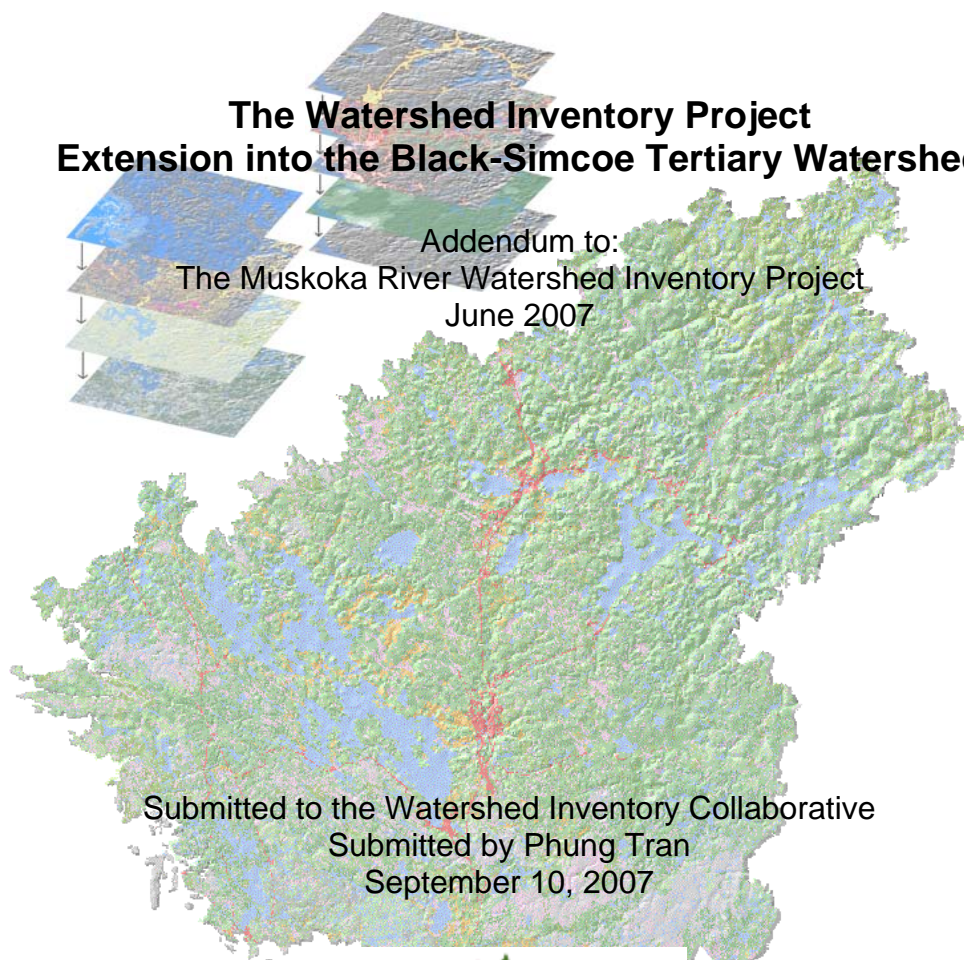


# **The Watershed Inventory Project Extension into the Black-Simcoe Tertiary Watershed**

Addendum to:  
The Muskoka River Watershed Inventory Project  
June 2007



Submitted to the Watershed Inventory Collaborative  
Submitted by Phung Tran  
September 10, 2007

THE ONTARIO  
TRILLIUM  
FOUNDATION



LA FONDATION  
TRILLIUM  
DE L'ONTARIO



Ministry of Natural Resources  
Parry Sound District

**The Watershed Inventory Project  
Extension into the Black-Simcoe Tertiary Watershed**

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## Preamble

This addendum is a result of extending the Muskoka River Watershed Inventory Project (MRWIP) to include all of the watersheds intersecting The District Municipality of Muskoka. The extended assessment is known as the Watershed Inventory Project (WIP).

The entire area of interest (AOI) for WIP covers about 769,000 hectares. It includes all of the Muskoka River watershed (~559,000 ha) and the northern part of the Black-Simcoe tertiary watershed (~210,000 ha). The reason for the additional area of assessment was to include the southern portion of The District Municipality of Muskoka and Parry Sound Ministry of Natural Resources District, as well as covering most of the area monitored by the Muskoka Watershed Council.

The southern boundary of the AOI stops at the Canadian Shield contact line. The rationale for ending the AOI at the shield is the difference in datasets available for on-shield and off-shield analysis. As well, the collaborative group recognized that natural processes behave differently on the different landform types.

The development of WIP was overseen by a collaborative group of the Muskoka Heritage Foundation, Muskoka Watershed Council, District Municipality of Muskoka, and Ontario Ministry of Natural Resources (Parry Sound District). The collaborative members identified a need to undertake a landscape level analysis of the terrestrial ecological systems (ecosystems) for the watersheds within and surrounding the District Municipality of Muskoka in order to facilitate their planning and resource management mandates. Funding was acquired from the Ontario Trillium Foundation and the federal Department of Fisheries and Oceans for the original Muskoka River Watershed Inventory Project. The Land Between and the Metcalf Foundation provided support for the additional assessment.

The three goals of the program were to:

1. Identify unique terrestrial ecosystems
2. Identify areas of high ecological importance
3. Identify stresses on ecosystems and process

Based on these analyses, a system of core ecological areas and connecting systems was identified.

The methodology for the Great Lakes Conservation Blueprint, developed by the Nature Conservancy of Canada and Ontario Ministry of Natural Resources, (Henson et al. 2005; Henson and Brodribb, 2004) was adapted for use in the WIP. The approach used Geographic Information System (GIS) modeling to assess areas at a watershed scale using a transparent, ecology-based approach.

The WIP used the best available datasets to identify ecologically important sites in good condition within the watersheds surrounding the District Municipality of Muskoka. Using current landscape ecology principles, significant areas were then identified on both Crown and private lands. These significant areas form the base of a sustainable natural ecosystem for the watersheds and they should be maintained in an undisturbed state.

The Watershed Inventory is not a site-specific analysis and cannot be used to identify specific features or natural values. Implementation of the Watershed Inventory will be through planning processes undertaken by any one of the collaborative members and will include public consultation as required by any applicable legislation.

### The Products of the WIP

The following four products were developed through The Watershed Inventory Project and provide a solid base for future natural heritage work of the collaborative members:

1. A gap analysis of unprotected vegetation communities and landforms;
2. A gap analysis of biological data and site inventories;
3. A map portraying the significant natural areas and connecting corridors;
4. Identification of significant degraded sites and areas that may require remediation.

The results of WIP are strategic in nature and cannot be applied on a site-specific basis. Collaborative members will be able to use the results for natural heritage planning, conservation, and restoration efforts. In particular:

1. The Muskoka Heritage Foundation, through the Muskoka Heritage Trust, will be able to establish priority areas for potential acquisition or remediation and therefore use limited resources efficiently.
2. The District Municipality of Muskoka will be able to use this information as background to a natural heritage strategy that will identify core natural areas and connecting systems and recommend levels of protection.
3. The Ontario Ministry of Natural Resources will be able to use the findings to assist with natural heritage planning on crown land throughout the watersheds and add new information to the provincial database.
4. The Muskoka Watershed Council will be able to report the changes in the sustainability of natural areas to the public and address watershed health through the Muskoka Watershed Report Card.
5. Along with the Muskoka Heritage Foundation, the Watershed Council will be able to use the products generated from MRWIP to develop education and stewardship programs.
6. All four collaborative members will continue to work together to promote the need for protected areas, and to encourage stewardship and

education for natural heritage on both Crown and patent land in order to maintain and enhance a logical and continuous natural system.

At a strategic level, WIP identified significant areas that, if conserved, will protect biodiversity and natural heritage values. WIP did not undertake any analysis at a property-specific level and, therefore, does not make any site-specific recommendations with respect to development or protection. Implementation of the MRWIP will occur through the planning processes and specific programs of the collaborative members and may include policy, management, education, stewardship, restoration and remediation activities.

This document is organized by the same goals and products identified by the collaborative for the Muskoka River Watershed Inventory Project. For additional information, please refer to the Muskoka River Watershed Inventory Project Technical and Final Reports.

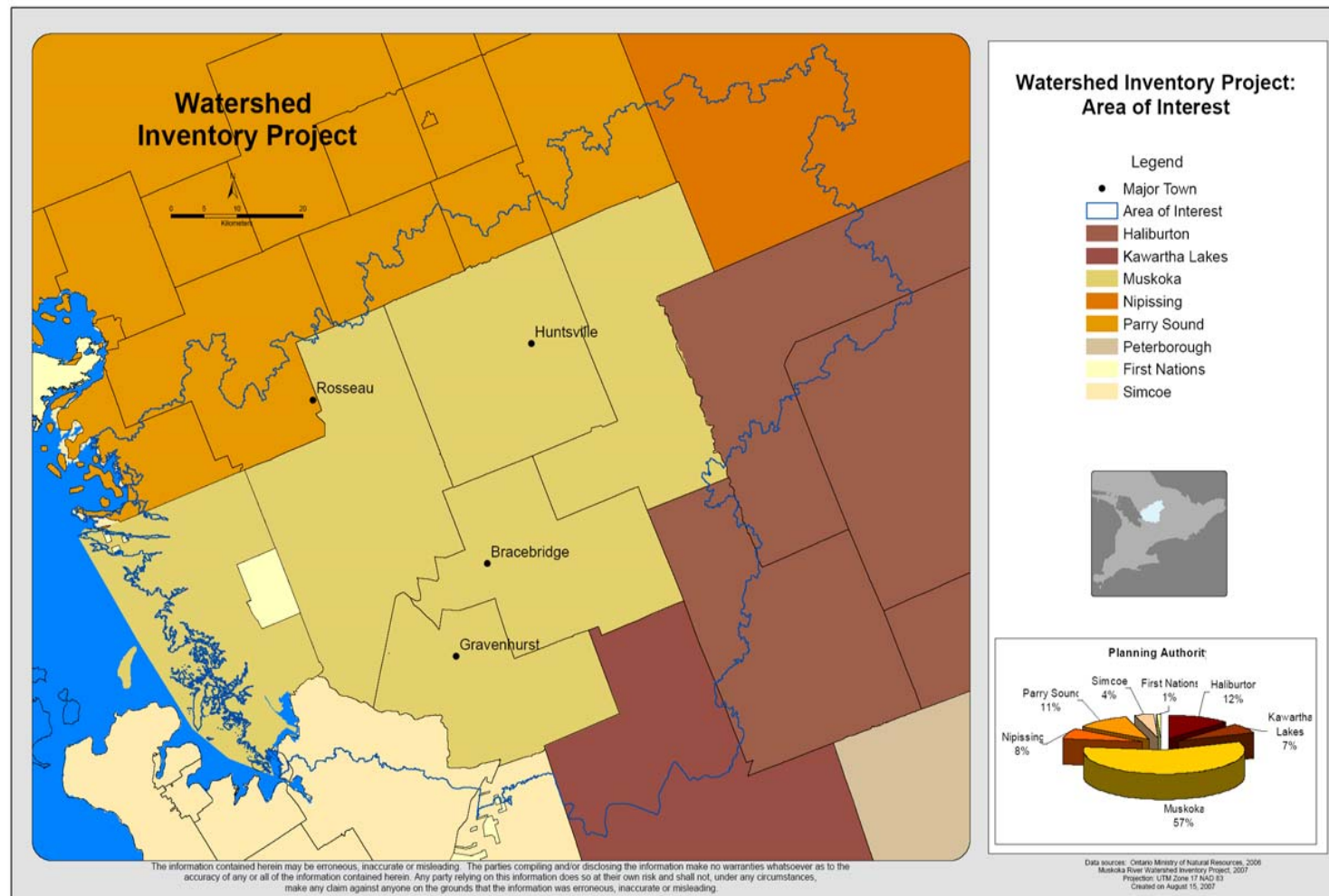


Figure 1. Area of Interest (AOI).



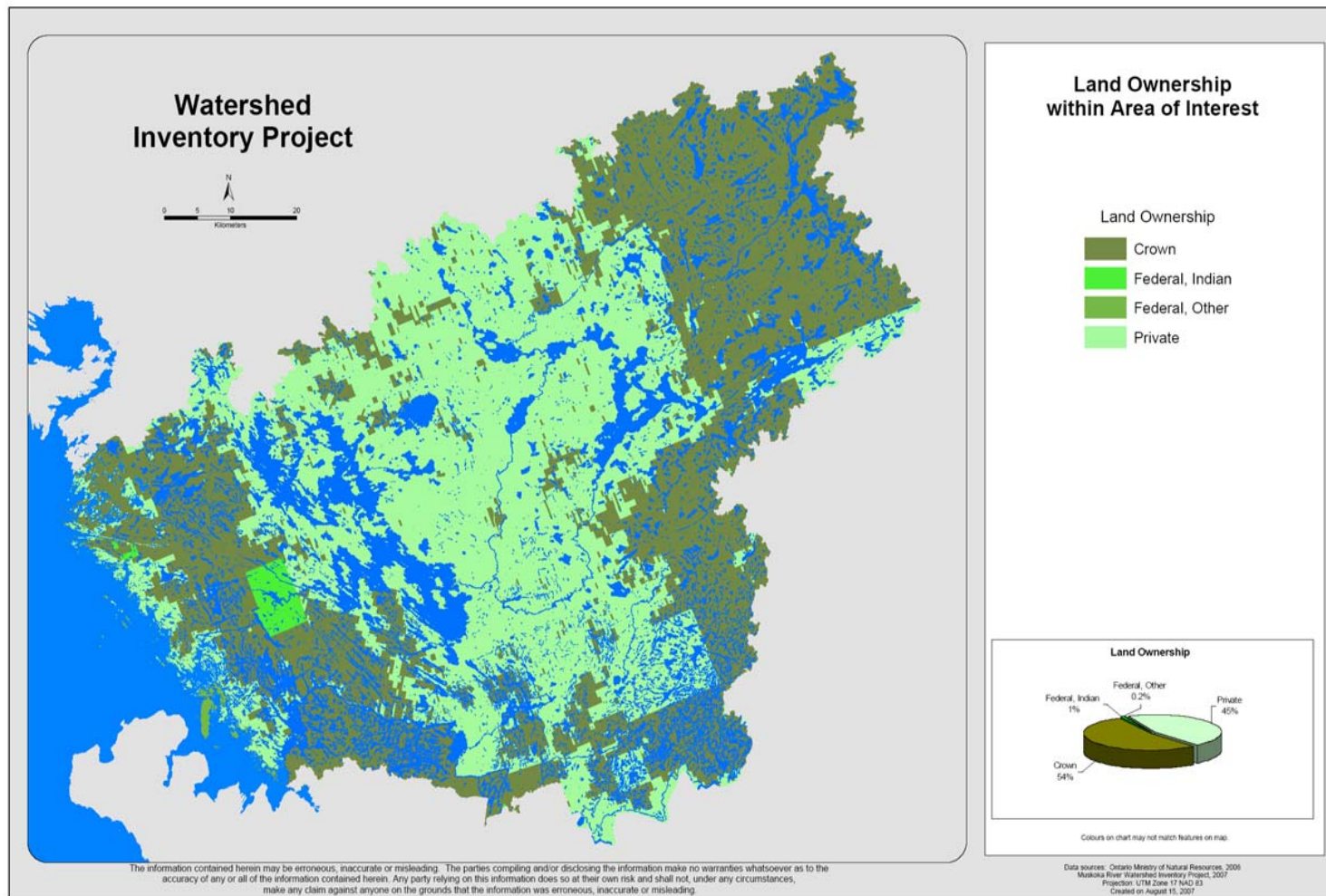


Figure 2. Land Ownership within AOI.

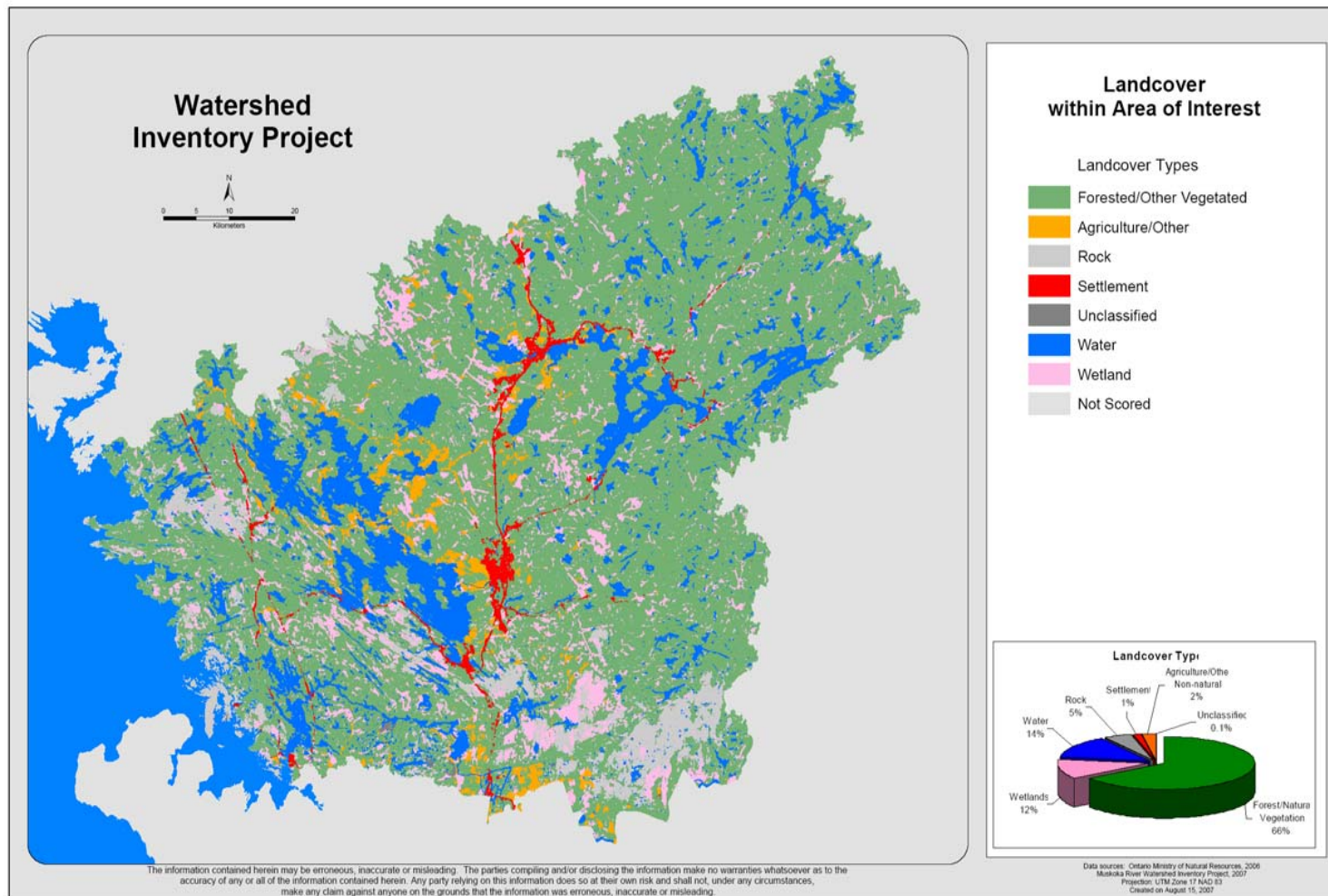


Figure 3. Landcover within AOI.

## Protected Areas

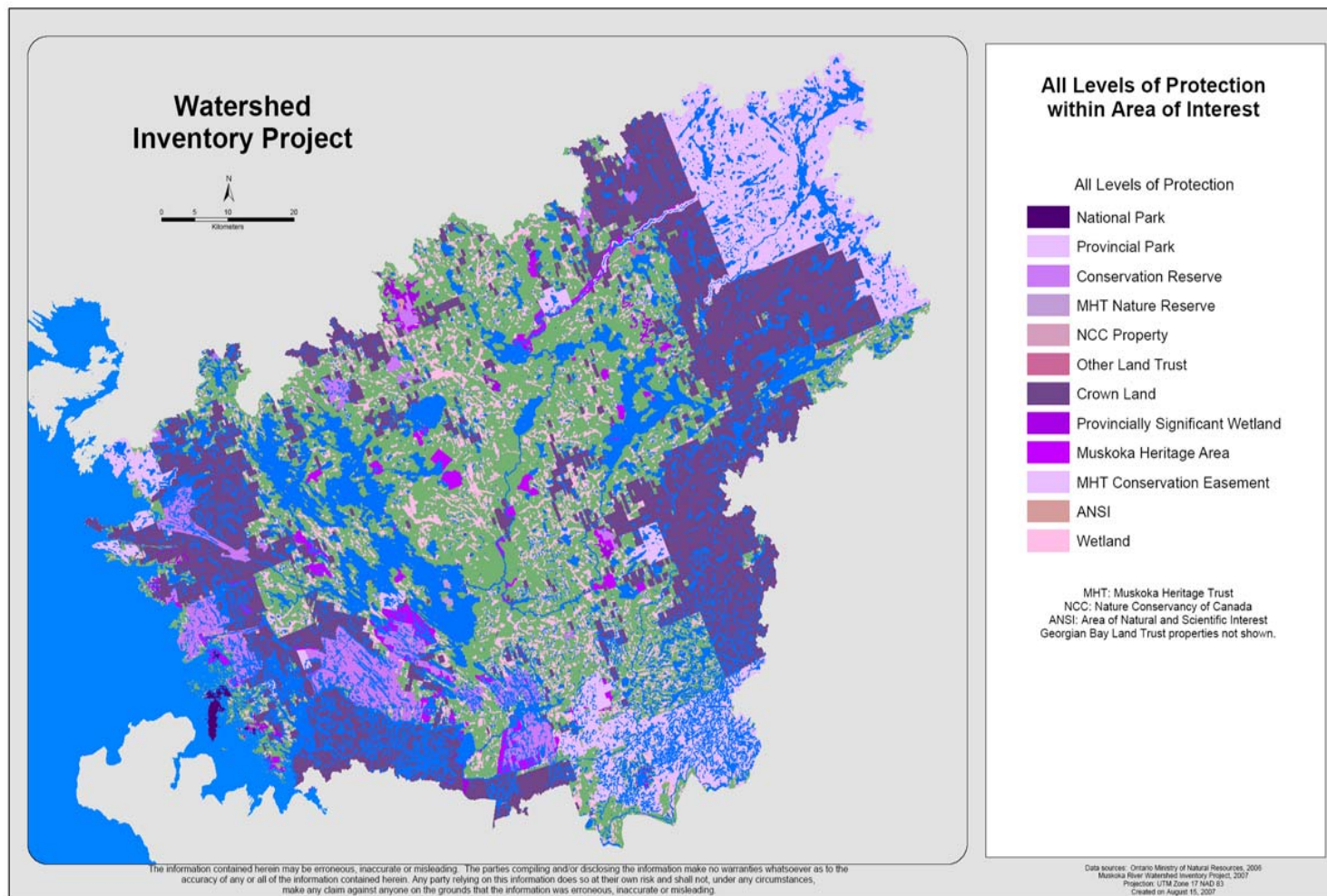


Figure 4. All levels of protected areas within AOI. Approximately 58% of the AOI is under some level of protection.



