Bear Brook Watershed Study – Natural Heritage Systems Characterization Report

January 2025

Prepared for:

Ottawa

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Summary of Findings

Land use planners, residents, and landowners in the Bear Brook Watershed face a critical challenge in balancing development, agriculture, and conservation to maintain watershed ecological integrity. While the watershed meets published guidelines for wetland and forest cover, notable disparities exist between subwatersheds due to varying geography, soils, land use history and proximity to urban centers.

The City of Ottawa's and the United Counties of Prescott and Russell's (UCPR) Natural Heritage Systems encompass significant natural features, supported by policies aligned with the Provincial Planning Statement, 2024. However, loss of naturally vegetated land cover persists, and scaled restoration efforts have stalled. Several natural heritage feature types, including significant valleylands and significant wildlife habitat, have either not been identified within the Bear Brook Watershed or they depend on site-level identification at the development stage. This approach is likely resulting in an overall loss of natural heritage features and areas in the Bear Brook Watershed. The following main findings are detailed in the current Natural Heritage Systems report:

- The loss of naturally vegetated areas and forest cover is occurring within and outside the cores and linkages of the mapped natural heritage system. Progress on the restoration or expansion of the system requires prioritization.
- Current natural heritage policies provide a framework for conservation. Enforcement and on-the-ground implementation are crucial to ensure that policies translate into real, measurable protection and restoration to natural heritage features.
- A proactive approach is essential to protect remaining natural areas, restore degraded habitats, and enhance watershed resilience against urbanization and climate change.
- A key priority must be halting the loss of forest and wetland cover. Efforts should focus on re-establishing connectivity between core natural areas and accurately mapping wetlands.
- Restoration efforts should focus on improving the resilience of the watershed against the impacts of climate change and continued urbanization. This could include reforestation initiatives, land securement, reconnecting floodplains and wetlands, and the creation of minimum buffer zones along watercourses to enhance water quality and wildlife habitat.
- Partnership with the agricultural and development industry is vital to success.
- Public ownership of less valuable development and agricultural land with conservation values must be prioritized to ensure conservation in perpetuity. Successful conservation will require collaboration among all stakeholders to ensure the watershed continues to support biodiversity, water management, and overall ecosystem health.
- Target-based conservation policies are recommended to be developed through collaboration among stakeholders at all levels—municipalities, conservation authorities, landowners, and the public. Systematic monitoring, review, and reporting on progress is imperative.

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Natural Heritage Systems Characterization

The Bear Brook Watershed's natural landscape has been subject to over two hundred years of human-induced disturbances, which have altered and shaped its natural form and function. Since European settlement, large areas of forests and wetlands have been cleared, drained, farmed, abandoned, reforested or naturalized — and in some areas, are now being cleared once again. In 1948, the forest cover of two counties (Prescott County and Russell County) that make up most of the Bear Brook Watershed was as low as 10% of the land area (Department of Planning and Development, 1948). The soil was severely degraded, agriculture was failing, and the land was exhausted after years of poor land stewardship and resource management.

In the period 1960 to 1990, the Bear Brook Watershed increased in natural vegetation cover, largely due to the Provincial Agreement Forest Program and Woodlot Improvement Program. Considerable progress was made in restoring the watershed and its ecological processes after years of severe environmental degradation of the land. However, in the past 25 years, natural vegetation cover is being removed once again as land use priorities evolve and economic incentives drive forest clearing. As a result, an overall decline in forest cover is currently occurring in the Bear Brook Watershed.

The Provincial Planning Statement (PPS; MMAH, 2024) outlines the types of natural features and areas that shall be protected for the long term in the Province of Ontario. Both the City of Ottawa and UCPR maintain Official Plans and Schedules that identify significant natural heritage features and areas designed to preserve and protect them on the landscape for the long term. The framework of a natural heritage system acknowledges that natural systems continue to function and persist on a landscape when they are connected, allowing for the movement of biodiversity and interactions between differing ecological systems.

This report provides a summary of the natural heritage systems and main natural heritage features and areas within the Bear Brook Watershed. These systems have been analysed to allow comparison with standard benchmarks used to assess ecological integrity and general environmental health at a watershed scale. Policies of the UCPR and City of Ottawa have been reviewed and those which directly impact or have the potential to directly impact the environmental health of the watershed are highlighted.

What happens on the land directly impacts water quality and aquatic systems. Thus, understanding human impacts on the watershed's terrestrial systems is pertinent. Understanding existing provincial and municipal policies that address environmental challenges allows for meaningful discussion on their effectiveness.

1. Natural Heritage Systems of the Bear Brook Watershed

Key Findings

- Development and site alteration shall have no negative impact on the Natural Heritage System and Natural Heritage Features in the City of Ottawa.
- UCPR maintains a policy of no negative impact and no-net loss of habitat or key hydrologic features or their functions within the Regional Cores of the UCPR Natural Heritage System.
- Land clearing and drainage for urban development and agriculture represents a significant threat to the large, naturally vegetated and privately owned lands of the Bear Brook Watershed, whether the lands are within a mapped Natural Heritage System or not.

The Bear Brook Watershed contains a vast array of natural areas and features, both within and outside municipally mapped natural heritage systems. The Mer Bleue Bog and the newly designated Provincially Significant South Bear Brook Wetland anchor the headwater areas by providing diverse habitat and flood storage. These areas are protected from development and land use change by provincial and lower-tier municipal policy, along with some public ownership.

The north side of Larose Forest represents a large area of natural cover near the outlet of the Bear Brook, largely under public ownership of the UCPR. Cumberland Forest, a collection of 3 City of Ottawa owned properties, provides additional core habitat and acts as a linkage, aiding the movement of biodiversity between Mer Bleue and Larose Forest.

In general, the natural heritage system of cores and linkages of the Bear Brook Watershed are well defined and identifiable in the Official Plans and Schedules of both the City of Ottawa and UCPR. Completed by SNC in 2021, the natural heritage system of UCPR was identified and designed to be consistent and contiguous with that of the City of Ottawa. Figure 1 shows both natural heritage systems on the same map. System continuity across municipal boundaries, along with consistency in natural heritage policies, acknowledges that natural heritage and biodiversity cannot be effectively conserved when constrained by political boundaries and unaligned policy.

Natural Heritage Policy in the City of Ottawa

Within the City of Ottawa's designated Natural Heritage System Core Areas and Linkages (Schedule C11-C East), special policies apply and are outlined in Section 4.8 (Natural Heritage, Greenspace and the Urban Forest) and 5.6.4 (Natural Heritage Overlays) of the City's Official Plan. In the urban areas of the City of Ottawa, the Site Alteration By-Law (No. 2024-448) helps to protect natural heritage features from negative impacts caused by site alteration, and permission from the City of Ottawa is required prior to site alteration that may impact an identified natural heritage feature. Outside of a buffered area of the City of Ottawa urban boundary and (i.e., the Rural Area), the Site Alteration By-Law (No. 2024-448) does not apply to Natural Heritage Features.

Recent updates to the Site-Alteration By-Law (October 30, 2024) have clarified requirements for the protection of Natural Heritage System Cores and Linkages that are mapped as part of the Natural Heritage System. However, tree cutting and land clearing incidental to a Normal Farm Practice carried out by an Agricultural Operation is exempt from the provisions of the Site-Alteration By-Law. As a result, large areas of the mapped Cores and Linkages of the Natural Heritage System are vulnerable to the expansion of agriculture. Recent examples include areas around Highway 417 within the mapped linkage between Larose Forest and Mer Bleue. Here, a previously intact naturally vegetated linkage has been removed from the landscape in the past several years.

Natural Heritage Policy in the UCPR

The UCPR's Natural Heritage System is made up of Regional Cores and Corridors (terminology is interchangeable with the City of Ottawa's 'Core Areas' and 'Linkages') and is presented as an overlay on Schedule B1 of the UCPR Official Plan.

Section 5.3.1 (Natural Heritage System) of the UCPR Official Plan contains policies such as no negative impact and no-net loss of habitat or key hydrologic features or their functions within Regional Cores. Connectivity between Regional Cores and key hydrologic features is to be maintained and, where possible, enhanced for the movement of native plants and animals across the landscape.

Like the City of Ottawa, the policies of the UCPR are not intended to interfere with the ability of land to be used for agriculture. Land clearing, vegetation removal, and drainage requires no consideration for negative impacts to the natural heritage system if the area is not identified as significant.

Viewed together, the Natural Heritage Systems of the City of Ottawa and UCPR are a collection of identified, large areas of generally naturally vegetated lands providing a myriad of ecosystem benefits, wildlife habitats, and hydrologic advantages to the Bear Brook Watershed and its residents. While the policies are written by and applied under different planning approval authorities, the Natural Heritage System of the Bear Brook Watershed is contiguous across the landscape.

