

POND MANAGEMENT



A Template for Your Pond Management Plan

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**Introduction**

Ponds provide a number of benefits to landowners in Indiana, including fishing for sport and food. However, healthy ponds and good fishing doesn't happen by chance – it requires careful planning and ongoing management. Without appropriate management, a pond can quickly become overcrowded with small fish and aquatic plants. This publication will help landowners develop, assess and manage fish populations in their ponds. It is a companion document to the more comprehensive publication titled *Managing Fish Populations in Indiana Ponds* (FNR-598-W), available at: extension.purdue.edu/pondwildlife.

This document provides a template for pond owners to record all information that is needed to produce a management plan for their pond. It is recommended that you download the PDF and fill out text sections on your computer. You can then print the document and complete the datasheet sections by hand when you sample and assess your pond. Electronic copies of the datasheets are available at extension.purdue.edu/pondwildlife.

The first step in a pond management plan is clearly defining your goals for the pond and fish populations. For example, do you want to use the pond for swimming and fishing, or do you only want to fish for trophy large-mouth bass. The next step is to assess the current status of your pond, including the species and size of fish present.

There are lots of methods that you can use to assess fish populations, but the simplest method is to just go fishing! Some species are detrimental to a pond ecosystem and may need to be removed to improve fishing. If you have a new or recently renovated pond, you may need to stock certain fish species to establish desired fish populations. For more information on specific stocking numbers and sizes, please refer to the Purdue Extension publication on *Stocking Fish in Indiana Ponds* (FNR-569) at extension.purdue.edu/pondwildlife.

It is important to assess your pond and its fish populations each year. It is essential that you keep good records of your fish sampling as you will use this information to make changes to your pond management. This template will help you record the necessary data for assessing your pond. It will also help you make key fish calculations such as proportional size distribution and relative weight. The last step in this template is to help you reflect on your pond assessment and how fish populations align with your initial goals. This is the perfect time to make changes to your management plan for next year. By assessing your pond each year and making the relevant changes to your management plan, you can enjoy a healthy pond and good fishing for many years. For more information on other pond management topics, please visit our website at extension.purdue.edu/pondwildlife.

Property Information

Complete this section by providing basic information about you, your property and your pond.

Pond Owner(s):

Pond history (e.g., length of ownership, date of construction/renovation, past fish stocking and management efforts, herbicide applications, etc.):

Pond Address:

County:

Pond Consultant/Biologist (if used):



Pond Maps

There are many free mapping tools online that can help you determine the size of your pond as well as the size of the watershed around your pond. Select which mapping tools you have used and record the size of your pond and watershed. You may also decide to paste images of these maps below.

Google Earth

Topographical map

Soils map

Other maps _____

Maps used (insert map sources and/or links below):

Pond Objectives

The first step in pond management is to define the desired use for your pond. Ponds can be managed in a number of different ways depending on the desired objectives and outcomes.

Primary pond use (e.g., fishing, swimming, irrigation, etc.):

Other desired pond uses:

Primary fishing objective (e.g., good all-round fishing, fish for food, trophy fish, etc.):

Calculate pond size (surface area and depth):

Other pond objectives (e.g., attract wildlife):

Calculated pond watershed (e.g., size, land use, etc.):

STEP
1

Identify a Fish Management Style That Meets Your Expectations

This template focuses on managing fish populations in your pond. Select one of the four fish management options below to help achieve your goals. These management options are typically the most successful options in Indiana ponds. More information on each management option can be found at extension.purdue.edu/pondwildlife.

Option 1: Ponds with channel catfish only

- ✓ Lowest amount of management effort as only one species present
- ✓ Supplemental feeding may be required to achieve larger catfish
- ✓ Harvest catfish annually
- ✓ Lack other species for fishing and food

Option 2: Ponds with all-purpose fishing

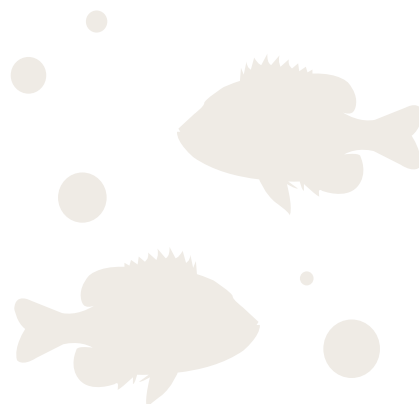
- ✓ Intermediate level of management effort to maintain
- ✓ Typically includes largemouth bass, sunfish, and channel catfish
- ✓ Can achieve self-sustaining populations when fish are harvested

