KANSAS Wildlife & Parks

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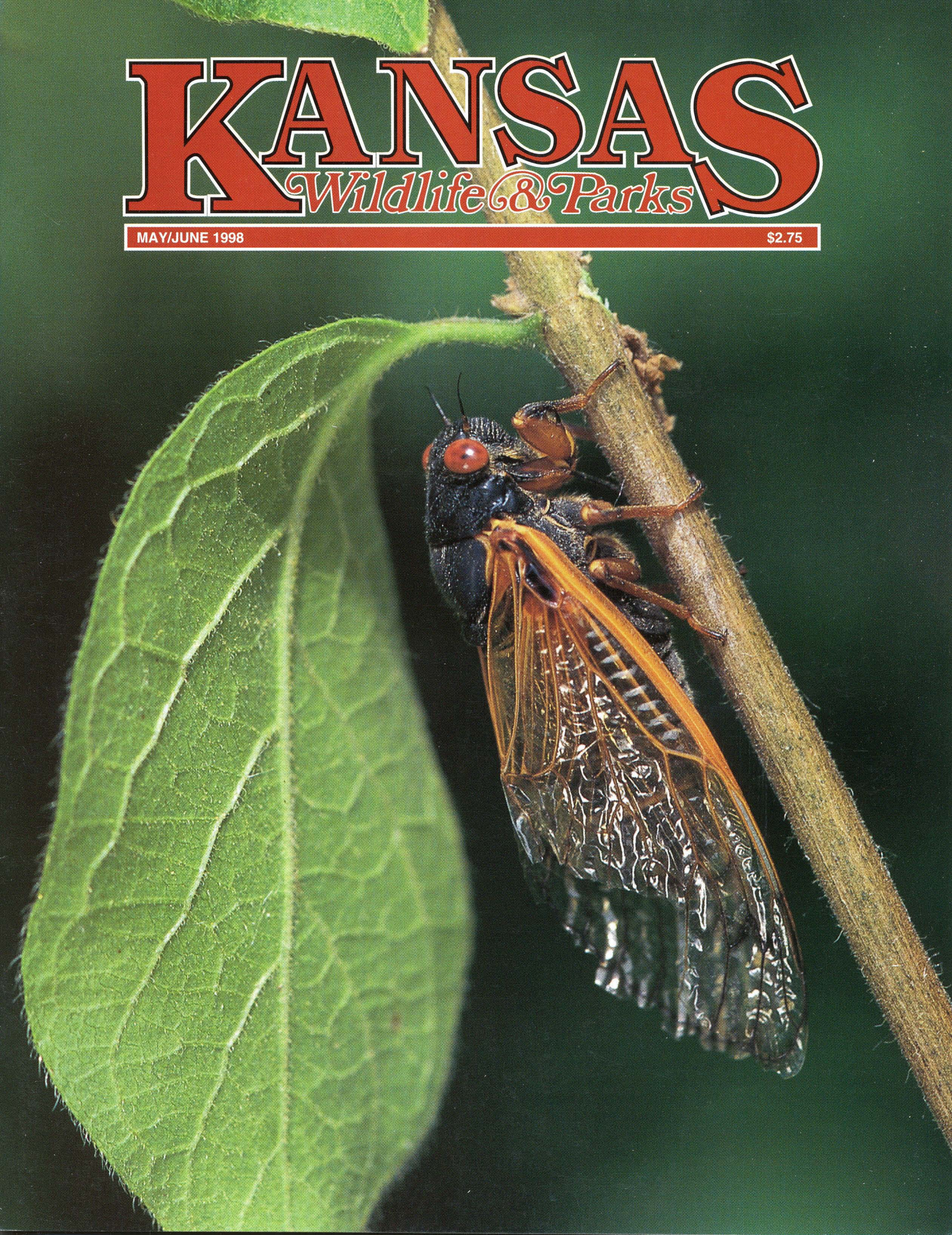

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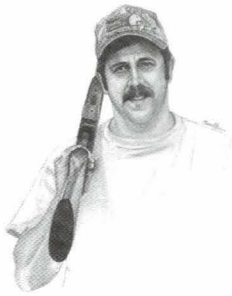

by Steve Williams

A Salute To Kansas WILDSCAPE

Opportunity. When you get right down to it, that is what most conservationists seek. Opportunity to enjoy our rich natural resources and opportunity to teach our youth the wonders of our outdoor world. Kansas WILDSCAPE, a private, non-profit organization, is helping provide these opportunities for all of us.

While Kansas is blessed with tremendous natural resources, we have little public land for outdoor enthusiasts to enjoy. WILDSCAPE was formed in 1991 to help enhance outdoor recreation and education opportunities in Kansas. The organization is guided by a simple, concise mission: "To conserve and perpetuate the land, the wild species and the rich beauty of Kansas for the use and enjoyment of all."

Last year, WILDSCAPE disbursed more than $270,000 in specific project funding throughout the state. All of the organization's generous contributions would not fit on this page, so I will highlight just a few of the accomplishments.

WILDSCAPE has raised nearly $100,000 to help fund Outdoor Wildlife Learning Sites (OWLS). OWLS are developed on or near the grounds of Kansas schools and contain several habitat features, such as woodlands, grasslands and wetlands. The sites and wildlife attracted to them provide students hands-on learning opportunities. Thanks to WILDSCAPE, students at nearly 150 OWLS facilities across Kansas are developing an appreciation for wildlife, as well as an understanding of its dependency on special habitats.

There are now 19 Friends Groups in the state operating under WILDSCAPE's non-profit umbrella. These Friends organizations raise private funds, and members donate their time to improve local state parks or public lands. Projects range from developing and maintaining nature trails to restoring fish populations. These groups' outstanding dedication is maximized by using WILDSCAPE as a funding bank, and this partnership has resulted in the completion of many projects that land and park managers would not otherwise have been able to afford.

WILDSCAPE is in its third year of participating in the Hooked On Fishing, Not On Drugs (HOFNOD) initiative. This program links drug education with sport fishing and environmental conservation to enhance life skills and divert children from using drugs. There are now 14 HOFNOD programs in Kansas with 125 certified volunteer instructors.

Currently, WILDSCAPE is taking on its biggest fundraising challenge: providing nearly $1.2 million in private funds to develop a 2,300-acre wetland at Milford Reservoir. (As this issue went to press, there was strong support from the Kansas Legislature to provide state funding for Phase 1 of this project.) This project, which would create the third largest wetland in Kansas, is a partnership that includes WILDSCAPE, the U.S. Army Corps of Engineers, KDWP and citizen groups.

The proposed wetland, which would be maintained by KDWP, would provide critical habitat to migrating waterfowl and shorebirds, as well as nesting habitat for resident species. The wide variety of game and nongame wildlife that would benefit from this project would provide excellent recreational opportunities for hunters, anglers and anyone who enjoys watching wildlife.

In order for WILDSCAPE to fund the Milford Lake Wetlands project and continue commitments to the other programs it sponsors, your help is necessary. If you believe WILDSCAPE represents your interests as a conservationist, I encourage you to contribute (donations are tax-deductible to the extent allowed by law). Your donation will not only help fund a specific program, it will preserve opportunities for future generations.

To find out more about WILDSCAPE contact them at P.O. Box 4029, Lawrence, KS 66046 or call Rich Bailey, executive director, at (785) 843-9453.

Steve Williams

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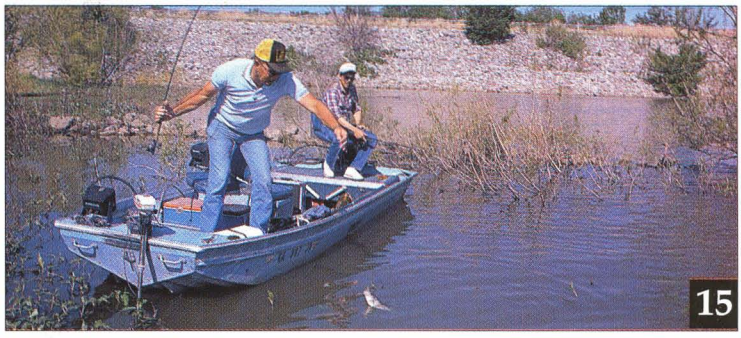

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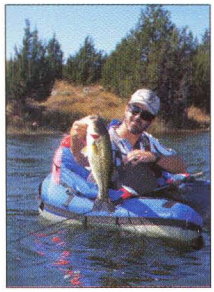

About the covers
Front: Periodical cicadas are infrequent visitors, appearing above ground just once every 17 years. Mike Blair filmed this specimen in Iowa, using a 105mm lens, f/16 @ 1/125.
Back: Spring awakens fishing fever for many Kansans, especially when farm pond bass become active. Mike Blair caught this action using a 55mm lens, f/11 @ 1/125.

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Editorial Creed: To promote the conservation and wise use of our natural resources, to instill an understanding of our responsibilities to the land.

Seventeen Years Waiting

text and photos by Mike Blair
staff photographer, Pratt

Every Midwesterner has heard the summertime buzz of cicadas, more commonly called locusts, but little is known about these interesting insects. Especially mysterious is the periodical cicada, which emerges after 17 years underground.

Something about the forest was unearthly. At a distance, the trees looked normal enough except for a few dead twigs hanging here and there. It was the sound that was weird. Out of the leafy jungle came an odd hum, rising and falling like a mantra. This was clearly the product of many voices, judging by the broad area from which it came. The sound was loud and hypnotic — froglike in some respects. "Wa-a-a-a-y — Oh-h-h," it repeated mournfully, drawing the listener to it.

At the edge of the woods an invasion was evident. Everywhere the soil was shot with dime-sized holes, and amber shells littered the understory. The trees seemed to move under an army of strange, thumb-sized insects. Bizarre was the best way to describe the creatures, whose very coloration seemed the product of a horror movie: black bodies, red eyes, orange legs and veins. The air glittered as hundreds of pairs of glassy wings fluttered in random directions. Everywhere sat the singers, swaying on twigs as they breathed the odd chorus.

The 1981 scene was unfamiliar, but neither frightening nor unexpected. The strange horde was comprised of a species that emerges from a subterranean existence just once every 17 years. Appearing for a few weeks, adults produce another generation and quickly die. Visible damage is erased by the next season, and passing years gradually diminish the memory of each visit. Then abruptly, the species reappears.

It is time. This is the year for periodical cicadas in Kansas.

In May and June, the spectacular emergence will again be visible in the Sunflower State. The emergence is part of a broader event that occurs in several Midwestern states including Missouri, Arkansas and Oklahoma. Periodical cicadas are restricted to the eastern third of Kansas. The insects have been collected in 35 Kansas counties and probably occur in a few more. However, they are normally associated with timber and cannot exist in grassland habitats.

Life cycles are complex. Periodical cicadas are found throughout the eastern half of the United States but nowhere else in the world. There are actually six species, all of which are similar in appearance. Three species require 17 years to develop, while the remaining three complete their

cycles in 13 years. The 17-year group is typically more northern in distribution, while 13-year cicadas are found farther south. However, there is much overlap between them so that many states, including Kansas, have both kinds.

A given outbreak is known as a brood. Broods emerge in different years and have different geographic ranges. To complicate things, there are at least 13 broods of 17-year cicadas and five of 13-year cicadas. Brood designation began in 1893 when emerging periodical cicadas were named brood I. The 1894 emergence was called brood II, brood III hatched in 1895 and so on. Brood XVII appeared in 1909, and 1910 saw the reemergence of brood I after 17 years.

A single brood may be widely scattered. For instance, brood I occurs principally in parts of Pennsylvania, Maryland, Virginia, West Virginia and North Carolina. Oddly, a small colony of brood I also exists in Kansas, broadly separated from its principal range. The insignificant Kansas population draws little attention and was scarcely noticed during its emergence in 1996.

More than one brood may be found in a state. Kansas has two broods of 17-year species, including *Magicicada septendecim*, and *M. cassini*. Both species may emerge in a given brood. Along with brood I, Kansas also hosts a major emergence of brood IV, to emerge this year. Missouri shares brood IV and also hosts broods III, X and XVII. Although these emerge to offer viewing opportunities at different times, brood IV is the most spectacular. It is the featured periodical cicada emergence of the Midwest.

Periodical cicadas have been the objects of much superstition. American Indians believed their cyclic appearances had an evil significance. Early American colonists who had never seen them viewed the sudden appearance of millions of cicadas as a biblical locust plague. This misunderstanding explains the insects' more common name of "17-year locusts." A false belief once held that periodical cicadas foretold war, due to a distinct black W described by wing veins in the adults. Another myth said that the insects could poison fruit by stinging it. There was often great fear that cicadas would leave the forest to ravage crops. None of this is true.

Holes pit the ground in areas where periodical nymphs have emerged. Depending on temperatures, emergence usually occurs in early to mid-May and lasts several weeks.

Instead, adult periodical cicadas live short and mostly harmless lives with the sole purpose of producing another generation. Economic damage is limited to young trees and shrubs which may be killed by the substantial injuries associated with egg-laying. Fruit growers are often warned to avoid planting new orchards near the time of an emergence. New landscape plants can likewise be affected. Otherwise, cicada damage is benign.

This "stitching," which is not damaging to mature trees, marks the limb where a female periodical cicada has laid her eggs. In six or seven weeks, the nymphs will hatch and drop to the ground.

Periodical cicadas are the longest-lived of any insects. The cycle begins at emergence, when the right combination of day length, soil temperature and moisture causes immatures, known as nymphs, to leave the soil. As many as 40,000 nymphs may emerge from the ground under a single large tree. A nymph climbs the nearest upright object for its final molt. To shed its skin, it secures a firm grip and

splits its shell along the middle of the back. Then it labors for as long as an hour to work itself free.

At first, the new adult is soft and white, vulnerable to injury and predation. It takes several hours for the crumpled wings to expand and dry and for pigmentation to develop. The insect becomes hard-shelled and robust, averaging just over an inch-and-a-half long. The fully mature adult is hardy and able to withstand flight collisions with branches and other objects. Generally, periodical cicadas are haphazard flyers.

Within a few days after emergence begins, the woods are filled with the drone of singing males. The insects produce sound through a pair of shell-like membranes found on the sides of the abdomen. Strong muscles control the membranes, squeezing out sound, which can be heard for some distance. The male usually remains stationary while singing, but its body rocks in gentle rhythm to the substantial effort required. The cicada chorus begins at daybreak, swells as the temperature rises, and ends at dusk.

A particular brood will emerge together within a one- or two-week period. Large concentrations will be evident not only by nymph shells, but by the noise of their calls.

Song is used to attract mates and is strictly a male function. Females do not have the sound-making structures.

Most adults mate within the first week, and females begin laying eggs seven to 10 days after emergence. Adults feed infrequently, piercing twigs to drink sap with their sucking mouthparts. Feeding sites may bleed a spittle-like deposit of clear sap. Generally, feeding causes little harm to trees.

Damage occurs when eggs are laid. The female uses a blade-like ovipositor located at the end of the abdomen to puncture a twig or small branch. This forms a pocket in the wood. In this, she lays several dozen eggs, normally in two rows. Withdrawing the ovipositor, she moves forward and repeats the process until up to 20 pockets are completed on a twig. The injured twig appears to be "stitched" with a line of slits. The female then moves to another twig and continues until up to 600 eggs are laid.

Eighty species of trees, shrubs and herbaceous plants are attacked by periodical cicadas. There is a preference for oak, hickory, apple, peach, pear and grape. Oviposition injuries often cause twigs to die, resulting in small dead areas visible throughout a tree crown. This type of injury is called flagging and is widespread throughout a forest under attack by periodical cicadas. Dead twigs often break and fall to the ground. Though many branches are affected, little lasting damage occurs to mature trees.

Eggs hatch in six to seven weeks.

During evening hours, nymphs emerge to split from nymphal shell. By morning, exoskeleton will harden and turn black, and wings will become functional. (Inset from Lee Jenkins Slide Collection, Department of Entomology, University of Missouri)

The tiny nymphs tunnel out of the twigs and fall to the ground where they enter the soil and burrow downward until they find suitable roots on which to feed. Once in position, they insert their beaks into a root and suck its juices. In wooded areas, nymphs generally localize on roots from 18 to 24 inches below the soil surface. This begins a marathon underground existence lasting 13 or 17 years, depending upon species and brood. The nymphs are fully grown after seven or eight years but continue to feed and develop until time for emergence, many seasons later.

In early spring of an emergence year, mature nymphs burrow upward close to the surface. During the first weeks of May, they open an emergence hole about one-half inch in diameter. In some cases, they construct a cone or earthen chimney to cover the hole. Chimneys are much like those of crayfish, protruding as high as three inches and more than an inch in diameter. Just beneath the soil in these open burrows, the nymphs await the proper time to continue.

Shells litter the area of a heavy emergence. After 17 long years as nymphs, adults have only five to six weeks to mate and produce the next generation of periodical cicadas.

Kansas emergence usually begins about the middle of May but may vary a week or so depending on weather. Adults have been collected as early as May 5. On a given night, nymphs leave the ground in vast numbers and crawl up trees and plants. Periodical cicadas differ from the common annual cicadas in many ways — by color, size, song and length of life cycle — but notably by emergence habits. Cicada species emerging each year don't appear until late July or August and then emerge during afternoon hours to harden by evening. Periodical cicadas emerge in spring, crawling from the soil at night to harden by morning. The mass emergence takes place over a period of several days.

Only the males create the characteristic cicada buzz, which helps attract a mate. The small noise-making organ is apparent just behind the wing on this cicada.

Adults immediately concentrate on reproduction. They live for five or six weeks, with peak Kansas numbers usually present the last week of May and gradually tapering through mid-June. As time passes, dead adults and nymphal shells litter the landscape where outbreaks were heavy. These dissolve away, leaving flagged trees as the only evidence of their visit. Nymphs burrow to repeat their long and silent lives within the soil.

Since emergence occurs over large areas, cicada concentrations may vary. Where local populations are high, noise levels of singing males may actually be disturbing. In these places, trees and shrubs are festooned with the insects, and flagging is heavy. Subsoil nymphal

populations can cause damage through the extensive feeding injury to tree roots. In some places, more than 100 nymphs per square foot can cause tree decline evidenced by dying limbs, no new growth, and light fruit sets. This can be economically important in orchards but seldom is worrisome in natural forest habitats.

More commonly, only moderate outbreaks of periodical cicadas occur. In Kansas counties on the western fringe of the range, adults may be hard to find. The best viewing opportunities will be found along the Kansas-Missouri border. In 1981, emergence was spectacular in the Kansas City area.

Like all creatures, periodical cicadas have natural enemies. Birds rank as the greatest threat, seriously reducing cicada numbers in light outbreaks. Mammals and insect predators also eat the adults. Parasites and mites attack cicada eggs, and a fungus disease kills some adults. Normally, however, a large brood is relatively unaffected by natural controls.

This spring offers Kansans their best chance to observe periodical cicadas for many years. The next local appearance will occur in 2007, when a 13-year Kansas brood will emerge in the Cowley County area. Brood I of the 17-year variety will follow in 2013. Brood IV will re-emerge in 2015. The distant futures of these events illustrate the limited opportunities to see them.

Periodical cicadas are worth seeking, if only for this reason: emergence of a given brood occurs just four times in the average person's lifetime. Adult cicadas are active for a span of only about 20 weeks during these many decades. Like returning comets, chances to witness 17-year locusts are brief and uncommon.

This is the year. Right now, just beneath the soil line of many woodland counties, an invasion is waiting. Don't miss the chance to see this amazing production of the Kansas outdoors.

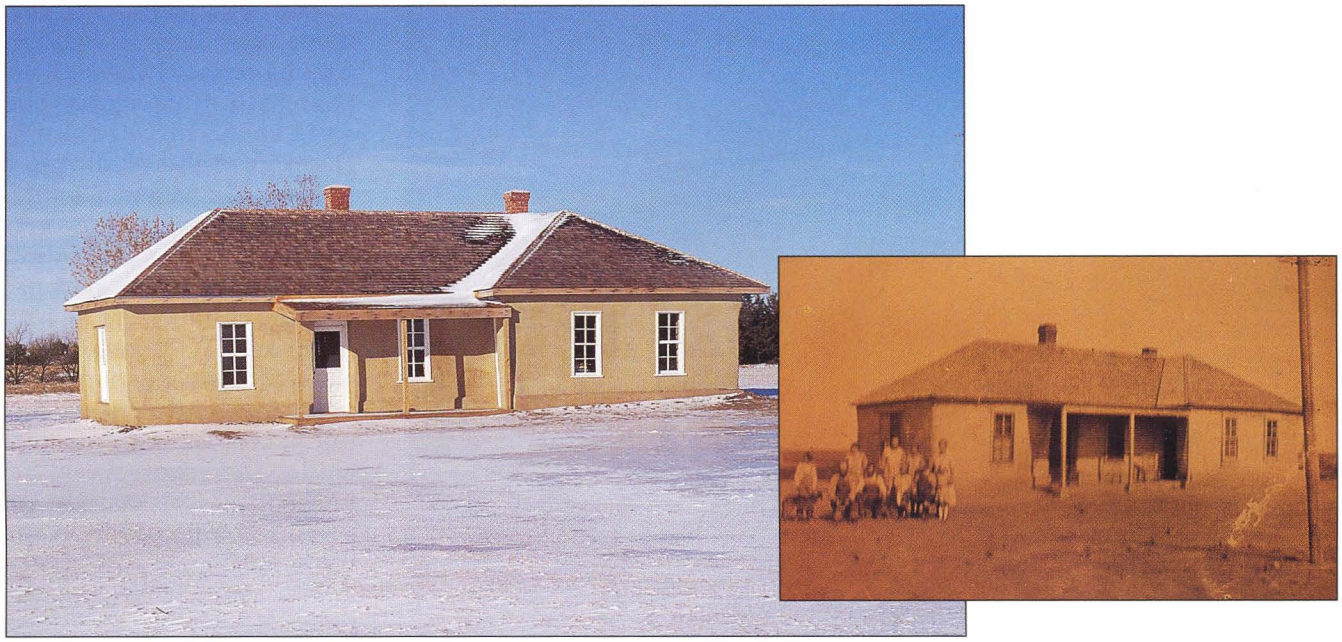
Annual Cicadas

Periodical cicadas belong to the order Homoptera, which includes such relatives as planthoppers, treehoppers, whiteflies, and scale insects. Insects in this order have sucking mouthparts comprised of four piercing stylets forming a beak. Although in cicadas this long, needle-like structure appears menacing, it is not used for defense. Cicadas do not bite when handled.

