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Moberly Lake:
Rebuilding a Lake Trout Population

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Where is Moberly Lake?

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About Moberly Lake

- Peace River drainage basin
- Large, deep lake
- Surface area = 2,942 hectares
- Maximum depth = 42.7 meters
- Mean depth = 18.3 meters
- Elevation = 697 meters

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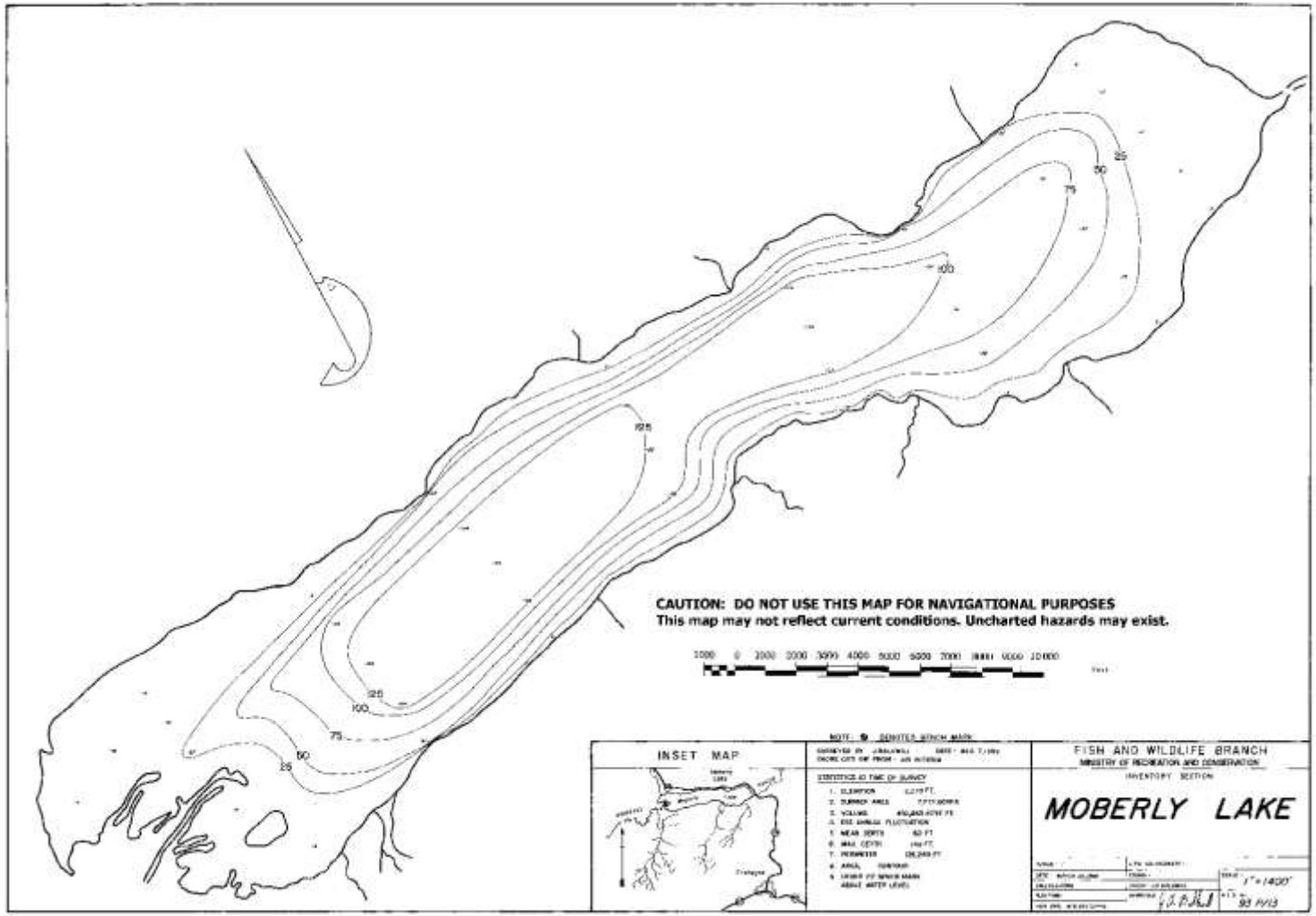

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History of Moberly Lake

- Moberly Lake has long been known for its' exceptional fishing
- Lake trout, northern pike, bull trout, burbot, arctic grayling, lake and mountain whitefish, and various sculpin and sucker species are found in the lake
- Lake trout were once found in high numbers in Moberly Lake, but now the population is critically low

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Background Information On Moberly Lake Lake Trout

- Estimated only 500 adults remain
- Very fast growing piscivorous stock
- Females first spawn @ 6 years old and then every 2-3 years after
- Males spawn annually beginning @ 4-5 years old
- Maximum age 16 to 17 years
- Some adults reach 30-35 pounds

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What happened to the Lake Trout?

