

## POND CONSTRUCTION

### How deep should my pond be?

A minimum depth of at least 7 feet in the southern part of the state to 10 feet in the northern part of Illinois should be maintained in one fourth of the pond. Depths which range from 10 to 15 feet are even more desirable. The water along the shoreline should be 3 feet deep to reduce the growth of shallow water plants.

### How big should my pond be?

The ideal pond should be at least 1 acre in size when full. Smaller ponds are difficult to manage for any length of time. Their fish populations tend to be unstable and unpredictable. Excessive aquatic plants can seriously interfere with recreational uses of the pond, and also, can provide too many hiding places for small fish. Summer and winter fish kills occur more frequently in small ponds because they are often shallow. Small ponds can seldom support enough fishing pressure to make management worthwhile. They are likely to dry up or provide marginal habitat during extended period of below average rainfall.

During construction, what can I do to help prevent weeds from taking over my pond?

When ponds are constructed, certain precautions should be taken to help prevent the growth of excessive aquatic vegetation. The pond should be located in a site where drainage does not permit pollutants to reach the pond. The lining of the beach areas with sand blankets, gravel beds or fiberglass mesh mats should be done in an attempt to inhibit or prevent rooted aquatic plant growth. The shoreline edges should be deepened to 3 feet or more at the time of construction. This will help prevent the growth of excessive aquatic vegetation.

## FISH STOCKING

Ponds in Illinois vary greatly in their fish stocking needs. The owners, managers and users of these ponds also may differ in their sport fishing objectives, and require a wide selection of stocking options. Therefore, it is important to discuss pond stocking with a District Fisheries Biologist.

### What kind of fish can I stock?

Most Illinois ponds provide habitat that is suited for “warm water” fish. The warm water fish species that are stocked with success are the largemouth bass, bluegill, redear and channel catfish. The stocking of “cool and “cold water” fish as an addition to the basic fish stocking, under the proper conditions and timing, also produces good fishing.

### Stocking Options

Before the fish stocking decision is made, careful analyses of pond characteristics and angler preferences must be made. Some of the factors affecting the decision include pond type, size, depth, water chemistry, fertility, existing fish population, expected fishing pressure and harvest, and most importantly, what fish do the anglers want?

The most widely used and successful stocking combination for ponds in Illinois is largemouth bass, channel catfish, bluegill and redear sunfish. These species are popular among fishermen, and are biologically adapted to a wide variety of pond conditions. These species effectively utilize natural and artificial foods, and are compatible with many other species that might be stocked later. The concept of this stocking combination is that the bluegill eat small aquatic insects and in turn serve as food for bass. The bass control the numbers of small fish so that those remaining grow to large size.

#### Can I stock crappies in my pond?

Crappies, though popular, are not generally suitable for stocking in small lakes and ponds. Crappies are prolific spawners and produce large numbers of offspring which can quickly overpopulate. High numbers of bass, which results in slow growth rates, must be maintained to provide desired rates of predation on crappie.

#### Won't bluegill become stunted and overpopulate my pond if I stock them?

Some pond owners are reluctant to stock bluegill because of their reputation for overpopulating. The cause for most bluegill problems is traceable to overharvest of largemouth bass and/or to the overharvest of large bluegill. Redear sunfish, in limited situations are substituted for the bluegill. In most cases, they are generally stocked in combination with the bluegill at a ratio of 70 percent bluegill to 30 percent redear. The redear is a southern species and generally doesn't survive the winter, north of Interstate 80. Bass and bluegill are sometimes stocked alone if redear and channel catfish are not desired.

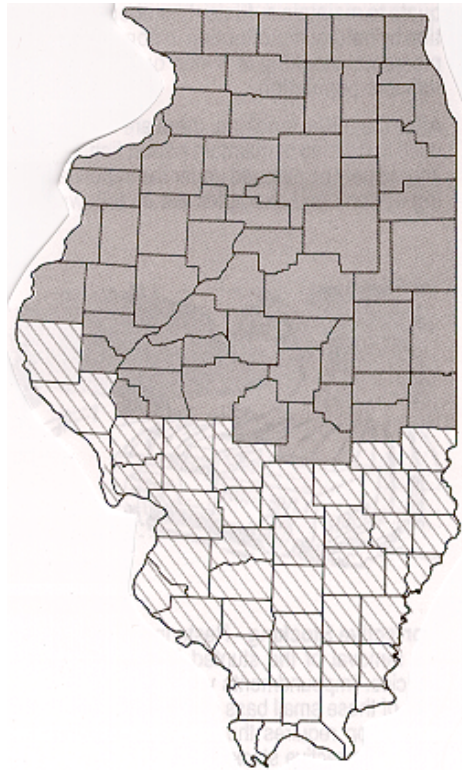
#### How big should the fish stocked be?

