

The Rabies Reporter

The Ministry of Natural Resources and Forestry
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The Rabies Reporter is a scientific newsletter about current issues in rabies research and control. It is a joint effort of the Wildlife Research and Monitoring Section of the Ontario Ministry of Natural Resources and Forestry; the Rabies Laboratory at the Ottawa Laboratory (Fallowfield) of the Canadian Food Inspection Agency; and the Ontario Ministry of Health and Long-Term Care. Articles for future issues will be welcomed by the editor. The Rabies Reporter is not peer reviewed and should be cited as a newsletter. Send contributions, letters and inquiries to: rabies@ontario.ca.

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[Ontario.ca/rabies](https://ontario.ca/rabies)

Rabies cases continue trending down in 2019

Anne McCarthy, Ministry of Natural Resources and Forestry

As 2019 came to an end, rabies cases continued to decline from previous years. A total of 65 rabies cases were detected throughout the year, compared to 104 in 2018 and 149 in 2017. Of the 65 cases, 22 were terrestrial strain rabies (Figure 1) and the rest were bat strain. In 2019 MNRF tested 4425 samples, approximately 600 more than in 2018.

Raccoon strain: A total of 22 cases of mid-Atlantic raccoon strain rabies were detected in 2019, 8 of which were detected between July and December. In total, raccoon strain rabies was detected in 12 skunks, 9 raccoons and 1 dog, all found within 60 km of the original Hamilton case from 2015. The cases were in Brant (1 raccoon, 1 skunk), Hamilton (7 raccoons and 8 skunks), Niagara (1 dog, 1 raccoon and 2 skunks), and Waterloo (1 skunk).

Fox strain: There were no fox strain cases detected in 2019. A total of 7 cases were detected in 2018. Monitoring and sampling continues to be done regularly for dead, sick or strange acting animals within the surveillance area.

Bat strain: In 2019, there were 43 cases of bat strain rabies detected in Ontario, up slightly from the 31 detected in 2018. Cases included two terrestrial animals (1 mink and 1 skunk) and 41 bats (36 big brown bats, 1 little brown bat, 3 hoary bats and 1 silver haired bat). The cases were detected in Dufferin, Durham, Elgin, Halton, Hamilton-Wentworth, Kent, Middlesex, Muskoka, Niagara, Northumberland, Ottawa-Carleton, Peel, Perth, Peterborough, Renfrew, Toronto, Waterloo, Wellington and York.

Between December 2015 and 2019, there were a total of 471 raccoon strain and 21 fox strain cases detected in Ontario (Figure 2). MNRF will continue enhanced surveillance and rabies control in 2020.