Option 3: Ponds with trophy sunfish

- ✓ High amount of management effort and population monitoring
- ✓ Typically includes largemouth bass and sunfishes, may include channel catfish
- ✓ Harvest large sunfish and a few mid-sized largemouth bass
- ✓ Typically, bass are quite small (e.g., less than 12 inches)

Option 4: Ponds with trophy largemouth bass

- ✓ High amount of management effort and population monitoring
- ✓ Typically includes largemouth bass and sunfishes, may include channel catfish
- ✓ Harvest large largemouth bass and the occasional mid- to large- sized bluegill
- ✓ Typically, bluegill are numerous but quite small (e.g., 3-5 inches)





STEP 2

Assessing the Pond to Determine What Needs to be Done

The second step in pond management is to assess the current status of your pond. This is particularly important if you have recently purchased a property with a pond or plan to start managing an old pond. This should be done systematically once per year to determine changes taking place on and around the pond. Be sure to take photographs and make sure they are dated.

There are three parts of the assessment that you will be asked to complete. These factors include pond maintenance, an inventory of aquatic vegetation, and a survey of fish species and size.

POND MAINTENANCE

A well-constructed pond is enjoyable for the pond owner, increases the aesthetic appeal of a property, and benefits a range of wildlife species. One of the most important aspects to pond maintenance is making sure your pond has little to no leaching, leaking, and unnecessary overflow. It is essential that you assess the structural integrity of your pond on a regular basis. This will not only ensure the function and enjoyment of your pond, but will also help prevent catastrophic failures that may impact downstream residents.

The United States Department of Agriculture has excellent resources on the planning, design, construction and maintenance of ponds and dams. You can download these resources at extension.purdue.edu/pondwildlife.

AN INVENTORY OF AQUATIC VEGETATION

Aquatic vegetation is an essential part of a healthy pond ecosystem. Vegetation adds dissolved oxygen to the water, provides essential habitat for fish, insects, and other wildlife, and provides food and shelter for waterfowl. However, excessive vegetation can cause a pond to quickly deteriorate, become stagnant, fill in with sediment, and throw off the balance of the system.

Aquatic vegetation changes a lot during the year, so it is important to assess aquatic vegetation in your pond at least twice a year, once in the spring and fall. The table below can be used for tracking aquatic vegetation during each assessment. There is an online version of this table at our website, extension.purdue.edu/pondwildlife. You can also visit the website for help identifying the particular species of plants on your pond. Photographs and/or specimens can be submitted to the Plant and Pest Diagnostic Laboratory for identification. See specific instructions at <https://ag.purdue.edu/btny/ppdl/Pages/default.aspx> for costs and sample preparation.

AQUATIC VEGETATION SAMPLING
Assessment date:

Plant category	Plant type	Approximate Density
EMERGENT PLANTS		
<i>Example</i>	Cattails	<u>25</u> % pond perimeter
		<u> </u> % pond perimeter
		<u> </u> % pond perimeter
		<u> </u> % pond perimeter
		<u> </u> % pond perimeter
FLOATING PLANTS		
<i>Example</i>	Duckweed	<u>75</u> % surface area
		<u> </u> % surface area
		<u> </u> % surface area
		<u> </u> % surface area
		<u> </u> % surface area
SUBMERGENT PLANTS		
<i>Example</i>	Eurasian watermilfoil	1 2 3 4 on rake*
		1 2 3 4 on rake
		1 2 3 4 on rake
		1 2 3 4 on rake
		1 2 3 4 on rake
ALGAE & CHARA		
<i>Example</i>	Filamentous algae	<u> </u> % pond volume
		<u> </u> % pond volume
		<u> </u> % pond volume
		<u> </u> % pond volume
		<u> </u> % pond volume

For an electronic version of this table, please visit extension.purdue.edu/pondwildlife.

* To assess submergent plants, you can toss a rake into the water and estimate the volume of plant material on the rake. Use the 4-point scale to score this volume (e.g., 1 = a little on some prongs, 2 = some on all prongs, 3 = a lot on prongs, some on rake head, and 4 = rake completely covered).

FISH LENGTH

Date	Species	Length										
		<3"	4"	5"	6"	7"	8"	10"	11"	12"	13-16"	16+ "
10/05/19	Bluegill											

For an electronic version of this table, please visit extension.purdue.edu/pondwildlife.

FISH WEIGHT

Date	Species	Length (in)	Weight (lb)
08/28/2019	Bass	15	1.7

Date	Species	Length (in)	Weight (lb)

For an electronic version of this table, please visit extension.purdue.edu/pondwildlife.