Fingerling fish (1 to 3 inches) are recommended for the initial stocking of new or rehabilitated ponds. It is essential that no fish life exists in the pond before the initial stocking. The single exception is to stock breeder sized fathead minnows which will create an abundant food supply that will eventually be eliminated by bass. Fathead minnows are available from private fish dealers. Other minnow species can cause problems.

#### The largemouth bass in my pond are skinny. Can I improve their condition by stocking minnows?

The IDNR fisheries biologists recommend stocking fathead minnows at a rate of approximately two pounds per surface acre to supplement forage in new ponds prior to sport fish stocking. These minnows will spawn and produce thousands of young which are great growth boosters for young sport fish. However, stocking fathead minnows into ponds with existing predator populations is much less productive, since most minnows are eaten before they can produce offspring, and it takes five to six pounds of minnows to produce one pound of bass weight gain.

# FERTILITY MAP OF ILLINOIS IMPOUNDMENTS BASED ON ALKALINITY OF THE WATER



Locate your pond in the black, crosshatched, or clear areas of the map. Use the following chart as a guide for its initial stocking.

Alkalinity	Fertility Rating	Fertility Key	Approximate Carrying Capacity LM Bass Lbs/Acre	Approximate Carrying Capacity Bluegill Lbs/Acre
More than 100 PPM (parts per million)	Good		100	400
50 to 100 PPM	Average		50	200
Less than 50 PPM	Fair		25	75

## Number of Fingerling Fish Stocked per Surface Acre

Largemouth Bass	100	80	60	90	70	50	80	60	40
Channel Catfish	100	80	60	90	70	50	60	60	40
Bluegill	1000	700	500	800	600	400	700	500	300

## Bluegill/Redear Combination

Bluegill	<b>700</b>	<b>560</b>	<b>490</b>	<b>490</b>	<b>420</b>	<b>350</b>	<b>350</b>	<b>310</b>	<b>245</b>
Redear	<b>300</b>	<b>240</b>	<b>210</b>	<b>210</b>	<b>180</b>	<b>150</b>	<b>150</b>	<b>140</b>	<b>105</b>

The above pond stocking guide is based on the utilization of natural food and does not consider artificial feeding which can potentially increase the stocking rates. By initially stocking the correct numbers of fingerlings, a pond or lake will produce sport fishing in less time than by releasing smaller numbers of adult fish. Stocking a few adult fish in a new pond results in an excessive first spawn and stunted fish. If properly managed, bass, bluegill and redeer need only an initial stocking as their natural spawning success is adequate to maintain sufficient numbers. Channel catfish do not normally maintain a population by natural reproduction in ponds in the presence of bass and bluegill. Therefore, supplemental stocking of 8 inch or larger channel catfish must be completed to sustain a fishable population.

After the initial stocking, there are numerous other fish stocking situations that may be used to develop or maintain a sport fishery. However, these more complex stocking options should only be pursued under the supervision of a fisheries biologist.

### Sources of Fish

#### Does the IDNR stock private ponds?

The Illinois Department of Natural Resources, Division of Fisheries, provides an initial stocking of sport fish for a nominal fee to privately owned impoundments 0.5 acres or larger through an application process. Applications for fish stocking must be submitted prior to August 31<sup>st</sup> of each year to be eligible for a fall stocking of fingerling sized bluegill, redeer sunfish, and channel catfish. The largemouth bass are delivered the following summer, usually early July.