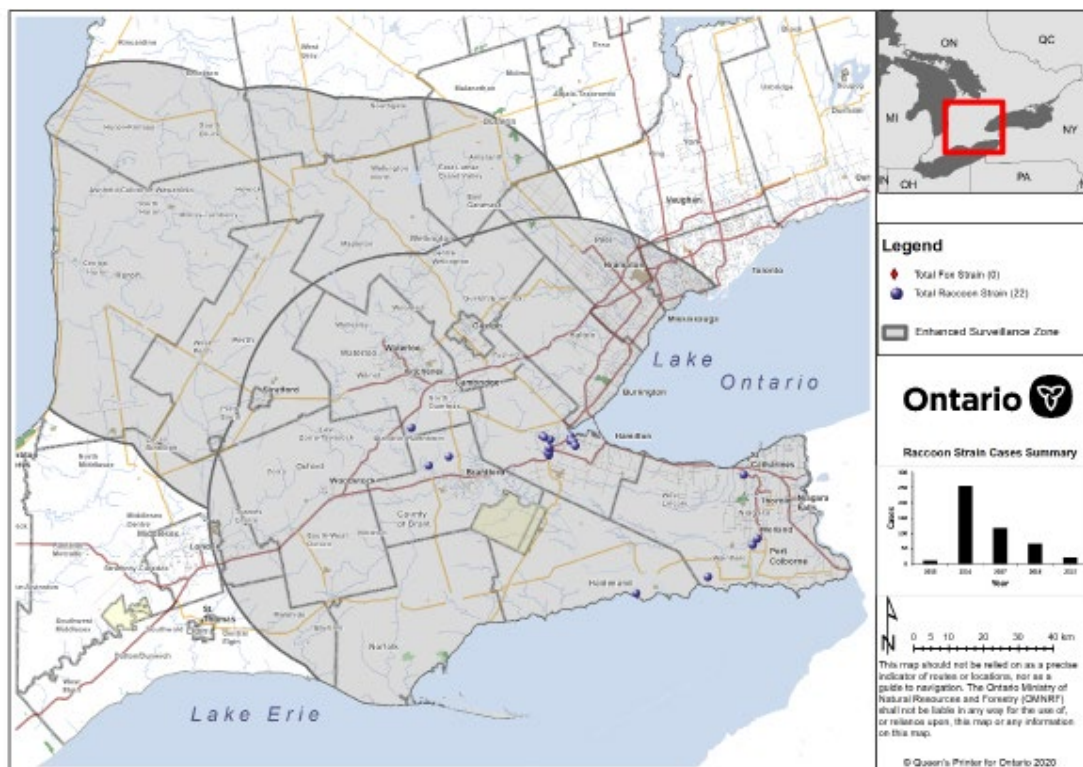


Figure 1. Terrestrial rabies cases (N=22) detected in southern Ontario from January–December 2019.

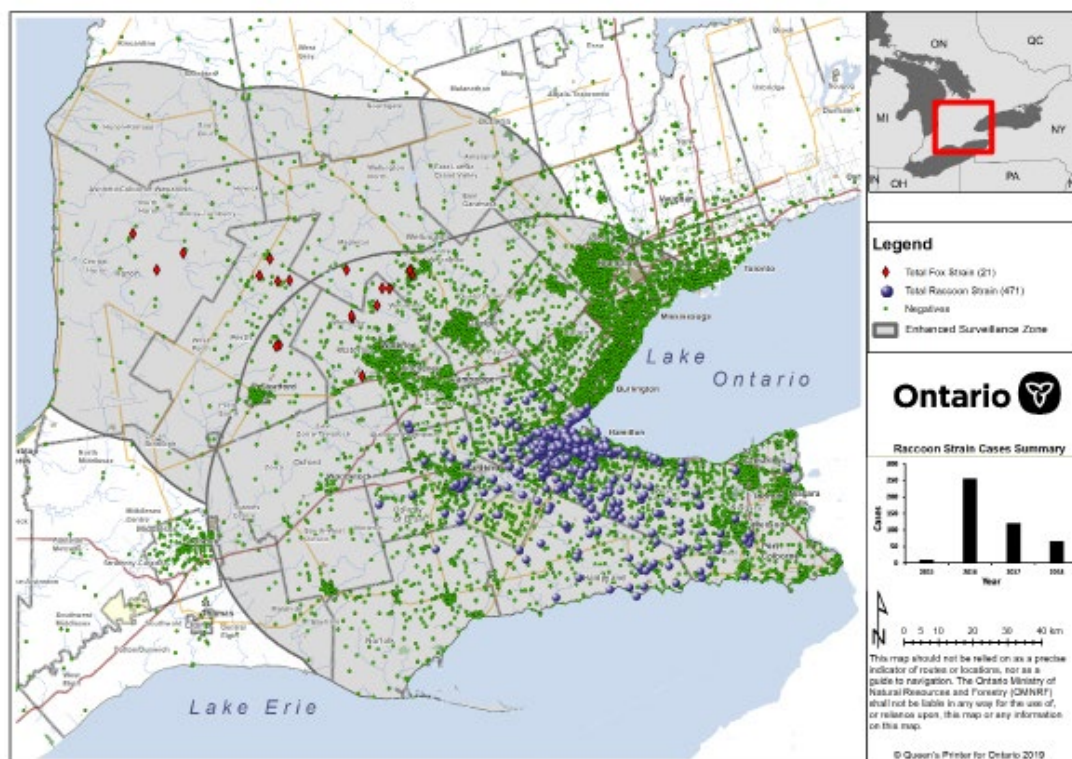


Figure 2. Total terrestrial rabies cases in southern Ontario from December 2015–December 2019 along with the surveillance and control zone.

