

The Rabies Reporter

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In this issue:

- One rabid fox in southern Ontario
- Rabies Control in northern U.S.A
- Bait drops for the fall of 1996
- Raccoon rabies in New York State
- The case of the phantom fox
- Jack Debbie retired

ONLY ONE RABID FOX IN SOUTHERN ONTARIO SURELY YOU JEST!

I never thought I would see more rabid foxes in northern Ontario than in southern Ontario, but it has happened. There was only one rabid fox in the recent quarter in all of southern Ontario, near Lakefield in Peterborough County, but there were six in the north. Another milestone is only two rabid cattle, no

Unfortunately, there are no UTM coordinates in these case records, so we cannot present a map. (See the last article in this issue.)

There is also rabies activity on the Quebec side of the northern farming country, northwest of Rouyn-Noranda, close to the Ontario border. So far there have been 8 cattle, but only 1 fox proven rabid. We are holding 150,000 baits in reserve in case we have to bait in the north this fall.

A second point of interest is that, after the almost complete disappearance of rabies east of Toronto last year, there is a considerable outbreak of rabies in skunks in Peterborough County, centered on the village of Norwood. The one fox was nearby, so this might be interpreted as a case of skunks maintaining rabies and passing it back to the fox population.

Western Ontario is not out of the woods yet either. Although there were no

PLANS FOR RABIES CONTROL IN THE NORTHERN U.S.A.

There is growing interest in doing something about the advance of raccoon rabies. There were meetings in Ohio, Pennsylvania and western New York in June, and an important New England meeting in Augusta, Maine on 8 August.

There was one rabid raccoon in Ohio early this year, but so far that has been the only one. One of the great puzzles about the movement of raccoon rabies is why westward movement in Pennsylvania has been so slow. The warm fuzzy idea is that the Appalachian Mountains have prevented, or dramatically slowed, westward movement. The cold hard fact is that we don't understand exactly why that works; certainly we do not know enough to predict whether this block will last. The mountains tend to have large tracts

Table 1. Historical averages of rabies cases for the second quarter of the year in Ontario.

Years	Fox	Skunk	Dog	Cat	Livestock	TOTAL
1958-70	85	32	13	9	64	214
1971-80	138	51	17	15	91	324
1981-90	184	110	16	20	56	405
1991-95	109	43	7	11	29	210
1996	7	26	0	1	2	43

dogs and one cat. Last year at this time we were optimistic because there were only 103 rabies cases during the first half of the year, compared to 297 the year before. This year we have only 74 for the same time period.

There are several points of interest. First is a mounting rabies outbreak in northern Ontario. In this issue's tables there are 9 rabid foxes for the first half of the year from the Cochrane District. All of those were well north of Cochrane. The most recent, and furthest south, was a fox encountered about three quarters of the way south from Moosonee to Cochrane. However, the good news is that that was the last case up to the end of July, and it occurred on 25 May.

rabid foxes during this quarter, I have heard of at least two in July, by telephone.

Table 1 shows decade averages for the past 38 years, for the second quarter only, to enable you to see how dramatically rabies has been reduced. We look forward to further progress. A major unknown at this time is whether an outbreak of rabies in foxes may start during the summer as one did last year in Grey County. If that does not develop, then we may be into the mop-up phase next year. Watch Peterborough County in the next quarter.

*Charlie MacInnes
Rabies Unit
Maple.*

of forest, and little farmland. Raccoons are most abundant in the interface between farms and forest. Another way of looking at this may be the ecology of soil and slope. It is safe to say that all of eastern Canada and U.S.A. has been subject to farming attempts at some time since white men came to this continent. Where there are still large areas with few humans, it is because the land will not, in the long term, support farming. Perhaps land that poor does not support enough raccoons to allow rapid passage of raccoon rabies.

Meanwhile, raccoon rabies has made an end run through western New York, and threatens to get onto the lowland plains in Ohio via the shore of Lake Erie. This is quite a long end run. Several years ago I wondered whether raccoon rabies could cross the high country in northern Pennsylvania at all, and that

possibly most of New York was protected by the mountains. History shows I was wrong about the protection, but right about the high country. Raccoon rabies did not come straight over the mountains: it made an end run by moving up the Susquehanna valley. That river and its tributaries flow from west to east across southern New York, then the Susquehanna makes a major bend, first south past Scranton and Wilkes-Barre PA, then southwestward toward Harrisburg. Reverse that course, and you see how raccoon rabies moved from southern Pennsylvania to western New York. Now, the strain has reached Lake Erie in New York, and there seem to be no barriers to westward spread. There were representatives from Indiana and Michigan at the meeting in Ohio, expressing concern that they have large raccoon populations, and they don't want raccoon rabies. Clearly, the atmosphere for cooperative efforts about rabies control is improving.

