

On T.R.A.C.K.S.



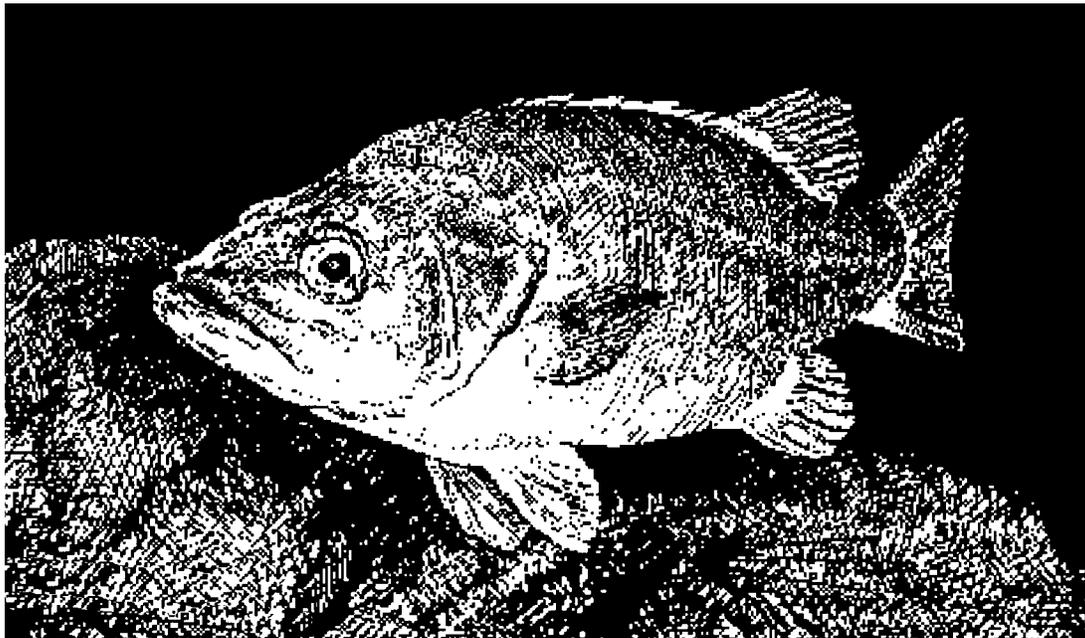
Teaching Resource Activities and Conservation to Kansas Students

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Kansas Wildlife & Parks

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Fish, Fish, and More Fish



Inside...

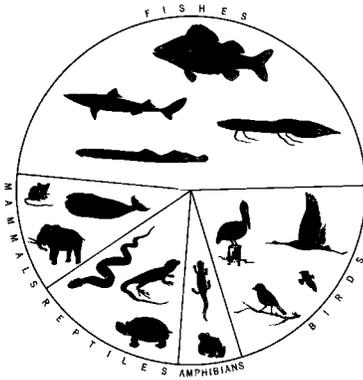
A Fish Is A Fish When?	2
Did You Know	3
It's All In The Family	4
Oh Give Me A Home Where The Fish Roam	6
Aliens in Our Midsts... Non-Native Fish In Kansas ..	8
A Year In The Life Of A Biologists	9
Investigate A Fish	10
Red Alert	10
Reference Center Addendum	11
Fishy Who's Who	13
The Wild Exchange	14
Kansas Earth Day Events	16
Words of W.I.L.D.	17
What's Happening	19

**Coming
Next
Fall:**

**Student
Guide to
Using an
OWLS Site**

A Fish Is A Fish When?

When asked to describe a fish, most of us would answer that fish live in water and take in oxygen through gills. Many kinds of animals that live in water are mistakenly called fish, from jellyfishes to starfishes. As a rule, fish are rather easy to recognize because they possess a combination of characteristics not found in other animals. Typically, fish are cold-blooded animals with backbones, gills, fins instead of legs, and scales covering the body. Most are torpedo or football-shaped-- the shape best suited for moving through water (a medium much denser than air) , however, some are round, others are flat, and still others are angular.



Fish are the most numerous of all vertebrates. No one knows exactly how many kinds of fish there are but even the most conservative estimates indicate more than 15,000

species of fish with some estimations as high as 40,000 species. One thing is certain, however, there are nearly as many fish species as all other vertebrates combined.

Fish are also masters of occupying a wide variety of places. They live almost everywhere there is water. They have been found in the waters of the Antarctic, in hot springs of more than 104OF, and in water saltier than the seas. Their vertical range of distribution also exceeds that of any other vertebrate. Fishes range from approximately 3.1 miles above sea level to some 6.8 miles beneath it.

To the Greeks, fish were known as ichthyoes and today, the scientific study of fishes is known as ichthyology. The common name fish comes from the Latin word pisces.

Fins. Most fish possess five types of fins used chiefly for stabilizing, steering, and braking. These are the **dorsal fin** on the centerline of the back, the **tail fin**, the **anal fin** on the underside opposite the dorsal fin, a pair of **pelvic fins** on the belly, and a pair of **pectoral fins** behind the head. The pelvic and pectoral fins can be compared to the arms and legs of mammal and their positioning on the fish provides an important means of identifying the major groups of fish.

Scales. Most bony fishes are covered with scales. Scales are small, thin structures, generally overlapping, and usually made of bone. Scales grow throughout life, increasing in size with the fish. Growth, in many species, results in concentric rings of bone being laid down and allows biologist to age a fish by counting the rings.

Air Bladder. The air bladder is a thin-walled hollow sack that allows a fish to adjust its density to match that of the surrounding water, thereby, making the fish "weightless".

Senses. Like all other animals, fish possess the five major senses of hearing, sight, smell, taste, and touch. Sound travels better in water than air and fish have good hearing, accomplished through the inner ear and sometimes aided by the air bladder.

The sense of smell is highly developed in many fish and experiments have shown that some fish recognize their home by its smell. Fish detect odors through the nares (nostrils) located between the eyes and in front of the snout.

