



See You Out There

# NEBRASKA POND GUIDE



Private Waters  
Program



Management Assistance for  
Lakes, Ponds, Pits & Streams

## FISH STOCKING

Properly stocking a pond can make a world of difference in the quality of fishing it offers for years to come. Choose a stocking strategy that is geared toward the kind of fishing desired. Just about anything can be stocked if the desire is just to have something to catch. However, most people would like a low maintenance pond that provides good sport fishing, as well as fish to eat. After years of study in ponds across the country, state fisheries biologists recommend a stocking combination of largemouth bass, bluegill, and channel catfish as the best choice for warmwater ponds. Once bass and bluegill are stocked, they typically do not need to be restocked; however, there will likely be a need for an occasional supplemental stocking of channel catfish. Additional bass and bluegill should only be stocked after evaluating their relative abundance and size distributions. See **PG13-4** on how to assess fish populations.

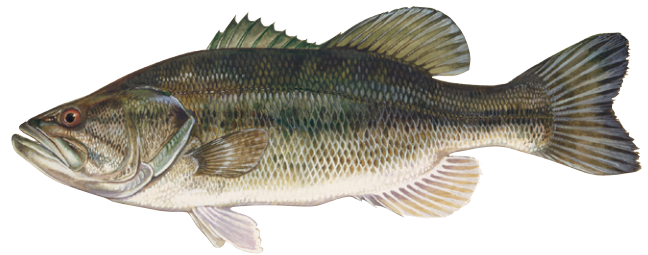
The initial stocking of largemouth bass and bluegills can be obtained from the Commission, or purchase them and channel catfish from a licensed private fish hatchery. Moving fish from a neighbor's pond, a local lake, or nearby stream is not recommended because:

- it may be illegal if bag, possession, and size limits are not followed
- fish may be misidentified – leading to the stocking of undesirable fish species
- may not obtain the correct stocking densities
- fish may be diseased.

Ponds should be stocked as soon as possible following completion of the dam to prevent establishment of undesirable wild fish species. It normally doesn't take long for fish food items (zooplankton and aquatic insects) to become established. Water in a pond that is still filling should be at least 8 feet

deep to ensure survival – especially for over-winter survival of fish initially stocked in the fall. Summer fish stockings should be typically avoided because high temperatures and low dissolved oxygen levels could be present in the pond and reduce survival.

### RECOMMENDED COMBINATION



#### **Largemouth Bass**

Largemouth bass are large predators that are well adapted to ponds. They are sought by many anglers because of their growth potential and fighting ability. They can be easily recognized by their greenish color, the dark stripe along their sides, white belly, and a large mouth with an upper jaw that extends beyond the eye when the mouth is closed. Numerous trophy-size bass (anything over 5 pounds) are caught in farm ponds and many are near record-size (current state record – 10 pounds, 11 ounces). Bass are voracious eaters and grow rapidly when food (such as fish, crayfish, insects, frogs, snakes, mice, and other small animals) is plentiful. In healthy, established ponds, bass may reach a length of 3 to 5 inches their first summer, and 10 to 13 inches after 3 years.

Bass reproduce readily in ponds after reaching a size of about 12 inches at 2 to 3 years of age. Spawning occurs during the spring when water temperatures reach 60 to 70 degrees. The male uses

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his body and fins to fan a saucer-shaped nest in shallow water, usually near a log or other underwater structure. He then guards/protects the fertilized eggs and subsequent young for about 2 weeks, at which time the young are able to fend for themselves. Bass will maintain a population without restocking if harvest is carefully regulated; however, they usually overpopulate and do not grow large if stocked alone.



### **Bluegill**

Bluegills are a small, hard-fighting sport fish that provide angling opportunities for anglers of all ages and are good to eat. Since they are well adapted to pond life and prolific spawners, they are ideal for a combination stocking with largemouth bass. Bluegills are deep-bodied with a relatively short head and small mouth. They range in color from silver-lavender when young, to greenish-brown with an orange or yellow breast when older. They also have a blue lower gill cover, entirely black gill cover flap, and an irregular blackish spot at the base of the soft dorsal fin. Although they primarily eat insects, larger bluegill will also consume snails, small crayfish, small fish, and occasionally raid unprotected nests of other spawning fish species to eat eggs and fry.

Six- to 8-inch or even trophy-size bluegill in excess of 10 inches or 1 pound can be produced if properly managed (current state record – 2 pounds, 13 ounces). Bluegills can spawn at a length of about 3 to 4 inches, which is at 2 or 3 years of age in established populations. Fingerling bluegills initially stocked in the fall will spawn the next summer. Bluegills can spawn from late May through August with nesting beginning

in spring when water temperatures reach 60 to 70 degrees. The male constructs a small saucer-shaped depression in shallow water, fertilizes the female's deposited eggs, and then guards the eggs and young for 1 to 2 weeks. Spawning beds (many nests in close proximity) provide excellent fishing during the spawning season. Bluegills rarely need to be restocked.



### **Channel Catfish**

Although native to streams and rivers, channel catfish do well in ponds and are a favorite among many anglers. Channel catfish have a deeply forked tail, gray back, white belly, 8 black barbels around their mouth, and an anal fin with a curved bottom edge and 24-29 rays. Young catfish have some black spots, which disappear as they mature. Large males develop a bluish color and are often misidentified as blue catfish (which have an anal fin with a straight bottom edge and 30 or more rays). Channel catfish grow rapidly if sufficient food (primarily invertebrates, small fish, and aquatic plants) is present and often attain a trophy-size of 12 pounds or more (current state record – 41 pounds, 8 ounces). Fish eaten are usually dead or injured and appear in the diet when catfish reach 12 to 14 inches. Even though they are not an important part of the predator-prey relationship between bass and bluegill, they are considered a bonus fish and a pond's potential to produce fish is more fully utilized if all three species are stocked.

Channel catfish spawn in early summer when water temperatures reach 75 to 80 degrees. The male makes a nest in a hole in the bank or in a hollow log, or next to any material that will provide protection. The male then guards the fertilized eggs

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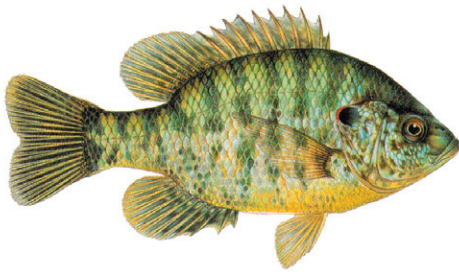

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and subsequent offspring for about two weeks. Because bass and bluegill eat most of the eggs and young, periodic restocking is necessary to maintain catfish populations in clear ponds. Restocked catfish should be at least 10 inches long to ensure good survival.

