



Canadian
Heritage Rivers
System

Réseau des
rivières du patrimoine
canadien

2021 ANNUAL MONITORING REPORTS SUMMARY

Summary of Canadian Heritage River Annual Monitoring Reports



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EXECUTIVE SUMMARY

The 2021 Annual Monitoring Reports Summary is a culmination of the key information and updates from Canadian Heritage Rivers across Canada for 2021. The information in this summary was extracted from the individual Annual Monitoring Reports collected* from Canadian Heritage River Managers for 2021.

A few common themes were found across the 2021 annual monitoring reports. These themes included the threats and changes to river ecosystems and watersheds as a result of climate change, the increased threat of wildfires and flooding along river systems, and the general impacts of the pandemic on resources needed to manage, monitor, and hold events by CHRS River Managers.

Across all Canadian Heritage Rivers, the values for which each river was designated still hold true in 2021. No significant changes or impacts have been documented that indicate a need for a change in any Canadian Heritage River nomination or designation.

**Not all reports were submitted from every Heritage River in 2021. This report contains information from those who completed and submitted their reports*

ALSEK

A new management plan for Kluane National Park Reserve was drafted and the approved plan is scheduled for release in fall 2022. Some key recommendations related to the Alsek River include the continuation of monitoring, researching, and communicating the impacts caused by the retreat of the Kaskawulsh Glacier, downstream effects from the Haines Junction Waste Water Treatment facility, and impacts from the Aishihik River hydroelectric dam. Monthly water quality monitoring of the Dezadeash River, which flows into the Alsek River, continues to be carried about by Parks Canada staff. The Alsek River also saw the number of commercial and recreational rafting and kayaking trips return to normal in 2021 after the peak of the pandemic.

ATHABASCA

A new management plan for Jasper National Park is scheduled to be released in fall 2022, with no changes to direction in relation the management of the Athabasca River. Aquatic Invasive Species (AIS) are moving closer to the Athabasca watershed with potential to cause significant impacts to the ecological integrity of the watershed. In December 2021, the Government of Canada announced \$14.7 million in funding to address AIS in Alberta and BC mountain national parks. New content on aquatic invasive species and water activities were added to the Jasper National Park website, annual visitor guide, and signs were installed at high-use water areas for the Clean Drain Dry campaign. Jasper National Park continues to monitor for the presence of micro plastics, water quality of stream and rivers, and species at risk. In 2021, Athabasca rainbow trout and bull trout were added to Schedule 1 of the *Species at Risk Act*. Additionally, The Trans Mountain Corporation is reactivating an 80-km long, 24-inch pipeline in Jasper National Park with reactivated services scheduled for December 2022.

BAY DU NORD

The Bay Du Nord remains in a condition that reflects the natural values for which is was designated. In 2016, a NL Hydro transmission line was constructed and trail cameras were installed to monitor the level of vehicle traffic passing the Bay Du Nord and wilderness reserve area along this line. Regular patrols were also conducted throughout 2021 by Resource Enforcement Division staff in response to increased access to the Bay Du Nord and wilderness area. A Rare Lichen Monitoring Program was undertaken in 2018-2021 to monitor lichen that had been transplanted before areas were cleared for transmission line construction.

BLOODVEIN | MISKWEWESIBI | MISKWEYAABIZIIBEE

There were no major changes in the Bloodvein River corridor in 2021, apart from natural changes caused by wildfires that burned a portion of the corridor. Canoeing was significantly reduced due to backcountry travel restrictions that were in place in Manitoba related to wildfire activity. The Pimachiowin Aki Corporation continued and initiated work on a variety of projects related to the area's UNESCO World Heritage Site designation, including ongoing participation in the Indigenous Guardians Pilot Program.

BONNET PLUME | TSAIH TL'AK NJIK

Implementation of the 2019 Peel Watershed Regional Land Use Plan began in 2020. However, there have been delays in advancing the park management planning due to other land use planning priorities that needed to be settled before proceeding with protected area planning. Park management planning will hopefully begin in 2022, and with the land use plan and the establishment of the park, the Bonnet Plume River watershed will be permanently protected. Very little commercial and recreations activity occurred in the Bonnet Plume watershed in 2021, and there has been a decline in recreational paddlers on the river over the past 10 years. A permanent withdrawal of mineral claim staking and oil and gas leases was instituted with the approval of the regional land use plan in 2019, thereby eliminating the risk of any further expansion of exploration or extractive activities in the Bonnet Plume watershed. In 2021, 5,000 of the over 7,000 mineral claims in the Wind, Bonnet Plume and Snake river watersheds have been relinquished.

