



See You Out There

NEBRASKA POND GUIDE



Private Waters Program



Management Assistance for Lakes, Ponds, Pits & Streams

MANAGING A BASS/BLUEGILL/CATFISH POND

Very few perfect ponds exist. But, with proper management, most ponds can provide good fishing, while some can even provide great fishing for trophy-size fish. The first step is to determine the status of existing fish populations.

ASSESSING FISH POPULATIONS

The most common complaints about fish populations are:

- there are too many of a particular fish species present
- the fish are not of a desired size
- undesirable fish are present.

Successful pond management requires more than just stocking fish and hoping the pond will produce the quality of fishing desired. Not only is it important to maintain proper aquatic and terrestrial habitats, it is also very important to monitor fish harvest,

growth, and reproduction, and to keep out unwanted fish. Once these things are done, balanced fish populations can be attained and/or maintained.








What is a Balanced Pond?

Pond balance or balanced fish population is simply the relationship between the abundances of predators and prey, such as largemouth bass and bluegill.

Generally, bluegills are the most abundant fish species. They provide the most angling opportunity and harvest can begin the second year after stocking. A good, balanced Nebraska pond will contain about 250 pounds of bluegills and 50 pounds of bass (one-fifth the weight of bluegill) per surface acre of water.

About 45 to 60 percent of the bass larger than 8 inches should be larger than 12 inches. In other words, about half the bass caught in the pond

Fish Size Distribution in a Four-Year-Old Pond

<p>Initially Stocked As Fingerlings In 1st Year (Now 4 Years Old)</p> 	<p>No Largemouth Bass Stocked The 1st Year</p>	<p>No Channel Catfish Stocked The 1st Year</p>
<p>2nd Year Offspring</p> 	<p>Initially Stocked As Fingerlings In 2nd Year</p> 	<p>Initially Stocked As Fingerlings In 2nd Year</p> 
<p>3rd Year Offspring</p> 	<p>Not Necessary To Stock Largemouth Bass The 3rd Year No Offspring Produced</p>	<p>No Channel Catfish Stocked No Offspring Produced The 3rd Year</p>
<p>4th Year Offspring</p>  <p>BLUEGILLS</p>	<p>4th Year Offspring</p>  <p>LARGEMOUTH BASS</p>	<p>4th Year: Supplemental Stocking Of 10-Inch Channel Catfish: Number Stocked Depends On Harvest – See Page 2</p> <p>CHANNEL CATFISH</p>

NEBRASKA POND GUIDE


**Private Waters
Program**


should be between 8 and 12 inches long and the other half larger than 12 inches. All bass less than 15 inches should be released for 4 years following the initial fingerling stocking. After that, no more than 15 to 30 adult bass or up to 20 pounds of bass should be harvested per acre annually, depending on pond fertility and management objectives. Greater harvest rates can reduce the quality of both bass and bluegill fishing.

It is very important the 5:1 ratio between bluegill and bass weight is maintained once harvest begins. For every 1 pound of bass harvested, there should be 5 pounds of bluegills harvested as well. For example, if one 10-pound trophy bass is harvested, 50 pounds of bluegills should be harvested for compensation. Given most bluegills caught will probably be a quarter- to a half-pound in size, that's 100 to 200 bluegills needing to be harvested. This is where many ponds fall out of balance: anglers do not or can not take out enough bluegills, especially the smaller ones, thus causing a shift that will likely get worse. Therefore, the most effective way to control bluegills is through bass predation, especially on young-of-the-year and age one bluegills.

When bluegills become overpopulated, growth rates decrease and they become stunted, with only a few fish growing to a large size. When this happens (usually as a result of bass being overharvested), it is almost impossible for anglers or remaining bass to remove enough small bluegills to get the pond back into balance. Even though bass can be stocked at a supplemental rate of 50 per acre with 8- to 12-inch long fish in an attempt to correct the situation, it may not work. The likelihood of bass overharvest can be reduced by requiring anglers to follow strict harvest rules.

