Adult Steelhead Assessment 2013

By: JG.

Co-op Angler 2013

(A partnership in science between the Ontario Ministry of Natural Resources and the North Shore Steelhead Association)

Introduction

- Four steelhead assessment projects were conducted during the spring of 2013.
- They are:

  A) McIntyre River Steelhead Population Assessment

  B) Portage Creek Steelhead Population Assessment

  D) Cypress River Steelhead Population Assessment

  C) Co-op Angler Study
- All studies were conducted in partnership with the North Shore Steelhead Association (NSSA) and the Ontario Ministry of Natural Resources (OMNR).

Steelhead Assessment 2012 (A partnership between MNR and the NSSA)

Methods

A) McIntyre River Steelhead Population Assessment

Four experienced anglers biologically sampled, fin clipped and tagged adult steelhead they captured while angling during the spring spawning migration (April and May).

B) Portage Creek Steelhead Population Assessment

Anglers from the NSSA angled, biologically sampled, fin clipped and tagged adult steelhead during the spring spawning migration (April and May)

C) Cypress River Steelhead Population Assessment

Three experienced anglers biologically sampled and fin clipped and tagged adult steelhead they captured while angling during the spring spawning migration (April and May).

D) Co-op Angler

Anglers from the North Shore Steelhead Association received sampling kits (tape, glove, knife, envelopes and instructions) and biologically sampled their steelhead catches (fork length, sex, and scale samples) from north shore tributaries during the spring. Scientific permits were issued by MNR.

The population estimates were based on a 'Petersen Population Estimate' shown in Appendices 4 and 5. Adult steelhead are fin clipped in year one and recaptured in year two. The repeat spawners with fin clips in year two complete the formula.

Collecting the data

Sample Kit

Measuring length

Gender (male or female ?)

Scale Sample

Yearly Sampling

Portage Creek Clipping, tagging and Sampling

2010 289 sampled and tagged (white Floy MNR 44000, Adipose clipped)
2011 211 sampled and tagged (copper Floy MNR 43000, Left Ventral clipped)
2012 150 sampled and tagged (yellow Floy MNR 49000, Right Pectoral clipped)
2013 96 sampled and tagged (purple Floy MNR 31000, Front Dorsal Clipped)

McIntyre River Clipping and Sampling

2011 Front Dorsal clip, Sampling: Fork length, sex and scale sample, tag
2012 Front Anal clip, Sampling: Fork length, sex and scale sample, tag
2013 Adipose clip, Sampling: Fork Length, sex and scale sample, tag

Co-op Angler Sampling by Tributary

	Basin	Tributary	Sample Size
A	Thunder Bay	Kam River	22
		Neebing River	121
		McIntyre River	243
		McVicar Creek	204
		Wild Goose Creek	14
		Blind Creek	17
		others	11
B	Black Bay	Portage Creek	96
		Coldwater Creek	26
		Wolf River	10
C	Nipigon to Marathon	Jackpine River	104
		Cypress River	171
		Prairie River	31
		Steel River	15
		Rossport Tribs.	35

Petersen Population Estimate

Number of Fish Clipped in Year #1 X Repeat Spawners in Year # 2 / by Clips from Year # 1 Captured in Year # 2

Example :

250 marked in Year #1
150 Repeat Spawners Year # 2
30 Marked fish from Year # 1 Captured in Year #2

$$\frac{250 \times 150}{30} = 1259 \pm 95\ \%\ \text{Confidence}$$

McIntyre, Portage Creek Population Trends

These two graphs indicate the trends in adult steelhead population size up to the present time. **Figure A** is the McIntyre River, Thunder Bay, **Figure B** is Portage Creek, Black Bay.

Figure A

- McIntyre River adult population held at over 2000 from 2010 to 2012
- 1 over 69 cm spring 1999

Figure B

- Portage Creek were closed to angling in 1994.
- From 1994 to to 2004 adult population went from 800 to over 2000
- 2007 to present dropped to 1900 to 500

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McIntyre River Steelhead

Adult Population Estimates

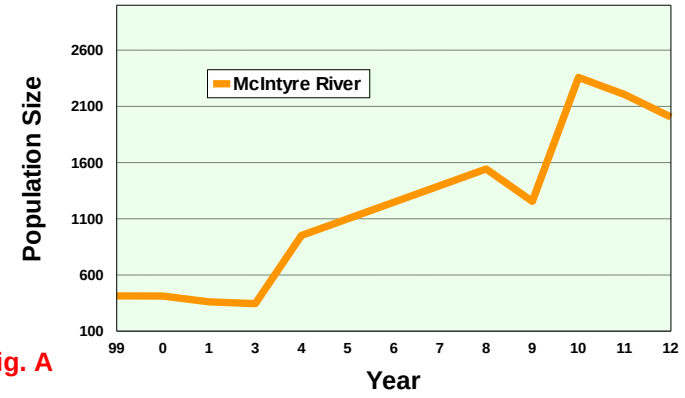


Fig. A

Note: 1999 to 2004 (Counting Fence), 2008 to 2012 (Petersen est.)

