

# BIRD BASICS

- **What Makes a Bird a Bird**
- **Feathers**
- **Intelligence**
- **Social**
- **Vocalizations**
- **Senses**
- **Migration**
- **Identification**
- **Native Plants**
- **Why Care?**
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Top left clockwise: Cedar Waxwing; Western Tanager; Short-eared Owl; Yellow Warbler; Mountain Bluebird; Broad-tailed Hummingbird; Bald Eagle.

Center: Bobolink

Prepared for Bighorn Audubon by J. Puckett  
(photos courtesy of Bighorn Audubon, JP)  
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## What makes a bird a bird.

All birds descended from small, meat-eating two-legged dinosaurs called theropods.

“Birds are dinosaurs, the only lineage to survive to the present day. They arose in the Jurassic period, between 200 million and 150 million years ago.” *Scientific American*

“Birds didn't just come from dinosaurs, they *are* dinosaurs,” remarks Dr. Donald Henderson, paleontologist and curator of dinosaurs. “living birds are nothing less than small, feathered, short-tailed theropod dinosaurs.” Birds are the only known living dinosaurs. All birds descended from dinosaurs, but not all dinosaurs became birds.

Birds, fish, reptiles, and all mammals are vertebrates.  
Birds are the only vertebrate with feathers.

Other notable attributes: lightweight hollow bones (easier to fly with), complex respiratory systems, all lay hard-shelled eggs, and have high metabolisms, especially hummingbirds (smaller birds use more energy).

Diverse in size.

Smallest bird: Bee Hummingbird (only found in Cuba) weighs less than a dime, and about 2” long.

Largest flying bird: Albatross (12’ wingspan)

Largest bird non- flying: Ostrich (as tall as 9’)

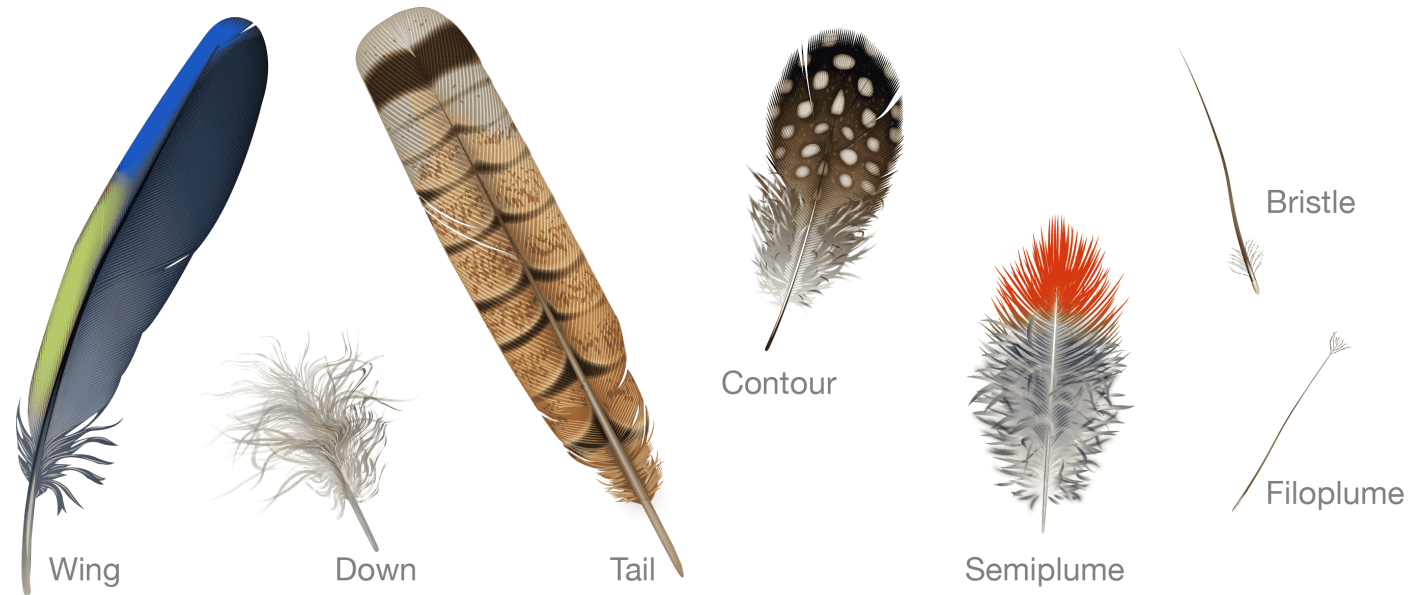
Ancient Ostrich relatives found in Wyoming are believed to have roamed the American West ~50 million years ago.

