

Wildlife Express!

Volume 19

Issue 2

October 2005



**Cunning
Kestrels**

photo by Gary C. Will, IDFG





Let's Look at...

American Kestrel

Have you ever been riding in the car and seen a small falcon-shaped bird sitting on a power line or post? How about a small bird hovering over a field or meadow? Did it have cinnamon and blue colors on its head and black mustache stripes on its face? What you probably saw was an American kestrel. The scientific name for the American kestrel is *Falco sparverius* (FAL-ko spar-VAR-ee-us).

American kestrels are the smallest falcons in North America and the second smallest in the world. They are found everywhere. At least at times, it seems like they are! American kestrels are the most common falcon in the United States. They are found all across North and South America and throughout Idaho.

Like all birds of prey American kestrels have great eyesight. They use power poles and other tall objects as lookout posts for food. Sometimes they hover over open fields and meadows looking for food. Can you spot a grasshopper in the grass when it is 30 feet away? A kestrel can! Once they spot movement, kestrels zoom to the ground and grab their prey with their feet. During the summer, kestrels eat a lot of insects, especially grasshoppers. They also eat snakes, lizards, birds and mice. Sometimes they even eat bats!

Kestrels are birds that like to nest in holes. Old woodpecker holes, holes in buildings, nest boxes and even crevices on cliffs will be used as nest sites. In Idaho, usually four or five eggs are laid. The female sits on the eggs most of the time, and the male brings her food. When the male has food for the female, he flies close to the nest, lands on a perch and gives a little whistle. The female hears the male and flies out to get her treat. She then returns to the nest to eat her snack.

In 29 to 31 days, the eggs hatch. For the first few days, the male brings food to the nest, but when the chicks are a bit bigger, both parents bring food to the hungry nestlings. It's a lot of work for the parents to feed four hungry mouths and themselves!

Nestling kestrels have an interesting way of dealing with their poop. They don't want to get poop on themselves, so they back up, raise their tails, and squirt the poop onto the walls of the nest cavity. The poop dries on the walls and stays off the nestlings. The nest gets to be a smelly place, with poop on the walls and uneaten parts of small animals on the floor. They're ready to leave the stinky nest when they are about 30 days old. Young kestrels usually stay with their parents for another two to four weeks after they can fly.

American kestrels are fun and interesting little birds. Look for them hovering over a meadow next time you are out and about.



What is a Bird?

Birds are **vertebrates**. They have backbones, just like mammals, reptiles and amphibians. But only birds have feathers. Birds also have wings for front limbs, no teeth, scales on their feet, and warm-blooded bodies. They also lay hard-shelled eggs.

Worldwide there are about 9,000 different kinds of birds. Birds are the only living animals with feathers. Feathers are made of keratin, just like your fingernails and hair. They are lightweight, strong and are what gives birds the ability to fly.

Birds' bones are also made for flying. Many bird bones are hollow with struts in them. Struts look a bit like toothpicks inside the bone. Struts are what make bird bones strong and lightweight.

Birds need a lot of oxygen to fly. When a bird breathes in, air doesn't go straight into its lungs. The air first goes to air sacs. Air sacs are even found in the bird's hollow bones. Air flows from the air sacs into the bird's lungs. Even when the bird is breathing out, fresh air is going into their lungs! Birds' lungs are always full of air. Our lungs fill with air and then empty. By having lungs that are always full of air, birds have the oxygen they need to keep their muscles going.

Birds also need powerful hearts that beat quickly to move blood through their bodies. Birds' hearts beat much faster than your heart. A pigeon's heart beats about 450 times per minute when flying. A hummingbird's heart beats about 1,000 times per minute. Now that's fast!

Birds need strong muscles to fly. Have you ever wondered why the breast meat on your Thanksgiving turkey is light, and the leg meat is dark? The breast muscles of a turkey do not have as much blood flowing to them. The dark meat on the legs has a greater supply of blood. The leg muscles can work steadily for a long time without tiring. Turkeys are good runners and walkers, but they are not strong fliers and cannot fly for long distances.

Birds are found everywhere on the planet. It's hard to look out a window and not see one. Next time you see a bird think about all the special parts of the bird's body that help it live. Feathers, light bones, strong muscles, air sacs and fast beating hearts all help a bird live.



Raptors

No matter where you live in Idaho, raptors live nearby. Raptors are also called birds of prey. They eat meat. They may hunt their food or eat **carion** (KARE-ee-on). Carion is dead animals.

