

The Rabies Reporter

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RABIES DURING THE FIRST QUARTER ALMOST NOTHING TO REPORT LITERALLY!

I have run out of superlatives to describe the rate at which rabies cases are dropping in the control zone in southern Ontario. The only rabid foxes were in the far north. There has not been a rabid fox in southern Ontario since last November. The total number of rabid animals in the first quarter was 16, down from 32 a year ago. Among the 16, there were 8 skunks, 3 cattle, 1 dog, 1 bat (big brown) and the 3 foxes in the north. The eastern and southern regions were rabies-free, while the counties of Waterloo, Wellington, Perth, Grey, Bruce and Huron, all in western region were the "hotbed" of rabies for the quarter.

There remain two points of concern, as outlined in the last issue. The northern outbreak is moving southward. It reached Kapuskasing this quarter, and telephone reports in April and May said that the number of rabid foxes in the area was increasing, and several people were on post-exposure treatment. The other area is still Quebec. The map shows cases east of Montreal. In response to these movements, the Rabies Advisory Committee endorsed recommendations by Roly Tinline that we bait the tip of eastern Ontario, and adjacent Quebec, and consider baiting in northern Ontario. Final decisions will

be made after we have examined the cases to the end of July.

There was another rabid skunk in the Havelock area, where there were several cases last year, but no more skunks in the unbaited parts of eastern Ontario.

The average number of first quarter cases from 1980 to 1989 was 471, ranging from a low of 243 (1984) to a record 814 (1986). Thus, we start off the year with roughly 97% less rabies than a decade ago. Let's hope that trend continues.

Please note that all the diagnostic records summarised for Ontario in the Rabies Reporter originate in the Rabies Laboratory of the Animal Diseases Research Institute, in Nepean, near Ottawa. That laboratory is no longer a part of Agriculture and Agri-Food Canada. On 1 April 1997, it became part of the new Canadian Food Inspection Agency, which comprises almost all the laboratory services which were formerly part of Agriculture and Agri-Food Canada. Not only is all the lab work done by this new agency, the network of district offices who collect the specimens and make sure they get to the lab promptly belongs there as well. The Ontario Ministry of Natural Resources does not collect or analyse rabies specimens. We do send some to ADRI through the district office network, but ADRI does all the hard work. We are most grateful to them for this high quality service.

As the perceptive among our readers have noticed, we have had trouble getting the data in a timely fashion for over a year. As part of the reorganisation, and in recognition of ongoing software problems, responsibility for extracting the Ontario and Quebec data has been reassigned to ADRI, where Lindsay Elmgren promises to get it to Queen's on time. Certainly he sent the April data before I had a chance to digest the first quarter cases!

Charlie MacInnes
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RACCOON RABIES A MILD WINTER SETS US UP FOR A LONG, HOT SUMMER

In northern New York and east through Vermont, the winter was mild, with very little snow at low altitudes during raccoon mating season in February and early March. That

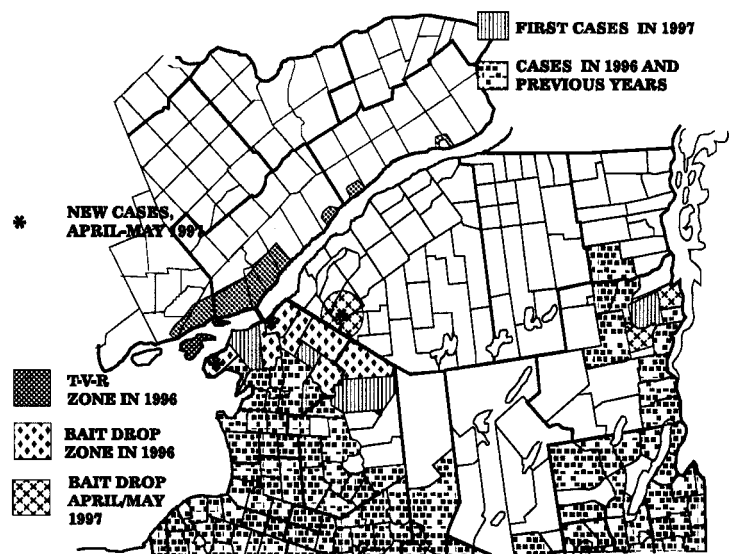


Figure 1. The advance of raccoon rabies along the St. Lawrence River in New York. The baited and T-V-R zones