Portage Creek Steelhead

Adult Population Estimates

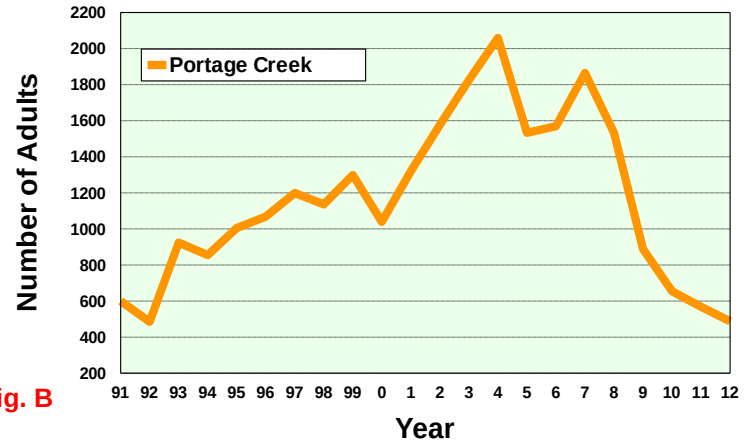
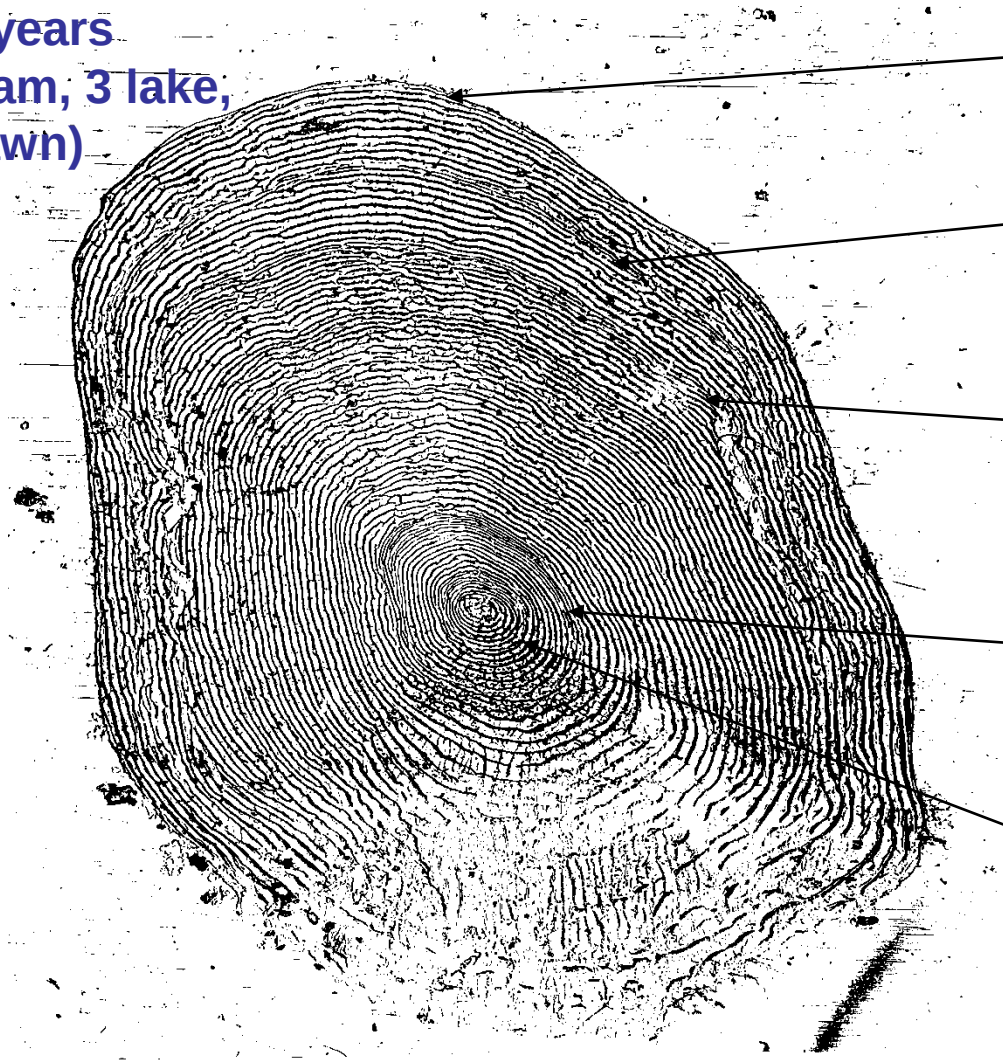


Fig. B

Life History Extrapolation

Steelhead Scale:
Age 5 years
(2 stream, 3 lake, 3rd spawn)



