

The Rabies Reporter

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Inside this issue:

<i>Rabies in Ontario in 2005</i>	1
<i>New York Rabies 2005</i>	2
<i>Roly Tinline Retires</i>	4
<i>TVR Trapping Experiences</i>	5

The Rabies Reporter, a scientific newsletter about current issues in rabies research and control, is a joint effort of the Rabies Research Unit of the Ontario Ministry of Natural Resources; the Rabies Laboratory at the Ottawa Laboratory (Fallowfield) of the Canadian Food Inspection Agency; the Ontario Ministry of Health; and the Geographic Information Systems Laboratory at Queens University, Kingston. 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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rabies.mnr.gov.on.ca

Rabies in the Fourth Quarter and a Review of Rabies in 2005

For only the third time since 1957, Ontario had fewer than 100 cases in a single year. In 1997 and 1998, there were 96 and 80 cases respectively. When raccoon strain rabies entered Ontario in 1999, the number of cases increased to 100. Since then, the numbers have fluctuated but have not dropped below 100 cases until 2005 when there were just 96 confirmed cases.

The even better news (from the view of our control programs) is that there were just 35 terrestrial cases—1 raccoon strain, 33 fox strain, and 1 strain type unknown.

The rabid raccoon occurred approximately 2km from the previous case in September 2004 and occurred almost exactly one year after that case. This is the lowest incidence of raccoon rabies since it was first confirmed in Ontario in 1999. The peak number of cases occurred in 2001 with 48 cases. Control programs (including aerial baiting and trap-vaccinate-release) will be continued in 2006 to ensure that cases do not spread.

The focus of the fox strain cases moved slightly south from where it was in 2004 to include Simcoe, Dufferin, Peel, and Wellington counties. Cases also occurred in Grey, Bruce, Huron, Perth, and Waterloo counties.

There was much fewer rabid livestock in 2005 with only 11 cases, two of which occurred in the fourth quarter (Wellington and Bruce counties). In 2004, there were 23 rabid livestock; although, multiple cases occurred on individual properties in 2004 which may have inflated the number.

Rabid dogs and cats remained unchanged with a single case in each species in both 2004 and 2005. The cat in the fourth quarter was from Wellington county.

The incidence of rabid skunks also decreased significantly from 25 in 2004 to 17 in 2005. There was a remarkable 6-month period from May to November where there

no reported rabid skunks. This has never happened since rabies became established in Ontario in the 1950s. During November and December, there were three positive skunks—all in Wellington county. One third of all cases in the fourth quarter occurred in Wellington county.

There were three rabid foxes in 2005 and in 2004. The one in the fourth quarter was from the Byng Inlet area near Parry Sound. This animal was confirmed rabid in December but was actually picked up by MNR staff in September. There was no indication that the fox was rabid so it was kept frozen by MNR until it was shipped (along with other wildlife specimens) to the Canadian Cooperative Wildlife Health Center in Guelph for post-mortem analysis in December. The rabies strain type is not available for this fox due to the poor quality of the specimen. This fox is approximately 150 km from the closest arctic fox strain rabies cases in southwestern Ontario. There have been no subsequent confirmed cases in this area. The other two foxes in 2005 were from Bruce and Dufferin counties in southwestern Ontario.

The number of rabid bats was the only disappointment for the year. There were 61 rabid bats throughout Ontario in 2005 making this the third highest year on record for number of rabid bats. In 2003 and 2002, there were 74 and 73 rabid bats respectively. However, due to the decrease in terrestrial cases, 2005 was the record year for highest percentage of rabid bats from total rabies cases; approximately 63.5% of all cases occurred in bats.

Stay tuned to see if any records are set in 2006.

Beverly Stevenson
RRDU
Peterborough, ON

An Overview of Rabies in New York State During 2005

Introduction

The raccoon rabies outbreak that moved into Nassau County on Long Island in 2004 persisted there in 2005, and remained enzootic in nearly all of the rest of New York State during the year. Terrestrial wildlife rabies brings with it the constant risk of encounters with rabid animals in affected areas. Since 1990, New York State has been affected by this outbreak of rabies in raccoons that has swept from Florida to Maine, and threatens to spread westward in the United States. Rabies is a cyclic, density-dependent disease in raccoon populations. Mortality from rabies reduces raccoon population densities in affected areas. As raccoon populations rebound, rabies incidence increases again. Thus in New York, we now have a pattern of increasing and waning rabies prevalence in areas across the state. Only two New York State counties (Franklin and Suffolk) have not experienced documented raccoon rabies within their borders. However, towns contiguous with both of these counties have experienced rabies in raccoons. In addition to raccoons, this variant of rabies virus can infect a wide range of other mammals, including humans.

