

LAKE MANAGEMENT STATUS REPORT

DATE OF REPORT: 2/10/2023 **FISHERIES MANAGER:** Rob Hilsabeck
DISTRICT No.: 4 **LAKE NAME:** Shovel Lake BMSFWA **COUNTY:** Fulton
WATER No.: 0505 **OWNERSHIP:** State **ACREAGE:** 200

1. All Fish - 2 pole and line fishing only except carp may be taken by bow and arrow devices, gigs or spears during May through August.

White, Black, or Hybrid Crappie:

- 25 Fish Daily Harvest Limit with no more than 10 fish greater than or equal to 10 inches.

Large or Smallmouth Bass:

- Protected Slot Length Limit from 12 to 18 inches with 3 fish daily harvest limit.

Muskie:

- 42 inch minimum and 1 fish per day harvest limit.

Channel Catfish:

- 6 Fish Daily Harvest Limit

Walleye:

- 14 inch minimum and 6 fish daily Harvest Limit

Recreational Use Restrictions:

-All live bait > 8 inch must be rigged with a quick set rig

-Waterfowl refuge or hunting area

2. 1. Spring trapnet survey on 4/12 and 4/13 in 2022.

2. No fish stocking in 2020 in Shovel Lake.

3. Conducted Fall Population Survey using D.C. electrofishing - 10/3/2022.

4. Registered 35 tournament fishing groups at Banner Marsh for 2022, with 8 events at the Shovel Lake Access.

**LAKE MANAGEMENT STATUS REPORT
SHOVEL LAKE**

| | | | | | | | | | | | | Objective |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| Largemouth Bass | | | | | | | | | | | | |
| Stock Number | 120 | 127 | 91 | 117 | 219 | 119 | 186 | 71 | 149 | 76 | 137 | 100 |
| PSD | 59 | 65 | 73 | 68 | 59 | 82 | 74 | 85 | 40 | 68 | 69 | 40-60 |
| RSD14 | 43 | 42 | 41 | 45 | 29 | 52 | 60 | 72 | 29 | 53 | 45 | |
| RSD16 | 21 | 27 | 24 | 21 | 12 | 26 | 37 | 44 | 21 | 41 | 31 | |
| RSD18 | 12 | 10 | 10 | 8 | 4 | 9 | 11 | 18 | 12 | 15 | 18 | 5-10 |
| Wr > 8" | 92 | 91 | 93 | 98 | 97 | 95 | 97 | 96 | 92 | 91 | 94 | 90-110 |
| YAR | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.7 | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | |
| CPUE Stock | 1.7 | 1.3 | 0.73 | 1.1 | 1.8 | 1.4 | 1.8 | 1.2 | 2.3 | 1.2 | 2.3 | 1/Min |
| Effort | 72 | 98 | 124 | 103 | 120 | 87 | 101 | 60 | 66 | 64 | 60 | |
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | |
| Bluegill | | | | | | | | | | | | |
| Stock # | 3 | 38 | 17 | 6 | 19 | 73 | 1 | 29 | 0 | 13 | 25 | |
| PSD | 67 | 92 | 88 | 100 | 53 | 6 | 0 | 14 | | 77 | 92 | |
| RSD7 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 3 | | 0 | 20 | |
| Wr > 5" | 80 | 87 | 92 | 82 | 76 | 94 | 1 | 73 | | 88 | 86 | |
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | |
| Black Crappie | | | | | | | | | | | | LMP Obj |
| Stock# | 40 | 13 | 35 | 11 | 31 | 35 | 19 | 24 | 26 | 17 | 12 | |
| PSD | 100 | 92 | 100 | 91 | 94 | 94 | 95 | 96 | 73 | 47 | 92 | 30-50 |
| RSD9 | 95 | 92 | 97 | 82 | 68 | 77 | 95 | 50 | 39 | 24 | 50 | |
| RSD10 | 70 | 62 | 94 | 82 | 52 | 63 | 95 | 46 | 23 | 18 | 17 | 20-40 |
| RSD11 | | | 63 | 73 | 32 | 37 | 74 | 33 | 4 | 12 | 8 | 5-10 |
| Wr > 8" | 90 | 94 | 92 | 92 | 90 | 94 | 97 | 99 | 97 | 100 | 86 | 90-100 |
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | |
| Channel Catfish | | | | | | | | | | | | LMP Obj. |
| Stock# | 3 | 3 | 4 | 3 | 13 | 6 | 0 | 0 | 0 | 1 | 0 | |
| PSD | 67 | 100 | 100 | 100 | 100 | 100 | | | | 100 | | |
| RSD18 | 67 | 67 | 100 | 100 | 100 | 100 | | | | 100 | | 10-20 |
| Wr | 102 | 117 | 126 | 134 | 108 | 112 | | | | 109 | | 90-110 |