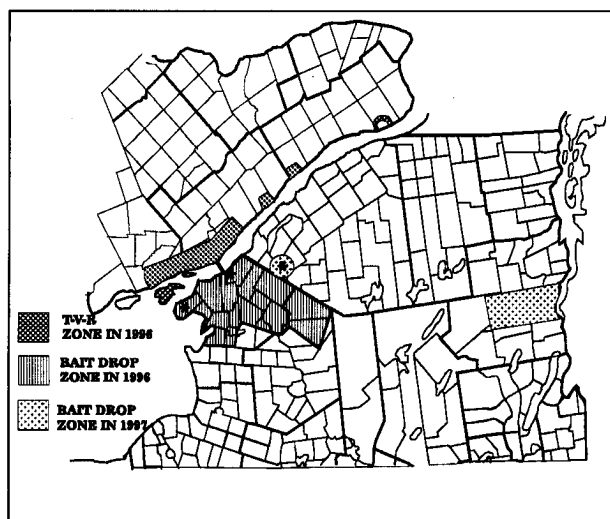


Figure 2. The defenses against raccoon rabies. The gap between the Jefferson County baiting on the west, and the NYDH baiting in Essex County, on the east, is occupied by the high country of the Adirondak Mountains. Raccoon rabies has not penetrated into the mountains.

was in sharp contrast to the harsh, snowy winter a year ago, when there was so much snow during mating season that there was very little advance of the rabies front. This year there have been major advances all over the front.

In March and April the front advanced into the baiting zone in Jefferson county. The major events are marked as large asterisks in figure 1. The first sign of trouble was a rabid raccoon in Clayton, less than 5 km from Wolfe Island (Ontario). Another rabid raccoon was encountered within 200 m of the New York end of the Ivy Lea Bridge. The good news on that one is that the nearby bridge goes to Wellesley Island, which was baited in both 1995 and 1995. Then the road passes to Hill Island, on which Parks Canada has conducted T-V-R for the past two seasons. So, despite the closeness of this case to Ontario, our defences were in place. Finally, on 21 May, a rabid raccoon was found near Gouverneur, in St. Lawrence County, on the *WRONG* side of the wall of baits. That was more than 32 km north and east of the nearest case previously seen. Quick action by Dr. Laura Bigler of Cornell resulted in baits being dropped for a 10-km radius around the case 3 days later.

On the New York (western) side of Lake Champlain, the northward movement was stalled as a result of ongoing bait drops by the New York Department of Health. The 1997 spring drop is shown in figure 2.

Raccoon rabies jumped northward in western Vermont, advancing up the lowlands agricultural habitat between the mountains and the east side of Lake Champlain. The northernmost case to the end of April was in the Town of Milton, only 42 km south of the Quebec border, and about 80 km from the south shore suburbs of Montreal. This front was

also treated with baits, as described in the next article.

There is a severe outbreak of raccoon rabies in southern Maine. Over 200 rabies cases were reported up to the end of May.

Last year there was one rabid raccoon taken in Ohio, in the Town of Poland, a suburb of Youngstown, which is, in turn, right on the Pennsylvania border. That was in April 1996, but there were no further cases through the summer and fall. That changed abruptly in late February, and to mid-April there had been 17 new cases of raccoon rabies within a 15 km circle around the original location. One hundred thousand fishmeal-polymer baits containing V-RG were dropped in a roughly 40 km diameter circle during four days of the week of 12 May. These baits were organised by the Centres for Disease Control in Atlanta, and put out by a

