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The rabies reporter



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October - December 2009

Looking back: Ontario rabies cases in 2009

With a total of only 50 confirmed cases this year, Ontario continues to experience record low numbers of rabies across the province. In fact, the lowest number ever reported since the 1950s.

Terrestrial cases were down considerably from 2008, from 41 to only 20 this year; while 60% of the total positive cases were found in bats.

That being said, two terrestrial cases reported were actually animals infected with bat strain. In August, a red fox in Victoria County tested positive with bat strain; and a cow in Leeds and Grenville County was also infected with bat strain in October. While rare, terrestrial animals contracting bat strain rabies does occur. Historically, we've seen about one case each year of a terrestrial animal infected with bat strain.

In July, a visitor from New York State came into contact with a bat while camping in Algonquin Provincial Park. She had the bat tested in NY State, where it was confirmed positive for rabies. The incident was not reported in the third quarter because we were not aware of it until afterwards. (*Note: this case is not recorded in the CFIA database; therefore CFIA reports total positive rabies cases in Ontario for 2009 as 49*).

Altogether, there were three cases of rabies found in foxes (as mentioned, one of which was bat strain); the two with Arctic fox strain were in Bruce County. Quite a change from 1989, when there were 891 positive Arctic strain rabies cases found in red foxes! The remaining 16 arctic fox strain cases were found in: bovine (5), ovine (3), and striped skunk (8).

In late September, having just concluded our aerial baiting program for the season, two positive rabies cases were confirmed in southwestern Ontario – in the Mount Forest and Listowel areas. Both were found in skunks with fox strain rabies. In an effort to rapidly respond to these cases, the Rabies Research and Development Unit distributed additional vaccine baits by

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2009 summary continued

hand in these areas; although both areas had been baited as part of our annual field season in mid-September.

Ontario remains raccoon rabies free, with the last case reported in 2005. We continued to bait along the Canada-US border in both the St. Lawrence and Niagara regions given that raccoon rabies is still present in our neighbouring jurisdictions.

Fourth quarter summary (October – December 2009)

There were only 9 rabies cases in the last quarter of 2009. Of these, there was one skunk, two cows, and six bat cases. The six rabid bats were located in Lennox and Addington (1), Hastings (1), Durham (1), Peel (1), Hamilton-Wentworth (1), and Elgin (1) counties, bringing the total for the year to 29. The rabid skunk was located in Grey County, while the two bovine cases were in Bruce and Leeds and Grenville counties.

Natalie Gorman, RRDU, MNR



Raccoon rabies in the province of Quebec: a significant decrease for the number of documented cases in 2009

The raccoon rabies strain has been detected in raccoons, skunks and one red fox in the Montérégie region, southern Quebec, during the last four years (n = 104 rabid animals documented in 2006-2009). From four cases found in 2006 (4 raccoons), the number has increased to 66 in 2007 (59 raccoons, 6 skunks and 1 red fox), then decreased to 32 in 2008 (26 raccoons and 6 skunks) and was only of two in 2009 (2 skunks), following extensive raccoon rabies surveillance (Figure 1) and control activities. Although these numbers are not directly comparable from year to year as, for instance, population reduction activities in 2007 has allowed the finding of additional cases which would have possibly gone unnoticed when compared to other recent years, the general pattern appears to be similar to the one experienced in Ontario. This is because we observed in the second year a peak followed by a progressive decrease and this, only after adequate surveillance and control.

The two rabid skunks found in 2009, through investigations done by the Canadian Food Inspection Agency, were also close to the border with Vermont where several cases of raccoon rabies are found each year. It thus appears that our control efforts, now mainly oriented towards both aerial and ground distribution of ONRAB® vaccine baits, provide very satisfying results and this, especially since no raccoon rabies case was identified