Third Lake Year, Third Spawn

Second Lake Year, Second Spawn

First Lake Year, First Spawn

Second Stream Year

First Stream Year

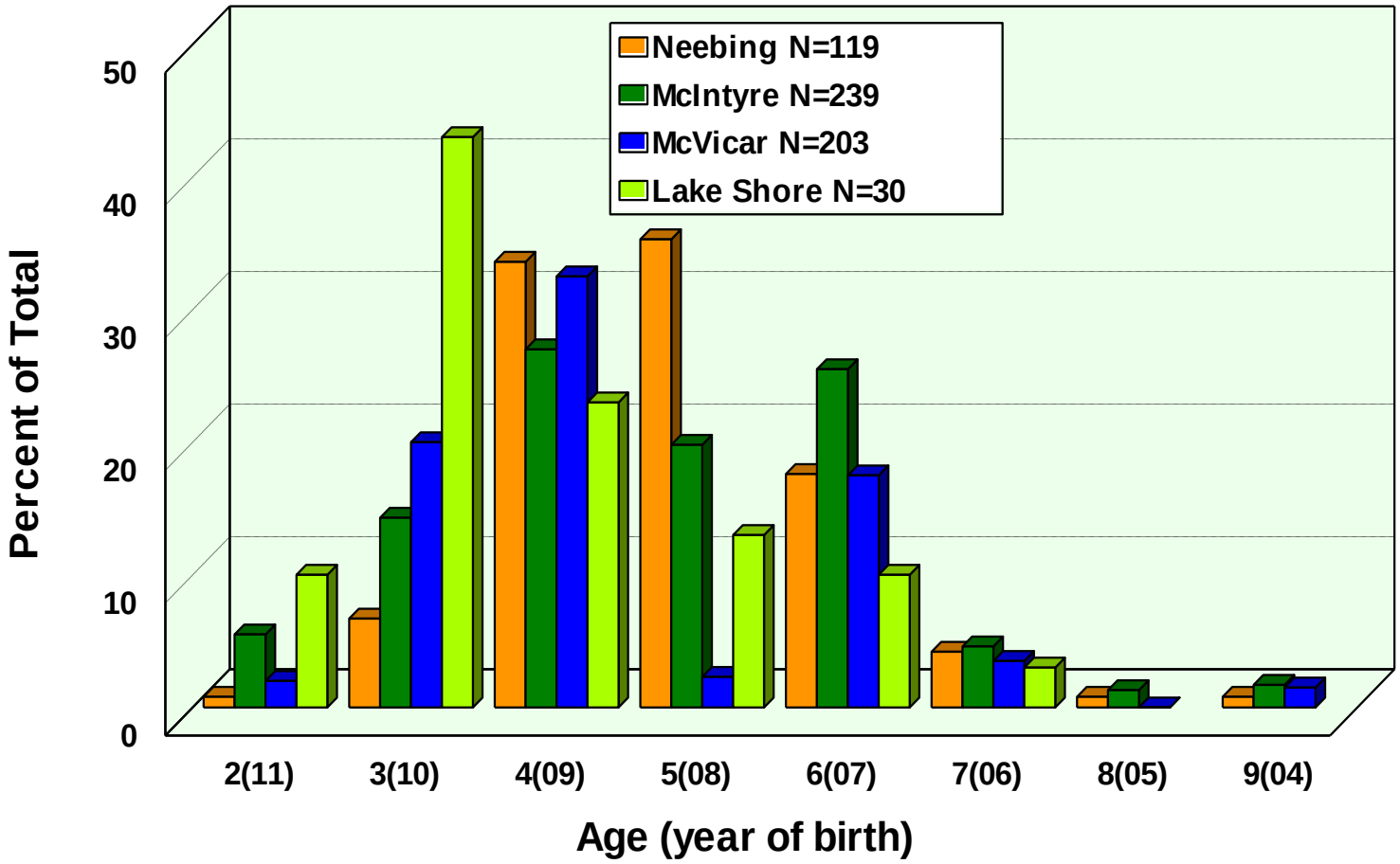
Steelhead life history information from scale samples (Recorded on Excel Database)

Flen	Sex	Spw	Lk/Sp	St.	Lk.	Age	Mat.
450	2	1	2	1	2	3	3
380	1	1	1	2	1	3	3
470	1	2	1	2	2	4	3
510	1	2	1	2	2	4	3
580	2	1	2	2	2	4	4
600	2	2	3	2	4	6	5
540	1	2	1	2	2	4	3
340	1	1					
680	2	5	2	2	6	8	4
470	2	1	2	2	2	4	4
510	1	2	1	2	2	4	3
610	2	6	2	1	7	8	3
690	9	4	3	2	6	8	5
640	2	3	2	2	4	6	4
490	1	2	2	1	3	4	3
580	2	1	3	1	3	4	4

Legend: Flen. (fork length), Spw. (# of spawns), Lk/Sp (# lake years @ first spawn), St. (# stream years), Lk. (# lake years), Age (total age), Mat. (age at maturity)

