Ministry of Natural Resources

Ontario

Natural. Valued. Protected.



Smallmouth Bass in Lake Muskoka



Organized competitive fishing events are growing in popularity. In 2008, over 1000 events were held across the province.

Events targeting bass are most popular. These events provide the opportunity for MNR biologists to handle a large number of fish in a short period of time.



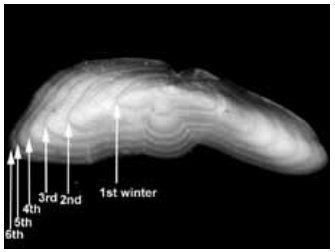
Top ten species sought in competitive fishing events in Ontario, 2008

Species	% of events
Bass (largemouth and smallmouth)	35.5
Walleye	10.1
Northern pike	9.4
Rainbow trout	4.5
Lake trout	4.2
Chinook salmon	4.1
Yellow perch	3.9
Muskellunge	2.4
Black crappie	1.7
Carp	1.6
Panfish (bluegill and pumpkinseed)	1.4

A large event was held on Lake Muskoka in 2007. At the weigh-in, bass were sampled by MNR staff before being live-released.

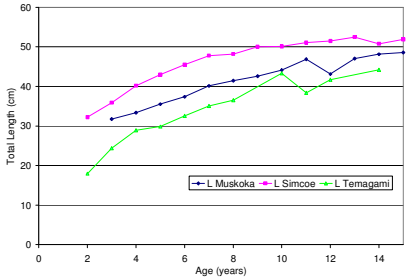


Fish were measured and spines from the dorsal fin were collected. The spines are cut into thin sections. Viewed under a microscope, the sections show growth rings, providing an estimate of the age of the fish.



Growth

Lake Muskoka is a large, diverse lake, with many islands, bays and rocky shorelines – great habitat for smallmouth bass. Growth of bass from Lakes Muskoka, Simcoe and Temagami are compared in the chart below.



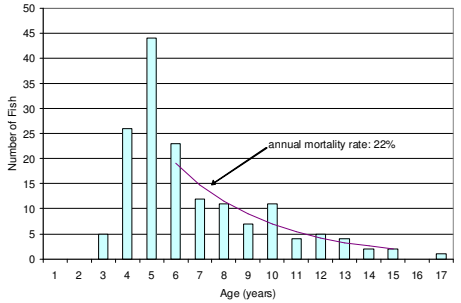
Lake Muskoka is close to Lake Simcoe and has a similar climate, but the lakes are very different. The growth rate and maximum size of bass are lower in Lake Muskoka due to the lower availability of nutrients. The granite rocks of Lake Muskoka provide great physical habitat but have very few nutrients.

In contrast, Lake Muskoka and Temagami are similar in terms of physical habitat, but the cooler climate and shorter growing season at Lake Temagami results in slower growth.

Early growth is important to bass and limits how far north they can live. If they do not grow to a large enough size during their first summer (~ 5 cm), they will not survive the winter.

Age Composition

Smaller, younger fish are not vulnerable to angling or are released. This tournament had a minimum size of 12” (30 cm) or about 4 years old.



The age distribution can be used to estimate the survival rate for the population. For this sample, it was estimated that for bass 6 years old and older (approximately 35 cm and larger) the annual survival rate was 78%.

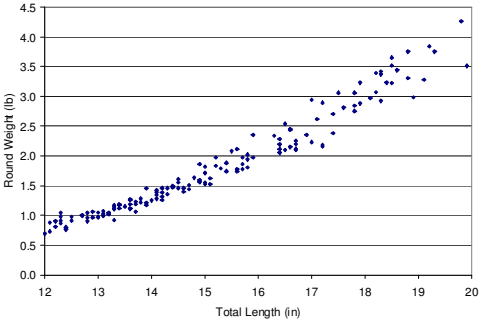
For example, if the population had 1000, six year old fish at the beginning of the year, by the next year 780 were still alive. After two years, 608 were alive (780*78%). This survival rate is quite high and indicates that mortality from fishing is well within sustainable limits.

How heavy is that fish?

The chart below shows the length-weight relationship for fish weighed at the tournament.

A handy equation to estimate the weight of a smallmouth bass is:

W (lb) = L x L x L /1900 (‘L’ is the length in inches)



How old is that fish?

Fish of the same size can be different ages. Fish grow at different rates determined by their genetics, habitat, gender and other factors.

Length		Age		
cm	inches	Average	Minimum	Maximum
30	11.8	4	3	4
32	12.6	5	3	7
34	13.4	5	3	6
36	14.2	5	4	8
38	15.0	6	4	9
40	15.7	7	5	12
42	16.5	8	5	12
44	17.3	9	6	12
46	18.1	10	7	13
48	18.9	12	8	15
50	19.7	14	11	17