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Good Pond Fishing is No Accident

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GOOD POND FISHING IS NO ACCIDENT

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Agricultural Experiment Station
South Dakota State University
U.S. Department of Agriculture

GOOD POND FISHING IS NO ACCIDENT

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There are approximately 100,000 ponds (also called stock dams) in South Dakota; 48,000 contain fish. Most ponds are privately owned and are on ranches in western and central South Dakota.

Ponds must be managed if they are to provide quality angling. And if properly managed, they can provide memorable fishing year after year.

A common misconception is that a pond can "have it all," that it can be stocked with any and all fish species and that the fishing will be good for all species. It is more likely that fishing may not be good for **any** species. In reality, you must decide what you want and choose that management option that best fits your needs.

We present the following key and discussion to help you decide the best pond management strategy for you. Start with Number 1 in the key and follow the directions after the answer that best fits you and your pond.

Key for Successful Pond Management

1. Is the pond at least 15 feet deep in the fall and 2 acres in area?
Yes: Go to Number 2.
No: The pond is susceptible to winterkill and should be managed for short-term production, or managed to reduce the chances of winterkill. See page 2.
2. Is the pond clear most of the year? Is transparency greater than 15 inches (elbow to fingertip) for most of the year, excluding a summer algae bloom?
Yes: Go to Number 3.
No: The pond should probably be managed for channel catfish only. See page 4.
3. Are there fish already present in the pond?
No: Go to Number 4.
Yes: See page 6.
4. Do you want a trout fishery?
No: Go to Number 5.
Yes: See page 4 for necessary conditions to stock trout. No stocking of warmwater species such as largemouth bass, northern pike, and bluegill can be made in trout ponds.
5. Do you intend to actively manage this pond, realizing that time, effort, and expense may be involved?
No: Go to Number 6.
Yes: Go to Number 7.
6. If you prefer not to spend time managing the pond, choose the "safe" management option of largemouth bass only - see page 2. Stocking a panfish species such as bluegill in a pond that is not well-managed usually results in a large number of small bluegills.
7. If you are willing to spend the necessary time managing the pond, choose one of these management options.
 - a. the "balanced" or all-purpose largemouth bass/bluegill option (production of moderate sizes and numbers of both largemouth bass and bluegill) - see page 2.
 - b. the panfish option (production of large panfish such as bluegill) - see page 3.
 - c. the big bass option (production of larger sizes of largemouth bass) - see page 3.
 - d. a crappie or yellow perch fishery (really a panfish option) - see page 3.
 - e. other species: smallmouth bass - see page 5; walleye - see page 5.

Winterkill

Shallow (15 feet or less) ponds winterkill easily in South Dakota. Fish do not die from the cold or because the water freezes to the bottom. They die because they run out of oxygen.

Winterkills are most common if there is heavy snow cover over the ice during a long cold spell. The snow blocks light, and the pond's microscopic plants cannot grow and give off oxygen in the dark. When these plants die and decompose, dissolved oxygen in the water is used by bacteria, further depleting the oxygen supply. If the winter is long enough, the oxygen level may drop to the point that the fish die.

Most game fish, like largemouth bass, bluegills, crappies, yellow perch, and walleyes, will be the first to die. They are more sensitive to low oxygen levels than "rough" fish such as carp or bullheads.

The rule to follow in ponds that are likely to winterkill is "fish fast!" Your best management strategy is to get in as much fishing as quickly as possible and be prepared to start over after the winterkill.

In shallow, warmwater ponds, the best management strategy is probably simultaneous stocking of largemouth bass and bluegill, with harvest as soon as you want. We recommend that 100 largemouth bass fingerlings (2-3 inches) and 500 bluegill fingerlings (1-2 inches) be stocked per acre of water. Keep in mind the legal daily creel limits, but your main objective is to obtain as much fishing as quickly as possible before a winterkill occurs.

A complete winterkill kills all fish, and you can restart the management process. However, winterkills are usually **partial**. You will probably be left with rough fish (bullheads and carp), because they are more resistant to winterkill.

You have two options. You can wait for a complete winterkill before restarting the management program, or you can eliminate the remaining fish. Restocking desirable fish into ponds that contain undesirable species is **not** recommended; it is almost never successful.

Ponds that are susceptible to winterkill may not meet the criteria to qualify for stocking by the South Dakota Department of Game, Fish and Parks (see page 6). The remaining options all assume that the pond is not susceptible to winterkill under normal circumstances.