<https://www.audubon.org/news/get-ancient-ostrich-relatives-used-strut-across-american-west>



Fossilized skull of lithornithid, a relative of tinamous and ostriches, from the Green River Formation of Wyoming. Photo: Sterling Nesbitt

The function of feathers is mainly for flying and insulation, and also for species recognition, male attraction for visual and auditory displays, and for protection.



Types of feathers: Image source: All About Birds

As light as feathers are, they commonly account for 15% of bodyweight, about twice as much skeleton. Numbers of feathers on individual bird range from a minimum of 940 on a Ruby-throated Hummingbird to more than 25,000 on a Tundra Swan (70% on head and neck). Sparrows, like Song, have 1,500 – 2,600 feathers and more in winter.

Source: *Sibley's Birding Basics*

For feather identification <https://www.fws.gov/lab/featheratlas/index.php>

More about feathers: <https://academy.allaboutbirds.org/feathers-article/>

From USFWS: Feathers are beautiful and remarkable objects. If you find feathers in nature, please appreciate, study, photograph them, and leave them where you found them. Under federal law, it is illegal to take them home.

See Migratory Bird Treaty Act

## Intelligence

- Birds are highly intelligent with a wide range of abilities - crafting and use of tools, deception, play, parenting, communication, courtship, music, navigation, artistic, problem solving, reasoning, and survival.
- Use of probability, consequences and planning with complex cognitive powers and their spatial memories are also astounding.
- They have super charged efficient brains, packed with neurons, many with large brains relative to their size.
- The family Corvids (includes jays, crows, ravens, magpies, and nutcrackers) are the most intelligent birds studied. They also live longer with more socialization, passing on learned survival techniques.

## Caching Food – examples of amazing spatial memory (ability to process and record information)

- Birds like Black-Capped Chickadees, Pinyon Jays, and Clark's Nutcrackers place 1,000s of hidden food stores, and can recover them even after months and landscape changes of shifting soil, rock and snow.
- Clark's Nutcracker (member of the Corvid family) will smooth the ground to remove signs of disturbances.
- In one season alone a single Nutcrackers can cache over 98,000 seeds in 2,000 locations and can potentially remember locations for up to 9 months.

## Social

- Birds have very complex social behaviors and hierarchies.
- And, yes, birds do play.
- Arthur Cleveland Bent, a notable ornithologist, watched ravens sliding down a bank, a dozen at a time, croaking loudly with apparent laughter. Others were in the trees “aiding the sport with their cries of approval or taking turns” .
- Observations of birds playing catch, tug of war, king of the castle, and other forms of play are endless. Sometimes we can hear their laughter - if we listen carefully.

Sources: *The Bird Way* by Jennifer Ackerman and The Science of Birds Podcast

## Vision

- Of all animals, birds arguably have the best eyesight.
- Large eyes relative to their body size, they see clearer, further, and process faster than humans and in greater detail.
- They have Tetrachromatic vision meaning they see in blue, red, green and ultraviolet colors.
- They see feather colors unimaginable to us and a massive color spectrum our brains are simply incapable of processing.
- “They’re experiencing another whole dimension of color..... It’s a complete reimagining of the color experience” Caswell Stoddard assistant professor of ecology and evolutionary biology.