Idaho has 31 species of raptors. Worldwide there are about 500 different kinds. They range in size from the tiny five-inch elf owl to the 20-pound condor with an 11-foot wingspan. Raptors may come in different sizes, but all raptors have some things in common with each other. They all have great vision, a sharp, hooked beak, and powerful feet with curved, sharp talons.

Scientists divide raptors into five different groups: vultures, hawks, falcons, barn owls and true owls. Vultures are nature's garbage disposals. Unlike other birds of prey, vultures have a great sense of smell. They love to eat dead animals. Yum! They have naked heads, so they can stick their face right in their food and not get their feathers dirty. Their large, broad wings help them ride air currents and soar in the sky.

The hawk family has many members, not just hawks. Eagles, kites, osprey and harriers are also in this family. To find their prey, hawks use their eyes. Many have long, broad wings for soaring, but not all. Sharp-shinned and Cooper's hawks have rounded wings and long tails. They dive, twist, zig and zag chasing birds through trees and bushes. Long wings would get in the way and would not allow them to turn as quickly.

Falcons are the fighter jets of the bird world. Their narrow, pointed wings are made for speed. Falcons are different in another way. They have a notch on each side of their beaks. This "tooth" is used to break the neck of their prey. Most raptors use their feet to kill their prey.

Owls are divided into two groups – barn owls and all other owls. Barn owls have heart-shaped faces. Other owls have round-shaped faces. Owls are raptors that have special adaptations for nocturnal lives. They have excellent hearing, can fly silently and can see in dim light.

Raptors are magnificent birds. Pick up a book and read more about them. With practice, you will be able to tell different raptors apart just by the way they fly and look in the sky.

Flight

Many people are fascinated by how birds, bats and insects are able to fly. The key to flying is in the wing.

The front part of all of these animals' wings are stiff. Bats and birds have bones in the front of their wings. Insects have stiff veins concentrated there. The rest of the wing is more flexible. This allows the wing to change shape as the wing flaps.

Wings are curved on the top and are flatter on the bottom. This is the shape of an airfoil. Air flows faster over the flat bottom of the wing than it does over the top. This gives the wing lift.

To move forward and stay up, birds need to flap their wings. The down stroke is what keeps the bird moving forward. During down strokes, birds fully extend their wings. That way they can get as much push and lift as possible. The tips of their wings also twist a bit to keep their wings lined up properly. When birds move their wings up, they need to fold the tips of their wings in. If they left their wings out on an up stroke, they would slow themselves down.

Flying is a complicated thing. Each bird flies in the same general way, but they may alter the method a bit for their particular habitat and way of life.



pheasant in flight

What's That Map Mean?

Open up a field guide and you will most likely see a map. Most field guides have maps in them. The maps are there to show you where an animal or plant lives, but there could be more to that map than meets the eye.

Most of the maps in field guides are called distribution or range maps. The map shows where the animal may be found in an area. Often, especially for birds, there may be many different colors on one map. Each color may represent where the animal is found at different times of the year. Some birds migrate. They might spend summer in one part of the country and winter in another part. They could even go someplace just to mate and raise their young. Each of these areas would be given a different color. Here is a look at the range map of the American kestrel in the [Stokes Field Guide to Birds](#).

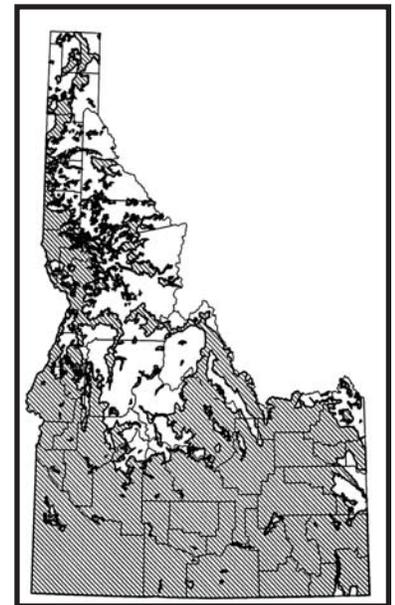
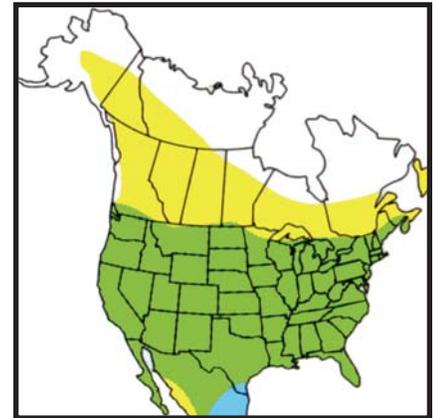
The yellow color shows the summer range. The green color is the year-round range. Kestrels are found in this area at all times of the year. The blue color is the winter range. Some kestrels migrate to this area in the winter to get away from harsher weather in other places.

