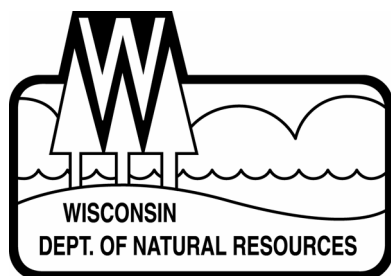


# Fisheries Survey of Thompson Lake, Oneida County Wisconsin during 2005.

Waterbody Identification Code 1569900



John Kubisiak  
Senior Fisheries Biologist  
Rhinelanders  
March, 2006



Your purchase of fishing equipment  
and motor boat fuel supports boating  
access and Sport Fish Restoration.

# Fisheries Survey of Thompson Lake, Oneida County Wisconsin during 2005.

John Kubisiak  
Senior Fisheries Biologist  
March, 2006

## EXECUTIVE SUMMARY

A survey targeting walleye and muskellunge was conducted in Thompson Lake during spring, 2005. Walleye (population estimate, PE = 1.1 per acre) and muskellunge were found at moderate abundance, along with a low-density northern pike population (PE = 0.7 per acre). Largemouth bass were present in good numbers, although spring sampling was conducted too early to capture bass effectively. Only two adult and one juvenile smallmouth bass were encountered during the survey. Walleye, northern pike and muskellunge growth rates are average or above, suggesting adequate food resources. Largemouth bass were growing slightly behind average. Bluegill, yellow perch and black crappie panfish catch. Pumpkinseed, rock bass, and yellow and black bullheads were also present. Non-game species include moderate numbers of white sucker, along with bluntnose minnow, burbot, common shiner, creek chub, golden shiner and Iowa darter.

I recommend managing Thompson Lake for muskellunge, largemouth bass, stocked walleye and panfish.

### Lake and location:

Thompson Lake, Oneida County, T36N R9E Sec11

Located in south-central Oneida County in the town of Pelican, about 2 miles east of Rhinelander. Thompson is part of the Upper Wisconsin River watershed. It has no inlet and the outlet is Midget Creek (labeled Lake George Creek on some maps).

### Physical/Chemical attributes (Andrews and Threinen 1966):

**Morphometry:** 382 acres, maximum depth 35 feet.

**Watershed:** 3 square miles, including 88 acres of adjoining wetlands.

**Lake type:** Drainage. Outlet forms Midget Creek.

**Basic water chemistry:** Soft – alkalinity 23 mg/l, conductance 60 µmhos.

**Water clarity:** Light brown water of moderate transparency.

**Littoral substrate:** 55% sand, 25% muck, 15% gravel and some rock.

**Aquatic vegetation:** well-developed beds of vegetation along much of the shoreline.

**Winterkill:** Not expected. At least 150 black crappies winterkilled in the west bay in 2005, possibly after being trapped in a shallow, boggy area.

**Boat landing:** Asphalt and concrete ramp with parking for two vehicles with trailers and two additional vehicles.

**Other features:** Shoreline 80% upland with meadow and shrub wetlands adjoining portions of the basin.

Purpose of Survey: Assess status of gamefish species and develop management recommendations.

Dates of fieldwork: Walleye netting, April 12-16 2005.

Muskellunge netting April 25-29 2005.

Mini-fyke netting August 23-24 2005.

Electroshocking (entire shoreline) April 16 and September 21 2005.

## BACKGROUND

A June 26, 1961 electroshocking survey found “an outstanding population of fish” including good populations of walleye and panfish and adequate numbers of muskellunge (Morehouse 1961). It was recommended that bullhead be classified as detrimental and opened to commercial harvest. However, a clipping from the 1963 Oneida County annual report states “Test netting for bullheads was attempted on Thompson Lake but the catch was not adequate for commercial interest and removal.”

A fyke net survey during July 28-31 1969 found (in declining abundance) good catches of crappie, bluegill, rock bass, yellow perch and walleye (file data). A few pumpkinseed, northern pike, muskellunge and smallmouth bass were also captured.

A comprehensive survey was conducted in 1978 (Smith 1979). Sampling included fyke netting (19 lifts, April 28-30 and 18 lifts, May 31-June 2), electroshocking (August 2) and shoreline seining (8 hauls, August 28). The survey found a “modest” walleye population, and lower numbers of muskellunge, northern pike and both species of bass. Panfish catches were “substantial”, along with good numbers of bluntnose minnow and white sucker. Golden shiner, hornyhead chub and johnny darter were also present. Smallmouth bass and walleye were slow-growing, northern pike and muskellunge were about average, while panfish were growing at or above average. Walleye and muskellunge stocking was recommended.

Walleye population estimates were conducted by DNR in 1995 and 1999. The adult walleye population was estimated to be 1.2 per acre in 1995 and 1.4 per acre in 1999.

Fall young-of-year electroshocking surveys were conducted by DNR in 1978, 1995, 96, 99, 2000 and 2005 and by Great Lakes Indian Fish and Wildlife Commission (GLIFWC) in 1991, 92, 93 and 2004.

Angler creel surveys were conducted in 1995, 1999 and 2005 (reported separately).

## METHODS

Eight standard fyke nets (3/4” bar measure) were set on April 12, 2005. These nets targeted walleye and northern pike and were fished through April 16. Six standard fyke nets were fished April 25-29, targeting muskellunge. Six mini-fyke nets (3/16” bar mesh with 1” bar mesh exclusion netting across the mouth) were fished one night on August 23-24, targeting juvenile and non-game fish. A WDNR-standard alternating current electrofishing boat was used to collect fish on April 16 and September 21, 2005. Length or length category (nearest half-inch) was recorded for all gamefish. Adult gamefish were given a right-ventral fin clip and juveniles were given a top-tail clip for use in mark-recapture population estimates. Age structures (scales or spines) were removed from ten fish per species, per half-inch group.