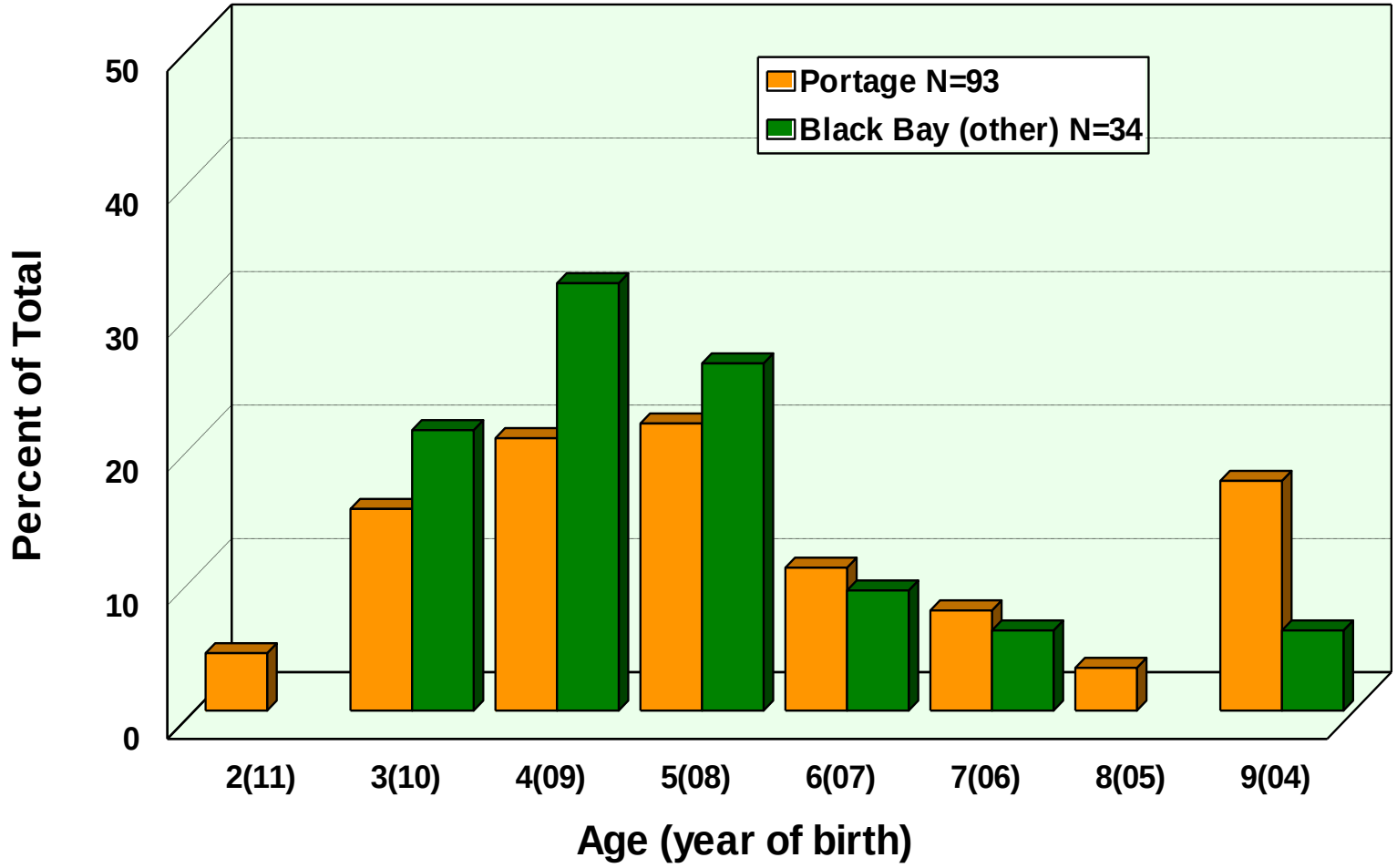
Lake Superior Steelhead

Age Structure 2013



Lake Superior Steelhead

Age Structure 2013



Lake Superior Steelhead

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