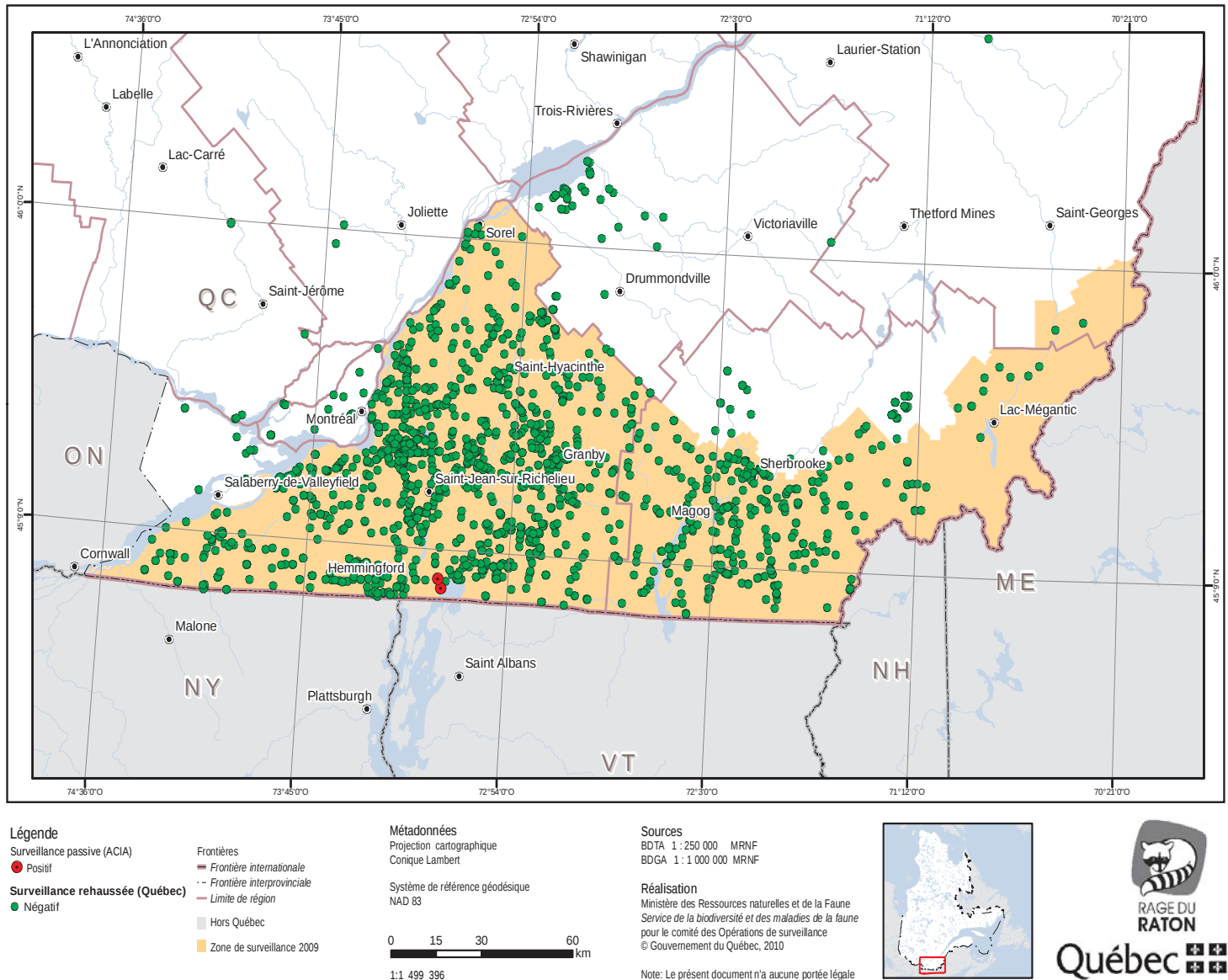
through our provincial 'enhanced' surveillance (Figure 1), as opposed to previous years. If we are successful in pushing back this viral disease south of the border in 2010, we will still likely have to maintain our surveillance and control programmes afterwards in an attempt to prevent this rabies strain from being documented in our province again, especially given the large area by which raccoon rabies can cross from Vermont to Quebec due to lack of natural barriers.

Figure 1. (opposite page) Geographical distribution of the raccoons and striped skunks analyzed through our provincial enhanced surveillance program. All negative results are presented in green. The two positive cases found in spring 2009 by the Canadian Food Inspection Agency are shown in red, near the border with the state of Vermont.

Julien Mainguy, wildlife biologist, Ph.D.
Ministère des Ressources naturelles et de la Faune

DID YOU KNOW...

