



Shoreline and Riparian Condition Assessment

Smoky Lake County



RIPARIAN
WEB PORTAL

December 2021

Smoky Lake County Summary: Your Shoreline and Riparian Condition Assessment

Purpose of this Report

This report presents information about the condition of riparian areas in your municipality. Satellite-based mapping techniques were used to assess riparian intactness, catchment pressure, and prioritization for select waterbodies and areas; some areas were excluded from the assessment. Results can be used to inform planning, conservation, and restoration efforts.

Details about the study scope and results can be found in the Appendix and through the Riparian Web Portal (riparian.info).

Riparian Areas 101: Why They Matter

Riparian areas are transitional areas between a waterbody and the adjacent upland area.



Photo credit: *Images Alberta
Camera Club.*



Improve water quality by trapping sediments, filtering nutrients and pollutants, reducing aquatic plant and algal growth



Mitigate floods and droughts by storing and slowing the release of water and reducing erosion



Improve biodiversity by providing fish and wildlife habitat and cooling water temperatures



Provide aesthetically pleasing areas for recreation or cultural activities



Add economic value by increasing property values or providing areas for nature viewing

To learn more about the importance of riparian areas, please go to:
riparian.info

Project Partners

This work has been carried out by Watershed Planning and Advisory Councils (WPACs) in your area:



What is Riparian Intactness?



Illustration by: Terra Simieritsch

Riparian intactness is a measure of how “natural” a shoreline is. Riparian intactness measures riparian condition at a broad scale, using satellite data. This is a new method, which has been scientifically validated, to assess riparian conditions across a large area in Alberta.

How to Use This Information

- To compare the condition of water bodies or watersheds across a region
- To prioritize restoration and conservation efforts
- To complement field-based assessment methods by showcasing broad-scale results
- To guide voluntary stewardship efforts by municipalities, community groups, and landowners

Beneficial Management Practices for Municipal Leaders



Ensure that your municipality has policies for sufficient development setbacks and buffers of native plants to safeguard water bodies



Encourage and support landowners and community initiatives to maintain and improve riparian areas through water and land stewardship groups



Utilize and enforce policy tools such as Environmental Reserves, Conservation Reserves and Conservation Easements to ensure that hazard and sensitive lands are not developed



Eliminate or control invasive species in municipal riparian areas and promote natural and native species along shorelines



Minimize erosion, maintain slopes and prevent disturbance in or close to riparian areas



Educate the public about recreational use impacts and why some activities are restricted to specific places or seasons

What is Intactness?

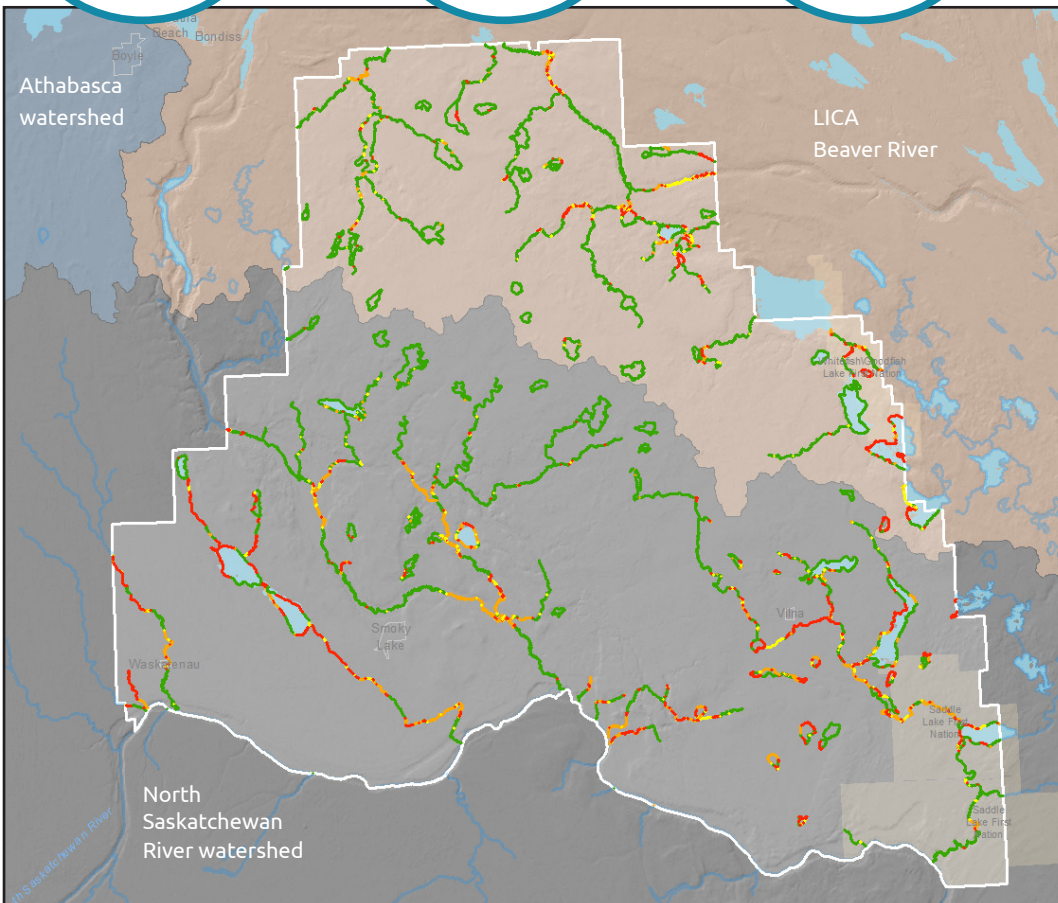
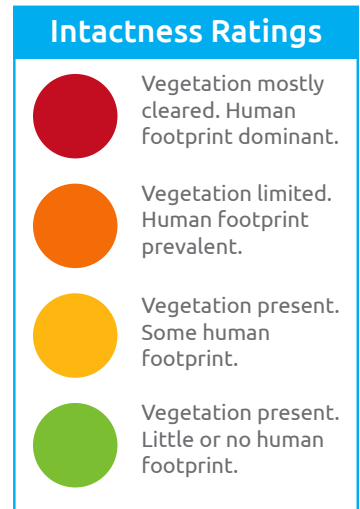
- o Intactness is a measure of riparian condition at a broad scale (watershed or region)
- o Measures if natural habitat has been altered or impaired by human activity
- o Measures the quantity of natural and woody vegetation, as well as human footprint, using satellite data

Intactness Results for Smoky Lake County

1,903 KM
of shorelines
assessed in Smoky
Lake County

48/70
lakes had 65%+
High Intactness

26/38
creeks had 65%+
High Intactness



Map 1: Riparian Intactness in the municipality. To view more data, please see the attached Appendix.

Smoky Lake County Overall Intactness

11%
Very Low

5%
Low

13%
Moderate

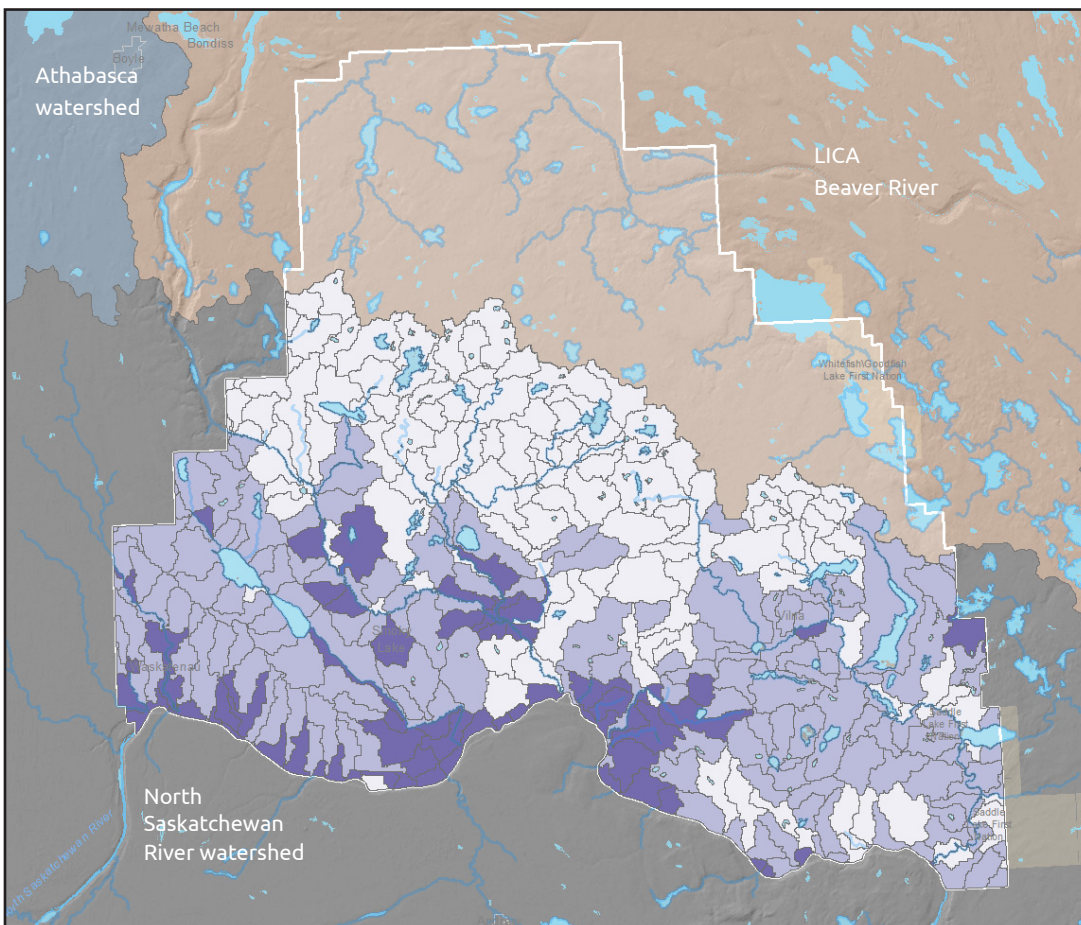
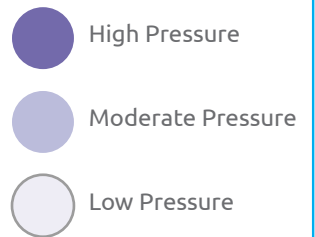
71%
High

What is Catchment Pressure?

- o Indicates pressures on the landscape that might impact riparian health
- o Includes natural stressors (e.g. slope, forests) and human stressors (e.g. land-use intensity)
- o High pressure = high potential stress for riparian areas. Data was collected to inform prioritization dataset.

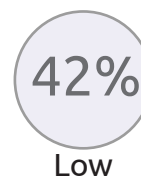
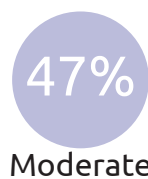
Catchment Pressure Results for Smoky Lake County

Pressure Ratings



Map 2: Catchment Pressure in the municipality. Note that some areas were not assessed. To view more data, please see the attached [Appendix](#).

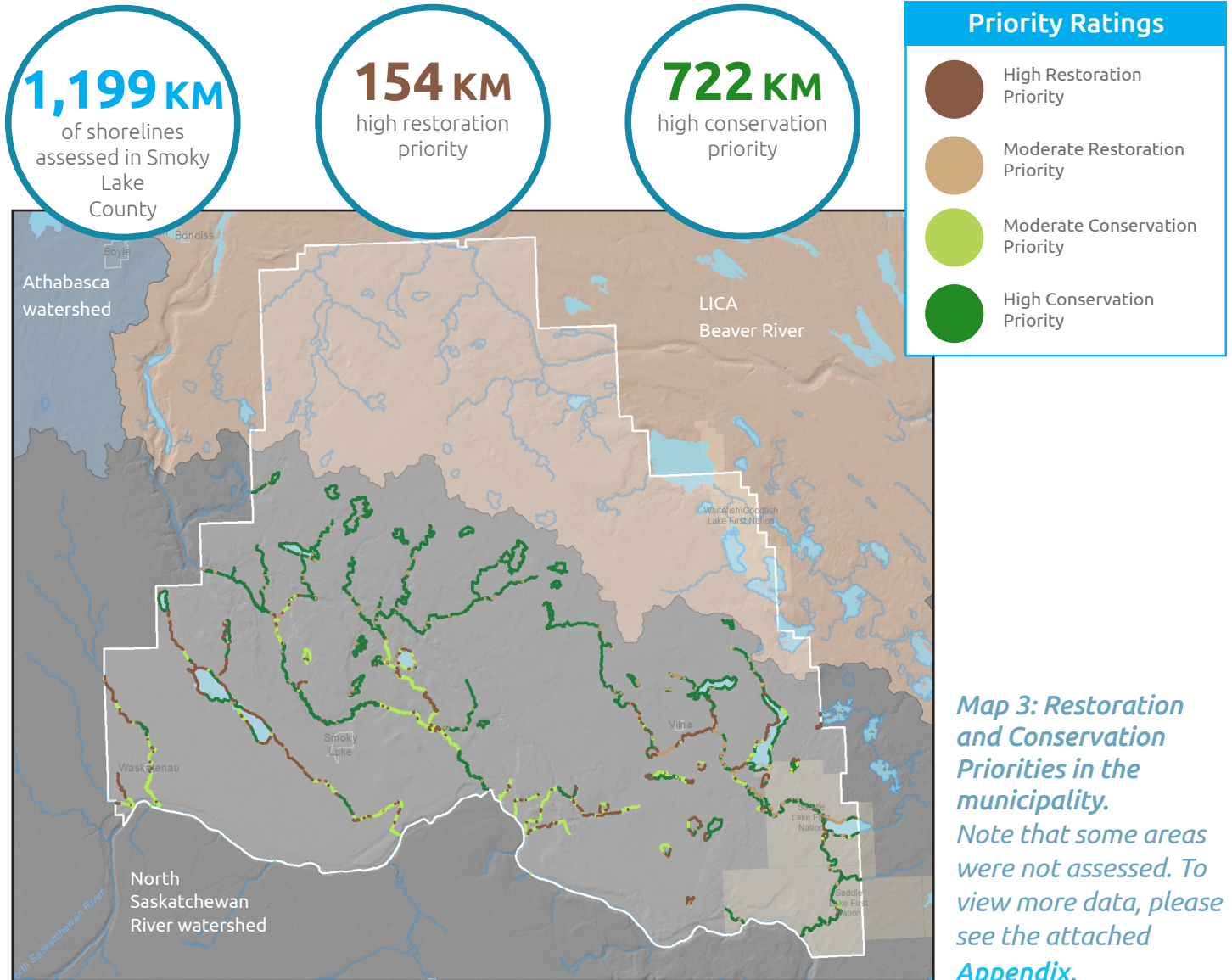
Smoky Lake County Overall Pressure



What is Prioritization?

- o Combines intactness scores and pressure scores to highlight which riparian areas are most affected by landscape pressures
- o Conservation rating is prioritized where riparian intactness is high and landscape pressure is low
- o Restoration rating is prioritized where riparian intactness is low and landscape pressure is high

Prioritization Results for Smoky Lake County



Smoky Lake County Overall Prioritization

13%

High Restoration

5%

Moderate Restoration

22%

Moderate Conservation

60%

High Conservation

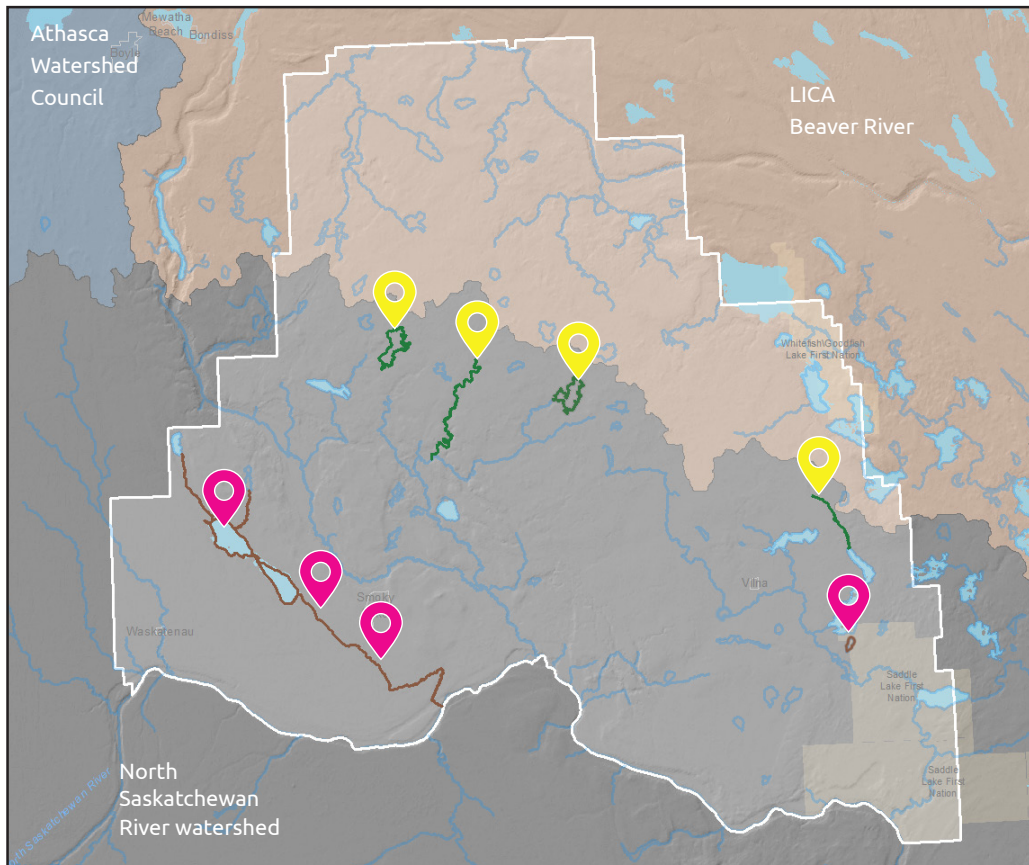
Top Conservation & Restoration Priorities

Restoration

- **Lake:** Smoky Lake
- **Unnamed Lake:** UL-110401-11
- **Named Creek:** Smoky Creek
- **Unnamed Creek:** Smoky Creek-01

Conservation

- **Lake:** Island Lake
- **Unnamed Lake:** UL-110302-11
- **Named Creek:** Cache Creek
- **Unnamed Creek:** Edwand Creek-02



Map 4: The top Conservation and Restoration Priorities recommended for the County. Recommendations are based on the top results from the Prioritization assessment shown in Map 3. To view more data, please see the attached [Appendix](#).

Next steps to conserve or restore priority riparian habitats:

- 1 Use priority maps to direct conservation and restoration efforts.
- 2 Develop policies at the municipal level for land management.
- 3 Provide incentives for private landowners to restore degraded riparian habitats.
- 4 Restore and conserve riparian habitats through municipal reserves, land trusts and/or conservation groups.

See the [Appendix](#) for a comprehensive list of priorities. To find out more about riparian condition data and resources, go to: riparian.info



Acknowledgments

This work was an inter Watershed Planning and Advisory Councils (WPAC) project with funding and support from many sources. A special thanks to the Watershed Resiliency and Restoration Program and the governments of Canada and Alberta, through the Canadian Agricultural Partnership.

Intactness, Pressure, and Prioritization data was created by Fiera Biological Consulting Ltd. Base Map Data was provided by the Government of Alberta.



