

## **2003 - 2004 URBAN CANADA GOOSE CONTAMINANTS STUDY**

### **Persistent and Bioaccumulating Contaminants**

#### **Executive Summary**

In several cities in Wisconsin, Canada goose populations have expanded so rapidly that they have become a nuisance. Control methods include the harvest of urban geese for donation to food pantries. This report discusses contaminant testing of tissue from geese that were harvested from urban sites in Minocqua, Wind Lake, Bohner's Lake and the Town of Brookfield and evaluates the need for consumption advisories. It has been prepared by the WDNR Wildlife Health Team and reviewed by Lynda Knobeloch, Ph.D., Senior Toxicologist for the Wisconsin Department of Health and Family Services. The WDNR Wildlife Health Team is made up of Dr. Julie Langenberg (Wildlife Veterinarian), Mr. Sean Strom (Wildlife Toxicologist), Ms. Kerry Beheler (Wildlife Health Specialist), Ms. Tara Schafer (Wildlife Health Assistant), Mr. Matt Watrud (Wildlife Health Assistant) and Mr. TJ Whyte (Wildlife Health Assistant).

#### **Introduction**

One method that is used to control the expanding goose population is the harvest of urban geese for donation to food pantries. Because geese are often concentrated in urbanized or industrialized areas, tissue samples are analyzed to ensure their safety for human consumption. This study was undertaken to assess the levels of environmental contaminants in urban geese and determine whether meat from these animals is safe to eat.

#### **Methods**

During the summer flightless period in 2003, 28 geese were collected from 4 urban sites in Wisconsin that are experiencing burgeoning populations (Minocqua, Wind Lake, Bohner's Lake and Town of Brookfield). For persistent contaminant testing, adult geese from each site (7 geese from each site) were euthanized by CO<sub>2</sub>, frozen, and delivered to the State Laboratory of Hygiene in Madison.

An area (approximately 10 x 12 cm) was plucked and a 20 g sample of breast muscle with skin on was dissected. Each sample was ground and divided between 2 jars. One jar was submitted for organic contaminants (PCBs) testing and the other was submitted for inorganic testing (mercury and lead). Tissue was analyzed at the Wisconsin State Laboratory of Hygiene in Madison according to Laboratory of Hygiene protocol (1980, 1994).

Advisories for human consumption (Table 1) were obtained from the Protocol for a Uniform Great Lakes Fish Consumption Advisory (GLSFATF 1993), the Health Guide for People Who Eat Sport Fish from Wisconsin Waters (WDNR and WDH 1994), and Action Levels for Poisonous or Deleterious Substances in Human Food and Animal Feed (USFDA 1994).

Table 1. Human Health Consumption Advisory Critical Concentrations in Fish or Meat Products.

CONTAMINANT	MINIMUM DETECTION LIMIT (ppm)	ADVISORY CONCENTRATION (ppm)	
		Unlimited consumption	No more than 1 LB/Week
PCB	0.04	<0.05	0.05 - 0.22
Mercury	0.004	<0.5	n/a
Lead	0.05	<0.25	n/a

## Results

PCBs were not detected in any of the geese sampled (Table 2) with a 0.04 ppm minimum detection limit. Thus all muscle samples had concentrations below the 0.05 ppm unlimited consumption advisory concentration. Therefore no consumption advisory is recommended based on PCB results.

Mercury was detected in only one sample (collected at Wind Lake) with a 0.004 ppm minimum detection limit. However, the mercury detected in this sample was just over the detection limit. The mean mercury concentration for Wind Lake samples (0.003 ppm) was far below the 0.5 ppm unlimited consumption advisory concentration. Therefore no consumption advisory is recommended based on mercury results.

Similarly, lead was detected in only two samples (one sample collected at Minocqua and one sample collected at Wind Lake) with a 0.05 ppm minimum detection limit. However, the lead detected in the sample from Minocqua (0.056 ppm) was just over the detection limit. The mean lead concentration for Minocqua samples (0.029 ppm) was far below the 0.25 ppm unlimited consumption advisory concentration. Therefore no consumption advisory is recommended based on lead results. The lead detected in the Wind Lake sample was above the unlimited consumption advisory concentration. However, there were significant problems associated with the quality control measures for this sample (spike recovery = 198%). Since acceptable spike recoveries should fall within 75% and 125%, the results for this sample were not included in the data analysis.

