



Morning light streams through oak trees at Indian Cave State Park.
Photo by Bill Hager.

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NEBRASKA
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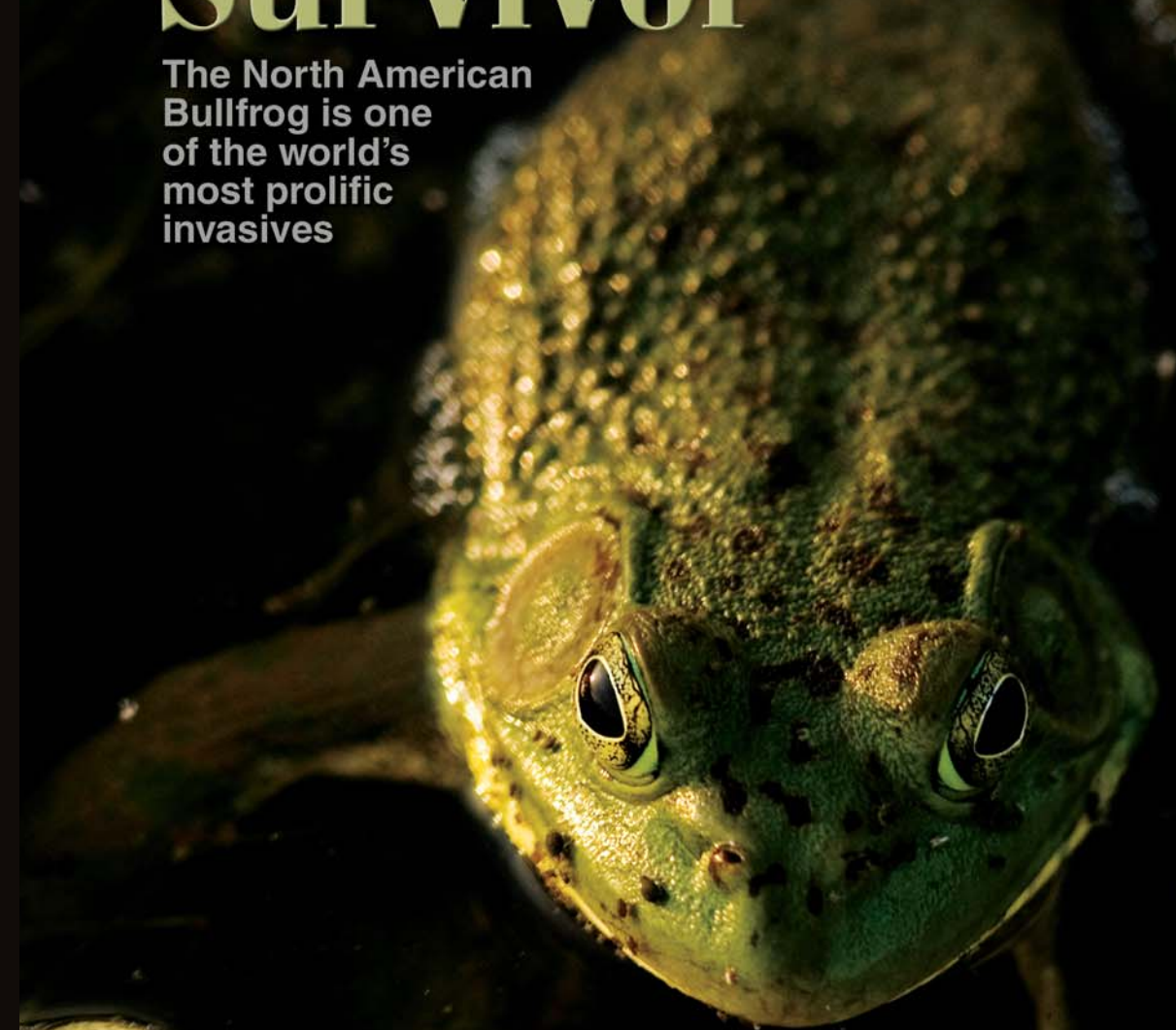
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NEBRASKAland

August-September 2009

Survivor

The North American
Bullfrog is one
of the world's
most prolific
invasives



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PLUS

The Platte River Caddisfly
Tales Told on the Water • Homegrown Expo
A Platte River Purchase • Burning to Revive Indian Cave



NEBRASKAland

Volume 87, Number 7, August-September 2009

FEATURES

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Native to southeastern Nebraska, this amphibian is known as one of the world's most prolific invasives.

TEXT AND PHOTOS BY JEFF KURRUS

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A day on the water with Callaway angler Stan Schied sees its fair share of tales told while fishing.

TEXT AND PHOTOS BY JEFF KURRUS

24 A Platte River Purchase

Purchases by officials from the Platte River Recovery Implementation Program this spring between Lexington and Minden will benefit least terns, piper plovers, whooping cranes, and other species of fish and wildlife that utilize the river. TEXT AND PHOTOS BY ERIC FOWLER

26 Homegrown Exposition

The Missouri River Outdoor Expo started modestly, but has mushroomed into one of the largest outdoor recreation and conservation education events in the state.

TEXT AND PHOTOS BY JON FARRAR

34 Returning Fire to the Ecosystem

A prescribed burn this spring was a first step in reviving the woodlands and hilltop prairies at Indian Cave State Park.

BY GERRY STEINAUER

38 Platte River Caddisfly

In early August, the USFWS will publish its initial review on the threatened or endangered status of the rarely seen Platte River caddisfly. TEXT AND PHOTOS BY ERIC FOWLER

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Cover: On a Sarpy County farm pond, the North American bullfrog looks anything but threatening. However, North America's largest frog is a prolific encroacher in nonnative regions. See story beginning on page 12. Photo by Jeff Kurrus.

Opposite: A small katydid clings to the top of Indian grass at Nine Mile Prairie in Lancaster County. Photo by Bill Hager.

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Hooked on Fishing

These pictures are of my son, Tyson Ritz of Lincoln, his wife, Kristin, and their one-year-old son, Wyatt, during a Family Fishing Night event at Holmes Lake this past June.

I used to take Tyson fishing when he was young, so being a grandma now, I thought it was time to introduce my grandson to fishing. I bought Wyatt his first pole, which has a plastic worm with a magnet and a life-sized fish that also has a magnet on it. Wyatt wasn't much interested in the real fishing part just yet, but he had to check out the fish dad caught. He did love being outdoors with his parents and grandparents. We had a ball and will be going fishing again and again.

Paula Heidtbrink
Malcolm, Nebraska



Monster Catfish

Here's a monster fish – my husband, Bob Walkowiak, caught this 60 pound, 48½-inch flathead catfish on 12-pound

line from Sherman Reservoir on August 20, 2006, one month after catching a 46-pound, 42-inch flathead at the same lake. Both fish were returned safely to the water after pictures were taken.

The funny thing is, he wasn't even catfishing – he was trying for walleye. What a surprise!
Deb Walkowiak
Grand Island, Nebraska

Ft. Rob Fun

My husband and I recently rode our motorcycles to Ft. Robinson State Park for an overnight visit. We are both Navy veterans and have been to many local, state and national parks across the country. I just had to tell you how much we enjoyed our stay at Ft. Robinson. The park was beautiful, clean and well-maintained, and all the staff we encountered were friendly and helpful. The activities available are amazing, something for everyone. At the advice of the gal working the information booth when we arrived, we went on the hayrack breakfast. She, by the way, was extremely friendly. It was a wonderful experience and the driver was great. We enjoyed the fort so much we are planning to go back with our kids and grandkids next summer.

Sharon Schroeder
North Platte, Nebraska



Whitey

I read an article in the July issue of NEBRASKAland about the sightings of black squirrels. It prompted me to send you a few pictures of our white squirrel. We first noticed and started feeding him last July. We feed a lot of birds and squirrels in our backyard throughout the year.

My wife, Marie, and I enjoy watching the birds and animals with our morning

coffee. We always look forward to seeing "Whitey" a number of times each week.

We can always find interesting articles and great pictures in NEBRASKAland.

Keep up the good work!

Irving Reiter
Kearney, Nebraska



Brush with Death

I thought you might enjoy seeing a picture of this deer found last November in a nine-acre CRP field in northeast Dodge County.

This was the bigger of two bucks I had kicked up while spot spraying the field in August. Wade Stenvers of Hooper found what was left of the carcass after he, I and several others walked the fields for pheasants after the rifle deer season was over. The buck had tangled up its antlers in some brush and couldn't get loose before dying of thirst, hunger or predators.

I enjoyed the story of fishing blood for catfish (July 2009 NEBRASKAland) as we have done it since the early 80s.

Ed Olson
Craig, Nebraska

Send your comments to:
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Please include your postal address and telephone number.
Letters may be condensed and edited for clarity. Photographs are welcome and will be returned.

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Red Headed Woodpecker, Pheasant, and Gold Finch photos courtesy of Don Brockmeier

“Ticketing” Kids

Daryl Teter
Boating Law Enforcement Officer

Thanks to Bosselmans, Pump & Pantry and Trotters Whoa & Go, for the past couple of years, young boaters in central Nebraska have been getting “tickets” from Nebraska conservation officers who catch them on the water wearing their lifejackets.

Nebraska Game and Parks Commission law enforcement officers give out “citations” to the kids after performing a safety check of the boat and its occupants. When you mention you want to give a kid a ticket for wearing a life jacket, you get a variety of puzzled looks and reactions until you give them a card for a free ice cream cone from one of the businesses mentioned. It generally brings a smile to their faces, is a good public relations tool for both the Commission and the businesses, and it helps teach the kids that following the law can be a good thing.

Although boaters 14 years of age and above don’t legally have to wear their lifejackets while on the water, it’s still a good idea since statistics show that lifejackets are the number one way to prevent death by drowning for all ages. Remember: “They don’t work if you don’t wear them.”

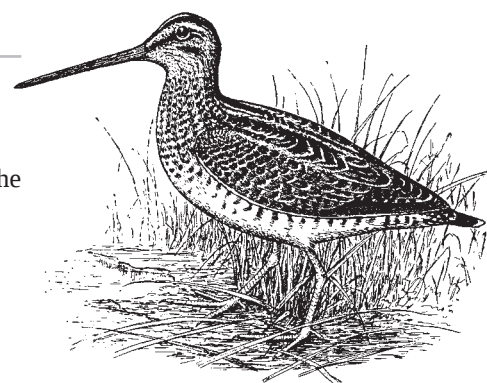
Snipe Hunting History

Jon Farrar

Appropriately named, the common snipe is probably one of the most abundant shorebird species in North America. They are seldom seen, though, because of their reclusive ways and predilection for mucky wetlands seldom frequented by hunters. Snipe nests are rarely found in Nebraska, but they breed and raise young here, principally in the northern counties.

The autumn snipe migration through the state peaks in late-September and early October. While Nebraska has few snipe hunters, there are no doubt more than hunt woodcocks, Virginia rails or soras, the other three shorebirds for which there are hunting seasons.

Shorebirds were popular game in Nebraska during the closing decades of



the 1800s and the opening decades of the 1900s. Golden plovers, upland sandpipers, yellowlegs and common snipe were the most sought-after species, although smaller shorebirds also were frequently shot. Woodcock were locally common along the Missouri River during the settlement years, before much of the timber was cleared.

The Migratory Bird Act of 1913 granted a five-year “rest period” for all shorebirds except woodcock, snipe, black-breasted plover and greater and lesser yellowlegs. That legislation was challenged in court, and the authority of the federal government to regulate migratory bird hunting was not firmly established until 1918, when the Migratory Bird Treaty Act with Canada was signed. Under that treaty, hunting seasons were allowed for upland sandpipers, yellowlegs, rails, snipe and woodcock.

The upland sandpiper season was closed in 1926, followed by greater and lesser yellowlegs in 1927. In 1941, snipe and rails were removed from the game bird list, leaving woodcocks as the only “shorebird” legally hunted. Snipe were restored as game birds under federal regulations in 1954, and rails returned to the Nebraska game bird list in 1957, but the shorebird hunting tradition had largely lost its following.

Would-be snipe hunters should don knee-boots and walk mucky and shallow-water wetlands around lakes, ponds and marshes; marshy stream sides; and hay meadows if early autumn rains have created small pools. Snipe are seldom found in heavy aquatic habitats such as cattails or bulrush. A 20-gauge shotgun and No. 7½ or No. 8 shot is a good choice.

NEBRASKA

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A History of Preservation



Beautiful Spring Creek Prairie
20 miles southwest of Lincoln.

The Nebraska Environmental Trust helped the National Audubon Society acquire the original 626 acre prairie in 1998-99 and an additional 182 acres along with several easements to protect the native tallgrass prairie. The Trust also helped fund the sustainably designed and constructed visitors center for prairie-based environmental programs that have facilitated over 30,000 visitors. The site contains streams, wetlands, ponds, springs, a bur oak stand and trail ruts from the Nebraska City-Fort Kearny Cutoff to the Oregon Trail. More than 360 plants and 213 birds have been documented on the site.

The Trust has been working to protect Nebraska's natural resources for 17 years. Using Nebraska Lottery proceeds, the Trust has provided over \$142 million to projects across Nebraska for habitat restoration and preservation, water conservation, environmental education, waste management and recycling. To learn more about the Trust, visit: www.environmentaltrust.org



Nebraska in Top 200 Towns for Sportsmen

Eric Fowler

If you like hunting, fishing and lists, you'll like this one from the June/July issue of *Outdoor Life*: "The Top 200 Towns for Sportsmen." The list includes six Nebraska towns, with Ogallala, home to Lake McConaughy, scoring the highest among them and one spot in front of Nebraska City.

