

# Introduction to Observing Birds: The Science of Life-long Learning

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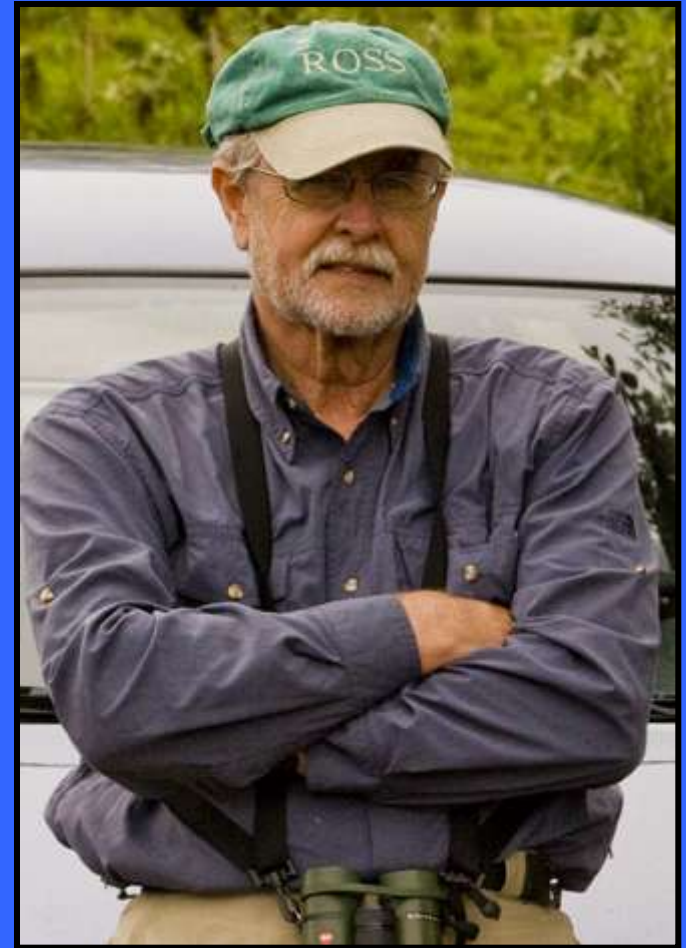
mountain bluebird (male)

# Photography Credits

Visit Tom Munson's extensive  
online photo gallery at:  
[www.pbase.com/clinton62/root](http://www.pbase.com/clinton62/root)

Tom has generously shared use of  
his photographs with the  
Wenatchee School District & the  
Chelan-Douglas Land Trust, and  
*Wenatchee Naturalist*.

Tom lives in Spokane, Washington.



# Overview

- Ethics & Conservation Practices
- What makes a bird a bird?
- Tools of the trade- binoculars & field guides
- Identification Clues:

## Structure:

**Silhouette**

**Comparative size**

**Bill shape**

**Body part proportions**

**Color pattern**

**Behavior**

**Habitat**

**Voice- Songs and calls**

Western Meadowlark



# Principles of Birding Ethics

## American Birding Association



- *Everyone who enjoys birds & birding must respect wildlife, its environment, & the rights of others....The welfare of the birds & the environment come first.*
- *...limit the use of recordings & other methods of attracting birds...*
- *...respect the law & rights of others...never enter private property without the owner's permission...*
- *...tread lightly on the earth; be kind to the environment.*
- **[www.aba.org/about/abaethics.pdf](http://www.aba.org/about/abaethics.pdf)**

# Wildlife Viewing Tips

- Fade into the woodwork- blend in
- Stick to the sidelines- keep your distance
- Think like an animal-anticipate location - habitat
- Create a sound map- make “mule ears”
- Develop your search image
- Think about seasonality



American dipper

# What makes a bird a bird??



Rufus hummingbird



Black-necked stilt



Birds evolved from reptile  
ancestors-160 million years ago

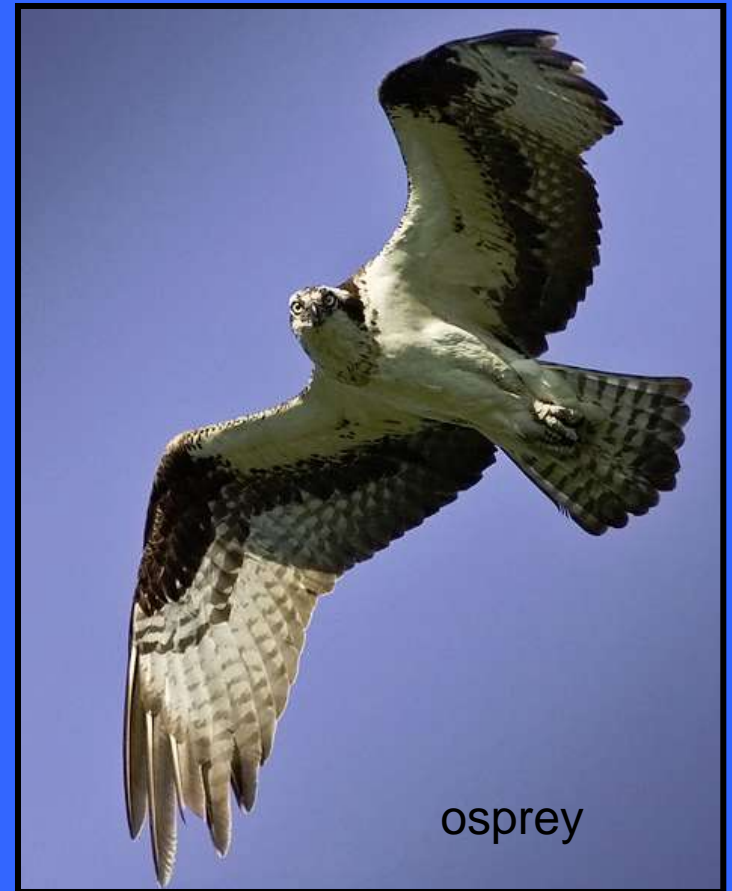
Both dinosaurs and early birds had  
**FEATHERS**