Other field guides may use different colors, but bird guides usually use colors to show ranges at different times of the year.

Some range maps can be detailed. This is what the map looks like in the [Atlas of Idaho's Wildlife](#) for the American kestrel.

To make this map, people looked at the different biomes and habitats in Idaho. This map doesn't show kestrels living everywhere in Idaho. Kestrels are not fond of thick woods. They would need some breaks in the woods, like meadows, for hunting. This map shows kestrels missing from high mountains and thick forests. The map from the [Stokes Field Guide](#) didn't show this. It took a more general look at the kestrel's range.

Looking at a range map can teach you a lot about wildlife and the habitats they need throughout the year.



Feathers

All birds have feathers. Scientists think that feathers evolved from scales on reptiles thousands of years ago. Dinosaur fossils have been found with feathers!

Feathers are made of keratin; just like your hair and fingernails. They are lightweight but strong. The hard center of a feather is called the shaft or **rachis** (RAA-kis). Rows of barbs branch off of the rachis. To keep the barbs together, they are covered with hundreds of tiny **barbules** (BAR-byuls). The barbules have very small hooks on them. The hooks work like Velcro or zippers to hold the feather together.

There are many different types of feathers. Flight feathers are on a bird's wings and tail. These feathers are stiff and straight. They overlap when a bird pushes down with its wings. This helps the bird go up when flying. The feathers on the outside of a bird are called the **contour** (KON-toor) feathers. They overlap like the shingles on a roof. These feathers keep out the wind and cold. Close to a bird's body are down feathers. Down feathers are very fluffy. A bird traps air in its down feathers. The trapped air is the bird's insulation against the cold.

Feathers are fabulous. What a wonderful way to stay warm and get around.



chukar feather

Fall Colors

Fall can be a beautiful time of year. The green leaves of summer start to turn bright yellow, orange and red. When leaves start to change colors, trees are beginning to prepare for a winter's rest.

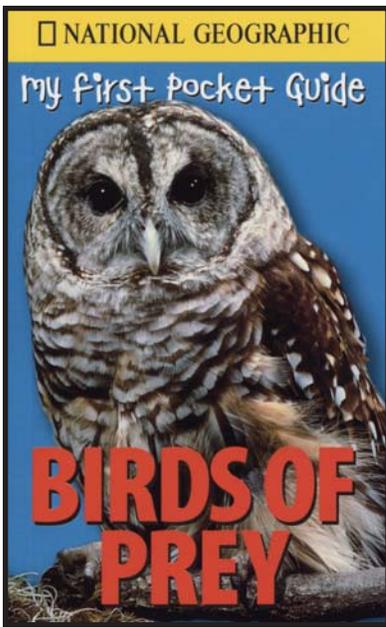
Leaves are a tree's food factories. Plants take water from the ground and a gas called carbon dioxide from the air. With sunlight, plants turn water and carbon dioxide into a kind of sugar called glucose. This is the plant's food. The way plants turn water and carbon dioxide into sugar is called **photosynthesis** (foe-toe-SIN-thuh-sis). A chemical called **chlorophyll** (KLOR-uh-fil) makes photosynthesis happen. Chlorophyll is what gives plants their green color.

Leaves contain all sorts of colors or pigments. We usually see green colors most of the year, because they are so bright. But two other pigments are also in leaves. One pigment is called **carotene** (KAR-uh-teen). Think of a carrot; carotene is the pigment that gives carrots their bright orange color. Another pigment in leaves is **xanthophyll** (ZAN-thuh-fil). This is a yellow pigment. Corn and bananas get their color from xanthophylls.

As fall days get shorter, trees start to make less and less chlorophyll. There is not enough light or water for photosynthesis in the winter. The green color starts to fade from the leaves. The orange carotene and yellow xanthophylls that have always been in the leaves can start to show through. Leaves become a bright rainbow of glowing yellows and oranges. But where do the reds come from?

The bright reds and purples come from **anthocyanin** (an-thuh-SI-uh-nuhn) pigments. When autumn has lots of warm, sunny days and cool nights, it will be a good year for red colors. During the day, trees can still make lots of sugar, but the cool night temperatures keep the sugar from flowing through the leaf veins and down into the branches and trunk. Trees make anthocyanins to help keep the sugar flowing. The longer the warm days and cool nights last, the redder the leaves will get. The brown color comes from the wastes that are left in the leaves.