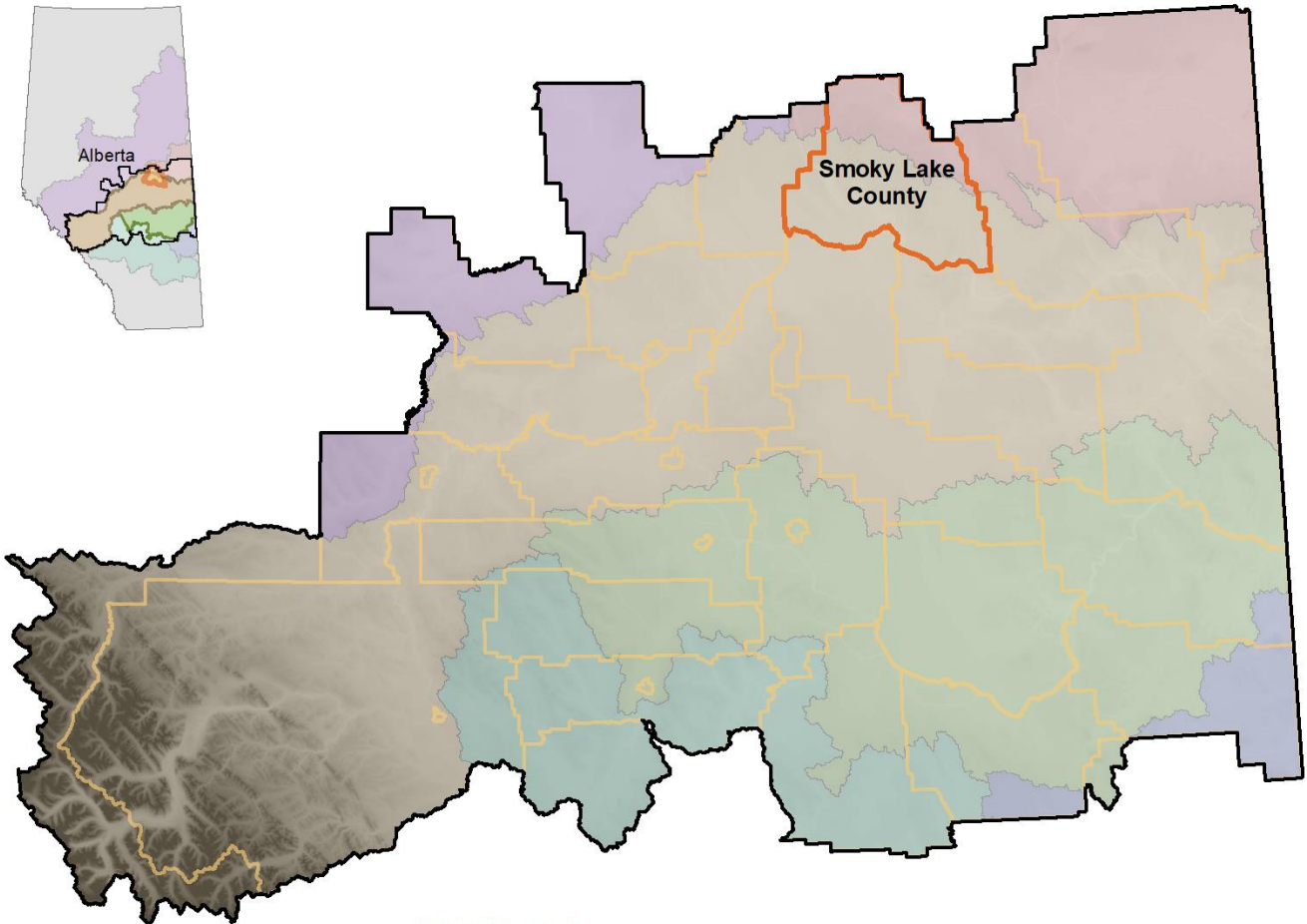


The following appendix is a summary of waterbodies assessed in your municipality, and includes results of the intactness, pressure, and prioritization assessments. Please note that the assessment methods were applied to specific waterbodies; some areas were not included. As such, results described in this report apply only to those areas assessed. See the supporting documents for more details.

Please note that waterbodies that flow through multiple municipalities have been 'clipped' to demonstrate the portion which applies only to your municipality.

The data has been extracted from "Appendix D: Rural Municipalities" of *Riparian Area Assessment of the North Saskatchewan and Battle River Watersheds* (Fiera Biological Consulting Ltd, 2021). The report can be found in the Information section of riparian.info

D22. Smoky Lake County

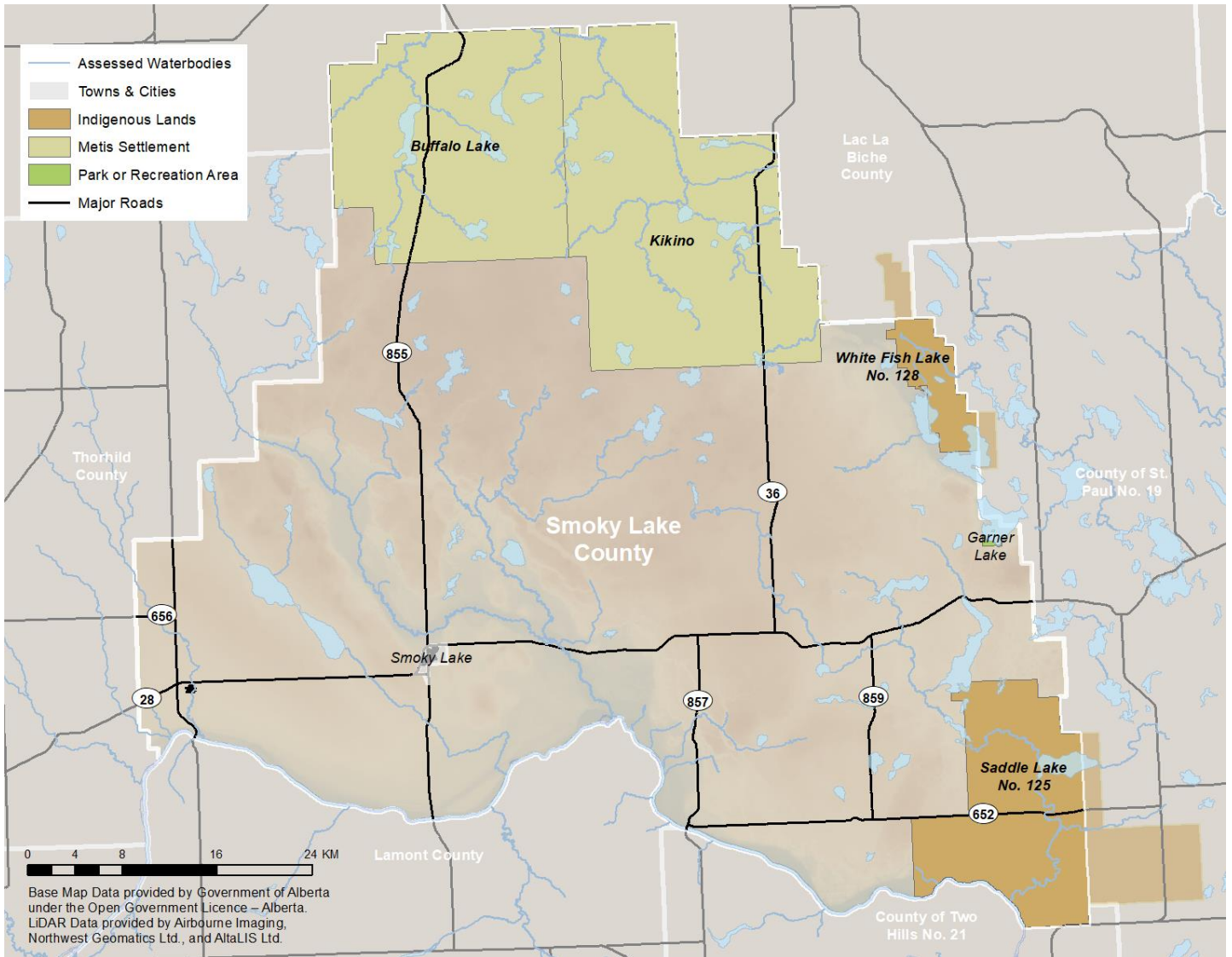


0 20 40 80 120 KM
 Base Map Data provided by Government of Alberta under the Open Government Licence – Alberta. LiDAR Data provided by Airbourne Imaging, Northwest Geomatics Ltd., and AltaLIS Ltd.

HUC2 Watershed

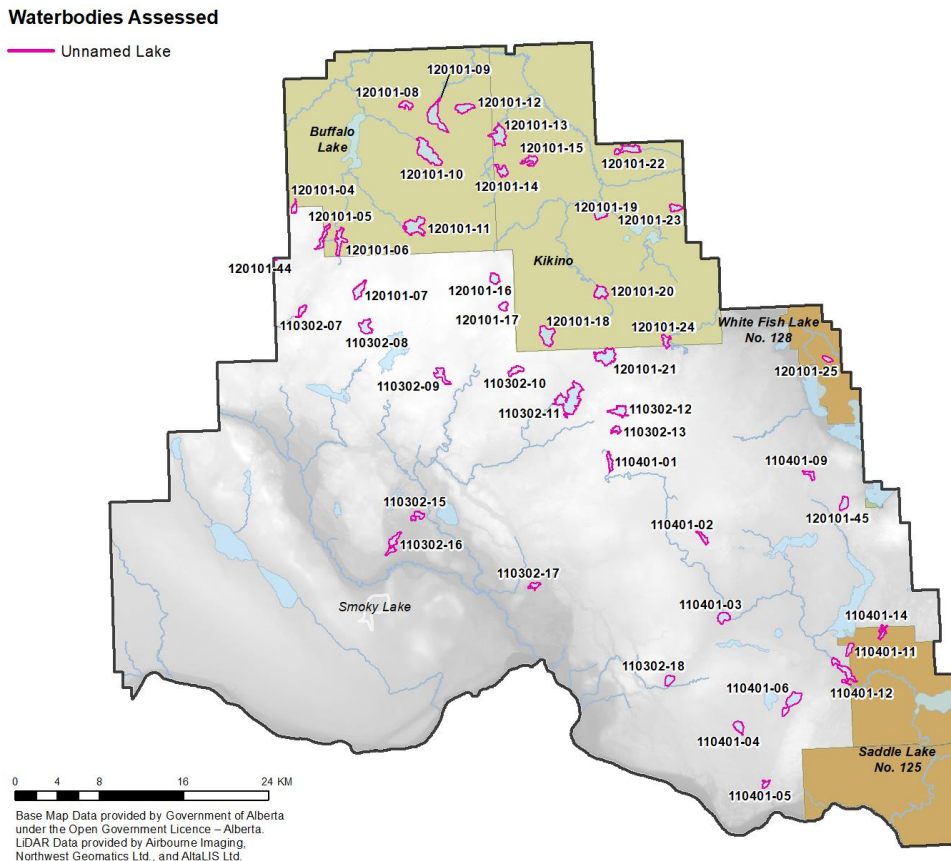
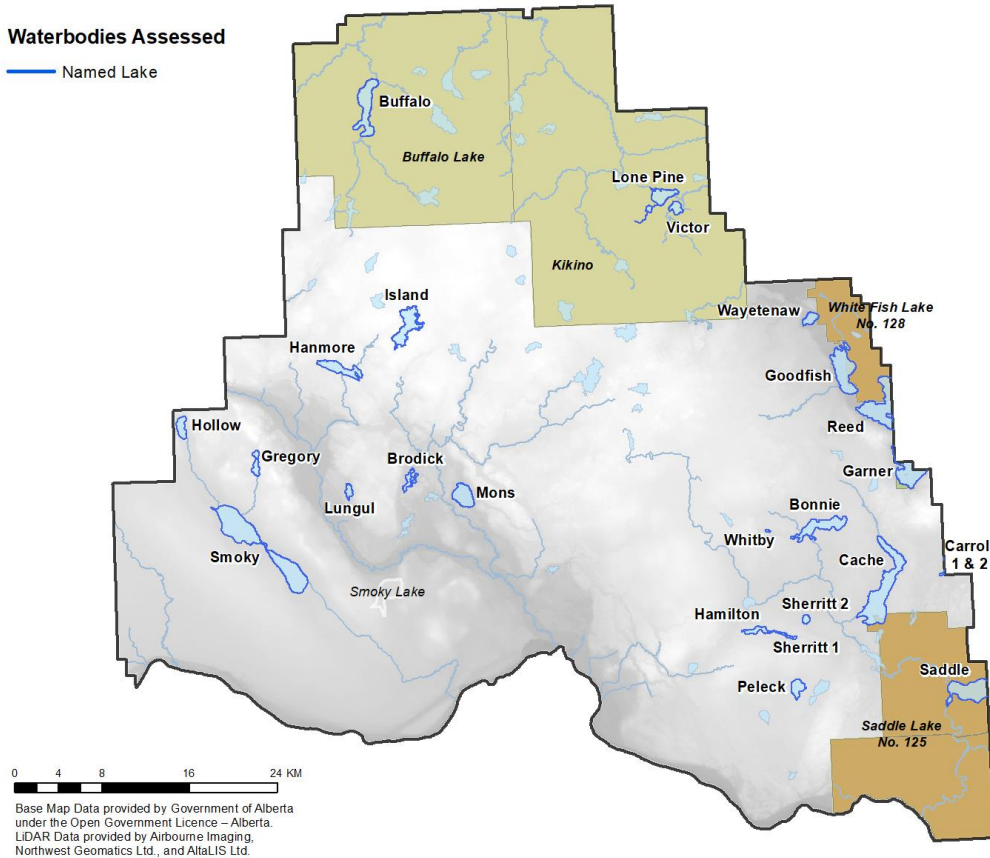
- | | | |
|-----------------------|--------------------------|--------------------------|
| Athabasca River Basin | North Saskatchewan River | Study Area Extent |
| Battle River | Red Deer River | Municipality of Interest |
| Beaver River | Sounding Creek | Municipal Boundaries |

1.1. Municipal Overview



1.2. Shorelines of Interest

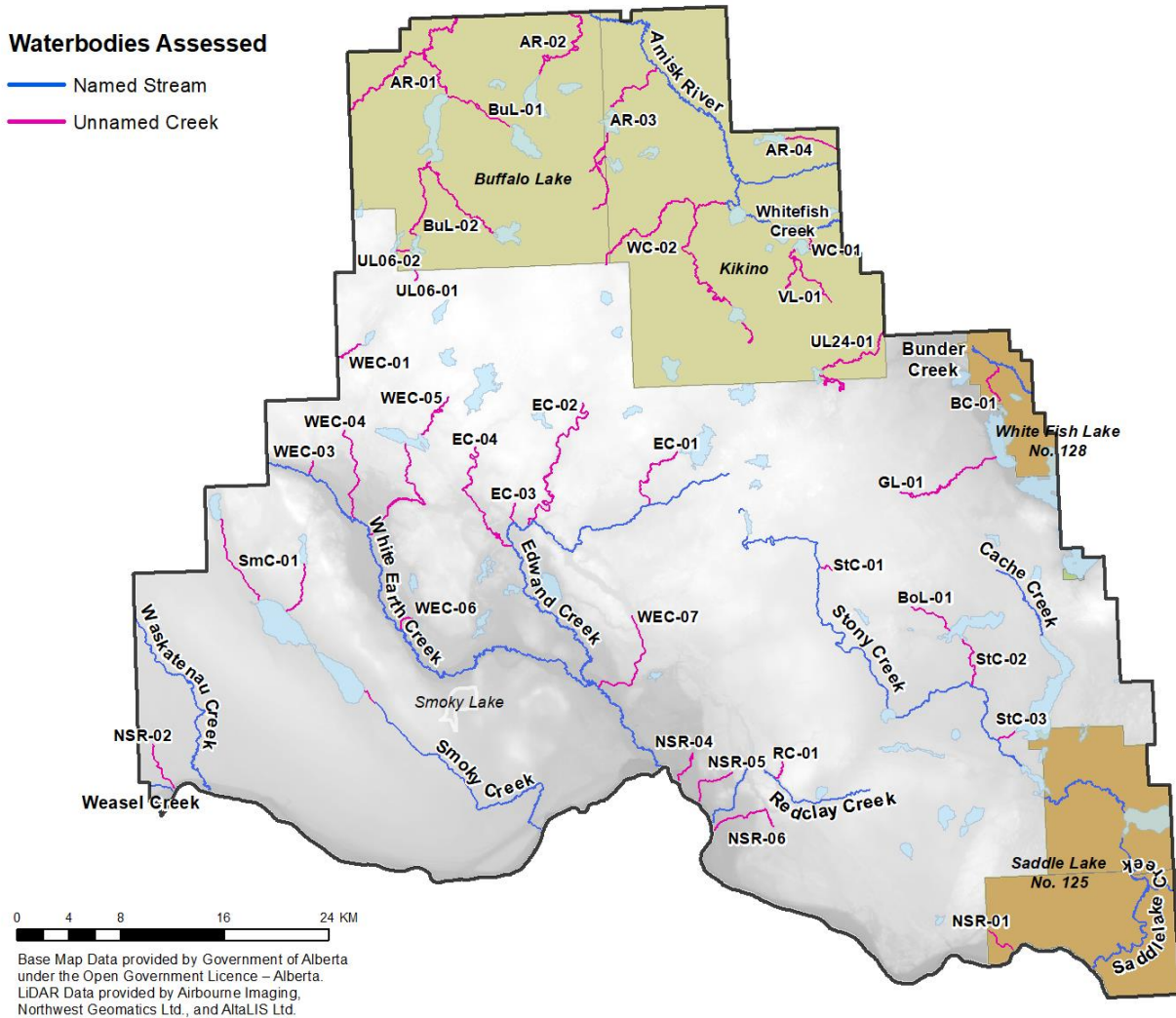
Location of Waterbodies Assessed within the Municipality – Lakes



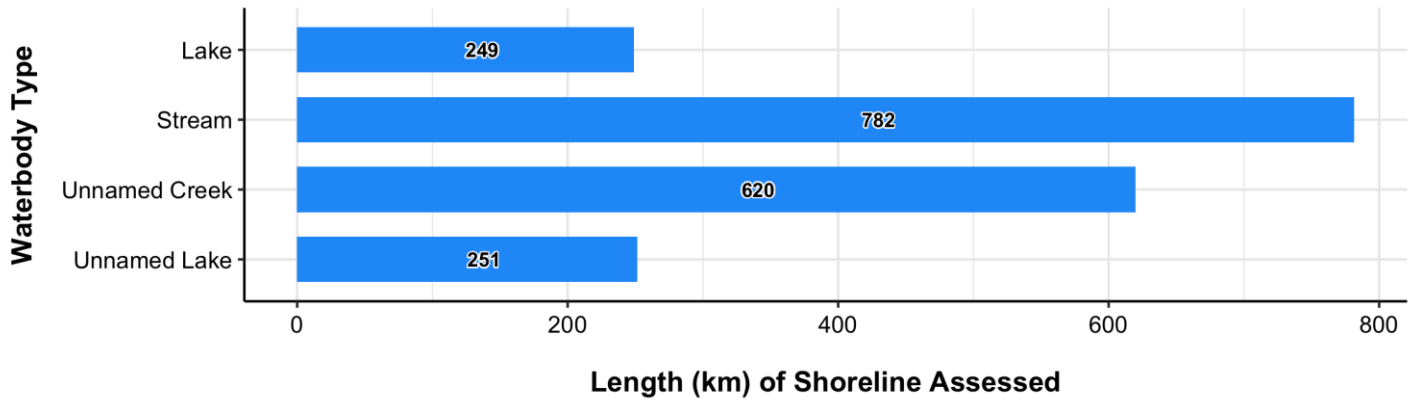
Location of Waterbodies Assessed within the Municipality – Streams