## OTHER POTENTIAL SPECIES

The following species can provide additional enjoyment or benefits; however, some can cause problems.



### **Redear Sunfish**

Redear sunfish are native to the southeastern United States. Since they can grow larger than bluegills and have a low reproductive potential, they are sometimes stocked in place of, or in combination with, bluegills. Redears are deep, slab-sided with a relatively small mouth. They are golden or light olive-green with a yellow or orange-yellow belly. The gill cover flap is black with a whitish border and adults have a prominent orange or red spot. Redears typically have low population densities, especially north of their native range, where young-of-the-year are very sensitive to winter's cold water temperatures. Therefore, ponds need to contain sufficient depths to avoid this type of winterkill.

A mixed stocking rate of two-thirds bluegills and one-third redears is utilized to ensure bluegill become established and provide adequate food for bass. Availability is somewhat limited in the state. Their spawning behavior is similar to bluegills and anglers may find them more wary and less aggressive than bluegill.

Redears are commonly called shellcrackers and feed primarily on snails, fingernail clams, and crayfish. Ponds typically need to have clear water and abundant vegetation in order for these food items to flourish and sustain a redear population. Redears can help control snails, which are a required host in the life cycle of yellow and black grubs. Although these grubs often show up in the fillets of fish, they are not harmful to humans. See **PG13-11** for information on fish diseases and parasites.


*Black Crappie*

### **Crappie**

There are two species of crappies: black and white. Black crappies have 7 or 8 hard dorsal spines with black spots scattered randomly over their bodies. White crappies are usually slimmer and have 5 or 6 hard dorsal spines with black spots arranged in vertical bars on their sides. Spawning male white crappies become very dark and boldly marked, and are often misidentified as black crappies. Spawning behavior is similar to that of largemouth bass and bluegills.


*White Crappie*

White crappies usually predominate in somewhat turbid (muddy) waters, while black crappies do better in clear water. Although crappies are very

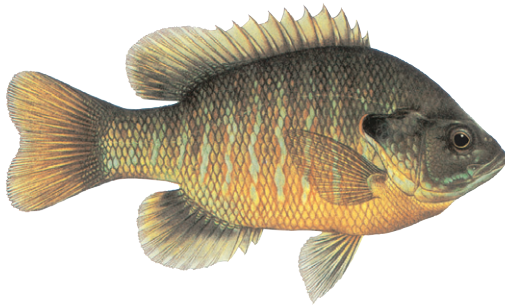


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popular with anglers, they can become a problem in ponds. Since crappies feed primarily on small fish and invertebrates, they compete with bass for food. Crappies tend to overpopulate and grow slowly if predators cannot reduce the number of young, especially when turbid water prevents their detection. However, in clear water with large numbers of bass present, black crappies can grow rapidly to lengths of 10 to 12 inches and provide quality fishing. Black crappies should not be stocked in a pond unless the pond is already producing bluegills over 8 inches long. This is a good indication that the largemouth bass population is dense enough to control crappies as well.



### **Hybrid Sunfish**

Hybrid sunfish are a cross between two sunfish species, generally green sunfish and bluegill. They are not sterile and will produce offspring that typically do not overpopulate, grow larger than either parental species, and are easier to catch due to their aggressive feeding habits. But, the growth difference is usually slight without artificial feeding.

Because hybrids do not produce enough offspring to support desirable largemouth bass populations, they should be stocked in combination with bluegills (mixed stocking rate similar to redears). Hybrids do not breed true; second generation offspring can be undesirable and exhibit a wide range of characteristics. They will have to be periodically restocked, utilizing larger fish to maintain a population when bass are present. Keep in mind hybrid sunfish are rarely recommended for stocking.



### **Black Bullhead**

Black bullheads are common in many small streams and often find their way into ponds. They are usually gray or black on top, with a white or yellow belly and 8 black barbels around the mouth. Bullheads become over-populated if stocked alone or a pond is muddy, or when very few bass are present. Their bottom-feeding activities stir up sediment and can cause a pond to become muddy, especially when they are over-populated. This hinders sight-feeding fish such as largemouth bass and bluegills and reduces pond productivity.

Spawning habits are similar to channel catfish. After hatching, young bullheads travel in compact schools called pods, often escorted by adults. In clear ponds with good bass populations, few bullheads survive. The ones that do grow to a large size are fun to catch and good to eat. Bullheads, like hybrid sunfish, are rarely recommended for stocking. As with black crappies, black bullheads should only be stocked in ponds that are producing bluegills longer than 8 inches.

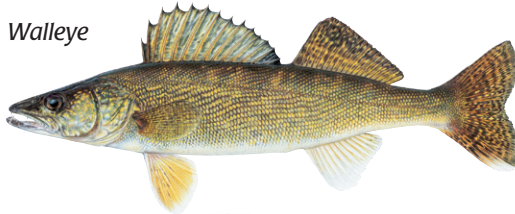
### **Northern Pike, Walleye, Flathead Catfish, Trout, Striped-White Bass Hybrid, Yellow Perch and Smallmouth Bass**

Although these fish are desired by some ponds owners and normally do not cause problems, they generally are not well suited for pond environments. Extra management efforts will be required to maintain populations of these species, if they survive at all. These species typically do not reproduce adequately in ponds to maintain populations, are costly to stock, can be difficult to obtain, and most ponds cannot support many of them.

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Northern Pike



Walleye



Flathead Catfish



Rainbow Trout



Wiper  
(White Bass x  
Striped Bass  
Hybrid)



Yellow  
Perch



Smallmouth  
Bass

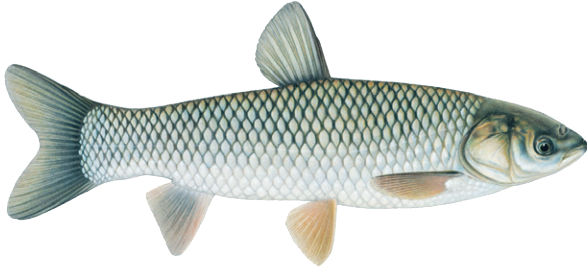
Very few ponds, particularly in eastern Nebraska, offer enough cool, clear water and/or aquatic vegetation to support walleye, northern pike, yellow perch, smallmouth bass, and striped x white bass hybrid, also known as wipers. Most ponds warm considerably during the summer, which can hinder the growth of these species and reduce survival of older fish. Although walleyes and northern pike can survive in larger ponds or lakes in eastern Nebraska, they will likely have to be restocked periodically to maintain populations. While flathead catfish can be stocked to produce a trophy fishery or as an additional predator, they will not effectively control bluegills as well as a properly managed largemouth bass population. Wipers generally require supplemental feeding in order to attain their full-growth potential.