**The Ontario Ministry
of Natural Resources
distributed over
2,177,550 rabies vaccine
baits in Ontario & Quebec
this year!**



2009 Niagara hand baiting report

During the period August 22 – October 31, Rabies Research and Development Unit (RRDU) staff handbaited a total of 138.47 km² of the Niagara region, distributing over 41,556 ONRAB® rabies vaccine baits (Fig. 2 - pg.4).

Our objective was to continue a vaccinated barrier of raccoons on the Niagara frontier thus preventing rabies from entering Ontario from New York State. Handbaiting occurs in urban areas and small rural areas, and is complimented by aerial baiting in adjacent large rural areas in the Niagara Region (refer to Figure 2).

We drove around areas indicated in Figure 2 tossing baits from our vehicles. Cell areas with high raccoon density were baited at 300 baits/km² and the remaining cells were baited at 75 baits/ km².

Navy Island, which is roughly 1.3 km² in area, was baited for the first time in our rabies control history. We had four staff walk individual ~1km transects (Fig. 3 - pg.4).

Baiting was completed at 400 baits/ km² as the raccoon density is known to be very high on Navy Island. No post baiting surveillance was conducted because we have sufficient data on raccoon bait acceptance and serology from previous baiting operations at densities of 75 and 300 baits/ km² .

We would like to send a special thank you to the Niagara Parks Police staff for their assistance in ferrying staff from the mainland to the island and the Niagara Parks Commission for allowing us to distribute baits in their region.

Mike Allan, RRDU, MNR

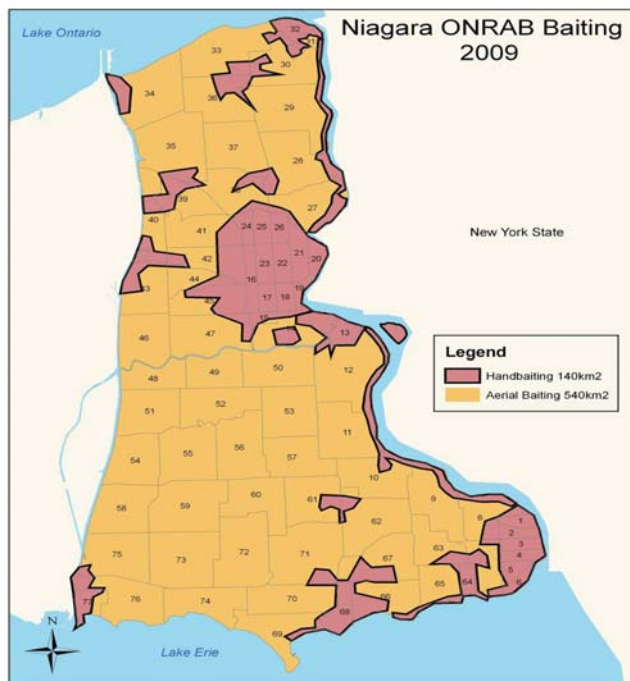


Figure 2



Figure 3

Fig. 2 Area hand baited with ONRAB® oral vaccine baits in Niagara region.

Fig. 3 Transects designed for hand baiting during rabies control operations on Navy Island with ONRAB® oral rabies vaccine baits.

Below (L-R) Mike Allan, Kim Bennett, Mark Gibson and Matt Purvis preparing to bait Navy Island.



ONRAB® small mammal study

In the summer of 2008, the ONRAB® Small Mammal Project was conducted to test the safety of the ONRAB® rabies vaccine bait on native small mammals. Small mammals are defined to include species belonging to the Order Rodentia: mice; voles; squirrels and chipmunks and the Order Insectivora: shrews and moles.

A trapping web design was used on eight study plots in Peterborough and eastern Ontario. Each web had eight arms representing the directions of a compass radiating out from a central point. Each arm of the web had a varying number of trap stations that were marked with a pin flag. After a few days of pre-baiting with a mixture of sunflower seeds and whole oats, ONRAB® baits were distributed at each trap station and monitored daily for one week prior to trapping. Monitoring included observations with regard to gnawing of the bait matrix, puncturing of the vaccine pouch and estimation of any vaccine spillage.