The colors of fall leaves sure are a thrill for the eye. They also are a sign of trees getting ready for the cold winter.



Using Field Guides

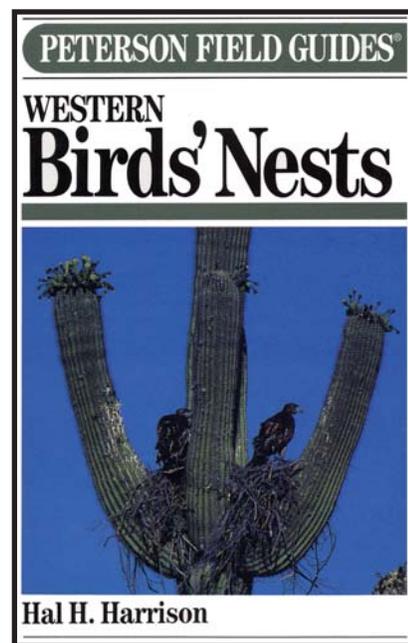
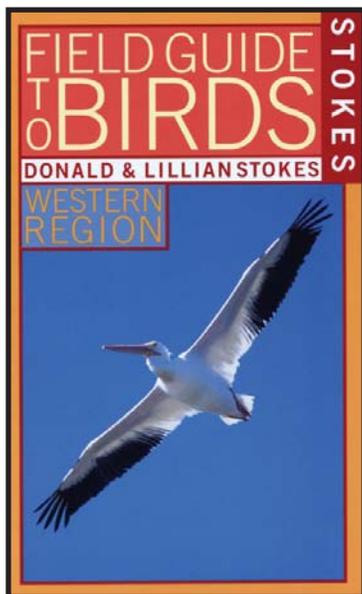
Field guides are wonderful tools that can help you figure out what animal you are looking at. They also can help you learn more about animals. The problem is that field guides are sometimes tricky to use. They may be confusing if you aren't used to looking at one. Here are some clues for understanding what is inside field guides.

The first thing you should do is look in the front of the field guide. Most field guides have a section in the front of the book on how to use it. Glance over this section to see how the book is organized. There should also be a section on what all the symbols and abbreviations mean in the book. Most field guides use abbreviations. Taking a few minutes to look at this part of your field guide will make it easier and more fun to use when out in the woods.

All field guides will have a section on what the animal looks like and a picture of the animal. This section is often called "identification." Here you will find out how big the animal is. It will also tell you if there is a difference between how the male and female look.

Some guides include information on the animal's habitat. You may find out what the animal eats, and where it finds shelter. Bird field guides should tell you about the bird's eggs, nests and young. Some field guides even have sections about interesting and fun facts about the animal. Often there will be a section on where the animal's population is increasing or decreasing.

Pick up a field guide and see what it looks like inside. Getting familiar with your field guides will make them a great tool for learning more about the animals you see.



The Better to See You With...



Vision is an amazing thing. It involves turning light into images. Animals do this with their eyes and brains. Every animal has eyes that help it live in its habitat. This has led to some pretty interesting eyes.

The cells that allow us see are on a thin covering at the back of the eye called a **retina** (RET-n-a). The retina has two different kinds of cells – rods and cones. Cones see color, and rods help us see in dim light. In the retina, is a spot called a **fovea** (FOE-vee-uh). Only what we see with the fovea is really sharp. Everything else is blurred. Stare at a page in a book and try to read the words on the opposite page. You can't get a clear picture of the words without looking directly at them. Animals' **foveae** (FOE-vee-ee) work the same way.

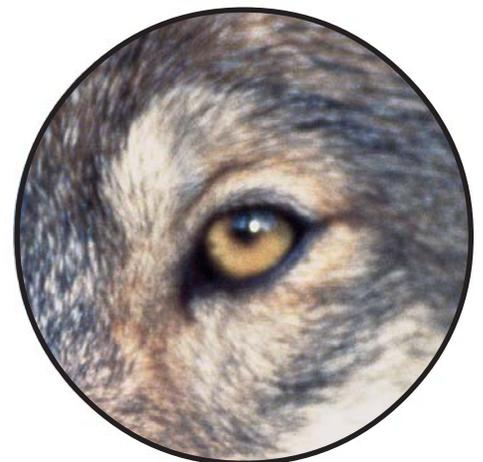
Hawks, falcons and eagles have wide flat foveae plus two round foveae in each eye. The round foveae form little pits that act like binoculars. Small, distant objects, like mice, look larger and closer. These birds can see eight times better than we can!