Very few ponds are capable of supporting trout year-round. Although trout can survive past 75 degrees surface temperatures for brief periods, they typically require water temperatures below 70 degrees and a high oxygen content. If trout are desired in eastern ponds, they can be stocked to provide a seasonal fishery from fall through late spring. Unless a spring or aerated well water provides enough cool water for the pond during the summer, trout will die and have to be restocked each fall.

For ponds and lakes in western Nebraska that have adequate depth and moderate levels of submerged vegetation, yellow perch can be considered as an additional prey fish. They should be stocked in combination with bluegill, utilizing stocking strategies similar to redear sunfish. Some western and northern waters may be able to support smallmouth bass, provided the ponds contain clear, deep water, submerged vegetation, rocky substrate, and crayfish. Since they cannot compete effectively with largemouth bass, they should not be stocked if largemouth bass are already present. Consult a local Commission fisheries biologist for advice before stocking any of these species.



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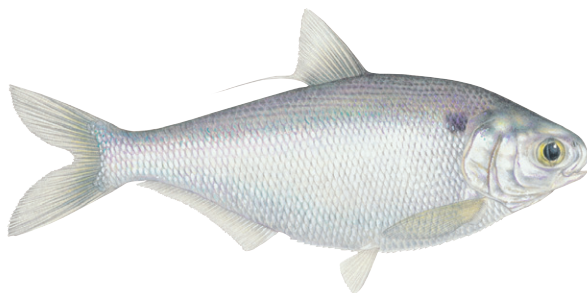
### **Grass Carp**

Grass carp are native to Asia and were brought to this country as a means to control aquatic vegetation. They usually grow larger than the common carp, often attaining weights in excess of 50 pounds, and can live for decades.

**The Commission does not recommend stocking grass carp.** Alternative vegetation control techniques should be used instead. The best solutions for a vegetation problem is to create more deep water to hinder the growth of submergent vegetation and restrict the amount of nutrients entering the pond. See **PG13-9** for additional information on vegetation control and grass carp.

## **SPECIES TO AVOID**

The following species should not be stocked in ponds. If undesirable fish are already established, they may have to be eliminated before the pond is stocked with the recommended stocking combination. See **PG13-5** for details on removing or controlling unwanted fish species.



### **Gizzard Shad**

Gizzard shad are silvery colored with a dark spot near the head and a sharp, saw-like ridge on the

belly. Although gizzard shad can be the primary food source for large game fish in large reservoirs, they are not recommended for ponds. Shad spawn from spring into summer by scattering eggs randomly in shallow water. This produces very high numbers of young shad that feed on the same invertebrates as bluegills and small bass, negatively impacting survival, growth, and body condition of young-of-the-year bass and bluegill of all ages. An overabundant population of shad can also consume most of the zooplankton, which are capable of controlling nuisance algae species. This can lead to extensive algal blooms. Adult shad normally grow too large for most bass to eat.



### **Fathead Minnow**

Fathead minnows are a dull, silvery-colored bait-fish that grow to about 3 inches in length. Fatheads feed on small invertebrates and plant material. They are hardy and very prolific. They spawn several times throughout the summer and produce very large numbers of young. An overabundant population of fatheads can remove most of the zooplankton and result in extensive algal blooms.

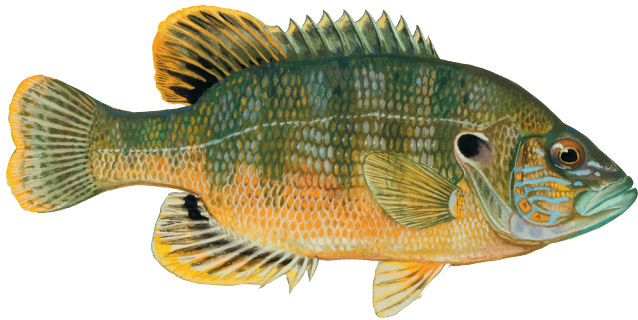
Fatheads should not be stocked in ponds to accelerate initial bass growth. Extremely high populations of minnows have been found to directly compete with stocked fingerling largemouth bass and bluegills, resulting in poor survival of their offspring. Although the young bass that survive to eat the minnows grow well, they will be low in number. The bluegill population may not be able to expand until the fatheads are eliminated by disease and/or predators. Although fatheads are excellent prey for smaller bass, bluegills are a better suited prey for adult largemouth.

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### **Golden Shiner**

Named for their gold color, golden shiners have a small upturned mouth and an obvious downward curving lateral line - a series of sensory tubes and pores extending back from the head along both sides of the body. They should not be stocked to accelerate initial bass growth rates because they will compete directly with bluegills and small bass for food.



### **Green Sunfish**

Green sunfish are often confused with bluegills and then mistakenly stocked into ponds. They have a stocky/tubular shape, a greenish color, a black gill cover flap with a whitish or yellowish margin, and a medium sized mouth that is larger than a bluegill's. Green sunfish flourish in ponds that have not yet been stocked with desirable fish. If they get large enough, or have already spawned, they can be a serious threat to the survival of bass, bluegill, and channel catfish when they are initially stocked. They normally do not pose a serious problem if they enter a pond containing a well-established bass population.

### **Common Carp**

Carp can grow to be quite large. Like bullheads, they are bottom feeders and tend to stir up sediment and cause a pond to become muddy. They tend to overpopulate and grow slowly. A well-established



bass population can control carp in ponds if good water clarity can be maintained. But, the carp that avoid predation "tie up" a lot of biomass and thus utilize nutrients that could have been used by desirable organisms.

## STOCKING RECOMMENDATIONS

### **Warmwater Ponds**

The best approach for establishing largemouth bass, bluegill, and channel catfish populations in a new pond is to stock 1- to 2-inch fingerling bluegills the first year and 2- to 3-inch fingerling bass the second year. Catfish fingerlings, ranging from 2 to 4 inches, can be stocked the same year as the bass. Bluegills should be stocked in late summer or early fall. This will allow them time to grow and spawn the following year, with offspring providing prey for bass stocked the second year.

To determine the proper number of fish to stock, the surface area of the pond must first be determined. If not known, consult NRCS or the pond contractor, or estimate the pond's size by using the formulas presented at the end of this pond guide.