Rabies control program – 2019

MNR

For the fourth year in a row, MNR continued its efforts to control rabies in southern Ontario and the number of cases detected continued to decrease. This year, a total of 65 rabies cases were detected in the province — 22 were terrestrial rabies cases (all raccoon strain) which were all detected within the enhanced surveillance zone. The raccoon rabies surveillance area expanded into the fox rabies zone by an additional 114 km² in response to a case near the northern edge of the zone. MNR and partners continued to focus on oral rabies vaccine ONRAB® bait, Trap-Vaccinate-Release (TVR) and enhanced surveillance within 50 km of any positive cases. In 2019, close to 1.2 million baits were distributed in southern Ontario by hand and air. Enhanced surveillance focused on the collection of sick, strange acting, or found-dead wildlife for rabies testing. surveillance focused on the collection of sick, strange acting, or found-dead wildlife for rabies testing.

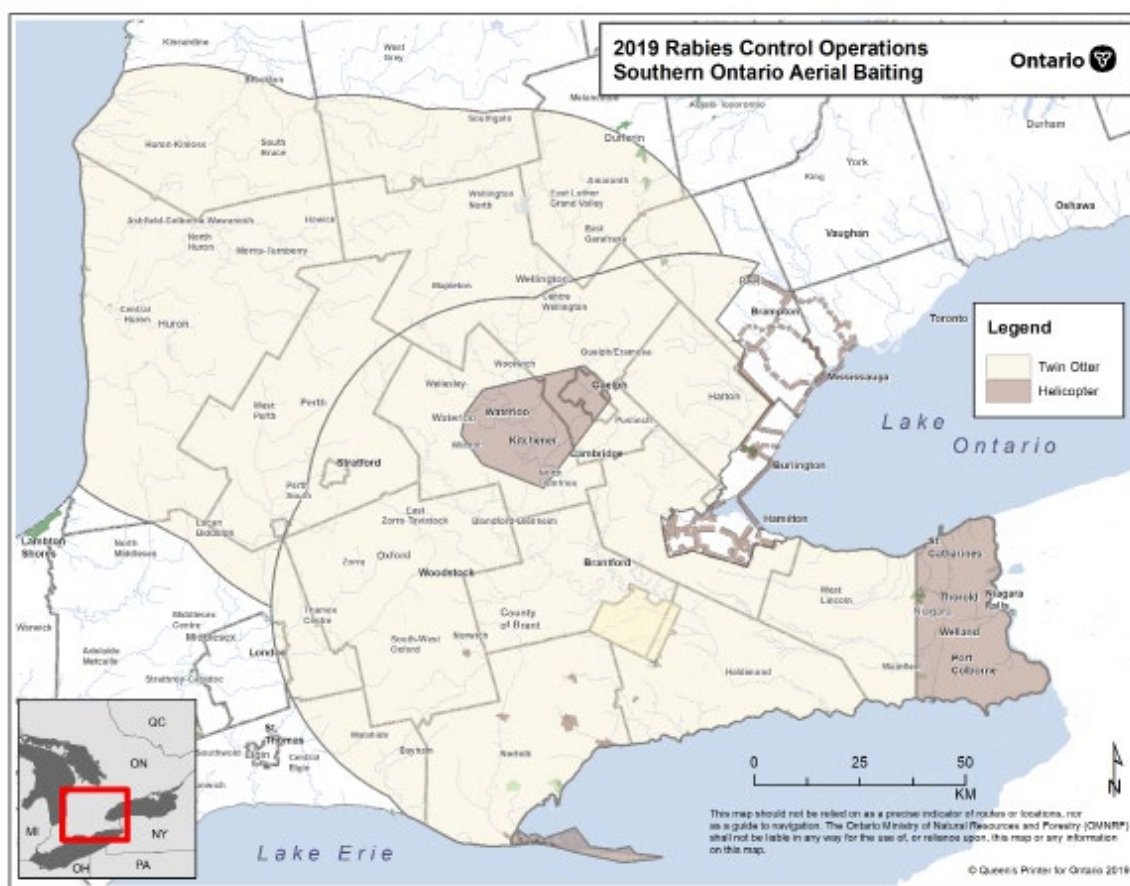


Figure 1. Southern Ontario aerial baiting was conducted from July to September; close to 1.2 million baits were distributed in 2019.