## Hearing

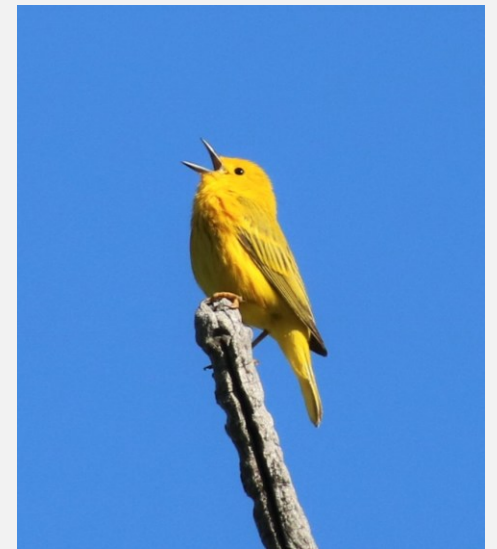
- Most birds have an excellent hearing, with much wider range than humans.
- Second most important sense after vision. Needed for communication, warnings, and for many species hunting prey.
- Evidence suggests they hear infrasound to predict volcanos, and earthquakes, causing behavior changes to escape bad weather and other natural disasters.

## Sense of Smell

- Some birds, like vultures “aka bloodhound of the bird world” have an incredible sense of smell. As well as sea birds and other species.
- Sense of smell can help birds to navigate, locate burrows and nests, courtship, avoiding predators, and seek food.
- House Finches can detect predators by smell, studies say.

## Vocalizations

- Birds have sophisticated multiplex language communication . Science is just tapping into the complexities of bird songs and calls. Some beyond human hearing.
- Both male and female sing – some species more so than others.
- Brown Thrasher ~2,000 different songs
- Some add to repertoire throughout life.
- Others are “one-hit wonders” with just one song. (that we can hear!)
- Different dialects with some, just like human accents, even county to county.
- Even American Robins makes more that 20 different sounds, most of which are mysterious to us.
- The honk of a Canada Goose contains levels of intricacy.
- Some are great mimics like Bluejays and Starlings, and will mimic predators like hawks, to cause other birds to drop their food and flee.
- Starlings and Mockingbirds will sound like car alarms, cell phones, barking dogs...
- Northern Flicker will make sound like bees to deter squirrels.
- Some wrens will make sound of snake to ward off intruders.



Top: Western Meadowlark

Bottom:  
Yellow Warbler

## Migration

Birds migrate seeking food and nesting opportunities.

Types Of Migration:

**Permanent residents** do not migrate. They are able to find adequate supplies of food year-round.

**Short-distance migrants** make relatively small movements, as from higher to lower elevations.

**Medium-distance migrants** cover distances a few hundred miles.

**Long-distance migrants** typically move from breeding ranges in the United States and Canada to wintering grounds in Central and South America, or, like the Rough-legged Hawk and others, migrate from the arctic to our region in winter.



The secrets of birds' amazing navigational skills aren't fully understood. Birds combine several different senses when navigating, and can get compass information from the sun, the stars by sensing the earth's magnetic field, and from landmarks seen during the day.

First-year birds often make their very first migration on their own, despite never having seen their wintering home before, and return the following spring to where they were born. *Source: All About Birds; Photo Sandhill Cranes JP*

**Birds face multiple threats during migration including weather, habitat loss, chemicals, collision due to lights, windows, tall buildings, communication towers, wind energy and other manmade structures.**

# Interesting Migration Facts

Source: Audubon

Whether it be in spring or fall, migration is a truly awe-inspiring phenomenon. In North America, most bird species migrate to some extent.

1. At least 4,000 species of bird are regular migrants, which is about 40 percent of the total number of birds in the world.

