

2008 Spring Netting Summary- Lost Land and Teal Lakes, Sawyer County

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6/2/2008

Background: Research netting was conducted on Lost Land and Teal Lakes, Sawyer County during spring, 2008. The netting was conducted as part of an investigation supporting the muskellunge propagation program. We are evaluating lakes that have potential to be used as sources of eggs for hatchery production. Expanding the number of broodstock lakes is part of a strategy to manage and conserve genetic diversity. The essence of a genetic conservation program can be summarized with two basic concepts. The first is to use a sufficient number of adults during egg take operations, so that offspring contain an adequate representation of the genetic diversity present in the source population. This prevents problems such as loss of genetic variation and inbreeding depression.

The second concept is that the propagation program should not disrupt patterns of genetic variation within the native range of muskellunge. Put simply, we want to avoid transferring fish into the native range. Therefore, fish stocked within the native range should be representative of native populations within the same basin. The fish existing within the Upper Chippewa River Basin are adapted to survive and reproduce under local environmental conditions. Moving fish adapted to different conditions has the potential to disrupt local adaptations and in the long term, harm the fishery.

Part of the propagation plan involves identification of potential brood lakes within the Upper Chippewa River Basin. Ideally, we would use a series of lakes in an annual rotation, visiting each every 5-7 years. Lost Land and Teal Lakes are part of the native range of muskellunge. Although these lakes have a history of stocking, they meet criteria to be considered as candidate lakes to use in a brood lake rotation. As part of the process to identify potential brood lakes, we need to validate the assumption that hatchery operations can obtain a sufficient number of fish to reach production goals, which include a minimum number of parents of each sex to adequately sample the genetic diversity present in the lake. The netting conducted during 2008 was intended to evaluate feasibility of a brood operation in Lost Land and Teal Lakes.

Methods: Adult muskellunge were sampled with fyke nets. Nets were fished overnight and checked daily throughout the sample period. Muskellunge were examined to determine gender, and reproductive condition of females (green, ripe, or spent). Total length was recorded. Each fish was also tagged with a passive integrated transponder (PIT) tag, which provides a unique

code to identify the fish. Muskellunge were released after handling, and all other fish were immediately released after removal from the nets.

Sample locations were based on old WDNR surveys, and additional locations were chosen to spread effort through different areas of the lake (Figure 1). Nets were set after ice-out, beginning 5/3. Six nets were set the first day, and an additional 4 nets set the next day. Nets were moved or removed based on observed trends in catch rates and water temperature, with the last nets removed on 5/12.

Results: Ninety-seven muskellunge were handled during 75 net lifts, for an average of 1.29 fish/net lift (Table 1). Muskellunge were captured in both lakes, although Lost Land was more productive. Thirty fish were sampled in Teal, whereas 67 were sampled in Lost Land. Ripe females were encountered through 5/10; catch rates dropped off after this point.

The Lost Land and Teal Lake muskellunge sample had a balanced sex ratio, with 51 males and 43 females, and 3 undetermined. Mean length of males was 33.9 inches with a standard error of 0.4; mean female length was 37.2 inches with a standard error of 0.7. Size distribution is shown in Figure 2. Ten fish >40 inches were sampled; all were females. Thirty-three females were ripe when handled and 6 were spent.

Discussion: The numbers of fish encountered and the balanced sex ratio suggest that a hatchery brood operation would efficiently obtain sufficient eggs to meet production goals, and also handle a sufficiently large number of fish to meet goals for representing genetic diversity. Hatchery netting operations should plan on deploying more effort to Lost Land than Teal. The main issue for use of these lakes is determining whether the population continues to recruit from natural reproduction.

The process of making a decision of whether or not to use Lost Land and Teal Lakes as part of a brood rotation involves several additional steps, so no decision has been made at this point (6/2/08). The issue will be discussed by the statewide muskellunge management standing team, which includes Conservation Congress representatives, representatives from muskellunge fishing clubs, and DNR fisheries program staff from management, propagation, research. A recommendation from this team would be forwarded to the Fisheries Management Board for approval.

Figure 1. Maps of Lost Land and Teal Lakes indicating location of nets.





B.M. X, no. 1427-A, is a 2" square chiseled in the N.W. corner of a 2' by 4' boulder 5' S. and 32' W. of the N. corner of the Empire Lodge. Assumed elev. 100.00' Water level 93.81'

Teal Lake
1,032.5 Acres
31' Max. Depth

WATER AREA 1303.7 ACRES
UNDER 3 FT. 3 %
OVER 20 FT. 1 %
MAX. DEPTH 21 FEET.
TOTAL ALK. 35 P.P.M.
VOLUME 18,209.5 ACRE FT.
SHORELINE 11.30 MILES

SPECIES OF FISH	
Abundant	
Common	
Present	
Trace	
Not Present	
Not Determined	
Muskie	X
N. Pike	X
Walleye	X
L.M. Bass	X
S.M. Bass	X
Trout	X
Panfish	X
Sturgeon	X

SCALE
0 1000 2000 3000 4000'

Access with Parking Access Boat Livery

Drawn by: W. Sanders
Field work by: C. Busch, C. Belter, S. Johannes.