## Level 1

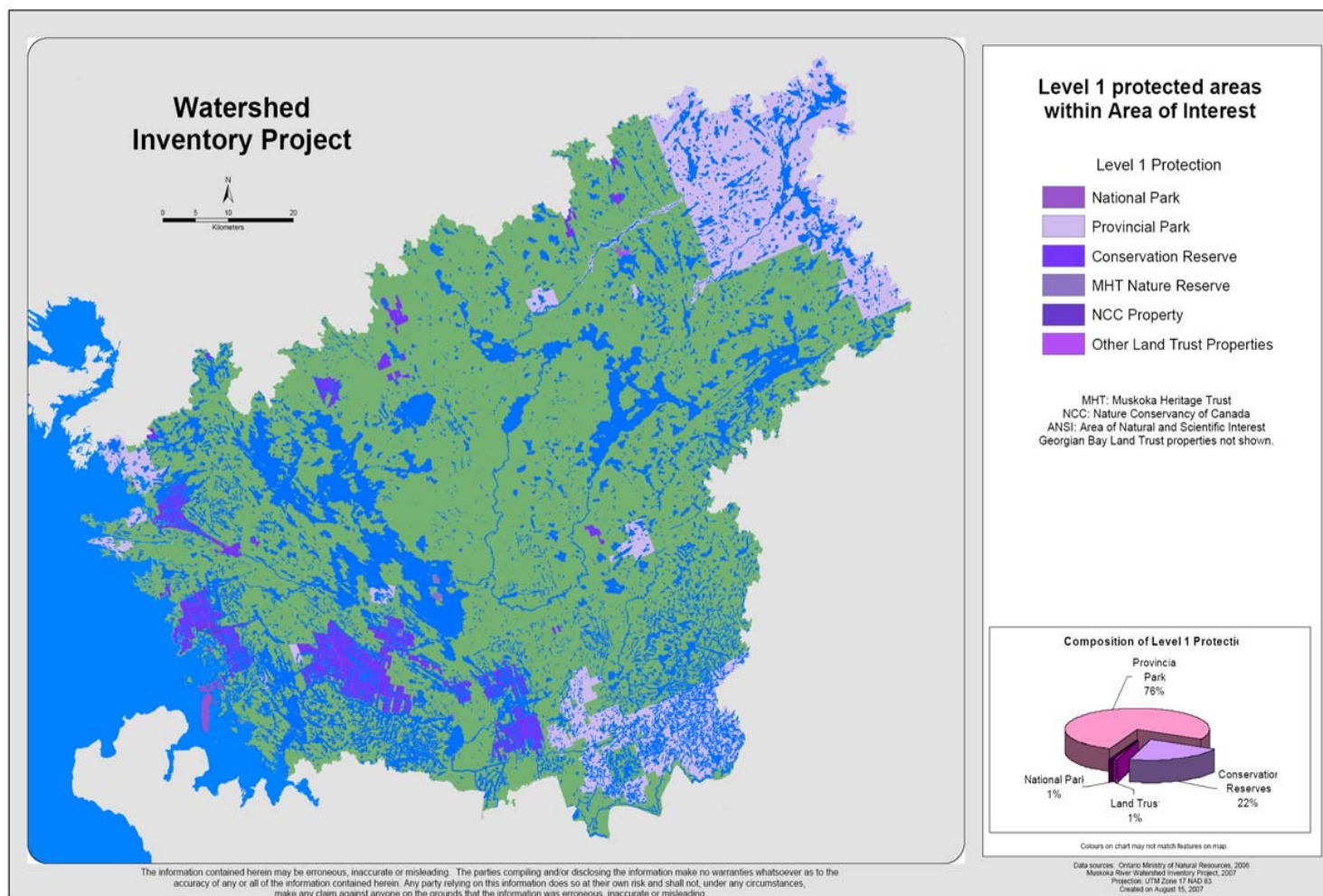


Figure 5. Level 1 protected areas within AOI.

## Level 2

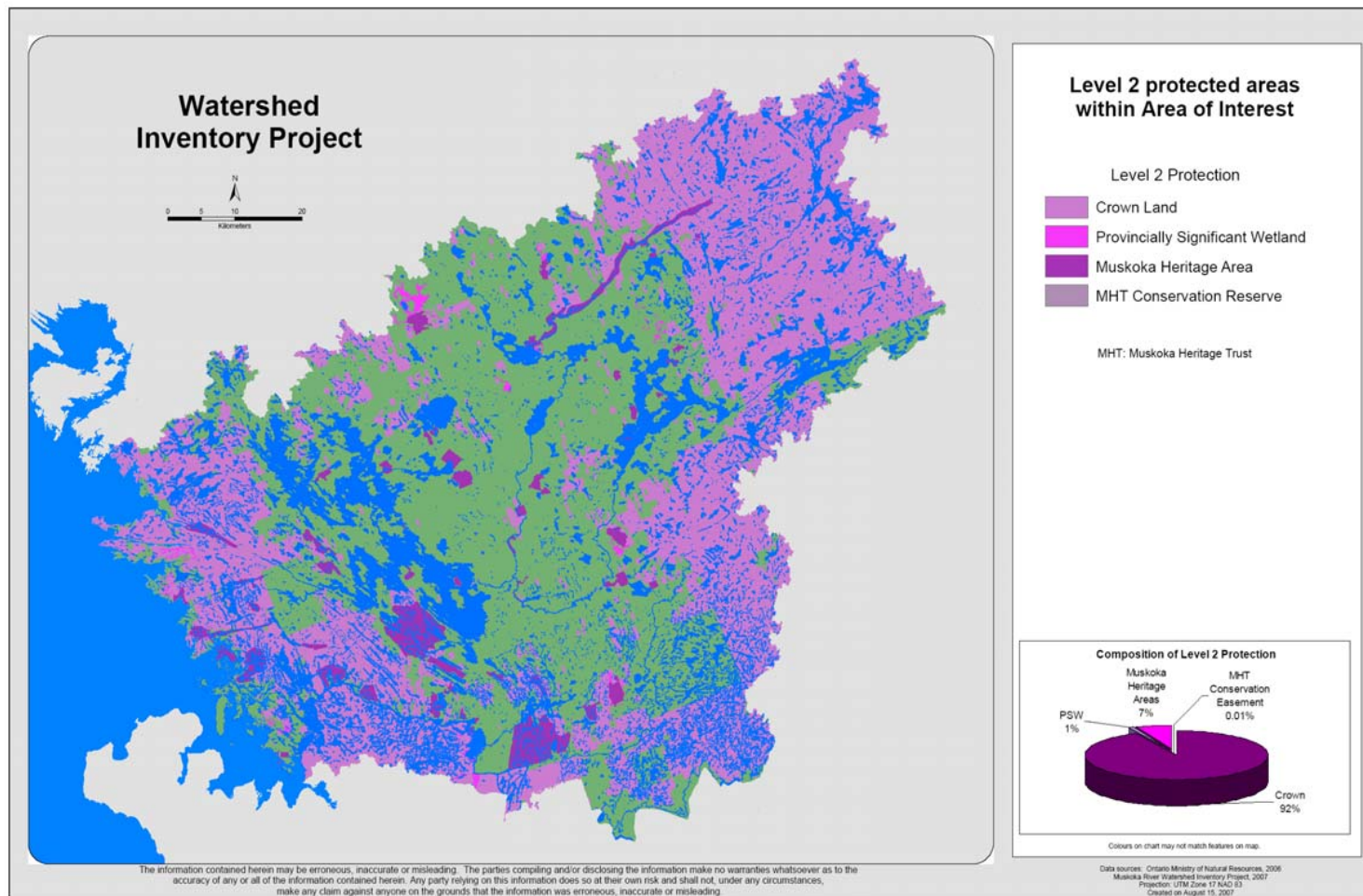


Figure 6. Level 2 protected areas within AOI (includes overlap with other levels).

## Level 3

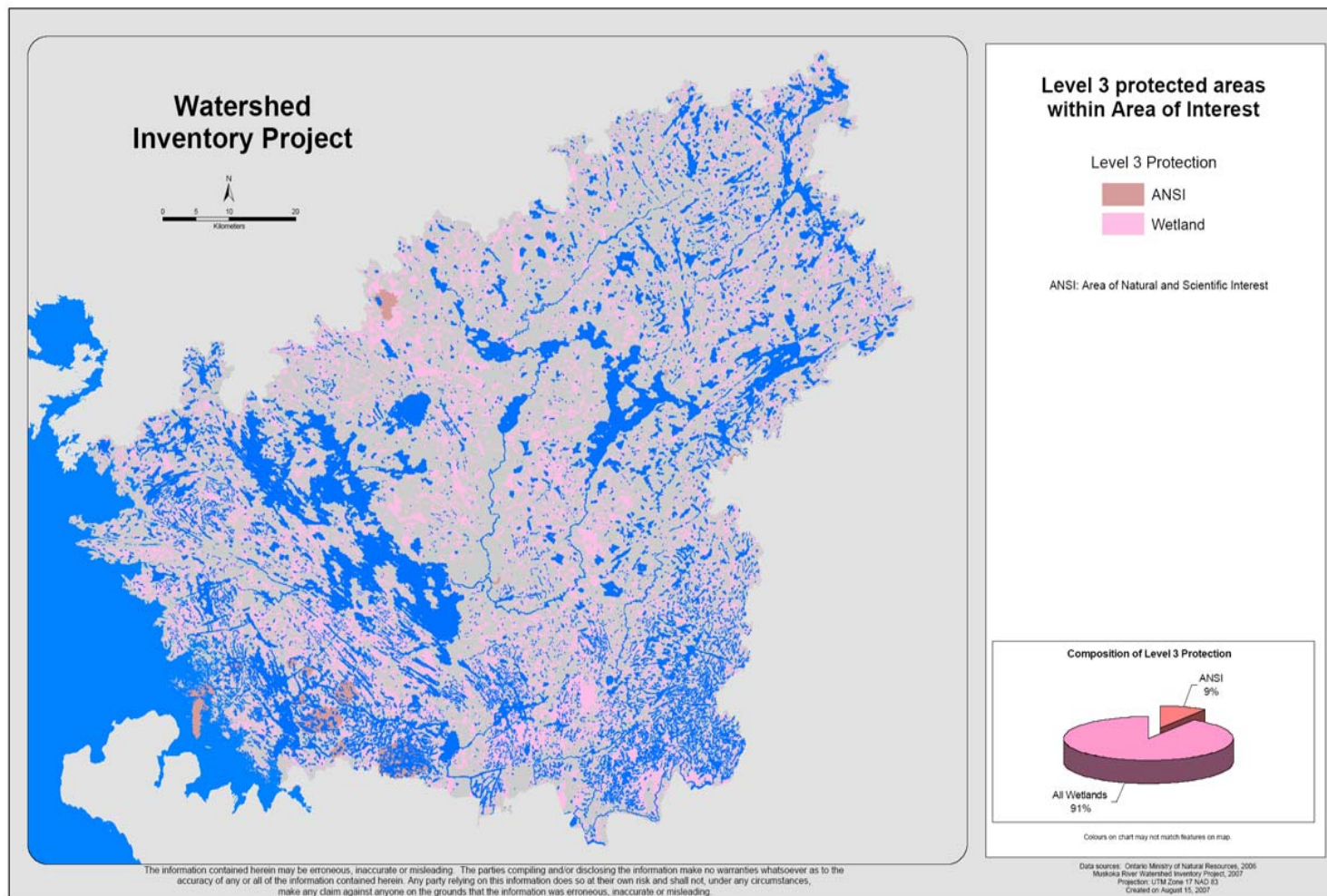


Figure 7. Level 3 protected areas within AOI.

### Goal 1: Identify unique ecosystems and protected areas

The relationship between landforms and vegetation communities is referred to as ecological systems. Ecological systems (or ecosystems) consist of living and non-living elements of an area and their interactions.

For the Muskoka River watershed study area, ecosystems consist of the dominant vegetation and the landform features on which they occur. The combination of non-living elements (landform) and the response of living features (vegetation) to those enduring elements create unique ecological units that support a matrix of animal populations and ecological functions.



Geology:

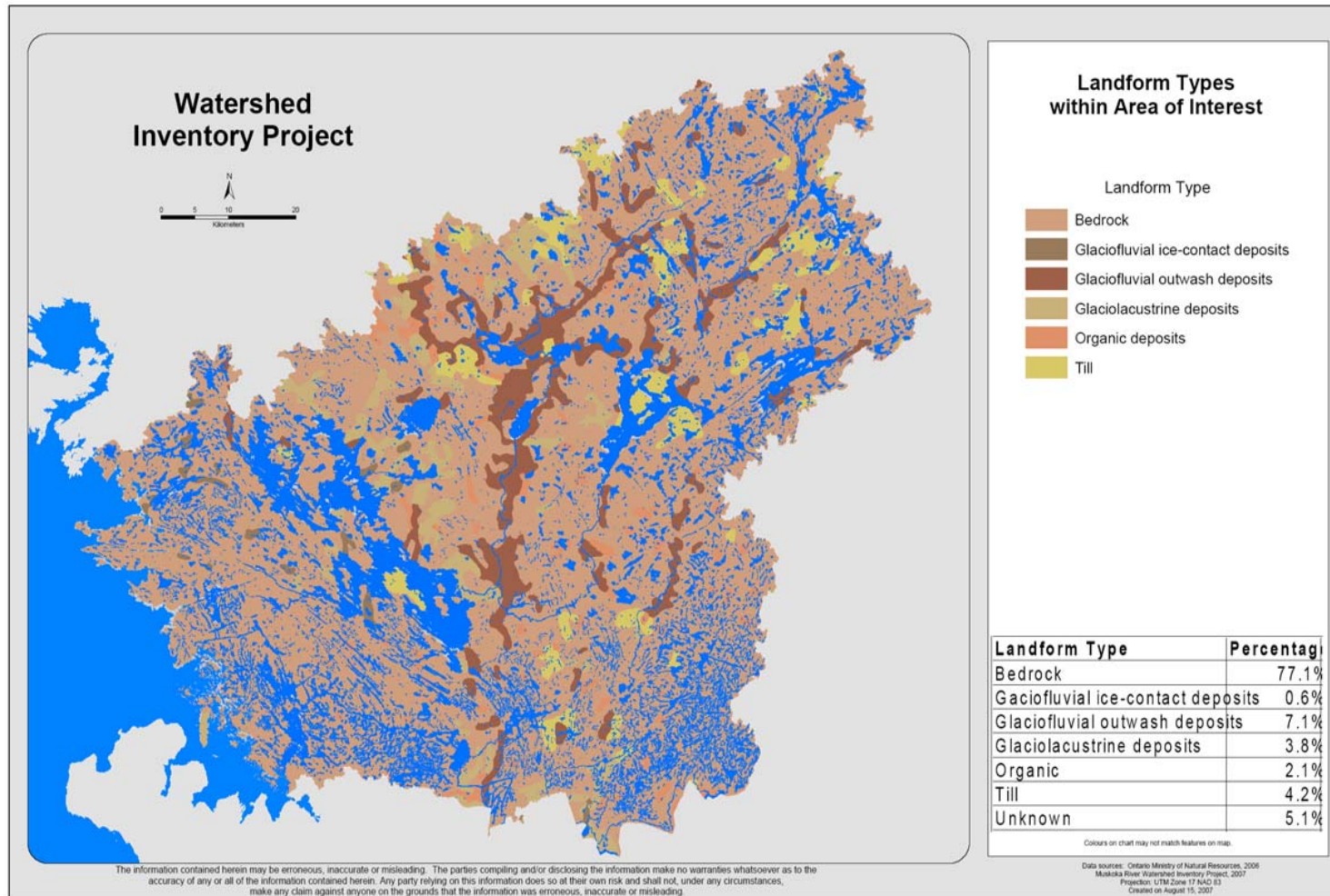


Figure 8. Landform types within AOI.



Vegetation:

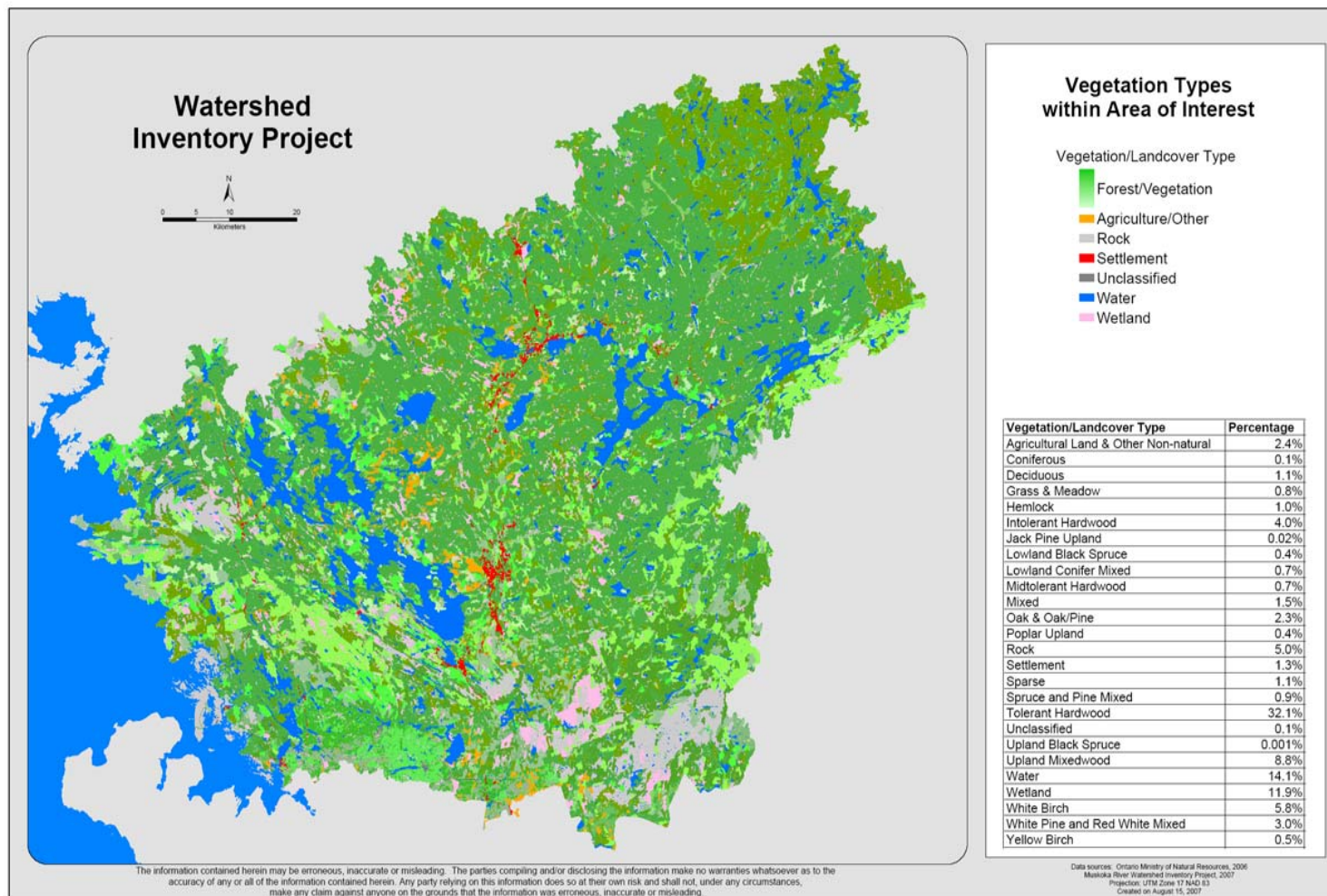


Figure 9. Vegetation and landcover types within AOI.

Table 1. Percent of each vegetation and landcover type within AOI.

<b>Vegetation/Landcover Type</b>	<b>Percentage</b>
Agricultural Land & Other Non-natural	2.8%
Coniferous	0.2%
Deciduous	1.3%
GRS	0.9%
Hemlock	1.2%
Intolerant Hardwood	4.6%
Jack Pine Upland	0.03%
Lowland Black Spruce	0.5%
Lowland Conifer Mixed	0.8%
Midtolerant Hardwood	0.9%
Mixed	1.8%
Oak & Oak/Pine	2.6%
Poplar Upland	0.5%
Rock	5.8%
Settlement	1.5%
Sparse	1.3%
Spruce and Pine Mixed	1.0%
Tailings	0.0%
Tolerant Hardwood	37.4%
Unclassified	0.1%
Upland Black Spruce	0.001%
Upland Mixedwood	10.2%
Wetland	13.8%
White Birch	6.8%
White Pine and Red White Mixed	3.5%
Yellow Birch	0.6%



Table 2. Percent of each unique terrestrial ecosystem within AOI.