2. Birds can reach great heights as they migrate. Some at altitude over 6 miles.

3. The Arctic Tern has the longest migration of any bird in the world. Flying more than 49,700 miles in a year, and over it's lifespan of more than 30 years, the flights can add up to the equivalent of three trips to the moon and back.

4. Northern Wheatear travels up to 9,000 miles each way giving it one of the largest ranges of any songbird. It is a tiny bird that weighs less than an ounce, on average.

5. The fastest bird is the Great Snipe: It flies around 4,200 miles at up 60mph. Birds usually utilize tailwinds to help them go faster, but the snipe's speeds don't seem to be a result of that.

6. The Bar-tailed Godwit can fly for nearly 7,000 miles without stopping, making it the bird with the longest recorded non-stop flight. During the eight-day journey, the bird doesn't stop for food or rest.

7. Migration can be extremely dangerous for birds, and many don't often make it back to their starting point. Sometimes natural occurrences like harsh weather play a role, but many times, human activities are the cause of birds' untimely demise. Approx. one billion birds die each year in the United States alone from window collisions.. And approximately seven million die from striking communication towers in North America annually.

8. To prepare for the extremely taxing effort of migration, birds enter a state called hyperphagia, where they bulk up on food in the preceding weeks to store fat, which they'll later use for energy on their long journeys. Some birds, like the Blackpoll Warbler, almost double their body weight before flying 2,300 miles non-stop for 86 hours.

9. Birds that don't fly also migrate. Emus often travel for miles on foot to find food, and many populations of penguins migrate by swimming.

# Four Keys to Identifying Birds



## Size and shape

The combination of size and shape is one of the most powerful tools to identification.

Though you may be drawn to birds because of their wonderful colors or feeding behaviors, when it comes to making identifications, size and shape are the first pieces of information you should take note of. The Evening Grosbeak (left, above) and American Goldfinch (left, below) are both brilliant yellow, black, and white. But the grosbeak is far larger than the goldfinch, and its beak is much thicker.

**Bird identification can be tricky when you're starting out.**

To identify an unfamiliar bird, focus first on these four keys to identification. They will help you to narrow down the possibilities. Field marks are very important, after you've placed your bird in the right group. Practice taking in size and shape, overall color pattern, behavior, and habitat, and you'll soon become proficient.



## Habitat

A habitat is a bird's home, and many birds are choosy.

Narrow down your list by keeping in mind where you see the Great Crested Flycatcher (right) and Western Kingbird (above) are both medium-sized flycatchers with yellow bellies, and can both be found in a massive oak in the center of the continent. But the Great Crested Flycatcher is found within or at the edges of forests and woods, usually hunting within the upper tree branches. The kingbird hunts from fences, wires, and snags in open country.



## Behavior

Behavior can sometimes lead you to an ID in the blink of an eye.

The Black Phoebe (left) and many Doves (right) are slate-gray except for the white belly. But the dove feeds on the ground, often in flocks, and its posture is horizontal. The phoebe sits more vertically atop perches or rocks, often wings to tail, and flutters out to grab flying insects.



## Color Pattern

Observe the overall pattern of light and dark, and the main colors and patterns.

Both the Chipping Sparrow (left, below) and American Tree Sparrow (right, above) have eye stripes and rusty caps. But the Chipping Sparrow has a more dagger-like shape, so the black eye stripe, bordered with white above. The American Tree Sparrow's face has a softer, more subdued look because the brown eye stripe is bordered above and below with gray. The American Tree Sparrow's dark "beak" spot can clinch your identification.



Take your birding to the next level by watching the Inside Birding video series.

[www.AllAboutBirds.org](http://www.AllAboutBirds.org)

## Bird Species Observed

Approximately 11,017 bird species globally  
(Clements Checklist 2023).