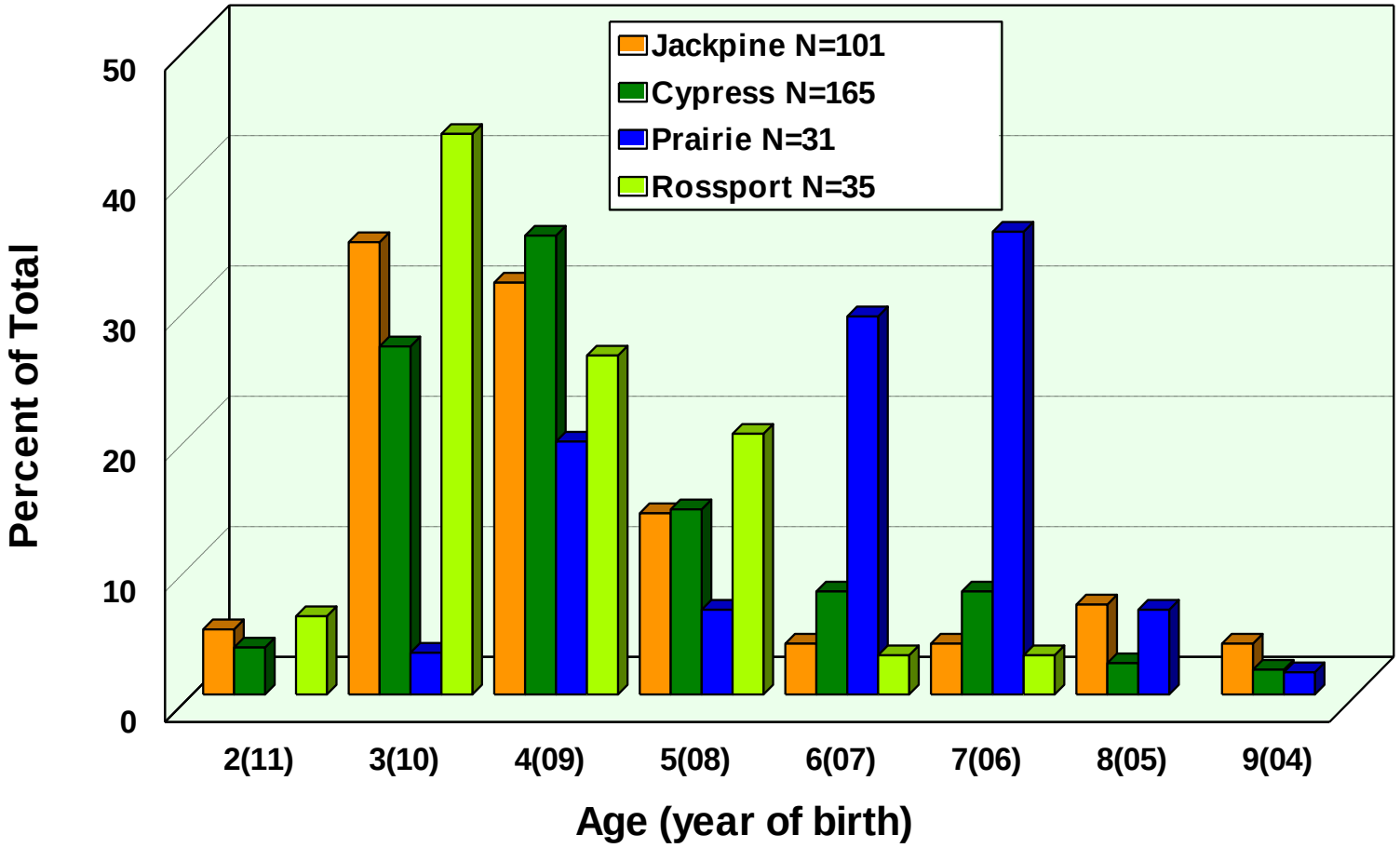
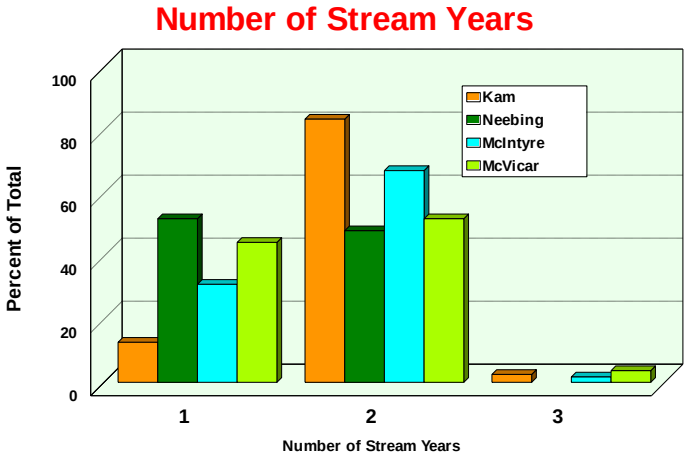
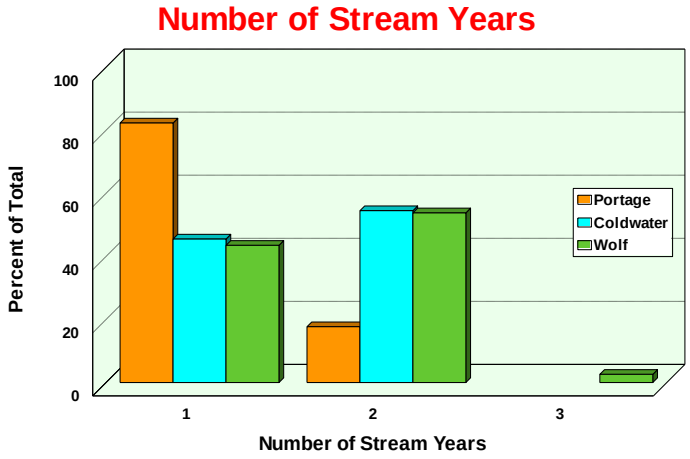
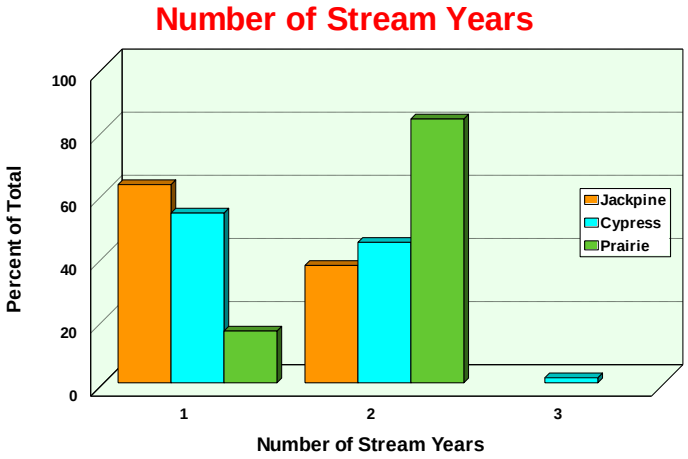