Landcover	%	Landcover	%	Landcover	%	Landcover	%	Landcover	%	Landcover	%
Asp/Bedrock	0.3%	Coniferous/Glaciolacustrine2	<0.1%	He/Till	0.1%	OCLow/Bedrock2	<0.1%	Rock	5.0%	Tailings	<0.1%
Asp/Glaciofluvial2	<0.1%	Coniferous/Organic	<0.1%	He/Unknown	<0.1%	OCLow/Glaciofluvial1	<0.1%	SbLow/Bedrock	0.4%	TolHd/Bedrock	25.1%
Asp/Glaciolacustrine1	<0.1%	Coniferous/Till1	<0.1%	IntHd/Bedrock	3.5%	OCLow/Glaciofluvial2	<0.1%	SbLow/Bedrock2	<0.1%	TolHd/Bedrock2	<0.1%
Asp/Glaciolacustrine2	<0.1%	Coniferous/Unknown	<0.1%	IntHd/Bedrock2	<0.1%	OCLow/Glaciolacustrine1	<0.1%	SbLow/Glaciofluvial2	<0.1%	TolHd/Glaciofluvial1	0.2%
Asp/Organic	<0.1%	DAL	2.4%	IntHd/Glaciofluvial1	<0.1%	OCLow/Glaciolacustrine2	<0.1%	SbLow/Glaciolacustrine1	<0.1%	TolHd/Glaciofluvial2	2.6%
Asp/Till	<0.1%	Deciduous/Bedrock	0.8%	IntHd/Glaciofluvial2	0.1%	OCLow/Organic	<0.1%	SbLow/Glaciolacustrine2	<0.1%	TolHd/Glaciolacustrine1	0.7%
Asp/Unknown	<0.1%	Deciduous/Bedrock2	<0.1%	IntHd/Glaciolacustrine1	0.1%	OCLow/Till1	<0.1%	SbLow/Organic	<0.1%	TolHd/Glaciolacustrine2	0.5%
Bw/Bedrock	5.1%	Deciduous/Glaciofluvial1	<0.1%	IntHd/Glaciolacustrine2	<0.1%	OCLow/Unknown	<0.1%	SbLow/Till1	<0.1%	TolHd/Organic	0.6%
Bw/Bedrock2	<0.1%	Deciduous/Glaciofluvial2	0.1%	IntHd/Organic	0.1%	OPine/Bedrock	1.8%	SbLow/Unknown	<0.1%	TolHd/Till1	1.9%
Bw/Glaciofluvial1	<0.1%	Deciduous/Glaciolacustrine1	<0.1%	IntHd/Till1	0.1%	OPine/Glaciofluvial1	0.1%	SbP/Bedrock	0.6%	TolHd/Till2	<0.1%
Bw/Glaciofluvial2	0.3%	Deciduous/Glaciolacustrine2	<0.1%	IntHd/Till2	<0.1%	OPine/Glaciofluvial2	0.2%	SbP/Bedrock2	<0.1%	TolHd/Unknown	0.4%
Bw/Glaciolacustrine1	0.1%	Deciduous/Organic	<0.1%	IntHd/Unknown	<0.1%	OPine/Glaciolacustrine1	<0.1%	SbP/Glaciofluvial1	<0.1%	UCL	0.1%
Bw/Glaciolacustrine2	<0.1%	Deciduous/Till1	<0.1%	MidHd/Bedrock	0.6%	OPine/Glaciolacustrine2	<0.1%	SbP/Glaciofluvial2	0.2%	Water	14.1%
Bw/Organic	0.1%	Deciduous/Unknown	<0.1%	MidHd/Glaciofluvial1	<0.1%	OPine/Organic	<0.1%	SbP/Glaciolacustrine1	<0.1%	Wetland	11.9%
Bw/Till1	0.1%	GRS	0.8%	MidHd/Glaciofluvial2	0.1%	OPine/Till1	0.1%	SbP/Glaciolacustrine2	<0.1%		
Bw/Till2	<0.1%	HdConU/Bedrock	7.0%	MidHd/Glaciolacustrine1	<0.1%	OPine/Unknown	0.1%	SbP/Organic	<0.1%		
Bw/Unknown	0.1%	HdConU/Bedrock2	<0.1%	MidHd/Glaciolacustrine2	<0.1%	Pj/Bedrock	<0.1%	SbP/Till1	0.1%		
By/Bedrock	0.4%	HdConU/Glaciofluvial1	<0.1%	MidHd/Organic	<0.1%	Pj/Glaciofluvial2	<0.1%	SbP/Till2	<0.1%		
By/Glaciofluvial1	<0.1%	HdConU/Glaciofluvial2	0.7%	MidHd/Till	<0.1%	Pj/Glaciolacustrine1	<0.1%	SbP/Unknown	<0.1%		
By/Glaciofluvial2	0.1%	HdConU/Glaciolacustrine1	0.2%	MidHd/Unknown	<0.1%	Pj/Organic	<0.1%	SbUp/Bedrock	<0.1%		
By/Glaciolacustrine1	<0.1%	HdConU/Glaciolacustrine2	0.1%	Mixed/Bedrock	1.1%	Pj/Till	<0.1%	Settlement	1.3%		
By/Glaciolacustrine2	<0.1%	HdConU/Organic	0.2%	Mixed/Bedrock2	<0.1%	PWR/Bedrock	2.4%	Sparse/Bedrock	0.8%		
By/Organic	<0.1%	HdConU/Till1	0.5%	Mixed/Glaciofluvial1	<0.1%	PWR/Bedrock2	<0.1%	Sparse/Bedrock2	<0.1%		
By/Till	0.1%	HdConU/Unknown	0.1%	Mixed/Glaciofluvial2	0.1%	PWR/Glaciofluvial1	<0.1%	Sparse/Glaciofluvial1	<0.1%		
By/Unknown	<0.1%	He/Bedrock	0.8%	Mixed/Glaciolacustrine1	<0.1%	PWR/Glaciofluvial2	0.2%	Sparse/Glaciofluvial2	0.1%		
Coniferous/Bedrock	0.1%	He/Glaciofluvial1	<0.1%	Mixed/Glaciolacustrine2	<0.1%	PWR/Glaciolacustrine1	<0.1%	Sparse/Glaciolacustrine1	<0.1%		
Coniferous/Bedrock2	<0.1%	He/Glaciofluvial2	0.1%	Mixed/Organic	0.1%	PWR/Glaciolacustrine2	0.1%	Sparse/Glaciolacustrine2	<0.1%		
Coniferous/Glaciofluvial1	<0.1%	He/Glaciolacustrine1	<0.1%	Mixed/Till1	<0.1%	PWR/Organic	0.1%	Sparse/Organic	<0.1%		
Coniferous/Glaciofluvial2	<0.1%	He/Glaciolacustrine2	<0.1%	Mixed/Unknown	0.1%	PWR/Till1	<0.1%	Sparse/Till1	<0.1%		
Coniferous/Glaciolacustrine1	<0.1%	He/Organic	<0.1%	OCLow/Bedrock	0.5%	PWR/Unknown	0.1%	Sparse/Unknown	0.2%		



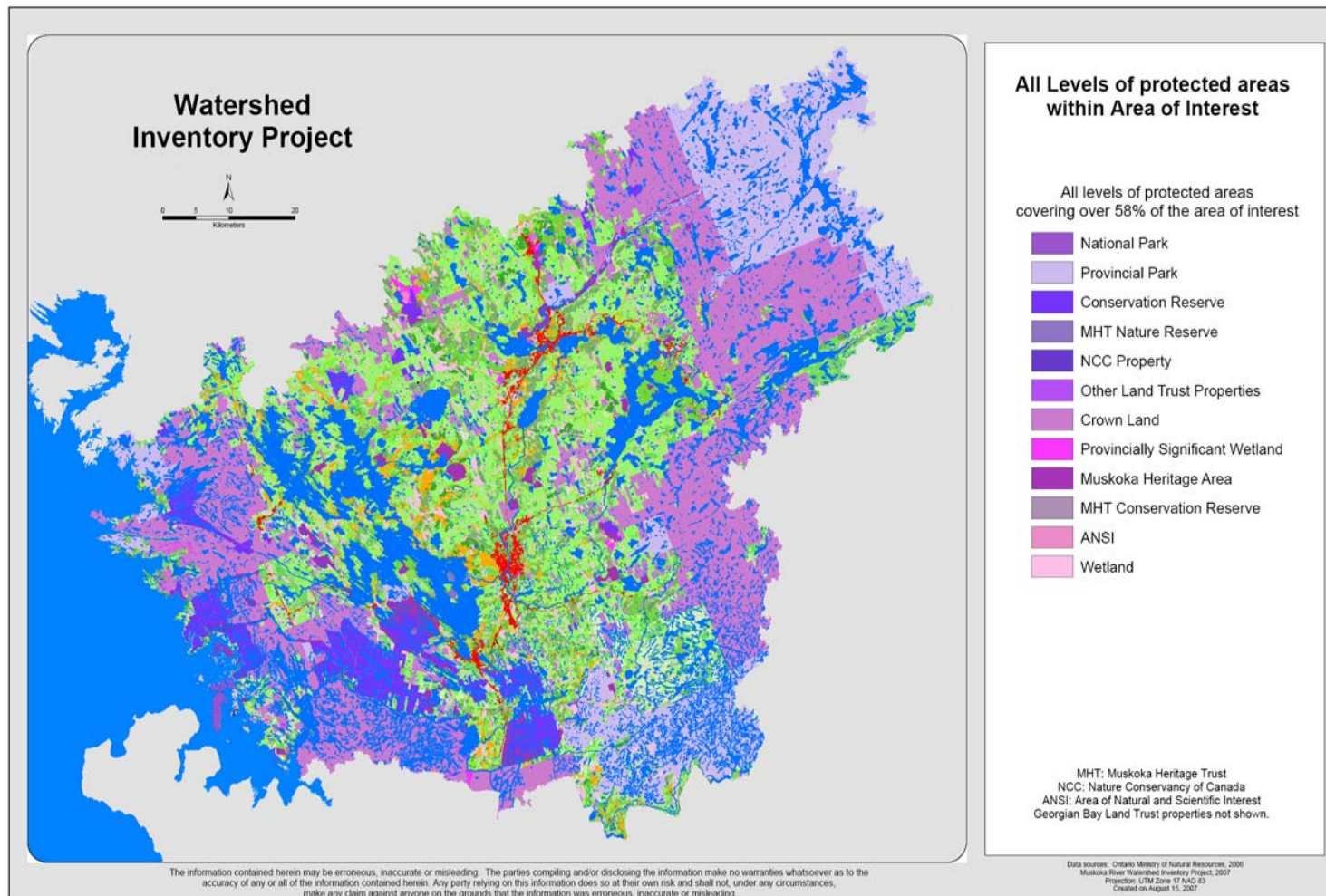


Figure 11. Terrestrial ecosystems and all protected areas.

Table 3. Percent of each unique terrestrial ecosystem under some level of protection.

	Total within AOI	Within All Levels of Protection	Within Level 1 Protection	Within Level 2 Protection	Within Level 3 Protection	Proportion Not within Protection
Ecosystem	Area (ha)	Percent				
Bw/Bedrock2	35.3978	0.0%	0.0%	0.0%	0.0%	100.0%
Bw/Till2	6.3628	0.0%	0.0%	0.0%	0.0%	100.0%
By/Glaciolacustrine1	14.1442	0.0%	0.0%	0.0%	0.0%	100.0%
IntHd/Glaciofluvial1	18.071	0.0%	0.0%	0.0%	0.0%	100.0%
MidHd/Organic	23.5764	0.0%	0.0%	0.0%	0.0%	100.0%
OCLow/Bedrock2	98.3785	0.0%	0.0%	0.0%	0.0%	100.0%
Pj/Glaciolacustrine1	3.6361	0.0%	0.0%	0.0%	0.0%	100.0%
Pj/Organic	2.6868	0.0%	0.0%	0.0%	0.0%	100.0%
Pj/Till	13.0522	0.0%	0.0%	0.0%	0.0%	100.0%
PWR/Bedrock2	56.4911	0.0%	0.0%	0.0%	0.0%	100.0%
SbLow/Bedrock2	38.0048	0.0%	0.0%	0.0%	0.0%	100.0%
SbLow/Glaciolacustrine1	10.7395	0.0%	0.0%	0.0%	0.0%	100.0%
SbLow/Glaciolacustrine2	2.4063	0.0%	0.0%	0.0%	0.0%	100.0%
SbLow/Unknown	11.3707	0.0%	0.0%	0.0%	0.0%	100.0%
SbP/Bedrock2	13.5848	0.0%	0.0%	0.0%	0.0%	100.0%
SbP/Glaciofluvial1	6.4664	0.0%	0.0%	0.0%	0.0%	100.0%
SbP/Glaciolacustrine1	219.4093	0.0%	0.0%	0.0%	0.0%	100.0%
SbP/Glaciolacustrine2	91.2797	0.0%	0.0%	0.0%	0.0%	100.0%
SbP/Till2	0.1875	0.0%	0.0%	0.0%	0.0%	100.0%
TolHd/Bedrock2	80.0502	0.0%	0.0%	0.0%	0.0%	100.0%
TolHd/Till2	11.5674	0.0%	0.0%	0.0%	0.0%	100.0%
He/Glaciolacustrine2	61.5225	0.1%	0.0%	0.1%	0.0%	99.9%
HdConU/Bedrock2	46.3767	0.3%	0.3%	0.0%	0.0%	99.7%
By/Glaciolacustrine2	41.7445	0.3%	0.3%	0.0%	0.0%	99.7%
Asp/Glaciolacustrine1	220.6116	0.5%	0.0%	0.5%	0.0%	99.5%
Asp/Glaciolacustrine2	20.8653	0.6%	0.0%	0.6%	0.0%	99.4%
Pj/Glaciofluvial2	42.322	0.8%	0.0%	0.8%	0.0%	99.2%
IntHd/Glaciolacustrine2	183.3532	0.9%	0.0%	0.9%	0.0%	99.1%

	Total within AOI	Within All Levels of Protection	Within Level 1 Protection	Within Level 2 Protection	Within Level 3 Protection	Proportion Not within Protection
OPine/Glaciolacustrine1	158.0839	1.9%	0.0%	1.9%	0.0%	98.1%
SbP/Unknown	4.5899	2.7%	0.0%	2.7%	0.0%	97.3%
He/Glaciolacustrine1	88.467	3.3%	0.0%	3.3%	0.0%	96.7%
OCLow/Glaciolacustrine1	113.1487	3.5%	0.0%	3.4%	0.1%	96.5%
OPine/Glaciolacustrine2	352.4439	3.5%	0.0%	3.5%	0.0%	96.5%
Sparse/Till1	223.7954	3.9%	0.1%	3.8%	0.0%	96.1%
Bw/Glaciofluvial1	58.9632	4.6%	0.0%	4.6%	0.0%	95.4%
He/Organic	126.3015	5.3%	0.1%	5.3%	0.0%	94.7%
Sparse/Glaciolacustrine2	71.2177	5.8%	0.0%	5.8%	0.0%	94.2%
OPine/Till1	424.0406	5.9%	0.0%	5.9%	0.0%	94.1%
TolHd/Glaciolacustrine1	5631.3543	6.3%	0.8%	5.4%	0.1%	93.7%
HdConU/Glaciolacustrine1	1528.7424	6.7%	0.2%	6.5%	0.1%	93.3%
HdConU/Glaciolacustrine2	864.1848	8.1%	3.6%	4.6%	0.0%	91.9%
GRS	6030.8408	8.9%	2.9%	5.7%	0.3%	91.1%
SbP/Till1	527.1342	10.3%	0.6%	9.7%	0.0%	89.7%
Coniferous/Unknown	17.8401	10.8%	0.2%	10.5%	0.0%	89.2%
Bw/Glaciolacustrine2	335.2362	11.6%	0.0%	11.6%	0.0%	88.4%
PWR/Glaciolacustrine2	492.8397	12.0%	1.0%	10.9%	0.0%	88.0%
Sparse/Glaciofluvial2	436.1682	12.1%	0.6%	11.1%	0.4%	87.9%
Mixed/Till1	359.0761	12.6%	1.2%	11.3%	0.0%	87.4%
IntHd/Bedrock2	116.0765	12.8%	12.3%	0.3%	0.0%	87.2%
IntHd/Till1	450.553	13.2%	8.6%	4.5%	0.0%	86.8%
MidHd/Glaciolacustrine2	2.0962	13.5%	0.0%	13.5%	0.0%	86.5%
MidHd/Glaciofluvial2	450.1376	14.4%	0.3%	14.1%	0.0%	85.6%
TolHd/Unknown	3206.4209	15.0%	4.0%	10.9%	0.1%	85.0%
TolHd/Glaciolacustrine2	3982.7526	15.1%	4.2%	10.9%	0.0%	84.9%
Deciduous/Till1	343.5427	15.7%	1.0%	14.7%	0.0%	84.3%
OPine/Glaciofluvial2	1194.3043	16.7%	0.3%	16.3%	0.0%	83.3%
Deciduous/Unknown	277.9456	17.0%	1.0%	15.9%	0.0%	83.0%
He/Glaciofluvial1	238.5327	17.6%	0.3%	17.3%	0.0%	82.4%

	Total within AOI	Within All Levels of Protection	Within Level 1 Protection	Within Level 2 Protection	Within Level 3 Protection	Proportion Not within Protection
PWR/Glaciofluvial2	1867.5487	18.5%	0.7%	17.7%	0.0%	81.5%
PWR/Glaciolacustrine1	294.5887	18.6%	11.4%	7.1%	0.0%	81.4%
MidHd/Glaciolacustrine1	197.6395	19.3%	0.0%	19.3%	0.0%	80.7%
He/Glaciofluvial2	454.5332	19.8%	0.0%	19.8%	0.0%	80.2%
He/Till	418.7444	20.1%	0.1%	20.0%	0.0%	79.9%
Coniferous/Till1	26.5872	20.4%	0.0%	20.4%	0.0%	79.6%
Mixed/Glaciofluvial2	998.2143	20.5%	2.1%	18.4%	0.0%	79.5%
Deciduous/Glaciofluvial2	604.3598	21.1%	1.0%	19.7%	0.4%	78.9%
MidHd/Unknown	90.0809	21.7%	0.0%	21.7%	0.0%	78.3%
PWR/Till1	277.7024	21.8%	0.7%	21.2%	0.0%	78.2%
SbP/Glaciofluvial2	1184.8004	22.4%	2.0%	20.4%	0.0%	77.6%
Asp/Glaciofluvial2	361.069	23.4%	10.1%	13.3%	0.0%	76.6%
Coniferous/Glaciofluvial2	127.3607	23.8%	4.2%	19.6%	0.0%	76.2%
Mixed/Glaciofluvial1	43.1647	23.9%	0.1%	23.8%	0.0%	76.1%
SbP/Organic	183.9139	24.2%	0.0%	24.2%	0.0%	75.8%
Bw/Glaciolacustrine1	618.6634	27.5%	10.3%	17.2%	0.0%	72.5%
Deciduous/Glaciofluvial1	67.3673	28.0%	0.5%	27.4%	0.0%	72.0%
Opine/Glaciofluvial1	389.5169	28.3%	0.0%	28.3%	0.0%	71.7%
MidHd/Till	125.8682	29.2%	0.0%	29.2%	0.0%	70.8%
Deciduous/Glaciolacustrine2	98.9364	29.8%	0.0%	29.8%	0.0%	70.2%
Bw/Till1	776.7469	30.4%	6.3%	24.1%	0.0%	69.6%
TolHd/Glaciofluvial2	19658.0569	31.8%	4.1%	27.6%	0.0%	68.2%
SbP/Bedrock	4452.9038	32.5%	3.5%	28.9%	0.0%	67.5%
PWR/Unknown	746.2808	34.7%	11.9%	22.7%	0.0%	65.3%
OPine/Unknown	814.4418	34.8%	23.4%	11.1%	0.1%	65.2%
IntHd/Glaciolacustrine1	591.8084	35.0%	29.6%	5.3%	0.0%	65.0%
OCLow/Glaciolacustrine2	133.6284	35.1%	34.5%	0.4%	0.0%	64.9%
HdConU/Glaciofluvial2	5515.863	35.5%	18.7%	16.7%	0.0%	64.5%
IntHd/Till2	8.1794	35.6%	34.2%	1.0%	0.0%	64.4%
Sparse/Glaciofluvial1	53.4109	36.0%	0.0%	36.0%	0.0%	64.0%



	Total within AOI	Within All Levels of Protection	Within Level 1 Protection	Within Level 2 Protection	Within Level 3 Protection	Proportion Not within Protection
Bw/Glaciofluvial2	2656.717	36.5%	8.1%	28.2%	0.3%	63.5%
TolHd/Organic	4884.9676	36.6%	5.0%	31.5%	0.0%	63.4%
OCLow/Glaciofluvial1	13.5594	36.7%	36.7%	0.0%	0.0%	63.3%
TolHd/Glaciofluvial1	1584.7165	36.8%	0.4%	36.4%	0.0%	63.2%
MidHd/Bedrock	4596.8668	37.0%	8.0%	29.0%	0.0%	63.0%
OCLow/Glaciofluvial2	313.2844	37.6%	15.5%	22.1%	0.0%	62.4%
HdConU/Organic	1276.8735	38.4%	13.8%	24.5%	0.0%	61.6%
Pj/Bedrock	107.1355	39.2%	6.8%	32.3%	0.0%	60.8%
He/Unknown	329.0752	39.7%	3.4%	36.2%	0.0%	60.3%
TolHd/Till1	14960.1193	41.2%	7.3%	33.9%	0.0%	58.8%
He/Bedrock	5943.2099	42.3%	5.7%	36.5%	0.0%	57.7%
MidHd/Glaciofluvial1	142.8239	43.8%	0.0%	43.8%	0.0%	56.2%
OCLow/Organic	115.4492	43.9%	34.7%	9.2%	0.0%	56.1%
Mixed/Glaciolacustrine2	157.594	44.7%	0.0%	44.7%	0.0%	55.3%
OPine/Bedrock	13971.6185	45.7%	24.4%	21.2%	0.0%	54.3%
IntHd/Glaciofluvial2	1010.0589	45.9%	10.5%	35.4%	0.0%	54.1%
Bw/Unknown	505.8295	47.3%	12.1%	35.1%	0.0%	52.7%
Coniferous/Glaciolacustrine2	7.9073	47.9%	0.0%	47.9%	0.0%	52.1%
OPine/Organic	164.862	49.0%	35.4%	13.4%	0.0%	51.0%
IntHd/Unknown	102.109	49.2%	23.8%	25.3%	0.0%	50.8%
TolHd/Bedrock	192940.5893	49.5%	10.5%	38.9%	0.1%	50.5%
HdConU/Glaciofluvial1	190.0704	49.9%	20.6%	29.2%	0.0%	50.1%
Asp/Bedrock	2208.4993	50.0%	26.7%	23.3%	0.0%	50.0%
Sparse/Bedrock2	2.2712	50.3%	0.0%	50.3%	0.0%	49.7%
Coniferous/Bedrock2	1.9691	51.6%	0.0%	51.6%	0.0%	48.4%
HdConU/Unknown	549.1894	51.9%	42.0%	9.7%	0.0%	48.1%
Sparse/Glaciolacustrine1	149.9737	52.4%	0.4%	51.9%	0.0%	47.6%
PWR/Organic	565.9145	52.5%	9.9%	42.5%	0.0%	47.5%
Bw/Bedrock	38928.2878	53.0%	14.2%	38.7%	0.0%	47.0%
IntHd/Bedrock	27250.5879	53.5%	24.6%	28.8%	0.0%	46.5%