The magazine put greater emphasis on quality-of-life issues, including affordable housing, low unemployment rates, good-paying jobs and everyday amenities, for its second annual version of the list. It also included towns of any size rather than only those with 4,000 people or more. But quality hunting and fishing, including the number of fishable and huntable species, proximity to public land, trophy potential and hunter-friendly gun laws, were still at the heart of the final rankings.

Only nine states had more towns on the list than Nebraska, including neighbors Colorado (11) and Wyoming (seven). South Dakota tied the Cornhusker State with six towns, and Iowa, Kansas and Missouri had five.

States in the Mountain West ruled the rankings, with Colorado and Montana each placing 11 towns and Idaho, with three of the top-10, claiming eight. Three-fourths of the towns were east of the Mississippi. Five states had none.

While this Ogallala native was happy to see his hometown atop the rankings of Nebraska communities, I had to wonder about the methodology when I saw that Valentine only scored four out of 10 in fishable species, below every Nebraska town but Scottsbluff, which also had four. I'm guessing the editors only considered Merritt Reservoir or the Valentine National Wildlife Refuge, and maybe even overlooked the Snake River's trout, when they tallied that score, because nearly every fish that swims in Nebraska waters can be caught close to Valentine. Likewise, Scottsbluff finished a notch below Valentine in huntable species, but has a nearly identical list.

If you want to review the entire list, or if you live in any of Nebraska's other great outdoor towns and want to state your case for inclusion in the next

list the magazine compiles, visit OutdoorLife.com.

Outdoor Life's Top 200 Towns for Sportsmen

1	Lewiston	ID
2	Marquette	MI
3	Idaho Falls	ID
4	Rawlins	WY
5	Pocatello	ID
6	Bismarck	ND
7	Sheridan	WY
8	Pierre	SD
9	Rochester	MN
10	Carbondale	CO
60	Ogallala	NE
61	Nebraska City	NE
81	Valentine	NE
98	Kearney	NE
105	Grand Island	NE
138	Scottsbluff	NE

Fred Thomas WMA

Julie Watts

Protecting our environment was the mission of Fred Thomas. Thomas desired to educate people on the importance of stewardship, and he did so by writing the "Our Environment" column for the *Omaha World Herald*. Thus the Fred Thomas Wildlife Management Area, with a panoramic view of the Niobrara River Valley visible from the lookout platform, is named in his honor.

Located on the south bank of the Niobrara River at Nebraska Highway 7, this area has 218 acres of prairie, cedars and steep cliffs which drop precipitously to the water. Just south of the parking area is the trailhead for a walking trail that begins with a lane which runs beneath a cedar canopy. It is a fairly easy walk to the edge of the embankment, but the edges of the bank are undermined in areas, so avoid getting too close.

Deer, turkey, rabbit and a multitude of waterfowl and other bird species inhabit this unique area of the Niobrara River Valley. The leaves of the sumac in the fall are brilliant red, and in the spring the seed heads, or sumac bobs, that have fed the birds during the winter continue to decorate the bare branches of the shrub.

More information on this area, including hunting regulations, can be found at www.OutdoorNebraska.org.



Outdoor License Plate

Omahan Marcus Dryak grew up fishing and hunting on the Missouri River near his hometown of Niobrara. He continues to pursue those passions throughout Nebraska with rod and reel, bow, muzzleloader and rifle, with several trophy deer, muskie, walleye and crappie to his credit from his home state, as well as elk and caribou from points abroad.

If you have a unique message plate you would like to share, or know someone who does, e-mail a photo (high-resolution .jpg format only, please) of it to Eric.Fowler@Nebraska.gov, along with your name, hometown, and a brief description of the interests expressed on your license plate.

Turpin Time

Dick Turpin

To add flavor to your wild duck, put the duck breasts in one of those zip lock bags, then cover it with orange juice. Throw that in your freezer, and eat it a month or two later and that is going to be some delicious duck. Even those folks that don't like wild duck might change their mind.

Becoming an Outdoors-Family

Applications are being accepted for two upcoming inaugural Becoming an Outdoors-Family workshops.

The workshops, based on the popular Becoming an Outdoors-Woman events, teach a variety of outdoor skills to family members eight years of age and older. The following classes are offered:

archery, basic outdoor first aid, beginning shotgun, camping, Dutch oven cooking, introduction to firearms, introduction to GPS, lake fishing, kayaking, pellet gun, and outdoor survival hiking.

The first workshop will be held August 7-9 at Ponca State Park, and the second workshop is scheduled for September 12-13 and will be held at the Eastern NE 4-H Camp and Platte River State Park. Space is limited at both events and applications will be accepted on a first-come basis. The fee is \$55 for adults and \$45 for children ages 8-12 for the Ponca event, and \$45 and \$30 for adults and children respectively at the shorter September workshop.

To apply, visit NebraskaBOW.com or contact Peggy Kapeller at (402) 471-5482 or peggy.kapeller@nebraska.gov.

Osprey Nesting Platform

Bob Grier

The pair of osprey, *Pandion haliaetus*, that established their breeding and nesting territory northeast of Scottsbluff in the Nebraska Panhandle last year (see July 2008 *NEBRASKALAND*) moved into a new home this spring and as of June were incubating eggs on a newly constructed nesting platform. The 2008 nesting was the first documented osprey nesting in Nebraska since the early 1900s.

Concerned that last year's large nest near power transmission lines created a hazard for the ospreys, retired U.S. Fish and Wildlife Service refuge manager Steve Knode of Gering contacted the Chimney Rock Public Power Company and linemen from the power company trimmed back the large nest and placed safety guards on the transmission lines.

"With the growing nest volume, it was only a matter of time before one of the osprey would have been killed," says Larry Fiscus, Chimney Rock Power manager.

In early 2009, linemen from Chimney Rock Power placed a dedicated osprey nesting structure near the transmission pole before the osprey returned from their wintering grounds. Upon their return, the breeding pair immediately began building their nest on the new platform and incubation activities continued into early June.

Upcoming Events

Here is a list of upcoming outdoor events across Nebraska. For more information about these and other events, click on the calendar at www.OutdoorNebraska.org.

August 1

- Niobrara SP Buffalo Cookout (also August 8, 15, 22, 29 and September 5)
- Calamus Carp Tournament

August 1-2

- Pioneer Longrifle Rendezvous, Indian Cave SP (also September 5-7)
- Fort Atkinson SHP Living History Demonstrations (also September 5-7)

August 4

- Family Fishing Night – Walnut Creek, Papillion

August 11

- Family Fishing Night – Holmes Lake, Lincoln (also September 8)

August 14

- Nebraska Star Party Star Gazing – E.T. Mahoney SP dusk to 11 p.m. (also September 11)

August 19

- Family Fishing Night – Wehrspann Lake, Omaha

August 22-23

- 1st Annual Heritage Farm Weekend – Ponca SP

August 23-24

- Calamus Windsurfing Rodeo – Calamus SRA

August 26

- Family Fishing Night – Bowling Lake, Lincoln (also September 23)

September 1

- Family Fishing Night, Standing Bear Lake, Omaha

September 5-7

- Fort Kearney SHP Living History Demonstrations

September 12

- Moonshell Storytelling Festival 2009 – E.T. Mahoney SP

September 16

- Family Fishing Night – Halleck Park Lake, Papillion

September 19-20

- Missouri River Outdoor Expo – Ponca SP

September 20

- Arbor Lodge and Nebraska City Apple Jack Festival

Officer's Notebook

Illegally Obtained Permits Will Cost You

Can you really purchase a resident lifetime permit if you don't live in Nebraska? After having a run in with an individual a few years ago, I found out just how easy it is to obtain one of these lifetime permits even when you are no longer a resident. The individual in this case was originally cited for hunting in the wrong unit during the antlerless-only late season in January. After the fine was paid, I found out how small the world really is. Someone who knew this individual made a comment to me that this person did not actually live in Lincoln, but that the address given to me was really his parent's address. After hearing this, I decided to check into the matter a little closer. I found out that this individual actually had moved from Nebraska in 1997, and that in 1998 a resident lifetime hunt and fish permit was issued to him using the same Lincoln address. My investigation also found that in December 2001, a lifetime habitat stamp was issued the same way.

I checked with the local sheriff's office and found out the individual had lived in three different states since leaving Nebraska in 1997. When I checked past records of permit sales, I discovered he had also been issued a resident antlerless tag for the 2000 season. Not only was this person going to be facing more state charges, but he had also violated the federal Lacey Act for taking a deer across state lines on an illegally obtained permit.

After working closely with two officers from the U.S. Fish and Wildlife Service, one in Nebraska and one in Kansas, the individual not only lost the remaining deer from that year, but also had his lifetime habitat stamp and permits confiscated. The individual was charged with two counts of illegally obtaining permits in Lancaster County, and was also charged with being a nonresident in possession of a resident permit in Thayer County. Including the \$708 he had paid for the confiscated permits and stamp, this caper eventually cost this individual \$1,727 in fines, liquidated damages and court costs.

Had someone not recognized his name after he was cited for hunting in the wrong unit, none of these illegally obtained permits would have been discovered and Nebraska would have continued to be short changed.

– Darin Gress, Conservation Officer, Hebron



you'll find a rather large, smooth and hard seed inside. The plants spread their seeds far and wide by hitchhiking on furry animals or the fuzzy clothing of hunters and hikers.

The tickclover's seed represents one of the redeeming qualities of the plant, which – believe it or not – actually provides some value to offset the hours spent pulling the seeds off your

sweatshirt before you're allowed back in the house. The large seeds provide excellent food

sources for upland game birds like quail, along with a number of other wildlife species. Tickclovers also have big tender leaves that serve as

high quality forage for both livestock and wildlife. In fact, tickclovers are rare in many grasslands because they are preferentially eaten by cattle and easily grazed out of pastures. In addition to their food value, tickclovers are legumes, so they fix nitrogen, increasing the soil productivity around them. Finally, many tickclover species, particularly those in grasslands, have small but showy flowers (usually pink) that are both pretty and important pollen and nectar sources to various pollinator species.

The real hidden value of tickclovers may be that their seed is actually worth money. No, really, look it up on the Internet! My quick research shows that tickclover seed sells for between \$10 and \$60 per ounce, which comes out to something like 1/10 a cent per seed. So



PHOTO BY CHRIS HELZER



PHOTO BY CHRIS HELZER

Tickclover

Chris Helzer

It's known as tickclover, tick-trefoil, beggars lice, and a number of other names – usually accompanied by some choice adjectives, none of which are appropriate to print in this magazine. Whatever you call them, their oval seeds stick to clothing, fur and skin like super Velcro, even through a full cycle in the washing machine. Despite many

efforts to find more efficient methods, the only way to get them off is to pick them off ... one by stinking one.

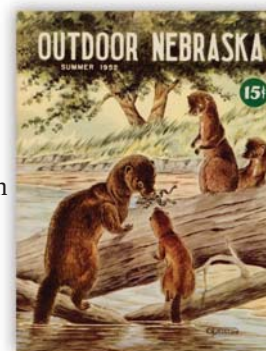
Technically speaking, tickclovers are members of the genus *Desmodium*, and there are eight species native to Nebraska. They are legumes, found both in woodlands and grasslands. And, technically speaking, what sticks to your socks is not the seed, but a kind of envelope that holds the seed. If you take the time to open the envelope,

A Look Back - Summer 1952

Jeff Kurrus

While the August/September 2009 article "Survivor" tells of the prolific bullfrog, the cover art by C. J. Pritchard in the Summer 1952

Outdoor Nebraska edition featured young minks feeding on a frog. In that same issue, multiple titles



remind us that some of yesteryear's issues are still being discussed today: "How to Remove a Fish Hook," "Fishing Tackle Maintenance," and "The Hawk – Friend or Foe." Much like today's "Officer's Notebook," which allows readers to see the enforcement of hunting, fishing, and park-related laws through the eyes of a conservation officer, this mid-century edition asked readers to "... Get Acquainted with Warden A. G. McCarroll," who, at the time, was a conservation officer with the Nebraska Game, Forestation and Parks Commission.

next time you're picking the seed out of your socks, toss them into a handy bucket and you can tally your profit as you pick! Then all you have to do is figure out who it is that actually buys the stuff.

Classes Forming Now

Heather Weihe

Summer is a great time to take a Hunter Education class. It seems like I spend most of my winter planning for summer; however I usually don't take the time to think about fall and winter until I'm forced to. This summer I encourage you to at least think about this fall's upcoming hunting seasons and to sign up now for any Hunter Education or Bowhunter Education

classes you might need to take in order to legally hunt.

Nebraska initiated its hunter education program in 1972; as a result Nebraska continues to experience a 30-year decline in accidents. With school not in session and few hunting seasons open yet, late-summer is a great time for students and volunteer instructors alike to set up classes.

To find out what classes are available, go to OutdoorNebraska.org, select NGPC Programs, then click on Hunter Education and select Available Classes. You can also call Heather Weihe at (402) 471-5662.

Peregrine Chicks Named

Nemaha, Niobrara, Platte, and Calamus were the winning entries of the 2009 Name the Chicks contest, according to the Nebraska Game and Parks Commission. The names were given to four peregrine falcon chicks hatched in May in a nest box outside the 18th floor of the Nebraska State Capitol Building.

Roxanne Smith, tourism supervisor at the Capitol, won the contest by suggesting the chicks be named after four Nebraska rivers. Smith's winning prize package includes a stuff-toy peregrine falcon and a one-year subscription to *NEBRASKALand Magazine*.

Peregrine females 97/H and 98/H were given the names Nemaha and Niobrara, respectively. Male falcons 91/A and 92/A were given the names Platte and Calamus, respectively. The names were selected from 388 contest entries.

