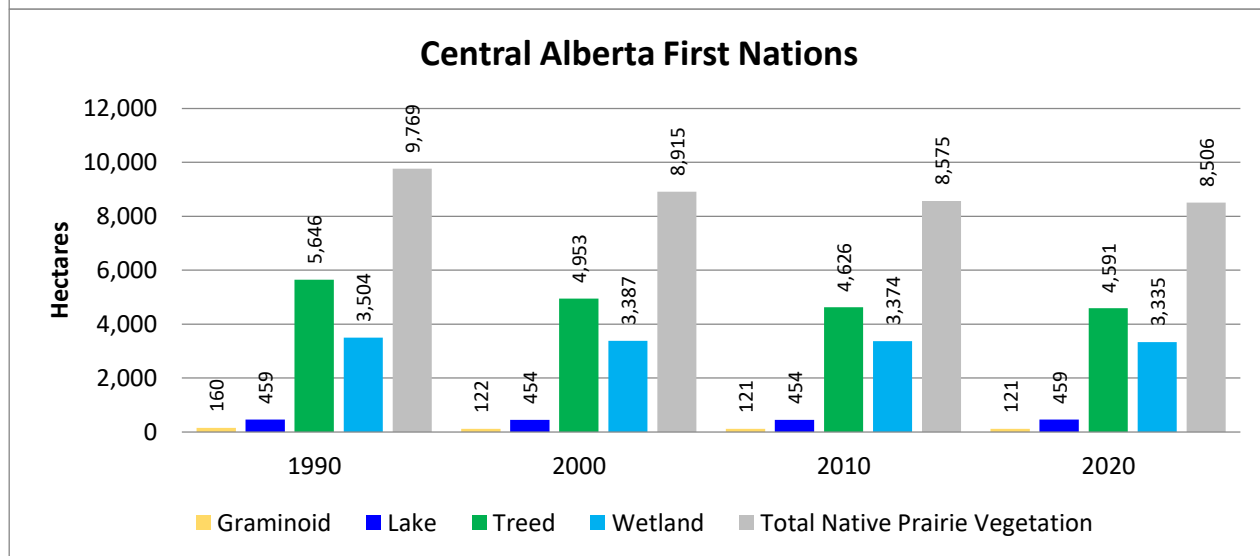
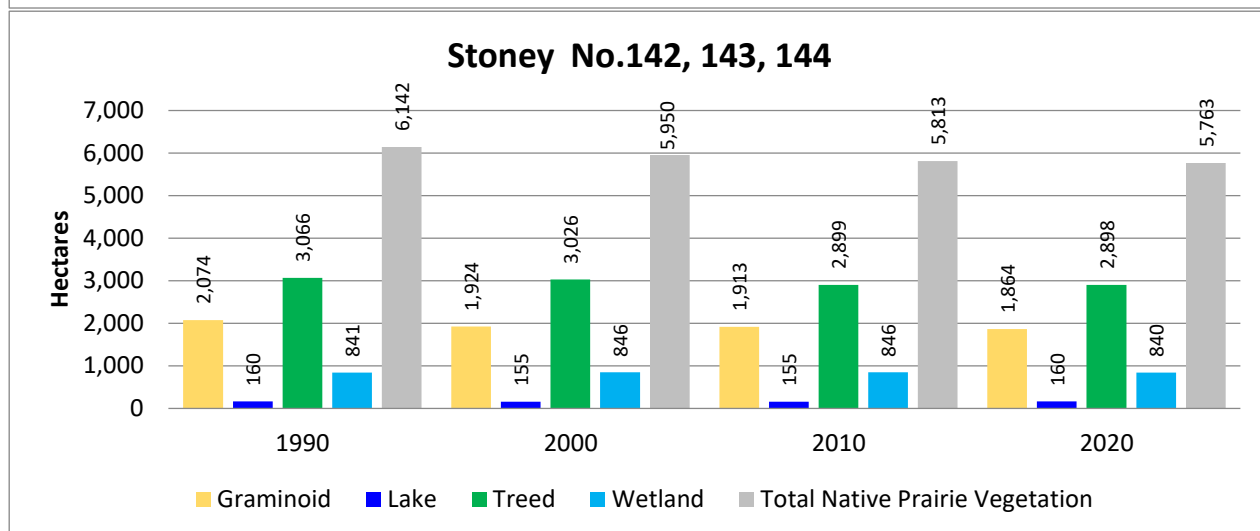
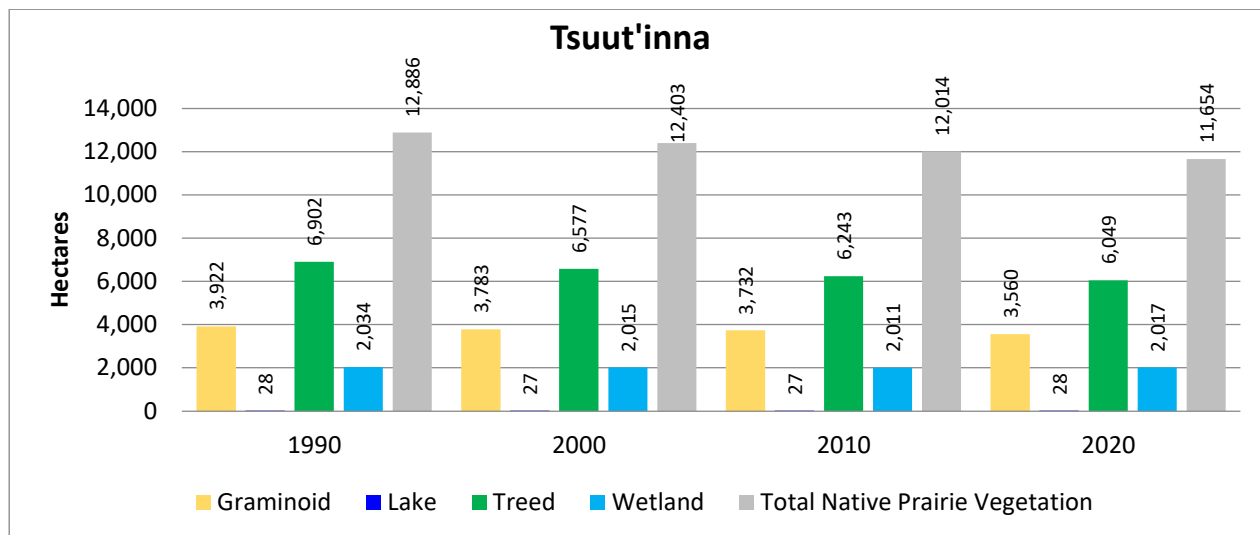


FIGURE 35. NORTH-CENTRAL FIRST NATION LANDS 30 YEAR TOTAL NATIVE COVER LOSS (ORANGE BAR) WITH AMOUNT OF NATIVE COVER IN EACH OF THE FOUR TIME PERIODS. DARK BLUE BAR IS THE PERCENT LOST IN 30 YEARS.





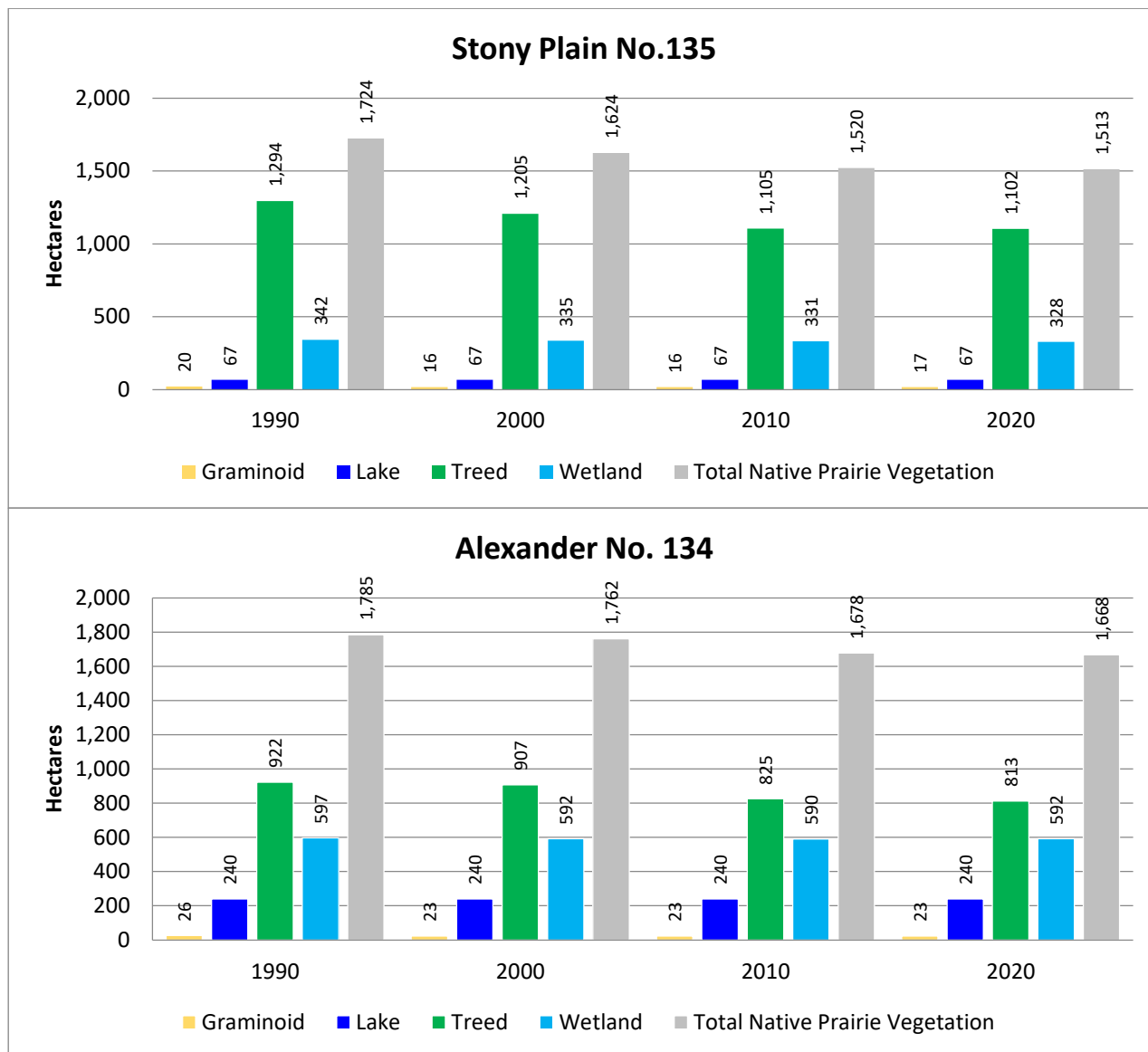


FIGURE 36. FIRST NATIONS TOTAL NATIVE COVER (IN HECTARES) WITH VEGETATION BREAKOUT. EDEN VALLEY NO.216 NOT SHOWN.

Decadal losses in native cover trend from higher values in the 1990-2000 period to lower losses in the 2010-2020 period, but those losses tend to be fairly constant and relatively small for almost all First Nation areas. The greatest areal loss is noted with the Kainai First Nation, depicting a drop of 4,724 ha from 1990 to 2020, followed by the Siksika First Nation with a drop of 1,812 ha over the same period.

FIRST NATIONS LAND VEGETATION 30 YEAR TREND

The vegetation trends in First Nations lands follow similar trends as with the natural areas and the MDs/Counties over the 30-year period. The loss in native cover is exhibited mostly in the predominant cover type, associated with the Natural Region in which the First Nation is located. For example, in the Tsuut'ina and Stony Plain First Nations, the nature of the loss is mainly in the Treed component of native cover (Figure 37), whereas in First Nations such as the Piikani and Blood (Kainai) the loss is predominantly Graminoid. The wetland loss in all the First Nations is relatively small.

STATE OF THE ADMINISTRATIVE AREAS: CANADIAN FORCES BASE (CFB) LANDS

The CFB lands in the Grassland Biome are essentially a study of two extremes regarding the state of native cover and loss. Essentially, the bases' size and functionality are driving the state of the native cover. The small bases of Penhold (688.8 ha) and Cardiff/Edmonton are characterized by predominant administrative and industrial activities on most of their small land areas whereas the large bases of Suffield (267,852.5 ha) and Wainwright (61,069.2 ha) facilitate significant large scale military exercises on their extensive land area. As a group, the bases represent areas in the two Natural Regions where the least and greatest amount of native cover disturbance is occurring on the landscape (Figure 38).

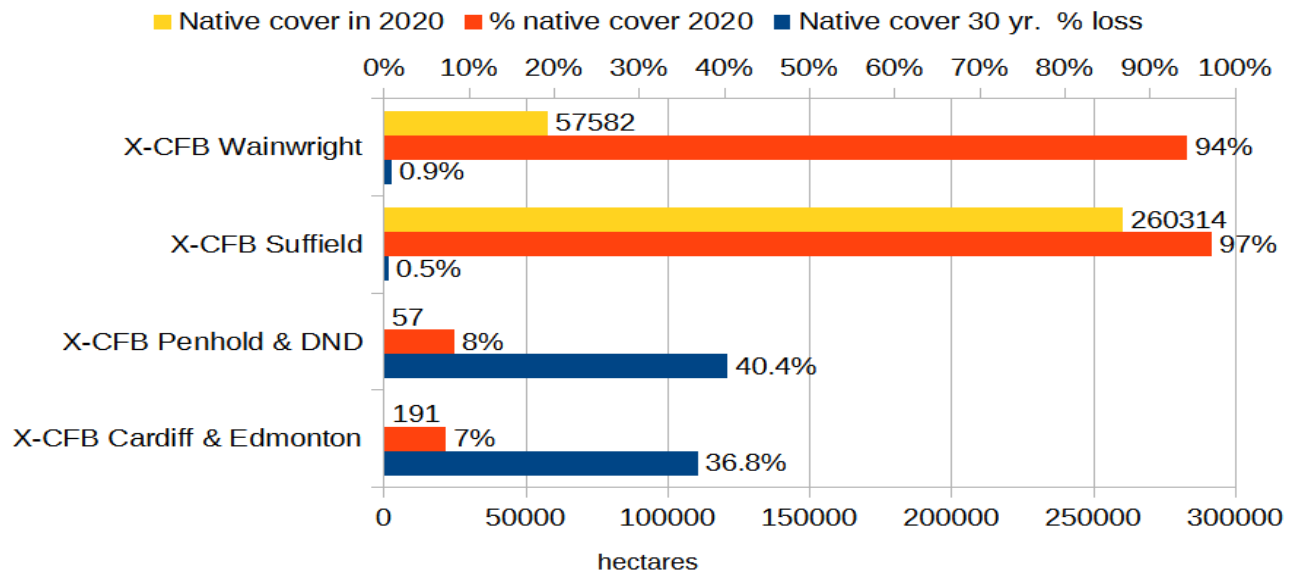


FIGURE 37. NATIVE COVER (IN HECTARES) IN 2020 (YELLOW BARS), % NATIVE COVER IN 2020 (ORANGE BARS) AND % NATIVE COVER LOSS OVER 30 YEARS (BLUE BARS) FOR CANADIAN FORCES BASES IN THE GRASSLAND AND PARKLAND NATURAL REGIONS.

CFB VEGETATION 30 YEAR TREND

The actual amount of native cover loss on the Grassland and Parkland Natural region military bases is relatively small, as shown in Table J. The smaller bases show a total loss of 151 ha while the larger bases show a loss of 1,796 ha. These losses, over an aggregated area of 332,261 ha represents a little over 0.5 percent. As with the First Nation areas, the vegetation cover losses are generally associated with the Treed or Graminoid cover type depending on whether the bases are in the Parkland or the Grassland Natural Regions. Wetland losses for all bases are negligible.

TABLE J. CANADIAN FORCES BASES VEGETATION COVER STATISTICS (IN HECTARES). THE SMALLER BASES OF PENHOLD AND EDMONTON SHOW MOST CHANGE IN THE TREED COVER COMPONENT. THE LARGER BASES SHOW THE MOST CHANGE IN THE GRAMINOID COVER.

Canadian Forces Base	Year	Graminoid	Lake/Water	Treed	Wetland	Total Native Cover	Total Non-native cover
CFB Cardiff & Edmonton	2020	10	2	128	52	191	2449
CFB Cardiff & Edmonton	2010	10	2	128	52	191	2449
CFB Cardiff & Edmonton	2000	10	2	146	52	210	2430
CFB Cardiff & Edmonton	1990	15	2	231	54	303	2337
CFB Penhold & DND	2020	2	2	34	18	57	633
CFB Penhold & DND	2010	2	2	31	19	54	636
CFB Penhold & DND	2000	2	2	35	19	59	631
CFB Penhold & DND	1990	3	2	72	19	95	594
CFB Suffield	2020	253224	3408	270	3412	260314	7548
CFB Suffield	2010	253305	3389	252	3394	260339	7523
CFB Suffield	2000	253817	3389	253	3411	260869	6993
CFB Suffield	1990	254432	3408	278	3486	261604	6258
CFB Wainwright	2020	36611	925	9239	10807	57582	3487
CFB Wainwright	2010	36725	922	9227	10831	57705	3365
CFB Wainwright	2000	36806	922	9286	10838	57851	3218
CFB Wainwright	1990	36885	925	9436	10842	58088	2981

STATE OF THE ADMINISTRATIVE AREAS: URBAN AREAS

The cities of Calgary, Edmonton, Lethbridge, Red Deer, and Medicine Hat represent the five largest urban areas in the Grassland and Parkland Natural Regions. The cities of Calgary and Edmonton proper and their surrounding aggregate urban metropolitan area are presented separately such that we can quantify the core and peripheral urban effect. Figure 39 shows that Calgary and Edmonton have lost 8% and 9% native, or more aptly, natural cover¹⁰, respectively, over the course of the last 30 years. Most of that loss occurred in the 1990-2000 period with a levelling off in the subsequent 20 years. Their current state of 10% and 8% natural cover, although seemingly low, may actually be one of the higher amounts for cities in Canada¹¹. With extensive natural parks such as the North Saskatchewan River Valley/ravine system in Edmonton and Nose Hill Park/Fish Creek Provincial Park and parts of the Bow River valley in Calgary, the 'natural' cover character of Alberta's two major urban centres can still be experienced upfront. The vegetative change for Calgary over the 30-year period shows a steady decline in both the Graminoid and Treed areas whereas Edmonton's loss is mostly in the Treed cover type. The Lake (water) and wetland areas losses are relatively low in both cities.