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | |
|--------|------|------|------|------|------|------|------|------|------|------|------|---------|
| Mue | | | | | | | | | | | | |
| Stock# | 28 | 15 | 32 | 17 | 47 | 36 | 14 | 10 | 2 | 17 | 12 | |
| PSD | 61 | 100 | 94 | 65 | 85 | 83 | 86 | 80 | 100 | 100 | 100 | |
| RSD42 | 4 | 7 | 10 | 0 | 9 | 3 | 0 | 0 | 0 | 12 | 8 | |
| Wr | 110 | 89 | 100 | 91 | 97 | 103 | 90 | 94 | 96 | 96 | 96 | 90-110 |
| CPUE | | | | | | | 1.1 | 0.5 | | | | |
| NN | 1.8 | 1 | 1.6 | 0.88 | 2.5 | 2.3 | | | | 1.1 | 0.8 | .3/netN |

4. In 2022, the water level in the marsh was higher in the spring and lower in the fall. A perfect cycle will be the higher spring through early summer water levels to promote good spawning and recruitment. Then the natural summer/fall drawn-down would allow the condensing of the prey fish with the predators.

In 2022, a spring trap net survey and a fall D.C. electrofishing survey was used to evaluate the fish population. The largemouth bass population was evaluated by 137 stock size bass from electrofishing with 60 minutes of effort.

The largemouth bass population appears to be defined by a high percentage of fish from 4.0 to 20 inches in length with good average Relative weights.

In 2000, the bass regulation for the Marsh was changed from a 14 inch minimum size limit and 1 fish per day - to a 12 to 18 inch protected slot length with a harvest of 3 fish under or over the slot per day.

The 2022 fall electrofishing survey indicated a size structure that is continuing to maintain a very good level and stability since 2004. The PSD of 69, the RSD14 of 45, the RSD16 of 31 and the RSD 18 of 18 were all very good.

The goal of the protected slot length limit was to create a high density bass population that is composed of fish large enough to be efficient predators upon the high density of slow growing panfish and the rough fish population. The benefit to bass

**LAKE MANAGEMENT STATUS REPORT
SHOVEL LAKE**

Page 4

anglers will be more fish surviving past 14 inches to catch, and for anglers wanting to harvest bass will be the opportunity to harvest more fish.

The online IFISH tournament registration and result system was started in 2015. The tournament results showed these anglers spent 1,552 hours in 2016, 1,140 hours in 2017, 932 hours in 2018, 556 hours in 2019, and 718 hours in 2022 on Shovel Lake. They reported 141 legal fish in 2016 for .09 fish per angler hour. They reported 131 legal fish in 2017 for .11 fish per angler hour. They reported 133 legal fish in 2018 for .14 fish per angler hour. They reported 110 legal fish in 2019 for .20 fish per angler hour. They reported 129 legal fish in 2020 for .10 fish per angler hour. They reported 232 legal fish in 2022 for .32 fish per angler hour.