Seventeen-year locusts have several cousins occurring each year in Kansas. These include dog-day and field cicadas, known collectively as annual cicadas. The lazy, siren-like drone of dog-day cicadas is one of summer's most familiar sounds. Annual cicadas emerge each year from July through September. Though common, they do not appear in the spectacular numbers characteristic of periodicals. Annual cicadas are widely scattered and somewhat solitary. They cause no economic damage.

Annual cicadas are larger than periodicals and less dramatically colored. Dog-day cicadas are a drab black and green, while field cicadas are black and tan. Both species are somewhat camouflaged for their respective habitats. Dog-day cicadas are found in forests where mature trees are present, including city parks and street-tree environments. Field cicadas live in open, grassy habitats where woody shrubs and trees exist.

Life cycles of annual cicadas are poorly understood. While their nymphal development and habits are similar to periodicals, durations are shorter. Annual cicadas are believed to spend from two to six years underground, depending on species. However, cycles are random so that some adults emerge and reproduce each year. Annual cicadas are not thought of in terms of "broods." Their principal enemies include birds and a species of giant, striped wasp whose common name is "cicada killer."



A Home On The Range

text and photos by David E. White
West Region Parks Supervisor, Hays

"Oh, give me a home, where the buffalo roam, where the deer and the antelope play; Where never is heard a discouraging word, and the skies are not clouded all day." (Lyrics: Dr. Brewster Higley, 1872, Music: Dan Kelley, 1873)

What better exemplifies this song and the state of Kansas than an adobe house on the western Kansas prairie? Prairie Dog State Park near Norton offers the opportunity to experience the pioneer spirit.

On Dec. 3, 1892, John F. Spencer purchased and settled on a piece of prairie overlooking Prairie Dog Creek in Norton County. Since trees were a limited commodity, he constructed a T-shaped, one-story, five-room adobe house for his family. Adobe is not considered a long-term material, but amazingly this dwelling remains after 104 years and is the only known Kansas adobe house sitting on its original site.

This historical house is a rare example of the building construction methods used by 19th-century settlers on the Midwest prairies. Adobe, which is unburnt, sun-dried clay, is an efficient building material that incorporates readily-available materials. Construction of this structure entailed a clay and straw mixture rammed into wooden forms to build the 16-inch-thick walls. Earth-rammed buildings are constructed similar to the pouring of concrete walls.

The outer wall is then coated with similar materials for protection against the elements. The problem with this type of structure is that the exterior walls rapidly deteriorate in areas with wide seasonal temperature and humidity changes, such as Kansas. Consequently, the walls must be treated regularly to maintain structure integrity.

The Prairie Dog adobe housed 12 different families between 1893 and 1944. The last tenants were Mr. and Mrs. Irvin Horning, who lived there after getting married in 1942 and stayed until 1944. Their first son was born in the house. Two surviving residents still live in Norton and provided beneficial historical information.

The house and surrounding property became federally owned in 1962 when the U.S. Bureau of Reclamation (BOR) developed Keith Sebelius Reservoir. Initially, the house was going to be destroyed, but local opposition prevailed, and the house became the responsibility of Prairie Dog State Park in 1966.

Before local opposition stopped destruction of the adobe house, the original pitched roof was removed. A flat roof was constructed during the first renovation effort.

This was the beginning of local interest and assistance in preserving this unique relic. Consequently, the first renovation project occurred, and the home became a museum containing various antiques.

The house experienced several renovations over time. Due to inadequate foundations and cracking exterior walls, a 6- to 8-inch concrete exterior was added in the 1920s to stabilize and weatherproof the structure. This stabilized two of the walls, but the other two deteriorated over time and required numerous patch jobs. And one 16-foot wall was replaced. The original peaked roof was razed before opposition stopped the house's demolition in the 1960s. It was replaced with utility poles and wood planking covered with roofing materials, constructed right on top of the adobe walls.

Designed to protect the structure, the combination of concrete wall overlay and heavy wooden roof actually enhanced deterioration. The added weight caused the top of the east wall to thrust outward 10 inches from the adjacent wall. Realizing that the structure could easily collapse, the park staff reinforced these walls with wooden supports. It was apparent the building needed extensive renovation

In the fall of 1991, assistant park manager Jim Ray began investigating funding options to renovate the building. The Norton Convention and Visitors Bureau (CVB) took special interest in the project due to its historical and tourism benefits. CVB president Charlotte Kindall and Ray began raising funds through local contacts and special events, as well as pursuing alternative sources. Within a few months, they received several large contributions and raised more than $20,000. The BOR allocated $25,000 to the department for renovation.

The CVB then signed up as the Friends of Prairie Dog State Park's Adobe House through the Kansas WILDSCAPE Foundation. The Friends group obtained a $30,000 grant from the Kansas Tourism and Visitor Bureau. Local contributions and fund raisers continued as well. WILDSCAPE worked with the public and the department to raise and spend funds in restoring the adobe house.

The department used the initial funds as seed money to begin investigating renovation needs and costs. Due to limited experience, the state's Architectural Services Department and Wildlife and Parks' Engineering Section obtained a consultant to provide an expert assessment of the house. John Lee & Associates, which had previous experience with adobe structures, completed a site assessment, provided recommendations, and developed renovation specifications. Initial cost estimates to repair the walls and roof were between $70,000 and $90,000, with an additional $25,000 needed to underpin the foundation.

The renovation specifications required returning the adobe house to its original design and construction as illustrated by 1920s photographs. It listed a 10-step process. The first step required digging foundation test pits to learn if the adobe was constructed on a foundation. The current roof was to be removed and stockpiled for other uses. The next step was removal of the exterior concrete coating on the leaning walls. The leaning walls would then be jacked into vertical alignment and shored into place.

The renovation design used stainless steel rods epoxyed into the adobe walls and tied to the new roof to provide the necessary stabilization. Two-inch cores would be

To stabilize original adobe walls, steel rods, which were connected to a new pitched roof, were epoxyed in.

drilled at approximately 8-foot intervals from top to bottom on the walls that were leaning. Two-inch cores would then be drilled 2-feet down at 2-foot centers on all of the walls. A steel rod was to be inserted into each core and filled with epoxy. The top of the rods would be integrated into the new roof, creating a rigid, interlaced grid of reinforcement to hold the walls in place.

The renovation design also planned for reconstruction of a hip roof and low-pitch porch roof similar to the original shown in old photos. The 16-foot wall previously replaced with concrete would be removed and reconstructed with adobe. Next, the remainder of the concrete exterior was to be removed. The three doors were to be refurbished using existing materials. All of the windows were to be replaced with fabricated replicas, except one, which was to be restored and reinstalled to serve as an original reference. Finally, the exterior was to be coated with an acrylic-amended mud coating, applied over expanded metal lath attached to the walls.

The department advertised for contract bids during the summer of 1996. Local contractors were already involved in several construction jobs, so no bids were received. The department advertised again that winter and accepted a bid for the project to start in April of 1997.

Midwest Contractors of Norton, owned and operated by Kennis Mann, received the bid, which was beneficial to the park. Mann is a strong supporter of the area. Prior to working on the adobe house, Mann volunteered his equipment and time to help repair the old windmill located next to the house. He also installed power poles and hung the security lights at two different locations, free of charge.

Mann saw renovating the adobe house as more than a money-making opportunity. He saw it as a challenge and adventure — a way to give back to the park and its visitors, as well as preserving a small part of Kansas' heritage. His concern and willingness were evident in the care and responsibility he took in ensuring a quality and cost-effective end product.

Using old photographs for reference, the recent renovation has returned the adobe house to its original appearance. A dedication is set for this spring.

Midwest Contractors completed the project in October 1997, with excellent results. The company also made several suggestions that were implemented and ultimately reduced project costs. They only ran into one real problem — replacing the 16-foot adobe wall. Since adobe was a new material for them, their original attempt to form the wall with the required rammed mixture of clay and straw failed to cure properly. As a result, they had to reduce the length of the wooden forms from 4 feet to 1 foot, and the job took much longer to complete.

The project also provided several interesting artifacts. As the contractor removed the windows, they found newspapers, dated 1906, that were used for insulation. The contractor discovered a rare, square wooden peg that was used to hold one of the doors in place. The final discovery was a flint rock used for footing under a portion of the floor. These discoveries made the project all the more interesting for both contractor and department staff.

Once the interior artifacts are replaced, the park, with Norton CVB assistance, plans an open house rededication on May 2, 1998. Additionally, the BOR is negotiating a cooperative agreement with Kansas University's Museum of Anthropology to assist in developing interpretive materials for the house. This would be the finishing touch on the project.

The adobe house project is a good example of the benefits of actively involving local constituents in area management and working cooperatively with other agencies. A number of agencies provided a large portion of the funding and expertise to finish this project. But without park assistant manager Ray taking a personal interest and CVB president Kindall's and many local residents' desire to preserve this part of Kansas' history, the state would have lost this unique adobe structure.

The Prairie Dog State Park adobe house has been returned to its original condition based on early photographs. And the renovation greatly enhanced the building's structural integrity. With luck, it will last another 100 years, providing a unique interpretive tool about Kansas' pioneers and a monument to early settlers.

For more information about Prairie Dog State Park and the adobe house, contact the park office, Box 431, Norton, 67654, (785) 877-2953.

Mike Blair photo

Bagworm Outbreak

by Bob Bauernfeind
extension entomologist, Horticulture, Kansas State University

Landowners beware. Bagworms in rural windbreaks can go unnoticed until it's too late, and the trees are lost. However, if treated in time, bagworms can be controlled and the windbreaks saved.

Bagworm feeding activities have attracted attention throughout much of Kansas over the past several years. Most of this attention has been associated with landscape ornamentals and hedges in urban settings, where the bagworms are quickly detected and controlled. However, bagworms are not bound to urban settings. With a recorded host range of 128 plant species, ranging from trees and shrubs to herbaceous plants, bagworm outbreaks can easily occur in isolated rural settings such as windbreaks.

Rural bagworm outbreaks aren't usually noticed until substantial defoliation of a windbreak signals something amiss to the distant observer. Only upon closer inspection are the offending bagworms detected.

Bagworm larvae construct a tough silken protective covering reinforced with bits of host plant material around themselves as they feed and develop. Another unique feature of bagworms is the white, fleshy egg-filled appearance of the female moth — eyes, mouthparts and legs are vestigial and nonfunctional, and antennae and wings are absent. The females degenerative form suits her confinement to, and egg-laying function within, her bag. Male moths are clear-winged, black in color and possess conspicuous feathery antennae.

Bagworms eggs overwinter in the female pupal case within the female bag hanging on a tree. Depending on springtime temperatures, egg hatch occurs from mid- to late May through early to mid-June. A day or two after hatching, larvae emerge from the large overwintering bag and immediately begin constructing individual bags. Over an approximate three-month feeding period, larvae and their bags grow, completing development by mid- to late August.

Larvae next permanently close the anterior, or feeding, ends of their bags, and then reverse their positions within their bags so that

their heads point downward. Within four days of this change in position, larvae enter the pupal stage. Two and one-half to three weeks later, the male pupa wiggles its way downward, and emerges through the posterior opening of the bag. The pupal case splits, and the male moth leaves the bag. The female moth only partially emerges from her pupa, remaining in her bag.

The male moth lives only one to two days. Using his feathery antennae to "smell" the pheromone emitted by the female moth, he locates a female bag, inserts his telescoping abdomen into the bag and pupal case, and fertilizes the female moth. During her one-week lifespan, the female moth deposits fertilized eggs into her spent pupal case, after which she (much diminished in size) exits her bag through the posterior opening. The female dies after dropping to the ground, and the cycle is set to repeat the following spring.

Females of most moth species are capable of flight, and they tend to spread their populations over large areas and many host plants and trees. However, immobile female bagworm moths are confined to the host upon which they developed. This, combined with the ability of each female to produce an average of 1,000 eggs, results in sudden bagworm outbreaks.

Bagworms can be devastating in rural areas. Damage may not be noticed until it is severe. Windbreaks may be lost if landowners fail to take action this spring.

Insect populations are regulated by naturally occurring phenomena, including climatic factors, as well as biological control by predators, parasites and parasitoids, scavengers, and disease organisms. Any disruptions in the natural scheme of things could remove a population suppressant and allow population outbreaks.

Twenty-six species of insects have been identified as bagworm parasites, predators, and scavengers. Vespid wasps, ants, spiders and various species of birds feed on bagworm larvae. However, there is little data on the effectiveness of biological controls to suppress bagworm populations. It is assumed that beneficials will eventually build to sufficient numbers to reduce bagworm populations. But given the severity of damage caused by bagworms, especially to evergreen plant species, intervention by man is often required.

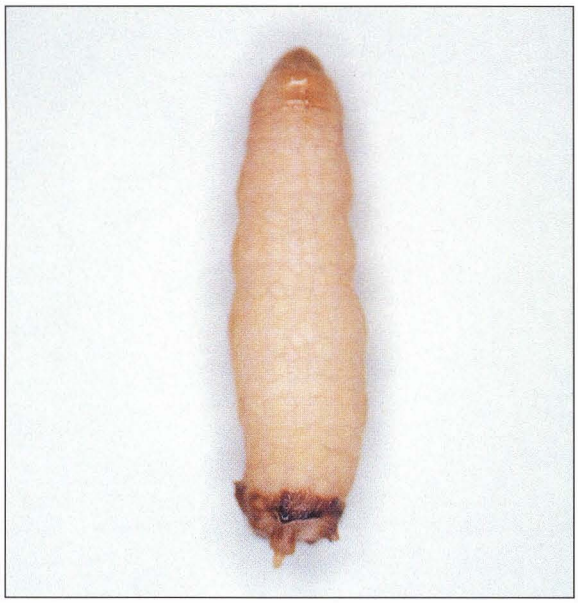
Once bagworm outbreaks have reached epidemic levels, the application of an insecticide is required to quickly eliminate bagworm larvae. There are several points to consider when implementing bag worm control.

Insecticidal control is most effective when larvae are in their early stages — smaller larvae are more susceptible to insecticides. It is imperative that bagworm-infested trees be monitored for the presence of newly emerged larvae. The initiation of bagworm activities will vary from year to year, depending on springtime temperatures. But typically, by mid- to late May, bagworm larvae emerge from the overwintering bag.

Given their small size (1 mm), newly emerged bagworm larvae will have produced bags that have grown to 3-4 mm long. Bags will be brownish and will stand out in stark contrast against the foliage. It takes some concentration to discern the small bags, but once detected, they

Mike Blair photos

Bagworm larvae encase themselves in a small bag that is reinforced with bits of material from the host plant. When the worms feed, movement will be evident in the bags.



The bagworm out of its bag. Bagworms hatch from mid- to late May through early to mid-June.

become readily apparent. The bags will be in continual motion as the small worms feed while protruding from the anterior end.

Initiation of spray treatment depends upon the condition of the trees. If the previous year's damage was slight, a single spray treatment should be applied in mid- to late June. This delay between the appearance of new larvae and the spray application will ensure that all of the larvae have emerged from the parent bag. At this point, bagworms will not have caused much additional feeding damage due to their small size, and slightly damaged plants can withstand this.

However, any additional feeding by even small larvae could cause further setback to trees that were severely damaged the previous year. In these instances, immediate treatment is recommended to preserve new and important growth, which will help restore the vitality of heavily infested plantings. It is imperative that an additional treatment be applied two weeks later to eliminate late-emerging bagworms not killed by the initial treatment.

Thorough spray coverage is essential to reduce bagworm populations. Merely waving a spray nozzle over infested trees only kills those bagworms feeding on tree peripheries. Insecticides must be applied with sufficient sprayer pressure and in adequate amounts of water carrier to ensure penetration of dense foliage.

It is much easier to control bagworms on a few individual trees than in a windbreak. Windbreaks generally consist of eastern redcedars planted for a substantial linear distance, as well as several rows of trees. And it's difficult to deliver insecticides to upper portions of mature trees and inner portions of the windbreak. Therefore, it is recommended that a high-pressure ground sprayer capable of delivering high volumes of an insecticide mixture be used to achieve total coverage. This will be time consuming and laborious, but it will be effective.

Although aerial applications have appeal in terms of ease of insecticide application to large plantings, the gallon-per-acre delivery rate may be insufficient to penetrate and provide protective coverage against massive bagworm infestations.

While some insecticides may be marketed under different formulations, all should provide acceptable control of bagworms if applied in a timely and proper manner. Final product selection may depend on availability and cost. It is the responsibility of the end user to read specific product labels to ensure their legal use for bagworm control.

The recovery of damaged trees depends on the type of tree, as well as the severity of damage. While trees such as eastern redcedars have their major growth spurt in spring (April through June), there is additional growth throughout the summer. Once bagworms are eliminated in mid- to late June, substantial recovery occurs by fall. On the other hand, recovery may be minimal to none for trees with "browned" branches. Trees with half to two-thirds of their branches "browned off" may cling to life for several years but will never recover to again serve as an effective windbreak. Also, weakened trees have

Bob Bauernfeind photos

The male bagworm adult (above) lives only one or two days, long enough to fertilize a female. The female does not have wings and is restricted to the orginal plant host.

little defense against shothole borers, which often provide the fatal blow to trees subjected to uncontrolled bagworm populations.

Windbreaks, many of which were planted in the 1930s and 1940s, prevent wind erosion and provide critical wildlife habitat across much of rural Kansas. Many windbreaks in central Kansas may be lost if landowners fail to inspect them and take appropriate action this spring. Cedar trees are especially vulnerable and may be damaged beyond recovery if they go untreated. To prevent substantial losses, landowners must be aware of bagworms and the potential damage they can do. If you have questions, call your local County Extension office, or Kansas Forest Service (785) 532-3300.

Mike Blair photo

Evergreen species, which provide important wildlife cover, are particularly vulnerable to bagworm damage and can be killed in heavy bagworm outbreaks.

Controlling Bagworms

The following products are registered for use on bagworms. The table lists toxicity ratings which are derived from information taken from the *Farm Chemicals Handbook '97*, Meister Publishing Company. Spraying bagworms presents some unique problems, especially in windbreaks where many trees may need treatment. If the bagworms aren't checked, the trees and wildlife habitat they provide will be lost entirely. Choose a product you're comfortable with, follow the label instructions carefully, and treat only affected trees.

Active Ingredient	Formulated Products	Toxicity			
		Bird	Fish	Bee	Mammal
acephate	Orthene	MT	RH	HT	MT
Bacillus thuringiensis	DiPel, Xentari	PNT	PNT	PNT	N/A
Bendiocarb	Turcam	N/A	N/A	N/A	HT
Bifenthrin	Talstar	PNT	HT	HT	HT
Carbaryl	Sevin, Carbaryl	ST	MT	HT	HT
chlorpyrifos	Dursban	HT	HT	HT	HT
cyfluthrin	Decathlon, Tempo	N/A	N/A	N/A	HT
diazinon	Diazinon	HT	HT	HT	HT
Dimethoate	Dimethoate	HT	N/A	HT	HT
Fluvalinate	Mavrik	N/A	HT	MT	HT
lambda cyhalothrin	Battle, Scimitar	ST	HT	N/A	HT
neem extract	Azatin	N/A	N/A	N/A	MT
permethrin	Astro	PNT	HT	HT	HT-MT
trichlorfon	Dylox	N/A	N/A	N/A	HT

Toxicity of insecticides ranked: HT = highly toxic, MT = moderately toxic, ST = slightly toxic, PNT = practically non-toxic, RH = relatively harmless, N/A = no test results available.

Bob Gress photo

The Great Plains Nature Center

by Marc Murrell
public information officer, Wichita

When fully functional, the Great Plains Nature Center will provide unique wildlife learning opportunities for countless Kansans in the heart of urban Wichita.

The Great Plains Nature Center (GPNC) is a cooperative project between the U.S. Fish and Wildlife Service (USFWS), the Kansas Department of Wildlife and Parks (KDWP) and the City of Wichita Park and Recreation Department. The center is located at 6232 E. 29th St. N. in Wichita. One wing of the facility houses the KDWP's Region 4 office, which is open Mon.-Fri., 8 a.m.-5 p.m., and the remainder of the facility is dedicated to the nature center. The GPNC is not open as a public visitor's center yet, but tentative plans target a grand opening in 1999.

The grand opening was originally planned for the spring of 1997, but Mother Nature threw a wrench in the works. A company in Seattle, Wash., Superscenics, Inc., was working on the interpretive nature displays for the Center's 3,400-square-foot exhibit hall when their building collapsed under the weight of snow and ice in December 1996. Virtually all of the displays that had been constructed during the previous year were destroyed. To complicate matters, the company never recovered from the disaster and defaulted on the contract to build the displays.

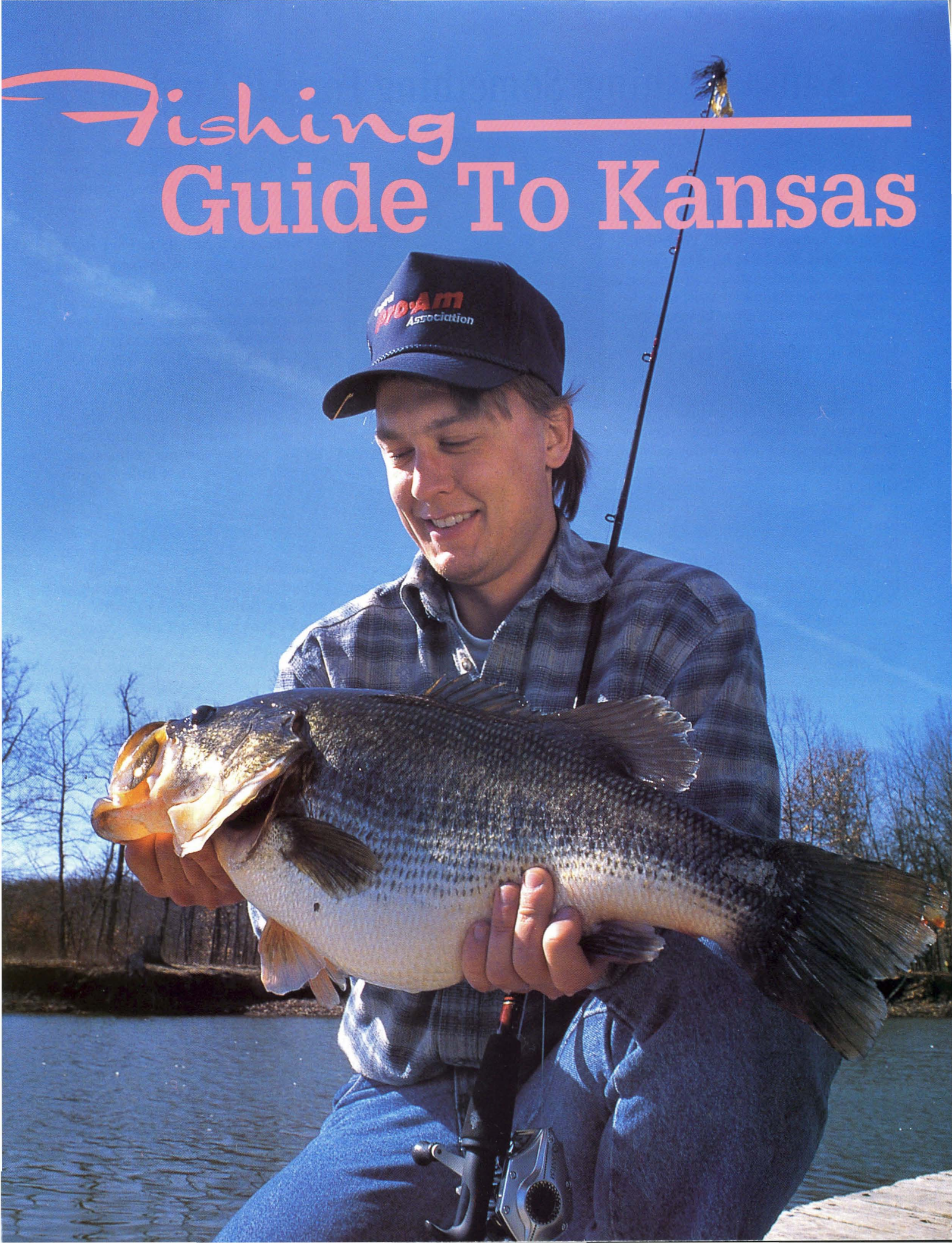
Currently, all three GPNC agencies are working together on a new plan. The USFWS is trying to redirect monies left from a federal dam project to the GPNC account so a new contract can be awarded. From all indications, this process should be completed this summer and a new contractor hired to complete the exhibits.