Largemouth bass only option

Largemouth bass do not require other fish species as prey, as they feed on smaller bass, crayfish, frogs, and tadpoles. This is undoubtedly one of the safest management options for South Dakota ponds, and may be the best option if you have little time or desire to actively manage the pond.

You can stock fathead minnows with the largemouth bass, but the minnows will eventually be eliminated from the pond by bass predation. In clear, weedy ponds, the golden shiner can be used as a source of prey. If vegetation is sparse or lacking, largemouth

bass predation will greatly reduce or eliminate the golden shiner population.

In some ponds, especially those that are clear, have moderate amounts of aquatic plant growth (20 to 40% surface area coverage), and are protected from the wind, largemouth bass may overpopulate when stocked alone in a pond.

You can tell this is happening when you consistently catch lots of 8- to 11-inch bass and almost none over 15 inches. The fishing is still good, unless you want big bass. If so, read the "big bass option" section. Otherwise, read the "panfish option" section.

All-purpose option

If there is a variety of species in the pond, this option gives you the opportunity to catch (but not always keep) fish of a variety of sizes.

To catch bass over 15 inches long with any consistency in ponds that are clear, have moderate aquatic plant growth, and are protected from the wind, the numbers of 8- to 12-inch bass must be reduced. In a pond of average fertility, no more than about **30** 8-to 12-inch bass can be harvested per acre per year after the fourth year from stocking. The removal of these small bass reduces competition and makes it possible for some bass to attain lengths over 15 inches.

To have at least 10% of the catchable-size bass survive to lengths of 15 inches and longer, **all** 12- to 15-inch bass that are caught should be released. A good

supply of 12- to 15-inch bass will also reduce densities of small bluegills so that some individuals grow to sizes of interest to anglers. This management option will produce bluegills of various sizes, with a few reaching 8 inches.

Most South Dakota ponds managed under this option do not produce high numbers of large bluegills. Intermediate-size bluegills tend to be quite abundant. However, such bluegill populations often create desirable fishing for kids.

Channel catfish can be included in the pond stocking complement. Catfish that are harvested must be replaced with 8-inch or longer individuals to maintain a sizable catfish fishery. Without periodic supplemental stocking, few catfish will be caught, because few young channel catfish can survive bass predation.

The all-purpose option is not as safe as the largemouth bass only option. In some ponds, largemouth bass populations may not reach densities high enough to control bluegill populations, and stunted bluegills may result. Recruitment (reproduction and survival to adulthood) of largemouth bass tends to be high in clear ponds that have abundant aquatic plants and are somewhat protected from the wind. In ponds that are somewhat muddy, or have little aquatic vegetation, or are shallow and/or windswept, recruitment of largemouth bass may be low. Such ponds are probably best managed with the largemouth bass only option. If bluegills are present in a pond with low bass recruitment, **no** bass less than 15 inches long should ever be harvested.

Panfish option

Ponds that have or likely will have high recruitment (reproduction and survival to adulthood) of largemouth bass can be managed under the panfish option. Ponds that are clear, have moderate aquatic vegetation, and are somewhat protected from the wind are good candidates for this management option.

Adopt the panfish option if catching big panfish is more important than harvesting bass or catching big bass. High densities of 8- to 11-inch largemouth bass are more effective at controlling bluegills and other panfish than moderate numbers of bass of several sizes. By deliberately overpopulating bass, you will create a pond with more 8-inch and longer bluegills.

Other species of panfish can be used for this option. High-density largemouth bass populations will thin reproduction by bluegills, crappies, bullheads, and yellow perch, and the survivors will grow to sizes of interest to anglers. However, it is essential to **choose only one** of these species for each panfish-option pond. The reproductive capacity of several species of panfish is generally too high for largemouth bass to control through predation.

In the past, panfish species were usually not recommended for ponds because they tend to overpopulate if bass numbers are low or if the pond is muddy and the bass cannot see to feed. You could begin by stocking only largemouth bass, to make sure that a high-density bass population does indeed develop.

You will know this has happened when angling catch rates become

high, with most bass caught being 8-11 inches long. At this time, you can introduce adult panfish, stocking approximately 20 adults per acre of water. After adult panfish spawn, it will take about 3-4 years for their offspring to reach sizes of interest to anglers.

For pond owners desiring the "safest" panfish option, **all** largemouth bass that are caught should be released. Few, if any, bass over 15 inches long would exist in such a pond. If you would like to harvest an occasional bass, take only those at least 15 inches long.