#### Is my pond eligible for the IDNR stocking program?

To be eligible for fish stocking through the IDNR, a water area must meet the following requirements to insure that a desirable sport fishery is developed and protected:

- 1) There must be no fish life present in the water area prior to the stocking of state fish.
- 2) The water area must be an impoundment (pond or lake) with a surface area of one-half acre or larger.
- 3) As a minimum depth requirement dependent on latitude), the impoundment must be 7 to 10 feet deep in one-fourth of the water area.
  - Southern Illinois - 7 feet
  - Central Illinois - 8 feet
  - Northern Illinois - 10 feet
- 4) Fisheries management practices, as outlined by the District Fisheries Biologist, must be followed.
- 5) There must be no pollution of any kind entering the water area.
- 6) Livestock must be excluded (fenced) from the water area.
- 7) There must be no usage fees charged to fishermen using the state stocked impoundment.

#### Where else can I get fish to stock my pond?

In addition to the stocking program offered by the Illinois Department of Natural Resources, there are several other local, statewide and regional sources of fish for stocking ponds. Most local county soil and water districts sell a variety of fish species. Also, there are numerous private fish dealers and hatcheries throughout the Midwest that supply and deliver live fish. A listing of these fish dealers can be obtained from the Department of Natural Resources, Division of Fisheries.

## FEEDING FISH

Now that I have stocked my pond, should I feed the fish?

Feeding is not recommended as a normal procedure in pond management. Caution must be exercised not to use too much food. Too much unused food in a pond may cause a fish kill due to the decomposition process. However, if you insist on feeding your fish, there are several animal food manufacturers offer fish food pellets for sale. These foods are used most successfully in trout and catfish culture. However, pelleted fish food can also be used by the pond owner to feed bluegill. Bluegill do not usually concentrate in one place to feed; therefore, the pelleted food would have to be scattered in the shallow water areas or placed on floating feeders around the entire pond. Pelleted fish food can be fed at the rate of 2 pounds per acre per feeding. Once the fish begin taking the food, the amount can be increased, not exceeding 10 pounds per acre per day. The best guide in feeding fish is to use no more than they consume in 15 - 20 minutes. Feeding bluegill may result in larger and fatter fish, but not necessarily better fishing. Bass do not take pelleted food very readily unless they learn to do so when very young (2 inches).

## WHEN AND HOW TO FISH YOUR POND

When can I start to fish my pond after it has been stocked with fingerlings?

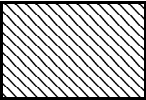

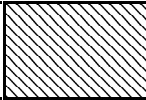

It is a good idea to allow the fish two complete years for growth before any harvest. In the second year following the bass stocking, sometime between May and July, the bass spawn for their first time. Bass do not reproduce until they are two years old. Initial panfish harvest is permissible by mid-July of the second year following the bass stocking. Remember that channel catfish do not usually reproduce in ponds so harvest should keep pace with restocking plans. Bass harvest is permissible in mid-July of the third year following their introduction, usually when they are 15 inches or larger.

How many fish should I harvest?

Everyone likes to catch bass, but removing too many them seriously jeopardizes the future of quality fishing. The average Illinois pond supports about four times as many pounds of bluegill and redear sunfish as it does bass. Therefore, much more effort, perhaps 20 times as much must be directed toward catching bluegill than toward bass. The following recommendations are provided as guidelines for maximum angling harvest per year for a typical one acre pond:

### FISH HARVESTING GUIDE

Species of Fish	Largemouth Bass			Bluegill and/or Redear Sunfish		
Carrying Capacity of Pond (Pounds per acre)	25	50	100	75	200	400

Fertility Map Key (see previous map)						
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Angler Harvest: (per acre)

1 <sup>st</sup> Year Max. Number	None	None	None	None	None	None
1 <sup>st</sup> Year Max. Pounds	None	None	None	None	None	None
2 <sup>nd</sup> Year Max. Number	Catch & Release Only	Catch & Release Only	Catch & Release Only	120 *	320 *	640 *
2 <sup>nd</sup> Year Max. Pounds	Catch & Release Only	Catch & Release Only	Catch & Release Only	30	80	160
3 <sup>rd</sup> Year Max. Number	10	20	40	120 *	320 *	640 *
3 <sup>rd</sup> Year Max. Pounds	10	20	40	30	80	160
Each Succeeding Year Max. Number	10 **	20 **	49 **	120 *	320 *	640 *
Each Succeeding Year Max. Pounds	10	20	40	20	80	160

\* 6 inches and larger

\*\* After quota is reached all bass over 18 inches can be harvested.

## AQUATIC VEGETATION MANAGEMENT

I have excessive weed growth in my pond and don't know how to control it. Can I obtain assistance from IDNR?

