

Komoka Creek Steelhead

**A Partnership in Research
2010 to 2012**

Thames River Anglers Association



Komoka Creek Steelhead Research

The main objectives of the Komoka Creek research project are:

- Quantitatively describe the population characteristics of a wild adult steelhead population over one generation (four years)
- Effects of environmental variables (e.g. climate) on a coldwater streams salmonid community
- Develop a management strategy for steelhead in Komoka Creek

Collecting the data



Sample Kit



Measuring length



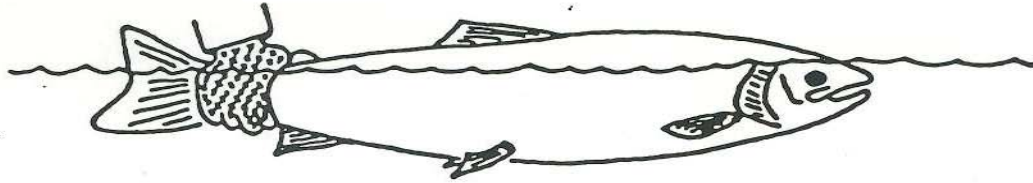
Gender (male or female ?)



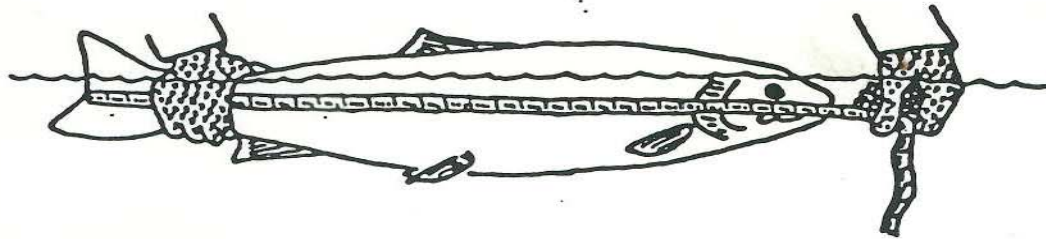
Scale Sample

LIVE SAMPLING RAINBOW TROUT BY ONE PERSON

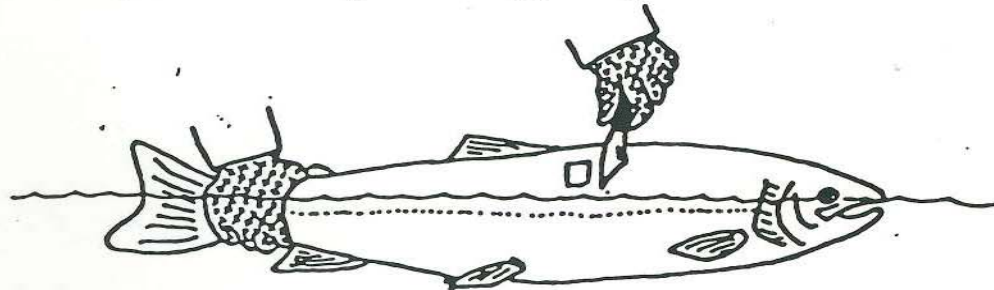
1. Have all sampling equipment ready (knife, measuring-tape, scale envelope and pencil).
2. After the fish is played out, bring it into the shallows (let it respire in the water).
3. Wearing the cotton glove, hold the fish just in front of the tail.