Birds developed hard **BEAKS**

Front limbs evolved into **WINGS**



Western fence lizard  
<http://wdfw.wa.gov/gallery>



osprey

# Why fly?



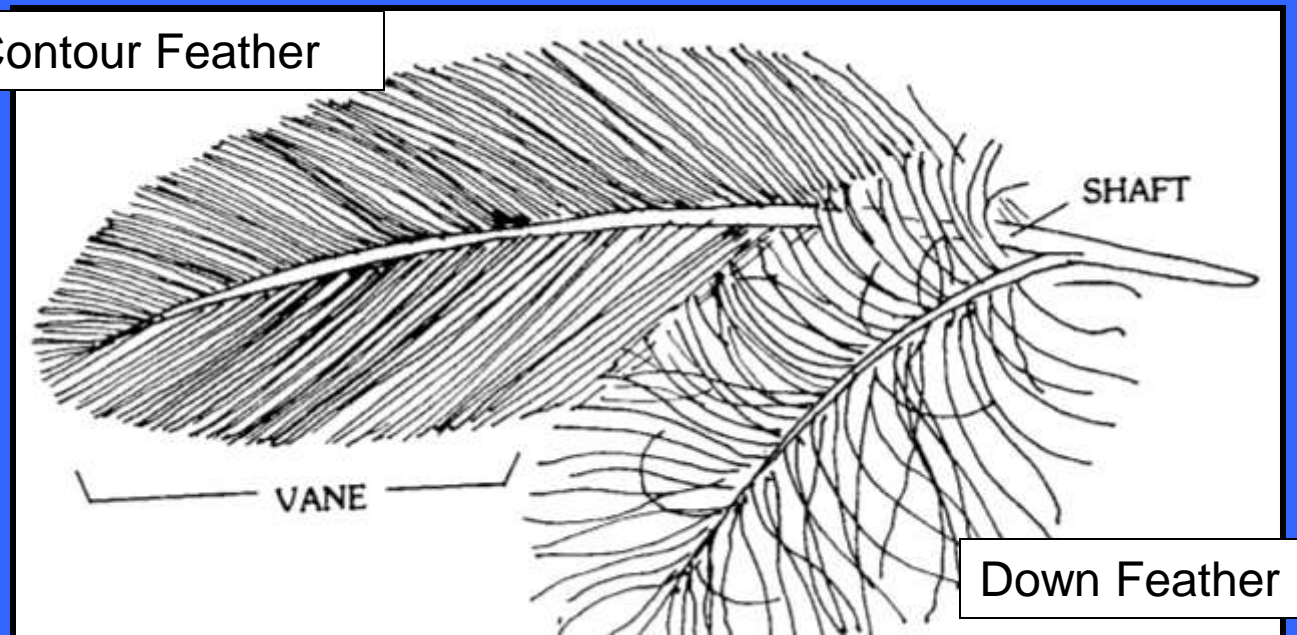
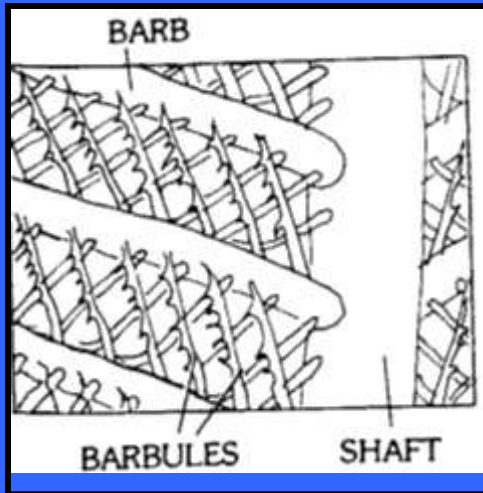
- Gives ability to escape predators
- Allows bird to search large areas for food- locally and as migrators
- Allows travel to avoid temperature extremes and to exploit seasonally available foods



# Feathers- light but strong; flexible yet tough durable, color-fast, & elastic

- Grow in feather tracks-minimize weight
- Made of keratin (a protein). Mostly air -hollow shaft and network of strengthening struts (barbs, barbules)
- Contour-most abundant; streamlined outer covering
- Down- traps air, held against skin by contour feathers

Contour Feather



# Functions of Feathers

- Protect skin from UV
- Color- mating to attract female; warn males; for camouflage
- Tail feathers- stability
- Insulation-moderate air temp.
- Nest lining
- Water birds have oil glands-use to make feathers water resistant
- Owls-facial feathers gather & focus sound; fringed flight feather edges muffle sound.