Excessive vegetation in a pond can be managed through chemical, biological, or physical means or some combination of these measures. The first step toward prudent vegetation management includes identification of aquatic plants. Once plants are identified, an appropriate approach for control can be formulated. Contact your local IDNR district fisheries biologist for literature and advice.

My pond has an algae problem, can I stock grass carp to control this?

Grass carp aren't generally stocked for algae control. They will tend to only eat filamentous algae if there is nothing else better available to them. In so doing, the body of water would convert itself to planktonic algae which is worse. Our own fish hatchery, Jake Wolf, got rid of the grass carp they had for just that reason. They were making water quality problems which hurt the young fish and clogged the filters.

## REMOVING UNDESIRABLE FISH

I have a lot of carp and bullheads in my pond that I want to get rid of. How should I proceed?

The undesirable fish can be removed by two methods: draining and chemical treatment. If the pond can be completely drained, the pond bottom should be left dry for several weeks. If any

water is left after draining, it should be treated with a fish toxicant to assure a complete fish kill. In order to use aquatic pesticides, such as rotenone, a Permit to Remove Undesirable Fish must be obtained from the Department of Natural Resources' Division of Fisheries. Aquatic pesticides are listed by the USEPA as "Restricted Use Pesticides", they may only be received and possessed by a Division of Fisheries biologist. Treatment of water areas with fish toxicants must be done by one of these biologists per Illinois Administrative Rule 890. The permit to Remove Undesirable Fish and a detailed explanation of Rule 890 may be obtained from the IDNR fisheries biologist.

Emulsifiable rotenone is very effective for the reduction or eradication of undesirable fish populations. The chemical inhibits a biochemical process at the cellular level making it impossible for the fish to use oxygen in the release of energy needed for body processes. The fish cannot be revived by transferring them to untreated water. Rotenone affects all species of fish although susceptibility to the chemical varies between species. Emulsifiable rotenone, 5 percent or 2.5 percent synergized, is generally used at a minimum concentration of 3 parts per million (1.0 gallon per acre foot). A stronger concentration may be required in waters that are very alkaline and highly turbid, caused by either algae or silt. Swimming may take place in waters treated with rotenone following completion of the application of the rotenone.

## **FISH KILL**

### What causes a fish kill and how can I prevent it?

Many things can cause the death of fish in ponds - and when the fish are dying it is usually too late to stop the kill. However, many fish kills can be anticipated, and measures taken to prevent them.

### Winter Kill

During winter, the oxygen supply under the ice depends upon the passage of light and the production of oxygen by tiny plants in the water. If snow covers the ice, sunlight cannot penetrate and the plants are unable to produce oxygen. The supply of oxygen is gradually used up by decay processes and by the respiration of fishes and other aquatic animals. If the snow remains on the ice long enough, oxygen is depleted and the fish suffocate. Dead fish are usually found in the spring after the ice melts. However, if the kill occurs early in the winter, there may be few, if any, dead fish observed when the pond opens in the spring.

Winter kill is most likely to occur in fertile, shallow, weed-filled ponds. To prevent winter kills, deepening the pond, and removing fertile organic matter, will help. Removing the snow cover from the ice will permit light to penetrate to the underlying plants. Making holes in the ice **will not help**. Artificial aeration can help fish survive and prevent oxygen depletion. Compressed air systems should be utilized in depths which exceed eight feet.

### Summer Kill (Aquatic Plant Die-Off)

Ponds that contain an abundance of submersed aquatic plants or algae sometimes have a fish kill when these plants die suddenly from natural causes or from herbicides. Aquatic plants frequently die during midsummer and use up the oxygen in the water as they decay and fish suffocate as a result. This type of summer kill almost always occurs about sunrise when the dissolved oxygen is at its low point for the day. Natural die-offs of phytoplankton (algae) blooms are a common cause of summer kill. On rare occasions fish may die or be in distress in mid-afternoon because of increased pH of water, supersaturation of oxygen (gas bubble disease), or toxic algae blooms.

To prevent a summer kill, control of the rooted aquatic vegetation and algae so that they never become dense is recommended. If the stand is dense, treat only a part of it at any one time and allow that part of the vegetation to decay before further treatment. Artificial aeration can help fish survive and prevent oxygen depletion. Compressed air systems should be utilized in depths which exceed eight feet. In lakes and ponds where depths do not exceed eight feet, blower systems are more efficient.