BOUNDARY WATERS-VOYAGEUR WATERWAY

In 2021, Ontario Parks staff conducted regular portage maintenance, resource management, and monitoring activities including sky quality monitoring to maintain Dark Sky Park designation along the waterway. Dark sky monitoring along the Boundary Waters-Voyageur Waterway supports the cooperative dark sky initiative and will help preserve and celebrate the natural values of the waterway. A dam on the south end of South Fowl Lake continues to be in poor condition and is awaiting a rehabilitation plan from the US authorities.

CLEARWATER

No activity, events, or actions to report based on very little activity, lack of staff, and low budget due to the pandemic.

COPPERMINE | KUGLUKTUK

Traditional use of the river continued in 2021, with residents of Kugluktuk travelling and harvesting on the lower reaches of the river. Due to the pandemic, the Nunavut border was highly monitored and only open to fully-vaccinated individuals, which resulted in low travel in 2021 from non-residents of the territory. No specific CHRS research or events took place this year as management actions for the river were on hold until the formal designation of the Coppermine River takes place between signatories of the Inuit Impact Benefit Agreement (IIBA).

COWICHAN

The Quw'utsun Cowichan River is central to the traditional and present-day lives of the Cowichan Tribes and others living, working, and playing along its 47-km stem. BC Parks is in the process of developing a management plan for Cowichan River Provincial Park, which protects a 28-km stretch of the 47-km Cowichan River. BC Parks has also been working with Cowichan Indigenous Nations to support information gathering on cultural and traditional uses in the park, which will continue into 2022. Research continues to be conducted on the river with an emphasis on Passive Integrated Transponder tagging of coho, chinook steelhead, and rainbow trout. Passive satellite archival tagging was also conducted targeting steelhead. A detailed engineering plan for the new weir has been completed and extensive technical studies have been initiated that will inform decision-makers about any potential impacts to the lake shoreline arising from the new structure.

DETROIT

Significant efforts to engage residents around the Detroit River's heritage values continued in 2021, as the Detroit River celebrated 20 years as the only river in North America with both Canadian and American Heritage River designations. The second ten-year monitoring report was completed with input from many community partners. Over the year, media stories highlighted the river's history. In partnership with the local tourism entity, self-guided Detroit River experiences were curated. The Detroit River watershed is the most southern region of mainland Canada and features rare and endangered species that cannot be found anywhere else in this country. Focused attention continues to ensure the protection of these species through restoration activities.



FRASER

Climate change and the pandemic in 2021 brought significant challenges to wildlife, ecosystems, and humanity. Due to ongoing pandemic restrictions in BC and extreme weather, several events, programs, workshops and projects related to the Fraser River were cancelled, postponed, scaled down, or modified. A warm spring sparked an early, devastating wildfire season that lasted well into the fall. Wildfires destroyed the town of Lytton, grasslands, and close to 8,700 square kilometres of forest adjacent to the Interior Fraser. In mid-summer, sustained extreme heat pushed water temperatures in the Fraser River to above 22 degrees Celsius, a potentially lethal scenario for salmon returning to their spawning grounds. Billions of aquatic sea animals died along the coast where water temperatures were as high as 56 degrees Celsius. In November, an unprecedented atmospheric rain event brought close to 200 ml of rain in two days to the southwest corner of the province, causing flooding, catastrophic road washouts, landslides, and redirected rivers in some cases. The impacts on salmon and Fraser natural heritage values will be assessed in the coming years. New centers, including UBC Centre for Indigenous Fisheries, focused on Indigenous knowledge were launched. Restoration works on wetlands and habitats continued at Big Bar and in the Lower Mainland along the Fraser. A short-term ban on the catch and release white sturgeon fishery was implemented for spawning periods.