Marsh wren on cattail

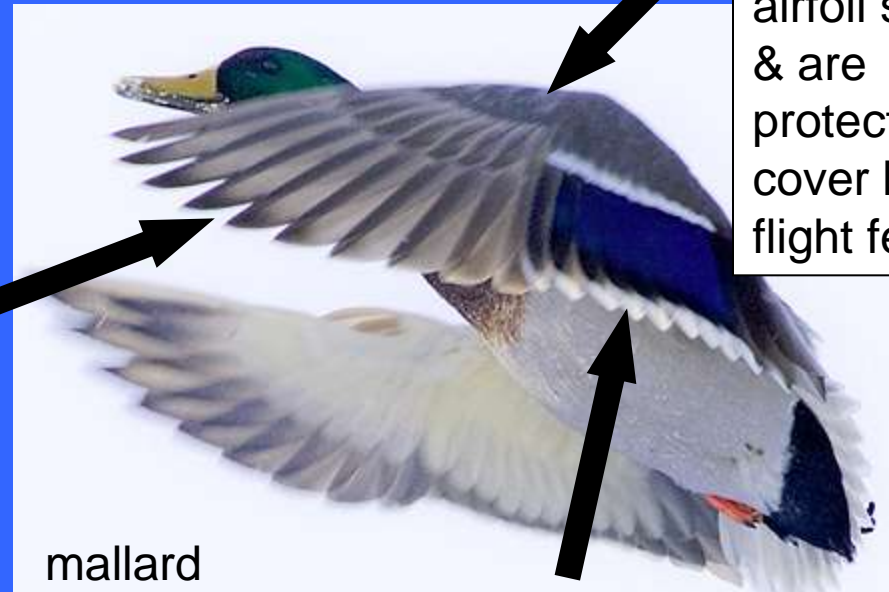
# Feathers -Critical Role for Flight

- Flight Feathers- Specialized contour feathers- very rigid shaft
- To minimize friction & drag, need even air flow over smooth surface.

Surface of wing kept smooth by overlapping placement of flight feathers.

**Primaries**  
9-12/wing

The side of feather facing the wind is narrower & stiffer than trailing edge



mallard

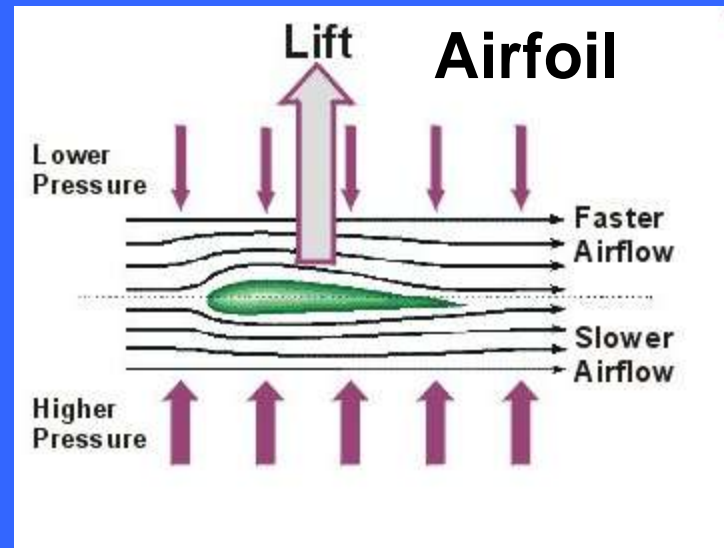
**Coverts:** give airfoil shape & are protective-cover base of flight feathers

**Secondaries-** # varies

**3 Types of Flight Feathers**

# All birds have wings

- Airfoil
- Speed, energy use, & maneuverability depend upon wing shape.
- Feathers perform like a propeller with each wing beat.