A good, balanced pond can also produce about 40 pounds of channel catfish per surface acre of water. Catfish can be introduced into established ponds at a stocking rate of 20 to 50 per acre with 10-inch sub-adults. The higher rate can be used if

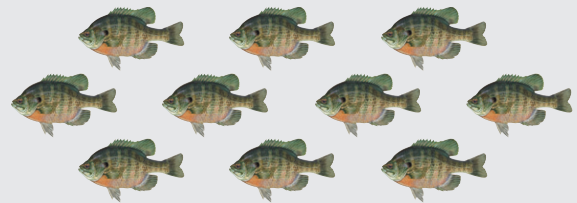
there will be significant harvest or a feeding program. Since catfish will have to be restocked in most ponds to maintain their fishery, they can be harvested whenever desired. Of course some need to be released each year if large catfish are wanted. Plus, harvesting everything caught will mean more catfish will have to be restocked, more often. A good catfish population can be maintained by only harvesting 15 catfish per acre per year and restocking 10-inch fish every three years. Number stocked should equal the harvest plus an additional 10 percent to compensate for natural mortality.

Fish Harvest Ratio for a Balanced Pond

Maintain a 5:1 Harvest Ratio



One 1-Pound Largemouth Bass (1 lb.)



Ten 1/2-Pound Bluegills (5 lbs.)

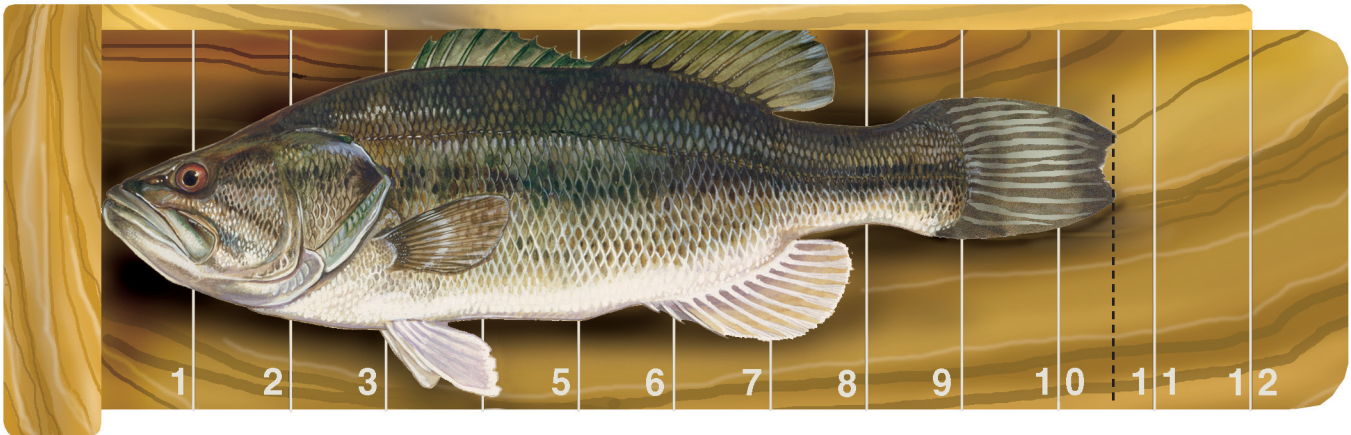
How Can Pond Balance be Determined?

The best way to tell how well fish are doing is to go fishing! By catching fish, growth and reproduction can be determined, and whether any unwanted fish species have gained access. Use a variety of techniques, including artificial lures and natural baits suitable for all species and sizes present. The more

NEBRASKA POND GUIDE



Measuring a Fish



1. Lay fish sideways, flat on measuring board/ruler.
2. Close the mouth.
3. Squeeze the tail lobes together.
4. See how long your fish is – this largemouth bass is just over 10¹/₂ inches long.

fish caught, the better the fish population evaluation. It is important to keep good records of the time spent fishing, dates, fish species caught, and accurately measure the length of each fish caught. A form for keeping catch records is provided at the end of this guide.