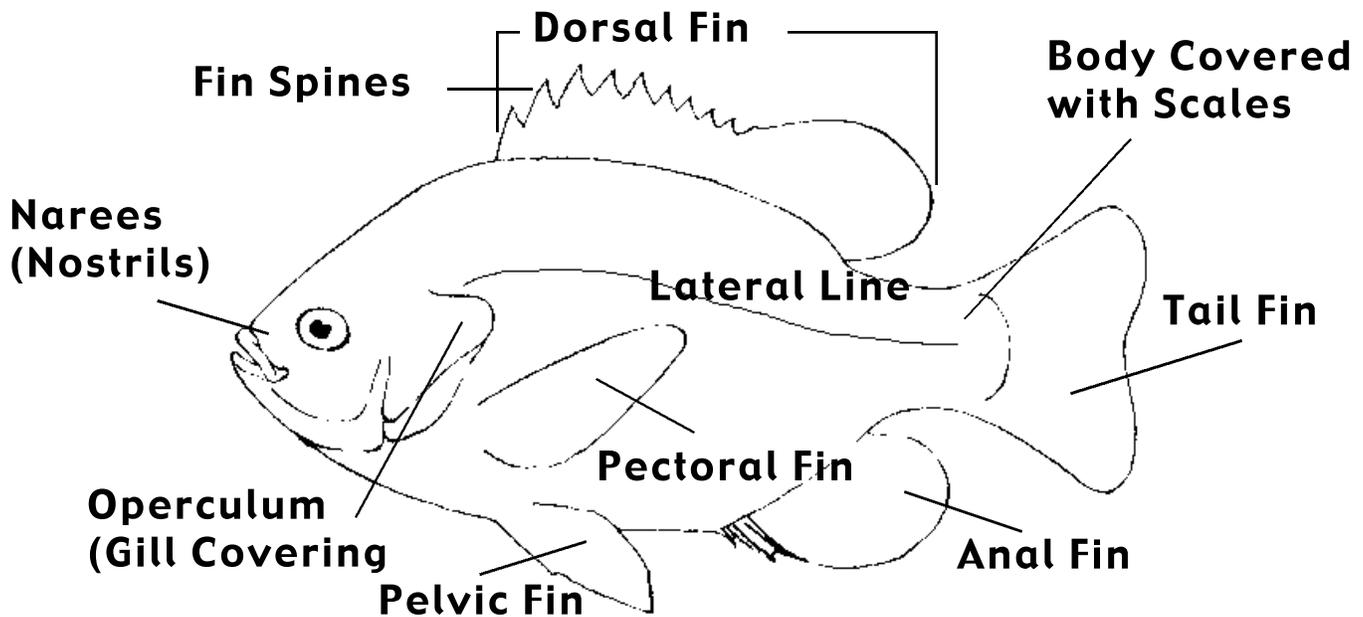
Taste is another important sense for fish. It is less important, however, to those fish that locate food by sight. Unlike other vertebrates, fish can have taste buds outside the mouth(i.e. on the whiskers of catfish) since they are not subject to drying out in their watery world.



Fish are near-sighted due to the optical qualities of water. This is no great hardship since turbidity and other factors can greatly reduce the amount of light available for distance vision.

Finally, fish possess a sense to which humans and other vertebrates have no comparison--that is the lateral line system. This

sense has been called "distant touch" and may be thought of almost as a form of underwater radar or sonar. Any motion in water causes vibrations of very low frequencies and causes pressures on different parts of the surface of the fish. These pressures are detected by the lateral line, a series of tubular canals mostly under the scales.



DID YOU KNOW?

The first vertebrates to appear on earth were the fish, some 350,000,000 years ago.

The world's largest fish, the giant basking shark, can reach a length of 45 feet. It feeds on tiny organisms called plankton.

A dog shark was caught almost four thousand miles from where it was tagged. It had traveled from the American Pacific coast to the Japanese coast.

Some electric rays produce more than 200 volts, enough to light up four average light bulbs.

Adult paddlefish don't have teeth, but the young do.

Some species of sturgeons become sexually mature only after they reach the age of twenty or more years.

Minnows have teeth in their 'throat' instead of their jaws.

A female sturgeon may lay up to five million eggs at one time.

A thirteen-inch mullet may have a digestive tract seven feet long.

The largest striped bass on record (125 lbs) was caught in North Carolina.

It requires, on the average, 700 man-hours to catch a muskellunge by hook and line.



It's All In The Family

There are three classes of living fishes today: the **jawless fishes** (lampreys and hagfishes) the **cartilaginous fishes** (sharks, skates, rays, and related fishes), and the **bony fishes**. Ninety-seven percent of the world's fish species belong to the group of bony fishes.

Although Kansas is not famous for its fishes, there are over 120 different species of fish to be found here. No species of fish is only found in Kansas, but a few are more abundant here than in any other state.

The following is a list of the families of Kansas fishes in phylogenetic order* (from the most primitive to the most advanced):

Jawless Fishes (Class Cephalaspidomorphi)

Lampreys (Family Petromyzontidae)



Lampreys are remnants of a group of jawless fishes

that lived more than 350 million years ago. The mouth is a sucking disc since the adults are parasitic on other fishes. The chestnut lamprey is found in Kansas only in the Missouri and Kansas Rivers.

Cartilaginous Fishes (Class Chondrichthyes)

No representatives in Kansas

Bony Fishes (Class Osteichthyes)

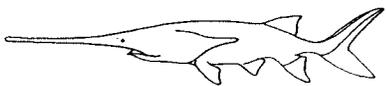
Sturgeons (Family Acipenseridae)



These fish resemble sharks somewhat in their appearance

esp. due to their large upper tail fin. The eggs of sturgeon, known as caviar, is world famous.

Paddlefish (Family Polyodontidae)



One of the most unusual fish to grace Kansas waters. A distinctive

feature of this fish is its long, paddle-shaped snout whose function is still not known. Even though it is one of the largest freshwater fishes, reaching weights over 100 lbs, it feeds only on microscopic organisms that it strains from the water.

Gars (Family Lepisosteidae)



Gars are easily recognized by their slender, cylindrical bodies and long beaks heavily

fortified with teeth. In gars, the air bladder can function as a lung allowing the gar to survive out of the water for more than an hour. These are the only fish in Kansas having toxic parts --their eggs are poisonous. Kansas is home to three species of gar.

Bowfins (Family Amiidae)



This family contains only one living species. They have been reported to

bury themselves in the mud of drying pools, and survive until rains restore their lake. Not common in Kansas.

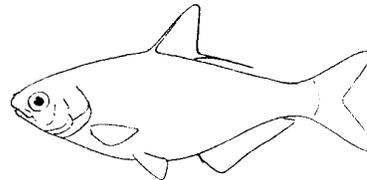
Freshwater Eels (Family Anguillidae)



Many kinds of eels are found in the seas, but only one species occurs in the freshwaters of North America. Eels are a

brownish-colored fish with a slender, snakelike body. No eels ever begin life in Kansas--they are born more than 3000 miles away in the Atlantic Ocean.

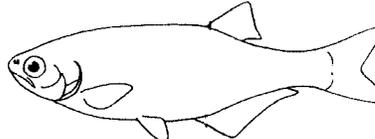
Herrings (Family Clupeidae)



Gizzard shad is the best known member of this family in Kansas. They are important food for most of the game fish in reservoirs and can

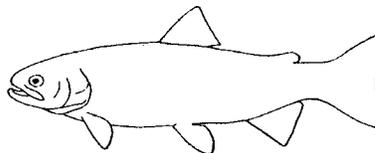
be considered the most abundant Kansas fish.

Mooneyes (Family Hiodontidae)



Goldeyes generally occur in large rivers and get their name from a reflective layer of tissue behind the visual cells that produces an "eye shine".

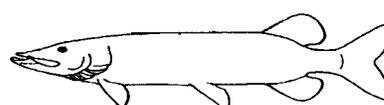
Trout (Family Salmonidae)



There are no self-sustaining populations of trout in Kansas, however, at least six species have been introduced here

in the past. Stockings in some waters occur in the winter months.

Pikes (Family Esocidae)

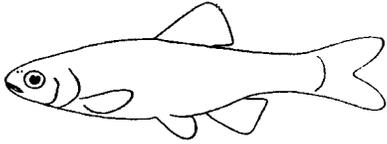


Northern pike were introduced into Kansas starting in 1962 to help stabilize reservoir

fish populations. Walleye, of the perch family, are sometimes mistakenly called "walleyed pike!"