# Wing shape- determines type of flight



## HIGH SPEED WINGS

Short, pointed. Rapid wingbeat provides energetically expensive high speed

## LONG & NARROW WINGS

Used for soaring, hovering, or gliding- allows for slower flight



Forster's tern

## SOARING WINGS

with deep slots at end of wing (reduce drag); shape aids in take off



bald eagle

## ELLIPTICAL WINGS

Short & rounded-allow for tight maneuvering & rapid takeoff to evade predators

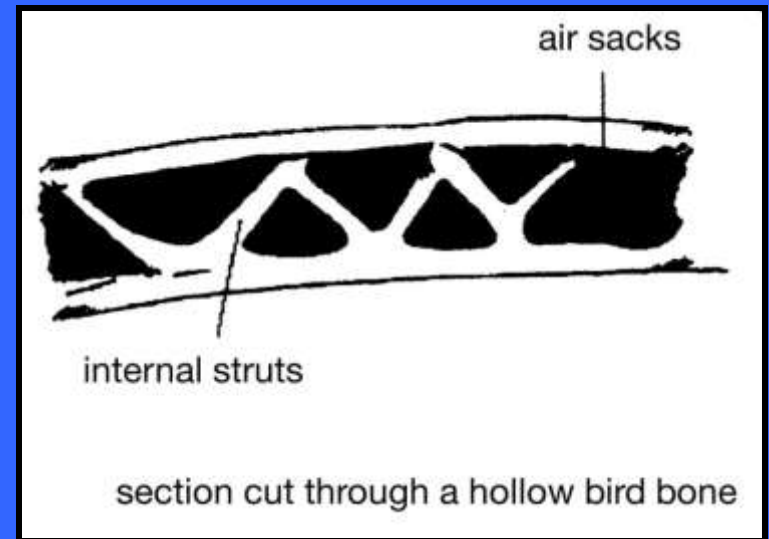


Cooper's hawk



# Adaptation for Flight: specialized bones

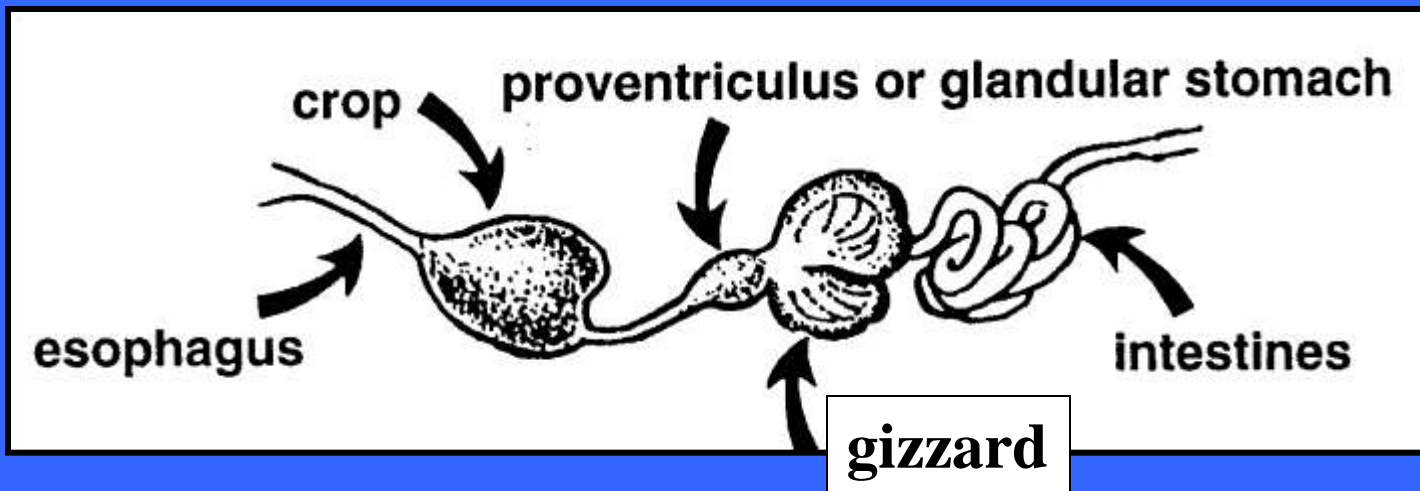
- **Specializations maximize stiffness & strength, compared to mammals:**
- Higher bone density (heavier)
- Reduced total # of bones
- Fusion of some bones
- Shape change: rounded humerus (wing bone) makes it stiffer and harder to snap.



Birds bones are partially hollow , thin walled, & have supporting struts. Yet, total bone density is greater than in a corresponding mammal bone.

# Adaptations for flight: minimize weight- No heavy teeth

- Birds swallow food whole
- Crop: stores food for later digestion
- Gizzard- muscular digester
- Grain-eating birds swallow small stones to aid the gizzard in grinding seeds.



## Adaptation for Flight: eat energy-rich foods

- Eat energy dense foods- seeds, fruit, nectar, insects, invertebrates, rodents, fish.
- Allows for lower volume of consumption at one time.



Say's Phoebe

# Beak Shape- Suited to food type

Dagger-like,  
spear fish  
underwater



Kingfisher

Spear Fish, invertebrates,  
amphibians, reptiles, birds,  
& small mammals.



Egret

Nets insects while  
in flight

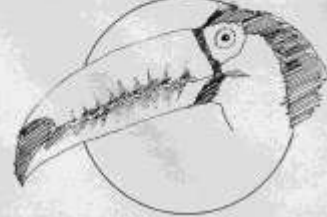


WHIP-POOR-WILL

Probes mud to stir  
up invertebrates



SNIPE



TOUCAN

Pluck fruit,  
then swallow  
whole

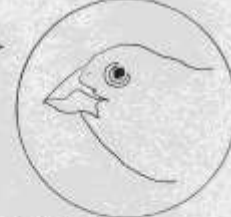


PELICAN

Functions  
as a fish net  
on a dive



HUMMINGBIRD



GROSBEAK

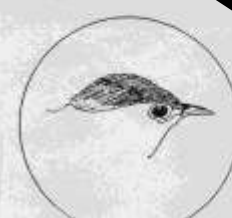
Thick &  
Powerful to  
crack seeds

Rips &  
tears  
flesh



Hawk

Long hollow tube to  
suck nectar



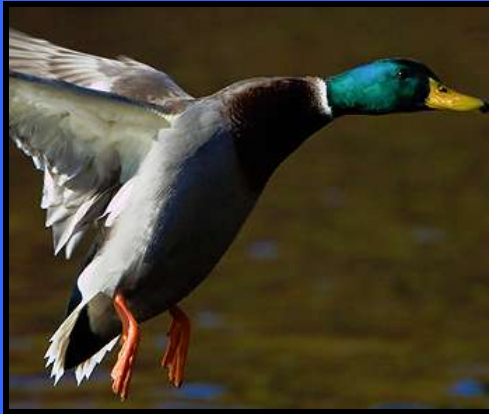
WARBLER

Thin to probe small  
spaces for insects



# Foot type: Suited to food gathering

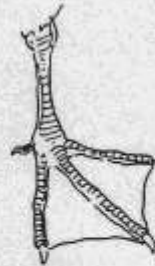
mallard



Solitary sandpiper



Swimmer



John Weisinger

Ducks: Webbed toes form paddles for swimming.

Wader



Hérons: Long foot and toes for wading also provide large surface area for walking in muddy places.

Climber



Woodpeckers: Strong toes and large nails for clinging to trees. 2 in front hang on, 2 in back help brace.

Runner



Grouse: Strong foot and leg for walking and running.

Percher



Perching Birds: Rather delicate toes used for grasping branches.

Prey Grasper



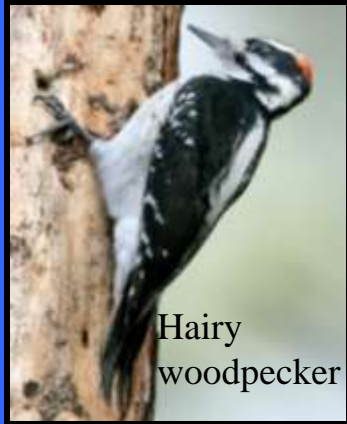
John Weisinger

Hawks: Strong toes with large nails (talons) can grasp and hold struggling prey.