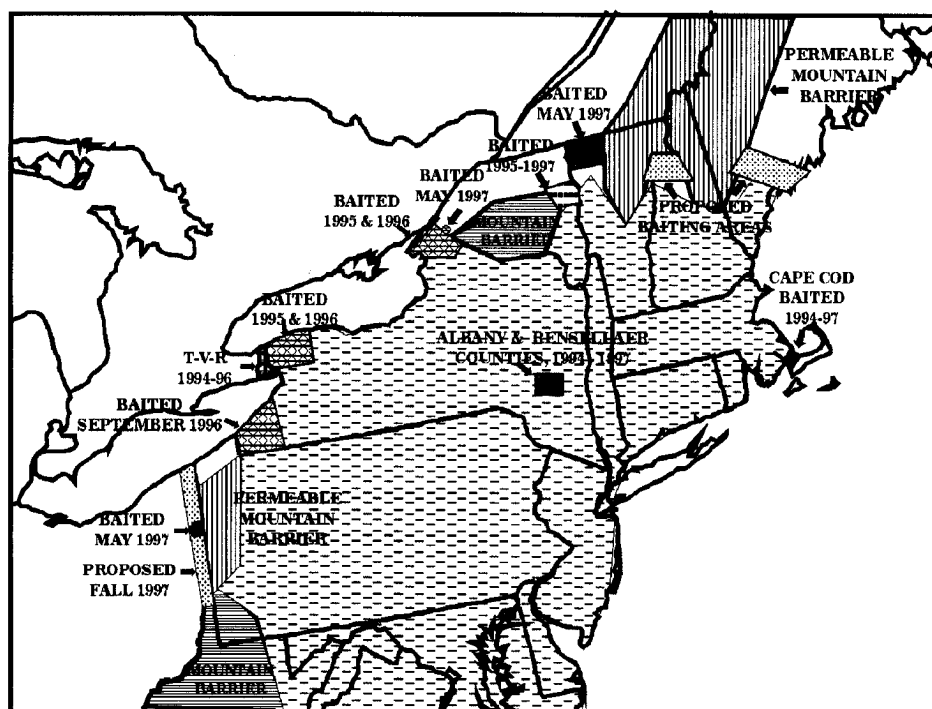


Figure 3. The existing and proposed bait projects designed to halt northward and westward spread of raccoon rabies. Raccoon rabies has not passed through the Appalachian Mountains in West Virginia, nor the Adirondak Mountains in New York. It has made its way across the Appalachians in western Pennsylvania, although it took several years to do so. We do not know whether there are enough raccoons in the Green and the White Mountain ranges in Vermont and New Hampshire. If the Ohio projects become active in September, the only unblocked areas for northward spread will be in New Hampshire and Maine.

the week of 12 May. These baits were organised by the Centres for Disease Control in Atlanta, and put out by a group of volunteers from CDC, Cornell, and the Ohio Department of Health, using an Ohio Department of Natural Resources helicopter, and a lot of ground crews. The Ohio Department of Health is hoping to raise the money to put out over 300,000 baits this fall, in a belt stretching down the eastern border of the state from Lake Erie to the Ohio River.

On the good news side of the picture, raccoon rabies has declined sharply in Niagara County, New York, probably as a result of the baits dropped there in the last two years. That relieves some pressure on our side of the Niagara River, but we will keep the T-V-R project active in 1997, just to be sure that Ontario is well protected.

In past years, except 1996, there have been 2 major advances of the raccoon rabies front. One was in April-May, and seemed to be a result of virus spread by adult males during their search for mates in early spring. The next, and often larger advance took place in August and September. Hold your breath and bite your fingernails, Ontarians! It's going to be a long, hot summer for raccoon rabies watchers. Rick Rosatte especially will be watching carefully, especially for outlying outbreaks.

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♪ BAITING IN

VERMONT ♪

The next step toward containing the northward spread of raccoon rabies was completed on Monday, May 5 1997, using the international airport at Burlington, Vermont as base. The operation went very smoothly, with 73,000 baits being dropped from one Twin Otter, C-FOPG, in a single day, over an area of 2401 km². There were 6 flights, starting at 0740, and ending at 1930. The drop took place in

superb weather, and was completed without incident.