## RESULTS AND DISCUSSION

### Walleye

During walleye netting, 222 walleye were captured in 4 nights, including 35 recaptures and 5 juveniles (walleye of unknown sex shorter than 15 inches), at a rate of 6.9 walleye per net night (Table 1). The electrofishing sample on April 16 yielded 60 walleye, including 22 juveniles. The

mark-recapture population estimate of 435 adult walleye ( $\pm 81$  SD), or 1.1 per acre, is just above the 1.0 per acre benchmark to be considered a fishable-size population. Walleye showed excellent size structure, with a 19 inch average adult length (Figure 1). Walleye growth rates were at or above the regional average until age 10 (23.7 inches for females), after which they slowed down (Appendix A).

Natural reproduction by walleyes in Thompson Lake is minimal, resulting in low numbers of young-of-year walleyes in fall surveys. Stocking of small fingerling (1 to 4 inch) walleye may also be ineffective in Thompson, due to predation by a strong crappie population. An experimental stocking of 3,820, 7.2-inch walleye was made in fall, 1994. A fall, 1995 survey found 6.9 age-1 walleye per mile, and a spring, 1996 survey estimated that 1,481 (39%) of the fish had survived to age 2. Following this positive result, large fingerling (6 inches or larger) walleye were stocked by DNR at a rate of 10 to 25 per acre in odd-numbered years from 1997 to present. Privately-funded stocking of about 5 per acre has occurred in most years since 1996 (Table 2). Strong stocked yearclasses of 1-year-old fish were documented in fall of 2004 (27.9 age-1 per mile) and 2005 (3.6 age-1 per mile). These results correspond to stockings of 9,598 and 1,800 large fingerling walleye, respectively (Table 2).

Figure 1. Length-frequency of adult walleye during 2005 in Thompson Lake, Oneida County WI.

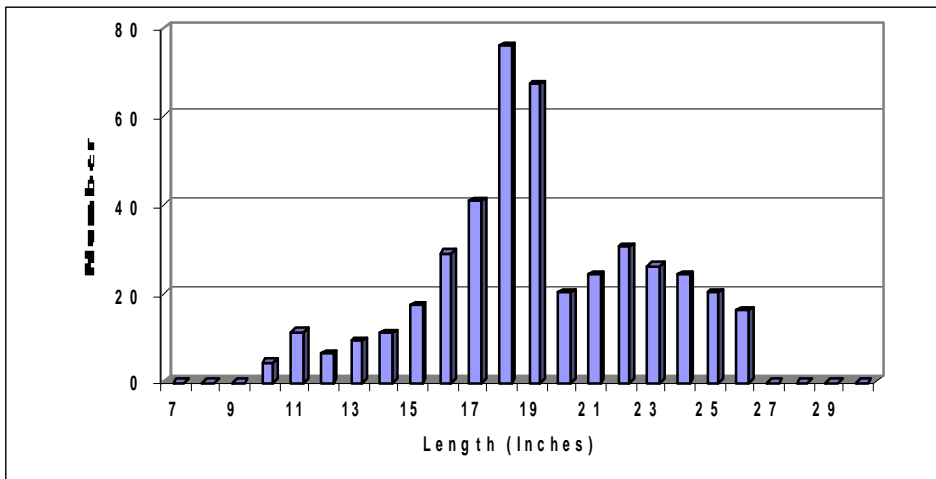


Table 1. Fish catch per unit effort during a 2005 survey of Thompson Lake, Oneida County Wisconsin. Netting catch rates are reported as number of fish per net night, while electrofishing catch rates are number of fish per mile of shoreline. Only gamefish data were collected during April shocking and non-game data were only collected from two 0.5-mile index stations on September 21.

species	walleye netting	April 16 shocking	muskie netting	Aug 24 mini-fyke	Sept 21 shocking
walleye	6.9	8.7	0.9	0.2	7.0
largemouth bass	0.06	0.4	0.2	11.2	4.2
smallmouth bass	0	0.1	0.04	0.2	0
muskellunge	0.1	0.4	0.1	0	1.2
northern pike	3.2	1.0	0.5	0	1.7
black crappie	6.0		1.2	1.8	19
blacknose dace	0		0	0.3	0
bluegill	13.7		16.5	88.7	169
hybrid bluegill x pumpkinseed	0		0	0.2	0
bluntnose minnow	0		0	11.8	0
burbot	0.03		0	0	0
common shiner	0.3		0	1.0	3
creek chub	0.03		0	0	0
golden shiner	0.3		0.08	0	4
Iowa darter	0		0	0.2	0
pumpkinseed	0.6		0.5	1.8	4
rock bass	0.3		0.2	0	0
white sucker	3.5		0.04	0	2
yellow bullhead	0.6		0	0.2	0
yellow perch	12.0		2.0	12.8	135

