

Fish and Wildlife Special Purpose Account

Annual Report 2015-16



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Introduction

The Ministry of Natural Resources and Forestry (MNRF) is responsible for fish and wildlife management in Ontario. This includes policy, planning and program development and delivery to sustain healthy fish and wildlife populations. In 1995 the MNRF established a separate account to serve as the financial mechanism to dedicate fish and wildlife revenue to fish and wildlife management.

All licence fees, fines and royalties collected under the *Fish and Wildlife Conservation Act, 1997* (FWCA) flow into the Fish and Wildlife Special Purpose Account (FW SPA) and are applied to fish and wildlife management programs, such as monitoring populations and enforcing regulations.

Pursuant to section 85(4) of the FWCA, the Minister of Natural Resources and Forestry is required to ensure that a report is prepared annually on the financial affairs of the FW SPA. This annual report of the 2015-16 fiscal year provides an overview of the financial details and associated achievements delivered through the FW SPA.

Fish and Wildlife Heritage Commission

The Fish and Wildlife Heritage Commission (FWHC), established under the provisions of the *Heritage Hunting and Fishing Act, 2002*, provides recommendations on matters referred to it by the Minister. The FWHC has a membership of eleven, including the commission chair, who represent a cross-section of key interests in the sustainable use of our fish and wildlife resources. During the 2015-16 fiscal year, the Minister had nine members and a chair appointed to the Commission. The FWHC was active during this period and reviewed materials and/or provided input on a variety of initiatives including:

- Black Bear Spring Season Pilot
- Fisheries management approaches
- Hunter Education Program modernization
- Learn to Fish program
- Licensing Automation System renewal
- Moose management and The Moose Project
- Proposed Invasive Species Act
- Provincial Bait Policy Review
- Provincial Wildlife Management Strategy
- Sustainability Strategy for the FW SPA

Not all briefings and consultations led to specific recommendations for the Minister but in many cases the consultations helped to frame the program or policy. The FWHC members are appointed by Order-in-Council. The membership for 2015-16 was as follows:

Position	Member Name	Location
Chair	Brooke, Thomas (Tom)	Campbellford
Member	Dickinson, Leonard (Len)	Ferguson Falls
Member	Mitchell, Gord	Field
Member	Morin, Conrad R.	Hearst
Member	Reid, Kathleen (Kathy)	Norwood
Member	Richer, Gerald (Gerry)	Aylmer
Member	Rivard, Deb	Murillo
Member	Tufts, Bruce	Elginburg
Member	Wheeler, Shannon	Bradford
Member	Williamson, John C.	Inverary

Fish and Wildlife Program at a Glance

\$70.8 million

In 2015-16, the FW SPA contributed \$70.8M to fish and wildlife management in Ontario

100%

of all fishing and hunting licence fees, fines and royalties are deposited in the FW SPA

2/3

of fish and wildlife management is funded from the FW SPA

1/3 is funded by other Ontario Government funds

1.2 million

licensed anglers enjoy Ontario's recreational fisheries annually

+2million

Outdoors Cards and fishing and hunting licences sold annually

\$60 million

Average annual revenue from fishing and hunting licences

\$1.6 billion¹

Anglers spend about \$1.6B per year on recreational fishing in Ontario

250,000

lakes in Ontario

145

fish species in Ontario

\$230 million

The commercial fishery contributes \$230M to the economy

\$431 million

Ontario residents spend \$431M on hunting activities

92.3 million

hectares of Crown Land in Ontario

1. Source: The 2010 Survey of Recreational Fishing in Canada: Selected Results for Ontario Fisheries

Financial Summary

Fish and Wildlife Program Expenditures

Fish and Wildlife Program expenditures are funded through a combination of FW SPA and general revenues through the Consolidated Revenue Fund (CRF). Capital expenditures to support the program (i.e. vessels, vehicles, fish culture stations etc.) are funded solely through the CRF.

Operating expenditures for the Fish and Wildlife Program, including enforcement, amounted to \$111.8 million in fiscal year 2015-16. Approximately 63% of these expenditures (\$70.8 million) were funded by the FW SPA. The remaining \$41.0 million in program expenditures were funded by the CRF. Over the last 10 years the Fish and Wildlife Program expenses have increased while the FW SPA portion of fish and wildlife management activities has remained relatively consistent. The following table summarizes the FW SPA and CRF contributions since 2006-07.

TABLE 1: FISH AND WILDLIFE PROGRAM EXPENDITURES (\$ in millions)

Fiscal Year	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
FW SPA Expenditures	\$ 58.7	\$ 60.5	\$ 61.6	\$ 64.2	\$ 64.5	\$ 67.6	\$ 68.6	\$ 65.8	\$ 69.8	\$ 70.8
FW CRF Expenditures	\$ 12.3	\$ 19.6	\$ 34.2	\$ 34.8	\$ 44.0	\$ 38.4	\$ 43.7	\$ 46.7	\$ 39.2	\$ 41.0
Total Expenditures	\$ 71.0	\$ 80.1	\$ 95.8	\$ 99.0	\$ 108.5	\$ 106.0	\$ 112.3	\$ 112.5	\$ 109.0	\$ 111.8

FW SPA Revenues and Expenditures

The *Fish and Wildlife Conservation Act, 1997* (FWCA) requires that revenues collected under that Act flow into the FW SPA. This includes all licence fees, royalties and fines paid under the FWCA and its regulations.

Money held in this account may only be spent on:

- the conservation or management of wildlife or fish populations or the ecosystems of which those populations are a part;

- 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.

Annual recoveries from the FW SPA are planned based on a 3-year rolling average of expected revenues, due to significant annual fluctuations resulting from the Outdoors Card 3-year purchasing cycle. Treasury Board approves the FW SPA recovery level as part of the Ministry's annual budget submission.

TABLE 2: SUMMARY OF REVENUES, RECOVERIES AND YEAR-END ACCOUNT BALANCES (\$ in millions)

Item	2013-14 Actual	2014-15 Actual	2015-16 Plan	2015-16 Actual	2015-16 Variance	2016-17 Plan
Opening Balance	\$ 12.5	\$ 19.5	\$ 19.2	\$ 19.2	\$ 0.0	\$ 18.5
Revenues	\$ 72.8	\$ 69.5	\$ 65.4	\$ 70.1	\$ 4.7	\$ 75.4
Recoveries	(\$65.8)	(\$69.8)	(\$71.3)	(\$70.8)	\$ 0.5	(\$ 71.3)
Year End FW SPA Balance	\$ 19.5	\$ 19.2	\$ 13.3	\$ 18.5	\$ 5.2	\$ 22.6

In 2015-16 revenue was higher than planned which may be due to changing licence renewal patterns that may cross fiscal years and higher than expected sales of three year licences.

