
The Muskoka Watershed

REPORT CARD

Background Report #3

Our Water – Fishability



Muskoka
WATERSHED COUNCIL

July 2004

OUR WATER- FISHABILITY

Indicator	Are We Happy?	Are Things Improving
No restrictions on eating local fish.		
Healthy fish populations.		

Why are we concerned about the quality of our fish?

Fish Advisories

There have been fish advisories for fish caught on inland lakes and on Georgian Bay since the early 1980's to inform anglers that consumption of certain preferred fish species may increase health risks. The resulting health problems may be small or could lead to birth defects and cancers. The advice varies from not eating certain kinds of fish in any amount to limited consumption over extended periods of time. The advice can differ for different groups of individuals, being more restrictive for women of childbearing age and for children.

Persistent toxic substances produced, discharged or deposited in aquatic ecosystems become more concentrated in higher levels of the food web and fish with high concentrations of fat (e.g. trout) tend to become relatively more contaminated than those with lower fat levels. Older and larger fish are also generally more contaminated.

Healthy Fish Populations

Owing to their long life cycles, movement over large spaces, tendency to bio-accumulate toxins, and ease of collection and identification, fish are a good indicator of aquatic ecosystem health. Because chemical toxins in the water, physical destruction of habitat, changes in water levels, and the introduction of exotic species affect fish, they can be used to identify a variety of stressors. People also consume fish and therefore it is important to understand how these environmental stresses may affect jobs, recreation and human health.

All fish are affected by environmental stresses but lake trout have been used as an indicator species because they are found in both inland lakes and on Georgian Bay. They are also a sensitive fish that require cold, oxygenated waters, which are generally associated with lakes that deteriorate quickly as a result of human activity such as shoreline development or increased nutrient loads.

Current state

Fish Advisories

In the *2003-2004 Guide to Eating Ontario Sport Fish*, advisories were issued for a variety of species of fish on 58 lakes in Muskoka, including Georgian Bay. The fish species that were reported on included such species as bass, trout, pike, walleye, sucker, cisco, whitefish, perch and chubb. An extract from the *2003-2004 Guide to Eating Ontario Sport Fish* that highlights the surveyed lakes in Muskoka is provided in Appendix 1 for information purposes.

Generally, the consumption restrictions on Georgian Bay that affect lake trout, salmon, and carp are caused by PCBs. The restrictions on other species of fish are usually caused by mercury. In total, 21.1% of the advice given for sport fish from Georgian Bay results in some level of consumption restriction.¹

On inland lakes, very few locations have been exposed to discharges of pesticides and other organic compounds that cause the majority of consumption restrictions on Georgian Bay fish. Consequently, 98% of all consumption restrictions on sport fish from inland locations are a result of mercury. In total, 40.2% of the advice given for sport fish from inland locations results in some level of consumption restriction.²

Lake Trout Population

In addition to Georgian Bay, there are thirty-four inland lake trout lakes in Muskoka. The state of the lake trout population can be defined as healthy if lake trout are abundant and are likely to remain so. Table 1 illustrates the general state of the inland lake trout resource in Muskoka. This status rating is an indication of lake trout abundance while being affected by fishing effort. Although the ranking is subjective, it does provide a cursory analysis of this unique species.

Table 1
Status of Lake Trout in Muskoka

Lake	Township	Status
Bella	Sinclair	average
Bigwind	Oakley	average
Blue Chalk	Ridout	average
Bonnie	McCauley	below average
Buck	Sinclair	average
Camp	Finlayson	average
Cardwell	Cardwell	below average
Clear	Oakley	below average
Clearwater	Morrison	below average
Dotty	Finlayson	below average
Eighteen Mile	Sinclair	below average
Fairy	Brunel	average
Fifteen Mile	Franklin	average
Harp	Chaffey	average
Jerry	Sinclair	below average
Joseph	Medora	good
Lake of Bays	Franklin	good
Mary	Stephenson	average
Muskoka	Monck	average
Oxbow	Finlayson	average
Peninsula	Sinclair	below average
Pine	Oakley	below average
Rebecca	Sinclair	below average
Red Chalk	Ridout	average

¹ MOE, Guide to Eating Sport Fish 2003-2004, pg.17

² ibid pg.18

Rosseau	Medora	good
Seventeen Mile	Franklin	below average
Shoe	Ridout	below average
Skeleton	Watt	average
Solitaire	Sinclair	good
South Tasso	Finlayson	average
Tasso	Finlayson	below average
Vernon	Stisted	below average
Young	Watt	below average

Source: Ministry of Natural Resources, Parry Sound District.