The recommended initial stocking ratio for fingerling bluegill and largemouth bass is 5 to 1, not to exceed 500 bluegills and 100 bass per surface



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acre of water. The initial stocking density for fingerling channel catfish is 100 per acre. This combination will begin to provide angling opportunities in about two years. If too few bluegills are stocked initially, an unusually high number of their first spawn will survive due to little competition for available space and food. This can become a problem if bass are overharvested, or are unable to effectively prey upon the bluegills due to poor water clarity or too much cover. Stocking at higher than recommended densities usually results in slow growth and poor fish populations.

When a pond is properly managed, bass and bluegill only need to be stocked once. Although not

necessary, a second stocking of 50 largemouth bass fingerlings per surface acre can be considered in the third year. Since bass from the initial stocking usually would not spawn until the fourth year, this second stocking would provide the year-class of bass that would otherwise be missing in the pond. In order to maintain a population, 10-inch channel catfish should be restocked every 2 to 3 years; number stocked should equal the harvest plus an additional 10 percent to compensate for natural mortality.

If the pond is large, the cost of fish may be prohibitive at the densities recommended. A pond larger than 5 acres can be stocked as if it was only 5 acres. This will save some money and still provide

## Warmwater Pond Stocking Recommendations (Fingerlings)

Species	Number Per Acre	Length (Inches)	When to Stock
Bluegill	500	1-2	Fall
Channel Catfish	100	2-4	Following Late Spring
Largemouth Bass	100	2-3	Following Late Spring
Largemouth Bass	50	3-4	One Year Later*

\* Optional

## Expected Lengths (Inches) of Fish Initially Stocked in a Typical Nebraska Farm Pond\*

Species	Stocking Length (Inches)	Years After Stocking			
		1	2	3	4
Bluegill	1-2	4.5	6	7	7.5
Channel Catfish	2-4	10	14	16	17
Largemouth Bass	2-3	9	11	13	15

\* Growth of subsequent year classes will likely be slower.





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## Warmwater Pond Stocking Recommendations (Adults)

Species	Number Per Acre	Length (Inches)	When to Stock
Bluegill	150-250	4-5	Spring
Channel Catfish	20-50	6-10	Spring or Fall
Largemouth Bass	30-50	8-12	Spring

enough fish to establish populations. Keep in mind the likelihood of high survival of the bluegills' first spawn that could cause a problem if the bass don't become established or if bass are over-harvested. If cost is not an issue, you should stock more fish, just be sure to maintain the recommended ratios and do not exceed the maximum of 500 bluegill and 100 bass per acre.

Although more costly, another option is to stock adult/sub adult fish, which will provide angling opportunities sooner. While these fish are more expensive due to their larger size, their survival chances are higher, so fewer are needed. Stocking these fish will be necessary if the pond already has fish that are capable of consuming or out-competing fingerling bass, bluegill, and catfish. All three fish species are stocked the first year – the bass and bluegill during the spring and channel catfish either in the spring or fall. Use the lower stocking rates

given when using the larger size bluegill, bass, and catfish.

Just stocking a few adult fish to populate a new pond is risky and not advised. Production of young fish from these adults in the first year is unpredictable. Bluegills may spawn more successfully than bass and the pond can immediately become out of balance. Fishing quality will become poor quickly, and will likely stay that way. Therefore, since bass are a very important predator, it is necessary to develop a high-density bass population the first several years following initial stockings.

For sand pits, quarries, and other steep-sided waters, the stocking recommendations are the same. Pits with very little water less than 4 feet deep may need supplemental stockings due to limited reproduction by bluegills and largemouth bass. New sand pits are usually infertile and will not be able to produce as many fish as a new farm pond.

## Trout Stocking Recommendations

Species	Number Per Acre	Length (Inches)	When to Stock
Rainbow Trout	100	8 or Larger	When Water Temperature Is Below 70 Degrees
Rainbow Trout	150-200	5 or Smaller	When Water Temperature Is Below 70 Degrees



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## **Coldwater Ponds**

For ponds able to support trout year-round, the suggested stocking rates are 100 adults (8 inches or longer) per acre, or 150 to 200 fingerlings (up to 5 inches in length) per acre. Smaller fish are cheaper and easier to transport. In ponds where large predators are established, only adult trout should be stocked to reduce the likelihood of them being eaten. Trout ponds will need to be restocked every 2 to 3 years, depending upon the amount of angler harvest. Ponds that only support trout on a seasonal basis can be stocked using 8-inch or larger trout at 100 per acre in the fall, when water temperatures stay below 70 degrees. Trout can be fed commercial trout food, if desired.

## **Small Fishing Ponds**

Channel catfish are recommended for smaller ponds with adequate depth, particularly those less than one-half acre in size, where it would be difficult to maintain balanced populations of bass and bluegills if angler harvest is high. Stocking only catfish is also recommended in muddy ponds since turbid water (clarity less than 12 inches) would hinder sight-feeding fish like bass and bluegill. Catfish can be stocked at an initial rate of 200 to 300 fish per acre with 4- to 6-inch fingerlings or 100 fish per acre with 8- to 12-inch sub-adults. Catfish can then be artificially fed to maximize growth and harvest. If the pond is already muddy and no feeding program will be used, the initial stocking densities should be cut in half. See **PG13-8** regarding ways to improve water clarity.

Ponds containing only catfish should not contain any structure that would facilitate spawning; otherwise, an overpopulation of small slow-growing catfish is likely and would worsen turbidity, due to their bottom feeding nature. If no reproduction occurs, catfish will have to be periodically stocked to compensate for harvest. They should be maintained at a density up to 100 fish per acre, 200 or more if

supplemental feeding is provided. The total biomass or weight of fish a pond can support is called the carrying capacity and it depends on the size of catfish present. See **PG13-02** for further details.

Maintain a record of catfish harvest. Restock 8- to 10-inch catfish during the spring or fall when cooler water temperatures are less stressful. Again, the number stocked should equal the harvest plus an additional 10 percent to compensate for natural mortality. Fathead minnows can be stocked with catfish to provide additional food and a source of bait.

Another option for smaller ponds would be wipers, providing a feeding program will be used. Wipers can be initially stocked as 2- to 4-inch fingerlings at 100 per surface acre of water. Supplemental stockings of 20 to 30 6- to 8-inch fish per acre will be needed every 2 to 3 years, depending on the amount of harvest and natural mortality. Wipers, particularly those weighing more than 5 pounds, may not survive when water temperatures remain warmer than 85 degrees for extended periods, or when dissolved oxygen levels drop below 4 parts per million. Feeding should be discontinued until these conditions improve. Wipers larger than 5 pounds can be produced, provided adequate deep water and moderate levels of submerged vegetation are available, and high dissolved oxygen levels can be maintained. Aeration may be necessary to maintain oxygen levels. Wipers can also co-exist in ponds with largemouth bass and bluegills.