Financial Summary *continued*

TABLE 3: FW SPA REVENUES FOR THE LAST 3 FISCAL YEARS (\$ in millions)

Source of Revenue	2013-14	2014-15	2015-16
Ontario Resident Angling and Hunting Licences and Permits	\$ 49.1	\$ 44.7	\$ 39.7
Non-Resident Angling and Hunting Licences and Permits	\$ 19.0	\$ 19.4	\$ 21.2
Commercial Fish Licences and Royalties	\$ 1.2	\$ 1.1	\$ 1.2
Bait Fish Licences	\$ 0.3	\$ 0.3	\$ 0.3
Fur Licences and Royalties	\$ 1.2	\$ 1.1	\$ 0.9
Rabies Vaccine Royalties	\$ 0.0	\$ 0.0	\$ 0.4
Fines and Penalties	\$ 0.7	\$ 0.6	\$ 0.7
Interest	\$ 0.3	\$ 0.3	\$ 0.2
Service Fee Revenue	\$ 0.0	\$ 0.7	\$ 4.3
Other Revenue	\$ 1.0	\$ 1.3	\$ 1.2
Total Revenue	\$ 72.8	\$ 69.5	\$ 70.1

TABLE 4: 2015-16 DETAILS OF EXPENSES (\$ in millions)

Item	Expenditures
Planning, Policy and Regulatory	\$ 18.0
Species and Ecosystem Science	\$ 14.2
Conservation Officers and Enforcement	\$ 13.4
Population Health, Rehabilitation and Enhancement	\$ 10.3
Outdoors Cards and Licensing	\$ 9.6
Safety, Education and Promotion	\$ 5.3
Total	\$ 70.8

TABLE 5: 2016-17 PLANNED EXPENDITURES BY SERVICE (\$ in millions)

Item	Planned Expenditures
Planning, Policy and Regulatory	\$ 16.9
Species and Ecosystem Science	\$ 13.6
Conservation Officers and Enforcement	\$ 13.4
Population Health, Rehabilitation and Enhancement	\$ 12.2
Outdoors Cards and Licensing	\$ 9.4
Safety, Education and Promotion	\$ 5.8
Total	\$ 71.3

Services Funded by the Fish and Wildlife Special Purpose Account

The MNRF supports the management of fish and wildlife populations in many ways, including the following highlights:

Conservation Officers and Enforcement

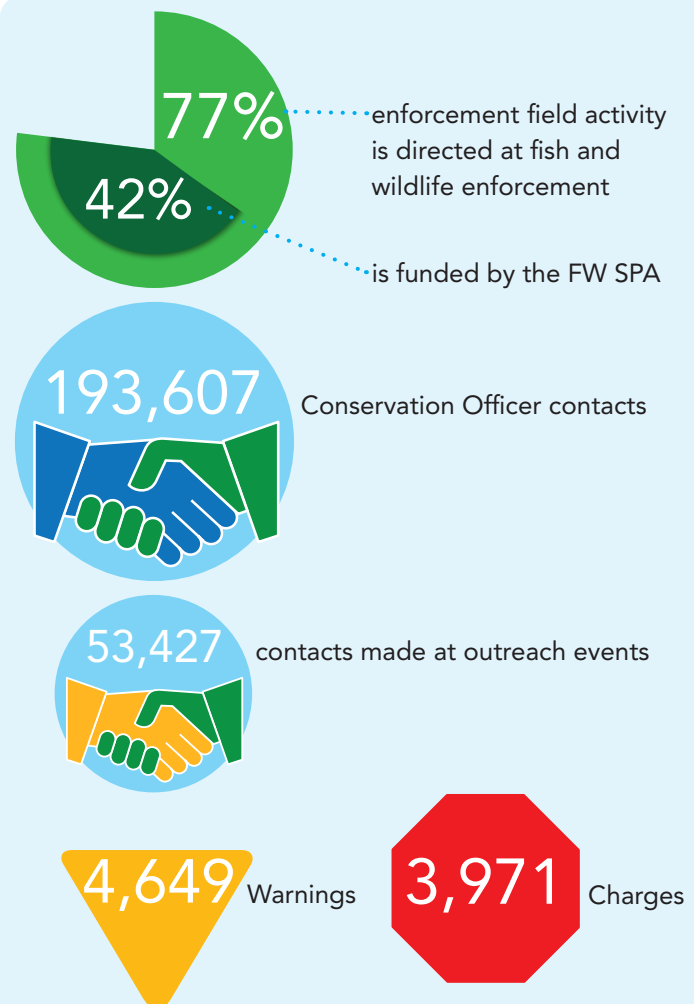
Conservation Officers provide regulatory enforcement for the protection of Ontario's natural resources and public safety. This includes specialized units and services to support field enforcement, including a canine program, undercover and special investigations, and mobile offices in Conservation Officer vehicles. Officers conduct public outreach and education to increase awareness and knowledge and promote compliance with Ontario's *Fish and Wildlife Conservation Act, 1997*.

Expenditures funded through the FW SPA include officers' salaries and benefits, operational costs such as fuel, travel and patrol expenses, uniforms, forensics and intelligence. Information technology costs such as specialized enforcement software, mobile offices and staff safety watch and radio monitoring services are also included.



2015-16 EXPENDITURES (\$ in millions)

Salaries and Benefits	\$ 9.3
Field Operations	\$ 2.9
IT and Communications	\$ 0.8
Safety Watch	\$ 0.4
TOTAL	\$ 13.4



Outdoors Cards and Licensing

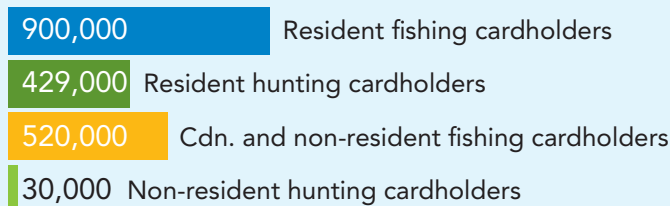
Outdoors Cards and Licensing includes the issuance of sport fishing and hunting licences, and the administration of big game draws and public support through the Outdoors Card Centre and the Natural Resources Information Centre.

FW SPA expenditures are related to licensing and draws and contact centre support. This includes staff costs, production of Outdoors Cards, licences, seals and tags, postage, the Licensing Automation System, and commission paid to private licence issuers to sell Outdoors Cards and licences.

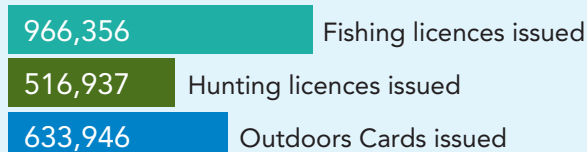
2015-16 EXPENDITURES (\$ in millions)

Licensing Automation System	\$ 4.7
Outside Issuer Costs	\$ 1.5
Contact Centres	\$ 1.4
Licensing and Client Services	\$ 1.2
Outdoors Card Production	\$ 0.8
TOTAL	\$ 9.6

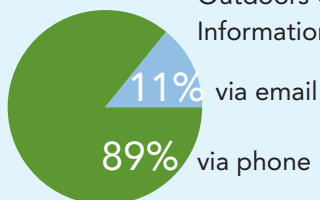
TOTAL CARDHOLDERS



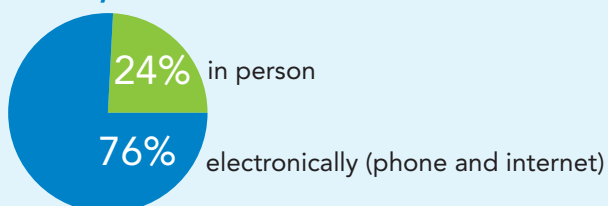
LICENCES and OUTDOORS CARDS ISSUED IN 2015-16



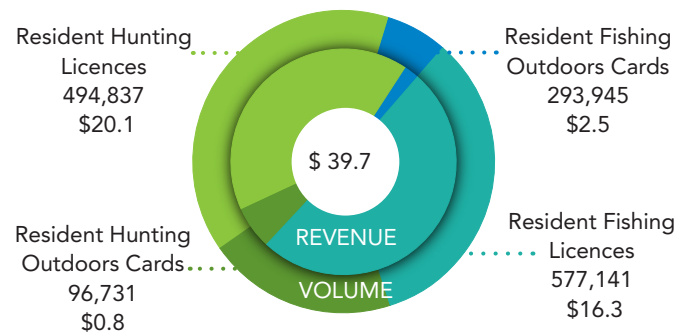
179,090 inquiries received through the Outdoors Card and Natural Resources Information Centres