Waterbodies Assessed

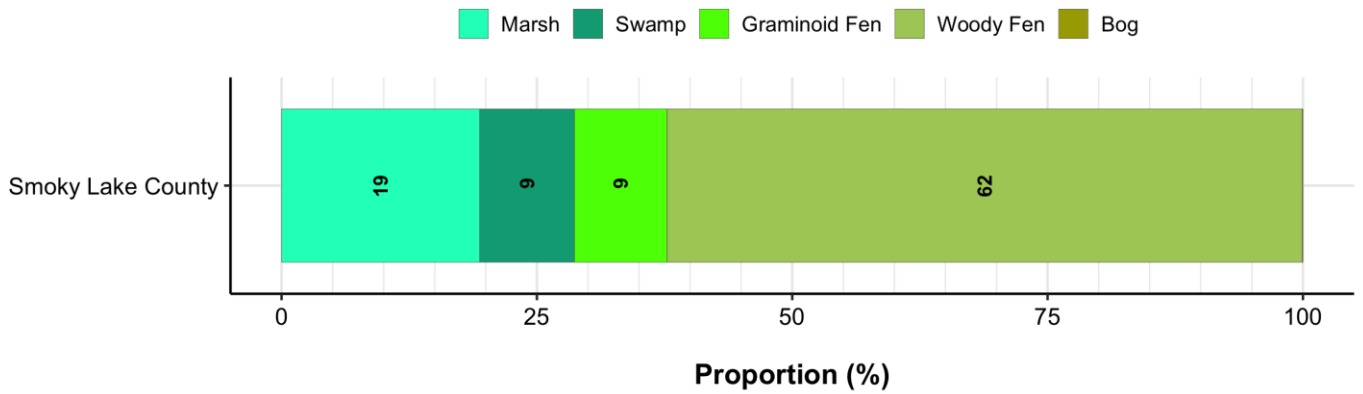
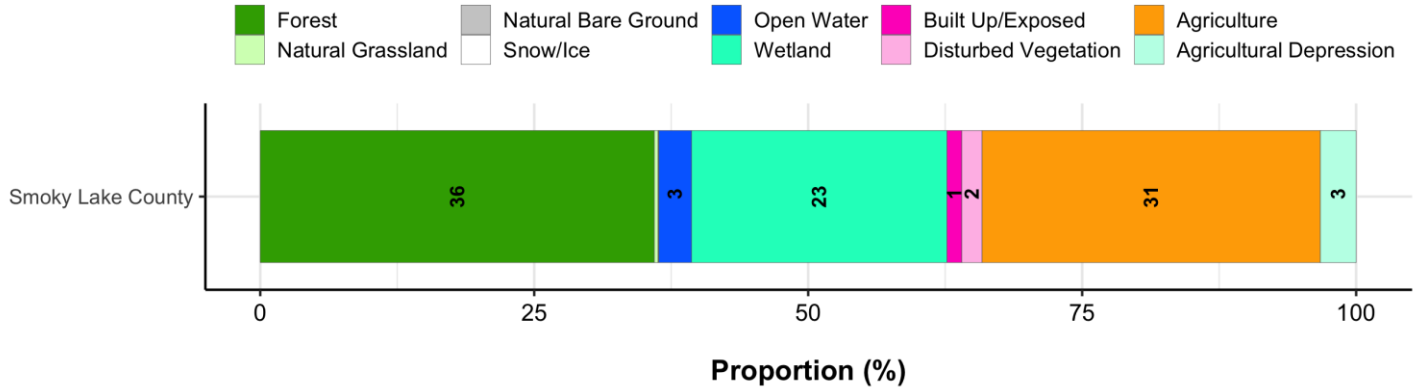
- Named Stream
- Unnamed Creek



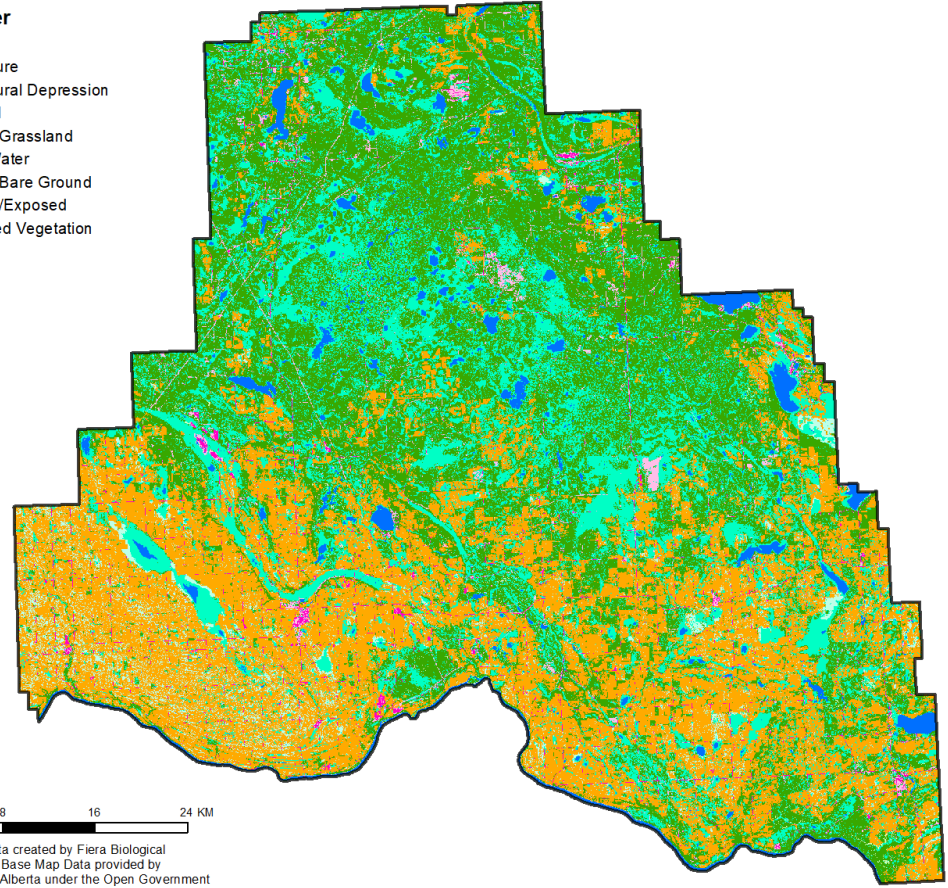
Total Length of Riparian Shoreline Assessed within the Municipality



1.3. Land Cover



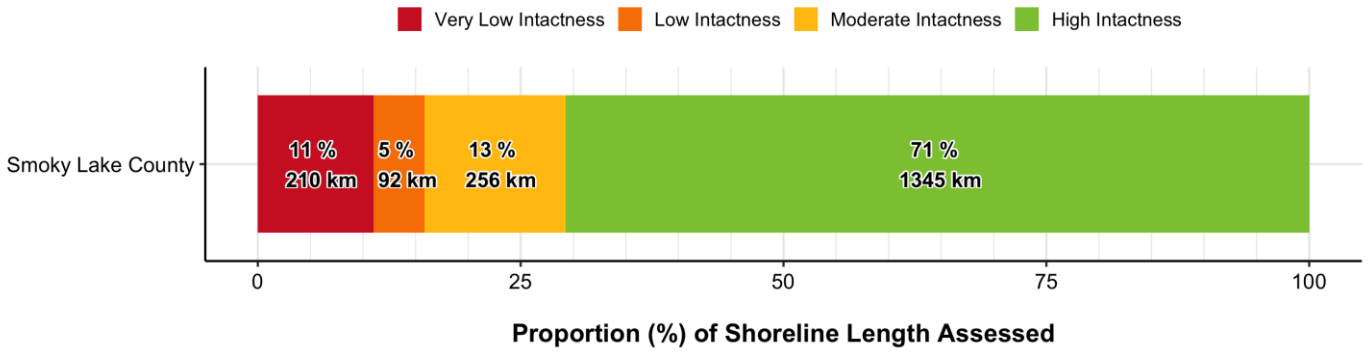
- Land Cover**
- Forest
 - Agriculture
 - Agricultural Depression
 - Wetland
 - Natural Grassland
 - Open Water
 - Natural Bare Ground
 - Built Up/Exposed
 - Disturbed Vegetation



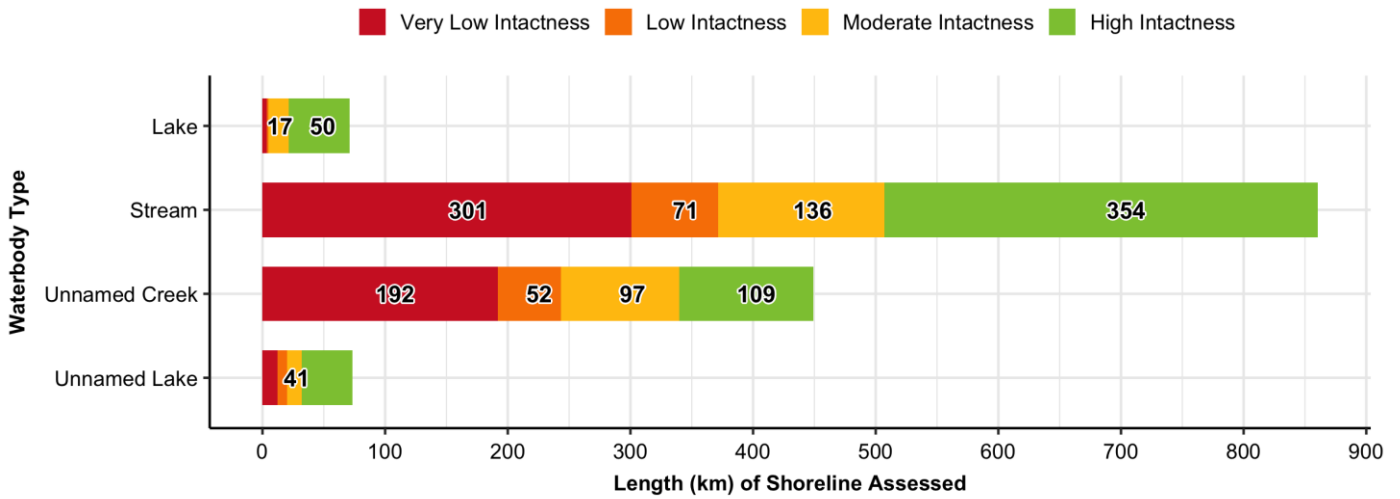
0 4 8 16 24 KM
 Land Cover Data created by Fiera Biological Consulting Ltd. Base Map Data provided by Government of Alberta under the Open Government Licence - Alberta.

1.4. Riparian Management Area Intactness

Overall Municipal Intactness

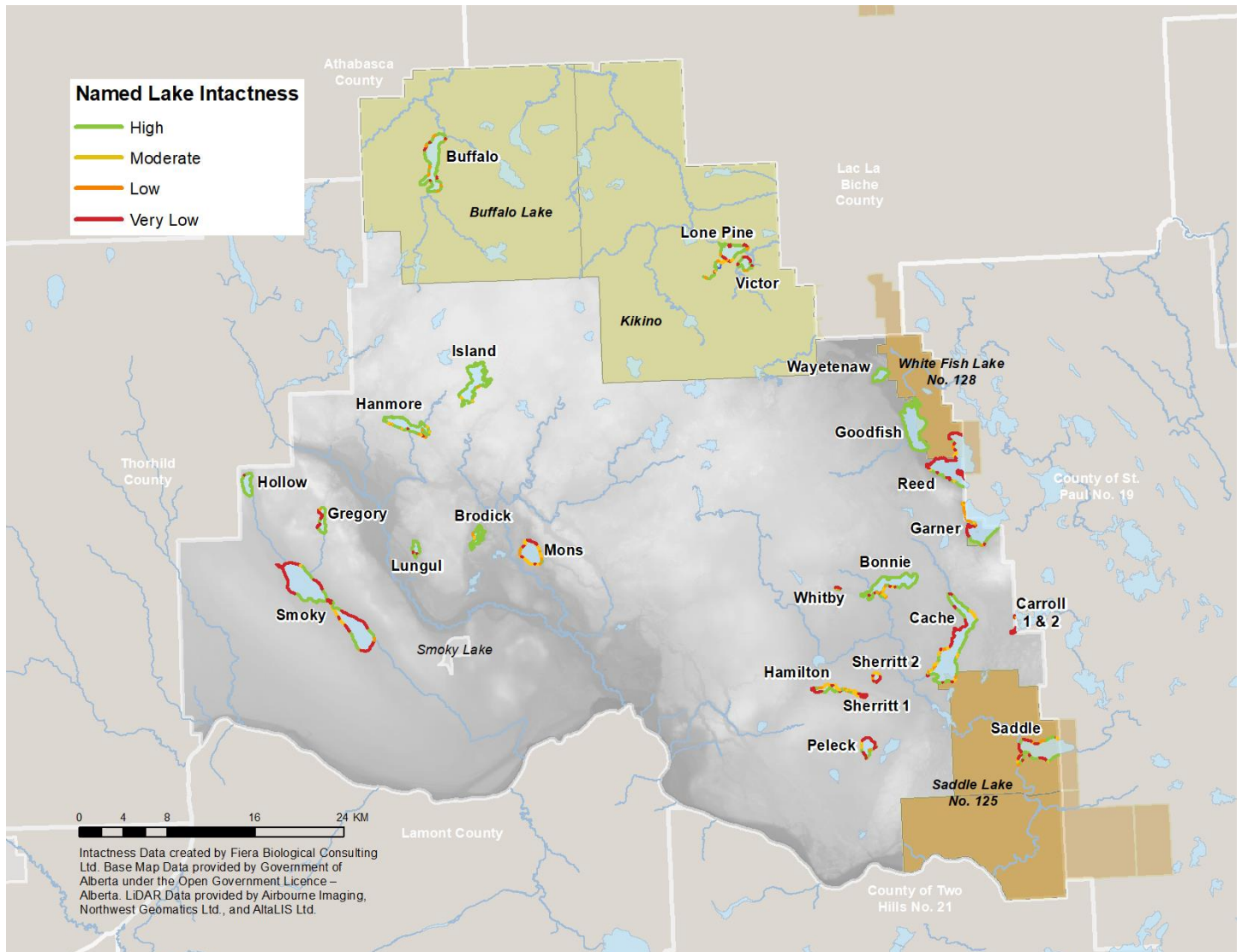


Intactness By Waterbody Type

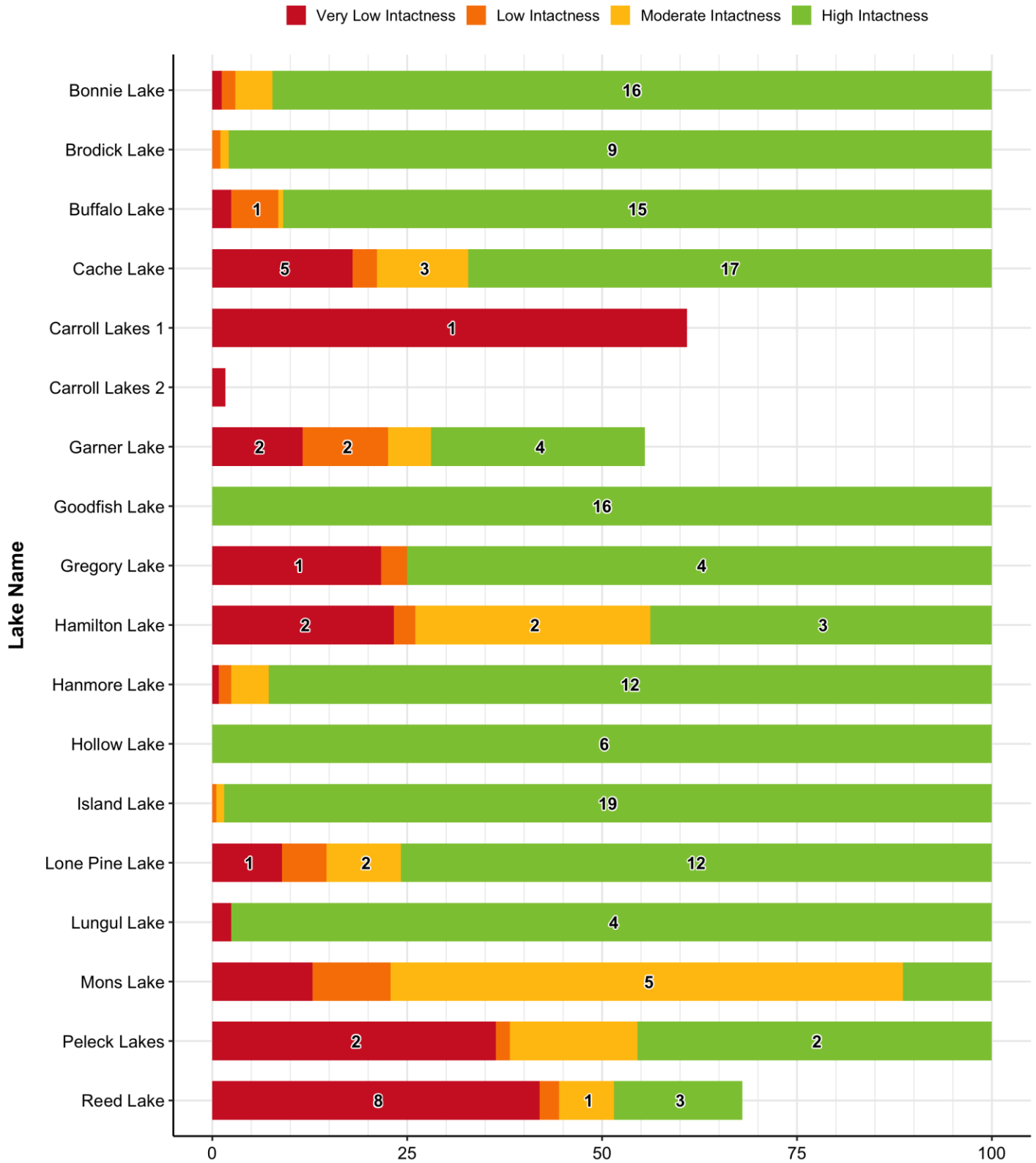


NOTE: Numbers indicate the total length (km) of shoreline associated with each intactness category. Categories with no label contain <15 km of shoreline.