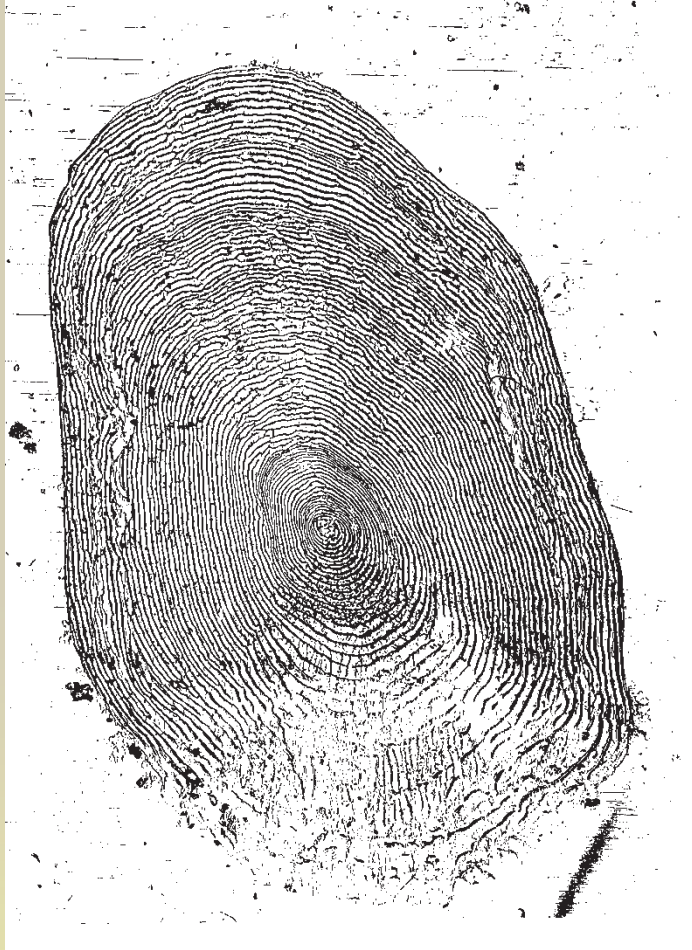
4. Slide the measuring-tape under the hand that is holding the fish until it reaches the fork of the tail.
5. Pull the tape out to the tip of the head and note the fork length (cm).



6. With your knife, remove a small area of slime from just in front of the dorsal fin and above the lateral line.
7. Wipe the slime off the knife on your glove.
8. With the tip of the knife, remove 6 to 10 scales (place knife with scales to one side).
9. Release the fish back into the river.
10. Place the scale sample in the envelope.
11. Record the length and sex information on your scale envelope. Record location and date.
12. Air dry the scale envelopes following your trip.