	Total within AOI	Within All Levels of Protection	Within Level 1 Protection	Within Level 2 Protection	Within Level 3 Protection	Proportion Not within Protection
PWR/Bedrock	18821.1632	53.7%	14.4%	39.1%	0.1%	46.3%
Coniferous/Glaciolacustrine1	46.3994	54.5%	0.0%	54.5%	0.0%	45.5%
SbLow/Till1	44.6481	55.4%	6.2%	49.4%	0.0%	44.6%
IntHd/Organic	776.1614	56.8%	20.9%	35.9%	0.0%	43.2%
PWR/Glaciofluvial1	93.0844	57.2%	2.7%	54.5%	0.0%	42.8%
Bw/Organic	898.6995	57.6%	22.6%	35.0%	0.0%	42.4%
SbLow/Organic	90.4507	62.5%	45.2%	17.4%	0.0%	37.5%
Mixed/Glaciolacustrine1	354.3978	63.1%	0.3%	62.7%	0.0%	36.9%
Deciduous/Bedrock	6374.2058	64.4%	0.9%	63.4%	0.0%	35.6%
HdConU/Till1	3526.3109	67.4%	56.1%	11.2%	0.0%	32.6%
Mixed/Bedrock	8325.402	67.8%	1.1%	66.6%	0.0%	32.2%
Sparse/Bedrock	6266.2229	68.7%	0.9%	67.8%	0.0%	31.3%
HdConU/Bedrock	54138.7352	70.0%	53.9%	16.1%	0.0%	30.0%
SbLow/Glaciofluvial2	177.4649	72.9%	30.1%	42.7%	0.0%	27.1%
Deciduous/Glaciolacustrine1	376.424	73.3%	2.0%	71.3%	0.0%	26.7%
Asp/Unknown	43.6398	73.5%	73.0%	0.2%	0.0%	26.5%
OCLow/Till1	303.732	74.0%	64.0%	10.0%	0.0%	26.0%
Deciduous/Bedrock2	6.3281	74.3%	0.0%	74.3%	0.0%	25.7%
Coniferous/Bedrock	716.184	75.3%	2.6%	72.8%	0.0%	24.7%
Rock	38282.6386	76.4%	48.9%	27.4%	0.1%	23.6%
Mixed/Unknown	1071.7075	77.8%	0.2%	77.6%	0.0%	22.2%
Coniferous/Glaciofluvial1	0.875	78.6%	0.0%	78.6%	0.0%	21.4%
SbUp/Bedrock	7.3968	79.3%	0.0%	79.3%	0.0%	20.7%
Sparse/Organic	201.4926	79.7%	0.3%	79.4%	0.0%	20.3%
OCLow/Bedrock	3885.9426	80.5%	68.2%	11.7%	0.6%	19.5%
Mixed/Organic	445.0785	82.1%	0.6%	81.5%	0.0%	17.9%
By/Glaciofluvial2	576.018	82.3%	15.9%	66.4%	0.0%	17.7%
Coniferous/Organic	57.7716	82.8%	0.0%	82.8%	0.0%	17.2%
Mixed/Bedrock2	28.3493	83.0%	0.0%	83.0%	0.0%	17.0%
Deciduous/Organic	286.1125	85.4%	0.7%	84.7%	0.0%	14.6%

	<b>Total within AOI</b>	<b>Within All Levels of Protection</b>	<b>Within Level 1 Protection</b>	<b>Within Level 2 Protection</b>	<b>Within Level 3 Protection</b>	<b>Proportion Not within Protection</b>
Sparse/Unknown	1200.5846	85.5%	0.2%	85.3%	0.0%	14.5%
By/Till	430.6496	85.5%	39.8%	45.7%	0.0%	14.5%
Asp/Till	144.1916	86.5%	20.4%	66.1%	0.0%	13.5%
SbLow/Bedrock	3018.5306	86.6%	54.3%	32.2%	0.0%	13.4%
Asp/Organic	30.7523	89.4%	69.8%	19.6%	0.0%	10.6%
By/Bedrock	2725.2054	90.5%	60.0%	30.5%	0.0%	9.5%
OCLow/Unknown	73.2528	92.7%	92.6%	0.1%	0.0%	7.3%
By/Organic	23.6429	94.9%	0.0%	95.4%	0.0%	5.1%
Wetland	91113.1023	99.6%	21.6%	35.3%	42.4%	0.4%
By/Glaciofluvial1	2.377	100.0%	100.0%	0.0%	0.0%	0.0%
By/Unknown	27.2806	100.0%	100.0%	0.0%	0.0%	0.0%

## Goal 2: Identify areas of high terrestrial ecological importance

Ecosystems that can maintain ecological processes, as well as sustain evolutionary processes will ensure a healthy, functioning natural system. Several elements can be used as indicators of how well a system can maintain these processes. The following figures represent indicators that were used to identify areas of high ecological importance.

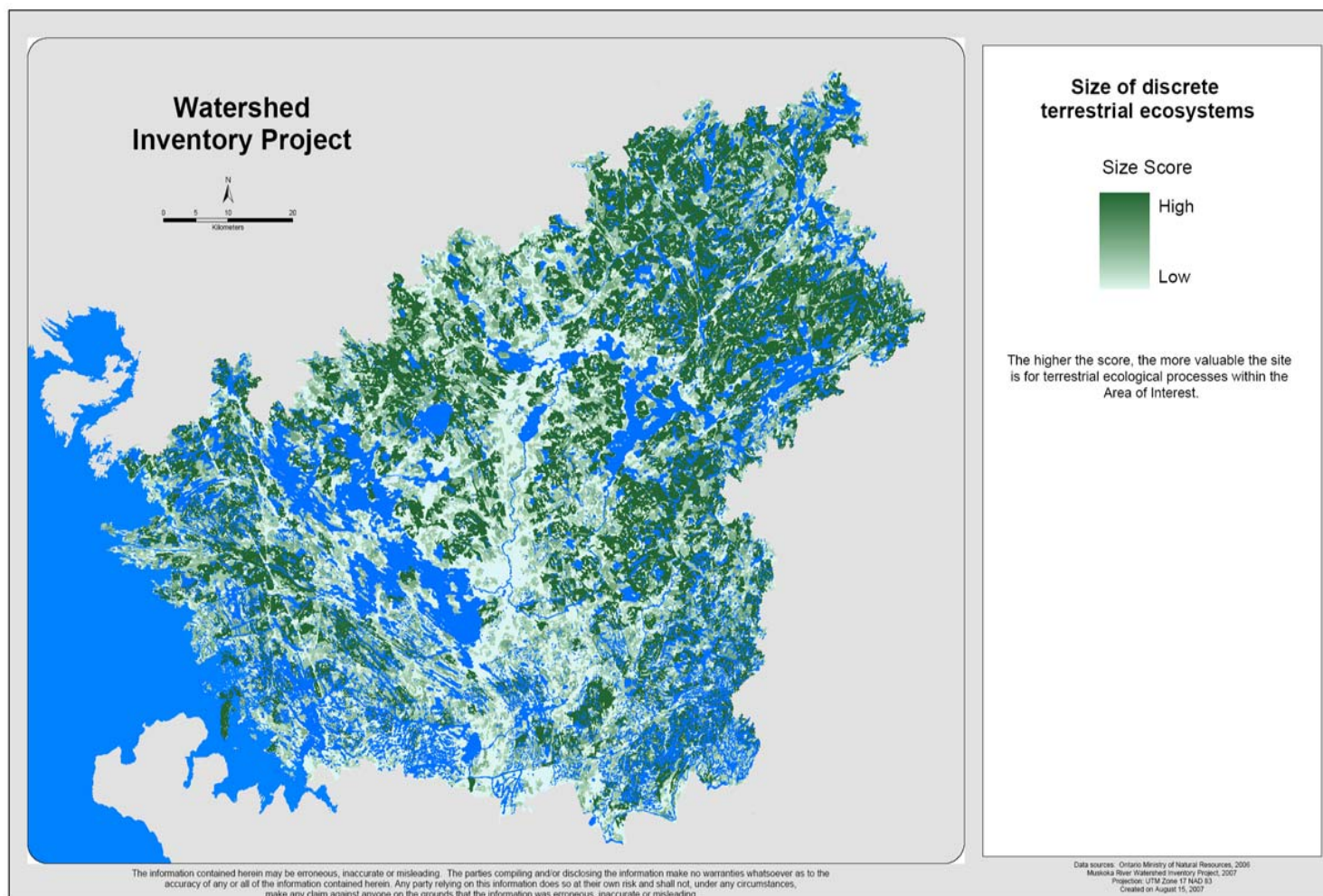


Figure 12. Size of terrestrial ecosystems: Indicator of ecological function.

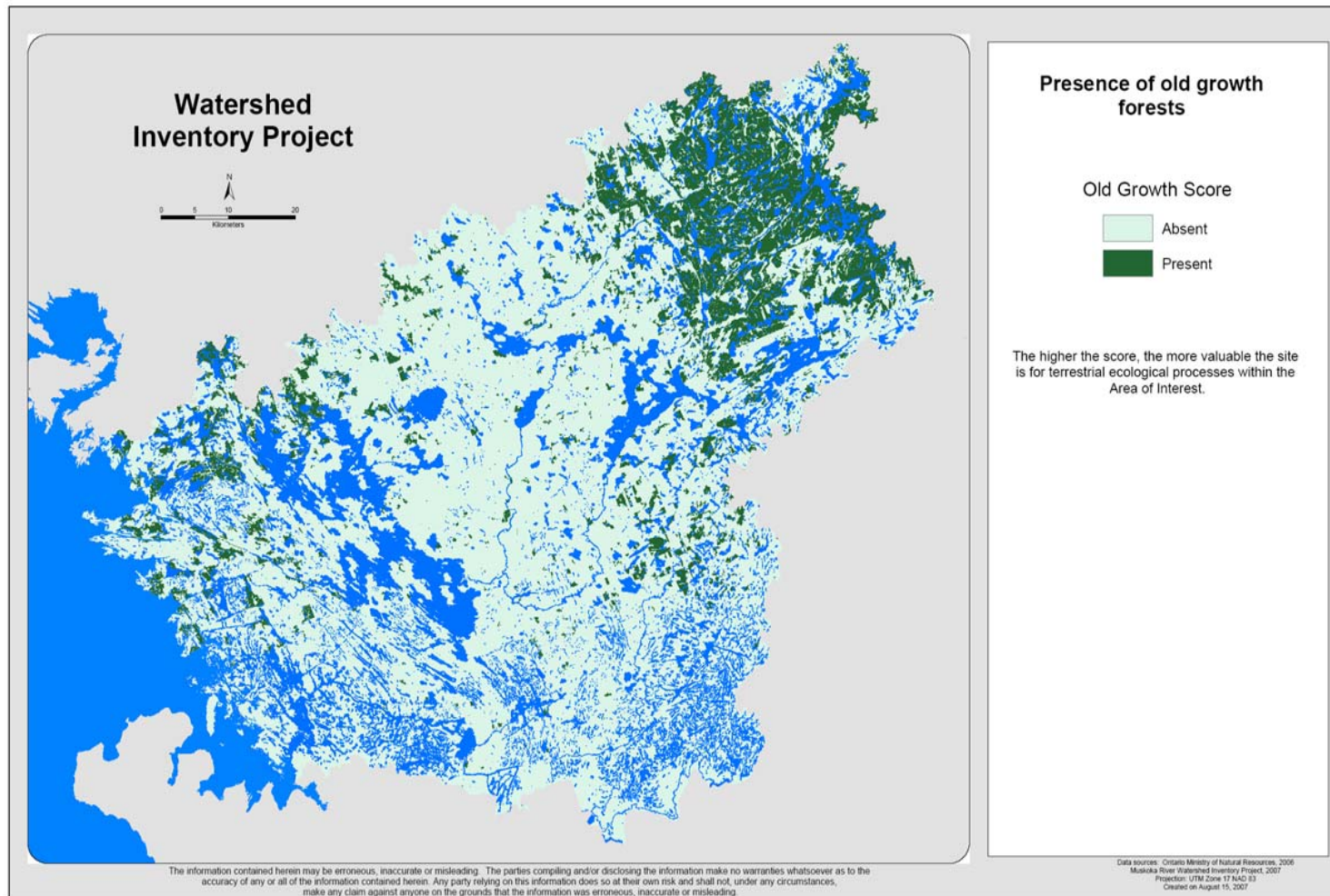


Figure 13. Old growth forests: Indicator of ecological function.



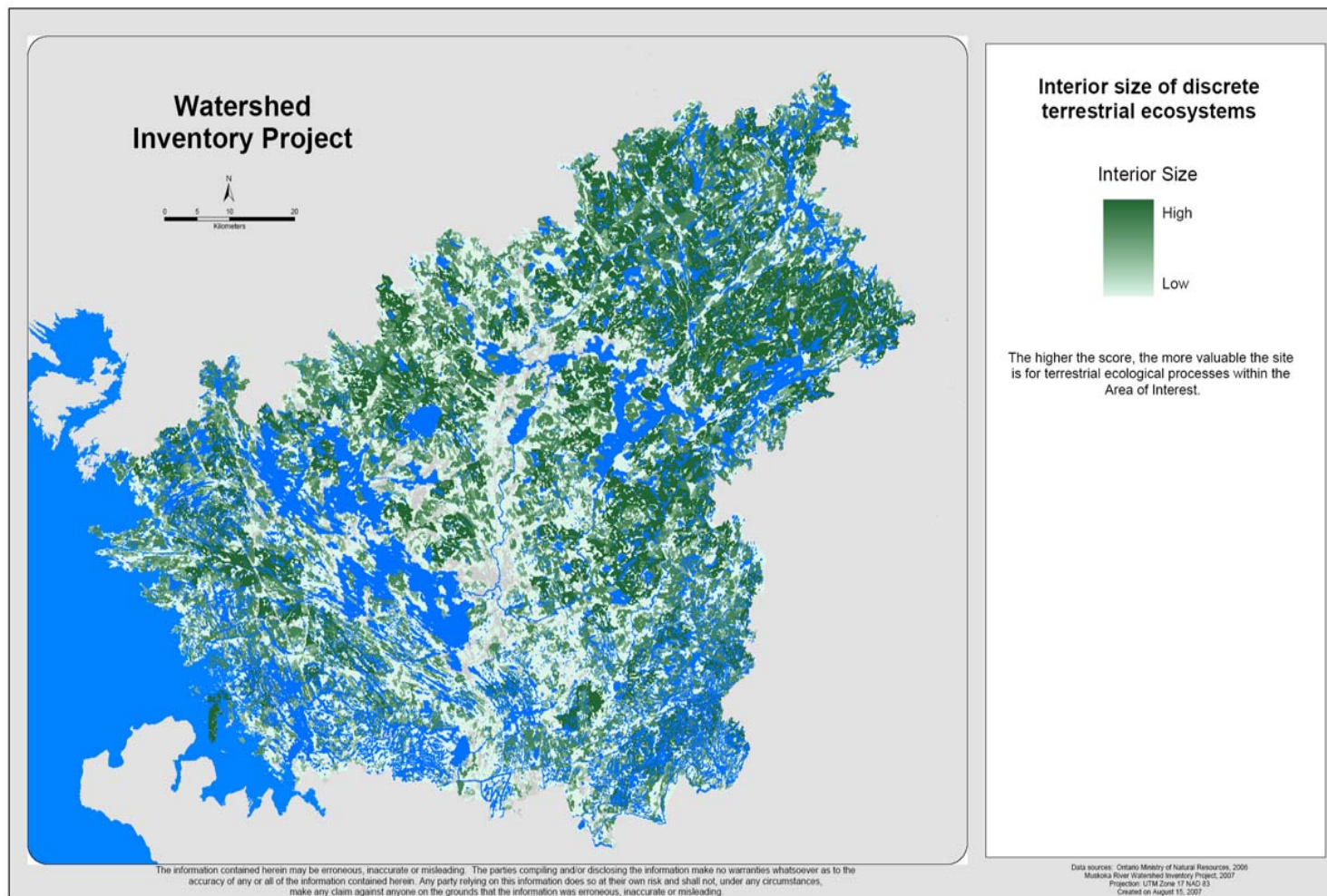


Figure 14. Size of interior habitat: Indicator of ecological function.

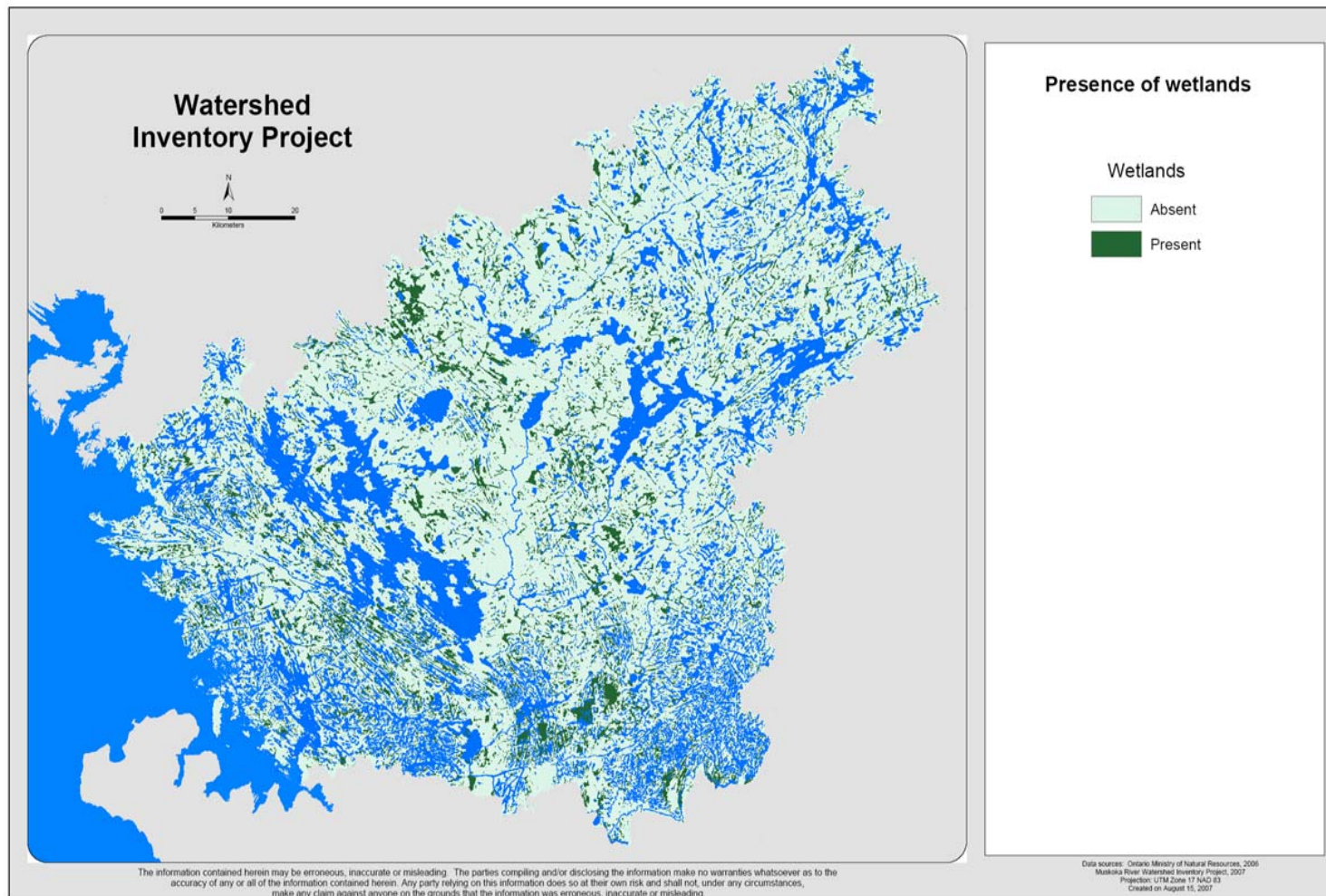


Figure 15. Presence of wetlands: indicator of ecological function.



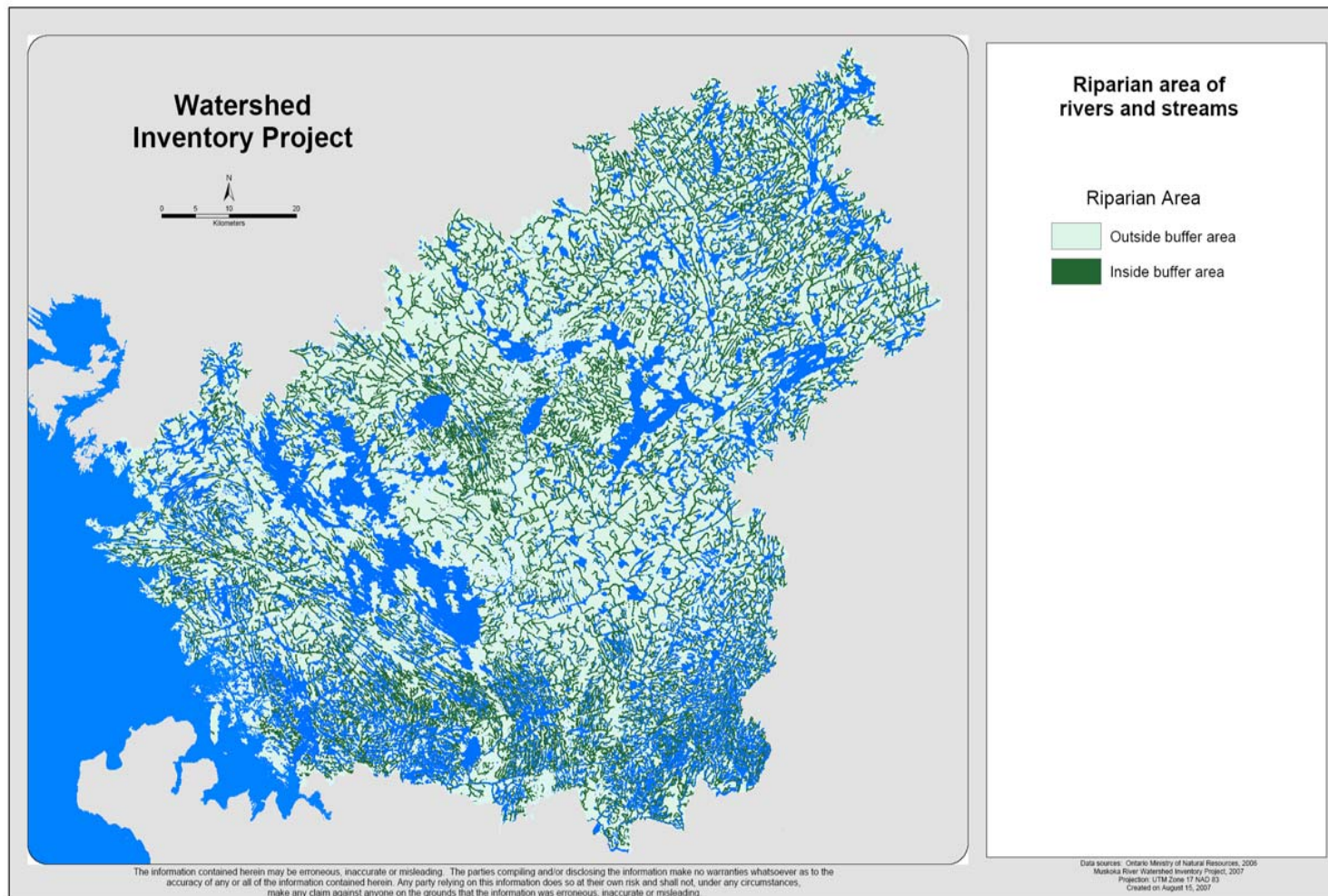


Figure 16. Riparian areas of rivers/streams: indicator of ecological function.

