

Heartworm in Canada in 2010 with comments on Atlantic Canada

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On November 30, 2010, 2816 questionnaires were sent by postal mail to small and mixed animal practices in Canada to determine the status of heartworm (HW) infection in dogs in 2010. On January 17, 2011, the questionnaires were sent again to clinics in Ontario, Quebec, and Manitoba (the HW endemic areas in Canada), that had not responded at that time.

In early February 2011, the response to the mail outs was relatively poor, and the pharmaceutical companies supporting the survey opted for a "fax blast" to all clinics urging a response from those who had not done so. Respondents could return a completed questionnaire by postal mail or submit data at a website online. The survey was closed on March 3, 2011. About 84% of the questionnaires came via postal mail, 16% were online.

A total of 1344 questionnaires were returned, but 75 were not included in the analysis of the data. Forty of the latter were returned by the postal services with notations of address unknown. The other 35 had either missing or questionable information and the data could not be verified, or were from specialized clinics with no HW testing. The response rate for the survey was 46.4%. In each year from 1976-2002, except 1999, I had sent to practitioners across Canada questionnaires to assess the prevalence of HW in Canada. In 2002, the response rate was 46.2%.

In 2010, 564 dogs were diagnosed with HW in Canada (354 in 2002). There were 367,385 dogs tested for HW in 2010 (317,182 in 2002), and an estimate of prevalence of HW in dogs in 2010 is 0.15% (0.11% in 2002). In 2010 in Ontario, three cats (one from Sri Lanka), two coyotes, and one fox, were found with HW at necropsy.

In 2010, a significant number of HW dogs, when compared to 2002 and previously, were from outside Canada. The primary impetus for this 2010 survey was some evidence that "Katrina dogs" ("rescue" dogs imported from southern USA states into Canada after hurricane Katrina in 2005) may have caused an increase in prevalence of HW in Ontario dogs. This

Table 1. 2010 Heartworm Questionnaire Results for Canada

1. When are most dogs routinely tested for HW(%)	Spring 67	Summer 20	Fall 3	Winter 3
	No Response 7			
2. No. of Dogs Tested for HW in 2010	367,385			
3. No. of Dogs Diagnosed with HW in 2010	564			
4. Travel History: Imported from southern USA (Katrina dogs)	49 (9%)			
Imported from other USA states or Countries	70 (12%)			
Traveled outside Canada six months or more prior to diagnosis	17 (3%)			
Traveled six months or more prior to diagnosis to Southern Ontario, Quebec, or Manitoba if not residing in those provinces	14 (2%)			
Never left your area	286 (51%)			
Travel history questionable or unknown	130 (23%)			
5. With <u>clinical signs</u> of HW	79 (14%)			
6 Diagnosed with HW <u>prior</u> to 2010	71 (13%)			
7. Diagnosed with HW <u>only</u> in 2010 and on preventative medication in 2009	77 (14%)			
8. If Question 7 is > 0 , Failure of preventative medication was due to:				
	Missed treatment 17	Inadequate dosage 1	Unknown 54	Other 5
9. No. of dogs tested in 2010 and on preventative medication in 2009	305,709			
10. No. of cats and other animals with HW in 2010: Specify Animal:	6			
11. In 2005-2010 were Katrina dogs in your area and/or practice?% Yes 28 No 35 Unknown 37				

survey was not designed to evaluate what effect "Katrina dogs" may have had. However, in the 2010 questionnaire, there were more questions than in the previous surveys on the travel history of HW positive dogs that were, or had been, outside Canada.