However, even without the completion of the exhibit hall, the GPNC has already been a positive force in promoting our natural resources. Staff from the three cooperating agencies, in addition to two U.S.D. 259 teaching specialists, presented more than 1,400 programs to nearly 46,000 children and adults in 1997. Summer programs for 1998 are well underway, and special programs include topics on wildlife photography, deer, turkeys, shorebirds, songbirds and waterfowl, decoys, fishing, urban wildlife, and animal natural history profiles.

Much of the operation and maintenance of the building is provided by KDWP in exchange for office space, but funds are still being sought to complete the facility. Corporate, individual and memorial contributions are important to the overall education mission of the center. The Coleman Company's $100,000 donation is the largest to date and helped build the 200-seat auditorium named in the company's honor.

When open, the GPNC will truly be a special facility. The Center will host an estimated 150,000 visitors annually, providing education on the plight and importance of wild habitats in the Great Plains region. As people learn to appreciate wild things and wild places, they will learn to care for and conserve these resources for future generations. For information on GPNC programs, call (316) 683-5499.

Fishing Guide To Kansas



Kansas Fishing: Something For All Anglers

Fishing in Kansas has something for every angler. From lazy prairie streams swimming with hard-fighting channel catfish to big-water reservoirs teeming with crappie, Kansas has it all. With this pamphlet and a little legwork, you can find the fishing opportunities suited to your fishing style.

Let's start at the top. The quantity of large reservoirs surprises most Kansas newcomers — 24 to be exact. Built for flood control, water supply, irrigation or power plant cooling, these reservoirs range in size from 1,200 to 16,000 acres. You can choose from timber-filled, clear-water get-aways, to rich, crappie-infested, open-water lakes. Many of these reservoirs provide excellent crappie, white bass, walleye and channel catfish fishing. And striped bass, smallmouth bass, wipers, and saugeye provide exciting variety.

Newer reservoirs have substantial amounts of submerged timber and offer good largemouth bass fishing. Reservoirs in northwest Kansas were restored to normal levels in the early 1990s after years of low water. The flooded timber and vegetation has provided excellent largemouth bass fishing, as well as outstanding fishing for many other sport fish.

In central Kansas, several reservoirs have emerged as premier walleye hotspots. Aggressive stocking programs along with length limit regulations have maintained excellent walleye fisheries. The walleye continues to be a favorite among anglers in spring and early summer.

For sheer angling excitement, several reservoirs have been stocked with striped bass since the early 1970s. Stripers weighing more than 30 pounds are caught each year. The state record weighed in at a whopping 43 1/2 pounds.

Another big fish attraction is the flathead catfish. The big cats swim in most larger rivers and streams across the state and are also caught from most reservoirs, either from the

lakes, the inlets or below the outlet structures. The state record, weighing in at 90 pounds, was caught below the spillway at Pomona Reservoir. Most flatheads are caught on setlines or trot lines. Live bait is a necessity for these big predators, and for those with patience, catching them on rod and reel is a terrific challenge.

Channel catfish are the most widespread of the catfishes, and nearly every stream, reservoir, and small lake has good numbers of channel catfish. Channel cats are popular with anglers in the smaller state and community lakes, and millions are raised in our state hatcheries and stocked into these waters each year. Reservoir channel cats maintain excellent populations without stocking, and they are often overlooked by anglers chasing crappie, walleye or white bass. As a result, good channel catfish fishing opportunities are available at many reservoirs, as well as the spillways below these reservoirs.

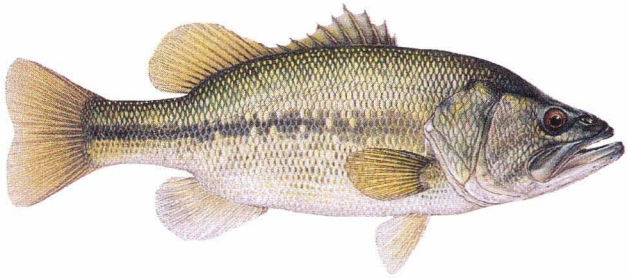
The state fishing and community lakes mentioned above are small jewels scattered across Kansas near smaller towns and cities. State fishing lakes are owned and managed by the department. They range in size from 50 to 200 acres and can be great places to take a family for a day of fishing. Community lakes are owned by local cities or counties and are usually managed by the local district fisheries biologist. Hidden away, just out of town, many of these small lakes are real sleepers, providing outstanding fishing opportunities for bass, crappie, channel catfish and bluegill.

Kansas is fortunate to have more than 10,000 miles of fishable streams. Only the navigable rivers — the Arkansas, Missouri and Kansas — are open to the public. You can reach these rivers at public access points or with permission from adjoining landowners. The rest of the state's rivers and streams, which range from wide, deep-flowing rivers of the east to meandering, sandy-bottomed prairie streams of the west, are privately owned. A little research and polite asking can open the doors to some great fishing on these streams. Huge flatheads and channel cats are caught on the larger rivers, and through a grassland region called the Flint Hills, the sparkling streams hold spotted bass for the angler looking to get away from it all.

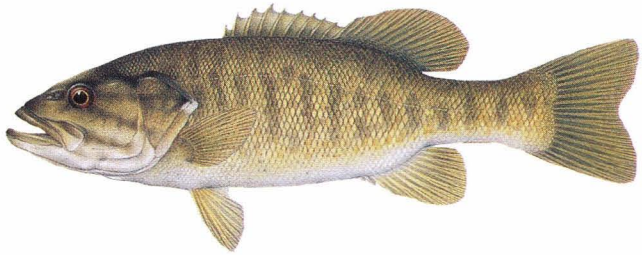
And last, but certainly not least, Kansas is blessed with more than 50,000 farm ponds. Most farm ponds are less than 10 acres, but some of the large watersheds cover more than 100 acres. These privately-owned waterholes require landowner permission, but the lack of fishing pressure makes them hotspots for largemouth bass, channel catfish, and bluegill. Farm ponds account for most of the large bass and bluegill caught in Kansas each year.

For those anglers who just can't bear to put up their fishing gear in the winter, many waters across the state also offer trout fishing. At select department-owned lakes and reservoir spillways, trout are stocked beginning October 15. A special trout permit is required to fish for trout in these waters during the season, which ends April 15.

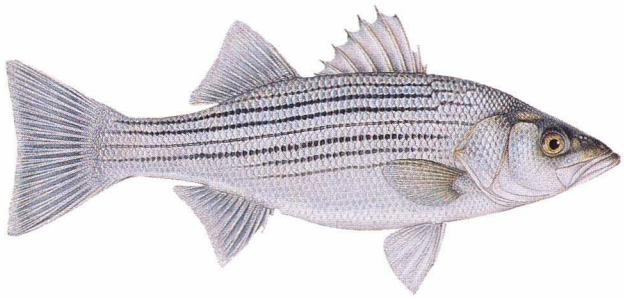
You can see that Kansas offers a wide variety of fishing opportunities. Kansas truly has something for every angler.



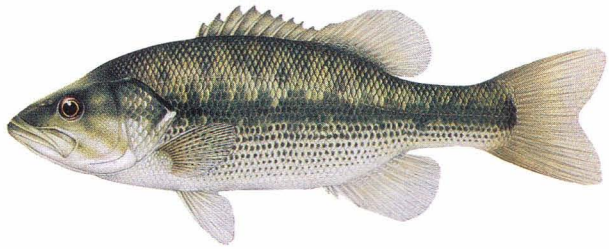
LARGEMOUTH BASS Part of a group known as the black basses, including the smallmouth and spotted bass, the largemouth is the largest. Common in farm ponds, lakes, reservoirs, oxbows and slow moving streams, largemouths usually associate with cover such as aquatic vegetation, submerged timber or rip-rap. Of the black basses, the largemouth is the only one with a mouth that extends back beyond the eye. The world record weighed 22 pounds, 4 ounces. The Kansas record was caught from a Jefferson County farm pond in 1977 and weighed 11 pounds, 12 ounces.



SMALLMOUTH BASS The smallmouth is a hard-fighting sport fish native only to a few streams in far southeast Kansas. Stocked into several reservoirs and select smaller lakes, the smallmouth has adapted well and is attracting a growing number of angler fans. Smallmouths prefer deep water and rocky structure. The smallmouth, or brown bass, has an upper jaw that extends to just below the eye. The Kansas record smallmouth was caught from Milford Reservoir in 1997 and weighed 6 pounds, 5.9 ounces. The world record smallmouth weighed a whopping 11 pounds, 15 ounces.

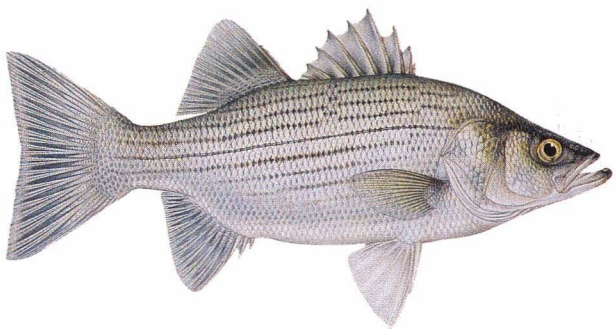


STRIPED BASS A saltwater native, the hard-fighting striped bass has adapted well to freshwater and has prospered in several Kansas reservoirs, primarily Cheney and Wilson. They don't reproduce in Kansas waters, so populations are maintained through stocking. The striper commonly reaches 20 pounds, has a slender body, and distinct stripes, several of which extend to the tail. The rear portion of the tongue has two tooth patches. The Kansas state record, caught at Wilson Reservoir, weighed 43 pounds, 8 ounces. The freshwater world record is 66 pounds.



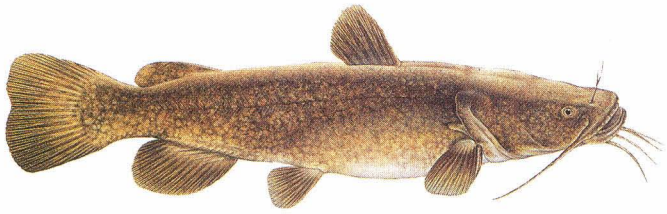
SPOTTED BASS Also known as the Kentucky bass, the spotted is native to eastern Kansas streams, mainly those that flow over limestone bottoms in the Flint Hills. It resembles the largemouth in coloration, with more pronounced horizontal blotching and spots along the belly. The spotted bass acts more like a smallmouth when caught, fighting remarkably hard. The mouth extends to just below the eye. The Kansas record was caught from Marion County Lake in 1977 and weighed 4 pounds, 7 ounces. The world record is 8 pounds, 15 ounces.

Illustrations by Joseph R. Tomelleri



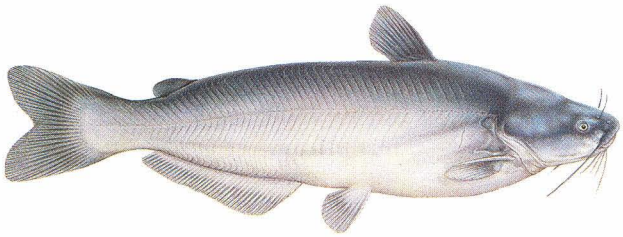
WIPER This hybrid is a cross between a white bass and a striped bass. Popular with anglers, wipers grow fast, and fight like no other fish. Small wipers can easily be mistaken for white bass, and since the daily limit on wipers is two, it's important to know the difference. The wiper has distinct stripes, which are usually broken, is deep bodied and may weigh more than 10 pounds. The wiper has two patches of teeth near the rear of the tongue. The state record wiper was caught from the Pomona Reservoir spillway in 1993 and weighed 22 pounds. The world record wiper is listed at 23 pounds, 2 ounces.

WHITE BASS Common in nearly all Kansas' larger reservoirs, white bass are generally found in large schools. While popular any time of the year, white bass are known for their spawning runs, which may take them miles upriver above the reservoir. White bass have faint stripes, and usually only one extends to the tail. White bass are deep bodied, rarely exceed 3 pounds, and have a single tooth patch on the rear of the tongue. The Kansas state record white bass weighed 5 pounds, 9 ounces and was caught from a Clay County sand pit in 1992. The world record is 6 pounds, 7 ounces.

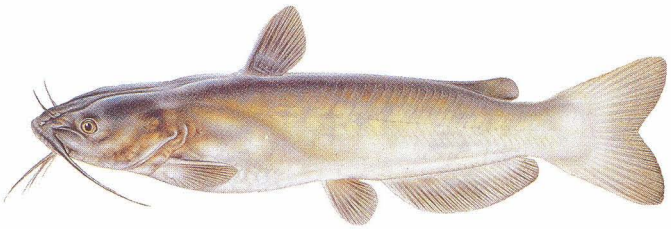


FLATHEAD CATFISH Just as the name implies, this catfish has a broad, flat head with a lower jaw that juts out. Also called the calico or yellow cat, the flathead can be mottled brown to nearly yellow in color. Flatheads are caught with live bait and occasionally lures, usually at night. The state record was caught from the Pomona Reservoir spillway in 1993 and weighed 90 pounds. The world record stands at 91 pounds, 4 ounces.

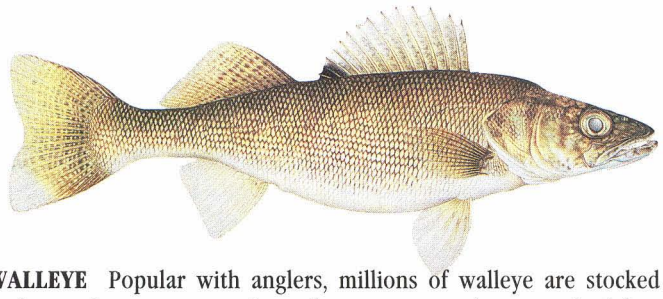
BLACK BULLHEAD Smaller than the other, more popular catfishes, the bullhead is brown/green in color and doesn't have the forked tail like the channel cat. Common in many streams, lakes and ponds, the bullhead bites worms and other bait readily, ideal for youngsters learning to fish. The state record was caught from a Montgomery County farm pond in 1985 and weighed 7 pounds, 5 ounces. The world record is 8 pounds, 15 ounces.



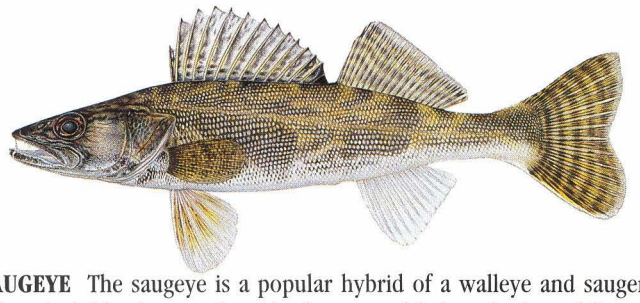
BLUE CATFISH The blue catfish looks much like the channel cat, except the blue has a humped back and a longer anal fin with about 32 supporting rays. Blues are native to several rivers in northeast Kansas including the Kansas and Missouri. Blues are usually caught on cut or live bait. The Kansas record was caught from the Kansas River in 1988 and weighed 82 pounds. The largest blue cat on record weighed 109 pounds, 4 ounces.



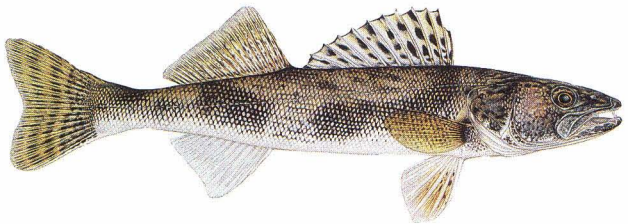
CHANNEL CATFISH One of Kansas' most popular fish, channel cats are common in rivers, lakes, ponds, reservoirs, and small prairie streams. Department hatcheries stock millions of channel cats each year. The channel cat has a deeply forked tail, and the anal fin has rounded edges and less than 30 supporting rays. The state record channel cat was caught from the Kansas River in 1993 and weighed 34 pounds, 11 ounces. The world record is 58 pounds.



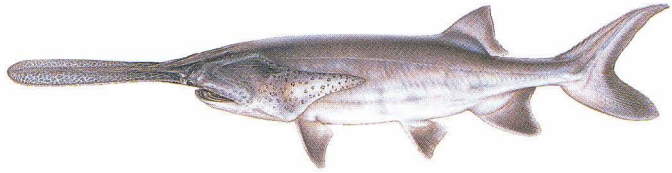
WALLEYE Popular with anglers, millions of walleye are stocked each year in most reservoirs and some state and community lakes. The walleye's spiny dorsal has a dark spot at the base, the lower lobe of the tail has a white tip, and dark blotches on the side rarely extend below the lateral line. It's cheeks are smooth (few scales). The state record was caught from Wilson Reservoir in 1996 and weighed 13 pounds, 2.56 ounces. The world record is 25 pounds.



SAUGEYE The saugeye is a popular hybrid of a walleye and sauger. It has dark blotches on the side that extend below the lateral line, a spiny dorsal with distinct streaks or blotches and an indistinct dark spot at its base. Its cheeks are rough (scaled), and the tail has white along the lower edge. The Kansas record was caught from Sebelius Reservoir in 1997 and weighed 8 pounds, 9.28 ounces. The world record saugeye weighed 15 pounds, 10 ounces.



SAUGER This close cousin to the walleye loves murky water and current and has been stocked in several northeast Kansas reservoirs. The sauger has dark blotches extending below the lateral line, distinct spots on the spiny dorsal, and rough, or scaled, cheeks. Smaller than the walleye, the world record sauger weighed 8 pounds, 12 ounces. The state record was caught from Melvern Reservoir in 1996 and weighed 4 pounds, 1.4 ounces.



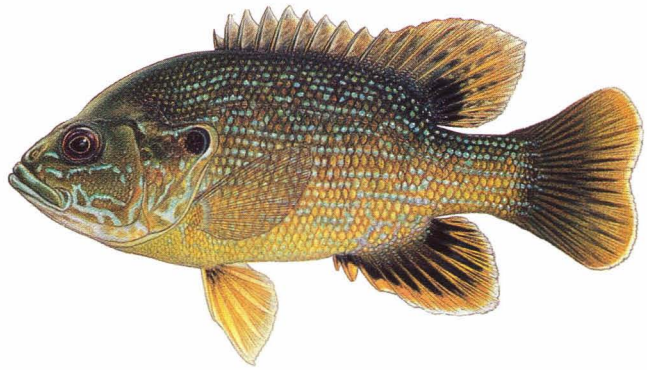
PADDLEFISH The paddlefish is a toothless plankton eater with a prehistoric appearance. Common only in two rivers in Kansas, the Marais des Cygnes and the Neosho, the paddlefish is taken by fishermen during the special snagging season when it moves upriver to spawn. Recent stockings of paddlefish in Kaw Reservoir in Oklahoma and in Tuttle Creek Reservoir may bring the paddle-snouted fish back to some of its former range. The Kansas record was caught in the Neosho River at Chetopa in 1996 and weighed 81 pounds. The largest paddlefish on modern record weighed 142 pounds, 8 ounces.

Illustrations by Joseph R. Tomelleri

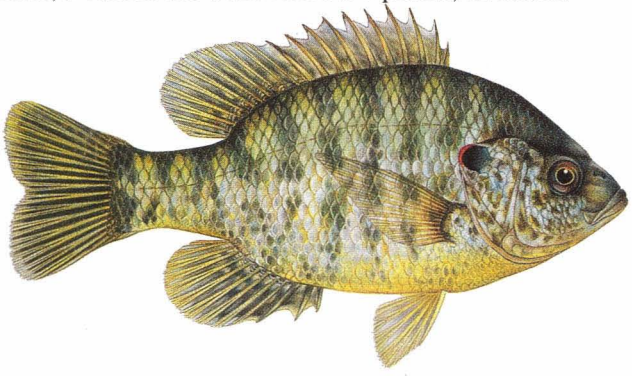
WHITE CRAPPIE The white crappie is abundant across Kansas and is ideally suited to large reservoirs, especially those in northeast Kansas, where outstanding crappie fishing is often found. Known for its prolific numbers and delicious white meat, the white crappie is one of the most popular sport fish in the state. The white crappie is distinguished by its vertical barring and five or six spines in the spiny dorsal fin. The Kansas record was caught from a Greenwood County farm pond in 1964 and tipped the scales at 4 pounds, 1/4 ounce. The world record white weighed 5 pounds, 3 ounces.

BLACK CRAPPIE The black crappie is not as widespread in Kansas as the white crappie. The black is more suited to small, clear-water impoundments such as state lakes and farm ponds. Black crappie are distinguished by a uniform dark speckling, without the visible barring seen on the white crappie. The black's spiny dorsal fin has seven or eight spines. The Kansas record black crappie was caught from Woodson State Fishing Lake in 1957 and weighed 4 pounds, 10 ounces. The world record black crappie weighed 6 pounds.