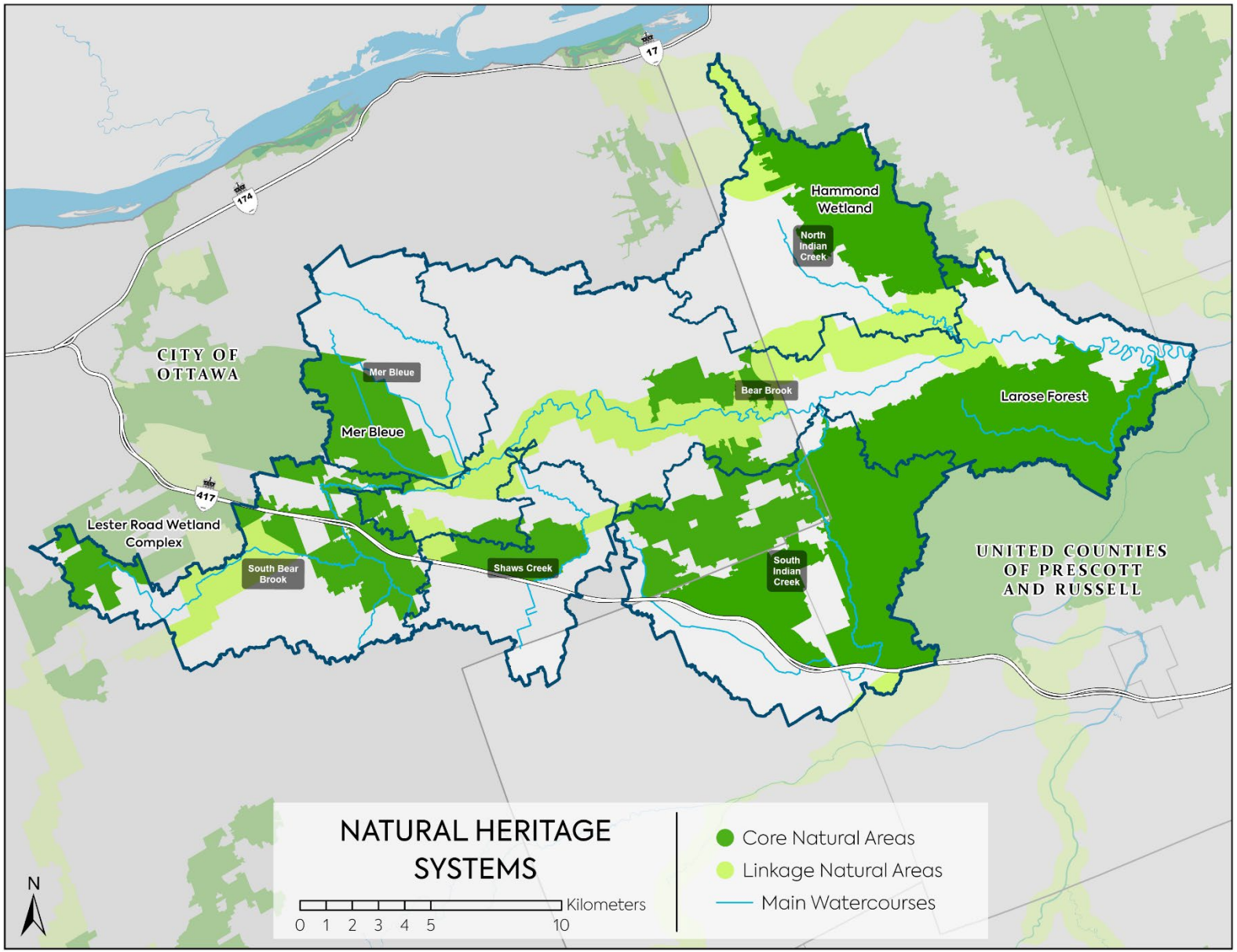

Figure 1. The Natural Heritage System of the Bear Brook Watershed as identified by the City of Ottawa and United Counties of Prescott and Russell.

2. Conservation Lands

Key Findings

- 8739 hectares or 18.2% of land within the Bear Brook Watershed is owned by public entities or organizations and is generally safe from private development and site alteration.
- Public ownership is the best mechanism for the conservation of land and results in ecological conservation in perpetuity.

Public ownership of land can play a significant role in conservation and biodiversity protection by ensuring that land is managed for public benefit rather than private gain. In most cases, development is controlled by the landowner, limiting the potential impacts to the land and biodiversity it conserves. Habitat destruction is controlled, and fragmentation of large, forested areas can be prevented. Public authorities often manage their lands based on long-term environmental objectives, prioritizing ecosystem health and the needs of all residents over the short-term economic interests of an individual or corporation.

There are several organizations and public entities operating within the Bear Brook Watershed that own land with the goal of maintaining them in a natural state for all time. For example, SNC owns forested land and manages it for the public by providing tree cover, sustainable land management, opportunities for recreation, floodplains, and hunting lands. The City of Ottawa and UCPR both own land within the Bear Brook Watershed and operate them as forested park lands providing many of the same opportunities and benefits as SNC's owned lands. The National Capital Commission (NCC) owns a significant portion of the natural lands in the headwaters of the Bear Brook River.

A collection of lands termed 'Conservation Lands' has been prepared and is illustrated in Figure 2. These lands are owned by public authorities, are managed for conservation purposes, and contribute to the natural heritage protection of the Bear Brook Watershed in the long-term. Many of these lands contribute to core natural heritage areas and linkages and form the basis for land and ecological conservation in the area.

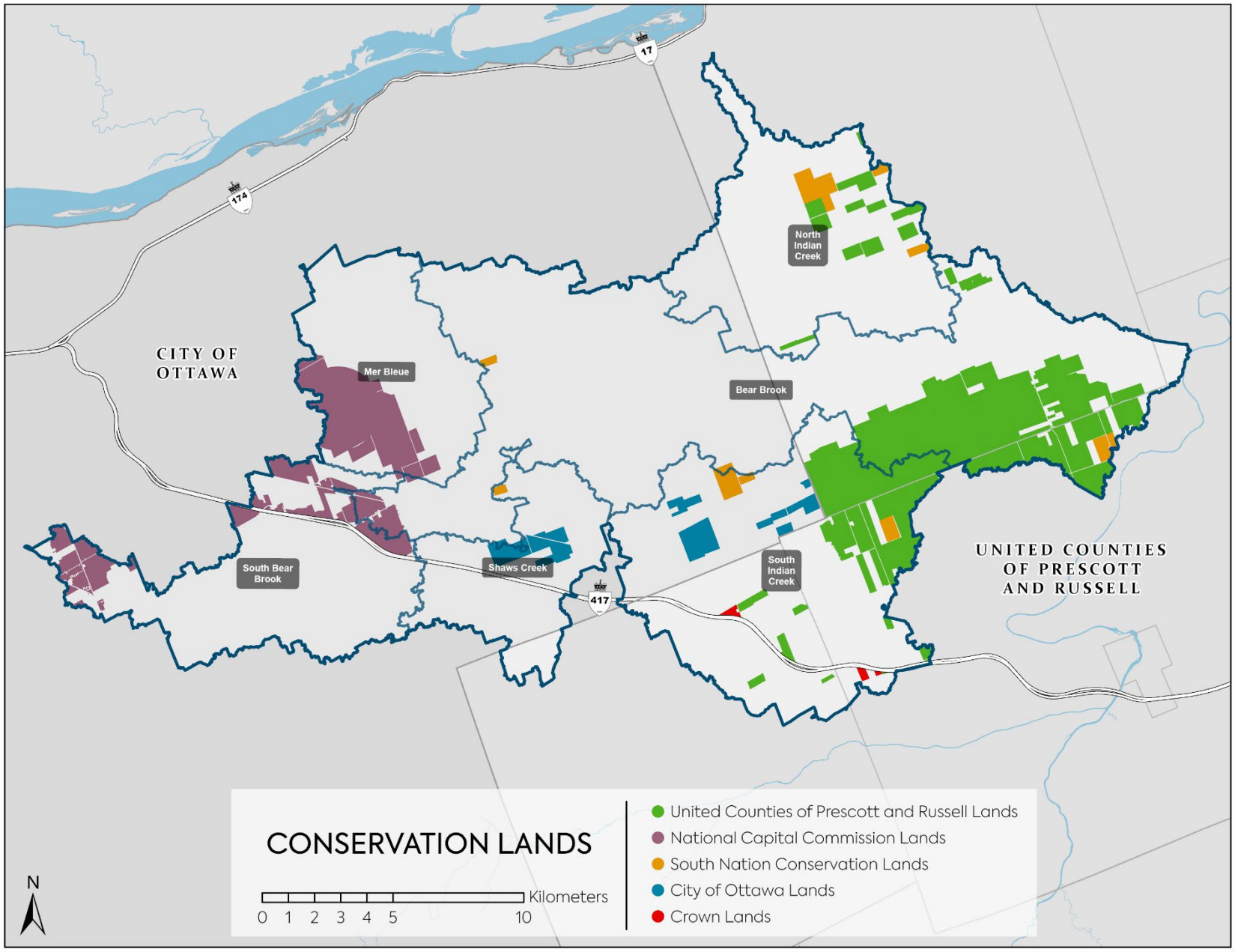

Figure 2. Conservation Lands of the Bear Brook Watershed. Lands shown are owned by public entities or organizations and generally are safe from development or site alteration proposals.

3. Forest Cover and Woodlands

Key Findings

- Approximately half of Larose Forest's 11,000-hectare area is contained within the Bear Brook Watershed and safeguards the headwaters of tributaries of the Bear Brook.
- Forest Cover within the Bear Brook Watershed is approximately 38.8%, meeting the guidelines suggested by Environment and Climate Change Canada.
- 5,566 hectares or 29.8% of forests within the Bear Brook Watershed are protected from disturbance and clear cutting by public ownership.
- Approximately 1,852 hectares, or 3.8% of the land area of Bear Brook Watershed has been converted from naturally vegetated land to alternative land uses in the past 20 years.

Forests and woodlands are critical to the health of humans and the environment. They supply the air we breathe, maintain the quality of the water we drink, and provide space for recreation and enjoyment of nature. Many flora and fauna species depend exclusively on forested habitats, while others depend on them for parts of their life cycle. Forested ecosystems provide food, water, and shelter for species during breeding seasons and temporary habitat as they migrate across the landscape.

Woodland features were identified and digitized through the SNC March 2024 Land Cover project and refined using the latest available satellite imagery from Google Earth. Woodland features were digitized from the reference material at a scale of 1:4000 with a minimum mapping unit of 0.5 hectares. Woodland features were categorized as treed, plantation, hedgerow and regenerative.

Being derived from the main land cover dataset, which has its own unique methodology and broader focus, the SNC woodland feature dataset is not appropriate for comparison with forestry-focused data previously derived from historical aerial images. Therefore, trend analysis on changing forest conditions within the study area compared to past studies is impractical. Additional details regarding the delineation of land cover for this study, including woodland features, are found in the Physical Setting Report.

To assess the conversion of naturally vegetated lands to alternative land uses in the past 20 years, SNC used free satellite imagery through Google Earth to compare areas of land use change between 2004 and 2024. This exercise was done at a high level to identify areas where natural vegetation (i.e., forests, scrubland, plantation, wetlands…etc.) has been converted to alternative land uses, including housing, agriculture, resource extraction or other developments. No specific scale of digitizing was defined and a minimum mapping unit of approximately 1 hectare was used.

The Bear Brook Watershed is approximately 38.8% forested and contains several significant areas of forest cover that are well-known to the public and rooted in local culture. However, forest cover in this area wasn't always this high, and reached a low of below 10% across Russell County and Prescott County in the 1940's (South Nation Valley Interim Report, 1948). Considerable effort and tree planting has resulted in the rebound of forest cover.

