Dear Cooperator:

Enclosed are recommendations for construction and managing your pond for greater fishing quality.

Possibly the most important factor in developing a "worry-free" pond is the proper location and construction of the pond. The watershed of a pond should not exceed 10-20 acres per estimated surface acre of pond. For example a 1.5 acre pond should have 15 to 30 acres of watershed. This will help reduce the size of the overflow pipe required, siltation, and the accumulation of nutrients. Silt-retention basins constructed in the "upper" end of the pond can capture silt/nutrients and can be cleaned periodically. This reduces nutrient accumulation in the main pond.

In general the larger and deeper the pond can be constructed the better. Deep ponds will have fewer problems with aquatic plants and lower likelihood of winter fish kills. Larger ponds support a wider diversity of species and a much greater level of fish harvest. They are more resilient to fluctuations in the fish population. However, future cost should be considered prior to determining the size.

Dam construction and maintenance is critical. The dam must be "keyed" so water cannot flow under or through the dam. Anti-seep collars must be placed on any pipes set in the dam, so water cannot seep along the length of the pipe. Only grasses should be allowed to grow on either side of the dam. Tree roots allow for pathways for water seepage. Trees growing on dams will result in the dam breeching and failing.

The next most important aspect of developing your pond is proper stocking. Always start with the smallest fingerlings available. They will grow very quickly and cost much less than larger fingerlings. Adult fish should be avoided due to the potential to reproduce too soon, resulting in an overpopulation of that species.

Largemouth bass and bluegill are the two species determined to provide the best fishing in warm water ponds throughout the Midwest and U.S. In addition, redear sunfish and channel catfish are also commonly stocked. These four species will provide the bulk of the fishing opportunity in most ponds.

Many cooperators ask if the redear sunfish is the same as a hybrid sunfish. The redear sunfish is a distinct species and is not a hybrid. As an adult, redear feed heavily on snails and freshwater mussels (often called "clams"). In doing so they utilize a food source that other fish do not and will increase the amount of fish produced in your pond. Hybrid sunfish are generally not recommended in most ponds.

It is **wise** for you to never stock or allow anyone else to stock or release any other fish into your pond! Stocking inappropriate species, or adults of desirable species at the wrong time, will result in poor fishing and an expensive rehabilitation using rotenone, a chemical which kills fish. Stocking adult fish from other sources rarely results in improved fishing quality. Discussed other species of fish with your biologist and a list of reliable sources for the correct species can be provided.

Fathead minnows are recommended for stocking in new ponds either with bass or prior to stocking bass. Fathead minnows will quickly be eradicated by bass. About 5 lbs. per acre should establish a low density population which will provide a boost in growth rates for stocked fish, especially bass.

NEVER allow golden shiners to be introduced into your pond! Unlike fathead minnows, golden shiners will not be eliminated by bass, will generally overpopulate, compete with bluegill for food, and can only be eradicated by chemicals or complete draining! Never allow bait to be released after fishing. If not kept, toss unused bait in the grass.

Regulating the harvest of fish from the pond is the next critical activity. Creel limits alone do not provide enough protection from overharvest. Selective harvest of fish using length limits will maintain balanced growth rates for all species and preserve fishing quality. In many ponds harvest may not be necessary, however, bass are actually more likely than bluegill to overpopulate in time if not harvested. Care is required to not overharvest bass, otherwise bluegill and redear sunfish may "over-populate." Overpopulation results in too many individuals competing for limited food resources, resulting in slow growth rates and reduced fishing quality.

Initially bass should NOT be harvested until the pond owner starts catching bluegill which are at least 8 inches or longer. This is important in maintaining large bluegill! Once large bluegill are being caught, and if primarily 11-13" bass are being caught, a slot-length limit for bass should be implemented. Slot limits allow for the thinning of small bass, protection of the intermediate-size fish, which are important for predation pressure on bluegill, and the occasional harvest of large trophy, bass. A slot length limit requiring the release of bass from 13 to 18 inches will provide optimum fishing quality while allowing harvest of smaller bass which are big enough to eat. The bass harvest should be recorded and stopped if harvest will exceed maximum number or pounds recommended for harvest by your district biologist. This number is based on surface area, soil types, and the carrying capacity of you pond.

New information has come to light regarding bluegill management! The presence of large adult male bluegill will inhibit sexual maturity in smaller males. The inhibition of maturity results in faster growth rates in smaller bluegill. Therefore, pond owners will want to protect their larger bluegill from overharvest with a creel (number) and length limit. This will prevent angler-induced stunting of bluegill populations.

The use of maximum length limits, requiring the release of some or all large individuals, will protect the proper sizes while allowing harvest of "smaller" bluegill. The size limit should be adjusted based on the largest size bluegill caught. For instance if anglers are catching 8-inch bluegill and only the occasional 9-inch fish, the length limit should be set at 8 to 8.5 inches. Harvest under the size limit is acceptable within reason (15-20/day). Harvest over the size limit should be very modest, if at all.