Considering Calgary and Edmonton's peripheral metropolitan zones (about 30-40km radius from the city core), the communities of Airdrie, Cochrane, Okotoks, Chestermere and Bragg Creek are denoted here as the 'Calgary Metro' area and the communities of Fort Saskatchewan, St. Albert, Morinville, Spruce Grove/Stony Plain, Devon, Leduc, Beaumont, and Sherwood Park are denoted here as the 'Edmonton Metro' area. Figure 40 shows the loss in natural area for these two metro areas with the Calgary Metro communities losing some 6% of the natural cover (from 16% in 1990 to 10% in 2020), while the Edmonton Metro communities lost about the same (from 14% in 1990 to 8% in 2020). And, as with Calgary and Edmonton, the loss in these peripheral communities was more prominent in the earlier years. These statistics emphasize the urbanization effect in reducing any natural cover and agricultural land some 30 to 40km beyond the core of Calgary and Edmonton proper.

¹⁰ Most areas of urban 'natural cover' are interspersed by non-native species: crested wheatgrass, brome, caragana, Russian olive, to name a few (see 'Invasive Plants of Alberta 4th edition, 2022). The text tends to avoid the term 'native' in favor of 'natural' cover in these areas because of these invasive/introduced species.

¹¹ Quebec City has the highest natural cover for major cities in Canada; www.ccpr.parkpeople.ca



PHOTO 11 . BLUE GRAMA ON THE SOUTH FACING SLOPES OF EDMONTON'S NORTH SASKACHEWAN RIVER VALLEY JUXTAPOSED WITH PARKLAND AND MIXEDWOOD BOREAL VEGETATION ON THE VALLEY BOTTOM AND NORTH FACING SLOPES BELOW THE UNIVERSITY OF ALBERTA.

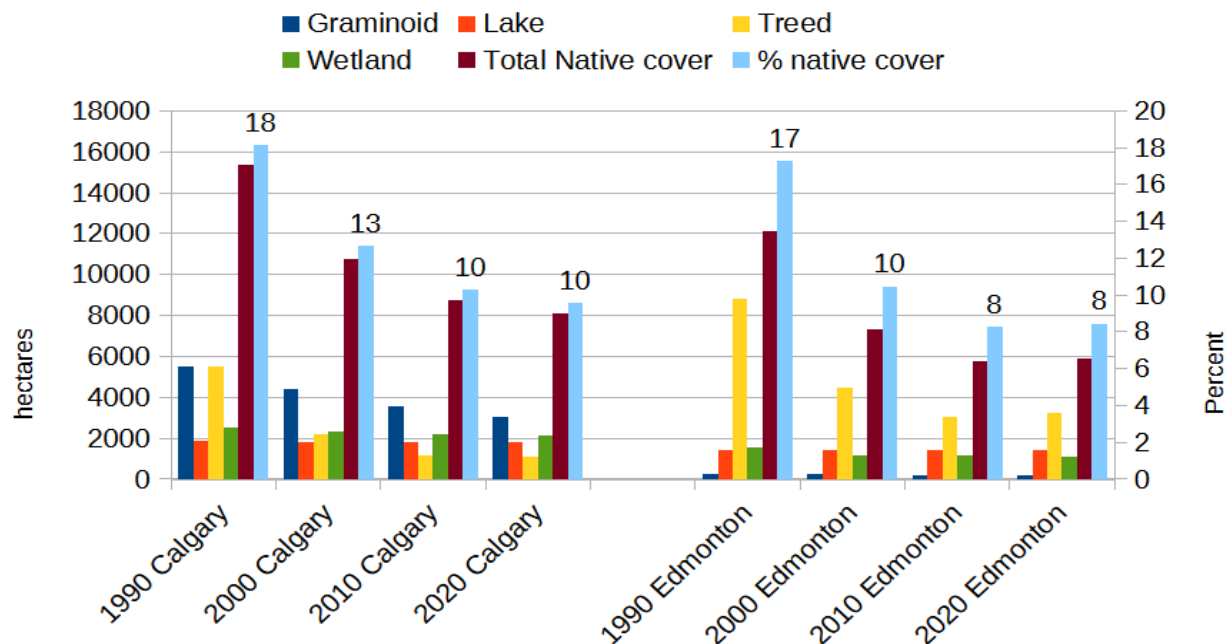


FIGURE 39. CALGARY AND EDMONTON NATIVE COVER (IN HECTARES) AND PERCENT LOSS 1990-2020.

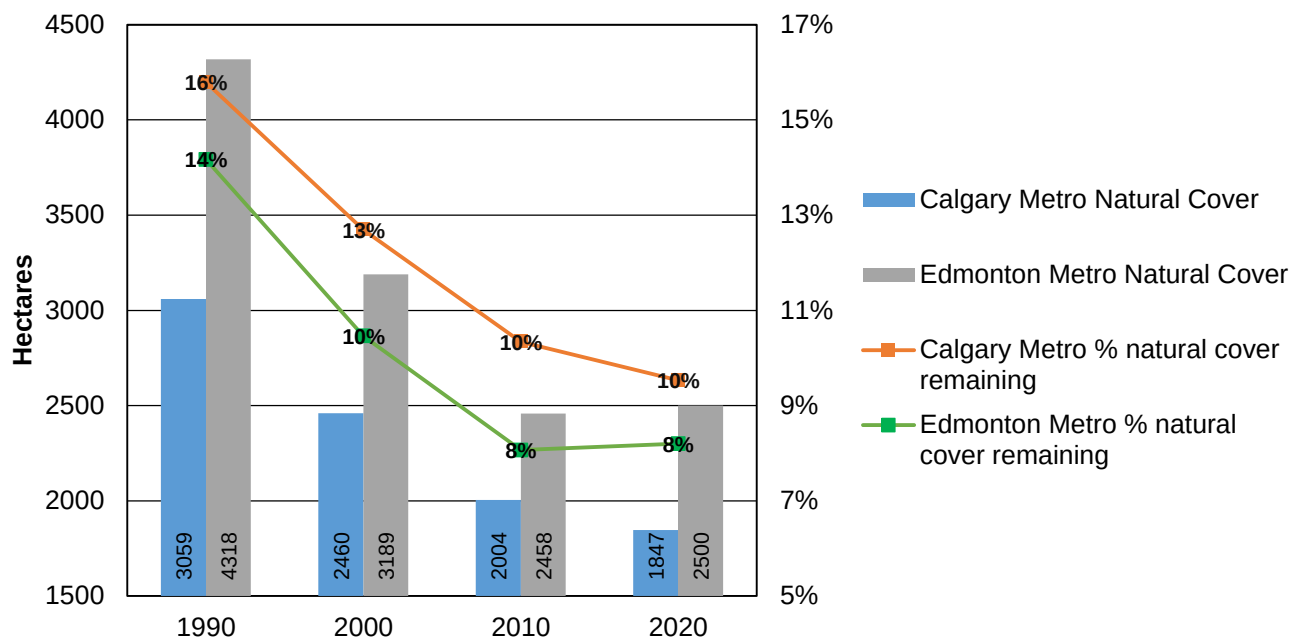


FIGURE 40. CALGARY AND EDMONTON SURROUNDING URBAN AREAS NATURAL COVER (IN HECTARES) AND PERCENT LOSS: 1990 – 2020.

Figure 41 shows the natural cover change for the smaller cities of Lethbridge, Red Deer and Medicine Hat. These centres, as with the larger cities, show similar losses in natural cover of about 6% except for Medicine Hat which indicates a loss of about 12% within the 30-year period. The majority of the natural cover loss, as with the rest of the areas in the Grassland/Parkland, tended to be in the earlier period. Although not shown, the character of the vegetative loss is associated with Lethbridge and Medicine Hat losing mostly Graminoid cover while Red Deer lost mostly Treed. These data, including data for many of the Grassland and Parkland Natural Region’s smaller cities and towns, is listed in Appendix 4.

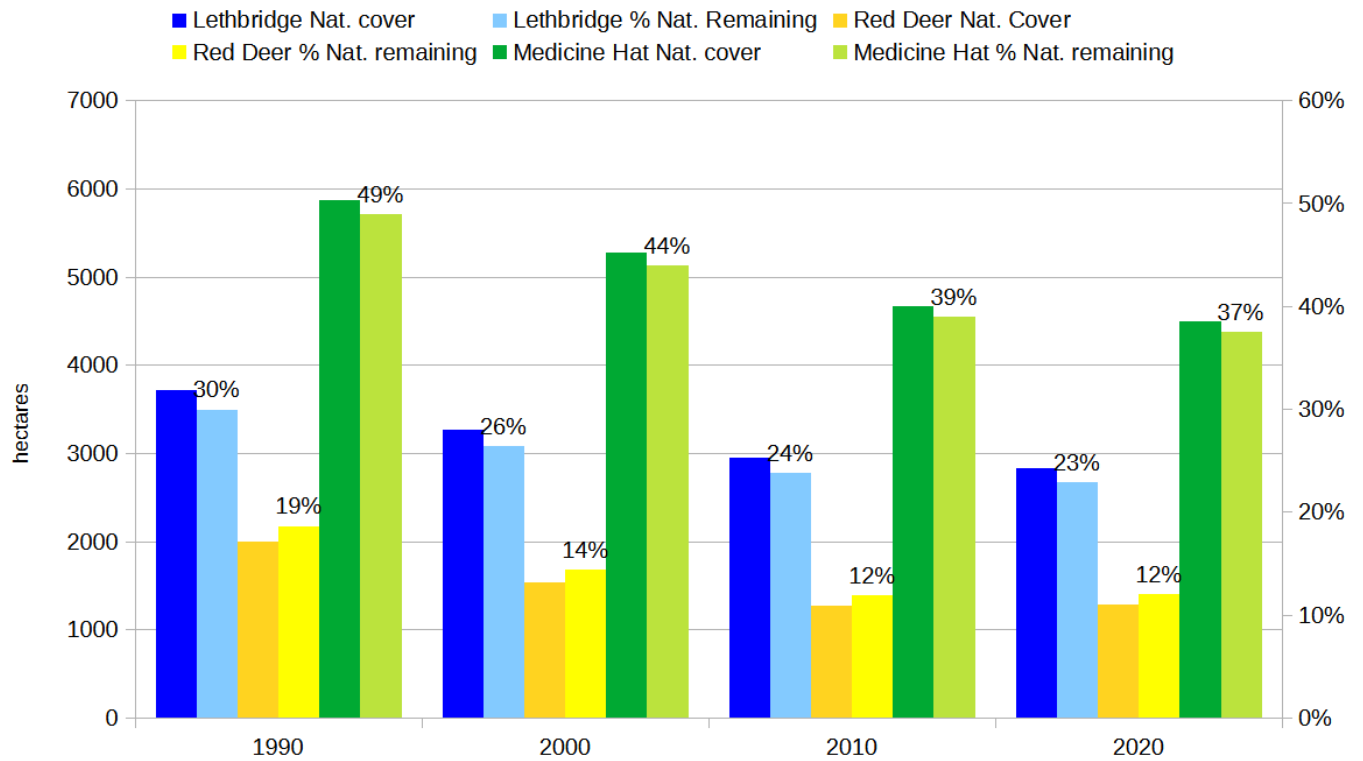


FIGURE 38. NATURAL COVER (IN HECTARES) AND PERCENT LOSS FOR LETHBRIDGE, RED DEER AND MEDICINE HAT FOR 1990-2020.



PHOTO 12. OLDMAN RIVER VALLEY AND COULEES LOOKING WEST OF PARADISE CANYON (LETHBRIDGE). LETHBRIDGE HAS ONE OF THE LARGEST URBAN NATURAL AREAS (BY %) IN CANADA.

DISCUSSION

Defining the ‘State of the Prairie’ is an endeavour that has now become a component of the Prairie Conservation Forum’s *raison d’être*. Back in 1990, the then PCF secretary, Ian Dyson, had a vision of quantifying the amount of native vegetation left in the old Alberta Government Prairie Region; it led to the development of the Native Prairie Vegetation Inventory (NPVI), which allowed us to quantify where native prairie was and how much was left on the landscape. In the early 2000s, a ‘change’ analysis was envisioned by the PCF to quantify native cover. That spearheaded the development of the Grassland Vegetation Inventory, which by the time it was completed, anchored the findings of the first ‘State of the Prairie’ report analysing change between 1990 and 2010. Today, using data from Agriculture and Agri-Food Canada, we continue in the same vein assessing change in the Grassland Biome Region. With four decadal points of reference data now available, not only can we assess overall change in the ensuing 30-year period, but we make some basic inferences as to longer term trends in native cover loss.

The one constant in this report and echoed by past change analyses is that the amount of native/natural cover is diminishing over the 30-year period *in all geographic configurations of the landscape*. This data also focuses attention to the reality that the greatest change is occurring in and around the urban areas of Calgary and Edmonton; from the peripheral ecodistricts to the adjacent counties and surrounding communities, the population growth pressure exacts a high price on the native landscapes and on farmland/rangeland surrounding the population centres.

Another general artefact of the data, regardless of the geographic partitioning, is that the greatest change (loss) occurred between 1990 and 2000, easing in the last decade from 2010 to 2020. Associated with this ‘good news’ outcome is that throughout the Grassland and Parkland the amount of wetland cover loss is relatively low, the native cover losses that do occur are predominantly in upland landscapes. The trend towards diminishing rates of native cover loss can be noted as encouraging and it is, in part, an attestation to the many people who have worked tirelessly to make us all aware of the beauty, functionality, and importance of the natural environment that are the Grasslands.

Comparatively, the Parkland Natural Region is significantly more threatened than the Grassland Natural Region. The Parkland’s highly productive soils and greater moisture are the key drivers for the historical land conversion to agricultural land uses. Add the growth pressures of the metropolitan regions of Calgary and Edmonton and the skewed nature of the private/public land tenure which makes a remedial government policy more cumbersome to implement, then the very character of a Parkland-type natural area becomes a rare occurrence indeed. If the case for more protected areas or

a policy incentive to value natural landscapes was ever needed to show future generations what the Parkland was like, these data support such action.

RECOMMENDATIONS

The 'State of the Prairie Supplemental Data' report provides an in-depth perspective of the native cover data and its change over the past 30 years for Alberta's Grassland Biome minus the Peace River Parkland. With the data now readily available, the Peace River Parkland should also be included in the next 'change' iteration of the 'State of the Prairie' report. Since the process for documenting that change is now established with both this report and its first iteration in 2019, the next version should be scheduled around 2030. Since the structural data work for the 1990, 2000, 2010, and 2020 time slices is now completed, the next iteration in 2030 need only concentrate on that particular dataset and the Peace River Parkland.

- 1. Recommendation: PCF to include an early 2030's 'State of the Prairie' review in the PCF's 2030-2035 Goals. The review should also include an analysis of the state and change of the native cover in the Peace River Parkland for a full 'State of the Grassland Biome in Alberta'.**

The PCF also produced an Occasional Paper based on the first State of the Prairie report. The occasional paper focused on changes in the physical environment and the policy related drivers that could explain the data results observed. In this current supplemental data review, the sporadic commentary on the drivers for the change observed is occasionally noted in the text but a more extensive update such as was done previously should be included in the next data review.

- 2. Recommendation: Update the State of the Prairie Occasional Paper with the next data iteration in early 2030's.**

Accurate and reliable data are the building blocks of informed analyses and decision making. The use and adaptation of the AAFC data sets provides for a broad scale overview of conditions on the landscape; we can, however, do better. The PCF, and more importantly, the Province have invested significantly in the Grassland Vegetation Inventory (GVI) which, year by year, becomes more dated. An update of this inventory is overdue and such an update should be used to drive the next State of the Prairie data requirements. That update would address the finer changes on the landscape including providing data for categories such as 'Shrubs' and 'Riparian', which the AAFC data was not designed for. It need not be onerous, simply identify areas of native cover lost and edit/update the geospatial database.

- 3. Recommendation: Update the GVI. Not only for the ‘State of the Prairie 2030’ but mainly for the myriad of uses which the dataset enables. An update of this data should occur between 2025 and 2030.**

The Parkland Natural Region remains an area that is challenged by good landscape data. The Primary Land Vegetation Inventory (PLVI) is an active ecosite phase-based inventory in the region but it fails to address a broad scale region-wide GVI-type overview, especially in an area where over 90% of the land base is privately owned. The region is limited to the coarser-grained satellite-based inventories such as the AAFC land use dataset. A PLVI level inventory across the Natural Region could be implemented with modifiers to address the disturbed landscape, especially with identifying the remnants of native/natural land in private tenure but it's at cost. Is it worth the effort? Who would support such an effort, especially since most of the land is private? These are some questions that should be considered, especially as a first step, in protecting whatever native natural cover is left in the Parkland.

- 4. Recommendation: Investigate how the PLVI could be adapted to reflect the significant disturbance present in the Parkland Natural Region: assess costs, potential funders, and feasibility. Complete the feasibility analysis by 2030.**



PHOTO 13. RIPARIAN AND RANGELAND LANDSCAPES IN THE TWIN RIVER HERITAGE RANGELAND NATURAL AREA. GOLD BUTTE AND WEST BUTTE ARE ON THE HORIZON.

REFERENCES

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GLOSSARY OF TERMS

Raster. A raster data set is a spatial dataset composed of discrete and uniformly sized areas usually called pixels. In this report, the pixels are 30mX30m.

Grassland Biome. In Alberta, it includes the Grassland Natural Region and the Parkland Natural Region.

Grassland Natural Region. A subset of the Grassland Biome, one of six Natural Regions of Alberta

Parkland Natural Region. A subset of the Grassland Biome, one of six Natural Regions of Alberta. The Parkland Natural Region is also commonly referred to as the Aspen Parkland.

Ecotone. Refers to the Parkland Natural Region; a transitional zone between the Grassland and Boreal Forest Biomes.

Graminoid. Herbaceous plants with a grass-like morphology. In this report, forbes and small shrubs such as sagebrush are also included in the Graminoid category.