Intactness - Named Lakes



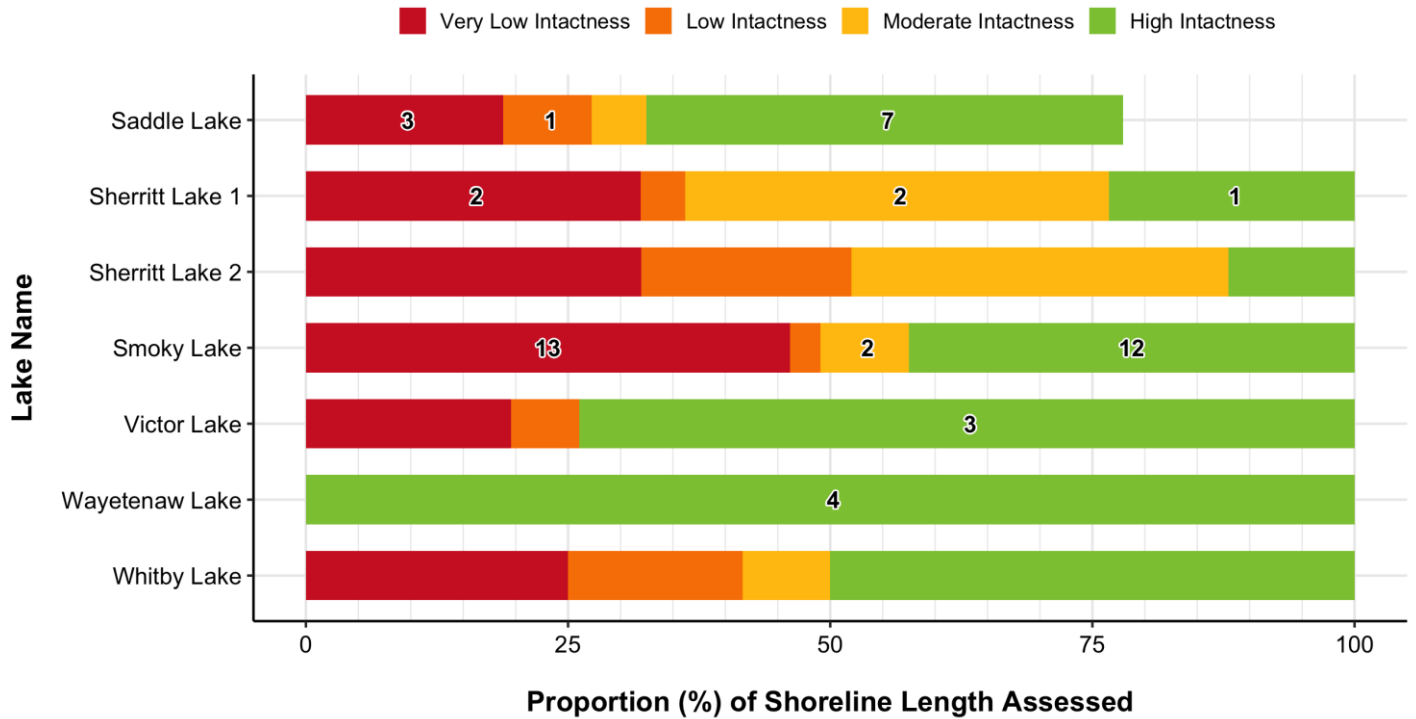
Intactness - Named Lakes



Proportion (%) of Shoreline Length Assessed

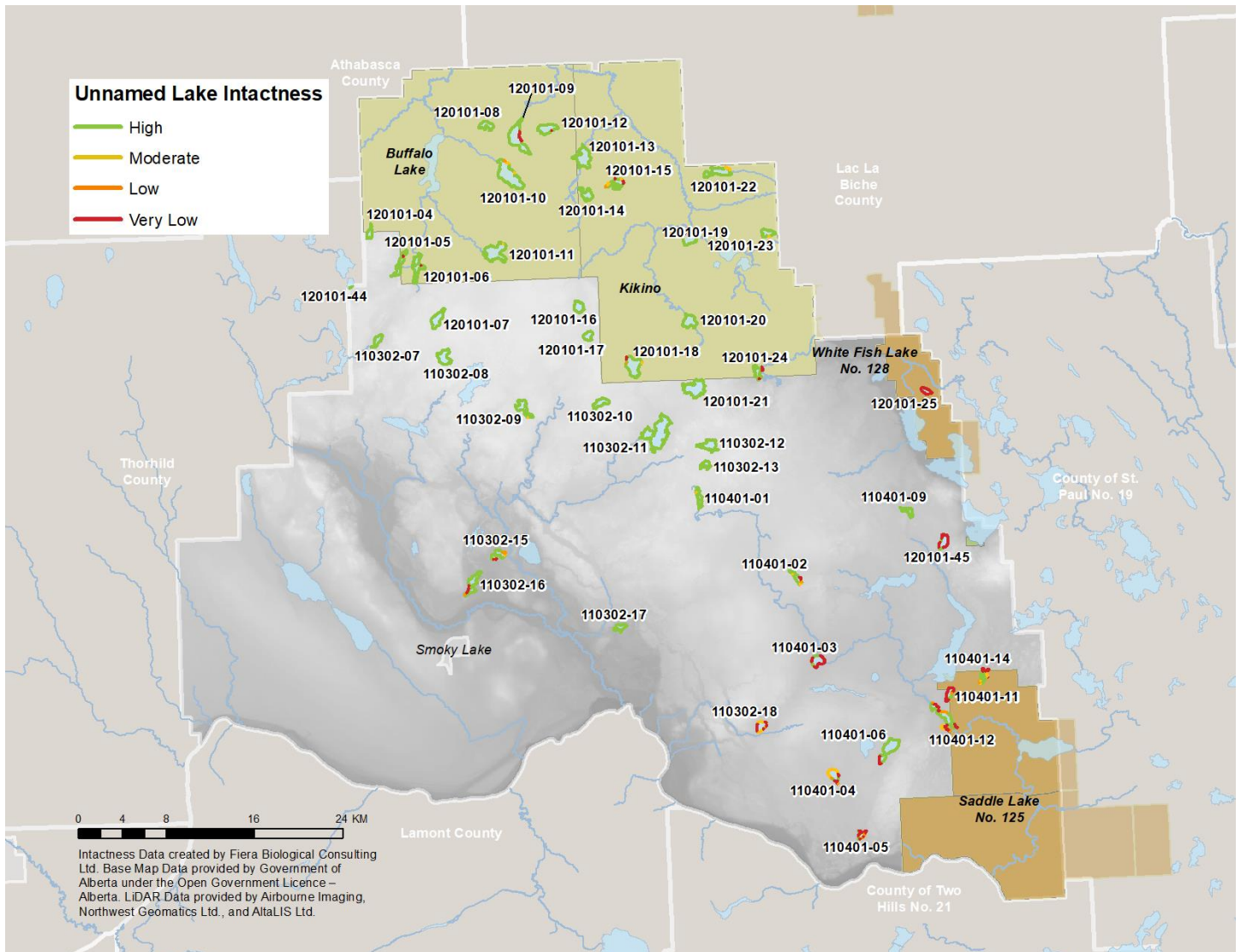
NOTE: Numbers indicate the total length (km) of shoreline associated with each intactness category. Categories with no label contain <1 km of shoreline.

Intactness - Named Lakes Continued

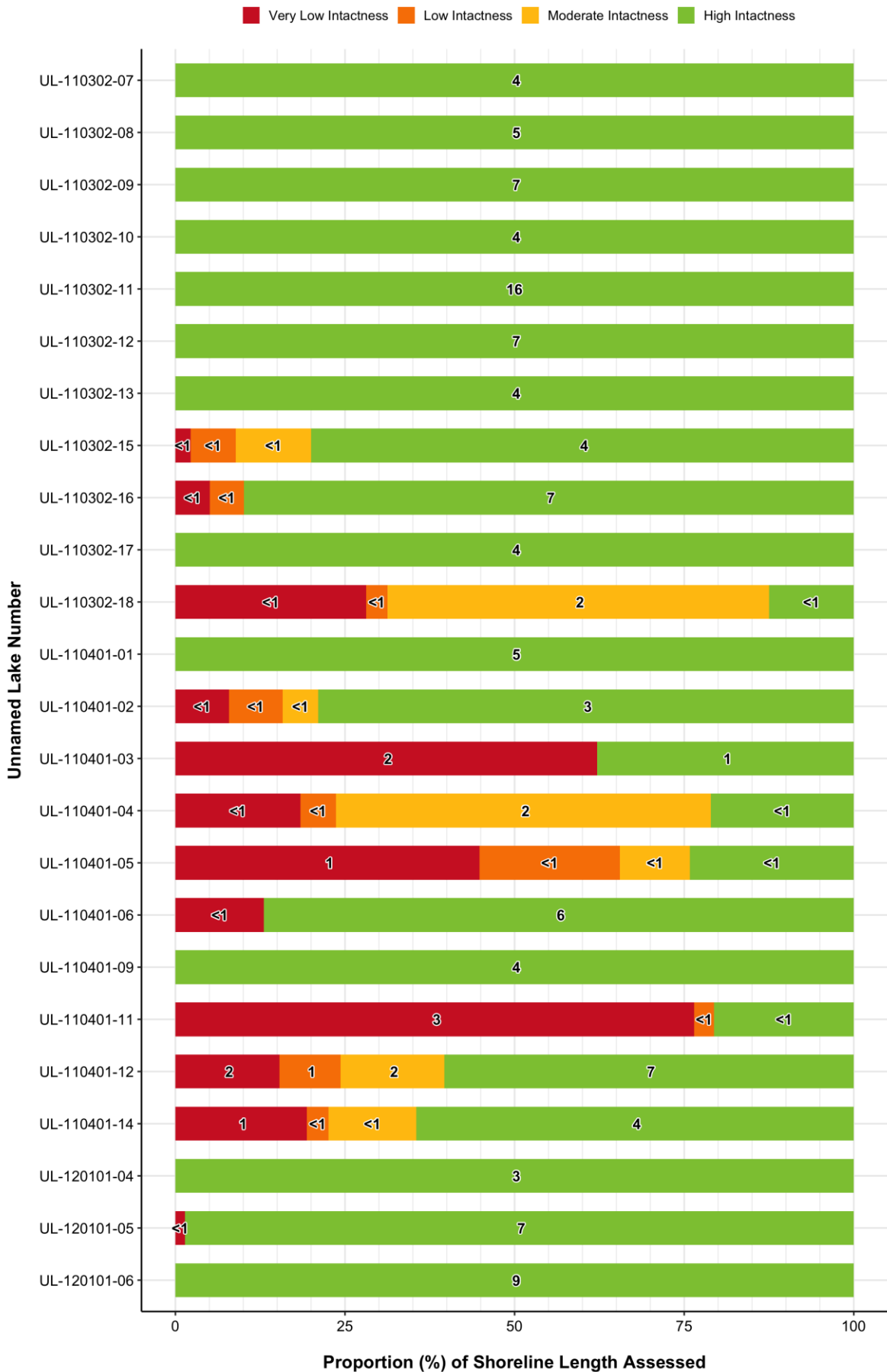


NOTE: Numbers indicate the total length (km) of shoreline associated with each intactness category. Categories with no label contain <1 km of shoreline.

Intactness - Unnamed Lakes

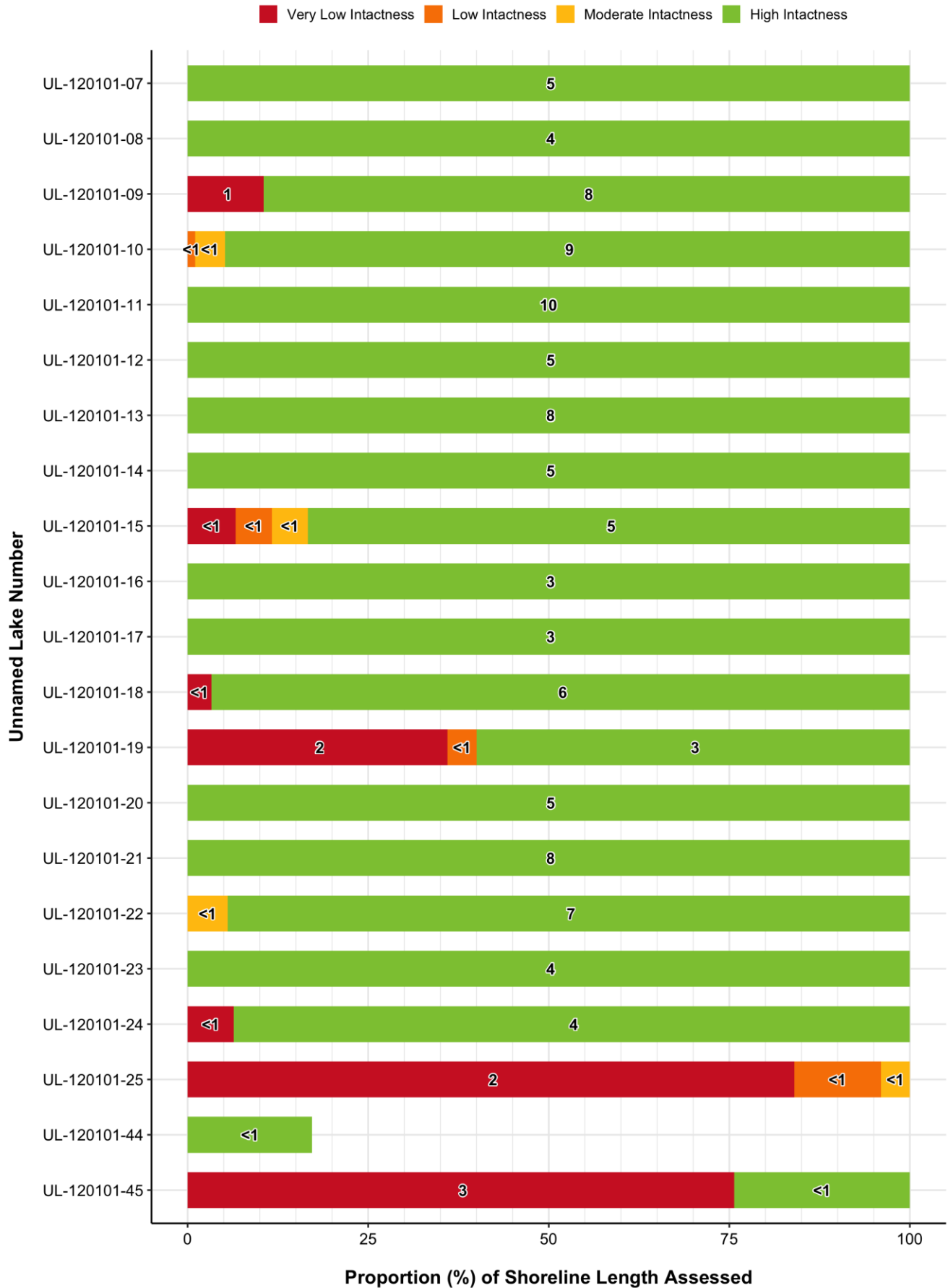


Intactness - Unnamed Lakes



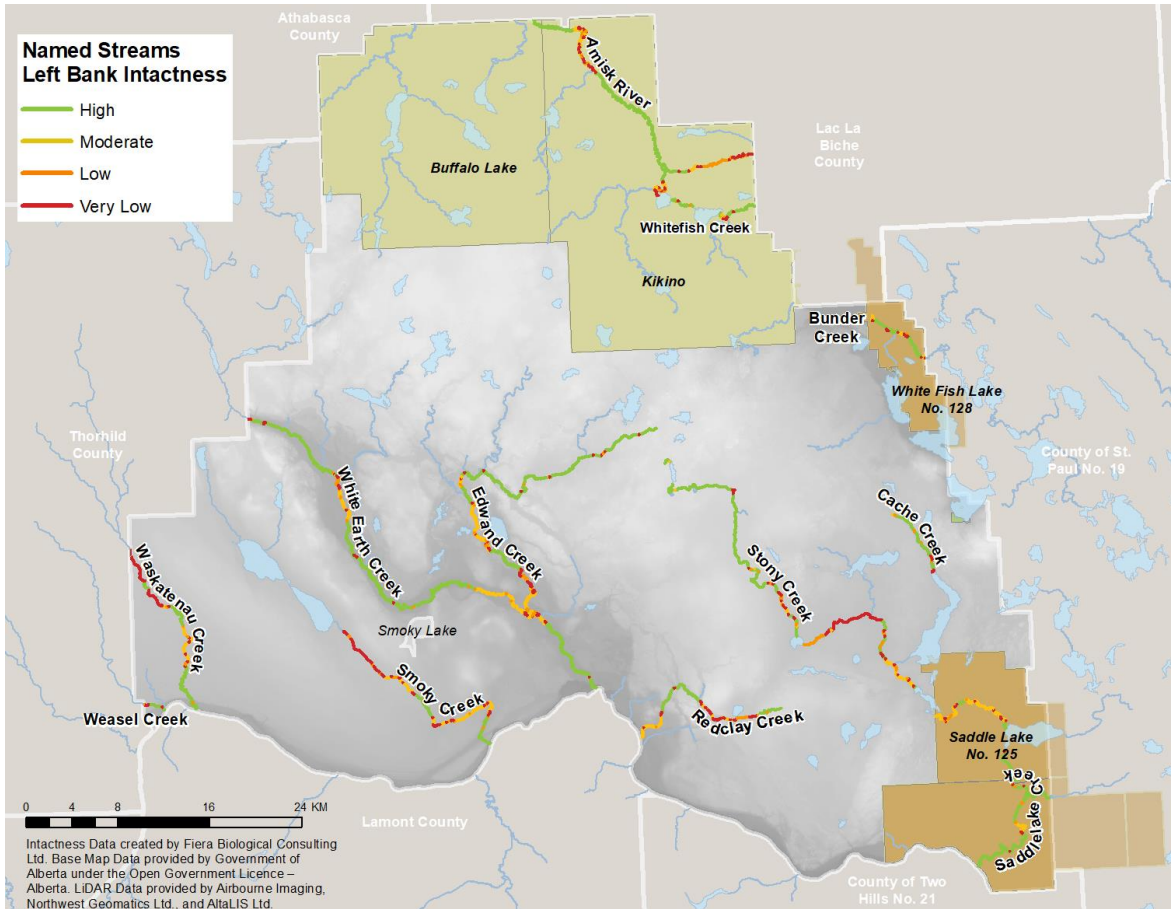
NOTE: Numbers indicate the total length (km) of shoreline associated with each intactness category.

Intactness - Unnamed Lakes Continued

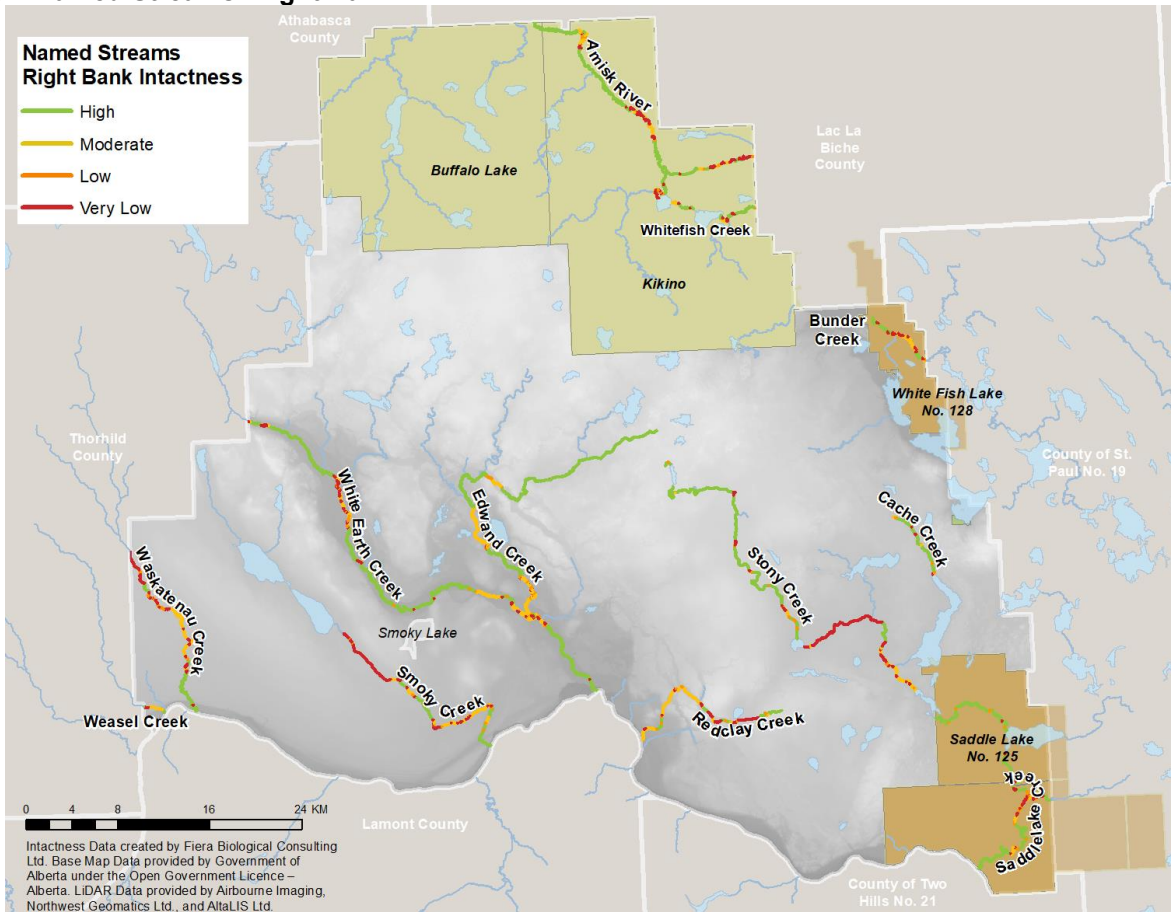


NOTE: Numbers indicate the total length (km) of shoreline associated with each intactness category.

