



September/October 2016

Xplor

**HEY
LITTLE
CUB,
HOW'S
LIFE?**

A BEAR
RESEARCHER
WANTS
TO KNOW



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Whether they're headed north, south, east, or west, these feathered flying aces are the best.

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Marbled orb weavers spin magnificent webs from early September until the first hard frost.

by Noppadol Paothong



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ON THE COVER

Black Bear Cub
by David Stonner

GET OUT!

DON'T MISS THE CHANCE TO DISCOVER NATURE AT THESE FUN EVENTS



Monarch

2 Catch **MONARCH MANIA!** Tag and release live monarch butterflies, get free native milkweed plants, and learn how to help our monarch population. All ages. Anita B. Gorman Conservation Discovery Center in Kansas City. September 17. 9:30 a.m.–2:30 p.m. Call 816-759-7300 for more information.

Join us for **DISCOVER NATURE — FAMILIES: ARCHERY BASICS.** Learn how to handle and shoot a bow and arrow, and then go practice on the archery range. You may bring your own bow or use ours. All ages. Andy Dalton Shooting Range and Outdoor Education Center near Springfield. September 8. 6–7:30 p.m. Call 417-742-4361 to register.

See live Missouri snakes, learn how to identify them, and learn which are venomous at **CONSERVATION KEEPERS: SNAKES ALIVE!** All ages. Northeast Regional Office in Kirksville. September 17. 1–2 p.m. Call 660-785-2420 for more information.



Eastern gartersnake

Hit the trail for a **NIGHT HIKE** and uncover the mysteries of Missouri's secretive nighttime animals. All ages. Cape Girardeau Conservation Nature Center. October 7. 7–9 p.m. Call 573-290-5218 to register beginning September 15.



Raccoon

Discover Nature at **OWL-O-WEEN**, where you will meet three owls from Dickerson Park Zoo. Explore the myths and superstitions surrounding these mysterious birds. All ages. Twin Pines Conservation Education Center in Winona. October 27. 6–7 p.m. Reserve by October 21. Call 573-325-1381.



Great horned owl

Don't you just love fall? The weather cools off, and there are more fun things than ever to see and do outside. Experience some of these natural events.

SEPTEMBER 4

Jewelweed seedpods explode when touched.

SEPTEMBER 17

Hunt for puffballs and other fall mushrooms.

SEPTEMBER 21

Listen for migrating birds during evening hours.

OCTOBER 8

Listen for the trill of field crickets.

OCTOBER 17

Peak of fall color begins in maples, oaks, and hickories. Now is a great time to hike a trail or float a stream.

OCTOBER 27

Watch for beavers. Usually active at night, they're now gathering winter food during the day.

WHAT IS IT?

DON'T KNOW?
Jump to Page 20 to find out.



- ① At rest, I look like a leaf.
- ② But disturbed, I reveal my surprise.

- ③ I'm a threat? Oh, you bet!
- ④ The proof you can see in my "eyes."

Into the WILD fall forest

Before winter's whiteness drifts in, Missouri's trees paint our state with dazzling colors. But pretty leaves aren't the only things you'll find in a fall forest.

Did You Know?

Maple leaf

The orange and yellow colors that leaves display in autumn are there all the time, you just can't see them. A green-colored substance called chlorophyll (*klor-o-fill*) covers up other colors most of the time. Chlorophyll has an important job. It uses sunlight to make food for the tree. But when days get shorter in the fall, leaves quit making chlorophyll. The green fades away, allowing orange and yellow colors to shine.

Take a Closer Look

Did that bit of bark just move? No, you've likely spotted a tiny forest bird called a brown creeper. Creepers fly to the bottom of a tree and spiral up the trunk, around and around, snapping up insects as they go. When they reach the top, they fly down to a new tree and start the dizzying climb again.

Taste

If you find a tree with knobby black bark, look up. You'll probably see orange, golf-ball-sized fruits hanging from its branches. **Persimmons** taste yummy — if they're ripe. If they aren't, one bite will make your mouth pucker like you drank a whole jar of pickle juice. When a persimmon is slightly squishy, it's ready to eat.

Where to Go

The Show-Me State's forests turn showiest in mid-October when oaks and hickories blaze with color. To plan a leaf-peeping adventure, check out fall color reports at short.mdc.mo.gov/Z4E. Then, head to one of these fine forests:

- 1 Poosey Conservation Area
- 2 Three Creeks Conservation Area
- 3 Burr Oak Woods Conservation Nature Center
- 4 Powder Valley Conservation Nature Center
- 5 Angeline Conservation Area
- 6 Ruth and Paul Henning Conservation Area



What Happened Here?