Larose Forest, an 11,000-hectare natural area of forests and wetlands, was started in 1928 by planting coniferous trees on abandoned and heavily eroded agricultural lands. Approximately half of the UCPR's Larose Forest is contained in the Bear Brook Watershed. Other areas of forest cover are provided by the large, expansive swamp wetlands of the Bear Brook Watershed. Forest cover in the Bear Brook Watershed as of March 2024 is shown in Figure 3.

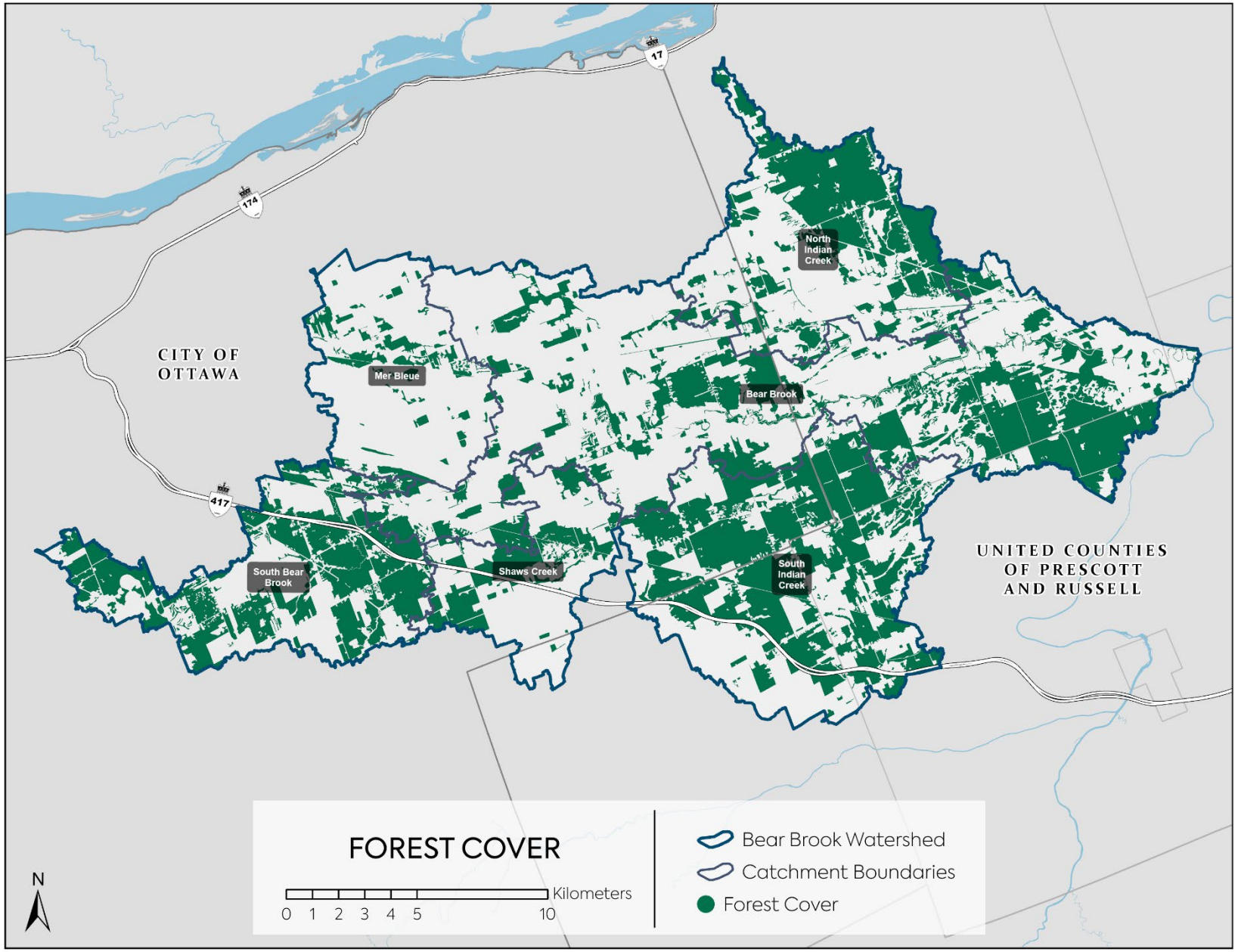

Figure 3. Forest cover in the Bear Brook Watershed.

In the City of Ottawa, Greenbelt lands owned and managed by the National Capital Commission represent a portion of forested lands in the headwaters of the Bear Brook Watershed. The South Bear Brook Provincially Significant Wetland also maintains forest cover in the headwater areas as a large, protected area of treed swamp wetlands. Cumberland Forest, in public ownership by the City of Ottawa, protects a further 600 hectares of forests in the watershed.

The more complex an ecosystem is, the greater the species diversity it can support, strengthening the ecosystem's resiliency to human impacts (ECCC, 2013). Simple indicators, including percent forest cover, percent forest interior, and percent forested riparian cover, can be used to assess forest condition at the watershed and subwatershed scale. Knowledge of forest type and species diversity is valuable in the context of current invasive species pressures on the health and diversity of native forests (e.g., Spongy Moth and Emerald Ash Borer).

To understand recent land use change practices, a simple exercise was completed to compare changes of land from naturally vegetated areas (forests, scrubland, wetlands…etc.) to disturbed or other land uses (agriculture, development, resource extraction…etc.) in the past 20 years. Satellite imagery was reviewed from various dates and areas of land use change were digitized.

It was found that over 1,800 hectares of forests, wetlands and naturally vegetated lands were cleared, drained, or altered in the past 20 years in the Bear Brook Watershed. The main driver of land use change is the conversion of plantation forests to cash-cropping agriculture with minor changes of land use for rural and single lot development. Major development projects and urban expansion were noted, but this was typically in areas already devoid of vegetation (e.g., agricultural lands or pre-cleared development lands). Some land use changes are attributed to the expansion of existing aggregate extraction, but this was minimal.

Three forest health indicator thresholds determined by Environment and Climate Change Canada (ECCC, 2013) were compared to results calculated for the total Bear Brook Watershed and its associated catchments. Table 1 displays total forest cover and core habitat values and the % riparian cover found within a 30-m buffer on either side of watercourses throughout the Bear Brook Watershed and its associated catchments. Figure 4 shows the identified interior forests of the Bear Brook Watershed.

Table 1. Forest cover, core habitat, and riparian cover indicators within the Bear Brook Watershed and the corresponding Environment and Climate Change Canada recommended guideline.

Indicator	Recommendation (ECCC, 2013)	South Bear Brook	Mer Bleue	Shaw's Creek	South Indian Creek	North Indian Creek	Main Bear Brook	Bear Brook (Total)
Forest Cover	***The proportion of the watershed in forest cover should be at least 30%.*** This equates to a high-risk approach that may only support less than one half of the potential species richness, and marginally healthy aquatic systems.	52.4%	13.2%	29.6%	52%	44.8%	33.3%	38.8%
Core Habitat (Interior Forest)	***The proportion of the watershed that is forest cover and 100 meters or further from the forest edge should be greater than 10%.*** The structure and functions of habitat edges are inherently different from those within habitat cores, supporting a different type, number, and range of species. 100 meters from the forest edge is typically used as the standard measure of where edge effects taper off, and where more undisturbed "core" or "interior" habitat conditions begin.	18.9%	1.1%	10.7%	23.9%	18.1%	11.2%	14.6%
Riparian Cover	***Buffers adjacent to watercourses should be at least 30 meters wide and naturally covered up to 75%.*** The 30-metre guideline is intended to capture processes and functions of an active riparian zone and the floodplain-to-upland transition. It has been proven that maintaining a portion of land covered with native vegetation along streams and rivers can help maintain good water quality, provide habitat for wildlife, and protect people and buildings against flooding (Wenger, 1999).	63.1%	43%	43.9%	60.5%	56.1%	47.7%	52.5%

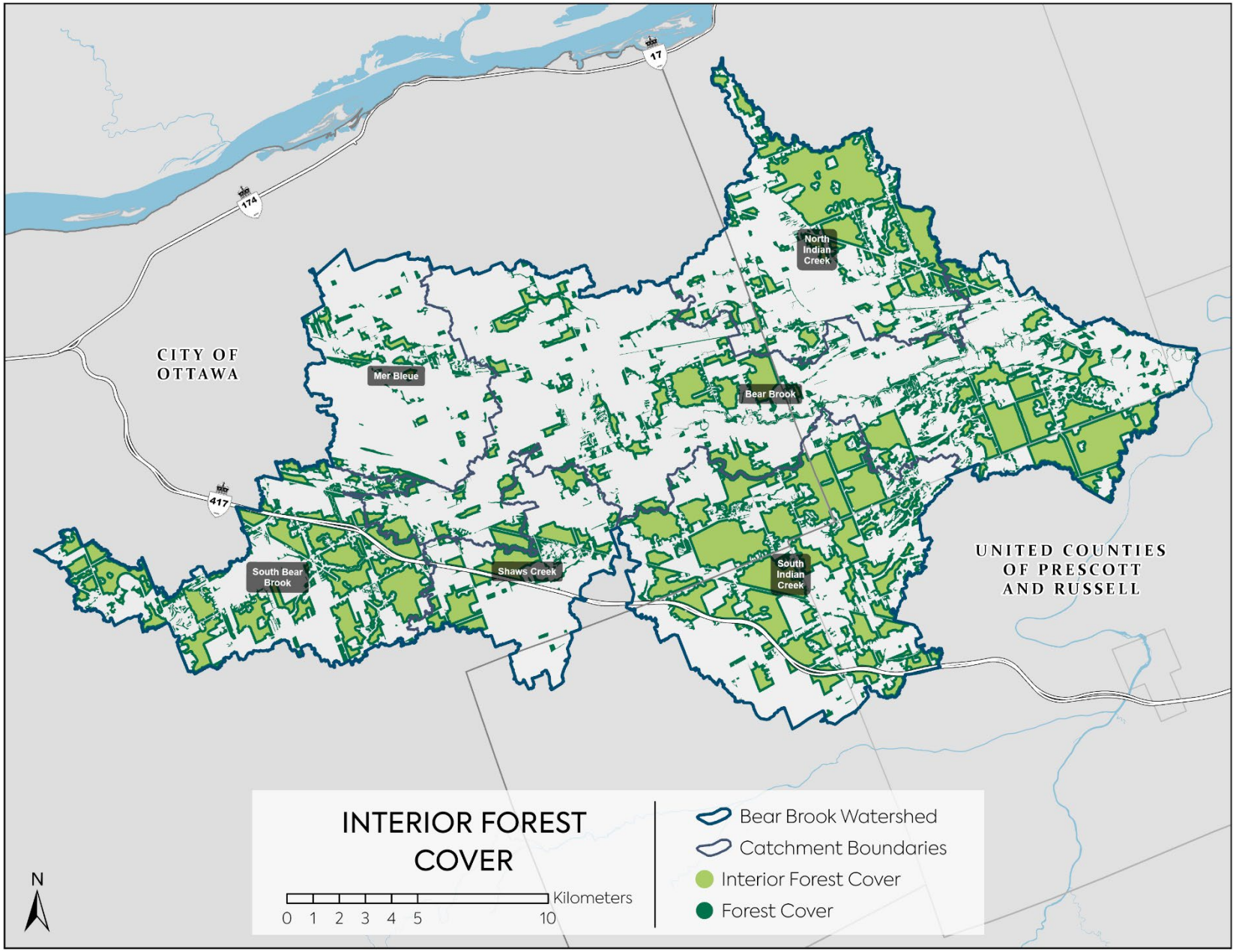

Figure 4. Interior forest cover in the Bear Brook Watershed.

