Fish and Wildlife Special Purpose Account Annual Report 2019-20

Ontario

Submitted to the
LIEUTENANT GOVERNOR IN COUNCIL

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Introduction

The Ministry of Natural Resources and Forestry (MNRF) manages Ontario's fish and wildlife resources to ensure the sustainability of wild populations, and the management of fishing, hunting and trapping opportunities for recreational and commercial purposes. The fish and wildlife program accomplishes its mandate through resource management planning, research and monitoring, and the delivery of public services to sustain healthy fish and wildlife populations for Ontario's future.

Recreational fishing is important to the province, both economically and socially. Ontario anglers enjoy the greatest fish diversity in Canada, with 145 species. Walleye, Yellow Perch, Smallmouth Bass and Northern Pike are the most caught and harvested species. With more than 250,000 lakes and countless rivers and streams, Ontario's vast aquatic resources give anglers a wide range of fishing opportunities; everything from fishing from shorelines in the city, to fly-in fishing trips in remote areas of the province. The 1.5 million anglers who enjoy Ontario's recreational fisheries spend $1.75 billion per year on recreational fishing in Ontario[1].

Ontario is home to a wealth of forests, shrublands, grasslands and wetlands that provide abundant wildlife habitat. The diversity of wildlife species in Ontario reflects the diversity of ecosystems in the province. Game wildlife species are not only important components of the ecosystems in which they are found but they provide sustainable hunting opportunities throughout much of the province. Ontario's goal for the management of these species is to ensure sustainable populations and ecosystems on which they rely, and for the continuous provision of ecological, cultural, social and economic benefits for the people of Ontario. Hunters in Ontario spend over $560 million on hunting activities each year.

In 1995, MNRF established the Fish and Wildlife Special Purpose Account (FW SPA) to demonstrate investment in fish and wildlife management activities. All revenue from licence fees, fines and royalties collected under the *Fish and Wildlife Conservation Act, 1997* flows into this account.

Funds held in the FW SPA may only be spent on:

- the conservation and/or management of fish and wildlife populations including the ecosystems which they rely upon
- matters related to the activities of people as they interact with, or affect wildlife or fish populations, including any matter related to safety, or,
- a refund of all or part of a fee or royalty

[1]Source: 2015 Survey of Recreational Fishing in Canada: Selected Results for Ontario Fisheries.

Pursuant to section 85(4) of the *Fish and Wildlife Conservation Act*, the MNRF must publish an annual report outlining the financial affairs of the FW SPA. This report summarizes the highlights and financial expenditures of the 2019-20 fiscal year.

Fish and Wildlife Heritage Commission

The Fish and Wildlife Heritage Commission (FWHC), established under subsection 2(1) of the *Heritage Hunting and Fishing Act*, 2002, provides recommendations on matters referred to it by the Minister. The FWHC members are appointed by Order-in-Council and represent a cross-section of key interests in the sustainable use of Ontario's fish and wildlife resources. The responsibilities of the FWHC include providing advice on:

- practices that will contribute to recreational hunting and fishing being valued by future generations
- public participation in fish and wildlife conservation programs
- youth participation in hunting, fishing and other fish and wildlife activities
- tourism related to hunting, fishing and other fish and wildlife related activities
- new opportunities for hunting, fishing and other fish and wildlife related activities, and
- the operation of the FW SPA

The Commission was engaged in 2019-20 to provide advice on many FW SPA funded items including fisheries management, wildlife management, invasive species and marketing and communications. The Commission was also regularly updated on the financial position and sustainability of the FW SPA. Information about the Commission or current membership may be found here.

Services Funded by the Fish and Wildlife Special Purpose Account

Fisheries Management

Fish Culture and Stocking

The province operates nine fish culture stations which produce and stock fish into public waters to rehabilitate degraded fish stocks and to create, maintain and enhance angling opportunities. The FW SPA covers a significant portion of the operating costs.

MNRF sets stocking targets, including those for community hatchery programs. Actual numbers produced in any year depend on the availability and quality of fertilized eggs.

This year, 8.65 million fish, weighing 203 metric tonnes were stocked into 1,249 waterbodies, including the Great Lakes and inland lakes, 13 percent above target. In addition, the ministry also supplied community hatchery program partners with 2.44 million fertilized fish eggs or fry, 13 percent over target. Classroom hatchery partners received 1.13 million fertilized fish eggs for eventual stocking into public waters, fully meeting the target.

Table 1: Number of fish stocked by species over the last five years

Species	2015	2016	2017	2018	2019
Atlantic Salmon	580,901	403,819	376,274	595,060	371,393
Aurora Trout	64,276	2,689	45,392	35,954	17,940
Bloater	35,597	161,680	170,410	91,653	27,436
Brook Trout	974,238	971,508	874,332	1,113,343	945,380
Brown Trout	297,117	269,766	231,596	250,405	245,783
Chinook Salmon	440,549	308,190	260,506	196,554	203,040
Lake Whitefish	145,219	140,908	106,645	144,376	141,041
Lake Trout	3,390,470	3,103,617	2,775,682	2,672,139	2,870,890
Muskellunge	1,818	0	194	398	0
Rainbow Trout	440,499	358,594	410,732	386,977	369,250
Splake	636,723	583,813	635,678	614,939	599,847
Walleye	1,298,029	560,832	2,472,591	1,980,873	2,855,226
Annual total	**8,305,436**	**6,865,416**	**8,360,032**	**8,082,671**	**8,647,226**

Of the 8.65 million fish stocked by MNRF in 2019, half were released into the Great Lakes. The other half were released into inland waters (Table 2).