Owls eat their prey whole. Once the unlucky victim lands in the bird's belly, its soft, meaty parts are quickly digested. Bones, fur, and teeth — which are too hard to digest — are barfed up a few hours later as a hairy gray pellet.



Did You Know?

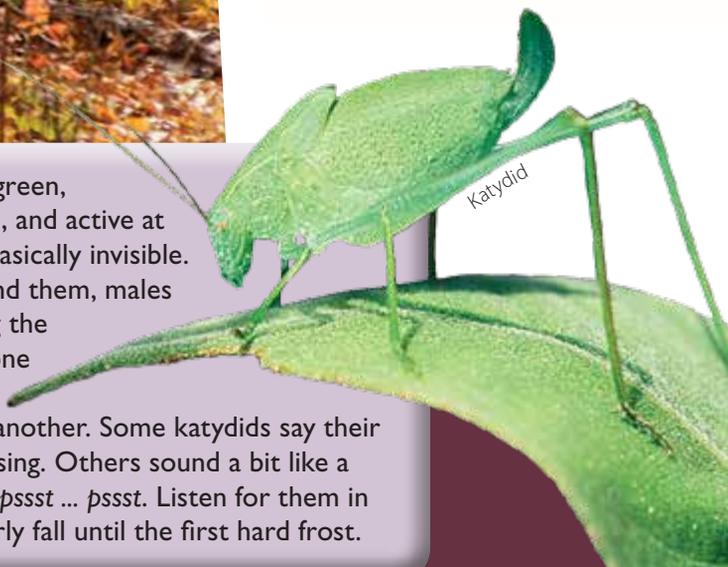
In the fall, chipmunks have just one thought in their furry little heads: storing food for winter. The hardcore hoarders forage on the forest floor, stuffing their cheeks like grocery sacks so they can scurry home and stash their loot. A single chipmunk may pack its winter pantry with enough seeds and nuts to fill nine 2-liter soda bottles.

Heads Up!

Deer season starts in the fall. Be respectful of hunters and wear hunter orange when you're in the woods.

Listen

Katydids are green, shaped like leaves, and active at night — they're basically invisible. To help a mate find them, males "sing" by scraping the smooth edge of one wing against the rough surface of another. Some katydid say their name when they sing. Others sound a bit like a sprinkler: *psst ... psst ... psst*. Listen for them in treetops from early fall until the first hard frost.



INTO THE WOODS

WITH A BEAR RESEARCHER

Jeff Beringer studies bears. Maybe because his last name starts with “Ber?” Or maybe because studying bears in the woods is fun, surprising, and important? Let’s ask him!

XPLOR:

Jeff, how long have you been studying bears?

JEFF:

Fifteen years. I got started studying bears in Tennessee, and I’ve been doing bear research for the Missouri Department of Conservation for about 10 years.



XPLOR:

Why are you researching bears in Missouri?

JEFF:

Our bear population is growing, and that's good news. For a long time, we had very few bears. That's because people hunted and killed too many of them back before we had hunting laws. Now that bears are making a comeback, they're spreading out to find food and mates. We need to understand bears so we can keep their numbers strong in Missouri — and help the people who live and camp near them stay safe.



XPLOR:

Why do you walk around the woods holding up a TV antenna?

JEFF:

My team and I are trying to find a bear den. We outfit the bears we study with satellite collars, and we check up on the bears every winter. To find them, we use a special antenna that beeps when there's a bear nearby. When the beep gets really loud, we start looking for a cave, a hole, or a big hollow tree. Anything a bear can fit its head in, it can fit its body in.



XPLOR:

What's the first thing you do when you find a sleeping bear?

JEFF:

We look at the bear's size to determine how much knockout medicine to give it, and then we poke it in the butt with a needle.

XPLOR:

Is it scary to poke a sleeping bear?

JEFF:

A little. Some bears are more reactive, and some hardly lift their heads up. They're more likely to be in a deeper sleep when it's really cold, so we try to check on adult bears without cubs in January.



XPLOR:

When do you look for the cubs?

JEFF:

We check on the cubs in March. We hold them to keep them warm, but you should never try to catch and hold a cub.



XPLOR:

Here's a bear with a bandana around its eyes. Are you worried it will recognize you and warn the others?

JEFF:

Ha! No, after the knockout medicine goes to work, we put protective drops in their eyes and then cover them up. Also, when their eyes are covered, they seem to be more relaxed.