Aerial baiting

Annual aerial baiting typically occurs from August–October via helicopter (urban forested areas) and airplane (rural areas) across the surveillance and control area (Figure 3). This year helicopter flights were conducted from August 12–16 in the Golden horseshoe and Long Point regions (Figure 3) and distributed 21,000 baits covering an area of 140 km² at a density of 150 baits/km².

A total of 637,737 baits were distributed from August 19 to September 2, at 75 baits/km² by fixed wing aircraft. This included 29,400 baits with tetracycline that were distributed in rural areas north of Burlington and Oakville. Tetracycline baits were distributed as part of a study to compare bait distribution using 750m and 250m flight line spacings to see if the tighter flight lines result in an increased bait uptake from target animals.

An additional 63,675 baits were distributed via helicopter at 75 baits/km² between September 9-12 in the Niagara area east of St. Catharines and Kitchener-Waterloo.

The fox strain control zone includes parts of Bruce, Grey, Huron, Perth, Middlesex, Simcoe, Waterloo and Wellington counties and was baited from September 26-29 with 158,525 baits distributed at 20 baits/km² via fixed-wing aircraft.

Ground Distribution

In addition to aerial baiting, baits were also distributed by ground crews (hand-baiting). Hand-baiting targets urban skunk and raccoon habitat where the use of aircraft would not be practical nor feasible (Figure 3). It also provided an opportunity for staff to interact directly with members of the public. Crews were able to inform landowners about the rabies program and that rabies may be present in the area.

Staff distributed the baits in urban and industrial areas, focusing on raccoon and skunk habitat (bushes/gardens, parks, ravines, etc.) where animals may be foraging, or along fence lines, hedges and large culverts. Green spaces such as forested parks, along railways and small hydro cuts were also targeted by crews and covered on foot using existing trails and pathways. Hand-baiting augments aerial baiting by penetrating dense urban centers where dropping baits from the air can be less practical or accurate, due to the high density of houses and other development.

Hand-baiting took place throughout the summer in the Golden Horseshoe area from July 2 to September 24. Crews distributed 250,660 baits at 150 baits/km² covering an area of 1,671 km² (Figure 3).

Bait stations

Research conducted in 2018 by MNRF and Trent University on using bait stations to distribute ONRAB® had promising results. In 2019 MNRF built on previous work by testing whether using a combination of hand-baiting and bait stations would result in higher vaccination rates in urban areas. The city of Brantford was selected for this experiment as all of the rabies cases were detected in raccoons (bait stations do not work well for skunks). Six cells were baited for three weeks. Two of the cells were baited only by hand, 2 were baited using only bait stations, and 2 were baited using a combination of bait stations and hand-baiting. All cells were baited at the same density (150 baits/km²). The cells were revisited in October for rabies serology assessment (antibody response). The serology results indicated that bait stations alone were more effective at immunizing the raccoon population (16%) than the combination of bait stations and hand-baiting (12%), as well as hand-baiting alone (10%).

Eastern Ontario proactive baiting

In order to prevent another re-incursion of raccoon strain rabies from New York State, ONRAB® baits were distributed in an area along the St Lawrence River. On August 9, 24,800 baits were distributed by fixed-wing aircraft over a 431 km² area on the mainland bordering the St. Lawrence River near Kingston and on Wolfe Island. All baits were dropped along flight lines spaced 750m apart and distributed at a density of 75 baits/km² over agricultural and forested habitats. From August 12-15, hand baiting crews distributed 4,725 baits in the city of Cornwall (Figure 5).

Additionally, MNRF partnered with the Mohawks of Akwesasne First Nation to provide 1,500 baits for distribution on Cornwall Island (Akwesasne). Eastern Ontario has not had a confirmed case of terrestrial strain rabies since 2005.