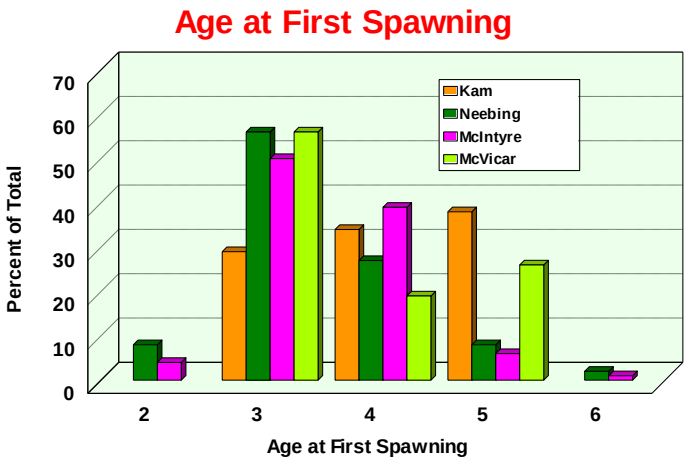
Smolting History

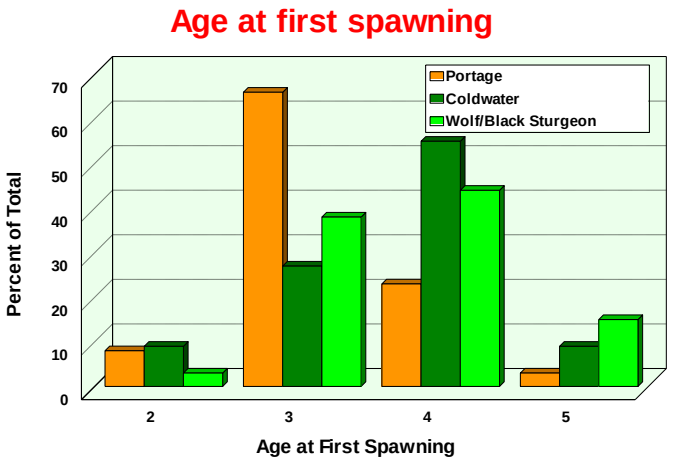


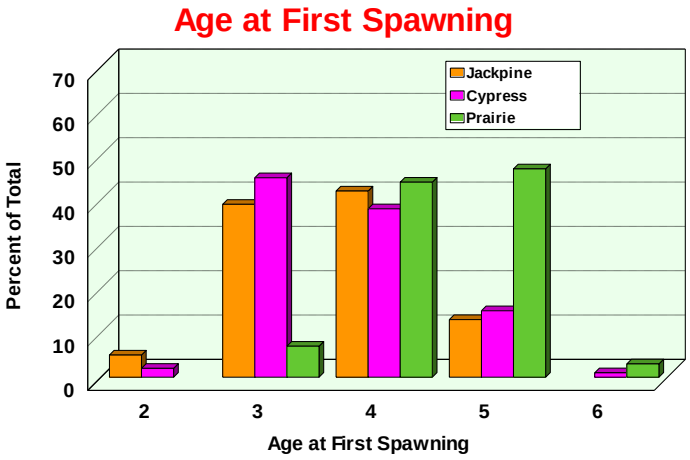




Steelhead Maturity



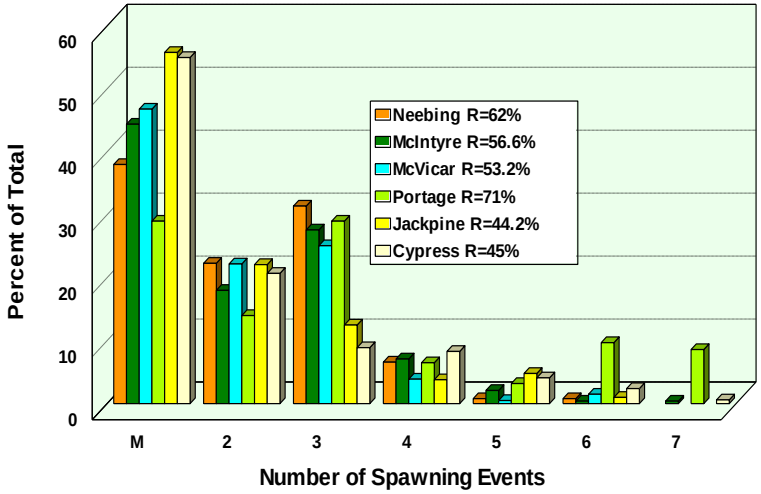




Repeat Spawners

Lake Superior Steelhead

Number of Spawning Events 2013



Weight and Age of your Steelhead

Figure A

Length to Weight

- A 60 cm. (24”) steelhead weighs 2.5 kg. or 5.5 Lbs.
- A 75 cm. (30”) steelhead weighs 3.8 kg or 8.5 Lbs.

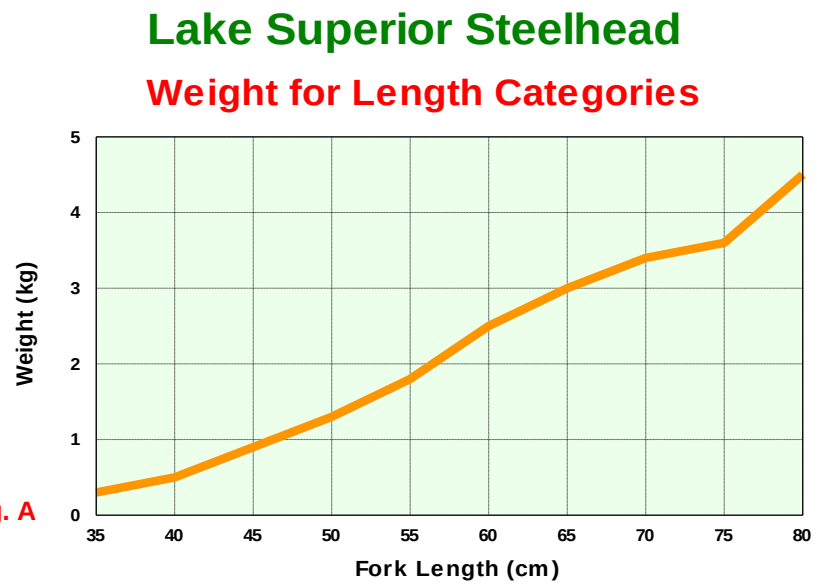


Fig. A

Note: 2.54 cm = 1 in ; 1 kg = 2.2 lb

Figure B

Fork Length to Age

- A 50 cm. (20”) steelhead is 3 years old
- A 70 cm. (28”) steelhead is 7 years old

