

SMALLMOUTH BASS REPORT: LITTLE RIVER LAKE

Co-ordinates

44° 58' N

64° 28' W

Surface Area: N/A

Max. Depth: 6 m*

* Dependant on water height

County: Kings

Water Clarity: 36 TCU

Shoreline Length: N/A

Recreational traffic:

Moderate



Summary

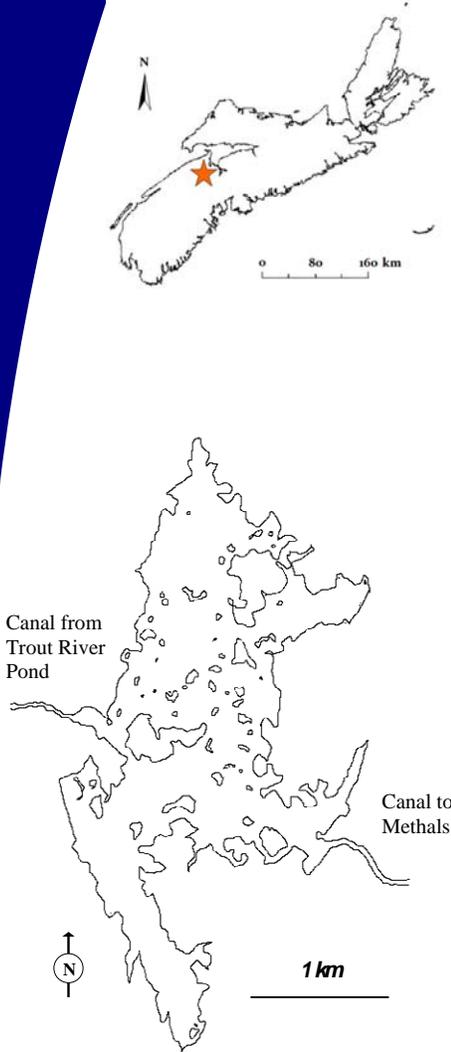
From 1995 to present, a total of 1378 tournament-caught smallmouth bass were sampled. Mean length of tournament smallmouth was 30.6cm (12 in). Bass over 35.5cm (14 in) represented 17% of the sample while bass over 45.5cm (18 in) represented only 3% of the sample. These values are heavily influenced by the mid-1990's and bass in recent years are considerably longer. Mean yearly length from years 1995 to 1999 averaged 30.1 cm (11.9 in) and varied only 3.8 cm (1.5 in) while in 2004 and 2006 mean yearly length was considerably longer averaging 37.5 cm (14.8 in) with similar variance (3.3 cm or 1.3 in). The trend of increasing length in recent years was significant. Mean condition ($W_r = 76$) and growth in Little River Lake is similar to that of other Nova Scotia lakes. Bass in Little River Lake reach 25.4cm (10 in) and 35.5cm (14 in) after 5 and 9 years, respectively.

The average 5-bass bag limit required to win a tournament on Little River Lake is 4.8 kgs (10.5 lbs) and the average tournament lunker is 1.6 kgs (3.6 lbs). Autumn bass tournaments produced larger winning weights than mid-summer tournaments.



Photo: M. Dodge

An angler displays a fine pair of Little River Lake smallmouth



General Information

Smallmouth bass were first introduced to Little River Lake in 1967 as part of a sanctioned introduction by the then NS Department of Lands and Forests, Federal Fisheries (DFO) and Nova Scotia Light and Power Co. and has since become one of the most popular destinations for smallmouth bass angling in Nova Scotia (McNeill 1995).

While a fair number of cottages dot the shoreline of Little River Lake, public access is restricted to two areas. Anglers can launch a boat at the Methals Lake hydro dam and enter Little River Lake via the canal. This route is the most popular. A second launch directly on Little River Lake exists through a series of woods roads (Butler's Road) originating from Hwy #12 between Forest Home and Murphy Lake.

The land surrounding the lake is dominated primarily by granite overlain by thin, nutrient-poor and acidic soils. Many large glacially-deposited granite boulders are strewn across the lake and surrounding areas and can make navigation dangerous. The forest surrounding Little River Lake is dominated primarily by red spruce, white pine, hemlock, sugar maple and white birch.

The Southern half of the lake is primarily less than 2 m (6 ft) deep while the Northern end of the lake is generally deeper with a large area greater than 4 m (13 ft) deep, including a 6 m (20 ft) hole.