CA quail



Hairy woodpecker



Black-capped chickadee



Red-tailed hawk





# Adaptation for flight: Excellent eye sight

- Birds-of-prey have binocular vision- allows distance estimation when hunting on the wing.
- Birds have eyes on each side of their head, maximizing visual field to spot predators- monocular
- Move head instead of eye

merlin



pine siskin

## Adaptation to flight: Acute hearing

- all birds rely on hearing for communication with mates, rivals, offspring, or flock members.
- Use hearing to locate prey or predators.
- Owls have asymmetrical ears (one ear being lower on the skull than the other) -sounds from a single source reach the ears at slightly different times.

The barn owl's pronounced facial disc focuses sound toward ears

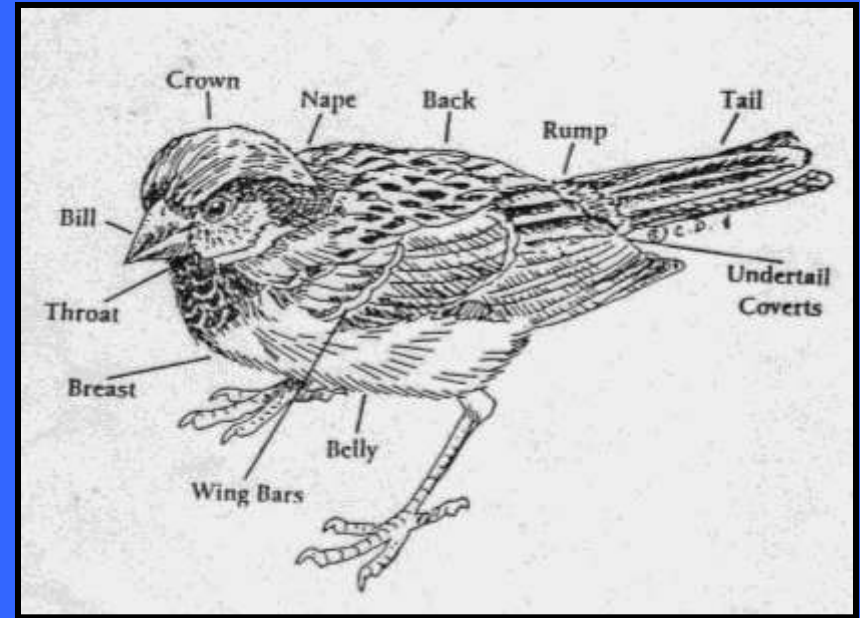


# The Art of Bird Identification

- **GISSS** *General Impression, Size, Shape, Sound, & Space* rapid assessment to immediately “know” the species in an instant.
- **Field Marks**- physical aspects of a bird’s appearance- diagnostic markings.
- Includes: plumage, shape of body or individual parts, actual markings (bars, bands, spots, rings)
  - *absolute*      - *relative to other species*
  - *Percentage characters “bird usually has...”*

# Bird Identification- Field Guides

- Read the introduction to your field guide.
- Refer often to the illustrations.
- Have several guides for reference.



## **BASIC RULES OF FIELD ID:**

- 1. Check every field mark**
- 2. Learn the common birds**
- 3. Consider shape, but avoid size misjudgement**
- 4. Learn to see details**
- 5. Consider molt and wear**
- 6. Color perception- our eyes easily tricked by light effects**



Family Gaviidae Common loon

## Field Guide Organization



Family Fringillidae Am. Goldfinch

- Birds (Class Aves) subdivided into orders, families, genera, and species.
- Ornithologists have on-going debate about classification- always a work in progress.
- The taxonomic order of birds in a field guide is based on evolutionary complexity (most primitive to most advanced) of families.



# Using a Field Guide to ID a bird

## Names:

**Common & scientific**

**Turdidae Family-Thrushes**

**Measurements: (averages)**

**LENGTH (L)-** from bill tip  
to tail tip.

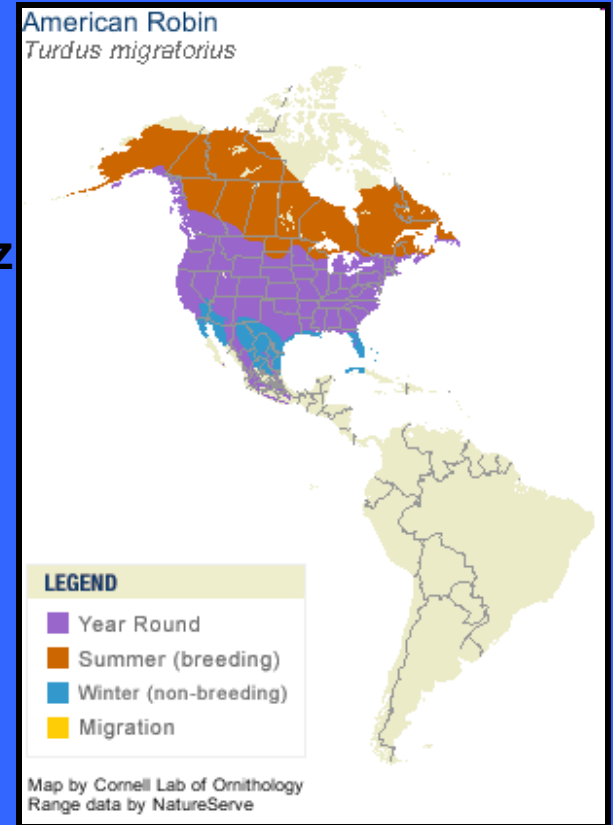
**WINGSPAN (WS)**

**WEIGHT (WT)**

**Note text with lines  
next to illustrations-  
indicating key field  
marks.**

**American Robin**  
**Turdus migratorius**

**L 10" WS 17" WT 2.7 oz**



**Always a good  
idea- Check the  
range map**

## Which Field Guide?

- Two types: Photo vs. composite drawings
- Geographic region
- Size: Does it fit into your pocket?
- Most popular in Pacific Northwest:
  - Sibley Field Guide to Birds of Western N Am*
  - Nat'l Geographic Field Guide to Birds of N Am*
  - Stokes Field Guide to Birds: Western Region*
- The *first* author to use field marks- Roger Tory Peterson- *Field Guide to Western Birds*

# What type of audio guide?

**CDs matched to a field guide, all species in taxonomic order:**

Western Edition of the Stokes Bird Song series, K. J. Colver.