Raccoon rabies has moved rather briskly this year on the Vermont side of Lake Champlain. That may be due to a mild winter with little snow except in the mountains. There were cases about 10 km south of Burlington in 1996. This spring the first cases were on the north side of the city, and then there was a case in the Town of Milton, more than 20 km further north, and about 42 km from the Quebec border. This bait drop covered all the land between Lake Champlain (including larger islands) and the 600 foot contour of the Green Mountains. In addition, two river valleys which come out of the mountains below that level were treated. It is intended to act a block to further northward progression, and it came far enough south to cover Milton.

The drop was done early in the year because of the rapid movement towards the Quebec border. However, we will have to go back and bait the area again in the fall, to immunise this year's young raccoons.

Volunteers helped load the bait machine. These came from APHIS-Animal Damage Control, two trappers, and various other individuals, including the recently retired dean of the Cornell Vet. School, who now lives near Burlington. One of the few hitches in the operation happened on the previous Friday, when a lawyer in the Vermont Department of Health ordered all Department staff not fly. The staff helped with ground operations, and were much in favour of the operation. The new state epidemiologist stayed all day and asked a lot of thoughtful questions.

The two individuals who flew the most in the baiting part of the aircraft were Andrew Silver and Peter Bachmann, both from OMNR. Kathryn MacDonald was the #1 navigator, followed by Laura Bigler of Cornell, and Roly Tinline from Queen's University. Pilots were Neil Ayers and Bill Turcotte, with Berj Sailian as engineer. The bait machine ran well throughout.

The majority of the funding for this drop came from the government of Quebec, with the cost of flying

from Ontario. There were 75,000 baits available, at \$1.50US/bait, and Ontario provided just over 15 hours of flying at \$800CDN/hr. The last 2000 baits will be hand placed in urban areas, including Burlington and St. Albans.

There were three local TV stations at the airport, plus a crew from Rigaud Productions in Paris, France, co-operating with TV Ontario on a three-part series on viruses. They wanted to show up-to-date methods to combat a virus. I did not see the local news coverage, but several of the crew said it was OK, although very short.

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RABIES REPORTER IS NOW ON THE INTERNET.

Visit us at our new internet web page at:

<http://www.gis.queensu.ca/RReporter/mnr.html>, or

<http://www.gis.queensu.ca> and follow the Rabies Reporter Link on the menu. This site features the latest Rabies Reporter incidence maps for foxes and skunks, it reviews some other rabies sites that may be of interest to you, it carries news of the oral vaccination programs, and it has a gallery of pictures of foxes, raccoons and skunks. New in 1997 on the site, you can query a database containing over 14,000 rabies case records for Ontario and Quebec, spanning 1988 to the present. You can either use a set of pre-designed queries, or map the cases for a time period of your choice, using our interactive map site, which employs Autodesk's MapGuide.

The Rabies Reporter is now soliciting articles of interest to rabies researchers: visit our homepage to e-mail us about any articles or sites that you would like to have linked to the Rabies reporter. We welcome discussion of issues in any aspect of rabies.

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VIIIth ANNUAL INTERNATIONAL MEETING ON RESEARCH ADVANCES AND RABIES CONTROL IN THE AMERICAS

This meeting, known by its short form as RABIES IN THE AMERICAS, will be held in Kingston, Ontario, Canada during 2-6 November 1997. The conference is hosted by Queen's University, Kingston; the Ontario Ministry of Natural Resources; and the Diagnostic Laboratory, College of Veterinary Medicine, Cornell University. The conference will focus on basic scientific contributions and applied research toward the understanding and control of this viral disease. Particular emphasis will be placed on the transfer of technology and techniques in rabies investigation and control. Conference sessions are designed for a diverse public health and biomedical audience, particularly Canada, the United States, Mexico and all of Latin America. The sessions will explore research advances, diagnostic issues, viral pathobiology, oral immunisation, descriptive and molecular epizootology, host ecology, legal, political and economic issues, and technological advances in rabies surveillance and control.