Laura Bigler of Cornell has led the production of a coordinated plan. The first draft, covering New England, was presented at the Maine meeting, but an addition to cover Ohio and adjacent states will be added soon. Rick Rosatte, Charlie MacInnes, Dave Ball and Roly Tinline all helped with sections of this plan. So far the idea of such a plan has been very well received, and to some, the costs of the initial bait programs seemed more reasonable than expected. However, there is still a long way to go, and there will be a lot more discussion, at many levels, before a concerted effort to eliminate raccoon rabies gets underway. Maps of the proposed bait zones will be presented in the next issue.

Drs. Lein and Bigler have had a very busy summer trying to raise money for baiting this fall. So far they have about 300,000 baits ordered, more than twice what was dropped in 1995, and there are further negotiations in progress. At present four drop areas are planned. Two are repeats of the areas treated last year. The third will cover the loer areas between the Adirondack Mountains and Lake Champlain, to continue the work begun by Drs. Debbie and Hanlon last year in stopping northward spread towards the Quebec border up the west side of Lake Champlain. The fourth area will be in Chatauqua County, the westernmost county in the state. Final details have

still to be worked out, but the tentative start date for these drops is 11 September.

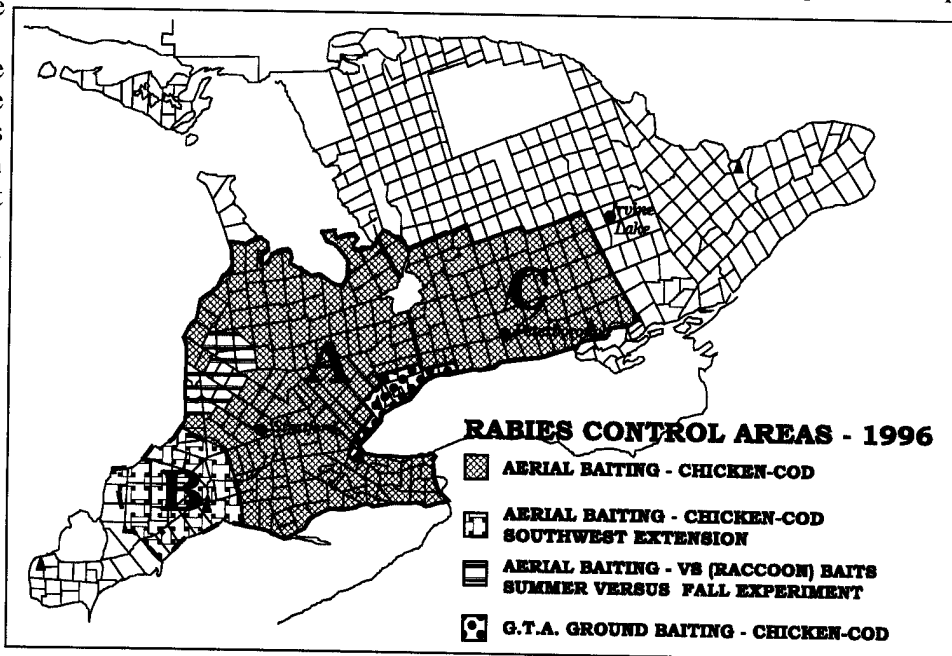
Charlie MacInnes
Rabies Unit
Maple.

BAIT DROPS PLANNED FOR THE FALL OF 1996

Plans for this fall include a major change. There will be no baits dropped in the eastern Ontario experimental area. That is an essential part of the original experimental plan. Rabies control will not be cost-effective if we have to keep on putting out baits essentially forever. We firmly believe that elimination of fox rabies is achievable. It has been more than 15 months since the last case of fox strain rabies in the whole area, and 33 months since the last rabid fox was detected. We are keeping a close watch on

reports, is it possible that there are still rabid foxes out there? Looking at the problem from another aspect, the last year of cases of fox-strain rabies in eastern Ontario were in cattle and one dog. Are these indicators that there are still rabid foxes out there, or were they exceptionally long incubators of rabies? A third possibility is that they were exposed to rabies further west, and then transported into eastern Ontario while incubating the disease.

Does this seem to be nit-picking? Consider the next step: when can we safely stop dropping baits in all of southern Ontario. The 1996 drop will cost almost \$2 million, and the 1995 drop cost \$2.6 million. There is a big bonus if we can save a year of baiting. However, the penalty for stopping too early might be a resurgence of rabies, which would take 2-3 additional years to stop. Thus, tempt-



the area, and there is a reserve of baits for last-minute tactical deployment.