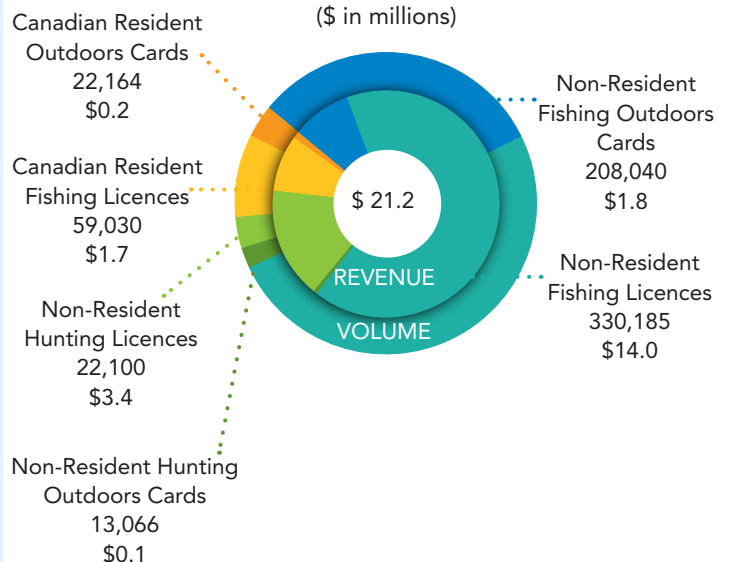
253,600 Big game draw applications processed



2015-16 ONTARIO RESIDENT ANGLING AND HUNTING LICENCE SALES – VOLUME/REVENUE (\$ in millions)



2015-16 NON-RESIDENT ANGLING AND HUNTING LICENCE SALES – VOLUME/REVENUE (\$ in millions)



Safety, Education and Promotion

Safety, Education and Promotion increases public awareness of fish and wildlife resources, and the social, economic, health and lifestyle benefits of them, including fishing and hunting activities that build a strong recreational fishing and hunting heritage. These initiatives also increase awareness of the threat of invasive species and encourage positive actions by the public to prevent, detect, respond, manage and adapt to invasive species.

FW SPA expenditures include the Kids' Fish Art Contest, the Hunter Education Program, the Learn to Fish Program, public outreach and education at community events. Responding to fish die-off events, conducting site visits to inspect wildlife damage to agricultural crops and make recommendations to prevent further wildlife damage, and promoting compliance with the *Fish and Wildlife Conservation Act, 1997* are also included.

2015-16 EXPENDITURES (\$ in millions)

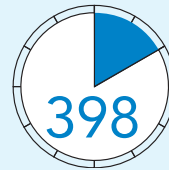
Prevention and Management of Human/Wildlife Conflict	\$ 1.2
Marketing and Operating Costs	\$ 1.0
Hunter Education	\$ 0.7
Public Outreach	\$ 0.7
Wildlife Education/Communication	\$ 0.7
Wildlife Compliance, Promotion, and Incident Management	\$ 0.6
Fisheries Local Incident Management	\$ 0.4
TOTAL	\$ 5.3

23,000

Number of students that completed Hunter Education in 2015

+7,000

Adults and children that participated in [Learn to Fish](#)



[Learn to Fish](#) 2 hour sessions delivered across Southern and Central Ontario

203,000

Fish ON-Line website hits

15,825

Number of lakes Fish ON-Line provides information on



385

Entries in Kids' Fish Art Contest

Species and Ecosystem Science

Species and Ecosystem Science includes monitoring and research programs to better understand the state of resources to guide management decisions.

FW SPA expenditures support analysis of hunter and angler surveys, moose aerial inventory surveys, broadscale and inland lake monitoring. State of the Resource reports are published to describe the condition, threats, trends and management response associated with specific issues, geographic areas, species, or habitats.

2015-16 EXPENDITURES (\$ in millions)

Fisheries Management Research and Monitoring	\$ 7.2
Game Wildlife Research	\$ 2.8
Great Lakes Fisheries Population and Habitat Monitoring	\$ 2.8
Commercial Fisheries Management	\$ 0.7
Moose Aerial Inventory	\$ 0.4
Hunter Surveys	\$ 0.3
TOTAL	\$14.2

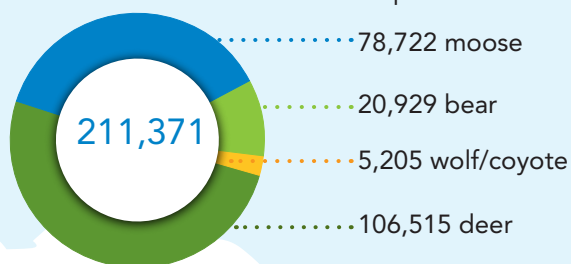
17,596 Commercial fish Daily Catch Records validated

537 e-DNA samples taken for Asian Carp surveillance throughout the Lake Erie Watershed

745 Lakes surveyed over the last five years to better understand the health of our lakes and fisheries resources

152 Ontario lakes surveyed through angler surveys, water quality testing, netting surveys and invasive species surveillance to gather information and help manage fish populations

Surveys mailed to hunters for completion and submission to MNRF for compilation



Implanting acoustic tags in Walleye on the Grand River



Lake Erie young of the year fish assessment

78% of the Wildlife Management Units where moose are hunted had an aerial survey conducted between 2013 and 2015

10 moose aerial inventories were planned and 6 were completed due to bad weather (too warm/lack of snow cover)

Population Health, Rehabilitation and Enhancement

Population Health, Rehabilitation and Enhancement protects the sustainability of native fish and wildlife populations. MNRF sets targets for fish produced for stocking including those for community hatchery programs; however, actual numbers depend on the availability and quality of fertilized eggs collected.

FW SPA expenditures support data collection (inventory, monitoring), information management, analysis and assessment of data, and reporting.

Expenditures also include invasive species monitoring, wild fur management including issuance of trapping licences, setting quotas, monitoring harvest, and fish and wildlife disease monitoring.

FW SPA expenditures contribute to the operation of the Canadian Wildlife Health Cooperative (CWHC), a cooperative of provincial/territorial, federal and private agencies that provides access to specialized wildlife health expertise and services such as disease diagnoses, veterinary lab capacity, and research and academic collaboration that benefits the public, government/non-government agencies and the private sector.

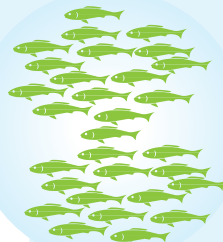
Nine provincial fish culture stations produce and stock fish into public waters to rehabilitate degraded fish stocks and to create, maintain and enhance angling opportunities.

2015-16 EXPENDITURES (\$ in millions)

Fish Culture	\$ 6.8
Fish and Wildlife Ecosystem Maintenance and Reporting	\$ 1.3
Wild Fur Management	\$ 0.8
Invasive Species Management and Control	\$ 0.7
Fish and Wildlife Disease Monitoring	\$ 0.4
Rabies Management	\$ 0.3
TOTAL	\$10.3

Approx. **8 million** fish weighing over **200** metric tons

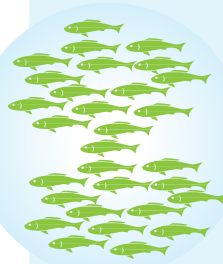
stocked in more than **1,200** waterbodies annually as part of rehabilitation efforts and to provide angling opportunities



8.31 million fish produced for stocking into Great Lakes and inland lakes: 103% of target



1.63 million fertilized fish eggs or fry provided to Community Hatchery Program partners for eventual stocking into public waters: 113% of target



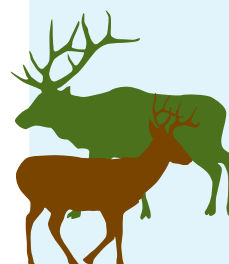
0.01 million surplus fertilized fish eggs or fry provided to academic institutions and government agencies to support research

0.16 million surplus fertilized fish eggs or fry sold to commercial interests to support industry



Loading incubators with fertilized eggs

47 sites in Thunder Bay, **40 sites** in Sault Ste. Marie and **45 sites** in Black Bay were sampled as part of binational aquatic invasive species survey. No new occurrences of invasive species were detected.