- Depend on stream life and maturity

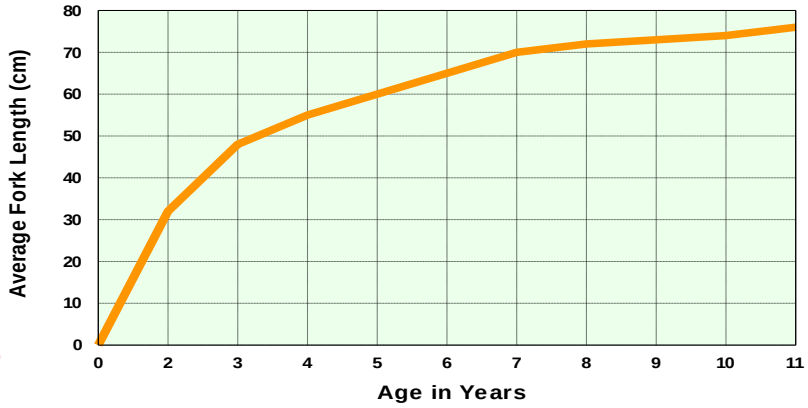


Fig. B

Note: This is s general guide. Growth will varyconsiderablywith maturity, stream life and feeding behavior.

What is happening in Black Bay ??

Figure A

Illustrates the population size in Portage Creek and the McIntyre River.