The following numbers of species were captured using Victor Snap and Tomahawk live traps baited with a mixture of peanut butter and whole

Bait that has been gnawed by small mammals



oats: 102 meadow voles; 58 short-tailed shrews; 31 eastern chipmunks; 12 meadow jumping mice; 9 white-footed mice; 4 masked shrews; 1 long and 1 short-tailed weasel; 1 red squirrel and 1 gray squirrel.

An oral and rectal swab was taken from each of the 220 samples to screen for the shedding of AdRG1.3 (ONRAB®

is a trade name for a vaccine-virus complex AdRG1.3, adenovirus-rabies glycoprotein). Out of the 440 swabs collected, 1 sample was greater than the AdRG1.3 detection level.

The analysis of the necropsy data is still ongoing. Six tissues: brain; lung; liver; spleen; intestine and kidney were removed from each of the 220 samples and screened for the presence of AdRG1.3.

The mandible and femur bones were removed and are currently in the process of being ground or sectioned, depending on size, and viewed via UV-light microscopy for the presence of tetracycline which indicates bait contact.

I would like to acknowledge all our partners for their contributions to this study: John Williams, Manager of the Otonabee Region Conservation Authority, Frank Phelan, Manager of the Queen's University Biological Station and Bill Mather, Manager of the Forsythe Property for their advice on potential study sites and permission to access ORCA, QUBS and private property; MNR Technicians Steve Bennett, Ashley Minion, Norm Tennyson and Brian McDougall for their assistance in the field; ONRAB and placebo baits provided by Artemis Technologies Inc.; AdRG1.3 screening provided by Chris Kyle and the Trent University Natural Resource DNA Profiling and Forensics Centre; AdRG1.3 screening test developed by the Canadian Food Inspection Agency; Trent University Graduate student Lindsay Thomson for running the DNA testing on our mice samples.

Laura Bruce, RRDU, MNR

News and updates

Welcome & congratulations to:

Natalie Gorman who was the successful candidate in the Wildlife, Aquatics and Rabies Research Information Officer's competition.

Steve Bennett, Luke Buchanan, Andrew Orton, Sarah Hagey and Zack O'Krafka who accepted seasonal rabies research positions in August.

Acting Assignments:

Kirk Sobey – acting assignment as A/Regulation and Policy Specialist, Ministry of Natural Resources, Fisheries Section (Aug.–Feb.)

Mike Allan filled in for Kirk as the acting Wildlife Research Biologist during this time frame.

Andrew Silver – is completing an acting assignment as the Wildlife Research Biologist with the Wildlife Research & Development Section from August until March 2010.

Bev Stevenson – continues her acting assignment in Clinton Area office throughout the 2009-10 as the Senior Fish & Wildlife Specialist.

Matt Purvis has been acting as the Wildlife Research Technician in Bev's absence.

Tara MacDonald – accepted an acting assignment as the Senior Aquatics Research Technician at the Codrington Research Facility during 2009. **Erin Scharf** filled for Tara during this time frame as the seasonal Wildlife Research (Rabies) Technician at the Codrington Wildlife Research Facility. **Graham Branscombe** will now continue this acting assignment through the 2010 year replacing Tara who has started her maternity leave.

A journal: aerial baiting 2009 – Ontario and Quebec

During this year's baiting campaign MNR rabies unit staff and aviation staff, used Twin Otters to bait over the islands near Kingston, Quebec and south western Ontario.

Kingston, Ontario

On the morning of August 16th, two staff loaded the electronics for the bait machines and 4 boxes of bait and headed east on Hwy 401 to Kingston to meet up with one of the Twin Otter planes, the "OGB". At the airport, the electronics, tools and baits were unloaded and one of the baiting crews came to pick up the bait machine truck to drive it over to Bromont, Quebec. Once the electronics were installed and the 4 boxes were loaded aboard, we were off to bait Wolfe and Howe Island. We continue to bait these islands because there are still rabies cases of concern on the other side of the border in New York State. A total of 12,960 ONRAB® baits were dropped in just over 2 hours, covering 181 km². After completing this we headed back to the airport for fuel, our gear and the aircraft engineer before flying out to meet the rest of our staff in Quebec. Once we gained some altitude, you could see through the haze how much work had been done since last year as Wolfe Island was peppered with wind turbines gathering energy for the new wind farm.