Treed. The Treed category includes tree species proper but also taller shrubs such as dogwood.

Lake/River. Denotes all open water systems, including rivers

Wetland. Includes lentic and lotic wetland vegetation except for open water which is captured in the 'Lake' category

Decadal. Refers to a period of a decade. Term is used to align with the AAFC data sets.

APPENDICES.¹²

APPENDIX 1. BASE DATA FOR THE GRASSLAND NATURAL REGION, INCLUDING THE NATURAL SUBREGIONS AND ECODISTRICTS.

Year or Change Inter- val	Ecoregion		Ecodistricts						Total Na- tive Prairie Vegetation change	Non- Native Land
					Graminoid	Lake	Treed	Wetland		
	Dry	Mixed-	Acadia	Valley						
1990	grass		Plain		13784	405	24	1010	15223	50853
2000					13690	404	23	997	15114	50962
2010					13664	404	19	973	15059	51017
2020					13614	405	19	857	14894	51182
1990 - 2000 Change					-93	-1	-1	-13	-109	109
2000 - 2010 Change					-26	0	-5	-24	-55	55
2010 - 2020 Change					-50	1	0	-117	-165	165
	Dry	Mixed-								
1990	grass		Berry Creek Plain		571862	14471	509	38539	625380	163822
2000					566722	14458	466	37865	619510	169692
2010					563694	14458	440	37543	616134	173068
2020					562679	14457	428	37278	614842	174360
1990 - 2000 Change					-5140	-13	-42	-674	-5869	5869

¹² The area values (in hectares) for each of the Appendices are rounded to whole numbers. Sum totals may display a rounding error.

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2000 - 2010 Change			-3028	0	-26	-322	-3376	3376
2010 - 2020 Change			-1015	-1	-12	-264	-1293	1293
	Dry Mixed- grass	Bindloss Plain	261504	8197	1586	8524	279811	77064
1990			259424	8192	1489	8371	277476	79399
2000			257875	8192	1451	8299	275817	81058
2010			256973	8195	1437	8229	274834	82041
2020								
1990 - 2000 Change			-2080	-5	-98	-153	-2335	2335
2000 - 2010 Change			-1549	0	-38	-71	-1659	1659
2010 - 2020 Change			-902	4	-13	-71	-983	983
	Dry Mixed- grass	Bow City Plain	87420	5745	251	8710	102126	54132
1990			86136	5731	240	8619	100725	55533
2000			85749	5731	231	8537	100248	56010
2010			85307	5744	227	8445	99723	56535
2020								
1990 - 2000 Change			-1285	-14	-12	-90	-1400	1400
2000 - 2010 Change			-387	0	-8	-83	-478	478
2010 - 2020 Change								

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2010 - 2020 Change			-442	14	-5	-92	-525	525
1990	Dry grass	Mixed- Brooks Plain	184346	12688	1841	21947	220822	144549
2000			181568	12690	1726	21649	217634	147737
2010			180395	12690	1692	21440	216216	149155
2020			179590	12686	1671	21191	215138	150233
1990 - 2000 Change			-2777	2	-115	-298	-3188	3188
2000 - 2010 Change			-1174	-1	-34	-209	-1418	1418
2010 - 2020 Change			-805	-4	-21	-249	-1078	1078
1990	Dry grass	Mixed- Foremost Plain	298011	26331	681	18433	343457	695679
2000			293865	26334	597	18049	338845	700292
2010			291913	26334	589	17651	336486	702651
2020			289940	26328	568	16098	332934	706202
1990 - 2000 Change			-4147	3	-84	-384	-4612	4612
2000 - 2010 Change			-1952	0	-8	-398	-2359	2359
2010 - 2020 Change			-1972	-6	-21	-1553	-3552	3552

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
	Dry grass	Mixed- Oyen Upland						
1990			164978	3565	129	10008	178681	161863
2000			164006	3562	126	9906	177600	162943
2010			163703	3562	126	9842	177233	163311
2020			163307	3565	122	9688	176682	163861
1990 - 2000 Change			-972	-4	-3	-102	-1080	1080
2000 - 2010 Change			-303	0	-1	-64	-368	368
2010 - 2020 Change			-396	4	-4	-154	-550	550
	Dry grass	Mixed- Purple Plain						
1990		Springs	71931	3157	349	2458	77896	53140
2000			70258	3154	328	2435	76175	54861
2010			69863	3154	325	2393	75735	55300
2020			69528	3156	323	2345	75351	55685
1990 - 2000 Change			-1674	-3	-21	-23	-1721	1721
2000 - 2010 Change			-395	0	-3	-41	-439	439
2010 - 2020 Change			-335	2	-2	-49	-384	384
	Dry grass	Mixed- Rainy land						
1990		Hills Up-	241041	2193	239	4724	248196	27466

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2000			239743	2195	238	4700	246876	28786
2010			239092	2195	233	4679	246199	29463
2020			238960	2193	233	4663	246050	29612
1990 - 2000 Change			-1297	2	-1	-24	-1321	1321
2000 - 2010 Change			-652	0	-5	-21	-677	677
2010 - 2020 Change			-131	-2	0	-16	-149	149
1990	Dry Mixed- grass	Schuler	187799	4621	355	7923	200698	132190
2000			185740	4615	348	7830	198533	134355
2010			184264	4615	341	7786	197007	135881
2020			183636	4621	334	7702	196292	136595
1990 - 2000 Change			-2059	-6	-7	-94	-2165	2165
2000 - 2010 Change			-1476	0	-7	-43	-1526	1526
2010 - 2020 Change			-628	5	-7	-84	-714	714
1990	Dry Mixed- grass	Sibbald Plain	7224	569	6	1623	9421	19884
2000			7206	570	5	1602	9383	19923

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2010			7171	570	2	1589	9332	19974
2020			7125	569	2	1507	9202	20103
1990 - 2000 Change			-17	1	-1	-21	-39	39
2000 - 2010 Change			-35	0	-3	-13	-51	51
2010 - 2020 Change			-46	-1	0	-82	-129	129
	Dry grass	Mixed- Sounding Creek Plain						
1990			114783	4242	515	17065	136604	89431
2000			113781	4252	511	16939	135484	90552
2010			113531	4252	505	16857	135145	90891
2020			113349	4242	498	16658	134746	91290
1990 - 2000 Change			-1002	11	-4	-126	-1120	1120
2000 - 2010 Change			-251	0	-6	-82	-339	339
2010 - 2020 Change			-182	-11	-7	-199	-399	399
	Dry grass	Mixed- Vauxhall Plain						
1990			73351	3928	127	5643	83049	187216
2000			71522	3935	116	5593	81165	189100
2010			70933	3935	114	5482	80464	189801

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2020			70518	3928	107	5185	79739	190526
1990 - 2000 Change			-1829	7	-12	-50	-1884	1884
2000 - 2010 Change			-589	0	-1	-111	-701	701
2010 - 2020 Change			-415	-7	-7	-297	-725	725
1990	Dry Mixed- grass	Wild Horse Plain	265619	2525	267	5825	274236	40828
2000			265100	2525	262	5749	273636	41427
2010			264824	2525	260	5720	273330	41734
2020			264390	2525	258	5716	272888	42175
1990 - 2000 Change			-519	0	-5	-76	-599	599
2000 - 2010 Change			-275	0	-2	-29	-307	307
2010 - 2020 Change			-435	0	-2	-5	-441	441
1990	Dry Mixedgrass		2543651	92636	6880	152431	2795599	1898118
2000			2518760	92616	6476	150304	2768155	1925561
2010			2506670	92615	6327	148792	2754404	1939313
2020			2498914	92613	6227	145561	2743315	1950402
1990 - 2000			-24891	-20	-405	-2128	-27443	27443

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
Change								
2000 - 2010								
Change			-12091	-1	-148	-1511	-13751	13751
2010 - 2020								
Change			-7756	-2	-100	-3232	-11089	11089
Foothills								
1990	Fescue	Cardston Plain	84267	7904	3051	8338	103560	193849
2000			81837	7901	2860	8245	100844	196565
2010			81373	7901	2566	8217	100057	197352
2020			80711	7901	2519	8082	99213	198196
1990 - 2000								
Change			-2430	-3	-191	-93	-2716	2716
2000 - 2010								
Change			-464	0	-294	-29	-787	787
2010 - 2020								
Change			-662	0	-47	-134	-844	844
Foothills								
1990	Fescue	Del Bonita Plat- eau	88181	1631	246	3141	93200	31470
2000			87332	1626	239	3127	92324	32346
2010			87169	1626	235	3111	92141	32529
2020			86887	1631	232	3079	91830	32840
1990 - 2000								
Change			-849	-6	-7	-14	-876	876

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2000 - 2010 Change			-163	0	-4	-15	-182	182
2010 - 2020 Change			-282	5	-3	-32	-311	311
	Foothills							
1990	Fescue	Delacour Plain	37558	11191	6485	31496	86730	618031
2000			35127	11138	4010	30552	80827	623933
2010			34186	11133	3422	30198	78940	625821
2020			32087	11129	3367	29839	76422	628339
1990 - 2000 Change			-2431	-53	-2474	-944	-5903	5903
2000 - 2010 Change			-941	-5	-588	-354	-1888	1888
2010 - 2020 Change			-2099	-4	-56	-359	-2518	2518
	Foothills	Twin Butte Foot-						
1990	Fescue	hills	44284	1080	3720	9457	58541	49947
2000			43444	1082	3657	9439	57622	50866
2010			43362	1082	3523	9432	57400	51088
2020			43013	1080	3468	9409	56971	51518
1990 - 2000 Change			-840	1	-64	-18	-919	919
2000 - 2010 Change			-81	0	-134	-7	-222	222

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2010 - 2020 Change			-350	-1	-55	-23	-429	429
1990	Foothills Fescue	Willow Upland	94330	516	6169	4565	105581	21408
2000			93582	507	6173	4567	104829	22160
2010			93415	507	6094	4565	104581	22408
2020			93211	516	6066	4555	104348	22641
1990 - 2000 Change			-749	-9	4	2	-752	752
2000 - 2010 Change			-167	0	-79	-2	-248	248
2010 - 2020 Change			-204	9	-28	-11	-233	233
1990	Foothills Fescue		348621	22323	19672	56996	447612	914705
2000			341322	22254	16940	55930	436446	925871
2010			339505	22250	15841	55524	433119	929198
2020			335909	22258	15652	54965	428784	933533
1990 - 2000 Change			-7299	-69	-2732	-1066	-11166	11166
2000 - 2010 Change			-1816	-5	-1099	-406	-3327	3327
2010 - 2020 Change			-3596	8	-188	-559	-4335	4335

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
1990	Mixedgrass	Blackfoot Plain	41079	9186	2300	6244	58809	73179
2000			39858	9156	2250	6206	57470	74517
2010			39449	9156	2211	6152	56969	75019
2020			39144	9186	2209	6090	56629	75358
1990 - 2000 Change			-1221	-30	-49	-38	-1339	1339
2000 - 2010 Change			-409	0	-40	-54	-502	502
2010 - 2020 Change			-305	30	-2	-62	-339	339
1990	Mixedgrass	Cypress Hills	112589	861	1782	3716	118947	7798
2000			112291	862	1762	3705	118621	8124
2010			112238	862	1753	3704	118557	8188
2020			112126	861	1760	3704	118452	8293
1990 - 2000 Change			-298	1	-19	-11	-327	327
2000 - 2010 Change			-53	0	-9	-1	-64	64
2010 - 2020 Change			-112	-1	7	0	-105	105
1990	Mixedgrass	Cypress Slope	85210	280	436	1960	87887	34432
2000			84596	281	427	1956	87260	35058

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2010			84405	281	422	1953	87061	35258
2020			84157	280	421	1938	86796	35523
1990 - 2000 Change			-614	1	-9	-4	-627	627
2000 - 2010 Change			-192	0	-5	-3	-200	200
2010 - 2020 Change			-248	-1	-1	-15	-265	265
1990	Mixedgrass	Lethbridge Plain	134174	13685	3825	17586	169270	603909
2000			123497	13649	3589	17234	157969	615211
2010			121032	13648	3509	16958	155147	618033
2020			118618	13660	3470	16411	152159	621021
1990 - 2000 Change			-10678	-36	-236	-352	-11302	11302
2000 - 2010 Change			-2465	-1	-80	-276	-2822	2822
2010 - 2020 Change			-2414	12	-39	-546	-2988	2988
1990	Mixedgrass	Majorville Up- land	71402	3295	115	1870	76682	69244
2000			70502	3327	105	1851	75785	70142
2010			70114	3327	103	1821	75365	70561
2020			69839	3295	106	1739	74978	70948

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
1990 - 2000 Change			-900	32	-10	-19	-898	898
2000 - 2010 Change			-388	0	-2	-29	-419	419
2010 - 2020 Change			-275	-32	2	-82	-387	387
1990	Mixedgrass	Makepeace Plain	87640	5421	497	6430	99989	107353
2000			86833	5418	432	6355	99037	108305
2010			86310	5418	430	6286	98443	108899
2020			85782	5423	425	6067	97697	109645
1990 - 2000 Change			-807	-4	-66	-75	-951	951
2000 - 2010 Change			-524	0	-2	-69	-594	594
2010 - 2020 Change			-527	5	-5	-219	-746	746
1990	Mixedgrass	Milk River Up- land	76177	1017	69	1873	79135	29546
2000			75499	1019	67	1855	78440	30242
2010			75364	1019	65	1837	78284	30397
2020			75088	1016	63	1796	77964	30718
1990 - 2000 Change			-678	2	-1	-18	-696	696

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2000 - 2010 Change			-135	0	-2	-19	-156	156
2010 - 2020 Change			-275	-3	-1	-41	-320	320
1990	Mixedgrass	Standard Plain	4427	1715	44	3440	9625	84929
2000			4186	1714	26	3312	9238	85316
2010			4137	1714	20	3288	9158	85396
2020			3996	1715	17	3158	8887	85667
1990 - 2000 Change			-241	-1	-18	-128	-388	388
2000 - 2010 Change			-50	0	-6	-24	-80	80
2010 - 2020 Change			-140	2	-4	-129	-272	272
1990	Mixedgrass	Sweetgrass Up- land	24589	89	183	534	25394	12940
2000			24435	88	169	530	25223	13111
2010			24413	88	49	529	25079	13254
2020			24410	89	48	519	25066	13267
1990 - 2000 Change			-154	-1	-14	-3	-172	172
2000 - 2010 Change			-22	0	-120	-1	-143	143

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2010 - 2020 Change			-2	1	-1	-10	-13	13
1990	Mixedgrass	Vulcan Plain	22500	2577	39	3268	28384	229720
2000			21514	2575	26	3207	27323	230781
2010			21428	2575	25	3189	27218	230886
2020			21148	2576	23	3107	26854	231250
1990 - 2000 Change			-986	-2	-13	-61	-1061	1061
2000 - 2010 Change			-86	0	-1	-18	-105	105
2010 - 2020 Change			-280	1	-2	-82	-364	364
1990	Mixedgrass		659788	38126	9291	46919	754123	1253050
2000			643211	38089	8854	46211	736365	1270808
2010			638889	38088	8587	45717	731282	1275891
2020			634310	38101	8540	44531	725483	1281690
1990 - 2000 Change			-16576	-37	-437	-708	-17758	17758
2000 - 2010 Change			-4322	-1	-267	-494	-5084	5084
2010 - 2020 Change			-4579	14	-47	-1186	-5799	5799
1990	Northern	Castor Plain	104730	11760	3499	45385	165373	190109

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
Fescue								
2000			102624	11761	3146	44812	162344	193139
2010			102161	11761	3054	44660	161636	193846
2020			101264	11760	3015	44563	160601	194881
1990 - 2000 Change			-2105	1	-353	-572	-3030	3030
2000 - 2010 Change			-464	0	-91	-152	-707	707
2010 - 2020 Change			-897	-1	-40	-97	-1035	1035
Northern								
1990	Fescue	Drumheller Plain	40772	7287	4086	15062	67207	269919
2000			39024	7282	3694	14617	64616	272510
2010			37776	7282	3643	14448	63148	273978
2020			34420	7285	3616	13618	58940	278186
1990 - 2000 Change			-1748	-5	-392	-445	-2591	2591
2000 - 2010 Change			-1248	0	-51	-169	-1468	1468
2010 - 2020 Change			-3356	4	-26	-830	-4208	4208
Northern								
1990	Fescue	Endiang Upland	33976	1675	5259	9827	50737	54024

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2000			33443	1679	5253	9767	50142	54619
2010			33305	1679	5236	9726	49946	54815
2020			33092	1676	5228	9557	49553	55208
1990 - 2000 Change			-533	4	-6	-60	-595	595
2000 - 2010 Change			-138	0	-17	-41	-196	196
2010 - 2020 Change			-212	-4	-8	-169	-393	393
	Northern Fescue	Kirkpatrick Plain	Lake					
1990			68629	3471	694	13744	86538	33301
2000			67805	3468	688	13690	85650	34188
2010			67366	3468	679	13641	85154	34684
2020			67087	3471	671	13602	84832	35007
1990 - 2000 Change			-824	-3	-6	-55	-887	887
2000 - 2010 Change			-439	0	-9	-48	-496	496
2010 - 2020 Change			-279	3	-8	-39	-323	323
	Northern Fescue	Neutral Hills						
1990			152940	9928	10400	30579	203846	163877
2000			151466	9927	9791	30423	201607	166116

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
2010			151029	9927	9701	30335	200992	166731
2020			150285	9928	9685	30253	200151	167572
1990 - 2000 Change			-1473	0	-609	-156	-2239	2239
2000 - 2010 Change			-437	0	-90	-88	-615	615
2010 - 2020 Change			-744	1	-16	-82	-841	841
	Northern Fescue	Wintering Hills						
1990			55336	3347	2032	8459	69174	139370
2000			54279	3349	2006	8383	68017	140528
2010			53763	3349	1988	8311	67412	141132
2020			53025	3347	1984	8108	66464	142081
1990 - 2000 Change			-1057	2	-26	-76	-1157	1157
2000 - 2010 Change			-515	0	-18	-71	-605	605
2010 - 2020 Change			-739	-2	-5	-203	-948	948
1990	Northern Fescue		456382	37468	25971	123055	642876	850600
2000			448641	37466	24577	121692	632376	861099
2010			445400	37466	24301	121122	628289	865187
2020			439174	37467	24198	119702	620541	872935

Year or Change Inter- val	Ecoregion	Ecodistricts					Total Na- tive Prairie Vegetation change	Non- Native Land
			Graminoid	Lake	Treed	Wetland		
1990 - 2000								
Change			-7741	-1	-1393	-1363	-10499	10499
2000 - 2010								
Change			-3241	0	-276	-570	-4087	4087
2010 - 2020								
Change			-6227	0	-102	-1419	-7748	7748
1990	Grassland Natural Region		4008442	190553	61813	379402	4640210	4916473
2000			3951935	190425	56847	374136	4573343	4983340
2010			3930465	190419	55056	371154	4547094	5009589
2020			3908307	190439	54618	364759	4518123	5038560
1990 - 2000								
Change			-56507	-128	-4966	-5265	-66866	66866
2000 - 2010								
Change			-21470	-6	-1791	-2982	-26249	26249
2010 - 2020								
Change			-22158	20	-438	-6396	-28971	28971

APPENDIX 2. BASE DATA FOR THE PARKLAND NATURAL REGION, INCLUDING THE NATURAL SUBREGIONS AND ECODISTRICTS.