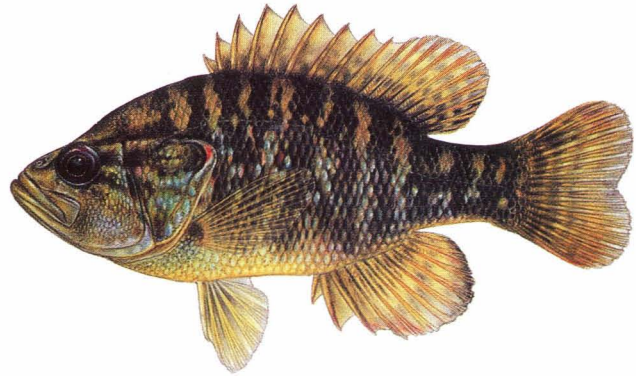
BLUEGILL Named for the blue tab on its gill cover, the bluegill is common in most farm ponds and smaller community and state fishing lakes. It provides many youngsters with their first fishing thrill. Although it doesn't grow to enormous weights, the tenacious, saucer-shaped fish makes up for lack of size with a scrappy fight. Bluegills are most easily caught when they move into shallow water and begin dishing out spawning beds. The Kansas record bluegill was caught from a Scott County farm pond in 1962 and weighed 2 pounds, 5 ounces. The world record is 4 pounds, 12 ounces.



GREEN SUNFISH Although it has a larger mouth and more elongated body than the bluegill, the green sunfish is often confused with the bluegill. Green sunfish have a blue tab on the the gill cover with a light-colored outer edge, light blue vermiculation below the eye and orange-tipped fins and tail. They are easy to catch but can overpopulate and become stunted in small impoundments. The Kansas record was caught from a Russell County farm pond in 1982 and weighed 2 pounds, 5.76 ounces. The largest greenie on record weighed 2 pounds, 7 ounces.



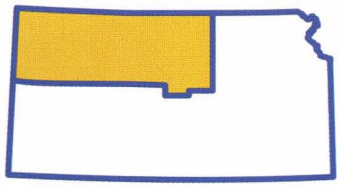
REDEAR SUNFISH The redear sunfish has been stocked into a select few lakes and reservoirs. Although the redear resembles the bluegill, it usually prefers deeper water and is more difficult to catch. The redear has a narrow band of red on the gill cover lobe and usually shows vertical barring. They are popular locally with anglers because of the challenge they provide. The state record redear was caught from a pond on the Finney Wildlife Area in 1995 and weighed 1 pound, 11 ounces. The world record tipped the scales at 5 pounds, 4 ounces.

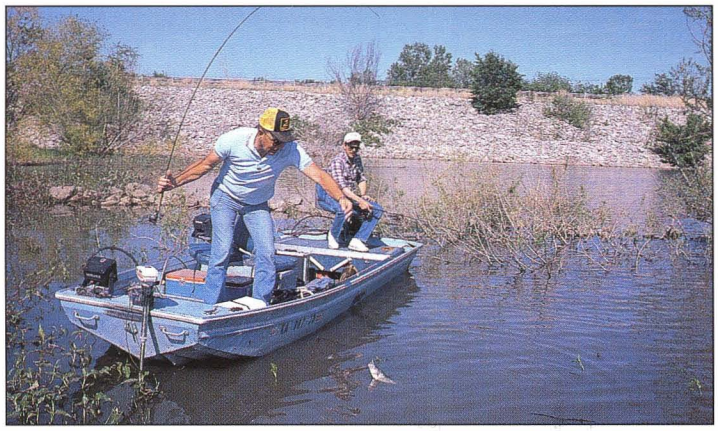


WARMOUTH The warmouth is a bronze-colored panfish with dark vertical barring and a distinctly red eye. The dark tab on the gill cover is has a bright red outer edge and its mouth is larger than that of the bluegill or redear. It is most commonly found in eastern Kansas lakes and streams. The state record warmouth was caught from a Mined Land Wildlife Area lake in Cherokee County in 1988 and weighed 1 pound, 1.76 ounces. The world record stands at 2 pounds, 7 ounces.

Illustrations by Joseph R. Tomelleri

Region 1





Gene Brehm Photo

RESERVOIRS

	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Cedar Bluff - 6,300 acres, 13 miles S of I-70 on K-147	●		●	●	●	●		●	●	●																		
Glen Elder - 12,586 acres, 12 miles W of Beloit on US 24	●	●	●	●	●	●	●	●	●	●																		
Kanopolis - 3,550 acres, 33 miles SW of Salina on K-141	●		●	●	●	●	●	●	●	●																		
Keith Sebelius (Norton) - 2,230 acres, 3 miles SW of Norton	●		●	●	●	●	●	●	●	●																		
Kirwin - 5,080 acres, 15 miles SE of Phillipsburg	●		●	●				●	●																			
Lovewell - 2,986 acres, 4 miles E, 10 miles N of Mankato	●	●	●	●	●	●	●	●	●	●																		
Webster - 3,740 acres, 8 miles W of Stockton	●		●	●	●	●		●	●	●																		
Wilson - 9,040 acres, 8 miles N of I-70 on K-232	●	●	●	●	●	●	●	●	●	●																		

STATE FISHING LAKES

	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Jewell - 57 acres, 6 miles S, 2 miles W of Mankato	●		●					●																				
Logan - 75 acres, (sometimes dry) 3 miles N, 3 miles W of Russel Springs	●		●					●																				
Ottawa - 148 acres, 5 miles N, 1 mile E of Bennington	●		●	●		●		●		●																		
Rooks - 64 acres, 2 1/2 miles S, 2 miles W of Stockton	●		●					●																				
Saline - 38 acres, 2 1/2 miles N, 2 miles W of Salina	●							●																				
St. Francis Sandpits - 5 acres, 1 mile W, 2 miles S of St. Francis			●					●																				
Sheridan - 67 acres, 11 miles E of Hoxie	●		●					●	●																			

Reg 1 Cont'

COMMUNITY LAKES

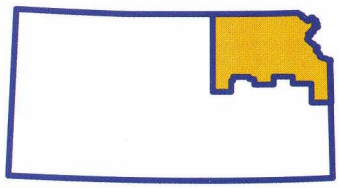
	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Antelope Lake – 80 acres, 2 miles W, 1 1/2 miles N of Morland	●		●					●			🎣			🎣	🎣			🎣	🎣									
Atwood Lake – 45 acres, Junction of highways 25 and 36	●		●	●				●			🎣		🎣	🎣	🎣		🎣	🎣										🎣
Belleville City Lake – 26 acres, Belleville	●		●	●	●	●		●		●	🎣		🎣	🎣	🎣		🎣	🎣	🎣									
Ellis City Lake – 100 acres, Ellis	●		●					●			🎣		🎣	🎣	🎣		🎣	🎣										🎣
Keller Lake – 3 acres, St. Francis			●					●			🎣			🎣	🎣			🎣	🎣									
Logan City Lake – 25 acres, 2 1/2 miles S of Logan	●		●			●		●			🎣		🎣	🎣	🎣		🎣	🎣										🎣
Plainville Township Lake – 158 acres, 2 miles W of Plainville			●					●			🎣		🎣	🎣	🎣		🎣	🎣										🎣
Salina (Lakewood) Lake – 8 acres, Salina	●			●				●			🎣		🎣	🎣	🎣	🎣	🎣	🎣			🎣				🎣			
Smoky Hill Gardens – 11 acres, 10 miles S, 2 miles W of Goodland			●	●	●			●			🎣			🎣	🎣			🎣							🎣			
Villa High Lake – 2 acres, Colby			●											🎣														

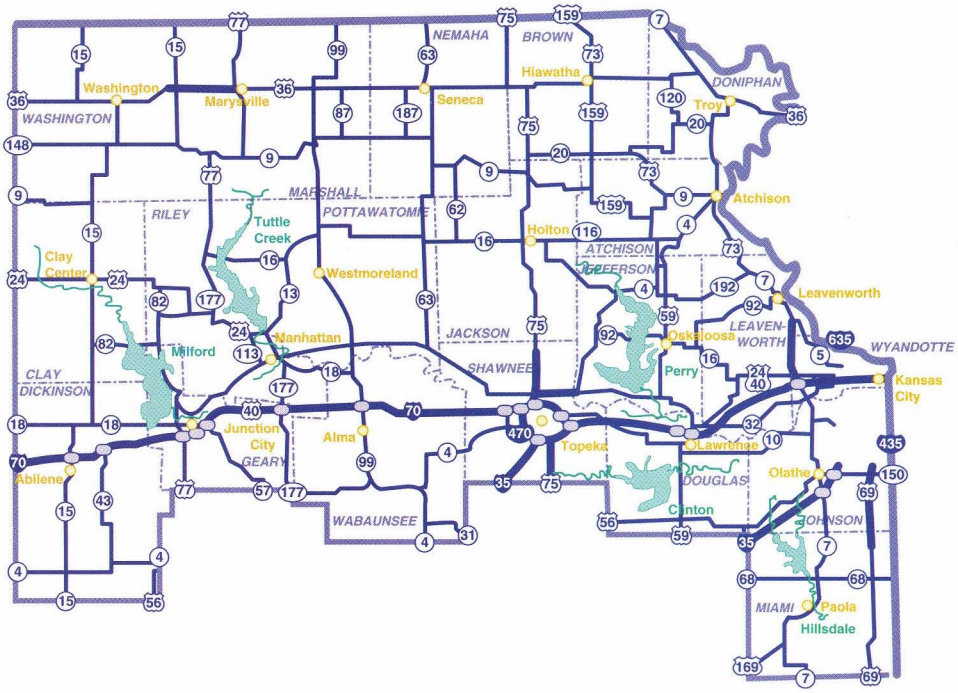
RIVER ACCESS

	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Saline River low-water dam at Lincoln													🎣	🎣		🎣											🎣	
Saline River, Wilson Reservoir Wildlife Area, Cedar Creek	●											🎣	🎣	🎣		🎣	🎣	🎣						🎣		🎣	🎣	
Smoky Hill River, Kanopolis Reservoir Wildlife Area													🎣	🎣		🎣											🎣	
Smoky Hill River at Salina													🎣	🎣		🎣											🎣	
Solomon River at Beloit	●		●	●	●	●		●			🎣	🎣	🎣	🎣	🎣	🎣	🎣	🎣										
Solomon River (north fork) – Glen Elder Reservoir Wildlife Area	●		●								🎣	🎣		🎣	🎣	🎣	🎣	🎣				🎣	🎣	🎣		🎣	🎣	
Solomon River (south fork) – Glen Elder Reservoir Wildlife Area	●		●								🎣	🎣		🎣	🎣	🎣	🎣	🎣				🎣	🎣	🎣		🎣	🎣	
Solomon River – Low-water dam at Minneapolis	●											🎣	🎣	🎣		🎣	🎣	🎣										
Big Creek at Hays				●				●			🎣			🎣	🎣		🎣	🎣										

Mike Blair Photo

Region 2





RESERVOIRS	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Clinton – 7,000 acres, SW of Lawrence	●	●	●	●	●	●	●	●	●	●																		
Hillsdale – 4,580 acres, 3 miles NW of Paola	●		●	●	●	●		●	●	●																		
Milford – 16,200 acres, 5 miles NW of Junction City	●	●	●	●	●	●	●	●	●	●																		
Perry – 11,630 acres, 18 miles NE of Topeka	●	●	●	●	●	●	●	●	●	●																		
Tuttle Creek – 15,800 acres, 6 miles N of Manhattan	●	●	●	●	●	●	●	●	●	●																		
STATE FISHING LAKES																												
Atchison – 66 acres, 3 1/2 miles N and 2 miles W of Atchison	●		●	●				●																				
Brown – 62 acres, 8 miles E and 1 mile S of Hiawatha	●		●					●																				
Browning Oxbow – 1/2 mile W, 1 1/2 mile N of Elwood																												
Douglas – 180 acres, 1 1/2 miles N, 1 mile E of Baldwin	●	●	●	●				●																				
Geary – 97 acres, 8 1/2 miles S, 2 miles W of Junction City	●		●					●																				
Leavenworth – 175 acres, 3 miles W, 1 mile N of Tonganoxie	●		●		●			●	●																			
Louisburg-Middlecreek – 280 acres, 7 miles S of Louisburg	●		●					●																				
Miami – 118 acres, 8 miles E, 5 miles S of Osawatomie	●		●					●																				
Nebo – 38 acres, 7 miles E, 1 mile S of Holton	●	●	●			●		●	●																			
Pottawatomie No. 1 – 24 acres, 5 miles N of Westmoreland	●		●					●																				
Pottawatomie No. 2 – 75 acres, 1 1/2 miles E, 2 1/2 miles N of Manhattan	●		●					●																				
Shawnee – 135 acres, 3 miles E, 7 miles N of Silver Lake	●		●	●	●	●		●																				
Washington – 65 acres, 7 miles N, 3 miles W of Washington	●		●					●																				

Reg 2 Cont'

COMMUNITY LAKES

	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Alma City Lake – 80 acres, 2 1/2 miles SE of Alma	●		●	●				●			●			●			●	●								●		
Antioch Park – 3 acres, 6501 Antioch Rd., Shawnee Mission				●				●			●		●	●	●		●	●										
Atchison City Watershed Lakes – 90 acres, Atchison	●		●	●	●	●		●	●		●		●	●	●			●							●			
Big 11 – 3 acres, 11th & State Ave., Kansas City				●				●			●	●			●													
Cedar Lake – 56 acres, S of Olathe in Cedar Lake Park				●				●			●		●	●	●													
Cedar Crest Ponds – 1 1/2 acres, I-70 & Fairlawn Rd., Topeka								●			●			●				●										
Central Park Lake – 3 acres, 1534 SW Clay, Topeka				●				●			●			●	●		●	●										
Centralia City Lake – 405 acres, 2 miles S, 1 mile W of Centralia	●		●			●		●	●	●	●		●	●	●	●	●	●								●	●	
Edgerton City Lake – 5 acres, Edgerton	●			●				●			●		●	●	●		●	●										
Elkhorn Lake – 4 acres, Holton								●			●			●				●										
Frisco Lake – 12 acres, Olathe				●				●			●			●	●			●										
Gardner City Lake – 100 acres, 1 mile N or Gardner	●			●				●	●		●		●	●	●		●	●										●
Governor's Cedar Crest Pond – 1 acre, Maclennan Park, Topeka											●			●	●		●	●										
Governor's Pond East – 1 acre, Maclennan Park, Topeka											●			●				●	●									
Governor's Pond West – 1 acre, Maclennan Park, Topeka											●			●				●										
Harveyville City Lake – 25 acres, 1 mile N, 1 mile W of Harveyville											●			●	●		●	●										
Herington City Lake (new) – 555 acres, 2 1/2 miles W of Herington	●		●					●	●		●		●	●	●	●	●	●								●	●	●
Herington City Lake (old) – 367 acres, 1 1/2 miles SW of Herington	●		●	●				●	●		●		●	●	●	●	●	●										
Heritage Park Lake – 20 acres, 160th & Pflumm Rd., Olathe	●							●			●		●	●			●	●										
Hiawatha City Lake – 7 acres, 1 mile S of Hiawatha				●				●			●			●	●			●										
Holton City (Prairie) Lake – 78 acres, 1 1/2 miles N, 3 1/2 miles W of Holton	●		●	●		●		●			●			●	●			●										
Jeffery Energy Center – 125 & 450 acres, 5 miles N, 3 miles W of St. Marys	●							●			●	●	●	●	●	●	●	●							●	●		●
Karlis Lake – 1 acre, 5501 SW 6th Ave., Topeka											●			●				●	●									
Kingston Lake – 8 acres, Overland Park								●			●		●	●			●	●										
Lansing City Lake – 1 1/4 acres, east edge of Lansing								●			●		●	●	●		●	●										
Leavenworth (Jerry's) Lake – 3/4 acre, Jerry's Parks, Leavenworth								●			●			●			●	●										
Lenexa (Rose's) Lake – 2 acres, 87th & Lackman, Lenexa								●			●			●				●										
Little Lake – Horton	●							●			●			●	●	●		●										
Lone Star Lake – 195 acres, 4 miles SW of Lawrence	●	●	●	●	●			●			●		●	●	●	●	●	●	●			●						●
Lake Hammond – 15 acres, 6320 Stubbs RD. Tecumseh								●			●			●			●	●										
Lake Henry – 2 acres, Clinton State Park			●	●	●	●		●		●	●			●	●		●	●							●			
Lake Olathe – 172 acres, 2 miles W of Olathe	●	●	●	●				●			●			●	●	●		●										
Louisburg Lake – 23 acres, SE edge of Louisburg											●		●	●	●		●	●	●							●		
Mahaffie Farmstead Pond – 1 acre, Ridgeview & Kansas City Rd., Olathe								●			●			●				●										
Mary's Lake – 3 acres, 1/2 mile E of Haskell & 31st St., Lawrence								●			●			●	●		●	●								●		
Marysville (Country Club) Lake – 10 acres, 1 mile E of US-36 & 77								●	●		●		●	●	●		●	●										
Mid American Nazarene College Pond (Bluestem Pond) – 2 acres, Olathe											●		●	●			●	●										
Mission Lake – 154 acres, Horton	●		●	●				●		●	●			●	●			●										
North Park Lake – 3 acres, NW Bonner Springs				●				●			●			●			●	●										
Ogden City Lake – 24 acres, Ogden			●					●			●	●		●	●	●	●	●										
Olathe East High School Pond – 2 acres, Olathe											●		●	●			●	●										
Osawatomie City Lake – 21 acres, 1 1/2 miles N, 2 miles W of Osawatomie	●							●	●	●	●		●	●	●		●	●										
Paola City Lake (Lake Miola) – 220 acres, 1 mile N, 1 mile E of Paola	●		●			●		●	●		●		●	●	●	●	●	●								●	●	●
Picnic Area Pond – 1/2 acre, Clinton State Park				●				●			●			●	●		●	●										
Pierson Park Lake – 13 acres, 55th & Douglas, Kansas City								●			●		●	●			●	●										
Prairie Center – 1 acre, 3 miles W of Olathe, on 135th St.								●			●		●	●			●	●										
Richmond City Lake – 21 acres, 1 mile S, 1 1/2 miles E of Richmond	●		●					●			●			●	●			●										
Sabetha City Lake – 100 acres, 6 miles W of Sabetha	●		●					●			●			●	●		●	●										
Sabetha Pony Creek – 191 acres, 3 miles N of Sabetha	●							●			●		●	●	●	●		●	●							●		
Banner Creek Lake – 535 acres, 1 1/2 miles W of Holton	●		●					●	●	●	●			●	●		●	●	●									

Reg 2 Cont'

COMMUNITY LAKES Cont.

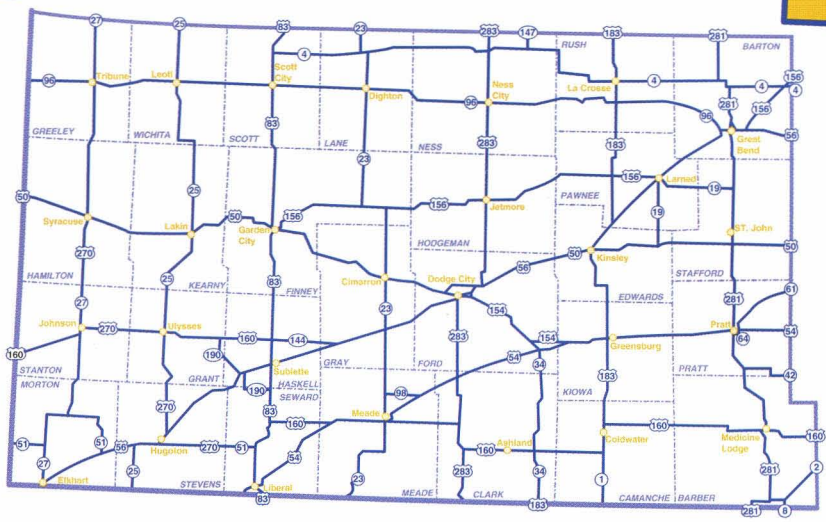
	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Shawnee Lake – 416 acres, 3139 SE 29th St., Topeka	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●						●	●	●	●
Shawnee JR. – 2 acres, W side of Lake Shawnee, 3139 SE 29th St., Topeka								●			●			●	●		●	●										
Shawnee Mission Park Lake – 135 acres, 79th & Renner Rd. Shawnee Mission	●	●		●				●	●		●			●	●		●	●							●			●
South Lake Park – 5 1/2 acres, 87th & Valley View, Overland Park								●			●			●			●	●										
Spring Creek Lake – 7 acres, 1.2 miles S, 11/2 miles E of Baldwin	●		●					●			●		●	●	●		●	●										
Spring Hill City Lake – 40 acres, 1/2 NW of Spring Hill											●			●	●		●	●										
Stoll Park – 1 3/4 acres, Overland Park								●			●			●				●										
Sunflower Park – 1 1/2 acres, 4 miles W of DeSoto								●			●			●			●	●										
Tomahawk Creek Parkway Ponds (3) – 3 acres, Leawood								●			●		●	●			●	●										
Troy 4-H Lake – 5 acres, 1/2 mile SW of Troy											●			●				●										
Tuttle Creek Seep Stream – Tuttle Creek State Park River Pond Area			●	●	●	●		●		●															●			
Lake Wabaunsee – 216 acres, 4 miles W of Eskridge													●	●	●	●	●	●										
Wamego City lake – 1/2 acre, Wamego City Park											●		●	●			●											
Waterville City Lake – 8 acres, 1 mile N, 1 mile W of Harveyville											●			●	●			●										
Waterworks Lake – 6 acres, Sheridan & Curtis St. Olathe								●			●		●	●	●	●	●											
West Lake – 6 acres, Gage Park, Topeka								●			●			●	●		●	●										
Wyandotte Co. Lake – 330 acres, Wyandotte County Park	●	●	●	●				●	●		●			●	●	●	●	●							●	●		●