Good - high fish abundance and low to moderate effort

Average - moderate fish abundance and low to high effort

Below average - low fish abundance and low to high effort

Based on this evaluation, there are fifteen (15) lakes that are ranked as below average, fourteen (14) lakes that are listed as average, and four (4) lakes are considered good. One (1) lake has not been evaluated.

Parry Sound harbour and South Bay of Georgian Bay are two of only four sites on the Canadian side of Lake Huron where lake trout reproduce naturally, but both sites are under considerable environmental stress. Stresses on the lake trout population in Georgian Bay have been identified as the introduction of sea lamprey, commercial and recreational fishing, and natural mortality.

Mortality rates of lake trout have been variable and relatively high in northern Lake Huron and Georgian Bay over the last few decades. Commercial fishing was the leading source of lake trout mortality during 1977-90, thereafter commercial fishing decreased as the impact of sea lamprey increased. Both mortality sources stabilized and were approximately equal through the 1990's. Recreational fishing was low in all years relative to commercial fishing and sea lamprey mortality.³

Parry Sound has been the most successful site of lake trout rehabilitation in Lake Huron because the bay is isolated from the main part of Georgian Bay by a shallow 12 m deep channel that likely reduced the effect of sea lamprey predation on this population. However, residual sea lamprey and a continuing sport fishery appears to have prevented unaided rehabilitation and kept the population numbers depressed.⁴

South Bay is another deep basin with a restricted opening to the main lake, which has provided some shelter for lake trout populations. A number of different strains of lake trout have been stocked in South Bay with the first significant natural year class of lake trout since 1948 produced in 1990.⁵

What are the stresses?

Accumulation of toxic substances in fish is a result of inputs of persistent toxic substances. There are four major sources of contaminants in the Muskoka environment.

- Long and short-range airborne transport and deposition of contaminates from inside and outside the watershed.
- Direct point source discharge from municipal and industrial sources.

³ Mohr, L.C. et. al, pg. 50

⁴ Mohr, L.C., et. al, pg. 53

⁵ ibid, pg. 53-54

- Diffuse discharge resulting, for example, from surface runoff of pesticides, nutrient loading from septic systems or hazardous leachates.
- Sediment resuspension, facilitating contaminant re-entry into the food web

Other major stressors of fish populations are:

- *Angling exploitation, both recreational and commercial:* Angling pressure is already a major stress and it will increase as access to remote inland lakes and northern bays of Georgian Bay improves.
- *Changes in fish community:* Changes in the fish community are expected partly as a by-product of human encroachment and also because of global changes. Climate warming is expected to change the physical properties of Shield lakes affecting such factors as temperature and water levels. These changes will effect the amount of habitat that supports production of lake trout and other fish species. In addition, the introduction of exotic species, by people, will impact the fish community. On Georgian Bay, the introduction of sea lamprey has had a significant impact on fish population.
- *Habitat changes:* Habitat changes can result from factors, such as nutrient loading, shoreline habitat alteration, siltation, acidification, and water level fluctuations. Although some of these factors can have acute effects on fish survival, their impact is often indirect and may not be noticeable for a period of time.

What action can be taken?

Activities that can be undertaken by individuals:

1. Reduce nutrient loading to the waterbody by ensuring that private waste disposal systems are functioning properly and meet current standards, not washing boats in the lake and not bathing in the lake.
2. Plant a shoreline vegetative buffer using native species.
3. Maintain aquatic plants and other structural aspects of fish habitat including submerged trees, branches, rocks and gravel.
4. Do not dump the content of baits buckets into lakes or streams.
5. Do not transfer fish from one lake to another.

Activities that can be undertaken by municipalities:

1. Encourage the retention of shoreline vegetation through the planning and development approval process.
2. Require all septic systems to be set back a minimum 30 metres from the high water mark of all waterbodies.
3. Limit development in areas where studies indicate that additional development will significantly impact the fish population.

Activities that can be undertaken by senior levels of government:

1. Continue fish management strategies aimed at protecting and enhancing the fish population and habitat.
2. Enact more restrictive emission controls for industry in Canada and work with the American government to achieve reduced emissions in the United States.

REFERENCES

1. Bob Bergmann, MNR Fisheries Biologist, per. Com. 2004.
2. Gunn, J.M., R.J. Steedman, R.A. Ryder, *Boreal Shield Watersheds, Lake Trout Ecosystems in a Changing Environment*. Lewis Publishers, Boca Raton, 2004.
3. Ministry of the Environment, *2003-2004 Guide to Eating Ontario Sport Fish*, Queen's Printer, Toronto, 2003.
4. Mohr, L.C., and Ebener, M.P. 2003. *Description of the fisheries. In* The state of Lake Huron in 1999. *Edited by* M.P. Ebener. Accepted for publication Great Lakes Fish. Comm. 2004.