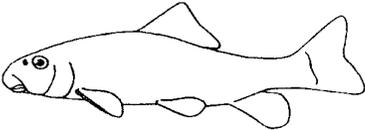
Minnnows (*Family Cyprinidae*)



More than a third of all the different kinds of fish in Kansas are minnows and minnows are

easily the most successful group of fishes in Kansas and most of the freshwaters of the world. Being small does not make a fish a "minnow"--the carp is a minnow that grows to be more than three feet. Other fish species that belong to this group include the chubs, goldfish, shiners, stonerollers, and grass carp. Minnows are the main food of most predatory fish in Kansas streams.

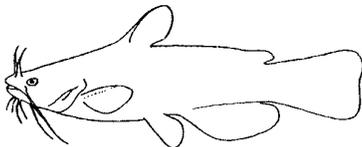
Suckers (*Family Castostomidae*)



Suckers, as the name implies, usually have mouths located on the underside of the head with which they suck

up material from the bottom. Some suckers can grow to be very large like the bigmouth buffalo which may weigh over 80 pounds.

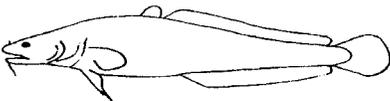
Catfish (*Family Ictaluridae*)



Twelve kinds of catfish occur in Kansas and six of these are so small and secretive that

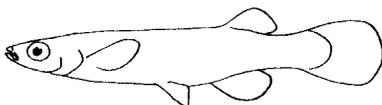
they are never seen by most people. The barbels (whiskers) of the catfish are covered with hundreds of tastebuds which lets the catfish taste its food before it is in the mouth! Consequently, catfish can survive well in muddy water since they don't rely on their eyesight to find food. The sharp spines on the pectoral and dorsal fins of the catfish can cause pain like a bee sting if handled improperly.

Codfishes (*Family Gadidae*)



The burbot is the only codfish that occurs widely in freshwater and only extends into the northeast corner of Kansas.

Topminnows (*Family Cyprinodontidae*)



The topminnows are a small group of fish that resemble the minnows. Their

mouths are tilted upwards to feed just beneath the surface of the water.

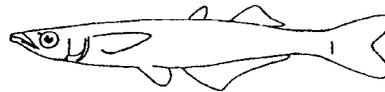
Mosquitofish (*Family Poeciliidae*)



This fish was introduced into Kansas in the 1940's and it is the only

Kansas fish that gives birth to young rather than lay eggs--just like pet store guppies. As the name suggests, they eat mosquito larvae.

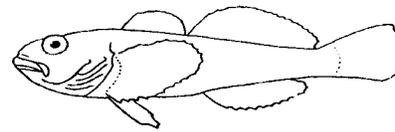
Silversides (*Family Atherinidae*)



The brook silversides is the only widespread freshwater species in a family

that is mainly marine.

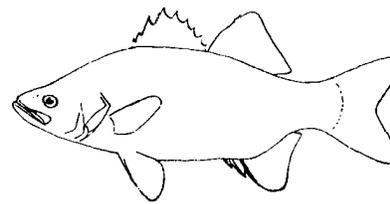
Sculpins (*Family Cottidae*)



The banded sculpin is the only sculpin found in Kansas and it is found only in the

Ozarkian streams of the southeast corner of the state.

Sea Basses (*Family Percichthyidae*)

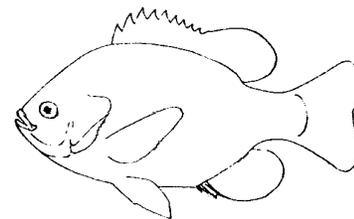


This group includes the striped bass, white bass, and a hybrid of both called the "wiper".

The white bass may have occurred natu-

rally in eastern Kansas but its present abundance, along with the striped bass and wiper, are due to stocking by man.

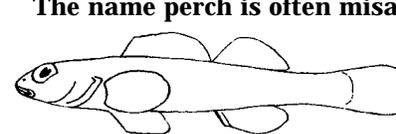
Sunfishes (*Family Centrarchidae*)



There are twelve members of this well-known family in Kansas. They can be divided into three major groups: black basses (large-mouth, smallmouth, and spotted bass), crappies

(black and white), and the panfish like bluegill, redear, green sunfish, or orangespotted sunfish.

Perches (*Family Percidae*)

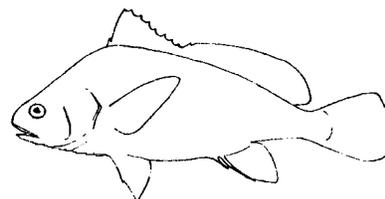


The name perch is often misapplied to many different fish, especially the small sunfish.

Members of this family are the yellow

perch, walleye, sauger, and darters. Darters are small, often colorful fish, that dart from place to place. They are usually found in the riffles and runs of clear streams.

Drums (*Family Sciaenidae*)



Most of the species in this family are also marine. Drum get their name from a peculiar booming sound the fish produces by muscular

action against the air bladder. Drum also contain large otoliths, sometimes called lucky stones, in the head which have been used in the making of jewelry.



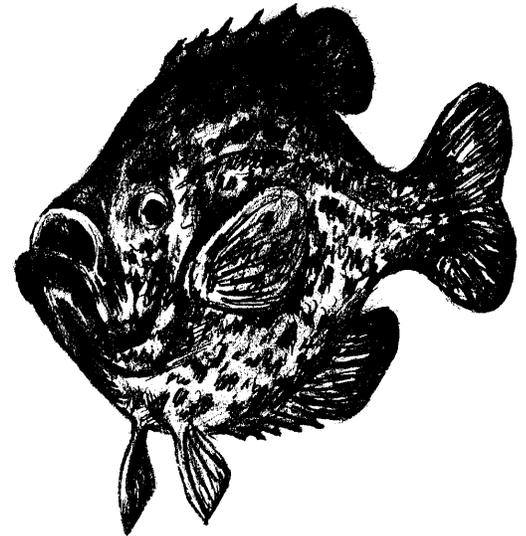
"Oh, Give Me A Home Where The Fish Roam?"

Our state symbols include an animal, a flower, a tree, an insect, a bird, a reptile, and an amphibian--but there is no state fish! We hope the following articles may inspire someone out there to take the chal-

lenge of beginning a campaign to adopt a fish to represent Kansas! We have given you our top three choices! We'd like to hear from you if you do decide to take up the torch. Good Luck!

CANDIDATE ONE THE WHITE CRAPPIE

There is only one fish that could be rightfully crowned 'state fish' - that's me-the white crappie. My scientific name is *Pomoxis annularis*. Unlike my cousin, the black crappie, I'm native to Kansas, always have been! I'm a hardy fish found in all types of water habitats like rivers, streams, ponds and lakes. According to the experts Frank Cross and Joseph Collins, who wrote the book called *Fishes in Kansas*, I may be the most important sport fish in Kansas. More of my species is caught than any other. My common name, crappie, (that's pronounced Craw-pee if you didn't know) may have come from the French word, crepe - for pancake, which sort of resembles my shape in a frying pan!! I have beautiful colors on my body that shimmer silver and black, especially in the sunlight. I think it makes me an attractive fish deserving a state emblem recognition! After all, many of the symbols already chosen also share my black color. Yes siree, if you are looking for a state fish, no other fish compares!