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RACCOON MOVERS SHAKE THEORY

Everyone say raccoon don't move very far. Most radio-telemetry studies indicate that rural raccoons have home ranges in the order of 4 km², while their urban cousins live within less than 1 km². That translates into maximum straight line distances of 4 km and 2 km between the farthest points visited by the average rural or urban raccoon in the course of the average year. Since Rick Rosatte did a lot of urban radio-tracking, he was convinced that raccoons are pretty sedentary. It therefore came as a major surprise, when he started to look at the T-V-R data gathered in the Niagara Peninsula, to find that movements from one year to the next are much greater than expected.

Each T-V-R trapping team carries a hand-held GPS receiver, and the location of each trap set is recorded. Since all captured raccoons receive eartags, it is easy to match the original tagging location with the recapture location. Remember that the figures given below all come from individual raccoons captured in 1994, and recaptured during the 1995 trapping season. The *average raccoon* was 7.97 km away from its original capture site, with a 95% confidence interval of 7.12 - 8.81. All ages and sex classes moved, but there were significant differences in how far. Adult males were the champion movers, with a mean dispersal distance of 10.17 km, while adult females averaged 8.48 km, juvenile males 7.02 and juvenile females 6.33 km. Even more worrisome to rabies control plans was that 19% of the recaptured animals were more than 20 km from their starting point. The maximum recorded movement was 46 km. That is remarkable when one considers that the study area is surrounded by water, and mostly big water. On the east there is the Niagara River, on the south, Lake Erie, on the north, Lake Ontario, and on the west, the Welland Canal. Neither you nor a raccoon can go much more than 46 km without having to cross water. Urban raccoons were more likely to move a long way. Sixty-four percent of the >20 km dispersals were made

by raccoons from Fort Erie and Niagara-on-the-Lake. It is possible that humans, by deporting nuisance raccoons, are partly responsible for these movements, but there are other indications that this may be a regular feature of raccoon life. In the Scarborough study, year after year the percentage of adult raccoons wearing ear-tags was much lower than the estimated percentage of all raccoons tagged the year before. That suggested extensive movements. The Scarborough study area has few straight line distances greater than 8 km, and on 2 sides the boundaries are streets that raccoons could easily cross. So far, the record movements of tagged animals are 5 individuals originally tagged in Cornwall, and captured the following year 75, 132, 133, 141 and 147 km to the west. We strongly suspect either hitch-hiking or deportation, but cannot prove it.

The implications of these movements for rabies control are considerable. The appearance of a rabid raccoon at Gouverneur fits this pattern. Rick is still early in the analysis. There will be 4 years of Niagara data by the end of summer. Stay tuned for more surprises.

The Rabies Reporter, a scientific newsletter about current issues in rabies research and control, is a joint effort of the Rabies Research Unit, Ontario Ministry of Natural Resources; the Food Production and Inspection Branch of Agriculture Canada; The Ontario Ministry of Health and the Department of Geography, Queens University, Kingston.. Articles for future issues will be welcomed by the editor. Comments, letters, submissions and enquiries should be sent to:

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Animal Rabies Report: January to March 1997

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Animal Type	Fox			Skunk			Other Wildlife			Dog			Cat			Livestock			Total		
County or Area	#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative	
		97	96		97	96		97	96		97	96		97	96		97	96		97	96
Northern (continued)																					
Thunder Bay																			0	0	
Rainy River																			0	0	
Kenora																			0	0	
Subtotals																					
Eastern							1	1	1										1	1	
Central				1	1	2													1	2	
Western			3	7	7	8				1	1				1	3	3	9	11	21	
Southern						2													0	5	
Northern		3	3	3															3	3	
Totals		3	3	8	8	12	1	1	1	1	1	1	0	0	1	3	3	9	16	32	

Livestock this quarter: 3 cows

Other wildlife this quarter: 1 big brown bat

