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The rabies reporter

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The Rabies Reporter, a scientific newsletter about current issues in rabies research and control, is a joint effort of the Ontario Ministry of Natural Resources; 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 refereed, and should not be cited in papers intended for refereed journals. Send contributions, letters and inquiries to:

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2013 in review: rabies cases and control efforts

Beverly Stevenson, Ministry of Natural Resources

All in all, 2013 was a good news year on the rabies front with only 28 cases reported in Ontario.

There were 27 rabid bats and one rabid dog in total this year. The most welcome news of all was the lack of terrestrial rabies cases in southern Ontario. This was the first year since the 1950s (when rabies became established in this province) that there were no confirmed terrestrial rabies cases in southern Ontario. The only terrestrial case occurred in a puppy from a First Nation's community on the James Bay coast, in northern Ontario.

During the final quarter of the year, there were six rabid bats (Bruce, Halton, Lambton (2), Middlesex, and Toronto) bringing the total for 2013 to 27. The following was the species distribution of rabid bats in 2013: big brown (23), little brown (1), eastern red (1) and silver-haired (2). This is up slightly from the 25 rabid bats in 2012 but is still lower than the average of 29 cases for the past 5 years and 44 cases for the past decade.

Southwestern Ontario

The low incidence of rabies in southwestern Ontario for 2012 and 2013 resulted in an approximately 40% reduction in the oral rabies vaccination (ORV) zone (Figure 1). The ORV zone is determined by adding an approximately 50 km buffer around confirmed terrestrial strain rabies cases in the current and previous year. Low density ORV is conducted to help prevent re-infection of fox populations by isolated cases of rabid skunks in SWONT, and to help to contain 'Ontario fox' strain rabies to this area and prevent it from re-entry into the rest of southern Ontario.

Between September 9 and 12, 135,720 ultra-lite (UL) baits containing ONRAB® vaccine were distributed by MNR Twin-Otter (DHC-6) aircraft flying approximately 150 meters above ground. Baits were dropped over an area measuring approximately 9,181 km² along flight lines spaced 2.0 km apart, at a density of 20 baits/ km². The area baited this year was roughly bounded by Goderich on the west, Hanover on the north, Guelph on the east, and London on the south.

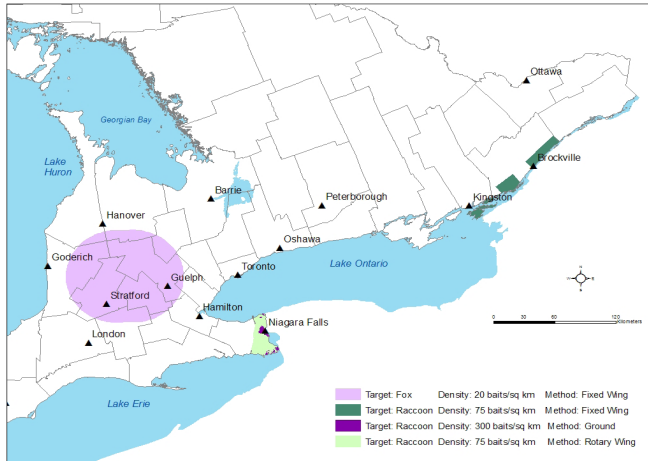


Figure 1. Oral rabies vaccination in Ontario in 2013.

Southeastern Ontario

To prevent re-incursion of ‘raccoon’ variant rabies from New York State, UL baits containing ONRAB® were distributed in select areas along the St. Lawrence River in SEONT. On August 17 and 18, 2013, 51,068 baits were distributed on Wolfe, Howe, Hill, Simcoe, and Grenadier islands in the St. Lawrence River, as well as on two rectangular plots (831 km²) near the international bridges in the Prescott and Ivy Lea areas (Figure 2). All baits were dropped along flight lines spaced 0.75 km apart and distributed at a density of 75 baits/km² over non-urban, agricultural and forested habitats. The St. Lawrence River area was once a hot spot for ‘raccoon’ strain rabies but Ontario has not had a case in eight years.

In addition to the aerial baiting, 945 baits were distributed by hand on August 18th, 2013, in green spaces in Brockville owing to its proximity to cases on the US side of the St. Lawrence (Figure 2).