XPLOR:

It also looks like you give the bear a manicure while it's asleep.

JEFF:

Actually, we do a lot of body measurements — paws, claws, neck, teeth, how long the bear is, and how much it weighs. We want to see how much it has grown and to measure its health overall. We compare the info we gather during each encounter to past records.



XPLOR:

What's the most fun thing about studying bears?

JEFF:

Visiting the dens and seeing how the mama bears do from year to year. It's always nice to get reacquainted with them. Sometimes when we are homing in on a den and finally find it, we see a mama bear looking at us. She knows we're coming.



XPLOR:

What was your scariest experience studying bears?

JEFF:

I was crawling in this rock crevice, and a bear made a bluff charge — that's when they come close, but don't make contact. It actually spit on me! It was a mama bear with three yearlings, and I was trying to count them. I tell everyone never corner a bear, and then I corner a bear ...

XPLOR:

What should *Xplor* readers know about bears?

JEFF:

A fed bear is a dead bear. A bear that learns to link food with people will become a danger and have to be killed. Be careful to bring in pet food and garbage, especially at night, and especially if you live or camp in bear country. That's most of southern Missouri.

How big is your paw?



A bear's front paw is about 5 inches wide, and its big toe is on the outside — the opposite from yours.

XPLOR:

What's the most surprising thing you've learned about bears?

JEFF:

They're very intelligent. I saw a video of a bear laying branches across an electric fence to get to honey without getting shocked. Other than humans, bears are the most intelligent mammals in Missouri.

XPLOR:

One last question — do bears poop in the woods?

JEFF:

Not as much as you'd think! When bears go into hibernation in November, they don't eat, drink, or poop for five months!

XPLOR:

That's amazing! Thanks, Jeff!

Learn more about Jeff's cool research at the **MISSOURI BLACK BEAR PROJECT**, where you can track individual bears. Find it at short.mdc.mo.gov/Z43.



A FED BEAR IS
A DEAD BEAR.
DON'T FEED
THE BEARS!

Masters of Migration



by Matt Seek
art by Mark Raithel

More than 300 kinds of birds can be seen in Missouri, and over half of them migrate. Migration is when an animal lives in one place for part of the year and goes to a new place to live for the rest of the year. Some birds migrate just a short distance. Others make epic journeys. Here are a few of Missouri's migration masters.



Fuel-Efficient Flier

What weighs less than five pennies and can fly nonstop for more than three days? **Blackpoll warblers** spend winter in the rainforests of South America. To get there, the tiny birds fly 1,800 miles over the Atlantic Ocean without stopping. Gram for gram, this is the longest nonstop flight of any bird in the world. Blackpolls prepare for the long haul by stuffing their beaks with bugs. The fat they pack on fuels their flapping like gasoline fuels a car.

The only difference? If your car used fuel as efficiently as a blackpoll, you could drive 720,000 miles on a single gallon of gas.

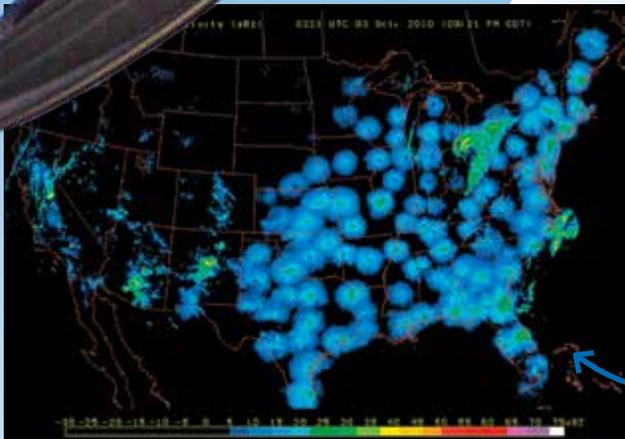
Just. Keep. Flapping.

Because of their black-and-white color pattern, some people call **bobolinks** “skunk blackbirds.” But nothing stinks about how far these little songbirds can fly. Bobolinks nest in prairies and grasslands of the Midwest. When they’re done raising babies, they point their beaks south and fly all the way down to rice fields and marshes in Paraguay and Argentina, a round-trip distance of nearly 13,000 miles. Bobolinks can live to be 10 years old. At that age, a bobolink will have traveled a distance equal to five trips around the Earth!



Pre-Migration Celebration

Purple martins live in the Show-Me State (and most of the eastern U.S.) during the summer, performing acrobatic flights to snap up insects on the wing. When bugs bug out in the fall, martins head to South America. But before they leave, the crowd-loving birds gather in huge flocks. One multitude of martins near St. Charles contained more than 100,000 birds. Another in South Carolina contained more than 700,000! Their flocks can grow so enormous that meteorologists often spot them on weather radar. The gatherings look like **blue doughnuts** on a radar map.