**APPENDIX 1
GUIDE TO EATING ONTARIO SPORT FISH
2003-2004**

LAKES IN MUSKOKA

Location/ Emplacement	Species/ Espèces	Fish size in centimetres (Inches) Longueur du poisson en centimètres (pouces)								
		15-20 (6-8)	20-25 (8-10)	25-30 (10-12)	30-35 (12-14)	35-45 (14-18)	45-55 (18-22)	55-65 (22-26)	65-75 (26-30)	>75 >(30)
Clear Lake Lac Clear 4502/7901 Oakley Twp./Canton d'Oakley Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ² Truite de lac ²								④	④
Clearwater Lake Lac Clearwater 4448/7914 Morrison Twp./Canton de Morrison Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ¹ Truite de lac ¹							④	④	②
Dickie Lake Lac Dickie 4509/7905 McLean Twp./Canton de McLean Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²				④	④				
Echo Lake Lac Echo 4511/7904 McLean Twp./Canton de McLean Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²		④	④	④	②				
Fairy Lake Lac Fairy 4520/7911 Chaffey Twp./Canton de Chaffey Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ² Truite de lac ²					④	②			
Fawn Lake Lac Fawn 4510/7915 Macaulay & Stephenson Twps. Cantons de Macaulay et de Stephenson Muskoka D. M./Mun. de dist. de Muskoka	Largeemouth Bass ² Achigan à grande bouche ²	④	④	②						
Fox Lake Lac Fox 4522/7921 Stisted Twp./Canton de Stisted Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²		④	②						
Gibson Lake Lac Gibson 4458/7945 Gibson Twp./Canton de Gibson Muskoka D.M. Mun. de dist. de Muskoka	Northern Pike ¹ Brochet ¹				④	④	④	②		
	Walleye ¹ Doré ¹			④	④	④	②	②		
	Rock Bass ¹ Crapet de roche ¹	④	④							
	Pumpkinseed ¹ Crapet-soleil ¹	④								
	Cisco ¹ Cisco ¹									
	Brown Bullhead ² Barbotte brune ²									
Gloucester Pool Bassin Gloucester Severn River/Rivière Severn 4451/7942 Baxter Twp./Canton de Baxter Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²					④				
	Northern Pike ² Brochet ²								④	
	Walleye ² Doré ²					②				
	Black Crappie ¹ Marigane noire ¹				④					
	Largemouth Bass ¹ Achigan à grande bouche ¹						④			
Go Home Lake Lac Go Home 4501/7951 Gibson Twp./Canton de Gibson Muskoka D.M./Mun. de dist. de Muskoka	Northern Pike ¹ Brochet ¹						④	④	②	
	Walleye ¹ Doré ¹			④	④	④	④	④	②	
	Cisco ¹ Cisco ¹			④						