RIVER ACCESS

Big Blue River, Rocky Ford Dam below Tuttle Creek Reservoir.								●			●	●	●	●	●	●		●	●		●					●	●	●
Big Blue River, Tuttle Creek Reservoir Wildlife Area	●		●									●	●	●	●	●	●	●			●					●	●	
Big Blue River at Marysville											●	●	●	●	●	●	●	●								●	●	
Delaware River, Perry Reservoir Wildlife Area, Valley Falls (2)	●		●	●				●		●				●	●	●	●	●									●	
Kansas River at Lawrence	●											●		●	●	●										●	●	●
Kansas River at Topeka	●											●		●	●	●											●	
Kansas River at mouth of Big Blue River, Manhattan	●										●	●		●	●	●		●										
Little Blue River, 1 mile W, 6 miles S of Hanover	●		●										●	●		●												
Marais des Cygnes River low-water dam at Osawatomie												●	●	●	●	●							●				●	
Marias des Cygnes River low-water dam at Ottawa												●	●	●	●	●							●				●	
Missouri River at Atchison	●											●		●		●				●							●	
Missouri River – city parks in Doniphan, Leavenworth and Wyandotte counties	●											●		●		●				●							●	
Republican River, Milford Reservoir Wildlife Area	●		●											●		●										●	●	●
Rock Creek, Clinton Reservoir Wildlife Area	●		●											●	●		●									●	●	
Wakarusa River at Eudora	●											●		●	●	●		●									●	
Wakarusa River, Clinton Reservoir Wildlife Area	●		●									●		●	●	●	●	●								●	●	

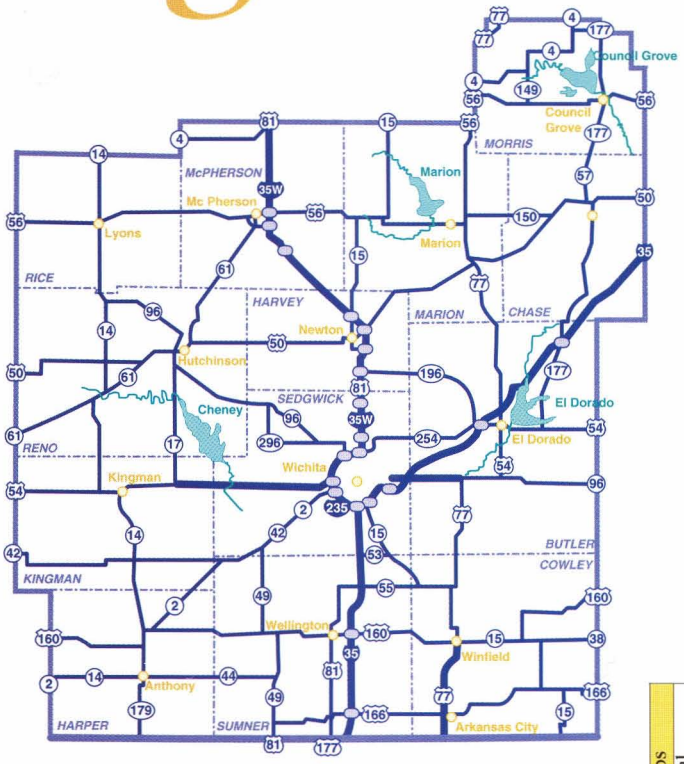
Mike Blair Photo

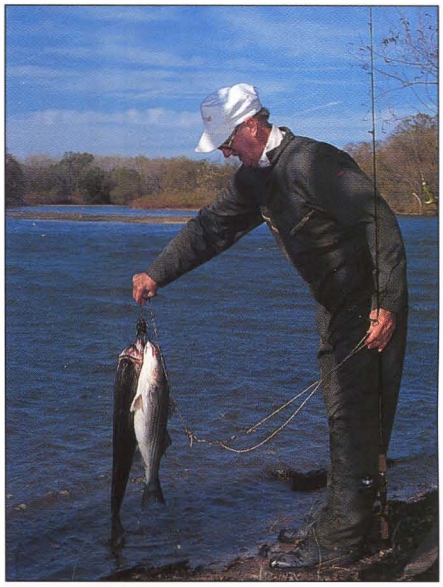
Region 3



	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
STATE FISHING LAKES																												
Barber – 77 acres, N edge of Medicine Lodge	●		●	●	●			●																				
Cimarron National Grasslands Pits – 11 acres, 8 miles N of Elkhart			●					●																				
Clark – 337 acres, 8 1/2 miles SW of Kingsdown	●		●					●																				
Concannon – 60 acres, 15 miles NE of Garden City	●		●					●																				
Finney Refuge Pits – 5 acres, S edge of Garden City			●					●																				
Finney – 110 acres, 8 miles N, 3 miles W, 1 mile N of Kalvesta	●		●					●																				
Goodman – 40 acres, 5 miles S, 2 1/2 miles E of Ness City	●		●					●																				
Hain – 53 acres, SW of Spearville			●					●																				
Hamilton – 60 acres, 3 miles W, 2 miles N of Syracuse	●		●					●																				
Kiowa – 21 acres, NW edge of Greensburg	●		●	●				●																				
Meade – 80 acres, 8 miles S, 5 miles W of Meade	●		●	●	●	●		●	●	●																		
Scott – 115 acres, 11 miles N of Scott City	●	●	●	●	●	●		●	●	●																		
Ford County Lake – 48 acres, 5 miles E, 3 miles N of Dodge City	●		●					●		●																		
COMMUNITY LAKES																												
Arkalon Recreational Area – 10 miles NE of Liberal on Highway 54			●	●						●																		
Beymer Sandpit – 18 acres, 2 1/2 miles S of Lakin			●	●				●	●																			
Coldwater City Lake – 250 acres, 1 mile S, 1 mile W of Coldwater	●		●	●	●	●		●	●	●																		
Jetmore City Lake – 110 acres, 1 mile S, 5 miles W of Jetmore	●		●	●		●			●	●																		
Lake Charles – 1 acre, Dodge City Community College																												
Great Bend (Veterans Park) – 13 acres, Great Bend	●							●																				
Mariah Hills Golf Course Pond – 2 acres, Dodge City																												
Pratt County Lake – 51 acres, 2 1/2 miles E of Pratt	●		●	●				●		●																		
Reinhart Lake – 10 acres, 2 miles N, 1/2 mile W of Bison			●					●																				
Stone Lake (Great Bend) – 50 acres, SW of Great Bend	●							●																				
Warren Stone Memorial Lake – 2 acres, 2 miles E of LaCrosse	●		●					●																				
RIVER ACCESS																												
Ninnescha River (south fork), 2 miles E, 1 mile S of Pratt			●					●																				
Ninnescha River (south fork), Lemon Park, Pratt								●																				

Region 4





Mike Blair Photo

RESERVOIRS	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Cheney – 9,550 acres, 20 miles W of Wichita	●		●	●	●	●	●	●	●	●				●	●	●		●						●	●	●	●	●
Council Grove – 3,280, 1 mile N of Council Grove	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	●			●					●	●	●
El Dorado – 8,000 acres, 3 miles E, 2 miles N of El Dorado	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●			●	●	
Marion – 6,160 acres, 4 miles NW of Marion	●		●	●	●	●		●	●	●				●	●	●		●								●	●	●
STATE FISHING LAKES																												
Butler – 124 acres, 3 miles W, 1 mile N of Latham	●		●	●				●			●		●	●	●		●	●	●							●		
Chase – 109 acres, 2 1/2 miles W of Cottonwood Falls	●		●					●	●		●			●	●		●	●			●	●	●			●	●	●
Cowley – 84 acres, 13 miles E of Arkansas City	●		●	●				●			●		●	●	●	●	●	●	●			●	●			●		
Kaw WA – 14 acres, 1 mile SE of Arkansas City	●										●	●		●	●	●	●	●								●	●	
Kingman – 144 acres, 7 miles W of Kingman	●		●					●			●			●	●		●	●								●		●
McPherson – 46 acres, 6 miles N, 2 1/2 miles W of Canton	●		●					●			●		●	●	●		●	●	●							●		
COMMUNITY LAKES																												
Afton – 258 acres, 20 miles SW of Wichita	●	●	●	●	●	●		●	●	●	●		●	●	●	●	●	●								●		●
Anthony City Lake – 156 acres, 1 mile N, 1/2 mile W of Anthony	●		●	●	●	●		●	●	●	●		●	●	●		●	●			●							
Carey Park Pond – 1 acre, S end of Hutchinson				●				●			●			●	●		●	●							●			
Chisholm Creek Park – 3 acres, NE Wichita				●				●			●		●	●			●	●						●				
Dillon Outdoor Ed. Center – 3 acres, NE of Hutchinson				●				●			●		●	●	●	●	●	●							●			
Harvey County East Lake – 254 acres, 7 miles E of Newton	●	●	●	●	●	●		●	●	●	●		●	●	●		●	●								●		●
Harvey County West Lake – 15 acres, 4 miles N, 3 miles W of Halstead	●		●	●		●		●	●	●	●		●	●	●	●	●	●										
Kahola Lake – 405 acres, 11 miles W, 8 miles N of Emporia	●		●	●		●		●		●	●		●	●	●	●	●	●					●			●		
Marion County Lake – 153 acres, 2 miles E, 2 miles S of Marion	●	●	●	●	●	●		●	●	●	●		●	●	●	●	●	●			●		●			●		●
Riggs Park – 1 acre, Haysville				●				●			●			●				●										
Sedgwick County Parks – 63 acres, NW Wichita				●				●			●		●	●	●	●	●	●						●				●
Watson Park – 42 acres, S Wichita				●				●			●			●	●			●						●				●

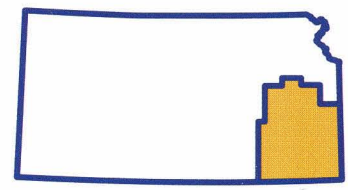
Reg 4 Cont'

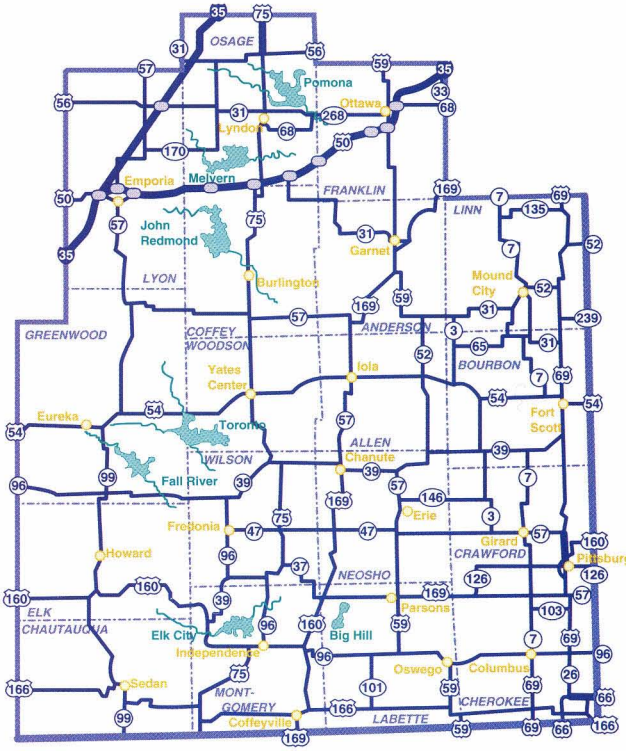
COMMUNITY LAKES Cont.	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Wellington City Lake #1 – 67 acres, NE of Wellington	●			●						●																		
Wellington City Lake #2 – 350 acres, 5 miles W, 1 1/2 miles S of Wellington	●	●	●	●	●	●		●	●	●																		
Winfield City Lake – 1,200 acres, 10 miles NE of Winfield	●		●	●		●		●	●	●																		
Winfield Island Park Lake – 7 acres, N of Winfield			●	●				●																				

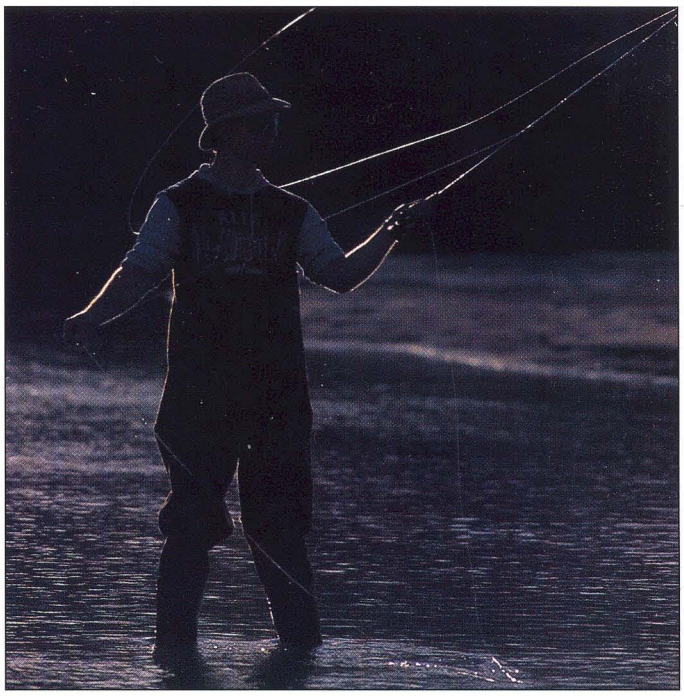
RIVER ACCESS	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Arkansas River – Kaw Wildlife Area			●																									
Arkansas River at Arkansas City																												
Arkansas River at Geuda Springs			●					●																				
Arkansas River – low-water dam at Oxford																												
Arkansas River – 21st St. Bridge, Wichita				●				●																				
Arkansas River – Lincoln St. Bridge, Wichita				●				●																				
Chikaskia River – Drury Dam, 5 1/2 miles S of South Haven																												
Cottonwood River at Cottonwood Falls																												
Cottonwood River – Marion Reservoir Wildlife Area	●		●																									
Little Arkansas River through Wichita			●	●																								
Neosho River, Council Grove Reservoir Wildlife Area																												
Walnut River at Arkansas City																												
Walnut River at Winfield																												

Mike Blair Photo

Region 5







Mike Blair Photo

RESERVOIRS

RESERVOIRS	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Big Hill – 1,240 acres, 4 1/2 miles E of Cherryvale	●		●	●	●	●		●	●	●																		
Elk City – 4,450 acres, 4 miles NW of Independence	●		●	●	●	●		●	●	●																		
Fall River – 2,500 acres, 25 miles SE of Eureka	●		●	●	●	●		●	●	●																		
John Redmond – 9,400 acres, 2 miles No 1/2 W of Burlington	●	●	●	●	●	●		●	●	●																		
La Cygne – 2,600 acres, SE of La Cygne	●	●	●	●	●	●		●		●																		
Melvern – 7,000 acres, 35 miles S of Topeka	●	●	●	●	●	●	●	●	●	●																		
Pomona – 4,000 acres, 25 miles S of Topeka	●	●	●	●	●	●	●	●	●	●																		
Toronto – 2,800 acres, 15 miles SW of Yates Center	●		●	●	●	●		●	●	●																		

STATE FISHING LAKES

STATE FISHING LAKES	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Big Hill Wildlife Area – 13 3/4 acres, 6 miles E of Cherryvale																												
Bourbon – 103 acres, 4 miles E of Elsmore	●		●	●				●																				
Crawford – 150 acres, 9 miles N, 1 mile E of Girard	●		●	●	●	●	●	●	●	●																		
Lyon – 135 acres, 5 miles W, 1 mile N of Reading	●		●					●	●																			
Marais des Cygnes Wildlife Area – 1,967 acres, 7 miles N of Pleasanton	●																											
Melvern River Pond – 90 acres, 1/2 mile S of Melvern Reservoir	●		●	●	●	●		●		●																		
Mined Land WA – 1,500 acres, Cherokee, Crawford & Labette cos.	●		●																									
Montgomery – 105 acres, 3 miles S, 1 mile E of Independence	●		●					●																				
Neosho – 92 acres, 6 miles S, 1 mile W of St. Paul	●		●	●				●	●	●																		
Neosho Wildlife Area – 800 acres, 1 mile E of St. Paul	●																											
Osage – 140 acres, 3 miles S, 1/2 mile E of Carbondale	●		●	●				●																				
Wilson – 110 acres, 1 mile S, 1 mile E of Buffalo	●		●					●																				
Woodson – 180 acres, 5 1/2 E of Toronto	●		●		●			●																				

Reg 5 Cont'

COMMUNITY LAKES

	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Allen City Lake – 59 acres, 1 mile E, 1/2 mile N of Allen	●		●					●			🎣			🎣	🎣	🎣	🎣	🎣										
Altamont City Lake – 13 acres, 4 miles S of Altamont			●								🎣		🎣	🎣	🎣		🎣	🎣	🎣									
Blue Mound City Lake – 19 acres, 1 mile N, 2 miles W of Blue Mound											🎣		🎣	🎣			🎣	🎣										
Bourbon County Lake – 106 acres, 1 mile E, 2 miles N of Hiattville	●		●	●				●	●		🎣		🎣	🎣	🎣	🎣	🎣	🎣	🎣									
Carbondale City Lake – 265 acres, 2 miles E of Carbondale	●		●								🎣		🎣	🎣	🎣		🎣	🎣				🎣				🎣		🎣
Chanute City Lake – 80 acres, S edge of Chanute	●		●	●	●	●		●			🎣		🎣	🎣	🎣		🎣	🎣					🎣					🎣
Cherryvale – 11 acres, 1.4 miles S of Cherryvale	●		●					●			🎣			🎣	🎣	🎣		🎣	🎣									
Coffeyville State Park & Pfister Park Lakes – 10 acres Coffeyville								●			🎣			🎣	🎣		🎣	🎣							🎣			
Empire Lake – 800 acres, SE of Riverton	●										🎣	🎣	🎣	🎣	🎣	🎣	🎣	🎣	🎣				🎣					
Emporia Jones Park – 3 acres, Emporia				●				●			🎣			🎣			🎣	🎣										
Emporia Peter Pan Park – 3 acres, Emporia				●				●			🎣			🎣			🎣	🎣	🎣									
Edna City Lake – 10 acres, 2 miles W, 1 mile S of Edna	●		●	●				●			🎣			🎣	🎣		🎣	🎣	🎣				🎣					
Eureka City Lake – 259 acres, 4 miles N of Eureka	●		●				●	●	●		🎣			🎣	🎣	🎣	🎣	🎣					🎣			🎣		
Fort Scott Lake – 360 acres, 2 miles S, 3 miles W of Fort Scott	●							●	●		🎣	🎣	🎣	🎣	🎣	🎣	🎣	🎣								🎣	🎣	🎣
Fort Scott Gunn Lake – 10 acres, NW corner of Fort Scott	●	●	●	●	●	●		●		●	🎣		🎣	🎣	🎣	🎣	🎣	🎣				🎣			🎣			
Fort Scott (Rock Creek) Lake – 75 acres, 1 mile S, 2 1/2 miles W of Ft. Scott	●		●	●				●			🎣	🎣	🎣	🎣	🎣	🎣	🎣	🎣								🎣	🎣	
Garnett Cedar Creek Lake – 310 acres, 6 miles S, 2 miles W of Garnett	●	●	●	●	●	●		●		●		🎣	🎣	🎣	🎣	🎣	🎣	🎣	🎣			🎣				🎣		🎣
Garnett City Lake (north) – 55 acres, N edge of Garnett	●			●	●	●		●		●	🎣			🎣	🎣	🎣	🎣	🎣	🎣						🎣	🎣		🎣
Garnett City Lake (south) – 10 acres, S edge of Garnett				●	●			●			🎣			🎣	🎣	🎣		🎣							🎣			🎣
Gridley (Bishop) Lake – 33 acres, 1 mile N of Gridley	●							●			🎣			🎣	🎣		🎣	🎣	🎣			🎣				🎣	🎣	🎣
Lebo Lake – 70 acres, 2 miles E, 1/ mile N or Lebo (Closed until 2000)	●										🎣			🎣	🎣	🎣	🎣	🎣	🎣			🎣			🎣	🎣		🎣
Madison City Lake – 114 acres, 2 miles S, 1/2 mile W of Madison	●		●					●	●		🎣			🎣	🎣	🎣	🎣	🎣								🎣		
Moline City Lake – 185 acres, 4 mile NW of Moline			●					●			🎣			🎣	🎣		🎣	🎣										
Mound City Lake – 148 acres, 4 miles W of Mound City	●		●								🎣		🎣	🎣	🎣		🎣	🎣	🎣							🎣		
Olpe City Lake – 90 acres, 1/2 mile W, 1 mile S of Olpe	●							●	●		🎣			🎣	🎣	🎣	🎣	🎣										
Osage City Lake – 50 acres, 1 1/2 miles S of Osage City	●										🎣		🎣	🎣	🎣			🎣								🎣		🎣
Parker City Lake – 7 1/2 acres, 3/4 mile S, 1/2 mile W of Parker											🎣			🎣		🎣	🎣	🎣										
Parsons City lake – 980 acres, 4 mile N, 3 1/2 mile W of Parson	●		●	●				●	●	●	🎣	🎣		🎣	🎣	🎣	🎣	🎣			🎣						🎣	🎣
Pittsburg College Lake -- 2 acres, Pittsburg				●				●			🎣			🎣			🎣	🎣										
Playters lake – 3 1/2 acres, Pittsburg								●			🎣			🎣	🎣		🎣	🎣										
Pleasanton City Lake No. 1 – 127 acres, 1 mile N, 1/2 mile E of Pleasanton	●							●	●		🎣		🎣	🎣	🎣	🎣	🎣	🎣										
Pleasanton City Lake No. 2 – 11 acres, 1/4 mile W of Pleasanton											🎣		🎣	🎣	🎣	🎣	🎣	🎣										
Pleasanton City lake No. 3 – 32 acres, 1/2 mile W of Pleasanton											🎣		🎣	🎣	🎣	🎣	🎣	🎣										
Prescott City Lake – 25 acres, 1 mile E, 1/2 mile S of Prescott											🎣		🎣	🎣	🎣		🎣	🎣										
Quivira Scout Lake – 475 acres, 5 mile N, 1 mile E of Sedan	●	●	●	●				●	●		🎣			🎣	🎣	🎣	🎣	🎣	🎣				🎣			🎣		
Sedan City Lake (New) – 70 acres, 5 mile N of Sedan	●		●					●			🎣			🎣	🎣		🎣	🎣							🎣			
Sedan City Lake (Old) – 55 acres, 7 miles N of Sedan	●		●					●			🎣			🎣	🎣		🎣	🎣							🎣			
Severy City Lake – 10 acres, 2 1/2 miles E of Severy	●		●					●			🎣			🎣	🎣		🎣	🎣										
Strawn City Lake (new) – 3 acres, Center of Strawn City				●				●			🎣			🎣	🎣		🎣	🎣	🎣						🎣	🎣	🎣	🎣	🎣
Thayer City Lake (old) – 30 acres, 2 mile W, 1/4 mile S of Thayer	●		●	●				●			🎣		🎣	🎣	🎣	🎣	🎣	🎣										
Thayer City Lake (new) – 45 acres, 2 1/4 miles W, 1/4 mile S of Thayer	●										🎣		🎣	🎣	🎣	🎣		🎣	🎣									
Yates Center Lake (old) – 250 acres, 1/2 mile S of Yates Center	●		●					●	●				🎣	🎣	🎣		🎣	🎣	🎣			🎣				🎣	🎣	🎣
Yates Center Lake (new) – 210 acres, 2 miles W, 3 miles S of Yates Center	●		●		●	●		●	●		🎣			🎣	🎣		🎣	🎣	🎣							🎣		🎣