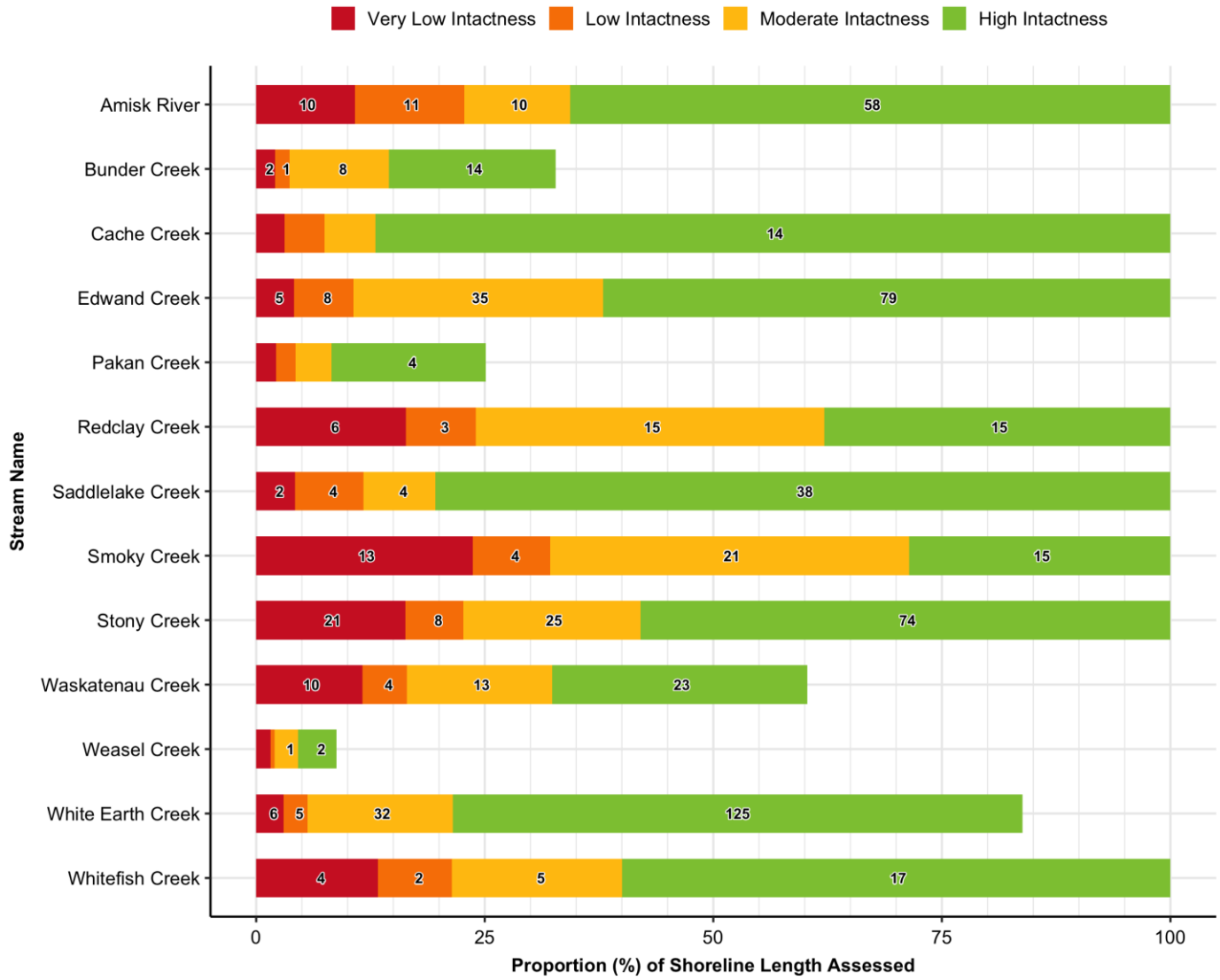
Intactness – Named Streams: Left Bank



Intactness – Named Streams: Right Bank

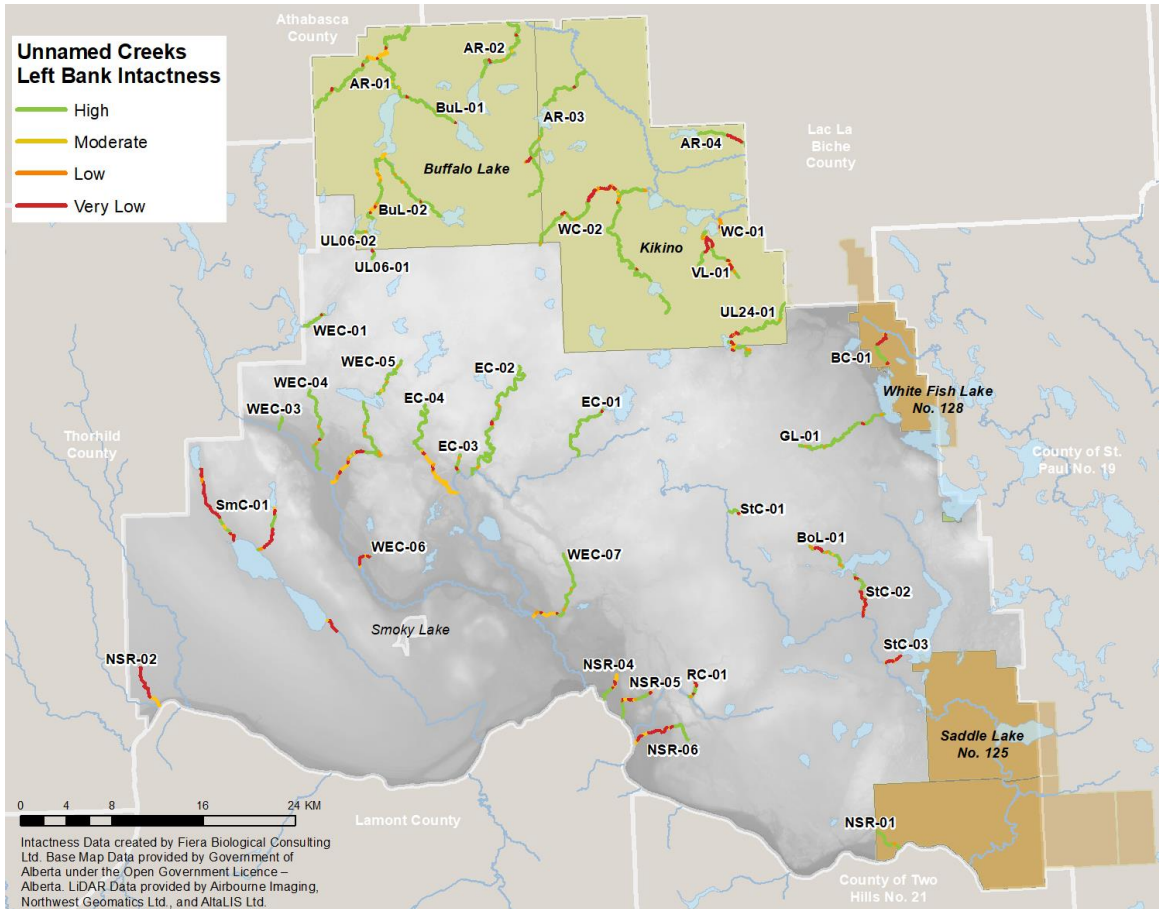


Intactness – Named Streams

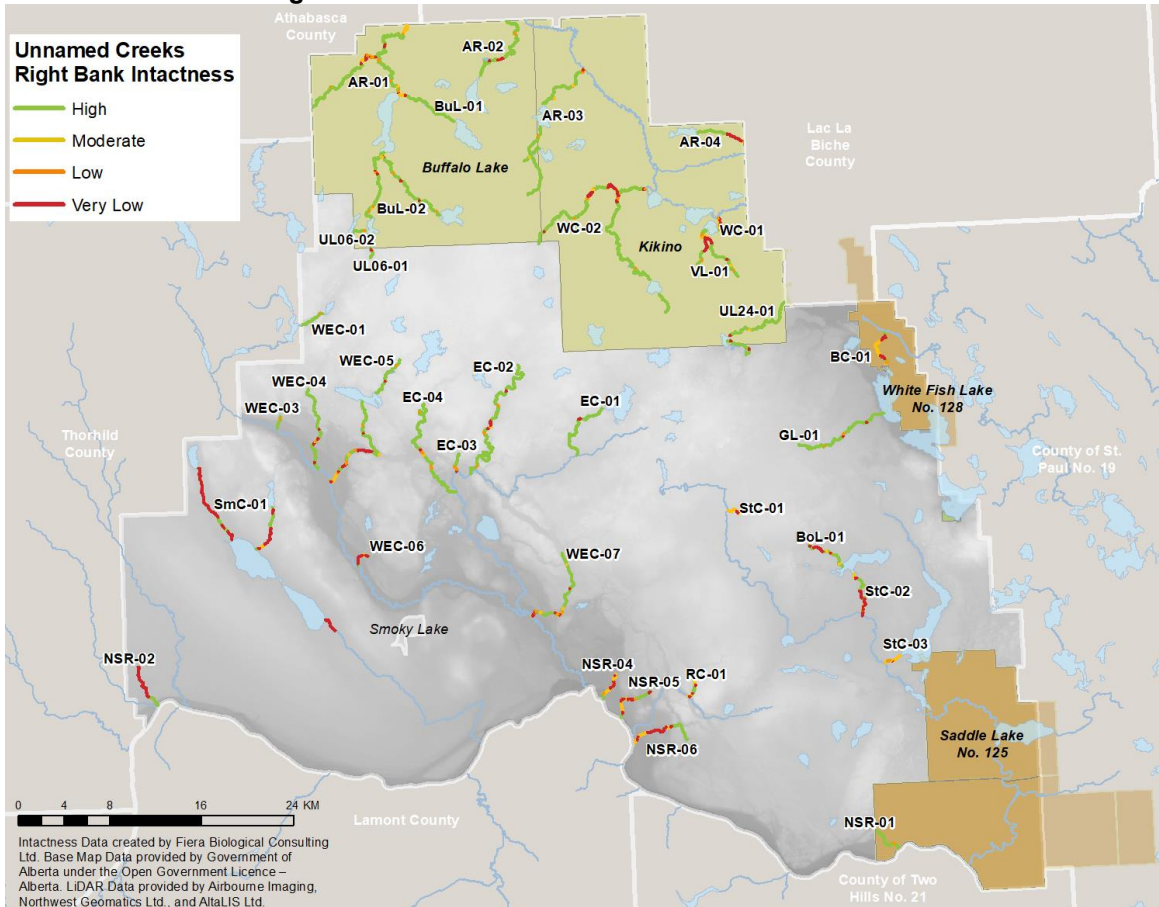


NOTE: Numbers indicate the total length (km) of shoreline associated with each intactness category. Categories with no label contain <1 km of shoreline.

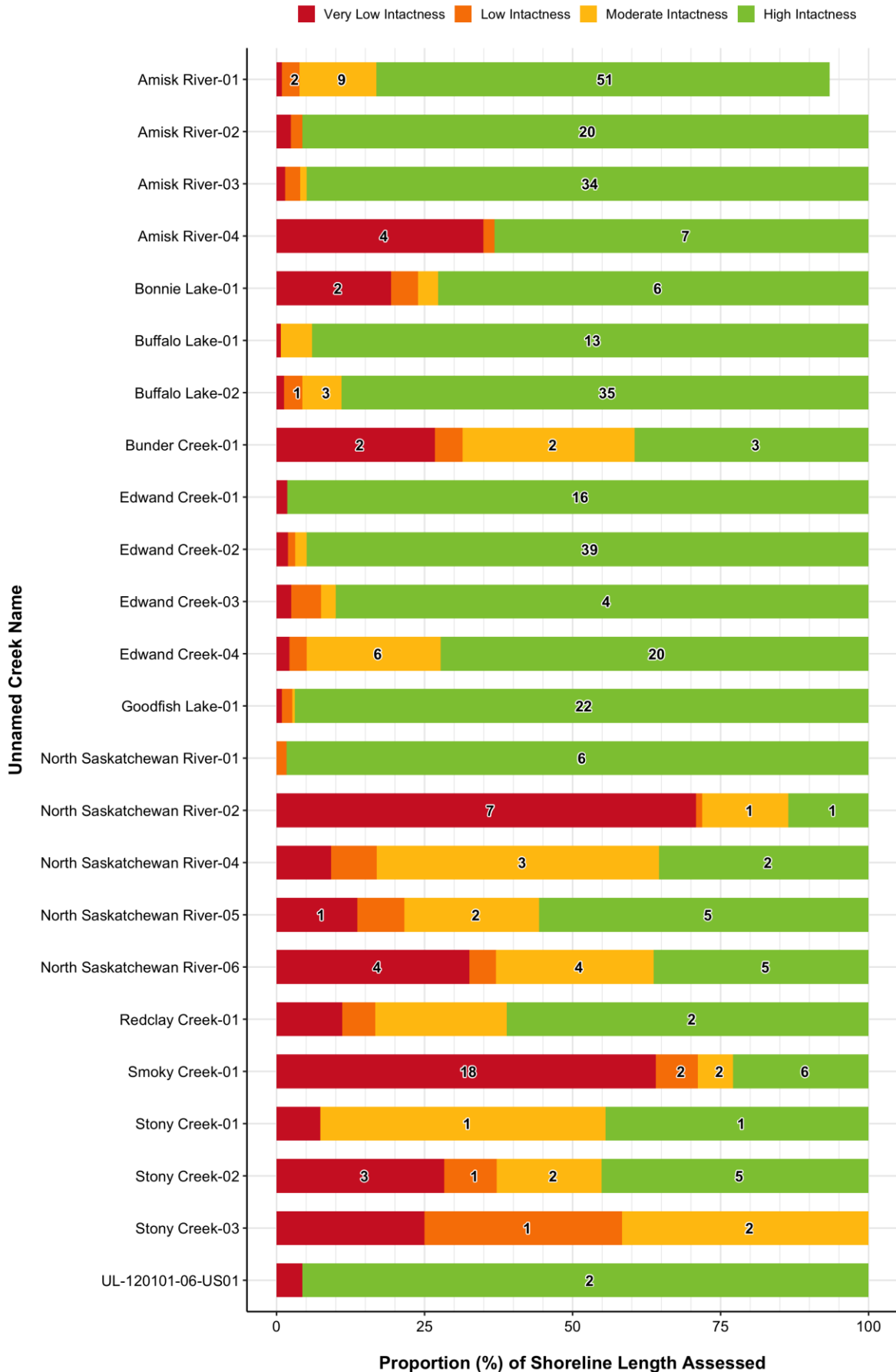
Intactness – Unnamed Creeks: Left Bank



Intactness – Unnamed Creeks: Right Bank

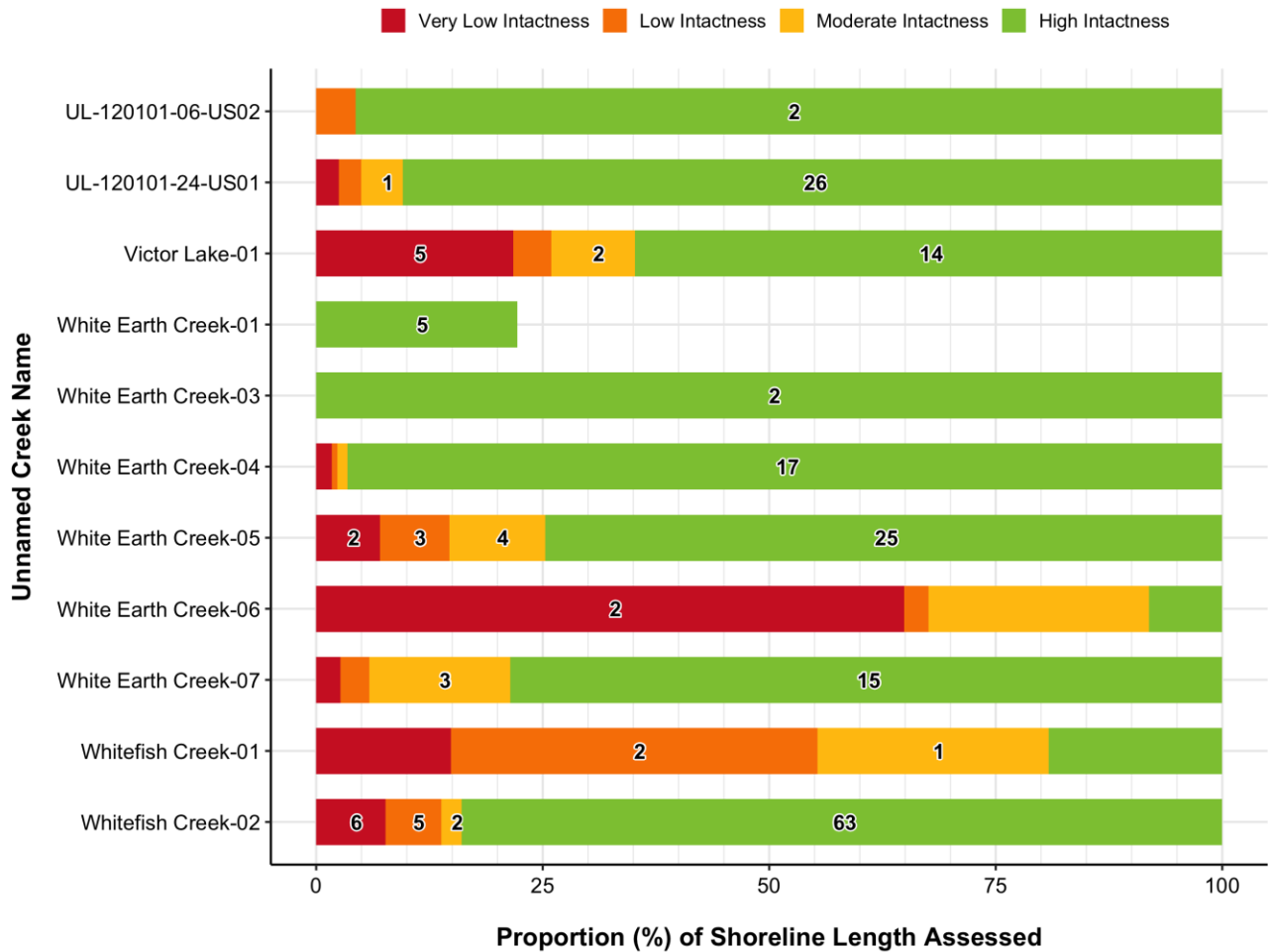


Intactness – Unnamed Creeks



NOTE: Numbers indicate the total length (km) of shoreline associated with each intactness category. Categories with no label contain <1 km of shoreline.