Year or Change Inter- val	Ecore- gion	Ecodistricts					Total Na- tive Prai- rie Vege- tation in ha	Non- Native Land
			Grami- noid	Lake	Treed	Wet- land		
1990	Central Parkland	Andrew Plain	477	7536	13067	13502	34582	286555
2000			381	7526	12052	13198	33157	287980
2010			378	7526	11037	13144	32085	289052
2020			381	7551	10594	13095	31620	289517
1990 - 2000 Change			-96	-10	-1015	-304	-1425	1425
2000 - 2010 Change			-2	0	-1015	-54	-1072	1072
2010 - 2020 Change			2	24	-443	-49	-465	465
1990	Central Parkland	Bashaw Up- land	32105	23562	47032	39835	142535	272751
2000			31138	23570	42312	39632	136653	278632
2010			30650	23570	38616	39562	132398	282887
2020			28639	23564	38110	39306	129618	285667
1990 - 2000 Change			-967	8	-4720	-203	-5882	5882
2000 - 2010 Change			-488	0	-3696	-71	-4255	4255
2010 - 2020 Change			-2011	-7	-507	-256	-2780	2780
1990	Central Parkland	Daysland Plain	17058	26225	38456	61008	142748	781285
2000			16329	26223	33181	60086	135819	788213
2010			16094	26223	29326	59905	131548	792485
2020			15246	26233	28890	59767	130136	793896
1990 - 2000 Change			-729	-2	-5275	-922	-6929	6929
2000 - 2010 Change			-235	0	-3855	-181	-4272	4272
2010 - 2020 Change			-848	10	-436	-137	-1412	1412
1990	Central Parkland	Leduc Plain	2700	13841	70820	27410	114771	619388

Year or Change Inter- val	Ecore- gion	Ecodistricts					Total Na- tive Prai- rie Vege- tation in ha	Non- Native Land
			Grami- noid	Lake	Treed	Wet- land		
2000			2004	13828	54977	25746	96555	637604
2010			1820	13828	47465	25476	88589	645570
2020			1814	13840	46775	25204	87633	646526
1990 - 2000								
Change			-696	-13	-15843	-1664	-18216	18216
2000 - 2010								
Change			-184	0	-7512	-270	-7966	7966
2010 - 2020								
Change			-6	13	-689	-273	-955	955
1990	Central Parkland	Lloydmin- ster Plain	6790	5295	19077	15181	46343	233586
2000			6414	5288	16514	15067	43282	236647
2010			6364	5288	15462	15034	42147	237782
2020			6150	5308	15282	14964	41705	238225
1990 - 2000								
Change			-377	-8	-2563	-114	-3061	3061
2000 - 2010								
Change			-49	0	-1052	-34	-1135	1135
2010 - 2020								
Change			-214	21	-180	-69	-443	443
1990	Central Parkland	Olds Plain	8510	1511	8567	8764	27353	256376
2000			7611	1513	7931	8663	25717	258012
2010			6963	1513	7407	8612	24495	259234
2020			6292	1511	7273	8378	23455	260274
1990 - 2000								
Change			-899	1	-636	-101	-1635	1635
2000 - 2010								
Change			-648	0	-524	-50	-1223	1223
2010 - 2020								
Change			-672	-1	-133	-234	-1040	1040
1990	Central Parkland	Pine Lake Upland	7570	4425	33370	18918	64283	325319
2000			7014	4419	30126	18767	60327	329276
2010			6928	4419	27846	18727	57920	331682
2020			6446	4425	27294	18531	56696	332906

Year or Change Inter- val	Ecore- gion	Ecodistricts					Total Na- tive Prai- rie Vege- tation in ha	Non- Native Land
			Grami- noid	Lake	Treed	Wet- land		
1990 - 2000 Change			-556	-6	-3243	-151	-3957	3957
2000 - 2010 Change			-86	0	-2280	-40	-2406	2406
2010 - 2020 Change			-482	6	-552	-197	-1224	1224
1990	Central Parkland	Provost Plain	4811	5181	2522	7169	19683	129899
2000			4697	5181	2271	7133	19282	130300
2010			4686	5181	2161	7123	19150	130432
2020			4605	5183	2139	7105	19031	130551
1990 - 2000 Change			-114	0	-251	-36	-401	401
2000 - 2010 Change			-11	0	-111	-10	-132	132
2010 - 2020 Change			-81	2	-22	-18	-119	119
1990	Central Parkland	Red Deer Plain	1642	12545	33127	15848	63162	279595
2000			1243	12545	28266	15278	57332	285425
2010			1215	12544	25423	15128	54311	288446
2020			1215	12540	24647	14924	53326	289430
1990 - 2000 Change			-399	0	-4861	-570	-5830	5830
2000 - 2010 Change			-28	0	-2843	-150	-3021	3021
2010 - 2020 Change			0	-4	-776	-204	-984	984
1990	Central Parkland	Ribstone Plain	136176	15341	39724	46189	237430	91969
2000			134686	15329	38180	46085	234280	95118
2010			134063	15329	37697	46019	233108	96291
2020			132931	15344	37677	45935	231887	97512
1990 - 2000 Change			-1490	-12	-1544	-104	-3149	3149
2000 - 2010 Change			-623	0	-484	-66	-1172	1172

Year or Change Inter- val	Ecore- gion	Ecodistricts					Total Na- tive Prai- rie Vege- tation in ha	Non- Native Land
			Grami- noid	Lake	Treed	Wet- land		
2010 - 2020 Change			-1132	14	-19	-84	-1221	1221
1990	Central Parkland	Sedgewick Plain	8997	4220	11184	13949	38350	209179
2000			8759	4219	10131	13854	36963	210566
2010			8710	4219	9575	13833	36337	211192
2020			8504	4223	9514	13782	36023	211506
1990 - 2000 Change			-238	-1	-1053	-95	-1387	1387
2000 - 2010 Change			-49	0	-557	-21	-626	626
2010 - 2020 Change			-206	3	-61	-51	-314	314
1990	Central Parkland	Vermilion Upland	35078	32388	76820	65911	210197	743201
2000			34031	32391	68360	65704	200485	752914
2010			33853	32391	64973	65639	196855	756543
2020			33114	32536	64600	65373	195623	757775
1990 - 2000 Change			-1047	3	-8460	-207	-9712	9712
2000 - 2010 Change			-178	0	-3387	-65	-3630	3630
2010 - 2020 Change			-739	145	-373	-266	-1232	1232
1990	Central Parkland		261915	152071	393767	333683	1141436	422910
2000			254306	152032	344302	329212	1079852	429068
2010			251724	152031	316986	328202	1048943	432159
2020			245337	152259	312794	326364	1036754	433378
1990 - 2000 Change			-7609	-39	-49465	-4471	-61584	61584
2000 - 2010 Change			-2582	-1	-27316	-1010	-30909	30909
2010 - 2020			-6387	228	-4192	-1838	-12189	12189

Year or Change Inter- val	Ecore- gion	Ecodistricts					Total Na- tive Prai- rie Vege- tation in ha	Non- Native Land
			Grami- noid	Lake	Treed	Wet- land		
Change								
	Foothills	Black Dia- mond Up- land						
1990	Parkland		87715	3385	61317	39042	191459	163677
2000			81750	3385	55628	38845	179609	175527
2010			78482	3384	51047	38747	171659	183477
2020			73984	3378	49998	38580	165940	189195
1990 - 2000								
Change			-5966	0	-5688	-196	-11850	11850
2000 - 2010								
Change			-3268	-2	-4581	-99	-7950	7950
2010 - 2020								
Change			-4498	-6	-1049	-167	-5719	5719
	Foothills	Blairmore						
1990	Parkland	Foothills	11182	915	15929	5792	33817	3184
2000			11038	911	15701	5778	33429	3573
2010			11008	911	14771	5775	32466	4536
2020			10944	915	14688	5771	32318	4683
1990 - 2000								
Change			-143	-4	-228	-14	-388	388
2000 - 2010								
Change			-30	0	-930	-3	-963	963
2010 - 2020								
Change			-64	4	-83	-5	-148	148
	Foothills							
1990	Parkland		98897	4300	77245	44834	225276	166861
2000			92788	4296	71329	44624	213037	179099
2010			89490	4295	65818	44522	204124	188012
2020			84928	4293	64686	44351	198258	193878
1990 - 2000								
Change			-6109	-4	-5916	-210	-12238	12238
2000 - 2010								
Change			-3299	-2	-5511	-102	-8913	8913
2010 - 2020								
Change			-4561	-2	-1132	-171	-5866	5866

Year or Change Inter- val	Ecore- gion	Ecodistricts					Total Na- tive Prai- rie Vege- tation in ha	Non- Native Land
			Grami- noid	Lake	Treed	Wet- land		
	Parkland							
	Natural							439596
1990	Region		360812	156371	471012	378517	1366712	4
								446978
2000			347094	156329	415631	373836	1292889	6
								450960
2010			341214	156326	382804	372724	1253068	8
								452766
2020			330265	156552	377480	370715	1235012	3
1990 - 2000								
Change			-13718	-42	-55381	-4681	-73822	73822
2000 - 2010								
Change			-5880	-2	-32827	-1112	-39822	39822
2010 - 2020								
Change			-10949	226	-5324	-2009	-18055	18055

APPENDIX 3. BASE DATA FOR THE COUNTIES AND MUNICIPAL DISTRICTS INCLUDING CITIES

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
1990	Beaver County	1114	12971	14271	25540	53895	277586
2000	Beaver County	977	12959	12827	25467	52231	279251
2010	Beaver County	976	12959	11708	25455	51098	280383
2020	Beaver County	975	12987	11539	25434	50935	280546
1990 - 2000 Change	Beaver County	-137	-11	-1444	-72	-1665	1665
2000 - 2010 Change	Beaver County	-1	0	-1119	-12	-1133	1133
2010 - 2020 Change	Beaver County	0	28	-169	-21	-163	163
1990	Calgary City	5490	1847	5489	2524	15350	69343
2000	Calgary City	4388	1831	2219	2303	10741	73953
2010	Calgary City	3544	1827	1170	2196	8737	75956
2020	Calgary City	3047	1815	1115	2158	8134	76559
1990 - 2000 Change	Calgary City	-1102	-16	-3270	-222	-4610	4610
2000 - 2010 Change	Calgary City	-844	-3	-1049	-107	-2003	2003
2010 - 2020 Change	Calgary City	-498	-13	-54	-38	-603	603
1990	Camrose County	5956	15306	19524	17516	58302	294563
2000	Camrose County	5519	15315	16184	17386	54404	298461

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010	Camrose County	5419	15315	14153	17352	52239	300626
2020	Camrose County	4926	15311	13893	17264	51393	301472
1990 - 2000 Change	Camrose County	-437	9	-3340	-130	-3898	3898
2000 - 2010 Change	Camrose County	-100	0	-2031	-34	-2165	2165
2010 - 2020 Change	Camrose County	-493	-4	-260	-88	-845	845
1990	Cardston County	142946	7509	10169	15230	175854	166819
2000	Cardston County	140813	7553	9958	15123	173447	169226
2010	Cardston County	140442	7553	9416	15067	172478	170194
2020	Cardston County	139783	7506	9356	14904	171548	171125
1990 - 2000 Change	Cardston County	-2133	44	-210	-108	-2407	2407
2000 - 2010 Change	Cardston County	-370	0	-542	-56	-968	968
2010 - 2020 Change	Cardston County	-659	-47	-60	-164	-930	930
1990	County of Forty Mile No. 8	299025	20477	649	13554	333705	408718
2000	County of Forty Mile No. 8	296956	20492	607	13370	331424	410999
2010	County of Forty Mile No. 8	296085	20492	582	13196	330355	412069
2020	County of Forty Mile No. 8	295006	20476	569	12414	328465	413959
1990 - 2000 Change	County of Forty Mile No. 8	-2070	15	-42	-185	-2281	2281

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000 - 2010 Change	County of Forty Mile No. 8	-871	0	-25	-173	-1069	1069
2010 - 2020 Change	County of Forty Mile No. 8	-1079	-16	-13	-783	-1890	1890
1990	County of Minburn No. 27	1441	9324	20511	15069	46345	247526
2000	County of Minburn No. 27	1343	9323	18516	15014	44195	249676
2010	County of Minburn No. 27	1339	9323	17284	14995	42940	250931
2020	County of Minburn No. 27	1315	9343	17105	14942	42705	251167
1990 - 2000 Change	County of Minburn No. 27	-98	-2	-1994	-55	-2150	2150
2000 - 2010 Change	County of Minburn No. 27	-4	0	-1232	-19	-1255	1255
2010 - 2020 Change	County of Minburn No. 27	-24	21	-179	-53	-236	236
1990	County of Newell	340314	23265	1635	33308	398521	224186
2000	County of Newell	336318	23276	1503	32879	393976	228731
2010	County of Newell	334859	23276	1459	32552	392146	230561
2020	County of Newell	333594	23262	1433	32157	390445	232262
1990 - 2000 Change	County of Newell	-3996	11	-132	-429	-4546	4546
2000 - 2010 Change	County of Newell	-1459	-1	-43	-327	-1830	1830
2010 - 2020 Change	County of Newell	-1265	-14	-26	-395	-1700	1700

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
1990	County of Paintearth No. 18	75176	9797	13791	35532	134297	212525
2000	County of Paintearth No. 18	73532	9787	12361	35267	130947	215875
2010	County of Paintearth No. 18	73177	9787	12075	35208	130247	216575
2020	County of Paintearth No. 18	72001	9792	12054	35197	129044	217778
1990 - 2000 Change	County of Paintearth No. 18	-1644	-10	-1431	-265	-3350	3350
2000 - 2010 Change	County of Paintearth No. 18	-355	0	-286	-59	-700	700
2010 - 2020 Change	County of Paintearth No. 18	-1176	5	-20	-11	-1203	1203
1990	County of St. Paul No. 19	442	217	4682	942	6283	14505
2000	County of St. Paul No. 19	384	218	4450	935	5986	14802
2010	County of St. Paul No. 19	374	218	4236	932	5760	15028
2020	County of St. Paul No. 19	353	218	4166	925	5661	15126
1990 - 2000 Change	County of St. Paul No. 19	-58	0	-232	-7	-297	297
2000 - 2010 Change	County of St. Paul No. 19	-9	0	-214	-3	-226	226
2010 - 2020 Change	County of St. Paul No. 19	-21	0	-71	-7	-99	99
1990	County of Stettler No. 6	50147	18114	35424	52825	156509	277461

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000	County of Stettler No. 6	49152	18156	31752	51726	150787	283184
2010	County of Stettler No. 6	48874	18156	28735	51542	147307	286664
2020	County of Stettler No. 6	47701	18114	28407	51351	145573	288398
1990 - 2000							
Change	County of Stettler No. 6	-995	42	-3672	-1099	-5723	5723
2000 - 2010							
Change	County of Stettler No. 6	-279	0	-3018	-184	-3480	3480
2010 - 2020							
Change	County of Stettler No. 6	-1172	-43	-328	-192	-1734	1734
1990	County of Two Hills No. 21	576	4277	6957	6264	18073	97486
2000	County of Two Hills No. 21	507	4275	6387	6167	17336	98222
2010	County of Two Hills No. 21	507	4275	5885	6154	16821	98737
2020	County of Two Hills No. 21	498	4290	5722	6127	16637	98921
1990 - 2000							
Change	County of Two Hills No. 21	-68	-2	-570	-96	-736	736
2000 - 2010							
Change	County of Two Hills No. 21	-1	0	-502	-13	-515	515
2010 - 2020							
Change	County of Two Hills No. 21	-8	15	-163	-28	-184	184
1990	County of Vermilion River	12763	18442	30280	33524	95009	425526
2000	County of Vermilion River	12066	18433	24619	33439	88558	431978
2010	County of Vermilion River	12012	18433	22973	33409	86827	433709
2020	County of Vermilion River	11659	18533	22743	33252	86187	434349

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
1990 - 2000 Change	County of Vermilion River	-697	-9	-5661	-85	-6452	6452
2000 - 2010 Change	County of Vermilion River	-54	0	-1647	-30	-1731	1731
2010 - 2020 Change	County of Vermilion River	-354	100	-230	-157	-640	640
1990	County of Warner No. 5	135949	7133	411	9215	152707	309915
2000	County of Warner No. 5	134014	7130	380	9039	150562	312059
2010	County of Warner No. 5	133439	7130	275	8804	149647	312974
2020	County of Warner No. 5	132409	7131	258	8133	147932	314690
1990 - 2000 Change	County of Warner No. 5	-1935	-3	-32	-176	-2145	2145
2000 - 2010 Change	County of Warner No. 5	-575	0	-105	-235	-915	915
2010 - 2020 Change	County of Warner No. 5	-1029	1	-17	-671	-1716	1716
1990	County of Wetaskiwin No. 10	715	4182	14061	6718	25676	145253
2000	County of Wetaskiwin No. 10	550	4172	11577	6397	22695	148234
2010	County of Wetaskiwin No. 10	506	4172	10681	6367	21725	149204
2020	County of Wetaskiwin No. 10	489	4182	10439	6297	21407	149521
1990 - 2000 Change	County of Wetaskiwin No.	-165	-10	-2484	-321	-2981	2981