Reg 5 Cont'

RIVER ACCESS

	boat ramps	boat rental	camping	drinking water	dump station	electric hookups	marina	picnic areas	swimming	trailer pads	bluegill	buffalo	bullhead	channel catfish	crappie	flathead catfish	green sunfish	largemouth bass	redear sunfish	sauger	saugeye	smallmouth bass	spotted bass	striped bass	trout	walleye	white bass	wiper
Caney River – Federal Land above Hula Reservoir												●		●	●	●	●									●		
Cottonwood River – Emporia Peter Pan Park								●				●		●		●	●									●		
Elk River – Elk City Reservoir Wildlife Area								●				●		●	●	●		●					●			●	●	
Fall River – low-water dam at Fredonia												●	●	●	●	●							●				●	
Fall River – Fall River Reservoir Wildlife Area	●		●									●	●	●	●	●	●	●					●				●	
Marais des Cygnes River – Marais des Cygnes Wildlife Area			●					●			●	●	●	●	●	●							●			●	●	●
Marais des Cygnes River – Melvern Reservoir Wildlife Area	●		●									●	●	●	●	●	●						●				●	
Marmaton River – low-water dam at Fort Scott														●	●	●							●			●	●	
Neosho River – low-water dam at Burlington												●	●	●	●	●							●			●	●	
Neosho River – low-water dam at Chanute												●	●	●	●	●							●				●	
Neosho River – low-water dam at Chetopa			●					●				●	●	●	●	●							●				●	
Neosho River – low-water dam at Hartford			●					●				●	●	●	●	●							●				●	●
Neosho River – low-water dam at Iola												●	●	●	●	●							●				●	
Neosho River – low-water dam at Neosho Falls			●									●	●	●	●	●							●			●	●	
Neosho River on the Neosho Wildlife Area			●									●	●	●	●	●							●				●	
Neosho River – John Redmond Reservoir Wildlife Area														●		●											●	●
110 Mile Creek above Pomona Reservoir			●											●	●	●										●	●	
Shoal Creek at Galena			●					●			●			●		●	●					●	●					
Soden Park at Emporia								●				●		●		●	●						●			●	●	
Spring River – low-water dam at Baxter Springs								●				●	●	●	●	●		●					●			●	●	
Spring River SE of Riverton below Empire Lake												●	●	●	●	●		●					●			●	●	
Spring River – off K-96 near Kansas-Missouri state line												●	●	●	●	●		●								●	●	
Verdigris River – low-water dams at Coffeyville												●	●	●	●	●		●			●					●	●	●
Verdigris River – low-water dams at Independence												●	●	●	●	●					●					●	●	●
Verdigris River – low-water dam at Neodasha	●		●					●				●	●	●	●	●		●			●		●			●	●	
Verdigris River – Toronto Reservoir Wildlife Area			●									●		●	●	●	●	●					●				●	

Department Offices

OFFICE OF THE SECRETARY
900 SW Jackson, Suite 502
Topeka, KS 66612-1233
(785) 296-2281

OPERATIONS OFFICE
512 SE 25th Avenue
Pratt, KS 67124-8174
(316) 672-5911

REGION 1
P.O. Box 338
1426 Hwy 183 Alt.,
Hays, KS 67601-0338
(785) 628-8614

REGION 2
3300 SW 29th
Topeka, KS 66614-2053
(785) 273-6740

REGION 3
1001 McArtor Rd,
Dodge City, KS 67801
(316) 227-8609

REGION 4
6232 E. 29th. N
Wichita, KS 67220
(316) 683-8069

REGION 5
1500 W. 7th
P.O. Box 777
Chanute, KS 66720-0777
(316) 431-0380

KANSAS CITY OFFICE
14639 W 95th St.
Lenexa, KS 66215
(913) 894-9113

EMPORIA INVESTIGATIONS OFFICE
1830 Merchant
Emporia, KS 66801-1525
(316) 342-0658

1998 Fishing Forecast

The following is an abbreviated version of the 1998 Fishing Forecast. Ratings for each sport fish are based on 1997 sampling efforts and creel surveys conducted by district fisheries biologists. The Power rating represents the number of fish sampled per unit of effort. The lunker rating represents the number of fish sampled considered to be of preferred size. And the biologist's rating takes into consideration factors that may not be evident in the sampling numbers. For a complete forecast brochure, contact the KDWP's Pratt office, (316) 672-5911, or find us online at www.kdwp.state.ks.us

Channel Catfish

Reservoir	Power Rating (>16″)	Lunker Rating (>28″)	Big Fish (lbs.)	Biologist's Rating
Sebelius	29	0	6.7	Excellent
Perry	15	0	4.7	Good
Council Grove	11	1	5.8	Fair
Webster	9	1.5	15.5	Good
Marion	8.1	1	12.9	Good
Lakes				
Gridley SFL	80	0	5.5	Excellent
Kingman SFL	40	0	5.7	Excellent
McPherson SFL	33	0	5.9	Excellent
Osage SFL	23	2.0	15.8	Excellent
New Strawn CL	23	0	8	Good

Black Crappie

Reservoir	Power Rating (>8″)	Lunker Rating (>12″)	Big Fish (lbs.)	Biologist's Rating
Kirwin	23.8	0.7	1.1	Very Good
Sebelius	20.3	0.4	1.4	Very Good
Webster	11	0.4	1.4	Excellent
Glen Elder	8.5	0	1	Fair
Cedar Bluff	5.5		0.6	Good
Lakes				
Centralia CL	59	0	0.9	Good
Miami SFL	45.5	0.7	1.8	Excellent
Antelope LK	14		0.9	Good
Cowley SFL	10	0	0.6	Fair

White Crappie

Reservoir	Power Rating (>8″)	Lunker Rating (>12″)	Big Fish (lbs.)	Biologist's Rating
Marion	194.6	20.5		Excellent
Kirwin	131.2	18.9	2.3	Excellent
Hillsdale	59.1	3.3	1.5	Very Good
Pomona	51.1	4.5		Excellent
Council Grove	50	4.5	1.8	Excellent
Lakes				
Horton Mission L	101.3	2.5	1.8	Good
Sheridan SFL	74.3	0.3	0.9	Good
Logan CL	65.8	3.0	1.1	Good
Chanute CL	41.5	0	0.5	Good
Moundridge CL	39.6	3.0		Fair

Largemouth Bass

Reservoir	Power Rating (>12″)	Lunker Rating (>20″)	Big Fish (lbs.)	Biologist's Rating
Sebelius	82.4	.04	6.1	Excellent
La Cygne	53	4.7	6.6	Excellent
Kirwin	51.3		4.8	Excellent
Cedar Bluff	45.9	0.1	6.3	Excellent
Toronto	37	1	6.2	Good
Lakes				
Garnett CO (So.)	124	2.4	4.6	Excellent
Melvern River Pnd	122	0	3.3	Excellent
Logan CL	106	8	6.3	Very Good
Scott SFL	103.2	0	1.7	Excellent
Ft. Scott CL	103	0	1.2	Good

Saugeye/Sauger

Reservoir	Power Rating (>14″)	Lunker Rating (>22″)	Big Fish (lbs.)	Biologist's Rating
Sebelius	16.5	1	8.2	Very Good
Council Grove	5.5	1.8	4.9	Fair
Kanopolis	5.2	0	1.5	Fair
Perry (sauger)	3.34	0	2.1	Fair
Elk City	2.0	0	2.8	Good
Lakes				
Middle Creek SFL	9.5	0	1.9	Good
Chase SFL	8.0	1	1.4	Fair
Marion Co. L	8.0	5	4.9	Fair
Washington SFL	7.0	4	7.1	Good
Leavenworth SFL	4.5	0	3.2	Fair

Walleye

Reservoir	Power Rating (>15″)	Lunker Rating (>25″)	Big Fish (lbs.)	Biologist's Rating
Marion	21.8	9.9	5.8	Excellent
Glen Elder	16.8	2.8	8.5	Good
Hillsdale	10	3	8.3	Good
Kirwin	10	0.5	6.4	Fair
Wilson	9.9	3.1	.59	Fair
Lakes				
Sabetha Pony Ck.	17	0	1.8	Good
Scott SFL	14	0	4.4	Poor
Yates Center So.	13	0	2.8	Poor
Council Grove CL	9.5	1	7.0	Good
Atchison SFL	8	0	4.7	Good

Wiper

Reservoir	Power Rating (>12″)	Lunker Rating (>20″)	Big Fish (lbs.)	Biologist's Rating
Webster	29.5	6.5	10.8	Excellent
La Cygne	24	5.5	6	Excellent
Milford	15	3.5	6.5	Good
Cedar Bluff	14.8		4.7	Good
Sebelius	14	8	16.3	Very Good
Lakes				
Coldwater CL	27	2	4.2	Good
Jetmore CL	21	0	3.9	Good
Jeffrey EC-Mkup	17	13	5.4	Good
New Strawn CL	13	2	4	Fair
Shawnee Lake	10	2	7.7	Good

White Bass

Reservoir	Power Rating (>9″)	Lunker Rating (>15″)	Big Fish (lbs.)	Biologist's Rating
Clinton	76	1.2	2.2	Good
Kanopolis	69.5	0.7	2.9	Very Good
Marion	50.3	8.8	3.2	Good
El Dorado	42.5	4.2	1.9	Good
Melvern	40	1.8	2.3	Excellent
Lakes				
Jeffries EC-Mkup	93	1	1.6	Good
Jeffrey EC-Aux	25	7	3.8	Fair
Shawnee Lake	24	1	1.9	Good
Herington CL new	19.5	0.5	1.4	Good
Paola CL (Lk Miola)	18	3	2.7	Good

Bluegill

Lakes	Power Rating (>6″)	Lunker Rating (>10″)	Big Fish (lbs.)	Biologist's Rating
Cowley SFL	63	0	.4	
KDOT W. Wichita	19.1	0	.6	
Butler SFL	16	0	.4	
Council Grove CL	13.3	0	.5	
Sterling CL	12	0	.3	

Flathead Catfish

Reservoir	Power Rating (>16″)	Lunker Rating (>28″)	Big Fish (lbs.)	Biologist's Rating
Webster	5	0	8	Excellent
Hillsdale	.8	.8	11.2	Good
Council Grove	.7	0	2.9	Good
Lakes				
Council Grove CL	1	0	6.2	
Pottawatomie SFL	1	1	10.2	

Redear Sunfish

Lakes	Power Rating (>7″)	Lunker Rating (>11″)	Big Fish (lbs.)	Biologist's Rating
St. Francis-Keller	15	0	.5	
Graham Co. L	2	0	.5	
Gardner CL	.5	0	.5	

Spotted Bass

Reservoir	Power Rating (>11″)	Lunker Rating (>17″)	Big Fish (lbs.)	Biologist's Rating
Sebelius	4.7	0	1.4	Excellent
Cedar Bluff	2	0	2.4	Good
El Dorado	1.7	0	0.9	Good
Lakes				
Wilson SFL	18.7	0	2.5	
Chase SFL	11.8	0.7	2.5	
Council Grove CL	9.3	0	1.3	

Smallmouth Bass

Reservoir	Power Rating (>11″)	Lunker Rating (>17″)	Big Fish (lbs.)	Biologist's Rating
Cedar Bluff	54	0	2.4	Excellent
Wilson	10.8	0	2.4	Good
El Dorado	3.2	0	.9	Good
Big Hill	3.1	.3	3.2	
Lakes				
Chase SFL	1	0	2	
Cowley SFL	1	0	2	

Striped Bass

Reservoir	Power Rating (>20″)	Lunker Rating (>35″)	Big Fish (lbs.)	Biologist's Rating
Wilson	6.3	1.4	23.6	Good
Cheney	0.7	0.3	12.7	Fair

Wild Currents

letters

Edited by Mark Shoup

Q & A

Note: The following are questions asked over the department's e-mail. Unfortunately, the names of the questioners were not available, but the questions should be of interest to our readers. If you have questions for the department, e-mail us at feedback@wp.state.ks.us

--Shoup

Wildlife and Parks:

I know this is a bizarre question, but is it legal to use a remote-controlled boat to get one's lure to hard-to-reach places?

It's not as bizarre as you might think. Getting the bait in front of the fish is half the game. There are no laws in Kansas prohibiting the use of a remote controlled boat to "cast" your bait or lure. Of course, all other regulations apply. Those who make fun of you will stop laughing after you catch the big one.

--Steve Stackhouse, director, Law Enforcement Division

Wildlife and Parks:

Do you have laws pertaining to access to streams for canoeing?

We do not have specific Department regulations pertaining to access for canoeing in Kansas. However, there are trespass laws that apply to where you may put in, take out, camp, etc. Kansas is a great place, but it lacks a great deal in the amount of public canoeing water.

The three "public" rivers in Kansas -- the Missouri, the Kansas, and the Arkansas -- are open for canoeing. You either must get permission from an adjoining landowner to access the water or do so at a public location. City parks and wildlife areas are examples of public access areas. Once on these rivers, public access is allowed up to the high water line. This would also allow you to camp on sandbars.

Technically, the only other streams with public access are those associated with federal reservoirs. The rivers that flow into most of these lakes are bordered by public lands and can offer some pretty good canoeing. There are maps available at the lakes and at most of our offices showing these public lands. On other rivers and streams, technically speaking, the landowner controls trespass even at bridges. This stems back to age-old landowner laws. Landowners control the banks and streambed, but not the flowing water. Access, setting foot on any land under or around the stream without permission is technically trespassing.

There are many areas of the state where landowners have no problem with canoeists, but that would be a local decision.

You may also want to contact the Kansas Canoe Association for information: Mic O'Shea, PO Box 2885, Wichita, KS 67201. Try not to let the restricted access to streams in Kansas deter your canoeing. Your efforts to locate areas very well may lead to high-quality paddling experiences.

- Stackhouse

UNSAFE CARRY?

Our family looks forward to receiving your magazine every month to read your articles and view the outstanding pictures.

I was disappointed to see your March/April picture on the back cover depicting a hunter with a turkey strung over his shoulder. As a hunter education instructor, I stress that this is a very dangerous practice. I realize this was a picture depicting a successful hunt, but it could lead to someone following suit in their carrying practices.

Also, my other comment is about your stocking of striped bass in the lakes. It seems to me that there is a direct relationship between the introduction of stripers and the decline of other fish, especially walleye. Am I mistaken, or are there other factors.

Who determines what species are introduced into the lakes, and do fishermen have any input into the decisions? I have noticed little input being sought.

Margaret Wall
Hays

Dear Mrs. Wall:

I am also a hunter education instructor, as well as an avid turkey hunter, and I agree with you that carrying a bird over your shoulder through heavy cover is an unsafe practice. The photograph on our back cover merely depicts a hunter posing for a photograph. We recommend that hunters either wear an orange hat or tie a strip of orange marking tape to the bird while carrying it from the field.

District fisheries biologists make decisions about fish stocking in our lakes. The biologists conduct creel surveys and monitor fish populations every year to determine what types of management practices would be most beneficial for each lake. Every fisheries biologist wants anglers to catch fish in their lakes, and they all get considerable input from fishermen. Striped bass have been stocked mainly in two lakes in Kansas -- Wilson and Cheney -- and they are stocked to provide anglers with an additional fishing opportunity. Most anglers who have caught a striper will attest to the excitement this fish adds to fishing on these lakes.

Stripers are not stocked heavily in either lake, and since they don't reproduce, they are easily controlled. Walleye, on the other hand, have been stocked heavily in many of our reservoirs, and since they reproduce, they help sustain populations. However, many factors influence the natural populations of walleye in our reservoirs. Since all of the data available indicates that the striper's primary food source in our reservoirs is shad, stripers aren't considered culprits in a declining walleye population. All fish populations fluctuate from year to year, according to water conditions, spawn success, and fishing pressure. Poor walleye fishing

can result after only one or two years of poor natural reproduction. For example, if the lake level rises dramatically during the walleye spawn, many adult and newly hatched walleye may wash out through the spillway. Or a cold snap soon after the walleye spawn can prevent the production of zooplankton, the primary food for walleye fry, causing many fry to starve. The result can be poor walleye fishing two or three years down the road.

--Miller

SWAN SONG

Editor:

On Christmas Day, even as I was unwrapping my cherished gift of a limited pen and ink drawing of a trumpeter swan by Bill Tucker to add to my collection of swan memorabilia, two young men were picking up their rifles and heading out to look for something to kill. What they found, heartbreakingly, was a family of trumpeter swans, encouraged to migrate through Kansas by many people wishing to see their great beauty.

Minutes later, six of these magnificent white creatures of God lay dead, with only three young managing to escape the slaughter. Their fate is unknown.

The public did not hear of this act until a week later when the Capital-Journal ran a story telling of the massacre. Instead of a trial, where the public could let its feelings be known, a cowardly deal was made between the young men and someone with authority in the wildlife department. I do not know their names, as they were never made public, to pay a ridiculous fine of $1,500, have their rifles taken away and write a letter of apology, which I believe should be read aloud on all Kansas television stations. This punishment is no more than a slap on the hand as I am sure they have new rifles by now and will pay the fine with their allowances. Aren't the swans worthy of at least $1,500 each?

How, in good conscience, can the U.S. Fish and Wildlife Service expect the public to support them and help them in their requests for funds if they allow inequities such as this to happen? Perhaps these two young men have strong backs and could do much to help repair and clean parks and wildlife habitats.

This world will be much more bleak in the future if we are never again to look to the sky and see the giant, graceful swans winging overhead and admire the beauty of their glistening bodies as they glide across our ponds and lakes.

Geneva Armstrong
Berryton

Dear Ms. Armstrong:

The swan issue was dealt with under federal law by the U.S. Fish and Wildlife Service. The two men did receive $1,500 fines each, in addition to the loss of their rifles. Frankly, I think the Fish and Wildlife Service was lucky to catch these guys. I don't know anything about the personal lives of these two men, but I do know this - if I were fined $1,500 and lost a rifle it would hurt. Not to mention the humiliation of public censure generated by the written apologies in our last issue.

Don't get me wrong; I'm not defending these two. Their act was criminal. But I do think the Fish and Wildlife Service did a good job on this. Too often, wildlife crime is taken lightly by Kansas judges and the public, and they could have gotten off much easier in the courts. This was one of the largest penalties I have seen for a single incident.

With all this said, a little hard labor isn't a bad idea . . .

--Shoup

THE OLD DAYS

This is a picture of my mother's uncle (the driver). I can't tell you the date, but from the looks of the car, it must be in the early twenties. He was one of the first people to come out from the East. I don't know if he settled, but he started hauling for others and finally started what they called a livery service at Stafford.

He was even at the Oklahoma Land Rush.

This picture shows him on his return with some hunters that he had taken to the Cheyenne Bottoms to hunt. I remember him telling of taking a lot of hunters from Kansas City, Chicago, and the East over there to hunt.

It must have been the best way to get to Cheyenne Bottoms, but flat tires were real common in them days. I remember him saying that if he had any flats, he had three or four hunters with him, and they would just get a hedge post and put it under the axle and lift the car up and change the tire.

I was only 15 or 16 years old at that time. I have wished many a time that I had written down the stories that he told.

L. H. Burkholder
Salina

GOOD ATTITUDE, BAD BEHAVIOR

While on routine patrol in Harvey County Nov. 21, 1997, I [CO Verle Warner] saw about 500 Canada geese rise off a cut cornfield and go toward a watershed pond. As I went around the section, I noticed a vehicle with an out-of-county tag and another with a 30-day tag. Then I saw some hunters who appeared to be hunting quail and pheasant on land posted "Hunting With Written Permission Only."

I parked and walked out to check their licenses and permission to hunt. As I got closer, they hid in the milo stalks and brush, and I realized that the geese were getting close, so I stopped and watched. As the geese passed overhead, all hunters shot at them. I then walked on in and motioned for three of the hunters who had seen me to come my way. Then a lone goose flew back over the other two hunters, and one man shot again while his partners tried to get him to stop.

All of the hunters had lead shot in possession; only one of the five had his gun plugged; and none of them had federal or state duck stamps. One of the hunters had verbal permission to hunt the land the night before, and I gave him time to go get written permission before going to court. He was issued a warning on that charge.

The five hunters were fined a total of $1,255 and paid $225 in court costs.

Ironically, the hunters had very good attitudes about the situation. They said that they were glad I was out in the field doing my job and that the state should have more officers.

–CO Verle Warner, Walton

SLOW LEARNER, BIG FINE

One of the largest penalties for a wildlife violation in Kansas was resolved about two years ago and involved mussel poaching. After being extradited from Iowa on a felony arrest warrant, Rodney Johnson, from Minnesota, pleaded guilty in Elk County District Court to one count of felony commercialization of wildlife. He was placed on two years probation and ordered to pay $2,109 restitution plus $62 court costs.

Johnson came to Kansas in April 1994 with two other men to harvest mussels. On May 13, 1994, I had my first contact with Johnson at Toronto Reservoir, resulting in boating violation charges against him and mussel fishing violations against another man. Johnson paid a $95 fine for that infraction.

On May 24, 1994, Johnson, using the address of the Eureka motel he was staying in, applied for and received a resident mussel harvest permit. He was later charged with misrepresentation to buy a resident permit, found guilty, and fined $295.

His troubles continued when he failed to file his mussel harvest reports at the end of the 1994 season. Charges were filed in Greenwood County. Johnson entered a no-contest plea and was found guilty.

It took the work of conservation officers in Iowa, Minnesota, Wisconsin, Illinois, Ohio, and Kansas – over a 17-month period – to bring this wildlife felon to justice.

–Bob Funke, conservation officer, Fredonia

RIDIN' SHOTGUN

Last Oct. 21, Chris Bauer, Garden City Police Department's school resource officer for the high school, received a report of two deer hanging in the basement of a residence just outside Garden City. Bauer, along with Cpl. Jerry Quint of the Finney County Sheriff's Department, went to the residence to see what they could find out about the report.