In total, there are approximately 18,655 hectares of forested land in the Bear Brook Watershed, the majority of which are contained within larger contiguous natural heritage features (Larose Forest, South Bear Brook Provincially Significant Wetland). Forest cover within the Mer Bleue catchment is low relative to the rest of the catchments that make up the Bear Brook Watershed. This can be attributed to the fact that most naturally vegetated land in this catchment is covered by the Mer Bleue Bog, which is a bog-type wetland and not a treed swamp wetland type.

Significant Woodlands Policy

The City of Ottawa restricts development within significant woodlands and provides direction on their identification, evaluation, and impact assessment in the Environmental Impact Study Guidelines and Significant Woodlands Guidelines. The City of Ottawa has identified some significant woodlands in Schedule C11-C East. However, not all significant woodlands have been identified.

In the UCPR, significant woodlands are awarded similar protections and requirements to the City of Ottawa. Identification of significant woodlands in the UCPR differ than those of the City of Ottawa and follow the standard criteria recommended by the Ministry of Natural Resources. Significant Woodlands are identified on Schedule B2 of the UCPR Official Plan.

Generally, significant woodlands are identified or confirmed on the ground on a case-by-case basis through land development processes and the environmental impact study process. This is oftentimes a developer-led method which may lead to differences in how significant woodlands are identified and inconsistencies among environmental consultants.

Identification, analysis, and refinement of significant woodlands on a watershed scale ahead of development is likely to improve the application of natural heritage protections and appropriately scope development projects to ensure no negative impact. Further refinement of the significant woodlands criteria in the rural area of the City of Ottawa and development of specific criteria in the UCPR would be beneficial.

4. Wetlands

Key Findings

- The City of Ottawa and UCPR prohibit development and site alteration in Provincially Significant Wetlands.
- No locally significant wetlands have been identified in the Bear Brook Watershed.
- 2,483 hectares or 23% of wetlands in the Bear Brook Watershed are protected under the Conservation Authorities Act, Planning Act, and Official Plans of the City of Ottawa and UCPR. 8,117 hectares or 77% are vulnerable and have no designation.
- The City of Ottawa has a target of no-net loss of forest cover and wetlands in its rural area (City of Ottawa Official Plan, Section 4.8, City-Wide Policies).

- Mechanisms to realize a no-net loss of wetlands include land use planning, zoning, development processes, land acquisition and conservation of land, and support for voluntary, private land conservation and stewardship (City of Ottawa Official Plan, Section 4.8.1. 5, City-Wide Policies).

The Bear Brook Watershed, with its extensive floodplains and low-grade river flow, was conducive to the establishment of wetlands following glaciation and the retreat of the Champlain Sea. Wetlands, such as the Mer Bleue Bog Provincially Significant Wetland, were established in the lowest areas of the remnant paleochannels where surface water collected. Without drainage and with underlying impermeable clays acting as 'liners', these conditions resulted in saturated soils, enabling the establishment of wetland vegetation and peat accumulation.

Some areas of the Bear Brook Watershed are elevated relative to the rest of the watershed, as they were not subjected to the scouring of the paleochannels and the retreat of the Ottawa River. Wetlands here, such as the Hammond Swamp Provincially Significant Wetland, have formed due to impermeable clay soil layers, high water tables, and low-grade drainage. Beavers likely played, and continue to play, a role in the establishment of wetlands in these low-grade river systems.

While many of the original wetlands in the Bear Brook Watershed have since been lost through clearing, filling, and drainage, the remaining wetlands provide valuable ecological and hydrological functions for the watershed. Many of the watershed's flora and fauna, including species at risk, depend on wetlands during part or all their life cycle. Wetlands also store and slowly release water at rates that natural waterways have developed with, effectively reducing downstream impacts like erosion and flooding.

Wetlands were identified through the SNC March 2024 Land Cover project and refined using the latest available satellite imagery from Google Earth. Aerial imagery from a wide temporal range was reviewed to identify potential wetlands during crucial time periods, such as during leaf-off and spring freshet conditions. Additionally, LiDAR derived digital elevation models and hillshade models were referenced to identify low-lying topography and compared against visual indicators in aerial photography.

Wetland elements were digitized from the reference material at a scale of 1:4000 with a minimum mapping unit of 0.5 hectares. Wetlands were categorized as open water, swamp or uncategorized (all others including marsh). Not all wetland elements have been field verified, so in many cases the wetland mapping contained within may be best considered 'potential wetlands', and this mapping is not accepted as completely accurate or precise.

Environment and Climate Change Canada recommends, at a minimum, the greater of 10% of each major watershed or 40% of the historic watershed wetland coverage should be protected and restored to ensure sustainable watershed processes (ECCC, 2013). Using SNC's 2024 landcover data, it is estimated that the Bear Brook Watershed has approximately 10,600

hectares of wetland cover, or 22%. Further wetland cover statistics and findings are provided in Table 2 and depicted in Figure 5.

The mapping of wetlands using the land cover data is only intended for high level watershed characterization purposes and discussions on sustainable development under Planning Act processes. Additional details regarding the delineation of land cover for this study, including wetlands, are found in the Physical Settings report.

Table 2. Wetland cover within the Bear Brook Watershed and the recommended Environment and Climate Change Canada wetland cover guideline.

Indicator	Recommendation	South Bear Brook	Mer Bleue	Shaw's Creek	South Indian Creek	North Indian Creek	Main Bear Brook	Bear Brook (Total)
Wetland Cover	*The proportion of the watershed in wetland cover should be at least 10%.*	17%	29%	18%	48%	23%	14%	22%

The Bear Brook Watershed contains six specific wetland areas with Provincially Significant Wetland (PSW) designations. These areas represent wetlands with the greatest protection afforded by the Province of Ontario and are generally safe from development and site alteration impacts. However, PSW designations are considered 'open files' and mapping and scoring is open to be reevaluated at any time. Recently, PSW reevaluation in the City of Ottawa to advance private interests has occurred, resulting in some PSW's losing their designations and associated protections. Table 3 lists PSWs and their total sizes, and they are shown in Figure 6.

Table 3. Provincially Significant Wetlands within the Bear Brook Watershed and their area (hectares).

Provincially Significant Wetland	Area (ha)
Hammond Swamp	236.8
Lester Road Wetland Complex	77.9
Limoges Swamp	283.4
Mer Bleue Bog	1264
South Bear Brook Swamp	560.7
Wolf Creek Swamp	60
TOTAL	2482.8

Locally Significant Wetlands

The Province of Ontario encourages planning authorities to go beyond the minimum standards outlined in the PPS to address matters of local importance with respect to natural heritage feature protections (OMNR 2010). In many areas of Ontario, municipalities have gone above and beyond designations and protections for PSWs and have identified and designated locally significant wetlands (LSWs).

To date, the City of Ottawa does not identify or designate LSWs within the Bear Brook Watershed. The UCPR Official Plan in Section 5.4 (General Land Use Policies) notes that LSWs may be identified in the future through an Official Plan amendment and, as of 2022, the municipality of Alfred-Plantagenet has identified, mapped, and zoned LSWs. While Alfred-Plantagenet is not within the Bear Brook Watershed, it represents an example of the possibility of further protection at a local level for wetlands in the Bear Brook Watershed.

By observing land cover wetland data and PSW mapping, it was determined that 2,482.8 hectares or 23.4% of wetlands in the Bear Brook Watershed are protected under the Conservation Authorities Act, Planning Act, and Official Plans of the City of Ottawa and UCPR by having PSW designation. 8,117.2 hectares or 76.6% of wetlands are not identified as PSWs and have no other type of protection or conservation designation. These areas could be evaluated for PSW status ahead of development proposals or identified and mapped as LSWs using a locally designed and defined methodology.