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
Change	10						
2000 - 2010	County of Wetaskiwin No.						
Change	10	-44	0	-896	-30	-970	970
2010 - 2020	County of Wetaskiwin No.						
Change	10	-17	10	-242	-69	-317	317
1990	Cypress County	758653	11973	3394	25010	799030	265931
2000	Cypress County	751569	12016	3275	24667	791527	273434
2010	Cypress County	747399	12016	3225	24487	787127	277834
2020	Cypress County	744972	11970	3180	24264	784386	280575
1990 - 2000							
Change	Cypress County	-7084	44	-119	-343	-7503	7503
2000 - 2010							
Change	Cypress County	-4170	0	-50	-180	-4401	4401
2010 - 2020							
Change	Cypress County	-2427	-47	-44	-223	-2741	2741
1990	Drumheller City	5443	312	404	591	6750	4370
2000	Drumheller City	5126	317	316	530	6288	4832
2010	Drumheller City	4794	317	311	515	5937	5182
2020	Drumheller City	4139	311	308	508	5266	5854
1990 - 2000							
Change	Drumheller City	-317	5	-89	-61	-462	462
2000 - 2010							
Change	Drumheller City	-331	0	-5	-15	-350	350
2010 - 2020	Drumheller City	-656	-6	-3	-7	-672	672

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
Change							
1990	Edmonton City	288	1423	8814	1576	12100	57786
2000	Edmonton City	242	1411	4485	1182	7321	62565
2010	Edmonton City	172	1411	3063	1137	5783	64103
2020	Edmonton City	169	1421	3208	1111	5908	63978
1990 - 2000							
Change	Edmonton City	-45	-12	-4328	-394	-4779	4779
2000 - 2010							
Change	Edmonton City	-70	0	-1422	-45	-1538	1538
2010 - 2020							
Change	Edmonton City	-3	10	144	-26	125	-125
1990	Flagstaff County	11188	7211	17251	22120	57770	361947
2000	Flagstaff County	10862	7214	15656	21972	55703	364015
2010	Flagstaff County	10789	7214	14550	21942	54495	365222
2020	Flagstaff County	10469	7217	14398	21893	53977	365741
1990 - 2000							
Change	Flagstaff County	-326	3	-1595	-149	-2067	2067
2000 - 2010							
Change	Flagstaff County	-73	0	-1106	-29	-1208	1208
2010 - 2020							
Change	Flagstaff County	-321	3	-152	-49	-518	518
1990	Fort Saskatchewan City	68	73	438	151	730	3830
2000	Fort Saskatchewan City	55	88	285	143	571	3989

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010	Fort Saskatchewan City	33	88	167	139	427	4133
2020	Fort Saskatchewan City	34	73	157	137	400	4160
1990 - 2000 Change	Fort Saskatchewan City	-12	15	-153	-8	-159	159
2000 - 2010 Change	Fort Saskatchewan City	-22	0	-119	-4	-144	144
2010 - 2020 Change	Fort Saskatchewan City	0	-15	-10	-2	-27	27
1990	I.D. No.4 Waterton	1354	276	1350	768	3749	213
2000	I.D. No.4 Waterton	1355	275	1327	770	3727	234
2010	I.D. No.4 Waterton	1354	275	1130	769	3529	433
2020	I.D. No.4 Waterton	1349	276	1100	767	3492	469
1990 - 2000 Change	I.D. No.4 Waterton	1	-1	-23	1	-22	22
2000 - 2010 Change	I.D. No.4 Waterton	-2	0	-196	0	-198	198
2010 - 2020 Change	I.D. No.4 Waterton	-5	1	-30	-3	-37	37
1990	Kananaskis I.D.	6	0	45	12	63	2
2000	Kananaskis I.D.	6	0	43	13	62	2
2010	Kananaskis I.D.	6	0	43	13	62	2
2020	Kananaskis I.D.	6	0	45	12	62	2
1990 - 2000 Change	Kananaskis I.D.	1	0	-2	1	0	0

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000 - 2010 Change	Kananaskis I.D.	0	0	0	0	0	0
2010 - 2020 Change	Kananaskis I.D.	-1	0	2	-1	0	0
1990	Kneehill County	23621	1250	4741	13228	42839	298781
2000	Kneehill County	22603	1230	4390	12932	41155	300465
2010	Kneehill County	21930	1230	4207	12833	40201	301420
2020	Kneehill County	19806	1250	4172	12496	37724	303896
1990 - 2000 Change	Kneehill County	-1018	-20	-350	-296	-1684	1684
2000 - 2010 Change	Kneehill County	-673	0	-183	-99	-955	955
2010 - 2020 Change	Kneehill County	-2124	20	-35	-337	-2476	2476
1990	Lacombe County	2406	11081	22389	11853	47730	171508
2000	Lacombe County	2026	11036	19746	11709	44516	174722
2010	Lacombe County	1999	11036	18002	11676	42713	176525
2020	Lacombe County	1930	11081	17442	11554	42007	177231
1990 - 2000 Change	Lacombe County	-380	-46	-2643	-145	-3214	3214
2000 - 2010 Change	Lacombe County	-27	0	-1744	-33	-1804	1804
2010 - 2020 Change	Lacombe County	-69	45	-561	-122	-706	706

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
1990	Lamont County	556	4464	10028	11050	26099	173356
2000	Lamont County	476	4471	9385	10754	25086	174369
2010	Lamont County	475	4471	8701	10675	24322	175133
2020	Lamont County	475	4469	8392	10639	23976	175479
1990 - 2000 Change	Lamont County	-80	7	-644	-296	-1013	1013
2000 - 2010 Change	Lamont County	-1	0	-684	-79	-764	764
2010 - 2020 Change	Lamont County	0	-2	-309	-35	-346	346
1990	Leduc County	464	1723	14584	4155	20925	138197
2000	Leduc County	372	1723	12143	3924	18162	140960
2010	Leduc County	350	1723	11051	3887	17011	142111
2020	Leduc County	350	1722	10866	3837	16775	142347
1990 - 2000 Change	Leduc County	-91	1	-2441	-232	-2763	2763
2000 - 2010 Change	Leduc County	-22	0	-1092	-37	-1151	1151
2010 - 2020 Change	Leduc County	0	-1	-185	-50	-236	236
1990	Lethbridge County	36162	5967	734	5516	48379	254515
2000	Lethbridge County	34119	5948	626	5398	46090	256803
2010	Lethbridge County	32860	5948	608	5236	44652	258241

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2020	Lethbridge County	32015	5948	581	4891	43435	259458
1990 - 2000 Change	Lethbridge County	-2043	-19	-108	-118	-2289	2289
2000 - 2010 Change	Lethbridge County	-1259	0	-17	-162	-1438	1438
2010 - 2020 Change	Lethbridge County	-845	1	-28	-345	-1217	1217
1990	M.D. of Acadia No. 34	34590	1272	141	2612	38616	72359
2000	M.D. of Acadia No. 34	34372	1263	142	2598	38374	72601
2010	M.D. of Acadia No. 34	34279	1263	136	2572	38249	72726
2020	M.D. of Acadia No. 34	34118	1272	134	2441	37964	73011
1990 - 2000 Change	M.D. of Acadia No. 34	-218	-10	1	-15	-242	242
2000 - 2010 Change	M.D. of Acadia No. 34	-93	0	-6	-26	-125	125
2010 - 2020 Change	M.D. of Acadia No. 34	-161	9	-2	-131	-285	285
1990	M.D. of Bighorn No. 8	437	714	500	279	1930	2027
2000	M.D. of Bighorn No. 8	404	715	471	273	1863	2095
2010	M.D. of Bighorn No. 8	393	715	446	271	1826	2132
2020	M.D. of Bighorn No. 8	394	714	441	270	1819	2139
1990 - 2000 Change	M.D. of Bighorn No. 8	-33	1	-29	-6	-67	67
2000 - 2010	M.D. of Bighorn No. 8	-11	0	-25	-2	-37	37

Year or Change Interval	Municipal District, County or Special Area					Total Na- tive Prairie Vegetation	Non- Native Land
		Graminoid	Lake	Treed	Wetland		
Change							
2010 - 2020							
Change	M.D. of Bighorn No. 8	1	-1	-5	-2	-7	7
1990	M.D. of Foothills No. 31	38369	3098	21502	19170	82139	225182
2000	M.D. of Foothills No. 31	37254	3075	19830	19133	79292	228029
2010	M.D. of Foothills No. 31	37073	3075	18118	19070	77335	229985
2020	M.D. of Foothills No. 31	36413	3082	17753	18923	76171	231150
1990 - 2000							
Change	M.D. of Foothills No. 31	-1115	-24	-1671	-36	-2847	2847
2000 - 2010							
Change	M.D. of Foothills No. 31	-181	0	-1712	-64	-1957	1957
2010 - 2020							
Change	M.D. of Foothills No. 31	-660	8	-365	-146	-1164	1164
1990	M.D. of Pincher Creek No. 9	56480	4010	11268	8701	80459	82247
2000	M.D. of Pincher Creek No. 9	54087	3982	11006	8652	77726	84980
2010	M.D. of Pincher Creek No. 9	53754	3981	10432	8643	76811	85896
2020	M.D. of Pincher Creek No. 9	53174	4009	10343	8637	76164	86542
1990 - 2000							
Change	M.D. of Pincher Creek No. 9	-2393	-28	-263	-49	-2733	2733
2000 - 2010							
Change	M.D. of Pincher Creek No. 9	-333	0	-574	-9	-916	916
2010 - 2020							
Change	M.D. of Pincher Creek No. 9	-580	28	-89	-6	-647	647
1990	M.D. of Provost No. 52	73696	12327	29039	32432	147494	227399

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000	M.D. of Provost No. 52	72824	12328	27405	32318	144875	230018
2010	M.D. of Provost No. 52	72479	12328	26711	32271	143788	231104
2020	M.D. of Provost No. 52	71766	12329	26664	32150	142909	231983
1990 - 2000							
Change	M.D. of Provost No. 52	-872	0	-1634	-113	-2619	2619
2000 - 2010							
Change	M.D. of Provost No. 52	-344	0	-694	-48	-1086	1086
2010 - 2020							
Change	M.D. of Provost No. 52	-714	2	-47	-120	-879	879
1990	M.D. of Ranchland No. 66	12823	356	4845	6719	24743	1741
2000	M.D. of Ranchland No. 66	12738	360	4849	6702	24648	1836
2010	M.D. of Ranchland No. 66	12722	360	4451	6701	24234	2250
2020	M.D. of Ranchland No. 66	12752	356	4347	6693	24148	2336
1990 - 2000							
Change	M.D. of Ranchland No. 66	-85	4	4	-16	-94	94
2000 - 2010							
Change	M.D. of Ranchland No. 66	-16	0	-398	-1	-415	415
2010 - 2020							
Change	M.D. of Ranchland No. 66	30	-4	-104	-8	-86	86
1990	M.D. of Taber	123944	7540	475	8853	140812	288076
2000	M.D. of Taber	120751	7531	424	8738	137444	291444
2010	M.D. of Taber	119718	7531	419	8618	136285	292603
2020	M.D. of Taber	118994	7538	415	8176	135123	293765

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
1990 - 2000 Change	M.D. of Taber	-3193	-8	-51	-116	-3368	3368
2000 - 2010 Change	M.D. of Taber	-1034	0	-5	-120	-1159	1159
2010 - 2020 Change	M.D. of Taber	-723	7	-4	-442	-1162	1162
1990	M.D. of Wainwright No. 61	42972	10568	26219	31825	111584	317472
2000	M.D. of Wainwright No. 61	41996	10565	23863	31695	108118	320938
2010	M.D. of Wainwright No. 61	41662	10565	23335	31634	107196	321861
2020	M.D. of Wainwright No. 61	40974	10609	23295	31547	106424	322632
1990 - 2000 Change	M.D. of Wainwright No. 61	-977	-3	-2356	-130	-3466	3466
2000 - 2010 Change	M.D. of Wainwright No. 61	-334	0	-528	-61	-923	923
2010 - 2020 Change	M.D. of Wainwright No. 61	-688	44	-40	-87	-771	771
1990	M.D. of Willow Creek No. 26	150531	4847	8552	13598	177528	249089
2000	M.D. of Willow Creek No. 26	146571	4810	8497	13450	173329	253289
2010	M.D. of Willow Creek No. 26	145765	4809	8324	13411	172310	254307
2020	M.D. of Willow Creek No. 26	144594	4843	8290	13315	171043	255574
1990 - 2000 Change	M.D. of Willow Creek No.	-3960	-37	-54	-147	-4199	4199

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
Change	26						
2000 - 2010	M.D. of Willow Creek No.						
Change	26	-806	0	-174	-39	-1019	1019
2010 - 2020	M.D. of Willow Creek No.						
Change	26	-1171	33	-33	-96	-1267	1267
1990	Mountain View County	8903	1331	10681	8307	29223	227727
2000	Mountain View County	7941	1332	9991	8210	27474	229475
2010	Mountain View County	7108	1332	9414	8145	25998	230951
2020	Mountain View County	6372	1331	9246	7926	24875	232074
1990 - 2000							
Change	Mountain View County	-961	1	-690	-97	-1748	1748
2000 - 2010							
Change	Mountain View County	-833	0	-577	-66	-1476	1476
2010 - 2020							
Change	Mountain View County	-736	-1	-167	-218	-1123	1123
1990	Parkland County	485	1262	11597	4155	17499	54867
2000	Parkland County	355	1262	9117	3933	14667	57700
2010	Parkland County	332	1262	7598	3873	13065	59302
2020	Parkland County	332	1263	7458	3830	12882	59484
1990 - 2000							
Change	Parkland County	-130	0	-2480	-223	-2833	2833
2000 - 2010							
Change	Parkland County	-23	0	-1519	-60	-1602	1602
2010 - 2020	Parkland County	0	1	-140	-43	-183	183

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
Change							
1990	Ponoka County	465	4769	14732	7713	27678	120629
2000	Ponoka County	352	4780	11768	7546	24446	123861
2010	Ponoka County	348	4779	10712	7519	23359	124949
2020	Ponoka County	349	4769	10174	7442	22734	125574
1990 - 2000							
Change	Ponoka County	-113	11	-2964	-167	-3232	3232
2000 - 2010							
Change	Ponoka County	-4	0	-1056	-28	-1087	1087
2010 - 2020							
Change	Ponoka County	1	-11	-538	-77	-625	625
1990	Red Deer County	9477	7016	37209	19237	72940	274910
2000	Red Deer County	8752	7018	34370	18931	69071	278779
2010	Red Deer County	8518	7017	31208	18828	65572	282278
2020	Red Deer County	7883	7013	30892	18716	64504	283346
1990 - 2000							
Change	Red Deer County	-725	2	-2838	-307	-3869	3869
2000 - 2010							
Change	Red Deer County	-234	0	-3162	-103	-3499	3499
2010 - 2020							
Change	Red Deer County	-635	-5	-316	-112	-1067	1067
1990	Rocky View County	44778	6049	18981	25406	95214	307927
2000	Rocky View County	39916	6032	16432	24830	87210	315931

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010	Rocky View County	37421	6029	15175	24649	83273	319868
2020	Rocky View County	32886	6030	14879	24426	78221	324920
1990 - 2000 Change	Rocky View County	-4863	-17	-2549	-576	-8005	8005
2000 - 2010 Change	Rocky View County	-2495	-3	-1257	-182	-3936	3936
2010 - 2020 Change	Rocky View County	-4535	1	-296	-223	-5052	5052
1990	Special Areas 2 (Hanna area)	661764	20314	2525	52891	737494	238634
2000	Special Areas 2 (Hanna area)	655262	20343	2472	52203	730280	245848
2010	Special Areas 2 (Hanna area)	651317	20343	2432	51839	725931	250197
2020	Special Areas 2 (Hanna area)	649965	20300	2400	51511	724177	251952
1990 - 2000 Change	Special Areas 2 (Hanna area)	-6502	29	-53	-688	-7214	7214
2000 - 2010 Change	Special Areas 2 (Hanna area)	-3945	0	-40	-364	-4349	4349
2010 - 2020 Change	Special Areas 2 (Hanna area)	-1352	-43	-32	-327	-1754	1754
1990	Special Areas 3 (Oyen area)	348655	10725	634	32969	392983	289476
2000	Special Areas 3 (Oyen area)	346508	10707	628	32745	390587	291872
2010	Special Areas 3 (Oyen area)	345716	10707	613	32561	389597	292862

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2020	Special Areas 3 (Oyen area)	344967	10725	603	32091	388385	294074
1990 - 2000 Change	Special Areas 3 (Oyen area)	-2147	-19	-6	-224	-2395	2395
2000 - 2010 Change	Special Areas 3 (Oyen area)	-792	0	-15	-184	-990	990
2010 - 2020 Change	Special Areas 3 (Oyen area)	-750	18	-10	-471	-1212	1212
1990	Special Areas 4 (Consort area)	209587	15237	12302	38430	275556	181671
2000	Special Areas 4 (Consort area)	207421	15237	12142	38259	273059	184168
2010	Special Areas 4 (Consort area)	206777	15237	12063	38087	272163	185064
2020	Special Areas 4 (Consort area)	205805	15238	12052	37865	270960	186267
1990 - 2000 Change	Special Areas 4 (Consort area)	-2166	0	-160	-171	-2497	2497
2000 - 2010 Change	Special Areas 4 (Consort area)	-644	0	-79	-172	-896	896
2010 - 2020 Change	Special Areas 4 (Consort area)	-971	0	-10	-222	-1203	1203
1990	St. Albert City	57	68	427	237	788	4180
2000	St. Albert City	49	70	239	214	572	4396
2010	St. Albert City	35	70	138	210	453	4515
2020	St. Albert City	35	68	178	203	483	4485

