

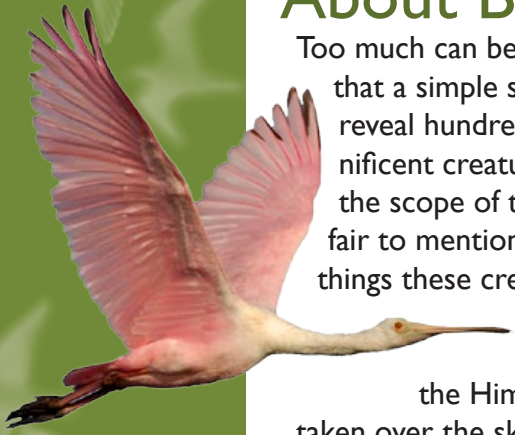
BIRDING 101

An Introduction to Bird Identification,
Tools and Techniques.



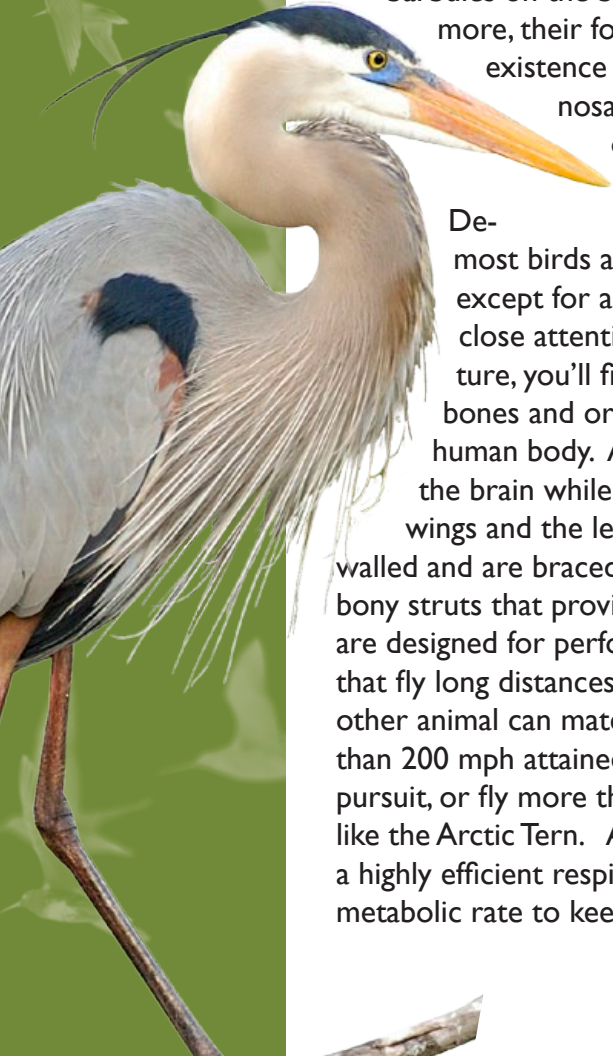
Photos & Text by
Reinier Munguia

About Birds



Too much can be said about birds, so much that a simple search at a local library will reveal hundreds of titles about this magnificent creatures. While that's far from the scope of this publication, I think it is fair to mention some of the most amazing things these creatures have achieved. Just for starters, they inhabit both poles and some fly over the Himalayas; in short, they have taken over the skies, the land and the water. In essence, they have conquered the world. No other group of animals has shared this success, not even the insects.

They have been the cause of marvelous discoveries and creations, and have appeared in works of art since our earliest records. Birds inspired humans to take to the sky and today's aircraft designers are looking more into birds for inspiration on how to improve efficiency and maneuverability. Don't forget the zipper on those jeans - they were inspired by the barbules on the bird's feathers. Furthermore, their fossil records show a long existence that dates back to the dinosaurs, and way before many other modern animals.