Trap-vaccinate-release

Ontario's 2019 trap-vaccinate-release (TVR) program was completed between July 1 and October 25, in Burlington, Dundas, and Hamilton. Twenty-seven cells and one TVR spot treatment covering approximately 145 km² were trapped. TVR targeted strategic areas where rabies cases are on-going and helped to create a wall of vaccinated animals to prevent the spread of rabies into Toronto and to target high risk areas where cases have recently been detected.

With cooperation from the public, municipalities, and various organizations, permission was obtained to set live traps on private and public land. Animals were captured and vaccinated with an intramuscular injection of IMRAB®3 rabies vaccine (Figure 7). Ear-tags with unique identification numbers were applied so that mark recapture data could be used to estimate raccoon and skunk population density and determine the percentage of animals vaccinated. After vaccination, animals were released at the site of capture. In 2019, 2454 raccoons, 541 skunks, 24 red foxes, and four coyotes were vaccinated during TVR.

In October, MNRF conducted a study to estimate what proportion of the raccoon and skunk populations were successfully vaccinated during the 2019 baiting campaign. This involved collecting blood samples from raccoons and skunks and testing them to see if they are seropositive for rabies antibodies, which indicates that the animals have been vaccinated. The overall proportion of animals that were seropositive (an indication of protection against rabies) was consistent with the previous three years' results at 19% for raccoons and 9% for skunks in 2019. The values varied greatly among cells (raccoon range: 5-43%; skunk range: 0-29%).

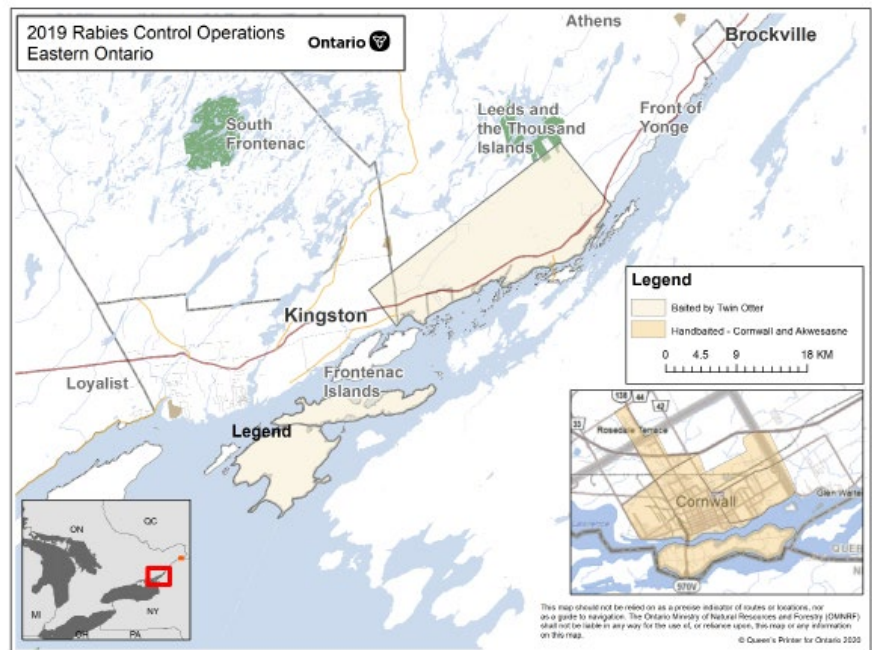


Figure 5. Eastern Ontario baiting occurs to prevent re-entry of the rabies virus.

Rabies Is Real Campaign – Using Evidence Based Results to Widen Rabies Awareness in Hamilton

Jane Murrell, City of Hamilton Public Health

On Dec 4, 2019 we reached the fourth year in the raccoon rabies outbreak that affected not only Hamilton but five other surrounding health units. As the situation quickly progressed back in 2016, Hamilton created a new public awareness campaign. The goal of that new campaign was to grab attention, prevent future exposures and drive residents to our rabies website for more information. This article will outline how evidence-based results were used to improve the awareness campaign and ensure outreach was achieved.