Table 2: Species stocked by region in 2019

Species	Great Lakes	Northeast Region	Northwest Region	Southern Region	Species Total
Atlantic Salmon	371,393	0	0	0	371,393
Aurora Trout	0	14,990	2,950	0	17,940
Bloater	27,436	0	0	0	27,436
Brook Trout	0	353,172	303,284	288,924	945,380
Brown Trout	178,721	2,298	0	64,764	245,783
Chinook Salmon	203,040	0	0	0	203,040
Lake Whitefish	0	0	0	141,041	141,041
Lake Trout	2,257,477	261,868	216,908	134,637	2,870,890
Rainbow Trout	139,263	89,753	41,078	99,156	369,250
Splake	0	220,723	220,710	158,414	599,847
Walleye	1,112,845	623,286	0	1,119,095	2,855,226
Regional Total	**4,290,175**	**1,566,090**	**784,930**	**2,006,031**	**8,647,226**

Of the 4.36 million fish stocked into inland waters, about 45 percent will help protect, reintroduce and rebuild fish populations in areas where they have been suppressed or eliminated. The other 55 percent were stocked to enhance recreational fishing opportunities through put-and-take, put-grow-and-take and supplemental stocking. These types of stocking create hatchery-dependent fishing opportunities. They can also protect other species by diverting angling pressure away from waterbodies with naturally reproducing fish stocks that are vulnerable to overharvest. We promote these recreational angling opportunities on the Fish ON-Line website.

Fisheries Legislation, Regulation and Policy

Fisheries legislation, regulation and policy, developed through engagement with stakeholders, partners, Indigenous communities and organizations, and the public, is the foundation of recreational and commercial fisheries management in Ontario. Regulations and policies outline where, when and how fishing is conducted in the province.

FW SPA expenditures support staff costs to deliver fisheries policy activities, such as:

- developing variation orders that implement changes to seasons, quotas and limits in fisheries management zones across the province
- requesting amendments to federal and provincial fishery regulations
- reviewing policies and procedures governing the allocation of aquaculture and commercial bait licences

This year, the ministry conducted consultations on a proposal to amend the Ontario Fishery Regulations. The amendment, which was posted on the Environmental Registry of Ontario, would allow the use of multiple lines when fishing for Common Carp. It would also clarify the existing provisions when baiting, or chumming, a fishing area.

Broad-scale monitoring

Broad-scale monitoring (BsM) is a long-term monitoring program that provides information on the state of Ontario's inland lake fish and fisheries to inform policy development and resource management decisions. Approximately 100-150 lakes across the province are sampled annually using standardized methods, with reporting on results for Fisheries Management Zones every five years.

Intensive inland lakes monitoring is targeted, long-term monitoring on selected lakes with significant social or economic benefits and that require more intensive management due to stressors like harvest, land use, and invasive species. Examples include Lake of the Woods, Lake Nipigon, Lake Simcoe, and the Kawartha Lakes.

Data and reports from BsM and intensive inland lake monitoring support fisheries management planning and other resource management activities and are used by a wide range of stakeholders, indigenous groups, anglers, and the public.

In 2019-20, the FW SPA supported BsM sampling of 126 lakes and focused aquatic monitoring on a number of significant inland fisheries, including Lake of the Woods, Lake Nipigon, Ottawa River, Lake Simcoe, Rainy Lake, Rainy River, Lake Nipissing, and Rice Lake. In addition to status and trend data, water quality and fish contamination were evaluated on these water bodies collaboratively with the Ministry of the Environment, Conservation and Parks (MECP). MNRF also took advantage of fisheries crews already on the water to collect data from cormorant colonies on selected lakes, increasing the spatial coverage provided by aerial and partner surveys as part of MNRF's cormorant monitoring program.

Recreational Fisheries Population Management

Northwest Region

Fisheries Management Zone (FMZ) 6 completed its first fisheries management plan in 2009, followed by FMZ 4 and FMZ 5 in 2014. These plans need to be examined periodically with the zone's advisory council to update the fisheries information, confirm the plan objectives, report on actions taken, and identify emerging fisheries issues.

The first plan to be examined was FMZ 6. The review began in 2018, to correspond to the Cycle 3 broad-scale monitoring and results. In this reporting period the council has met seven times. It identified 15 emerging fisheries issues within the zone, with revisiting the winter angling season for Lake Trout as its highest priority. To address this issue, the advisory council initiated a fisheries plan amendment process for Lake Trout, the first such process since Ontario established fisheries management zones.

Several waterbodies in the Northwest Region are designated provincially significant inland fisheries, including Lake of the Woods, Lake Nipigon, Lac Seul, Rainy Lake and the Winnipeg River. Of these, Lake of the Woods is one of the most important.

Fisheries monitoring data shows that the Walleye fishery in Lake of the Woods is in trouble. In 2019, MNRF initiated the first steps toward a recreational fisheries plan for this lake, starting with Walleye. An advisory council was formed with a broad range of local stakeholders. It has held introductory meetings to review the fisheries information.

Northeast Region

The FMZ 10 advisory council has been in place since 2007. The council initially focused on the management of individual species, such as the significant changes to Lake Trout regulations in 2010 and increased opportunities for bass angling in 2014.

At the beginning of 2018, the zone held four Indigenous information sharing sessions. These sessions attracted more First Nation and Métis members to the FMZ 10 advisory council. The reinvigorated council transitioned to comprehensive zone-wide planning in 2018.