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
1990 - 2000 Change	St. Albert City	-8	3	-188	-23	-216	216
2000 - 2010 Change	St. Albert City	-14	0	-101	-4	-119	119
2010 - 2020 Change	St. Albert City	0	-3	40	-7	30	-30
1990	Starland County	48511	3716	6006	14373	72606	189108
2000	Starland County	47055	3717	5880	14111	70763	190951
2010	Starland County	46215	3717	5833	13930	69695	192019
2020	Starland County	44542	3716	5818	13150	67226	194488
1990 - 2000 Change	Starland County	-1456	1	-125	-263	-1842	1842
2000 - 2010 Change	Starland County	-840	0	-48	-181	-1068	1068
2010 - 2020 Change	Starland County	-1674	-1	-15	-780	-2469	2469
1990	Strathcona County	267	516	8082	1800	10665	49205
2000	Strathcona County	202	522	5915	1587	8226	51644
2010	Strathcona County	181	522	4694	1559	6955	52915
2020	Strathcona County	181	516	4687	1544	6928	52942
1990 - 2000 Change	Strathcona County	-65	6	-2167	-213	-2439	2439
2000 - 2010 Change	Strathcona County	-21	0	-1221	-29	-1271	1271

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010 - 2020 Change	Strathcona County	0	-6	-6	-15	-27	27
1990	Sturgeon County	425	2617	8059	4071	15172	144692
2000	Sturgeon County	237	2599	7046	3906	13789	146074
2010	Sturgeon County	230	2599	6259	3863	12951	146912
2020	Sturgeon County	229	2617	6089	3823	12757	147106
1990 - 2000 Change	Sturgeon County	-187	-18	-1012	-165	-1383	1383
2000 - 2010 Change	Sturgeon County	-7	0	-788	-43	-838	838
2010 - 2020 Change	Sturgeon County	-2	18	-170	-40	-194	194
1990	Vulcan County	123974	12326	446	8712	145459	409671
2000	Vulcan County	121140	12319	387	8602	142448	412682
2010	Vulcan County	120437	12319	379	8514	141648	413482
2020	Vulcan County	119581	12326	382	8245	140534	414595
1990 - 2000 Change	Vulcan County	-2834	-8	-59	-110	-3011	3011
2000 - 2010 Change	Vulcan County	-703	0	-8	-88	-800	800
2010 - 2020 Change	Vulcan County	-856	8	4	-269	-1114	1114
1990	Westlock County	23	42	1667	439	2171	29539
2000	Westlock County	18	42	1505	414	1978	29732

Year or Change Interval	Municipal District, County or Special Area					Total Na-tive Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010	Westlock County	17	42	1424	407	1891	29819
2020	Westlock County	18	42	1294	398	1751	29959
1990 - 2000 Change	Westlock County	-5	1	-163	-25	-193	193
2000 - 2010 Change	Westlock County	0	0	-80	-7	-87	87
2010 - 2020 Change	Westlock County	0	-1	-131	-9	-140	140
1990	Wheatland County	45888	8602	2527	20646	77663	390516
2000	Wheatland County	44321	8586	2265	20134	75306	392874
2010	Wheatland County	43638	8586	2198	19981	74403	393776
2020	Wheatland County	42131	8604	2176	19437	72347	395832
1990 - 2000 Change	Wheatland County	-1567	-16	-262	-512	-2358	2358
2000 - 2010 Change	Wheatland County	-683	0	-66	-153	-902	902
2010 - 2020 Change	Wheatland County	-1507	18	-22	-544	-2056	2056

APPENDIX 4. DATA FOR GRASSLAND AND PARKLAND CITIES AND TOWNS.

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
1990	Airdrie	59.44	62.23	167.97	161.45	451.09	8,146.42
2000		53.90	61.19	50.73	148.38	314.21	8,283.30
2010		52.10	60.38	31.74	140.10	284.33	8,313.18
2020		52.17	61.24	32.01	139.85	285.27	8,312.24
1990 – 2000 Change		-5.54	-1.04	-117.24	-13.06	-136.89	136.89
2000 – 2010 Change		-1.80	-0.81	-18.99	-8.28	-29.88	-29.88
2010 – 2020 Change		0.07	0.86	0.26	-0.26	0.94	-0.94
1990	Beaumont	8.34	19.57	91.29	23.85	143.05	2,283.00
2000		6.76	20.11	57.02	23.27	107.15	2,318.89
2010		5.59	20.11	27.74	23.00	76.44	2,349.61
2020		5.74	19.57	44.38	22.41	92.09	2,333.96
1990 - 2000 Change		-1.58	0.54	-34.28	-0.58	-35.90	35.90
2000 - 2010 Change		-1.17	0.00	-29.27	-0.27	-30.71	30.71
2010 - 2020 Change		0.15	-0.54	16.63	-0.59	15.65	-15.65
1990	Brooks	191.66	43.35	42.88	140.87	418.76	1,501.13
2000		176.91	42.81	3.33	129.91	352.96	1,566.93
2010		164.44	42.81	2.61	125.68	335.54	1,584.35
2020		155.57	42.63	1.80	125.45	325.45	1,594.44
1990 - 2000 Change		-14.75	-0.54	-39.55	-10.96	-65.80	65.80
2000 - 2010 Change		-12.47	0.00	-0.72	-4.23	-17.42	17.42

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010 - 2020 Change		-8.87	-0.18	-0.81	-0.24	-10.09	10.09
1990	Calgary	5,490.07	1,846.85	5,489.03	2,524.42	15,350.37	69,343.38
2000		4,388.35	1,830.58	2,218.79	2,302.81	10,740.53	73,953.22
2010		3,544.32	1,827.43	1,169.59	2,196.02	8,737.36	75,956.39
2020		3,046.69	1,814.52	1,115.22	2,157.96	8,134.40	76,559.35
1990 - 2000 Change		-1,101.72	-16.27	-3,270.23	-221.61	-4,609.84	4,609.84
2000 - 2010 Change		-844.03	-3.15	-1,049.20	-106.79	-2,003.17	2,003.17
2010 - 2020 Change		-497.63	-12.90	-54.37	-38.06	-602.96	602.96
1990	Camrose	23.30	106.24	302.18	98.79	530.51	3,881.38
2000		17.40	105.31	162.74	88.44	373.90	4,038.00
2010		17.22	105.31	96.20	87.27	306.00	4,105.89
2020		17.47	105.52	112.11	86.10	321.20	4,090.69
1990 - 2000 Change		-5.90	-0.93	-139.43	-10.35	-156.61	156.61
2000 - 2010 Change		-0.18	0.00	-66.54	-1.17	-67.89	67.89
2010 - 2020 Change		0.25	0.21	15.90	-1.17	15.20	-15.20
1990	Chestermere	47.52	336.06	23.31	228.91	635.81	3,074.50
2000		44.88	336.64	2.16	219.85	603.53	3,106.78
2010		38.49	336.46	0.63	204.81	580.38	3,129.92
2020		27.45	335.79	0.45	199.32	563.01	3,147.29
1990 - 2000 Change		-2.64	0.57	-21.15	-9.07	-32.28	32.28
2000 - 2010 Change		-6.40	-0.18	-1.53	-15.04	-23.14	23.14

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010 - 2020 Change		-11.04	-0.66	-0.18	-5.49	-17.37	17.37
1990	Edmonton	287.85	1,422.55	8,813.65	1,575.73	12,099.79	57,786.23
2000		242.41	1,410.84	4,485.33	1,182.21	7,320.78	62,565.24
2010		172.01	1,410.75	3,063.50	1,136.88	5,783.14	64,102.88
2020		168.92	1,420.93	3,207.81	1,110.71	5,908.36	63,977.66
1990 - 2000 Change		-45.45	-11.71	-4,328.33	-393.52	-4,779.01	4,779.01
2000 - 2010 Change		-70.40	-0.09	-1,421.83	-45.33	-1,537.64	1,537.64
2010 - 2020 Change		-3.09	10.18	144.31	-26.17	125.23	-125.23
1990	Fort Saskatchewan	67.62	73.28	437.89	150.92	729.71	3,830.44
2000		55.32	88.03	285.22	142.52	571.09	3,989.06
2010		33.27	88.03	166.56	138.92	426.78	4,133.37
2020		33.60	73.19	156.51	136.52	399.83	4,160.32
1990 - 2000 Change		-12.30	14.75	-152.67	-8.41	-158.63	158.63
2000 - 2010 Change		-22.05	0.00	-118.66	-3.60	-144.31	144.31
2010 - 2020 Change		0.33	-14.84	-10.05	-2.39	-26.95	26.95
1990	Lacombe	12.84	135.88	194.39	151.21	494.31	1,680.36
2000		6.75	136.60	77.33	113.34	334.02	1,840.66
2010		6.39	136.60	51.93	110.33	305.25	1,869.43
2020		6.41	135.43	54.33	109.02	305.19	1,869.48
1990 - 2000 Change		-6.09	0.72	-117.06	-37.87	-160.29	160.29
2000 - 2010 Change		-0.36	0.00	-25.40	-3.01	-28.77	28.77

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010 - 2020 Change		0.02	-1.17	2.40	-1.31	-0.06	0.06
1990	Leduc	22.42	113.04	258.85	69.92	464.23	3,838.53
2000		20.19	113.58	137.58	58.87	330.22	3,972.54
2010		9.84	113.58	85.43	53.56	262.40	4,040.36
2020		9.91	113.04	95.43	51.02	269.40	4,033.36
1990 - 2000 Change		-2.24	0.54	-121.26	-11.05	-134.01	134.01
2000 - 2010 Change		-10.35	0.00	-52.15	-5.31	-67.81	67.81
2010 - 2020 Change		0.08	-0.54	10.00	-2.54	7.00	-7.00
1990	Lethbridge	3,030.55	173.08	183.63	328.09	3,715.35	8,670.93
2000		2,670.46	171.55	119.37	309.73	3,271.10	9,115.18
2010		2,383.30	171.37	113.43	282.66	2,950.76	9,435.52
2020		2,288.67	162.99	111.28	275.60	2,838.54	9,547.74
1990 - 2000 Change		-360.09	-1.54	-64.26	-18.35	-444.24	444.24
2000 - 2010 Change		-287.15	-0.18	-5.94	-27.07	-320.35	320.35
2010 - 2020 Change		-94.63	-8.38	-2.14	-7.06	-112.21	112.21
1990	Lloyminster	33.26	23.22	176.29	138.35	371.12	3,623.14
2000		28.26	21.60	89.39	101.36	240.61	3,753.66
2010		23.06	21.60	28.47	94.52	167.65	3,826.61
2020		15.47	21.51	32.75	92.84	162.57	3,831.69
1990 - 2000 Change		-5.01	-1.62	-86.90	-36.99	-130.51	130.51
2000 - 2010 Change		-5.19	0.00	-60.92	-6.84	-72.95	72.95

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010 - 2020 Change		-7.59	-0.09	4.28	-1.68	-5.08	5.08
1990	Medicine Hat	4,715.87	480.30	163.33	512.25	5,871.75	6,111.84
2000		4,310.86	465.12	109.18	390.40	5,275.56	6,708.04
2010		3,740.98	465.12	95.00	370.24	4,671.34	7,312.25
2020		3,544.24	479.54	97.34	371.66	4,492.76	7,490.83
1990 - 2000 Change		-405.01	-15.18	-54.15	-121.85	-596.20	596.20
2000 - 2010 Change		-569.88	0.00	-14.18	-20.16	-604.22	604.22
2010 - 2020 Change		-196.74	14.42	2.33	1.41	-178.58	178.58
1990	Red Deer	63.09	232.77	1,315.12	384.62	1,995.59	8,698.15
2000		54.04	230.41	911.51	340.91	1,536.87	9,156.88
2010		46.93	230.41	663.82	332.36	1,273.52	9,420.23
2020		45.60	231.42	686.31	327.96	1,291.28	9,402.46
1990 - 2000 Change		-9.05	-2.36	-403.61	-43.71	-458.72	458.72
2000 - 2010 Change		-7.11	0.00	-247.69	-8.55	-263.35	263.35
2010 - 2020 Change		-1.33	1.01	22.48	-4.40	17.76	-17.76
1990	Spruce Grove	19.35	17.63	483.61	102.48	623.07	3,051.79
2000		16.91	18.00	337.02	99.16	471.09	3,203.77
2010		6.57	18.00	237.54	83.77	345.87	3,328.99
2020		6.13	17.63	224.02	80.25	328.03	3,346.83
1990 - 2000 Change		-2.44	0.37	-146.59	-3.32	-151.99	151.99
2000 - 2010 Change		-10.35	0.00	-99.48	-15.39	-125.22	125.22

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2010 - 2020 Change		-0.44	-0.37	-13.52	-3.52	-17.84	17.84
1990	St. Albert	56.80	67.78	427.16	236.72	788.46	4,179.81
2000		49.18	70.46	238.87	213.53	572.04	4,396.23
2010		35.14	70.46	137.68	209.87	453.16	4,515.11
2020		34.96	67.78	177.80	202.62	483.15	4,485.12
1990 - 2000 Change		-7.62	2.69	-188.29	-23.19	-216.42	216.42
2000 - 2010 Change		-14.04	0.00	-101.19	-3.65	-118.88	118.88
2010 - 2020 Change		-0.19	-2.69	40.12	-7.26	29.99	-29.99
1990	Wetaskiwin	15.45	45.40	167.35	50.53	278.74	1,701.28
2000		11.95	44.60	49.49	43.96	150.00	1,830.01
2010		11.32	44.60	40.20	43.78	139.90	1,840.11
2020		10.90	45.13	45.57	42.75	144.34	1,835.67
1990 - 2000 Change		-3.50	-0.80	-117.86	-6.57	-128.73	128.73
2000 - 2010 Change		-0.63	0.00	-9.29	-0.18	-10.10	10.10
2010-2020 Change		-0.42	0.53	5.37	-1.04	4.44	-4.44

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
1990	Blackfalds	15.79	55.21	236.66	118.50	426.16	1,264.01

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		12.59	54.89	169.15	111.08	347.71	1,342.46
2010		8.98	54.89	104.22	107.93	276.02	1,414.15
2020		8.62	55.03	98.33	102.89	264.87	1,425.30
1990-2000 Change		-3.20	-0.31	-67.51	-7.43	-78.45	78.45
2000-2010 Change		-3.62	0.00	-64.93	-3.14	-71.69	71.69
2010-2020 Change		-0.36	0.13	-5.89	-5.04	-11.15	11.15
1990	Carstairs	19.59	1.53	38.19	15.00	74.30	1,041.72
2000		16.72	1.62	10.01	14.67	43.02	1,073.01
2010		14.02	1.62	5.24	14.49	35.37	1,080.66
2020		6.94	1.53	8.89	14.10	31.46	1,084.56
1990-2000 Change		-2.87	0.09	-28.17	-0.33	-31.29	31.29
2000-2010 Change		-2.70	0.00	-4.77	-0.18	-7.65	7.65
2010-2020 Change		-7.08	-0.09	3.65	-0.39	-3.90	3.90
1990	Claresholm	41.41	8.73	0.36	20.74	71.24	956.28
2000		32.58	8.64	0.09	20.41	61.72	965.80
2010		26.28	8.64	0.09	20.41	55.42	972.10
2020		23.05	8.73	0.09	20.45	52.32	975.20
1990 - 2000 Change		-8.83	-0.09	-0.27	-0.33	-9.52	9.52
2000 - 2010 Change		-6.30	0.00	0.00	0.00	-6.30	6.30
2010 - 2020 Change		-3.23	0.09	0.00	0.04	-3.10	3.10
1990	Coaldale	36.64	24.80	10.35	32.05	103.84	1,306.19

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		34.64	24.59	2.46	29.92	91.61	1,318.42
2010		18.62	24.59	0.72	29.38	73.31	1,336.72
2020		16.95	24.80	0.45	29.08	71.28	1,338.75
1990 - 2000 Change		-2.00	-0.21	-7.89	-2.13	-12.22	12.22
2000 - 2010 Change		-16.02	0.00	-1.74	-0.54	-18.30	18.30
2010 - 2020 Change		-1.66	0.21	-0.27	-0.30	-2.03	2.03
1990	Cochrane	982.83	71.20	383.28	130.72	1,568.03	1,605.01
2000		834.50	68.83	216.84	101.80	1,221.97	1,951.07
2010		622.81	68.74	131.97	91.36	914.89	2,258.15
2020		476.53	71.11	130.66	91.93	770.22	2,402.82
1990 - 2000 Change		-148.33	-2.37	-166.44	-28.92	-346.06	346.06
2000 - 2010 Change		-211.69	-0.09	-84.87	-10.44	-307.09	307.09
2010 - 2020 Change		-146.28	2.37	-1.31	0.57	-144.66	144.66
1990	Crossfield	2.85	25.29	18.03	20.22	66.39	1,117.85
2000		2.66	25.53	3.79	16.34	48.32	1,135.91
2010		2.48	25.53	2.08	16.16	46.25	1,137.98
2020		2.31	25.29	2.19	14.99	44.78	1,139.45
1990 - 2000 Change		-0.19	0.24	-14.24	-3.88	-18.07	18.07
2000 - 2010 Change		-0.18	0.00	-1.71	-0.18	-2.07	2.07
2010 - 2020 Change		-0.17	-0.24	0.11	-1.17	-1.47	1.47
1990	Devon	9.43	6.49	251.25	53.27	320.44	1,110.54

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		7.60	6.39	216.62	46.85	277.46	1,153.52
2010		6.25	6.39	187.29	45.68	245.62	1,185.36
2020		6.46	6.49	189.02	47.15	249.12	1,181.86
1990 - 2000 Change		-1.83	-0.10	-34.63	-6.42	-42.98	42.98
2000 - 2010 Change		-1.35	0.00	-29.33	-1.17	-31.85	31.85
2010 - 2020 Change		0.21	0.10	1.73	1.47	3.50	-3.50
1990	Diamond Valley	91.67	6.92	173.96	80.72	353.27	852.81
2000		76.71	7.06	126.11	76.92	286.80	919.28
2010		58.68	7.06	82.48	75.12	223.33	982.75
2020		52.44	6.92	71.58	75.70	206.63	999.45
1990 - 2000 Change		-14.96	0.14	-47.85	-3.80	-66.46	66.46
2000 - 2010 Change		-18.04	0.00	-43.64	-1.80	-63.47	63.47
2010 - 2020 Change		-6.24	-0.14	-10.90	0.58	-16.70	16.70
1990	Didsbury	59.63	0.54	75.15	89.44	224.77	1,311.07
2000		41.20	0.54	60.16	87.51	189.41	1,346.43
2010		35.80	0.54	50.72	87.15	174.21	1,361.63
2020		26.02	0.54	51.14	87.55	165.26	1,370.58
1990 - 2000 Change		-18.44	0.00	-14.99	-1.93	-35.36	35.36
2000 - 2010 Change		-5.40	0.00	-9.44	-0.36	-15.20	15.20
2010 - 2020 Change		-9.77	0.00	0.42	0.40	-8.95	8.95
1990	Drumheller	5,442.63	312.09	404.18	590.68	6,749.58	4,370.23