This is the fourth successful breeding season for the pair of peregrines using the Capitol nest box. In 2005, the pair successfully raised a chick that was named Pioneer. In 2006, three chicks fledged and were given the names Willa, Bess and Sterling after famous Nebraskans Willa Cather, Bess Streeter Aldrich and J. Sterling Morton. In 2007, four chicks fledged and were named Boreas, Notus, Eurus, and Zephyrus after the four wind gods from Greek mythology that are ascribed to the cardinal directions North, South, East, and West. The 2008 nesting attempt failed. ■



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Survivor

The North American Bullfrog

Text and photos by Jeff Kurrus

Bullfrogs are North America's largest frog, measuring up to eight inches in length and weighing upwards of one pound. They have shown the ability to survive through a Minnesota winter and a Louisiana summer, on glacial lake and brackish coastal water, and their impact in nonnative regions can be catastrophic.

Pull a North American bullfrog from the water, hold it around the waist so its legs dangle, and it's hard not to conjure images of Michigan J. Frog from the *Looney Tunes* cartoon shorts. For many people throughout the world, however, bullfrogs provide little reason to laugh, much less smile. They are carriers of

disease, killers of local animal populations and one of the world's most prolific invasives. Most of all, though, they are survivors.

Invasion

Native to the southeastern portion of the state, bullfrogs can currently be



Three generations from the Blaser family of Platte County hunt bullfrogs at dawn.

found in every Nebraska county and on almost every body of water, from backwater riverbanks and ponds, to wetland areas and even cattle tanks. Nationally, while native to the eastern part of the country, bullfrogs are found coast to coast and from Mexico to Canada. Internationally, bullfrogs have been introduced to Europe, Asia and both South and Central America, as well as a host of islands throughout the world. During this time when bullfrogs are so prolific, however, other amphibians are disappearing throughout the world.

According to Texas A&M biologist



The North American bullfrog is one of eleven frog and toad species found in Nebraska. Their color can range from various shades of green to almost black, as seen from this bullfrog in a Sarpy County farm pond.

Malcolm McCallum, the current mass extinction of amphibians far exceeds earlier extinctions in history linked to calamitous events, such as continental drifts and "super" volcanoes. "The general trend of amphibian extinction suggests catastrophic future losses and uncertain opportunity for recovery," McCallum said. In addition, the Red List of Threatened Species and the Global Amphibian Assessment has put about one-third of all amphibian species at high risk of extinction. The bullfrog is not on that list. It is, however, on another.

According to the International Union

for Conservation of Nature, the bullfrog is one of the 100 worst invasive species in the world. For example, they were introduced in mainland China in 1959 and, being larger than any native frogs, soon put local frog populations at risk. In Europe, it is illegal to import bullfrogs because of their effects on native amphibians.

One current issue involving the effects of bullfrogs on native species is their link to the fungus *Batrachochytrium dendrobatidis* (Bd), also known as chytrid. While there are multiple chytrid fungi species, the term "chytrid" has

become synonymous with the Bd fungus that specifically infects amphibians. According to Jennifer Holland's April 2009 *National Geographic* article entitled "The Vanishing," chytrid attacks keratin, a key structural protein in an animal's skin, perhaps hampering oxygen exchange and the control of water and salts in the body. Chytrid is now reported on all continents where frogs live, and also exists in Nebraska. In Holland's article, Australian researcher Lee Berger was quoted as saying: "The impact of chytridiomycosis [the infection caused by a chytrid fungus]

on frogs is the most spectacular loss of vertebrate biodiversity due to disease in recorded history.”

Currently, there is no cure for this fungus, which has negatively affected at least 200 species of frogs worldwide. Chytrid can be spread from just about anything in nature, including bird feathers and frog legs. Curiously, while bullfrogs are a carrier of this fungus, they do not appear to be harmed by it. According to Thomas R. Jones, Amphibians and Reptiles Program Manager for the Arizona Game and Fish Department (AGFD), biologists in that state know that bullfrogs there carry chytrid, and they know that their native frog populations are suffering from the fungus, but they “just don’t have the smoking gun link between the two.”

Arizona is one of many states dealing with nonnative bullfrogs. Bullfrogs were introduced by the AGFD in the early 1970s for sport, and some were also likely inadvertently introduced as tadpoles with fish stockings. Jones has spoken to some people in the state who also redistributed bullfrogs simply because “they liked them.” Since their introduction, all six native Arizona ranid frog species, five of which are leopard frogs, have declined.

While habitat loss has been important to amphibian declines in Arizona, bullfrogs have also contributed to the



California red-legged frog



Sonoran tiger salamander



PHOTO BY JEFF KOOSER

ABOVE: A bullfrog swallows a bluegill whole. RIGHT: Male bullfrogs are distinguished from female bullfrogs by the size of their eardrums, otherwise known as their tympanum. If the tympanum and eye are similar sized, the frog is a female. If the tympanum are considerably larger (pictured), the bullfrog is a male.

decline of northern leopard frogs and Chiricahua leopard frogs. “Whether the decline is directly due to bullfrogs or not,” said Jones, “recovery of those species is definitely linked to bullfrogs. Except in a few relatively dramatic cases we don’t have a timeline to show that bullfrogs eliminated the natives. What we do know is that bullfrogs now occupy many of their historical habitats, and recovery at those sites is impossible without getting rid of bullfrogs.”

Introduced bullfrogs compete with native frogs from the tadpole stage to adulthood and also prey on native wildlife. They consume worms, fish, insects, crustaceans, small mammals including mice, snakes, bird and bat species, and other frogs and tadpoles. Needing to eat approximately 5 to 10 percent of their body weight each day, they capture and hold their victims with their upper jaw teeth before swallowing them whole. “I was just at a site early this week doing bullfrog control work where we have a population of federally endangered Sonoran tiger salamanders,” said Jones. “The stomachs of the larger bullfrogs we caught were full of salamander larvae.”

The AGFD, in collaboration with the U.S. Forest Service, U.S. Fish and Wildlife, The Nature Conservancy and local organizations, are working on multiple projects to eliminate bullfrogs from parts of Arizona. However, Jones knows how much work there is to do

and the problems associated with it.

“Recently, a fishing lake was drained and bullfrogs were eliminated from the lake,” said Jones. “Following this, we worked on eliminating the bullfrog populations in a 250-square-mile area surrounding the lake. During this project, while working at one of the many small, cattle-tank sized water sources in the area, we removed over 100,000 tadpoles. That’s the product of maybe 10 individual frogs. But to ensure the success of our project, we will have to try and eliminate all the bullfrogs from the area. Otherwise, the frogs will recolonize the lake and we will be back to square one.

“But we’re facing a deadline because Arizona’s summer rain season is coming. As soon as that starts, all bets are off because of how well bullfrogs can move across the landscape.”

In California, where bullfrogs have also been introduced, there are similar issues. “The problem here is so overwhelming because the bullfrog is so ubiquitous,” said Betsy Bollster, Statewide Coordinator for the Conservation of Amphibians and Reptiles with the California Department of Fish and Game. “We barely have the resources to manage native species, much less bullfrogs.” The curious part, Bollster said, is that most people think bullfrogs are native because they have been in the state for so long.

They were first introduced to



Prolific Reproducers

During the breeding season, which in Nebraska usually starts in June or July when water temperatures near 70 degrees, female bullfrogs are attracted by the voice of the male, who uses a series of bass notes to make a sound best described in multiple publications as resembling “jug-o-rum.” Males are highly territorial as they call, defending upwards of 25 yards of shoreline from neighboring males by “wrestling,” while females traditionally stay away from the shoreline until breeding time.

Once a female chooses a mate, she will lay between 10,000 and 20,000 eggs on the water's surface in a disc-shaped film up to five feet across. This large surface area of eggs increases the likelihood that each embryo will obtain sufficient oxygen for normal development. The male then fertilizes the eggs, which drift until they attach to vegetation or debris. About four days later, small spotted tadpoles emerge from the floating egg mass.

Once hatched, bullfrogs stay in the tadpole stage for one to three years, taking longer to fully develop in the northern part of their range while occasionally fully developing by that same fall or early winter in the southern part. Typically, however, they overwinter for at least one season as tadpoles and metamorphose the next spring. During the tadpole stage, bullfrogs can range from less than an inch up to six inches in length, and survive by eating algae and aquatic vegetation, and being well-camouflaged.

Metamorphosis, the transition from tadpole to adult, occurs when the tadpole's three sets of gills are replaced by lungs. Most bullfrogs take two years to reach sexual maturity from the time they metamorphose, but some might breed the summer after this process. Size, length of growing seasons, food and temperature determine the rate of maturation. In warmer climates, female bullfrogs may lay two clutches per year.

Natural predators throughout a bullfrog's life cycle include snapping turtles, snakes, birds, fish and man. Because adult bullfrogs will eat anything available, they have been referred to as “dietary generalists.” In areas with large concentrations of bullfrogs, other bullfrogs are this species' greatest predator.

California in the early 1900s to serve as a food source after the California red-legged frog was overharvested. Since their introduction, bullfrogs have decimated the California red-legged frog population, a species of special concern in the state, by consuming members of the species as well as competing for habitat.

Bullfrogs have even affected local social events, as they are used instead of red-legged frogs at the Calaveras County jumping frog contest – celebrated in Mark Twain's writings. This is due in part to the negative effects bullfrogs have had on red-legged frog numbers.

In addition, bullfrogs also eat the larvae of the California tiger salamander, which only lives in that state and is also threatened. In California, bullfrog densities can exceed 10,000 per hectare. To combat the problem, there is no limit on bullfrogs when hunting, but the state still allows bullfrogs to be imported for food sale.

Like California, Arizona also has unlimited bag limits on bullfrogs taken by hand, gig, or net, and it is illegal for people to possess live bullfrogs. Despite these regulations, said Jones, more Arizonans still don't realize the effect that bullfrogs have on native wildlife, and funds are limited for working on their control.

Closer to Home

The Nebraska Game and Fish Commission began moving bullfrogs throughout the state from their native habitat in southeastern Nebraska at least as early as 1907.



Bullfrogs will eat a host of prey, including crayfish, birds, mice, fish and other toads and frogs, including smaller bullfrogs.



In Nebraska, bullfrogs can be taken by hook-and-line (pictured) or by hand.

“It is yet too early to forecast the result of the introduction of the bull-frog, but from the experiments carried on with them at the hatcheries the past two years I am confident they will provide a highly profitable addition to our work and a valuable asset to the state,” stated Will J. O’Brien in the *1908 Biennial Report of the Game and Fish Commission*.

“Originally, bullfrogs were stocked for both a game resource as well as a method to feed bass populations in newly state-created water bodies,” said Dan Fogell, Life Sciences Instructor at Southeast Community

College in Lincoln and associate editor of herpetology for *The Prairie Naturalist*. “But bass don’t eat bullfrog tadpoles. There is a toxin in tadpole skin that’s unpalatable to bass.”

The Commission ceased its stocking efforts in the first half of the 20th century. In the 1942 *Nebraska Conservation Bulletin*, G. E. Hudson stated the following: “Although the bullfrog is native to Nebraska it’s original distribution was no doubt much more restricted than at present. Countless thousands have been released by the game commission in all parts of the state.”

Years before Hudson’s 1942 statement, during the same time the Nebraska Game and Fish Commission was evaluating the release of bullfrogs throughout nonnative portions of the state, the *Omaha World-Herald*’s Sandy Griswold wrote the following on June 12, 1910:

“In the course of the spring months I accumulated a wonderful assortment of little creatures and put them in my pond. There were salamanders that crawled around among the pebbles on the bottom, in company with crayfish, snails, and small, black, red-spotted turtles. Three tiny water snakes entrenched themselves at one end of the sloping bank, while at the other, just as far away as possible, were half a dozen little brook frogs, just learning to use their newly acquired legs. Out in the water swam minnows, tadpoles, sunfish and whirl-a-gig bugs, all living in harmonious contentment. Occasionally, however, one of the tadpoles mysteriously disappeared, and, coincident with the catastrophe, a snake would be seen to increase materially his girth, but, aside from these little tragedies, peace and quiet reigned supreme; until one day – an evil day – when I placed in the tub one of those huge pond bullfrogs. The first to vanish were the little frogs and tadpoles, and by the end of ten days not a salamander was left, and only one lone snake. The fishes lasted well, and only after many days did the last sunfish finally disappear from the tub. But the old fellow must have struck a snag when he tried a diet of turtle shells or crayfish, or perhaps it was remorse for his former companions; for one morning we found him in the water, his ponderous white stomach extended to its fullest extent, lying flat on his back – dead – and so ended our aquarium.”

Not All is Good

Despite their voracity, throughout the last century bullfrogs in Nebraska have still had to endure hardships. The *1912 Biennial Report* stated: “The attempt to acclimate the bull-frog has not up to date been a decided success. Plants made at Long Pine, in Brown County, Beatrice, in Gage County, and Benkelman and Imperial, in Chase County, have promised some results, but the efforts to introduce them into the swampy sandhill lakes has thus far



A bullfrog's eyes are blinded with a hand-held spotlight as a "frogger" makes an attempt at catching one by hand.

been marked with failure."

In addition, it was not until 1974 that rifle shooting was outlawed in Nebraska for bullfrogs. During the heavy drought in the 1970s, a decline in bullfrogs was noticed by conservation officers and fisheries biologists across Nebraska. Because bullfrogs take from one to three years to reach adulthood, a permanent water source is needed for their long-term survival. A 1976-1977 study conducted by then-University of Nebraska-Lincoln graduate student

Joseph McAuliffe researched bullfrog growth and maturity rates and suggested a later opening date, a size limit and a reduced bag limit for bullfrog season to ensure maximum reproduction. These limits were adopted by the Commission and are still in effect today.