When they arrived, they were given permission to search the premises, and they found the two deer, which they determined had been shot with shotguns. While shotguns are not illegal equipment, it was not firearms season, so Bauer and Quint notified Wildlife and Parks Conservation Officer Bruce Peters, Lakin.

Peters interviewed several subjects connected with the incident, and they claimed that the deer had been run over by a vehicle. Still, the evidence indicated otherwise, and Peters seized the deer, hides, and meat that had been processed and packaged.

Peters then contacted Conservation Officer Dennis Sharp, Holcomb. An in-depth examination of the hides and other evidence convinced both COs that the deer had been shot with shotguns and .22s.

As luck would have it, the person who supposedly hit the deer drove by Sharp's home in the same vehicle that was supposed to have been involved in the "accident." Sharp and Peters stopped the driver and interviewed him. When an examination of the pickup failed to support the 17-year-old driver's story, he was requested to take his truck to the Holcomb City Shop. There, Sharp checked under the vehicle and found no evidence that the vehicle had hit a deer. At this point, the driver confessed to spotlighting and driving when the deer had been shot.

Three other young men ages 16, 18, and 23 were also interview by the two COs, and all three confessed to shooting and using spotlights to take the deer.

All four were charged in Finney County District Court, where they pleaded guilty and received fines and community service in the amount of 100 hours apiece. The community service was to be served in work for the Department of Wildlife and Parks.

–Shoup

KWF PRESENTS CONSERVATION AWARDS

On Feb. 7, the Kansas Wildlife Federation (KWF) honored 13 persons, groups or organizations for their efforts to promote the conservation, preservation and wise use of Kansas natural resources. The honors were presented at the 49th Annual KWF Meeting and Conservation Achievement Program (CAP) banquet in Manhattan. CAP Chairman Tommie Berger presided.

The winners of this year's CAP awards were Michael Watkins, Lawrence, Wildlife Conservationist; Atwood OWLS Committee, Conservation Organization; Roxanne Mettenburg, Princeton, Water Conservationist; Senator Dave Kerr, Hutchinson, Conservation Legislator; Wanda Adams, Plains, Land and Soil Conservationist; the James Ruder Family, Wakeeney, Forest Conservationist; Michael Pearce, Newton, Outdoor Instructor; Stan Roth, Lawrence, Conservation Educator; Steve Hausler, Hays, Conservation Communicator; Friends of the Kaw (Lance Burr, President), Lawrence, Stream Team; Brant Clary, Highland, Youth Conservationist; and E. DeEtte Huffman, Wichita, Stream Monitor.

Perhaps the most prestigious of the awards is Conservationist of the Year, which went to John Strickler, Manhattan. Kansas Department of Wildlife and Parks Secretary Steve Williams had this to say about Strickler's accomplishments:

"It's difficult to envision a more deserving recipient of the Conservationist of the Year Award than John Strickler. His contributions are too numerous to list, and John's most obvious efforts may not be his most important ones. As the long-time leader in Kansas Advisory Council for Environmental Education (KACEE) and two-time acting secretary of Wildlife and Parks, John has made enormous impacts for the benefit of wild Kansas.

"But it has been John's immeasurable influence on individual lives that represents his true great stature as a conservationist, as a champion of the wild and natural resources of this state. Thousands of teachers have learned from John how to convey the value of wildlife and its habitat to young minds. John has taught, by his example, hundreds of young conservation professionals to be effective advocates for their cause. And it would be a major omission to overlook the legions of politicians who have felt John's subtle, but powerful, arm-twisting.

"One person at a time, John has won victory after victory for wildlife in the state and the nation. His contributions to the outdoor heritage of Kansas span decades and countless lives. He is truly deserving of the honor."

-Shoup

Anti's Want Hunters' Money

The Fund For Animals, an anti-hunting and anti-fishing organization, is seeking to use excise tax monies paid by hunters and anglers to help foot the bill for a new project aimed at swaying the minds of our youth.

According to a news release from the Sportsmen Conservationists of Texas (SCOT), the Fund For Animals has applied for a $142,000 grant from the U.S. Fish and Wildlife Service to fund the program it calls "Project Respect: An Educational Program for Young People." The Fund For Animals, which hopes to ban all sport hunting in America, also is opposed to sport fishing. The program up for discussion would be used to get their material into public schools.

SCOT, a 41-year-old statewide fish and wildlife conservation organization, says people interested in conservation should know that the Fund For Animals wants to use federal Wildlife Restoration Program (Pittman-Robertson) money to finance their efforts. The Pittman-Robertson Act is a national excise tax on hunting and shooting equipment initiated by sportsmen 60 years ago to fund wildlife restoration projects.

If you want the federal government to know how you feel about this issue, contact the Department of the Interior at (202) 208-7351.

-Matt Williams, outdoors writer

Cheney Gets Facelift

For the past six years, Cheney State Park staff have been renovating the area in a major way. More than $3 million has been made available to renovate and replace 34-year-old facilities.

New designated campgrounds were built, including ground grills, lantern stands, picnic tables, and parking areas. Campgrounds were separated from day-use areas; low-water boat ramps and parking lots were built for personal watercraft; day-use areas were expanded; new restrooms replaced old ones, which were not handicapped-accessible; new swimming beaches were built with handicapped-accessible walkways; two multi-unit trailer dump stations were added; several miles of blacktop roads were constructed; and thousands of tons of riprap were used to build jetties and to protect shorelines from erosion.

Much of the credit for this project goes to the Cheney Lake Association. This private, nonprofit group started in the early 1990s with the specific goal of

enhancing Cheney Reservoir. Through their personal contacts and fund raising events, legislators, government officials, and the public became aware of the need for this work.

Funding came from the Kansas State Legislature and the Bureau of Reclamation. Although the Department of Wildlife and Parks has long recognized the need to enhance old park facilities, they have often lacked the funding. The cooperation of these private and governmental entities has benefitted everyone who uses the area.

And park goers are liking it. Those patrons who thought they would not like designated campsites find that having a table, ground grill, and lantern stand all to themselves is very nice. The separation of day-use and camping, along with more aggressive law enforcement, has brought more families back to the park.

The staff at Cheney State Park thank the Cheney Lake Association, the Department of Wildlife and Parks, the Bureau of Reclamation, the general public, and many other groups for their support. With this kind of support, even a 34-year-old, well-worn park can rebound into a modern, efficient, state-of-the-art park.

Patrons of Cheney State Park will continue seeing improvements throughout 1998. Campgrounds are being renovated, new restrooms and blacktop roads will be built, day-use areas will be improved, and jetties will be built for shoreline stabilization. We thank the public for their patience during this construction.

--Jerry Schmidt, Cheney State Park manager

HAYDEN HEADS LCV

Former Kansas Gov. Mike Hayden, an avid hunter and fisherman, has been elected the first Republican to head one of the most influential environmental groups in Washington. The selection of Hayden to chair the League of Conservation Voters marks something of a change for the political group, which spotlights lawmakers it says have poor environmental voting records.

--Wichita Eagle

WOMEN AND GUNS

Citing National Shooting Sports Foundation (NSSF) participation statistics, Business Week magazine reported that the influx of women in the shooting sports has boosted business, expanded demand for shooting ranges and instruction, and inspired new lines of clothing and accessories. Many women who enjoy the shooting sports are corporate executives or professionals.

USA Today, using NSSF statistics, reported that about 7.5 million women are active target shooters, an 80 percent increase since 1988.

--National Shooting Sports Foundation

Wetlands Create $$$

Fishing now pumps $152 billion a year into the nation's economy and creates about two million jobs, according to "Fisheries, Wetlands, and Jobs."

This report, released by members of the Clean Water Network, a national coalition of more than 1,000 organizations, documents the fact that three-quarters of the nation's fish production depends on estuaries, marshes, and other wetlands. Meanwhile, more than 117,000 acres of wetlands are lost annually to land development.

The report is based upon scientific publications and government documents, and was prepared by fisheries management consultant Bill Kier Associates of Sausalito, Cal. It shows that where wetlands are destroyed, fisheries and fishing-dependent jobs have declined.

The continental United States has already lost more than half of its wetlands. Last winter, President Clinton outlined the details of his Administration's Clean Water Action Plan, which hopes to gain 100,000 wetland acres per year by the year 2005 through restorations.

"Wetlands are crucial to the environment, and they also provide real economic benefits through activities like fishing, " said Kathy Nemsick, national coordinator of the Clean Water Network. "For the sake of our environment and our economy, we need to do a better job of protecting wetlands."

--Clean Water Network

becoming an Outdoors-Woman

Outdoor Woman's Woman

For the second time since Budweiser began naming an Outdoorsman of the Year three years ago, the honor has gone to a woman. This year, the award went to Dr. Christine Thomas, a hunting and fishing enthusiast and professor of resource management at the University of Wisconsin-Stevens Point, where she developed the Becoming an Outdoors Woman (BOW) program.

Thomas designed BOW specifically to teach women outdoor skills. In just three years, the program has been adopted by fish and game agencies in more than 40 states and several Canadian provinces and has taught shooting, fishing, survival, and other outdoor skills to thousands of women.

The Outdoorsman of the Year award is chosen annually through open voting among the sporting public across the nation. It includes a $50,000 grant from Budweiser to wildlife and natural resource conservation groups, which Thomas will distribute to groups of her choice. The grant will be matched by nearly $200,000 from other contributors, making the value of the award nearly a quarter of a million dollars.

Organizations Thomas has chosen to receive portions of the award include the Rocky Mountain Elk Foundation - $15,000; the Nebraska Game and Parks Foundation - $10,000 earmarked for the Nebraska Bighorn Sheep Project; the Wisconsin Conservation Hall of Fame -- $7,500; Ducks Unlimited -- $5,000; The University of Wisconsin-Stevens Point - $5,000 earmarked for the 1998 International Becoming and Outdoors Woman project; Wisconsin Trout Unlimited - $4,000 for a river restoration project; and the National Shooting Sports Foundation - $3,500 for the Step Outside Campaign.

-National Shooting Sports Foundation

Hunter Ed Turns 25

The Kansas Hunter Education Program turns 25 this year, and on July 18, the Kansas Department of Wildlife and Parks will celebrate the occasion with an all-day event at the Webster Conference Center in Salina. The center has classrooms, conference rooms, a kitchen, a banquet hall that seats 500, and substantial grounds for outdoor activities, weather permitting.

The event will begin at 1 p.m., and an evening banquet will begin about 7 p.m. Vendors will man booths and exhibits throughout the day, and various workshops will be held. A tentative list of workshop topics includes game calling, antler scoring, flint knapping, reloading, and bowhunting. The DART computerized shooting system will also be on hand, and department officials hope to enlist a shooting expert for demonstrations. Door prizes will be given away.

Approximately 140 hunter education instructors have been active for 25 years, and they will be given special awards during the day. The event will be open to all instructors and their families.

About 12,000 students pass through the Kansas Hunter Education Program each year, learning respect for hunting, natural resources, firearms, law, wildlife, and landowners. Volunteers are essential to these efforts.

"The courses are organized and conducted by volunteer instructors across the state," Robins explains. "The 25-year instructors are among more than 1,200 volunteers who are the backbone of the program. This celebration will honor all of these instructors for their selfless efforts to train safe, responsible, ethical hunters."

The following list details just a few of the Kansas Hunter Education Program's accomplishments in the past 25 years.

- Approximately 350,000 students have been trained.
- More than 12,000 students are trained each year.
- About 1,200 volunteer instructors are currently active.
- 140 instructors have been active for 25 years.
- The program has received four NRA Awards of Achievement, the NRA 100,000 Club Award, and the NRA Top 10 Award for one of the best programs in the nation.

-Shoup

HUNTIN' GREAT-GRANDMA

Lydia Vizner, Belleville, celebrated her 15th year of deer hunting last winter by bringing down a buck and a doe within five minutes of one another.

"I was pretty fortunate this year," Vizner says. "A group came into sight, and I shot the lead doe and then shot the buck that was with them. The buck went behind a tree, and I knew I had hit him well, but he started to go, so I shot him again. He wouldn't have made it very far anyway, but I didn't want to have to trail him."

Vizner hunts on the farm north of Munden, in Republic County, where she and her husband have lived for many years. She filled her tags in only her second day in the stand.

"My farm is on a dirt road, so I couldn't get to it the first three days of the season [because of the mud]," she says. "I went out on Saturday and didn't get anything, and then I went out Sunday about 7:30 a.m. and shot my deer at 9 a.m.

Deer hunting - using an over-and-under 20-gauge shotgun she- borrows from her grandson - is a hobby Vizner started late in life. She was a 70-year-old widow when her sons and daughter and grandchildren encouraged her to hunt. She had never fired a shotgun although she admits that she used to handle a rifle in her younger years.

"A shotgun fires as far as I want to shoot," she says.

Vizner has been successful in her hunts all but three years, she adds. "I've only missed one or two over the years, and we've only had to trail one of the others that I've gotten, but not too far."

Vizner usually dresses the deer herself although she did get help from her son and grandson in boning the meat this year. "I have some processed into steaks and summer sausage, but my grandkids really want me to make my deer jerky," she says. She makes the jerky in a food dehydrator in her home.

Properly preserving the meat is no problem, either.

"I used to raise 2,000 chickens out on the farm, so we had a walk-in cooler to store the eggs. Now that's where we hang our deer."

Vizner, grandmother to nine and great-grandmother to six, had considered hanging up her gun for good this year, but her grandchildren's desire for jerky, plus the milestone of her 85th birthday, sent her back into the field another year.

"I have arthritis in my lower back and knees, so I debated about getting a permit," she admits, "but I decided that I was going to go hunting this year if I had to crawl to my stand."

- Belleville Telescope

First Shotgun

by Mark Shoup

My oldest son, Logan, has gone hunting with me since he was less than two, but he's never hunted or had his own shotgun. When he was eight, he begged me to let him take the hunter education course, but I made him wait until last fall, when he was nine. In March, he turned 10, an event that made us both feel older (with ironically opposite effects). It was a day we'll never forget:

Over lunch the day before, I go to the local gun shop and buy a Winchester 1300 Youth Model 20-gauge. That evening, Logan and his younger brother, Will, are bouncing off the walls, Logan anticipating the big day and Will through simple chain reaction.

The shotgun is still in my pickup, where it will stay until they are both sound asleep. I let them play basketball until after dark and eat late, then chase them into the shower and off to bed. Remarkably, they fall asleep within 20 minutes, so I retrieve the gun, wrap it in Looney Tunes wrapping paper, and put it on the kitchen table. I tape on a card featuring a black-chinned hummingbird and trumpet vine on the front and a pop-up pair of the birds nesting inside, where I write a simple note:

"Happy birthday, son. Treat this and all guns with respect and caution. Respect and love all nature as well. I love you, Dad."

Next morning, Will discovers the package first and hurries to roust his brother from bed. Logan tears through the paper as if he's certain it contains the key to the Emerald City, and when he sees its contents, he whispers "Wow!" Gingerly, he strokes the stock and receiver, then looks up to me expectantly, thinking, but not saying, *Can I hold it?* I smile, nod, and say, "Go ahead. Pick it up." Having been around guns all his life, he knows and follows the rules.

He handles the gun a bit, carefully shouldering, cocking, and pointing it a few times. This, however, is a school and work day, so we lock up the gun and get about our morning chores with the promise that he may shoot it that evening.

When I return after work, I am reminded of this promise before any other conversation ensues. Will, too, is anxious to witness the momentous event. So I remove shotgun from safe, gather a couple of tin cans, ear muffs, shells, and just in case he might want to try a wingshot, some bluerock and a thrower.

Then the three of us walk to the north side of our shelterbelt, Logan gingerly leading the way, his new firearm held precisely in the two-handed "ready" carry. Will tails behind, picking up sticks and fencing with some unseen musketeer.

I place the two tin cans 20 yards away, thinking this is a challenge he must face if he wants to shoot well. We carefully cover all aspects of loading and operating a pump-action shotgun, and then I have him shoot. His first shot is low, placing just two BBs in the can. (The kick is a bit surprising, but he's undisturbed by it.) The second, however, centers the target, and he hits the other can equally well.

This is okay, I think, but game birds don't hang in mid-air at 20 yards.

"You ready to try some bluerock," I ask, knowing full well that he'll be lucky to hit one.

"I don't know," he says timidly. This hesitancy, I'm sure, stems more from his fierce competitive nature, a fear of failure more than anything else.

"It's just the same," I say, "only the target's moving." I admit suppressing the thought, *Not even a child can swallow this logic.* Still, you have to shoot to learn to shoot. Later, I will be reassuring, explain how difficult it is to hit a flying object, especially the first time.

"Okay," he assents.

The first rock flies about 35 yards before he fires and it falls to the ground - in pieces. I'm not sure who is more amazed. Logan's eyes are as wide as half-dollars. He grins from ear to ear and expels an almost breathless laugh. It's called an "epiphany" in literary terms, a seminal moment when the impossible becomes possible, accompanied by a potent new faith in oneself.

"Fantastic, Logan!" I scream. "You hit it! You broke the first bluerock you ever shot at! I can't believe it! You want to try it again?"

There is no hesitation: "Yes. Yes."

He powders the next rock about 20 yards out. Now I am even more disbelieving. He's left hesitation behind now although he shoots above the third rock. The fourth he breaks quickly, easily. In all, he shoots seven times and breaks four. Perhaps I have a natural on my hands, I think.

Perhaps I do, but what does this bode for me when we hunt together? At 50, my hand-eye coordination isn't quite what it used to be. May I be outshot by a 10- or 12-year-old boy? I sincerely hope so.

By now, Logan is ready for a rest, and Will is anxious to run out and search for unbroken rocks. He picks up pieces and asks, "Can I shoot a gun, Dad?" Only six, he is too young for a shotgun, but I promise him a .22 lesson soon, another promise that I will not be allowed to forget.

As we walk back to the house, Logan strides ahead, clearly aware of the shotgun in his hands. Will, ever the comedian, follows behind with the ear muffs on his ears but the strap over his eyes. "What happened?" he mugs. "Everything is black darkness. Wait a minute; I can see something. I can see . . ." and he breaks into song, "It's Bill, Bill, Bill Nye, Bill Nye the Science Guy!" And Logan joins in, both laughing so infectiously that, I too, am bitten.

If discovery is the essence of life, laughter is its most profound affirmation.

PERRY BASS PROJECT

Avid fishermen in northeast Kansas have expressed curiosity about a Wildlife and Parks project to improve the largemouth bass fishery in Perry Reservoir, initiated last year. After the glory years in the late 1960s and the early 1970s, the largemouth bass population declined, and a 15-inch limit was put in place.

However, the 1997 electro-fishing sample results are similar to sampling done prior to the 15-inch length limit. A low-density population exists, with only 68 fish sampled for nearly 8 hours of electrofishing time. Of the 68 fish sampled, only 37 were longer than 8 inches and none were more than 20 inches. The condition of these fish is good but something is missing.

Is it reproduction? No, fall shoreline seining indicates good reproduction in most years and very good reproduction in years when spring rises take place. Is it a lack of food? No, the shoreline seining also indicates a good forage base, and the relative weights of bass are good. Is it habitat? This is a real possibility. Perry is a relatively old reservoir in which much of the standing timber was removed and the fluctuating water levels along with water quality inhibit aquatic vegetation growth.

One part of the plan was to increase the length limit from 15 inches to 21 inches. This was done to protect most of the bass in the reservoir from harvest. The second part of the plan was to stock a relatively small number of two-year-old fish (5,000) yearly. These fish would be marked to determine survival rates or stocking success when annual sampling is conducted. The third part of the plan was to increase habitat in the reservoir over the next 5 years by placing trees, synthetic fish structures, and shoreline vegetation enclosures. The fourth part of the plan was to ensure the annual Water Level Management Plan is followed due to its proven worth to the fishery. The fifth part of the plan was to run standard creel surveys and monitor club tournaments to help document changes in the bass population.

The Flint Hills Bass Club, of Topeka, has been very active in assisting with this plan. Their members have donated hundreds of hours putting in habitat, assisting with sampling, and securing a $10,000 matching grant for synthetic "Fish Habs" from Berkley.

Will the 21-inch length limit have an impact on the number of bass anglers or tournaments at the Reservoir? Initially, it may reduce both, but if the project works, both will increase.

Still, many anglers wonder why lakes differ in their ability to support certain species. The answer is that every lake is different; amount of shoreline vegetation, standing timber, age of reservoir, type of fish present, structure of fish population, fertility, and many other factors affect fish populations. Any lake has the potential to produce a trophy, catching it is another story. But producing a trophy at Perry Reservoir is not our goal; increasing the number of largemouth bass is.

--Kirk Tjelmeland, fisheries specialist, Topeka

CHENEY WALLEYE

The future of walleye fishing at Cheney Reservoir appears to be very bright. In fact, fisheries biologist Gordon Schneider believes the next three years will be exceptionally good for walleye anglers at the 9,500-acre reservoir.

Stocking of walleye fry and a new technique for tracking their survival appears to be the reason for this good fortune. In 1996, walleye fry marked with oxytetracycline were stocked into the reservoir. This process involves "bathing" the fry in oxytetracycline, a chemical that leaves a fluorescent mark in the bony structure of fish. When the biologist conducts test netting for walleye in the fall, a sampling of the fish is sent to experts who have the equipment to detect this mark in the otolith, a bone in the head of the fish. The number of sampled fish with the mark gives the biologist a good idea of the percentage of the population that is stocked fish, rather than naturally reproduced, and whether stocking fry is actually worth the effort.

The sampling that followed Cheney's 1996 stocking of fry marked with oxytetracycline revealed 99 percent of the fish with this mark, a good sign that fry stocking works, at least in Cheney Reservoir. The sample of fry stocked in 1997 revealed 90 percent with the mark, and Schneider will stock marked walleye fry again this year.

"The impressive thing about this to me is not only the percentage of stocked fish in the 1996 sample but the fact that this is a huge year-class of stocked fish," says Schneider. "This will be very interesting to anglers in the next few years."

Stocking of larger walleye is expensive and time-consuming, and not near as many fish can be stocked as can be when fry are stocked. Thus, the results of this study have helped ensure a more consistent stocking method at Cheney and better year-in, year-out production for anglers.

--Shoup

START 'EM EARLY

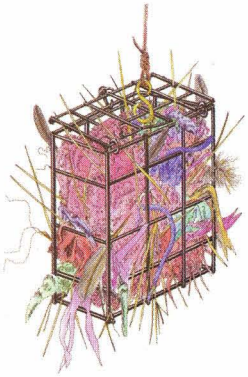
Amazingly, 85 percent of today's freshwater anglers began fishing before they were 13 years old. In contrast, only 8 percent took up angling as adults. Research also indicates that anglers who began fishing early were more likely to do the following when they became adults: 1) continue fishing through their lifetimes; 2) fish more days each year; 3) fish more regularly year in and year out; and 4) even spend more money on fishing equipment [and licenses].