EQUIPMENT	RECORDING SYMBOLS	SONAR MAPPED	MAY MONTH	1969 YEAR
TOPOGRAPHIC SYMBOLS	() Steep slope	P. Peat		
() Partly wooded	— Indefinite shoreline	Mh. Muck		
() Wooded	Marsh	C. Clay		
() Cleared	Spring	M. Marl		
() Pastured	Intermittent stream	Sd. Sand		
() Agricultural	Permanent inlet	St. Silt		
() B.M. Bench Mark	Permanent outlet	Gr. Gravel		
() Dwellings	Dam	R. Rubble		
() Resort	D.N.R. State owned land	Bc. Bedrock		
() Camp				

LAKE BOTTOM SYMBOLS	1969 YEAR
B. Boulders	
S. Stumps & Snags	
R. Rockenger in vegetation	
T. Submerged vegetation	
I. Emergent vegetation	
F. Floating vegetation	
B. Brush shelters	

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Pine

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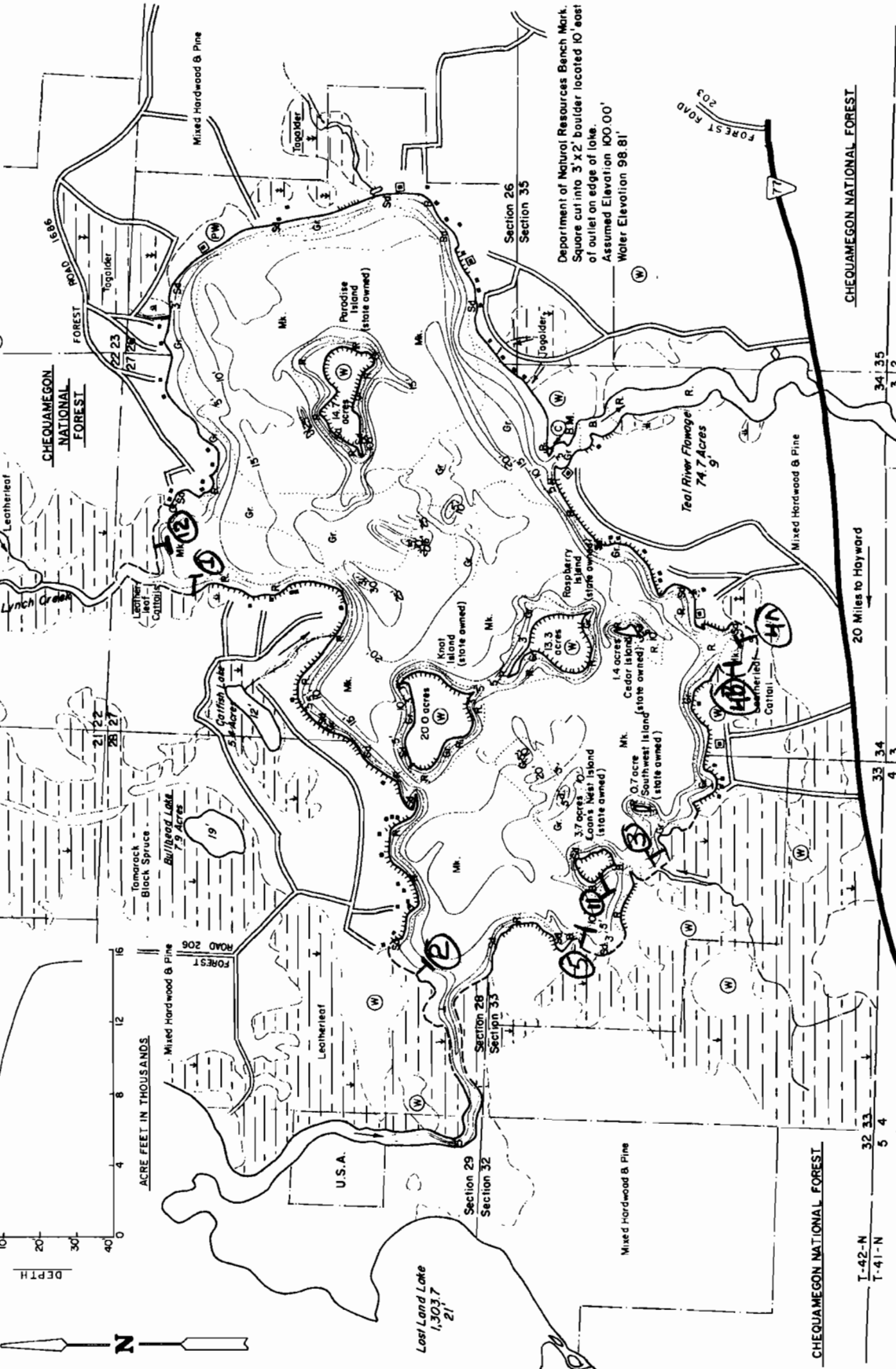
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SEC. 26, 27, 28, 33, 34 T. 42 N. R. 6 W.