It also appears as if bullfrog tadpoles can be affected by the tadpole edema virus, which causes hemorrhage in skeletal tissue similar to that caused with frogs afflicted with the ranavirus frog virus. In addition, bullfrogs can be

affected by UV exposure, which has increased worldwide, because bullfrog eggs are laid on thin sheets on the surface of water (see sidebar on page 16). Furthermore, a study in the St. Lawrence River Valley of Quebec, Canada revealed that endocrine-disrupting chemicals, namely herbicides and pesticides, cause hindlimb deformities in various amphibians, including bullfrogs. Lastly, in 1996 the Australian government banned 84 herbicides, each containing glyphosate as the active ingredient, near

streams and waterways because of its apparent effect on frogs and tadpoles. Glyphosate, which is the active ingredient in Roundup®, is a staple herbicide in Nebraska.

Mistaken Identity

Despite their invasive characteristics when introduced to nonnative regions, bullfrogs thrive in their native ecosystems and do not pose the same threats as they do when introduced to these new areas.

Hunting and Eating

Until 1958, there were no regulations regarding bullfrogs in Nebraska. That year, the Nebraska Game and Parks Commission placed a bag and possession limit of 12 on the species, and bullfrogs could be taken by rifle, spear, hook-and-line, hand net or hand. In 1974, firearms were outlawed and bow and arrow was added as a legal method of take.

In 1979, the Commission imposed even stricter limits, placing a size limit of four and a half inches from nose to vent. Gigs, arrows and spears were no longer legal to use. That same length limit still applies today, as does the law that they may only be captured by hand, hand net or hook-and-line. Current regulations allow "frogging" from August 15 to October 31, with a bag limit of eight per person. Hunting is usually done from dusk to dawn and a Nebraska fishing permit is required.

While regulations have changed through the years, there has been one constant as relevant now as it was at the turn of the 20th century – how they should be cooked: "First dry the saddles [the bullfrog's legs], dip them in egg batter, roll in corn meal and cook them in boiling hot fat until they have a light brown appearance." – *Omaha Daily Bee*, July 29, 1894.

"It's funny," said Fogell. "We did some research a few years back with students from the University of Arizona in the southeastern part of Nebraska. When they saw bullfrogs in these regions, they got mad. They looked at them with disdain. 'Hold up,' I told them. 'They're supposed to be here. They're just not supposed to be in Arizona.'"

As stated earlier, bullfrogs are native to parts of Nebraska, just not the entire state. While it doesn't seem as if they have had a negative impact on Nebraska's amphibian populations, including cricket frogs and Great Plains leopard frogs, little is known about the bullfrog's current status across the state. Commission biologist Mike Fritz said that there is a probability that bullfrogs are increasing in Nebraska, but added "we do not track bullfrog numbers."

Talk to various people throughout the state, and you're likely to get various answers regarding bullfrog populations. Some say numbers are steady, and others say that do not see or hear as many as they used to. This is a topic that should be watched closely.

With all the detrimental issues North American bullfrogs cause internationally, and as many issues as amphibians face worldwide, analyzing the bullfrog's effect in nonnative areas of our own state is extremely important. As is ensuring that these survivors remain prolific throughout their native regions. ■



Paddle Talk

Text and photos by Jeff Kurrus

Talk to most anglers and they will tell you that the most important part of the fishing trip is not the fish, but the tales told while on the water.

When watching Sandhills bass angler Stan Schied of Callaway fish, it's obvious it isn't his first day on the water. When watching his wife, Kim, fish beside him, it's sometimes hard to tell who taught who how to fish. While their techniques differ, any story about 100-bass days or trophy largemouth would never even come close to raising a curious eyebrow with these two. They know how to fish, period.

Just like their technical differences, with Stan wanting to bury his boat in the thickest, most vegetated areas possible and Kim wanting to fish fast until she finds fish, albeit open or heavy-covered water, they both have a

difference in their words when on the lake. Kim's usually, if not always, relate directly to the current fish she is trying to catch. With Stan, his stories can be as varied as his lure choices, and serve as nothing more than a way to pass the time between casts.

For the fortunate listener, these stories are part of the entire outdoor experience that is only understood by anglers on the water or hunters in a blind. The best part about spending time on the water with a new fishing partner like Stan? His stories are all new. The following are some of Stan's tales spun on the water, a stream-of-consciousness look at a few hours spent in the Sandhills between bulrushes and bass.



The Nebraska Sandhills sit atop the massive Ogallala Aquifer. Marshes and temporary and permanent shallow lakes are common in low-lying parts. The eastern and central sections of the region are drained by tributaries of the Loup and Niobrara rivers, while the western section is largely composed of small interior drainage basins.

As a Child

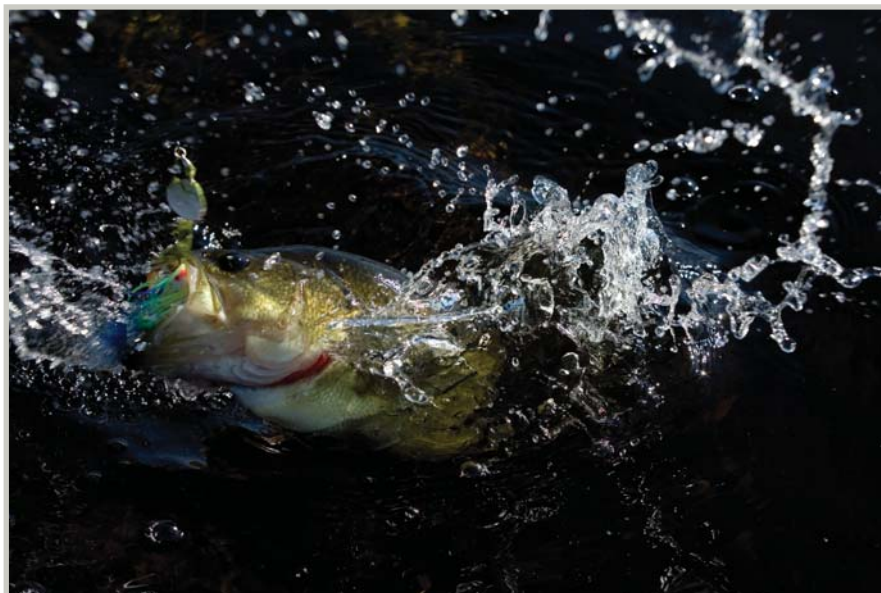
I've been fishing these lakes for a lot of years and many of them haven't changed a bit. When I got to be about 10 years old, I'd say I wanted to fish and was told to have fun. We'd seine minnows from the area creeks. Then, when we got done fishing, we were told to "feed the fish." I'm sure we threw carp into the lakes, too – we just didn't know any better.

I think I had as much to do with some of the lakes going bad as the adults. When we weren't using live bait, I caught the rest of my bass on a Johnson's silver minnow or a Rapala. This one time, I saw a bass splash near the bulrush. I made a cast, caught the fish, then saw something in its mouth. A bird's feet. I pulled on the feet and the blackbird was still alive.

Bad Fishing Partners

Early on in my marriage, I fished a tournament with a guy. At the time I didn't have a lot of money. And every time I got my crankbait hung up, he wouldn't let me go and get my lure. So I had to cut my line each time. When you have no money, lures get expensive quick. I never fished with the guy again.

I took another guy one time to one of my little private lakes up here, and came back a couple months later and there was a tournament going on at the lake being hosted by that guy. There was a field full of cars with Iowa license plates in the Sandhills. Man, I was so naïve at the time.



Aggressive and beautifully-colored Sandhills largemouth bass is what Stan loves about fishing in north-central Nebraska.

Stan and his wife, Kim, spend an early fall morning fishing a Sandhills pond.





Kim holds a largemouth caught near bulrushes on a recent trip with her husband.

Permission

Years ago when I was in school I wanted to start bass fishing. Someone told me I could go through the state's stocking records. So I sat on the floor in the Nebraska Game Commission's

office and found where there had been bass stocked. Any lake that was the right size and had the right size of fish, I went to look for permission. It didn't mean that they had to let me fish, but I sure could ask.

One time, several years back, I was planning to fish a public lake, Cottonwood Steverson. I saw a guy coming out of his field near where the lake was. He asked me why I was going there. I told him I wanted to catch and release bass. He said, "You don't want to fish here. You want to fish my lake." I took him up on the offer.

If you're just polite when you're talking to folks it sometimes works out.

Fish Guides

I was talking to a fishing guide one time and I asked him about the biggest bass he had ever caught. He said it was 11 or 12 pounds, but at the time he caught it he was fishing with a client who wanted to take it home and claim it as his own. This was before you could get the synthetic mounts for fish. A little bit later while

we were fishing, he caught a great big rainbow trout. "I finally get one of these to mount," he says. Then I say, "No, that's my fish." You should have seen the look on his face before I started laughing.

Million Dollar Muskrats

Originally, my granddad followed a herd of longhorns up here from Missouri. He liked it, and took a job at a ranch called the U-cross that covered hundreds of thousands of acres. He noticed all these lakes had muskrat dens and he knew how to trap. At the time, the muskrat skins were worth 3 cents less than an acre of ground. "So I just kept my mouth shut and buried my money in a coffee can," he told me years later. So he got enough money to buy land, then he started raising cattle. No one thought this ground was worth anything because you couldn't grow corn on it. But it sure would grow cattle. Through the years, Dad built the acreage up to 20,000 acres. And to think it all started with a few muskrats.

A Pattern for the Pros

When we were younger, we had a pattern on these Sandhills lakes that would work every time. So, one day when I was feeling unstoppable, I called Rick Clunn shortly after he won those two Bassmaster Classics in a row. I told him I was thinking about turning pro.

He was a very nice man, and he chatted with me for quite awhile. Then



Stan fishes with youngster Jake Adamson on a sunlit fall morning.

he says, "Okay, let me understand this. You got a couple lakes you know like the back of your hand, right? Well, why don't you get on a reservoir you've never seen before and fish against me. Unless you're really financially healthy, you might want to think twice about this decision." I think it was some of the best advice that I ever got. There's a difference between professional fishing and recreational fishing. And I'm more partial to the thought of the latter.

Fitting In

When I was a kid growing up, I didn't fit in very well socially with the city kids. Growing up 10 miles north of Lincoln near Ceresco, I always had

cow (expletive) on my boots every morning when I went to school but I couldn't help it. Dad said to milk those dang cows, and I had to milk those dang cows. But up here in the Sandhills, when I visited I didn't have that problem with the kids because all of us had cow (expletive) on our boots.

The Armpit

We had a guy that did some contract work at our hospital in Callaway. I couldn't stand him. He walked like he was special, talked like he was special. Wore a four-piece suit, the whole bit. He came in one day and said, "God, I did a terrible thing. I drove to a town called Chadron and a town called

Valentine. That country is so horrible, no one will even live there." I kept a straight face and said, "Isn't it. It's absolutely the armpit of the Earth."

"I can get you a job back east," he said. "I'll think about it," I said. But if he thought I was going to leave an area so close to that "armpit," he was nuts.

Stan's stories resonate time spent on the water. Only a person who has logged so many hours could talk about bird-eating bass and other oddities with a straight face. Yet it is these tales that reveal how comfortable Stan is in this part of the world, where day-to-day bass fishing trips form stories he'll remember and re-tell for a lifetime. ■



Stan, running a foot-controlled trolling motor, guides the boat into thick bulrushes in search of bass.

A Platte River Purchase

Text and photos by Eric Fowler

For more than two decades, advocates for restoration of the Platte River have been putting their foot down in defense of this biologically unique and important resource and the fish and wildlife that depend on it. Now they nearly have something to really put their foot down on: land.

This spring, officials with the Platte River Recovery Implementation Program purchased four parcels of land covering 1,000 acres and located between Lexington and Minden, and are working to close on four more tracts covering 1,700 acres. The land will be restored to benefit least terns, piping plovers and whooping cranes, all federally threatened or endangered species, and other species of fish and wildlife that utilize the river.

For more than 100 years, the Platte's water has been impounded and diverted for power and irrigation projects, erasing the ebb and flow that maintained what was once an open, braided river channel. Thousands of irrigation wells in the Platte Basin have compounded the problem, reducing the level of hydrologically connected groundwater that contributes a substantial portion of the river's flow. As a result, the river's width has been reduced by 50 to 90 percent, and vegetation has encroached on 80 to 95 percent of what is left.

Approved in 2006 and launched in January 2007, the recovery program grew from a cooperative agreement signed in 1997 by the U.S. Fish and Wildlife Service and the governors of Nebraska, Wyoming and Colorado to find solutions to problems on the Platte. The agreement was the end result of legal wrangling between the Service, states,

water users and conservation groups that began in the early-1980s when Central Nebraska Public Power and Irrigation District initiated efforts to relicense Kingsley Dam, which holds back the waters of the North Platte River to form Lake McConaughy, bringing the Endangered Species Act into play.

The program will take an incremental approach in its restoration efforts. The first increment will span 13 years and cost \$320 million, with the federal government contributing \$157 million for its share and Colorado and Wyoming pitching in \$30 million in cash, as well as land and water. Nebraska's share of the program's cost will be entirely covered by contributions of land and water.

During this phase, 10,000 acres of land bought from willing sellers or protected through conservation easements is to be restored between Lexington and Chapman by 2019. Phase II could add another 19,000 acres.

Jerry Kinney, executive director of the program, said his group is looking for properties within or adjacent to the high bank of the river. Within the high banks, trees and shrubs will be removed to recreate an open, braided river with bare sandbars where terns and plovers can nest and cranes can rest. Sloughs and backwaters will be restored, and adjacent uplands will be restored to native prairie and wet meadows.

Kinney said because little conservation work has been done west of Kearney, their initial push for land acquisition and restoration is focused in that reach. But they are also looking for land east of there next to other properties that have already been restored, such as those owned by the Nebraska Game and Parks Commission, Platte River

Whooping Crane Trust and Nature Conservancy. Ideally, two- or three-mile-long blocks of restored habitat spanning both sides of the river can be created. "We'd like to have a number of those chunks spread over the entire critical habitat reach," Kinney said.