Niagara Region

To prevent re-incursion of ‘raccoon’ variant rabies from New York State and to maintain a buffer of vaccinated raccoons on the Niagara peninsula, urban areas (300 baits/km²) and rural areas (75 baits/km²) were baited aerially using an EC130 helicopter (rotary wing) (Figure 3). A total of 60,412 baits were distributed over 627 km² during August 26 – 29, 2013. We were able to distribute baits more efficiently in many areas in 2013 using the EC130 helicopter, thereby reducing staff and time to complete the project.

Additionally, 95 km² of the Niagara area, which was inaccessible by helicopter, was hand-baited by four MNR field staff during the period of September 3–6, 2013. Staff drove around the areas inaccessible by helicopter, mainly high density urban areas such as the core of Niagara Falls and Fort Erie, tossing baits from vehicles at a density of approximately 300 baits/km², delivering 18,293 ONRAB® rabies vaccine baits to the area.

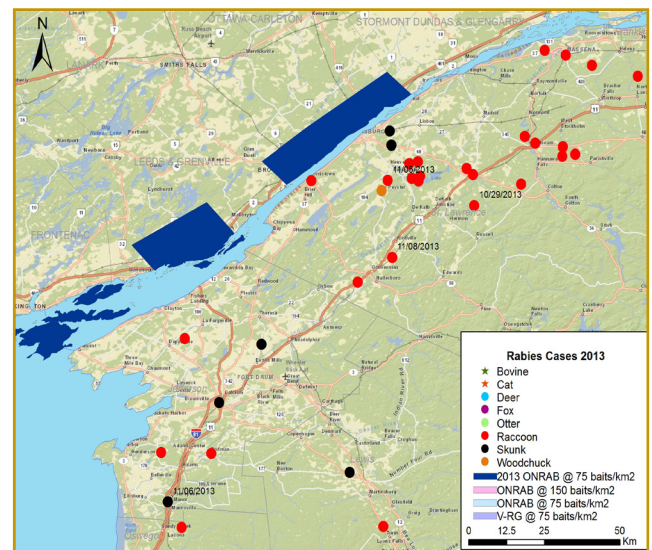
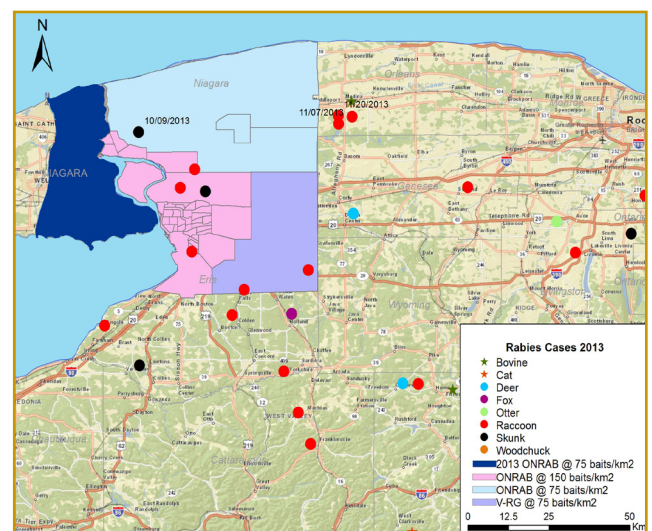


Figure 2. St. Lawrence baiting areas and New York rabies cases in 2013.

Figure 3. Niagara baiting areas and New York rabies cases in 2013.



An overview of 2013 surveillance and control activities in Québec

Marianne Gagnier & Ariane Massé, Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs

Even though Québec has been considered raccoon rabies free since 2010, the threat of a new introduction from the U.S. is still real and worrying. In 2013, several positive cases were found in the neighbouring states, New York and Vermont. Moreover, 51 cases were found less than 80 km from the border. This preoccupying situation has led us to keep our rabies surveillance and control program active and up to date, which was carried out for the eighth consecutive year.

During the year, our enhanced surveillance activities allowed us to collect 880 specimens in the south area of Québec, mainly in Estrie and Montérégie regions. Of these, 76% were raccoons, 20% were skunks and less than 4% were foxes. Most of these animals were collected through our road patrol (64%) or following a citizen report (28%). No positive cases were found this year, for the fourth consecutive year. In comparison with 2012, we received 35% less reports from citizens (N = 797) and, therefore, 33% less specimens were collected from citizen reports (N = 260). However, our road patrol managed to keep up pace of specimen collection with an increase of 6% (N = 560).