Despite their diversity, most birds are structurally the same, except for a few things. If you pay close attention to their body structure, you'll find many similarities in bones and organs with those of a human body. A hard skull protects the brain while long bones support the wings and the legs. These bones are thin walled and are braced on the inside by many bony struts that provide more strength. Birds are designed for performance, especially those that fly long distances or at high speeds. No other animal can match the speed of more than 200 mph attained by a Peregrine Falcon in pursuit, or fly more than 44,000 miles in a year like the Arctic Tern. All these are the result of a highly efficient respiratory system and a high metabolic rate to keep up with demands.

Birds are the only animals with feathers. These feathers are strong, flexible and light, providing them the ability to fly and to stay warm. Feathers have other uses in a bird's life, including water collection and nesting material. When breeding season starts, many species will grow special breeding feathers used for display during courtship. The feathers and the way they can produce color by refraction are unique in the animal world.

Perhaps the most important thing about birds is what they give to the rest of the inhabitants of this planet. Birds are nature's way to disperse seeds, pollinate flowers, eradicate insects and control the population of other species. They work as nature's barometer of life, an indicator, and in several cases, a keystone species.

The ecological checks and balances would not be possible if birds were gone, yet we continue to endanger their existence in our modern struggles and developing practices. Many are no longer in this world; they have vanished forever by uncontrolled hunting, and over control of the species to benefit agriculture. Modern threats are by far more challenging to the billions of birds that migrate every year as more buildings, towers and wind turbines are erected to supply housing and energy for more energy-thirsty civilizations around the world. On the other hand, new species are being discovered every year and more people are turning their attention to these creatures, perhaps the only thing that will keep them safe for many years to come. Enjoy them and respect them, as we only have them once.

Some Bird Facts

- The Emperor Penguin can dive nearly 2,000 feet under the frigid waters of the Antarctic.
- Some hummingbirds can beat their wings at more than 80 times per second and their hearts up to 1,200 times per second.
- A Blackpoll Warbler flies more than 3,000 miles non-stop over water in 85 hours, and completes a migration cycle of more than 12,000 miles every year.

Simple Tools for Bird Watching

Birdwatching has become one of the most practiced past times in the United States for a reason. First, it brings people closer to nature and for the most part it can be an affordable hobby; second, it can be practiced almost anywhere.

Birders use a wide range of gear in the field. For a beginning birder, little more than a pair of binoculars is required and a notepad to keep record of your sightings. However, the more time that a birder dedicates to their passion, the more likely they are to extend their gear to include things like scopes, which allow them to see birds that are even farther away. Also, should a birder take up

photography as a way to record their sightings, a camera will be added to the list of must-haves. Another technological bombshell that has just recently made its appearance on the birding scene are recorded bird songs, with programs such as iBird for iPods and other such devices being used more and more. They are a great way to attract birds that might otherwise be hard to spot. More advanced birders may even bird by ear, which requires you to know the bird calls and, in many cases, specialized equipment to amplify far away calls. Regardless of the technology that can be used in the field, there is one item that is truly indispensable: a field guide. Pocket field guides are essential to identifying birds, and typically contain illustrations of different species as well as information, such as size and range, that help birders identify their subjects.

As with most hobbies or sports, the process of selecting the right gear should not be taken lightly. Making the right decisions at an early stage will ensure years of enjoyment without additional expenses. While binoculars or spotting scopes can be pricey at times, there are always some affordable options for those with a tighter budget. Before making the investment, it is recommended that you get familiarized with the equipment and brands. This