Public access, including hunting and fishing, might be allowed on some land purchased by the program, Kinney said, but that will hinge on the type of research being done on the property.

One of the program's goals is to reduce target flow shortages in the Platte by 130,000 to 150,000 acre-feet per year, especially during the time when it can most benefit terns, plovers and whooping cranes. But that won't be easy. When the cooperative agreement was signed in 1997, the states agreed to make up for future depletions; yet in Nebraska's portion of the Platte River basin alone, more than 3,000 new irrigation wells have been added. Whether the states can make up for post-1997 development



The interior least tern is one of four threatened or endangered species the Platte River Recovery and Implementation Program is designed to protect.



Habitat restoration projects on land acquired by the Platte River program will be similar to that done on the private land near Wood River shown here, including clearing trees from islands and restoring sloughs.

is key to meeting target flows, Kinney said.

Kinney said they are also looking for new places to store water to supplement base flows, pulse flows or both. Twenty-five potential sites have been identified and that list will soon be narrowed to three for further analysis.

A water action plan developed in 2000 is being updated, focusing on "exactly what we're going to do to reduce the deficit to target flows and manage the pulse flow targets we need," Kinney said. That work will include determining how to best use water in the Environmental Account in Lake McConaughy, which stores a percentage of annual flows to be released to maintain river habitat.

In April, the Service and Platte River Recovery Program staff worked together to test a pulse flow to provide information on how long it takes water released from McConaughy to reach downstream locations and how much it affects water levels. They will continue to evaluate the effectiveness of pulse flows to determine whether they are enough to strip vegetation from the riverbed and sandbars as spring flows once did or if the river will need to be cleared mechanically.

Restoring habitat and river flows are the meat of the program, but monitoring and management will ensure the activities actually produce the desired benefits before the second increment of the program is launched in 2020.

"We don't know everything we need to know to help the [threatened and endangered] species recover. The fact is, we

don't agree on everything we think we know," Kinney said. "Adaptive management allows you to stop arguing long enough to gather enough information to make informed decisions."

Studies will gauge the response that whooping cranes, terns and plovers, the fish and insects that terns and plovers feed on, and vegetation has to the restoration and management practices. Others will ensure that any actions taken in the central Platte region do not negatively affect pallid sturgeon in the lower Platte. And a new candidate for listing, the Platte River caddisfly (see story on page 38), will also be watched closely and considered when work is planned. "One of the objectives of the program is to try and prevent other species from joining the [threatened and endangered species] list," Kinney said.

Kinney said program staff will work closely with the Fish and Wildlife Service to identify caddisfly habitat and insure their land restoration efforts don't affect the species, and also try to incorporate features that would benefit or provide habitat for caddisflies.

An independent science advisory committee and peer review panels will follow and evaluate the program's efforts on the river. "We have a lot of questions to answer," Kinney said. "Thirteen years sounds like a long time, but when you're trying to gather data in a living laboratory where a lot of things are uncontrolled.

"It's challenging, but it's a very exciting challenge." ■

Homegrown Exposition

Text and photos by Jon Farrar



ABOVE: Niobrara State Park assistant superintendent Mark Rettig points out Missouri River geologic features.
OPPOSITE: Instructor Todd Kratke instructs a beginner in proper form and arrow release.

The Missouri River Outdoor Expo that has been held in September at Ponca State Park each year since 2005 started modestly, but has mushroomed into one of the largest outdoor recreation and conservation education events in the state.

The mission of the Expo is relatively simple – bring together, in an old-fashioned county fair atmosphere, experts in many areas of outdoor sports, recreation and conservation and invite the public to learn more about their favorite activity or be introduced to new possibilities. It was a concept born at exactly the right time, when participation in traditional outdoor recreation was declining.

The first Expo was scheduled for late-September when the weather was predictably mild and pleasant. Defying more than 100 years of weather averages, a dark cloud hovered over Dixon County for most of the 2005 event, dumping eight inches of rain. Some activities and demonstrations were moved

inside the Missouri National Recreational River Resource and Education Center, and other events went on outside as best they could during breaks in the downpour. Remarkably, an estimated 6,000 people still showed up that inaugural year, and each year since the weather has been gorgeous for the event.

The beauty of the Missouri River Outdoor Expo is that it is spread across much of the 2,400-acre park – from the spacious resource and education center, the “Shooters Village” tucked away in a wooded hollow of the Missouri River bluffs, and to water sports at the river’s edge. Shuttles transport people from one site to the next, but many walk from event to event through woodlands showing the first hint of autumn color. Thousands of people attend the Expo but it never seems crowded. Outdoor recreation and conservation exhibits and demonstrations are outdoors where they belong.

A list of everything a Missouri River Outdoor Expo visitor can see and do would fill this page, but a sampling suggests the variety: Shooting sports, including archery, shotgun, muzzleloading, pellet gun and .22 rifle; outdoor skills demonstrations such as Dutch-oven cooking, trapping, game calling, fly tying/fishing and kayaking; and conservation education events such as bird banding and a sandbox where young people can dig for fossils. In the resource and education center, Expo goes view art, photography, taxidermy and book exhibits. In 2008, more than 50 vendors and exhibitors attended the Expo, hawking everything from recreational vehicles, custom-made knives and game calls, to ornamental metal work produced



ABOVE: Youngsters and oldsters have a hands-on experience with kayaks on a shallow Missouri River backwater.

LEFT: James Horn, retired National Park Service employee, demonstrates handmade Native American items used to survive on the Great Plains.

RIGHT: Muzzleloader Tom Roberts showed Expo visitors how quickly his flintlock could be reloaded and fired.



by blacksmiths laboring over on-site forges. There are dog training seminars and the popular “Splash Dogs” competition.

Expo boat rides on the Missouri River are more than just an adventure; they’re an opportunity to learn about the Missouri National Recreational River, the only unchannelized portion of the river bordering Nebraska; its geology, fauna and flora, and the history of river travel in the 1800s. There are presentations on game cooking, outdoor survival, wildlife management, hunter ethics and



land stewardship. Visitors can check out the latest waterfowl decoys or all-terrain vehicles on the market. Youngsters and oldsters can see and touch fish, snakes and turtles. There are more things to do at the Expo than a family will have time to do in just one day. And, there are prize drawings and discounts for Nebraska Youth Lifetime Hunting-Fishing Permits.

Jeff Fields, superintendent of Ponca State Park, is quick to praise the volunteers who make the Expo happen. In 2008, more than 300 volunteers assisted with the event, with the Better Ponca Foundation recruiting two-thirds of them from Ponca and nearby

communities. Volunteers serve as shuttle drivers and guides, man information booths – whatever needs to be done. Other volunteers come from Commission staff and conservation organizations. Again the list is too long to note all, but the 2008 Expo had volunteers from such organizations as Pheasants Forever, Ducks Unlimited, Nebraska 4-H Shooting Sports, Friends of the National Rifle Association, and the U.S. Coast Guard Auxiliary. Commercial vendors in 2008 included Yamaha, Polaris, Reel Wings Decoys, Browning/Winchester, Benelli USA, Beretta and a host of smaller outdoor sports businesses and cottage industries.

Last year an estimated 42,000 people attended the Missouri River Outdoor Expo. Accommodating so many and providing diverse experiences requires a huge gift of time from volunteers, not just putting on the event but planning it as well. It also takes money. About half of the funding for the Expo comes from the Commission, mostly in the form of staff time and equipment. The other half comes from vendor fees and sponsors. There are six levels of sponsorship. At the top are the Heritage Sponsors, those businesses or organizations contributing \$5,000 or more. In 2008, those sponsors included Scheels All Sports, Interstate Batteries, Nebraska and Iowa chapters of Friends of the National Rifle Association, Pheasants Forever, Great Plains Communications, Z98/Fox Sports Radio and KTIV TV Channel 4 in Sioux City, Iowa.

What has made the Expo so successful, Fields said, is local

ABOVE: The spacious Missouri National Recreational River Resource and Education Center was filled with art, photography, taxidermy and book exhibits.

RIGHT: Dean Slader demonstrated blacksmithing throughout the Expo's two days last year and offered hand-forged items for sale.





and regional support. "It's the people's event and they make it happen." An advisory board of 25 people drawn from local communities, regional Commission staff, and conservation groups and organizations meet monthly to plan the next Expo. They look at what worked, what did not and how the event can be improved.

Most Expo visitors come from northeastern Nebraska, southeastern South Dakota and western Iowa. Since 2006, about 300 fifth-grade school students from the region have come to the park the Friday before the Expo opens to the public and experience most of the same demonstrations and hands-on events that happen on the weekend. Fields said the swelling interest in the Expo has been amazing, particularly in a time when organized sports, video games and the Internet seem to dominate young people's time at the expense of traditional outdoor sports. And the Expo meshes nicely with the Commission's recently developed Hunter and Angler Recruitment, Development and Retention Plan to draw young and old into, or back to, traditional outdoor sports and experiences.

"I think we have created the sort of event we set out to do," Fields said. "It is something families do together and many come back year after year. The Expo has a rural atmosphere, just like the old county fairs. It was timed

for right before the hunting seasons, when people are getting geared up, planning, anticipating, and learning more about their favorite outdoors pursuits. And, of course, we want to encourage young and old alike to be outdoors; to hunt, fish, camp, watch birds, whatever interests them. The Missouri River Outdoor Expo is an opportunity to sample the possibilities."

The Missouri River Outdoor Expo slogan, "An Outdoor Family Tradition," aptly describes the goal of the event – to provide a venue where parents, grandparents, aunts and uncles can spark interest in hunting, fishing and camping within their children, grandchildren, nieces and nephews, and pass on their outdoor heritage. ■

Editor's note: This year's Missouri River Outdoor Expo will be held September 19-20. Expo hours are 9 a.m. to 6 p.m. on Saturday and 10 a.m. to 4 p.m. on Sunday. There is no admission charge, but a valid Nebraska State Park Permit is required to

enter the park. Food vendors are on the grounds.

Other Commission-sponsored outdoor expo events for 2010 include: the east version of the Nebraska Outdoor Expo for fourth and fifth grade students on April 21-22 at Platte River State Park; the west version in Scottsbluff for fifth, sixth and seventh grade students May 4-5; the original Nebraska Outdoor Expo at Fort Kearny Recreation Area on May 13-14 for fourth through sixth grade students, and May 15 for the public; and the Missouri River Outdoor Expo at Ponca on September 17 for fifth grade students, and September 18-19 for the public. Additional information about outdoor expos can be found on the Internet at www.nebraskaoutdoorsexpo.org or by calling Nebraska Game and Parks Commission event coordinator Julia Plugge at (402) 471-6009.

OPPOSITE: A climbing wall provided by the U.S. Army gave youngsters an opportunity to safely try their hand, and feet, on sheer, vertical climbs.

BELOW: Game and Parks Commission wildlife biologist Tom Welstead demonstrated how to use different types of turkey calls to a group of future turkey hunters.



Returning Fire to the Ecosystem

Burning the Woodlands at Indian Cave State Park

By Gerry Steinauer

Native Americans understood the benefits of fire to eastern Nebraska's deciduous woodlands and frequently set them ablaze. Fires thinned the trees and brush in the stream bluff and floodplain woodlands, making travel easier, promoting fruit-bearing shrubs and acorn-producing oaks – both important food sources – and attracting game.

Early European settlers continued to burn woodlands for much the same reasons. However, that tradition was gradually lost in the early 20th century when forest fire suppression became official policy. The subsequent decades without fire, or with relatively few fires, have resulted in drastic changes in the tree composition and density of woodlands, impacting both native plants and wildlife populations.

This past spring, a 1,100-acre prescribed fire was conducted on the wooded Missouri River bluffs at Indian Cave State Park in Nemaha and Richardson counties. This burn was a first step to restore the park's woodlands and once again make fire part of the ecosystem.

Woodland Ecology

Prior to settlement, the bluffs and breaks of the Missouri River and its larger tributaries in eastern Nebraska were only partially wooded. Basswood, red oak, black walnut and other moisture-loving trees grew in the somewhat fire-protected bottoms and low on north- and east-facing slopes. Higher on these slopes grew the more open stands of bur and black oak, shagbark hickory and other trees that were more drought and fire tolerant trees.

The dry west- and south-facing slopes and ridgetops supported tallgrass prairie and savannah – prairies with scattered oaks. Lightning and Indian-set fires burned with intensity through grass-fueled prairies and open woodlands at least every few years, burning with less intensity or going out when they reached the denser low woodlands.

"The last fire to burn through Indian Cave State Park was about 40 years ago," said Bill Kerkow, Indian Cave State Park employee and longtime local resident of the area. "Old man Morehead to the north burned off his

woods and the fire worked its way down through the park area."

The recent lack of fire has allowed fire-intolerant shrubs and trees, such as rough dogwood, buck brush, hackberry, elms and eastern red cedar, to proliferate in the park's woodlands, shading out grasses and wildflowers that prefer open woodlands. Brush and trees have also overgrown the prairies and savannahs, so that they are restricted to narrow bands on only the highest and driest ridgetops in the park.

Oaks in particular suffer without periodic fires – oak seedlings and saplings require ample sunlight and will not survive to maturity in densely

shaded woodlands. Presently, Indian Cave's woodlands are too dense for oaks to regenerate, so without fire to thin brush and trees, they will eventually be lost. Most oak woodlands throughout eastern Nebraska are suffering this same fate.

Oaks and many other native trees are well-adapted to fire – the thick bark of oaks protects them from fire, and if top-killed by fire they resprout. Oaks may even promote fire – their fallen leaves remain thick and durable, readily burning and carrying fire when dry. In contrast, the thinner, less durable leaves of elms, hackberry and other fire-intolerant trees degrade rapidly and

burn hesitantly even when dry.