Between late 2018 and early 2020, eight council meetings were held. Objectives, strategies, and regulation change options were developed for most fish species within the zone. This work is captured in a draft FMZ 10 management plan.

Consultation on the draft plan, scheduled for early 2020 via Environmental Registry posting, public open houses, and Indigenous sharing sessions, was paused because of COVID-19. It is scheduled to resume in 2021.

The FMZ 11 advisory council was established in 2010. A draft FMZ management plan was completed, in collaboration with the FMZ 11 advisory council, in 2018. The draft plan was posted on the Environmental Registry for comment in 2019, and four open house sessions were hosted in major communities within FMZ 11. Several key regulation changes proposed in the draft plan were implemented on January 1, 2020. The Fisheries Management Plan was finalized, and a decision notice was posted on the Environmental Registry in Dec 2020.

Regulation proposals were modified based on consultation results. Examples of these regulation changes include expanding the open season for bass, shortening the Lake Trout season, introducing new Lake Trout size restrictions, and aligning Muskellunge regulations within the FMZ and the French River.

Lake Nipissing, the only waterbody within Northeast Region classified as a provincially significant inland fishery, is managed on an individual lake basis. The lake supports three fisheries. The first is an Indigenous subsistence fishery, used by Nipissing First Nation, Dokis First Nation and other Robinson-Huron Treaty beneficiaries, as well as Algonquins and Métis. Nipissing First Nation (NFN) also operates a commercial fishery targeting Walleye. Thirdly, the lake is a popular recreational fishery for individual anglers and over 100 tourism operators. This year a meeting was held with the Lake Nipissing Advisory Council (LNAC) to review fisheries survey results and discuss recreational fishery regulation change options for Walleye, Muskellunge, Northern Pike and Bass.

Southern Region

Fisheries management planning is underway in FMZ 15. The first advisory council meeting was held in March 2017. A draft plan should be ready for review by the advisory council in Spring 2021. After review, the draft plan will be posted for public review on the Environmental Registry.

MNRF initiated an enhanced engagement approach in FMZ 16, due to its size and complexity. A series of listening sessions with the public, stakeholders, First Nation and

Métis communities, and conservation authorities held in 2017-18 asked participants to share their vision for what the planning process should include and consider. A discussion paper was prepared, based on feedback from the listening sessions. As MNRF determines the next steps, posting the paper on the public-facing website is on hold.

Fisheries Research

Applied research, focused on fish populations and their ecosystems, provides a foundation of knowledge for provincial fisheries management, policy, and regulations, including catch limits. Work includes gaining new relevant knowledge about fish and fisheries and the cumulative impacts of threats such as invasive species and climate change on the integrity of inland and Great Lakes fisheries. Population and ecosystem models, decision support tools, advances in research and development, as well as scientific advice, help sustain our fisheries and the $1.75 billion in economic benefits they provide. Highlights for this year include:

- For the Lake Whitefish recruitment project, laboratory work continued including genetic, diet and growth analysis of larval fish and analysis of plankton samples collected from previous years.
- The results of the ecosystem model of Lake Simcoe were finalized. A paper was published, showing the impact of the invasion of dreissenid mussels on fisheries management measures intended to restore cold water fish populations. These results will inform decisions related to stocking levels of Lake Trout, an important species in the recreational fishery and a target species for restoration in the Lake Simcoe Protection Plan.
- Research was conducted on spatial patterns of recreational boating. A paper was published on the potential impacts on fisheries and ecosystems.
- Research continued to quantify variations in reproductive potential among different age and size classes in exploited fish stocks. The third and final controlled-breeding experiment with Lake Nipissing Walleye was completed.
- The Community Restoration of Acid-Damaged Lakes (CRADL) research project was launched in collaboration with the Ministry of the Environment, Conservation and Parks and Laurentian University. BsM surveys and food web sampling were completed on 25 recovering Lake Trout lakes in the historically acid-damaged zone of northeastern Ontario.
- Hypoxia (low oxygen) conditions were observed on fish nursery grounds in west Lake Erie. Potential causes for the low oxygen level that occurs each fall in this region of the lake were identified. The results may explain the variation of fish abundance in those low-oxygen regions and improve the design of fisheries-independent surveys, such as interagency trawling surveys. One manuscript was published from this research. To request a copy send an email to: mailto:info.mnrfscience@ontario.ca.

- A study was undertaken to model the vertical habitat of adult Walleye in Lake Erie. It used telemetry network and fishery-independent surveys to describe the diel (i.e. 24 hour or daily period) vertical migration and size and age dependent behavior of this species. The results will inform Walleye habitat mapping and commercial fishery quota management in the lake. One manuscript was published from this project. To request a copy email mailto:info.mnrfscience@ontario.ca.
- A study was undertaken to model the feeding ecology of Walleye, White Perch and Freshwater Drum, the three main fish species in Lake Erie. The study showed how niche partitioning (i.e. different species using the environment differently) in fish communities can be driven by size and seasons. Considering the interaction of Walleye with non-managed species like drum and perch can improve the management of Walleye populations. One manuscript was published from this project. To request a copy send an email to: mailto:info.mnrfscience@ontario.ca.
- Roving and access creel protocols for both open-water and ice fisheries were scrutinized in the province's three most important provincially significant inland fisheries, Lake of the Woods, Lake Nipissing and Lake Simcoe. Statistical analyses of creel outputs gauged their efficiency and effectiveness. A new method of spatial analysis was conducted in Lake of the Woods and Lake Nipissing. A new winter access creel protocol was designed, tested and conducted in Lake Simcoe. Aerial counts were conducted in winter 2020 to calibrate the 2020 survey of recreational fishing in Ontario.
- A Bayesian fisheries model was developed and presented to Lake Nipissing stakeholders which will help predict status and trends in the lake's recreational Walleye fishery. The model's purpose is to develop simpler harvest control rules for the fishery.