North America ~2,400    United States ~1,200    South America ~3,870

Wyoming ~449 species

Sheridan and Johnson Counties ~310 species

## MERLIN APP

Explore Lists of Birds Near You

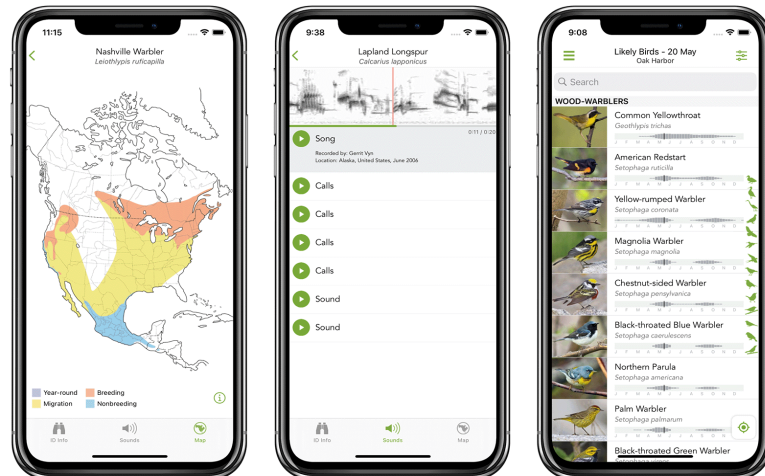
Merlin is powered by [eBird](#), allowing you to build custom lists of the birds you're likely to spot wherever you are.

### Identify Bird Songs and Calls

**Sound ID** listens to the birds around you and shows real-time suggestions for who's singing. Compare your recording to the songs and calls in Merlin to confirm what you heard. Sound ID works completely offline, so you can identify birds you hear no matter where you are.

### Identify Birds in a Photo

Snap a photo of a bird, or pull one in from your camera roll, and **Photo ID** will offer a short list of possible matches. Photo ID works completely offline, so you can identify birds in the photos you take no matter where you are.



*Ethics of using bird sound – please be aware that playing bird sounds might confuse birds around you.  
Be mindful when playing sounds outside.*