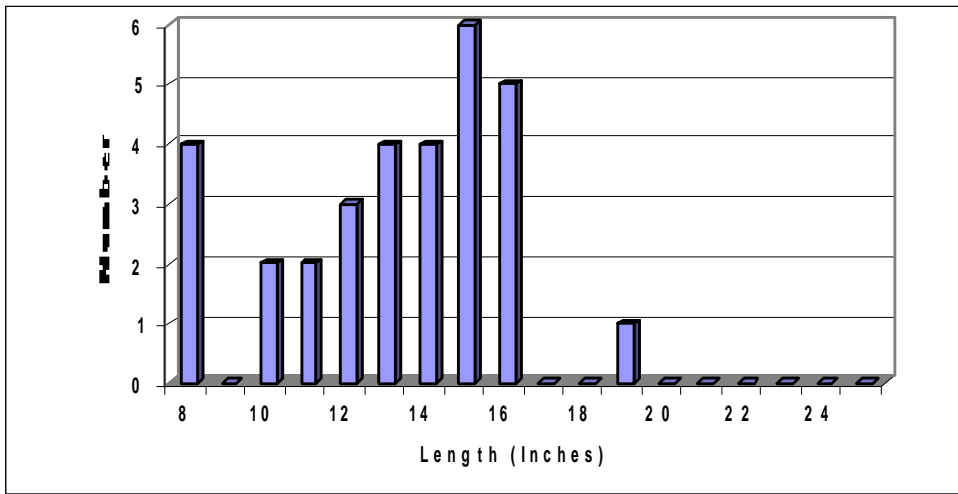
Table 2. Fish stocking record during 1980 through 2005 in Thompson Lake, Oneida County WI.

Year	Species	Size	Number	Comments
1980	muskellunge	large fingerling (8 inch)	800	
1980	muskellunge	large fingerling (12 inch)	188	
1981	walleye	small fingerling (3 inch)	10,000	
1983	walleye	small fingerling (2 inch)	19,000	
1984	muskellunge	large fingerling (10 inch)	658	
1987	walleye	small fingerling	19,000	
1994	walleye	large fingerling (7.2 inch)	3,820	
1996	walleye	large fingerling (6 inch)	1,400	private funds
1997	walleye	large fingerling	9,500	
1997	walleye	large fingerling (6 inch)	900	private funds
1998	walleye	large fingerling (7 inch)	1,000	private funds
1999	walleye	large fingerling (8.2 inch)	3,780	
2000	walleye	large fingerling (6 inch)	2,200	private funds
2001	walleye	large fingerling (7.8 inch)	7,640	
2001	walleye	large fingerling (6 inch)	2,200	private funds
2002	walleye	large fingerling (8 inch)	1,050	private funds
2003	walleye	large fingerling (7.7 inch)	7,698	
2003	walleye	large fingerling (7 inch)	1,900	private funds
2004	walleye	large fingerling (7 inch)	1,800	private funds
2005	walleye	large fingerling (7.1 inch)	3,820	

#### Bass

Bass do not net well and the April 16 electroshocking survey was too early to capture more than moderate numbers of bass. Nevertheless, two smallmouth and ten largemouth bass were captured during spring sampling. One smallmouth and 67 largemouth juveniles were captured in August mini-fyke nets and 29 largemouth bass were captured during the fall electroshocking survey. The adult smallmouth were 18 and 20 inches long. One largemouth was just over 19 inches, but all others were less than 17 inches (Figure 2). Both species of bass were represented in low numbers in past surveys, but largemouth bass have increased to form a significant part of the gamefish community in Thompson Lake. Favorable spawning conditions during recent years and protective regulations have undoubtedly played a role in the increased bass numbers. Bass were protected by a 12-inch minimum length limit beginning in 1989, catch-and-release during the spawning season since 1992 and a 14-inch minimum length limit since 1996. Largemouth bass growth rates were slightly behind average (Appendix A).

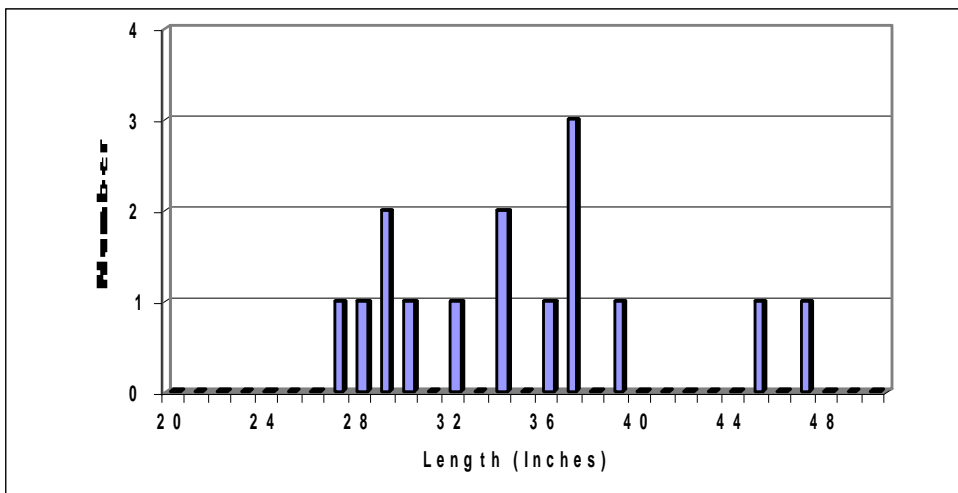
Figure 2. Length-frequency of largemouth bass during 2005 in Thompson Lake, Oneida County Wisconsin. Data are included from both spring and fall.



### Muskellunge

Nine adult male and 1 female muskellunge were captured during the spring survey. Muskellunge spawned in many northern Wisconsin lakes during a warm spell April 9-19 2005. By the time nets were reset for muskellunge on April 24, cold, rainy weather had returned and few muskellunge were captured in the spawning areas. Five adult and three juvenile muskellunge (shorter than 20 inches) were captured during fall shocking. Muskellunge growth rates were about average for northern Wisconsin (Appendix A). The female muskellunge was the largest fish captured, measuring 47.4 inches in length and 16 years of age. Muskellunge have not been stocked in Thompson Lake since 1984 (Table 2) and are supported by natural reproduction.