We landed in Bromont at around 5:30pm and unloaded our gear. The computer was already installed into the second Twin Otter, the "OGA", by the operations lead so the flights were loaded and ready. After some minor calibrations, we cleaned up and headed for the hotel. After dinner, the baiting staff met up to go over the teams and schedule for tomorrow.

Bromont, Quebec

Being the first day of baiting in Quebec, we were all eager to get things going. First we had some new people that needed safety briefings and training; and Quebec was also hosting their media day event. The flights were uploaded and OGB was off first while

OGA was on the ground a little longer with the media. Then it was off on a shorter flight with some reporters and cameras aboard. While we waited, the baits in the reefer were sorted into lots and organized for future flights. OGB landed and was off with a new crew and we waited for the media flight to get back. OGA was ready to go once an experienced navigator was on with one of the new pilots. As with most media days, there was a bit of a delay but we managed to get 7 flights done.

After some discussion with the Quebec staff it was decided to switch the density from 150 up to 175 and 200 baits per km² for tomorrow's flights.

On the morning of the 18th, we were up and ready earlier in an effort to get as many flights in that the weather allow. We made the changes to get the density higher and after some number checks we managed to get the planes off by 8:30am. As the day went along, our turn around times were getting better with each flight. The skies were starting to get darker and by noon the second shift of pilots arrived and they were wondering about the mornings delay. There was some concern about finishing up by Saturday as there weren't enough rooms available at the hotel for the weekend. The flights to the north soldiered on to finish but the flight to the south was running into cells of lightning and heavy rain so it landed until the weather eased off, only to try again later and return quickly. We still managed to get a total of 7 flights done.

August 19th was an earlier start and once the planes were loaded, they were off the ground and baiting by 7:30am as planned. The pumps were getting some additional use as we had 2 helicopters come in for fuel. The day was cooler and windier after the storms went through but we were making good progress. We managed to get 9 flights done but the weather

hampered us from getting any additional flights off. The next morning was much the same; once the planes were loaded and the crew was aboard, the planes were off by 7:30am. We switched one of the planes back from our earlier high density to the lower density, as well as testing out our newest bait machine computer. We completed 10 flights before packing up and calling it a day. The morning of August 21st was shaping up to be a slow start as it was foggy in the hills so the pilots checked the forecast and it looked more promising by mid-morning so the crews were on stand by. By 10am, the pilots were eager to give it a try and so the planes were loaded and airborne. After looking at our progress by mid-afternoon it was decided that the rooms we managed to get together could be cancelled and we would be finished and heading home tomorrow. We managed to get 5 flights done leaving us with one flight per plane to complete tomorrow.

On the 22nd, we got up and had a hearty breakfast and headed to the airport and had the planes loaded and off the ground by 8am. We shuffled around some personal gear, took down the antennae and moved the engineers gear near the pumps so it could be loaded. The first plane landed and we had enough time to fuel and load it before making room for the second Twin to do the same.

In 6 days, we flew almost 80 hours and completed 40 flights dropping a total of 946,392 ONRAB® ultra-lite baits over 11,487 km². The data was downloaded, merged, checked and given to Quebec before taking a group picture and saying goodbye for another year. Before leaving Bromont, we picked up the daily copy of Le Journal de Montreal to have a look at the excellent 2 page spread on the 2009 aerial baiting operation in Quebec. We headed on our way and stopped over the border in Cornwall for some lunch before heading on to Peterborough.

Stratford, Ontario

Three weeks later, starting on September 13th, we met in Peterborough to pick up our new staff before departing for Stratford. After some gear was shuffled around, we were off down Hwy 115 and on our way. The traffic on the 401 through Toronto was no problem and crews made good time getting to the airport in Stratford. At the airport, we had some lunch before doing a briefing, organizing teams and setting up the antennae. The flights were loaded and the pilots did their safety briefing before we moved onto the navigator and baiter training.

On the first morning, we were once again asking ourselves what would fall baiting be without our usual foggy start to the project. But by 10am, the planes were loaded with the first flights and the wheels were off the tarmac and back down by noon. Although it looked fine on the ground, the flights were less than smooth and some of the staff were coming back a little green and carrying some little white bags as luggage. Before the next sets of flights headed up, we went over to the reefer and did some counting and organizing so that operations would run smoothly in days to come. To our surprise, even with the fog delay, we still managed to get 8 flights done by days end.