Content archived by Paul Hurtado from the NEXRAD Radar page run by the Department of Atmospheric and Oceanic Sciences at the University of Wisconsin-Madison.



Swirliest Migration

Broad-winged hawks nest in the eastern U.S. and spend winter in Central America and the Amazon. To save energy during what can be a two-month-long, 4,000-mile flight, broad-wings ride rising air currents high into the sky. As the hawks go up, up, up, they circle round and round like soup noodles stirred by an invisible spoon. These flocks or “kettles” often contain thousands of hawks riding the same air currents. When the hawks get high enough, they glide forward to catch the next current.



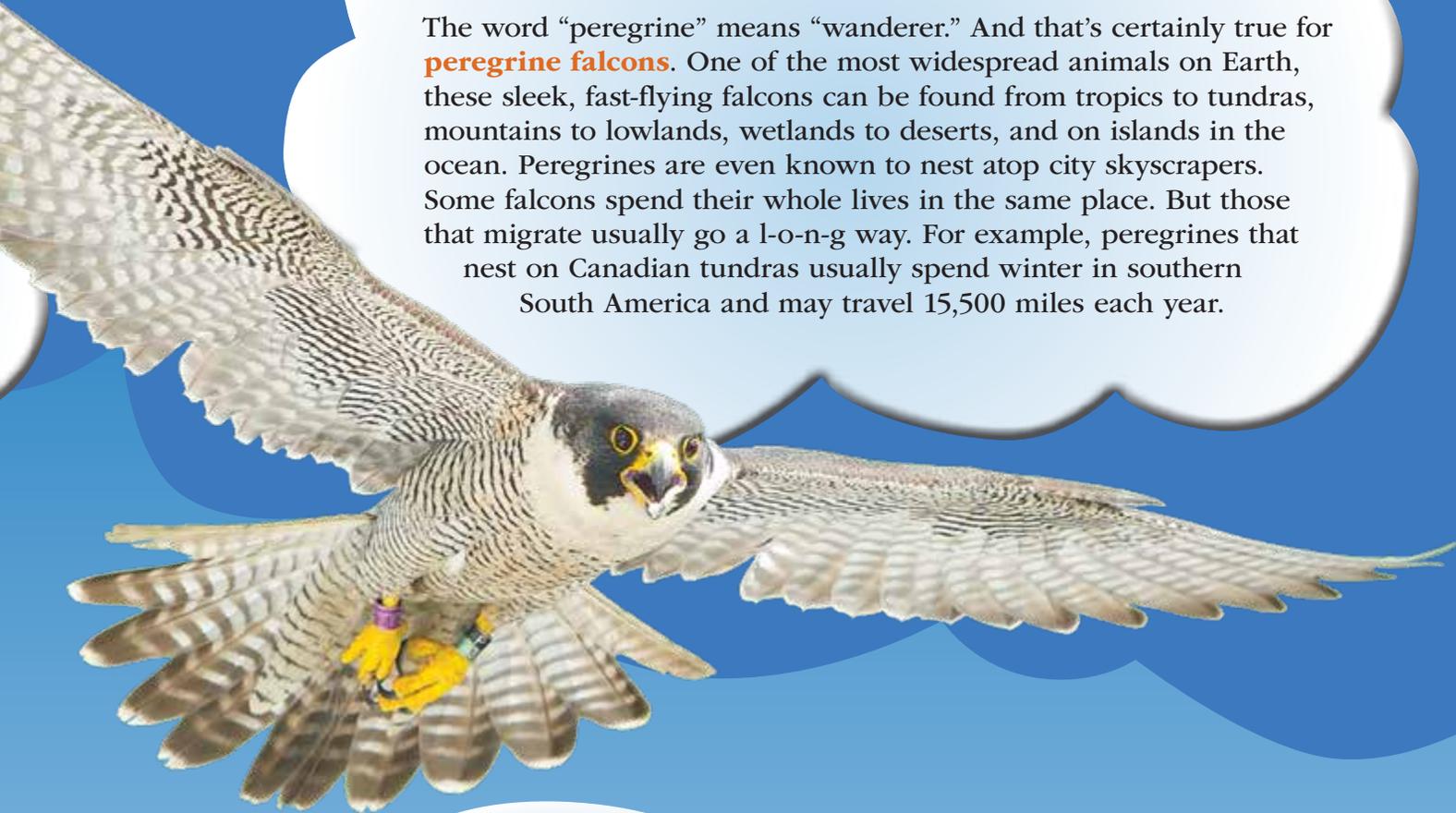
Why Do Birds Migrate?