Aquaculture Management

Aquaculture is the propagation, cultivation or rearing of aquatic organisms. Many different species of finfish, crustaceans, molluscs and aquatic plants may be farmed. Aquaculture management includes licensing, inspections and monitoring of all 160 facilities in Ontario.

Private-sector fish culture in Ontario has evolved from the initial use of ponds to the highly intensive facilities that use long rectangular concrete raceways or circular tanks. Cage aquaculture raises fish (primarily Rainbow Trout) from fingerling to market-size in net-pens moored in the open waters of Lake Huron. The farm gate value of the cage aquaculture industry in Ontario was $31.2 million.

In 2019-20, approval was received to begin the process to potentially issue 20-year aquaculture licences and 20-year term leases. MNRF began working on the relicensing process with the sector.

Baitfish Management

Ontario's commercial bait industry is the largest in Canada, with approximately 1,050 commercial bait licences issued in 2019. Estimates suggest that 60 to 80 percent of Ontario anglers use live baitfish at some point during the year.

The use, movement and harvest of live bait, however, can spread invasive species and fish diseases. This poses a significant ecological risk to Ontario's fisheries and the businesses and industries they support. To reduce this risk, MNRF has spent the past few years reviewing its bait policies and evaluating new options for bait management.

MNRF actively communicates with commercial bait operators through provincial mailouts. It also educates anglers and bait operators about the risks posed by invasive species and the ecological danger of dumping unused bait.

In September 2019, MNRF posted a draft of Ontario's Sustainable Bait Management Strategy on the Environmental Registry for public comment. The proposed changes came from comprehensive review and engagement with the bait operators, stakeholder groups, the public and Indigenous communities. The revised strategy is intended to protect Ontario's vibrant fisheries and the industries that rely on them, while also providing flexibility and business security to the bait industry and anglers.

In the fall of 2019, MNRF coordinated and administered the Lake Simcoe Emerald Shiner Viral Hemorrhagic Septicemia (VHS) pilot program. This program enables approved harvesters to get their Lake Simcoe shiners tested for VHS, and if they are free of VHS, allows them to transport and sell their bait outside of the Lake Simcoe management zone.

Commercial Fishery Management

Ontario's commercial fishing industry operates in the Great Lakes, large inland lakes such as Lake Nipigon and Lake Nipissing, and a number of smaller lakes found mostly in northwestern Ontario.

Commercial fishing operations in the province range from small, one-person operations to larger corporate fleets. This industry plays a significant role in the economic and social welfare of many communities that depend upon the fishing industry. Commercial fishing is also important to Indigenous communities throughout the Great Lakes and northern Ontario. Approximately 85 percent of the commercial fish harvested in 2019 came from Lake Erie. The 2019 landed value of Ontario's commercial fishery was $35 million.

Great Lakes Management

The ministry manages the Great Lakes to ensure long-term sustainable economic and social benefits by:

- developing fisheries management objectives with Indigenous communities, stakeholders, the commercial fishing industry and partners including binational agencies
- engaging the public and local recreational fishing clubs
- supporting aquatic ecosystem research
- conducting fisheries assessment and monitoring

Fisheries management in the Great Lakes is supported by three management units: Upper Great Lakes (Huron and Superior), Lake Erie and Lake Ontario. These management units develop fisheries management objectives in conjunction with Ontario stakeholders and partners as well as with United States partner agencies under the auspices of the Great Lakes Fishery Commission.

The lake units monitor the status of fisheries and the health of the Great Lakes, and support research on the factors that affect them. Monitoring and research activities include:

- migratory fish assessments
- fish community assessments
- fish stocking and egg collection
- angler diaries
- invasive species monitoring and prevention (i.e., Asian Carp)

Upper Great Lake Management

The FW SPA supports fishery management activities, fishery assessments, cage aquaculture management and licensing, and commercial, recreational and Indigenous fishing interests on Lake Huron (including Georgian Bay and the North Channel) and Lake Superior with offices located in Owen Sound, Sault Ste. Marie and Thunder Bay.

In 2019-20 in Lake Huron, the ministry supported stocking 1.6 million Lake Trout into Georgian Bay and the North Channel to support species restoration. The lake unit also completed a lake-wide fisheries assessment program and set commercial fish quotas. MNRF also held meetings with Indigenous communities, stakeholders and fisheries management zone advisory council members to discuss goals and objectives for the development of a Walleye management plan and non-native salmonid stocking plan for the lake.

On Lake Superior, the ministry supported a lake-wide fisheries assessment program. It includes projects at a number of key fish community index sites spread along the shoreline from the St. Mary's River to the Pigeon River. MNRF also conducted a broad-scale fish community project in Nipigon Bay. Commercial fish quotas were also set for each quota management area of the lake.

As part of a binational aquatic invasive species survey, 25 sites in Thunder Bay and 27 sites in Sault Ste. Marie were sampled. No new occurrences of aquatic invasive species were detected.

Lake Erie Management

The Lake Erie Management Unit carries out operations between Sarnia and Niagara Falls, including work within the Huron Erie Corridor (including Lake St. Clair), Lake Erie, and the upper Niagara River.