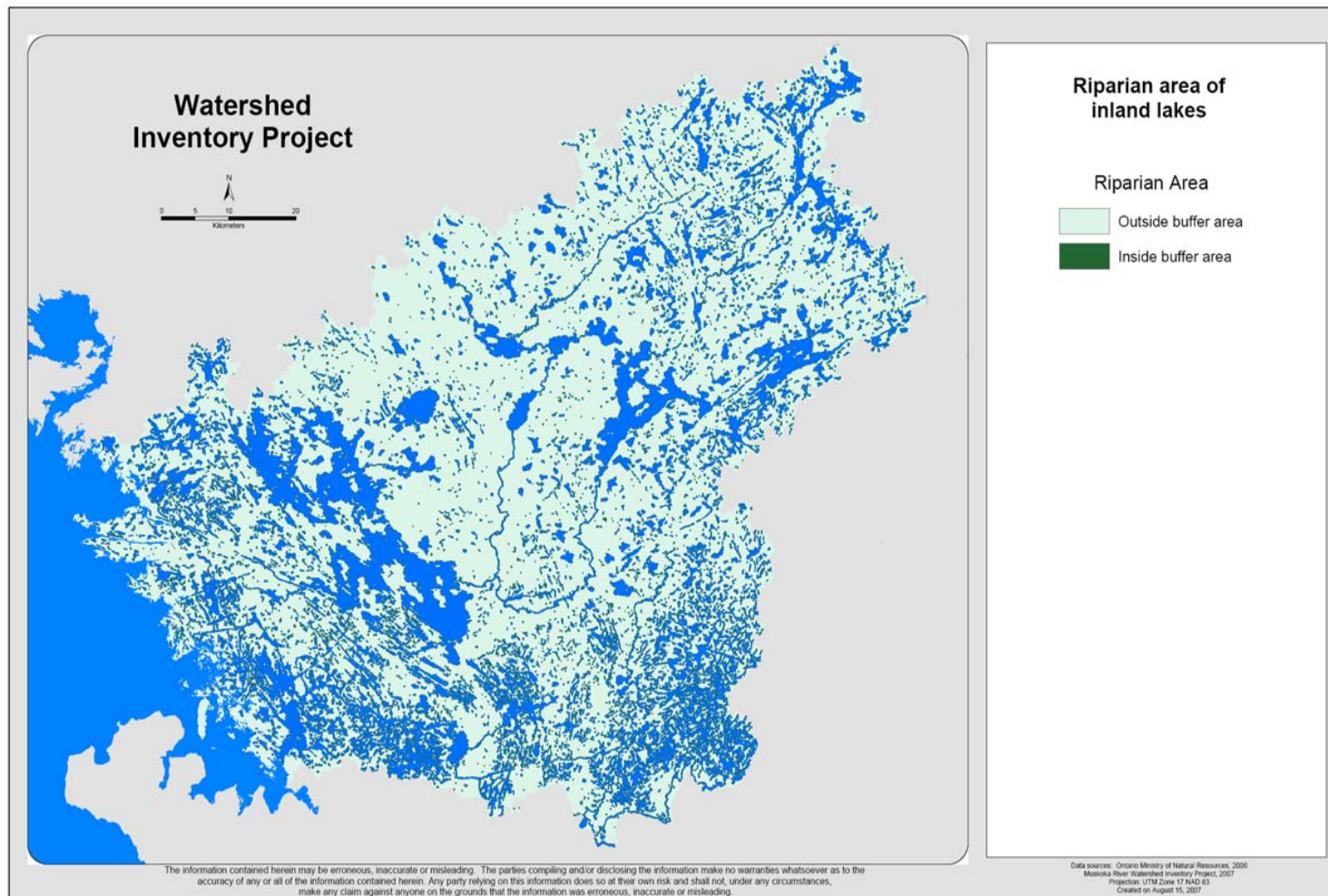


Figure 17. Riparian area of inland lakes: indicator of ecological function.

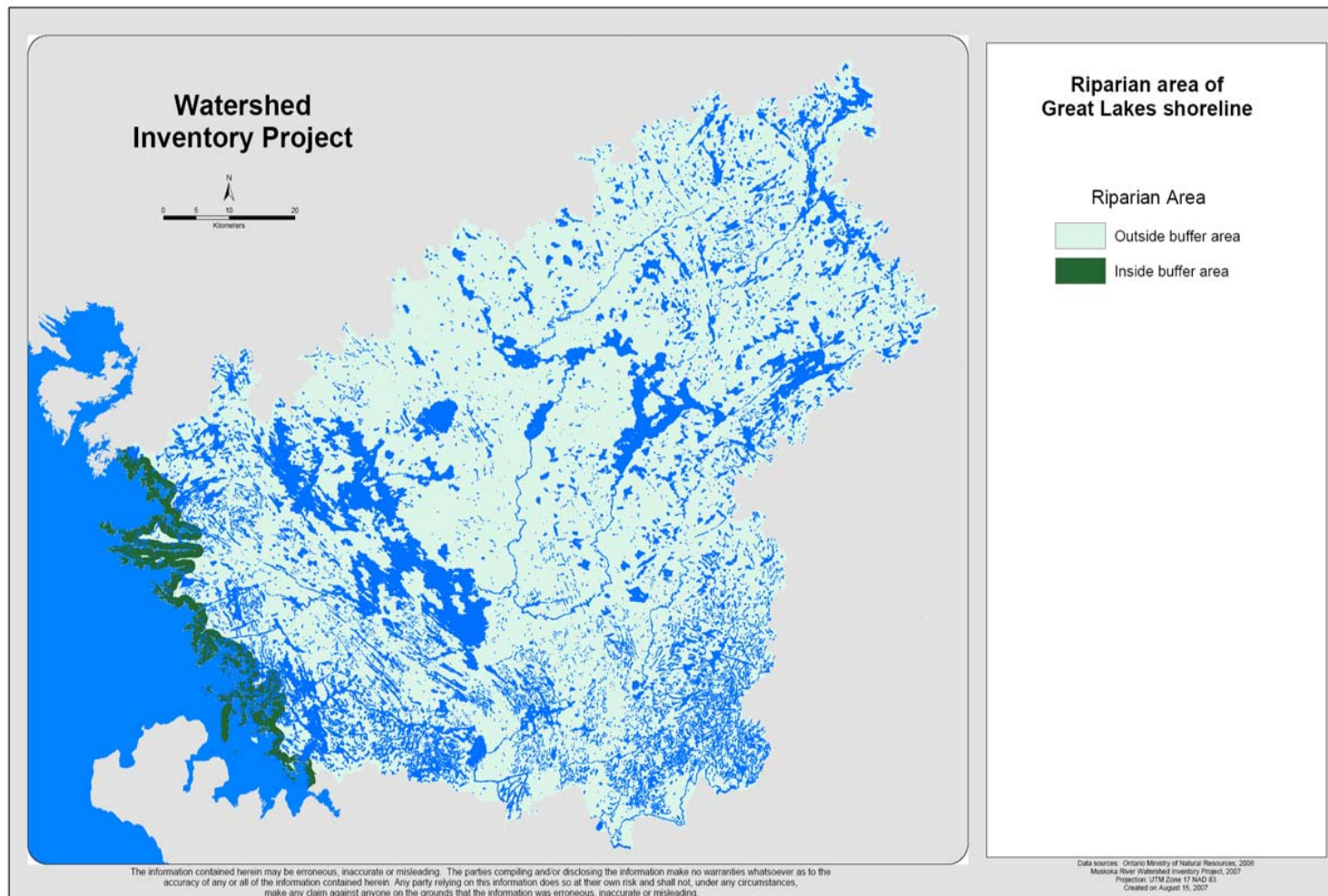


Figure 18. Riparian area of the Great Lakes shoreline: indicator of ecological function.



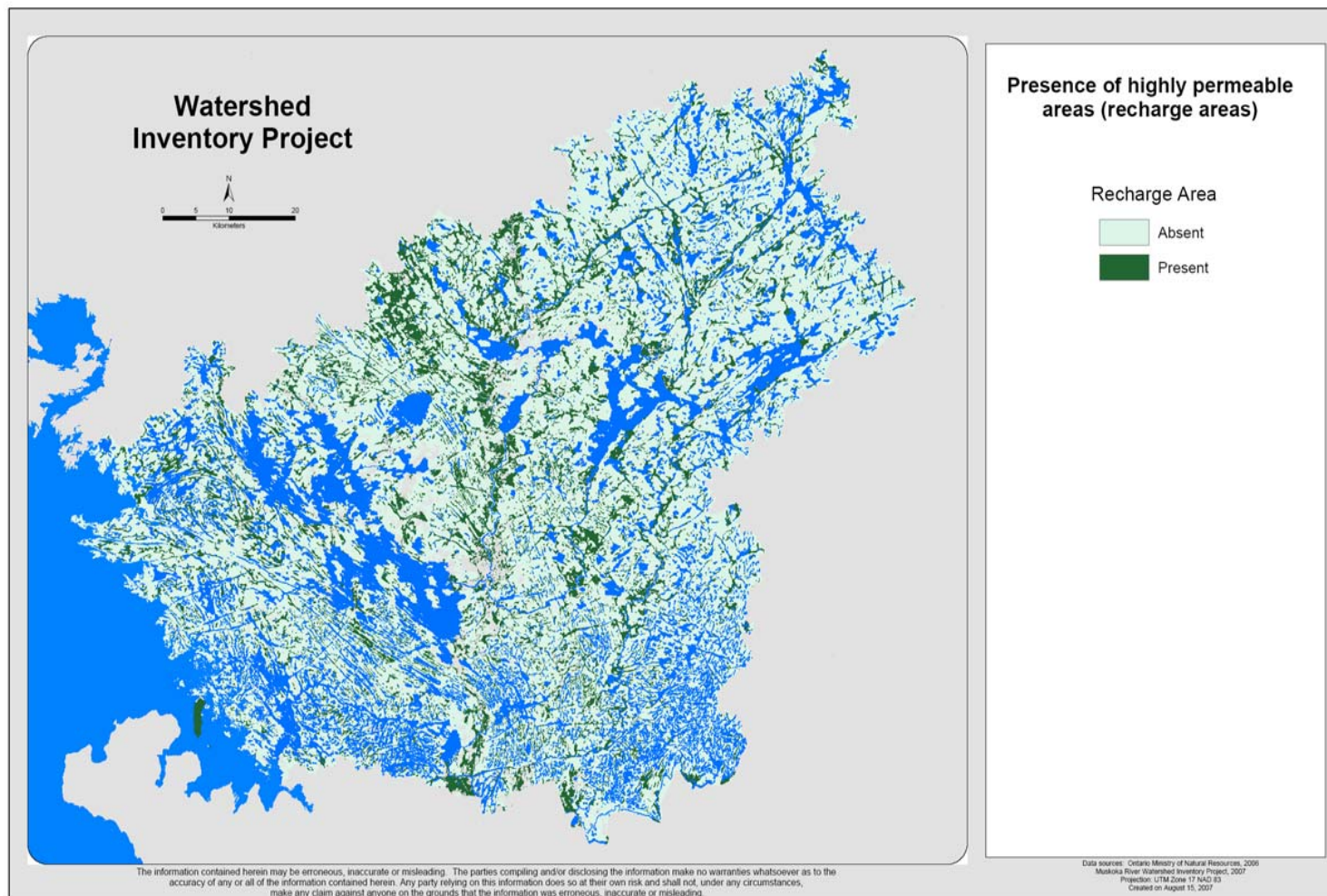


Figure 19. Presence of highly permeable areas (predictor of recharge areas): indicator of ecological function.

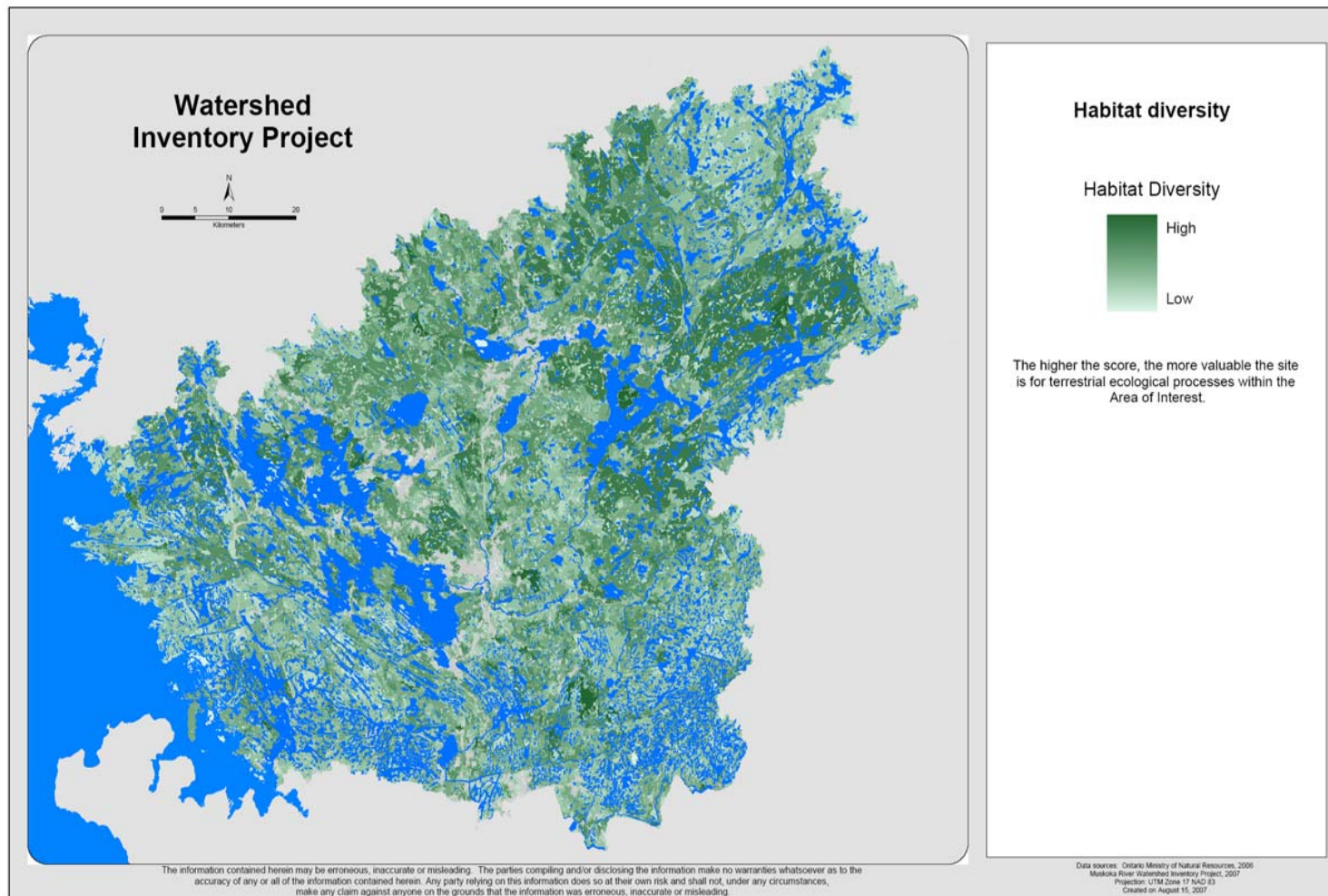


Figure 20. Habitat diversity (ecosystem diversity): indicator of diversity.

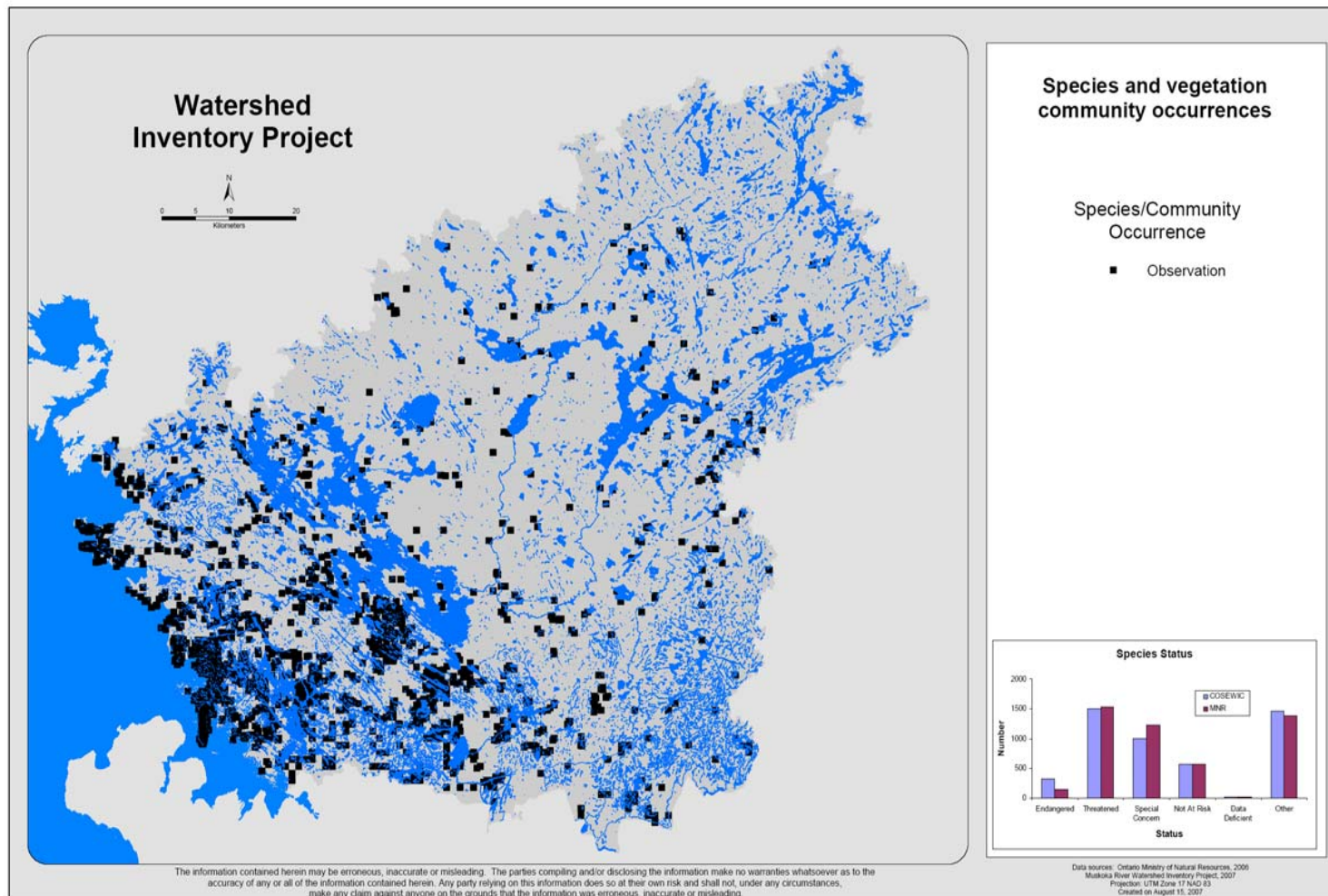


Figure 21. Species and vegetation community occurrences: indicator of special features.



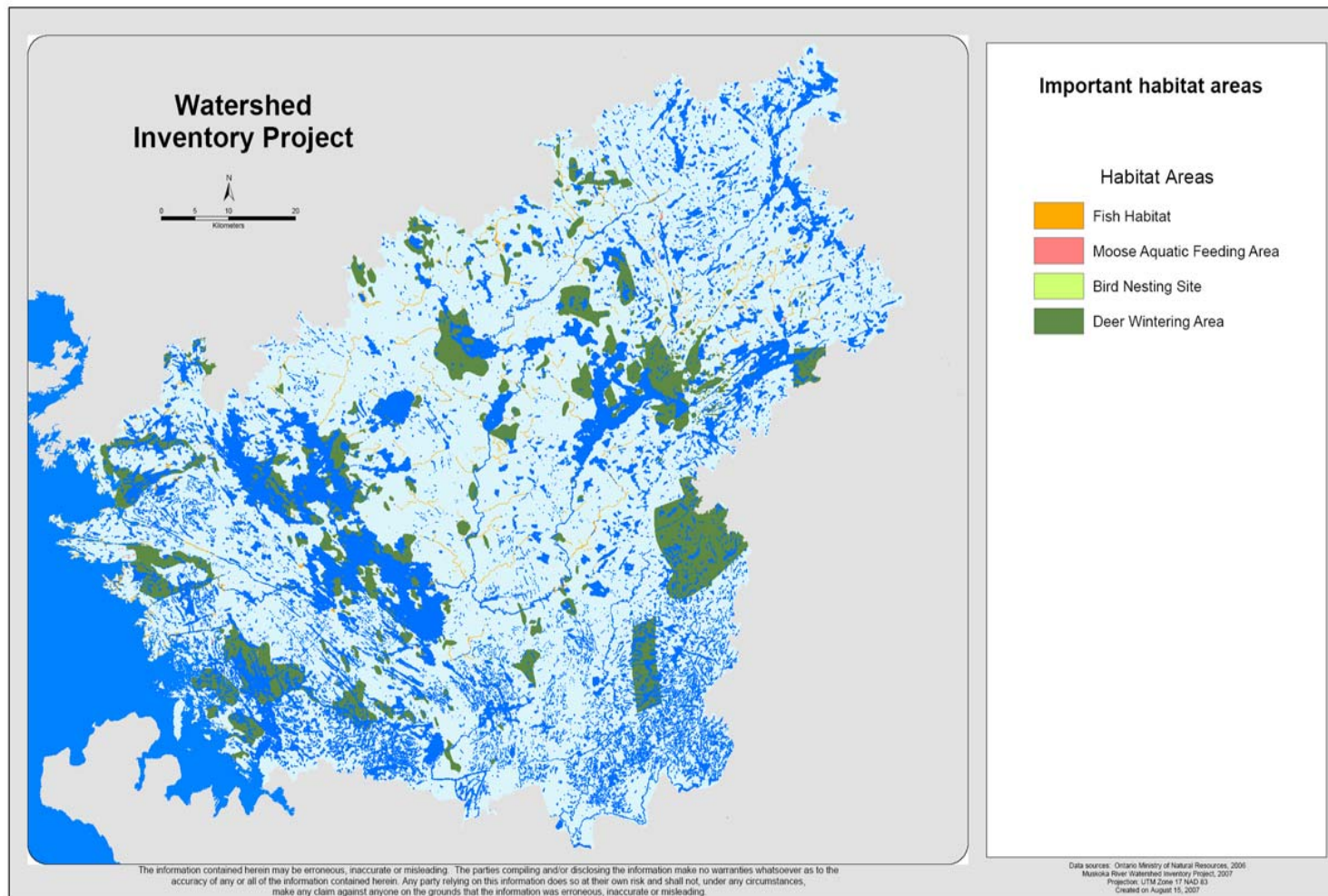


Figure 22. Important habitat areas: indicator of special features.