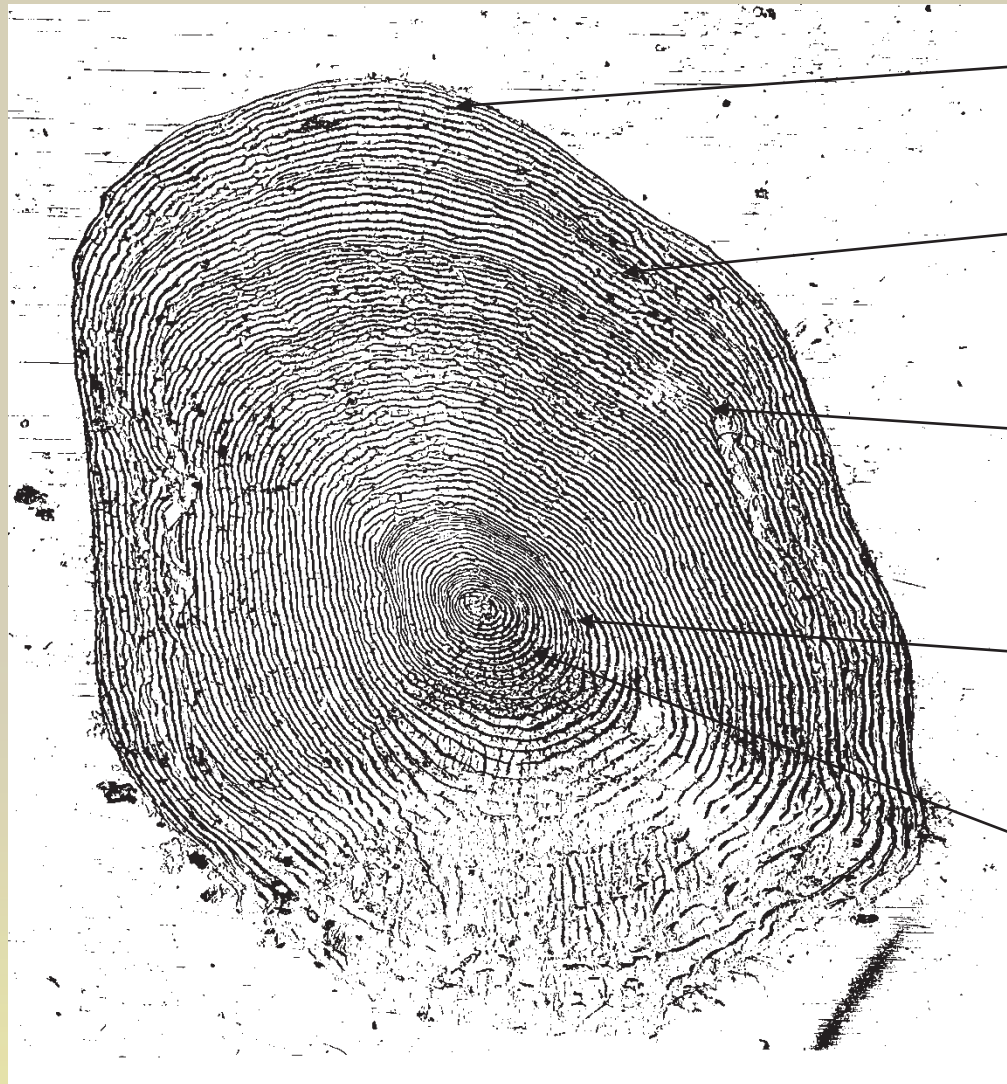
Scale Analyses



- Number of stream years
- Number of lake years
- Total age
- Age at maturity
- Number of spawning events
- Size at age
- All the above by male and female

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

Life History Extrapolation



**Third Lake Year,
Third Spawn**

**Second Lake
Year, Second
Spawn**

**First Lake
Year, First
Spawn**

**Second
Stream
Year**

**First
Stream Year**

Clipping and Tagging



Estimating Population Size

The recommended method of estimating population size in this situation would be the “Mark/Recapture” or “Petersen Estimate”. It is based on the number of fish marked in year one times the number of repeat spawners in year two divided by the recaps in year two.

2010 Population Estimate

tagged 2010 X # repeat spawners 2011 / recaptured tags from 2010

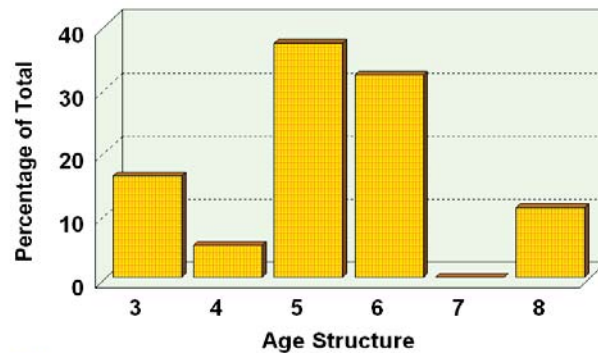
$19 \times 12 / 5 = 46$ (20% tag loss)