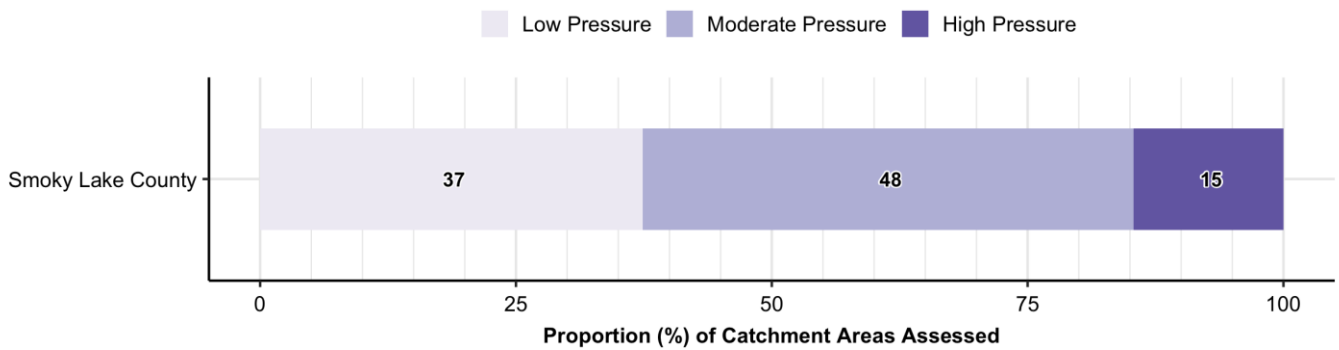
Intactness – Unnamed Creeks Continued



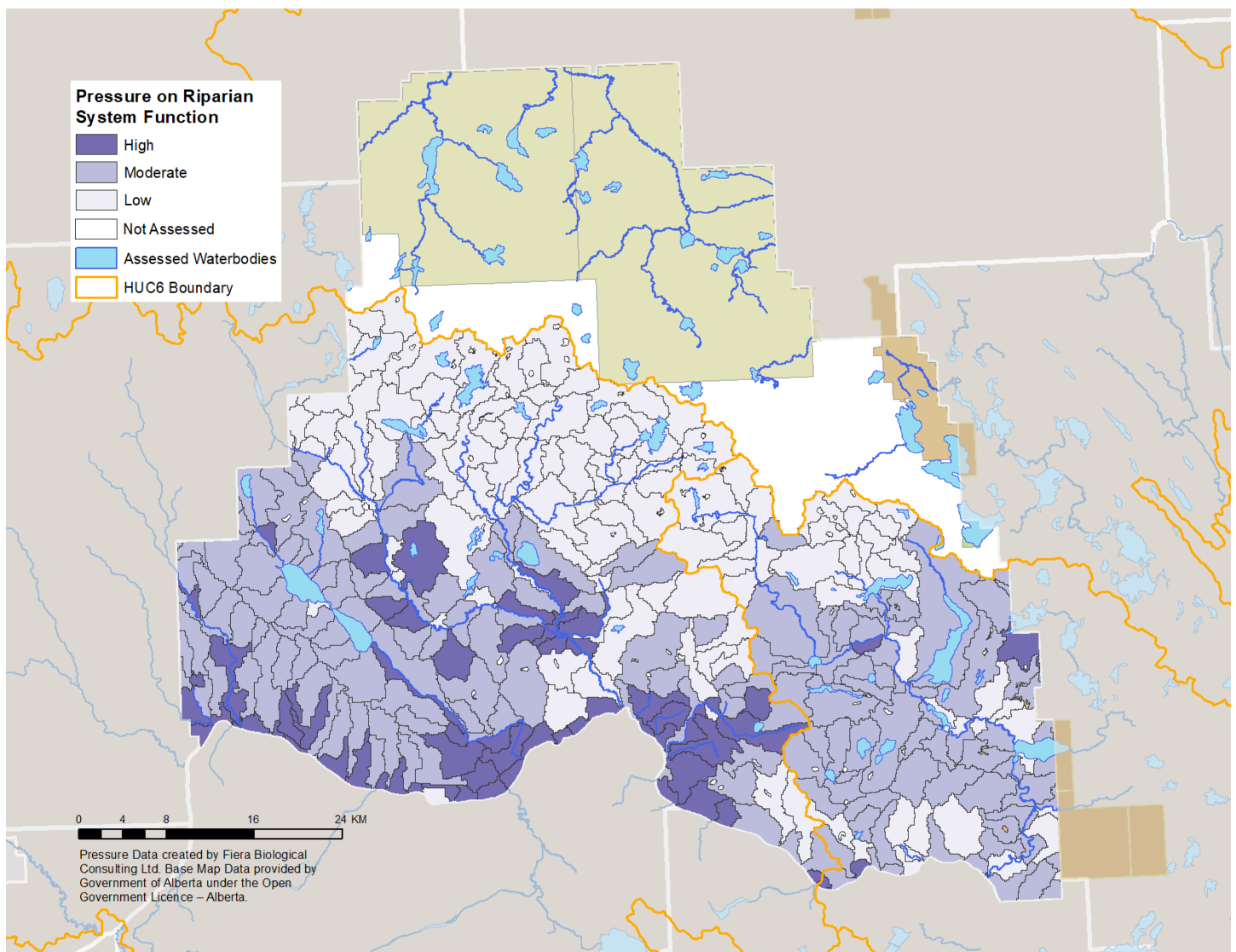
NOTE: Numbers indicate the total length (km) of shoreline associated with each intactness category. Categories with no label contain <1 km of shoreline.

1.5. Pressure on Riparian System Function

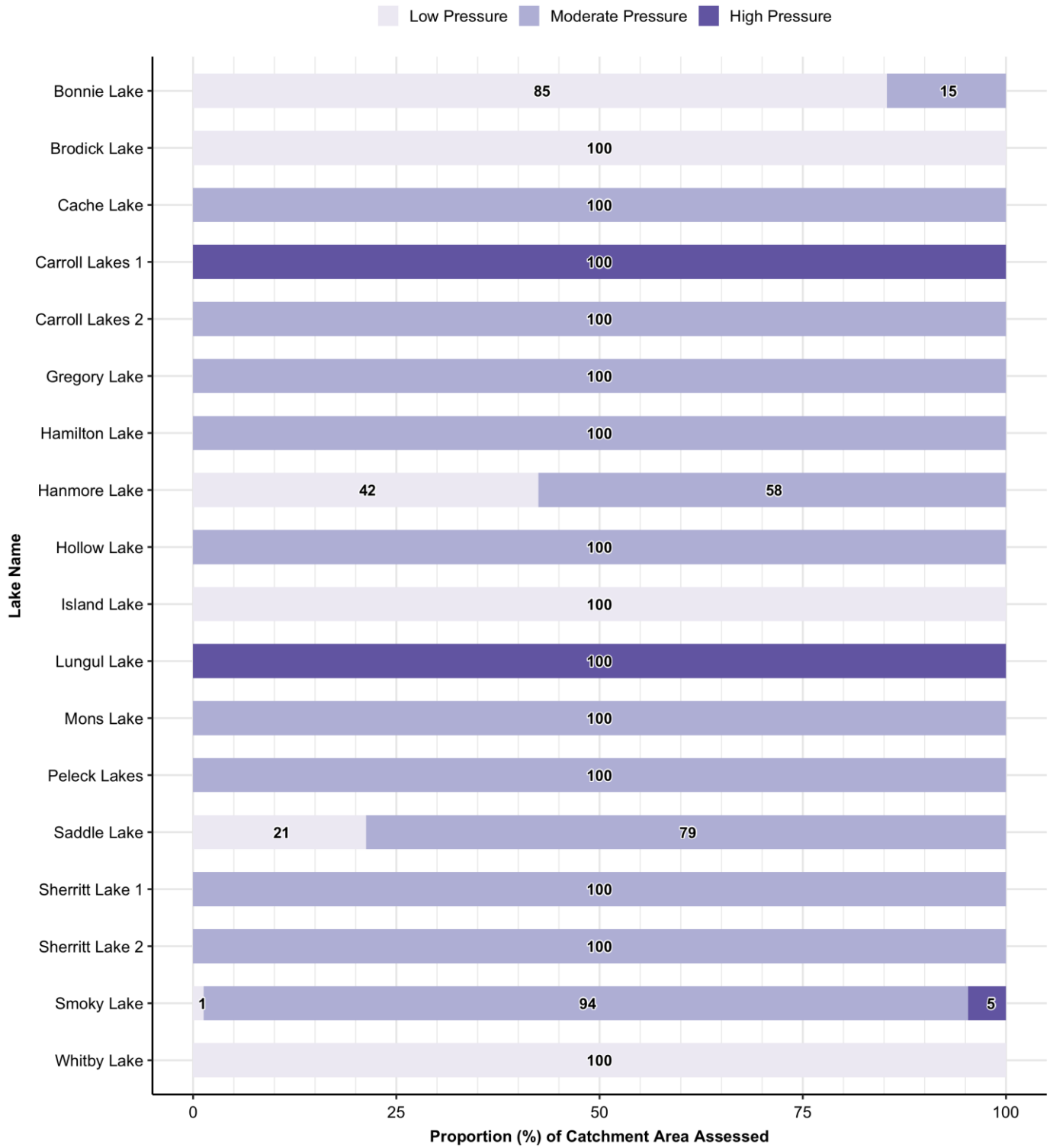
Overall Municipal Pressure



NOTE: Numbers indicate the proportion (%) of shoreline associated with each pressure category.

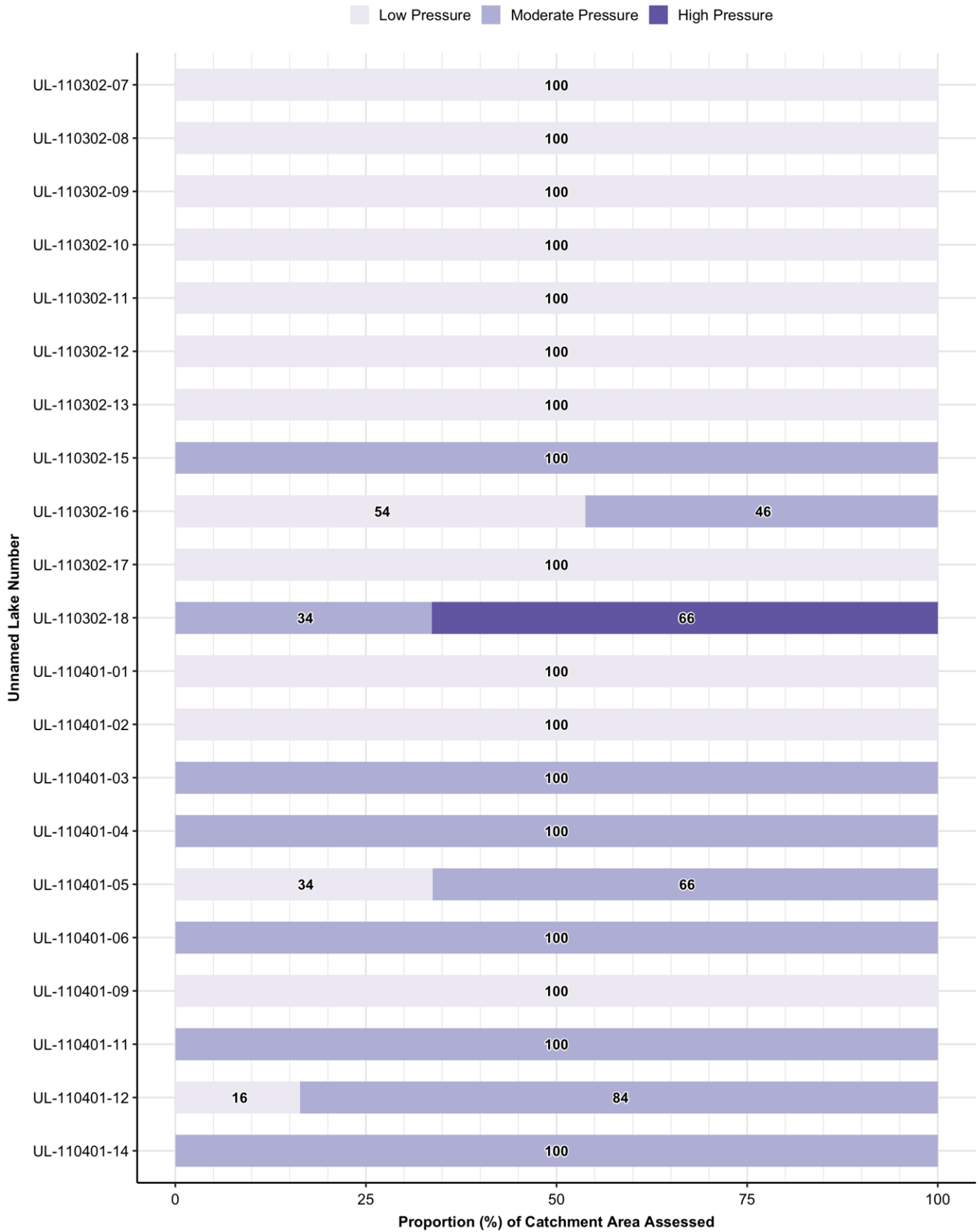


Pressure - Named Lakes



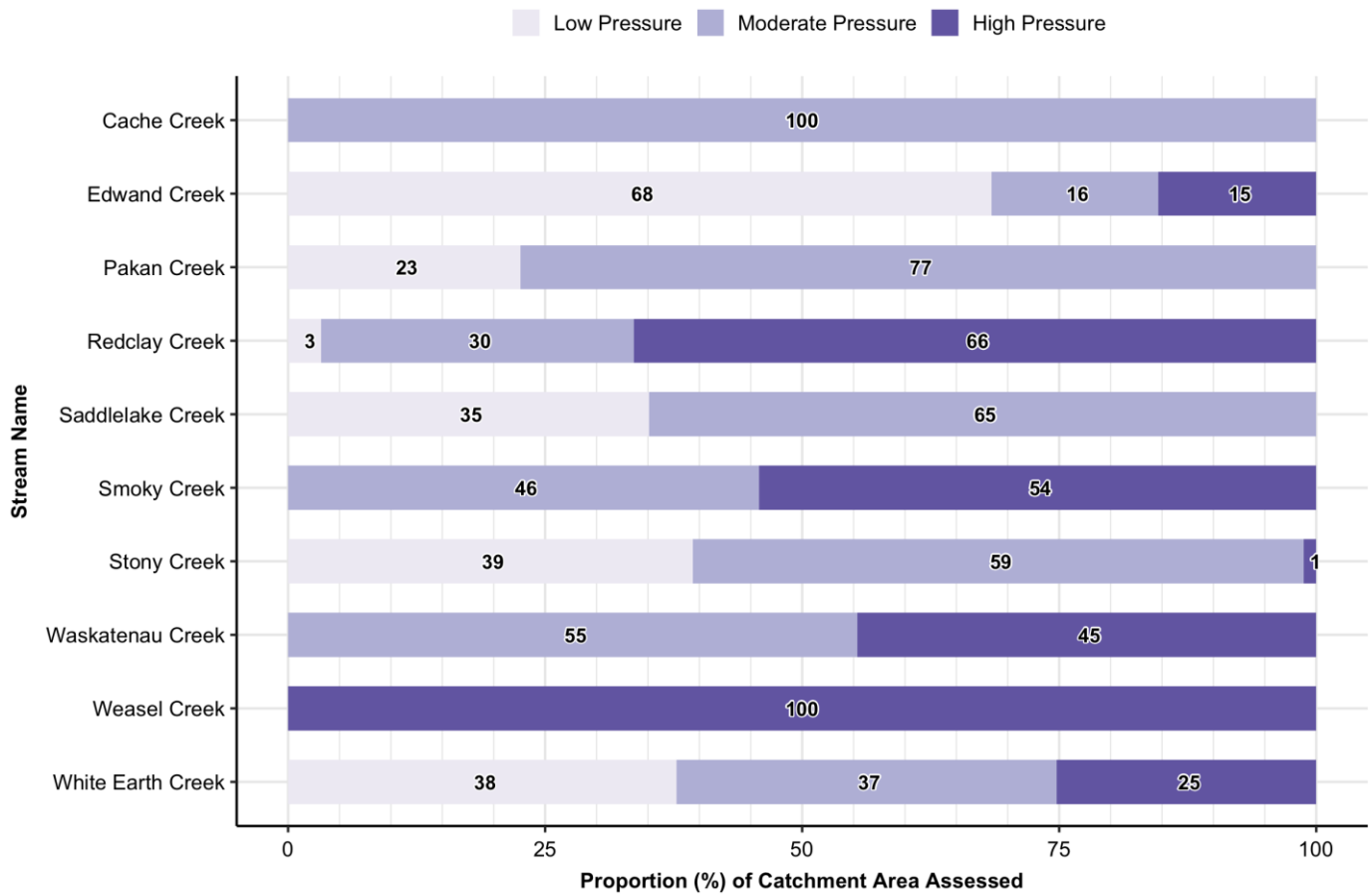
NOTE: Numbers indicate the proportion (%) of shoreline associated with each pressure category.

Pressure - Unnamed Lakes



NOTE: Numbers indicate the proportion (%) of shoreline associated with each pressure category.

Pressure - Named Streams



NOTE: Numbers indicate the proportion (%) of shoreline associated with each pressure category.