Rabies Distribution

There were 565 rabid animals identified at the Wadsworth Center laboratory in 2005, constituting 6.7% of all animals examined here, as the laboratory tested a total of 8,318 animals during the year. The number of animals received for testing during the year is within 1% of the submission average for the previous three year period and continues the pattern established in the mid 1990s of the laboratory receiving between 8,000 and 10,000 specimens annually. Specimens were received



Figure 1. Raccoons are the principle rabies vector in New York state and adjacent northeastern states.

from all of the 57 counties in New York State and the five boroughs of New York City during 2005. Rabies was identified in terrestrial mammals submitted from 51 of the 62 counties in New York State. Rabies in bats, also with a widespread occurrence in the state, was identified in 33 counties.

The 8,318 specimens received in 2005 consisted of 5,924 wild animals (71% of total) and 2,394 (29%) domestic animals, including greater than 50 species of animals. The 3,856 bats received comprised 46.4% of all animals tested. Bats were submitted from all counties and boroughs. The Wadsworth Center laboratory also tested 1,440 cats (17.3% of all animals tested), 1,127 raccoons (13.5%), 706 dogs (8.5%), 279 skunks (3.4%), 182 foxes (2.1%), 124 deer (1.5%), 93 woodchucks (1.1%), 91 cattle (1.1%), 49 horses (0.6%), 32 goats (0.4%) and 261 other

wild animals (3.1%).

The number of each taxa found rabid and the positivity rate (number positive/number examined) for each is: mule, 1 (100%), beaver, 1 (50%), hoary bat, 2(33%), skunk, 86 (30.8%), raccoons, 334 (29.6%) gray fox, 21 (16.9%), red bat, 3 (12.5%), bovine 9 (9.8%), coyote, 1 (6.6%), red fox, 3 (5.2%), horse, 2 (4.0%), woodchuck, 3 (3.2%), big brown bat, 67 (2.3%), deer, 2 (1.6%), cat, 21 (1.4%) little brown bat, 6 (0.7%) and dog 1 (0.1%).

Rabies in Bats

The 80 rabid bats identified in the state in 2005 were the smallest number since 1997, and 17 below the average for the last ten years. The positivity rate for all bats submitted in 2005 was 2.1%, the lowest overall rate for more than 20 years, and appreciably lower than the 3.1% average for the