Redear sunfish do not seem to follow the same constraints on growth as bluegill and can be harvested at any size. Channel catfish also can be harvested at any desirable size. Creel limits may be beneficial, depending upon fishing pressure, harvest rates, and the size of the pond. Often pond owners are hesitant to harvest channel catfish and end up with more large catfish than they like. If you are not interested in harvesting catfish, initial stocking rates should be reduced or this species disregarded.

Despite popular misconceptions, channel catfish can reproduce in your pond and can even overpopulate if bluegill and bass are not present. However, bass and bluegill usually eat all of the young channel catfish produced in a pond, requiring periodic restocking to maintain suitable numbers. Restock channel catfish of at least 8 inches to avoid bass predation. Studies have indicated that this is the most cost effective size. Adding an additional 20% to the number harvested will account for any channel catfish lost to natural causes.

If properly constructed, your pond will **benefit tremendously** from the presence of rooted aquatic plants (macrophytes). The benefits include; clearer water, increased competition for nutrients with undesirable plant species (reducing chances for summer fish kills), a wider diversity of food for fish, a greater abundance of fish, and an abundance of cover which cannot be duplicated with woody or man-made cover.

In most ponds, 10 - 20% of the surface area supporting aquatic plants will provide sufficient habitat for fish without restricting fishing. In older ponds that have "silted-in" and are shallow, it is unfortunately difficult to keep rooted plants and/or algae from becoming overly abundant. In new ponds, plants should be started a soon as the pond approaches full capacity.

Wild celery, American pondweed, wild blue iris, three-square bulrush, softstem bulrush, and some arrowhead species appear to be good choices for local ponds. These species are easy to control if necessary. These species tend to be less aggressive and grow in shallower depths than most other species.

Starts of several of these species are available through Champaign Co. Soil and Water Conservation district. Other than wild celery, ordering plants from private nurseries located long distances from east-central Illinois is NOT recommended. For instance, plants from Wisconsin have exhibited much more aggressive growth characteristics than plants from local populations. I keep a list of cooperators who are interested in plants, and can occasionally provide pondweed in July. I also have information regarding the different plant species listed above.

If aquatic plants reach nuisance proportions, or invasive species establish themselves, then control measure may be necessary. Three basic methods of control are available: mechanical, biological, and chemical. Each method has advantages and disadvantages.

Biological control with grass carp is a cheaper alternative to herbicides, but grass carp seem to provide an all-or-none effect (i.e. they must be overstocked to get desired results). This usually results in the eradication of rooted aquatic plants and the release and/or non-use of nutrients (nitrogen and phosphorus). This will result in an overabundance of microscopic algae (phytoplankton bloom) making a pond more susceptible to a summer fish kill due to low oxygen at night. Grass carp are indirectly responsible for more than 80% of all summer fish kills in District 11 ponds due to this effect.

Although chemicals are more expensive, they are more flexible in controlling plants in particular areas or controlling certain species. There is a wide variety of herbicides which are approved for use in waterbodies. Modern aquatic herbicides do not persist for long periods of time which reduces the chance for harming non-target plants or animals, including humans. One size does not fit all! Your district fisheries biologists can recommend the appropriate herbicide for the type of plant you are trying to control.

If needed, aquatic plant samples can be sent to fisheries biologist's office for identification. Contact your biologist before sending the plants so he or she will be available to identify them before they rot. To prepare the sample, simply place the plants in a plastic bag, without any extra water, eliminate any extra air, and drop them in the mail early in the week. Please write "**refrigerate upon arrival**" on both sides of the envelope in **LARGE** letters to prevent spoiling if your biologist is away from the office. Also, include your name, address, and daytime phone number.

Using chemicals **not** approved or labeled "for aquatic use" can cause serious problems. These chemicals do not provide warnings regarding restrictions for human or animal drinking water consumption, human consumption of fish, irrigation, or swimming. (For example: One unapproved chemical will stunt the growth of all fish in your pond by wiping out the food base for up to one year after use. Eating fish exposed to this chemical is restricted for one year also, but not listed.) It is always best to use the proper chemical approved for aquatic use that lists the restrictions for your own safety and maximum benefit for your pond. Also read all of the directions and follow them to the letter to maximize results. Specific information can be found in the free publication, *Aquatic Plants, their identification and management*.

The IDNR has several free publications to help you maintain and enjoy your pond. These publications can be found through the IDNR website of the IFISHILLINOIS website at: http://www.ifishillinois.org/publications/index.html. If have any questions regarding this information, please do not hesitate to contact me at (217) 345-2420, or at 1660 W. Polk Ave., Charleston, IL 61920.

Sincerely,
Michael J. Mounce
District 11 Fisheries Manager

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