Oral rabies vaccination (ORV) was conducted along the Québec-U.S. border, in the same regions as our enhanced surveillance activities (Figure 4). ORV operations included both hand (end of April and early-September) and aerial baiting (mid-August). Overall, 651 065 ONRAB® baits were distributed over 8,040 km². In 2013, bait densities ranged from 60-80 baits/km² (hand baiting) to 75-125 bait/km² (aerial baiting). The baits were distributed in preferred raccoon habitat, forest patches and adjacent edges of agricultural fields.

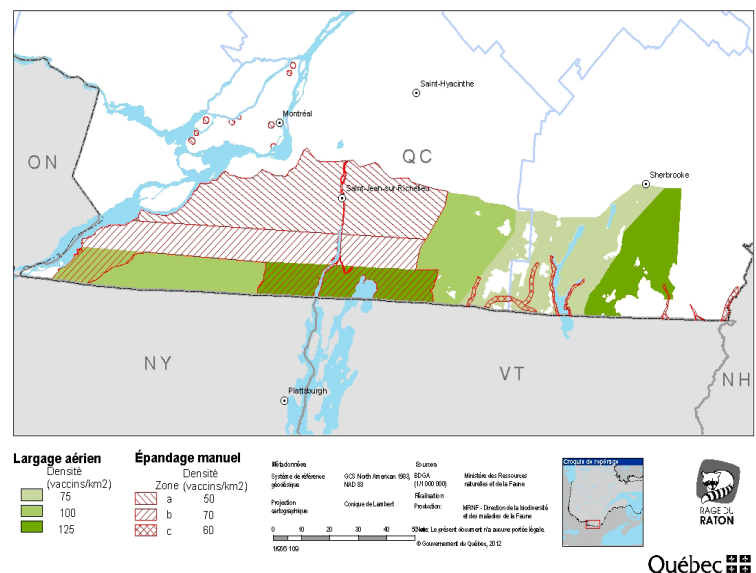
A post-ORV study was conducted between October 8 and 18, 2013 to assess the percentage of raccoons that were positive for rabies virus antibodies in the area where ONRAB® baits were used. Blood serum was collected from a total of 455 raccoons distributed in three cells. Antibody prevalence ranged between 47 and 56% (c-ELISA, CFIA).

Changes in the rabies team

Following the retirement of Pierre Canac-Marquis, who was the coordinator of the rabies control program in Quebec, the team involved in the fight against the spread of raccoon rabies in Quebec changed quite a bit. We are pleased to inform you of the new task sharing. Ariane Massé, biologist PhD, joined the team in 2012 and will be in charge of the research activities on raccoon rabies in the province. Guillaume Tremblay, who began his work with our department in 2012, is now the wildlife technician responsible for all operational component and field monitoring activities of our rabies control program. Marianne Gagnier, biologist and new member of our team since 2013, will do the coordination of surveillance and control activities.

For future communication, Marianne Gagnier can be reached at marianne.gagnier@mrn.gouv.qc.ca or by phone at 418-627-8694 ext.7422.

Figure 4. 2013 oral rabies vaccination in Québec



Remembering Gary “Hay-maker” Bron

Mike Allan, Ministry of Natural Resources



It was a sad day last September when I heard that Gary Bron had moved on to harvest hay for the big man in the sky.

Gary worked as a seasonal resource technician doing trapping with the MNR's past Rabies Research and Development Unit from 1999-2008.

I first met Gary during the raccoon rabies outbreak in Domville, Ontario in the summer of 1999, when he was a member of the Lanark County Trapper's Association. After shaking his hand (which completely enveloped mine) I immediately liked the

man with the large hands and kind heart. As I got to know Gary over the years, I learned he had a great love for many things including the outdoors, working with animals, farming, rum, the Hamilton Tiger Cats and his family. I also learned that Gary disliked a number of things including maps, GPS units, paperwork, ear tags and gloves that were too small for his large hands.

He was happiest when trapping, although a good hay season would have him grinning from ear to ear as well. Gary was well liked by his colleagues and had no trouble making friends wherever he went.

He worked primarily as a trapper but was also involved with the aerial baiting program distributing oral rabies vaccine baits across Ontario and Quebec on board our Twin Otter. He trapped and vaccinated raccoons, skunks, foxes and cats during Point of Infection Control operations in the St. Lawrence region and was part of the MNR team that eliminated raccoon rabies from Ontario. Gary also assisted in the field trial for ONRAB® oral rabies vaccine in Flesherton, Ontario, where he worked as a trapper to collect data on raccoons and skunks for the project. He assisted with other wildlife research projects like waterfowl banding and Chronic Wasting Disease surveillance.