Birding by Ear, Western, by R. K. Walton & R. W. Lawson

**CDs: either by habitat type or in instructional sets:**

Beginners Guide to Bird Songs of N. Am. J. Neville & M. Coulson

**Electronic “apps”-view comparison chart for all current apps at**

*<http://ibird.com/compare.aspx>*

IBird Explorer pro <http://www.ibird.com/>

Bird JAM: <http://www.birdjam.com/>

Most field guide publishers now have “apps”

Free app: MERLIN Bird ID

## Tools of the trade- binoculars

- First #- MAGNIFICATION POWER- “7”  
makes a bird appear 7 times closer than it is.  
Aim for 7-10 (>10 hard to hold steady, & heat shimmers can distort image)
- Second #- DIAMETER of objective lens  
millimeters. Function: Gather light Aim for 35-42 mm.
- Rule of thumb: 2<sup>nd</sup> # is at least 5 times greater than 1<sup>st</sup> # (7 x 35 or 8 x 40)
- Adjust for different strength of your 2 eyes

## **Evaluate your binoculars**

- Does the barrel flex easily, yet not slip?
- With barrels adjusted, is the image single & clear, in a single perfect circle?
- Wearing glasses, can you push back eye caps to get closer to lens (gives larger field of view)
- Can you close-focus your binoculars (20 ft)?
- Focusing 2 blocks away, are the letters on a car license plate sharp and clear?
- Do you have a single focusing knob between two barrels?



# Key features to look at on all birds

**Color pattern-**  
often not the  
most important.  
Our eyes are  
easily tricked  
by the light

#1 **Bill** size & shape

Note pattern  
on **face**- Is  
there ring  
around the  
eye, or a line  
near eye?

**Breast-** plain,  
streaked, or  
spotted?

**Wings and  
tail-** plain or  
patterned? Bars  
or stripes?

Is **tail** long or short,  
compared to folded  
wings?



Once you know a common bird, you can use it to identify a similar unknown bird

L 10"



American robin

L 7.5"; L 8.5"



Spotted towhee

**Observe : overall body silhouette; bill shape & size.**

**Observe patterns on face, head, breast, wings, and tail**

**Note behavior**

**Listen to voice**

**Note if in a flock or solitary**

**Check range map**

**Chickadees (Paridae family)**- small songbirds, often in mixed flocks searching woodlands for seeds & insects. Active birds- move nervously & acrobatically as they search vegetation for food. Short, strong bill. Frequents bird-feeders

All black cap & throat  
White cheek  
buffy flanks; white  
edged wing feathers



black-capped chickadee L 5.25"

White "eyebrow"  
Slightly thinner bill and shorter tail than  
black-capped; gray-edged wing feathers



mountain chickadee L 5.25



**Nuthatches (Sittidae family)**-small songbirds often in mixed flocks in woodlands. Cling to bark with legs & feet-can climb sideways or head-down.

Eat insects, but in winter can consume seeds or nuts.

Have long sharp bills

Dark eyeline & white  
eyebrow Plain blue-grey  
above; Pale orange below  
Short tail with white pattern  
Often perches on twigs

Narrow Dark crown stripe  
Extensive white head & face  
Often climbing headdown on trunk  
Largest nuthatch- note long bill



red-breasted nuthatch L 4.5"



white-breasted nuthatch L 5.75"

**American goldfinch** (Fringillidae family- Finches) small songbird with **short conical sparrow-like bill**. High, strong, undulating flight. Often perch in treetops. Almost always in flocks

Plain yellow-brown nape  
Whitish undertail coverts  
Buffy wing bars  
Unstreaked breast



American goldfinch female

Black forehead; orange bill  
Yellow back; brilliant yellow  
Breast. Unmistakable!



American goldfinch male

**Evening Grosbeaks** -Common in E. Cascade forests.  
Seen flying overhead, perched in treetops, or at feeders.  
Usually in flocks. Feeds on insects and tree seeds.

**MALE:** Yellow eyebrow  
White secondaries- visible  
on wing in flight

Massive head & bill  
Large bird, but  
short tailed

**FEMALE:** dark lores by eye  
Greenish nape; pale bill  
White wing patch



evening grosbeak, male L 8.75"



evening grosbeak, female



**Dark-eyed junco (Emberizidae Family-Sparrows)**— altitudinal migrant in North Central Washington- winters in small flocks in shrub-steppe. Forages on ground, frequents small shrubs

Well-defined sooty or blackish hood; brownish back & flanks  
Short, conical pointed bill, pinkish-whitish bill  
Unstreaked breast; white belly. White rump and under-tail  
Outer tail feathers white that flash in flight (like scissors opening/closing)



Dark-eyed junco L 6.25"



**Swallows (Hirundinidea Family)**- aerial songbirds with very short legs and bills, and relatively long & pointed wings. Feed on flying insects captured in swooping flight. Forage in groups where prey is abundant. All species can occur together. 6 species summer in NC WA.

Common. Cavity nester in small groups. Forages over open areas, often near water.