## Management Implications and Future Research

Based on the data from these analyses, people of all ages can eat unlimited amounts of meat from geese harvested from the tested sites at Minocqua, Wind Lake, Bohner's Lake and the Town of Brookfield. PCBs were not detected in geese from these areas. Furthermore, concentrations of mercury and lead were well below the unlimited consumption advisory concentration (with the exception of the Wind Lake sample discussed above). Therefore, no consumption advisories are needed for any of these sites.

Shotgun pellets from unsuccessful hunters have been raised as a potential concern. These steel pellets can become lodged in the muscle tissue. Consumption of meat that contains steel pellets can cause cracked or chipped teeth. Products prepared from wild geese should include a consumer warning about this risk.

### **Literature Cited**

Great Lakes Sport Fish Advisory Task Force (GLSFATF). 1993. Protocol for a Uniform Great Lakes Fish Consumption Advisory.

United States Food and Drug Administration (USFDA). 1994. Action Levels for Poisonous or Deleterious Substances in Human Food and Animal Feed.

Wisconsin Department of Natural Resources (WDNR) and Wisconsin Division of Health (WDH). 1994. Health Guide for People Who Eat Sport Fish from Wisconsin Waters.

Wisconsin State Laboratory of Hygiene. 1980. Methods for inorganic analysis. University of Wisconsin, Madison, WI.

Wisconsin State Laboratory of Hygiene. 1994. Methods for organic analysis. University of Wisconsin, Madison, WI.

Table 2: 2003 Urban Canada Goose Contaminants Data

Sample ID (Location)	Date Collected	Sex	% Fat	Lead Conc. (ppm)	Mercury Conc. (ppm)	PCB Conc. (ppm)	Advisory*	Comments
<b>Minocqua</b>								
04-001	06/27/2003	M	5.4	ND	ND	ND	Unrestricted	
04-002	06/27/2003	F	3.8	ND	ND	ND	Unrestricted	
04-003	06/27/2003	F	17	ND	ND	ND	Unrestricted	
04-004	06/27/2003	F	6.5	ND	ND	ND	Unrestricted	
04-005	06/27/2003	M	1.8	0.056	ND	ND	Unrestricted	
04-006	06/27/2003	M	13	ND	ND	ND	Unrestricted	
04-007	06/27/2003	?	5.1	ND	ND	ND	Unrestricted	
				<b>Ave. = 0.029</b>				
<b>Wind Lake</b>								
04-008	06/23/2003	M	6.6	ND	0.007	ND	Unrestricted	
04-009	06/23/2003	M	4	ND	ND	ND	Unrestricted	
04-010	06/23/2003	M	1.7	ND	ND	ND	Unrestricted	
04-011	06/23/2003	F	11	ND	ND	ND	Unrestricted	
04-012	06/23/2003	F	5.2	ND	ND	ND	Unrestricted	
04-013	06/11/2003	F	8.4	12.50	ND	ND	Unrestricted	SPIKE QC EXCEEDED. % RECOVERY = 198%
04-014	06/11/2003	M	4.2	ND	ND	ND	Unrestricted	
				<b>Ave. = 0.003</b>				
<b>Bohner's Lake</b>								
04-015	08/14/2003	?	1.8	ND	ND	ND	Unrestricted	
04-016	06/11/2003	F	7.2	ND	ND	ND	Unrestricted	
04-017	06/11/2003	M	9.4	ND	ND	ND	Unrestricted	
04-018	06/11/2003	M	10	ND	ND	ND	Unrestricted	
04-019	06/11/2003	F	12	ND	ND	ND	Unrestricted	
04-020	06/11/2003	M	9.4	ND	ND	ND	Unrestricted	
04-021	06/11/2003	F	5	ND	ND	ND	Unrestricted	
<b>Town of Brookfield</b>								
04-022	06/12/2003	M	13	ND	ND	ND	Unrestricted	
04-023	06/12/2003	M	6.8	ND	ND	ND	Unrestricted	
04-024	06/12/2003	F	12	ND	ND	ND	Unrestricted	
04-025	06/12/2003	F	10	ND	ND	ND	Unrestricted	
04-026	06/12/2003	F	17	ND	ND	ND	Unrestricted	
04-027	06/12/2003	M	15	ND	ND	ND	Unrestricted	
04-028	06/12/2003	M	9.9	ND	ND	ND	Unrestricted	
*Advisory Source: Appendix 9 of Wisconsin Urban Waterfowl Task Force								