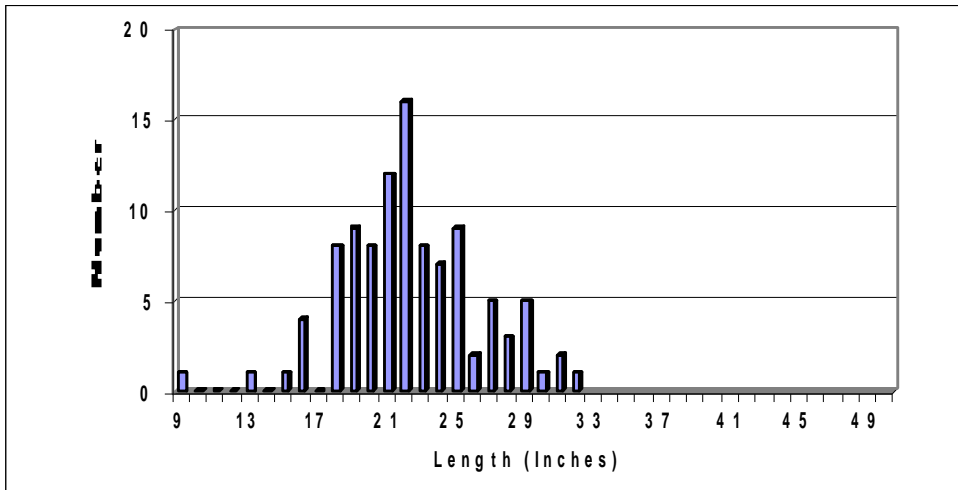
Figure 3. Length-frequency of adult muskellunge during 2005 in Thompson Lake, Oneida County Wisconsin. Data are included from both spring and fall.



## Northern Pike

One hundred twenty-two northern pike were captured (including 1 juvenile and 20 recaptures), all gears combined. The northern pike population (including sexually mature fish and all fish over 12 inches) was estimated at 265 ( $\pm 59$  SD), or 0.7 per acre, using the Schnabel multiple-capture method (Ricker 1975). Northern pike populations less than 2 fish per acre are considered low-density. Pike were generally growing at about the regional average (Appendix A). Average size of adult northern pike was 22.4 inches and the largest northern pike was a 32.3 inch male (Figure 4).

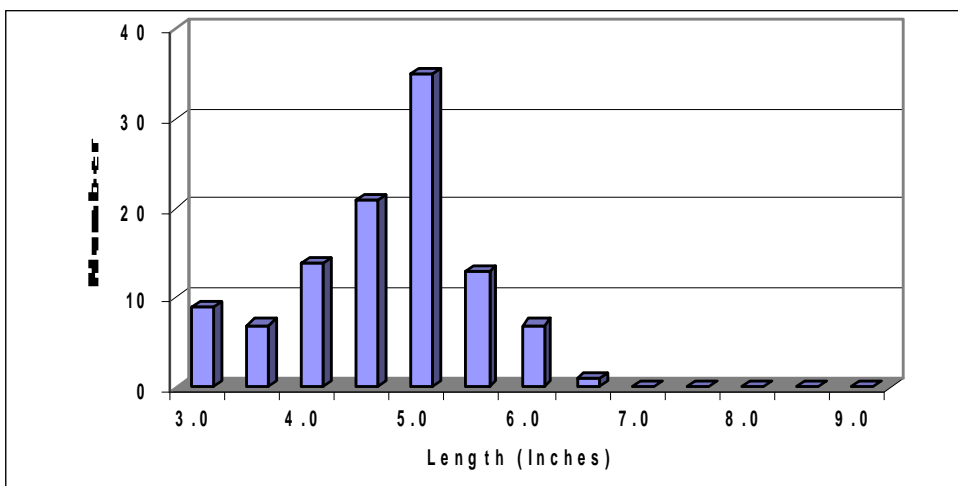
Figure 4. Length-frequency of adult northern pike during 2005 in Thompson Lake, Oneida County Wisconsin. Data are included from both spring and fall.



## Panfish

Thompson has moderate fertility and abundant aquatic vegetation, resulting in good panfish abundance. Bluegill, yellow perch and black crappie dominated the panfish catch (Table 1). Bluegill size was centered at about 5 inches in the fall electroshocking survey (Figure 5). However, panfish larger than about 6 or 7 inches often remain offshore and are poorly represented in fall shocking surveys.

Figure 5. Length-frequency of bluegill during fall, 2005 in Thompson Lake, Oneida County WI.





## MANAGEMENT RECOMMENDATIONS

Thompson Lake supports a diverse, well-balanced fishery. No single species was dominant, but largemouth bass have increased substantially compared to historic surveys. Walleye, muskellunge and largemouth bass are present at moderate densities, while northern pike were low density. Size structure and growth rates of all game species were very good. Bluegill and yellow perch were the dominant panfish, followed by black crappie. Lower numbers of rock bass, pumpkinseed, yellow and black bullhead were also present. Forage and non-game species include white suckers, bluntnose minnow, burbot, common shiner, creek chub, golden shiner and Iowa darter. Stocking of small fingerling walleyes may be ineffective due to predation by black crappies, but the walleye population has responded favorably to stocking of large fingerlings. Thompson is best managed for muskellunge, largemouth bass, stocked walleye and panfish.

## ACKNOWLEDGEMENTS

Mike Coshun supervised the field work for this survey with assistance from Doug Day, Kevin Gauthier, Jason Halverson, Marty Kiepke, Steve Kramer, Tim Tobias, Joelle Underwood, Dave Van De Water and Doug Yonker. Steve Kramer assigned ages from fish scales. Dave Van De Water entered and summarized data. Mike Coshun calculated the walleye population estimate.