Background

A marketing company was contracted by the city of Hamilton Public Health to create the campaign. Two styles were provided for consideration (see image 1A below). The first was a typical health education piece with a picture of a raccoon. The other style was a creative combination of rabies vector species using a bat, raccoon, skunk and fox to create hybrid animals called the “baccoon” and “skox”. A series of focus group testing was conducted using the two campaign ideas. The focus group testing was kept simple by showing both posters and asking people to select the one they liked most and indicate why. Participants were also asked “which poster would most likely get their attention and potentially create conversation”.

Results indicated the “Baccoon” poster was the favorite, selected by 84% of the individuals with descriptive comments including, ‘it’s different & eye catching’, “might trigger questions because it’s weird”, and ‘more likely to be shared on social media’. Interestingly, five of the thirteen individuals that chose the other poster changed their minds when asked the question “Which poster would most likely get your attention and therefore create conversation?”.

Non-English-speaking residents also selected the “Baccoon” poster as they thought the raccoon in the other poster was a dog but the hybrid image using a bat which they recognized caused them to question what the poster was about because it looked strange to them.

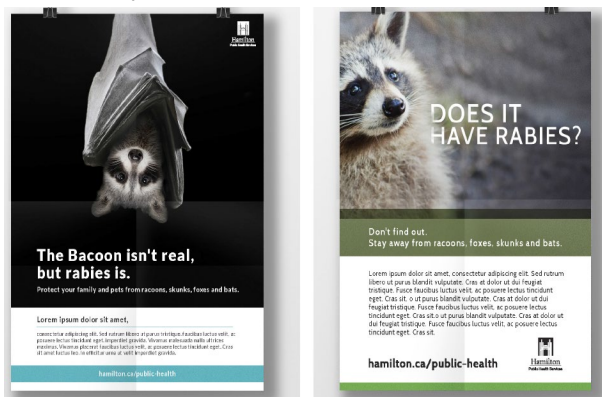


Figure 1. First Draft of Artwork



Figure 2. Final product

Implementation

The “Baccoon” and “Skox” images were selected for the Rabies is Real campaign which officially launched City-wide in September 2016 using various promotional venues including social media ads (see image 2A). The campaign was shared with other health units and key partners. Currently, three other health units have adopted the campaign for their own rabies education and the Ontario Association of Veterinarian Technicians has used the images for their “Protect Your Pet” campaign in 2017 & 2018. The images even made their way to the United States as the Maryland Department of Health requested permission to use the images in their own rabies campaign.

Evaluation and Impact

To measure the success and outreach of the campaign a convenience sampling evaluation was completed in 2018 using both online and hard copy surveys. The objectives of the evaluation were to:

1. Determine the reach of the awareness campaign.
2. Determine the level of knowledge of rabies for residents of the City of Hamilton.

Summary of Evaluation

A total of 2,369 completed entries.

- Most respondents (93.8%) had heard about rabies prior to this survey and of those who had 77% knew about rabies within the city of Hamilton.
- Many residents (52.9%) were able to identify the "Baccoon" or "Skox" ads and the key health messages conveyed through these ads.
- Only 84% of respondents identified cats as potential vectors of rabies compared to 93% identifying dogs and 97% identifying raccoons.
- When asked about wound care and if rabies is fatal, 82% responded correctly.
- Some respondents (26%) thought that birds were a vector species of rabies

Results of the evaluation revealed that more efforts were needed to focus on cats being a potential vector species. Given Hamilton has already seen two rabid stray cats since the outbreak started, this was a new program objective. The outcome was the creation of a new hybrid; called the "purrpup" (see image 3A). This image focused on domestic animals being at risk for rabies and was also more appropriate for rabies education at veterinary clinics where the public could relate the messaging to owned pets.

Lessons Learned

Not only was the creativity of the images important but sharing the creative work with other health units and partners broadened the impact and reach of this education campaign. The evaluation showed some residents were unaware that rabies is fatal and proper wound care could be an essential first step of protection. Moving forward the following issues require ongoing improvements to ensure improved community awareness about rabies:

- Ensure all health messaging includes and clearly states rabies can cause death.
- Dispel myths around which animals can and cannot transmit rabies.
- Continue to re-enforce health messaging when dealing with animal exposures.
- Continue to state the importance of rabies prevention through animal vaccinations, avoidance of wild animals and supervision of pets.