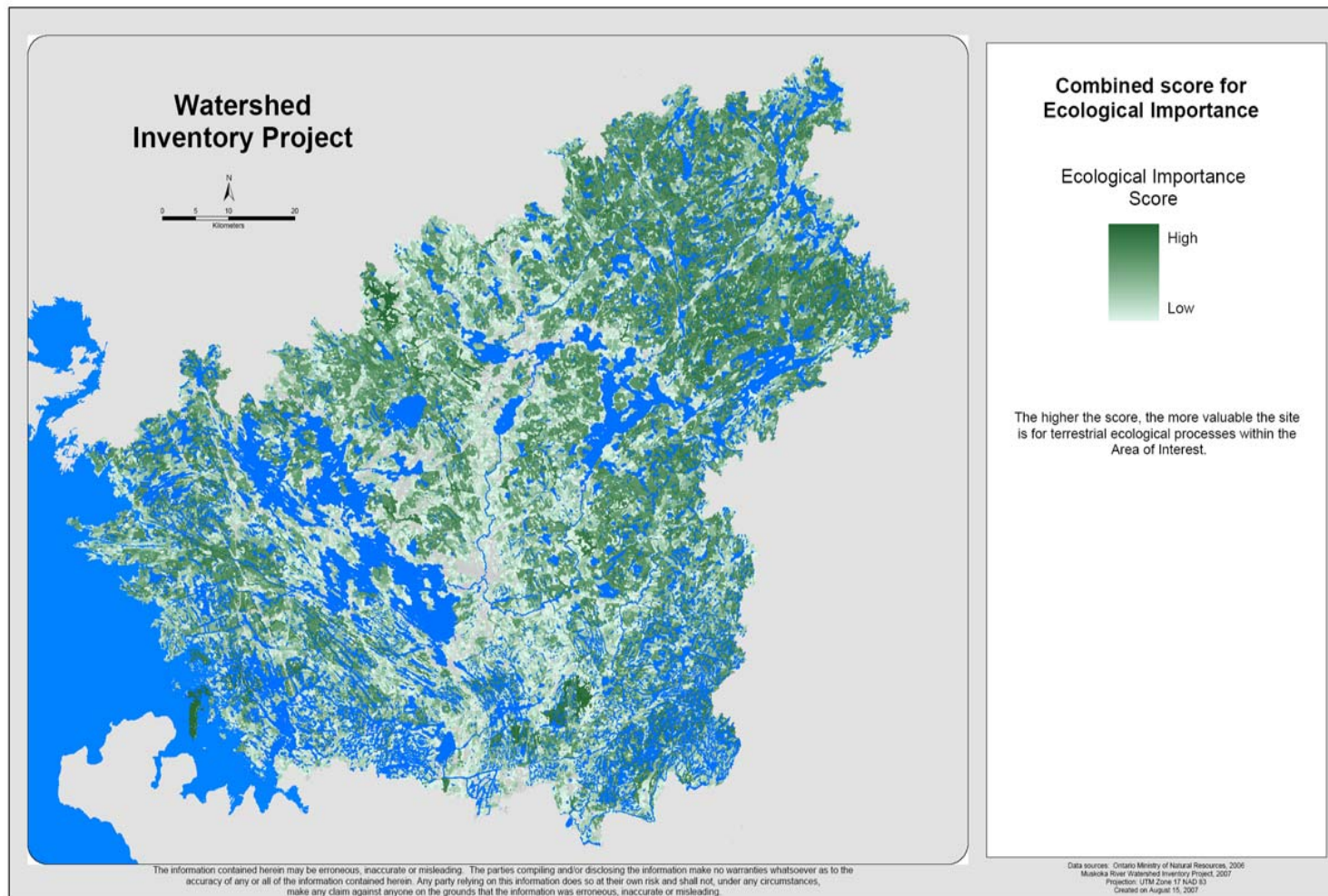


Figure 23. Combined score for Ecological Importance.



### Goal 3: Identify stresses on terrestrial ecosystems and processes

A crucial part of identifying a healthy, fully functioning ecosystem is to recognize the stresses on an area's ecological integrity. Stress on an ecosystem can come in a variety of forms and will impact upon the condition of an ecosystem and affect the ability of the ecosystem to maintain ecological functions. The following figures represent the elements that are currently putting stress upon ecosystems.

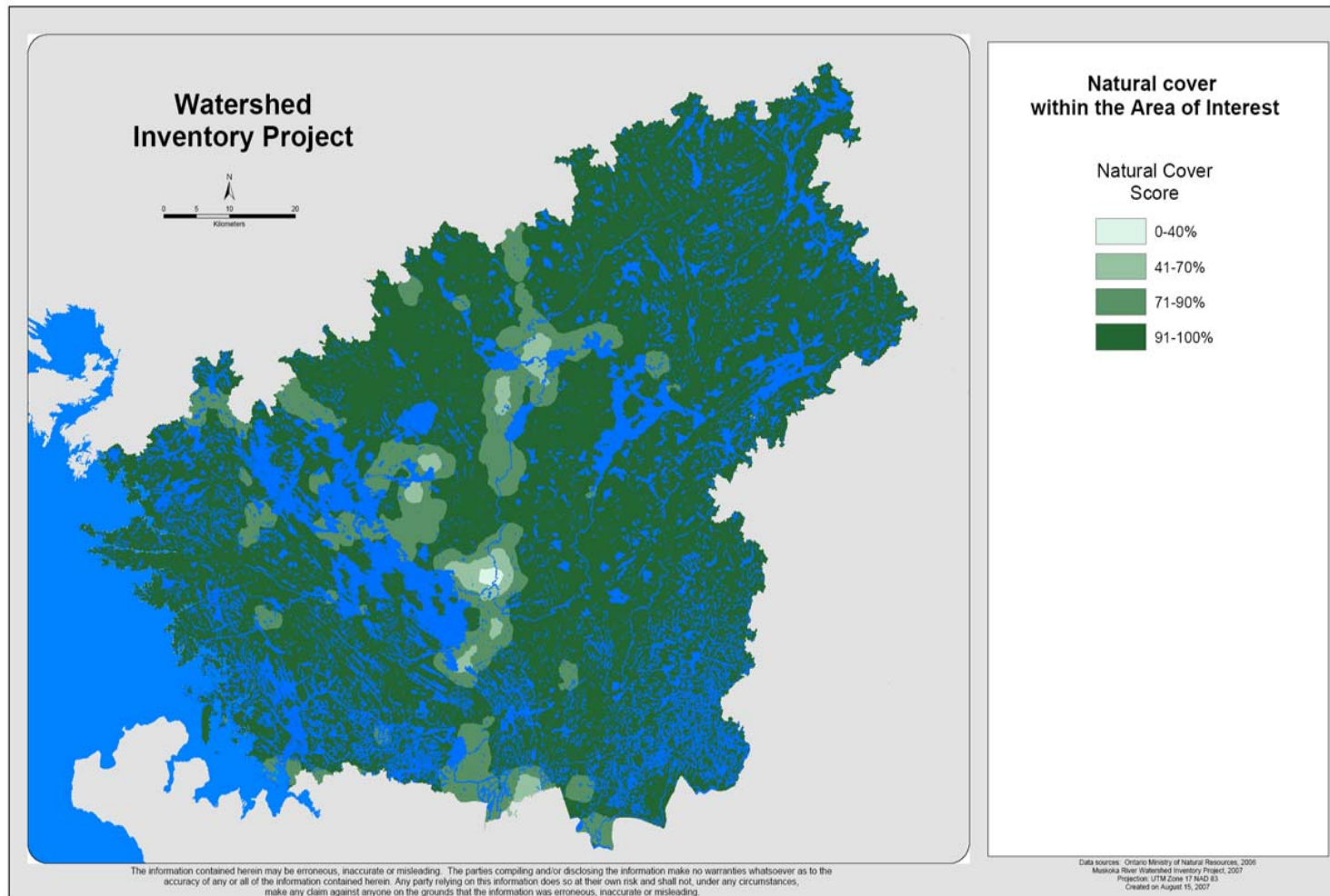


Figure 24. Percent natural cover: indicator of condition.

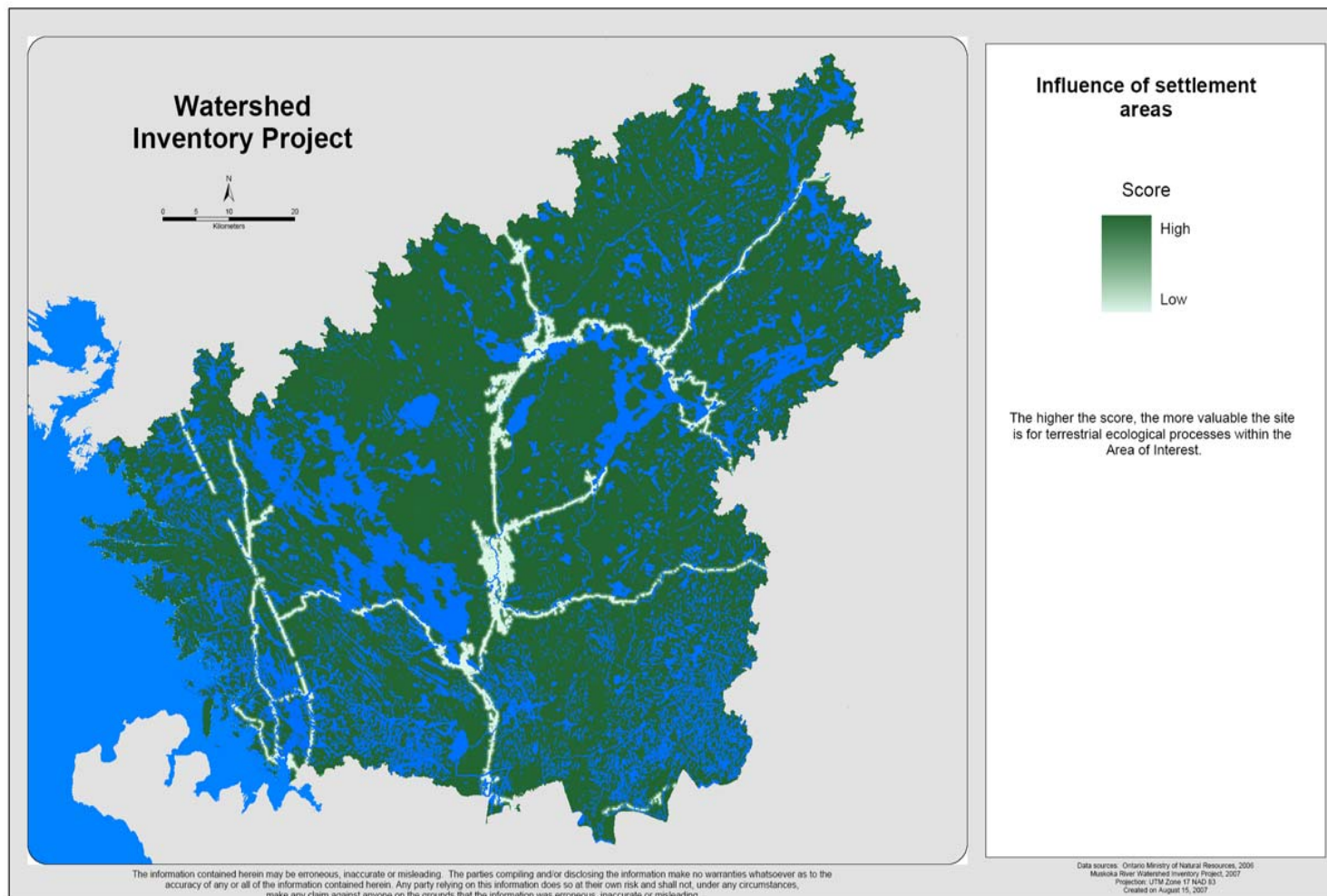


Figure 25. Influence of settlement areas: indicator of condition.

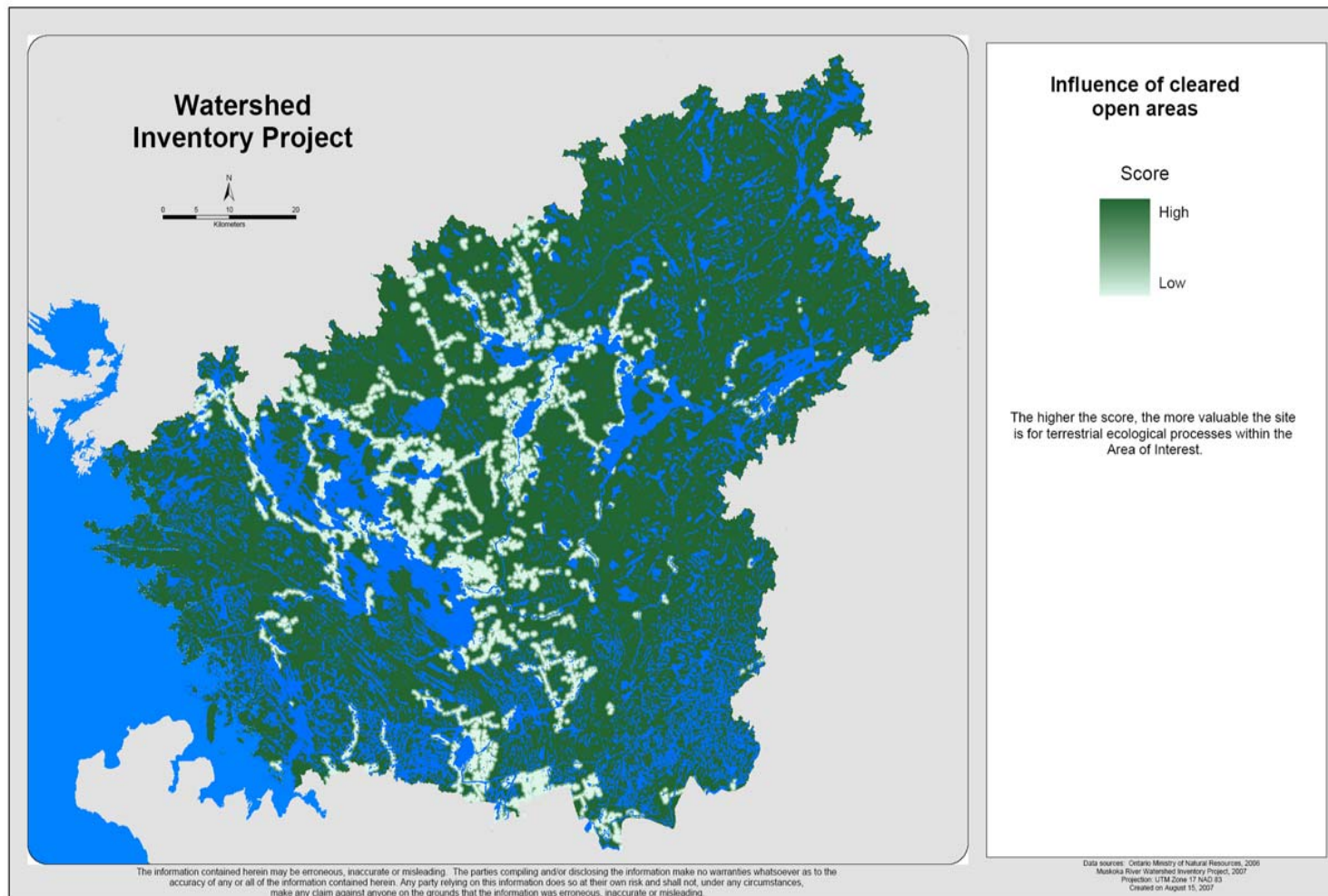


Figure 26. Influence of open and cleared areas: indicator of condition.



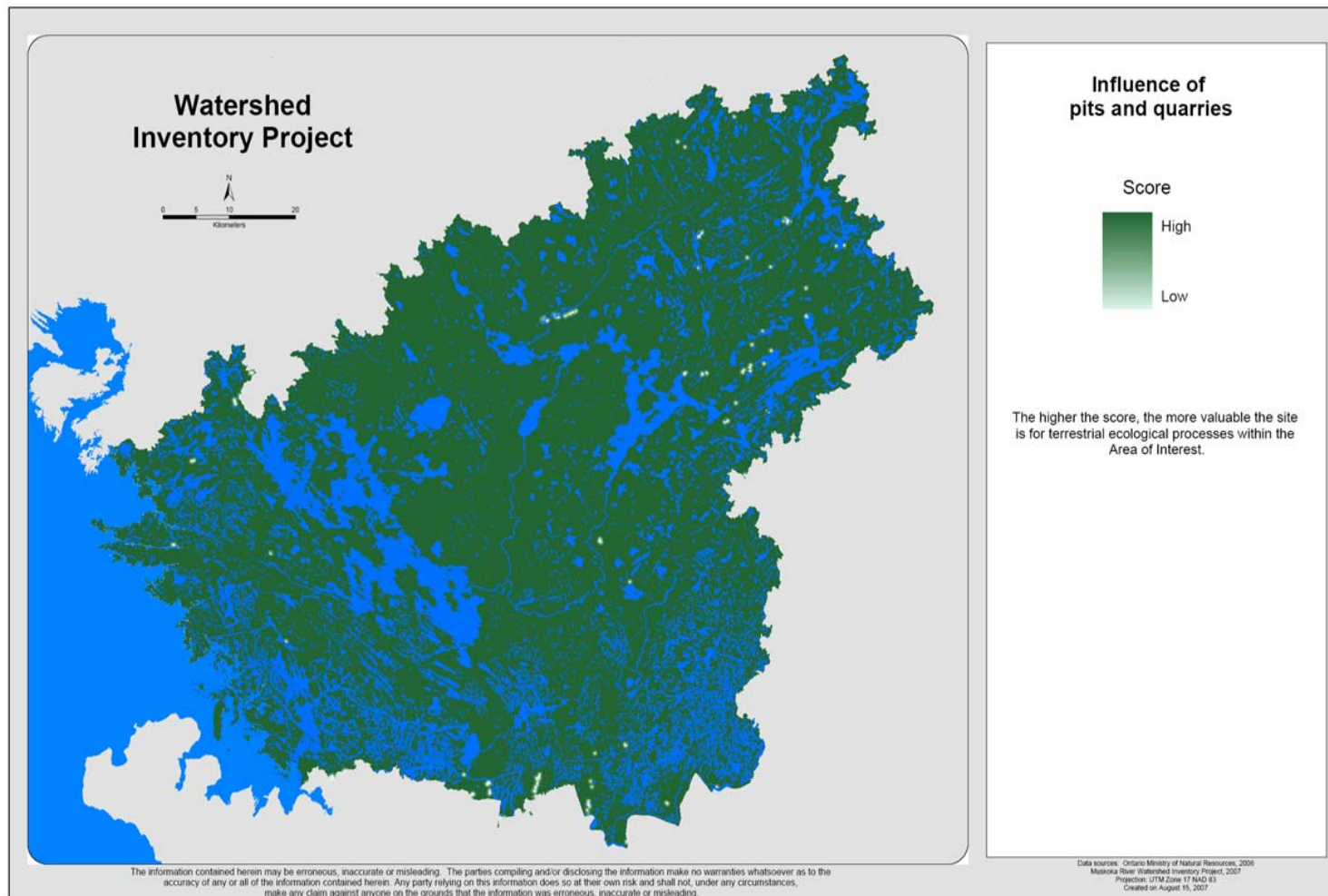


Figure 27. Influence of pits and quarries: indicator of condition.



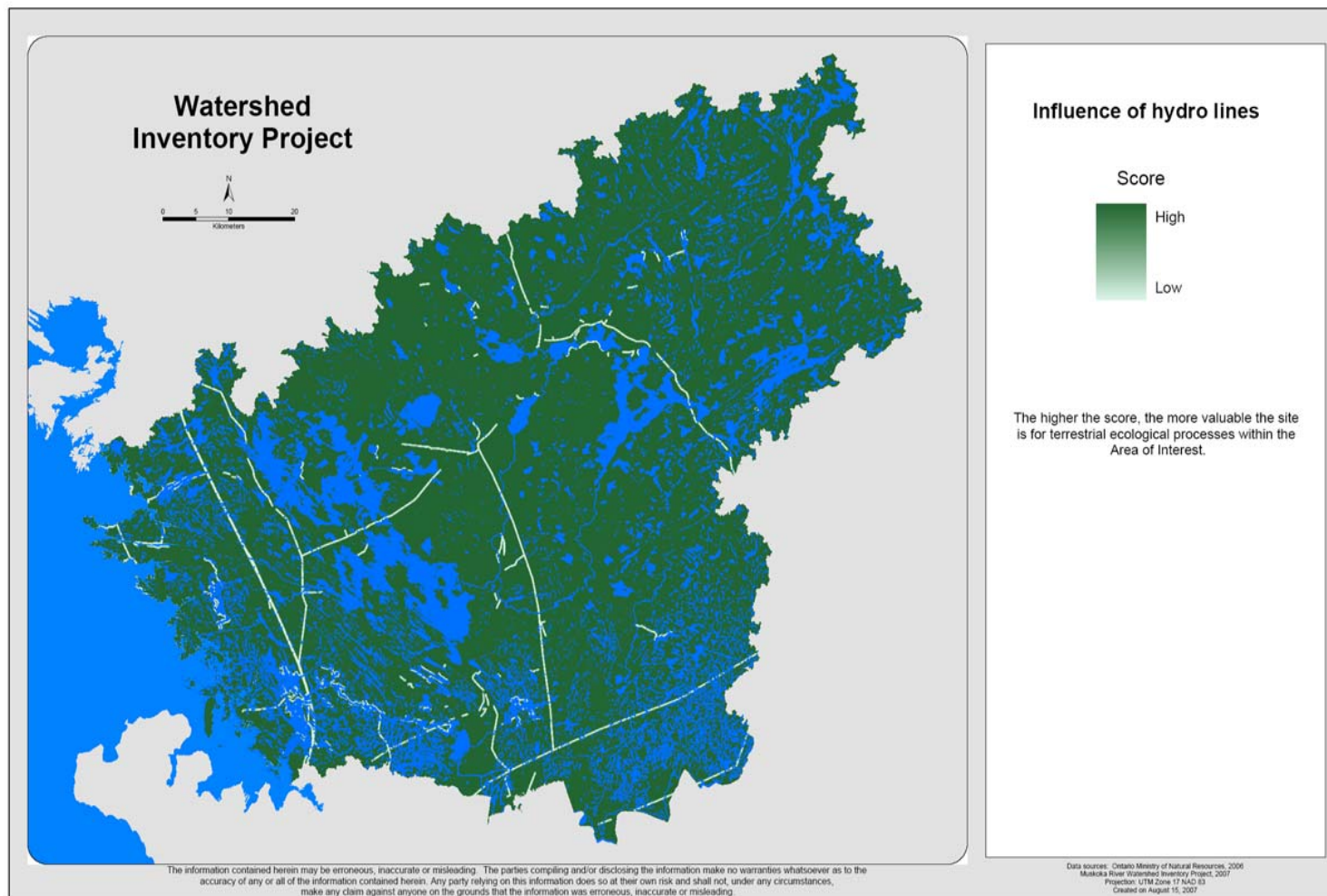


Figure 28. Influence of hydro lines: indicator of condition.