The connecting waters of the Detroit, St. Clair and Niagara Rivers support important recreational and subsistence fisheries. Although these areas are highly impacted by a variety of stressors, they are considered biodiversity hotspots that support key fish spawning and nursery habitat.

In 2019, the Lake Erie Management Unit carried out work at 58 sites in these connecting waters, catching 54 different fish species. They included Yellow Perch, Walleye and a diversity of forage fish species.

A quota of 11.8 million pounds of Walleye and Yellow Perch was set for commercial fishing on Lake Erie. Approximately 9.8 million pounds of commercially caught fish was inspected by the Lake Erie Management Unit Port Observer program through direct dockside inspections and through the review and validation of 6,425 daily catch records.

Quotas are managed on a binational basis on Lake Erie through the Lake Erie Committee (LEC) of the Great Lakes Fishery Commission. Stakeholder input is received by the LEC through two separate committees. The first is through the Lake Erie Percid Management Advisory Group (LEPMAG). This group is a binational multi stakeholder advisory group that is facilitated by Michigan State University's Quantitative Fisheries Centre. Additionally, Fisheries Management Zone 19 (many of the members are also LEPMAG members) provide input on Ontario and LEC fisheries management planning. FMZ 19 also provides a venue for information sharing between MNRF and our valued stakeholder partners.

This year, 486 water samples were taken from 90 locations in the Lake Erie and Lake Huron watersheds, looking for evidence of Asian Carp DNA. None has been found to date.

Lake Ontario Management

Lake Ontario fisheries are managed by the Lake Ontario Committee, which consists of MNRF in partnership with New York State. The Lake Ontario Fish Community Objectives (2013) provide bi-national fisheries management direction to protect and restore native species and to maintain sustainable fisheries.

MNRF, in partnership with the United States Geological Survey and the New York State Department of Environmental Conservation, conducted a lake-wide prey fish survey to inform joint Ontario/New York stocking decisions. MNRF stocked over two million fish into Lake Ontario to support species restoration and provide angling opportunities. Species stocked include Chinook Salmon, Rainbow Trout, Brown Trout, Atlantic Salmon, Lake Trout, Walleye and deep-water cisco (Bloater).

MNRF completed a lake-wide fisheries assessment program to monitor the health of the fishery, including the main lake, Hamilton and Toronto Harbours, the Bay of Quinte, the upper St. Lawrence River and Lake St. Francis. For example, in 2019-20:

- staff delivered more than 30 field and laboratory projects, including a comprehensive long-term base monitoring program that spans more than five decades
- 4,592 anglers were interviewed during creel surveys in the Bay of Quinte and the western basin of Lake Ontario
- more than 60,000 video images were recorded and processed from the Ganaraska River and Credit River video fish counter systems

FMZ 20 council members represent a broad spectrum of interests across the zone, including Muskies Canada, Bay of Quinte and Upper St. Lawrence River Guides, Central Lake Ontario Sport Anglers, Metro East Anglers, Port Credit Salmon and Trout Association, Halton Region Salmon and Trout Association, St. Catharines Game and Fish Association, Ontario Sportfishing Guides Association, Ontario Commercial Fisheries Association, Ontario Federation of Anglers and Hunters, competitive bass anglers, tributary anglers, academia, environmental interests and several unaffiliated anglers.

FMZ 20 advisory council continued engagement in binational fish stocking decisions addressing prey fish declines. The council also worked very hard to develop new angling regulation options for Largemouth and Smallmouth Bass angling seasons in Lake Ontario and the St. Lawrence River.

Fish and Wildlife Local Monitoring and Management

MNRF conducts local and regional activities for identified fish and wildlife management needs or reporting requirements. For example, MNRF conducts snow surveys, moose

aerial inventories, and creel and aerial fisheries surveys. The ministry monitors and analyzes fish and wildlife populations across the province.

The ministry also identifies local fish stocking requirements, creates multi-year stocking plans and coordinates fish stocking locations across the province.

Regional activities include issuing and renewing licences for commercial fish and wildlife activities and trapping licences, auditing compliance with natural resources acts, managing licence regulations, and initiating enforcement action for delinquencies, errors and/or omissions.

From time to time, fish and wildlife populations experience sudden die-offs. Local incident management responds to fisheries incidents like die-off events and spill response. It provides direction and information to the public and other agencies, as required. Responses may include conducting site inspections, contacting members of the public, collecting fish samples and coordinating fish health testing.

Wildlife Management

Wildlife Legislation, Regulation and Policy

Wildlife legislation, regulation and policy, developed through consultation engagement with stakeholders, partners, Indigenous communities and organizations, and the public is the foundation of wildlife management. Regulations and policies outline where, when and how wildlife-related activities can be conducted in the province.

They cover a wide range of actions associated with habitat, hunting, trapping, human-wildlife conflict, wildlife health, wildlife in captivity, and possession, buying and selling of wildlife.

FW SPA expenditures support the delivery of the wildlife management program, including the review and allocation of harvest opportunities, public planning and engagement opportunities.

Some key initiatives in 2019-20 included:

- improvements to moose management
- new guidelines for managing the white-tailed deer population
- actions to prevent chronic wasting disease (CWD)
- changes to black bear hunting regulations

Game wildlife research

Game wildlife research generates new information on wildlife populations, distribution, health, behaviour, and habitat use of species such as waterfowl and other game birds, elk, lynx, deer, mink, fisher, moose, wolves, coyotes and black bear.

The FW SPA provides partial funding for wildlife research and monitoring. The program is delivered by scientists who design and conduct studies and programs that support diverse, healthy, sustainable wildlife populations and habitats.