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Smith, J. A. 1979. Comprehensive fisheries survey of Thompson Lake, Oneida County. Three-page memorandum with 32 pages of attached data.

Cover image courtesy of TerraServer-USA website and the United States Geological Survey.  
<http://terraserver-usa.com>

## APPENDIX A FISH AGE RESULTS

Age structures (scales or spines) were removed from ten fish per species, per half-inch group. The walleye and northern pike aged sub-samples were applied against the spring length-frequency to eliminate bias when averages were calculated. Nearly all adult bass and muskellunge were aged.

Table A.1. Female walleye length-at-age in Thompson Lake, Oneida County Wisconsin during 2005.

Age of fish	Number	Thompson avg length	Northern WI avg
5	10	18.8	16.1
6	18	19.3	17.6
7	9	20.3	19.5
8	9	22.4	21.2
9	5	22.1	22.6
10	5	23.7	23.8
11	13	24.1	24.9
12	8	24.6	25.8
13	4	25.2	26.9
14	1	25.3	27.5
15			28.0
16			27.7
17	2	26.0	
18			
19	1	26.3	

Table A.2. Male walleye length-at-age in Thompson Lake, Oneida County Wisconsin during 2005.

Age of fish	Number	Thompson avg length	Northern WI avg
2	3	10.3	10.6
3	4	11.4	11.6
4	4	12.9	13.0
5	14	13.9	14.5
6	10	16.0	15.8
7	4	18.5	16.9
8	10	17.4	18.1
9	5	17.2	18.9
10	1	18.3	19.7
11			20.4
12			20.6
13			21.3
14			22.0

Table A.3. Largemouth bass length-at-age in Thompson Lake, Oneida County Wisconsin during 2005.

Age of fish	Number	Thompson avg length	Northern WI avg
4	2	12.0	11.5
5			12.9
6			14.4
7	1	14.8	15.3
8	3	15.8	17.1
9	2	15.9	17.5
10			18.9

Table A.4. Female muskellunge length-at-age in Thompson Lake, Oneida County Wisconsin during 2005.

Age	Number of fish	Thompson avg length	Northern WI avg
16	1	47.4	

Table A.6. Female northern pike length-at-age in Thompson Lake, Oneida County Wisconsin during 2005.

Age	Number of fish	Thompson avg length	Northern WI avg
1			13.1
2			14.4
3			16.9
4	1	18.3	20.4
5	2	24.3	23.1
6	9	24.0	24.4
7	5	23.6	27.3
8	8	28.1	28.8
9	1	25.3	32.1
10	1	29.8	33.8
11	2	30.8	
12			
13	1	31.8	

Table A.5. Male muskellunge length-at-age in Thompson Lake, Oneida County Wisconsin during 2005.

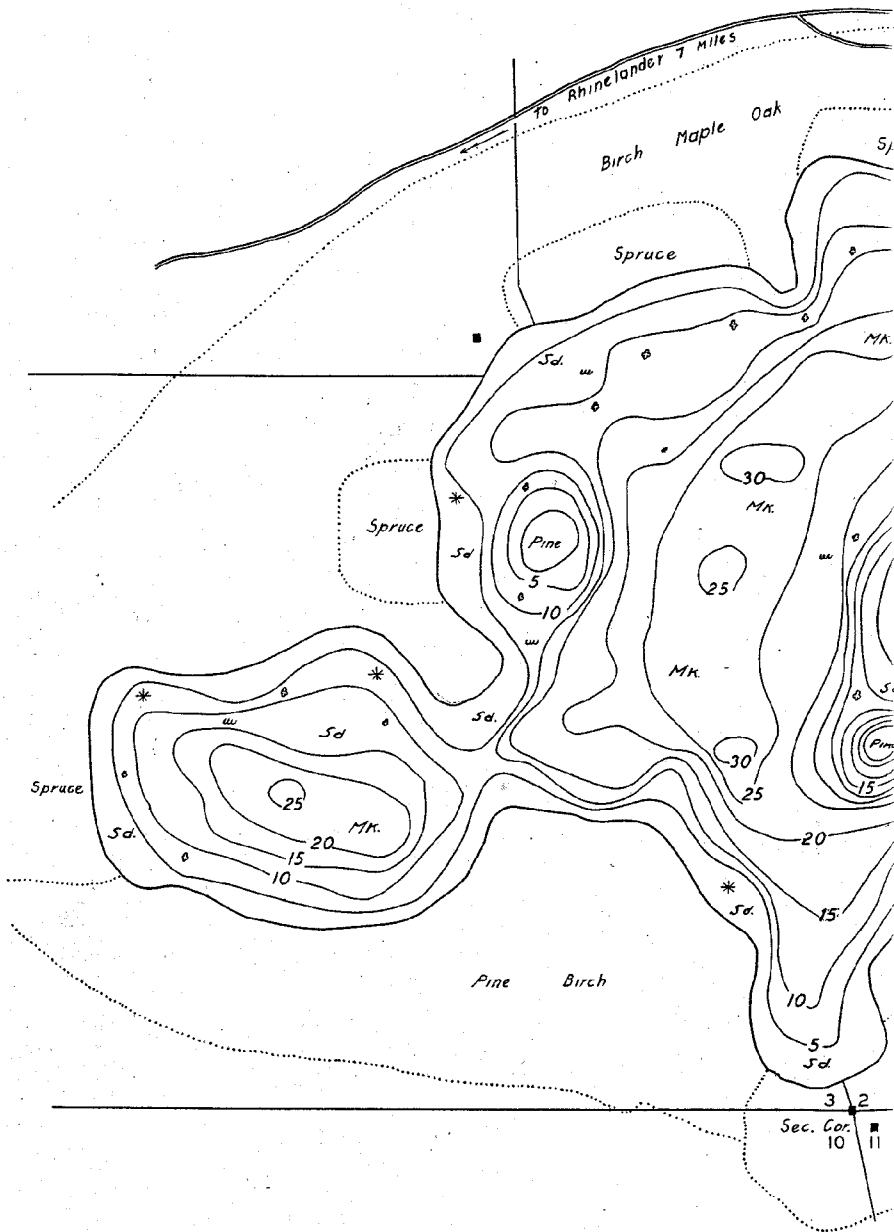
Age	Number of fish	Thompson avg length	Northern WI avg
5	2	29.4	29.2
6	2	28.7	31.5
7	1	34.1	33.3
8	2	37.5	34.4
9			35.8
10	1	37.4	37.3