The muskie population was sampled by a total of 12 stock size muskie by the spring of 2022 trap net survey (.8 fish per net night). These fish ranged from 33.2 to 42.7 inches long. The body condition of these fish was good with an average Wr of 101. The first stocking of 450 fish at 11 inches was in 1999. In 2000, a total of 200, 2001-600, 2002-200, 2003-200, 2004-0, and 200 annually from 2005 through 2014 at an average size of 11.2 inches were stocked. No muskie were stocked in 2015 or 2016. In 2017, 200 fish at 12.4 inches long were stocked. In 2021, 2,788 fish at 3 inches were stocked in June, and 240 fish at 13 inches were stocked in September. A triennial stocking is now scheduled to maintain a moderate density of healthy muskie. Illinois (Jake Wolf) muskie strain appear to be doing good in this lake. No muskie stocking occurred in 2020 due to COVID work restrictions effecting hatchery production.

25 stock size bluegill and 50 stock size redear sunfish were sampled in 2022. The population for both of these species has remained poor in size structure and body condition. The competition with the gizzard shad and carp have caused this growth slowdown.

No channel catfish were sampled in 2022 and 1 fish in 2021. No recent channel catfish stockings have occurred in Shovel Lake.

LAKE MANAGEMENT STATUS REPORT
SHOVEL LAKE

Page 5

The black crappie population was surveyed by 12 stock size fish in 2022. The PSD was 92, the the RSD9 was 50, the RSD10 was 17, and the RSD11 was 8. The body condition was average with a Wr value at 86. The black crappie population has been on a downward trend since 2019 in Shovel Lake.

No white crappie were surveyed in 2022. This population is present in a very low density of quality fish.

In 2018 the crappie harvest regulation changed to a harvest limit of 25 fish per day with only 10 fish over 10 inches allowed.

In 2000, the HREP project added a large amount of habitat to the Shovel lake section. The addition of large woody structure (downed trees and brush piles) was completed along the shoreline of the main lake and the connection to the canal, lotus lake, glove lake and goose mound lake was completed and has provided a major increase in littoral area when this section of the Marsh was refilled in 2001.

A brood stock introduction of redspotted sunfish was completed in 2010. A total of 100 redspotted sunfish were introduced on 5/7/2010. These fish were propagated at the Fish Preserve Lake at Emiquon. The fish were released into the new addition section of Shovel Lake. No red spots have been sampled since that introduction. Another stocking from the Banner Marsh Rearing Ponds should be attempted in the near future. The redspotted Sunfish have survived and recruited in the same habitat in other lakes at Banner Marsh.

A brood stock introduction of 100 starhead topminnows was completed into the Shovel extension area on 8/31/11. These fish were propagated in the shower house pond at Jubilee State Park. Adult and YOY starhead topminnows were observed and collected on 9/12/2012, 7/19/2013 and 7/10/2014 in Shovel Lake extension area. In 2015 through 2022, starhead adults and YOY were observed throughout Shovel Lake. Future vegetation and fish surveys will attempt to document survival and recruitment.

LAKE MANAGEMENT STATUS REPORT
SHOVEL LAKE

Page 6

In 2016, a stocking of adult bowfin was completed on 3/30/2016 from the Emiquon Preserve. These fish were all floy tagged and part of the INHS study on ancient fish in Illinois. A very low population of bowfin (2 fish) had been sampled in Johnson Lake over the last 25 years. This stocking is an effort to establish a self-sustaining population at a site that has excellent habitat for their survival and recruitment. In the fall 2018 surveys, 1 tagged bowfin was collected in both the Johnson and Shovel Lake sections. In 2019, a mature bowfin was collected in the Wheel Lake section. In 2022, A YOY bowfin was collected in the Johnson Lake section.

Recommended Lake Management Activities with Rationale for Implementation:

Fish Stocking - Muskie 200 fish every 3rd year, 1/acre, 12 in. Supplemental stocking is required for all the above species due to no natural recruitment at Shovel Lake.

- spotted gar. Consider and evaluate the potential of reintroducing these historically native species back into the marsh in an effort to enhance the diversity of the current fishery.