Big Game

Moose

Ontario's abundant forests and wetlands provide valuable moose habitat that sustains a healthy moose population. Moose hunting is a popular outdoor activity pursued by Ontario residents and non-resident hunters from Canada, the United States, and beyond.

This year, the ministry undertook a province-wide moose management review. Working with the Big Game Management Advisory Committee (BGMAC), it conducted seven open house listening sessions across the province, gathering suggestions from moose hunters and other interested stakeholders on how to improve moose management. Hunters across Ontario asked for changes that would benefit moose populations and create a fairer system for allocating moose tags. BGMAC shared these suggestions with the Minister.

The ministry consulted on a comprehensive suite of regulatory and policy changes. It ultimately approved changes that would improve how tags are distributed without compromising the sustainability of moose populations. These changes will be phased in during 2020 and 2021. Work has already begun on updating the moose tag allocation system and communicating the changes to hunters.

Moose aerial inventory surveys were conducted across 16 wildlife management units in 2019-20, including Woodland Caribou, Wabikimi, and Algonquin Provincial Parks.

Deer

Deer are an important component of Ontario ecosystems. They can be found from the boreal forest to the southern Ontario agricultural belt. Winter severity is the main factor limiting population growth and northern range expansion. As a result, the range and density of deer populations can change over time, in response to weather (short-term), climate (long-term) and habitat changes.

Deer contribute substantial ecological, social and economic benefits to the people of Ontario. They are one of the most sought-after big game species for harvest by licensed hunters, both as a heritage activity and a food source. Deer are also very popular for non-consumptive activities like wildlife viewing. In some situations, deer come into conflict with people. They can damage agricultural crops and are the most common big game species involved in collisions with vehicles.

This year, the ministry consulted on and finalized Ontario's White-tailed Deer Population Objective Setting and Harvest Management Guidelines to support the continued implementation of Ontario's White-tailed Deer Management Policy. In addition, the ministry launched a white-tailed deer socio-economic survey to collect information on deer hunter expenditures and perspectives.

The ministry updated its Chronic Wasting Disease Prevention and Response Plan and made legislative amendments to the *Fish and Wildlife Conservation Act, 1997* under Bill 132 to support responses to chronic wasting disease (CWD) and other wildlife disease threats.

In addition, the ministry continued monitoring for CWD. CWD was not detected in any of the 449 white-tailed deer tested for the disease.

Bear

Black bears are a highly valued and unique part of Ontario's wildlife heritage, integral to a functioning ecosystem and Ontario's biodiversity. MNRF has been refining Ontario's black bear management program for several decades, in part through FW SPA funding. The province invested in harvest assessment, population management and inventory, allocation, communication, resolution of human-bear conflicts, and science and research.

This year, the ministry consulted on broad changes to the black bear program. They included establishing a regular annual spring bear hunting season, reducing the bear hunting season on the Bruce Peninsula, changing regulatory requirements for placing bear bait, and making regulatory changes to support the bear tourism industry. These changes were approved and communicated to the public and stakeholders.

In 2019, more than 16,000 hair samples were collected from 30 traplines in 25 Wildlife Management Units. Genetic analyses revealed more than 4,000 independent detections of 1,380 individual bears. This year, a new analytical method was developed. It combines information across replicate sampling units (our traplines) to estimate bear density at the larger spatial scales over which bears will be managed in future.

Rabies management

Ontario is a recognized leader in rabies surveillance and control. Since the province's most recent rabies outbreak, which began in December 2015, 471 cases of raccoon strain rabies and 21 cases of fox strain rabies have been confirmed in southern Ontario. In response, over five million oral rabies vaccine baits have been distributed, immunizing most raccoons, skunks and foxes that ate them. Funding from the FW SPA partially supported this work.

In 2019, 22 raccoon rabies cases were detected in Ontario. No cases of fox strain rabies were detected. This represents an almost 70 percent drop in cases from 2018 and continues the overall downward trend. MNRF tested more than 4,400 specimens in 2019, 600 more than the previous year.

Approximately 1.2 million oral rabies vaccine baits were distributed via fixed wing aircraft, helicopter and ground crews. The trap-vaccinate-release program vaccinated 2,454 raccoons, 541 skunks, 24 red foxes and four coyotes. The Rabies Information Line responded to more than 450 public calls. Rabies research continued this year, including studies on remote bait uptake monitoring, the use of bait stations and post-baiting serology.

Invasive Species

The ministry provides policy leadership and program funding to protect, conserve and restore vital habitat, such as wetlands, that are important for healthy fish and wildlife populations and recreational enjoyment. An essential aspect of this work involves supporting efforts to reduce the threat of invasive species, including prevention, detection, response and management of invaders. To achieve these objectives, the MNRF continues to work closely with partners to implement the Ontario Invasive Species Strategic Plan and *Invasive Species Act, 2015*, as well as the Wetland Conservation Strategy for Ontario.

Key initiatives supported by FW SPA funding in 2019-20 included:

- using strategic partnerships to support education and outreach, research, monitoring/reporting, prevention and control of high-risk invasive species
- supporting the Ontario Federation of Anglers and Hunters' delivery of the Invading Species Awareness Program (ISAP)
- initiating strategic communication, research, collaboration and policy development to better understand and address the potential impact of wild pigs
- continuing an innovative social media awareness campaign that educates the public on how to identify and fight the spread of invasive species, particularly public reporting of wild pig sightings
- advancing the work of inter-provincial and international working groups focused on reducing the threat and impacts of invasive species in Canada, especially within the Great Lakes basin
- collaborating with partners on plans to control high-risk invasive species, such as water soldier and water chestnut
- developing innovative tools with partners to control invasive Phragmites throughout Ontario's sensitive ecosystems

Conservation Officers and Enforcement

Conservation officers provide regulatory enforcement for the protection of Ontario's natural resources and public safety. They employ specialized units and services to support field enforcement, including a canine program, intelligence and special investigation services.