GRAND

In 2021, more recreation and heritage activities resumed after a slow year in 2020 resulting from the pandemic. There continued to be increased pressure on the Grand River and other natural areas in the watershed as people sought outdoor activities outside major urban centres. A number of events celebrating the recreational and heritage values of the Grand River were cancelled again in 2021 due to capacity limits and lack of financial resources. The GRCA is working on sub-watershed characterization reports for each of the Grand River's major sub-watersheds. These will complement existing management plans developed by the GRCA, including the Grand River Fisheries Management Plan, the GRCA's Watershed Forest Plan, and the GRCA's Water Management Plan, all of which support the CHRS designation.

HAYES | KISIPIKAMAWI SIPI | APIHT SIPI

In 2021, water levels, wildfires, and the pandemic all had an effect on travel to and along the Hayes River. The York Factory National Historic Site (NHS) reopened to the public with low visitation due to river water level and wildfires. The aquatic invasive decontamination station continues to be used to help stop the spread of zebra mussels and water quality continues to be monitored as part of the Coordinated Aquatic Monitoring Program (CAMP), a collaborative partnership between Manitoba Hydro and the Government of Manitoba. The Manitoba government staff conducted a trap line patrol near the western end of the river in January and a boat patrol of the west side of Molson Lake later in the year.

HUMBER

As a result of the pandemic, most engagement with communities continued in virtual settings to continue to protect, restore, and celebrate the Humber River. Several events took place including a ceremonial fire for National Day of Truth and Reconciliation, exhibits at the Black Creek Pioneer Village, TRCA Youth Council Events, ORCCR virtual events, and an art gallery mural project with the McMichael Art Gallery. The TRCA has observed a growing interest in the Carrying Place trail and the Humber River's CHRS designation, around what regulatory powers the CHRS designation holds. In 2021, TRCA has continued to observe an increased interest and visits to its Conservation Areas and parks which generally had implications for site securement, enforcement, health and safety considerations within the Humber River watershed. In addition, with increasing food security concerns has resulted in a growing interest in TRCA's agricultural properties and urban agriculture programs. A major highlight for 2021 was that TRCA submitted its 10-Year Humber River Monitoring Report to CHRS and was adopted by the CHR Board in November 2021. In addition, TRCA initiated a process for updates to the Humber River Watershed Plan.

KAZAN | HARVAQTUUQ

Traditional use of the river continued in 2021, with residents of Baker Lake travelling and harvesting on the lower reaches of the river. The area surrounding the upper reaches of the river are commonly used for traditional harvesting activities by residents of Arviat and other communities in the southern Kivalliq Region of Nunavut. Due to the pandemic, the Nunavut border was highly monitored and was open to fully vaccinated non-residents of the territory but travel was still low. No recreational trips from non-residents on the Harvaqtuuq Kazan River were undertaken in 2021. No CHRS specific research or events took place this year as the pandemic shut most work down. According to many Inuit elders and community members, the early melt of lakes and rivers makes ice travel routes unpredictable and unsafe in the spring. In addition, decreasing water levels make travelling

by boat more difficult during the summer months. Additionally, heritage and special places in Nunavut are being affected by permafrost degradation. The cold Arctic climate helps preserve organic materials frozen in permafrost. As the permafrost changes, cultural remains and archaeological artifacts are negatively impacted. Ongoing freeze-thaw cycles promote the decay of artifacts such as Inuit sod houses, and other historical resources such as sites relating to European exploration of the Arctic. CanNor invested nearly \$3 million to build on a prior feasibility study examining the development of a hydroelectric and fibre-optic link between Manitoba and the Kivalliq region of Nunavut – this will possibly cross the mouth of the Harvaqtuuq Kazan River. According to Exploration Overview 2021 produced by Canada-Nunavut Geoscience Office four active exploration sites; 3 looking for gold and one for nickel-copper-PGE by three companies were around the Harvaqtuuq Kazan River. The Water Survey of Canada continues to operate two recorders on the river, one at Ennadai Lake (station 06LA003), and the other above the Kazan Falls (06LC001). Kivalliq Inuit Association (KIA) as per the Inuit Impact Benefit Agreement (IIBA) for the Canadian Heritage Rivers (CHR) in Nunavut, conducted water sampling and training as per the IIBA over the summer in 2021.

