Lake Trout Recreational Harvest Regulation Review for MM-4 (Grand Traverse Bay)

April 16, 2014 – Grand Traverse Bay
Why are we holding these public meetings?

• Five year review process: 2010-2015

• Earlier review prudent
  - Changes to fisheries order process/fishing guide publication
  - Recent harvest patterns

• MM-123: 50,000 lb limit
  - harvested 29,412 lb

• MM-4: 77,200 lb limit
  - harvested 77,849 lb

• MM-5: 58,800 lb limit
  - harvested 57,718 lb
Lake Trout Management Units and Refuges

Current Lake Trout Regulations for MM-4

Possession Season:
January 1- September 30

Possession Limit:
3 Fish

Size Restrictions:
20"-25" with 1 fish over 25"

Legend
- Lake Trout Refuge
  Note: All refuges are closed to lake trout harvest.

For a complete description of refuge and management unit boundaries, see FO-200 available online or at any DNR Customer Service Center.

Great Lakes Boundary Data provided by ESRI
Additional Lake Trout Management Units

MM 6, 7, and 8

- Managers are proposing changing from the current regulation of a 20” MSL to a new regulation of a 15” MSL the possession season and bag limit under both regulations would be unchanged.

- This will align the MSL for southern Lake Michigan with the MSL’s on Lakes Huron and Superior and increase opportunity for anglers.

- Only possible due to the large harvest limit (>325,000 lb) in this area.
Lake Trout Management Objectives:

- Assure the weight of lake trout harvested is below the TAC
- Reduce the age and biomass of harvested fish
- Maximize age structure and biomass of spawning lake trout to meet rehabilitation goals
- Increase number of fish harvested
2000 Consent Decree

- Management framework

- Harvest is restricted by total harvest limits
  - Requiring recreational fishery limitations

- State allowed 45% of the total limit in MM-4

- Provisions of the Decree not fully implemented – Stipulation
## Harvest Patterns
*(all in pounds)*

<table>
<thead>
<tr>
<th>Year</th>
<th>CORA Harvest</th>
<th>CORA HL</th>
<th>State Harvest</th>
<th>State HL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>88,276</td>
<td>94,300</td>
<td>48,158</td>
<td>63,000</td>
</tr>
<tr>
<td>2008</td>
<td>86,715</td>
<td>109,142</td>
<td>19,241</td>
<td>63,000</td>
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<tr>
<td>2009</td>
<td>137,312</td>
<td>138,059</td>
<td>33,282</td>
<td>63,000</td>
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<tr>
<td>2010</td>
<td>92,358</td>
<td>124,018</td>
<td>34,074</td>
<td>77,200</td>
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<tr>
<td>2011</td>
<td>74,765</td>
<td>137,426</td>
<td>71,523</td>
<td>77,200</td>
</tr>
<tr>
<td>2012</td>
<td>100,987</td>
<td>99,977</td>
<td>70,847</td>
<td>77,200</td>
</tr>
<tr>
<td>2013</td>
<td>95,580</td>
<td>100,653</td>
<td>77,849</td>
<td>77,200</td>
</tr>
</tbody>
</table>
FISHING EFFORT IN MM-4

- **Commercial**
- **Recreational**

1,000 feet of gill net: 1981 to 2013

100 angler hours: 1981 to 2013
Recreational Harvest (Creel + Charter)

Number of Lake Trout Harvest

- Harvest
- Release

Years: 2008 to 2013

Graph showing the number of lake trout harvested and released from 2008 to 2013.
LAT Harvest 2006-2010

LAT Harvest 2011-2013

= inch groups legal to harvest
Compliance

- Projections are based on legal harvest
- Statewide illegal LAT harvest
  - Under minimum size limits, 5%
  - Under slot limits, 18%
- MM-4 specifically
  - Under 2006-2010 slot, 20%
  - Since 2011, at least 4%
- Illegal harvest counts against harvest limit
Hooking Mortality

- Current Estimate = 15% of released fish, regardless of season or method of fishing
  - 1980s Lake Superior Study

- Ongoing research to be completed in winter 2016 to reassess
  - Gear and seasonal component?
  - Preliminary estimates higher than 15%

- Release mortality counts against harvest limit
Lake trout and Chinook Harvest Rates

Lake Trout
\[ y = -0.1691x + 3.9235 \]
\[ R^2 = 0.489 \]

Steelhead
\[ R^2 = 0.254 \]

Coho
\[ R^2 = 0.143 \]
Chinook Salmon Harvest Rate in Lake Michigan, 1986-2013

Harvest Rate (fish per hour)
More alewife = More Chinook salmon (Lake Michigan)

Alewife Biomass with 2014 Forecast

- Observed
- Prediction bounds
- Prediction made in 2012: 22.5 kt
- Forecasted 2014: 9.7 kt
Estimated Chinook Salmon Recruitment in Lake Michigan, 1967-2013

Millions of smolts

- Total
- Stocked
- Natural


Values range from 0 to 12 millions of smolts.
HYPOTHETICAL SCENARIO:
1) higher hooking mortality implemented
2) a poor CHS fishing year
3) good weather resulting in additional effort

Consent Decree imposes penalties on overharvest:
- Exceed harvest limit by 15,000 lb
- Next years limit would be reduced by 15,000 lb, and would be 62,200 lb.
- Timing of harvest reports and fishing guide publication are problematic
- Danger of repeated overharvest given the regulation that would be in place, need for emergency order (MH-1 example)
Managing Risk

• Given the potential for overharvest and penalties, what level of risk are you willing to accept?