In 2019-20, out of 190,305 enforcement contacts, 184,348 (97 percent) were related to fish and wildlife laws and regulations, and identified 8,995 violations. Overall, there was a 96.1 percent rate of compliance with fish and wildlife laws and regulations.

Officers conduct public outreach and education to increase awareness and knowledge, and to promote compliance with Ontario's *Fish and Wildlife Conservation Act, 1997*. Conservation officers attend events, such as outdoors shows and fishing derbies, as well as fish and game clubs and trapping councils.

A key part of conservation officer outreach is educating youth about natural resources and engaging them in outdoor activities. Visits are made to school classrooms, youth clubs and family-focused outdoor events.

This year, conservation officers interacted with 57,756 people at 555 outreach events across the province, including hunter and trapper groups, hunter education courses, trade shows, and naturalist and outdoor clubs.

Customer Service

Almost two million anglers and hunters use the Fish and Wildlife Licensing Service to purchase Outdoors Cards and fish and wildlife licence products, and to participate in big game draws and reporting.

Anglers and hunters can purchase licences and apply to draws over the internet, by phone or in person at 66 ServiceOntario locations and approximately 500 participating licence issuers across the province. This year, more than 900,000 fishing licences, 500,000 hunting licences and 600,000 Outdoors Cards were issued.

Table 3: Fishing and hunting licence sales and revenue by residency

2019-20 fishing and hunting licence sales	Number sold	Revenue ($ in millions)	% of revenue
Resident fishing licences	556,165	$20.38	29%
Resident hunting licences	546,483	$24.43	34%
Canadian resident fishing licences	55,785	$1.86	3%
Non-resident fishing licences	327,788	$15.53	22%
Non-resident hunting licences	19,700	$3.17	4%
Outdoors Cards	645,868	$5.54	8%
Receipt replacements	10,227	$0.09	0%
Total	**2,162,016**	**$71.00**	**100%**

Hunters made more than 230,000 draw applications, 75 percent of which were processed electronically, via phone and internet. The remaining 25 percent were made in person.

The Natural Resources Information and Support Centre answers questions about Outdoors Cards and licensing, hunting and fishing regulations, hunting accreditation, big game draws, wildlife conflicts, land use and other MNRF topics of interest. In 2019-2020, the centre responded to almost 140,000 inquiries from anglers, hunters, and vendors of fishing and hunting licences. Most of the requests (78 percent) were phoned in. The rest arrived via email.

Marketing and Communication

The ministry promotes fish and wildlife outdoor activities through social media, annual fishing and hunting regulation summaries, outreach events, the Kids' Fish Art Contest, Learn to Fish and Fish ON-Line. These activities increase public awareness of fish and wildlife resources, demonstrate the social, economic, health and lifestyle benefits of fishing and hunting, and sustain Ontario's recreational fishing and hunting heritage.

Learn to Fish

Learn to Fish is a free, two-hour program that teaches people of all ages the basics of fishing. The program combines in-class learning with hands-on experience. Participants learn fish identification, casting, fishing regulations and more.

In 2019, Learn to Fish taught 10,704 people how to fish, bringing the total participation to more than 50,000 since the program launched seven years ago. It was available at nine locations across southern and central Ontario, plus pop-up programs via the mobile unit. Sessions were offered from June to August at least five times a week.

For more information, visit: www.ontario.ca/learntofish (FR: www.ontario.ca/apprenezapecher)

Fish ON-Line

Fish ON-Line is a handy mobile fishing tool with maps and information on fishing in Ontario. It offers data on 20,000 lakes and rivers across the province. It helps anglers plan fishing trips, check fishing regulations and learn about Ontario sport fish. In 2019-20, Fish ON-Line got more than 537,000 pageviews from 200,000 interested anglers.

Hunter Education

The Ontario Hunter Education Program (OHEP) is administered by the Ontario Federation of Anglers and Hunters on behalf of the MNRF. The ministry is modernizing

the OHEP by looking for opportunities to utilize new technology in course delivery to reduce barriers for customers and increase hunter recruitment. This year more than 16,500 students completed the hunter education course.

Social Media

MNRF uses social media to engage with the angling and hunting community. In 2019, it added an Instagram profile, with a goal of 10,000 followers. For a chance to be featured on Instagram, followers are encouraged to tag Ontario Fish and Wildlife in the photos they post.

Anglers and hunters follow our Facebook, Twitter and Instagram profiles to get the news, stay informed and receive reminders about important dates. Input and questions are welcome.

Facebook: https://www.facebook.com/fishwildlifeon
Twitter: https://www.twitter.com/fishwildlifeon
Instagram: https://www.instagram.com/fishwildlifeon

Stakeholder and Advisory Committee Engagement and Consultation

Stakeholder engagement and consultation is an important part of managing fish and wildlife resources. Committees representing stakeholders, residents, tourism outfitters and Indigenous communities provide input to MNRF regarding big game quotas, fisheries management planning, commercial fish quotas and other matters.

This year, the ministry supported meetings of the Big Game Management Advisory Committee, Fish and Wildlife Heritage Commission, Great Lakes Fishery Commission, Lake Simcoe Fisheries Management Committee and fisheries management zone councils.