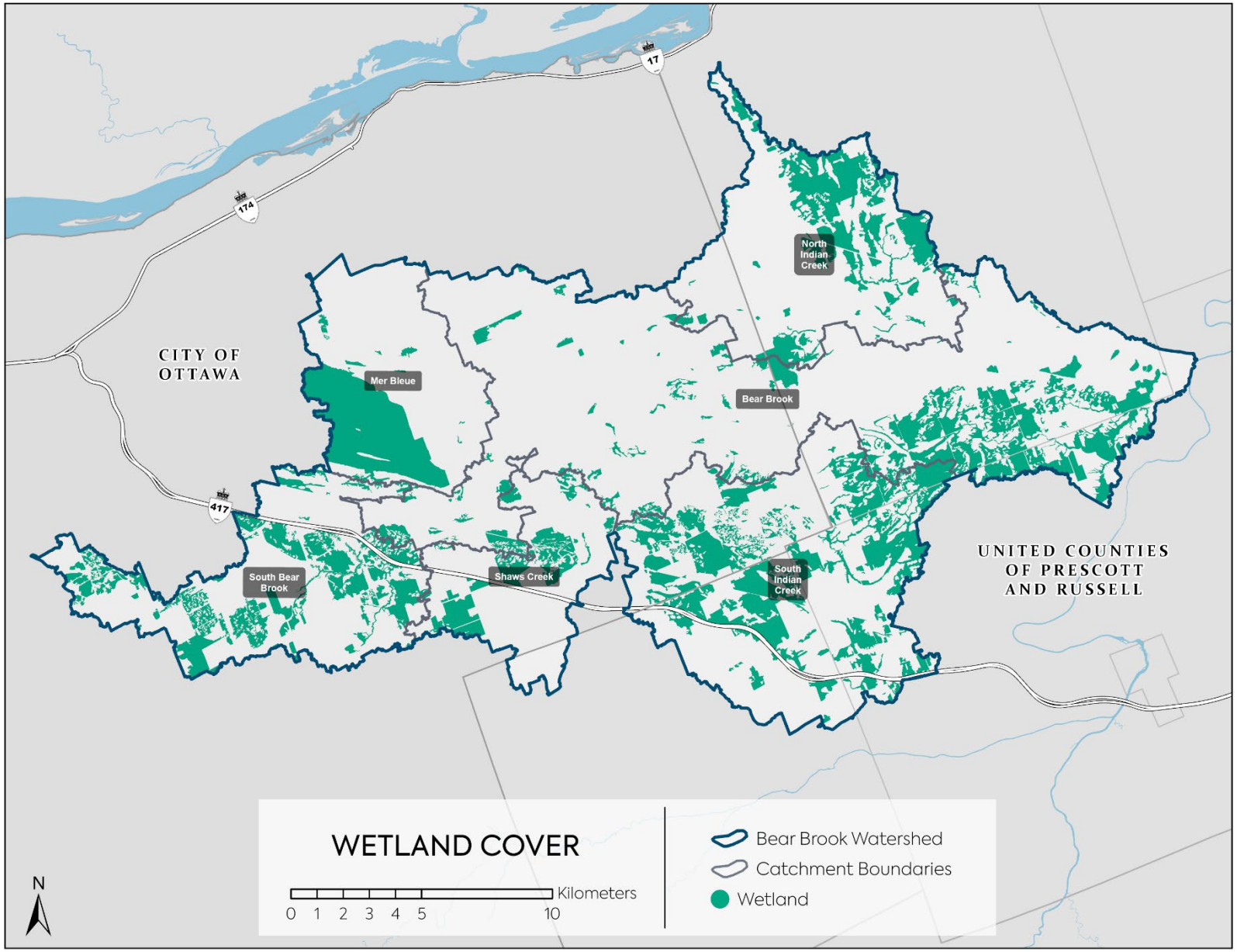

Figure 5. Wetland cover in the Bear Brook Watershed. Wetland areas displayed in Figure 5 of this report are not used for regulatory purposes by South Nation Conservation under the Conservation Authorities Act.

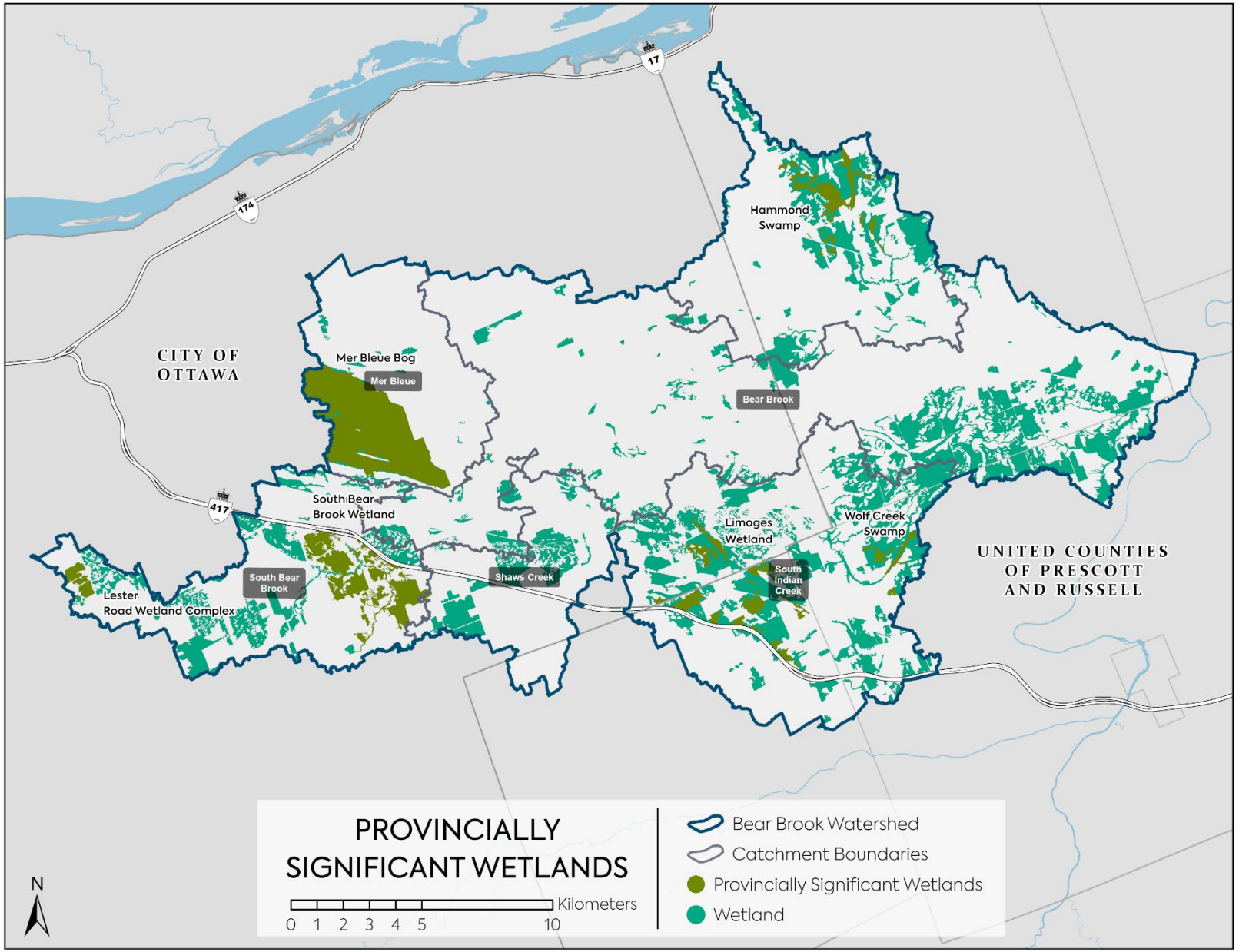

Figure 6. Provincially Significant Wetlands and all wetlands of the Bear Brook Watershed. All wetlands are a result of the 2024 SNC Land Cover Update project.

5. Provincially Significant Wetland Pre-Screening

Natural heritage features are often identified at the site level after other development approvals have already been obtained and significant work has taken place to design a development. This can lead to disappointment, frustration, and a lengthy review process due to the requirement for multiple iterations of a development proposal or the review of natural heritage features during the process.

The identification of natural heritage features and assessing their significance before development or site alteration is proposed is an effective way to conserve the most ecologically important areas and improve the expediency of development review. It also provides for a planning process that is consistent, fair, and predictable when development proposals are scoped to the least impactful and sustainable level at the start of a planning process. The identification of Provincially Significant Wetlands ahead of development not only leads to wetland areas being meaningfully protected and conserved but allows landowners and developers to know ahead of time which areas of their lands are appropriate for development and which areas are not.

The wetland areas identified in Table 4 represent areas of known wetlands in the Bear Brook Watershed that have a higher potential to be considered significant, if evaluated. Some of the areas listed already contain PSWs, but land use changes, updated wetland mapping, and changes to the Ontario Wetland Evaluation System (OWES) indicates that they are likely to be much larger if re-evaluated today.

The likelihood of a wetland to be considered significant under the OWES increases with increasing wetland size as many point scoring aspects of wetland evaluation are dependent on size. Only wetland areas with the potential to be over 200 hectares in size have been included in Table 4. Wetland potential sizes were calculated using SNC's March 2024 Land Cover project wetland data and wetland areas within 30m of one another were grouped into 'mosaic wetland' functional units.

Table 4. Potential Provincially Significant Wetlands and wetlands with the potential to increase in size if re-evaluated within the Bear Brook Watershed.

Wetland Name/Area	Potential Size	Note
Larose Forest Wetland / Wolf Creek Swamp	3,000ha +	The Wolf Creek PSW is near large marshes and swamp wetlands on the north side of Larose Forest. This area may all be considered one large mosaic wetland if re-evaluated.
Hammond Swamp	1,000ha +	The Hammond Swamp PSW appears likely to be a much larger area if re-evaluated.
Limoges Swamp	500-1,000ha +	The Limoges Swamp appears likely to be a much larger area if re-evaluated.
Vars-West Swamp	350ha +	A large, naturally vegetated and forested area west of the town of Vars exists which has the potential to be a PSW, if evaluated. This area currently has no status as a wetland and is unprotected.
Cheney Swamp	200ha +	The Cheney Swamp was evaluated in the past and is identified as an evaluated wetland that is not significant. If re-evaluated, it has the potential to be a PSW.
Wetland Areas around Louiseize Road.	200ha +	A large area of swamp wetlands is present surrounding Louiseize Road in the City of Ottawa, near the existing Lester Road Wetland Complex. This area has the potential to be a PSW if evaluated.

6. Fisheries Communities and Habitats

Key Findings

- The Bear Brook and its tributaries represent a common, warm-water fishery that is typical for eastern Ontario.
- Sport fish, including northern pike and walleye, are present in the Bear Brook and may support a recreational fishery. The extent of Bear Brook's use as a recreational fishery and the potential economic influences are unknown.

- Fyke netting on larger systems by SNC has resulted in greater species richness being observed. The main Bear Brook has not been sampled by SNC but is likely to host species not yet captured.
- McKinnon's Creek hosts a high species richness relative to the rest of the catchment.

SNC has been completing formal fisheries investigations in the Bear Brook Watershed since 2008. Most of the results presented in this report were obtained through fish sampling following the Ontario Stream Assessment Protocol (OSAP). In some cases, funding from Fisheries and Oceans Canada (DFO) was used to sample fish under the Classifying Ontario Municipal Drains Protocol. In general, fisheries sampling by SNC has represented a presence or absence type of study and no attempt has been made to sample and analyze individual fish or overall fish community health.