Other native prairie and woodland plants and wildlife will also eventually disappear if fire is not returned to the park. For example, Indian Cave is one of a few sites in the state where the endangered southern flying squirrel still survives. The diminutive squirrel requires open oak woodlands with large trees to provide den sites and acorns for food. Also, because these squirrels move between trees by gliding (hence their name) on skin membranes that stretch between front and hind legs, they must have open woodlands – they can't survive in tree-choked forests of elms and hackberries.

An additional problem at Indian Cave is that recent ice storms have littered the woodland floor with downed limbs and trees, adding to those that had accumulated during decades without fire. In some areas, the downed timber has made the woods nearly inaccessible to hikers, mushroom hunters and other park users, so fire is needed to help consume the downed wood.

The Burn

On the morning of March 19, 2009, a dozen Nebraska Game and Parks Commission employees and other conservationists gathered at Indian

PHOTO BY GERRY STEINAUER



Jarren Kuipers of the Northern Prairies Land Trust watches the Indian Cave State Park fire from a hiking trail. Here on a high, wind-exposed ridgetop with plenty of oak leaf litter the fire burned with intensity.

Cave State Park to set fire to 200 acres of Missouri River floodplain wetlands and 1,100 acres of bluff woodlands. It was a fairly good day for a prescribed woodland fire – the sky was clear, the air temperature was predicted to reach the mid-60s, and the winds were relatively light. The burn was originally planned for early March, but rain, snow and cool temperatures had postponed it. The snow had now melted, however, and the leaf litter was sufficiently dry to burn.

After finalizing their plans, the burn crew started burning the wetlands at 10 a.m. to set back the young cottonwoods that were invading the area. As the wetlands burned, a few crew members took all-terrain vehicles armed with spray units and burned around picnic shelters and other structures in the bluff woodlands to protect them from the main fire.

By 1 p.m. the wetlands had burned, so the crew ate a quick lunch and then got ready for the woodland fire. The woodland burn unit was bordered by a blacktop road on three sides and the Missouri River on the east, providing safe fire breaks from which to light the fire. Using drip torches filled with a

mix of gasoline and diesel fuel, four crew members set fire along the two miles of blacktop.

Once the fire was started, there was little for the burn crew to do except patrol the fire’s perimeter and watch the flames and smoke. The wind was generally from the south at about five miles per hour, so on wind-exposed slopes with lots of oak leaf litter the flames moved at a steady pace. Where it burned down slope and into the wind, the fire moved at a snail’s pace. Stronger winds would have sped the fire along and allowed it to burn more areas, as many slopes with few oak leaves did not burn.

Compared to prairie fires, which are fed by abundant grass litter and are in open country, deciduous woodland fires, fed by leaf litter and often in wind-sheltered hills, are slow burning. To speed the burn, a few burn crew members set fires along some of the many hiking trails that meander through the woods.

The only real danger with this burn was where standing dead trees caught fire near the road – these flaming towers could burn for several days, and if the wind were to pick up they could send



Commission employees Rick Souerdyke (left) and Brad Seitz douse a burning dead tree adjacent to one of the park’s blacktop roads.

PHOTO BY GERRY STEINAUER



PHOTO BY JON FARRAR

Dutchman’s breeches were one of several woodland wildflowers in bloom just weeks after the fire.

burning embers across the road into unburned areas, so all burning trees near the road were dowsed with water, cut down with chainsaws and allowed to burn out on the ground.

The fire worked its way through the woods throughout the afternoon and into the evening. Most of the burn crew departed at supper time, though a few stayed late into the evening watching the fire. At dusk, lines of flames still flickered in the woods and smoke hung heavy over the park.

The next morning some standing snags and downed logs still burned. Hiking trails prevented some patches with sufficient fuels from burning, so

crew members went into the burn unit’s interior and set fire to the unburned areas.

In all, approximately 60 percent of the woodlands within the unit burned. The areas that did not burn generally had few oaks and oak leaf litter. It is important to note that the burn had no negative impacts on wildlife – several tom turkeys were seen foraging among the burned leaf litter, white-tailed deer browsed in unburned patches, and songbirds sang profusely. Just weeks after the burn, Dutchman’s breeches, white trout-lily and other spring wildflowers had pushed through the ash and were in bloom.

This burn was a first step in reviving

the woodlands and hilltop prairies at Indian Cave State Park. Decades without fire had deteriorated the woodlands and it will likely take decades of fire to restore the woodlands to health. Portions of the park will likely be burned each spring and fall, but the cutting of small trees and brush in areas may also be needed. In time, proper management will reduce tree densities, allowing oaks to regenerate, enlarging prairie openings and enhancing native plant and wildlife populations.

Future burns will likely occur on weekdays and provide only a minor inconvenience to park visitors. Visitors

must realize a little smoke in their campground is a small price to pay for healthy woodlands and abundant wildlife. ■

Gerry Steinauer lives in Aurora and is a botanist for the Nebraska Game and Parks Commission’s Wildlife Division. He has been contributing stories and photographs to NEBRASKALAND since 1990.



Platte River Caddisfly

Rare insect may become state's next endangered species

Text and photos by Eric Fowler

There are a few species of caddisflies that call the Platte River Valley home, but with an adult life stage that allows them just a few weeks to fly around and be seen, few people are aware of that, or would even know a caddisfly if they saw one. One caddisfly species flew so far under the radar that it wasn't discovered until 1997. Presumably found nowhere outside the Central Platte, it was aptly named the Platte River caddisfly (*Ironoquia plattensis*). Already rare when compared to other insects when it was discovered, its numbers have since dropped in some locations, raising concerns that could earn it a spot next to 13 other plants, mammals, fishes, insects and amphibians found both in Nebraska and on the federal list of threatened and endangered species.

By August 8, 2009, the U.S. Fish and Wildlife Service (USFWS) is to publish its initial review on the status of the Platte River caddisfly in the Federal Register. This court-ordered deadline is in response to a petition by WildEarth Guardians, an environmental group that in 2007 petitioned the service to list the Platte River caddisfly and 205 other species as threatened or endangered.

Facing several threats, including changes to river hydrology, loss and degradation of habitat and threats from invasive species, it appears that such protection for the Platte River caddisfly may be warranted. But little is known about the obscure insect.

"We don't know if it should be listed or not," said Robert Harms, fish and wildlife biologist with the USFWS in

Grand Island. "At this point, we're still gathering information about the species and its threats. But given the declines in the number of insects at some sites, it could very easily meet the mark to make it a candidate species."

The Platte River caddisfly was discovered by Beth Goldowitz and Matt Whiles, biologists who were studying wetland sloughs and the amphibians, fishes and insects that inhabit them for the Platte River Whooping Crane Trust on its Mormon Island Crane Meadows property south of Grand Island. Following a wet year in 1995, scientists had noticed a huge spike of biological activity in the wetlands, especially in the number of frogs, toads and fish, and hoped to better understand the ecosystems, their value to migratory birds and how fluctuating water levels affected them.

In June 1997, biologists set up drift fences and pitfall traps – buckets sunk in the ground – to collect insects and invertebrates that were migrating out of the water and onto land. When they checked their traps one day, they found a surprise: "The bottoms of our buckets were just full of thousands of these caddisfly larvae," said Goldowitz. "We literally discovered this insect completely by accident."

Both Goldowitz, a fisheries biologist working for the Crane Trust, and Whiles, a Kansas State University entomologist, immediately recognized the larvae as caddisflies. But Whiles knew there was something different about this species – it was smaller and left its wetland habitats earlier than other caddisflies

known to inhabit the region.

There are about 1,350 caddisfly species in the order *Trichoptera* that inhabit freshwater rivers, streams, lakes, marshes and other wetlands. Caddisflies in general are small, moth-like insects with two sets of hairy wings that take the shape of a tent when folded against their bodies. Adult females lay their eggs on or under the water, and sometimes even in vegetation above it. In as little as three weeks, the eggs hatch into larvae which live underwater and, depending on the species, feed upon algae, vegetation or other insects. The larvae of some species roam freely on the bottom of whatever body of water they inhabit.



A Platte River caddisfly rests on a twig near a Hamilton County slough, one of 10 sites in the Central Platte River Valley where the rare insect is currently known to exist.

Others build cases with silk they produce and silt, rocks, sand or small pieces of vegetation that they carry with them throughout their life much like a snail carries its shell. A third variety builds a net that they use both as a retreat and to catch food. Larvae go through several growth or instar stages, shedding their rigid exoskeleton between each and expanding their case as needed. After their last larval stage, the insects pupate, a process that may last weeks or months. Some species pupate underwater and others on land. When pupation is complete, they emerge as adults. As adults, their primary purpose is to mate – they do not eat and it is a short life, lasting just

one to two weeks for most species. To ensure adults have a chance to mate, emergence is synchronized, with males hatching before females. Trout anglers know this phenomenon as the "hatch," common among caddisflies as well as mayflies and stoneflies.

While the caddisfly Goldowitz and Whiles found was similar to *Ironoquia parvula*, a species more common east of Nebraska, further work in the lab failed to match them to that or any other member of the genus. "At that point we had to collect adults in order to be able to definitively identify them," said Goldowitz.

Screened boxes were built and placed around the wetland at an elevation near

where the caddisfly larvae had been collected. Technicians working on the wetland study, which was funded in part by the U.S. Environmental Protection Agency, checked the traps daily for the next three months before adults finally emerged in late-September.

Specimens were sent to the science department at Wayne State College, where Kevin Alexander used a scanning electron micrograph to visually dissect male and female samples and confirm the find was indeed a new species. The insect was accepted by the American Entomological Society in 1999.

"That first year what we learned is that all of the adults emerge within about a 10-day period," Goldowitz said.



A Platte River caddisfly larva pokes its head out of its case in the entomology lab at the University of Nebraska at Kearney.

“That was it. Boom, boom, and it was over.”

In 1998, Goldowitz and Whiles collected larval samples monthly to study the lifecycle of the species, which they learned is closely adapted to the hydrologic regime of the sloughs and wet meadows it inhabits. After adults emerge from late-September through mid-October, they mate and lay their eggs on the surface film of water in shallow sloughs, linear depressions that were once river

channels. The eggs sink to the bottom, but do not hatch for about a month, presumably a safeguard against wetlands drying once more before becoming wet for the winter.

Unlike similar *Ironoquia* species, Platte River caddisflies grow very little after hatching in the fall and spend most of their first larval stage dormant on the bottom of the wetland, which can freeze solid during winter. Larvae build a case with small particles of sand and soil bound with silk and live in and carry

this case until they emerge as adults.

In February, the larvae begin growing and feed by shredding aquatic vegetation and plant material found beneath the water. In late-May or early-June, during the fifth and final growth stage, larvae move from the wetland to the adjacent wet meadow. The timing of this emigration occurs when wetlands often dry out for the summer, and is much earlier than other caddisfly species that pupate on land. Larvae spend the summer beneath the vegetative litter of the adjacent wet meadow, where they remain somewhat active but do not feed.

In early September, the insect pupates within its case and emerges later that month when surface and groundwater levels are rising and water is returning to the wetlands. Unlike other species of caddisflies, which fly upstream to lay eggs that then develop as they drift, Platte River caddisflies are poor fliers and don’t range far from the slough.

“They don’t need to because this is a wetland slough,” said John Reins, a University of Nebraska at Kearney (UN-K) graduate student who has studied the Platte River caddisfly. “The water stays relatively constant. They probably lay their eggs the same place that their mother laid her eggs, or pretty close, within 10 feet or so.”

Goldowitz continued to monitor the Platte River caddisfly on Mormon Island through 2003. In 1999, she branched out to look for other populations of the insect’s larvae at 17 sites between Overton and Chapman, finding them at five new locations, all within a 46-mile stretch of the Platte between Gibbon and Central City. In the fall of 2004, she conducted another search for the Nebraska Game and Parks Commission, taking sweep net samples at 28 sites along the Platte and Loup River in eastern Nebraska in hopes of capturing adults, but finding them in only two sites where she had previously found larvae. None were found on the Mormon Island site where the species was discovered. Bad weather scuttled plans to search similar habitats along the Elkhorn River.

UN-K entomology professor Wyatt Hoback and his students are continuing the search for the insect in known and new locations. This spring, Lindsay Vivian, using a Geographic Information



Platte River caddisflies use sand and silk to form a case they carry with them until they pupate and emerge as adults.



Lindsay Vivian holds a larval case left behind by a Platte River caddisfly that she found while searching the area around a Hamilton County slough with fellow University of Nebraska at Kearney graduate student John Reins.

System model she helped develop as part of a graduate study to help identify likely habitats, as well as studying aerial imagery on Google Earth, found larvae in six new locations, stretching its known range west to Kearney and east to Silver Creek.

“We thought it was so very rare, so to keep finding more populations is good news,” Vivian said. “I was definitely excited.”

While that is good news, the number of insects remains high in only two of the original sites where they were found. They are very low in number at two of the original sites as well as the eight new ones, and are not found two others.

Changes to the historic flow regime of the Platte River are the primary threat to the survival of the Platte River caddisfly and its wetland and wet meadow habitats. Winter ice jams and high spring flows once regularly sent water over a broad swath of landscape, creating new backwater and slough

habitat and scouring vegetation from old ones. High spring flows are now stored in irrigation reservoirs and seldom occur. Diversions and the proliferation of groundwater wells for irrigation in the region have reduced summer river flows and lowered groundwater levels, which provide water for wetlands and wet meadows in the valley that are utilized by many other fish and wildlife species. The effects of these changes were readily visible during the recent prolonged drought, in which the Central Platte ran dry each summer from 2002 to 2006, sometimes for months.