It takes two eyes looking forward at the same scene for an animal to judge distance well. Try closing one eye and reaching for something. Now use both eyes. Isn't it a bit easier using two eyes? Being able to judge distance is important for predators like kestrels. Monkeys have eyes that face forward, but many of them are not predators. They need to judge distance when jumping and swinging from tree limbs.

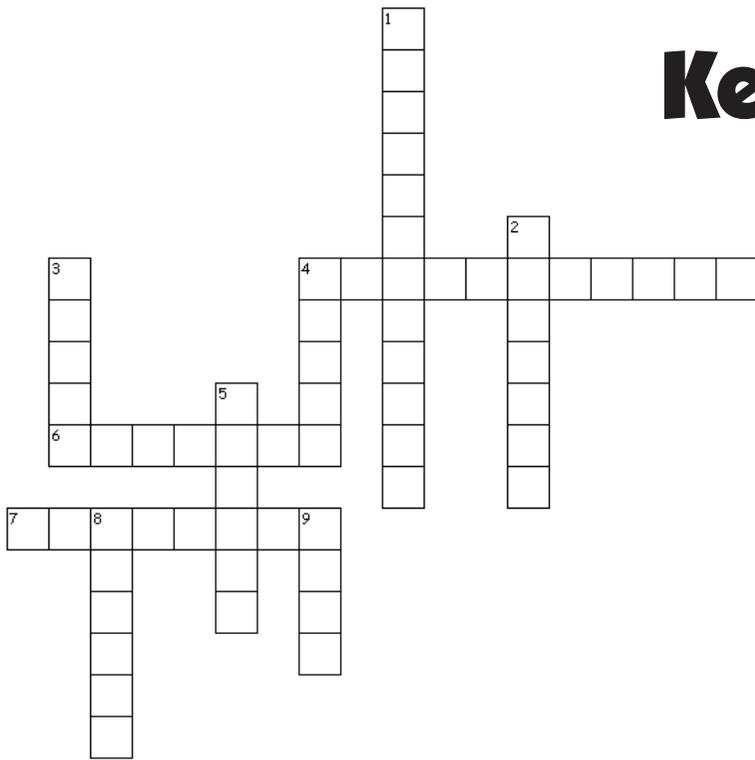
Prey animals usually have their eyes on the side of their heads. A rabbit can see in nearly every direction, but they can't see everywhere. They have a blind spot right in front of their noses!

Frogs eyes really stick out. They can see all around them. This lets frogs look for food while also keeping an eye out for danger. Frogs eyes also help them to swallow food. When frogs eat, they blink and pull their eyes down into the roof of their mouths. The eyes help to push food down the frog's throat!

Animals' eyes may look similar to your eyes on the outside, but they sure can work differently on the inside!



Kestrel Crossword



Words: Barbules, Grasshoppers, Hollow, Hover, Kestrel, Raptors, Retina, Sacs, Wings, Woodpeckers

4. These birds make holes that are good places for kestrels to build nests.

6. Kestrels are in this group of birds.

7. These hold feathers together like a zipper.

Down

1. Kestrels eat lots of these during the summer.

2. The smallest falcon in North America.

3. Kestrels sometimes do this while hunting.

4. The key to being able to fly.

5. Birds' bones are this.

8. The thin covering in the back of the eye.

9. These hold air before the air goes into a bird's lungs.

WILDLIFE EXPRESS

Volume 19 • Issue 2 • *Kestrel* •

October • 2005

Wildlife Express is published nine times a year (September-May) by the Idaho Department of Fish and Game. Classroom subscriptions and an Educator's Guide are available for \$30.00 per year and includes a classroom set of 30 copies mailed to your school each month. Subscriptions of five copies or less are available for \$10.00.

Wildlife Express is also available on the Idaho Department of Fish and Game website at no charge at <http://fishandgame.idaho.gov> For more information, call or write: *Wildlife Express*, Idaho Department of Fish and Game, 600 South Walnut, PO Box 25, Boise, Idaho, 83707 (208) 287-2874.

Lead Writer: Adare Evans

Layout and Design: Alyssa Jones

Contributors: Kevin Frailey • Renai Brogdon • Cristina Watson



WE WOULD LIKE TO HEAR FROM YOU !

If you have a letter, poem or question for Wildlife Express, it may be included in a future issue! Send it to the address printed above!