I remember a warm summer's evening, smell of fresh cut hay and sitting on a porch sharing a drink of rum with Gary and his wife Gail, enjoying some Balderson cheese and gazing out over their farmland. After Gary's hands told me the cheese wasn't made in Balderson, it was made in Winchester, I smiled and realized that when I tell this story only those that know him will know what I'm talking about. His caring ways, his gentleness with the animals, his camaraderie with team members are only some of the ways in which Gary will be remembered by his friends and colleagues in the Ontario Ministry of Natural Resources.

News and updates

Recent publications

The World Health Organization recently released a second rabies studies publication entitled [WHO Expert Consultation on Rabies](#). This report of a WHO Expert Consultation provides new data on the estimated burden of rabies and its distribution in the world. It also reviews recent progress in the classification of rabies viruses, rabies pathogenesis and diagnosis, rabies pre- and post-exposure prophylaxis, the management of rabies patients, and canine as well as wildlife rabies prevention and control.

The information in this report should be considered the most current data on rabies prevention and control, and supersedes that of the report of the first WHO

Expert Consultation on Rabies, published in 2005. For more information, contact: Jennifer Kern at: jennifer@styluspub.com.

MNR's Wildlife Research and Monitoring Section has also completed and published three new papers:

- Oral vaccination and protection of red foxes (*Vulpes vulpes*) against rabies using ONRAB®, an adenovirus-rabies recombinant vaccine. (Brown et al., *Vaccine*)
- Innate immune responses in raccoons after raccoon rabies virus infection. (Srithayakum et al., *Journal of General Virology*)
- Immune response and protection in raccoons

(*Procyon lotor*) following consumption of baits containing ONRAB®, a human adenovirus rabies glycoprotein recombinant vaccine. (Brown et al., *Journal of Wildlife Diseases*)

Contact rabies@ontario.ca for more information.

Rabies Reporter update



A decrease in rabies cases in Ontario also means a decrease in news to report! Therefore, as of January 2014, the Rabies Reporter newsletter will be distributed semi-annually instead of quarterly.

You can expect to receive your updates in June and December to ensure that information about our annual baiting operation plans are available, followed by a recap on rabies cases and management activities for the year.

However in an effort to keep the most up-to-date data available, we will still be distributing maps and tables of rabies cases in the province quarterly via email. Please note that special edition newsletters may be circulated in the event of important or timely news taking place. Questions? Email us at rabies@ontario.ca.



Rabies in the Americas XXIV

The Rabies in the Americas (RITA) meeting is an annual event that has been taking place for almost 25 years. Each year, a different country hosts the meeting and delegates from more than 20 countries across five continents attend.

The meeting brings together researchers, health professionals, wildlife biologists and others interested in rabies management, challenges, and research.

This year's RITA conference took place in Toronto, Ontario, Canada from October 27-31, 2013.

Organized by numerous agencies including the Ministry of Natural Resources, our Wildlife Research and Monitoring staff were not only part of the conference organizing committee but also the Scientific Committee and the International Steering Committee. Staff also gave talks, moderated a round table session and presented posters.



Highlights from our team included:

- Oral vaccination and protection of striped skunks (*Mephitis mephitis*) against rabies using ONRAB® - a poster by Lucy Brown
 - Persistence and shedding of ONRAB® rabies vaccine in captive and free-ranging mammals in Ontario, Canada – poster by Aaron Walpole
 - Raccoon rabies and chains of infection given habitat and disease control – presentation by Dr. Bruce Pond
 - The evolution of wildlife rabies control tactics - presentation by Dr.