The Bear Brook represents a typical warm-water fishery that is common in eastern Ontario. It hosts many species of fish which find refuge in its diverse habitat characteristics, which range from slow-moving, turbid waters downstream to clear, cooler waters in its headwaters and tributaries. In general, the Ministry of Natural Resources manages the fishery in the Bear Brook for forage production, which supports sport fish downstream in the South Nation River (J. Côté, personal interview, August 30, 2023). It is not known whether there are significant populations of resident sport fish or spawning habitat in the Bear Brook, but they are assumed to be present in some areas (J. Côté, personal interview, August 30, 2023).

The Bear Brook Watershed has been subject to thorough fisheries investigations in the past by SNC. Fish communities and diversity are good indicators of aquatic ecosystem health and change over time. Historic fisheries studies completed in the Bear Brook Watershed include inventories undertaken by private consulting firms in support of development, as well as research by the Ministry of Natural Resources, the City of Ottawa, and SNC as part of past monitoring programs.

The following discussion includes SNC data since 2008 on the Bear Brook, its tributaries, and municipal drains. Work completed in recent years (2020-2021) as part of the South Bear Brook Catchment Study (2022) filled gaps in monitoring data.

SNC has sampled fish 58 individual times at 41 different locations in the Bear Brook Watershed since 2008. A variety of techniques were used including fyke netting, minnow trapping, and electrofishing. 35 different species have been detected by SNC within the watershed and several other sportfish (i.e., largemouth bass, walleye) are expected to also be present within the watershed depending on seasonality and location. A full list of species found within the watershed is provided in Appendix A, along with all sites and locations sampled for fish by SNC since 2008.

The distribution of known fish species and communities within the Bear Brook Watershed is influenced by numerous factors including adjacent land uses, migration barriers, groundwater seepage areas, riparian conditions, available habitat, and forest cover.

The Bear Brook Watershed fishery's overall health has not been assessed relative to other common warm water fisheries in eastern Ontario. Likewise, the health and growth rates of individual fish have not been examined. However, existing information and historic sampling results provide an adequate baseline for future analysis and serve as a foundation for impact assessment and environmental effects monitoring in the future.

7. Aquatic Crossings and Barriers

Key Findings

- Migration barriers, such as degraded culverts and natural elevation changes, may be limiting the movement of fish to the upper reaches of the Bear Brook Watershed.

During all field work completed in the Bear Brook Watershed to support future watershed planning, SNC staff were observant of potential barriers and obstructions to water movement and fish migration within the river. If a potential obstruction was observed, SNC staff documented its location and the type of barrier it represented.

SNC staff used high quality satellite imagery and LiDAR to scan the main Bear Brook River from its headwaters to where it meets the South Nation River. Any potential fish migratory obstructions were noted and mapped. The data represents a simple screening of potential barriers and obstructions in the main Bear Brook River requiring field verification and confirmation in the future.

The Bear Brook River contains at least 23 potential fish migration crossings and barriers to water flow, and it is likely that there are more amongst its various tributaries. Figure 7 depicts obstructions identified on the Bear Brook River and attempts to classify them.

Many of the identified obstructions appear human-caused and consist of low-water level crossings used for farm machinery, abandoned culverts and bridges, and perched culvert crossings. Also common in the Bear Brook River are rock or cobble riffles under bridges and natural grade changes that provide diverse habitats.

One example of a natural obstruction exists downstream of Drouin Road on the main Bear Brook River, where a small ‘waterfall’ over bedrock prevents certain species of sport fish from passing in the spring. This effectively limits their access to potential upstream spawning and rearing habitats (J. Côté, personal interview, August 30, 2023). Further downstream, where the river tends to exhibit a more incised and sinuous flow, log jams appear to be more common.

Removing human-caused migration barriers are often one of the best ways to improve overall stream health (Reeves et al. 1995; Roni et al. 2002; Roni et al. 2008). Fish can access more habitat when rivers flow freely, free of obstructions. While potential obstructions have been identified in the Bear Brook River, no attempt has been made to quantify or measure whether they represent significant challenges to the movement of fish or water in the river.

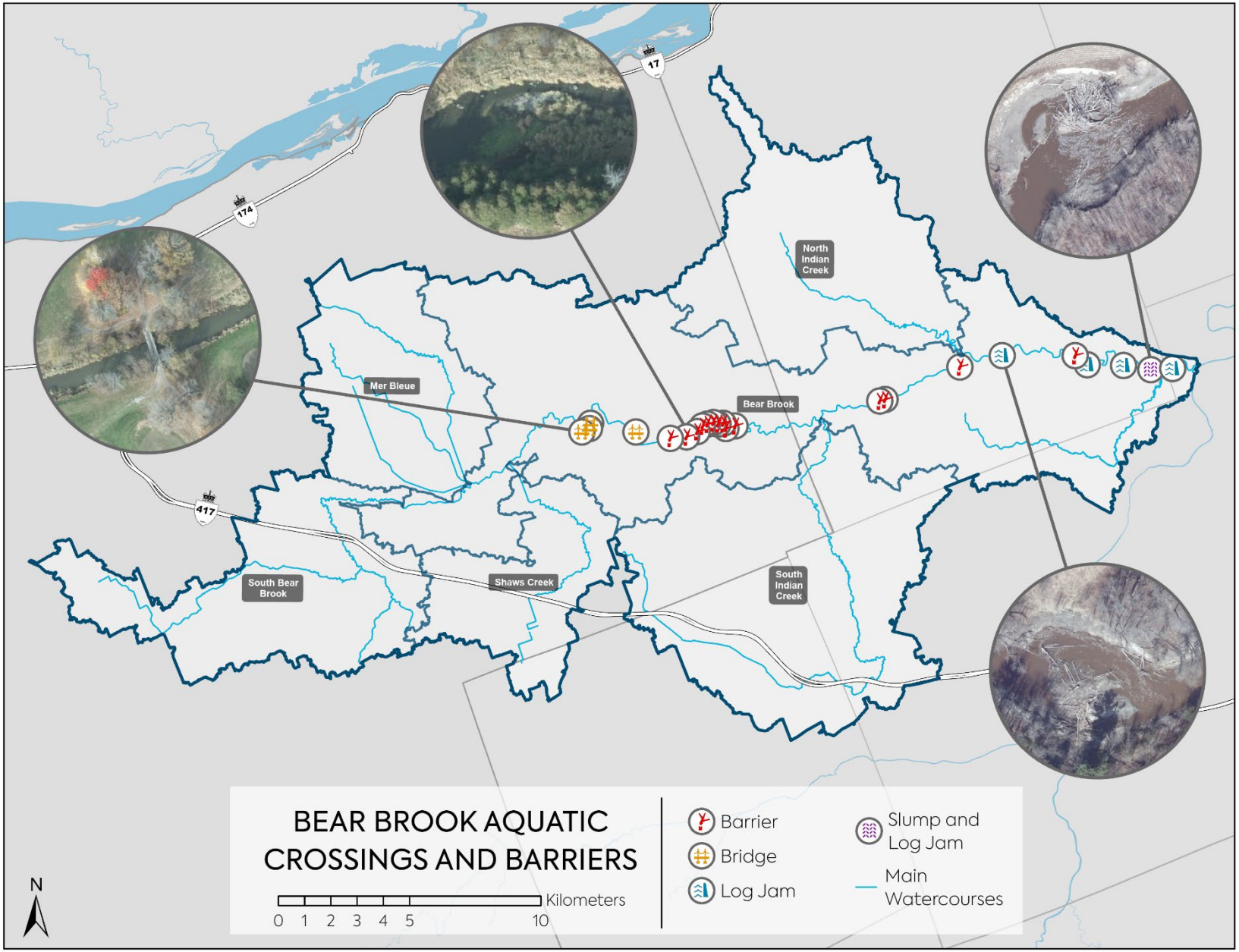

Figure 7. Potential aquatic migration barriers and crossings in the Bear Brook.

8. Areas of Natural and Scientific Interest

Key Findings

- There are two Areas of Natural and Scientific Interest in the Bear Brook Watershed: The Mer Bleue Bog Life Science ANSI and the Sarsfield-Bear Brook Esker Earth Science ANSI.

Areas of Natural and Scientific Interest (ANSI) are areas of land and water containing unique natural landscapes or features. Generally, these areas have been scientifically studied and determined to have life or earth science values that are worthy of protection. There are over 1000 ANSIs within Ontario that are identified to conserve significant features through means other than regulation.

Within the Bear Brook Watershed, the Province of Ontario has identified the Mer Bleue Bog Life Science ANSI and the Sarsfield-Bear Brook Esker Earth Science ANSI, both of which are found within the jurisdiction of the City of Ottawa and shown in Figure 8.

The Mer Bleue Bog Life Science ANSI encompasses the entirety of the Mer Bleue Bog Provincially Significant Wetland. This ANSI recognizes the expansive representative biodiversity and natural landscape that Mer Bleue Bog provides to Ontario. This area contains undisturbed vegetation and hosts relatively intact ecological species and communities.

The Sarsfield-Bear Brook Esker Earth Science ANSI, also referred to as the Vars-Winchester Esker, extends north to south along much of the eastern edge of the City of Ottawa. This ANSI is geologic in nature and is representative of a significant landform and geologic process that has occurred within the Bear Brook Watershed. The Water Resources Report contains more information on the Vars-Winchester Esker.

Policies of the City of Ottawa and UCPR

The City of Ottawa recognizes ANSIs as natural heritage features and Natural Heritage Feature Overlay policies apply (City of Ottawa Official Plan, Transects, Section 5.6.4.1, 2). The UCPR recognizes ANSIs in their Official Plan in Section 5.5.3 (ANSIs). Generally, no negative impact on ANSIs is allowed unless it has been demonstrated through an environmental impact study that there will be no negative impacts on the natural features or functions for which the area is identified.