Location/ Emplacement	Species/ Espèces	Fish size in centimetres (Inches) Longueur du poisson en centimètres (pouces)							
		15-20 (6-8)	20-25 (8-10)	25-30 (10-12)	30-35 (12-14)	35-45 (14-18)	45-55 (18-22)	55-65 (22-26)	65-75 (26-30)
Halfway Lake Lac Halfway 4507/7914 Macaulay Twp./Canton de Macaulay Muskoka D.M./Mun. de dist. de Muskoka	White Sucker ¹ Meunier noir ¹	●	●	●	●	●			
Harp Lake Lac Harp 4523/7907 Chaffey Twp./Canton de Chaffey Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ² Truite de lac ²		●	●	●	●	●	●	●
	White Sucker ¹ Meunier noir ¹			●	●				
	Smallmouth Bass ² Achigan à petite bouche ²	●	●	●	●	●			
Healey Lake Lac Healey 4505/7911 Macaulay Twp./Canton de Macaulay Muskoka D. M./Mun. de dist. de Muskoka	Largemouth Bass ² Achigan à grande bouche ²	●	●	●	●	●			
	Yellow Perch ¹ Perchaude ¹	●	●	●	●				
	Rock Bass ¹ Crapet de roche ¹	●							
	Black Crappie ¹ Marigane noire ¹	●							
	Pumpkinseed ¹ Crapet-soleil ¹	●							
	Brown Bullhead ¹ Barbotte brune ¹	●	●	●					
	White Sucker ¹ Meunier noir ¹	●	●	●	●				
Heeney Lake Lac Heeney 4508/7906 McLean Twp./Canton de McLean Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²	●	●	●	●	●			
	White Sucker ¹ Meunier noir ¹	●	●	●	●	●			
Hunters Bay Baie Hunters 4519/7914 Stisted Twp./Canton de Stisted Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²	●	●	●	●	●			
		●	●	●	●	●			
Lake Joseph Lac Joseph 4510/7944 Medora Twp./Canton de Medora Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²	●	●	●	●	●			
	Rainbow Smelt ² Éperlan arc-en-ciel ²	●							
	Lake Trout ² Truite de lac ²			●	●	●	●	●	●
	Cisco ² Cisco ²	●	●	●	●	●			
	Whitefish ² Grand corégone ²				●	●	●		
	Rock Bass ² Crapet de roche ²	●	●	●					
Leonard Lake Lac Leonard 4504/7927 Monck Twp./Canton de Monck Muskoka D.M./Mun. de dist. de Muskoka	Walleye ¹ Doré ¹					●	●	●	●
	Smallmouth Bass ¹ Achigan à petite bouche ¹			●	●	●			
	Whitefish ¹ Grand corégone ¹	●	●	●	●	●			
Mary Lake Lac Mary 4515/7915 Stephenson Twp. Canton de Stephenson Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ² Truite de lac ²				●	●	●	●	●
	Smallmouth Bass ² Achigan à petite bouche ²	●	●	●	●	●			
	Rainbow Smelt ² Éperlan arc-en-ciel ²	●							

Location/ Emplacement	Species/ Espèces	15-20 (6-8)	20-25 (8-10)	25-30 (10-12)	30-35 (12-14)	35-45 (14-18)	45-55 (18-22)	55-65 (22-26)	65-75 (26-30)	> 75 (>30)
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Peninsula Lake Lac Peninsula	Smallmouth Bass ² Achigan à petite bouche ²	(4) (4)				
4520/7906 Chaffey Twp./Canton de Chaffey Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ² Truite de lac ²		(4) (4) (4)			
Pine Lake Lac Pine	Rainbow Trout ¹ Truite arc-en-ciel ¹					
4504/7904 Oakley Twp./Canton d'Oakley Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ¹ Truite de lac ¹	(4) (4)				
Prospect Lake Lac Prospect	Smallmouth Bass ² Achigan à petite bouche ²	(4) (4) (2)				
4459/7908 Draper Twp./Canton de Draper Muskoka D. M./Mun. de dist. de Muskoka						
Rebecca Lake Lac Rebecca	Smallmouth Bass ⁵ Achigan à petite bouche ⁵		(4) (4) (4) (2)			
4526/7902 Sinclair Twp./Canton de Sinclair Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ⁵ Truite de lac ⁵			(4) (2) (2)		
Red Chalk Lake Lac Red Chalk	Lake Trout ² Truite de lac ²	(4)				
4511/7857 Ridout Twp./Canton de Ridout Muskoka D. M./Mun. de dist. de Muskoka						
Lake Rosseau Lac Rosseau	Smallmouth Bass ² Achigan à petite bouche ²	(4) (2)				
4510/7935 Cardwell Twp./Canton de Cardwell Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ² Truite de lac ²	(4) (4) (2) (2)				
	Rainbow Smelt ² Éperlan arc-en-ciel ²					
	Cisco ² Cisco ²					
	Rock Bass ² Crapet de roche ²	(4)				
	Whitefish ² Grand corégone ²		(4)			
Six Mile Lake Lac Six Mile	Walleye ¹ Doré ¹		(4) (2)			
4454/7943 Baxter Twp./Canton de Baxter Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²	(4)				
	Largemouth Bass ² Achigan à grande bouche ²					
	Yellow Perch ¹ Perchaude ¹					
	Black Crappie ¹ Marigane noire ¹					
	Rock Bass ¹ Crapet de roche ¹					
	Pumpkinsseed ¹ Crapet-soleil ¹					
	Brown Bullhead ² Barbotte brune ²					
Skeleton Lake Lac Skeleton	Lake Trout ² Truite de lac ²		(4) (4)			
4515/7927 Cardwell Twp./Canton de Cardwell Muskoka D. M./Mun. de dist. de Muskoka	Walleye ² Doré ²		(4) (4)			
	Smallmouth Bass ² Achigan à petite bouche ²	(4)				
Solitaire Lake Lac Solitaire	Lake Trout ⁴ Truite de lac ⁴					
4523/7901 Sinclair Twp./Canton de Sinclair Muskoka D. M./Mun. de dist. de Muskoka						