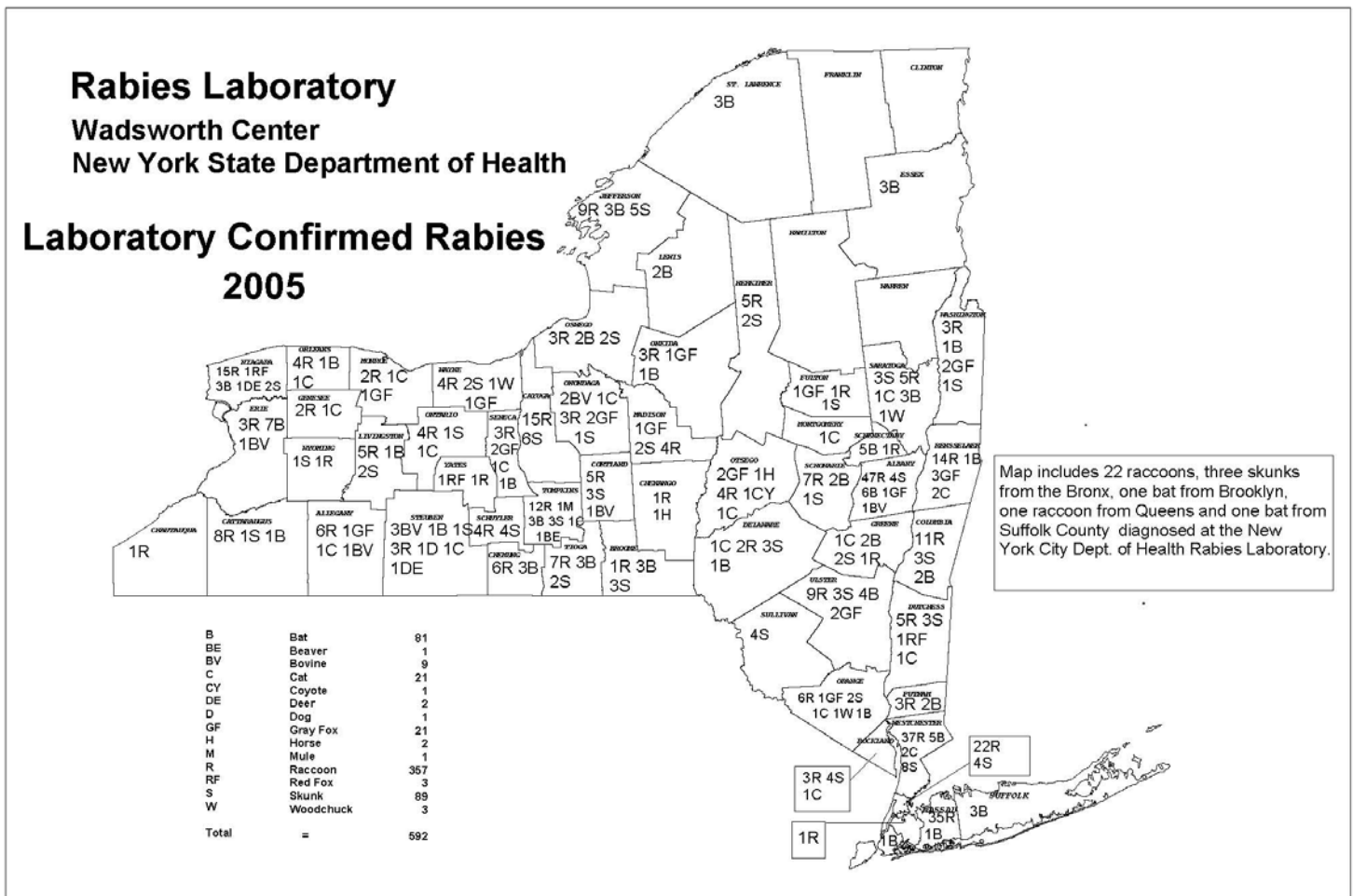


Figure 2. Location and distribution of cases in New York state during 2005.

previous 10 year period. Nonetheless, with one in 50 to one in 30 examined bats found rabid from year to year, an emphasis on avoidance of direct contact with bats and proper management of human and animal encounters with bats is strongly justified.

Human Exposures to Rabid Animals

In 23.5% of the animal rabies cases, there was a recognized human exposure, as there were 47 bites to humans and an additional 86 other direct human contacts reported with the 565 laboratory-confirmed rabid animals. In 52.3% of the cases there was exposure to domestic animals. The highest rate of human exposure (80.5%) occurred to the 21 rabid gray foxes, which included 15 bites and two direct contacts. Among the 80 rabid bats identified in

2005, there were 12 bites to humans and 9 other direct contacts, for a human exposure rate of 26%. Pet exposure occurred with 29% of the rabid bats. There were 6 humans bitten and 44 humans in contact with the 334 rabid raccoons, resulting in a 15% exposure rate. In contrast, pet exposure, primarily in dogs, occurred with 53.3% of the rabid raccoons.

New York City

The rabies diagnostic laboratory at the New York City Department of Health and Mental Hygiene examined 528 specimens, including 156 raccoons, 136 cats, 117 dogs, 52 bats, 47 opossum, 12 skunks, 2 squirrels, 2 ferrets, 2 muskrats, 1 rabbit and 1 deer. Among these, 28 (5.3%) were positive for rabies, including 23 raccoons, 3 skunks and 2 bats.