There is an interesting question about stopping baiting. Looking back now, we see that there hasn't been a single rabid fox detected since September of 1993. Could we have stopped baiting in 1995? There are two considerations: we did not know at the time that the 1993 fox really was the last, and there was rabies activity close to the area, in Quebec. Hence, we baited in Quebec last fall.

It seems likely that only about 1 - 10% of all rabid foxes make it into the reporting system. Thus, even when there have passed several months with no

ing as an early stop may be, the financial penalty for guessing wrong will be large.

The map on this page shows the plans for 1996. The "Southwest Extension" is the likeliest place for dropping the bait reserve, but northern and eastern Ontario are also strong possibilities. We will make the decision in late August, having reference to the latest information available from the field.

The experiment with VS (Vanilla-Sugar) raccoon baits this year will compare the acceptance by raccoons of baits dropped on 19-20 August (summer) with others dropped on 23-24 September (fall). We know that, as the fall progresses,

raccoons forage less and less. Rick Rosatte's T-V-R trappers all report that by mid- to late October, trapping success declines because the raccoons seem no longer interested in bait (sardines) in the traps. We do not know when this trend begins. However, all of Rick's experimental bait drops done in July or August have resulted in better acceptance of baits by raccoons than the 1994 and 1995 experiments in western Ontario, which were done in late September. We want to find out if the difference is due to dropping in summer versus fall. Bait density will be 60/km². As with the last two years, the baits will contain vaccine for foxes.

There are 3 areas separated within the 1996 CC (Cod-Chicken) bait area. Areas A and B will be covered using Stratford as base. Area C will be baited from Peterborough, because it is too far from Stratford for efficient coverage from that base. We will use Peterborough airport instead of the MNR field at Irvine Lake to save money. Baiting from Stratford will begin as soon as the raccoon baits are dropped on September 23, and we will move to Peterborough when all the work at Stratford is finished. Area B, the Southwest Extension, will be baited unless the baits allocated for it are needed more urgently in northern or eastern Ontario.

There have already been two experimental drops of raccoon baits. These were done on two study areas between Bradford and Barrie, on either side of highway 400. The tests are two new bait constructions, testing new materials. The blister-packs contained tetracycline, not vaccine.

*Charlie MacInnes
Rabies Unit, Maple.*

RACCOON RABIES IN NEW YORK

There has been relatively little movement of raccoon rabies in New York State this year compared to previous years. There is only one map on this page, because there was not enough "new" territory invaded in other parts of the state to justify producing the other maps. There appear to be three major factors which may have contributed to this lack of movement. The first, as pointed out by Charles Trimarchi of the NYDH lab in Albany, is that there just isn't much of the state left to be invaded. The second factor may be the success of bait programs last year. You will note that there have been no new cases this year in the northern part of the Clinton-Essex Counties outbreak in northeastern New York. Drs. Debbie and Hanlon of the NYDH

organised small bait drops during the summer and fall of last year. There have been no cases within their baited areas, but the total number of cases in the area was small in the first place. The third possible factor is the hard winter. A reasonable hypothesis to account for the big advances in the rabies front in past springs was the activities of male raccoons during mating season, in February and March. During mating, males are thought to travel extensively looking for females, and intimate contact between individuals could spread rabies. Such travel would have been difficult this year, due to the heavy snow cover and cold temperatures during mating season. Laura Bigler reports that raccoons were surprisingly hard to find in the St. Lawrence area this year, indicating much lower numbers than last year. There have been several reports of aggressive raccoons, one of which chased a tractor, but all were negative for rabies. Perhaps distemper is present in the region. Please note that the last two factors sound plausible, but there is no good scientific evidence to support them at this time.

Although the rabies front has advanced toward the vaccination barrier established in Jefferson and St. Lawrence Counties last fall, there has been no case immediately adjacent to, or within the area yet, so the success of the barrier remains untested. In Niagara County, indications are very positive. Remember that the baits were dropped at the height of the epizootic. Orleans County, just east of Niagara, is the control area, but the epizootic began there a year earlier. In most New York counties, the first rabies outbreak lasted 2+ years. Against that background, it is very positive to hear that the proportion of animals submitted for diagnosis which were confirmed to have rabies was significantly lower from Niagara County than from Orleans. Thus, the experiment to stop an outbreak in mid-course seems to be working.