Fish size in centimetres (Inches)
Longueur du poisson en centimètres (pouces)

Location/ Emplacement	Species/ Espèces	15-20 (6-8)	20-25 (8-10)	25-30 (10-12)	30-35 (12-14)	35-45 (14-18)	45-55 (18-22)	55-65 (22-26)	65-75 (26-30)	> 75 >(30)
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Tadenac Lake Lac Tadenac 4503/7957 Freeman Twp./Canton de Freeman Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ¹ Truite de lac ¹							(4)	(4)	(4)	(2)
	Smallmouth Bass ¹ Achigan à petite bouche ¹						(4)	(2)			
	Northern Pike ¹ Brochet ¹							(4)	(4)	(4)	
Tasso Lake Lac Tasso 4527/7856 Finlayson Twp./Canton de Finlayson Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ¹ Truite de lac ¹							(4)	(4)	(2)	(2)
	Smallmouth Bass ¹ Achigan à petite bouche ¹						(4)				
Three Mile Lake Lac Three Mile 4510/7927 Watt Twp./Canton de Watt Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²										
	Largemouth Bass ² Achigan à grande bouche ²										
	Walleye ² Doré ²				(4)	(4)	(2)	(2)			
Unnamed Lake #420 Lac sans nom n° 420 4531/7857 Finlayson Twp./Canton de Finlayson Muskoka D. M./Mun. de dist. de Muskoka	Brook Trout ¹ Omble de fontaine ¹										
Lake Vernon Lac Vernon 4520/7917 Stisted Twp./Canton de Stisted Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²	(4)	(4)	(4)	(2)	(2)					
	Lake Trout ² Truite de lac ²				(2)	(2)					
	Largemouth Bass ¹ Achigan à grande bouche ¹		(4)	(4)							
	Northern Pike ¹ Brochet ¹					(4)	(4)	(4)	(2)		
Walker Lake Lac Walker 4523/7905 Sinclair Twp./Canton de Sinclair Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²	(4)	(4)	(4)	(4)						
Waseosa Lake Lac Waseosa 4524/7917 Chaffey Twp./Canton de Chaffey Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²				(4)						
	Lake Trout ² Truite de lac ²										
	Brook Trout ² Omble de fontaine ²				(4)	(2)					
Wood Lake Lac Wood 4501/7905 Oakley Twp./Canton d'Oakley Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ² Achigan à petite bouche ²						(4)				
	Walleye ¹ Doré ¹				(4)	(4)	(2)	(2)			
Woodland Lake Lac Woodland 4454/7933 Wood Twp./Canton de Wood Muskoka D. M./Mun. de dist. de Muskoka	Largemouth Bass ¹ Achigan à grande bouche ¹	(4)	(4)	(2)							
Woods Lake Lac Woods 4516/7936 Cardwell Twp./Canton de Cardwell Muskoka D. M./Mun. de dist. de Muskoka	Smallmouth Bass ¹ Achigan à petite bouche ¹										
Young Lake Lac Young 4513/7933 Watt Twp./Canton de Watt Muskoka D. M./Mun. de dist. de Muskoka	Lake Trout ¹ Truite de lac ¹					(4)	(2)				

Location/ Emplacement	Species/ Espèces	Fish size in centimetres (Inches) Longueur du poisson en centimètres (pouces)								
		15-20 (6-8)	20-25 (8-10)	25-30 (10-12)	30-35 (12-14)	35-45 (14-18)	45-55 (18-22)	55-65 (22-26)	65-75 (26-30)	>75 >(30)
Georgian Bay GB3 Baie Georgienne GB3	Lake Trout ¹ Truite de lac ^{1,2}				●	●	●	●	●	④ ④
	Walleye ¹ Doré ¹					●	④	④	④	④
	Northern Pike ¹ Brochet ¹			●	●	●	●	●	●	
	Smallmouth Bass ¹ Achigan à petite bouche ¹	●	●	●	●	●	●	●		
	Largemouth Bass ¹ Achigan à grande bouche ¹	●	●	●	●	●	●	●		④
	Yellow Perch ¹ Perche ¹	●	●							
	Black Crappie ¹ Mangane noire ¹	●	●	●	●	●	●	●		④
	Whitefish ¹ Grand corégone ^{1,2}	●	●	●	●	●	●	●	●	
	Brown Bullhead ¹ Barbotte brune ¹	●	●	●	●	●	●	●		④
	Ling ¹ Lotie ¹					④	④	④	②	
	Chub ¹ Chub ¹	●	●	●						