It is **essential** to prevent overharvest of largemouth bass in any pond managed under the panfish option! If the bass are overharvested, the panfish will undoubtedly overpopulate. The pond will then contain high numbers of small panfish and few bass.

Big bass option

Largemouth bass can reach larger sizes in ponds stocked with only largemouth bass **or** in ponds stocked with both bass and bluegills.

In ponds containing only largemouth bass, the sizes of bass present can be increased by harvesting some of the smaller ones. For ponds of average fertility, approximately **40** bass that are 8-12 inches long should be harvested per acre per year. Perhaps **five** 12- to 15-inch bass might also be harvested per acre per year, but all other bass of this length should be released.

Eighteen-inch bass (4 lb) can be produced in a pond with such a

management strategy, and these larger bass can be harvested as **occasional** trophies.

A similar harvest strategy for bass can also be used in ponds containing both bass and bluegills. The quality of bluegills in such ponds will be sacrificed to produce fewer, larger bass. In fact, ponds managed in such a fashion can reach a point at which bluegills become overpopulated and bass recruitment (reproduction and survival to adult) ceases.

Management of a bass-bluegill pond with the “big bass option” is **not** a safe option in South Dakota and should only be attempted by extremely interested pond owners.

Channel catfish only option

It is best to stock channel catfish only in muddy ponds where sight-feeding fish like bass and bluegills would do poorly. Large, clear ponds will produce about the same weight of catfish whether or not they contain bass and bluegill.

Ponds managed under this option should be free of any structure such as sewer tiles, stumps, large rocks, or tires that would provide seclusion for spawning. Ponds that contain only catfish often have excessive numbers of small catfish when such suitable spawning sites exist.

If reproduction can be avoided, replacement fish will have to be stocked periodically to maintain the population. Fathead minnows can also be stocked to provide additional food for

catfish and a ready source of bait for the pond owner.

This option is the easiest of the five options to manage so long as natural reproduction does not occur. Harvest can begin as soon as fish reach the size you want, and there is no restriction, other than applicable creel limits, on the overall number harvested.

As catfish numbers decrease, fishing success will decline, so additional stocking will be required to maintain catfish at a density of approximately 100 fish per acre. Catfish at least 8 inches long should be stocked in the fall or spring when water is cool. Stock the same number as you harvested in previous angling seasons with an additional 10% per year to replace fish lost to natural causes.

Channel catfish are truly a warmwater species. In South Dakota, they have a short growing season. Expect to have harvestable fish within 2-3 years if fingerling fish are stocked and within 1-2 years if 8-inch fish are stocked.

Trout pond management

Rainbow trout require water temperatures below 70 F and a high oxygen content. Before stocking, monitor water temperatures throughout the previous summer. Generally, only deep ponds in western South Dakota or the Black Hills are suitable for trout.

However, if there is a large spring in the pond, it may supply water that is cool enough in all parts of

the pond to keep trout. Larger ponds without excessive aquatic vegetation may also retain sufficient oxygen in the cool bottom waters to allow trout survival.

As a general rule, do not expect trout reproduction. Trout need to be restocked as they are harvested. We suggest an initial stocking of approximately 250 fingerling (3-4 inch) trout per acre of water. Restocking can be at the same densities and generally should be done every second or third year.

Growth of rainbow trout in South Dakota ponds is often quite rapid, with fish ranging from 8 to 12 inches by the end of their first growing season.

We do not recommend stocking fathead minnows with rainbow trout. While larger rainbows will indeed eat the minnows, they do not require fish as prey. In fact, fatheads may actually compete for food (zooplankton) with the small rainbow trout that are restocked.

Brown trout can survive in water that is slightly warmer and somewhat lower in quality than that rainbow trout must have. Thus, browns may have a place in South Dakota pond management. They are, however, more difficult to catch than rainbow trout. You could take advantage of this lower catchability by stocking a few brown trout in the hopes of producing a trophy some years down the road.

Large browns tend to eat fish. Because this habit can cause problems when you stock replacement fingerling trout (brown or rainbow), minnow

stocking might be desirable. If a pond has a large population of brown trout, you could lessen predation by stocking larger replacement trout, perhaps as large as 6-8 inches.

Brown trout should not be stocked unless you truly desire to produce this species. They are not normally available from South Dakota Department of Game, Fish and Parks for pond management (see page 6).

Brook trout require colder water than do rainbows or browns. They do best in waters that do not warm beyond the low to mid-60s F. Therefore, brook trout should not be stocked except in some Black Hills areas.