Additionally, the conversion of 75 percent of the historic wet meadows and sloughs to cropland, and intensive grazing on many of the remaining native grasslands, are also factors that have affected Platte River caddisfly numbers.

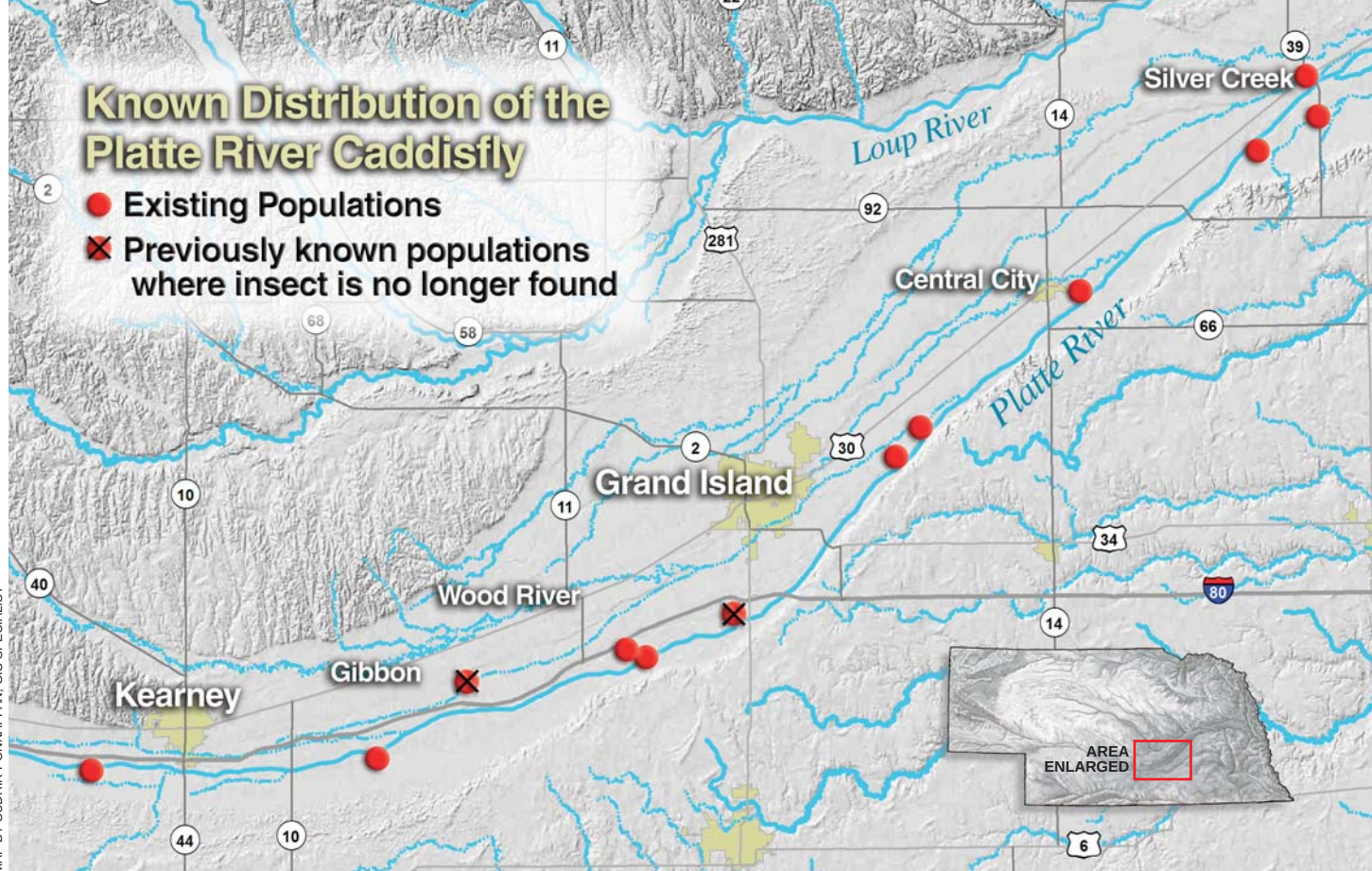
“Its evolutionary adaptation to the Platte River system and the historic flow regime makes it an important component of that whole system,” said Mike Fritz, zoologist with the Commission’s Natural Heritage

Program. “It represents how that system used to function with historical flooding and drying cycles and groundwater regimes that are unique to the Platte River and created and maintained those backwater sloughs and wet meadows.

“But most of those habitats have been either significantly reduced or severely degraded, so working on the conservation of the caddisfly works toward the conservation and restoration of those types of plant communities in the Central Platte River.”

Other threats to the Platte River caddisfly include invasive plants, some of them nonnative, such as phragmites, purple loosestrife, reed canarygrass, eastern red cedar and Russian olive that are encroaching on the Platte River caddisfly’s known habitats.

Also, the nonnative mosquitofish (*Gambusia affinis*), a minnow-sized fish introduced to Nebraska waters to help control mosquito populations, is known to feed on all aquatic invertebrates and has expanded its range since the discovery of the Platte



Known Distribution of the Platte River Caddisfly

- Existing Populations
- ✕ Previously known populations where insect is no longer found

River caddisfly. Hoback said mosquitofish are present at one of the two sites that have healthy caddisfly populations, as well as other locations where the insects' numbers have declined. Laboratory studies are underway at UN-K to determine how much

the fish might be affecting the insect.

Hoback and his students are also studying the longevity of caddisfly cases left on the banks of sloughs after adults emerge. "We don't know how long they persist, but we suspect they last more than a year," he said. Knowing the answer to that question will help make population estimates, which can include counts of cases found on land, more accurate.

The UN-K studies, funded by grants from the Service and the Commission, are leading to other new information about the insect. Hoback said that while collecting larvae this spring, they also collected sediment from the bottom of the wetland to take back to the lab. "We looked at the container and pretty soon we saw five more larvae we didn't know were there, and a little while later we found some more," he said. "So we learned they burrow into sediment, presumably to hide from predators. We're learning a lot by happenstance."

Still, much is yet to be learned about the insect. Researchers do not know whether flooding might carry larvae from one wetland to another, but it is believed the limited mobility of adults prevents females from seeking water in which to lay their eggs if the wetland

they emigrated from is dry.

Scientists also do not yet know if another wet period similar to the one that preceded the discovery of the species in 1997 could result in a significant increase in the number of the insects that are found, as well as the locations they are found in. Some sloughs where the species was found in 1999 were dry for several years, but have been wet for the past three and still no caddisflies have been found.

"I don't see any evidence of that happening, but I don't know what is causing the decline," Hoback said. "Nobody does, or even if it is declining."

"This particular insect has a life cycle of only one year, so it's a lot like the [endangered] Salt Creek tiger beetle – it's probably not hiding out for 10 years and then showing up in mass numbers."

No doubt many will question the need to provide federal protection to an obscure insect that may have never been abundant in number, but as has been the case with other species listed under the Endangered Species Act, the Platte River caddisfly is considered an indicator species – its decline mirrors that of its natural habitat.

Certainly, this caddisfly's value to

the world is not fully known, but its feeding habits – shredding vegetation on the bottom of wetlands – may help improve the health of the wetland. It may have also once provided an important food source for fish, birds and other creatures. In the slough where it was originally discovered, the Platte River caddisfly comprised 30 percent of the total insect biomass found there. Its decline is "a huge loss for everything that would prey on and use it as a forage base," Fritz said. "So that's what the value of something as small as these individual caddisflies are."

If the Platte River caddisfly is added to the list of threatened and endangered species, it may have an effect on property owners, especially if they need to obtain a federal permit, authorization or funding. But because caddisflies are not found in crop fields, farming would not be affected, nor would grazing and even some cases of wetland and river habitat restoration projects.

In this case, even becoming a candidate for listing could be a significant step toward its recovery. "It would definitely bring money to the table," said Harms. "That would allow us to do more research to see if we can restore these habitats or transplant these insects to restoration sites."

Federal funding could also allow more extensive searches for additional populations. Goldowitz said she never imagined she would be involved in the discovery of a new species when she started her work. "The fact that we happened to have selected a study site in this particular spot, that was really pure dumb luck," she said. "I don't know how else to describe it."

While initially dumbfounded by that luck, she then realized that finding a new insect wasn't that rare of an occurrence simply because so little research has been done on insects in Nebraska. Indeed, Hoback said that hundreds of new insects are described worldwide each year. "Careful observation leads to new information," he said.

Already that thought is playing out. "There are a lot of those little sloughs and drainages back through those areas that by and large we haven't been able to get on because they're on private land," Fritz said. "Once we start looking more, or if we can get access to more

sites, I don't think there's any question that we'll find more [caddisflies]. Now whether we find enough that it changes their status is hard to say.

"We might find that the listing isn't to the level of endangered. Maybe it's threatened, or maybe it doesn't get listed, but because it is a declining species it means it is one we have to look at and focus conservation work on."

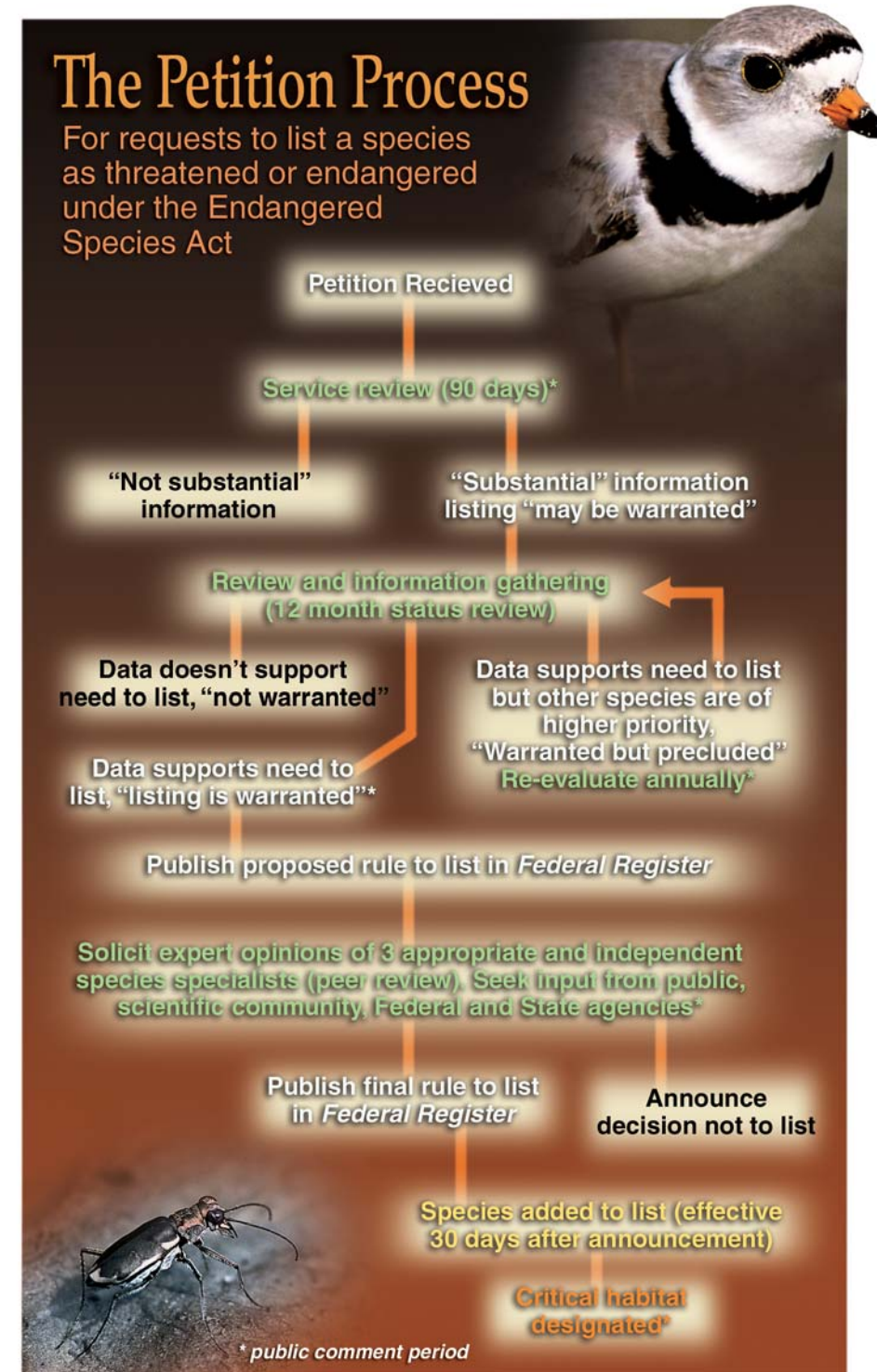
"It's pretty clear that this species is

probably in trouble," said Harms. "We're trying to do something in the 11th hour. It's hard to work with a species when we don't have many populations left. We're in triage mode." ■

For more on the Platte River caddisfly, visit the site developed by University of Nebraska at Kearney students and staff at <http://cgi.unk.edu:16080/hoback/prcf/>.

The Petition Process

For requests to list a species as threatened or endangered under the Endangered Species Act



The small hairs on a Platte River caddisfly's wings sparkle in the sunlight.

Dove Demographics

Since 2003, wildlife managers have intensified mourning dove research.

By Jon Farrar

Hunters harvest more mourning doves nationwide than all other migratory game bird species combined. Even in Nebraska, which does not have the long dove-hunting tradition found in southern states, they are second only to pheasants in number of upland game birds taken by hunters. To better understand the species and improve future management, biologists have directed considerable attention to doves in recent years.

During a mourning dove study conducted from 2003 through 2005 in 29 states, including Nebraska, about 100,000 birds were banded, and hunters returned about 5,000 bands. Biologists estimated 85 percent of the banded doves shot by hunters were reported.