## **SOURCES OF FISH**

The Commission will provide largemouth bass, bluegill, and possibly trout, for stocking newly constructed, privately-owned ponds or those where the Commission has recently authorized the existing fish population to be chemically removed. Fish will be provided for ponds that meet the following requirements:

- one-half surface acre or larger in size



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- 25% of the pond must be at least 10 feet deep (exceptions could be spring-fed ponds, natural lakes, and others at the discretion of the inspecting biologist)
- no other fish present at the time of stocking (with the exception of recently stocked channel catfish or other compatible fish species at the discretion of inspecting biologist)
- minimum water clarity of 12 inches (turbid water hinders development of a quality bass/bluegill fishery)
- fencing to exclude livestock may be required

Although owners of state-stocked waters are not obligated to allow unlimited public fishing access, they cannot charge anglers a fee to fish and are urged to grant access to anglers who ask permission to fish. A valid Nebraska fishing permit is required of every person 16 years of age and older who fishes these ponds, and all anglers must comply with current state fishing regulations.

Pond owners can either use the copies of the fish stocking policy and application at the end of this pond guide or contact local Commission fisheries biologist or the Private Waters Specialist and request copies from them. All applications for fish must be returned by August 1 to be considered for stocking during that calendar year. If a pond has multiple landowners, all landowners must concur with the stocking request or the application will be denied. If a shortage of fish should occur, pond owners will be notified and placed on a waiting list for the following year. Young-of-the-year bluegills will be available during the fall and largemouth bass during the following late spring. Coldwater ponds capable of supporting trout throughout the year can be considered for an initial fall trout stocking. Owners who allow reasonable public access may also receive supplemental fingerling trout stockings.

Fish can be purchased from a licensed private aquaculturist or licensed nonresident fish dealer. Ponds that are stocked with purchased fish may

be exempt from fishing license requirements and harvest restrictions. Consult Nebraska's fishing regulations or contact a local conservation officer for details. A list of licensed commercial fish dealers is available from the Commission. It is advisable to consult several suppliers to see who has the best prices and the most convenient delivery schedules.

## STOCKING PROCESS

If fish are being transported to a pond by the owner, tap water should not be used to fill the container, especially if it contains chlorine or chloramines. Both can kill fish. It is best to take fresh water from the pond just before the fish are picked up. Water taken the day before may cool off significantly during the night. Water allowed to sit during the day may become too warm. Either situation can kill fish when they are transferred directly into the container.

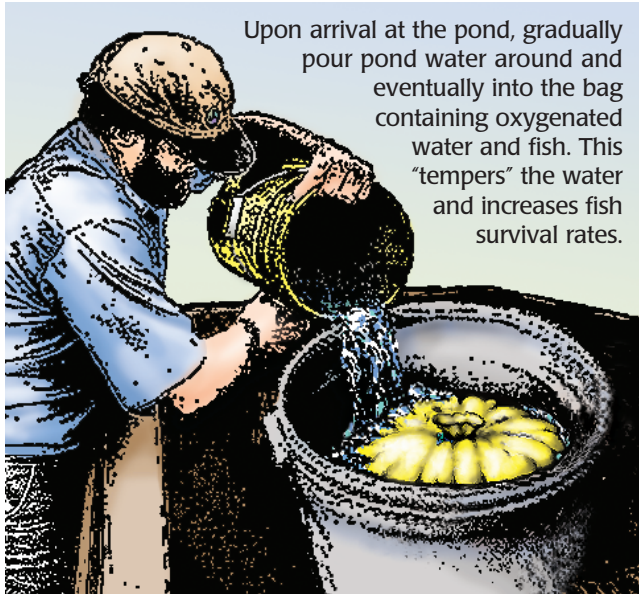
When fish are obtained from the Commission, the owner's hauling container should have a trash bag liner and be half-filled with pond water. Upon arrival at the pick-up site, the water in the container is tempered to closely match the temperature of the water in the fish hauling tank. Fish are then added and the water oxygenated. Finally, the bag is sealed and the container is ready for the trip to the pond. A commercial supplier will often fill the container with oxygenated water when the fish are picked up, or he may provide fish already packaged in Styrofoam containers and/or plastic bags with water.

Get the fish to the pond as quickly as possible. Transportation delays can cause oxygen levels in the water to drop and water temperature to rise, resulting in stressed or even dead fish. If the water for transporting the fish wasn't taken from the pond being stocked, the water's pH, hardness, alkalinity and temperature will likely be different from that in the pond. Do not pour the fish into the pond right away. Fish must be acclimated to the changes in water chemistry first, or they can go into shock



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Upon arrival at the pond, gradually pour pond water around and eventually into the bag containing oxygenated water and fish. This “tempers” the water and increases fish survival rates.

and die. This is especially important if the water temperature in the container is more than 5 degrees different from the water in the pond. During the

course of 15 to 30 minutes, pour pond water around and eventually into the bag containing fish. This “tempers” the water and increases fish survival. Then place the container into the pond so that the fish can swim out when they are ready. Or, the hauling container can be partially submerged into the pond upon arrival and the water allowed to be slowly exchanged until the chemistry is similar to that of the pond. Be careful while handling the fish; any wound created may become infected with bacteria or fungi. Although the fish may swim away into the pond, they may die later from these infections.

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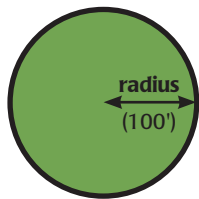
**Contacts:** Jeff Blaser, Private Waters Specialist  
 Nebraska Game and Parks Commission  
 2200 North 33<sup>rd</sup> Street  
 Lincoln, NE 68503  
 402-471-5435  
 or area Commission fisheries biologist.