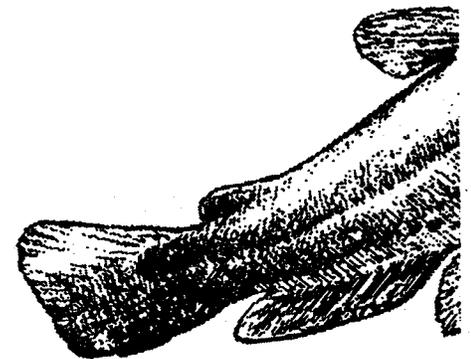
CANDIDATE THREE THE CHANNEL CATFISH

Don't listen to these other two guys. If you're looking for a state fish, then I'm who you want. I can live in any water in Kansas, even the cloudiest farm pond around! I use my sense of taste and smell to find my dinner. Did you know that I can taste food before I get it into my mouth? Neat trick, uh? I have taste buds on the outside of my mouth on my whiskers (really, they are called barbels) that hang down from my chin.

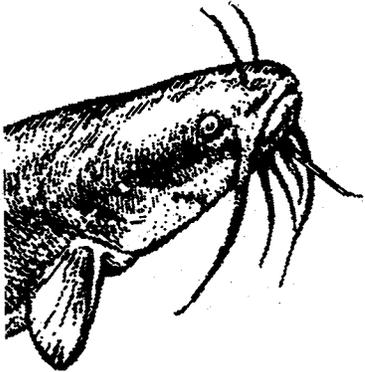
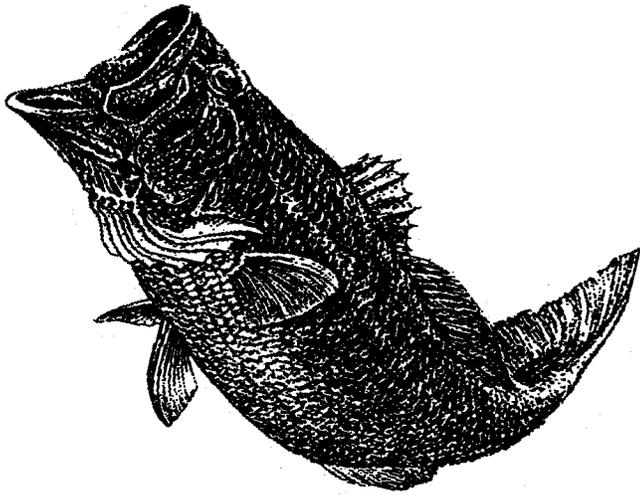
Speaking of whiskers, don't you think they

are handsome? Sort of reminds you of your favorite kitty cat, doesn't it? Of course, I don't have fur like a cat. Since I'm a fish, I should have scales but I'm different it that respect too. As a matter of fact, I don't even have scales like other fish. Instead, my body is smooth.

Just like a cat with sharp teeth, I have sharp spines on my dorsal fin and pectoral fins. If you try to handle me improperly, you may get poked by one of my spines. This can be a painful experience, sort of like



CANDIDATE TWO THE LARGEMOUTH BASS



"Mr. Muscle" is my nickname and don't you forget it! I'm arguably one of the most popular sportfish in Kansas especially because of my predacious nature. My philosophy is simple: "If it doesn't eat me, I'll eat it."

I live in ponds, lakes, reservoirs, and rivers throughout Kansas. I belong to a big family of fish so I have lots of cousins - all the sunfish and even my contender over there, the white crappie. I'm the most abundant of all the members of my unique group called the black basses. Static, shallow, murky water with structures like weeds, submerged timber, or rocky outcrops makes an excellent place for me to live.

Most people consider me a very important member of the aquatic environment since I'm what's called a 'top carnivore' in most Kansas' ponds. I eat any and all smaller fish, especially the bluegill and crappie. Hey, don't feel bad for the little guys-we big fish hafta eat too! After all, we consider you a predator! In fact, the biggest one of my species caught by you in Kansas was 11 lbs. 12 oz! Pretty big, uh?

If Kansas is looking for a state fish, then I should be it. I'm common; a great sport fish; and play a key role in all aquatic habitats that supports fish.

being stung by a bee!

I don't care what anybody else says, I'm by far the most popular fish in Kansas! I find my way into all kinds of city lakes where kids can catch me! You can't always find my contenders in such easy to get to places. Besides, raising catfish for commercial production started in this state! There's no doubt about it, I should be the state fish for Kansas!



Aliens in Our Midsts ... Non-Native Fish in Kansas

Fish species in Kansas have undergone considerable changes since the arrival of the first settlers. Most of these changes are a direct result of man and his habitat alterations, especially the damming of rivers to create reservoirs. With the creation of these reservoirs, new species have been introduced and the production of desirable species (which may not have been common in Kansas) has been promoted. Only in a very few cases has a species simply extended its range through a natural process. Let's take a look at some of these newcomers and the stories behind their arrival.

The first species to be officially introduced in Kansas was the American Shad in the year 1872. The purpose of this stocking was to increase the food fish available to predators, such as bass. Stocking this particular species of shad was not successful. California Salmon and Lake Trout were also stocked in Kansas in the late 1870's, but they fared no better than the American Shad.

In 1880, the Carp became the first successfully introduced species in Kansas. It now inhabits nearly every body of water and is particularly abundant in reservoirs and large rivers. Favored as fine food in Europe and Asia, the carp did not gain such a following in Kansas. Carp compete with native fish for food and can alter habitat in ways which may be detrimental for native fish. Two other carp, the bighead and the grass carp, have recently been introduced in Kansas, but for completely different reasons.

The Mosquitofish was introduced into Kansas via the Ninnescah River during the mid-1940's. It was introduced to feed on mosquito larvae and pupae, thus serving as a detriment to mosquito populations. Since it's susceptible to extreme cold, it's population may fluctuate in any given area. The range of the mosquito-fish has recently expanded northward to the Kansas River basin near Lawrence.

The "hottest" fish in Kansas right now is the Rainbow Trout. In the last few years, numerous stockings of the this excellent game fish have occurred, primarily during the winter months when the water is coldest. With so little suitable water in Kansas for trout, no self-sustaining populations exist in the state. But, without stockings, Kansans would not have had the opportunity to try their skills against this highly prized fish.

Although the Goldfish is a cousin of the carp and has been introduced in Kansas many times, (mainly as a bait fish) it has not been as successful as the carp in establishing itself in the state. Goldfish have been caught almost everywhere in the state, but is not considered a common fish.

When it comes to sportfish, there are many species whose populations are a result of man's introductions. Trout, mentioned earlier, are just one example. Many may find it hard to believe the Redear Sunfish is not native to Kansas. It is fairly common now in many farm ponds and small reservoirs. Other sportfish introduced into Kansas over the years are: Striped Bass, Wiper (a hybrid produced from a striped bass and the white bass), Black Crappie, and the Saugeye (a hybrid produced from the walleye and a sauger). Both the Wiper and Striped Bass are hard fighters and are known for their aggressive runs. Neither has been proven to reproduce naturally in Kansas so they must be maintained through stocking programs. The Saugeye has only been stocked since 1990, but may have a real future in Kansas. It just may fill the niche in lakes where it's cousin, the Walleye, is not doing well.