+305 deer and elk tested for Chronic Wasting Disease. 100% of results have been negative to date.

Planning, Policy and Regulatory Services

Planning, Policy and Regulatory Services includes development and implementation of resource management plans, policies, legislation, programs and standards related to recreational and commercial fisheries management and wildlife management in Ontario.

Regulations and policies outline where, when and how fishing and hunting is conducted in the province. FW SPA expenditures support staff costs to deliver fish and wildlife management activities including the review and allocation of aquaculture and baitfish licences, commercial fishing regulatory compliance, public planning and engagement opportunities such as Fisheries Management Zone (FMZ) Advisory Councils, public planning and engagement activities and resource development on Crown land authorizations. Information technology costs for tools such as Fish ON-Line, the fish stocking database and the moose harvest allocation system are also included.

2015-16 EXPENDITURES (\$ in millions)

Fish and Wildlife Legislation, Regulation and Policy Development	\$ 7.1
Commercial Fisheries Management (Regulatory)	\$ 2.2
Fisheries Management Plans and Allocations	\$ 2.0
Fish and Wildlife Information and Information Technology	\$ 1.7
Wildlife Habitat and Population Planning and Authorizations	\$ 1.6
Fish Habitat Management	\$ 0.9
Recreational Fisheries Management	\$ 0.9
Provincial Committee and Zone Council Support	\$ 0.7
Baitfish Management	\$ 0.4
Moose Project	\$ 0.3
Aquaculture Management	\$ 0.2
TOTAL	\$18.0



of quota set for commercial fishery on Lake Erie



pounds of commercially caught fish inspected on Lake Erie



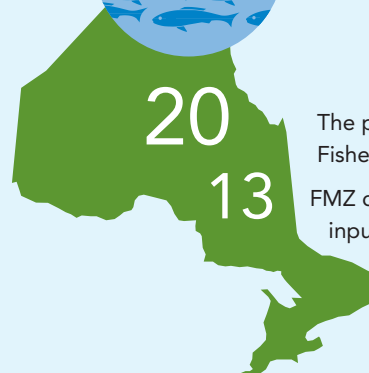
commercial fish licences issued



aquaculture licences issued



baitfish licences issued



The province is divided into 20 Fisheries Management Zones with FMZ councils in place to provide input into fisheries management

Planning, Policy and Regulatory Services *continued*

Legislation, Regulation and Policy Development

- successfully drafted and obtained Royal Assent of the *Invasive Species Act, 2015*;
- continued strategic partnerships with the Invasive Species Centre, the Ontario Federation of Anglers and Hunters, and the Ontario Invasive Plant Council to support activities ranging from education and outreach, research, monitoring/reporting and control actions on a wide variety of invasive species;
- supported on-going research on prevention, detection, control and response tools for invasive species such as dog-strangling vine, phragmites, Asian Carp and water soldier;
- developed and implemented an innovative social media based awareness campaign to increase the public's awareness of invasive species in Ontario;
- continued to advance the work of inter-provincial and international working groups focused on reducing the threat and impacts of invasive species in Canada and specifically within the Great Lakes basin;
- successfully released and conducted broad public consultation on Wetland Conservation in Ontario: A Discussion Paper;
- successfully drafted a proposed Wetland Conservation Strategy for Ontario;
- continued strategic partnerships with Ducks Unlimited Canada, the Eastern Habitat Joint Venture and Birds Studies Canada to support wetland conservation in the province;
- contributed funding to the operation of the Canadian Wildlife Health Cooperative to undertake wildlife disease diagnoses, maintenance of data/web-based information services and public wildlife mortality reporting hotline;
- consulted on Moose Project Phase 2 resulting in new population objectives and changes to hunting seasons for moose across much of southern Ontario for implementation in 2017;
- extended the Black Bear spring hunting season pilot for an additional five years (from May 1, 2016 to June 15, 2020) and expanded it to include all Wildlife Management Units and non-resident hunters;
- regulated placement of bait used for Black Bear hunting;

STRATEGIC PARTNERSHIPS AND BUSINESS AGREEMENTS



PARTICIPATED IN AND SUPPORTED COMMITTEES SUCH AS:

- local Fisheries Management Zone Advisory Councils
 - local citizens committees
 - Big Game Management Advisory Committee
 - Ontario Moose-Bear Allocation Advisory Committee
 - Fish and Wildlife Heritage Commission
 - Human-Wildlife Conflict Advisory Group and Steering Committee
 - Canadian Wildlife Directors Committee
 - International Hunter Education Association Canada
 - Bait Review Advisory Group
-
- updated regulations to permit the use of relaxing cable restraints in some areas of Ontario;
 - continued the Provincial Bait Review including posting the third related Environmental Registry (ER) policy proposal on the commercial aspects of the review;
 - posted the cage aquaculture application guidelines on the ER;
 - developed the Ontario portion of the 2015 National Recreational Fishing Survey and distributed it to over 45,000 anglers.

Initiatives in the Spotlight

Each year the MNRF manages fish and wildlife populations and their habitats for long-term sustainability, undertakes recovery actions for species at risk, and improves recreational opportunities for angling, hunting and trapping. The following achievements section provides detailed examples of a few initiatives undertaken by the ministry in 2015-16.

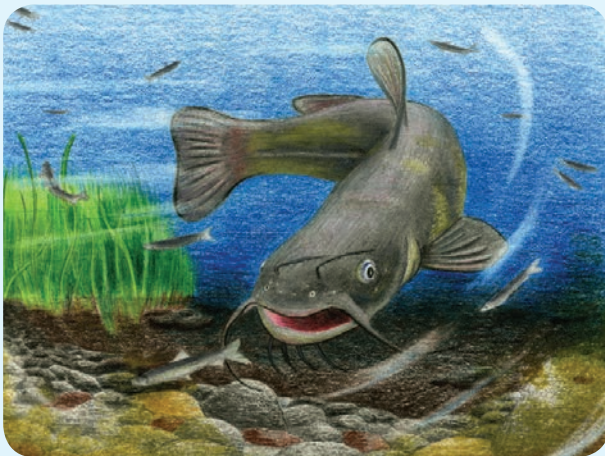
Kids' Fish Art Contest

The 13th annual Kids' Fish Art Contest, a collaboration with the MNRF and corporate partners, looks for winning artwork from Ontario students from grades 4 to 12. The purpose of the contest is to educate elementary school age children on conservation and sustainability and introduce them to angling as a pastime. In 2015, students were to provide a drawing of either an Aurora Trout or Brown Bullhead and a one-page essay depicting the species' habitat and how to protect it for future generations. The 13th annual Kid's Fish Art Contest Winners are:

- Howyn Tang, Grade 10 to 12 Winner and Overall Winner
- Maria Chigireva, Grade 7 to 9 Winner
- Madelaine Swan, Grade 4 to 6 Winner



Madelaine Swan



Howyn Tang, overall winner



Maria Chigireva

Learn to fish

The Learn to Fish Program was introduced in 2013 to provide new opportunities for individuals, families and children to connect with nature through recreational fishing. The program has grown in size and success but the goal is always to instill a passion for the conservation of the fisheries resource and to increase licensing revenue for the Fish and Wildlife Special Purpose Account.

Learn to Fish is a free, hands-on program that equips new anglers with the skills and confidence needed to engage in safe and fun fishing. The program is offered permanently at six provincial park locations. A traveling mobile unit delivers the program at additional locations. In just four years the program has taught more than 20,000 Ontarians how to fish!