**Surface area/volume calculations and diagrams, stocking policy, and fish application/pond location are on the following pages.**

## CALCULATING THE SURFACE AREA AND VOLUME OF A POND

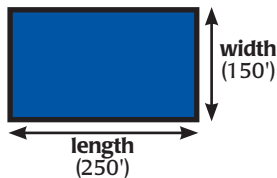
Presented below are formulas for calculating the **surface area** of a pond. Pick a shape that most closely resembles the pond and measure the necessary distances in feet. Put these measurements into the appropriate equation and multiply to find the surface area in square feet. Surface area in acres is simply obtained by dividing the surface area by the number of square feet in an acre (43,560). If a pond is irregular in shape, the best thing to do is divide it into workable shapes and then add the areas of the smaller units together to get the area of the whole.

$$\text{CIRCLE} = 3.14 \times \text{radius}^2$$



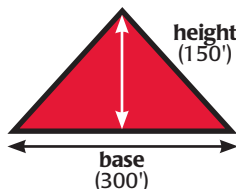
EXAMPLE: pond radius 100 feet x 100 feet x 3.14 = 31,400 square feet total surface area ÷ 43,560 = .72 surface acre

$$\text{RECTANGLE} = \text{length} \times \text{width}$$



EXAMPLE: pond length 250 feet x width 150 feet = 37,500 square feet total surface area ÷ 43,560 = .86 surface acre

$$\text{TRIANGLE} = \frac{\text{base} \times \text{height}}{2}$$

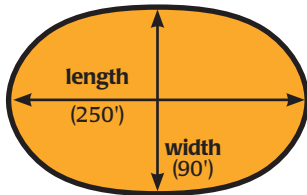


EXAMPLE: pond base 300 feet x height 150 feet = 45,000 square feet ÷ 2 = 22,500 total surface area ÷ 43,560 = .52 surface acre

# NEBRASKA POND GUIDE



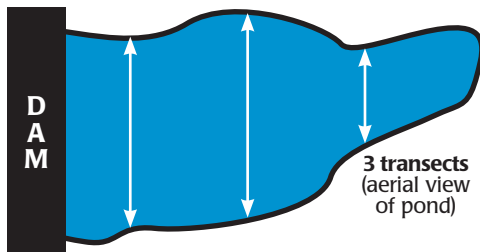
**ELLIPSE = length x width x 0.8**



EXAMPLE: pond length 250 feet x pond width  
90 x 0.8 = 18,000 square feet total surface area  
÷ 43,560 = .41 surface acre

The formula for calculating a pond's **volume** is surface area (acres) x average depth (feet). Average pond depth can be estimated by measuring the depth of the water in a number of places throughout the pond, adding these measures together to get a total, and then dividing the total by the number of measurements. Several transects should be established across the pond (from one side straight across to the other side). Depth measurements should be taken/recorded every 40 feet with an electronic depth finder or a weight attached to a string marked in feet.

**VOLUME (acre-feet) = surface area (acres) x average depth (feet)**



EXAMPLE: forty measurements were taken while conducting three transects across the surface of a .75 acre pond; average depth calculated to be 4 feet; therefore, .75 x 4 = 3 acre-feet

NOTE: Average depth can be estimated by multiplying the maximum depth by 0.4



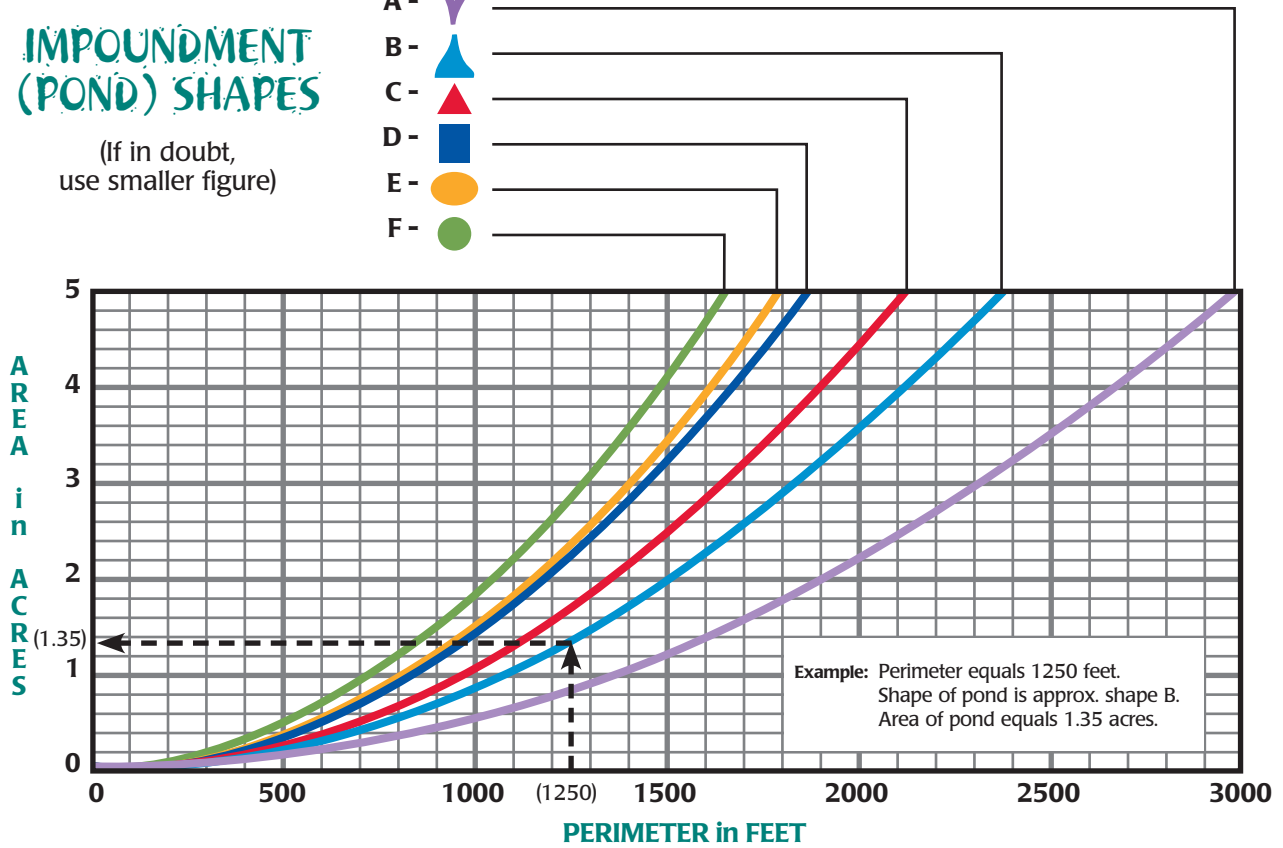
# POND AREA ESTIMATOR

If the distance around the entire pond can be measured, this pond estimator can be used.