As you can see, Kansas' fish species have been changing and they will continue to change. It is our hope, through good stewardship, we will be able to insure that any new introductions in the future will not be at the expense of our native fish.



A Year in the Life of a Fisheries Biologist

Often folks wonder just what a fisheries biologist does. Some think we simply fish and get to be outside all day. Others probably think that we sit in an office all the time and push papers. Most people don't really know what we do but would eagerly trade jobs with us in a minute!

The basic job of a fisheries biologist is to manage fish populations in public lakes and reservoirs in order to maintain healthy and balanced fish populations. In extremely simple terms, our job is to make fishing better for the angling public. This may sound simple, but there is more to it than meets the eye.

Managing fish populations involves a variety of activities such as collecting data on fish populations, taking scales and spines of fish for aging, conducting creel surveys to evaluate harvest and angler use of the resource, stocking fish when and where necessary, developing and implementing regulations such as length and creel limits, improving fish habitat, and a whole host of other activities! A fisheries biologist also has to keep the public informed about fishing opportunities with weekly fishing reports and occasional news releases, provide programs to sportsman groups and civic organizations, put on fishing clinics and programs to educate the public about fishing techniques, and even write articles for outdoor magazines on fishing and fishing related topics. Fish management includes lots of things!

The calendar year starts, of course, in January--winter time. This time is spent in the office working up the fish data collected in the warmer months of the year. Data must be analyzed, tabulated, and put into a report form. For each lake, an Annual Progress Report and Management Plan is due in March. This report allows us to compare fish populations from year to year and helps us make those management decisions, like stocking of fish, that need to be made.

When March rolls around, the field work begins to pick up. Creel surveys start at the beginning of this month and run for 8 months

through October. Habitat work, like placing brushpiles, if not finished before the ice melts, continues into this month and the first of the fishing information for the upcoming season is being given out. Late in March, most of the biologist get involved in taking walleye eggs so the hatcheries can supply baby walleye for stocking throughout the state.

April and May generally are the beginning of the real fish sampling season. Electrofishing of bass takes place now along with special tagging studies for species like white bass and striper. Stocking efforts of fry and fingerling walleye, saugeye, wipers, and stripers is done late in this period, too. And, let's not forget Earth Day and the many school programs that are given during these months!

Summer months involve all kinds of outdoor projects for the biologist. Shoreline seining is done to see how many young fish, both predator and prey, are being produced plus it helps keep us cool on a hot summer day! Reports of any fish kills, more common in summer than any other time, must be investigated. Imagine counting the bodies of dead fish as the temperature soars to 100 F! Fishing clinics, for all ages, are also done as requested.

Fall brings the busiest time of year for a fisheries biologist because it is the time of the fall test nettings. Fall nettings are conducted on all the lakes to evaluate the fish populations and to compare it to the populations in years past. These samples are collected with gill nets, trap nets, electrofishing gear, and other methods.

Now winter is upon us again. We use these last few months as catch up time, data prep time, and getting equipment repaired for the next season. As you can see, the life of a fisheries biologist is not just fishing all the time! It's hard work but fun work. Like the old saying goes, "Somebody's got to do it!"

Submitted by Tommie Berger,
Fisheries Biologist for KDWP



Investigate a Fish

To help further your investigations of this fascinating aquatic dweller, the following resources are suggested:

Project Aquatic: "Fashion A Fish" is a classic for studying fish and their adaptations for various aquatic habitats. To help identify the fish species in your area, "Fishy Who's Who" would be a great activity. To identify a food web in a wetland, try "Marsh Munchers".

Project WILD: "Adaptation Artistry" could compliment "Fashion A Fish" in evaluating the importance of adaptations to fish. To explain how pesticides can enter an aquatic food chain, try "Deadly Links". Why we need suitable habitat and the effects of human development on aquatic plants and animals is brought out nicely in "Shrinking Habitat".

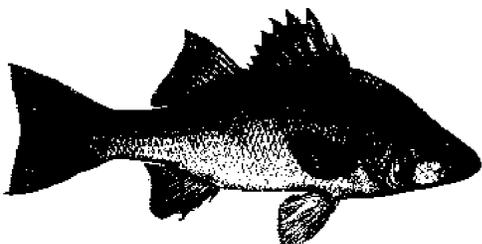
Project Learning Tree: To learn how nonliving things influence living things in an ecosystem, plan to use "Field, Forest And Stream". Determine whether we are the problem or part of the solution in "Pollution Search" and find out how land-use decisions and legislation can affect wetlands, in "Watch on Wetlands".

Nature's Notebook: Section "G" on fish provides coloring activities, informational sheets on many Kansas fish species, and an anatomic chart of a fish. Section "M" highlights any T & E fish species of Kansas and Section "B" gives more information on wetlands.

Reference Center Catalog: There are over four pages of "Fish" and "Fishing" resources in the catalog. Eyewitness Books on fish are a must, as well as KDWP produced video called the "Channel Catfish Story". Additional pamphlets and brochures available include: "Fishing Guide to Kansas" (excellent photographs of fish) and individual pamphlets on the sportfish of Kansas (habitat, diet, spawning, etc).

RED ALERT — RED ALERT — RED ALERT

WARNING! WARNING! BE ON THE LOOKOUT FOR THESE TWO ALIEN INVADERS:



White Perch (*Morone americana*)

In 1996, biologists discovered this uninvited guest in both Cheney and Wilson reservoirs. The white perch is a native of the East Coast from the Gulf of St. Lawrence to South Carolina. It is a member of the temperate bass family which includes the white bass, striped bass and wiper. White perch are especially prolific and as a result, they can develop dense populations of slow-growing fish. The Department of Wildlife & Parks will continue to monitor the white perch and asks all anglers to notify your local fisheries biologist if you think you may have caught one. Save the fish--**DO NOT** throw it back or transfer it to any other waters.