There are two parts to the program. Learn to Fish Outreach Events promote the program and get new anglers excited about fishing. The hands-on Learn to Fish Program gets participants familiar with the basics of fishing and then takes them to the shoreline to learn how to fish. Not only has the program taught thousands of people, but participants are saying that they are enjoying the experience and wish to continue the sport of angling.



Instruction at the mobile unit



Learn to Fish participants

New anglers ❤️ Learn to Fish! In 2015 the participation survey determined that;

- 99% were satisfied with the experience
- 99% report improved fishing skills
- 89% are likely to continue fishing over the next 5 years
- 42% will definitely buy a fishing licence
- 96% would recommend the program to someone else

The Learn to Fish outreach component has grown steadily over the last few years. The mobile unit attended over 65 urban festivals and events in 2015 to reach urban and new Canadian families that have yet to try the sport. There were more than 1.3 million people who attended the urban festivals, and Learn to Fish staff had conversations about recreational fishing in Ontario with more than 70,000 attendees!

A promotional campaign to support the Learn to Fish Program has been developed to increase participation in the Learn to Fish experience and raise awareness of recreational fishing opportunities in Ontario. Of the many initiatives some key pieces are:

- distributing promotional material (branded items, program literature);
- media efforts (press releases, media outreach in partnership with Learn to Camp, print advertisements);
- the digital components (social media presence, increasing website traffic, Learn to Fish e-mail address for communicating with public).

Canine Services Unit

In 1990, MNRF introduced the first-ever Conservation Officer Canine Team, based out of Sudbury. The team's sole focus was to find and apprehend people committing natural resource infractions. Today, MNRF has six canine teams across the province. They are located in Fort Frances, Thunder Bay, Sault Ste. Marie, Timmins, Guelph and Bancroft, and each makes a difference in their communities every day.

Enforcement Branch canine teams are trained to a standard similar to that of police K-9 Units. A key role of the canine services unit (CSU) is to help conservation officers locate evidence at crime scenes. Service dogs are trained to detect shell casings, deer, bear, moose, turkey, wood turtles, bass, trout, walleye and whitefish. They are also trained to track human scent to locate lost persons or fleeing violators. The canine handlers and dogs have reduced the time spent searching for evidence and increased the amount of evidence recovered. This results in more complete investigations and more effective prosecutions. The CSU also provides investigative assistance to police and other law enforcement agencies as required.

Another important focus of the CSU is to increase compliance through education and outreach. Enforcement staff conduct presentations and demonstrations for schools to foster a sense of stewardship with school-aged children, and for colleges, interest groups, external enforcement agencies and the media to promote the MNRF and the role conservation officers play in enforcing natural resources legislation.

The MNRF canine program is supported financially, in part, by the Fish and Wildlife Special Purpose Account. Funding is used for a variety of purposes, including keeping dogs in good health; ensuring canine teams are trained effectively to support fellow officers in investigations; and upgrading canine patrol vehicles.



Obedience training



Tracking



Canine services unit team

Fish Stocking

The process of fish stocking sounds simple and straight forward. However, there are a lot of logistics and much technology needed to ensure that fish arrive at their destination alive and in top shape. It isn't enough to just transport fish in water. It's more complicated and it's something that requires planning.

Fish Quantities vs. Fish Numbers

Truth be told, fish numbers are actually derived from average fish weights. Example: 15 kg of 30 gram fish = 500 fish or 15 kg of 20 gram fish = 750 fish. Due to the enormous volume of fish that get stocked into the thousands of lakes across the province, it's not practical to count out individual fish that are allocated to each lake. Instead, fish at the hatchery are first sampled to determine the average fish weight. From the average fish weight we can calculate how many kilograms of fish are needed for a particular stocking day or lake.

The weighing of fish is done using a displacement tank. A displacement tank is a partially filled tank of a known volume/weight of water. Fish of a known average weight are added to the zeroed displacement tank until the calculated weight of fish needed for the day/lake is reached. The displacement tank with the fish is then emptied into the hatchery truck. Once at the stocking site, a small portable displacement tank is used to measure out the desired "number" of fish for each lake for that day based on the stocking coordinator's stocking plan.

Stocking Trucks

All fish reared in our provincial fish culture stations leave the hatchery in specialized trucks. Large 5-ton trucks have 6 to 8 individual tanks to enable multiple species to be transported at the same time.

Since trout are cold water species, it's very important to keep the water temperature from warming during transport. Each tank is therefore completely insulated to protect fish from thermal differences.



A 5-ton hatchery truck with insulated multi-compartment tanks

A computer system monitors and adjusts an oxygen supply to each tank to ensure oxygen levels are maintained within preferred concentrations. Levels too high or too low will result in fish mortality. The system can also be controlled manually in the event there is a computer failure.

Large 5-ton trucks are used to stage large numbers of fish for helicopter deployment to remote lakes that are inaccessible by road. They are also used to stock fish directly into lakes where road access is good. Where fewer fish are required, smaller 4x4 1-ton and 1/2 ton trucks are used to stock lakes accessible by road.



A 1-ton insulated multi-compartment truck

Fish Stocking *continued*

Helicopters

Remote lakes that are inaccessible to stocking trucks are stocked using helicopters fitted with a multi-compartment stocking tank. Helicopters are the perfect tool to stock a large number of lakes (big or very small) across vast sections of landscape in a very short time frame.

Helicopters are fast and efficient at delivering fish from the staging area to the actual lakes so stress and fish mortality is virtually zero. This ensures the valuable investments made in growing the fish are fully maximized. Up to six different lakes can be stocked in a single flight depending on the quantity of fish for each lake. Since the individual compartments keep fish isolated, multiple species can be carried within the same flight. The individual compartments are first partially filled with water before fish are added.

The district stocking coordinator is responsible for calculating the weight of fish required for each individual tank for each flight, including the entire flight plan for the stocking day. The stocking coordinator flies with the pilot to navigate and deploy the appropriate tank into each lake. GPS and hardcopy maps are used to fly to each lake. Once at the appropriate lake, the helicopter pilot will hover about 3 to 4 feet above the water. The navigator then releases the fish to be stocked in that water body.



EC-130 Eurocopter stocking fish in a lake



Lake Trout ready for stocking

Management Biologists Help Sample Bass

Kenora district management biologists were on hand to help sample bass caught during the 2015 Kenora Bass International held August 6th to 8th, 2015.

Sampling bass allows the ministry to monitor the condition and health of Smallmouth and Largemouth Bass populations in Lake of the Woods.

The information collected can be used to detect any problems or concerning trends in bass populations. This supports management decisions regarding bass.

Staff have sampled bass for over 20 years at this event. The length and weight of each fish is measured and tissue samples of scales and a dorsal fin spine are collected in order to count growth rings and determine the fish's age.

Smallmouth Bass caught by tournament anglers reach weights of 1,800 grams (4 pounds) while Largemouth Bass sampled have reached weights of 3,000 grams (6.6 pounds). The oldest fish caught each year are typically 16 to 18 years of age.

Everything possible is done to minimize the amount of stress and harm to the bass. This includes providing cool, well-oxygenated water, processing fish quickly, and minimizing the amount of time they spend out of the water.

The collection of scales and spines causes a relatively small amount of stress and pain for the fish. The wounds typically heal quickly, as proven by anglers recapturing bass missing these fin spines.

Kenora staff worked with the event's fish care personnel to ensure water temperatures and oxygen levels were suitable for bass at all points during the tournament.



Kenora district management biologist, monitoring bass survival following the tournament

The event organizers purchased new transport tanks for moving fish back to the areas where they were caught. These new tanks have the capacity to hold more fish than tanks used previously due to larger volumes, insulated walls and built-in oxygenators.