Table A.7. Male northern pike length-at-age in Thompson Lake, Oneida County Wisconsin during 2005.

Age	Number of fish	Thompson avg length	Northern WI avg
1			10.7
2			13.4
3	2	17.2	16.2
4	3	18.8	18.9
5	7	20.6	20.6
6	10	21.0	22.3
7	13	22.3	23.4
8	11	22.9	24.8
9	9	23.4	23.9
10	5	24.0	21.5
11	1	32.3	

WISCONSIN CONSERVATION DEPARTMENT  
 BIOLOGY DIVISION  
 LAKE AND STREAM IMPROVEMENT SECTION

LAKE SURVEY MAP



DATE JAN 31 1941  
 COMPILED BY O.S.B.  
 TRACED BY W.L.L. G.C.C.  
 SOURCE OF INFORMATION \_\_\_\_\_  
W.P.A.  
LAKE SURVEY PROJECT  
 SOUNDINGS \_\_\_\_\_  
200 FT INTERVALS  
 DATES OF MAP REVISION \_\_\_\_\_  
 WORK AGENCY W.P.A.

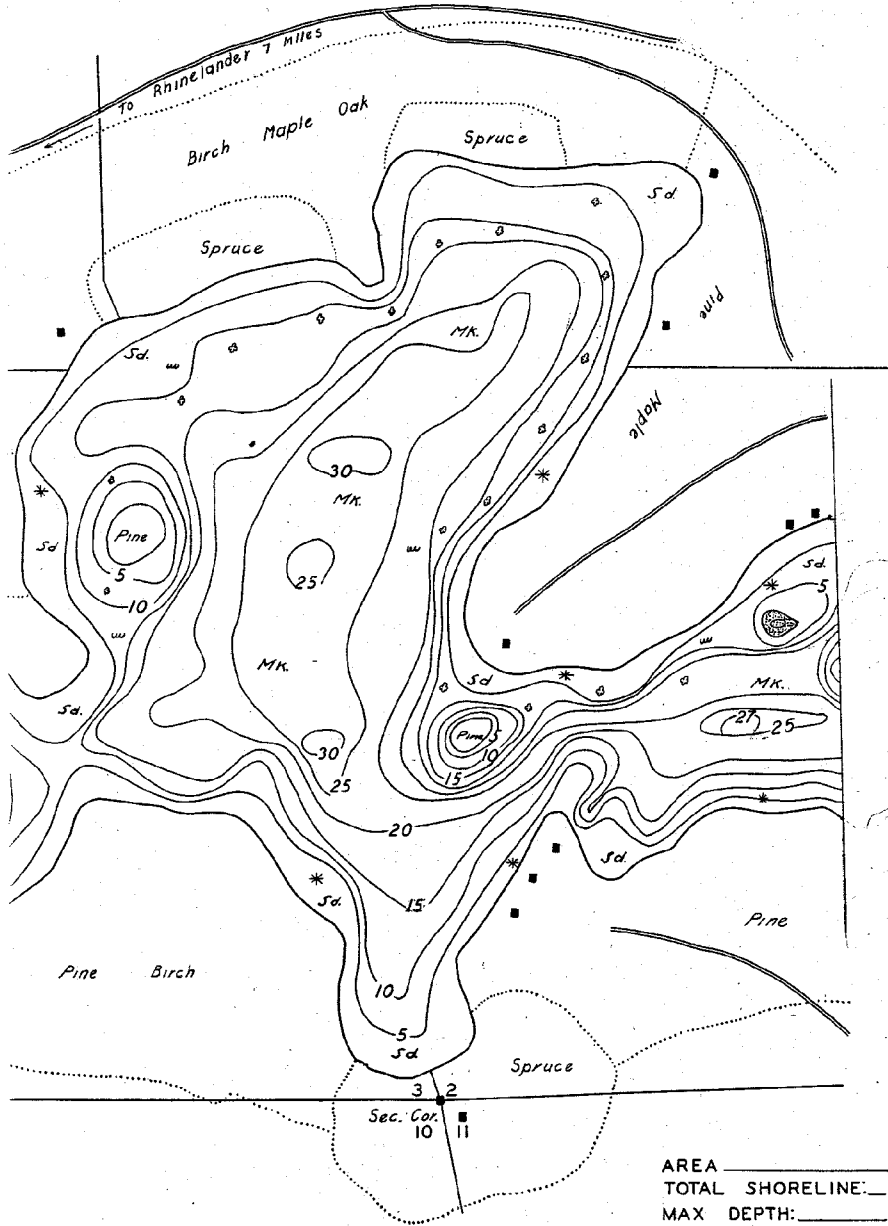
LAKE IMPROVEMENT RECORD

TYPE	DATE	1936	1937
⊕ BRUSH REFUGES		24	1
ω SAPLING TANGLES		11	6
□ SPAWNING BOXES			
* MINNOW SPAWNERS		377	6
TOTAL		511	16