- Over harvest of lake trout has threatened the long term survival of this stock
- Current recruitment failure is compounding this problem
- It's hypothesized that whitefish and sculpin populations have flourished due to the overharvesting of lake trout. These species may be preying on juvenile lake trout, further reducing lake trout numbers

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Attempts to Curb the Decline

- Since 2002, the Ministry of Environment has been working in partnership with the Saulteau and West Moberly First Nations to address the declining catch rate
- Harvest of Moberly Lake lake trout was eliminated beginning in 2005
- In 2008, MOE implemented further restrictions for recreational anglers, completely closing the lake to all fishing from September 15th to October 31st of each year

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A New Plan for the Future

- Eliminating harvest of lake trout has not solved the population decline problem
- Need to directly address the population bottleneck by re-establishing the community balance
- This should restore the natural recruitment of lake trout

A New Plan for the Future

- FFSBC has partnered with HCTF and MOE to use a rehabilitative stocking strategy for Moberly Lake lake trout
- Plan is to culture and release three cohorts of spring-yearling lake trout into Moberly Lake
- 6 year program with stocking occurring every 2nd year to reduce inter-cohort effects on survival

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Project Timeline

- Fall 2010
  Egg collection from wild Moberly Lake broodstock
- Fall 2010 to Spring 2012
  Rear progeny at FFSBC hatchery to ~50 grams
- May 2012
  Release 1st cohort of 14,000 yearlings into Moberly Lake
- Fall 2012
  Egg collection from wild Moberly Lake broodstock
- Fall 2012 to Spring 2014
  Rear progeny at FFSBC hatchery to ~50 grams
- May 2014
  Release 2nd cohort of 14,000 yearlings into Moberly Lake
- Fall 2014
  Egg collection from wild Moberly Lake broodstock
- Fall 2014 to Spring 2016
  Rear progeny at FFSBC hatchery to ~ 50 grams
- May 2016
  Release 3rd cohort of 14,000 yearlings into Moberly Lake

Fall 2010 – 1st Spawn

- Adult lake trout were trapped and angled by MOE biologists in late September / early October and held in net-pens
- Once enough ripe adults were obtained, FFSBC was called in to spawn

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Spawning and Setup

- Peak spawning occurs when surface temperature of lake drops to 10 degrees Celsius
- Spawned on October 6, 2010

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Spawning

- Very docile
- No anaesthetic
- Easy to express eggs by hand
- Spawned 1:1 ratio
- Fertilization done on-site

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Cabela's

Spawning Results

- 8 females spawned
- 1:1 crosses
- Fecundity ranged from 6,000-12,000 eggs per female
- All adults were hand-spawned and released back into Moberly Lake
- Eggs were loaded into Gott coolers and transported via truck back to Duncan (28-hour transport time)

Egg Transport

- Water temperature at departure was 7.8 degrees Celsius (CWH well water)
- Ice was added to water throughout transport
- Departed Moberly Lake @ 1pm Oct 6th
- Drove 8 hours to Clearwater and 'overnighted' eggs at CWH in coolers
- Eggs arrived at VITH in Duncan at 5pm on October 7th
- Water temp. was 7.5 degrees Celsius @ VITH
- Total transport time was ~28 hours

Incubation at VITH

Incubation

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Incubation Timeline

- Spawn date – October 6/2010
- Incubation temp. – 7.5 degrees Celsius
- Eyed eggs – 240 ATUs (Nov 8)
- Shock eyed eggs – 350 ATUs (Nov 22)
- Hatch – 500 ATUs (Dec 12)
- Ponding – 800 ATUs (Jan 17/2011)
- 1st feeding – January 19/2011

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Incubation Results

- Eggs incubated @ 700-900g/tray
- 55,533 green eggs taken
- 37,627 fry ponded in two groups
- Main group = 18,203 fry
- Backup group = 19,424 fry
- 86% Survival GE to EE
- 68% Survival GE to Ponding

Getting Ready to Pond

Swim Up

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Early Rearing

- Ponded into aluminum troughs with 7” water depth
- Early rearing temp = 8.0 degrees
- Started feeding #0 Mash with Cyclop-eeze added for 1st 3 weeks
- Fed @ 4% BW/Day (some waste)
- Used Sweeney auto-feeders feeding every 30 minutes

Early Rearing…

- Increased water depth to 11” 3 weeks post-ponding
- Increased water depth to 18” 5 weeks post-ponding
- Volume @ full depth = 5150 liters
- Flow was ~45LPM, giving a full water exchange once every 2 hours

Rearing

- Fish were transferred from troughs into 2 - 10’ circulars in mid-April @ 1.6 gram average size
- Water depth in circulars was 24”
- Circulars not supplied with chilled-water, so now reared on 11 degree Celsius water
- Increased water depth to 40” mid-May
- Fish adapted to circulars quickly

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Fish Culture Notes

- Bulk samples for size performed bi-weekly
- No size grading has been required thus far
- No fin wear evident – even with reduced rations and higher temps
- Have reared up to 25 grams/liter density with no problems
- Very docile and easy to rear
- Prefer slow water current
- Adipose clipped in July with no issues

Suggested Feed Sizes

- #0 Mash < 0.2 grams
- #1 Mash 0.2 – 1.0 grams
- #2 Mash 1.0 – 3.2 grams
- 1.2mm pellet 3.2 – 6.0 grams
- 1.5mm pellet 6 – 14 grams
- 2.0mm pellet 14 – 25 grams
- 3.0mm pellet 25 – 100 grams

*courtesy Chatsworth Hatchery, Ontario

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Feeding Regime

- All fish were fed 7 days ‘on’ until mid-June 2011 (avg. size = 5 grams)
- Began feeding 1 day ‘on’ 1 day ‘off’ starting mid-June to reduce growth
- Reduced to 1 day ‘on’ 2 days ‘off’ starting mid-August
- Have increased feed to 1 ‘on’ and 1 ‘off’ as of December 1

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Growth

DATE	AVERAGE SIZE
March 1	0.4 grams
April 1	1.0 grams
May 1	1.8 grams
June 1	4.0 grams
July 1	6.5 grams
August 1	9.5 grams
September 1	12.0 grams
October 1	14.0 grams
November 1	16.5 grams
December 1	21.0 grams

SIZE GOAL	
May 15/2012	50 grams

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As of December 2011…

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Fish Culture Concerns

- How will lake trout respond to 12-13 degree water temperatures this winter at VITH?
- How will lake trout respond to the long transport from Duncan to Moberly Lake for release in May 2012?

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