Periodically review your catch records and answer these questions:

- 1) Is the average size of bluegills decreasing?
- 2) Is the size of the largest bluegill caught getting smaller?
- 3) Are bass getting skinnier?
- 4) Are fewer big fish and more little fish being caught per hour?
- 5) Are crappies, carp, bullheads, or other non-stocked fish showing up in the catch?

Answering 'yes' to any of the questions may signal the pond is becoming out of balance.

How Can Balance be Maintained or Achieved?

Fish populations will naturally fluctuate and there's no need for concern if you experience one or two fishing trips with poor success. If the quality of fishing in your pond appears to be declining, start collecting angler catch data. Spring is normally the best time to collect angling data; however, angling may have to be conducted several times during the year to collect enough pertinent data.

Although angling assessment is preferred, fish populations can also be assessed with a seine in mid-summer. Legal seines can only be one-fourth inch non-metallic square mesh and not over 20 feet long and 4 feet deep. Use of larger seines must be authorized by the Nebraska Game and Parks Commission. Seining may not be effective if the pond has abundant submerged aquatic vegetation or limited shallow water areas.



See You Out There

NEBRASKA POND GUIDE



Private Waters
Program



Once angling and/or seining assessment data have been collected, determine which one of the scenarios (pages 5 and 6) that best fits your pond's situation. More detailed information on specific management options are presented on pages 7 and 8, including several that intentionally keep a pond out of balance to produce trophy bluegills or trophy largemouth bass.

Is Help Available to Assess Fish Populations?

Perhaps you are experiencing problems and are unable to collect fish, or you have already monitored your pond for a year, implemented the suggested management practices, and things don't seem to be getting any better. If you are unsure what to do, contact the Commission's Private Waters Specialist or your area district fisheries biologists and seek assistance. They may be able to resolve your problem(s) over the phone. If not, they will likely conduct a site visit, which may involve sampling the fish in your pond, and make recommendations.

The most effective way to quickly sample the bluegill and largemouth bass populations is by electrofishing. Electrofishing is done by boat, so a pond must have good boat access. Electrofishing boats are rather large and heavy, so a smooth, solid shoreline and bottom is required. A water depth of at least 3 feet of water within 10 feet of the shoreline is required to launch the boat. A sharp drop-off at the water's edge may high-center the trailer and prevent launching the boat.

Electrofishing boats send an electrical current into the water which shocks/stuns fish. Most of the stunned fish come to the surface in front of the boat by the electrodes, where they can be easily netted. Stunned fish recover within a few seconds to a few minutes, depending on their size, proximity to the electrodes, and water temperature. Netted fish are placed in the boat's live well. Once an adequate number of fish are collected, the biologist will assess the sample, noting the species collected, their size distribution, and their relative abundance.

Depending on the size of the pond and the number of fish initially collected, additional fish may need to be collected. From these samples and angler catch results, the biologist can determine whether or not the pond is in balance, or if undesirable species have become a serious problem, and formulate a management plan.

While professional assistance would seem to be the easiest option for the pond owner, it may not be the most convenient. State biologists may be willing to sample a pond, but they primarily do so on a time-available basis. Public waters typically take priority and electrofishing is most effective in the spring and fall. Pond owners may have to wait weeks or months for someone to sample their pond. Keep in mind pond access improvements may have to be done to accommodate launching the electrofishing boat. If state biologists are unavailable, private pond management consultants can be contacted. For a fee, they will sample a pond and make management recommendations. Contact an area Commission fisheries biologist or the Private Waters Specialist for a listing of consultants.

MANAGING FISH POPULATIONS

By the fourth year after stocking, a decision has to be made on how to manage the pond. Is a balanced population preferred so that good-size bass and bluegills can be caught, or is catching large individuals of one species more important than the other? Quantity usually has to be sacrificed to grow larger fish. Regardless of which option you choose, the key to success is controlled harvest. Keep records of fish caught and make sure anglers are only harvesting the species and sizes of fish necessary to accomplish desired angling goals. A lack of harvest may be a bigger problem than too much harvest and will likely result in failure of specialized management efforts.