DEPARTMENT  
SECTION

LAKE SURVEY MAP

LAKE THOMPSON  
SECTION 1 2  
TOWNSHIP 36 N  
RANGE 9 E  
TOWN OF PELICAN  
COUNTY ONEIDA



AREA 411 ACRES  
TOTAL SHORELINE 6.7 MILES  
MAX DEPTH: 30 FT

SCALE 1" = 400'

LAKE IMPROVEMENT RECORD

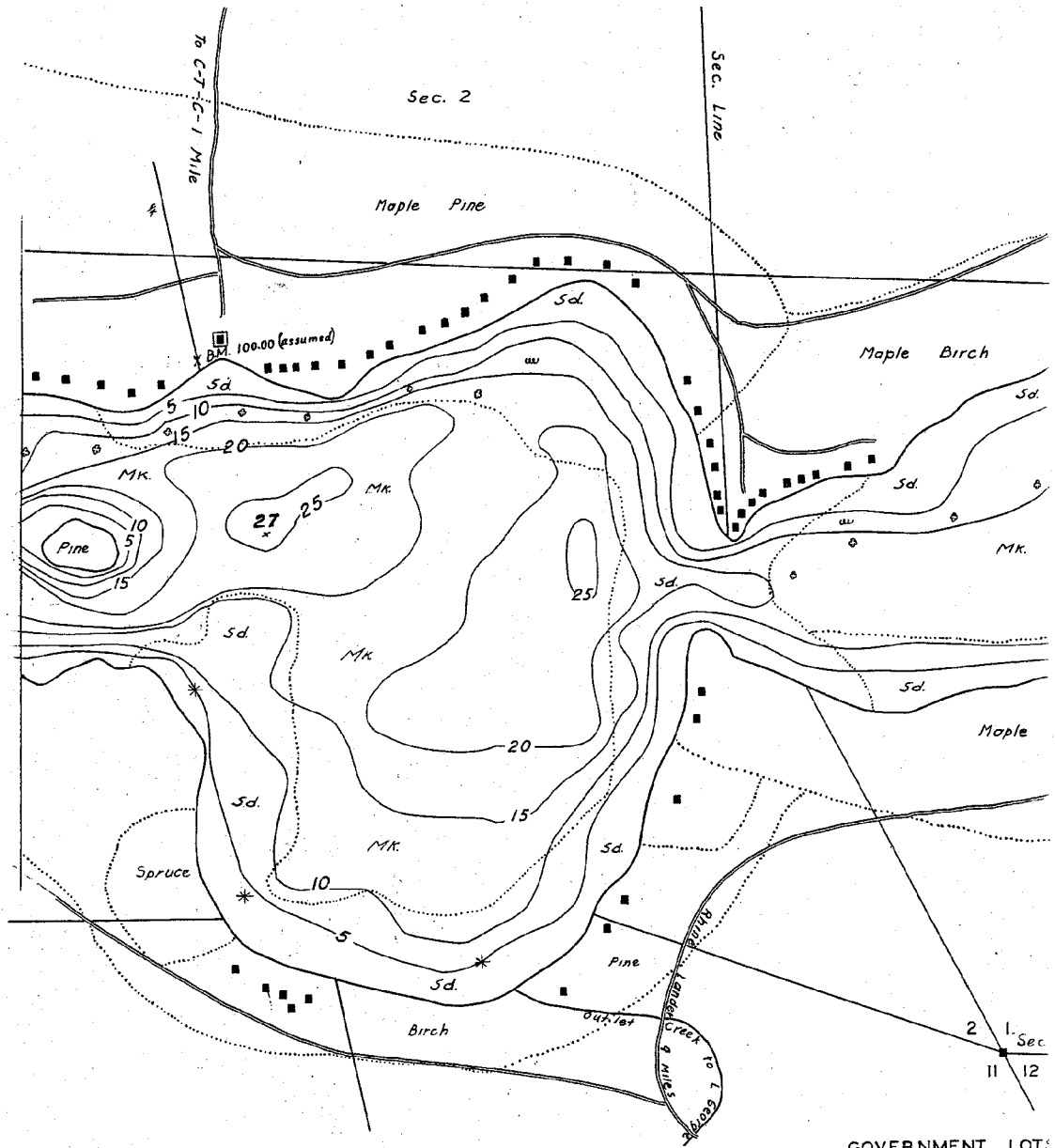
TYPE	DATE	1936	1939	1940
⊕ BRUSH REFUGES		24	11	20
∞ SAPLING TANGLES		11	60	176
□ SPAWNING BOXES				
* MINNOW SPAWNERS		377	89	
TOTAL		511	160	196

LEGEND

⊕	WEED BEDS
∞	ROCKY SHOALS
Sd	SAND
Cl	CLAY
Gr	GRAVEL
MK	MUCK
■	DWELLING 63
□	ABANDONED DWELLING
■	BESORT 1

WISCONSIN CONSERVATION DEPARTMENT  
 BIOLOGY DIVISION  
 LAKE AND STREAM IMPROVEMENT SECTION

LAKE S



DATE JAN 31 1940  
 COMPILED BY O.S.B.  
 TRACED BY W.I. C.C.  
 SOURCE OF INFORMATION \_\_\_\_\_  
 \_\_\_\_\_  
W.P.A.  
LAKE SURVEY PROJECT  
 SOUNDINGS \_\_\_\_\_  
 \_\_\_\_\_  
200 FT INTERVALS  
 DATES OF MAP REVISION \_\_\_\_\_  
 WORK AGENCY W.P.A.