KICKING HORSE

The pandemic restrictions continued into 2021 which resulted in a trend of greater domestic visitor demographic over international visitors. This reduction in visitation numbers altered recreational use patterns within the Kicking Horse Pass watershed. Statistics from the Annual Analysis Traffic report indicate a significant decrease in traffic volume along the TransCanada highway through the Kicking Horse watershed in 2021. Significant wildfires, record high temperatures, and major flooding west of Revelstoke impacted visitation and use of the Kicking Horse watershed as vehicular travel through to BC was closed. The CHRS monitoring program is a subset of a greater National Park research effort to identify common trends and assess change over time of ecological, landscape, recreational and cultural values over time. The 2020-2030 Strategic Plan highlights development of a formal collaborative monitoring program that guides a more holistic approach to include ongoing research initiated by other functions such as aquatics, fire and vegetation, species at risk, visitor experience, integrated land use planning, and cultural resource management. Aquatics and water quality monitoring, along with species at risk (Wolverine, bats, and whitebark pine), continued in 2021. Cultural resource condition monitoring continued, along with infrastructure upgrades to the Kicking Horse campground including the stabilization of the historic bake oven cultural resource in the campground.

MAIN

Regular patrols were conducted during the operating season by the Field Manager responsible for the Main River Waterway Provincial Park. New and increased use of illegal ATVs on wetlands due to the 2016/17 construction of a new transmission line has been observed. An outfitter's request to build an ATV trail was approved in 2019 and the trail was constructed in 2020. This approval was granted in an attempt to limit illegal ATV traffic along the wetlands.

MATTAWA

The designated section of the river is mostly within the boundaries of Mattawa River and Samuel de Champlain Provincial Park, which is managed by Ontario Parks. Mattawa River Provincial Park is a non-operation park with limited facilities. Park wardens conducting custodial management carried out site visits in the park in 2021 and executed portage maintenance, campsite maintenance, bike trail monitoring, and dock inspections. Samuel de Champlain is an operating provincial park and has park staff monitoring and managing the park on a continual basis. Lands within the area of Mattawa and within the overall proposed settlement area are part of active negotiations as described within the Algonquins of Ontario, Ontario and Canada Agreement-in-Principle. Some of those lands include lands that are designated as part of the Canadian Heritage Rivers System.

MISSINABI

The Missinabi River has on-going management to maintain the significant whitewater canoe route tracing the traditional routes of Indigenous Peoples and the historic European fur trade from Lake Superior to Hudson's Bay. Ontario Parks is continuing to move forward with the boundary regulation as recommended from Ontario's Living Legacy (OLL 1999) and as stated in the approved park management plan from 2004. Regular park operations continued at the Barclay Bay campground and throughout the backcountry access points. Unauthorized access continues along the river and attempts to address this are being made through additional signage and contact with users. In 2021 a letter of authorization was issued for research on mosses within the park.

NORTH SASKATCHEWAN (BANFF NATIONAL PARK)

Pandemic restrictions remain unchanged into 2021. As a result of restrictions, visitor demographic, visitation numbers, and recreational use patterns on the landscape were significantly different than pre-pandemic levels. However, wayfinding apps and resources opened the door for an increase of off-trail use into areas that at one time were little known. The natural and cultural resources condition monitoring is a priority as impact on

the landscape continues. The CHRS monitoring program is a subset of a greater National Park research effort to identify common trends and change over time of ecological, landscape, recreational and cultural values over time. The 2020-2030 Strategic plan highlights development of a formal collaborative monitoring program that takes a holistic approach to include ongoing research initiated by other functions such as aquatics, fire and vegetation, species at risk, visitor experience, integrated land use planning, and cultural resource management. Current monitoring programs include the set up of three locations to determine the presence of whirling disease in salmonid fishes. Aquatic health monitoring using benthic macroinvertebrates indicators was conducted, with random sampling complete at four tributary sites that flow into North Saskatchewan River. Cultural resource monitoring was done via drone photographic recordings to assess landscape change, glacial recession, and river morphology over time. Additional ecological integrity research is underway including mammal, amphibian, forest and alpine bird, goat, and wolverine monitoring and research.