Length of Little River Lake Bass

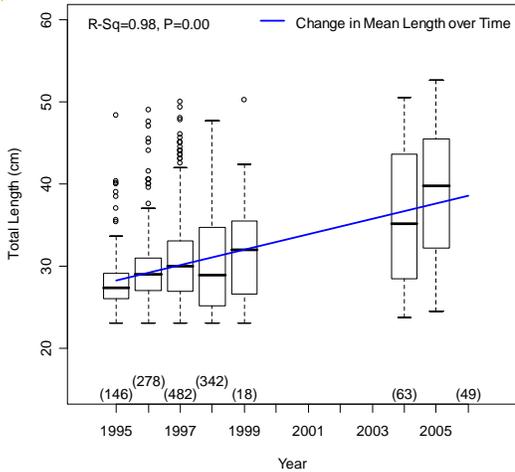


Figure 1—Length of tournament-caught smallmouth bass. Centre of boxes represent median values. Blue line indicates

the minimum size permitted in many tournaments.

“Based on historical tournament data, 3% of all Smallmouth Bass weighed-in were longer than 45.5cm (18 inches)!”

Similar to many Nova Scotian lakes, 57% of tournament bass were smaller than 30.5cm (12 in). Of all tournament caught bass sampled, 17% were longer than 35.5cm (14 in), 7% were longer than 40.5cm (16 in) and 3% were longer than 45.5cm (18 in). The proportion of bass >45.5 in the years 1995 to 1998 averaged 2% while the years 2004 & 2006 averaged 24%.

In any given year, the mean length of tournament angled bass varied from a low of 28.1 cm (11.1 in) in 1995 to a high of 39.2 cm (15.4 in) in 2006. Length of tournament bass varied significantly from year to year.

For example, for the period

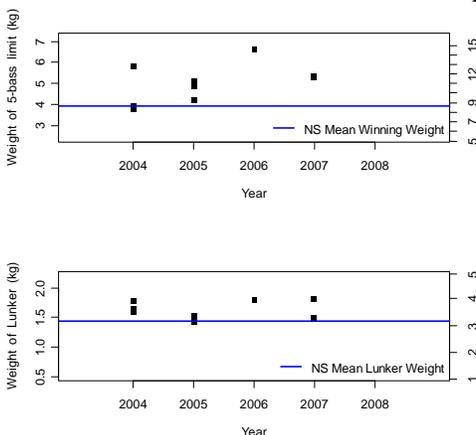


Figure 3— Weight of winning 5-bass tournament bag limits from 2005 to 2008. Each point represents a tournament winning weight.

The average length of Little River Lake smallmouth bass brought to tournament weigh-in scales from 1995 to 2006 was 30.6 cm (12.0 in) (S.E. = 0.16) as calculated from 1378 smallmouth over 23cm (9 in) –

of 1995 through 1999 the length of tournament caught bass did not generally differ from one another (Tukey HSD, $P>0.05$) and again 2004 and 2006 did not significantly differ (Tukey HSD, $P=0.14$). These two periods were however significantly different indicating a change in population size structure over that time period. Mean length has increased significantly over time ($R^2=0.98$, $P=0.00$) with recent years (2004 and 2006) having significantly longer

bass than previous years (Figure 1).

Movement of strong year classes through the population may have contributed to this trend. The 5-7 years between the late 90’s and mid-2000’s should have allowed substantial growth of individuals within a cohort. Based on the length frequencies (Figure 2), the movement of a cohort is not obvious, potentially a result of a relatively small sample in 1999 and the lack of data for 2000 to 2003.

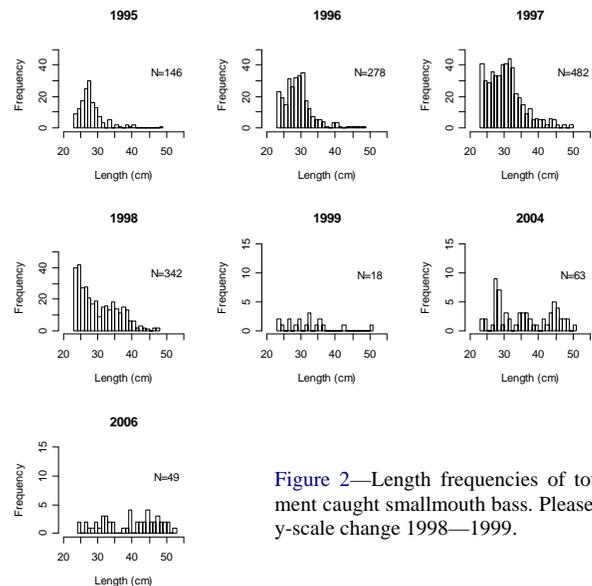


Figure 2—Length frequencies of tournament caught smallmouth bass. Please note y-scale change 1998—1999.