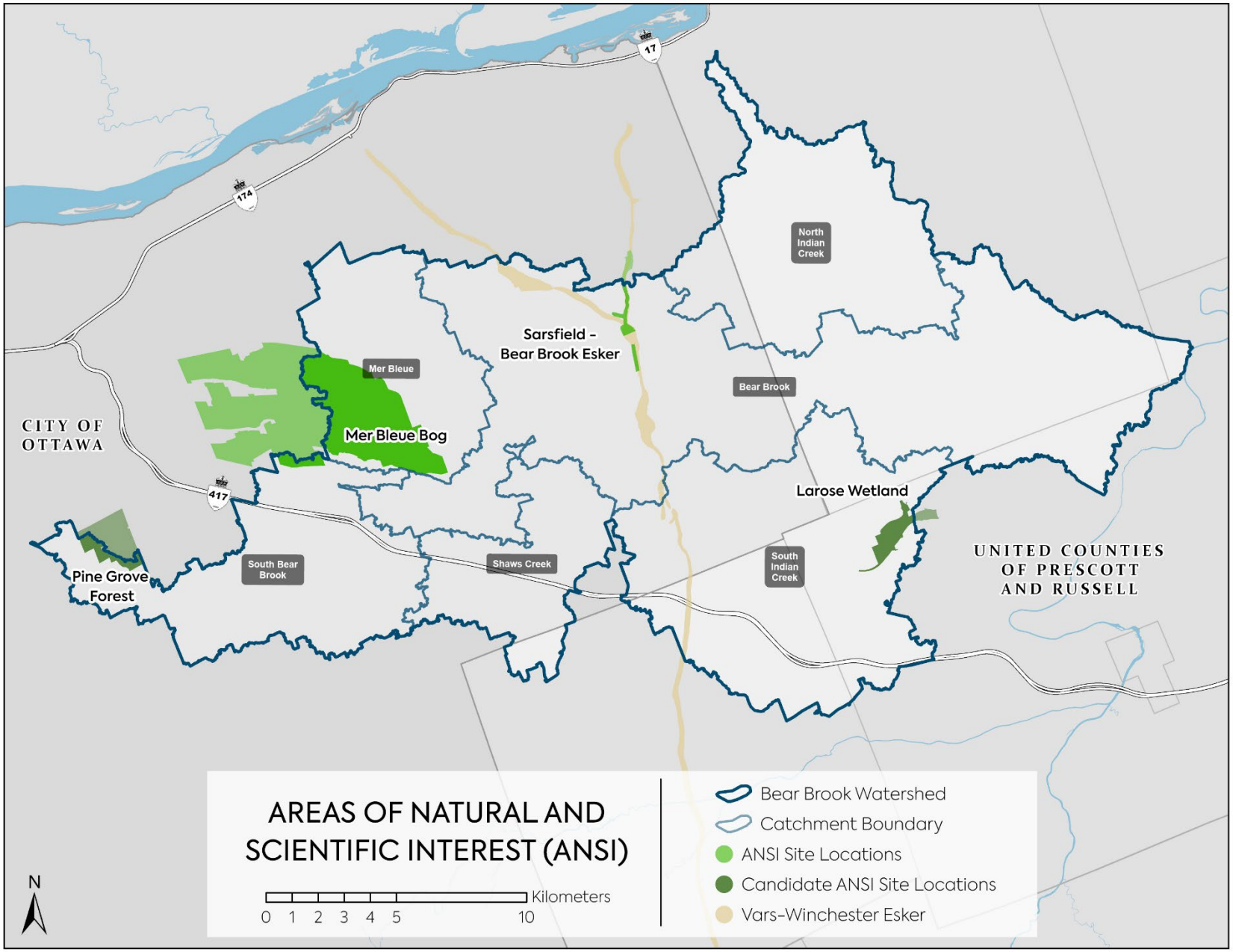

Figure 8. Areas of Natural and Scientific Interest in the Bear Brook Watershed

9. Species at Risk

Key Findings

- There are over 80 species at risk documented within the boundaries of the City of Ottawa, and species in the UCPR are expected to be similar.

Endangered and threatened species, in addition to their habitat, are protected within the City of Ottawa and UCPR under the *Endangered Species Act*, 2007 (provincial) and *Species at Risk Act, 2002* (federal). Further, both the City of Ottawa and UCPR require an environmental impact study to evaluate any known or suspected species at risk and their habitats when development or site alterations are proposed that may impact them.

The City of Ottawa has documented over 80 species at risk within its boundaries (i.e., species that are listed as endangered, threatened, or special concern by the provincial and/or federal governments; City of Ottawa, 2024). While no formal list exists for the UCPR, the species noted within the City of Ottawa would not differ significantly.

Formal species at risk sightings recorded by the Natural Heritage Information Centre within the Bear Brook Watershed have been identified and summarized in Appendix B (MNR, 2024). The City of Ottawa's Species at Risk List is also included (City of Ottawa, 2024).

Commonly encountered species in the Bear Brook Watershed include Eastern Whip-poor-will, Bobolink, and several species of turtles. Butternut trees and Black Ash trees are also frequently found in the area and are routinely discovered during site investigations for development projects.

Identification of dense populations or special habitats for species at risk in the Bear Brook Watershed ahead of development proposals would allow management objectives identified within the species' Recovery Strategies to be implemented. Overall, this would lead to the meaningful conservation and protection of these species in the Bear Brook Watershed.

10. Invasive Species

Key Findings

- Over 10,000 sightings of invasive species are documented within the City of Ottawa and UCPR boundaries.

The natural areas of the Bear Brook Watershed host numerous invasive plants and animals that are impacting, and will continue to impact, native species and landscapes. Dog-strangling vine, Common and Glossy Buckthorn, and the Emerald Ash Borer are a few common invasive species in the watershed that have considerable impacts on biodiversity and result in significant financial costs to local residents. Giant Hogweed and Wild Parsnip are two examples of invasive

plants that can cause physical harm to humans; both UCPR and the City of Ottawa are actively controlling these plants through roadside herbicide spraying programs.

A 2021 National Invasive Species Municipal Expenditures Survey, conducted by the Invasive Species Centre for 231 municipalities across Canada, estimated that invasive species cost Canadian Municipalities over $247 million per year (Invasive Species Centre, 2023). Between 1960 and 2017, the economic impacts of invasive species on North American agriculture and forestry sectors have been conservatively estimated to have cost upwards of US $560 billion (Crystal-Ornelas at al., 2021). In general, it is expected that costs associated with the control and removal of invasive species will increase into the future, particularly as a changing climate creates more favourable conditions for exotic species.

Given the expanse of agricultural lands, natural wetlands (i.e., Mer Bleue), and forests (i.e., Larose Forest) within the Bear Brook Watershed, the City of Ottawa and UCPR are likely to continue to spend, and be required to increase spending, significant portions of their operating budgets on invasive species control and prevention. Early detection of new invasive species, along with rapid control and containment, is paramount to reducing the impacts of invasive species in the Bear Brook Watershed.

An online community mapping portal for documenting invasive species distributions (EDDMapS) was consulted to establish a list of all invasive species observed and recorded in the Bear Brook Watershed. Observations of invasive species in the Bear Brook Watershed were downloaded, and a table of all species is provided in Appendix C.

11. Other Significant Natural Heritage Features

Key Findings

- Significant valleylands have not been identified in the Bear Brook Watershed, but they may exist and represent an opportunity to improve the natural heritage system.
- The City of Ottawa has developed identification criteria for significant valleyland.
- Potential significant wildlife habitat has been identified in the Bear Brook Watershed, but the UCPR and the City of Ottawa do not formally track its identification or maintain a database of these habitats.

Significant Valleylands

Significant valleylands are natural areas that occur in a valley or other landform depression that has water flowing through or standing for some period of the year, and which have been determined to be ecologically important, contributing to a natural heritage system (OMNR, 2010). Currently, the City of Ottawa and the UCPR have not identified any significant valleylands within the Bear Brook Watershed; however, such areas are likely to exist.

The City of Ottawa has developed criteria to identify significant valleylands. According to the City of Ottawa Environmental Impact Study Guidelines (City of Ottawa, 2023), a significant

valleyland is a natural valley with slopes greater than 15% and lengths over 50 metres. Through the formation of criteria for UCPR, careful study, and precise delineation, significant valleylands may be identified across the Bear Brook Watershed ahead of development.

The Bear Brook is flowing water through a valley, providing ecological value and contributing to the natural heritage system. It would meet the definition of a significant valleyland along much of its length. A consistent definition of significant valleylands between the City of Ottawa and the UCPR would be beneficial for consistency in natural heritage identification. The Bear Brook also represents a significant opportunity for the restoration and reclamation of a large natural heritage linkage or corridor feature on the landscape, potentially aiding wildlife movement between Mer Bleue Bog and Larose Forest.

Significant Wildlife Habitat

Significant wildlife habitats are specific areas where plants, animals and other organisms live and find adequate amounts of food, water, shelter and space to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate during vulnerable points in their annual or life cycle, as well as areas important to migratory or non-migratory species (OMNR, 2010). Significant wildlife habitats are identified using the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (OMNRF, 2015), a supplement to the Natural Heritage Reference Manual.

Significant wildlife habitats in the Bear Brook Watershed are often identified by environmental consultants during the site investigation stage of an environmental impact study. However, they remain *potentially* significant wildlife habitats unless a planning authority (i.e., the UCPR or the City of Ottawa) reviews and approves the habitat, as well as maintains a database of significant wildlife habitats for their protection.

To date, neither the UCPR nor the City of Ottawa maintain a database of identified and accepted significant wildlife habitats in the Bear Brook Watershed. As a result, these areas of habitat may be impacted and remain vulnerable to impacts in the future. Identification of the main significant wildlife habitats in the Bear Brook Watershed before development occurs would allow watershed planning to adequately recognize and avoid impacting these irreplaceable habitats.

12. Summary

Planning and implementing a natural heritage system is about recognizing the necessity for balance in the landscape. A watershed cannot continue to support biodiversity, absorb and provide water for human use, or sustain present and future generations without careful consideration of its exploitation and any changes from baseline levels.

In general, wetland and forest cover within the Bear Brook Watershed meets published guidelines for ecosystem health. However, stark differences are observed between the different subwatersheds, likely due to variations in soils and physiography leading to differing land uses. Proximity to existing urban centres played a role in land use decisions in the past.

The currently mapped and identified Natural Heritage Systems of the City of Ottawa and UCPR contain large expanses of significant natural heritage features and areas. Policies in the Official Plans of the City of Ottawa and UCPR are consistent with the Provincial Planning Statement (2024) and aim to protect and conserve these features and areas. Nonetheless, the loss of naturally vegetated areas continues within the cores and linkages of the mapped natural heritage system, and progress on restoring or expanding the system is stagnant.