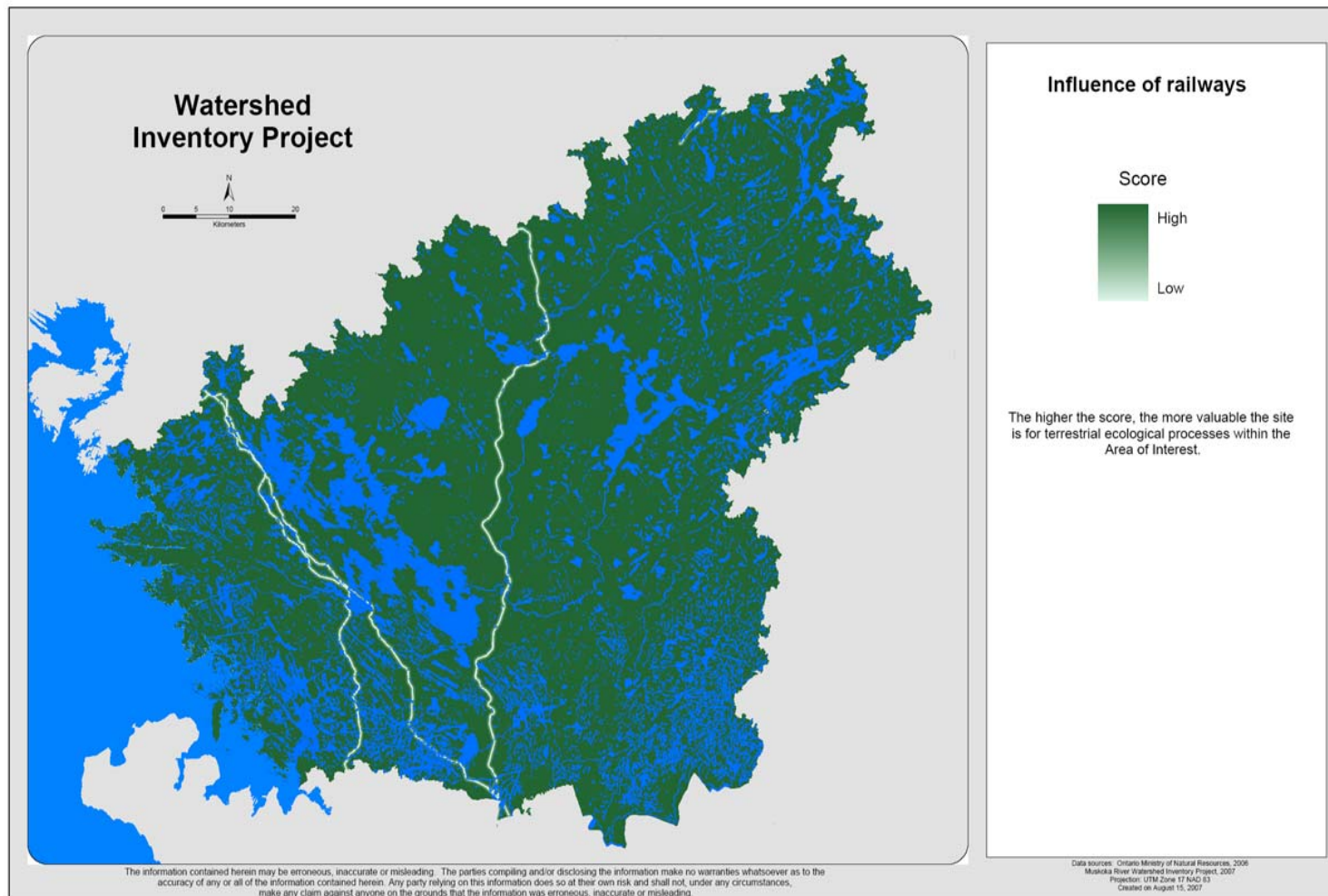


Figure 29. Influence of railways: indicator of condition.

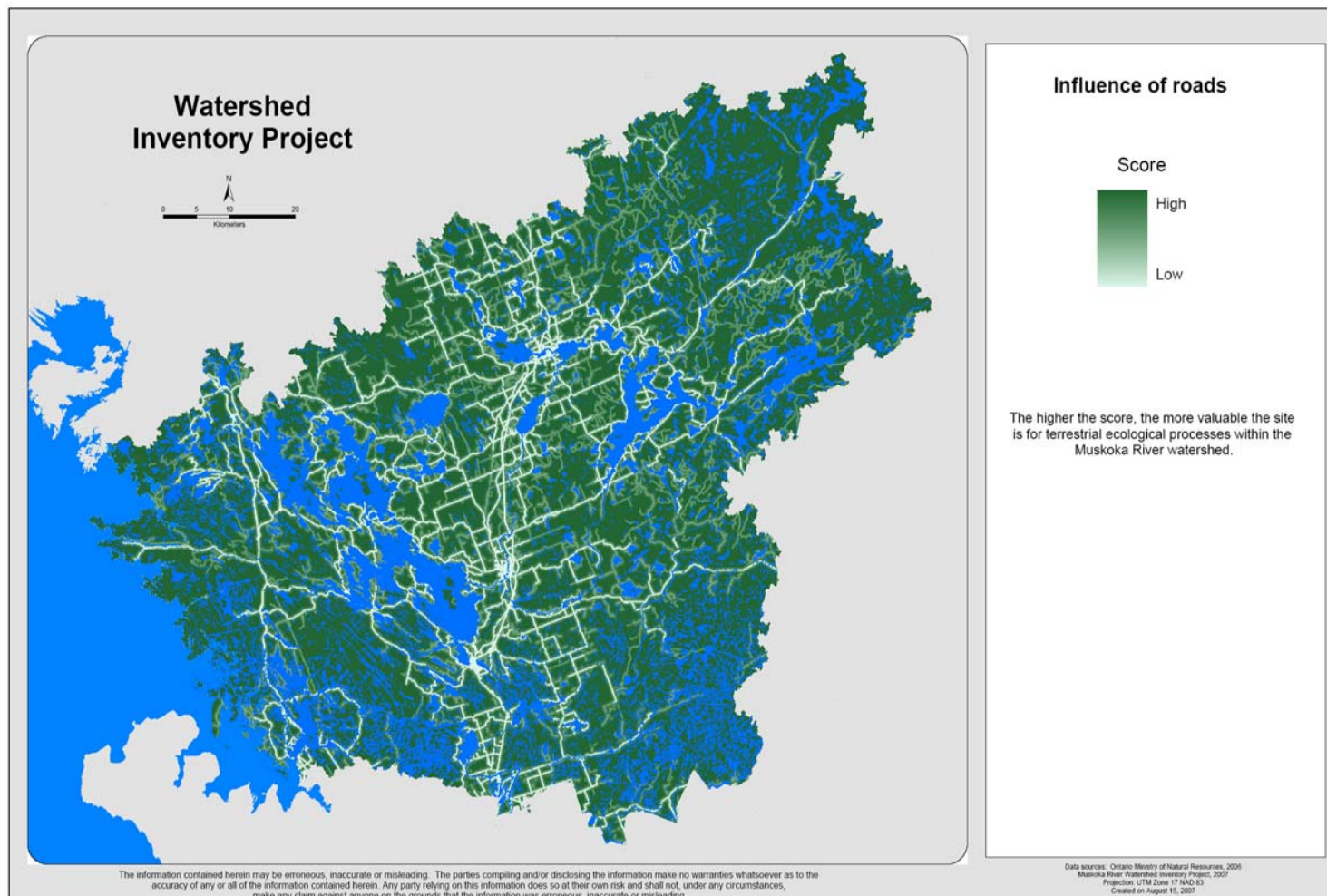


Figure 30. Influence of roads: indicator of condition.



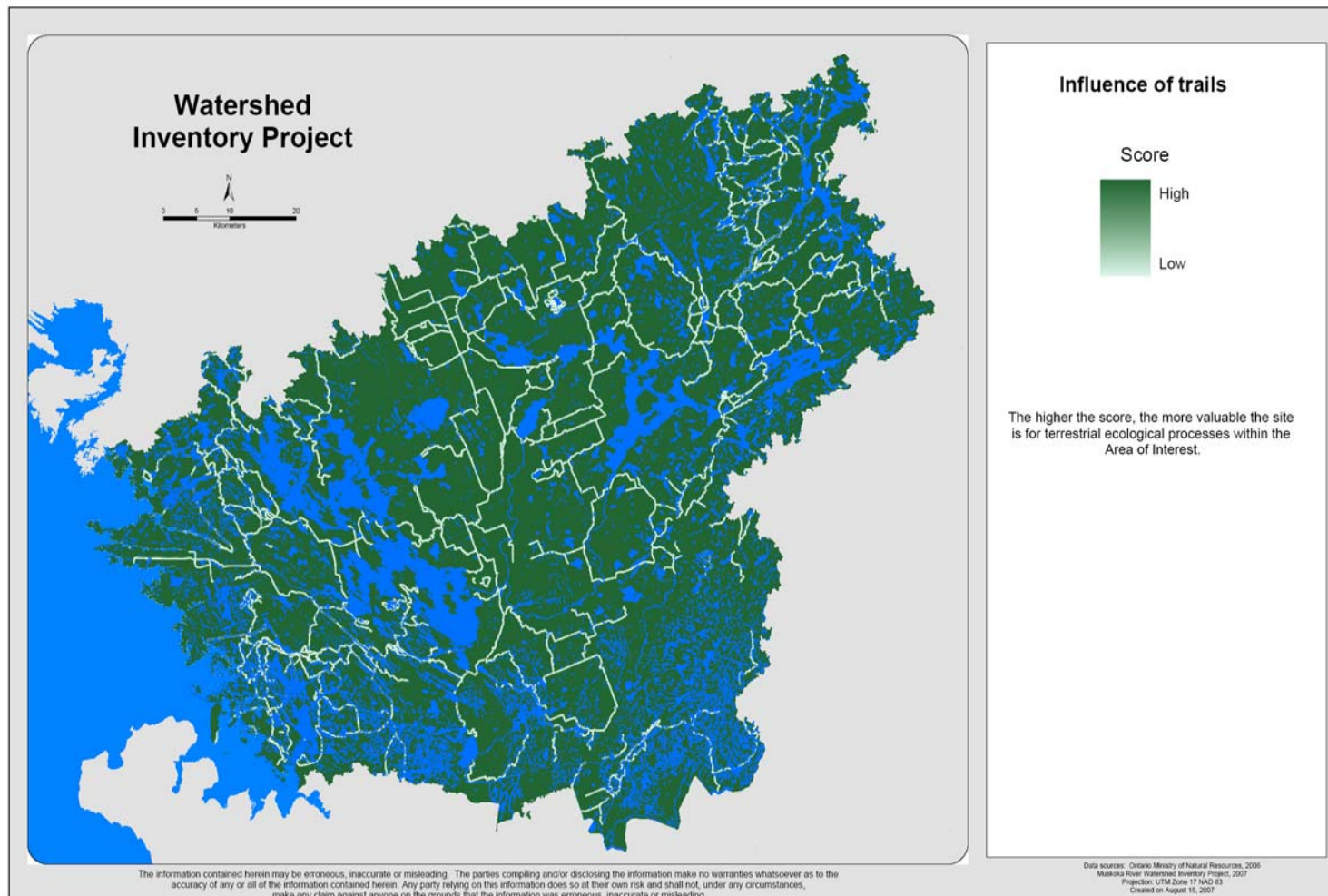


Figure 31. Influence of trails: indicator of condition.

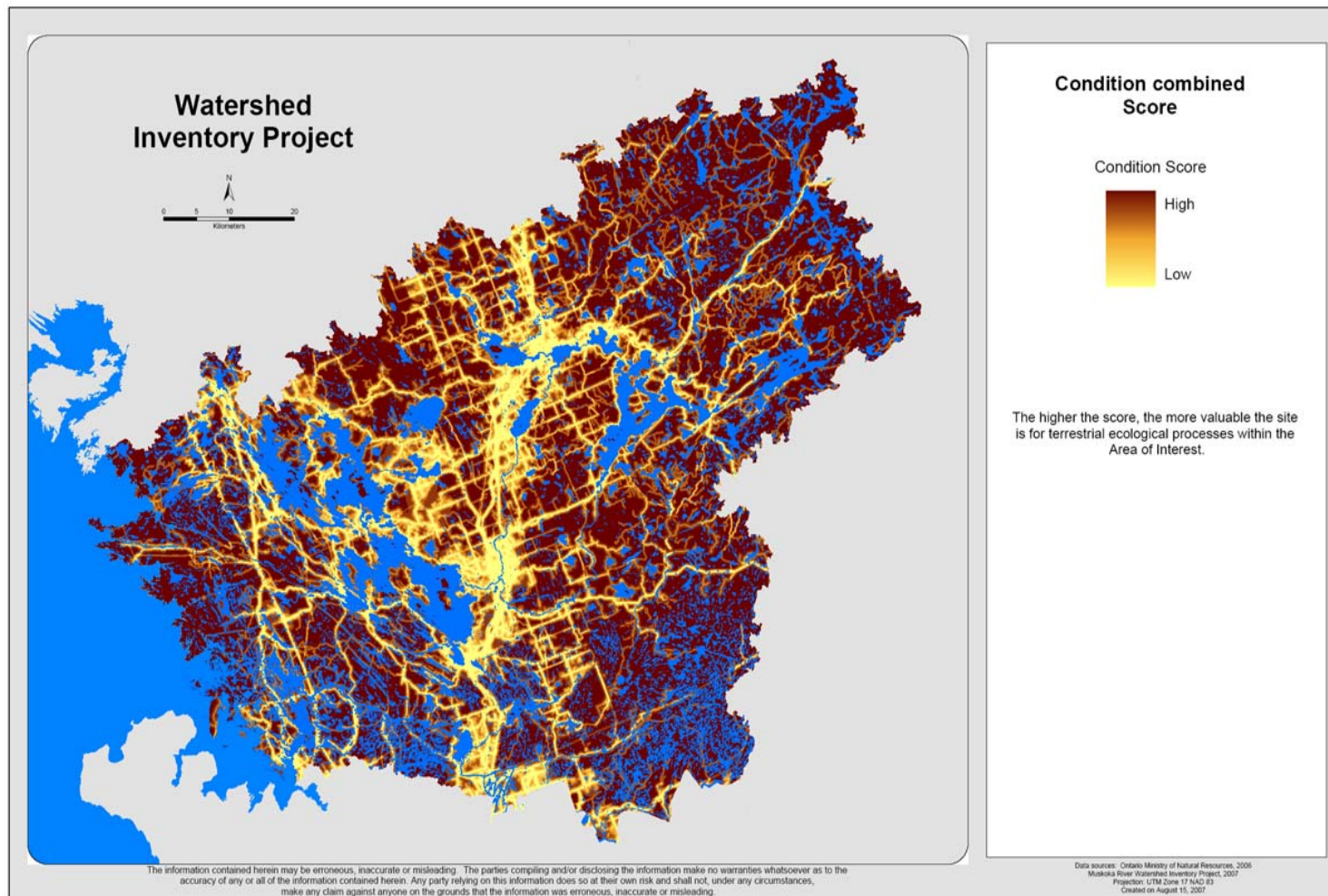


Figure 32. Combined score for condition.



Product 1: A gap analysis of unprotected vegetation communities and landforms.

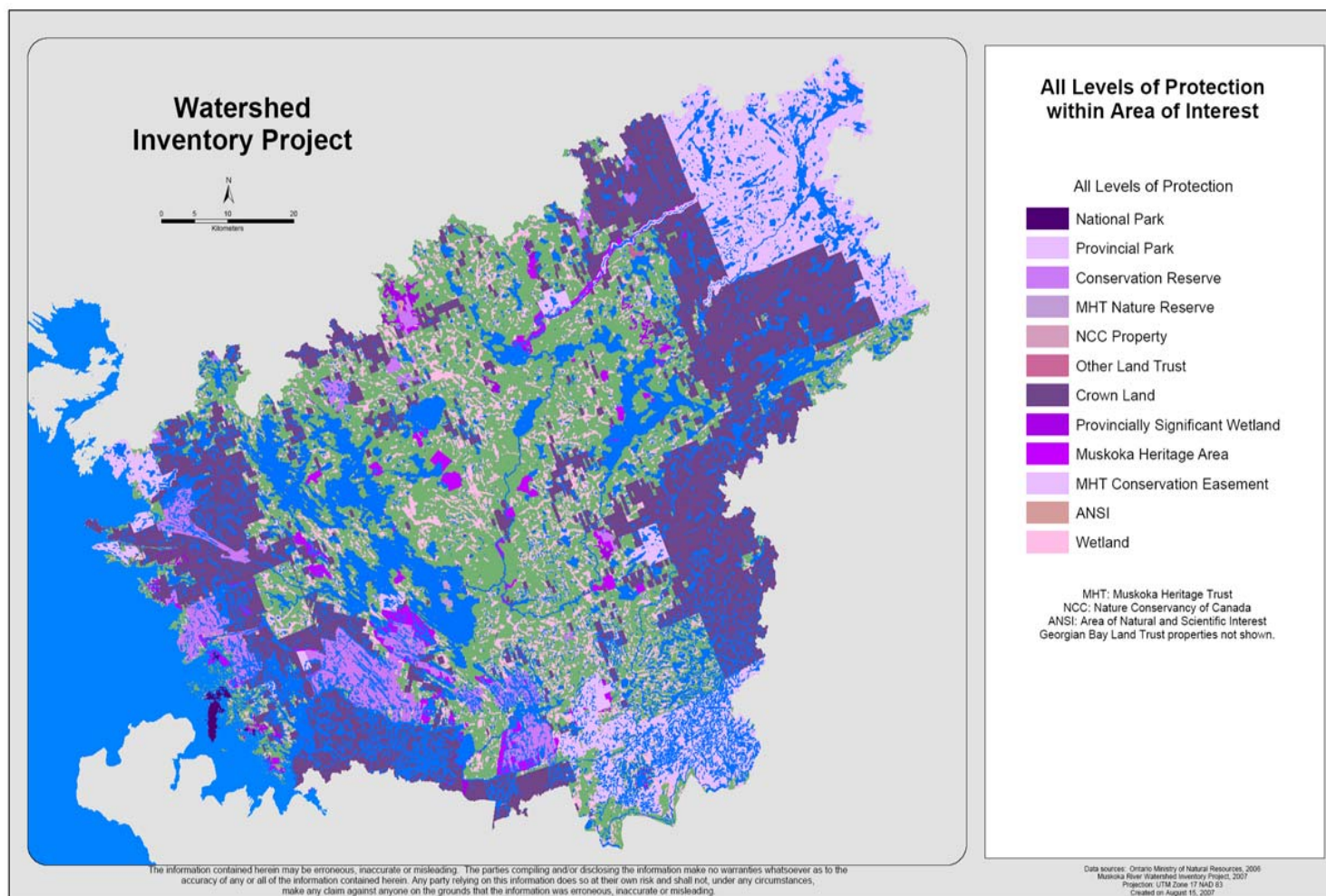


Figure 33. All levels of protected areas within AOI.

Table 4. Terrestrial ecosystems with an area of less than 10% located within existing protected areas.