An exception might be a pond that has a sufficiently large spring to maintain the necessary water temperature. Such a spring must flow with sufficient quantity (and sufficient dissolved oxygen) to maintain a good environment for the brook trout.

We repeat that trout ponds can contain **only** trout. None of the other warmwater species such as largemouth bass, bluegill, or northern pike can be added. Predators such as bass and pike will prey on the trout. Panfish such as bluegills will overpopulate and compete with the trout for food.

Smallmouth bass

Smallmouth bass have been used in South Dakota pond management for only a few years, and we do not know their population dynamics as well as those for other species. How-

ever, results to date have been quite positive.

Smallmouth bass can be stocked as the only species in the pond. Small ones will eat mostly insects, and larger ones can eat insects, crayfish, and small bass.

Larger smallmouth bass can be produced in much the same way as for large largemouth bass ("big bass option," page 3). Fathead minnows or golden shiners can be added as a source of prey. Fathead minnows may eventually be eliminated by bass predation. However, the golden shiner has potential to provide a source of prey for smallmouth bass, especially if some aquatic vegetation is present.

Smallmouth bass should **not** be stocked with bluegills. Smallmouths are less efficient predators on panfish than are largemouth bass, and in most cases the bluegills will overpopulate. Smallmouth bass and largemouth bass should not be stocked in the same pond. In most cases, the largemouth bass is more suited to the pond environment, and will likely out-compete the smallmouths. Eventually, few, if any, smallmouth bass will remain. One exception might be in "gravel-pit" type ponds, where smallmouths often do quite well.

Northern pike

Northern pike usually have a maximum biomass of 10 pounds per surface acre of water. Thus, even though they may reproduce and maintain a population in South Dakota ponds, they do **not** control bluegills, and at this biomass few northern pikes will be avail-

able for angling. A pond stocked with bluegills and northern pike will probably end up with small bluegills.

Northern pike reproductive success will vary from pond to pond. Reproduction is more likely in ponds that have some type of marshy area. In steep-sided ponds that vary little in water level, pike may not be able to reproduce.

Walleye

Because walleyes are so popular, many pond owners want to stock them. Walleyes do not cause problems in a pond, but they are not particularly well-suited to the pond environment.

They probably will not reproduce, except in larger ponds with gravel shoals or rocky shoreline areas. They are costly to stock and difficult to obtain. In addition, a pond cannot support many walleyes.

If you still want walleyes, go ahead and add some, but any catch will be only an occasional "bonus" in the rest of your angling.

Walleyes can be part of the predator component in most pond management strategies (with the exception of trout ponds), as long as you realize they will need to be restocked every few years. Walleyes stocked into established pond communities should be at least 6-8 inches long, so they can avoid predation by fish such as largemouth bass. Stocking density can be approximately 20 fish per acre.

Walleyes are not available for pond stocking by the South

Dakota Department of Game, Fish and Parks.

Established fish communities

If a pond already has a fish community (a fish community includes all species of fish in the pond), we suggest that you read through all the management options, find the one that seems to describe the pond, and manage accordingly. However, if the pond is dominated by small sunfish or bullheads, or if common carp are present, you should eliminate these fish. Consult your local conservation officer or fisheries biologist for further information on removing unwanted fish species.

South Dakota pond stocking program

The South Dakota Department of Game, Fish and Parks (GF&P)

provides fish for stocking private waters. If you receive fish from GF&P, you must sign an agreement allowing reasonable public access and optimum harvest of resultant fish populations.

Applications can be obtained at any GF&P division office, the Pierre headquarters, or from your area conservation officer.

To qualify for trout stocking, a pond must be a minimum of 1 acre in area or 1/2 acre if flowing springs are active throughout the year. Ponds must be at least 15 feet deep over a fourth of the pond area or at least 10 feet deep with continual spring flow. The rainbow trout is the only species available, and is generally stocked on alternate years.

To qualify for warmwater fish stocking, a pond must be at least 1 acre in size and have a depth of 12 feet or more over a fourth of the pond. Species available may include

largemouth bass, bluegill, channel catfish, black crappie, and yellow perch. Most are stocked as fingerlings, and only a single stocking is usually provided. Fingerling stocking of warmwater fish is generally most successful and most likely to be approved when no other fish are present in the pond. If you want to purchase larger fish for your pond, ask the GF&P Fisheries Division office in Pierre for a copy of its list of commercial fish growers.



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