The future health of the Bear Brook Watershed depends on our collective ability to strike a balance between development, agriculture, and conservation. By prioritizing the preservation and enhancement of its natural heritage system, we can ensure that the Bear Brook Watershed continues to support biodiversity, contribute to regional water management, and provide ecological services essential for both human and environmental well-being. Collaboration among stakeholders at all levels—municipalities, conservation authorities, landowners, and the public—will be critical in making this vision a reality.

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Appendix A Fish Species and Sampling Locations

Table A1. All fish species captured and/or observed in the Bear Brook Watershed under South Nation Conservation monitoring initiatives (2008-2024).

Common Name	Scientific Name
American Brook Lamprey	*Lethenteron appendix*
Banded Killifish	*Fundulus diaphanus*
Blacknose Dace	*Rhinichthys atratulus*
Blacknose Shiner	*Notropis heterolepis*
Bluegill	*Lepomis macrochirus*
Bluntnose Minnow	*Pimephalus notatus*
Brassy Minnow	*Hybognathus hankinsoni*
Brook Stickleback	*Culaea incostans*
Brown Bullhead	*Ameiurus nebulosus*
Central Mudminnow	*Umbra limi*
Common Shiner	*Luxilus cornutus*
Common White Sucker	*Castostomus commersoni*
Creek Chub	*Semotilus atromaculatus*
Eastern Silvery Minnow	*Hybognathus regius*
Emerald Shiner	*Notropis atherinoides*
Fallfish	*Semotilus corporalis*
Fathead Minnow	*Pimephales promelas*
Finescale Dace	*Phoxinus neogaeus*
Golden Shiner	*Notemigonus crysoleucas*
Greater Redhorse	*Moxostoma valenciennesi*
Johnny Darter	*Etheostoma nigrum*
Logperch	*Percina caprodes*
Longnose Dace	*Rhinichthys cataractae*
Mimic Shiner	*Notropis volucellus*
Northern Pearl Dace	*Margariscus margarita*

Northern Pike	*Esox lucius*
Northern Redbelly Dace	*Phoxinus eos*
Pumpkinseed	*Lepomis gibbosus*
Rock Bass	*Ambloplites rupestris*
Silver Redhorse	*Moxostoma anisurum*
Smallmouth Bass	*Micropterus dolomieu*
Spotfin Shiner	*Cyprinella spiloptera*
Tadpole Madtom	*Noturus gyrinus*
Trout-perch	*Percopsis omiscomaycus*
Yellow Bullhead	*Ameiurus natalis*

Species captured by SNC's Fisheries Monitoring Programs 2008-2024 in the Bear Brook Watershed. Not expected to be an exhaustive list of all species found within the watershed. Further and more intensive monitoring is likely to reveal a greater diversity of species.

Table A2. All sites and site details sampled for fish by South Nation Conservation in the Bear Brook Watershed (2008-2024).

Stream Name	Site Code	UTM Easting	UTM Northing	Year(s) Sampled
Bear Brook	CB01577	477871	5027394	2008
Tributary of Bear Brook	CB02544	480088	5028358	2008
Labelle Municipal Drain	CB032203	474397	5019875	2008
Ashton Griffith Municipal Drain	CB052230	473810	5026000	2008
Bear Brook Municipal Drain	CB062224	474652	5027065	2008
Labelle Municipal Drain	CB07874	479523	5017688	2008
Rudolph Brisson Municipal Drain	CB08641	478803	5016780	2008
Tributary of Bear Brook	CB09513	474020	5029380	2008, 2013, 2019

Tributary of Bear Brook	CB10526	473294	5028983	2008, 2013, 2019
Tributary of Bear Brook	CB11468	473499	5030275	2013
Tributary of South Indian Creek	CB12717	481875	5021332	2013
South Indian Creek	CB13787	481539	5020258	2013, 2019
Tributary of South Indian Creek	CB14806	480237	5019941	2013
Tributary of Black Creek	CB15562	491949	5027906	2013
Black Creek	CB16559	492034	5027996	2013
Tributary of South Indian Creek	CB17718	481824	5021335	2013
Labreche Municipal Drain	CB18511	474185	5029025	2019
Tributary of Bear Brook	CB20512	473947	5029193	2019
Schnupp Municipal Drain	CB21440	489021	5031328	2019
Bear Brook Municipal Drain	MB013271	466896	5025241	2008
McKinnon's Creek	MB02477	465862	5029789	2008, 2013, 2017
Regimbald Municipal Drain	NIC013095	478539	5035563	2008, 2013
Tributary of Charlebois-Vinette Municipal Drain	NIC02358	477655	5033899	2008
North Indian Creek	NIC03443	485076	5031118	2008, 2019
Tributary of North Indian Creek	NIC04438	478455	5031354	2013

Tributary of North Indian Creek	NIC05389	482491	5032885	2013
Smith-Gooding Municipal Drain	UB01716	460722	5022044	2008
Tributary of Bear Brook	UB02731	460806	5021468	2008, 2013, 2019, 2020
Bear Brook	UB03643	461756	5024780	2008, 2019, 2021
Smith-Gooding Municipal Drain	UB042156	456744	5021168	2008, 2020
Tributary of Bear Brook	UB05741	462289	5020731	2020
Bear Brook Municipal Drain	UB063142	465552	5024616	2019, 2021
Bear Brook	UB08644	464047	5024715	2020, 2021
Smith-Gooding Municipal Drain	UB102147	458459	5022242	2020, 2021
South Bear Brook	UB143004	462869	5022007	2020, 2021
Smith-Gooding Municipal Drain	UB152155	452174	5018000	2020
Bear River Municipal Drain	UB16780	463483	5020378	2020, 2021
Bear Brook	UB173003	462139	5022897	2020
Smith-Gooding Municipal Drain	UB18000	454434	5020654	2020
Bear Brook	UB19000	461215	5024771	2020
Johnston Municipal Drain	UB202143	459556	5019538	2021

Appendix B Species at Risk

Table B1. The Natural Heritage Information Centre (NHIC) was searched and presented the following records of species at risk within the Bear Brook Watershed.

Scientific Name	Common Name
Bombus bohemicus	Gypsy Cuckoo Bumble Bee
Bombus terricola	Yellow-banded Bumble Bee
Carex folliculata	Northern Long Sedge
Centronyx henslowii	Henslow's Sparrow
Chlidonias niger	Black Tern
Clemmys guttata	Spotted Turtle
Coccinella novemnotata	Nine-spotted Lady Beetle
Dolichonyx oryzivorus	Bobolink
Emydoidea blandingii	Blanding's Turtle
Fraxinus nigra	Black Ash
Graptemys geographica	Northern Map Turtle
Heterodermia hypoleuca	Cupped Fringe Lichen
Hirundo rustica	Barn Swallow
Ixobrychus exilis	Least Bittern
Lampropeltis triangulum	Eastern Milksnake
Lanius ludovicianus	Loggerhead Shrike
Leptogium corticola	Blistered Jellyskin
Moxostoma valenciennesi	Greater Redhorse
Neottia bifolia	Southern Twayblade
Persicaria arifolia	Halberd-leaved Tearthumb
Platanthera grandiflora	Large Purple Fringed Orchid
Sturnella magna	Eastern Meadowlark
Thamnophis saurita	Eastern Ribbonsnake
Torreyochloa pallida var. pallida	Pale False Mannagrass
Williamsonia fletcheri	Ebony Boghaunter

Appendix C Invasive Species List

Table C1. All invasive species within the EDDMapS database as of October 31, 2024 that are found within the Bear Brook Watershed. Note: This is not an exhaustive list, and some species may be considered naturalized in Ontario.

Scientific Name	Common Name
Acer platanoides	Norway maple
Aegopodium podagraria	goutweed
Agrilus planipennis	emerald ash borer
Alliaria petiolata	garlic mustard
Berberis thunbergii	Japanese barberry
Betula pendula	European birch
Butomus umbellatus	flowering rush
Centaurea jacea	brown knapweed
Cerastium fontanum	common mouse-ear chickweed
Cichorium intybus	chicory
Cirsium arvense	Canada thistle
Convallaria majalis	lily of the valley
Datura stramonium	jimsonweed
Daucus carota	Queen Anne's lace, wild carrot
Epipactis helleborine	helleborine
Euonymus alatus	winged burning bush
Frangula alnus	glossy buckthorn
Hemerocallis fulva	tawny daylily
Hesperis matronalis	dames rocket
Humulus japonicus	Japanese hop
Hydrocharis morsus-ranae	European frog-bit
Hypericum perforatum	common St. Johnswort
Impatiens glandulifera	Himalayan balsam
Iris pseudacorus	pale yellow iris, yellow flag iris
Leucanthemum vulgare	oxeye daisy
Lonicera tatarica	Tatarian honeysuckle
Lotus corniculatus	birdsfoot trefoil
Lymantria dispar	spongy moth (formerly gypsy moth)
Lythrum salicaria	purple loosestrife
Medicago sativa	alfalfa

Melilotus albus	white sweetclover
Melilotus officinalis	yellow sweet-clover
Nasturtium officinale	watercress
Neonectria faginata	beech bark disease
Pastinaca sativa	wild parsnip
Phalaris arundinacea	reed canarygrass
Phleum pratense	timothy
Phragmites australis	common reed
Phragmites australis ssp. australis	European common reed, Phragmites
Pinus sylvestris	Scots pine
Pistia stratiotes	water lettuce
Potentilla indica	false strawberry
Potentilla recta	sulfur cinquefoil
Prunella vulgaris	common selfheal
Reynoutria japonica	Japanese knotweed
Rhamnus cathartica	common buckthorn, European buckthorn
Robinia pseudoacacia	black locust
Salix alba	white willow
Scilla siberica	squill
Securigera varia	purple crown-vetch
Sedum acre	mossy stonecrop
Silene vulgaris	bladder campion
Solanum dulcamara	bittersweet nightshade
Sorbus aucuparia	European mountain-ash
Striacosta albicosta	western bean cutworm
Syringa vulgaris	common lilac
Trifolium pratense	red clover
Trifolium repens	white clover
Tussilago farfara	coltsfoot
Typha angustifolia	narrow-leaved cattail
Typha latifolia	common cattail
Urtica dioica	stinging nettle
Valeriana officinalis	common valerian
Verbascum thapsus	common mullein
Viburnum opulus	European cranberrybush

Vicia cracca	bird vetch
Vinca minor	common periwinkle
Vincetoxicum rossicum	dog-strangling vine, European swallowwort
Viola tricolor	pansy