2010 Population estimate 46 +- 26.7 (95 % confidence)

Steelhead Age Structure 2010-2012

Komoka Creek Steelhead

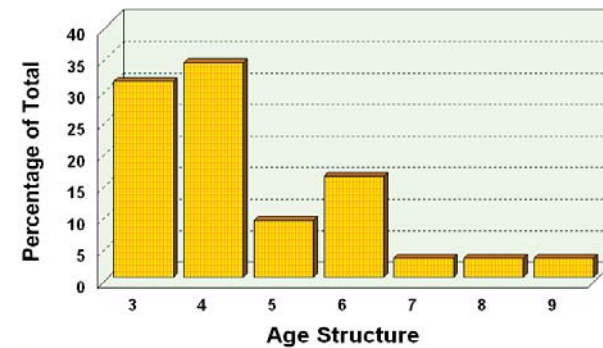
Age Structure 2010



N=19

Komoka Creek Steelhead

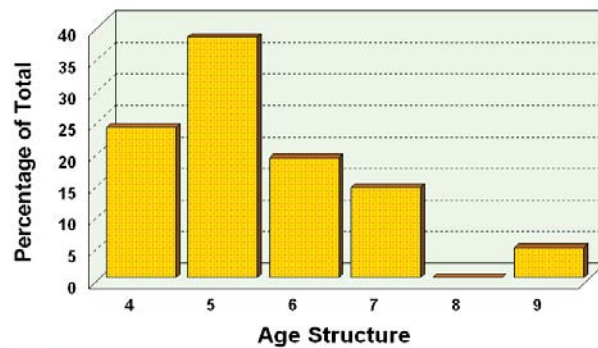
Age Structure 2011



N=32

Komoka Creek Steelhead

Age Structure 2012



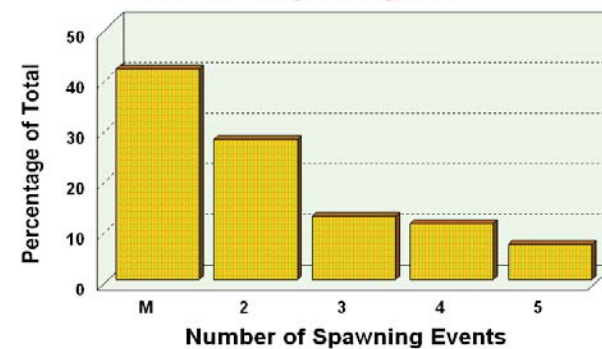
N=21



Maturity and Spawning Events

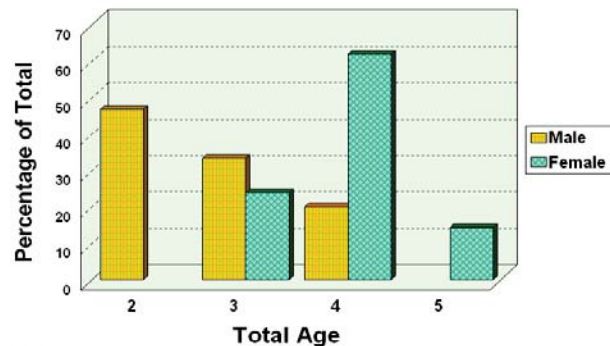


Komoka Creek Steelhead
Number of Spawning Events



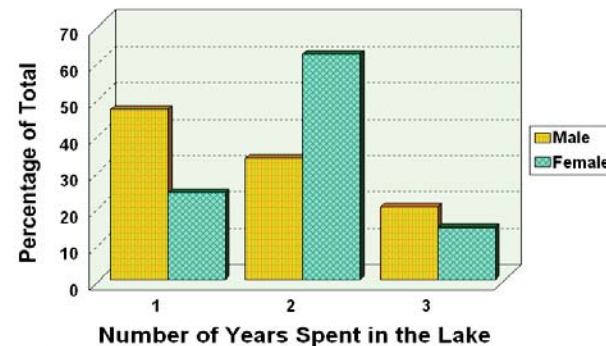
N=72

Komoka Creek Steelhead
Age at Maturity (Stream and Lake Years)



N=72

Komoka Creek Steelhead
Lake Years at Maturity by Sex



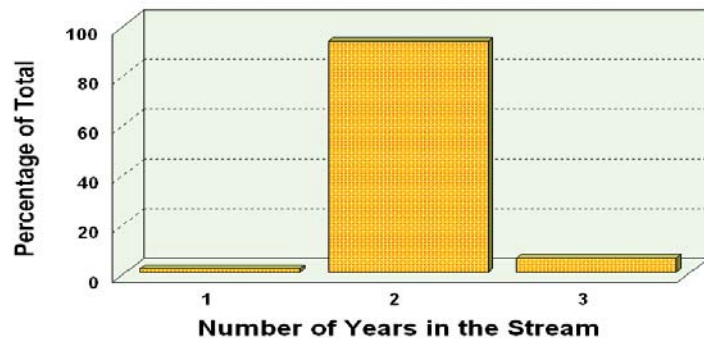
N=72

Note: 2010 to 2012 data combined

Stream and Lake Life

Komoka Creek Steelhead

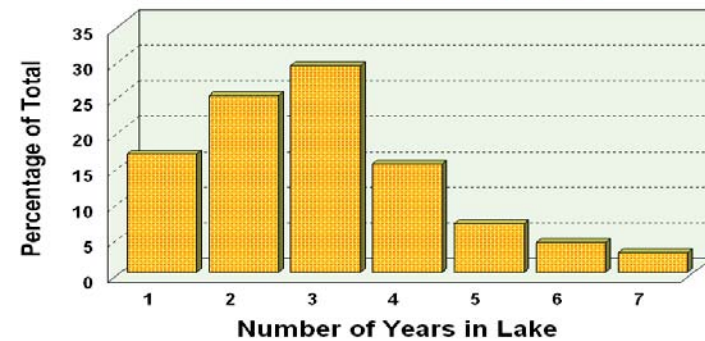
Number of Stream Years 2010-2012



N=72

Komoka Creek Steelhead

Number of Lake Years 2010-2012



N=72



Summary

- Komoka Creek has a relatively small wild steelhead population estimated at 40 to 80 individuals
- 90% of the juvenile steelhead spend two to three years in the stream prior to lake migration (smolting)
- Maturity is two to three years for males and three to four years of age for females
- The high level of repeat spawning (60%) and the survival of adults to age nine indicates a low annual mortality rate
- Protection of this relatively small wild steelhead population should be a management priority

A Healthy Steelhead Population Maximizes Recruitment and Angling Opportunities