Biological Surveys - Conduct annual surveys to measure trends in fishery population dynamics, angling regulations and progress toward management goals. In the fall, utilize by standardized methods; D.C. electrofishing to sample a target number of at least 100 stock-size largemouth bass. In the spring, assess the walleye, muskie, black crappie, bluegill, redear and channel catfish populations by a trap net survey. In the summer, complete an aquatic vegetation and topminnow survey.

Toxicant Fish Control - limited application may be necessary to rehabilitate seasonally-isolated ponds which contain severely imbalanced fish populations.

Aquatic Vegetation Control - limited need or application due management goal of providing diverse, significant habitat for fish and wildlife. Will continue vegetation survey to document trends and exotic species (i.e. Eurasian milfoil). In 2017, **LAKE**

MANAGEMENT STATUS REPORT
SHOVEL LAKE

Page 7

2018, 2019, and 2020 a late summer application of glyphosate herbicide was applied to the very vigorous stand of phragmites that had developed at the main access boat ramp. These treatments have been very successful. This phragmites control will continue for the future to maintain the access.

Habitat Enhancement - The major addition of woody habitat (downed trees and brush piles) along the final cut banks of Shovel Lake in 2000 added significant habitat. And the connection to the rest of the Shovel Lake section increased the littoral zone of Shovel Lake by over 100% with the addition of approximately 100 more surface acres of water.

Lake access - coordinate with the site staff on the development of shoreline fishing areas. The raising of the township road, powerline roadway has provided another easily accessible shoreline fishing area. And in 2018, the power company raised the roadway along the powerlines at the base of the levee. This has created another shoreline fishing area. The IFISH online fishing tournament registration has worked very well. Coordination on the site use has been good and conflicts have been minimal with the public.

Site Map - update the site map of the water bodies as needed.

Shovel Lake Largemouth Bass Index Table

| Year | Stock # | PSD | RSD14 | RSD15 | RSD16 | RSD17 | RSD18 | RSD19 |
|---|---------|------|-------|-------|-------|-------|-------|-------|
| 1996 | 123 | 42.3 | 13.0 | 8.9 | 7.3 | 7.3 | 5.7 | |
| 1997 | 205 | 25.4 | 6.3 | 3.9 | 2.4 | 2.4 | 2.0 | |
| 1998 | 101 | 55.4 | 21.8 | 11.9 | 5.0 | 3.0 | 2.0 | |
| 1999 | 110 | 64.5 | 19.1 | 4.5 | 1.8 | 1.8 | .9 | |
| ---- New regulation 12-18" protected slot, 3 fish daily creel---- | | | | | | | | |
| 2000 | 154 | 62.3 | 30.5 | 14.9 | 5.2 | 3.9 | 1.9 | |
| 2001 | | | | | | | | |
| 2002 | 134 | 62.7 | 45.5 | 38.1 | 21.6 | 12.7 | 3.7 | |
| 2003 | 159 | 64.2 | 45.3 | 34.6 | 20.1 | 10.1 | 3.1 | |
| 2004 | 167 | 56.3 | 33.5 | 26.3 | 16.2 | 8.4 | 1.2 | |
| 2005 | 113 | 63.7 | 38.9 | 31.0 | 20.4 | 11.5 | 4.4 | |
| 2006 | 84 | 54.8 | 40.5 | 29.8 | 20.2 | 19.0 | 8.3 | |
| 2007 | 93 | 63.4 | 45.2 | 36.6 | 28 | 16.1 | 10.8 | |
| 2008 | 81 | 53.1 | 40.7 | 30.9 | 27.2 | 19.8 | 7.4 | |
| 2009 | 113 | 56.6 | 32.7 | 25.7 | 19.5 | 15.9 | 8.0 | |
| 2010 | 103 | 62.1 | 45.6 | 42.7 | 29.1 | 23.3 | 10.7 | 5.7 |
| 2011 | 100 | 73.0 | 53.7 | 46.0 | 38.0 | 32.4 | 17.0 | 8.3 |
| 2012 | 120 | 59 | 43 | 38 | 21 | 16 | 12 | 6 |
| 2013 | 127 | 65.4 | 41.7 | 37 | 26.8 | 20.5 | 10.2 | 3.9 |
| 2014 | 91 | 73 | 41 | 36 | 24 | 19 | 10 | 9 |
| 2015 | 117 | 68 | 45 | 33 | 21 | 15 | 8 | 6 |
| 2016 | 219 | 59 | 29 | 24 | 12 | 8 | 4 | 2 |
| 2017 | 119 | 82 | 52 | 45 | 26 | 19 | 9 | 4 |
| 2018 | 186 | 74 | 60 | 52 | 37 | 26 | 11 | 7 |
| 2019 | 71 | 85 | 72 | 63 | 44 | 34 | 18 | 9 |
| 2020 | 149 | 40 | 29 | 25 | 21 | 17 | 12 | 9 |
| 2021 | 76 | 68 | 53 | 45 | 41 | 29 | 15 | 4 |
| 2022 | 137 | 69 | 45 | 37 | 31 | 26 | 18 | 5 |