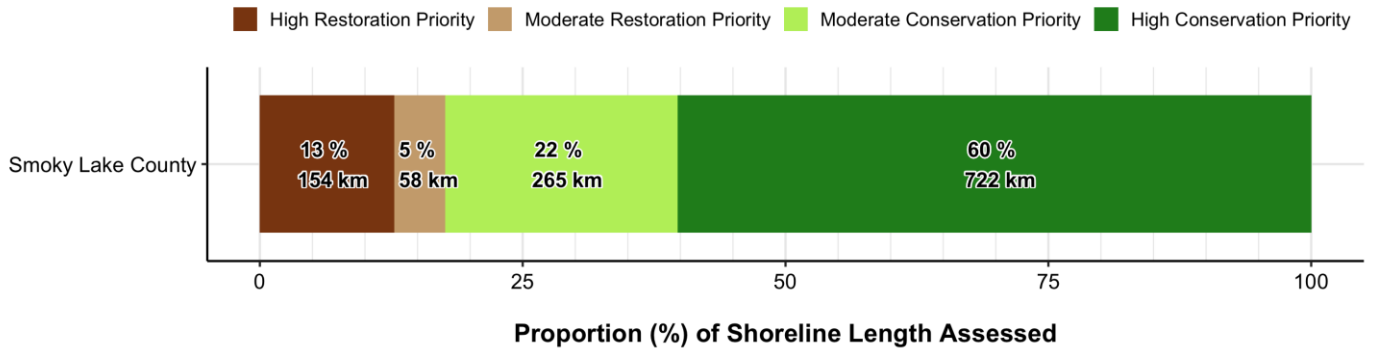
Pressure - Unnamed Creeks



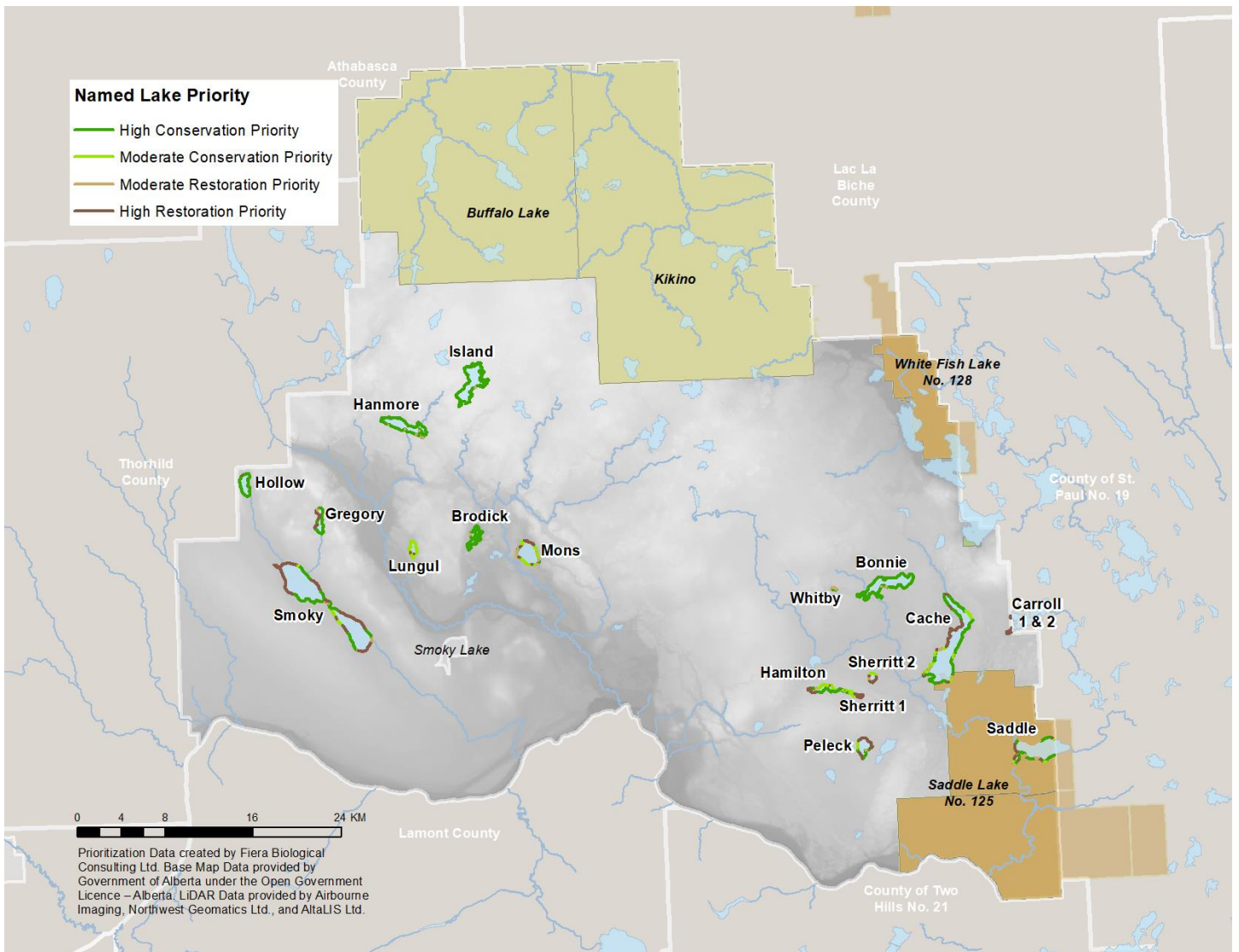
NOTE: Numbers indicate the proportion (%) of shoreline associated with each pressure category.

1.6. Conservation & Restoration Priority

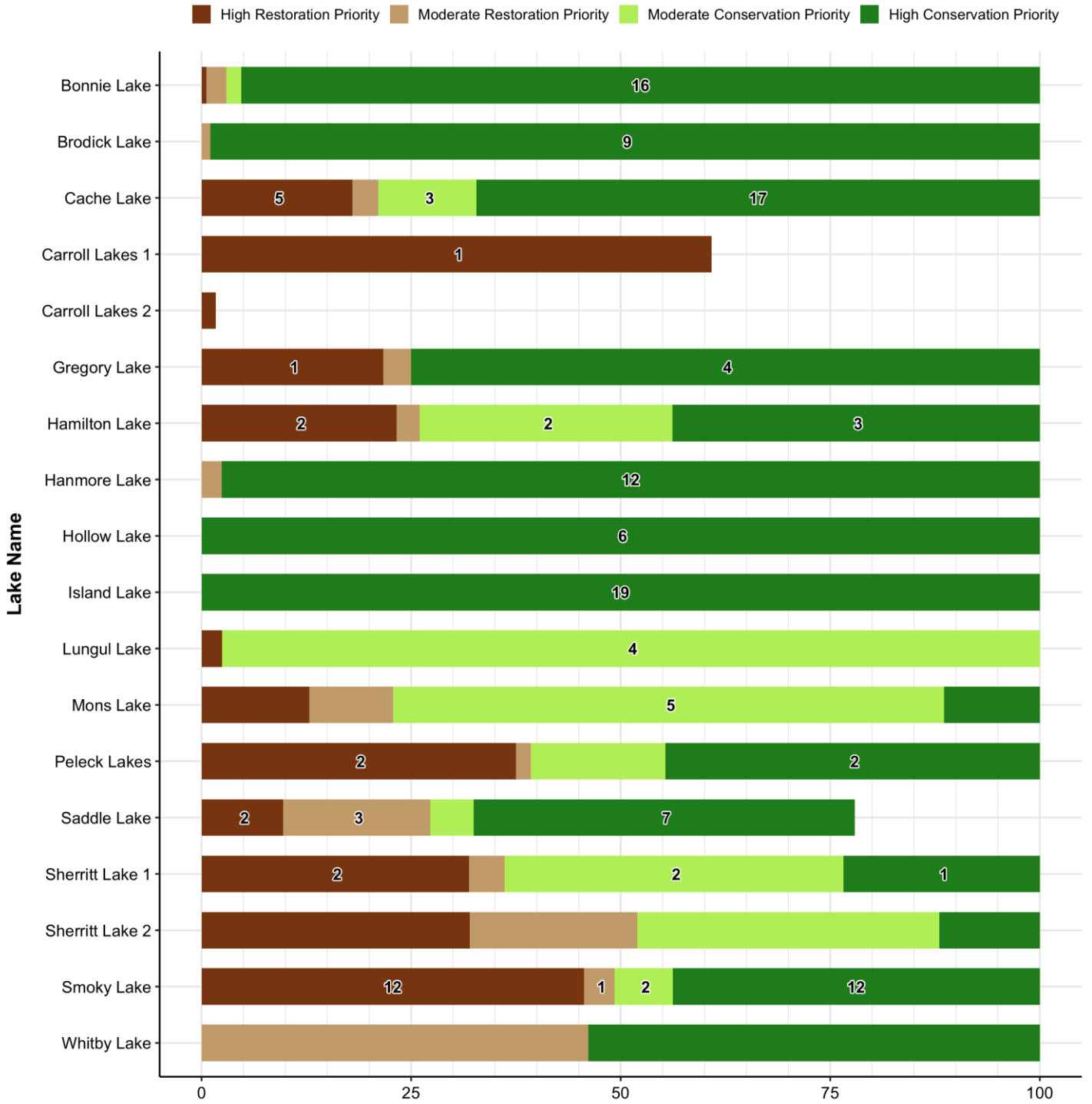
Overall Municipal Conservation & Restoration Priority



Conservation & Restoration Priority – Named Lakes



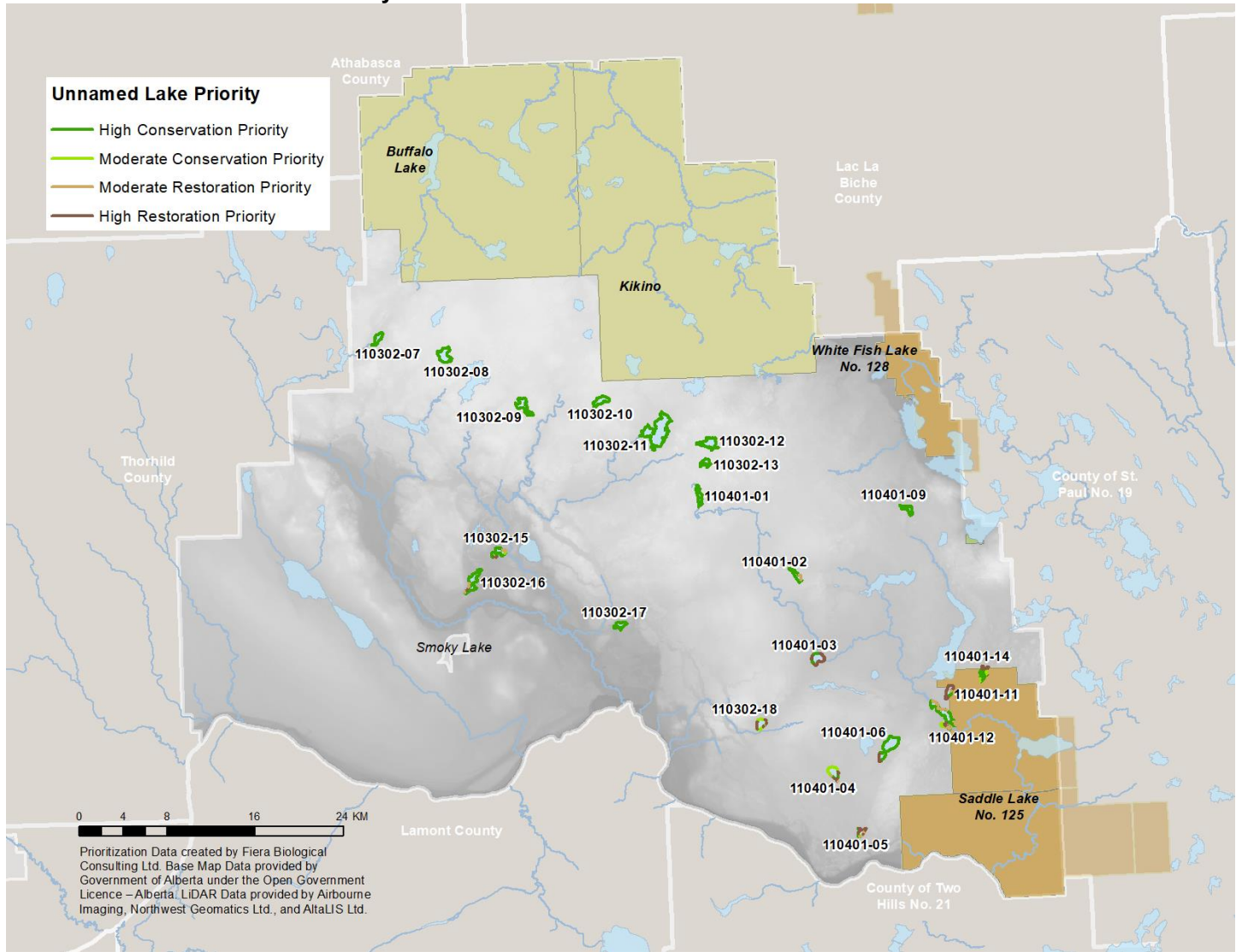
Conservation & Restoration Priority – Named Lakes



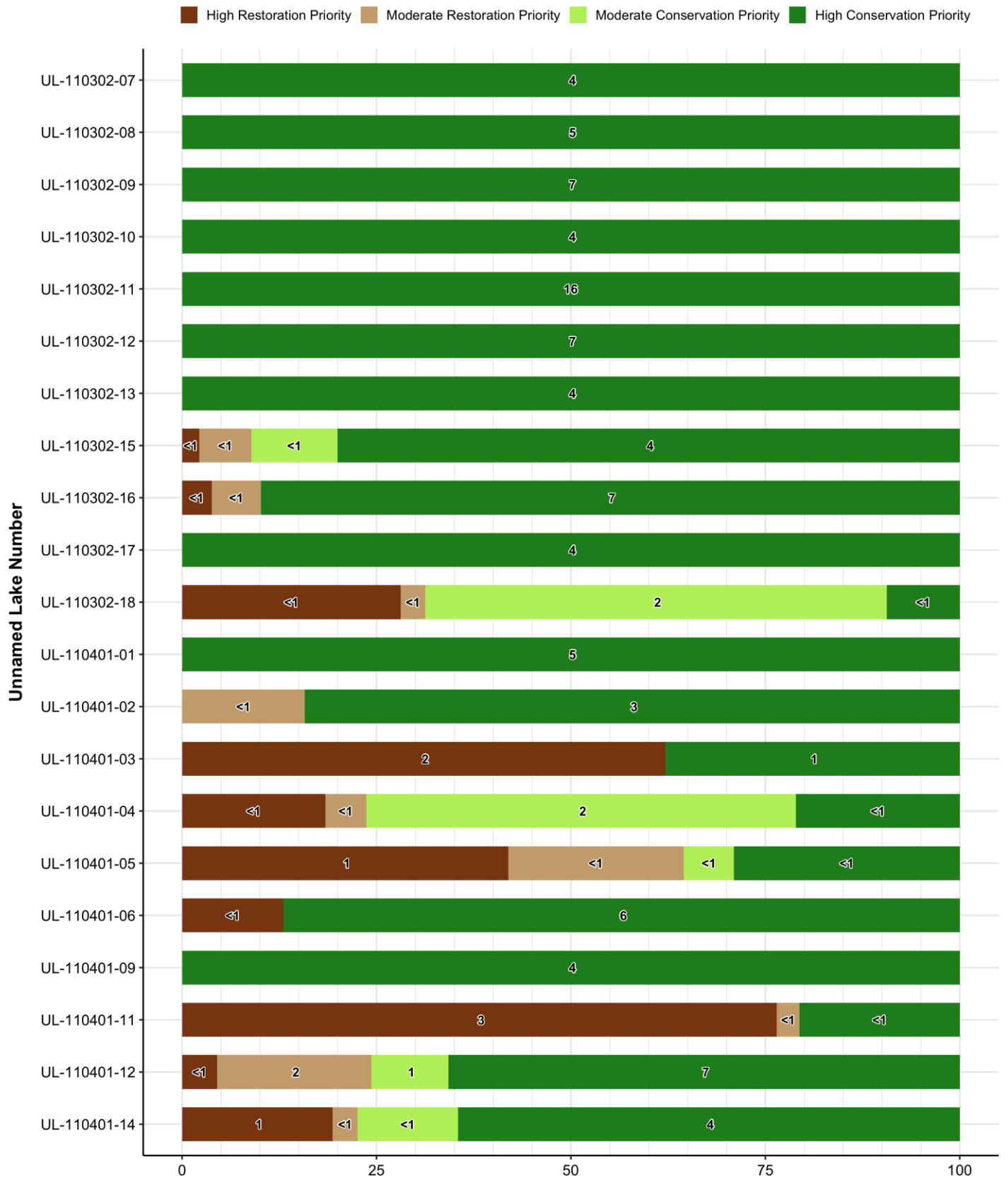
Proportion (%) of Shoreline Length Assessed

NOTE: Numbers indicate the total length (km) of shoreline associated with each prioritization category. Categories with no label contain <1 km of shoreline.

Conservation & Restoration Priority – Unnamed Lakes



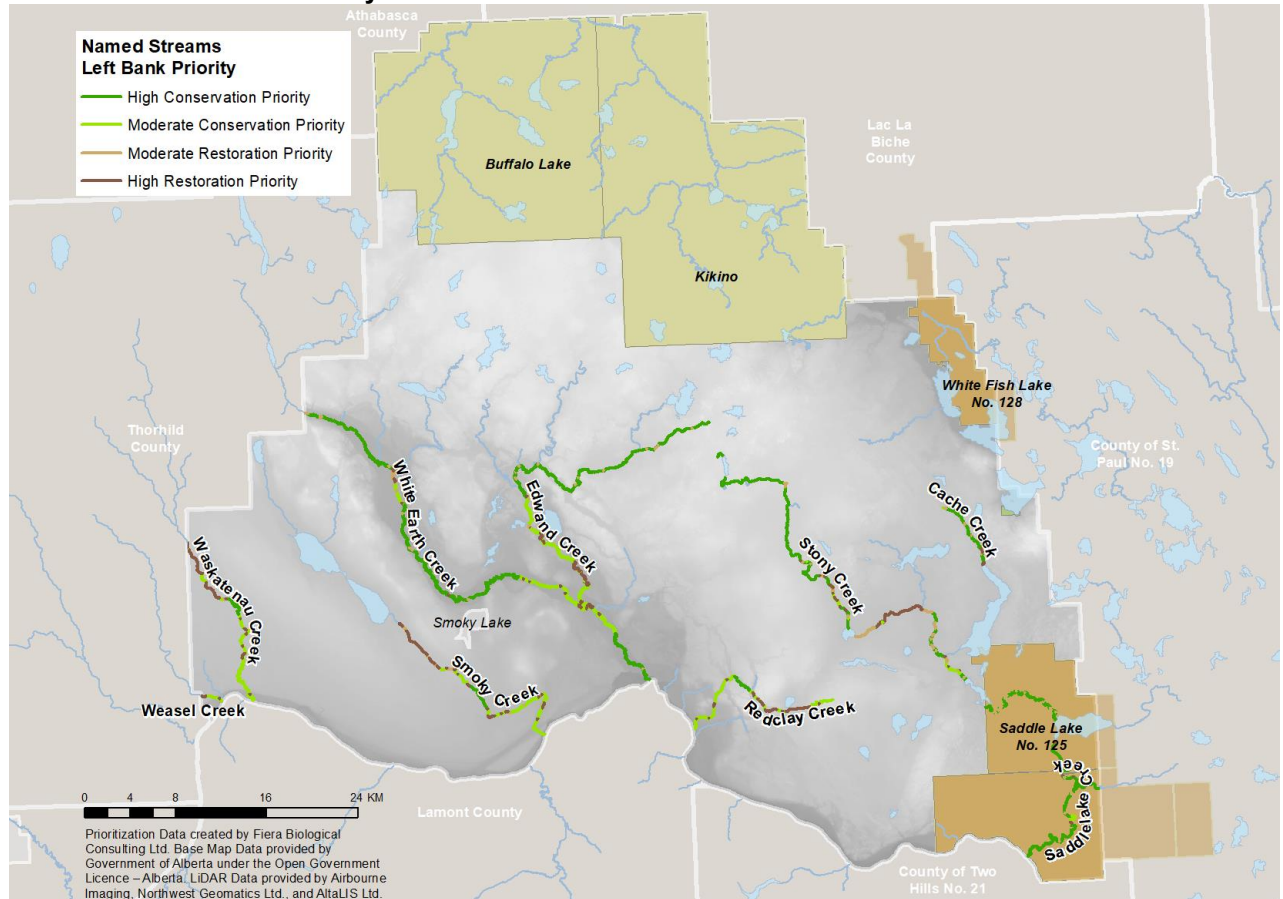
Conservation & Restoration Priority – Unnamed Lakes