Figure 3. "Purrpup"

Some positive but unplanned outcomes included the image of the "baccoon" transcending language barriers as many Non-English-speaking residents could recognize a bat but wanted to ask more questions when the image was combined with a raccoon. This was not something considered prior to the design stage. The Rabies is Real campaign has been popular on social media platforms due to its unique and eye-catching images. Overall, the evaluation demonstrated that the Rabies Is Real campaign was a success in keeping Hamilton residents informed of the risks of rabies, while creating a campaign with impact, appeal and longevity.

MNRF 2019 rabies control program communications

Anne McCarthy, MNRF

Public education and outreach are an integral component of the rabies program. MNRF works closely with municipal and ministry partners to inform and engage the public and key audiences about rabies in wildlife.

The 18 rabies social media posts that were published in 2019 reached almost 1.5 million people and engaged almost 200 thousand individuals. Staff also responded to 115 questions from the public over social media about rabies and rabies operations in Ontario. Visits to the Ontario.ca rabies webpages was up 40% in 2019.

Ontario Ministry of Natural Resources and Forestry
September 28, 2019 · 🌐

One of the ways we monitor our rabies program's effectiveness is by using trail cameras.

Since the rabies outbreak began in 2015, we've taken quick action to protect communities, distributing over 4 million vaccine baits by air and ground, and vaccinating over 6,000 animals by hand through the Trap-Vaccinate-Release program. Ontario's rabies control program has been effective in containing the original outbreak to within 65 km of the initial case. Since 2016, rabies cases have declined in Ontario by approximately 50% each year.

We hope you enjoy seeing some of our recent visitors!

Want to know more? Visit www.ontario.ca/page/rabies-wildlife.
#MNRScience #WorldRabiesDay

MNRF Wildlife CAMERAS are MONITORING RABIES
baiting efforts.

Meet some of our visitors.

12499548/ 11 Comments 23 Shares

Ontario Ministry of Natural Resources and Forestry
September 9, 2019 · 🌐

Attention Pet Owners!

Here's what you need to know about rabies, the oral rabies vaccine bait and your pets:

- the vaccine has been tested and is safe if consumed by domestic animals.
- If your pet has eaten a bait and you are concerned, contact your vet
- the bait's coating is made up of vegetable-based fats, wax, icing sugar, vegetable oil, artificial marshmallow flavour, and dark-green food-grade fat-soluble dye

You can keep your pets safe by:

- Keeping your pet on a leash
- Keeping your pet away from wildlife
- Keeping your pets' vaccinations up to date
- Not feeding wildlife

For more information on rabies and the rabies oral vaccine bait, please visit ontario.ca/rabies.

PET OWNERS!
Know the facts about oral rabies vaccine bait

34 Comments 401 Shares

Ontario Ministry of Natural Resources and Forestry
March 6, 2019 · 🌐

Think an animal may have rabies? Five things to know:

1. If you suspect an animal has rabies, call MNRF's Rabies Information Line (888) 574-6656 for information and advice on next steps
2. If you/a family member has been scratched/bitten, contact your family doctor or local emergency department
3. If a pet/livestock has been scratched/bitten, contact your vet to arrange testing
4. If you find a dead wild animal and suspect rabies, call MNRF's Rabies Information Line (888) 574-6656
5. If you find dead bats, call the Canadian Wildlife Health Cooperative at (866) 673-4781

Learn more at ontario.ca/rabies.

Do you think an animal may have rabies?

91 Comments 460 Shares

Congratulations and welcome to the team!



Anne McCarthy is the new acting Science Transfer Specialist. Anne received her BSc from Trent University and an MSc from Laurentian University studying hybridization between escaped domestic and wild American mink, co-supervised by WRMS Research Scientist Jeff Bowman. Anne joined MNRF in 2009 as a Species at Risk Technician with the Aquatic Research and Monitoring Section, and most recently completed an acting assignment as Aquatic Ecosystem Science Specialist with Regional Operations Division.

Anne's strong science background, communication skills and enthusiasm will be a great addition to our team!