Rabies Serology

The Wadsworth Center rabies laboratory tested 2,179 human sera for rabies virus neutralizing antibody. The majority of these tests are requested to determine the need for booster vaccinations for individuals wishing to maintain current rabies pre-exposure immunization status. The laboratory also examined 2,806 raccoon sera for rabies antibody, in support of programs for the oral rabies vaccination (ORV) of raccoon populations.

(New York City Health Department data provided by Drs. Igal Poshni and Judy Lovchik.)

Wadsworth Center
New York

Roly Tinline Retires

Rowland R. Tinline is quite a guy! He is a world renowned professor of geography and GIS specialist from Queen's University, Kingston, Canada, but you should also know that he started his professional career as a Grade 6 public school teacher with wide scientific interests and a particular bent for biology.

At his recent retirement party he told a story of how, when he first started teaching university, he recognized a young female student in the front row of his class. She was 'Susan' from his former Grade 6 class years before who used to look after the class mascot, a pair of white rats! This made him realize how quickly time passes in one's career.

Roly's PhD research in Bristol, England was also a biological twist of fate, but in a favorable fashion. While working on the geography of weather patterns, he solved the problem of foot-and-mouth disease transmission in cattle by showing wind-born aerosols could carry the virus over the English

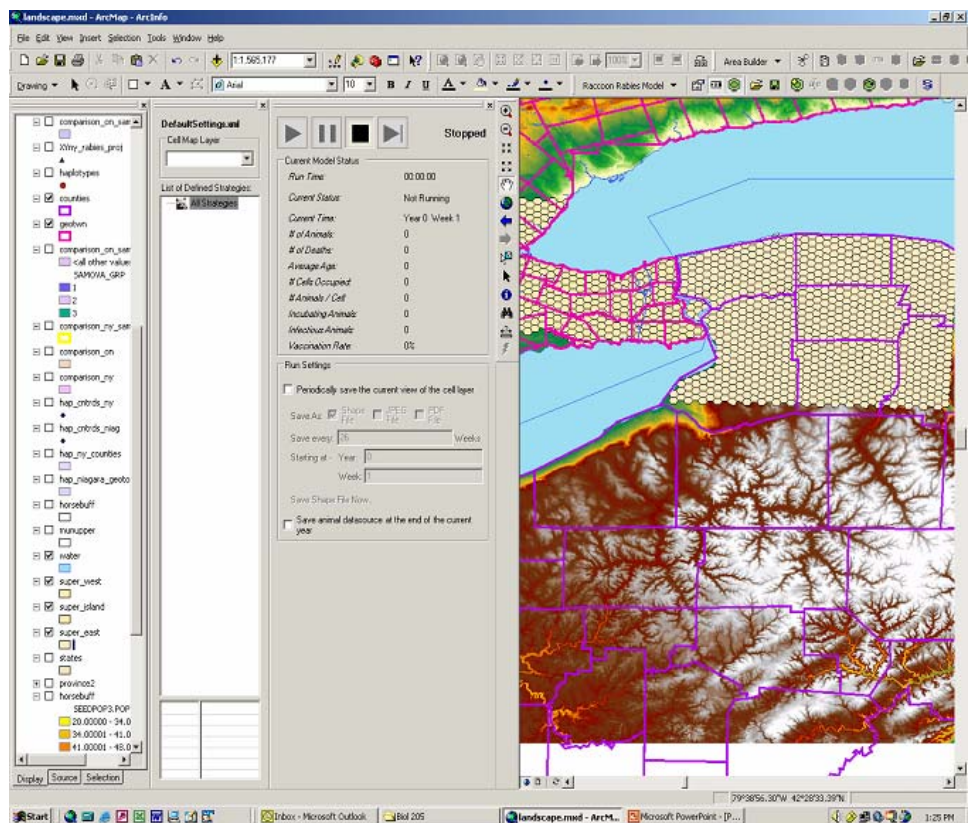


Figure 4. Screenshot of the Raccoon Rabies Model which Roly Tinline developed with collaborators.