• What should our target harvest number be: the actual harvest limit, 10% below, 25% below, 50% below?
Criteria for setting harvest limits in MM-4:

• Annual mortality rate: 45%

• Spawning stock biomass targets
  – older fish have higher value

• Total Allowable Catch (TAC) Allocation:
  – 55% Tribal Commercial
  – 45% State Recreational
Management Objectives for lake trout:

- Assure the weight of lake trout harvested is below the TAC
- Reduce the age and biomass of harvested fish
- Maximize age structure and biomass of spawning lake trout to meet rehabilitation goals

Other concerns (sources of risk):

- Compliance with regulations
- Hooking mortality estimates likely to increase from 15%
- Unforeseen increases in the biomass of fish harvested (low CHS catch)
Recruitment (x 1,000)

Number of Age-1 Fish

- MM-123
- MM-4
- MM-5

Recruitment (x 1,000)
NUMBERS OF FISH KILLED IN MM-4

Number of fish (x 1,000)

- Commercial
- Recreational
- Lamprey
WHAT HAS ANGLING HARVEST LOOKED LIKE?
Recent Regulation Changes:

1) 2003 20” min to 22” min
2) 2006 22” min 20 to 25” slot plus 1 over 34”
3) 2011 20 to 25” + 1 over 34” slot to 20 to 25” slot + 1 over 25” slot
Recreational Harvest (Creel + Charter)

Number of Lake Trout

- **Harvest**
- **Release**

<table>
<thead>
<tr>
<th>Year</th>
<th>Harvest</th>
<th>Release</th>
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</thead>
<tbody>
<tr>
<td>2008</td>
<td>4000</td>
<td>6000</td>
</tr>
<tr>
<td>2009</td>
<td>5000</td>
<td>7000</td>
</tr>
<tr>
<td>2010</td>
<td>6000</td>
<td>8000</td>
</tr>
<tr>
<td>2011</td>
<td>7000</td>
<td>9000</td>
</tr>
<tr>
<td>2012</td>
<td>8000</td>
<td>10000</td>
</tr>
<tr>
<td>2013</td>
<td>9000</td>
<td>11000</td>
</tr>
</tbody>
</table>
Old verses new regulations

STATUS QUO

Old Regulation
20-25 “Slot 1 over 34”, 3 fish bag

Projected Recreational Yield
Recreational Harvest Numbers
Minimum Size Limit Scenarios = MM-4

Projected Recreational Yield
Recreational Harvest Numbers
SSB
Age 3+ Population Size
Maximum Size Limit Scenarios = MM-4
Scenarios allow 1 trophy over 34”

STATUS QUO

- 25” MAX
- 26” MAX
- 27” MAX
- 28” MAX

Projected Recreational Yield
Recreational Harvest Numbers
SSB
Age 3+ Population Size
2014 MODEL RESULTS FOR MM-4

- Current Regulation: 20-25” 1 over 25”, 3 fish bag
- Proposal 1: 20-25” 1 over 25”, 2 fish bag
- Proposal 2 (Northern LMI): 20-25” 1 over 34”, 3 fish bag
- Proposal 3: 20-25” 1 over 30”, 3 fish bag
- Proposal 4: 20-25” 1 over 30”, 2 fish bag

Projected Recreational Yield
Recreational Harvest Numbers
SSB
Age 3+ Population Size
2014 MODEL RESULTS FOR MM-4

Current Regulation
20-25” 1 over 25”
3 fish bag

Proposal 5:
15-25” 1 over 34”
2 fish bag

Proposal 6:
15-25” 1 over 34”
3 fish bag

Proposal 7:
15-30” 1 over 34”
2 fish bag

Proposal 8:
15-30” 1 over 34”
3 fish bag

Projected Recreational Yield
Recreational Harvest Numbers
SSB
Age 3+ Population Size
2014 MODEL RESULTS FOR MM-4

Current Regulation
20-25” 1 over 25”
3 fish bag

Proposal 9:
15” minimum
1 fish bag

Proposal 10:
15” minimum
2 fish bag

Proposal 11:
15-25” 1 over 25”
2 fish bag

Proposal 12:
15-30” 1 over 30”
2 fish bag

Projected Recreational Yield
Recreational Harvest Numbers
SSB
Age 3+ Population Size
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2014 MODEL RESULTS FOR MM-4

Projected Recreational Yield
Recreational Harvest Numbers
SSB
Age 3+ Population Size

Current Regulation
20-25’ 1 over 25”
3 fish bag

Proposal 4:
20-25” 1 over 25”
2 fish bag

Proposal 5:
15-29” 1 over 34”
2 fish bag

Proposal 6:
15-29” 1 over 34”
2 fish bag

Proposal 7:
15-29” 1 over 34”
3 fish bag