## IMPOUNDMENT (POND) SHAPES

(If in doubt, use smaller figure)

- A - 
- B - 
- C - 
- D - 
- E - 
- F - 





See You Out There

# NEBRASKA POND GUIDE



Private Waters  
Program



## PRIVATE WATERS STOCKING POLICY

To receive fish from the Nebraska Game and Parks Commission (NGPC) for stocking privately-owned waters, the owners or associations are not obligated to give up trespass rights and can regulate angler access. However, NGPC urges owners to grant access to anglers asking permission to fish and anglers cannot be charged a fee to fish. All owners or their designee(s) must complete the "APPLICATION FOR FISH AND MANGEMENT REPORT FORM" or the stocking request will be denied. A valid Nebraska fishing permit is required of every person 16 years old or older who fishes waterbodies stocked by NGPC as well as compliance with current state fishing regulations. A report of NGPC stocked waterbodies is available in each District Office and the Lincoln and Omaha offices.

### STANDING WATERS (Lakes, Pits and Ponds)

To receive fish, the waterbody must meet the following minimum requirements:

- one-half surface acre or larger
- 25% of the waterbody at least 10 feet deep (exceptions could be spring-fed ponds, natural lakes, and others at the discretion of inspecting biologist)
- no other fish present at the time of stocking (exceptions could be recently stocked channel catfish or other compatible fish species at the discretion of inspecting biologist)
- minimum water clarity of 12 inches (turbid water limits the quality of a largemouth bass-bluegill fishery)
- fencing to exclude livestock may be required

All fish stocking applications must be received by NGPC no later than August 1 to be considered for stocking during that calendar year. The fish provided by NGPC for private waters will be available only after all needs of the state's public waters have been

met. Subsequent fish allocation will then be based on number of fish available and approved requests. If a shortage of fish occurs, owners of larger waterbodies may not receive the full allotment of fish and will be advised to purchase additional fish from private fish hatcheries. If no fish are available for private waters, all applications will be cancelled and waterbody owners will be notified and included on the fish stocking list for the following year.

The fish available for stocking of private waterbodies are typically largemouth bass and bluegill fingerlings, delivered on a split-stocking basis. The first year, bluegill will be stocked in September at a density of 500 fingerlings per surface acre of water. The following year, largemouth bass will be stocked in July at a density of 100 fingerlings per surface acre of water. In order to receive their fish, owners will likely have to meet the distribution truck at a location determined by the District Fisheries Biologist.

NGPC hatcheries currently do not spawn channel catfish; therefore, they can be purchased from a licensed private aquaculturist if desired by associations or owners. When channel catfish are stocked in combination with largemouth bass and bluegill, it is recommended that fingerlings (~2-3 inches) be stocked in the second year at a density of 50-150 per surface acre of water.

Coldwater waterbodies capable of supporting trout year-round can be considered for trout stocking. Sub-catchable rainbow trout (~5 inches) will be stocked at a density depending on environmental conditions, anticipated harvest, and availability. Since trout will not reproduce in a pond environment, owners who allow reasonable public access are also eligible to receive maintenance trout stockings. Owners desiring trout larger than five inches will have to purchase them from a licensed Nebraska private aquaculturist.

4-19-13



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# NEBRASKA POND GUIDE



## APPLICATION FOR FISH AND MANAGEMENT REPORT FORM

Waterbody Owner/Operator: \_\_\_\_\_ Phone: \_\_\_\_\_ (Home)

Address: \_\_\_\_\_ (Work)

City: \_\_\_\_\_ ZIP: \_\_\_\_\_

Does the waterbody have multiple landowners? \_\_\_\_\_ If yes, how many: \_\_\_\_\_

**All landowners or lake association boards have to be in concurrence with stocking request, otherwise the application will be denied.**

Waterbody Location (miles from nearest town): \_\_\_\_\_

County: \_\_\_\_\_ Quarter \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_

*(Illustrate location on reverse side)*

Surface Acres: \_\_\_\_\_ Depth: \_\_\_\_\_ Date constructed: \_\_\_\_\_

Use by livestock: \_\_\_\_\_

Watershed: % pasture \_\_\_\_\_ % crop \_\_\_\_\_ % other (describe) \_\_\_\_\_

Is waterbody open to fishing by permission without charge? \_\_\_\_\_

Fish present in waterbody: \_\_\_\_\_

**Instructions:** The kind and number of fish provided will be determined after review of the application and an on-site inspection. The deadline for receiving applications in this office is **August 1** for stocking during that calendar year. Please complete this form accurately and completely for each waterbody you want stocked. Failure to do so may mean disqualification.

**Mail to: Nebraska Game and Parks Commission, P. O. Box 30370, Lincoln, NE 68503.**

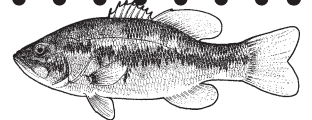
I herein make application for fish. It is understood and agreed that all fish secured are to be used for initial stocking in the waterbody described above and open to fishing by permission without charge; and that a valid Nebraska fishing permit is required of every angler 16 years of age and older.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



### FOR STATE USE ONLY

### Private Waterbody Activity Report Form



Type of Contact: Walk-in \_\_\_\_\_ Letter \_\_\_\_\_ Phone \_\_\_\_\_ Field investigation \_\_\_\_\_

Date: \_\_\_\_\_ Time Spent: \_\_\_\_\_

Activity and/or Summary of Recommendation: \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_

Approved for stocking \_\_\_\_\_ Disapproved for stocking \_\_\_\_\_ Biologist: \_\_\_\_\_