The live-release equipment worked well, as all 44 smallmouth bass held in trap nets for 48 hours following the tournament survived and swam off into Whitefish Bay.

Changing Great Lakes Food Webs

The Great Lakes contain twenty percent of the world's freshwater supply. And they're changing. They are under threat from development, pollution, invasive species and climate change.

Scientists use food webs to illustrate how different plants and animals interact. Food webs can reveal how a change in one part of the lake can have unexpected and pronounced effects somewhere else.

In the 1960s the governments of Canada and the U.S. took strong action to prevent chemicals and nutrients from entering the Great Lakes and the quality of the water improved. However, a continuous invasion of foreign animals and plants has brought species to the Great Lakes that have changed them forever.

Non-native zebra and quagga mussels, through their filtering activities, have changed the way nutrients move through the lake. These changes have led to increases in nearshore nutrients and reductions of offshore nutrients, changing where certain fish typically find and consume food.

Tiny plants and animals (plankton) that depended on the offshore nutrients to grow declined in number. Small fishes that relied on plankton for food also declined. Bottom dwelling fishes that eat mussels increased. The Round Goby, an invasive fish, has become abundant by feeding on zebra and quagga mussels.

Not all large fish could adapt, and the size and numbers of some species declined. In Lake Huron, the recreational fishery for Chinook Salmon collapsed. Lake Trout tried to adapt by shifting their diet to include gobies, but the additional energy to find the gobies in waters typically warmer than Lake Trout prefer, caused declines in growth rate. Meanwhile, in the nearshore, where nutrients, aquatic plants, and gobies are flourishing, species like Smallmouth Bass and sunfishes are benefitting.



Tyson Scholz

A research team collects plankton and water samples at the historical site Station 81 in eastern Lake Ontario.



Scott Higgins

Shoreline fouling by *Cladophora* algae in the waters and shoreline adjacent to Rock Point Provincial Park in eastern Lake Erie. An increase in algae in the nearshore may be the result of higher nutrient levels.

Research scientists represent food webs as models to reflect feeding rates, growth rates and abundance of each species. These models are used to forecast possible consequences of changes in the food web, and develop management actions to prevent or reduce the likelihood of that event occurring.

Fish and Wildlife Special Purpose Account investments in aquatic research enable research scientists to leverage funding from other sources such as the Canada-Ontario Agreement Respecting Great Lakes Water Quality and Ecosystem Health, and in-kind resources from universities and other agencies. This helps us further our knowledge about the Great Lakes to inform fisheries management decisions.

New Technology Played Key Role in Management Decision to Re-open Lake Simcoe Cisco Fishery

In 2001, data from creel surveys showed that the Lake Simcoe Cisco (or Lake Herring) was in trouble. A popular eating fish and food source for larger fish (especially Lake Trout), Cisco had suffered a steep decline in this lake. Lake Simcoe is one of the most heavily fished inland lakes in Ontario, with more people fishing it in winter than any other season.

To help stop the decline, the winter recreational fishery was closed. The Lake Simcoe Cisco has now made a comeback, and there is strong evidence this species is growing to eating size once again. This was determined by collaboration from a lot of people, and some technology called hydroacoustics.

It started with reports from anglers and data from long-term monitoring, which showed Cisco were perhaps increasing in numbers. Using a collaborative approach, MNRF district staff, the Lake Simcoe Fisheries Stakeholder Committee, and the Lake Simcoe Fish Management Committee looked into re-opening the fishery. However, it wasn't clear whether Cisco's recovery was strong enough to sustainably support recreational fishing again.

In summer 2011, MNRF started a new project to assess the status of Cisco and other coldwater species in Lake Simcoe. This work led to experts on the two committees recommending that the Cisco fishery be re-opened, with a two-fish limit for sport license holders and one fish for a conservation license. The fishery re-opened in time for the 2015 ice fishing season, with much applause from anglers.

The hydroacoustics equipment helped with the research needed to make the decision. This tool works by sending sound waves into the water, which bounce off targets such as fish. The return signal is used to estimate the abundance and size of fish and where they are living in the lake. Using hydroacoustics along with netting data, science experts can get an accurate picture of fish populations.



A research crew heads out on Lake Simcoe to conduct multi-frequency hydroacoustic surveys



Cisco sampled on Lake Simcoe, showing multiple year classes



A pelagic trawl net is being deployed at night on Lake Simcoe. Trawl data is used to verify what is measured with the hydroacoustics.

New Technology Played Key Role in Management Decision to Re-open Lake Simcoe Cisco Fishery

continued

In 2013, the science team switched from hydroacoustics gear with a single frequency to a state-of-the-art multi-frequency system, which allows scientists to track many species at once, from tiny plankton to large sport fish like Lake Trout. It also allows tracking fish when they are very young so measurements can be made of how many new fish are being born into the population many years before the fish would be caught by anglers.

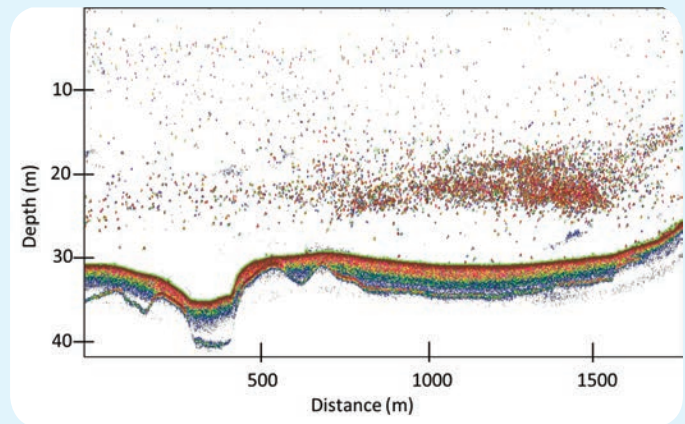
Hydroacoustics is especially helpful when collecting data on Cisco because this pelagic fish species likes off-shore open water. They are often in the middle of the water column rather than close to the bottom, making them hard to track with the usual fish assessment tools.

Scientists are using this tool in other inland lakes as well as the Great Lakes. For example, hydroacoustics is being used to help understand how the food web in Georgian Bay is changing.

Fish and Wildlife Special Purpose Account investments in aquatic research help scientists to leverage funding from other sources such as Environment Canada, Ontario's Lake Simcoe Protection Plan, and the Canada-Ontario Agreement Respecting Great Lakes Water Quality and Ecosystem Health (COA), as well as in-kind resources from universities and other agencies. This work helps improve the knowledge of the Great Lakes and Lake Simcoe and supports those who manage our fisheries.



Pelagic gill net is set from the Lake Simcoe Fisheries Assessment Unit's tug, Barrie can be seen in the background.



Hydroacoustics echogram taken at night on Lake Simcoe, showing an image of what can be observed with one of the acoustic frequencies. The top is the water's surface, while the lakebed is the thicker line shown toward the bottom of the image. A dense layer of Cisco can be seen within the water column.

The Role Of Harkness in Furthering Fisheries

Harkness Laboratory of Fisheries Research is located on Lake Opeongo in Algonquin Provincial Park. It is one of Canada's oldest field stations. Established in 1936, Harkness lab is a centre of excellence in fisheries and aquatic research.

Every year Harkness hosts scientists, graduate students and university professors. They may be pursuing areas of fisheries and aquatic science or working on projects such as the ecology of Brook Trout, Lake Trout and Smallmouth Bass. Research is currently being done to update the knowledge of fish populations within Algonquin Provincial Park. This research will support both land claim negotiations and park planning exercises.

At Harkness, some of the most up-to-date high-tech tools are routinely used. Fisheries hydroacoustics is used for mapping the distribution and number of fish in lakes. Acoustic telemetry monitors tagged fish to track movement and behaviour.