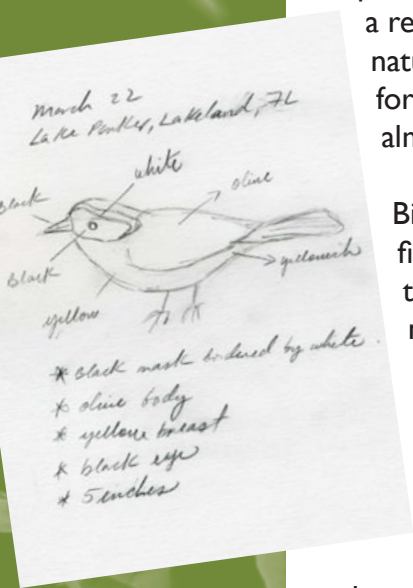
can be easily done by visiting nature centers with loaner optics or participating in nature festivals which usually have some of the leading brands represented in their exhibit areas. In general, bird watching is an inexpensive activity when most of the birding is done near home; as you become an advanced birder, you will want to explore other distant hotspots in search of highlight species. At the end, it's a rewarding activity that teaches you about nature and can be extremely beneficial when you report your findings to a Citizen Science Program or wildlife agency to help those doing research and conservation projects on birds.

Selecting Binoculars

Binoculars are your most important piece of equipment. Choosing the wrong one may lead to frustration that can put a stop to your birding enthusiasm. Several characteristics need to be considered in order to obtain a perfect match for you. Below are some of the most important features to consider.

Price

The price of binoculars is probably the one thing most people will consider first. Optics tend to be expensive, and higher price usually means better quality optics and durability. With some prices exceeding \$1,000 dollars, a binocular is an investment that should not be taken lightly. Fortunately, there are inexpensive options that offer high quality and durability. An experience birder will probably opt for the most expensive glass, but for beginners, any binocular priced between \$100-\$200 will be a good starting point. Even an old but well-kept pair of binocular can get you started and happy for awhile. Garage sales and thrift stores are great sources for used equipment. As your skills improve you may want to upgrade to better quality optics whenever possible. You can also join a local birding group or an Audubon chapter near you, and go on birding trips, usually they bring scopes and are willing to share their sightings with you.



Magnification

The magnification of your binocular determines how large your distant subject will appear on the ocular and is expressed in terms of "X" or "magnification factor". An 8x32 binocular will allow you to see a bird 8 times larger than what you see with your naked eye. The larger the X number, the larger the magnification. For bird watching 8X to 10 X is a good starting point. The second number refers to the width in millimeters of the frontal element (glass). In theory, the larger this number the more light enters the binocular, thus producing really clear images even in low light situations.

Close focus

This feature allows the binoculars to focus really close for those subjects that venture near us. If a binocular starts focusing at a minimum of 20 feet, you may be missing the little birds that perch closer to you. A close focus binocular will allow you to focus as close as 5-8 feet, which makes them appropriate for backyard birding.

Weight

Weight is usually a sign of good optics and sturdy construction, but perhaps it may be too much to carry and hard to justify for long walks. Today's binocular construction calls for lighter materials that retain the same strength and durability of heavier ones, leaving the rest of the weight on the optics. Good glass is always heavy, and that's due to the number of elements used in the construction. More elements translate into less distortion and an optimized viewing experience. These binoculars are usually more expensive.

There are other factors to consider when buying binoculars, but they become more a matter of taste and convenience. For example Nitrogen filled binoculars

are fog proof,

Binocular Design Basics



Roof Prism

A roof prism design above is more compact and lightweight than the porro prism model below. They both use a set of prisms to fold the light that travels through them, so we can see the image right side up. The smaller designs are usually more expensive and less stable.



Porro Prism

Which one is best?

Optically speaking, a porro design offers sharper images than a prism design, but they're heavier and usually wider. Porro binoculars offer a more tridimensional view as their front elements are widely spaced when compared to the roof design. For convenience, most people prefer the roof type as they are easier to carry.

About the exit pupil

The exit pupil is the measure of the image as it exits through the ocular. The size is measured by dividing the diameter (mm) of the frontal element by the magnification. The larger the exit pupil the brighter the image; this is particularly important in low light situations and as we grow older because our eyes lose their capacity to gather light.

Binocular Tips

Before using the binoculars make sure to find your subject with your bare eyes. Find a good vertical reference point on either side then scan with your binoculars horizontally before going vertical.