When reading about the following harvest recommendations for the various management options, keep in mind anglers have to obey



See You Out There

NEBRASKA POND GUIDE



ANGLING CATCH	WHAT IT MEANS	RECOMMENDATIONS
Most bass 12 to 15 inches, with some smaller and larger; most bluegills 3 to 6 inches, some over 8 inches.	Balanced population.	None. You're doing fine. Continue existing harvest philosophy, unless you want bigger bass or bigger bluegills.
Numerous small bluegills, most less than 5 inches; a few bass, most over 15 inches.	Overcrowded bluegill population; bass not reproducing or recruiting successfully.	None if managing for large bass; otherwise, stop bass harvest, stock 8- to 12-inch bass at 25 to 50 per acre.
Numerous bass, most less than 12 inches; most bluegills over 8 inches.	Overcrowded with small bass; most bluegills are eaten, but those that escape have little competition and grow well.	None if managing for large bluegills; otherwise, harvest 15 bass less than 12 inches per acre per year to reduce their competition for food.*
Numerous skinny bass, few over 12 inches; a few bluegills over 6 inches.	Severely overcrowded with small bass that compete with bluegills for food.	Harvest 30 bass less than 12 inches per acre per year.* If bluegills numbers remain low, may need to stock 4- to 6-inch bluegills at 50 to 100 per acre.
Aquatic vegetation covers more than 40% of pond; most bluegills less than 5 inches; most bass less than 12 inches.	Predator-prey interaction interrupted.	No bass harvest; control vegetation.
Bullhead, green sunfish, carp; few bluegills and bass.	Undesirable species are competing with bass and bluegills; bass are unable to control them if water is turbid.	Drain the pond or renovate the fish population with rotenone* and restock with largemouth bass, bluegills, and channel catfish.

* Authorization from the Commission is required before any bass less than 15 inches can be harvested or removed from private waters or before a pond can be renovated. Consult Commission fisheries personnel for details.



See You Out There

NEBRASKA POND GUIDE



SEINE HAUL CONTENTS	WHAT IT MEANS	RECOMMENDATIONS
Small and medium size bluegills and some young bass.	Balanced population.	None. Keep the same management and harvest practices.
Numerous small bluegills, but no small bass.	Overcrowded bluegill.	None if managing for large bass; otherwise, stop bass harvest, stock 8- to 12-inch bass at 25 to 50 per acre.
Some small bass and no small bluegills.	Insufficient bluegill numbers, bass overcrowded.	None if managing for large bluegills; otherwise, harvest 15 bass less than 12 inches per acre per year.* If bluegill numbers remain low, may need to stock 4- to 6-inch bluegills at 50 to 100 per acre.
No small bass and no small bluegills, just green sunfish and bullheads.	Fish population has serious problems that require drastic measures to correct, especially if water is turbid.	Drain the pond and renovate it with rotenone* to eliminate fish and restock with largemouth bass, bluegills and channel catfish.
No fish, just tadpoles or salamanders.	No fish populations present or at low levels.	If only tadpoles present, pond may be too shallow to support fish or no fish have been introduced yet. If only salamanders present and pond has sufficient depth and good water clarity, stock larger largemouth bass, bluegills and channel catfish. Fingerlings would be eaten by salamanders.

* Authorization from the Commission is required before any bass less than 15 inches can be harvested or removed from private waters or before a pond can be renovated. Consult Commission fisheries personnel for details.



See You Out There

NEBRASKA POND GUIDE



Private Waters
Program



regulations set for private waters. **A Private Waterbody Management Authorization (PWMA) from the Commission is required before any bass less than 15 inches can be harvested or removed from private waters.** Consult the Commission fisheries personnel about a PWMA request and how many bass can be harvested. Regardless of which option is chosen, any catfish harvest will require they be restocked periodically to maintain a viable fishery because bluegills and bass eat most of the eggs and young. Replacement catfish have to be at least 10 inches long to ensure survival.