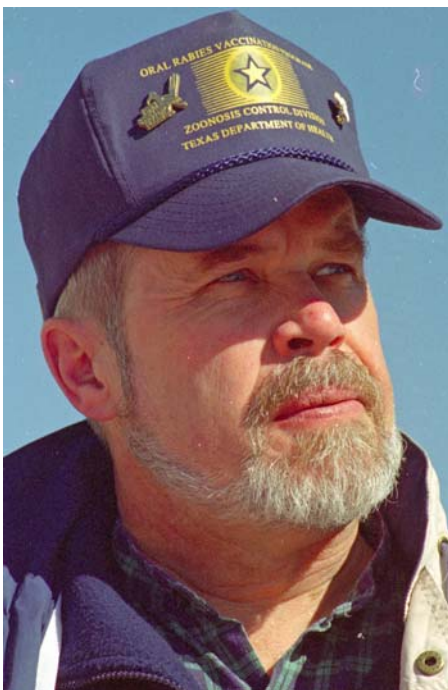


Figure 3. Dr. Roly Tinline.

hills and dales from farm to farm. This explained how even quarantined farms miles away could become infected.

His connection to rabies epidemiology and GIS control strategies began through a chance encounter with the late Bob Ramsden of the Ontario Rabies Unit. This symbiotic connection grew with Roly providing the GIS modeling expertise and various ecologists and epidemiologists supplying the biological input parameters to explain rabies epizootics and cycles.

His research lead to the development of the flight planning programs used for aerial baiting in the successful Oral Rabies Vaccination Programs in Ontario and Texas. Today, this original work is evident in the continent-wide raccoon rabies control program running the length of the Appalachian cordillera from the province of New Brunswick to the state of Florida.

The result of Roly's collaboration with geographers, biologists, veterinarians, mathematicians and other scientists, around the world, has produced a meeting of minds on many rabies questions. These have included modeling how rabies spreads in populations, both domestic and wild, as well as how it may be controlled through careful tailoring of ORV parameters to suit the infected populations, be they red fox, gray fox, coyote, raccoon, or skunk.

Today Roly is very active in all of the above fields as an information systems consultant. He can be reached through his new company, ISRC, rowland.tinline@sympatico.com.

*Dave Johnston
Johnston Biotech
(Retired RRDU)
Sarnia, ON*

The Trials and Tribulations Of Being a TVR Trapper

For those of you who don't know, a trapper in the Ontario Rabies control program is an individual who live traps, ear tags and inoculates raccoons, skunks, and foxes with rabies vaccine and subsequently releases the animals. Trappers work within assigned zones working with landowners and trapping on both private and public land. This program is called TVR (trap vaccinate and release).

Trappers also work on other rabies control programs when needed including: aerial baiting, hand baiting and Point Infection Control.

Every year we are asked to watch for suspicious animals- rabid animals. This always leads to the question- what is suspicious in a raccoon? Every animal is different and most seem to be insane. Whether it is an animal that growls, spits and hisses at you before you even get out of the truck, or the animal that turns on you and takes a run at you when you release it, or the animal that you catch day after day in the same trap who clearly finds steady free meals more attractive than keeping any dignity.

In the fall of 2004, I came across a raccoon that I thought was acting "unusual or suspicious". It was a quiet animal; I almost didn't notice it in the trap as I was dealing with a growling, fuming juvenile. I brought the trap over to the truck and the animal started to whine- it almost sounded like it was trying to sing a song. I kept the animal and it continued to sing over the next two hours as I finished checking my trapline. I then took the animal into our depot for a second opinion but with the noise and confusion the animal stopped singing and seemed normal. I told my boss that I thought the animal was rabid but he wasn't convinced and later released it. The same animal was caught the next day with porcupine quills in its nose - a likely sign of ra-

bies. It was subsequently tested and confirmed positive.

One of the funniest animals I have worked with was a young juvenile female raccoon I caught on one of the islands at St. Lawrence Island National Park. The area I caught the animal in was a series of small 2-5 acre rocky islands 150-200' apart with rapid currents and strong undertows between them. I trapped these islands for 7 nights and caught the animal 7 times on two different islands. This little 2-3 lb raccoon swam back and forth between island in currents I wouldn't dream of tackling myself. On some days, I had trouble navigating the boat between islands.

As you can tell, the life of the trapper is never dull, there is always something new to deal with. It's one of the reasons its such a great job.

*Peter Neave
TVR Trapper
St. Lawrence Region*

My name is Bill Mather and I have been asked to write about some of my experiences as a trapper with the Rabies Control Unit.