Selecting a Bird Guide

A bird guide is nothing more than a pictorial reference book to bird species of a defined range, or country. These books are typically illustrated using hand-painted plates that emphasize the particular field marks and details of the bird. In most cases they show both male and female and various stages including breeding or wintering plumage. Some use photographs, but most dedicated birders prefer the illustrated versions because of all the detailed information. Besides, a photo can not always capture the colors and details of a bird, because it depends on too many factors, such as available light and posture of the bird.

Selecting a bird guide is a challenging job, because there are way too many choices. Following some basic guidelines will make the selecting process much easier.

Here are a few things to consider:

Buy a guide for the particular area where you plan to bird watch.

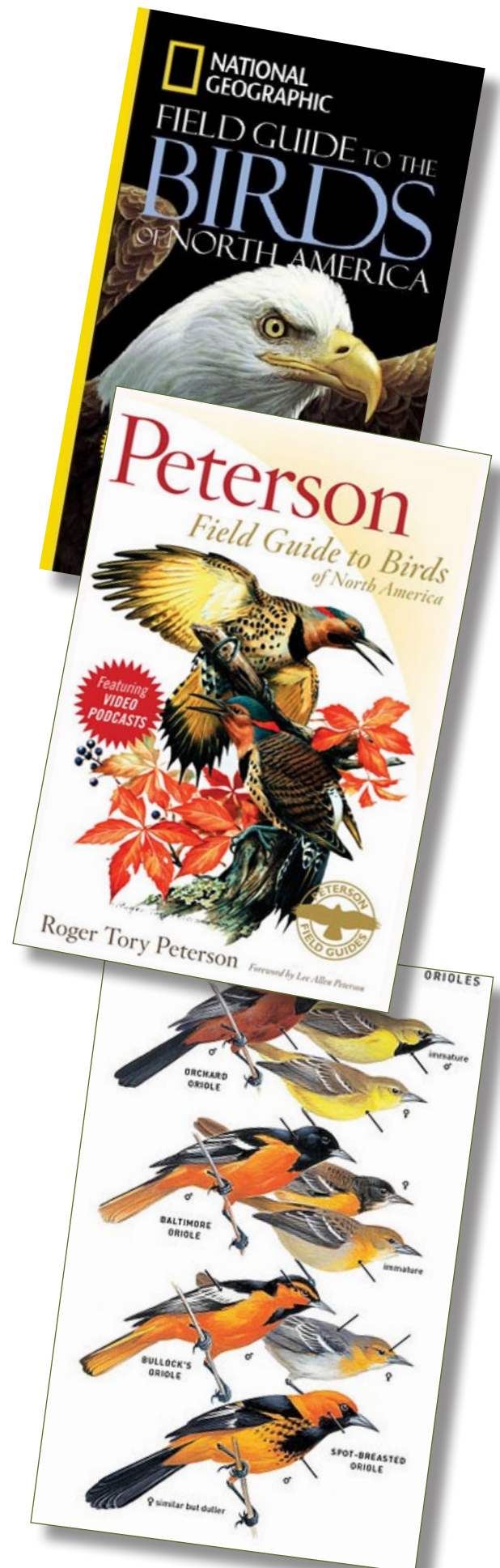
A good guide to all birds of North America may be too big to carry with you in the field, but getting one for the East section only may save you some weight. Compact and comfortable is better when you plan to carry the book in the field.

Get a full-sized guide to all birds of the country to keep at home for later reference.

The best guides will show seasonal plumage and subspecies variations.

A well designed bird guide will also point out some of the main field marks for a particular species.