OTTAWA

During 2021, the Ottawa River experienced a normal (even slightly low) spring freshet and there was no unusual excess contamination as a result. Regular annual events were postponed or cancelled until 2021 due to the pandemic. Water testing on the Ottawa River occurred at beaches during the summer by the City of Ottawa and by smaller municipal health units along the length of the river. The Ottawa River Keeper organization conducted pollution monitoring programs, along with the on-going Riverwatch Program by river watchers from Temiskaming to Lake of Two Mountains.

RED

The pandemic resulted in a decrease in the overall number of events in the Red River corridor. However, many activities still took place, including a paddle challenge and several competitive fishing events. The skating trail on the Red and Assiniboine rivers was also open for roughly seven weeks. Various studies and river-related infrastructure and recreation projects continued or were initiated in 2021. These included work on the Netley-Libau Marsh Restoration Project, recreational trail and boat launch projects, and long-term water monitoring, freshwater mussel surveys, and a fish movement study.

RIDEAU

Administered by Parks Canada as a premier heritage waterway, the Rideau Waterway is a cultural destination that is also valued for its landscapes, lakes, and rivers. Work in 2021 focused on advancing the Federal Infrastructure Investment Program (FIIP), invasive species management, GIS capabilities, and developing a new Rideau Canal National

Historic Site Management Plan. The rehabilitation of Jones Falls Locks is the largest capital project being undertaken on the Rideau Canal since its original construction, with completion expected by May 2022. In 2018, Ontario Waterways and partner Universities have received a Natural Sciences and Engineering Research Council of Canada (NSERC) Strategic Partnership Grant entitled “Science to Support Management of Waterways”. The initiative incorporates multiple research projects focused on management questions and environmental issues that will generate knowledge to support Parks Canada in the development of evidence-based policies and decision-making on historic waterways. The control program for the invasive aquatic plant called European Water Chestnut (*Trapa natans*) was conducted in 2021 and will be ongoing in 2022. A GIS-based framework for Ontario Waterways was developed with a focus on conserving connectivity in the managed freshwater systems by supporting effective landscape-scale management. These processes will be used by Parks Canada staff to support evidence-based management decisions. To date, pilot projects have been carried out in parts of the Rideau Canal to better understand preferred movement corridors for endangered Blanding’s turtle and American eel from Lake Ontario to upstream habitat. Parks Canada advanced the preparation of a new Rideau Canal National Historic Site Management Plan (to replace 2005 Plan), undertaking public and Indigenous consultation on a draft plan. The final plan will be tabled in Parliament in 2022. The pandemic resulted in a decrease in the number of events and activities in the river corridor.

SEAL

The work of the Seal River Watershed Indigenous Protected Area Initiative was ongoing in 2021, led by Sayisi Dene First Nation to protect the Seal River watershed in partnership with several other Indigenous communities (Northlands Dene Nation, O-Pipon-Na-Piwin Cree Nation, Barren Lands First Nation, and Inuit of the Kivalliq region of Nunavut). Annual Canada goose banding and goose breeding population surveys were not conducted due to wildfires affecting helicopter usage across Manitoba. A study released in August 2021 showed that beluga whales with calves moved throughout the Churchill and Seal River estuaries to raise their offspring during the summer months, rather than congregating in distinct groups. These findings support a proposal to protect marine habitat in western Hudson Bay, as they show that belugas with calves roam widely within the area. The Seal River Watershed Alliance and Audubon’s Boreal Conservation program partnered to install ten automated sound recording units within the river’s watershed. These devices record sound files which are then analyzed to identify which bird species are present at the device locations. Indigenous youth and elders selected the sites, and the devices were then deployed in May 2021 and collected for analysis in July 2021.

SOPER | KUUJJUAQ

Traditional use of the river continued in 2021, with residents of Kimmirut and Iqaluit travelling and harvesting on the river and the surrounding valley. Due to the pandemic, the Nunavut border was highly monitored and open to fully vaccinated non-residents of the territory but travel was still low. Only 36 registered travellers from Nunavut travelled through Katannilik Territorial Park. Recreational paddling trips continued. According to many Inuit elders and community members, early melt of lakes and rivers makes ice travel routes unpredictable and unsafe in the spring. Heritage and special places in Nunavut are being affected by permafrost degradation. The cold Arctic climate helps preserve organic materials frozen in permafrost. As the permafrost changes, cultural remains and archaeological artifacts are negatively impacted. Ongoing freeze-thaw cycles promote the decay of artifacts such as Inuit sod houses, and other historical resources such as sites relating to European exploration of the Arctic.