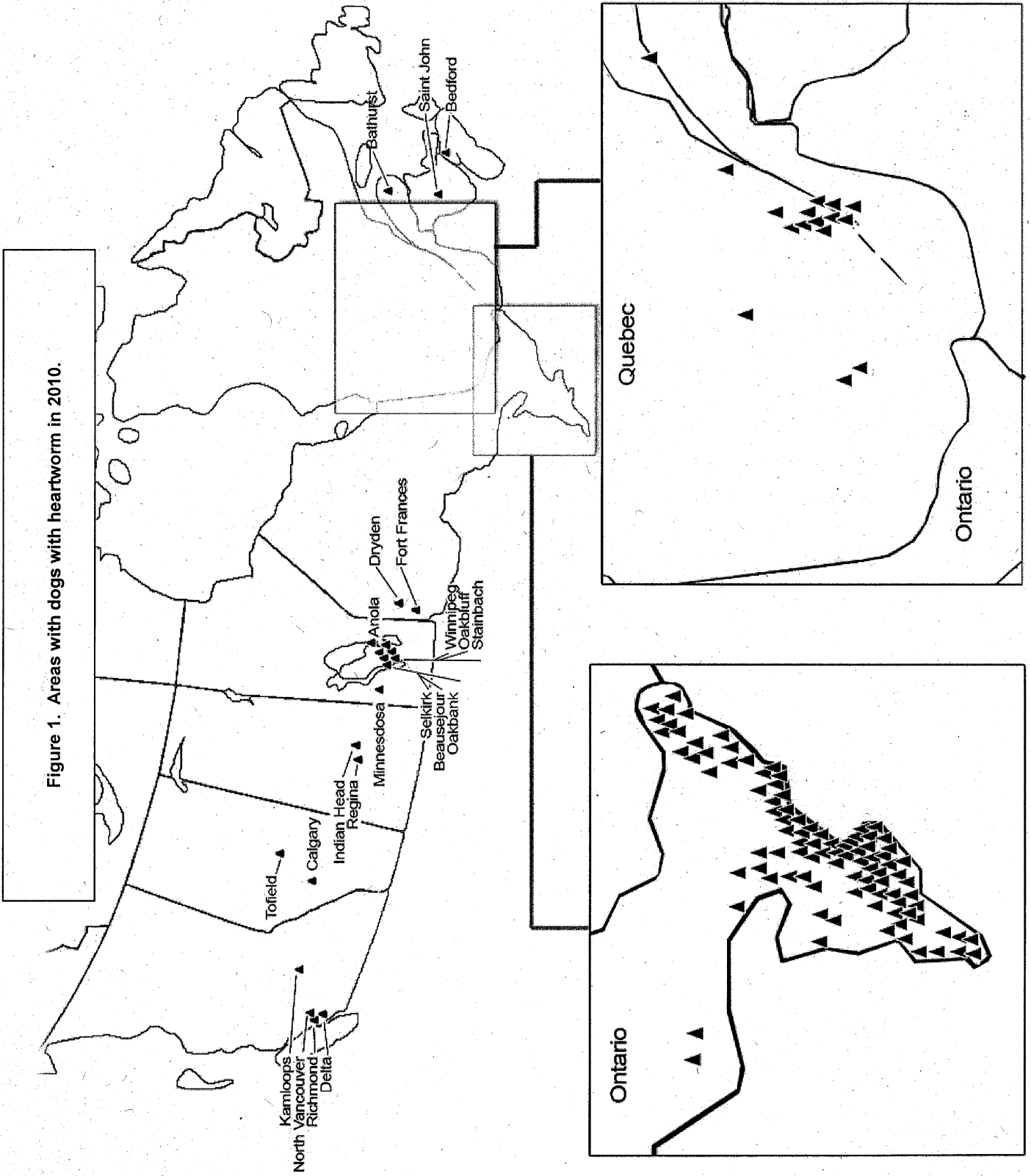
In previous surveys, there was a single question on HW dogs that were outside Canada (Canadian dogs that had travelled outside of Canada, and dogs imported into Canada). In 2002, there were 17 such dogs (less than 5% of all HW dogs that year). In 2010, the request was to identify these HW dogs as either "Katrina dogs", or dogs imported from other USA states and countries, or Canadian dogs which had been outside Canada.

There were a total of 136 HW dogs in the three categories identified above (more than 24% of all dogs with HW in 2010). Only 49 dogs were identified as "Katrina dogs", and these were mostly in Ontario, with one each in British Columbia and

Saskatchewan. But 28% of the respondents, and from all provinces except Prince Edward Island, indicated that from 2005 through 2010 "Katrina dogs" had been in their area, and/or practice.

The major foci of infection in Canada continued to be in southern Ontario, southern Manitoba, and southern Quebec. The number of HW dogs in those provinces increased significantly over those reported for 2002. In Ontario, 431 dogs were diagnosed with HW in 2010 (268 in 2002). In Manitoba, there were 77 HW cases (53 in 2002), and in Quebec 41 (21 in 2002). In 2002 and 2010, most of these dogs had never left their provinces, and accounted for 62% and 51% of the HW positive dogs in 2002 and 2010, respectively. In 2010, HW was not found in Prince Edward Island or Newfoundland & Labrador, but 15 cases were diagnosed in the other five provinces.

Figure 1. Areas with dogs with heartworm in 2010.



The increased number of cases in Manitoba and Quebec in 2010 appeared unrelated to the number of "Katrina dogs" and the other imports. In 2010, there were no "Katrina dogs" in Manitoba or Quebec. There were only two HW dogs in Manitoba and five in Quebec from other USA states and countries. There were 21, and 10 HW dogs in Manitoba, and Quebec, respectively, with travel history unknown. HW infected dogs in all these categories may have been in Manitoba and Quebec in 2005 through 2009. Whether their presence had any effect on the prevalence of HW in dogs in those provinces is unknown.

In previous surveys, I had indicated that in the endemic areas of Ontario, Manitoba, and Quebec, more attention needs to be focussed on dogs not on HW preventative medication. Most of these dogs are likely not ones that visit clinics routinely. In those provinces, of 482 dogs diagnosed with HW only in 2010, 408 were not on preventative medication in 2009.

Atlantic Canada

The findings in 2010 for Atlantic Canada are presented in one figure, three tables, and with some comments.