The object of the study was to determine harvest rates, estimate annual survival and provide a geographical distribution of the harvest.

A more ambitious mourning dove study has been underway since 2006 and will continue into the foreseeable future. Doves are again being live-trapped in late summer. Spots of bare ground, where doves prefer to forage for seeds, are baited with millet prior to wire-mesh, walk-in traps being placed on the feeding areas. Because of the traps' funnel-entrance design, doves find it easy to follow the seed trail into them, but nearly impossible to find their way out. Each trapped bird is aged, sexed and fitted with an aluminum U.S. Fish and Wildlife Service (USFWS) leg band before being released. Last year, the Nebraska



Commission summer workers Joshua Schnitzler (left) and Travis Kenny band a dove trapped on George Syas Wildlife Management Area.

Game and Parks Commission operated seven dove trapping stations and 1,063 doves were banded.

Jeff Lusk, Nebraska Game and Parks Commission Upland Game Program Manager, said the goal of the study is to gather demographic data so a computer model can be constructed to allow more precise management of the species and its harvest, similar to surveys and models used to manage waterfowl. Additionally, some dove hunters are randomly selected and asked to return wings from doves harvested during the first week of the season and mail them to the USFWS, just as waterfowl hunters have for many years. With the additional information and population model, wildlife managers will be better able

to adjust the harvest to be compatible with the dove population. "We want a better understanding of the population dynamics for mourning doves, which will allow for better management," Lusk said.

The current survey is nationwide. Unlike waterfowl, where management is defined by four long-established, continental flyways, there are only three dove management units – Eastern, Central and Western. The Central and Mississippi flyways of waterfowl have been merged into the Central Management Unit, as migrating doves do not sort in mid-continent, as do ducks and geese.

An ancillary study within the larger survey work is designed to determine how to simplify the band reporting process. Traditionally, the aluminum USFWS band asked hunters to report harvest information either by phone (1-800-327-2263) or by mail. This year, a second type of band will be attached to every other banded dove, and hunters may report their recovery information either by mail or at the internet website reportband.gov. Like waterfowl bands, hunters may keep the bands from doves they shoot.

Dove hunters are encouraged to assist in the study by reporting bands found on birds they shoot, leaving wings in collection boxes placed on some public hunting areas, or sending wings to the USFWS if asked to participate in that survey. All are ways that hunters can help ensure a thriving dove population and the opportunity to hunt them in the future. ■

Many Litterers Can Be Saved

Knowing why you visit nature may be reason enough to clean up after self.

By Doug Carroll

Litter. It's a common sight. It seems like everywhere you go, you see it. Often it seems like you can hike to the remotest part of a pristine wilderness and still find someone's soda can or discarded plastic water bottle.

It doesn't have to be that way. Even litterbugs will tell you that litter is unsightly, but they try to justify their actions by saying that others will pick up their aluminum cans and that fishing line makes "good nesting material for birds," when in actuality, it more often becomes a death trap for various species.

Many of the worst litter offenders are more absent-minded than devious – boaters more concerned with finding a good seat before gaining boat speed instead of stowing away plastic wrappers and pop bottles, families so excited about being outside that they don't

dispose of picnic trash before the wind whisks it away and hunters who are more excited about the next flush or fly by than picking up the hulls from their last volley (dove hunters are the perfect example of these offenders – I don't know how many boxes of empty hulls I picked up last year on opening day from where just one hunter had sat and shot at doves all morning!).

There's not much that can be done with the dregs of society that intentionally litter at will, but the rest of these offenders can be reached. It often takes just a few seconds to assure that you will not be the cause of litter. Here are some suggestions from the Nebraska Game and Parks Commission for keeping land and water clean:

- **Leave only your footprints** – Properly discard of trash when camping, fishing, hunting or hiking. If visiting a

Time It Takes To Decompose

Banana peel	3-4 weeks
Paper bag	1 month
Cardboard	2 months
Cotton rag	5 months
Wool sock	1 year
Cigarette butt	2-5 years
Leather boot	40-50 years
Rubber sole	50-80 years
Tin can	80-100 years
Plastic 6-pack ring	450 years
Aluminum can	200-500 years
Disposable diaper	550 years
Plastic bag	20-1,000 years
Plastic jug	1 million years
Glass	1-2 million years
Styrofoam	1 million years

NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

remote spot where no trash cans are available, pack it out with you. Don't leave trash in a fire ring.

- **Recycle trash** – Take the aluminum cans, plastic bottles and paper home with you to recycle.
- **Recycle fishing line** – Bins specifically designated for these purposes are located at many eastern Nebraska lakes and sporting goods stores.
- **Reuse** – Consider reloading expired shotgun shells.
- **Pick it up** – If you see trash, properly dispose of it. Take a garbage bag with you when you visit a park or lake and clean up what you can. Then teach a child how to do the same thing.

There is always going to be a contingent of people who will throw trash out car windows and refuse to pick up after themselves. These people don't understand or care that litter is unsightly, polluting and potentially fatal to fish and wildlife that may ingest it or become entangled with it.

However, there is also a long (hopefully much longer) line of outdoor enthusiasts who do care about the environment and who could make nature a much cleaner place if they just slowed down a bit and remembered why they want to be outside in the first place. After all, I'm pretty sure it's not for the chance to view or photograph a litter-marred landscape. ■

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Little Ducks – Big Rewards

Teal hunting a great introduction for the novice waterfowler.

By Aaron Hershberger

The sun was not yet up but the September day had already begun. In Nebraska, where there is water, there is life – especially in the fall. From my bucket in the bulrushes I had already seen a white-faced ibis, greater yellowlegs and a smorgasbord of ducks, including some northern shovelers, a few mallards and blue-winged teal – lots of teal. My intent that late summer morning was to lure a few of those teal within shotgun range through the use of eight plastic decoys I had floating 20 yards downwind. I didn't have to wait long.

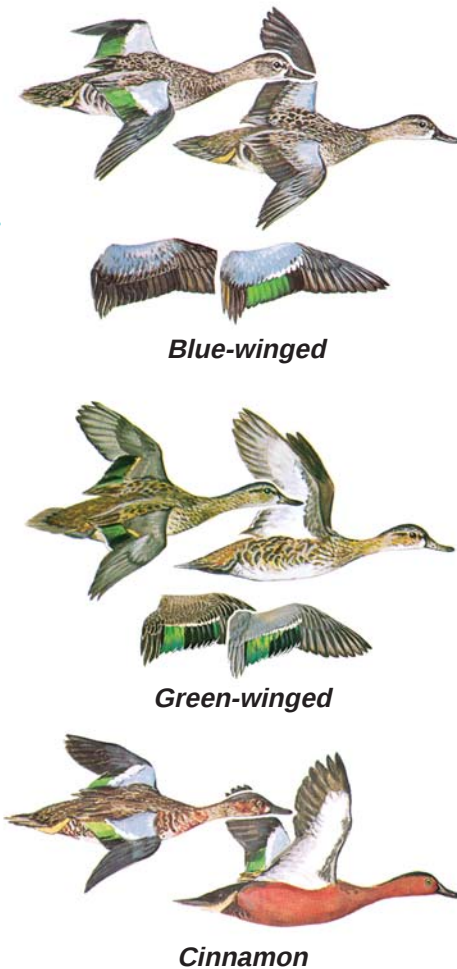
Nebraska is blessed to have some pretty special waterfowl hunting opportunities, one of which is the September teal season that began in 2000 and takes place in about the southern one-third of the state. Being a waterfowl production state (which simply means that ducks nest here), Nebraska is very fortunate to offer such a season – in fact, Nebraska is the northernmost state in the Central Flyway that is allowed an early teal season. The reason for the September season is that teal, especially the blue-winged variety, are early migrants,

oftentimes beginning their trip south to wintering grounds by mid-August, although early to mid-September are peak migration times in Nebraska.

The Three Teal

There are three different species of teal in North America, which are the smallest puddle ducks we have. Blue-winged and green-winged teal are the most common and can be found statewide. Cinnamon teal are seen less often, with some seen each year in western Nebraska. In September, all three species are still in their summer brown, which is called eclipse plumage.

However, blue-winged and cinnamon teal, which look almost identical at this time, have a very noticeable light-blue wing patch that can be seen in flight. The smaller green-winged teal lack this wing patch, but does have a beautiful, iridescent green speculum. All three species tend to be low flyers as they move around the marsh – sometimes being just high enough to clear the wetland vegetation. Being able to separate teal from the rest of the duck world is very important during the



COURTESY OF DUCKS UNLIMITED

early teal season, as they are the only ducks that may be harvested at that time.

Why Teal?

Teal are fun to hunt and are darn tasty when grilled. They almost always seem open to the idea of at least buzzing by your decoys and seem to have an urge to move about the marsh from time to time throughout the day – which makes them great ducks for the aspiring waterfowler. Their flying abilities make them a challenging target and the extended season gives seasoned hunters the excuses needed to chase them.

Tips for New Teal Hunters

Because duck identification is critical, teaming up with a seasoned teal chaser for your first hunt or two is not a bad idea. However, teal hunting is also easily accomplished by the do-it-yourselfer. Regardless of your experience, it's always a good idea to put the sun behind you – this will help you distinguish teal from other ducks. In fact, afternoon hunts instead of early morning outings make identification easier as well. You may especially want to learn to identify northern shovelers, aka spoonies – these big-billed ducks are common and have light-blue wing patches similar to blue-winged and cinnamon teal, but their much larger body and bill size make them easy to differentiate.

Thick cover makes a great place to hide from ducks, but is terrible for locating downed birds. Hunting the edges of vegetation and only taking shots at birds over open water will be more productive and keep you from spending a lot of time looking for your harvest.

What You Need

Though some of us like to use lots of gear, the beauty of teal hunting is that you don't really need much – other than your required permits and stamps (see OutdoorNebraska.org for details) all you need is a shotgun, some non-toxic shotshells (No. 4 steel works

well) and a place with teal. I love to decoy ducks, so I take a few decoys, mostly hens, to help attract attention to my end of the water. Something to sit on will also make your hunt more comfortable and enjoyable. I also wear hip boots or waders to keep myself dry, although during one teal season when the water was warm and I didn't have waders, I just strapped on some old boots and splashed right through the knee-deep water to where I wanted to hunt.

Where to Hunt

Teal rely on wetland areas for home and groceries, so you must find water to locate teal. All water, however, is not equal. Being a small duck, teal prefer shallow water areas with lots to eat, such as smartweed, sedge and pondweed seeds. Teal also seem to have an affinity for the mud flats found around very shallow waters. When wet, the Rainwater Basin area in south-central Nebraska is a great spot for teal, and several of the area's basins are

open to public hunting. Farm ponds can hold good numbers of birds as well, especially during dry years, and nearby rivers should never be ruled out.

During really rainy years, teal can also be found on large puddles in the middle of crop fields and pastures. Just remember that you must always obtain permission to hunt private lands in Nebraska, whether it is posted or not.

On a hunt last year, the graceful, twisting flight of an approaching blue-winged teal quickly brought the bird over the decoys and I instinctively shouldered the shotgun as I stood. Three empty shells floated on the water as the teal winged its way to parts unknown. Nebraska's teal season was underway. ■

Aaron Hershberger has been an Outdoor Education Specialist for the Nebraska Game and Parks Commission since 2007.



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▲ This picture was taken in 1936 in Falls City, Nebraska. My brother, Vern, was four years old and I was six. By the 1936 season, all live decoy hunting had been banned nationwide, so Dad called the ducks in himself. These ducks were bagged on the Missouri River by my father, Glen L. Wachtel. Dad used an L.C. Smith side-by-side 12-gauge shotgun.

— Glen M. Wachtel, Yoncalla, Oregon



▲ This picture is of my then-fiance, now wife, Maureen (Mo) of Omaha, taken in the winter of 1962 near Union, Nebraska. It was her first (and last) hunt. After she shot this jackrabbit, we were near some thickets and scared up a covey of quail. She got so scared, she tripped in the mud with the gun.

Yours is a great magazine, I look for it each month.

— Dave Folda, Omaha, Nebraska



▲ This is a picture of my father, Herman C. Johnson (left), and my brother, Herbert Johnson, on our farm north of Fairfield, Nebraska in 1925.

They were paid 10 cents for each of these crows they shot. They are each holding opossums they had gotten also.

They both loved to hunt coyotes and go fishing often.

— Lois Dilk, Big Springs, Nebraska



▲ I have been an avid hunter and fisherman all my life. I grew up as a close friend with Tim Farrar, (NEBRASKAland Senior Editor) Jon Farrar's nephew. And my father was a close friend of Jon's brother, Tom Farrar. They all were well mastered hunters and fishermen. And with NEBRASKAland forever being in our home, I have always been a loyal fan. With my father's health in decline, I thought I would lift his spirits by sending you one of his old-time hunting pictures. This is a late 1950s Sidles Auto Parts Company pheasant hunting trip which took place in the Broken Bow area. In the back row are (from left to right) Pepper Morris and Jack McGirr. In the front row are Gary Kosbau, Rod (the Broken Bow Manager), Vern Bollish, Bill Hesson, Don Hinrichs (my father), and Dale Mills. All were Sidles employees from throughout the state. It appears like it was much more of a successful hunt than any I have ever been on!

— Hugh H. Hinrichs, Norfolk, Nebraska

Send contributions to: Portraits from the Past, NEBRASKAland Magazine, P.O. Box 30370, Lincoln, NE 68503-0370. Photos should show people enjoying Nebraska outdoor activities, such as camping, boating, hunting or fishing, and must have been taken before 1970. We will give priority to unusual photos or activities. When possible, please include a story about the photograph and identify the people, places and approximate date it was taken. Photos will be returned.

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