Shovel Lake Fish Tournament Results 2022

| Start Date | ID | Fish Hours | Total Boats | Total Anglers | Species 1 | Total Fish | Total Pounds | | |
|------------|--------------|------------|-------------|---------------|-----------|------------|--------------|--|--|
| 09-24-2022 | <u>19707</u> | 8 | 10 | 10 | LMB | 65 | 0.00 | | |
| 09-10-2022 | <u>20018</u> | 6 | 12 | 16 | LMB | 21 | 32.95 | | |
| 08-13-2022 | <u>21011</u> | 8 | 4 | 4 | LMB | 19 | 46.82 | | |
| 08-06-2022 | <u>20376</u> | 3 | 7 | 14 | LMB | 2 | 8.81 | | |
| 07-16-2022 | <u>21008</u> | 8 | 4 | 4 | LMB | 19 | 48.71 | | |
| 07-10-2022 | <u>20518</u> | 6 | 11 | 22 | LMB | 38 | 68.50 | | |
| 05-14-2022 | <u>19916</u> | 16 | 10 | 19 | LMB | 68 | 116.00 | | |
| 04-02-2022 | <u>21022</u> | 7 | 12 | 24 | CRP | 38 | 39.56 | | |

Totals: Bass Angler hours 718 # Bass 232

Shovel Lake Stocking record 2012-2022.

| Waterbody | Species | Size (in) | Count | Delivery Date | Source |
|------------------------------------|-------------|-----------|-------|---------------|-------------------------------|
| Shovel Lake - Banner Marsh (00505) | Muskellunge | 13 | 240 | 9/7/2021 | #2 Jake Wolf Hatchery (09000) |
| Shovel Lake - Banner Marsh (00505) | Muskellunge | 3 | 2788 | 6/3/2021 | #2 Jake Wolf Hatchery (09000) |
| Shovel Lake - Banner Marsh (00505) | Muskellunge | 12.4 | 200 | 8/29/2017 | #2 Jake Wolf Hatchery (09000) |
| Shovel Lake - Banner Marsh (00505) | Muskellunge | 11.8 | 202 | 9/3/2014 | #2 Jake Wolf Hatchery (09000) |
| Shovel Lake - Banner Marsh (00505) | Muskellunge | 1 | 69443 | 4/28/2014 | #2 Jake Wolf Hatchery (09000) |
| Shovel Lake - Banner Marsh (00505) | Muskellunge | 11 | 200 | 10/10/2013 | #2 Jake Wolf Hatchery (09000) |
| Shovel Lake - Banner Marsh (00505) | Muskellunge | 11 | 200 | 8/21/2012 | #2 Jake Wolf Hatchery (09000) |
| Shovel Lake - Banner Marsh (00505) | Muskellunge | 0 | 62067 | 4/9/2012 | #2 Jake Wolf Hatchery (09000) |