## Native Plants

“Gardening is the way we believe in tomorrow” Doug Tallamy

**Benefits of native plants:**

**Best for birds, humans, and the environment**

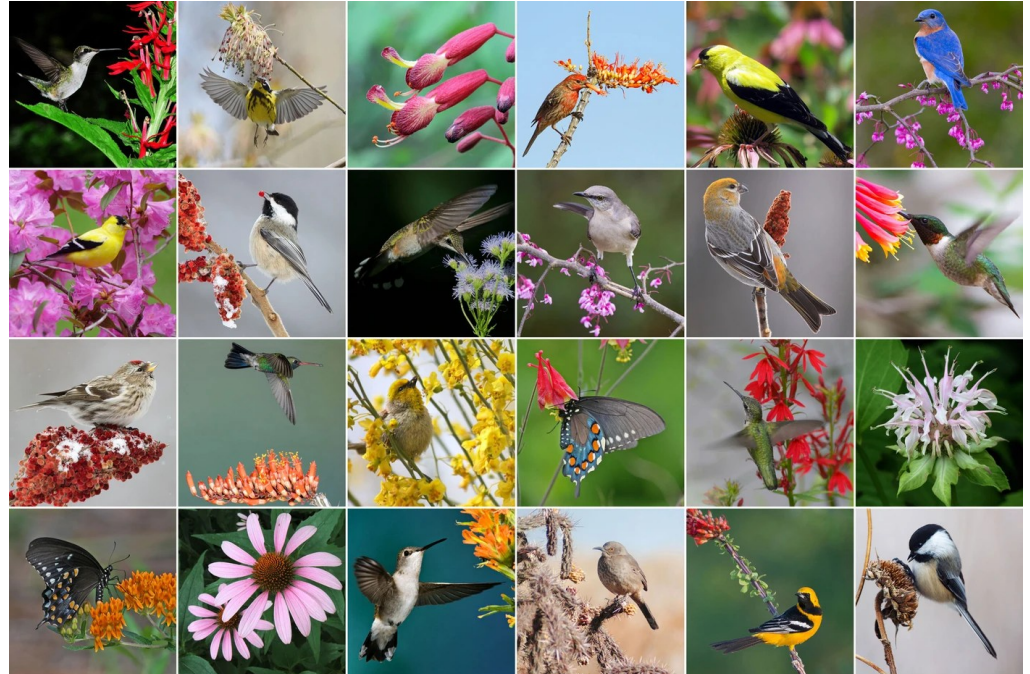
**Reduces maintenance**

**Requires less water**

**Requires fewer or no chemicals**

**Helps control flooding**

**Naturally beautiful**



*Your garden is your outdoor sanctuary. With some careful plant choices, it can be a haven for native birds as well. Landscaped with native species, your yard, patio, or balcony becomes a vital recharge station for birds passing through and a sanctuary for nesting and overwintering birds.*

*Each patch of restored native habitat is just that—a patch in the frayed fabric of the ecosystem in which it lies. By landscaping with native plants, we can turn a patchwork of green spaces into a quilt of restored habitat.*

*Audubon Rockies*

## Why care about birds?

1. Birds are fascinating – the more we learn the more fascinating they are.
2. Birds are critical to our ecosystem. As pollinators and seed dispersers birds are invaluable to plants and propagation. They are regulators of pest and diseases by eating insects and rodents. Some are scavengers cleaning carcasses.
3. Recycle nutrients back into the earth
4. Birds are the harbingers of the environment's condition.
5. Most of us have a deep connection to birds, many since childhood. Watching or listening to birds reduces stress, improves mood and overall mental health. Walking in nature has the added benefit of improving physical and mental health. Multiple scientific studies confirm the health benefits, but it's clear to most of us that birds do make us happy!
6. Inspiration for art, music, literature and help fill the gap between humans and the natural world.
7. Learning about birds by observing, reading, and listening help keep cognitive skills sharper.

In the last 500 years, ~ 180 bird species have become extinct. ~ 1200 species are in danger of extinction in coming decades.

Everyone can do their part, large or small, to help birds.

## Suggested Resources:

**Phone Apps:** Merlin and Audubon

### On-line resources:

Audubon Rockies / Habitat Heroes <https://rockies.audubon.org/>

Bighorn Audubon <https://www.bighornaudubon.com/>

Birds & Bloom Identify Birds

<https://www.birdsandblooms.com/birding/birding-basics/identify-birds/>

Cornell Lab of Ornithology: All About Birds

<https://www.allaboutbirds.org/news/>

Nests and Nest Boxes : <https://nestwatch.org/learn/all-about-birdhouses/>

Bird Cast Live Migration <https://birdcast.info/migration-tools/live-migration-maps/>

Birds of the World (paid subscription) <https://birdsoftheworld.org/bow/home>

USFWS Feather ID: <https://www.fws.gov/lab/featheratlas/index.php>

**Checklists:** Bighorn Audubon Region

<https://www.bighornaudubon.com/bighorn-forest-checklist>

**Books**, short list include:

*Nature's Best Hope* by Douglas Tallamy ; *The Bird Way* by Jennifer Ackerman

**and great local books:**

*Wyoming Birds for Kids* by Pamela Moore

*Birds of North-Central Wyoming* Helen Downing, Editor

*Birds and Birding in Wyoming's Bighorn Mountains Region* by Jackie

Canterbury, Paul Johnsgard and Helen Downing

**Citizen Science:**

eBird <https://ebird.org/home>

Feeder Watch <https://www.allaboutbirds.org/news/attract-birds-with-birdbaths/>

Christmas Bird Count <https://www.bighornaudubon.com/christmas-bird-count>

Great Backyard Bird Count <https://www.birdcount.org/>

Spring Count <https://www.bighornaudubon.com/spring-count>

**Podcasts:**

The Science of Birds and BirdNote