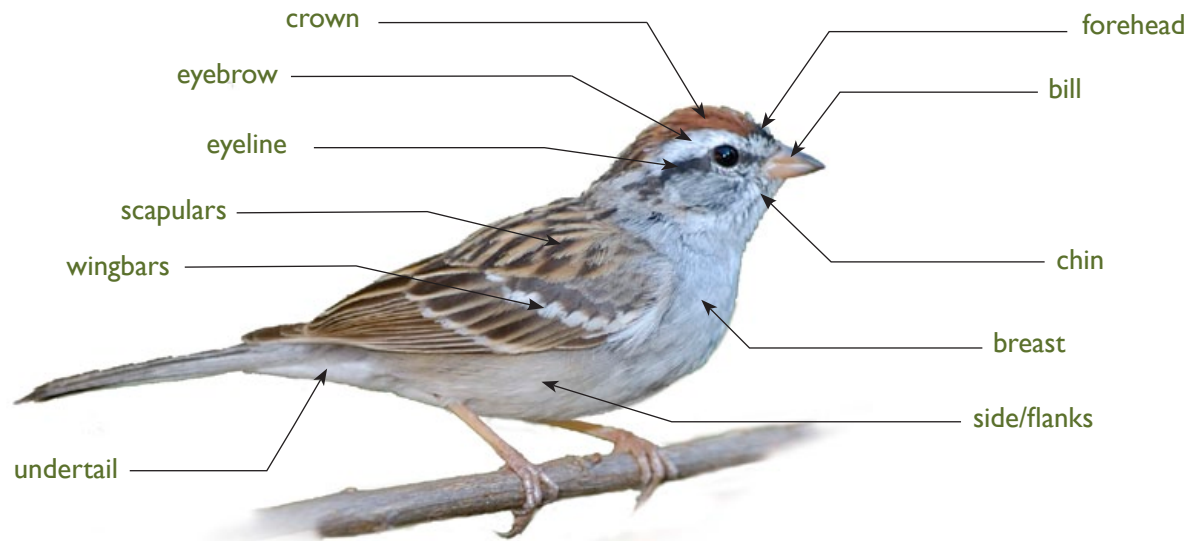
Today it is possible to buy software based guides that contain photos, sounds and even videos of North American birds.



Basic Bird Topography

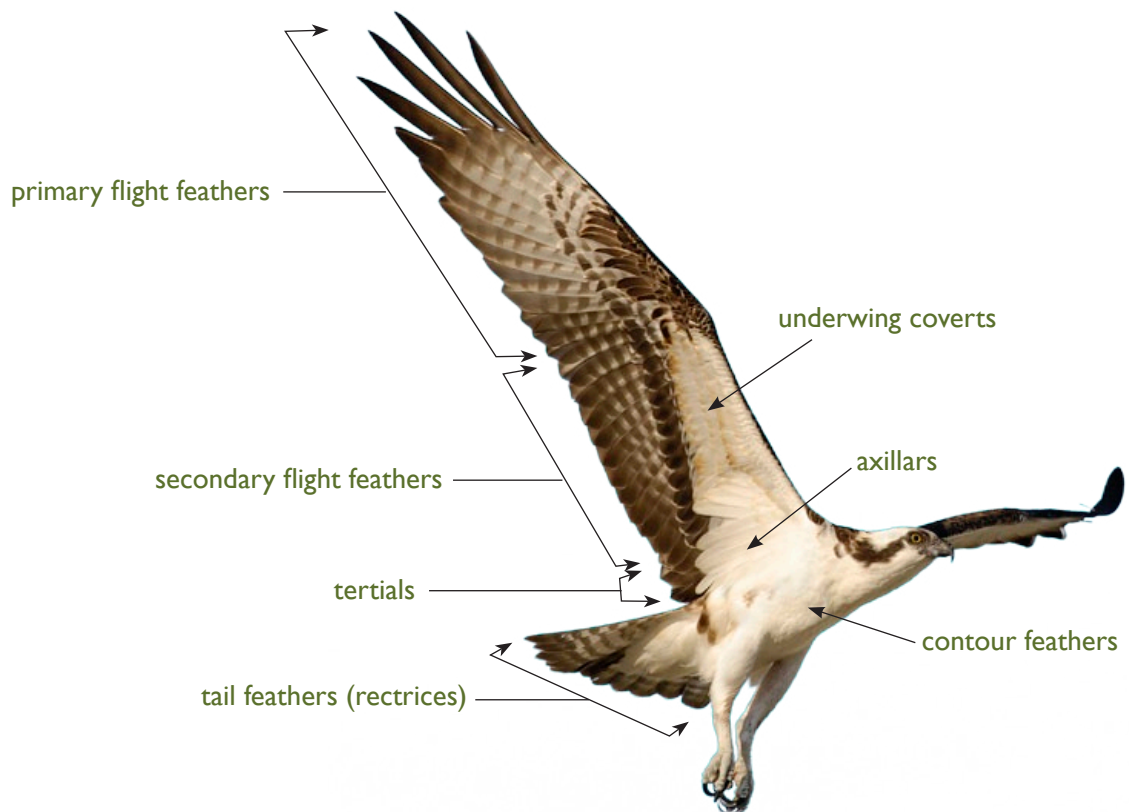
While all birds have the same common parts, the sizes, colors, shapes and configurations are different from species to species. It is there-