GOVERNMENT LOTS  
 LAKE IMPROVEMENT

TYPE	DATE
⊕	BRUSH REFUGES
w	SAPLING TANGLES
□	SPAWNING BOXES
*	MINNOW SPAWNERS

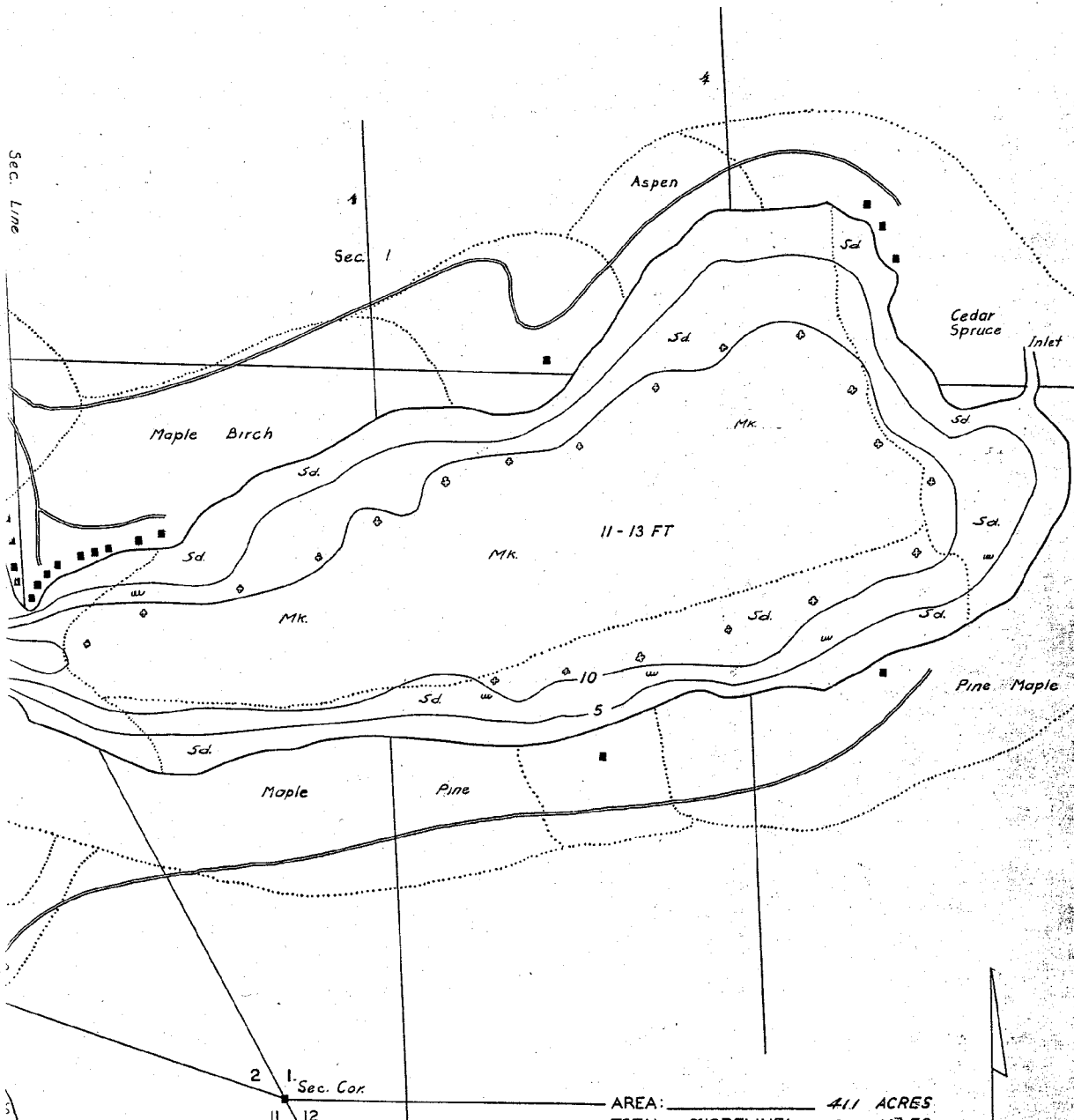
TOTAL

DEPARTMENT \_\_\_\_\_  
 ON \_\_\_\_\_  
 VEMENT SECTION \_\_\_\_\_

LAKE SURVEY MAP

LAKE THOMPSON  
 SECTION 1, 2  
 TOWNSHIP 36 N  
 RANGE 9 E  
 TOWN OF PELICAN  
 COUNTY ONEIDA

#1



AREA: \_\_\_\_\_ 411 ACRES  
 TOTAL SHORELINE: \_\_\_\_\_ 6.7 MILES  
 MAX. DEPTH: \_\_\_\_\_ 30 FT

SCALE: 1" = 400'

GOVERNMENT LOTS NOT PLOTTED  
 LAKE IMPROVEMENT RECORD

TYPE	DATE	1936	1939	1940
⊕ BRUSH REFUGES		24	11	20
⊕ SAPLING TANGLES		110	60	176
□ SPAWNING BOXES				
* MINNOW SPAWNERS		377	89	
TOTAL		511	160	196

- LEGEND
- ⊕ WEED BEDS
  - ⊕ ROCKY SHOALS
  - Sd SAND
  - Cl CLAY
  - Gr GRAVEL
  - Mk MUCK
  - DWELLING 63
  - ABANDONED DWELLING
  - RESORT 1