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		5,125.76	316.64	315.54	529.93	6,287.87	4,831.94
2010		4,794.45	316.64	310.95	515.39	5,937.43	5,182.38
2020		4,138.63	311.10	307.95	508.22	5,265.90	5,853.91
1990 - 2000 Change		-316.87	4.55	-88.64	-60.75	-461.71	461.71
2000 - 2010 Change		-331.31	0.00	-4.59	-14.54	-350.44	350.44
2010 - 2020 Change		-655.82	-5.54	-3.00	-7.17	-671.53	671.53
1990	Fort Macleod	943.37	27.81	34.68	235.50	1,241.36	1,135.42
2000		826.23	26.02	24.25	230.15	1,106.66	1,270.11
2010		749.48	25.84	21.55	228.64	1,025.51	1,351.27
2020		698.71	26.28	21.19	226.94	973.11	1,403.66
1990 - 2000 Change		-117.13	-1.79	-10.43	-5.34	-134.69	134.69
2000 - 2010 Change		-76.76	-0.18	-2.70	-1.52	-81.16	81.16
2010 - 2020 Change		-50.76	0.44	-0.37	-1.70	-52.39	52.39
1990	High River	41.44	33.97	122.37	132.36	330.15	1,971.55
2000		37.99	32.40	91.69	130.63	292.70	2,008.99
2010		37.16	32.40	83.68	129.55	282.78	2,018.91
2020		34.83	32.44	83.15	126.92	277.34	2,024.35
1990 - 2000 Change		-3.45	-1.57	-30.68	-1.73	-37.44	37.44
2000 - 2010 Change		-0.83	0.00	-8.01	-1.08	-9.92	9.92
2010 - 2020 Change		-2.33	0.04	-0.53	-2.63	-5.44	5.44
1990	Innisfail	10.98	59.40	170.94	63.92	305.24	1,631.73

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		8.27	59.22	124.88	55.14	247.52	1,689.46
2010		8.18	59.22	89.85	53.34	210.59	1,726.38
2020		7.73	59.22	88.57	51.70	207.22	1,729.75
1990 - 2000 Change		-2.71	-0.18	-46.06	-8.77	-57.72	57.72
2000 - 2010 Change		-0.09	0.00	-35.03	-1.80	-36.92	36.92
2010 - 2020 Change		-0.45	0.00	-1.28	-1.64	-3.37	3.37
1990	Morinville	7.63	10.35	55.95	22.31	96.24	1,035.82
2000		7.15	9.90	41.65	21.78	80.49	1,051.57
2010		4.18	9.90	19.39	18.18	51.65	1,080.41
2020		4.21	10.35	24.92	17.74	57.23	1,074.83
1990 - 2000 Change		-0.48	-0.45	-14.30	-0.53	-15.76	15.76
2000 - 2010 Change		-2.97	0.00	-22.26	-3.60	-28.83	28.83
2010 - 2020 Change		0.03	0.45	5.53	-0.44	5.58	-5.58
1990	Okotoks	66.84	29.26	204.03	104.32	404.46	3,495.82
2000		55.51	24.80	139.63	100.21	320.15	3,580.13
2010		53.62	24.62	49.89	96.16	224.29	3,675.99
2020		54.23	24.31	54.47	95.36	228.38	3,671.90
1990 - 2000 Change		-11.34	-4.47	-64.40	-4.11	-84.31	84.31
2000 - 2010 Change		-1.89	-0.18	-89.74	-4.05	-95.86	95.86
2010 - 2020 Change		0.62	-0.30	4.58	-0.81	4.09	-4.09
1990	Olds	10.27	1.43	23.17	13.85	48.73	1,641.31

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		10.49	2.62	13.76	15.44	42.31	1,647.73
2010		9.50	2.62	3.50	14.99	30.61	1,659.43
2020		3.38	1.43	8.51	13.40	26.72	1,663.32
1990 - 2000 Change		0.22	1.19	-9.41	1.59	-6.42	6.42
2000 - 2010 Change		-0.99	0.00	-10.26	-0.45	-11.70	11.70
2010 - 2020 Change		-6.12	-1.19	5.01	-1.59	-3.89	3.89
1990	Penhold	1.98	29.68	26.96	27.06	85.67	1,018.36
2000		1.29	32.33	16.68	27.35	77.65	1,026.38
2010		1.29	32.33	10.11	27.17	70.90	1,033.13
2020		1.35	29.68	14.13	26.43	71.59	1,032.44
1990 - 2000 Change		-0.69	2.65	-10.28	0.30	-8.02	8.02
2000 - 2010 Change		0.00	0.00	-6.57	-0.18	-6.75	6.75
2010 - 2020 Change		0.06	-2.65	4.03	-0.75	0.69	-0.69
1990	Pincher Creek	34.02	3.24	14.02	6.31	57.59	948.27
2000		19.16	3.33	3.32	5.67	31.48	974.38
2010		18.53	3.33	2.45	5.67	29.97	975.89
2020		15.47	3.24	1.61	5.83	26.14	979.72
1990 - 2000 Change		-14.86	0.09	-10.70	-0.64	-26.11	26.11
2000 - 2010 Change		-0.63	0.00	-0.88	0.00	-1.51	1.51
2010 - 2020 Change		-3.07	-0.09	-0.83	0.16	-3.83	3.83
1990	Ponoka	14.92	4.80	286.11	60.77	366.61	1,388.97

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		9.20	5.10	87.91	53.88	156.09	1,599.48
2010		7.22	5.10	65.23	53.26	130.81	1,624.76
2020		7.42	4.80	64.59	51.78	128.59	1,626.98
1990 - 2000 Change		-5.72	0.29	-198.20	-6.90	-210.52	210.52
2000 - 2010 Change		-1.98	0.00	-22.68	-0.62	-25.27	25.27
2010 - 2020 Change		0.20	-0.29	-0.65	-1.48	-2.22	2.22
1990	Redcliff	915.94	9.14	8.97	62.66	996.72	671.17
2000		840.32	11.20	6.49	36.67	894.67	773.22
2010		740.80	11.20	6.40	29.02	787.41	880.48
2020		694.87	7.84	5.55	28.16	736.42	931.47
1990 - 2000 Change		-75.62	2.05	-2.48	-25.99	-102.04	102.04
2000 - 2010 Change		-99.52	0.00	-0.09	-7.65	-107.26	107.26
2010 - 2020 Change		-45.93	-3.36	-0.85	-0.85	-50.99	50.99
1990	Stettler	2.40	19.34	64.50	38.65	124.90	1,253.80
2000		2.04	18.58	25.46	34.22	80.30	1,298.40
2010		2.04	18.58	16.64	31.43	68.69	1,310.01
2020		1.58	18.89	15.55	31.49	67.50	1,311.20
1990 - 2000 Change		-0.37	-0.76	-39.04	-4.43	-44.60	44.60
2000 - 2010 Change		0.00	0.00	-8.82	-2.79	-11.61	11.61
2010 - 2020 Change		-0.46	0.31	-1.09	0.06	-1.19	1.19
1990	Stony Plain	28.10	8.80	558.18	93.90	688.98	2,996.94

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		20.51	8.61	343.27	77.08	449.47	3,236.44
2010		17.09	8.61	232.69	75.73	334.11	3,351.80
2020		16.65	8.53	251.72	74.89	351.79	3,334.12
1990 - 2000 Change		-7.59	-0.19	-214.90	-16.82	-239.50	239.50
2000 - 2010 Change		-3.42	0.00	-110.59	-1.35	-115.36	115.36
2010 - 2020 Change		-0.44	-0.08	19.03	-0.84	17.68	-17.68
1990	Strathmore	78.65	79.73	84.03	265.78	508.19	2,292.18
2000		35.79	78.61	6.58	253.26	374.24	2,426.14
2010		23.01	78.61	4.33	243.54	349.49	2,450.89
2020		17.70	79.01	3.48	241.75	341.94	2,458.43
1990 - 2000 Change		-42.87	-1.12	-77.45	-12.52	-133.95	133.95
2000 - 2010 Change		-12.78	0.00	-2.25	-9.72	-24.75	24.75
2010 - 2020 Change		-5.31	0.40	-0.85	-1.79	-7.55	7.55
1990	Sylvan Lake	4.75	54.26	160.09	35.52	254.61	896.57
2000		3.98	56.20	103.51	32.72	196.41	954.77
2010		3.17	56.05	78.04	31.44	168.70	982.49
2020		2.86	54.18	71.19	31.47	159.71	991.48
1990 - 2000 Change		-0.78	1.94	-56.58	-2.80	-58.20	58.20
2000 - 2010 Change		-0.81	-0.16	-25.47	-1.28	-27.71	27.71
2010 - 2020 Change		-0.30	-1.86	-6.85	0.02	-8.99	8.99
1990	Taber	315.69	29.88	21.81	38.30	405.68	1,543.43

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		273.50	29.80	15.49	34.90	353.69	1,595.43
2010		254.80	29.80	15.49	33.01	333.11	1,616.01
2020		241.72	29.34	14.75	32.85	318.66	1,630.46
1990 - 2000 Change		-42.19	-0.08	-6.32	-3.39	-51.99	51.99
2000 - 2010 Change		-18.70	0.00	0.00	-1.89	-20.59	20.59
2010 - 2020 Change		-13.08	-0.46	-0.74	-0.16	-14.45	14.45
1990	Vegreville	4.54	11.61	49.41	38.91	104.47	1,318.31
2000		4.19	11.16	42.54	39.86	97.74	1,325.04
2010		2.30	11.16	22.13	38.60	74.18	1,348.60
2020		2.29	10.89	25.84	37.38	76.40	1,346.39
1990 - 2000 Change		-0.35	-0.45	-6.87	0.94	-6.73	6.73
2000 - 2010 Change		-1.89	0.00	-20.41	-1.26	-23.56	23.56
2010 - 2020 Change		-0.01	-0.27	3.71	-1.21	2.21	-2.21
1990	Vermilion	3.96	68.84	95.64	76.79	245.23	1,083.51
2000		3.74	68.85	52.02	70.42	195.03	1,133.71
2010		3.65	68.85	42.24	70.15	184.89	1,143.85
2020		3.42	69.02	41.38	71.57	185.39	1,143.35
1990 - 2000 Change		-0.22	0.01	-43.62	-6.37	-50.20	50.20
2000 - 2010 Change		-0.09	0.00	-9.78	-0.27	-10.14	10.14
2010 - 2020 Change		-0.23	0.17	-0.86	1.42	0.49	-0.49
1990	Wainwright	11.23	5.09	53.85	35.27	105.44	1,133.03

Year or Change Interval	Municipal District, County or Special Area					Total Native Prairie Vegetation	Non-Native Land
		Graminoid	Lake	Treed	Wetland		
2000		10.41	5.75	28.69	34.56	79.41	1,159.06
2010		8.79	5.75	14.88	33.39	62.81	1,175.66
2020		2.95	4.82	19.04	30.32	57.13	1,181.34
1990 - 2000 Change		-0.82	0.66	-25.16	-0.71	-26.03	26.03
2000 - 2010 Change		-1.62	0.00	-13.81	-1.17	-16.60	16.60
2010 - 2020 Change		-5.84	-0.93	4.16	-3.07	-5.67	5.67

APPENDIX 5. GVI – AAFC COMPARISON.

Township	Year	Data Source	Bare Ground	Cover Classes					Total Native Prairie Vegetation	Non-Native Land
				Shrub	Graminoid	Lake	Treed	Wetland		
TWP-002 RGE-17 MER-4	2006	GVI	204	353	5918	73	0	98	6646	2819
TWP-003 RGE-06 MER-4	2006	GVI	1914	892	5507	6	0	124	8444	1071
TWP-004 RGE-23 MER-4	2006	GVI	457	48	4639	62	0	230	5436	4076
TWP-007 RGE-12 MER-4	2006	GVI	10	28	495	3	0	120	656	8906
TWP-008 RGE-04 MER-4	2006	GVI	1021	365	6712	97	283	256	8736	767
TWP-008 RGE-25 MER-4	2006	GVI	87	422	2589	156	272	83	3609	5903
TWP-012 RGE-08 MER-4	2006	GVI	750	224	3479	1031	9	272	5765	3752
TWP-013 RGE-21 MER-4	2006	GVI	676	74	1891	75	0	678	3394	6084
TWP-018 RGE-03 MER-4	2006	GVI	1453	37	5629	230	5	313	7668	1815
TWP-020 RGE-25 MER-4	2006	GVI	43	33	839	75	5	67	1062	8434
Total			6617	2477	37699	1808	574	2241	51416	43627
TWP-002 RGE-17 MER-4	2005	AAFC			6660	56	2	152	6871	2595
TWP-003 RGE-06 MER-4	2005	AAFC			7901	27	3	316	8247	1268
TWP-004 RGE-23 MER-4	2005	AAFC			934	32	5	170	1141	8371
TWP-007 RGE-12 MER-4	2005	AAFC			402	23	0	86	511	9051
TWP-008 RGE-04 MER-4	2005	AAFC			7639	127	453	452	8671	832
TWP-008 RGE-25 MER-4	2005	AAFC			3119	124	210	308	3763	5750
TWP-012 RGE-08 MER-4	2005	AAFC			3933	1137	60	218	5348	4169
TWP-013 RGE-21 MER-4	2005	AAFC			2288	28	0	83	2400	7078
TWP-018 RGE-03 MER-4	2005	AAFC			7361	276	67	144	7848	1635
TWP-020 RGE-25 MER-4	2005	AAFC			526	34	1	112	673	8823
Total			0	0	40763	1865	801	2042	45472	49571
Percent Difference					8	3	33	-9	-12	13

Shrub and Bare Ground included in Graminoid category										
Township	Year	Data Source	Bare Ground	Cover Classes					Total Native Prairie Vegetation	Non-Native Land
				Shrub	Graminoid	Lake	Treed	Wetland		
TWP-002 RGE-17 MER-4	2006	GVI			6476	73	0	98	6646	2819
TWP-003 RGE-06 MER-4	2006	GVI			8314	6	0	124	8444	1071
TWP-004 RGE-23 MER-4	2006	GVI			5144	62	0	230	5436	4076
TWP-007 RGE-12 MER-4	2006	GVI			534	3	0	120	656	8906
TWP-008 RGE-04 MER-4	2006	GVI			8099	97	283	256	8736	767
TWP-008 RGE-25 MER-4	2006	GVI			3098	156	272	83	3609	5903
TWP-012 RGE-08 MER-4	2006	GVI			4453	1031	9	272	5765	3752
TWP-013 RGE-21 MER-4	2006	GVI			2641	75	0	678	3394	6084
TWP-018 RGE-03 MER-4	2006	GVI			7119	230	5	313	7668	1815

TWP-020 RGE-25 MER-4	2006	GVI			915	75	5	67	1062	8434
	Total		0	0	46793	1808	574	2241	51416	43627
TWP-002 RGE-17 MER-4	2005	AAFC			6660	56	2	152	6871	2595
TWP-003 RGE-06 MER-4	2005	AAFC			7901	27	3	316	8247	1268
TWP-004 RGE-23 MER-4	2005	AAFC			934	32	5	170	1141	8371
TWP-007 RGE-12 MER-4	2005	AAFC			402	23	0	86	511	9051
TWP-008 RGE-04 MER-4	2005	AAFC			7639	127	453	452	8671	832
TWP-008 RGE-25 MER-4	2005	AAFC			3119	124	210	308	3763	5750
TWP-012 RGE-08 MER-4	2005	AAFC			3933	1137	60	218	5348	4169
TWP-013 RGE-21 MER-4	2005	AAFC			2288	28	0	83	2400	7078
TWP-018 RGE-03 MER-4	2005	AAFC			7361	276	67	144	7848	1635
TWP-020 RGE-25 MER-4	2005	AAFC			526	34	1	112	673	8823
	Total		0	0	40763	1865	801	2042	45472	49571
Percent Difference					-14	3	33	-9	-12	13

Township	Year	Data Source		Cover Classes					Total Na- tive Prairie Vegetation	Non- Native Land
			Bare Ground	Shrub	Graminoid	Lake	Treed	Wetland		
TWP-025 RGE-07 MER-4	2010	GVI	539	98	4041	73	0	431	5182	-5182
TWP-025 RGE-19 MER-4	2010	GVI	88	109	1547	156	16	305	2222	-2222
TWP-028 RGE-12 MER-4	2010	GVI	582	79	3848	69	1	294	4873	-4873
TWP-028 RGE-21 MER-4	2010	GVI	328	144	892	23	249	83	1719	-1719
TWP-031 RGE-07 MER-4	2010	GVI	455	157	4717	38	13	725	6105	-6105
TWP-031 RGE-15 MER-4	2010	GVI	70	114	3038	464	31	279	3997	-3997
TWP-032 RGE-04 MER-4	2010	GVI	262	198	4346	238	12	588	5646	-5646
TWP-032 RGE-20 MER-4	2010	GVI	50	109	2300	155	193	737	3544	-3544
TWP-035 RGE-14 MER-4	2010	GVI	302	33	1593	2192	14	3310	7443	-7443
TWP-036 RGE-05 MER-4	2010	GVI	220	303	4440	101	502	485	6052	-6052
Total			2896	1345	30764	3509	1030	7237	46781	-46781
TWP-025 RGE-07 MER-4	2010	AAFC			5781	97	0	523	6401	-6401
TWP-025 RGE-19 MER-4	2010	AAFC			1040	153	2	680	1876	-1876
TWP-028 RGE-12 MER-4	2010	AAFC			5225	54	4	291	5573	-5573
TWP-028 RGE-21 MER-4	2010	AAFC			600	24	200	448	1273	-1273
TWP-031 RGE-07 MER-4	2010	AAFC			5279	74	7	492	5853	-5853
TWP-031 RGE-15 MER-4	2010	AAFC			1713	385	15	1034	3146	-3146
TWP-032 RGE-04 MER-4	2010	AAFC			4180	187	27	524	4917	-4917
TWP-032 RGE-20 MER-4	2010	AAFC			2212	192	120	955	3478	-3478
TWP-035 RGE-14 MER-4	2010	AAFC			1212	2107	14	4571	7904	-7904
TWP-036 RGE-05 MER-4	2010	AAFC			5619	99	427	762	6907	-6907
Total			0	0	32862	3371	816	10280	47328	-47328