### Summer Kill (Temperature)

Water temperatures in shallow ponds may reach 90 to 95 degrees during hot summer months. Water holds very little oxygen when its temperature is above 90 degrees F. On days with little breeze, little or no oxygen is added to the water, and the dissolved oxygen may disappear entirely just before dawn and as a result fish would die from suffocation.

To prevent this kind of summer kill, ponds should be deepened so that 25 percent of the area is 7 to 10 feet deep or deeper. Artificial aeration can also help fish survive and prevent oxygen depletion. Compressed air systems should be utilized in depths which exceed eight feet. In lakes and ponds where depths do not exceed eight feet, blower systems are more efficient.

### Organic Pollution

Barnyard, feedlot, silo, and sewage drainage that consumes oxygen as it decays, can quickly deplete the oxygen in a pond and cause fish to die from suffocation. Many times these kills are noticed after a rain after organic pollution has washed into the pond.

To prevent fish kills from organic pollution, organic wastes need to be kept from entering ponds by the use of proper livestock confinement practices and appropriate agricultural practices.

### Pesticides

Farm crops on the watersheds of ponds are often sprayed with pesticides. Rain may wash this material into the pond and readily cause a fish kill from exposure to the chemicals.

To prevent such a kill, caution should be exercised in the selection and application of pesticides, and in the time of treatment. Also, application equipment should not be spray washed in or near ponds.

### Natural Mortality

In the spring a few large fish may be found dead along the shoreline. Such mortalities are often the result of natural causes. The natural resistance of fish to disease is lower in the early spring than at any other time of the year. Larger fish often seem to be more susceptible to disease than smaller fish.

### Industrial and Mining Wastes

Many industrial wastes are toxic to fish. Other industrial wastes are organic, consuming dissolved oxygen and killing fish by oxygen depletion. Mining wastes kill fish by the direct effects of acids and sulphur compounds.

To prevent such kills, wastes from mines and industrial plants should be kept from entering ponds.

## **FISH DISEASES**

### **Yellow Grub**

As I was cleaning a fish, I noticed tiny white worms in the fillet. What are these and is the fish still okay to eat?

What you are seeing sounds like yellow grubs. Yellow grubs are worm parasites that spend part of their life cycle in fish. The adult grub lives in a heron's mouth. They lay eggs in the saliva which wash out of the bird's mouth as it feeds. Upon emerging from the water, the eggs hatch and the larvae must invade the flesh of a particular type of snail of the genus *Helisoma*. If these snails are not present in the lake, the life cycle is broken. If this genus of snail is present, the larvae invade its flesh and multiply themselves manyfold. When they mature, they burst out of the snail and penetrate the fish's skin and become encysted in the muscle. This encysted form may be white or yellow and 1/8 to 1/4 inch long. When teased out of its cyst, it wiggles, squirms and crawls about. The large size and active behavior of this grub can shock anglers when they fillet an infected fish. The life cycle is completed when the fish containing these encysted grubs is eaten by a feeding heron. Dissolved out of their cysts by the digestive juices of the heron, they mature into adult worms, which migrate up the bird's gullet to its mouth, where the life cycle begins again. This parasite is **not** a parasite to man. Fish infected with them **are edible**.

### **Black Spot**

The fillets of the fish I cleaned appear "peppered". What is this caused by and are they safe to eat?

What you are describing sounds like black spot. In black spot, the adult grub lives in a kingfisher's intestine, depositing eggs that enter the water via the bird's feces. Upon entering the water, the eggs hatch and the larvae enter the body of a snail. When they mature, the larvae burst out of the body of the snail and swim to the nearest fish. They become encysted in the fins, under the scales and in the meat. The fillets of an infected fish may appear to have been "peppered". The black pigment is actually provided by the fish. The tiny grub itself is white. This parasite is **not** a parasite of man. Fish infected with them **are edible**.

### **Control of Yellow Grub and Black Spot**

How do I control yellow grub and black spot in my fish?

In order to help minimize the number of grubs in your fish, you must attempt to break the parasite's life cycle by reducing the numbers of snails present in your pond. The best way to do this is to 1) control the aquatic weeds in order to remove hiding places for the snails and 2) stock at least 100 redear sunfish per acre (stocking adults is most effective). Redear sunfish are known as shell crackers in the southern U.S. because their feeding litters the pond bottom with broken snail shells.