Management Option 1:

No Harvest Restrictions

Although harvest without any restrictions requires no management effort by the pond owner, it will rarely provide more than one or two years of good fishing. Anglers are allowed to keep as many fish as they can catch within regulations set for private waters. Anglers will likely catch nice bass and bluegill during the first few years; however, the catch in succeeding years will usually consist of some small bass and numerous small bluegill. Once bluegills become overabundant and their growth slows, few will reach sizes most anglers like to catch for sport or keep. This option would be a choice for pond owners who are just interested in catching fish and are not concerned about size.

Management Option 2:

All-Purpose (Balanced Pond)

If there is interest in catching fish of a variety of sizes, this option can be utilized to either maintain or get a pond back into balance. To catch some bass longer than 15 inches, the numbers of 8- to 12-inch bass must be reduced, especially if the pond has high bass recruitment. Removal of these smaller bass reduces competition and improves bass growth, which allows some bass to attain lengths over 15 inches. Most fertile ponds, particularly those

in the southeastern part of the state, can have up to thirty 8- to 12-inch bass harvested per acre per year the fourth year after fingerlings are stocked. All 12- to 15-inch bass should be released in order to produce fish over 15 inches long. Having high numbers of bass, particularly 12- to 15-inch bass, also reduces the number of small and intermediate size bluegill. This will result in producing bluegills of various sizes, with some reaching 8 inches. Anglers can harvest bluegill and catfish as desired. The extent of submergent aquatic vegetation has to be monitored; otherwise, too much vegetative cover will prevent bass from effectively controlling bluegills. See **PG13-9** for various vegetation control techniques.

Management Option 3:

Large Bluegill (Unbalanced Pond)

If there is more interest in catching big bluegills than big bass, anglers should release all bass caught less than 15 inches long. Bass over 15 inches long can be harvested, but few bass will reach that size, due to competition for food. By having a high density of small bass, bluegills will be effectively controlled. With overcrowded small bass, the few bluegill that avoid predation by bass will grow fast and reach a size large enough that the bass can't eat them. This will produce more 8-inch and larger bluegill than other management options. This option only works in water with visibility of **at least** 18 inches and when aquatic vegetation isn't excessive. This allows bass to easily see and capture their prey. Although there are normally no harvest restrictions on bluegill or catfish, some of the big bluegills should be returned to produce even larger ones. If, after a couple of years, the bass become skinny or appear to be all head and very few 12- to 15-inch bass are caught, the removal of some 8- to 12-inch bass, about 15 per acre per year, may be necessary. This annual bass harvest may need to be continued or increased until 10 to 30 percent of all bass caught are 12 inches or longer. If small bass become too



See You Out There

NEBRASKA POND GUIDE



Private Waters
Program



dense, they may remove too many bluegills or compete with them for food.

If the pond contains sufficient depth and clarity, has crappies, bullheads, or green sunfish, and there is no desire to drain the pond or kill all the fish in the pond, following this management strategy would be the best bet. By purposely overcrowding bass, the numbers of these other species may be controlled, possibly allowing the eventual catch of some that are decent size or even maintain a good bluegill fishery. Stocking an additional predator, such as northern pike or walleye, might also help control the numbers of these other species provided the waterbody is of sufficient size and contains appropriate habitat. The important thing is to protect predators from angler harvest. For additional information, see **PG13-3** regarding fish stocking and **PG13-5** regarding removal and/or control of unwanted fish species.

Management Option 4:

Large Bass (Unbalanced Pond)

This option should be used if the only interest is a chance to catch big bass and no concern for bluegills. Upon completion of initial stocking, there should be no bass harvest for four years. After that, start harvesting 30 to 50 bass, 8- to 12-inches per

acre per year and 5 bass, 12- to 15-inches per acre per year. By reducing bass numbers, survivors will have little competition and grow well. Release larger fish so they can continue to grow to trophy-size. Keep in mind a pond can only produce a certain poundage of bass per surface acre of water. Whether it is ten 3-pounders or three 10-pounders depends on management, along with environmental and habitat conditions. But, in order to catch a 10-pounder, the 9-pounder has to be thrown back and the 1-pounders kept. This will give the 9-pounder a chance to grow and hopefully live long enough to reach record-size so it can be caught again. Since this option produces high numbers of small bluegills, it may be a good option if there are young children learning to fish. They can enjoy catching lots of small bluegills while the adults go after trophy bass. There are no bluegill or catfish harvest restrictions with this option.