The morning of the 14th looked promising until we got to the airport and the fog rolled in, but by 9am we were ready to give it a try. It was decided to attempt some of the flights to the north and get them out of the way. As daylight started to fade we decided to squeeze in 2 more short flights for a total of 7 for the day. On the morning of the 16th, we were loaded and off by 7:30am. Throughout the day we had many visitors stop by to say "Hi" and see how things were going. The crews on the last 2 flights of the day were treated to a magnificent sunset. It was a long day and since the weather had cooperated we managed to get a total of 11 flights done.

The morning of September 17th looked similar to the previous day and the planes were off by 7:30am. But after three lines, one of the planes came back because the belt stopped moving. After 2 separate attempts, the problem with the bait machine was solved and the crew continued on. Thankfully, all this happened before the media showed up to do some interviews and get some footage. The day seemed to get better until a call came in from a milk farmer that had problems with how low the planes were flying over his building. We had Kincardine airport relay a message to fly higher with longer turns. At the end of the day, we downloaded the flights onto the computer and we completed an additional 8 flights.

On the 18th, the weather looked promising to the south so OGB was loaded with the 2 flights to do the Niagara area but the weather to the north looked a little uncertain. OGA decided to go up and have a look, so in the meantime we loaded to

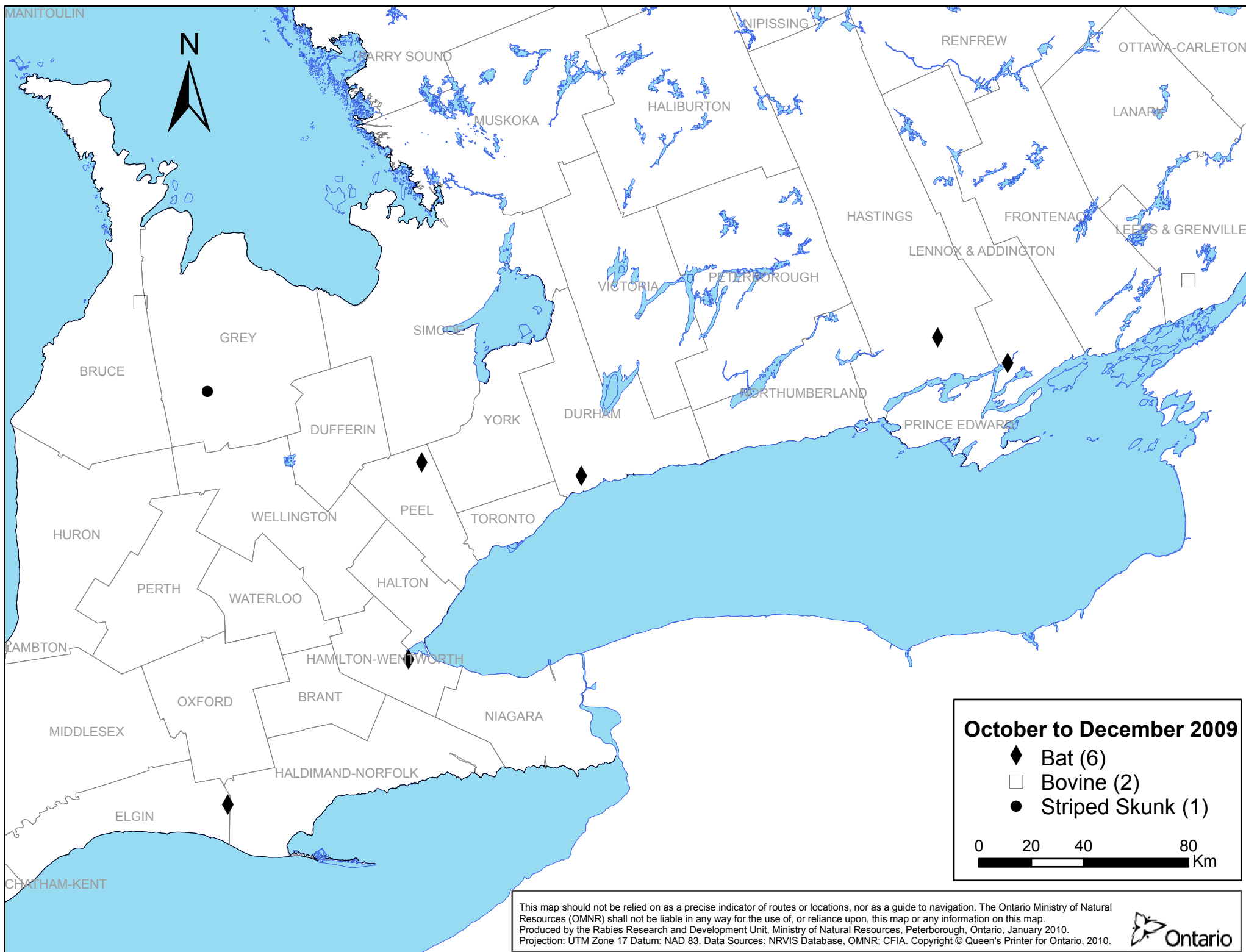
do our Borden flight. They returned shortly thereafter because the fog was still blanketing the tree tops. We found a more southerly flight for OGA to do and were hoping to get Borden done on the next run. We did manage to get it done next but we were down a couple of staff afterwards because of the length of the flights and air sickness. Eight flights were completed by the end of the day. The crew decided to head off to *Molly Blooms* for dinner and to blow off a little steam listening to a real "yee-ha!" band.