I have worked in the woods for over 30 years, facing adversities such as bears, lightning storms, ice storms, snow storms etc., and yet nothing prepared me for what was about to transpire.

Three years ago I set out to check my traps, it was a beautiful summer morning the temperature already in the 20s, I arrived at my first set of four traps which were located, with permission, at a local golf course.

I set up in the corner of the parking lot and proceeded over the embankment to my traps which surrounded a large den tree, in one of the traps was a mother raccoon and in the remaining three were five juveniles, 6 to 8 weeks old. I returned to the truck with the animals and vaccinated the mother first and then released her at the den tree, with the juveniles to follow.

I then started to vaccinate the juveniles, for anyone that does not know raccoons, baby raccoons are much like human babies in the fact that they will scream blue murder when pricked by a needle, well, needless to say the juvenile started screaming when I vaccinated him.

Unknowning to me at this time, there were 15 to 20 elderly ladies, on an outing from Ottawa, about to tee off at the first hole, which was only 30 yards away behind the parking lot.

As I worked I heard this loud angry voice behind me scream, "What are you doing to that poor animal?".

I turned around to see all of these ladies advance menacingly towards me across the parking lot, armed with various fairway woods, a couple of 3 irons and a putter. I immediately threw my arms in the air in surrender, then hastily explained what I was doing to the blue haired lady at the front of the mob, that I took to be the leader.

She then said, "Its O.K. Jenny, he is vaccinating them against rabies," I then explained to them about the Rabies Control program and showed them what I was doing. As they were leaving, I heard the following comments.

"I thought Jenny was going to hit him with her 3 wood."

"He was quite safe, she hasn't hit anything with it in years."

"What a nice young man."

"He smelled like a skunk."

*Bill Mather
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[illegible][illegible]

Central

Hastings													1									0	0	1
Prince Edward													1									0	1	0
Northumberland													1									0	1	0
Victoria													1	2								0	1	2
Haliburton																						0	0	0
Peterborough													3	1								0	3	1
Durham													4	2								0	4	2
York Region											2		5	6					1			2	5	7
Toronto													2									0	2	0
Simcoe			1				7	7					4	2							12	0	11	22

Western

[illegible]

Animal Rabies Report: October to December 2005

Animal Type	Fox			Raccoon			Skunk			Other Wildlife			Bat			Dog			Cat			Livestock			Totals		
County or Region	#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative		#	Cumulative	
		05	04		05	04		05	04		05	04		05	04		05	04		05	04		05	04			
Southern																											
Wentworth												4	6											4	6	0	
Haldimand-Norfolk														1										0	0	1	
Brant																								0	0	0	
Niagara													2	2										0	2	2	
Elgin													2	1										0	2	1	
Oxford													1											0	1	0	
Middlesex													3	6										0	3	6	
Lambton													1	3										0	1	3	
Kent														1										0	0	1	
Essex																								0	0	0	
Northern																											
Muskoka														1										0	0	1	
Parry Sound	1	1																						1	1	0	
Nipissing																								0	0	0	
Sudbury																								0	0	0	
Cochrane																								0	0	0	
Timiskaming																								0	0	0	
Algoma																								0	0	0	
Thunder Bay														1										0	0	1	
Rainy River																								0	0	0	
Kenora			1																					0	0	1	
Regional Totals																											
Eastern	0	0	0	0	1	4	0	0	0	0	0	0	1	7	14	0	0	0	0	0	0	0	0	1	8	18	
Central	0	0	1	0	0	0	0	7	7	0	0	0	2	21	14	0	0	0	0	0	1	0	0	12	2	28	35
Western	0	2	1	0	1	1	3	10	18	0	0	0	1	18	12	0	1	1	1	1	0	2	11	11	7	44	44
Southern	0	0	0	0	0	0	0	0	0	0	0	0	4	15	14	0	0	0	0	0	0	0	0	4	15	14	
Northern	1	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	1	3	
Totals	1	3	3	0	2	5	3	17	25	0	0	0	8	61	56	0	1	1	1	1	1	2	11	23	15	96	114

Notes for this quarter: All of the bats were big brown bats. The livestock were all bovine.