In three lakes in the park a network of GPS receivers is being used. MNRF researchers use the receivers to map the spatial and thermal movement of Brook Trout. Results show that Brook Trout are moving into water that is warmer than the optimal temperature. The most likely reason for this is so they can forage for smaller fish.

Harkness Lab's 79-year creel survey for Lake Opeongo has contributed new knowledge about Lake Trout. Harkness survey crews have also been sampling a number of other lakes in Algonquin Provincial Park to determine the health and abundance of Lake Trout and other species.

Members of the public can participate in select citizen science projects at Harkness. In the fall of 2015, citizen scientists from four First Nation communities and the Fleming College Fish and Wildlife Technology Program took part in the fall tagging of Lake Trout on Lake Opeongo. This work helped MNRF estimate the number of Lake Trout.

Fish and Wildlife Special Purpose Account investments in long-term research at Harkness have led to new knowledge about Lake Trout and Brook Trout. This knowledge can be applied to other inland lakes in the province, and helps universities and partner organizations understand Algonquin's heritage fisheries resource.



Harkness Lab group photo 1937



Lake Trout



Checking nets

Inland Lakes Monitoring: Helping our Fisheries

Ontario has 20 Fisheries Management Zones, and staff collect fish monitoring data from a sampling of lakes in each zone every five years. This data shows changes over time, helps the ministry develop management plans, and resource reports.

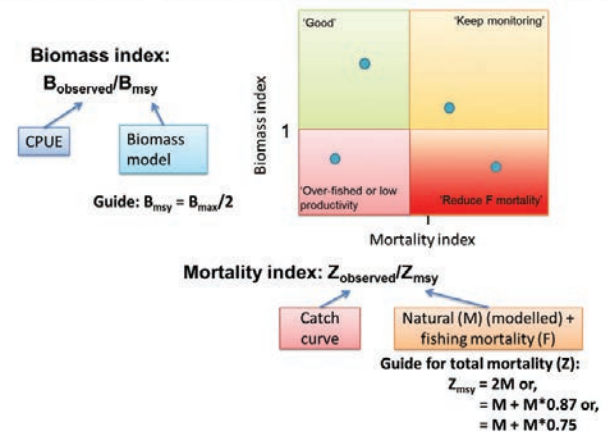
For this monitoring, crews net fish and record information such as species, sex, age, length, weight, and general health. This information is used to determine how plentiful sport fish are, understand their life history, and see how diverse the fish community is. Some fish are also checked for contaminants such as mercury.

Through this monitoring, scientists now have a better understanding of the following:

- where fish species are found in lakes;
- what fish like to eat;
- which indicators best help us assess lake health (examples include fish abundance or the amount of fish in the lake and biomass, the total amount of living matter in the lake).

This monitoring data is being used to help manage popular sport fish species like Lake Trout, Walleye, Brook Trout, Northern Pike, and Smallmouth Bass. Anyone can access the most recent monitoring results in the form of lake bulletins. Visit Fish ON-line to learn more.

Biological reference points diagnostics



Illustrative guide to calculating biological reference points for inland lakes from broad-scale monitoring data



MNRF monitoring staff measures and records fish length and weight

Ontario's Moose Project – Phase 2

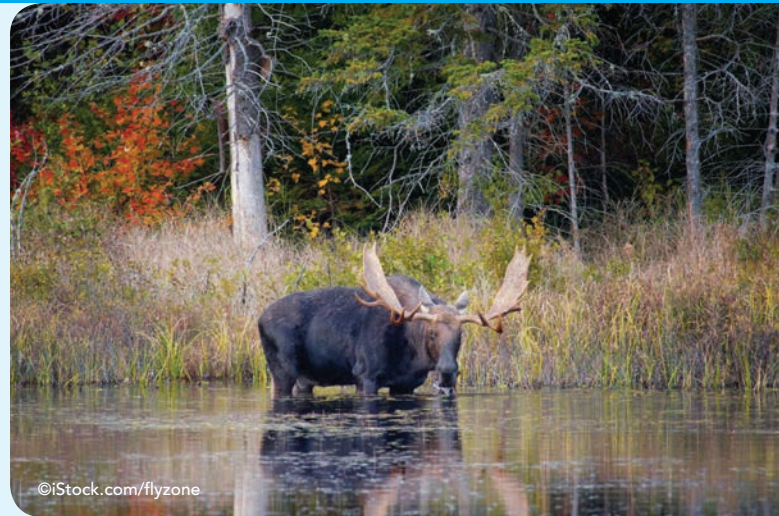
Moose face pressure from a number of factors in Ontario's complex ecosystem. Among the pressures are parasites, changing climate, habitat, hunting and predators. Moose population surveys have shown declines in moose numbers over about the last ten years, particularly in northern Ontario. Ontario's Moose Project has looked for ways to reduce the pressures on moose and help moose numbers reach desired levels.

Throughout the project MNRF engaged hunters, stakeholders, tourist outfitters, Indigenous groups and communities, and the public. We asked them to share their interests and concerns regarding moose. These insights helped us develop actions to benefit moose. These actions respected Aboriginal and treaty rights and minimized the impact on licensed hunters and tourist outfitters.

Ontario made two changes resulting from Phase 1 of the project. In 2015 the hunting season for calf moose was shortened in northern Ontario. In 2016 the start of the moose season will be delayed by one week across much of northern Ontario.

Ontario made two more changes as part of Phase 2. First, new moose population objectives were approved for Wildlife Management Units across the province. These goals help managers set hunting tag quotas and with habitat considerations in forest management planning. Also, beginning in fall 2017 a day will be added to the southern Ontario moose hunting season and the season will be shifted slightly later to better align with the hunting season for calf moose in northern Ontario.

These actions are designed to help increase Ontario's moose populations and the MNRF will monitor their effectiveness. If necessary, further actions may be considered in future years based on the results of Moose Project discussions.



Moose in the water eating

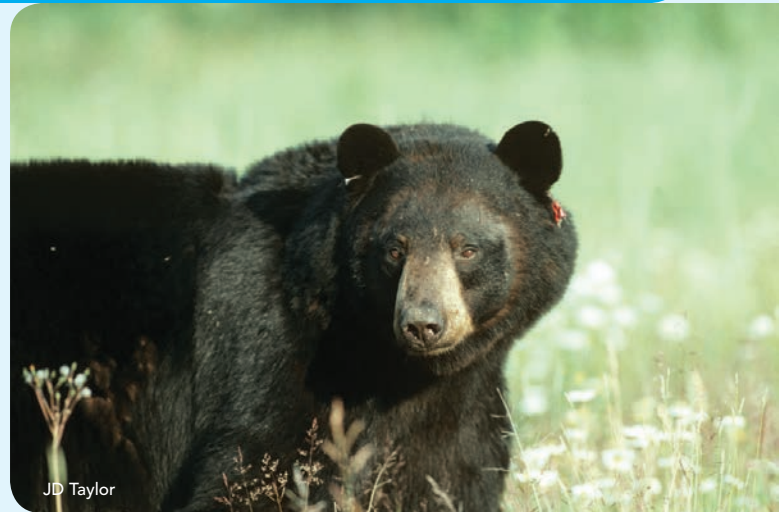
Black Bear Spring Hunting Season Pilot

Ontario is home to between 85,000 and 105,000 Black Bears. Ontario's wildlife managers look at many factors when managing Black Bears. They look at sustainability and habitat. They look at socio-economic factors such as hunting and wildlife viewing. They consider human conflicts with bears.

Science shows the biggest influence on human-bear encounters is the availability of natural food sources. Bear-related concerns are very real for people living in some communities. MNRF is committed to helping these communities deal with this problem.