Why do migrating birds fly such a long way? Some people say because it's too far to walk, but the real reason is to feed and to breed. Birds move north in the spring to take advantage of lots of food and nesting sites. When food grows scarce or they're done raising their young, they head south. How do birds know when to go? They likely get the itch to migrate from changes in temperature, day length, or food supplies.



Worldwide Wanderer

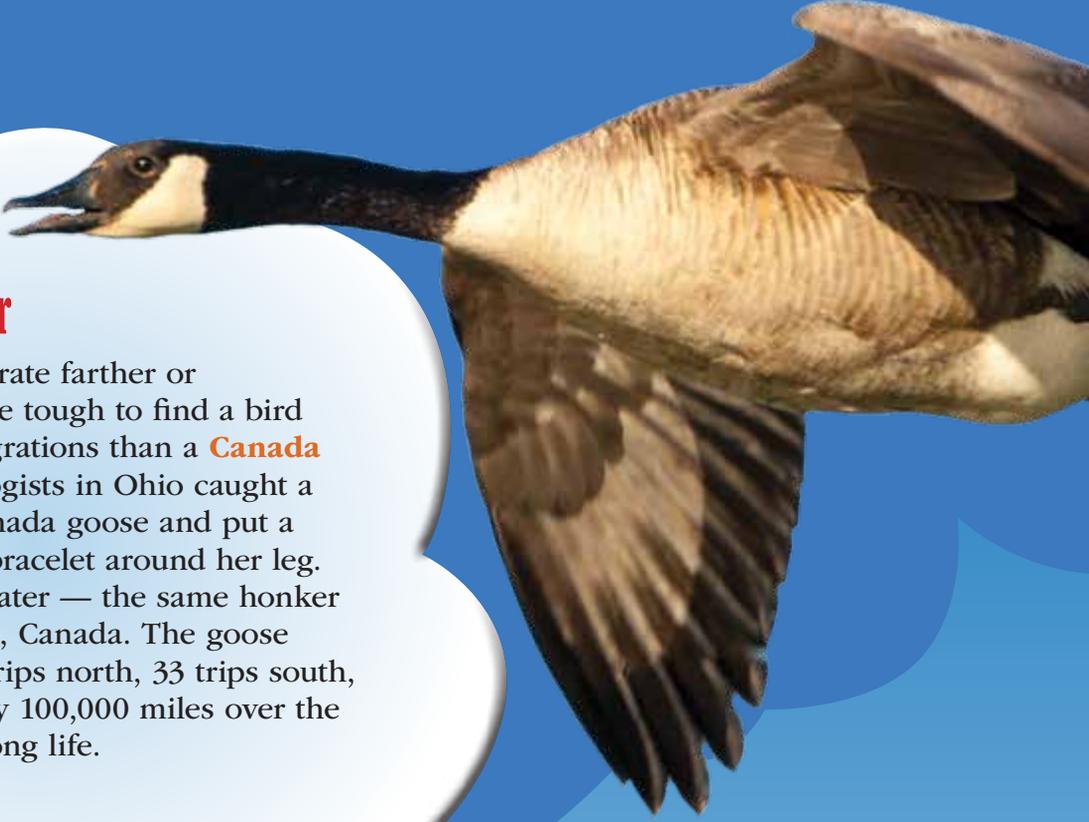
The word “peregrine” means “wanderer.” And that’s certainly true for **peregrine falcons**. One of the most widespread animals on Earth, these sleek, fast-flying falcons can be found from tropics to tundras, mountains to lowlands, wetlands to deserts, and on islands in the ocean. Peregrines are even known to nest atop city skyscrapers. Some falcons spend their whole lives in the same place. But those that migrate usually go a l-o-n-g way. For example, peregrines that nest on Canadian tundras usually spend winter in southern South America and may travel 15,500 miles each year.



Mass Migrator

When **snow geese** migrate, they like to be loud and in a crowd. The snow-white birds (which can also be bluish-gray) fly south in noisy flocks that can contain hundreds of thousands of geese. Along the way, the flocks swirl down to feed in fallow fields and wetlands, blanketing the ground. The more geese in the group, the more eyes there are to keep watch while other geese feed. If a lookout spots a predator, it honks an alarm, and the whole flock takes flight like an upside-down snowstorm.