Financial Summary

Revenue

FW SPA revenue fluctuates significantly from year to year because of an ongoing three-year purchasing cycle for Outdoors Cards.

Table 4: FW SPA revenues for the last three fiscal years ($ in millions)

Source of revenue	2017-18	2018-19	2019-20	2019-20 % of total
Angling and hunting licences/permits and Outdoors Cards*	$ 65.7	$62.7	$71.3	93%
Commercial fishing licences and royalties	$ 2.0	$ 2.9	$ 1.8	2%
Commercial bait licences	$ 0.3	$ 0.3	$ 0.3	0%

Furbearer licences and royalties	$ 0.8	$ 1.0	$ 0.8	1%
Rabies vaccine royalties	$ 0.5	$ 0.5	$ 0.5	1%
Fines and penalties	$ 0.7	$ 0.7	$ 0.9	1%
Interest	$ 0.4	$ 0.6	$ 0.7	1%
Service fee revenue	$ 4.3	$ 3.5	$ 0.0	0%
Other revenue	$ 0.8	$ 0.8	$ 0.8	1%
Total revenue	**$ 75.5**	**$ 73.0**	**$ 77.1**	**100%**

* Revenue for the fiscal year does not align with revenue in Table 3 due to the timing of payments received and recorded in the financial system.

Expenditures

Fish and Wildlife operating expenditures amounted to $99.7 million in fiscal year 2019-20. Approximately 71 percent of these expenditures ($71.2 million) were funded by the FW SPA. The remaining $28.5 million in fish and wildlife expenditures were funded by the Consolidated Revenue Fund (CRF).

Annual expenditures from the FW SPA are planned based on the 3-year rolling average of expected revenues. The ministry maintains a residual balance in the FW SPA each year, balancing program delivery and long-term funding requirements. Treasury Board approves the FW SPA recovery level and ending balance as part of the ministry's annual budget submission.

Table 5: Summary of 2019-20 FW SPA actual expenditures ($ in millions)

Fisheries management	**($ in millions)**
Fish culture	$ 6.62
Broad-scale monitoring	$ 4.68
Fisheries research	$ 1.91
Recreational fisheries population management	$ 1.91
Legislation, regulation and policy development	$ 1.61
Fisheries legislation and regulations (operational costs)	$ 0.97
Baitfish licensing and authorizations	$ 0.56
Fisheries local incident management, such as fish die-off, invasive species detection, sediment/chemical spills	$ 0.32
Commercial fisheries and aquaculture licensing and authorizations	$ 0.18
Total fisheries management	**$18.76**
Conservation officers and enforcement	
Conservation officer salaries, benefits and operating costs	$ 14.71
Total conservation officers and enforcement	**$ 14.71**
Wildlife management	
Wildlife population management - terrestrial game wildlife	$ 4.08

Wildlife legislation and authorizations	$ 1.75
Wildlife legislation, regulation and policy	$ 1.51
Human/wildlife conflict communications	$ 1.03
Licence issuance and related activities to manage furbearer populations	$ 0.76
Wildlife legislation, regulation and policy (operational costs)	$ 0.42
Trapping harmonization agreements with Provincial Treaty Organizations (PTOs)	$ 0.39
Rabies management	$ 0.36
Wildlife disease surveillance	$ 0.21
Fur royalty reimbursement to Provincial Treaty Organizations (PTOs)	$ 0.03
Total wildlife management	**$ 10.54**
Customer service/engagement	
Licensing and client services	$ 3.69
Educational outreach to public and stakeholders	$ 1.83
Fees paid to private licence issuers	$ 1.07
Hunter education	$ 0.44
Trapper licence and education service agreements	$ 0.39
Hats for Hides	$ 0.10
Total customer service/engagement	**$ 7.27**
Great Lakes management	
Fisheries population assessments - Lake Erie	$ 2.56
Fisheries population assessments - Lake Huron and Lake Superior	$ 2.33
Fisheries population assessments - Lake Ontario	$ 1.95
Total Great Lakes management	**$ 6.84**
Licensing service development, system hosting and mailouts	
Fish and wildlife licensing service	$ 3.95
Total licensing service development, system hosting and mailouts	**$ 4.09**
Fish and wildlife local monitoring and management	
Conduct snow surveys and fisheries surveys, complete data analysis, fish stocking	$ 3.18
Total fish and wildlife local monitoring and management	**$ 3.18**
Financial and other management	
Financial administration	$ 1.68
Oversight of hunter education and trapper licensing, education and harmonization agreements	$ 0.22
Total financial and other management	**$1.90**
Invasive species management	
Legislation, regulation and policy development	$ 1.13
Ontario invasive species management transfer payment	$ 0.08
Total invasive species management	**$ 1.21**

Marketing and communications	
Public outreach and education regarding angling and hunting	$ 0.75
Fishing and hunting regulation summaries	$ 0.41
Total marketing and communications	**$ 1.16**
Information management/information technology	
Systems to support fish and wildlife management	$ 0.66
Information technology to support fisheries population data analysis	$ 0.41
Total information management/information technology	**$ 1.07**
Stakeholder/advisory committees	
Stakeholder/advisory committees such as FMZ councils, Fish and Wildlife Heritage Commission, Big Game Management Advisory Committee, Ontario Moose Bear Allocation Committee, Great Lakes Fisheries Commission	$ 0.38
Total stakeholder/advisory committees	**$ 0.38**
Grand total	**$ 71.22**