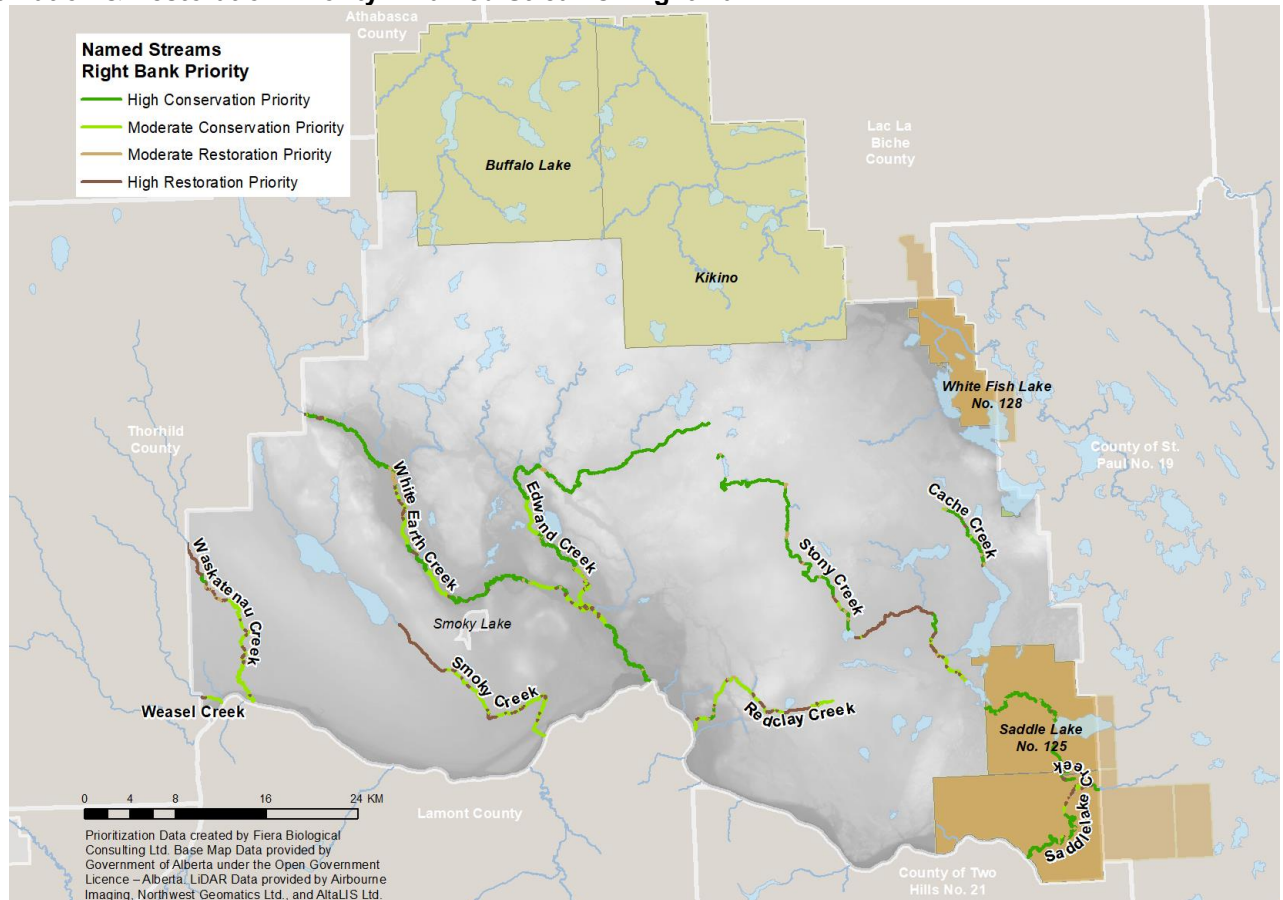
Proportion (%) of Shoreline Length Assessed

NOTE: Numbers indicate the total length (km) of shoreline associated with each prioritization category.

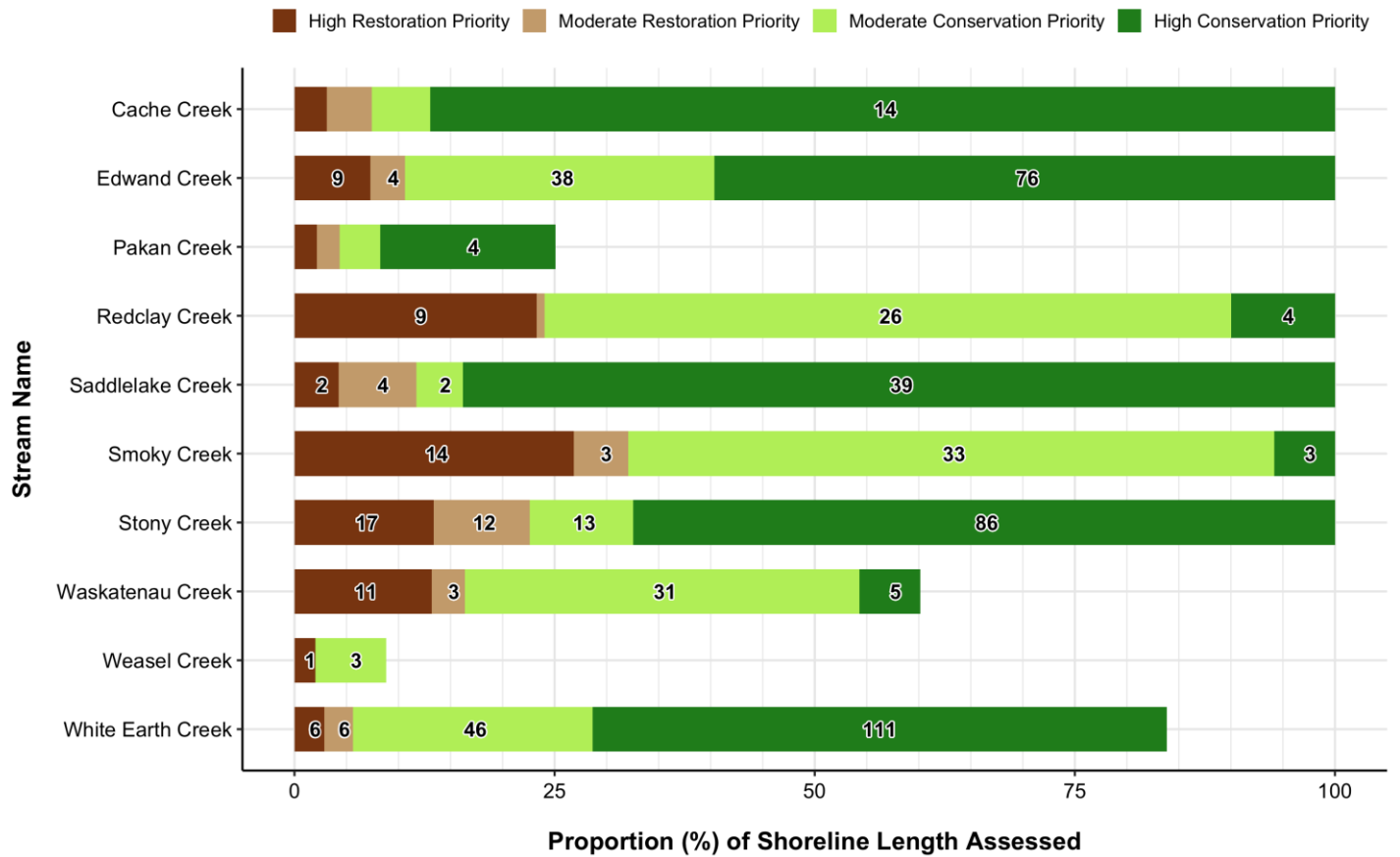
Conservation & Restoration Priority – Named Streams: Left Bank



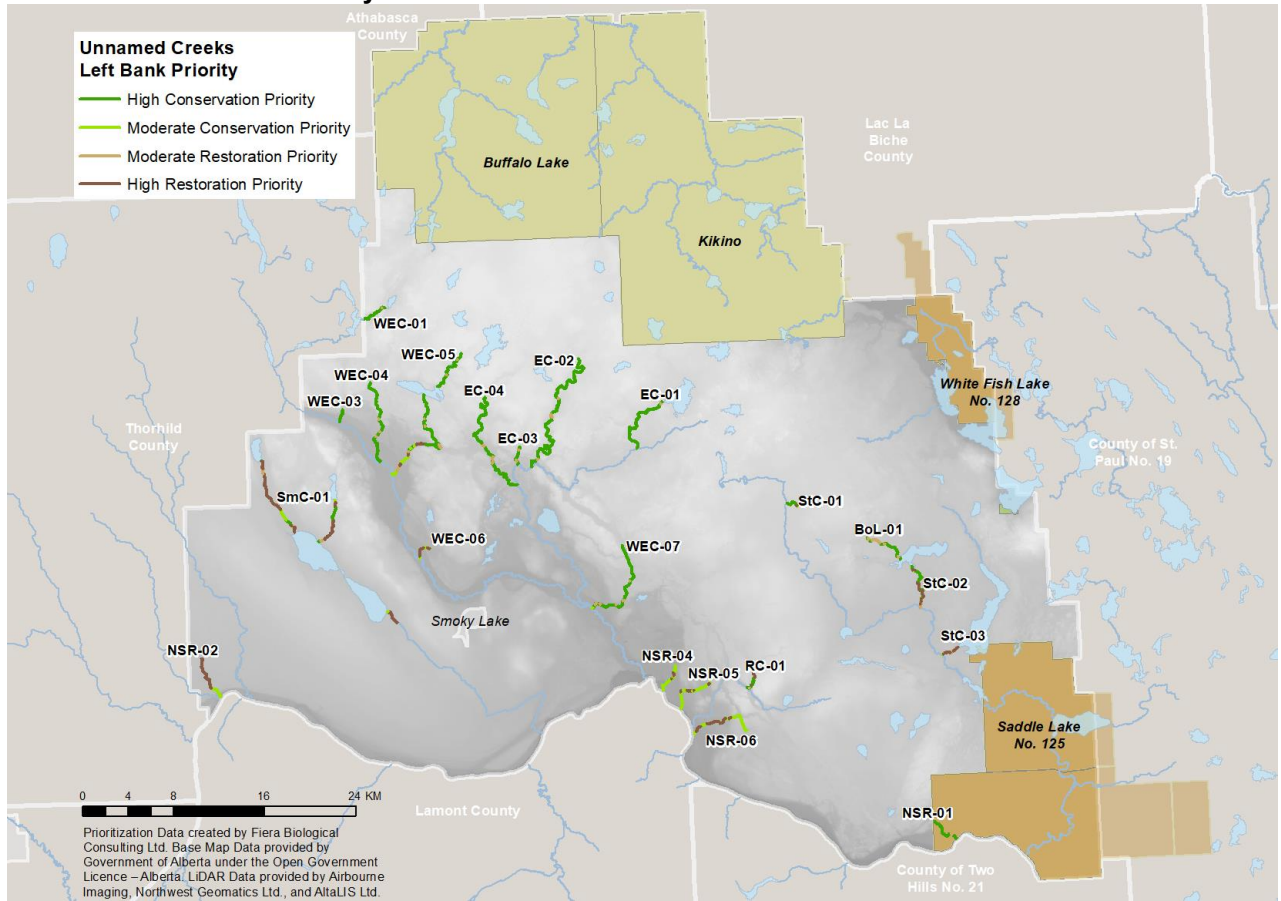
Conservation & Restoration Priority – Named Streams: Right Bank



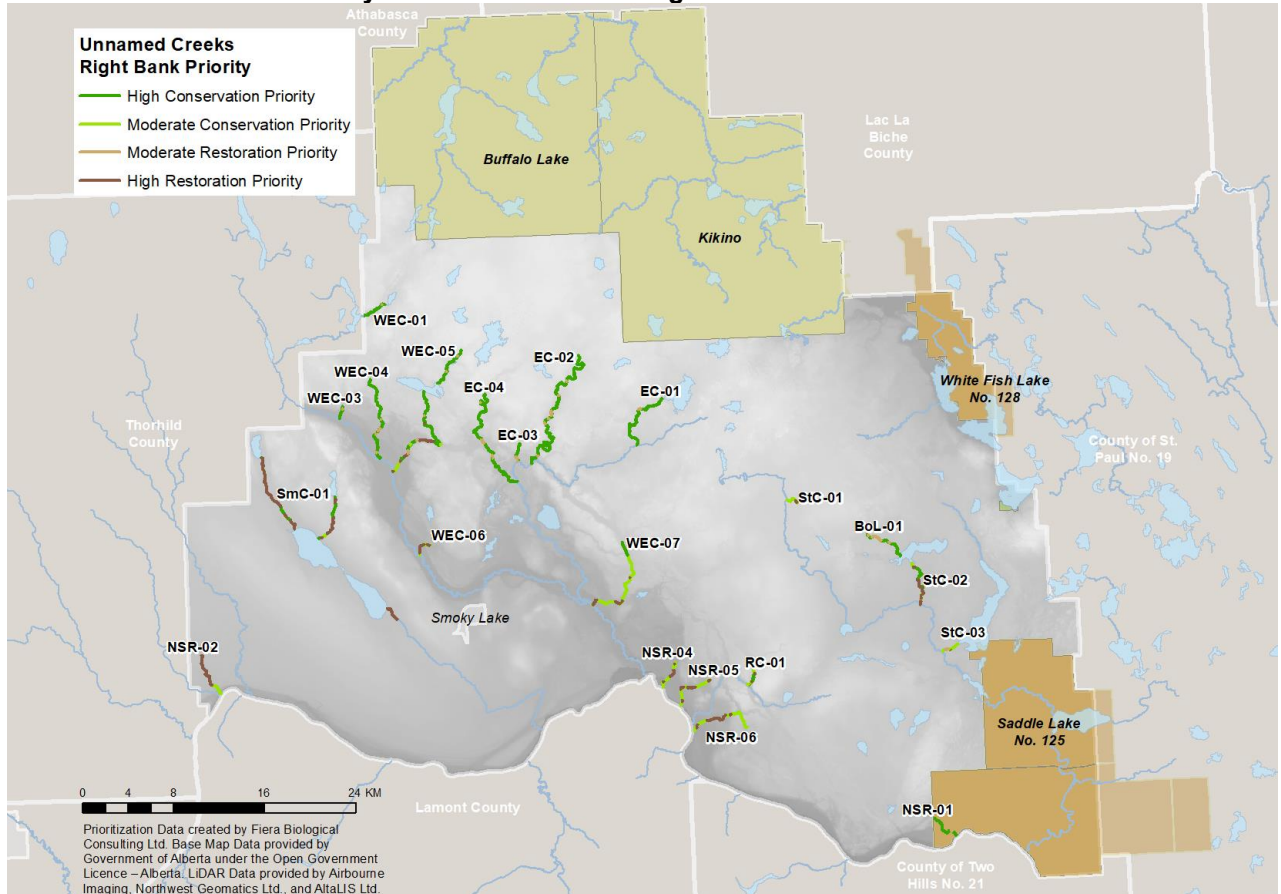
Conservation & Restoration Priority – Named Streams



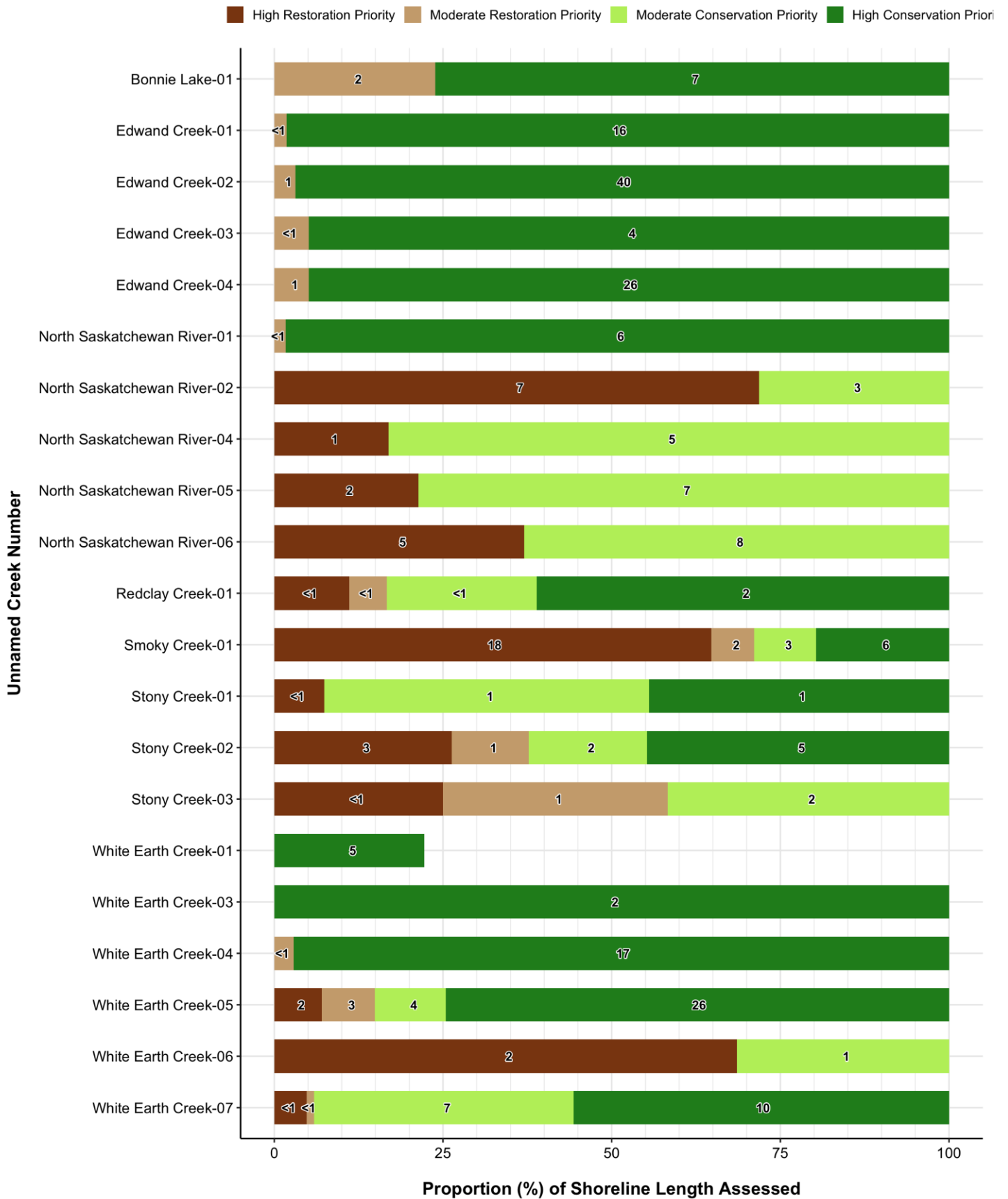
Conservation & Restoration Priority – Unnamed Creeks: Left Bank



Conservation & Restoration Priority – Unnamed Creeks: Right Bank



Conservation & Restoration Priority – Unnamed Creeks



NOTE: Numbers indicate the total length (km) of shoreline associated with each prioritization category.