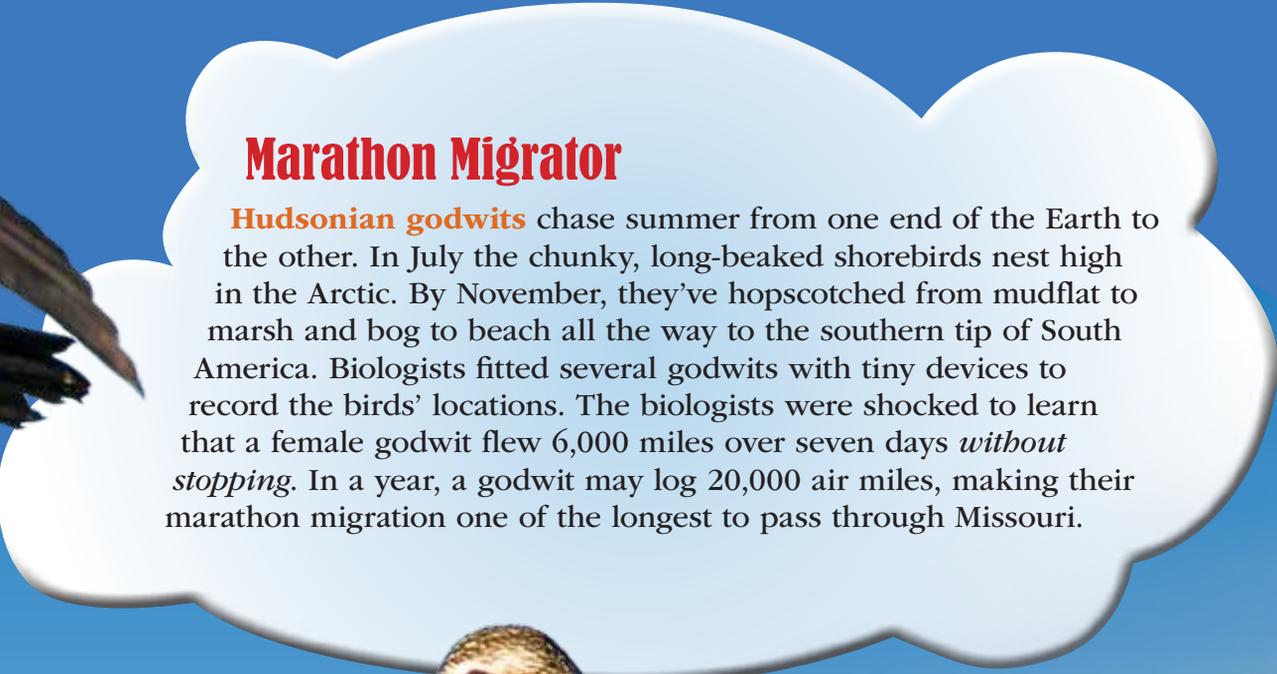
Oldest Migrator

Other birds may migrate farther or faster, but it would be tough to find a bird that makes more migrations than a **Canada goose**. In 1969, biologists in Ohio caught a 1-year-old female Canada goose and put a metal identification bracelet around her leg. In 2001 — 32 years later — the same honker turned up in Ontario, Canada. The goose had likely made 33 trips north, 33 trips south, and covered nearly 100,000 miles over the course of her long life.



Fastest Flier

Compared to other world-class migrators, **red-breasted mergansers** don't travel all that far. But these fish-eating waterfowl can sure get where they want to go in a hurry. To take flight, mergansers must pitter-patter across the water's surface for several yards. Once airborne, however, they can boogie along at a blistering 80 miles per hour! Mergansers nest in northern Canada and spend winter along the coasts of North America. Some pass through Missouri on their way north and south.



Marathon Migrator

Hudsonian godwits chase summer from one end of the Earth to the other. In July the chunky, long-beaked shorebirds nest high in the Arctic. By November, they've hopscotched from mudflat to marsh and bog to beach all the way to the southern tip of South America. Biologists fitted several godwits with tiny devices to record the birds' locations. The biologists were shocked to learn that a female godwit flew 6,000 miles over seven days *without stopping*. In a year, a godwit may log 20,000 air miles, making their marathon migration one of the longest to pass through Missouri.



Flyover Country

Some people call Missouri “flyover country.” But migrating birds probably think of it as “stopover country.” Millions of birds pass through the Show-Me State at some point during their migrations. Missouri’s wetlands, prairies, and forests offer perfect pitstops for these tired and hungry travelers.