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

Catch & release fishing and catch recording are on the following pages.

Catch & Release Fishing

Knowing how to grasp and unhook fish properly means anglers can release them unharmed. They can survive to grow, spawn, and be caught again. Even when only measuring a fish, you must handle it gently and release it quickly. Handling fish correctly also eliminates injuries to the angler caused by teeth and spines.

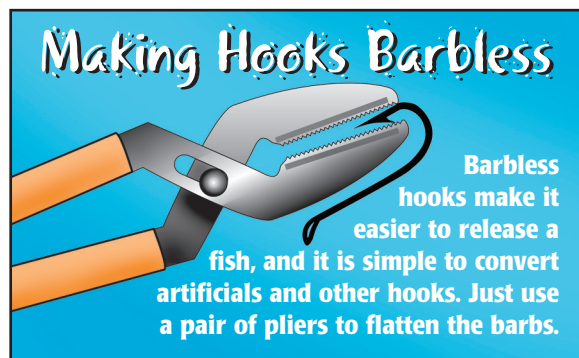
How to Catch & Release

Landing the Fish

Avoid playing the fish to total exhaustion. The longer you play it, the more stress it experiences and the less chance it has to survive.

Rubber Nets

If you use a net, choose one with rubber mesh. Soft rubber is less harmful to a fish than cord. Using a net properly can make handling a large fish quicker and easier than doing it by hand.



Barbless Hooks

Keep the fish in the water as much as possible. Barbless hooks reduce the time needed to handle a fish and make it simpler to remove the hook, often by merely backing it from the fish's mouth without lifting the fish from the water.

Wet Hands

If you must handle the fish, wet your hands before touching it. Dry hands will remove a fish's protective surface mucus, which guards it against bacterial and fungal infections. Using a wet glove can help control lively, slippery fish.

Careful Touch

Handle the fish carefully. Don't squeeze the gills or body cavity, and don't put your fingers into its gill flaps or eye sockets. Try to keep it horizontal. A firm grip behind the head and around the tail is the least harmful. Don't let it flop around on the bank or bottom of the boat.

Helpful Tools

Remove the hook carefully with a hemostat or other hook removal device. If the fish is deeply hooked, cut the line as close to the hook as possible and release the fish. The fish's digestive juices will dissolve the hook in time. Pulling or jerking on a hook will damage a fish's esophagus, stomach, or gills.

Act Quickly

Once the hook is removed, quickly and gently return the fish to the water. Don't just toss it back into the pond. If the fish hasn't regained its equilibrium, cradle it upright in your hand in the water until it can swim away. Don't move it back and forth in the water "to revive it" because gills are fragile and can be damaged by water being forced through them the wrong way.

Definite NO

Never place fish that will later be released in a live-well, in a fish basket, or on a stringer. It is better to release them immediately.

NEBRASKA POND GUIDE



Catch Record

All fishing trips should be recorded — one angler per line. If no fish were caught, place a zero under species fished for. Keep records for an entire season (the more trips the better). Use this as the original, make additional copies for the actual recordings. If bass < 8 inches or bluegill < 3 inches are caught, use the **Other** column to record them. **K** = Kept (harvested), **R** = Released (catch-and-release).

Date	Total Hours Fished	Largemouth Bass			Bluegill			Channel Catfish				Other (Species, Number, Length)			
		8-11.9"	12-14.9	15-19.9	3-5.9"	6-7.9	8-9.9	≥10	<11"	11-15.9	16-23.9		≥24		
		K R K R K R	K R K R K R	K R K R K R	K R K R K R	K R K R K R	K R K R K R	K R K R K R	K R K R K R	K R K R K R	K R K R K R				

Notes: Body condition of fish caught, etc.



See You Out There

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



See You Out There

NEBRASKA POND GUIDE



Private Waters
Program



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