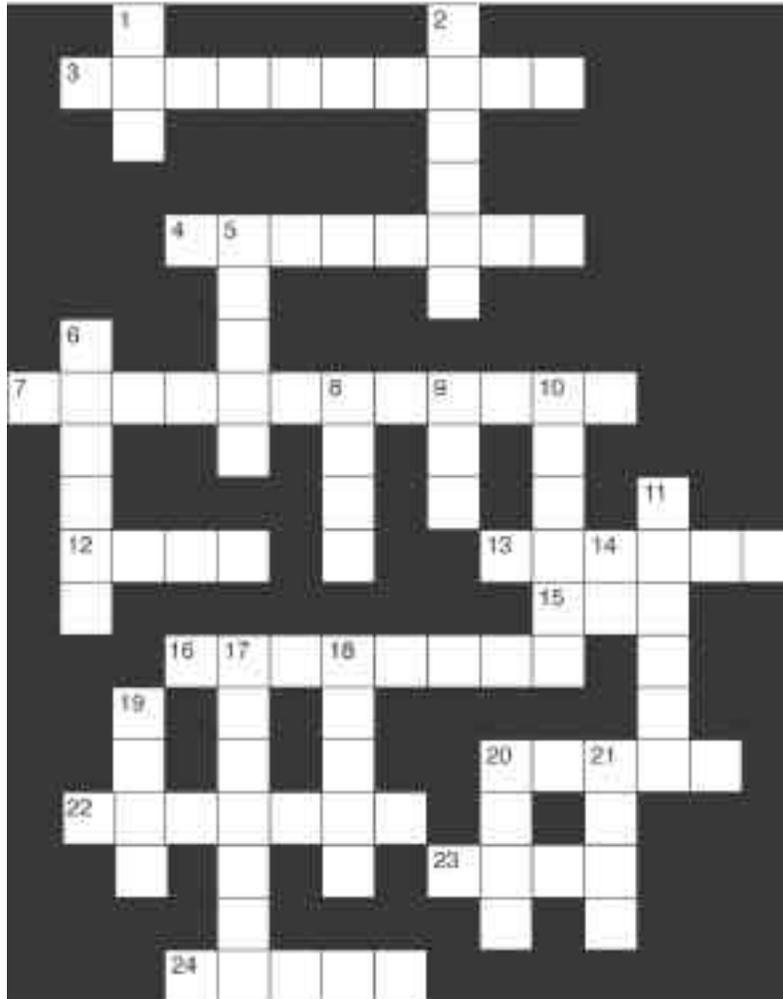


Zebra Mussel

Zebra mussels have been found in nearly every state surrounding Kansas. The U.S. Army Corps of Engineers has issued a "Zebra Mussel Watch" for midwestern states. Zebra mussels look like small clams with yellow-brown shells, usually with dark- and light-colored strips. Most are smaller than 1 inch long. Zebra mussels are incredibly prolific and can attach to anything solid, including water intakes of power plants and municipal water systems. Accumulating as much as six inches deep on these structures, they pose a serious multibillion dollar threat. If you boat in other states, take protective measures before moving your boat into Kansas waters. If you discover zebra mussels, note location and take the mussels with you--**Don't throw them back!**



FISHY WHO'S WHO



Across

- 3** One of the largest freshwater fishes with a long, paddle-like snout.
- 4** The eggs of these kinds of fish are used as caviar.
- 7** Only fish in Kansas that doesn't lay eggs—looks like a guppy.
- 12** The fin located on the underside of the fish, opposite from the dorsal fin.
- 13** White perch and zebra mussels are _____ to Kansas (but not from another planet!)
- 15** Fish with a snakelike body.
- 16** Greek word meaning "fish".
- 20** Family of fish to which walleye and darters belong.
- 22** Family of fish to which the largemouth bass, bluegill, and white crappie belong.
- 23** Ninety-seven percent of the world's fish species belong to this group of fish which have skeletons made of bone.
- 24** The world's largest fish is the giant basking _____. It can reach a length of 45 feet!.

Down

- 1** Slender fish with long jaws and lots of teeth.
- 2** Latin word for fish. Also a zodiac sign.
- 5** Fish that likes cold, clear streams. Some of these fish are stocked in Kansas during the winter months.
- 6** Fin on the centerline of the back.
- 8** Fin at the hindend of a fish.
- 9** Part of a fish used for steering and locomotion.
- 10** Outside covering on a fish; made of bone.
- 11** Pair of fins on the belly.
- 14** Abbreviation for id est, or example.
- 17** Type of fish with "whiskers".
- 18** Another word for litter.
- 19** This fish makes a booming noise with the air bladder. (Also the name of a musical instrument).
- 20** Sound of a fish being returned to the water.
- 21** Some electric _____ produce more than 200 volts, enough to light up four average light bulbs.





Your Source for Project WILD Information in Kansas

BACKYARD MONSTERS

One of the world's most comprehensive and exciting touring museum exhibits is coming to the Hutchinson Mall this fall. Called "**Backyard Monster- The World of Insects**", this exhibit will feature giant robotic insects, each in their own backyard setting, many hands-on activities for children and adults, one of the finest and most complete private insect collections in the world, PLUS other educational displays.

Backyard Monsters is being sponsored by the Living Land Foundation and the Reno County Historical Society for a fund-raiser for the history museum and the Dillon Nature Center. The exhibit will be open to the public from mid-September to mid-December. This will be the first showing of the exhibit in the central U.S.

If you would like to help underwrite expenses by donating money or your services as a volunteer to help man the exhibit, give Jim Smith a call at (316) 663-7411.

ENVIROLEAGUE

How would you like to involve your students in a new and exciting club for kids? A club that studies wildlife, investigates nature, plants, and every living thing? A club that helps us to learn why we must protect our wonderful earth and how we can do something about it? If you answered "YES" to these questions, then **Enviroleague** is for you.

Sponsored by the Flinthills Audubon Society and working closely with local environmental organizations, K-State university staff, and city personnel, **Enviroleague** is a youth organization dedicated to serving young people so they may serve the Earth tomorrow. An **Enviroleague Team** may be forming near you. For more information, please contact:

Patricia Seabourn
(913) 537-0307

Manhattan Area Enviroleague Coordinator

Free Fishing And State Park Weekend

Want a chance to experience what "fishing" is all about? For two days, **June 7-8, 1997**, anyone can fish the waters of Kansas without a fishing license. Add to this the fact that it is also free park entrance weekend at all state parks and you have the ingredients for a great family outing! Take advantage of this opportunity and pile everyone into the car to try fishing in a state park. Hope the fish are biting!



Tips For A Successful Field Trip

Field trips have tremendous opportunities for educational experiences, BUT, they can also have potential for unforeseen problems. The following suggestions may help one avoid a few of the mistakes which could detract from the positive outcome of a field trip.

Step 1. Before making any plans, decide where you want to visit and why. This may require a preliminary trip to the location. Schedule your field trip well in advance. Have the school nurse prepare a first-aid kit for the field trip.

Step 2. Consider your options in case of inclement weather.

Step 3. Survey your students to determine how many have already experienced a similar trip. Students repeating a field trip are more likely to become bored, restless, and disruptive.

Step 4. Don't let the students know the proposed trip until all aspects have been confirmed.

Step 5. When planning your budget, allow for some unexpected expenses. It is harder to collect monies after a field trip.



Step 6. If at all possible, have everyone in one vehicle. Lost vehicles are not fun and valuable time has been wasted.

Step 7. Choose your chaperons with care. Rewarding the chaperons will encourage them to return for subsequent trips.

Step 8. Organize a field trip as you would any lesson plan. Let the students expand upon what they learned. Make sure the presentation format is attractive to your students.

Step 9. Give yourself enough time to enjoy the trip without rushing.

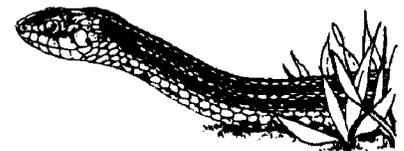
Step 10. Make sure all students are accounted for when leaving or boarding the vehicle.