World Record Migrator

Arctic terns don’t travel through Missouri, but they do earn the world record for the farthest known migration. The tiny white seabirds nest in Greenland and winter in Antarctica, following a zigzagging route between the two points. Biologists tracked the terns using tiny transmitters attached to the birds’ bodies. They found that terns may rack up an astonishing 40,000 miles in a single year! Over a tern’s 30-year life, it may travel a distance equal to three round trips to the moon.

THIS ISSUE:

WHITE PELICAN VS GIZZARD SHAD

Illustrated by David Besenger

Dive Goggles

Special lower eyelids slide up to protect pelicans' peepers underwater.

Bucket Bill

A flexible, bucket-like lower bill can scoop up fish lickety-split!

Paddle Feet

Big webbed feet make for powerful propulsion.

Skipping the Scene

Quick and stream-lined, shad can scatter fast and even leap clear of the water to escape chase.

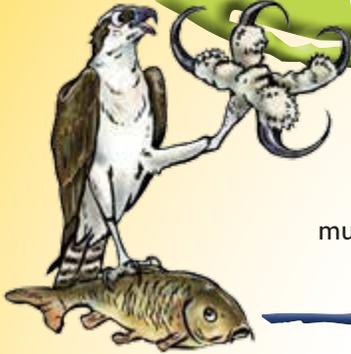
Safety in Numbers

Gizzard shad travel in large, constantly moving schools, a habit that helps individuals survive. It's hard to pick a single shad out of a crowd.

AND THE WINNER IS...

STRANGE but TRUE!

YOUR GUIDE TO ALL THE
UNUSUAL, UNIQUE, AND
UNBELIEVABLE STUFF
THAT GOES ON IN NATURE

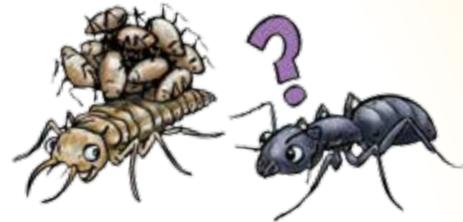
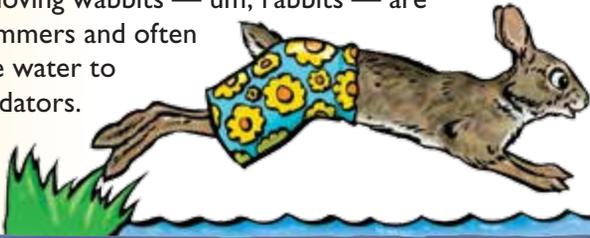


Get a grip! To help them hang on to slippery, slimy fish, **OSPREYS** have pokey pads on the soles of their feet. The pads must work. Ospreys catch up to seven out of every ten fish they go after.

Birds aren't the only animals that migrate. In September, **MONARCH BUTTERFLIES** point their antennae southward and flutter as far as 3,000 miles to evergreen forests high in the mountains of central Mexico.



Cottontails aren't Missouri's only bunny. **SWAMP RABBITS** live along streams and in wetlands in the Bootheel. As their name suggests, the water-loving wabbits — um, rabbits — are strong swimmers and often jump in the water to escape predators.

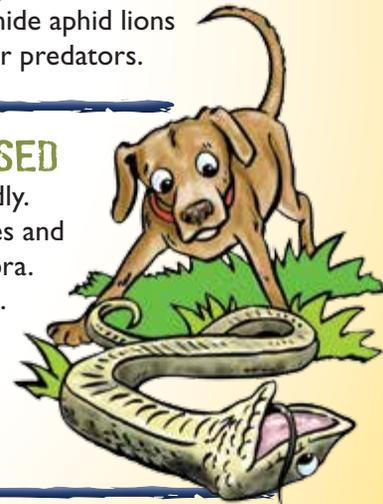


After an **APHID LION** finishes eating an aphid, it adds its victim's shell to the pile of other victims on its back. Biologists believe this creepy camouflage helps hide aphid lions from ants, birds, and other predators.

Ants in your pants? **COMMON GRACKLES** sometimes crouch over anthills and let the angry insects crawl all over their bodies. Why? Ants release acid, which biologists believe helps rid the grackles' feathers of parasites.



The harmless **HOG-NOSED SNAKE** sure looks deadly. When threatened, it hisses and flattens its head like a cobra. But the snake is a big fake. If its bluff fails, the hog-nose rolls onto its back, flops out its tongue, and pretends to be dead.



Sproing! When frightened, a **MEADOW JUMPING MOUSE** uses its oversized hind feet to jump up to 12 feet in a single bound. If the tiny mouse were human-sized, it could leap over six school buses parked end-to-end.