On the morning of September 19th, we were greeted by a spectacular sunrise and with it being the weekend we were given permission to head up north to get the Meaford tank range done. On the next flight, we decided to throw one of our new navigators up front to see how they managed in the front seat after their previous training session. The crews were fairing much better today and we ended the day with a flight over Tillsonburg, so some Stomping Tom definitely had to be played for those in the back. For the third day running, we managed to get 8 flights done just leaving us with 2 to finish on Sunday.

On our last day, September 20th we packed up our gear, checked out of our rooms and loaded the vehicles before a hearty breakfast. Once at the airport we got the flights off and then took down the antennae and moved the engineers gear out to the ramp for loading. The planes landed and we split into 2 groups to take the bait machine and electronics out of each aircraft. Once the planes were loaded, we gathered for our group photo before departing. We said our goodbyes to Andy and his staff, as well as the pilots and engineers as we most likely wouldn't see them for another year. Like Quebec, our baiting operations were featured in a local paper so we were off to find some copies before returning to Peterborough. In seven days, we flew just over 110 hours and dropped a total of 1,146,733 baits over 28,659 km² of landscape.

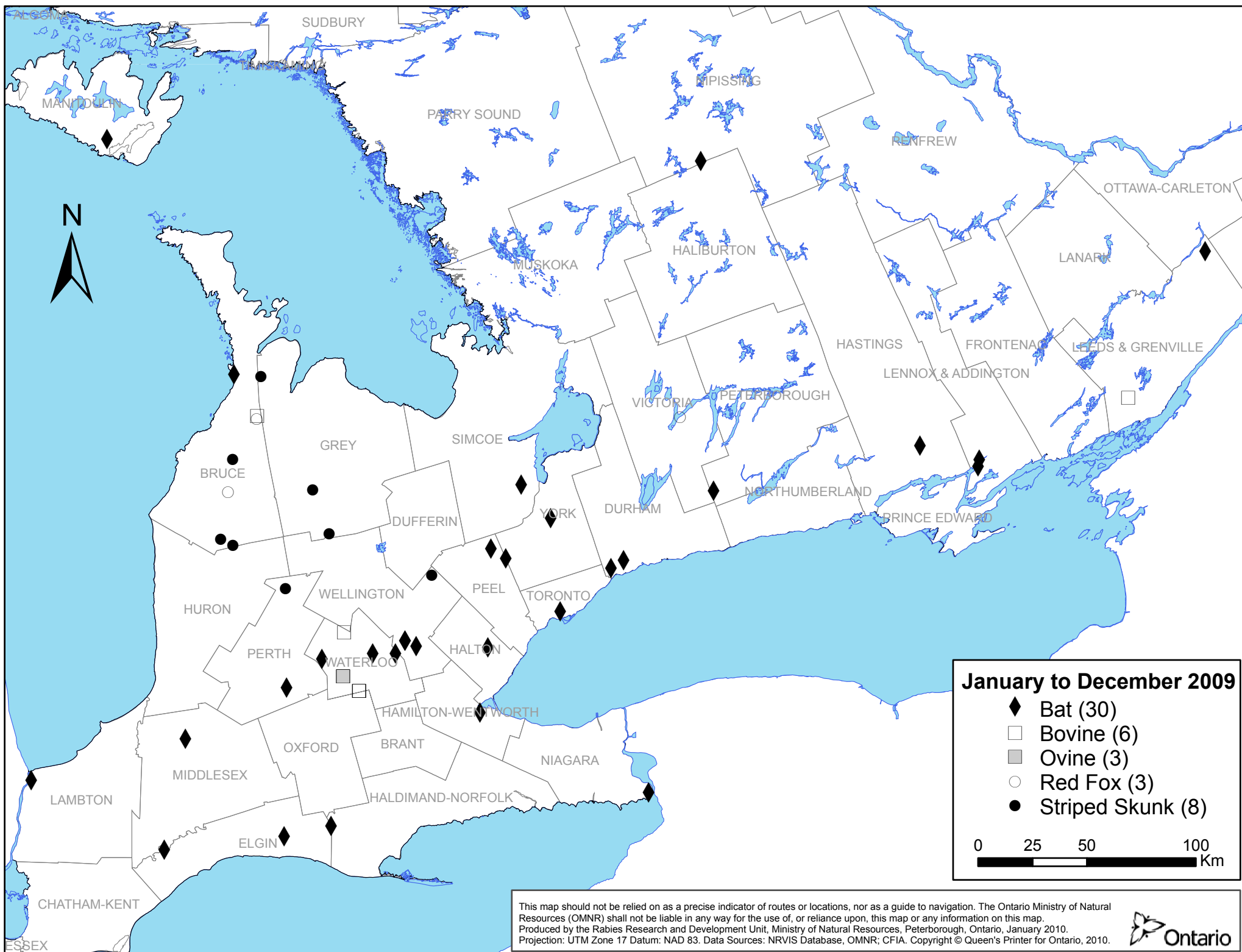