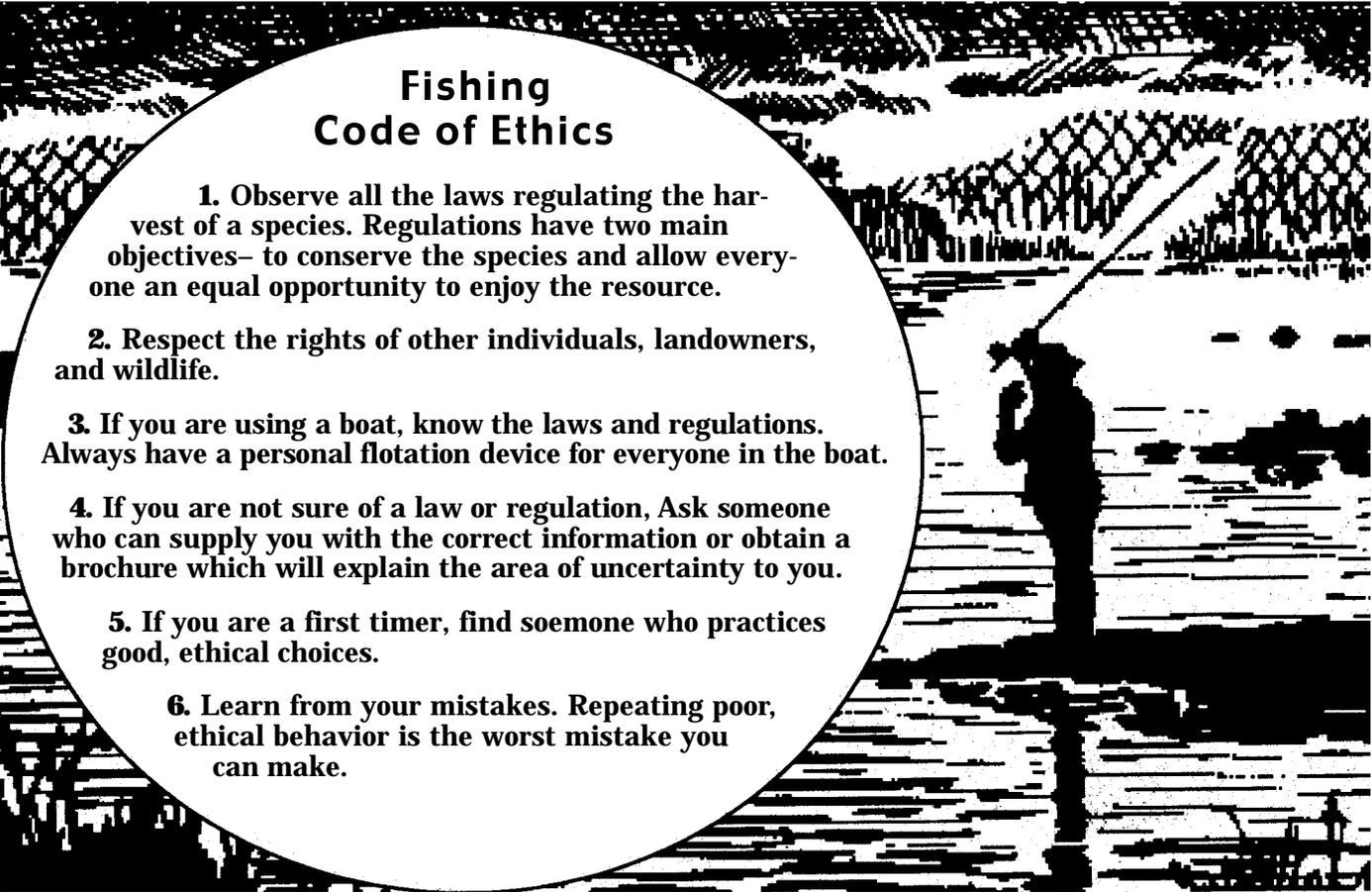
Step 11. Set the behavior standards by which the students are to conduct themselves before the field trip. During the field trip, presenters will value your assistance and insight in managing your students during their presentation.

Step 12. Watch what your students eat and the amounts. By restricting food to meal time and planned snacks, students will not pig-out. In this way, you may avoid sickness and hyperactivity.

"Until we extend the circle of our compassion to all living things, we will not ourselves find peace"

Dr. Albert Schweitzer





Fishing Code of Ethics

1. Observe all the laws regulating the harvest of a species. Regulations have two main objectives— to conserve the species and allow everyone an equal opportunity to enjoy the resource.

2. Respect the rights of other individuals, landowners, and wildlife.

3. If you are using a boat, know the laws and regulations. Always have a personal flotation device for everyone in the boat.

4. If you are not sure of a law or regulation, Ask someone who can supply you with the correct information or obtain a brochure which will explain the area of uncertainty to you.

5. If you are a first timer, find someone who practices good, ethical choices.

6. Learn from your mistakes. Repeating poor, ethical behavior is the worst mistake you can make.



EARTH DAY EVENTS FOR 1997

APRIL 17

Clay Center

USD #379 Clay County School and Clay County Conservation District will host an Environmental Education Day for the 6th graders at Milford Lake Timber Creek Education Center. Contact: Lori Martin (913) 926-3564.

APRIL 18

Paola

The Hillsdale Elementary School will participate in the planting of 10,000 trees at Hillsdale Lake. Contact: Jim Bell (913) 783-4366.

APRIL 19

Kansas City

The Wyandotte County March for Parks will sponsor an "Environmental Safari" for school children at the Wyandotte County Lake. Contact: Alaine Neelly (913) 894-9113 ext. 13 or Patrick Cassidy (913) 573-9856.

Lawrence

Hazardous household products drop off from 8 am to noon at 711 E. 23rd St. Sponsored by the Waste Reduction & Recycling Division of the City of Lawrence. Contact Molly Mangerich (913) 832-3030.

APRIL 22

Wakarusa

Opportunity for H.S. educators and their students to become involved in meaningful local research on declining amphibian populations. Contact: Suzanne Miller (913) 836-2119 or wakarsa@cjnetworks.com.

Garden City

The Lee Richardson Zoo will host Earth Day activities from 8:30 am to 3:00 pm at the Finnup Center for Conservation Education. Activities will focus on school groups. Contact: Kathy Sexson (316) 276-1250.

APRIL 26

Topeka

Life science students of Topeka Collegiate will conduct an amphibian and reptile survey for KHS on private land in Sumner County. Contact: Larry Miller (913) 228-0490. Fifth graders will conduct a wildlife census along Shunga Trail on April 30th. Contact: Mary Kate Baldwin.

MAY 3

Hays

The Kansas Herpetological Society (KHS) will conduct a survey of amphibians and reptiles on the Z-Bar Ranch in Chase County. Contact: Karen Toepfer (913) 628-1437.

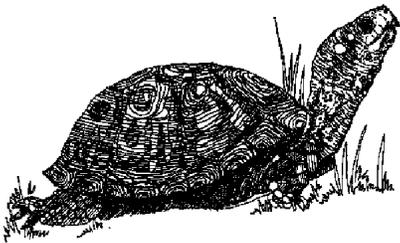


Words of W.I.L.D.