An important trend highlighted by Mr. Trimarchi is the resurgence of rabies in the southern tier counties. That indicates clearly that raccoon rabies will not go away after the drop in cases following the initial outbreak. Rather, it will start to cycle, as fox rabies did in Ontario, and as raccoon rabies is doing in Virginia, Maryland and Pennsylvania.

Charlie MacInnes, Rabies Unit

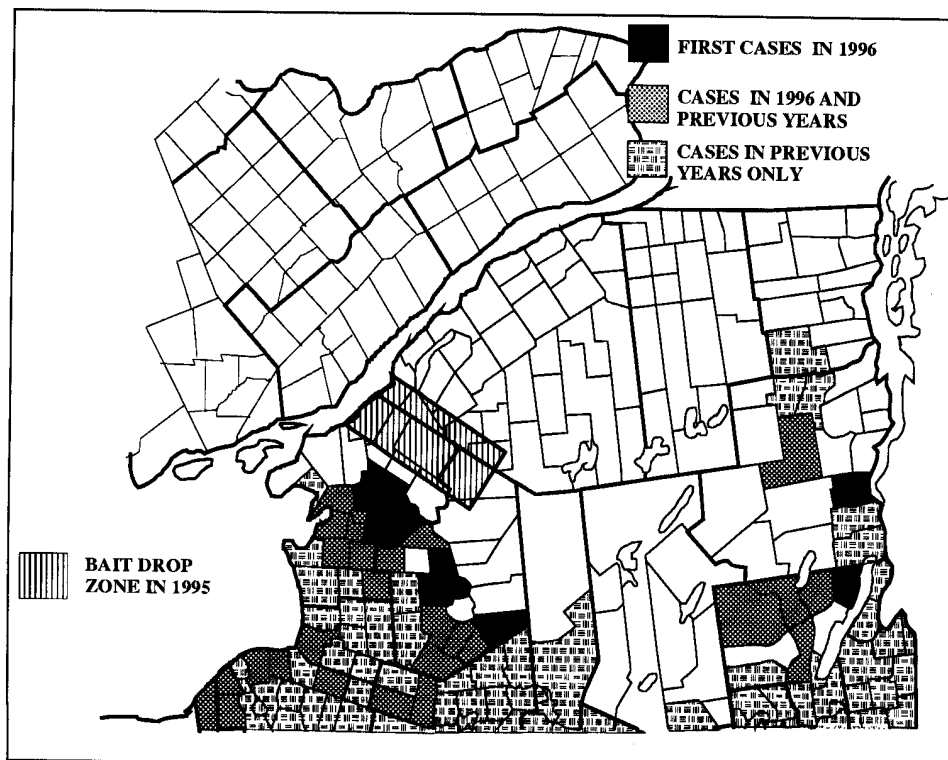


Figure 1. Raccoon rabies in northern New York on 30 June 1996

JACK DEBBIE RE- TIRED 30 JUNE 1996: A REAL PIONEER IN WILDLIFE RABIES CONTROL

Jack Debbie and George Baer were the original North American team seeking means to immunize wildlife against rabies. When the Appalachian fox variant of rabies was the dominant rabies from southern New York to northern Florida, they began a wide variety of experiments to see what could be done. While a New York state team tried hard to kill enough foxes to stop the northward spread of rabies, Debbie and Baer investigated vaccination. In those days all dog vaccines were Modified Live Virus, and very sensitive to air and heat. That made them viable for only a few hours in the field. One of the early devices the team examined was a highly modified trap. Instead of catching the animal, it was supposed to jab a hypodermic full of vaccine into whatever animal touched its trigger pan. Another possibility was to modify the explosive coyote-getter to shoot vaccine instead of poison. However, very soon baits with vaccine in them occupied most of their attention. Many of the ideas we work with today started in Jack's lab in Albany.

Jack had a long career as public health veterinarian in New York. Rabies was only one of several diseases he dealt with. He also served a term with the WHO rabies group in Geneva, working on the international scene.

When raccoon rabies started to move toward his state, Jack was one of the first to try to get prevention efforts under way. It is fitting also that among the last projects he organized were emergency bait drops to counter the rabies outbreak which started in Clinton County last summer. These were modest efforts, put together quickly in an emergency, but the lack of northward extension of rabies in the area this summer indicates that they were successful.

Jack has retired to a home on the shores of Saranac Lake, in the Adirondacks. However, he still attends New England rabies control meetings. All bait-dropping aircraft are hereby ordered to waggle their wings or rotors in salute as they pass over his house. We wish him

many happy years in the mountains. He earned them!