Tournament Results

Since comprehensive tournament reporting was initiated in 2004, the average weight of a 5-bass limit required to win a tournament on Little River Lake was 4.77

kgs (10.5 lbs). The largest 5-bass bag was 6.59 kgs (14.5 lbs) (Figure 3). On average, the weight required to finish in the top 5 of any given tournament was 3.35 kgs (7.38 lbs) for 5 bass. A lunker is the single largest bass weighed in at a tournament. The mean size of tournament-winning lunker bass was 1.61 kgs (3.6 lbs)

while the largest single lunker (out of 1717 bass) was 1.81 kgs (4.0 lbs). As the year progresses, the weight required to win a tournament also increased significantly ($R^2=0.41$, $P=0.03$) with weights in September being the highest.

Smallmouth Growth in Little River Lake

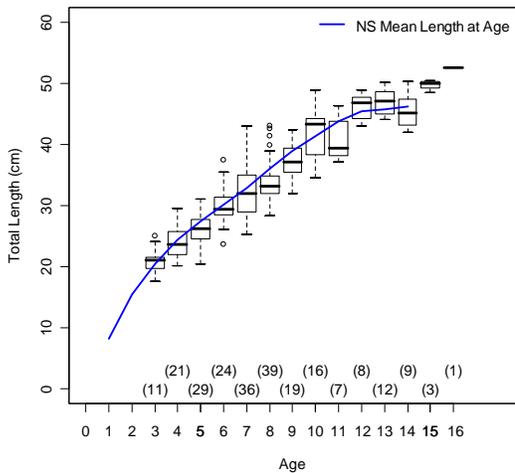


Figure 4 — Length at age for Little River Lake bass. Centre of the boxes represents the median values. Sample size in ().

Nova Scotia lies at the northerly end of the smallmouth’s range and thus NS bass exhibit slower growth than other parts of North America. Additionally, lakes in Nova Scotia tend to be less productive than elsewhere. In previous studies, MacMillan et al. (2002) indicated that Little River Lake exhibited considerably slower growth when compared to the provincial average though recent data suggest that growth is near the provincial mean (Figure 4). Similarly, young smallmouth not often

captured in tournaments (ages 1, 2 and 3 years) tend to grow slower than the North American average (Dunlop 2004). Bass in Little River Lake grow to 25.4cm (10 in) after 5 years, 30.5cm (12 in) after 7 years and to 35.5cm (14 in) after 9 years. Large specimens are notoriously difficult to age however bass as old as 16 years have been sampled in Little River Lake.



Photo: M. Dodge

Relative Weight

The weight of bass increases with length. Using this relationship the relative weight, or “plumpness” of individual bass may be assessed. On average, the relative weight of smallmouth from Little River Lake is 76.4 (S.E. = 0.24, N=1341). Yearly mean relative weights ranged from a high of 79.7 in 1995 to a low of 70.9 in 2004 (Figure 5).

These values are close to the Nova Scotia mean of 77, yet low when compared to bass in New Brunswick and Maine or the North American average of 100.

The relative weight of Little River Lake bass appears to have decreased since the mid-1990’s however this reduction is not significant ($R^2=0.36$, $P=0.15$). Relative

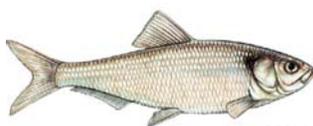
weight is affected by food supply and competition from other predators. Varying rates of juvenile alewife production in Little River Lake and in lakes upstream in the watershed may affect smallmouth relative weight at the population level.

“It takes 6-7 years for a Little River Lake Bass to reach 30cm (12”) while a 50cm (20”) bass may be 16 years of age or older !”

Common Prey and Competitor

Several fish species inhabit Little River Lake including brook trout, white perch, yellow perch, brown bullhead, American eel and alewife (gaspereau). Little River Lake is shallow and has extensive littoral zones conducive with baitfish production. Mice, frogs and other amphibians also likely fall prey to Little River Lake

bass while aquatic plants, stumps and logs provide ample insect production. The fall migration of juvenile alewife through the



Alewife (Gaspereau)

system (although variable) presumably provides a large influx of baitfish.