	Within Level 1 Protection	Within Level 2 Protection	Within Level 3 Protection	Proportion Not within Protection
<b>Ecosystem</b>	<b>Percent</b>			
Bw/Bedrock2	0.0%	0.0%	0.0%	100.0%
Bw/Till2	0.0%	0.0%	0.0%	100.0%
By/Glaciolacustrine1	0.0%	0.0%	0.0%	100.0%
IntHd/Glaciofluvial1	0.0%	0.0%	0.0%	100.0%
MidHd/Organic	0.0%	0.0%	0.0%	100.0%
OCLow/Bedrock2	0.0%	0.0%	0.0%	100.0%
Pj/Glaciolacustrine1	0.0%	0.0%	0.0%	100.0%
Pj/Organic	0.0%	0.0%	0.0%	100.0%
Pj/Till	0.0%	0.0%	0.0%	100.0%
PWR/Bedrock2	0.0%	0.0%	0.0%	100.0%
SbLow/Bedrock2	0.0%	0.0%	0.0%	100.0%
SbLow/Glaciolacustrine1	0.0%	0.0%	0.0%	100.0%
SbLow/Glaciolacustrine2	0.0%	0.0%	0.0%	100.0%
SbLow/Unknown	0.0%	0.0%	0.0%	100.0%
SbP/Bedrock2	0.0%	0.0%	0.0%	100.0%
SbP/Glaciofluvial1	0.0%	0.0%	0.0%	100.0%
SbP/Glaciolacustrine1	0.0%	0.0%	0.0%	100.0%
SbP/Glaciolacustrine2	0.0%	0.0%	0.0%	100.0%
SbP/Till2	0.0%	0.0%	0.0%	100.0%
TolHd/Bedrock2	0.0%	0.0%	0.0%	100.0%
TolHd/Till2	0.0%	0.0%	0.0%	100.0%
He/Glaciolacustrine2	0.0%	0.1%	0.0%	99.9%
HdConU/Bedrock2	0.3%	0.0%	0.0%	99.7%
By/Glaciolacustrine2	0.3%	0.0%	0.0%	99.7%
Asp/Glaciolacustrine1	0.0%	0.5%	0.0%	99.5%

	Within Level 1 Protection	Within Level 2 Protection	Within Level 3 Protection	Proportion Not within Protection
Asp/Glaciolacustrine2	0.0%	0.6%	0.0%	99.4%
Pj/Glaciofluvial2	0.0%	0.8%	0.0%	99.2%
IntHd/Glaciolacustrine2	0.0%	0.9%	0.0%	99.1%
OPine/Glaciolacustrine1	0.0%	1.9%	0.0%	98.1%
SbP/Unknown	0.0%	2.7%	0.0%	97.3%
He/Glaciolacustrine1	0.0%	3.3%	0.0%	96.7%
OCLow/Glaciolacustrine1	0.0%	3.4%	0.1%	96.5%
OPine/Glaciolacustrine2	0.0%	3.5%	0.0%	96.5%
Sparse/Till1	0.1%	3.8%	0.0%	96.1%
Bw/Glaciofluvial1	0.0%	4.6%	0.0%	95.4%
He/Organic	0.1%	5.3%	0.0%	94.7%
Sparse/Glaciolacustrine2	0.0%	5.8%	0.0%	94.2%
OPine/Till1	0.0%	5.9%	0.0%	94.1%
TolHd/Glaciolacustrine1	0.8%	5.4%	0.1%	93.7%
HdConU/Glaciolacustrine1	0.2%	6.5%	0.1%	93.3%
HdConU/Glaciolacustrine2	3.6%	4.6%	0.0%	91.9%
GRS	2.9%	5.7%	0.3%	91.1%

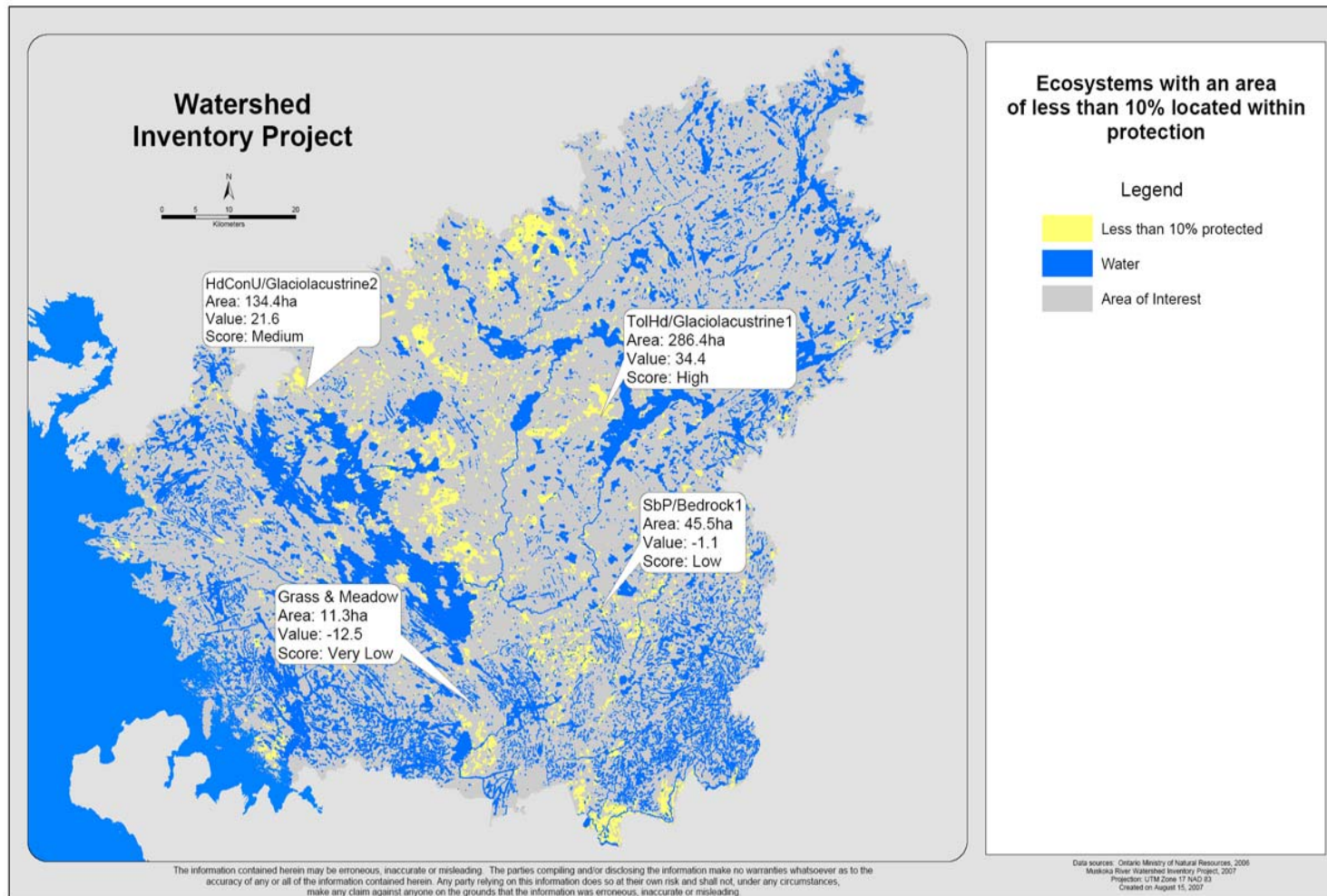


Figure 34. Terrestrial ecosystems with an area of less than 10% located within existing protected areas.



## Product 2: A gap analysis of biological data and site inventories

Many of the datasets used in the MRWIP were used for the extended assessment into the Black-Simcoe tertiary watershed. At the time of analysis, the data issues from the previous analysis had not yet been fully addressed, thus the summary of data gaps in the MRWIP Final Report remain valid (please refer to the Muskoka River Watershed Inventory Project Final Report).

Product 3: A map portraying the significant natural areas and connecting systems

The MRWIP produced a model that identifies areas with the potential for sustaining ecological processes as well as areas in poor condition and subject to ecological stressors. When the two datasets are combined, the result of the final analysis shows how some stressors affect ecologically important areas. The result is an indication of where the least stressed and most ecologically significant areas are located within the watershed. This process was used for the WIP assessment (Please refer to the Muskoka River Watershed Inventory Project Technical and Final Reports).

Combined scores:

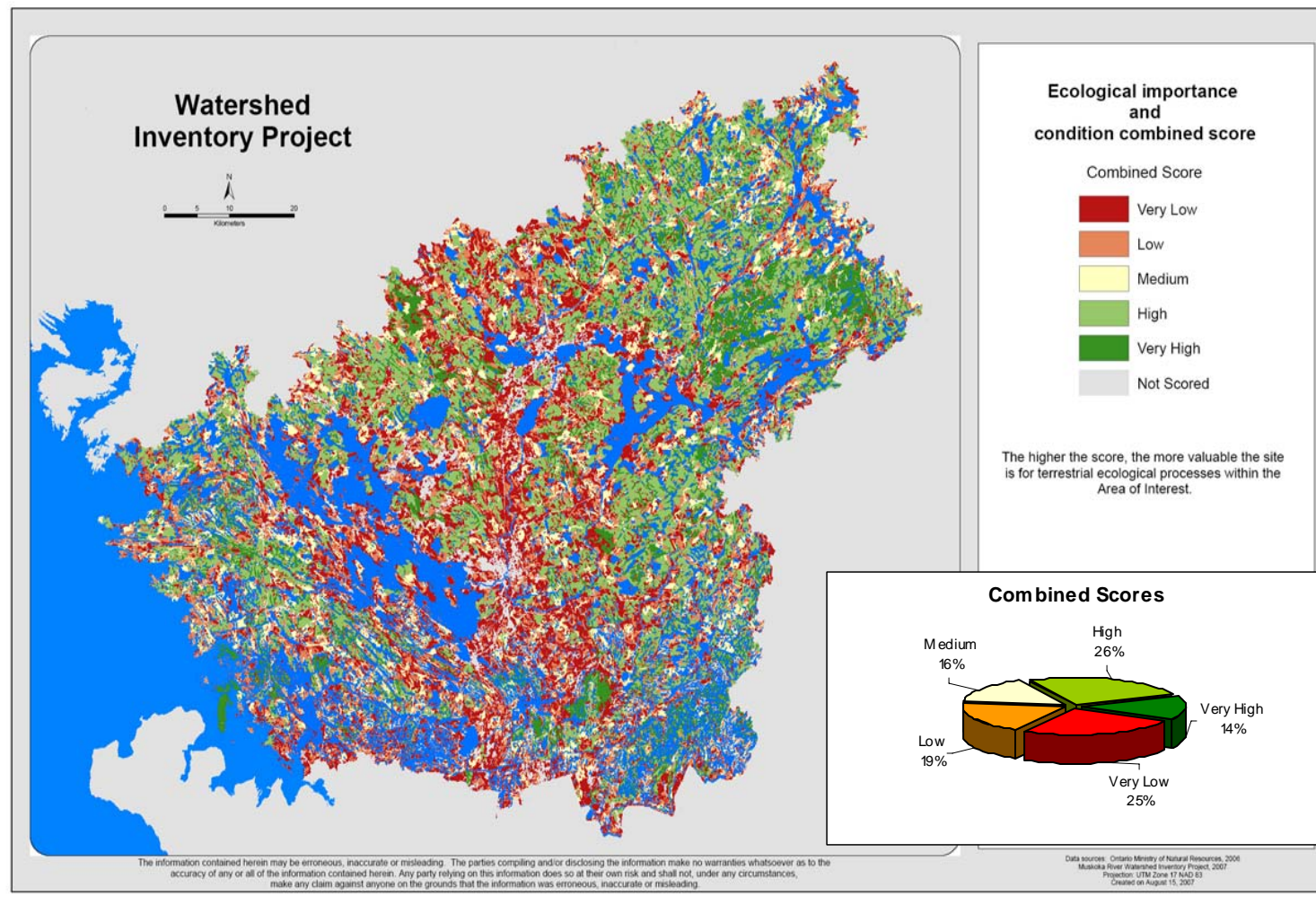


Figure 35. Ecological importance and condition combined scores.

Core areas:

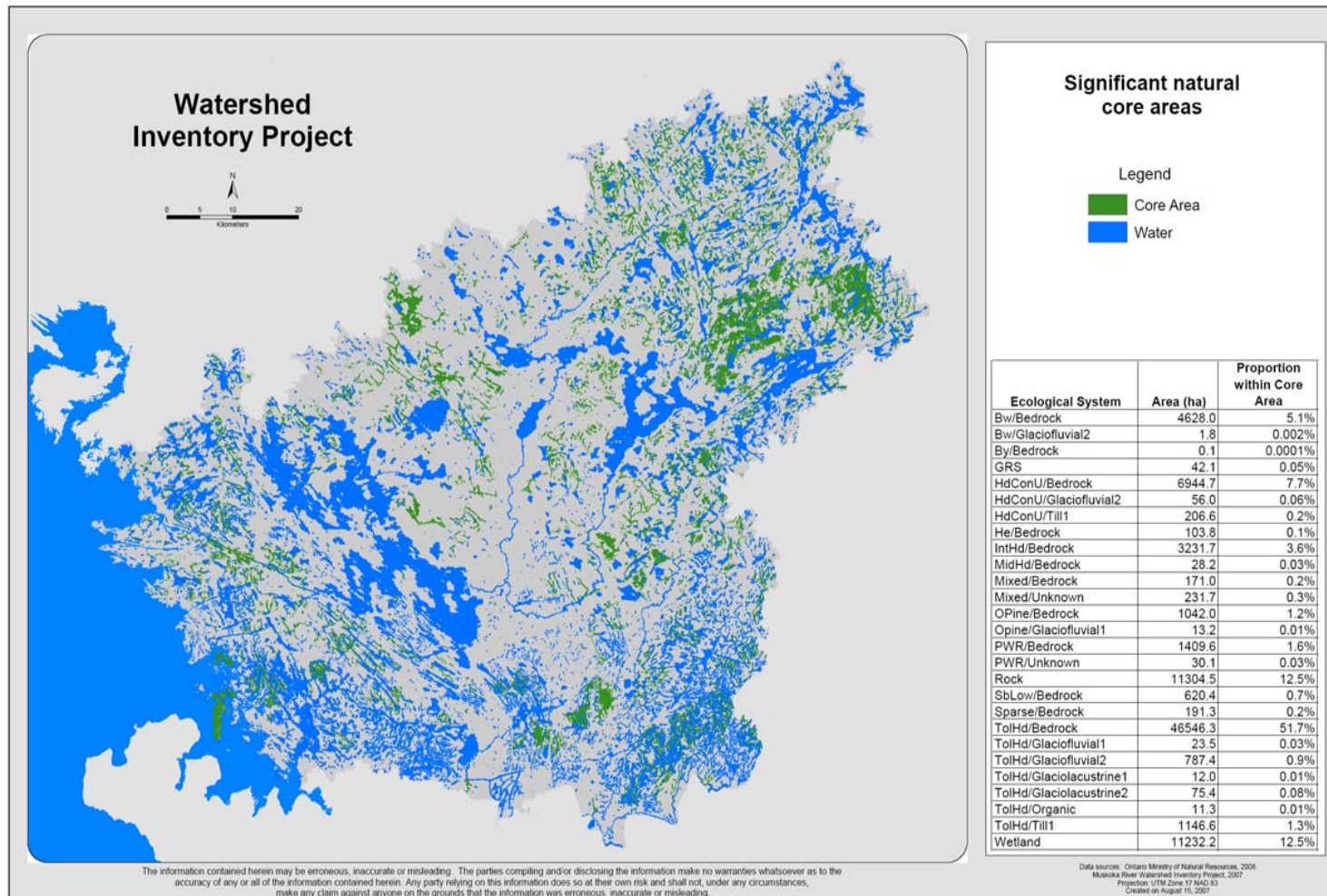


Figure 36. Significant natural core areas (areas scored Very High).



Table 5. Percent of terrestrial ecosystems found within significant core natural areas (very high score).

Within Very High Scored	Area	Percent
Bw/Bedrock	4627.9923	5.14%
Bw/Glaciofluvial2	1.7555	0.002%
By/Bedrock	0.1284	0.0001%
GRS	42.0962	0.05%
HdConU/Bedrock	6944.7262	7.71%
HdConU/Glaciofluvial2	56.0207	0.06%
HdConU/Till1	206.5960	0.23%
He/Bedrock	103.8042	0.12%
IntHd/Bedrock	3231.6817	3.59%
MidHd/Bedrock	28.1548	0.03%
Mixed/Bedrock	170.9609	0.19%
Mixed/Unknown	231.6804	0.26%
OPine/Bedrock	1041.9882	1.16%
Opine/Glaciofluvial1	13.1677	0.01%
PWR/Bedrock	1409.6220	1.56%
PWR/Unknown	30.1168	0.03%
Rock	11304.4976	12.55%
SbLow/Bedrock	620.4484	0.69%
Sparse/Bedrock	191.2817	0.21%
TolHd/Bedrock	46546.3396	51.67%
TolHd/Glaciofluvial1	23.4991	0.03%
TolHd/Glaciofluvial2	787.4392	0.87%
TolHd/Glaciolacustrine1	12.0199	0.01%
TolHd/Glaciolacustrine2	75.3854	0.08%
TolHd/Organic	11.3224	0.01%
TolHd/Till1	1146.6331	1.27%
Wetland	11232.1818	12.47%

## Core Areas and Priority Linkages:

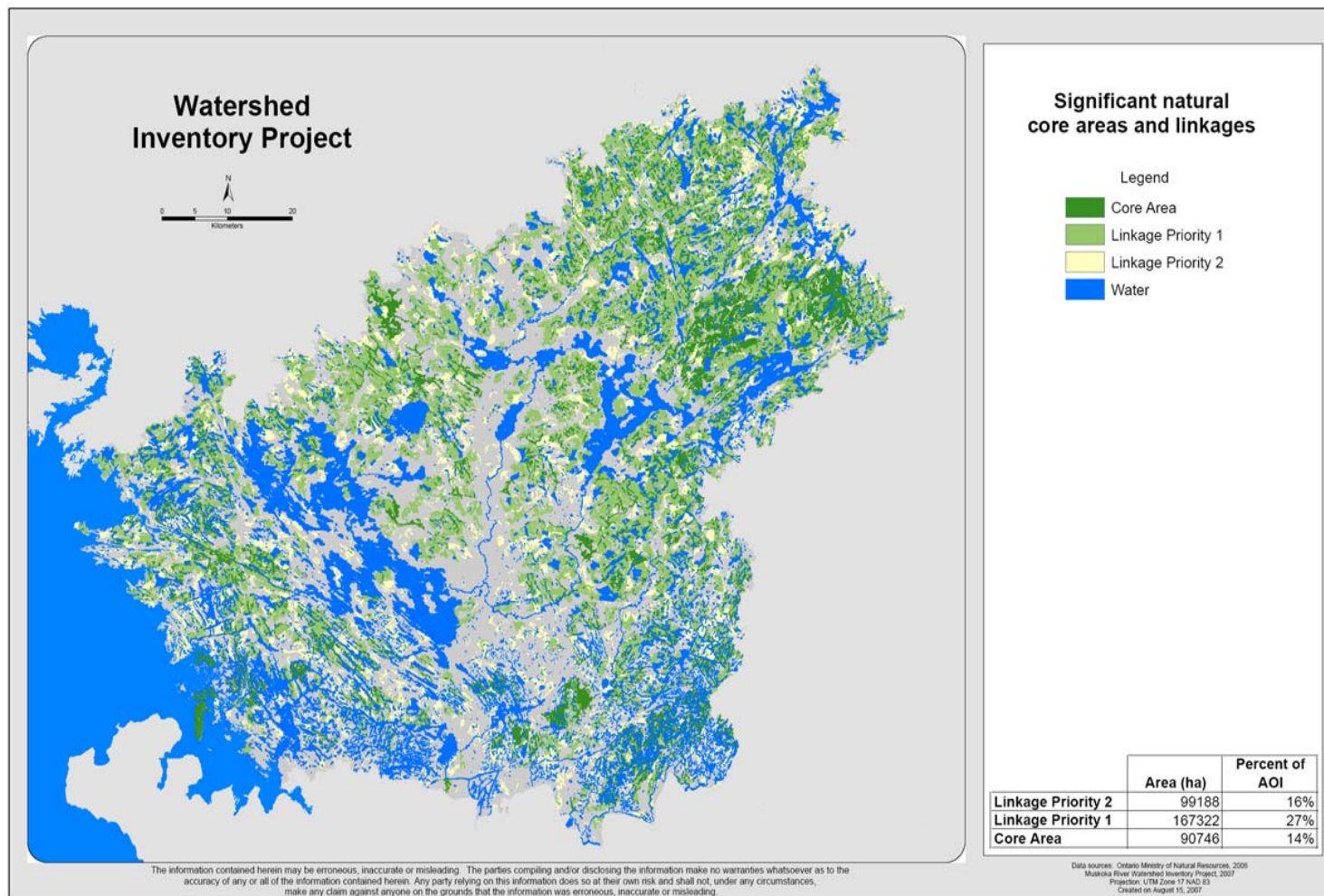


Figure 37. Significant natural core areas (areas scored Very High) and connecting natural areas (areas scored High and Medium).

Core/Linkages Protected:

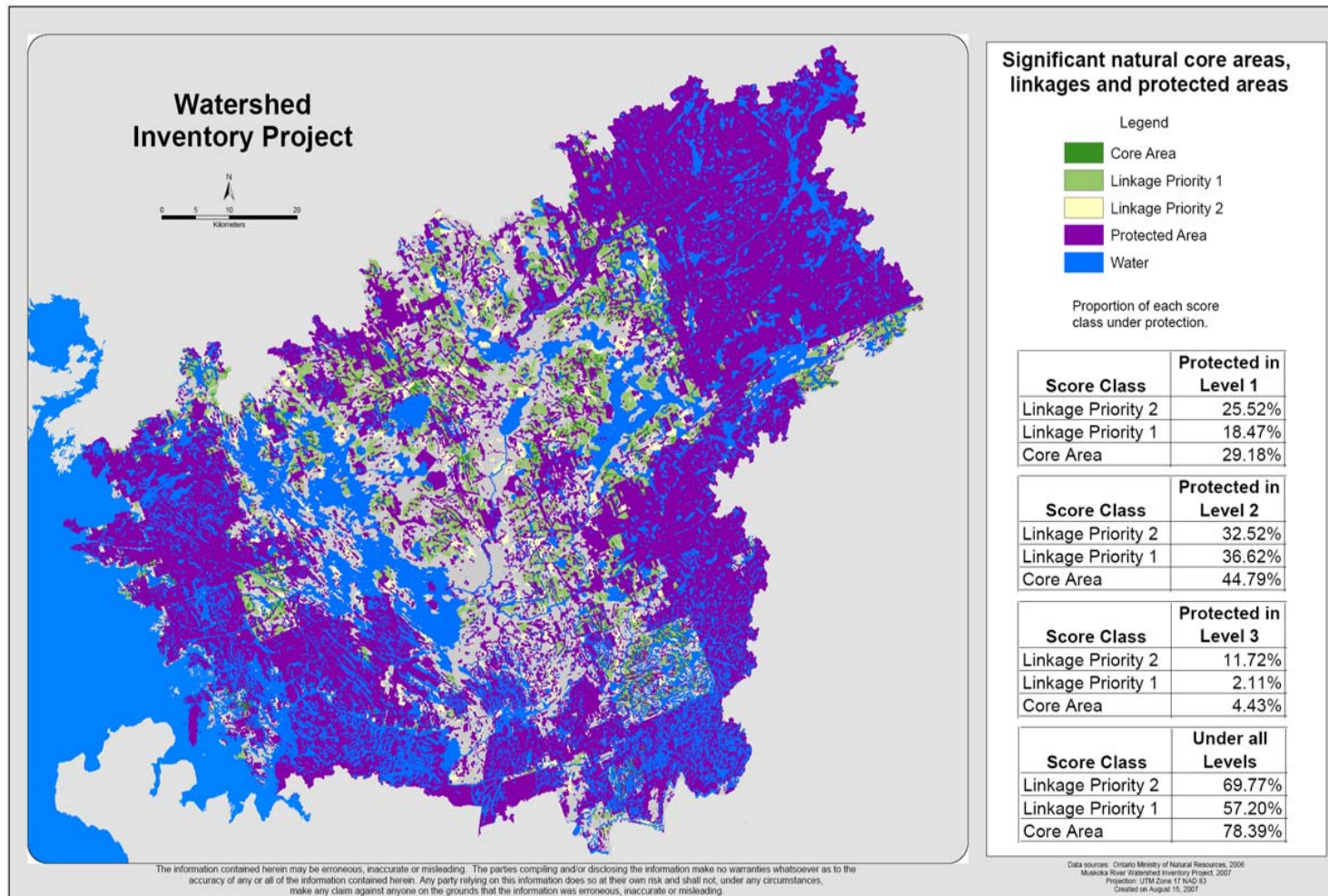


Figure 38. Significant core natural areas, connecting natural areas and existing protected areas.

Product 4: Identification of significant degraded sites and areas that may require remediation.

Similar to the results found during the MRWIP, there are several ways to identify areas that require attention from WIP assessment. Please refer to MRWIP Final Report for more information.