From the Wild

Side Troubling Time for Turtles

Living in coexistence with people is rough on box turtles. Much of their habitat has been altered for human use. Areas which fulfill their needs are increasingly harder to find.



During recent years, another problem has become apparent. Turtles are collected from the wild and sold as pets, especially overseas. Many turtles die in transit or due to improper care. Tens of thousands of animals were shipped each year until 1994. It was feared that box turtles would soon be threatened with extinction if collecting was not controlled. No commercial collection of box turtles is allowed in Kansas, however, a few individuals may be collected with the proper permits for education.

Box turtles, which can live in excess of 30 years in the wild, usually have very shortened lives once taken into captivity. They often succumb to respiratory failure or other stress-related illnesses. Captive wild turtles are, at times, used in

turtle "races" which can have a negative effect on the turtle and does not lend itself to a positive educational activity.

We can all lend box turtles a hand by respecting their role as wild animals. Enjoy a turtle for a couple of weeks, but be sure to return it to its proper habitat.

Taken in part from "Box Turtles: More Than Meets the Eye" by Karen S. Graham, Curator of Herpetofauna and Fishes--Sedgwick County Zoo.

[Editor's Note: Box turtles collected in the United States may bring upwards of \$40-\$50 a piece to the collector. In Asia, where most of these turtles are sold, prices may reach \$200-\$300 a piece. The box turtles are bought so that people can write their wishes on their back and let the turtles go (Into the wrong habitat!)]

Choosing A Site And Liner For The Schoolyard Pond

A backyard pond not only increases the habitat value of your site, but also the visual appeal of the area. To create a functional and attractive pond, consider the following points.

--Look for the lowest ground in the setting. This will serve as a natural basin for collecting water.

--Locate the pond away from trees, areas exposed to fertilizers, and heavy traffic. This will reduce excess

nutrients and sediment from entering your pond.

--In designing your pond, make sure you can provide at least eight square meters of surface area. A pond of this size will attract amphibians and produce sufficient aquatic life to feed them.

--If you wish to house amphibians over winter, an area of the pond should be below the frost line or install a pond aerator to prevent ice from forming.

--It is best to stay away from ponds with many curves and corners. It is difficult to manipulate most liners into unusual shapes. Crescents and oval shapes are recommended.

--You can create different habitats, such as a wet meadow, rock garden, and cattail area by alternating the shoreline depth. This will also allow the winter ice to expand out of the pond, preventing possible damage to the liner.

--to restrict access for safety reasons, use natural-looking materials such as a cedar rail. A sign warning of deep water would also be advisable.

Your liner will be the most important component of a successful pond. A clay liner is the most natural looking and often the least expensive, however, it will also be the most likely to leak.

Concrete liners are expensive, often requiring footings and other reinforcements. They are best



Focus on Wild

installed by the professional.

Fiberglass ponds are also an alternative. The fiberglass pond is expensive and always requires a good base. These can also be death traps to amphibians and other animals. Their

steep sides make it hard for animals to climb out of the water. To solve this problem, simply provide rocks or logs in the pond for animals to climb out on.

The best choice is probably a natural-looking (brown or green) 45 mil

EDPM flexible pond liner. Most are relatively inexpensive and can be installed by the do-it-yourselfer. These liners are very flexible, UV stable, resistant to air pollution, nontoxic to pond life, and often have a lifespan of twenty years or more.

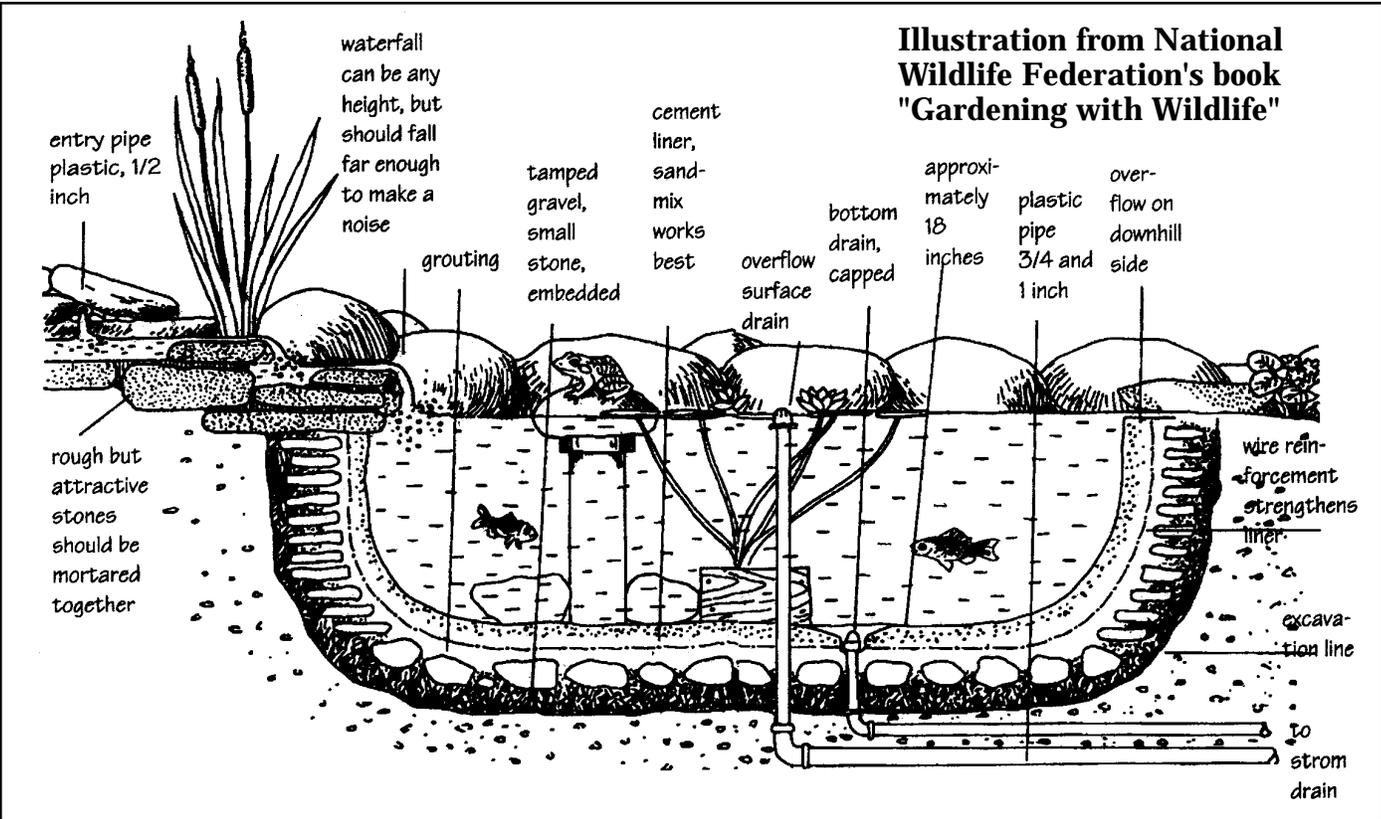


Illustration from National Wildlife Federation's book "Gardening with Wildlife"

KEY TO PUZZLE ON PAGE 13.