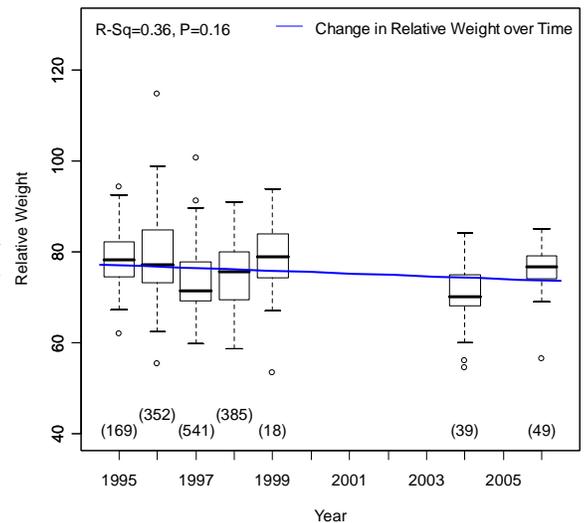


Figure 5 — Relative weight of tournament-caught smallmouth from 1995 to 2006. Blue line represents trend. Sample size in (). Centre of boxed represents median values.

Nesting

Nesting in Little River Lake is slightly different than many Nova Scotian lakes in the fact that the lake is a hydroelectric impoundment. Bass nest in sheltered coves and shallow points often associated with woody debris. The actual location of nesting may be impacted by fluctuating water levels.

Also, because the water in Little River Lake is rather dark, bass often build their nests shallow as the lack of clarity offers protection from visual predators. Furthermore, dark water absorbs more energy from the sun than does clear water and often warms faster than clear lakes, reaching the 12.8 °C necessary for nest building, earlier in the spring (Scott and Crossman 1973).



Photos: J. Leblanc



Typical wood and rock cover in Little River Lake exposed by low water (above), and a typical NS bass nest associated with wood

Bass Fishing Tips

Little River Lake holds fish throughout with productive areas spread out across the lake. The abundant wood, rock and vegetation provide ideal bass cover.

Fishing in the spring is primarily associated with bass as they prepare to spawn. Smallmouth in this lake will often stage in the deepest available area adjacent to their preferred spawning site. Soft plastic jerkbaits, topwater lures and spinnerbaits will all catch spring bass. As the lily pads emerge in late June topwater fishing becomes an effective and exciting method. While floating lures will attract bass all summer long at the appropriate times, soft plastic baits become the preferred lure. In particular, soft plastic "stick baits", jerkbaits, worms and lizards are effective. Bait color depends on the time of year though in general brown and black works well in the spring and green, purple and black are great summertime and fall baits.

Angling Regulations

Current regulations for smallmouth bass in Little River Lake are designed for trophy management. As such, anglers are permitted to angle smallmouth bass from

April 1st to December 31st. From April 1st to June 30th, no smallmouth bass may be retained to protect spawning bass. From July 1st to the end of season, anglers are permitted to retain three (3) smallmouth bass with a maximum length of 35 cm (13.8 in). For additional information, please refer to the Angler's Handbook.



Photo: J. Leblanc

Report compiled by:

E. A. Halfyard (Fisheries Biologist)

For more information, contact:

Warmwater Fisheries Biologist

Jason LeBlanc
leblanje@gov.ns.ca
902-485-7029



Fisheries and Aquaculture

Inland Fisheries Division

P.O. Box 700,
Pictou Nova Scotia,
B0K-1H0
Phone: 902-485-5056
Fax: 902-485-4014
<http://www.gov.ns.ca/fish/>

References:

- Davis, D. and S. Browne (eds). 1997. The natural history of Nova Scotia—Theme Regions. Nimbus—Nova Scotia Museum. Halifax, NS. 304 p.
- Dunlop, E.S. and B.J. Shuter. 2004. Native and introduced populations of smallmouth bass differ in concordance between climate and somatic growth. *Trans. Amer. Fish. Soc.* **135**: 1175-1190.
- MacMillan, J. L., A.J. MacNeill, R.G. Heighton and M.S. Ridgeway. 2002. Life history characteristics of smallmouth bass populations in Nova Scotia based on tournament monitoring. **Black bass: ecology, conservation and assessment. American Fisheries Society symposium. 31 pp. 535-544.**
- McNeill, A.J. 1995. An overview of the smallmouth bass in Nova Scotia. *N. A. J. Fish. Mgmt.* **15**: 680-687.
- Scott, W.B. and E. J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada, Environment Canada. Bulletin 184. 966 p.

Acknowledgements:

We wish to thank members of the Annapolis Valley Bass Club, the Canadian Association of Smallmouth Anglers and Nova Bassmasters. Also, a special thank you to Ralph Heighton who conducted much of the tournament sampling and provided reliable aging of scale samples and to Nova Scotia Power for their support of recreational angling and research projects in this region.