Childhood participation is crucial for instilling a lifelong love of fishing, but it's also critical in the development of positive attitudes toward the natural world. Children who fish are exposed to all the educational benefits associated with an outdoor experience.

Independent studies have shown that children who fish, hunt, and birdwatch have much higher knowledge levels about the environment -- and much deeper ecological understanding - than children who do not participate in these activities. Direct participation in outdoor activities appears to make a tremendous difference. They have a better understanding than children who learn about fish and wildlife in classrooms or zoos.

--Mark Damian Duda, "Fishing Tackle Trade News"

FOR THE BIRDS



Here's some recent handy hints from Wild Birds Forever:

This spring, consider throwing a few crushed chicken eggshells in your feeder or suet recipe. This is an irresistible attraction to nesting birds that can use the extra calcium as they begin to nest and lay their eggs. This food supplement will also act as a source of grit to help your wild birds digest their food.

You can also crush the egg shells and place them on the ground.

As spring approaches, don't forget the importance of offering nesting materials to entice nesting birds to you backyard. A single nest can take thousands of individual search and carry missions for nesting birds. Help them out by offering nesting materials in concentrated, readily-observable piles or stashes. Offer the following items wedged in the trunk of a tree, an empty suet cage, or a basket suspended from the branch of a tree: yarn (pieces no longer than 8 inches), hair, twigs, narrow strips of soft cloth, feathers, stuffing from old furniture, excelsior, shredded cotton, or long strands of grass.

-Joann Battin, Topeka

FROM LAKE TO WETLAND

The department is working with the Lake Nemaha Improvement Association to develop a wetland in what was once the Nemaha State Fishing Lake. The lake has been dry since the early 1980s when the spillway washed out and the department decided that repairs were cost prohibitive.

Since that time, individuals from the town of Seneca have been working to establish some form of water retention system.

The opportunity to develop a water retention system arose when the Corps of Engineers introduced its new 206 program, which allows for enhancement or restoration of wetlands on non-federal lands at a cost share of 65/35. The Nemaha project would restore 70 to 100 acres of wetlands at an approximate cost of $353,000. KDWP would be responsible for $123,550.

This figure has been discussed with the Lake Nemaha Improvement Association, which has agreed to come up with the funding. They currently have $75,000 available in cash and will do the remaining balance with in-kind services, with assistance from the department. A preliminary restoration plan has been completed by the Corps of Engineers and we are waiting for approval from their headquarters. If approved, the project would be completed within the next year.

-John Bond, public lands supervisor, Topeka

Brush Up On FROG SONGS

Few but the experts know much about Kansas frogs and toads.

That may change with the release of an excellent new audio cassette entitled "The Calls of Kansas Frogs and Toads," by Keith Coleman and Joe Collins. The tape, produced jointly by the Kansas Biological Survey, Chickadee Checkoff Program of the Kansas Department of Wildlife & Parks, and the Center for North American Amphibians and Reptiles, provides an entertaining and educational look at the 22 species of Kansas frogs and toads. Superbly mastered, one side illustrates individual and collective voices for each species, while providing natural history information and range within the state. Side two is a clean and beautiful progression of choruses without narration, interspersed with the sounds of rain and thunder. It tests the knowledge gained on side one, while providing a wonderful listening experience.

Ken Brunson, wildlife diversity coordinator for KDWP, says the tape was designed to help train survey personnel for the new CROAK program, an annual survey to increase knowledge of amphibians in America. CROAK stands for Calling Records of Anurans in Kansas. The program joins Kansas with 15 other states involved in similar surveys.

Brunson explains that amphibians readily absorb contaminants and respond to changes in ultraviolet light levels. "They are excellent environmental indicators, acting as red flags for human health. As such, there is growing interest in amphibians nationwide."

The new audio tape is designed to help participants recognize each species by voice, so that automobile survey routes can be effective in expanding amphibian range information. But the fine way it chronicles this mysterious group of Kansas wildlife should make it popular for general outdoor enthusiasts.

"The Calls of Kansas Frogs and Toads" is available from the Kansas Department of Wildlife and Parks' Outdoor Store, (316) 672-5911. Also available from the Outdoor Store is an excellent natural history and ID book, *Amphibians and Reptiles of Kansas*, by Joseph Collins. The book is $20 and the tape is $10. Include 6 percent sales tax. Orders less than $15, include $3 shipping and handling. For orders between $15 and $30, include $5.50 shipping and handling.

--Blair

TEACHING KIDS

The Milford Nature Center staff has completed a new three-dimensional maze -- the Duck Wing Maze -- to teach children how to apply the process of keying to identify something. Here's how it works: Each child is given an unidentified duck wing. As they proceed through the maze, children answer questions about the wing they have. Based on their answers, they are led through the maze, answering a series of other questions until they ultimately find out what kind of wing they have.

A similar maze set up by the Milford staff at a wetlands festival last fall was a popular and successful activity. If anyone is interested in how to set up a similar maze, either for temporary or permanent use, contact the Milford Nature Center staff. Once the maze is set up, it is amazingly diverse and can be used to key out other things such as tree leaves or anything else you can think of.

--Pat Silovsky, Milford Nature Center

BIRD DAY ON WEB

International Migratory Bird Day - May 9 - is now on the World Wide Web. IMBD Online can be found at http:www.americanbirding.org/imbdgen.htm

This web site provides a new and powerful communications tool for IMBD. Once at IMBD Online, you will find IMBD monthly features such as helpful information on planning fun and informative events.

--Naomi Edelson, International Assn. of Fish and Wildlife Agencies

ENDANGERED PLANT PRESERVE

An 80-acre nature preserve near Welda will be the focus of a major nature restoration project this summer with hopes of saving a rare plant from extinction. Ruth Palmer, with the Nature Conservancy, said the work project will include a volunteer work crew and plant scientists who will set about the task of bring the plot of pasture and mixed timber back to its original native prairie habitat. The Nature Conservancy purchased the land, which lies about 5.5 miles southwest of Garnett, two years ago because of the abundance of Mead's milkweed found in the area.

--Anderson County Review

BISON ON THE MOVE

The Byron Walker Wildlife Area bison herd is just a memory now. The bison, which had occupied a small pasture next to the heavily-traveled U. S. 54 highway since 1957, were moved to Maxwell Wildlife Refuge in November.

Although the roadside buffalo were popular attractions for motorists stopping at an adjacent roadside rest area, the pasture was not ideal bison habitat. Wet conditions produced continual invasion of woody plants. As time passed, plant succession continued to replace grass with trees. This increased the overgrazing of the remaining grass and led to poor nutrition for the animals. The cost and labor to maintain a healthy and visible buffalo herd proved more than the pasture could support.

Visitors were becoming aware of the bison's poor condition so the herd was moved to Maxwell. So, although the bison made possible some natural history and wildlife conservation lessons for visitors, they're in a better place today.

--Mathews

OUTDOOR CAMP JULY 26-31

The Kansas Wildlife Federation (KWF) 1998 Outdoor Adventure Camp will be held July 26-31 at Rock Springs Ranch 4-H Camp, near Junction City. For six days, youth ages 10-12 will canoe, swim, participate in shooting sports, fish, prowl for owls, and identify plants, insects, and other wildlife.

Participants are taught by experts, and because of the careful instruction, class sizes are limited. Youngsters who will be 10 by Aug. 1 are eligible to attend.

The cost of the camp is $175.

This will be the 10th year that KWF has sponsored the Outdoor Adventure Camp.

"The camp is a great place for kids to get a good close look at nature, to learn to respect the wildlife and natural resources we have in this state, and to learn how to enjoy them," says Steve Sorensen, KWF president and camp coordinator. "We have a great time every year."

For more information, contact KWF at (785) 843-7786, fax (785) 843-7555, or write KWF, 4840 W. 15th., Lawrence, KS 66049-3876 for a free brochure.

--Shoup

ROBEL HONORED

Last spring, Robert J. Robel, professor of environmental biology at Kansas State University and a Boone and Crockett "professional member," was named to the University of Idaho Hall of Fame as a Distinguished Alumni.

--Fair Chase

ELPERS NEW BOW LEADER

Connie Elpers, a naturalist and environmental education instructor at the Great Plains Nature Center, is the new coordinator of the 1998 Becoming An Outdoors Woman program. The selection was made by Bob Mathews, chief of the Information-Education Section of KDWP. Elpers replaces Becky Johnson, who resigned to become the regional director of the National Wild Turkey Federations' Women in the Outdoors program.

The BOW coordinator works under contract with the Department of Wildlife and Parks, and Elpers submitted the low bid for the position.

--Wichita Eagle

by Mark Shoup

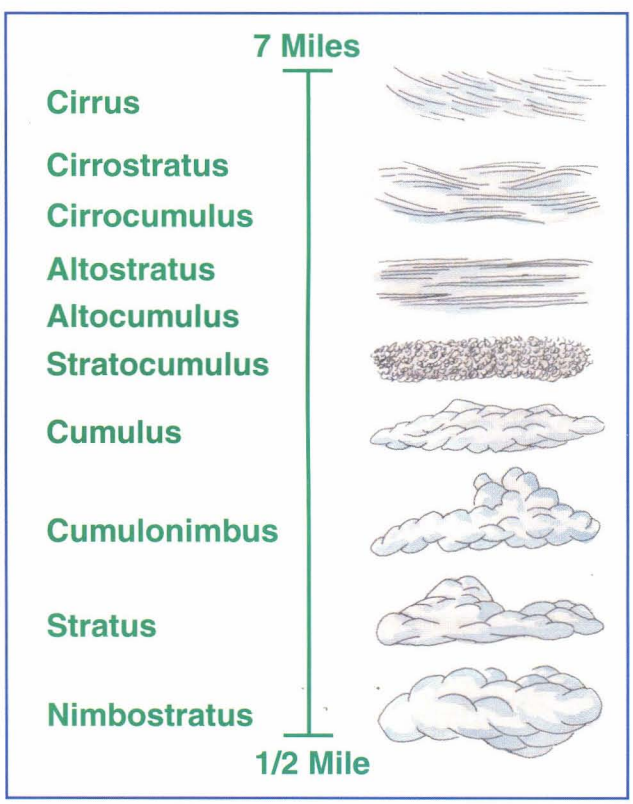
The most common word we use to describe something cool is "awe-SOME." However, few probably realize that the real meaning of the word is something that makes you feel both respect and fear. Few things in nature fit this definition of "awesome" as do thunderstorms.

Thunderstorms are the most familiar and exciting events of spring and summer in Kansas. These giant black clouds contain some of the most powerful forces in nature. They also put on some great light shows.

Of course, there are many different types of clouds. From highest to lowest, they include the following:

Cirrus clouds are wispy streaks high in the sky. **Cirrostratus** are similar but spread into milky sheets. **Cirrocumulus** are also high and thin, but they are bunched up into a lumpy sheet, like dried white mud cracking. **Altostratus** and altocumulus are like puffy dinner rolls at medium height. **Stratocumulus** rise and spread out sideways from the tops of **cumulus** clouds, which billow upward and have a solid, mountainous look. If a cumulus cloud grows big enough, it become a **cumulonimbus**, the boiling, mountainous clouds that sometimes look like atomic explosions. **Stratus** and then **nimbostratus** are the dull gray clouds that hang low and often contain drizzle.

It is the cumulonimbus clouds that put on the great summertime shows that we



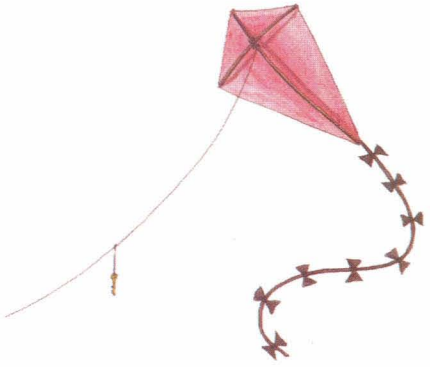
both love and fear. As warm, moist air rises, it gets cooler the higher it goes. As the water vapor in the air cools, it forms tiny droplets that create the cloud we see. Rising warm air also creates an updraft that, if strong enough, can reach some 18 miles high to the layer of our atmosphere called the **stratosphere**. Air in the stratosphere is warmer, and here the cloud spreads out across the sky.

Large or small, these clouds almost always create thunder, lightning, and rain. If moving masses of cold and warm air come together around a thunderstorm, a supercell storm occurs. These are the scariest of all. Not only do they create thunder and lightning but hail, high winds, and sometimes tornadoes. Kansans know these devastating "twisters." Several have hit Kansas towns, causing widespread damage.

Most storms, however, are just exciting to watch. The electricity they generate almost seems to charge you up, and the air always feels freshest after a storm.

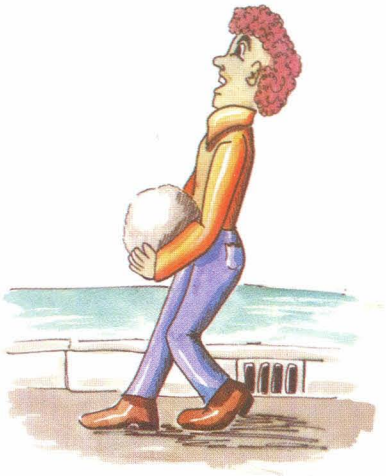
Lightning is the most common and interesting element of thunderstorms. A single thunderstorm cloud can generate enough energy to light a small town for a year. Some people argue whether lightning bolts move from the clouds to the ground or the other way around. The answer is "both." Lightning bolts begin when a small "leader stroke" charges the air from the cloud to the ground. An instant later, a huge lightning bolt shoots up the path created by the leader.

The air around a lightning bolt is five times hotter than the surface of the sun.

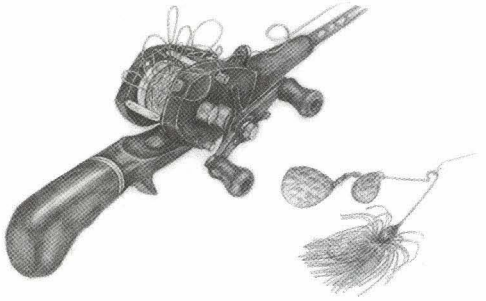


Everyone is familiar with the story of Benjamin Franklin flying a kite with a key tied to the string during a thunderstorm. While old Ben proved that lightning was electricity when sparks jumped from the key, he was very lucky he wasn't killed. NEVER try this experiment.

Hail is one product of thunderstorms that nobody likes. Hail is formed when rain freezes in the cold upper air. If hailstones are caught in the updraft, they may collect more water, rise, and grow bigger. Hailstones may range from the size of a pea to as big as a softball. The largest hailstone ever recorded fell in Coffeyville, Kan., in 1970. It weighed 1.7 pounds.



This summer enjoy the thunderstorms that come your way. Just be careful. Stay out of the open, and avoid becoming a human lightning rod by fishing or playing golf if a storm is anywhere near. And stay out of the water.



Backlash

by Mike Miller

Metaphors Running On Empty

Lennie and I were involved in one of our deeply philosophical discussions the other day, arguing the pros and cons of using braided, fused, or monofilament fishing lines.

"I like the fused lines for jig fishing and deep-water vertical fishing," I said authoritatively. "Monofilament stretches too much. It's like fishing with a rubber band."

"I'll take monofilament for jig fishing any day," Lennie disagreed. "Its stretch lets me 'pluck the string' and free snagged jigs — that ain't a good metaphor, but you get my drift."

"A meta-what?" I said, stunned. "You don't even know what metaphor means."

"Do too. A metaphor is referring to an object or action with something unrelated to make a point — a figure of speech. We use 'em all the time."

"You scare me when you talk like that. Anyway, I don't use metaphors," I said with that deer in the headlights look.

"Do too," Lennie said. "Just don't realize it."

"You mean like when I said monofilament was 'like fishing with a rubber band,'" I said, trying to save face.

"No, no. If you use the words like or as, it's a simile, which is still a figure of speech but not a metaphor," Lennie said, nodding as if I knew what he was talking about.

"Who are you? And what did you do with the real Lennie?" I said realizing the discussion was way over my head. "You know, I need to get home — think I forgot to water the dogs."

I hurried home and found a dictionary. Lennie was right, which really scared me, but I got to thinking. We use metaphors every time we speak, and most of them have been around for years. I started thinking of new metaphors, using outdoor experiences for inspiration. Next time Lennie and I talk, I'll have the upper hand in metaphors. Here are a few I came up with.

Embarrassment: All boaters have had that sinking feeling. You're running late and sure you're missing out on the best fishing of the day. You launch the boat in record time. As you proudly motor out of the cove, you wonder out loud why the boat is sitting a little low in the stern, blaming your buddy's weight — then you realize you've forgotten to put the drain plug in. Next time you see someone realize they've screwed up, try, "There's a guy without his drain plug."

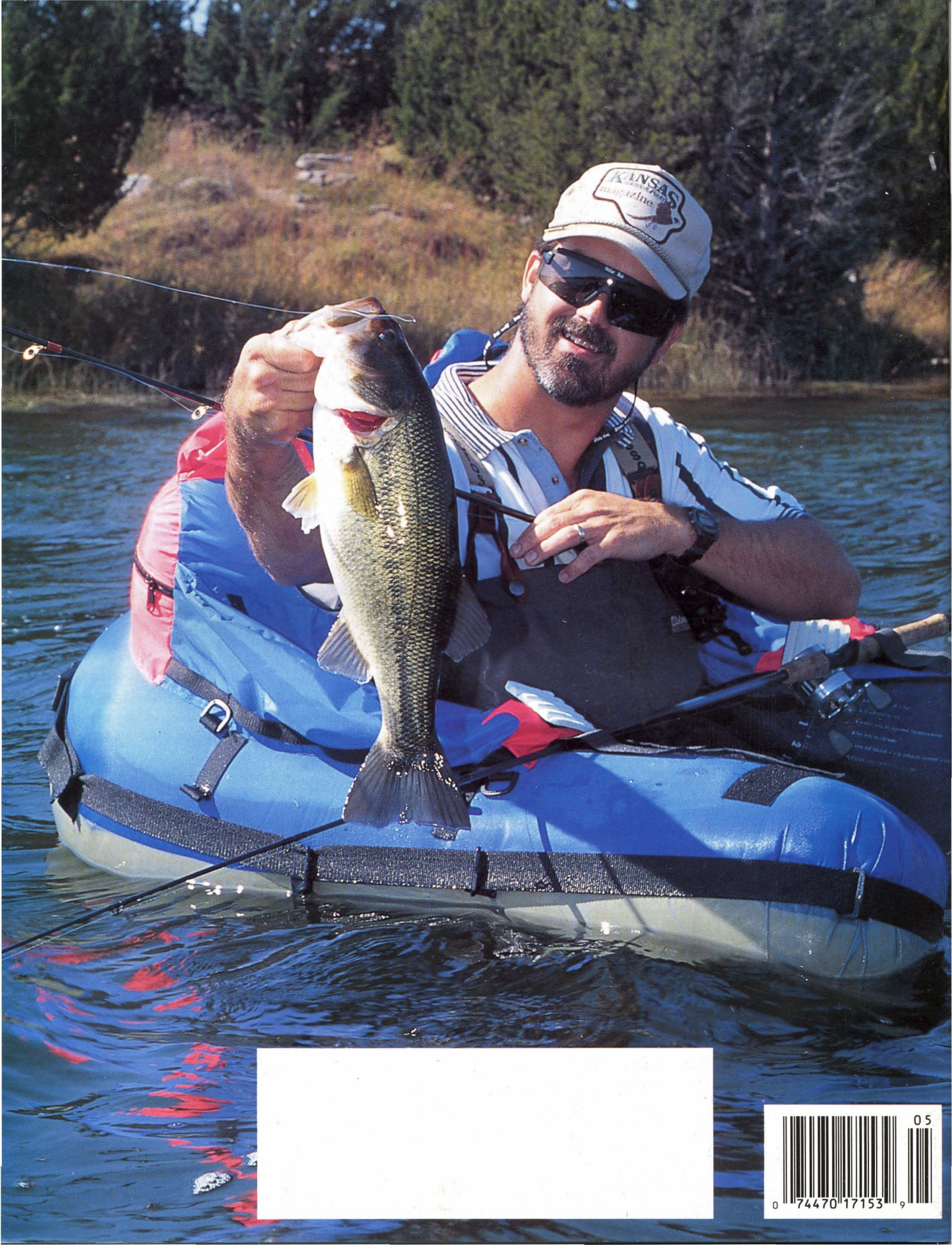
Depressed: Bowhunters can really get down in the dumps. You sit in a treestand for 20 straight days, waiting for a trophy buck only to miss an easy 10-yard shot on the biggest buck you've ever seen. Next time you see someone depressed, say, "What's the matter? Life's big buck pass you by?"

Anger: Hunting dogs can easily make their owners blow their tops. The best dogs save their worst tricks for days when you're hunting with a large group, and it never fails that you'll have bragged obnoxiously about the dog to each member of the group. Dove hunts are prime opportunities for dogs. The dog will perform flawlessly until you proudly call it over to help another hunter who's lost a bird in heavy cover. As "wonder dog" emerges from the weeds with the bird, you make sure everyone's watching as you kneel with your hand out. With the group looking on, the dog will casually sit and eat the bird in one or two gulps, then trot off happily like he does it all the time — "That guy was madder than a bird-eatin' bird dog owner."

Goofy: Many of the most colorful metaphors are used to describe someone who thinks or does things differently such as, "his elevator doesn't go clear to the top," or "he's a few cars short of a full train," or the ever popular, "he has some screws loose upstairs." We can dream up lots of new metaphors for this field: "That duck only has one webbed foot. He's a bird or two short of a limit. His line doesn't quite reach the water. Or, he doesn't have a full spool."

Realization: Everyone has heard "boy, you've really stepped in it now," — that sudden realization that you've bitten off more than you can chew. Well a perfect metaphor can be taken from a wading fisherman who takes that last step to get just a little closer to the hotspot. The bottom drops off and 50-degree water pours over the top of his chest waders. The reaction is graphic as his eyes widen, jaw drops and he makes chalkboard-scratch screeches inhaling short breaths — "Boy, now you've stepped in over your waders."

The possibilities are limitless. With a little imagination, hunters and fishermen could really liven up our metaphors with many of our everyday experiences. Let's do our part to spice up conversation.



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