- EQUIPMENT RECORDING SONAR MAPPED**
- | SYMBOL | DESCRIPTION |
|--------|------------------|
| (B) | Brush |
| (P) | Partially wooded |
| (W) | Wooded |
| (C) | Cleared |
| (P) | Pastured |
| (A) | Agricultural |
| (B.M.) | B.M. Bench Mark |
| (D) | Dwelling |
| (R) | Resort |
| (C) | Comp |
- TOPOGRAPHIC SYMBOLS**
- | SYMBOL | DESCRIPTION |
|---------|-------------------------|
| (//) | Sleep slope |
| (- - -) | Indefinite shoreline |
| (- - -) | Marsh |
| (- - -) | Spring |
| (- - -) | Intermittent stream |
| (- - -) | Permanent inlet |
| (- - -) | Permanent outlet |
| (- - -) | Dam |
| (- - -) | D.N.R. State owned land |
| (- - -) | Bedrock |
- LAKE BOTTOM SYMBOLS**
- | SYMBOL | DESCRIPTION |
|---------------|-------------|
| (B) | Boulders |
| (M) | Muck |
| (C) | Clay |
| (M) | Mari |
| (Sd.) | Sd. Sand |
| (St. Silt) | St. Silt |
| (Gr. Gravel) | Gr. Gravel |
| (R. Rubble) | R. Rubble |
| (Bt. Bedrock) | Bt. Bedrock |
- 1969 YEAR**
- | SYMBOL | DESCRIPTION |
|--------|---------------------------|
| (B) | Boulders |
| (S) | Stumps & Snags |
| (R) | Rock damper to navigation |
| (T) | Submerged vegetation |
| (E) | Emergent vegetation |
| (F) | Floating vegetation |
| (B) | Brush shelters |
- ACCESS**
- ◆ Access with Parking
 - ◆ Access with Porting
 - ◆ Boat Livery
- Drawn by: J. Roth
Field work by: C. Busch, C. Bellar, S. Johnson

SCALE

0 1,000' 2,000' 3,000' 4,000'

SPECIES OF FISH

Species	Present	Abundant	Common	Scarce
Mudpuppy	X			
Whitefish	X			
Walleye	X			
L.M. Bass	X			
S.M. Bass	X			
Panfish	X			
Trout	X			
Sturgeon	X			

WATER AREA 1,048.9 ACRES

Category	Value	Unit
UNDER 3 FT.	1	%
OVER 20 FT.	9	%
MAX. DEPTH	31	FEET
TOTAL ALK.	30	P.P.M.
VOLUME	15,387.9	ACRE FT.
SHORELINE	11.8	MILES
8.8	MILES	EXCLUDING ISLANDS

Department of Natural Resources Bench Mark.
Square cut into 3' X 2' boulder located 10 east
of outlet on edge of lake.
Assumed Elevation 100.00'
Water Elevation 98.81'

Table 1. Summary of catch by net during period 5/4/08-5/12/08. Net locations are indicated in Figure 1. Locations that contained no net on the sample date are indicated with "NA" for not applicable. Sets in Lost Land are noted with *, sets in Teal with **.

Net	5/4	5/5	5/6	5/7	5/8	5/9	5/10	5/11	5/12	Fish/lift
1**	0	1	1	4	2	2	1	0	0	1.2
2**	0	1	1	0	0	0	NA	NA	NA	0.3
3**	1	1	0	1	4	2	3	1	1	1.6
4**	NA	1	0	NA	NA	NA	0	0	1	0.4
5**	NA	0	0	0	1	0	0	NA	NA	0.2
6*	3	3	1	0	1	1	0	0	NA	1.1
7*	1	3	3	5	0	0	0	NA	NA	1.5
8*	1	0	0	6	1	0	0	0	NA	0.9
9*	NA	1	4	3	6	2	0	0	0	1.8
10*	NA	7	0	4	2	7	1	1	0	2.4
11**	NA	NA	NA	0	NA	NA	NA	NA	NA	0.0
12**	NA	NA	NA	NA	0	0	NA	NA	NA	0.0

Figure 2. Length frequency distribution of muskellunge sampled in Lost Land and Teal Lakes, Sawyer County during spring 2008.