## **LAKE MICHIGAN**

How many salmonids are stocked in Illinois waters of Lake Michigan?

The annual stocking plan calls for 305,000 chinook (king) salmon, 300,000 coho salmon, 60,000 lake trout, 100,000 rainbow trout, and 100,000 brown trout.

How many salmonids are stocked in Lake Michigan?

Approximately 14.5 M (million) salmonids are stocked annually in Lake Michigan: 5.6 M chinook (king) salmon, 2.6 M coho salmon, 2.4 M lake trout, 1.9 M rainbow trout, 1.6 M brown trout, 245,000 brook trout, and 80,000 splake (a hybrid of brook trout and lake trout).

How can I charter a boat to fish for salmon on Lake Michigan?

Charter fishing trips can be arranged by calling any of the three charter fishing associations.

North Point Charter Boat Association (Winthrop Harbor)

(800) 247-6727

<<http://www.salmonoid.com/npcba/>>

Waukegan Charter Boat Association (Waukegan)

(847) 244-3474

<<http://www.big-fish.com/wcba/>>

Chicago Sportfishing Association (Chicago)

(312) 922-1100

<<http://www.great-lakes.org/il/fish-chicago/index.html>>

### Where can I launch a boat to fish Lake Michigan?

Lake Michigan boat launches are available at North Point Marina in Winthrop Harbor, Waukegan Harbor, Lloyd Park in Winnetka, Dawes Park in Evanston, Diversey Harbor, Burnham Harbor, Jackson Harbor, and 95<sup>th</sup> Street in Calumet Harbor.

### Where is the artificial reef?

The artificial reef is located east of the 59<sup>th</sup> Street Harbor in 25 ft of water. It is 800 ft long, oriented north-south, and rises an average of 7 ft off the bottom. GPS coordinates for the reef are N 41° 47.600 / W 87° 33.133 (north end) and N 41° 47.473 / W 87° 33.144 (south end).

### Can I eat Lake Michigan fish?

The Illinois Department of Public Health issues annual guidelines for the consumption of Lake Michigan fish based on the species and size of the fish. These can be found in the Illinois Fishing Information (regulations) booklet.

### Where can I fish in the Chicago harbors?

Fishing is allowed in most of the Chicago harbors. Contact the Chicago Park District at (312) 747-PLAY to obtain a brochure indicating designated fishing areas for the Chicago harbors.

## **FISHING**

### Can I use bluegill as bait?

Thanks for writing. There is nothing in the Illinois Fish Code which prohibits the use of legally taken bluegill or sunfish as bait for another species of fish. The bluegill/sunfish must have been taken by a properly licensed sport fisherman using legal sportfishing devices. You must also observe all size and creel limits both where the bluegill/sunfish were taken and where they are being used as bait. Also, it is illegal to cut up or dress or be in possession of cut up or dressed fish on any body of water where there is a size limit for that particular species of fish.

### Do I need a fishing license to fish our subdivision's private lake?

At first many people think that if they live in a subdivision with a lake, that they are a landowner

and exempt from having a fishing license. This unfortunately is not correct. Section 5/20-15 of the Illinois fish code (ILCS 515) specifically states that the landowner fishing license exemption "does not apply to club lakes, organizational lakes, or lake developments".

Do I need a fishing license to fish my private pond located entirely on my property?

**Owners or tenants (if they reside on the land) may fish in waters on or flowing over their lands without a license. This exemption does not apply to club and organizational lakes or lake developments. Guests must have a fishing license to fish the lake** unless they meet any of the requirements exempting persons from needing a license - such as being under age 16, Illinois residents who are disabled or blind, or Illinois residents on leave from active duty in the Armed Forces.

Can I catch and take as many fish as I want from my lake?

A privately owned and stocked/maintained lake is still covered by Illinois statewide sportfishing regulations. These regulations can be found in our "2003 Illinois Fishing Information" booklet which can be found anywhere licenses are sold as well as on our DNR homepage. The statewide regulations are on page 8 of the booklet while the information regarding licensing requirements is on page 3.

Do kids under age 16 need to buy a trout stamp to fish for trout?

No. People exempt from purchasing fishing licenses are also exempt from purchasing a trout stamp.