STEP 3

Summarize and Analyze Fish Sampling

Using the data collected in the above datasheets, provide a summary of fish harvest and fish length.

Species	# caught	# harvested	# > stock size*	# > quality size*
Bluegill			>3": _____	>6": _____
Redear sunfish			>4": _____	>7": _____
Largemouth bass			>8": _____	>12": _____
Channel catfish			>11": _____	>16": _____

* For more information on stock and quality size, please refer to the publication Managing Fish Populations in Indiana Ponds at extension.purdue.edu/pondwildlife.

PROPORTIONAL SIZE DISTRIBUTION

Proportional size distribution (PSD) is a simple method to assess the current status of the fish population in a pond. It takes the length data you have collected and calculates a single number (percentage) for each species. This single number can then be tracked through time to identify changes. PSD is the percentage of quality-sized fish when compared to stock-sized fish. The quality and stock sizes, and target PSD range, for bluegill, redear sunfish, largemouth bass and channel catfish are given below.

For more information on calculating PSD, please refer to the publication Managing Fish Populations in Indiana Ponds on our website, extension.purdue.edu/pondwildlife.

Fish species	Stock Size	Quality Size	PSD range
Bluegill	3+ inches	6+ inches	20-60
Redear Sunfish	4+ inches	7+ inches	20-60
Largemouth Bass	8+ inches	12+ inches	40-70
Channel Catfish	11+ inches	16+ inches	20-50

Assessment year	Bluegill PSD	Redear PSD	Bass PSD	Catfish PSD
2019	35	43	51	31

RELATIVE WEIGHT

Relative weight (RW) is a simple index for pond owners to determine the condition or health of their fish. RW is calculated by dividing the observed weight of your fish by the standard weight of that species. Fish with high RW are fatter, thus healthier, while those with low RW are thin and less healthy. The standard weights of common species in Indiana Ponds are given below.

Bluegill		Redear Sunfish		Largemouth Bass		Channel Catfish	
Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)
5.0	0.1	5.0	0.1	8	0.2	12	0.5
5.5	0.1	5.5	0.1	9	0.4	13	0.7
6.0	0.2	6.0	0.1	10	0.5	14	0.9
6.5	0.2	6.5	0.2	11	0.7	15	1.1
7.0	0.3	7.0	0.2	12	0.9	16	1.4
7.5	0.3	7.5	0.3	13	1.2	17	1.7
8.0	0.4	8.0	0.4	14	1.5	18	2.0
8.5	0.5	8.5	0.4	15	1.8	19	2.4
9.0	0.6	9.0	0.5	16	2.3	20	2.9
9.5	0.7	9.5	0.6	17	2.7	22	3.9
10.0	0.9	10.0	0.7	18	3.3	24	5.2
10.5	1.0	10.5	0.8	19	3.9	26	6.8
11.0	1.2	11.0	1.0	20	4.6	28	8.7
11.5	1.4	11.5	1.1	21	5.4	30	10.9
12.0	1.6	12.0	1.3	22	6.2	32	13.5
12.5	1.8	12.5	1.4	23	7.2	34	16.4
13.0	2.1	13.0	1.6	24	8.2	36	19.8

Use the standard weight data above to calculate relative weight:

Assessment year	Bluegill RW	Redear RW	Bass RW	Catfish RW
2019	105%	110%	82%	91%

**STEP
4****Defining Future Goals**

Congratulations! You have described the specific management goals you have for your pond, collected important pond data throughout the year, and summarized fish populations with PSD and/or RW. With these numbers and observations, you are now ready to reflect on the data you have collected to see how well they align with your goals. It is also a good time to think about additional sampling or management (e.g., adding fish habitat) that you may wish to do next year.

Please answer the following questions based on the Fish Management Option you selected at Step 1 (page 3):

◆ **Are the fish species in balance and at a desirable size?**

If not, what are some things you can do to improve the health of those species?

◆ **Did you add artificial habitat? If so, record type, location and number:**

- ◆ **Did you apply herbicides to control unwanted vegetation?** If so, record the name of the herbicide, the EPA registration number found on the label, the application rate selected, application methods used, and the dates of application. You may also wish to record how effective the herbicide treatments were in reducing vegetation.

- ◆ **Did you add supplemental food or artificial fertilization to your pond?**
If so, record the type, amount, location, duration, etc.:

- ◆ **Did you discover any unwanted fish species?**
If so, record the species, number, location, and if any removal measures were conducted:

POND MANAGEMENT



◆ **Did the pond experience a fish kill during the year?**

If so, can you estimate number of dead fish, species, etc.

◆ **Please record any other relevant information about your pond over the past year.**

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