

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**FISHPOND MANAGEMENT**

(Ac.)

**CODE 399**

**DEFINITION**

Managing impounded water for the production of fish or other aquatic organisms (non-commercial use).

**PURPOSE**

1. To provide favorable habitat for fish and other aquatic organisms.
2. To develop and maintain a desired level of production.
3. To develop and maintain a desired species composition and ratio.

**CONDITIONS WHERE PRACTICE APPLIES**

In warm- and cold-water ponds, lakes, and reservoirs.

**CRITERIA**

**General Criteria Applicable To All Purposes**

Constructed ponds will meet or exceed the requirements of the NRCS Field Office Technical Guide (FOTG) Pond Standard 378.

All Federal, State and Local regulations will be followed and necessary permits obtained prior to stocking.

Livestock will be excluded from entering the pond.

The pond will be protected from contamination from barnyards, septic tanks, pesticides, excess nutrient runoff and other types of pollutants.

The site will be protected from flooding and sedimentation.

The source of water will be sufficient to maintain the planned water level.

- Invasive species, or species that may become invasive in surrounding waters, will not be stocked.

**Additional Criteria To Develop And Maintain A Desired Level Of Production**

Maintain a minimum depth for fish survival of eight (8) feet over 25 percent of the pond area, or six (6) feet over 50 percent of the area.

Maintain aquatic vegetation levels of less than 20 percent of the water surface area.

**Additional Criteria To Develop And Maintain A Desired Species Composition And Ratio**

A fisheries plan will be developed with the landowner to maintain the desired species composition and species ratios.

All Largemouth Bass, Bluegill and Redear will be stocked in the same year.

Largemouth Bass will not be harvested until they have successfully spawned. Normally this will be May or June of the second summer after stocking.

To maintain proper species balance, and to keep species such as Bluegill from overpopulating and stunting, the number of small fish will be controlled by at least one of the following methods.

- Avoiding highly prolific species such as Green Sunfish or Black Bullhead
- Protecting predators such as Largemouth Bass by limiting the Bass removal to 25 or less per acre of surface water per year
- Using a size limit to determine Largemouth Bass removal. Do not remove Bass that are smaller than 12 to 14 inches in length.

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- Drawing the pond down to one-half its normal surface area. This forces small fish into open water where larger fish can capture them. It also reduces late nesting by Bluegills by exposing shallow areas where nesting occurs. Drawdown will begin in August or early September, and will be held at a low level for about three (3) months. Allow to refill in November to a minimum depth of eight (8) feet to prevent winterkill.
- Utilizing wire-mesh cylindrical fish traps to remove small Bluegill and Redear
- Removing small fish by seining shallow waters.
- Introducing additional predators such as Striped Bass, Walleye and Northern Pike as recommended by a professional fisheries biologist
- Using fish toxicants, such as Rotenone® and Antimycin®. **Note however, that these chemicals are restricted use pesticides and must be purchased and applied by a licensed applicator.** A permit may be required from the Director of the Division of Fish and Wildlife, Indiana Department of Natural Resources (IDNR). Contact the IDNR District Fisheries Biologist to determine if a permit is required. Fish toxicants should be considered a last resort to control the overpopulation of small fish because they are non-selective, meaning that all fish will be killed by use of these chemicals. Fish killed with Rotenone should not be consumed humans or animals.

Except where otherwise recommended by a professional fisheries biologist, species selection and stocking rates will follow Tables 1, 2 and 3 for ponds between one-half and five acres in size. Stocking rates, species selection, and species combinations will depend upon the size, depth, water temperature, and water quality of the area to be stocked. Note that when stocking, the goal is to maintain a 5:1 Bluegill:Largemouth Bass ratio.