STOCKING DATE		NUMBER	RECEIVED BY	SOURCE OF FISH/DELIVERED BY
	BLG			
	LMB			





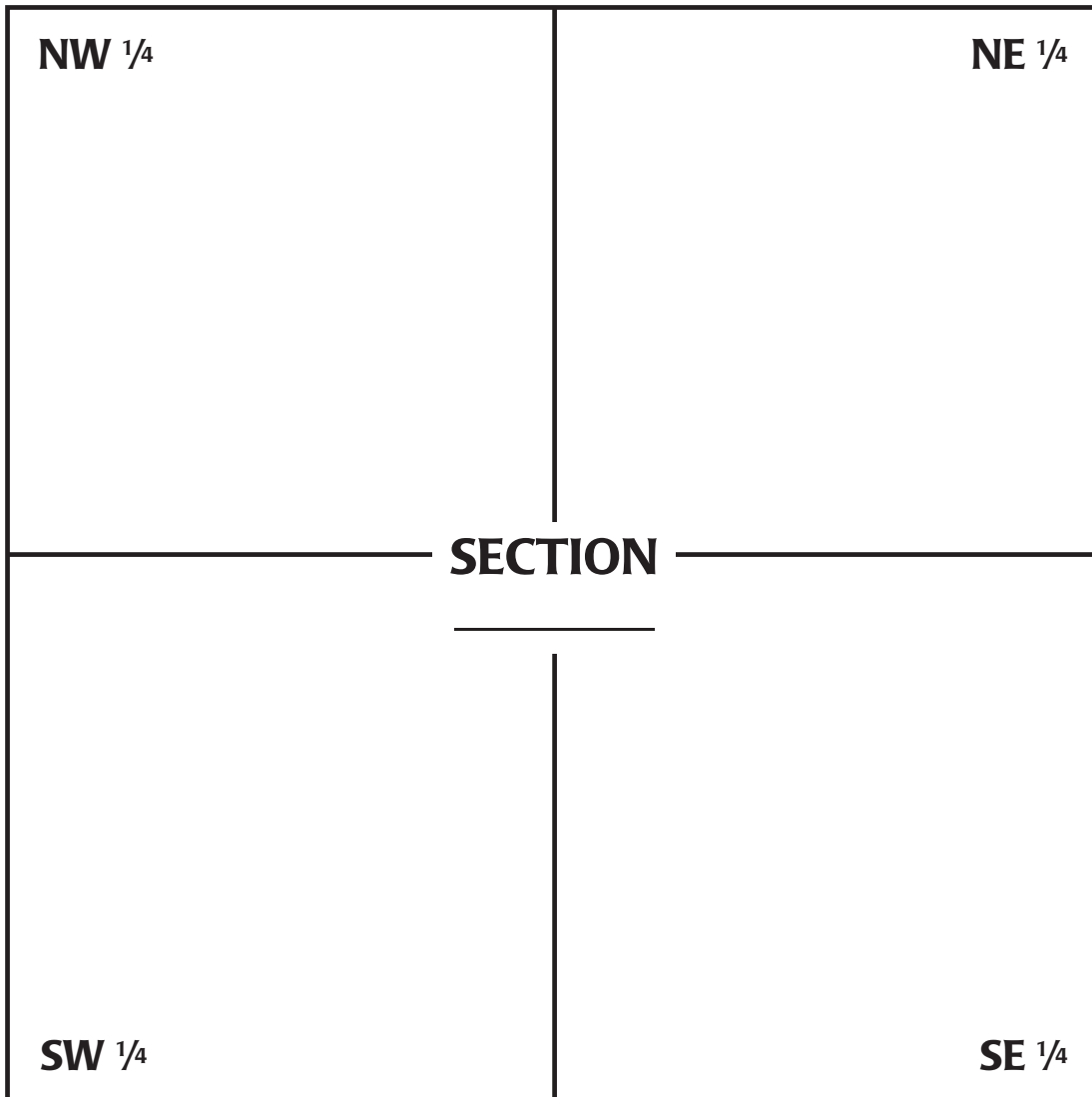
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# NEBRASKA POND GUIDE



## PLEASE DRAW IN LOCATION OF THE POND, IN RELATION TO QUARTER SECTION

R \_\_\_\_\_



T \_\_\_\_\_



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# NEBRASKA POND GUIDE



Private Waters  
Program



Management Assistance for  
Lakes, Ponds, Pits & Streams

## TECHNICAL ASSISTANCE CONTACTS

### Nebraska Game and Parks Commission (Commission)

2200 N 33rd Street PO Box 30370  
Lincoln, NE 68503  
Private Waters Specialist 402-471-5435  
Natural Heritage Program 402-471-5419

#### Northwest (NW) District - Alliance

Game and Parks Commission  
299 Husker Road PO Box 725  
Alliance, NE 69301  
308-763-2940  
Fisheries Division or  
Wildlife Habitat Partners Section

#### Northwest (NW) Field Office - Valentine

Valentine State Fish Hatchery  
90164 Hatchery Road  
Valentine, NE 69201  
402-376-8080 or 402-376-2244

#### Southeast (SE) District - Lincoln

Game and Parks Commission  
2200 N 33rd Street PO Box 30370  
Lincoln, NE 68503  
402-471-7651 or 402-471-5561  
Fisheries Division or  
Wildlife Habitat Partners Section

#### Northeast (NE) District - Norfolk

Game and Parks Commission  
2201 N 13th Street  
Norfolk, NE 68701  
402-370-3374  
Fisheries Division or  
Wildlife Habitat Partners Section

#### Northeast (NE) Field Office - Bassett

Game and Parks Commission  
524 Panzer Street PO Box 508  
Bassett, NE 68714  
402-684-2921  
Fisheries Division or  
Wildlife Habitat Partners Section

#### Southwest (SW) District - Kearney

Game and Parks Commission  
1617 First Avenue  
Kearney, NE 68847  
308-865-5310  
Fisheries Division or  
Wildlife Habitat Partners Section

#### Southwest (SW) Field Office - North Platte

Game and Parks Commission  
301 East State Farm Road  
North Platte, NE 69101  
308-535-8025  
Fisheries Division or  
Wildlife Habitat Partners Section



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# NEBRASKA POND GUIDE



Private Waters  
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Management Assistance for  
Lakes, Ponds, Pits & Streams

## United States Department of Agriculture - Natural Resources Conservation Service (NRCS)

Federal Building, Room 152  
100 Centennial Mall North  
Lincoln, NE 68508  
Statewide Wildlife Biologist  
402-437-4100  
or contact Local County Office

## University of Nebraska - Lincoln, Cooperative Extension

211 Agricultural Hall - UNL East Campus  
Lincoln, NE 68583  
Main Office 402-472-2966  
or contact Local County Office;  
Water Quality Questions 402-643-2981, ext. 115

## Nebraska Department of Natural Resources (DNR)

301 Centennial Mall South, PO Box 94676  
Lincoln, NE 68509  
Water Storage Permits 402-471-2363 or  
Dam Safety Guidelines 402-471-1222

## U.S. Army Corps of Engineers (ACOE)

8901 S. 154th Street, Suite 1  
Omaha, NE 68138 402-896-0723  
or contact the Kearney office at:  
1430 Central Avenue  
Kearney, NE 68847  
308-234-1403

## Nebraska Department of Environmental Quality (NDEQ)

1200 N Street, PO Box 98922  
The Atrium, Suite 400  
Lincoln, NE 68509  
402-471-0096

## Nebraska Association of Resources Districts (NARD)

601 S. 12th Street, Suite 201  
Lincoln, NE 68508  
402-471-7670  
or contact your local Natural Resources District (NRD)  
listed in White Pages of the phone book