**Compared to Tree Swallow:**

1. smaller, has shorter tail- folded wings longer
2. Narrower wings
3. White extends on cheeks & above eye
4. Underside White wraps up onto sides of rump- visible in flight

Common. Nests singly in cavities. Often seen in large flocks, perched on wires. Square tail, with notch  
Always dark above, white below.  
Contrasting dark cheek to white throat



Violet green swallow L 5.25"



Tree swallow L 5.75"

# Cliff and Barn Swallows- Summer resident

Common. Colony Nesters on man-made structures-under bridges. Mud gourd-shaped nest. Forages over fields & water. Pale buffy rump  
Dark throat  
Most adults-white forehead “ran into cliff”  
Short square tail.  
Plain drab underwing



cliff swallow L 5.5”

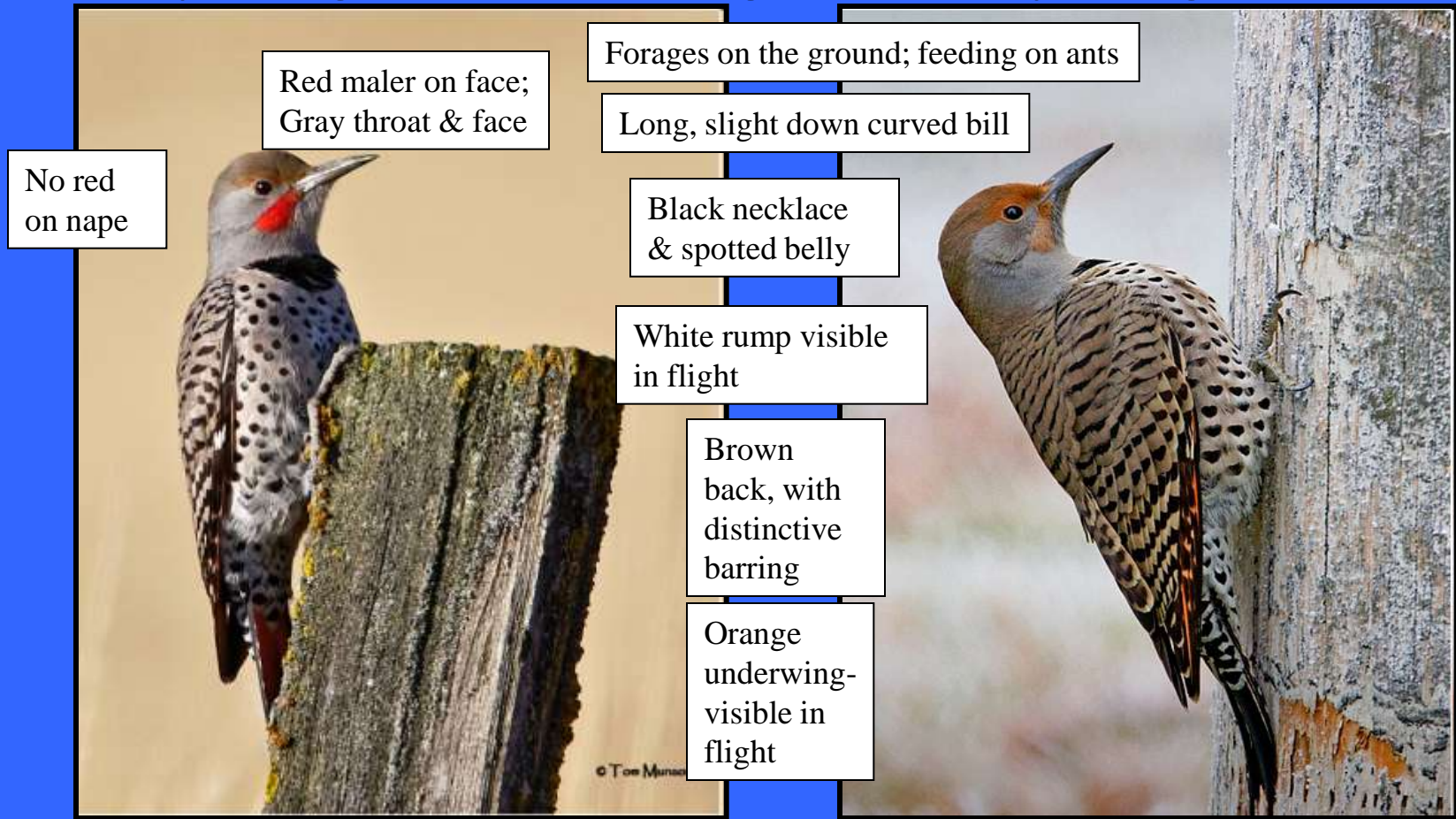
Common. Nests mostly on man-made structures. Nest a partial bowl of mud on ledge. Graceful. Long-forked tail. Long pointed wings. Blue-black upperside. Whitish-to orange underside. Dark rufous throat. Pale buffy underparts.



Barn swallow L 6.75



**Woodpeckers (Picidae family)**– Use stiff tail as a prop while cling to tree. Straight chisel-like bill used to peel bark or excavate wood. Nest in tree cavities. Mostly solitary. Flight is undulating with noisy wingbeats.



Northern flicker male L 12.5"

Northern flicker female

# Downy and Hairy Woodpeckers- differ by size, proportion, and voice

Downy woodpecker L 6.75"



Smaller shorter bill,  
Compare to head width

Hairy woodpecker L 9.25"



Longer bigger bill,  
Compare to head width

## **Both species have:**

1. white patch on back
2. males-red on head
3. black-&-white head
4. white belly & flanks
5. white spots on wing
6. can share habitat

Both species: Pacific region can have underparts that are washed gray-brown, not white, as in photos.



**Jays & Crows (Corvidae Family)**- large, sturdy songbirds with thick bills, strong legs, & loud voices. Noisy & aggressive; will mob predators. Usually travel in groups.



Long crest

Paler overall & white marks on forehead of Interior West pop.