Rick Rosatte

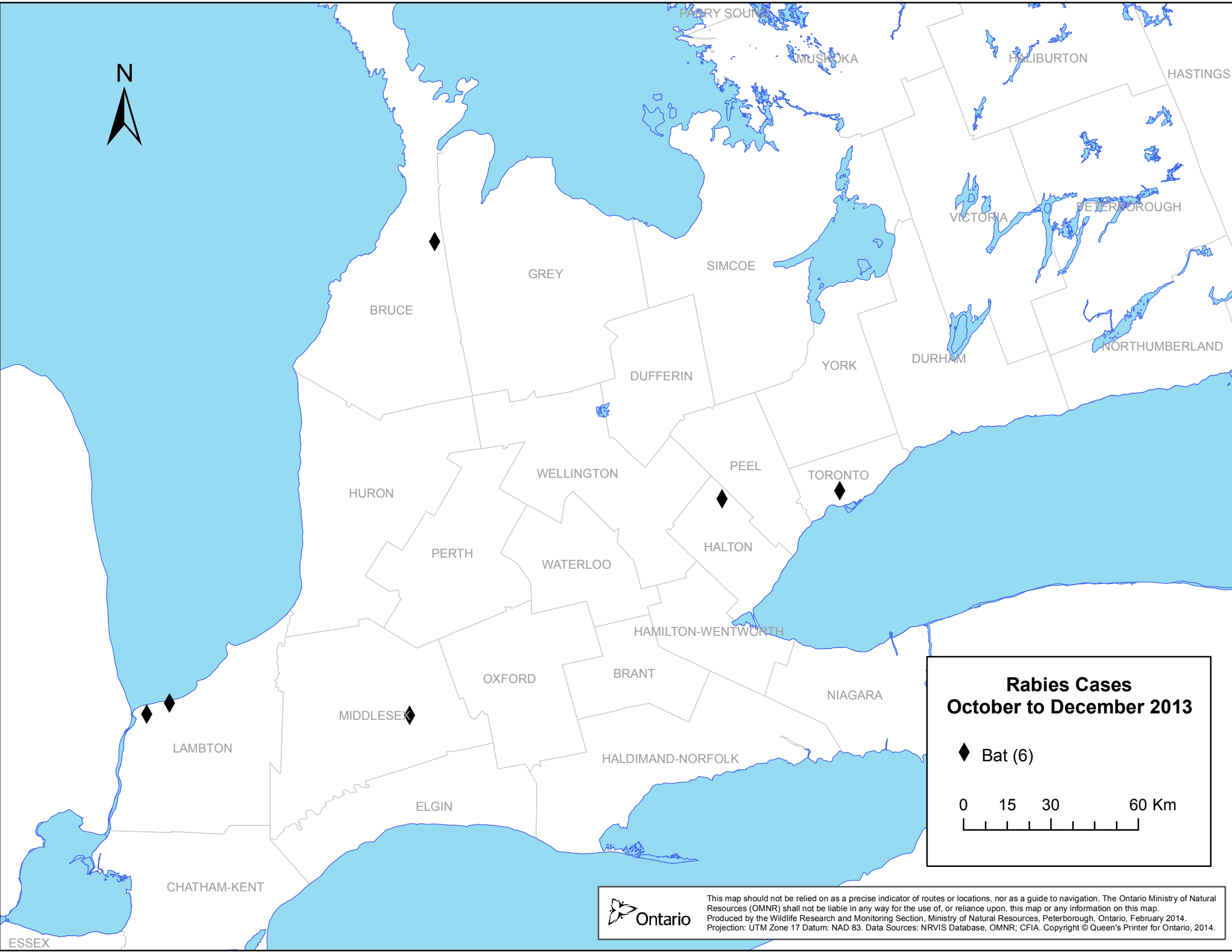
Program details and presentations can be found online at www.rita2013.com.

Thanks to all who participated and attended. The next RITA conference will be in Cancun, Mexico from October 26-31, 2014.

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Animal Rabies Report: October to December 2013