HOW TO

Make a Bow and Arrow

You don't need an expensive bow to practice archery. Here's how to make one for less than \$5 using plumbing pipe.

HERE'S WHAT

- Tape measure
- Pencil
- Hacksaw
- 4-foot length of ½-inch PVC pipe
- 2 large paperclips
- Duct tape
- 5-inch length of ½-inch foam pipe insulation

BUILD YOUR BOW



1. Cut the PVC pipe to 4 feet (48 inches). Measure $\frac{3}{4}$ of an inch from one end of the pipe and cut a $\frac{1}{4}$ -inch-deep notch into the side of the pipe. Do the same thing on the other end of the pipe, taking care to make sure the notches are on the same side of the pipe.
2. Write a "T" on one end of the pipe and a "B" on the other end. This will help you remember which end is the top of the bow and which is the bottom.
3. Bend each paperclip so it makes a 90-degree angle. Make a pencil mark 23 inches from the top end of the pipe. Lay the pipe flat with the notches you cut in Step 1 facing downward. Tape a paperclip to each side of the pipe so the clips stick straight out from the 23-inch mark. These will be your arrow rests.
4. Make a pencil mark 20 inches from the bottom end of the pipe. Smear a thin layer of glue around the pipe between this mark and the arrow rests. Cut a 5-inch-long piece of pipe insulation and slide it from the bottom of the pipe upward until it touches the arrow rests.
5. Wrap duct tape tightly around the pipe insulation. This will be the handle of your bow.

YOU NEED

- Glue
- Braided nylon cord
- Lighter
- $\frac{3}{8}$ -inch wooden dowel cut to 2-foot lengths
- Eraser caps
- An adult to help

Remember:

Your bow isn't a toy. Always point it in a safe direction, and always shoot with an adult present or with an adult's permission.

STRING YOUR BOW

1. Cut a 44-inch-long piece of nylon cord. Use a lighter to melt the ends of the cord to keep them from unraveling.
2. Double one end of the cord back upon itself so it overlaps by 6 inches. Tie an overhand knot an inch down from the bend to form a closed loop. Repeat this process at the other end of the cord.
3. Slip one loop into the notch at the bottom of your bow. Bend the bow and slip the other loop into the notch at the top of your bow. An easy way to bend the bow is to place your foot gently below the bow's handle and pull the top of the bow toward you.



If you want to improve your archery and like to have lots of fun, check out the Missouri National Archery in the Schools Program (MoNASP). For details, aim your browser at short.mdc.mo.gov/Z4U.

MAKE YOUR ARROWS



1. Cut a $\frac{3}{8}$ -inch dowel into 2-foot-long lengths.



2. At one end of each 2-foot dowel, cut a $\frac{1}{4}$ -inch-deep groove. Make sure the groove is centered on the dowel.



3. Place eraser caps on the other end of each arrow. You'll have to push hard to get them to fit.

XPLOR MOOR

Wacky Woodland

Few places are as beautiful as a fall forest in Missouri. But something isn't quite right about this wacky woodland.

Can you find six things that don't belong?

WHAT IS IT?

— FROM PAGE 3 —

by strokes of red, these eyespots look like bad news to predators. Io moths prefer forests and wooded parks, but you might see them flying around porch lights in September.

The large io (eye-oh) moth (2–3½-inch wingspan) looks just like a leaf when it's at rest. But disturbed, it parts its forewings to reveal a pair of large dark eyespots on the hind wings. Surrounded



Donna Brunet

KE



Bananas (bottom of left page) don't grow in Missouri's forests.
Mallard ducks (top of left page) nest on the ground in wetlands, not in trees in the forest.
Kangaroos (bottom of left page) don't live in Missouri — except in zoos.
Old wheels (middle of right page) and other trash should be discarded into a trash can or dumpster, not a forest.
Prairie chickens (bottom of right page) are found in Missouri, but they live in prairies, not forests.
Monkeys (top of right page) don't live in Missouri — except in zoos.

Answers

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FREE TO MISSOURI HOUSEHOLDS

CRITTER CORNER

Spotted Salamander



Beautiful but secretive, this amphibian lives in damp forests throughout most of southern Missouri. During the day, it hides beneath rocks and logs. At night, it eats anything it can catch and swallow, including worms, spiders, insects, and slugs. It hibernates in winter. In the spring, it emerges and migrates to temporary pools, where it mates and lays eggs. Adult spotted salamanders can live up to 30 years.