Short broad tail

Broad rounded wings

Wings, rump, belly, tail- bright blue

Head, breast, and back blackish



Steller's jay L 11.5"



Black-billed magpie- use your field guide to confirm this identification (Corvidae family)



# Is it an American Raven or a Common Crow?

## Use field marks in the guide to identify.

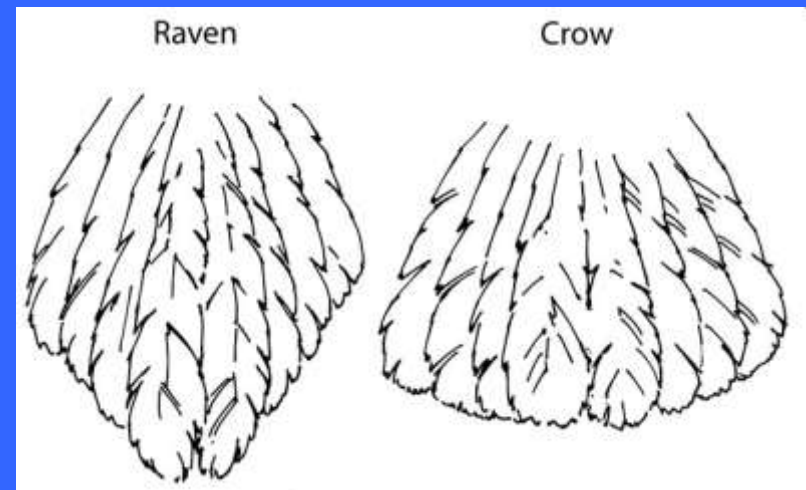
The main field marks are only visible when the bird is in flight:

Tail shape (wedge or straight)

Wing length

Tail length

American Raven



variety of calls including these sounds: "croooooak", "cr-r-ruck", "tok", and "wonk-wonk."

"caw caw caw." : "Awk"

LBJ's- *little brown job*- How to begin with  
sparrow identification:  
Start with what you know!

**House sparrow**

Common & widespread in cities,  
towns, parking lots, farms.

Almost always in small flocks

Male strikingly patterned  
Unstreaked breast  
Stocky and short-tailed



House sparrow male L 6.25

**Song sparrow**

Common & widespread in  
brushy areas near water. In  
suburbs.

Usually solitary

Bold coarse streaks above  
& below  
Red-brown (rufous)-tinged  
wings & tail

Stocky and long-tailed  
“**Ink spot**” in breast



song sparrow L 6.25”



**Dabbling Ducks** – family Anatidae- puddle ducks. Mainly on smaller ponds & marshes in shallow water. Feed at surface by “dabbling” bill in the water. Can take off from water without running.

**Female American wigeon**

Dark smudge around eye  
Small gray bill  
Weakly patterned flanks  
Gray-brown head

Rounded head  
Small gray bill  
Grazes in fields in flocks

**Male American wigeon**

White or buffy forehead  
White wing patch  
White hip patch



American wigeon L 20”, female above, male at right.

**Kinglets**-Family Regulidae. Tiny, nervous & active. Flick wings. Hover at branch tips to glean insects, spiders, seeds, & fruits. Often join mixed groups of chickadees, nuthatches & warblers.



Nests in tall conifers,  
feeds in deciduous trees

Often solitary

Pale eye-ring: narrow at  
top and bottom

**ruby-crowned kinglet L. 4.25"**

Common in conifer trees.

Almost always in groups of 3-8.

Striped face. Can raise yellow crest

**golden-crowned kinglet L 4"**



Raised crest rarely seen





**Kingfisher-** family Alcedinidae. Fish-eating birds found on sheltered waters. Search for prey from a lookout perch, hovers over water, then plunde-dive headfirst to capture fish. Voice-clattering rattle.

Shaggy crest	Dark band on upper chest.
White collar	Large bill



**Belted kingfisher**, females with 2<sup>nd</sup> rufous belt



**Cedar Waxwing- Family Bombycillidae.** Medium-sized with long crest, black mask, yellow-tipped tail, distinctive silky plumage. Almost always in flocks.



Pale, yellowish belly

White under-tail  
coverts

Plain gray  
upperwing

Always check for a  
Bohemian waxwing  
The characters in  
this box differentiate  
the two species



Cedar waxwing L 7.25"

**Blackbirds-** family Icterid med.-large songbirds. Long, heavy pointed bills & long tails.



Red-winged blackbird male & female L 8.75"

**Falcons-** Falconidae family. Day-time active predators with sharp talons for grasping and hooked beaks for tearing prey.



Blue-gray wings  
Rufous upper tail w/ black tip  
Orange on back of head

Boldly patterned head  
Rufous barred back



Often seen on  
roadside wires or  
fenceposts.

Pumps tail

Hunts for insects &  
small mammals  
from a perch or a  
hover, dropping  
straight down.



American kestrel female L 9"

American kestrel male L 9"



**Wood Warblers:** Family Parulidae. Small, active birds with short, pointed bills. Strong fliers & slightly undulating. Habitat: trees, shrubs, bushes.

**Yellow warbler:** Bright yellow plumage, plain pale face, short-tail with yellow spots, stout bill. Found in low trees & woodland edges, especially willows in wet areas.

Males with red streaks on breast.



Length: 5 inches

# Go home and start birding out your window. Learn what's common!

Common & widespread in suburbia

Nearly always in a large flock

Relatively long-tailed, round head.

Short bill- curved culmen (upper bill)

Brownish back with indistinct streaks

Streaked flanks

Pale, grayish cheek

Orange-red brightest on forehead and  
malar (area below bill on face)



House finch, male

Birding- an adventure in like-long learning that brings new discoveries to every day.

6 male wood duck, 2 female wood duck







Barrow's goldeneye