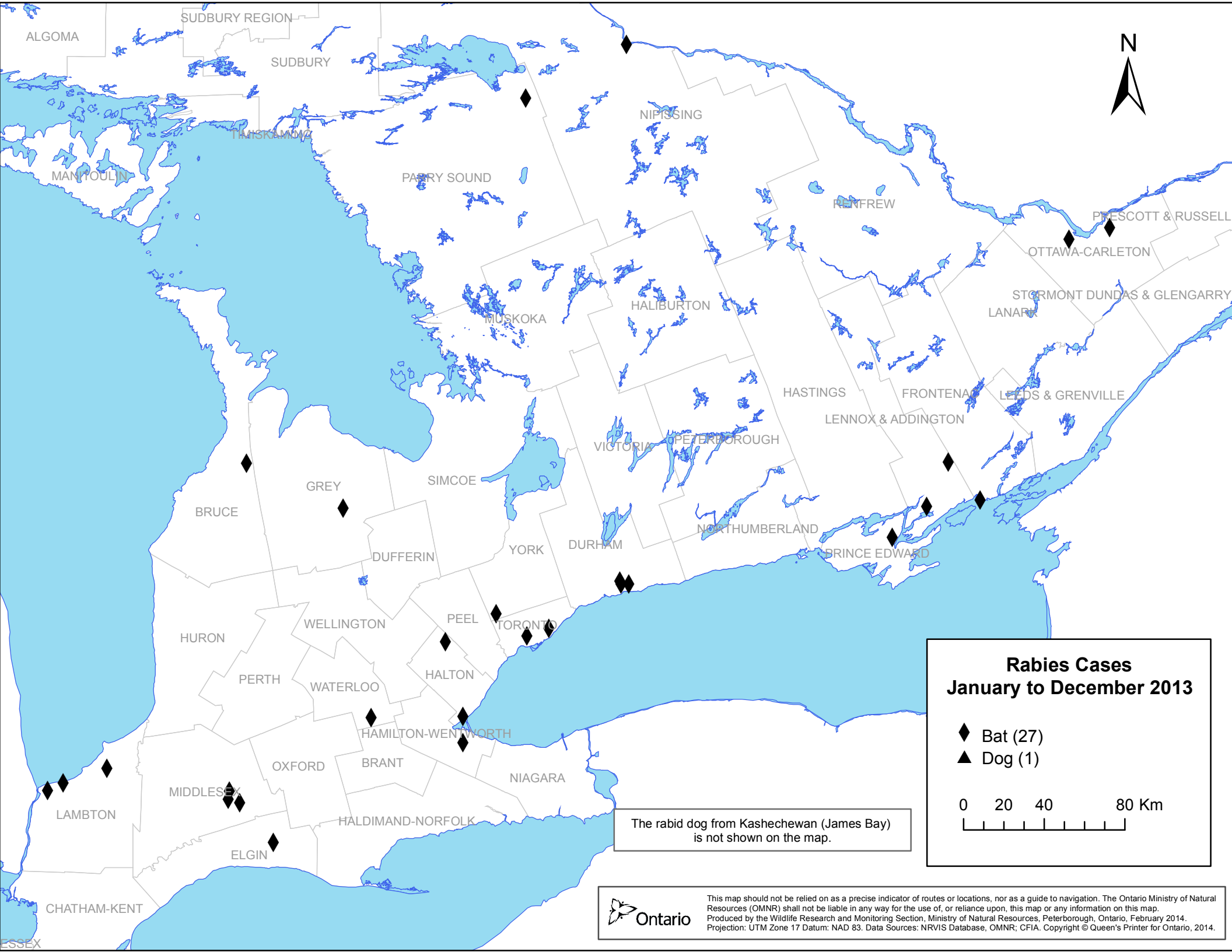
Animal Type	Fox			Raccoon			Skunk			Other Wildlife			Bat			Dog			Cat			Livestock			Totals		
County or Region	Cumulative			Cumulative			Cumulative			Cumulative			Cumulative			Cumulative			Cumulative			Cumulative			Cumulative		
	#	13	12	#	13	12	#	13	12	#	13	12	#	13	12	#	13	12	#	13	12	#	13	12	#	13	12
Southern																											
Wentworth													1												0	1	0
Haldimand-Norfolk																									0	0	0
Brant														2											0	0	2
Niagara														2											0	0	2
Elgin													1	2											0	1	2
Oxford																									0	0	0
Middlesex												1	3	1											1	3	1
Lambton												2	3												2	3	0
Kent														2											0	0	2
Essex																									0	0	0
Northern																											
Muskoka																									0	0	0
Parry Sound													1												0	1	0
Nipissing													1												0	1	0
Sudbury and Manitoulin														1											0	0	1
Cochrane																									0	0	0
Timiskaming																									0	0	0
Algoma																									0	0	0
Thunder Bay																									0	0	0
Rainy River																									0	0	0
Kenora																1									0	1	0
Regional Totals																											
Eastern	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	0	1	0	0	0	0	0	0	0	0	5	5
Central	0	0	0	0	0	0	0	0	0	0	0	0	1	7	9	0	0	0	0	0	0	0	0	0	1	7	9
Western	0	0	0	0	0	0	0	0	1	0	0	0	2	5	2	0	0	0	0	0	1	0	0	0	2	5	4
Southern	0	0	0	0	0	0	0	0	0	0	0	0	3	8	9	0	0	0	0	0	0	0	0	0	3	8	9
Northern	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0	0	3	1
Totals	0	0	0	0	0	0	0	0	1	0	0	0	6	27	25	0	1	1	0	0	1	0	0	0	6	28	28



**Rabies Cases
October to December 2013**

◆ Bat (6)

0 15 30 60 Km



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