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This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources (OMNR) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map. Produced by the Rabies Research and Development Unit, Ministry of Natural Resources, Peterborough, Ontario, January 2010. Projection: UTM Zone 17 Datum: NAD 83. Data Sources: NRVIS Database, OMNR; CFIA. Copyright © Queen's Printer for Ontario, 2010.





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Animal Rabies Report: October to December 2009

Animal Type	Fox			Raccoon			Skunk			Other Wildlife			Bat			Dog			Cat			Livestock			Totals		
County or Region	#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative	
		09	08		09	08		09	08		09	08		09	08		09	08		09	08		09	08			
Southern																											
Wentworth													1	1	5										1	1	5
Haldimand-Norfolk																									0	0	0
Brant																									0	0	0
Niagara														1	2										0	1	2
Elgin													1	3	2										1	3	2
Oxford																						1		0	0	1	
Middlesex														1	6										0	1	6
Lambton														1	1										0	1	1
Kent															1										0	0	1
Essex															1										0	0	1
Northern																											
Muskoka																									0	0	0
Parry Sound																									0	0	0
Nipissing														1											0	1	0
Sudbury														1											0	1	0
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	0	1
Regional Totals																											
Eastern	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	0	0	0	0	0	0	1	1	0	2	4	3
Central	0	1	0	0	0	0	0	0	0	0	0	0	2	7	9	0	0	1	0	0	0	0	0	0	2	8	10
Western	0	2	1	0	0	0	1	8	25	0	0	0	1	11	8	0	0	2	0	0	2	1	8	8	3	29	46
Southern	0	0	0	0	0	0	0	0	0	0	0	0	2	7	18	0	0	0	0	0	0	0	0	1	2	7	19
Northern	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	1
Totals	0	3	2	0	0	0	1	8	25	0	0	0	6	30	38	0	0	3	0	0	2	2	9	9	9	50	79