ST. JOHN | WOLASTOQ

The St. John River Society had a successful 2021 year thanks to the support of our municipal, provincial, federal, volunteer, and non-profit partners. Our completed and ongoing projects continue to pave the way for future actions that maintain the St. John River's natural, cultural, and recreational heritage. The Minister of Finance announced that the Wolastoq St. John River will be one of 12 lakes and rivers to benefit from \$19.6 million in funding from Environment and Climate Change Canada's Freshwater Action to support clean-ups. The St. John River Society completed Phase I of the ELOHA Project, to determine the social values of the river, with support from the Environmental Trust Fund and ECCC's Atlantic Ecosystems Initiative. The society also developed a media toolkit to offer local governments and community organizations coordinated messages to use during the pre-, during, and post-flood periods along the river (with support from the New Brunswick Environmental Trust Fund and in collaboration with the City of Fredericton). A bilingual video to educate the public about cyanobacteria in the Wolastoq and freshwater systems in New Brunswick, including key public health and safety messages. Repairs were complete at White Bluff Wharf, with remaining to be complete in 2022. The Trans Canada Trail's Seasonal Cleanup Grant provided the Society and Wharf Stewards with the ability to provide safe access to eleven of our wharves for public to enjoy.

ST. MARYS

The St. Marys River is a binational waterway connecting Lake Superior and the North Channel of Lake Huron in the Great Lakes. Although the St. Marys River was designated as an Area of Concern (AOC) in 1987, significant improvements have been made to help restore the quality of water and health of the ecosystem. In 2021, significant progress was made in regards to understanding and implementing actions around contaminated

sediments, contaminants and tumors in fish, and habitat restoration for fish and wildlife. In March 2021, the St. Marys River Remedial Action Plan Team delivered a virtual presentation to members of four different local stakeholders. The presentation provided an overview of the St. Marys River AOC including background information, projects completed, status of Beneficial Use Impairments, and status of the AOC. In late 2021, Environment and Climate Change Canada (ECCC) and the Batchewana First Nation's Natural Resources Department negotiated a two-year funding agreement for project management activities to advance the proposed Whitefish Island aquatic habitat restoration. The next step will be to gather the engineer "stamped" drawings required for regulatory review and permitting purposes for the habitat restoration project. A Sediment Management Strategy for the Canadian section of the St. Marys River AOC was drafted in late 2021. It provides a plain language summary of the history, current status, and future actions required as related to the management of contaminated sediment in the river. Implementation of Action FFM-4: The Stage 2 Remedial Action Plan Report lists all recommended actions and monitoring initiatives necessary to complete restorations of the beneficial uses in the St. Marys River Area of Concern (AOC). The Action "FFM-4: Fish Contaminant Monitoring Programs" states that a Community Fish Consumption Survey is needed to form a better understanding of fish consumption patterns and habits within the AOC. The survey was launched in May 2021, with both an online and in-person version. Survey collection is scheduled to continue in 2022.

TATSHENSHINI | SHÄWSHE CHÙ

Overall, the Tatshenshini River's Yukon portion retained its natural, cultural, and heritage values for which the river was designated. Tourist traffic was restricted to BC and NWT residents during the pandemic resulting in a sharp decline in commercial paddlers on the Tatshenshini. The Yukon-based Tatshenshini Expediting conducts day trips by raft from Blanchard River to Tatshenshini River and experienced a 70% decline in clients from the previous year. Government of Yukon and Champagne & Aishihik First Nation (CAFN) began work towards a plan for heritage conservation of the historical site, Sha'washe, near the Dalton Post take-out on the Tatshenshini. This included a site visit by Historic Sites and CAFN staff. The goal was to complete documentation of six buildings at Sha'washe and two additional buildings at the nearby abandoned First Nations settlement of Neskatahin. CAFN will complete the suggested stabilization in summer 2022. Long term planning and the development of a heritage management plan for Sha'washe continues.