In 2014 and 2015, MNRF piloted a spring Black Bear season from May 1st to June 15th in and around Timmins, Thunder Bay, Sudbury, Sault Ste. Marie and North Bay. Hunting and trapping were allowed in eight Wildlife Management Units. The goal of the pilot was to gather information and assess bear conflict safety concerns in these communities.

In 2016, MNRF extended the pilot spring season for five more years. The 2016 to 2020 pilot opened a spring season in all 88 Wildlife Management Units with a fall Black Bear season. Non-residents as well as residents can take part in the pilot spring hunt. The extended and expanded pilot will support economic growth and tourism in north and central Ontario.



Black Bear

In keeping with the two-year pilot, the following continue to apply during the 2016 to 2020 spring season:

- all provisions for hunting and trapping Black Bears that apply in the fall; and,
- the harvest of cubs and female bears with a cub is illegal.

The pilot is being monitored and its success will be evaluated. This will ensure Ontario's approach to Black Bear management maintains healthy Black Bear populations. It also ensures Ontario remains responsive to ecological, social and economic interests.



Wildlife Health, Featuring Canadian Wildlife Health Cooperative

The Canadian Wildlife Health Cooperative (CWHC) is a national wildlife health program. It is made up of wildlife health experts (veterinarians, pathologists, technicians) who work to detect, respond to and manage wildlife disease across the country.

By partnering with CWHC, the MNRF has access to specialized wildlife disease expertise and services. By working together we can prevent and manage threats to wildlife health in Ontario.

CWHC helps with research and other activities, such as:

- looking for wildlife diseases across Ontario (e.g., Avian Influenza, Chronic Wasting Disease);
- helping MNRF with research and management activities;
- providing scientific knowledge;
- providing education on wildlife health issues;
- leading programs for wildlife disease response and management;
- producing annual reports on wildlife diseases.

CWHC has reached many milestones in its efforts to improve wildlife health. It has developed new ways of sharing information, including quarterly reports and web content for wildlife diseases and social media reports. CWHC continues to communicate with both government and non-government organizations that are responsible for maintaining wildlife health.

CWHC is currently working on a project for Ontario wildlife health. The project involves infectious diseases in carnivore species (coyotes, foxes, wolves) in Ontario. CWHC is working to understand how these viruses are distributed across Ontario.



Examining an eagle

Rabies Control in Wildlife

There are three strains of rabies currently in Ontario – raccoon, fox, and bat. While all mammals are capable of contracting and transmitting rabies, the most common carriers in the province are raccoons, skunks, foxes, and bats.

Rabies response and prevention in Ontario is a joint effort of government, local public health units and veterinarians. Taking part are:

- members of the public;
- local public health units;
- veterinarians;
- the Ministry of Health and Long-Term Care;
- the Ministry of Agriculture Food and Rural Affairs; and,
- the MNRF.

The role of the MNRF is to manage rabies in wildlife. This is done through vaccination, surveillance, and research programs. Thanks to these control efforts, Ontario had been free of raccoon strain and fox strain rabies in southern Ontario for several years. In late 2015, cases of raccoon and fox rabies were confirmed.

Since the first outbreak of raccoon rabies in the late 1990s, the ministry has developed more efficient and thorough methods to manage the spread of rabies. ONRAB®, an Ontario produced and manufactured oral vaccine, is now used with great success to vaccinate raccoons, foxes and skunks. The ONRAB® rabies vaccine is being used across Ontario and other jurisdictions in North America which generates royalty payments back into the Fish and Wildlife Special Purpose Account.

MNRF distributed over 1.8 million rabies vaccine baits this year. This was done by hand, helicopter and fixed-wing aircraft in southwestern Ontario and along our US border to protect wildlife in the province.

A new diagnostic test called dRIT is now used by MNRF to screen any suspected rabid wildlife. The ministry tested over 4,600 sick, strange-acting, or found dead wildlife using this technique. Vaccine distribution and wildlife testing are partially funded by the FW SPA. This work will continue to ensure that the ministry understands what areas may be affected by rabies.



Staff performing lab dRIT



Rabies vaccine bait



Aerial baiting

With the help of the public and partners, the ministry is working to keep people, pets and wildlife safe from rabies and eliminate it from Ontario once again. For more information, visit ontario.ca/rabies.

2015-2016 Invading Species Awareness Program Highlights

For almost 25 years the MNRF has been working with the Ontario Federation of Anglers and Hunters, to deliver the Invading Species Awareness Program (ISAP). The ISAP aims to address the threats of invasive species in Ontario. The program is promoting education and awareness, monitoring for invasive species, and working to slow or stop their spread.

Promoting awareness

- Each year, ISAP staff conduct many presentations and attend events with invasive species displays across Ontario.
- One of the most popular programs is the Asian Carps Travelling Crew. Led by their mascot Captain Carp, they are always ready to answer any questions!
- Operation Boat Clean is an initiative that encourages boaters to Clean, Drain, and Dry their boats between waters.
- The ISAP has two boat wash stations operated out of the City of Barrie and the City of Orillia.
- The Clean Boats, Clean Tournaments project demonstrates the Clean, Drain and Dry message to engage tournament anglers with boat washing demos in the Lake Simcoe area.
- Working with many partners, the ISAP hires over 20 summer students every year to promote awareness of invasive species. They attend local festivals and events, deliver outreach to the public, and monitor local areas for invasive species.



Monitoring

- The ISAP conducts monitoring of invasive species through the toll-free Invading Species Hotline.
- The ISAP also operates EDDMapS Ontario, an interactive online invasive species mapping tool.
- The ISAP collects hundreds of invasive species records every year.

Management

- The ISAP helps to manage invasive species. This includes involvement in the water soldier eradication project. Water soldier is an invasive plant found only in two wild places of North America, both in Ontario.



Garlic Mustard pull



Captain Carp

Fish and Wildlife Additional Internet Resources

The 2015-16 FW SPA Annual Report provides information regarding how fishing and hunting licence fees are used. The following references highlight some of the additional fish and wildlife information that is available on the internet:

REPORTS AND ACT

- Historical Fish and Wildlife Special Purpose Account annual reports www.ontario.ca search "how fishing and hunting fees are used"
- Sustainability Strategy for the FW SPA www.ebr.on.ca search "Sustainability Strategy for the Fish and Wildlife Special Purpose Account"
- *Fish and Wildlife Conservation Act*
<http://www.ontario.ca/laws> search "*Fish and Wildlife Conservation Act*"

FISHERIES MANAGEMENT INFORMATION

www.ontario.ca/fishing

- Fishing Regulations Summary
- Outdoors Cards and licences
- Zone maps
- Fish ON-Line
- Eating Ontario Fish

www.ontario.ca/page/ontarios-fish-stocking-program

- How to find a stocked lake
- Stocking Strategy
- Visit a fish culture station

Other fisheries management resources

- Learn to Fish – www.ontario.ca/learntofish
- 2015 Annual Report of the Lake Ontario Management Unit http://www.glf.org/lakecom/loc/mgmt_unit/index.html
- Ontario's Great Lakes Strategy <http://www.ontario.ca/document/ontarios-great-lakes-strategy>

www.ontario.ca search "fisheries in Ontario"

- Provincial fish strategy
- Recreational fishing including Fisheries Management Zones (FMZ)
- Commercial Bait
- Commercial Fishing
- Aquaculture

WILDLIFE MANAGEMENT INFORMATION

www.ontario.ca search "Wildlife"

- Biodiversity
- Laws for wildlife protection
- Moose
- Black Bear
- White Tailed Deer
- Elk
- Small game
- Wolf/coyote
- Other species

www.ontario.ca/hunting

- Outdoors Cards and licences
- Hunting Regulations Summary
- Harvest results
- Hunter Education
- Wildlife Management Unit Maps

INVASIVE SPECIES

<http://www.invadingspecies.com>