**Table 1 – Single Species**

Species	Stocking Size	No./Acre <sup>1</sup>
Largemouth Bass	2"-3"	200
Bluegill	1"	1000
Channel Catfish	Over 6"	100

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**Table 2 – Fingerling Combinations<sup>2</sup>**

Species	Size	No./Acre <sup>1</sup>
Largemouth Bass	2-3"	200
Bluegill	1"	1,000
Channel Catfish	Over 6"	100
Largemouth Bass	2-3"	200
Bluegill	1"	700
Redear	1"	300
Channel Catfish	Over 6"	100

**Table 3 – Adult Combinations<sup>2</sup>**

Species	Size	No./Acre <sup>1</sup>
Largemouth Bass	10-12"	10
Bluegill	4"	3-5
Channel Catfish	6-12"	100
Largemouth Bass	10-12"	10
Bluegill	4"	3-5
Redear	4"	10
Channel Catfish	6-12"	100

<sup>1</sup>Surface area of water

<sup>2</sup>See "Considerations" for ponds less than one-half acre, or greater than five acres in size

**CONSIDERATIONS**

Consider the use of seining, catch records, and observations in the development of a fisheries plan.

Consider not stocking ponds less than one-half acre in size with a Bass/Bluegill combination. Ponds of this size should be stocked with only Channel Catfish at 500 to 1000 per acre. When stocking only one species, size is not as important as when Catfish are stocked in combination with other species. However, a minimum size of six (6) inches is recommended.

Consider contacting the local IDNR District Fisheries Biologist for recommendations on stocking ponds larger than five acres, or when alternative stocking methods are desired.

Consider stocking only new or renovated ponds. With the exception of Channel Catfish, adding fish to an existing population will aggravate the problem of overpopulation.

Consider stocking only native fish species.

Avoid stocking Black or White Crappies and Yellow Perch in ponds five acres or less in size, as they will tend to have stunted growth.

Consider effects of pesticides, herbicides and fertilizers used in the drainage area above the site, which may have a negative impact on water quality.

Consider constructing wetlands, installing filter strips, or planting other vegetative practices above the fishpond to enhance water quality and to provide additional wildlife habitat.

Consider consulting the IDNR District Fisheries Biologist for special recommendations concerning the control of fish diseases or parasites.

Consider stocking fathead minnows, topminnows, or goldfish to reduce mosquito production. This type of biological control can be a viable control method where the use of pesticides is not preferred. Stocking mosquito fish (*Gambusia affinis*) as a means of mosquito control is not recommended. Studies indicate that mosquito fish will feed on naturally occurring mosquito predators including amphibians, reptiles and other beneficial organisms.

Consider contacting a professional fisheries biologist before stocking sterile grass carp, a.k.a. "triploids," as biological control agents.

Consider contacting an IDNR District Fisheries Biologist when considering the release of insects as biological control agents to control purple loosestrife.

Consider methods to prevent fish from escaping into adjoining waters.

Consider the use of fish toxicants to control unbalanced populations of fish or to remove rough fish before stocking. See restrictions under "Additional Criteria To Develop And Maintain A Desired Species Composition And Ratio".

Consider methods to prevent introduction of non-native species into adjoining waters where native species might be adversely affected, as well as methods to prevent non-compatible species from entering the pond, lake or reservoir.

Avoid artificial feeding except when raising Channel Catfish, since food is not normally a limiting factor. Feed only the amount that can be eaten at the time of feeding.

Consider reducing the possibility of winterkill by removing snow from clear ice to permit sufficient light transmission for photosynthesis of algae and other submersed plants. Mechanical water aerating equipment, with capacities of 100 gallons per minute per acre-foot, can also be used.

Consider providing additional fish and wildlife habitat within or around the impoundment for cover and breeding purposes that will not compromise the integrity of the structure or the purpose of this practice.

Because of the many disadvantages of fertilization, it is not recommended that a fertilization program be implemented. Fertilization can promote aquatic vegetation growth rather than plankton. Increases in aquatic vegetation can increase chances of summer and winter fish kills as the vegetation decays. Plankton blooms can also occur, damaging the appearance of your pond by making it a soupy, green color. Once fertilization is started, it must become a permanent part of a management program or a pond's carrying capacity is reduced, often resulting in over-crowded, slow-growing fish.

## PLANS AND SPECIFICATIONS

Plans and specifications for fish and other aquatic organism management will be in keeping with this standard and will describe the requirements for applying this practice to achieve its intended purpose. Specifications for this practice will be prepared for each site. Specifications will be recorded using approved specifications sheets, job sheets, narrative statements in the conservation plan, or other documentation.