1. In 2010, 170 questionnaires were sent out, and 60 returned, but six were not used in the analysis of the data for reasons indicated above. The rate of response was 33.3% (44.4% in 2002). There were 21 responses from Nova Scotia (26.3% response), 24 from New Brunswick (46.3% response), six from Prince Edward Island (46.2% response), and three from Newfoundland & Labrador (17.6% response).

2. Three dogs were reported with HW (four in 2002); one of these dogs was in Nova Scotia, the other two in New Brunswick.

3. There were 1,759 dogs tested in 2010 (4,961 in 2002).

4. Nova Scotia. The dog had been imported from the USA/Other countries, and was diagnosed HW positive prior to 2010.

5. New Brunswick. One of the dogs was imported from the USA/Other countries. The other dog had come from southern Quebec, and was placed on preventative medication without prior testing for HW.

6. Five respondents, one each from Nova Scotia and Newfoundland & Labrador,

Table 2. 2010 Heartworm questionnaire results for Atlantic Canada

1. When are most dogs routinely tested for HW. (%)	Spring 57	Summer 18	Fall 12	Winter 5	
	No Response 8				
2. No. of Dogs Tested for HW in 2010					1,758
3. No. of Dogs Diagnosed with HW in 2010					3
4. Travel History: Imported from southern USA (Katrina dogs)					0
Imported from other USA states or Countries					2
Traveled outside Canada six months or more prior to diagnosis					0
Traveled six months or more prior to diagnosis to					0
Southern Ontario, Quebec, or Manitoba if not residing in those provinces					1
Never left your area					0
Travel history questionable or unknown					0
5. With <u>clinical signs</u> of HW					1
6. Diagnosed with HW <u>prior</u> to 2010					2
7. Diagnosed with HW <u>only</u> in 2010 and on preventative medication in 2009					1
8. If Question 7 is > 0 , Failure of preventative medication was due to:					
	Missed treatment 0	Inadequate dosage 0	Unknown 0	Other 1	
9. No. of dogs tested in 2010 and on preventative medication in <u>2009</u> (No. should not be greater than the No. in Question 2)					1,236
10. No. of cats and other animals with HW in 2010: Specify Animal: _____					0
11. In 2005-2010 were Katrina dogs in your area and/or practice?(%)	Yes 9	No 53	Unknown 38		

and three from New Brunswick indicated that "Katrina dogs" had been in their area, and/or practice in 2005-2010.

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Table 3. Number of dogs tested for heartworm in Atlantic Canada in 2010 (number in brackets represents number of clinics).

Town	Total	No Medication in 2009	Town	Total	No Medication in 2009	Town	Total	No Medication in 2009
NOVA SCOTIA			NEW BRUNSWICK			NEWFOUNDLAND & LABRADOR		
Annapolis Royal (1)	22	0	Bathurst (1)	63	23	Mount Pearl (1)	0	0
Baddeck (1)	1	1	Campbellton (1)	40	20	St. David's (1)	1	1
Beaford (1)	0	0	Fredericton (3)	150	42	St. John's (1)	10	0
Bedford (3)	113	23	Grand Falls (1)	35	0	TOTAL (3)	11	1
Bridgewater (1)	30	5	Miramichi (1)	30	0	PRINCE EDWARD ISLAND		
Dartmouth (2)	181	0	Moncton (3)	15	4	Charlottetown (2)	14	14
Fall River (1)	18	2	Oromocto (1)	402	102	Montague (1)	4	4
Lake Echo (1)	9	1	Red Bank (1)	5	4	Stratford (1)	4	1
Lawrencetown (1)	5	0	Richbucto (1)	0	0	Summerside (2)	41	23
Murray Siding (1)	12	3	Sackville (1)	0	0	TOTAL (6)	63	42
New Glasgow (2)	17	0	Saint John (4)	241	114	ATLANTIC CANADA		
Plympton (1)	15	1	Saint-Jacques (1)	5	0	TOTAL: (55)	1759	523
Sydney (1)	26	17	Salisbury (1)	0	0			
Truro (2)	12	2	Shediac (1)	100	0			
Upper Tantallon (1)	6	6	Shippagan (1)	11	0			
Wileville (1)	93	93	St. Stephen (1)	11	0			
TOTAL (21)	560	154	Tracadie-Sheila (1)	17	17			
			TOTAL (24)	1125	326			

Table 4. Number of dogs diagnosed with heartworm in Atlantic Canada in 2010 and their travel history (number in brackets represents number of clinics).

Area	Imported		Canadian			Travel History Unknown	Total	No Medication in 2009
	"Katrina"	Other Imports	Visited Outside Canada	Visited Endemic Areas in Canada	Never left the Province			
Nova Scotia								
Bedford (1)	0	1	0	0	0	0	1	14
Total (1)	0	1	0	0	0	0	1	14
New Brunswick								
Saint John (1)	0	1	0	0	0	0	1	46
Bathurst (1)	0	0	0	1	0	0	1	23
Total (2)	0	1	0	1	0	0	2	69
Atlantic Canada	0	2	0	1	0	0	3	83
Total (3)								