Percent Difference				7	-4	-23	35	1	1
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Shrub and Bare Ground included in Graminoid category										
Township	Year	Data Source		Cover Classes					Total Na- tive Prairie Vegetation	Non- Native Land
			Bare Ground	Shrub	Graminoid	Lake	Treed	Wetland		
TWP-025 RGE-07 MER-4	2010	GVI			4678	73	0	431	5182	-5182
TWP-025 RGE-19 MER-4	2010	GVI			1744	156	16	305	2222	-2222
TWP-028 RGE-12 MER-4	2010	GVI			4510	69	1	294	4873	-4873
TWP-028 RGE-21 MER-4	2010	GVI			1364	23	249	83	1719	-1719
TWP-031 RGE-07 MER-4	2010	GVI			5329	38	13	725	6105	-6105
TWP-031 RGE-15 MER-4	2010	GVI			3223	464	31	279	3997	-3997
TWP-032 RGE-04 MER-4	2010	GVI			4807	238	12	588	5646	-5646
TWP-032 RGE-20 MER-4	2010	GVI			2459	155	193	737	3544	-3544
TWP-035 RGE-14 MER-4	2010	GVI			1928	2192	14	3310	7443	-7443
TWP-036 RGE-05 MER-4	2010	GVI			4963	101	502	485	6052	-6052
Total			0	0	35005	3509	1030	7237	46781	-46781
TWP-025 RGE-07 MER-4	2010	AAFC			5781	97	0	523	6401	-6401
TWP-025 RGE-19 MER-4	2010	AAFC			1040	153	2	680	1876	-1876
TWP-028 RGE-12 MER-4	2010	AAFC			5225	54	4	291	5573	-5573
TWP-028 RGE-21 MER-4	2010	AAFC			600	24	200	448	1273	-1273
TWP-031 RGE-07 MER-4	2010	AAFC			5279	74	7	492	5853	-5853
TWP-031 RGE-15 MER-4	2010	AAFC			1713	385	15	1034	3146	-3146
TWP-032 RGE-04 MER-4	2010	AAFC			4180	187	27	524	4917	-4917
TWP-032 RGE-20 MER-4	2010	AAFC			2212	192	120	955	3478	-3478
TWP-035 RGE-14 MER-4	2010	AAFC			1212	2107	14	4571	7904	-7904
TWP-036 RGE-05 MER-4	2010	AAFC			5619	99	427	762	6907	-6907
Total			0	0	32862	3371	816	10280	47328	-47328
Percent Difference					-6	-4	-23	35	1	1

ADDENDUM – THE PEACE RIVER PARKLAND

BACKGROUND

The Prairie Conservation Forum's roots in Alberta's Grassland Natural Region has, understandably, focused much of its work with issues and stakeholders in southern Alberta. Throughout the years since the PCF's inception the Parkland Natural Region, and much less, the Peace River Parkland subregion have hardly been considered in the inventories (NPVI, GVI) and assessments that the PCF has advocated for. This approach changed with the work done in the original State of the Prairie report in 2018. At that time, the full southern contiguous block of Alberta's Grassland Biome was considered and added to the change analysis work. The current update to the year 2020 would continue in the same vein and this version of the State of the Prairie update report has been presented likewise. However, as we started referencing the 'Grassland Biome' much more in this analysis, it became clear that a true 'Grassland Biome' assessment would need to have the Peace River Parkland subregion included with the Central and Foothill Parkland subregions for completeness. With the AAFC data readily available for this area, it is presented here as an addendum as an unfortunate oversight on the author's part for not having included it in the original report .

NATURAL SETTING

The Peace River Parkland represents a disjunct subregion of the Parkland Natural Region proper. Separated from the Central Parkland subregion by the Boreal and Foothills Natural Regions (about 400km to the southeast), the subregion is comprised of three relatively small non-contiguous units. The Natural Regions and Subregions of Alberta (Downing and Petapiece, 2006) describe subregion as "... gently rolling plains and steep, southfacing grassy and forested slopes along the Peace River. It is the smallest Natural Subregion in Alberta".

Table T1 provides a comparative overview of the subregions' basic statistics including the Natural Region as a whole. The Peace River and Foothills Natural Subregions are close in size (5.1% and 6.5%, respectively) while the Central Parkland subregion is much larger (88.4%); its size defines the general characteristic of the Parkland Natural Region. Although much smaller than the Central Parkland subregion, the Peace River subregion displays a similar character relative to the dynamics of natural cover remaining on the landscape (19.3% and 21.4%, respectively). Agricultural land use pressures reflecting region's abundance of black chernozemic soils relegate natural landscapes to the few remaining wetlands, non-arable steep valley slopes along the Peace River proper and the ever diminishing dispersed aspen/white spruce stands on the glaciolucustrine plains.

Table T1. Basic comparative statistics for the Parkland Natural Region's subregions.

	Total Area (ha)	% of Total subregion	Natural Cover (ha)	% of subregion
Central	5,370,539	88.4%	1,036,754	19.3%
Foothills	392,137	6.5%	198,258	50.6%
Peace River	312,042	5.1%	67,780	21.7%
Alberta Parkland	6,074,718	100.0%	1,302,792	21.4%

THE PEACE RIVER PARKLAND SUBREGION

The 30-year trend in natural cover change is shown in Table T2. The Peace River subregion shows a cumulative loss of native cover of about 6,314 hectares, which is comparatively less than the Foothills subregion's 27,018 ha and certainly much less than the Central subregion's 104,682 ha.

Table T2. Natural cover in hectares for each of the four decades.

	1990	2000	2010	2020	Total loss
Central	1,141,436	1,079,852	1,048,943	1,036,754	104,682
Foothills	225,276	213,037	204,124	198,258	27,018
Peace River	74,094	71,362	69,145	67,780	6,318
Alberta Parkland	1,440,806	1,364,251	1,322,213	1,302,792	138,014

The Peace River subregion has lost natural cover at about the same rate and proportional magnitude as the Central subregion. Since the Central subregion overwhelms the Parkland Natural Region in area, the Peace River subregion tends to mimic the Natural Region (figure F1). Figures F1 and F2 also serve to show the different dynamics occurring in the Foothills subregion with the loss of natural cover 3X greater than either the Peace or Central subregions.

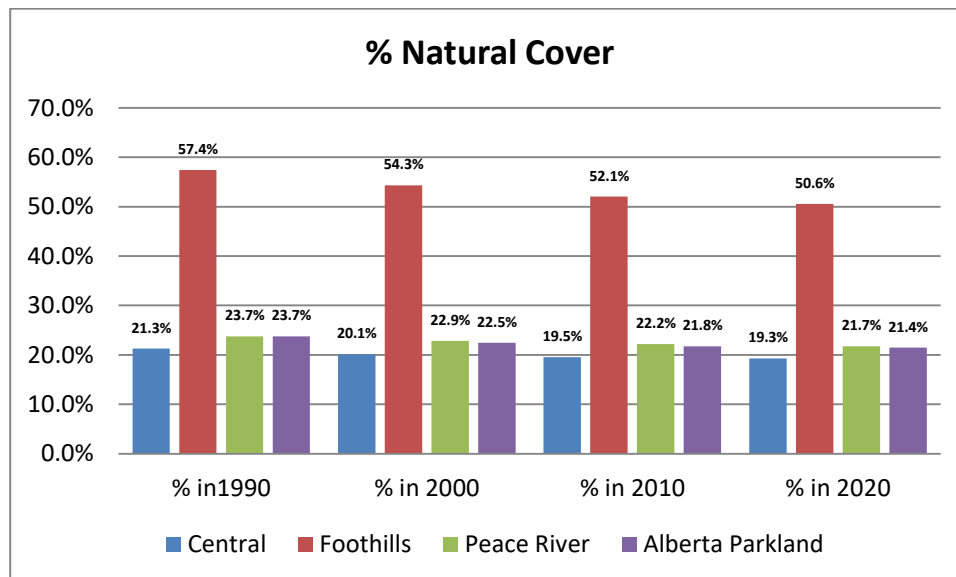


FIGURE F1. PERCENT NATURAL COVER FOR EACH SUBREGION OF THE 30 YEAR PERIOD

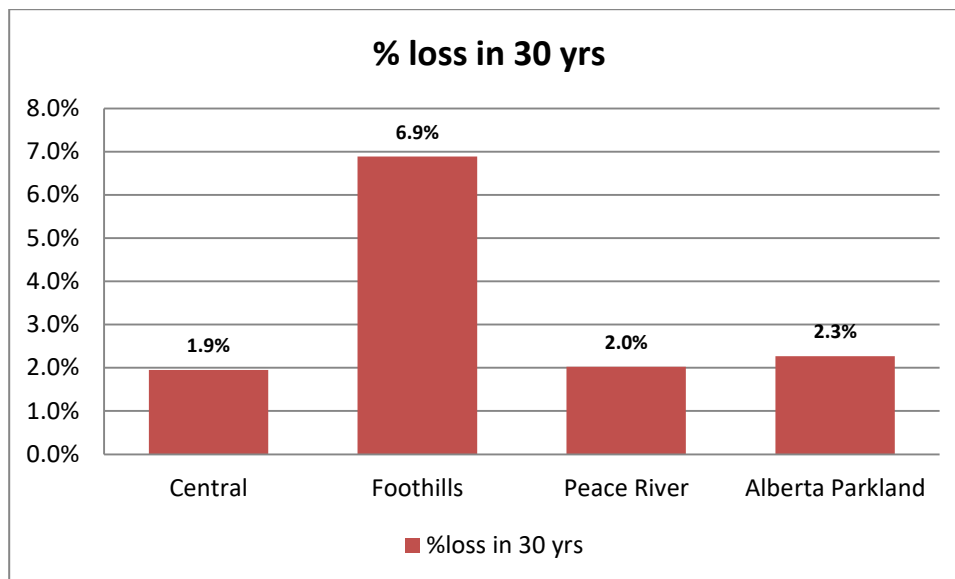


FIGURE F2. TOTAL PERCENT LOSS OF NATURAL COVER OVER THE 30 YEAR PERIOD, FROM 1990 TO 2020.

TABLE T3. PEACE RIVER SUBREGION NATURAL COVER CHANGES FROM 1990 TO 2020

Year	Graminoid	Lake/River	Treed	Wetland	Total
1990	5,614.38	8,324.64	45,651.51	14,503.95	74,094.48
2000	5,248.08	8,324.28	43,700.22	14,089.32	71,361.90
2010	5,185.26	8,324.10	41,703.30	13,932.72	69,145.38
2020	4,857.57	8,325.36	40,913.55	13,683.51	67,779.99
1990 - 2000 change	-366.30	-0.36	-1,951.29	-414.63	-2,732.58
2000 - 2010 change	-62.82	-0.18	-1,996.92	-156.60	-2,216.52
2010 - 2020 change	-327.69	1.26	-789.75	-249.21	-1,365.39

The largest natural cover loss in the Peace River subregion occurs in Treed cover. If we sum all the loss in the 30-year period and compare it with just the Treed loss in the 30 year period we get values of 6,313 ha and 4,692 ha, respectively. That indicates that almost 75% of the natural cover loss is Treed; the Graminoid, Lake/river, and Wetland components are relatively minor. Not too surprising considering that aspens are the vegetative characteristic of much of the Parkland, at least where they have not been removed for agricultural purposes. The deforestation of the Parkland Natural Region is also seen in the Central subregion where the 30 year natural cover loss is 104,682 ha and the Treed natural cover 30 year loss is 80,973 ha for a percent loss of 77% of just Treed cover. The Foothills subregion cover loss statistics indicate a more even spread between Treed cover and Graminoid cover. The % percent loss of natural cover in the Foothills subregion is 47% Treed and 52% Graminoid. Common to all the Parkland Natural Region subregions is that a relatively small component of the cover loss is Wetland, around 7% and this cover type is much less in the Foothills subregion.

Finally, by adding the Peace River Parkland subregion to the Parkland Natural Region and then adding the modified Parkland Natural Region to the Grassland Biome for Alberta, how does the remaining natural cover for the Biome change? Table T4 outlines the statistics for the Biome including the Peace River subregion while Figure 2 is reproduced from page 18

and represents the Biome minus the Peace River. As can be noted from the percentage values, the addition of the Peace River subregion reduces the overall native cover percentage for the Biome from 37.6% to 37.2% for the year 2020. The reduction is because, as noted, the Peace River Parkland natural cover tends to mimic the cover in Central Parkland which is significantly lower than the Grassland Natural Region.

TABLE T4. THE ALBERTA GRASSLAND BIOME: NATURE COVER AREA (IN HECTARES) BY YEAR AND COVER TYPE, DECADEAL CHANGES (DELTA) AND PERCENT OF NATURAL COVER REMAINING BY YEAR.

Year(s)	Natural Region	Graminoid	Lake/River	Treed	Wetland	Total Natural Cover	Total Area	%Natural cover
1990	Grassland Biome	4,374,869	355,248	578,477	772,422	6,081,016	15,631,401	38.9%
2000		4,304,277	355,078	516,178	762,062	5,937,595	15,631,401	38.0%
2010		4,276,864	355,069	479,563	757,811	5,869,307	15,631,401	37.5%
2020		4,243,430	355,316	473,012	749,157	5,820,915	15,631,401	37.2%
1990 - 2000 Delta		-70,592	-170	-62,299	-10,361	-143,421		
2000 - 2010 Delta		-27,413	-9	-36,615	-4,251	-68,287		
2010 - 2020 Delta		-33,434	247	-6,551	-8,654	-48,392		

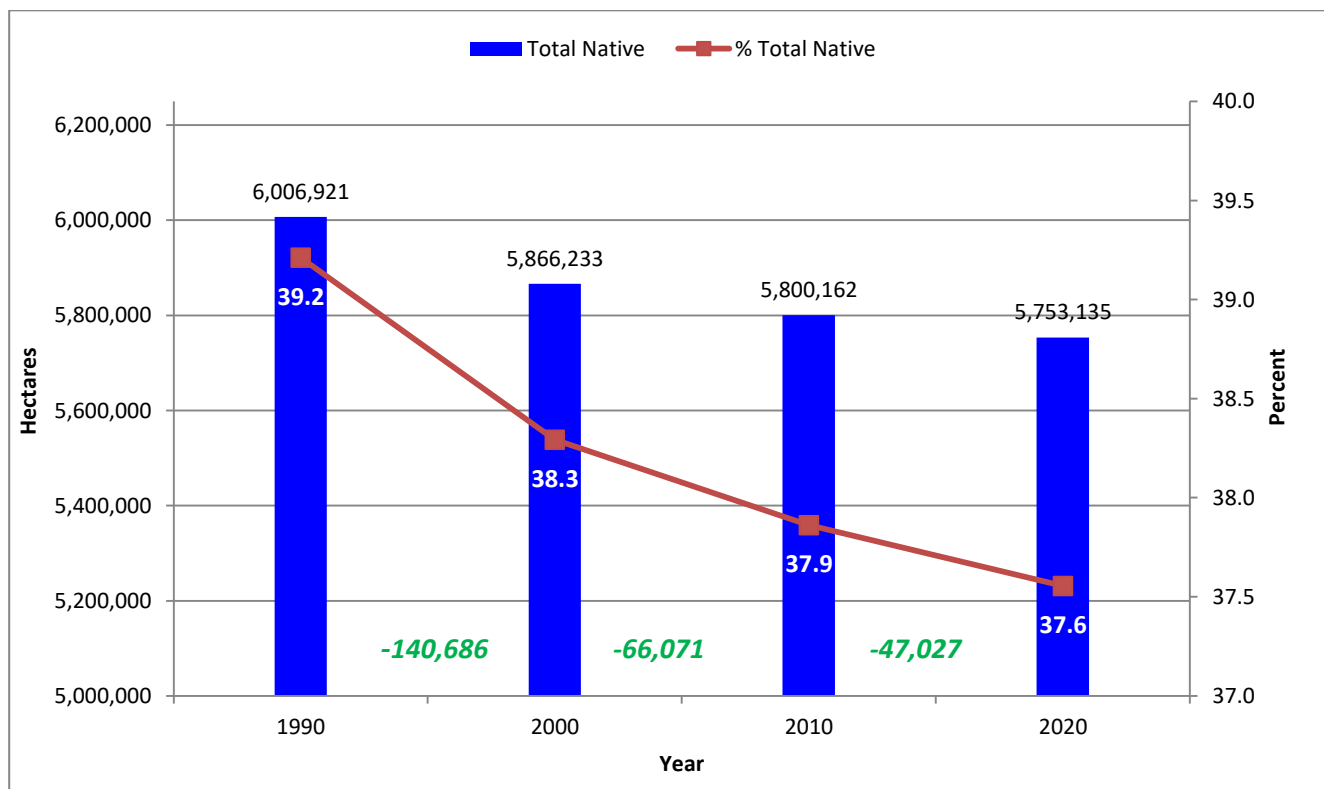


FIGURE 39. TOTAL NATIVE COVER (IN HECTARES) AND PERCENTAGES IN THE GRASSLAND BIOME IN ALBERTA. THE AMOUNT OF NATIVE VEGETATION REMAINING IN THE BIOME IS INDICATED BY THE BLUE BARS FOR EACH OF THE FOUR YEARS. THE PERCENTAGE OF NATIVE VEGETATION REMAINING IN THE BIOME IS INDICATED BY THE RED LINE. THE GREEN VALUES IN BETWEEN THE DECADEAL POINTS INDICATE THE CHANGE (LOSS) IN THE INTERVENING DECADES.