Requirements for the operation and maintenance of this practice will be incorporated into site specifications.

## OPERATION AND MAINTENANCE

The client will receive a plan or specifications describing the following management and corrective actions that are required for the successful management of the pond, lake or reservoir.

- Managing fish or other aquatic organism populations.
- Supplemental feeding.

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- Removing undesirable and overpopulated organisms.
- Aquatic plant control.

### **Aquatic Plant Control**

Management strategies will be implemented when aquatic vegetation covers more than 20-25 percent of the surface water area. Control will be obtained by the use of the mechanical, chemical or biological methods listed below.

1. Mechanical - During construction, deepen at least 75 percent of the pond shoreline to a slope of 3:1 or steeper and to a depth of three (3) feet below permanent pool level. After construction, physical removal can be accomplished by hand pulling and raking. Mechanical removal can be effective in small ponds or spot treatments on areas such as swimming beaches. It is very labor intensive and not usually practical for larger areas.
2. Chemical – Prudent use of approved chemicals can be an effective technique for controlling aquatic plants in ponds. Read and follow label directions. Contact the local Purdue University Cooperative Extension Service Specialist, or IDNR District Fisheries Biologist, for herbicide recommendations to control aquatic plants.

Important points to remember when treating aquatic vegetation are as follows.

- Identify the problem plant and select the appropriate herbicide.
  - Use only registered, approved herbicides.
  - Carefully read and follow all herbicide label directions.
  - Distribute the herbicide evenly, covering all areas in the treatment zone.
  - Do not over treat or apply the herbicide to an area larger than needed.
  - Treat submergent vegetation and algae early in the growing season.
  - Properly dispose of empty containers and unused herbicide.
3. Biological - Pond owners are not allowed to buy grass carp, or to stock their own ponds. An aquaculture permit holder must deliver and stock the fish. A stocking permit may also be required. Contact an IDNR District Fisheries biologist for additional biological control methods.

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**REFERENCES**

Goodsell, J. A. & L. B. Kats. 1999. *Effect of introduced mosquito fish on Pacific treefrogs and the role of alternative prey*. Conservation Biology. 13: 921-924.

Grubb, J. C. 1972. *Differential predation by Gambusia affinis on the eggs of seven species of anuran amphibians*. American Midland Naturalist 88: 102-108.

Illinois NRCS FOTG Standard 399 *Fishpond Management*

IDNR Division of Fish and Wildlife, *Aquatic Nuisance Species*  
<http://www.in.gov/dnr/invasivespecies/>

IDNR Division of Fish and Wildlife, *Fishing*  
<http://www.in.gov/dnr/fishwild/fish/>

IDNR Division of Fish and Wildlife, *Indiana Fish Pond Management*  
<http://www.IN.gov/dnr/fishwild/publications/fsmgt/fishpd.htm>

Komak, S. & Crossland, M. R. 2000. *An assessment of the introduced mosquito fish (Gambusia affinis holbrooki) as a predator of eggs, hatchlings and tadpoles of native and non-native anurans*. Wildlife Research. 27(2):185-189

Lawler, S. P., et al. 1999. *Effects of introduced mosquito fish and bullfrogs on the threatened California red-legged frog*, Conservation Biology. 13: 613-622

USDA Natural Resources Conservation Service, Agriculture Handbook 590 *Ponds – Planning, Design, Construction*

The Indiana Department of Natural Resources has statutory responsibility for regulating the importation of fish (IC 14-22-25-2) and regulates possession of live exotic nuisance species of fish (312 IAC 9-6-7). Listed fish are illegal to import, possess, or release into public waters without a permit. As of December 1, 2002, the department issued an emergency rule that modifies the list of fish species to include the following species:

- Black Carp (*Mylopharyngodon piceus*)
- Bighead Carp (*Hypophthalmichthys nobilis*)
- Silver Carp (*Hypophthalmichthys molitrix*)
- White Perch (*Morone americana*)

- Snakehead Fish (28 species in Family Channidae)

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