THAMES

The Thames River's heritage values continue to be supported. River managers, including the Upper Thames River Conservation Authority (UTRCA) and Lower Thames Valley Conservation Authority (LTVCA), provide strong environmental and recreational programming, while cultural heritage preservation and interpretation are provided by numerous museums, sites, plaques, reenactment societies, Indigenous Peoples, heritage committees and others across the large watershed. Several events were held in 2021, including river clean ups, online events, festivals, activities, and the opening of new cultural, heritage, and Indigenous tourism experiences along the river. Paddlers and sailors continue to make good use of the watershed's many conservation area, while boaters utilize the lower Thames River from Chatham to Lake St. Clair, and anglers fish throughout the watershed. In 2021, Dorchester Swamp, one of the largest remaining swamps in the Thames watershed, was recognized as a Canadian Protected and Conserved Area. The City of London has budgeted \$700,000 a year towards reducing river pollution by separating combined sewers that lead to system overloads and the discharge of untreated sewage in high flow events. The Municipality of Chatham-Kent and the LTVCA worked with the road department to identify active turtle and snake crossing areas, especially near watercourses, and erect signage to warn drivers to keep these endangered species safe. Data on vegetation cover collected by the UTRCA using digital aerial photography has shown that forest loss continues to occur. However, some 800 hectares of woodland were gained as older tree plantings from the 1970s and 1980s matured to become classified as woodland. The Chippewas of the Thames First Nation and Oneida Nation of the Thames participated in archaeological digs in 2021 with the Ontario Archeological Society (OAS) and digs occurred along the Thames River in London. The work helps people connect with their ancestral history and increase awareness of local indigenous history. The UTRCA's Turtle Research Team released more than 4,000 endangered Spiny Softshell turtle hatchlings in 2021. The frequency of floods is changing in the Thames watershed area and what has been called a 100-year flood is now 30 times more likely according to new data from the national flood map. Data will be useful to the UTRCA and LTVCA and others in planning for and mitigating flooding impacts.

THELON | KANGIRJUAP

Traditional use of the river continued with residents of Baker Lake travelling and harvesting on the lower reaches of the river and people from Łutsel K'e doing the same in the upper reaches and headwaters of the river. Due to the pandemic, the Nunavut border was highly monitored and open to fully-vaccinated, non-residents of the territory but travel was low. No recreational trips from non-residents on the Kangirjuap Thelon River occurred in 2021. No CHRS specific research or events took place this year as the pandemic shut most work down. Refer to notes on the Kazan Harvaqtuuq for additional information on permafrost derogation in the Arctic and its effect on heritage and special places in Nunavut.

THIRTY MILE | TÄGÀ SHÄW

The summer of 2021 was a dramatic season for Thirty Mile (Yukon River). In early summer, the Hootalinqua Historic Site, at the north end of heritage river, was threatened by a wildfire that was located across the river from the site. A sprinkler system was set up on the historic buildings but fortunately the fire never crossed the river, and the historic site was able to escape damage. Later in the summer, the entire heritage river was affected by record-high flooding, due to rapid snow melt after a record-high snowfall the previous winter. The historic sites avoided significant damage. However, many of the campsites that Yukon Parks manages had been inundated, leaving debris and detritus over many campsites. Due to the flooding, Yukon Parks was unable to conduct the periodic impact monitoring survey. Despite the challenges, the campsites on the river were maintained by the Ta'an Kwäch'än Council, whose traditional territory the heritage river passes through. Due to the wildfires, flooding and the pandemic, it is assumed that visitation on the river was significantly lower than other years. The Backcountry Recreation Impact Monitoring Survey also had to be delayed by a year, due to the wildfire, flooding and the weather conditions.

UPPER RESTIGOUCHE | LUST-A-GOOSH | LISTUGUJ

Trends of climate change observed over the past few years have impacted the river with high flow in spring and extreme low flow August through October, which was the situation again in 2021. Because of this low flow situation, the overall traffic on the river has diminished. Low water levels in August, along with the closing of private fish camps has lowered the traffic on the river during certain periods. This is having economic impacts to the tourism industry in the region. The Habitat Stewardship Program conducted water monitoring to reduce sediments runoff from potato farm and industrial sites in the Five Finger Brook watershed. Restoration work was performed on forestry roads to decrease sediment runoff in the Kedgwick area and maintenance of campsites and access sites by the Restigouche River Watershed Management Council was completed.



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