THE CASE OF THE PHANTOM FOX, OR, THE (F)OKIE FROM MUSKOKIE

Shortly after the last Rabies Reporter was sent out, Charlie MacInnes of the Rabies Unit called me about an e-mail he had received from one of our readers. The map of fox rabies cases for January to March 1995 contained a case in the District of Muskoka which was not there in the version of the same map published a year ago. From checking the data (provided by Agriculture and Agri-Food Canada) used to generate these maps, I discovered a rabid arctic fox that was reported from the District of Kenora last year. While their identification of this record in the "northern" region of the province was correct, the UTM (Universal Transverse Mercator) coordinates provided with this record placed it in the top of Muskoka. Since the computer creates the Rabies Reporter maps solely from the UTM values, the error reached print. This error illustrates a persistent problem with the data we receive: cases from northern Ontario frequently have incorrect coordinates. What makes the errors difficult to detect is that they often turn out to be "legitimate" locations in southern Ontario. There is a second problem with northern cases: many have no UTM coordinates at all. In defense of the Agriculture Canada staff, I know that there are no 1:50,000 maps for most of northern Ontario. While an experienced geographer can estimate UTM values from a 1:250,000 map, I know it isn't easy, and I believe it was not covered in Agriculture Canada's training.

My thanks to Rob Black, MNR Parry Sound, for spotting this anomaly in the May 1996 Rabies Reporter. I guess this was one record that slipped through the data quality checking net!

Perhaps also it was an illustration of the modern proverb: "To err is human, but to really foul things up takes a computer"!

*Peg Hauschildt
GIS Laboratory
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Kingston*

DOWNSIZING IS BREAKING UP THAT OLD GANG OF MINE.

In the last issue of the Rabies Reporter we reported, sadly, that the Rabies Unit had lost three members, Sarah Crossgrey, Mike Pedde and Wendy Sinclair.

It turns out that these were not the last effects of ongoing changes. Two more members of the Unit were "bumped": that is, they were displaced from their jobs by other MNR staff with more seniority. Laurie Calder left on 2 August, and Mike Power will go soon after. Laurie was the technician in charge of carcass collections, and analysis thereof, plus a multitude of other useful jobs. She is also a talented artist, and her cartoon cards, and wonderful paintings will be missed. It is hard to imagine how Rick Rosatte will get everything done without Mike, who was a masterful organizer and doer. We will welcome Terry Medd and Dennis Donovan to the Unit in September.

Finally, when the move to Peterborough was officially confirmed, our media relations expert, Jane Sirois, regretfully advised that, for family reasons, she could not move. Eventually we will find a replacement for her too. Out of ten people who were the Rabies Unit in April, only four of the originals remain, to be reinforced by three newcomers. For a close-knit, hard-working group of people, these are stressful times.

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 and Agri-Food 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: April to June 1996

Animal Type		Fox		Skunk		Other Wildlife		Dog		Cat		Livestock		Total	
County or Area	#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative	
		96	95		96	95		96	95		96	95		96	95
Eastern															
Stormont														0	0
Dundas													1	0	1
Glengarry														0	0
Prescott														0	0
Russell														0	0
Carleton					1	2								1	2
Renfrew														0	0
Lanark														0	0
Grenville														0	0
Leeds														0	0
Frontenac														0	0
Lennox-Addington														0	0
Central															
Hastings			1	2	3		1	1	1					3	4
Prince Edward														0	0
Northumberland		1					1	1						1	1
Victoria					1	2								0	2
Haliburton														0	0
Peterborough	1	1	1	11	11	2	1	1			1			13	4
Durham						1							1	0	2
York Region						1								0	1
Scarborough														0	0
East York														0	0
City of Toronto														0	0
City of York														0	0
North York														0	0
Ettobicoke														0	0
Simcoe							1	1						1	0

Animal Rabies Report: April to June 1996

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Animal Type	Fox			Skunk			Other Wildlife			Dog			Cat			Livestock			Total		
County or Area	#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative	
		96	95		96	95		96	95		96	95		96	95		96	95		96	95
Northern (continued)																					
Thunder Bay																			0	0	0
Rainy River																			0	0	0
Kenora									1										0	0	1
Subtotals																					
Eastern							1	2					1						2	1	2
Central	1	1	3	13	15	6	4	4	1						1				1	18	20
Western		3	14	8	16	22								1	2	2		9	14	9	30
Southern		2	20	5	6	6	2	2			1	2			4	2	2	8	9	13	40
Northern	6	9																	6	9	0
Totals	7	15	37	26	37	34	7	8	1	0	1	3	1	2	7	2	11	25	43	74	107

Livestock this quarter: 2 cow, 1 red deer

Other wildlife this quarter: 6 bats