Figure B

Age classes as a percentage

Figure C

Age Classes as the estimated number of individuals

Note the difference in the 2008 and 2004 year classes

Adult Population Size 1991 to 2012

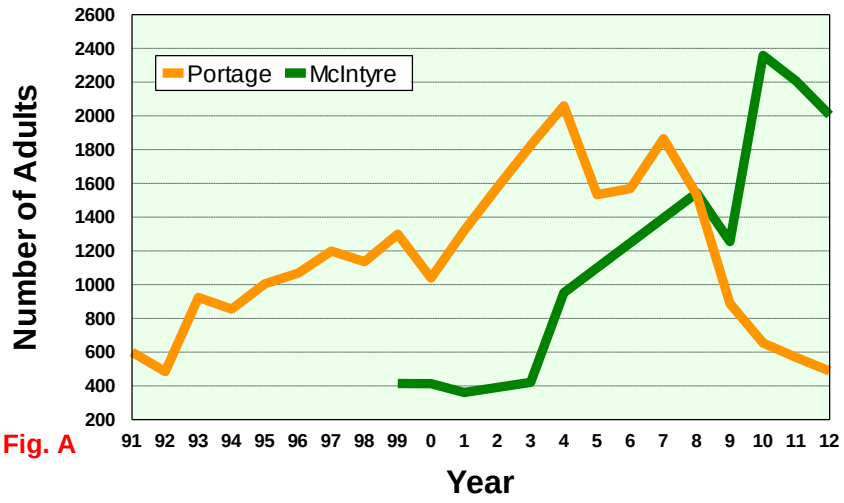


Fig. A

Age Structure and Year Class 2012

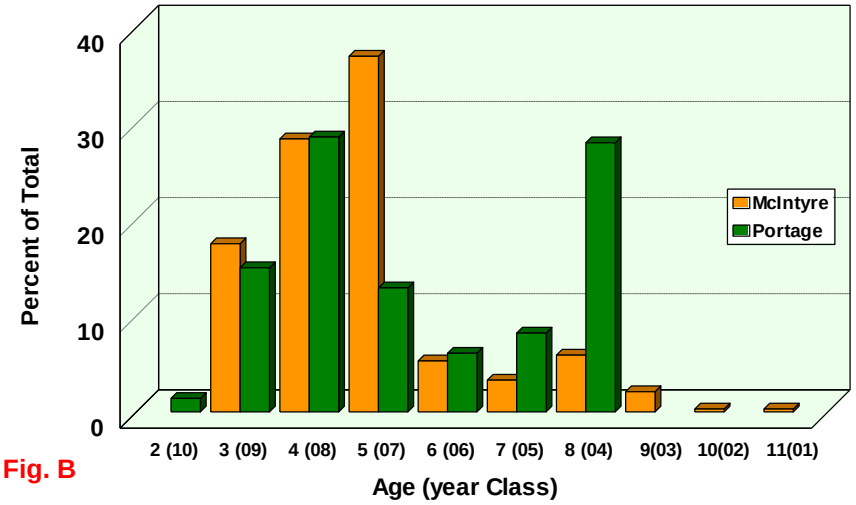


Fig. B

Age Structure and Year Class 2012

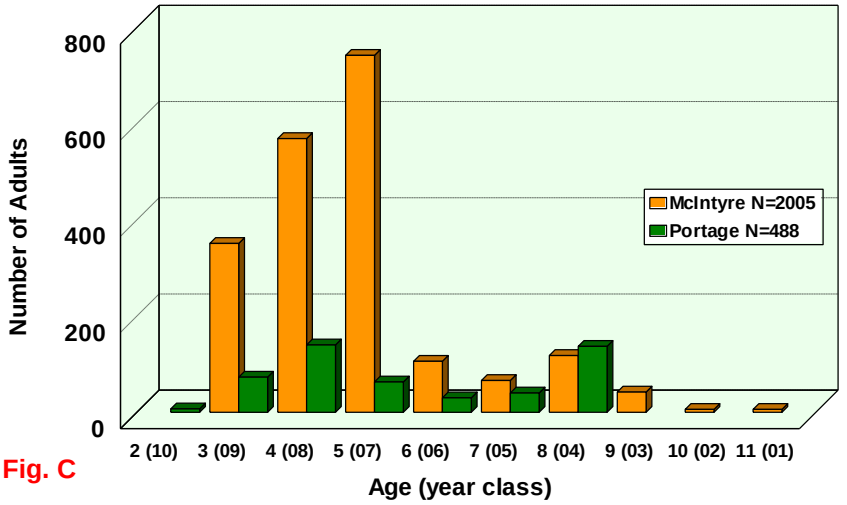
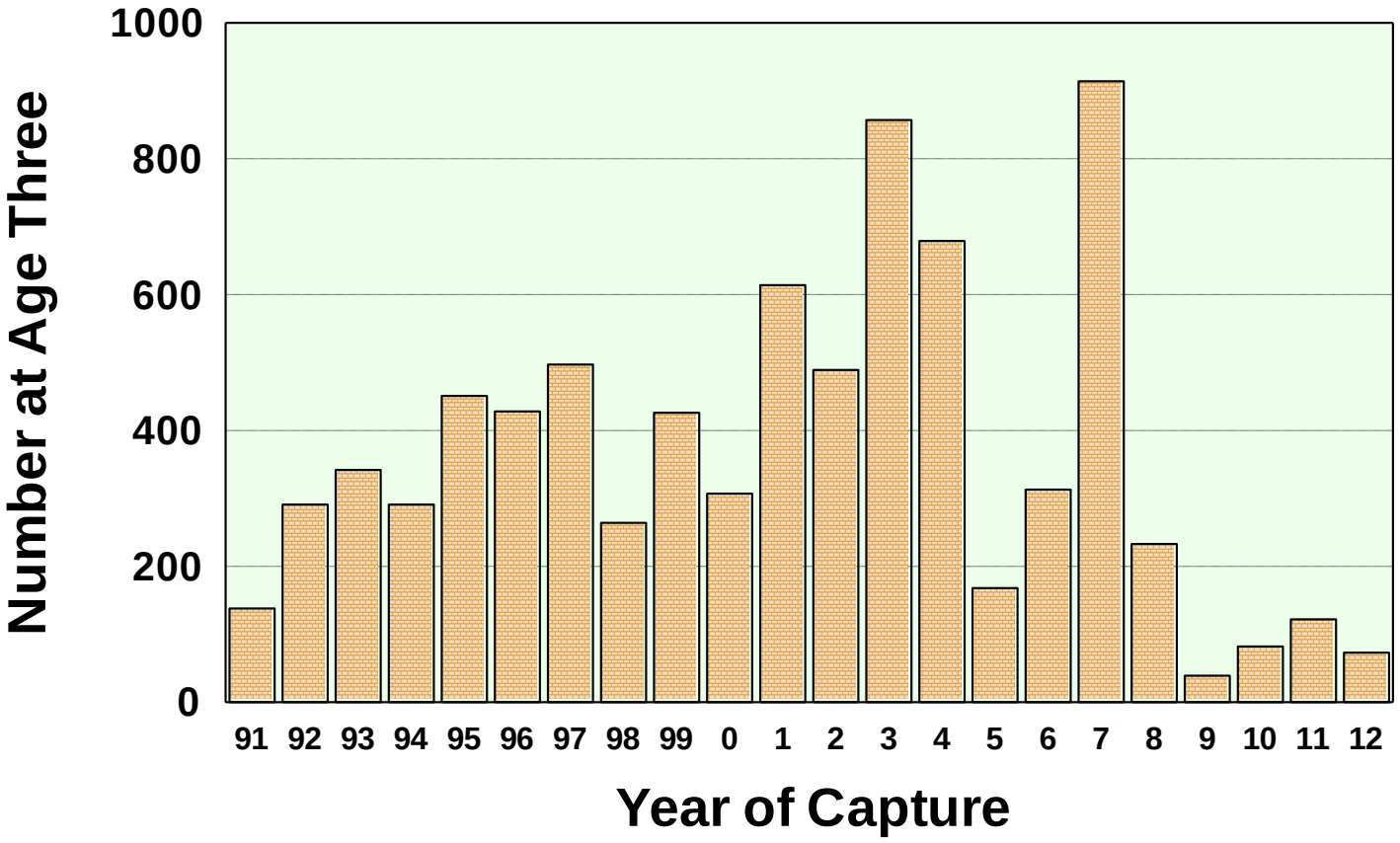


Fig. C

Portage Creek Steelhead

Number of Age Three Adults 1991 to 2012



Summary

Thunder Bay

- Thunder Bay is a good news story.
- McIntyre River as an index stream
- 2007 to 2010 year classes all show good to excellent recruitment
- Angler satisfaction high

Black Bay

- Black Bay is not good news
- Using Portage Creek as an Index
- Poor recruitment since 2004 and poor angler catches in all tributaries the past five years
- Changes in the Black Bay fish community is probably the reason

Nipigon East

- Nipigon east streams show a similar trend as Thunder Bay
- 2009 and 2010 Year classes in the Jackpine R. and Cypress R. appear strong
- Angler success indicates the populations are in good shape
- An adult population estimate is needed as an index…Cypress R.

Acknowledgements

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Cypress River Population Study
Wes Bender. Keith Ailey, Terry Kosolowski

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