fore necessary to become familiar with all the terms used in describing these parts. This section will help you do just that.

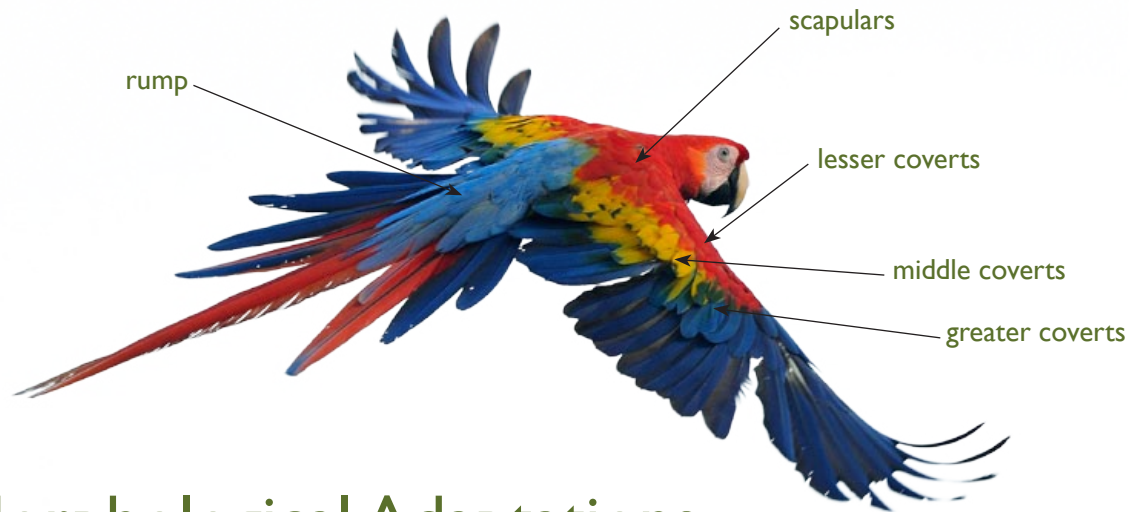


The above illustration shows you the basic parts that are usually visible on a perching bird. Note that we're not going into detail yet, later in our field marking section we'll discuss differences on particular areas of some bird species which are clues to their proper identification.

The illustration below denotes the parts of the bird that are visible when they fly in front of the viewer. It's important to recognize these parts and their associated colors to differentiate between similar species on the fly.



Basic Bird Topography (continued)



Morphological Adaptations

All birds are associated with a particular niche in our ecosystems. This niche is normally related to food gathering. The habitat in which the bird lives is a complicated relationship between the bird species, the vegetation, the food supplies, climate, and the predators. Several species can share the same habitat but have different techniques to gather their food. In woodlands, many birds prey on insects, but each species will eat insects in different places of the trees and surrounding areas. A Robin may gather insects from the ground, while the Carolina Wren will pluck them from the leaves of a tree, and a Red-bellied Woodpecker will peck on the bark in search of burrowing bugs. Each one of these birds has different techniques and tools to obtain food. Their bills are all different in shape and length. Most birds

that procure their food from deep water require to float on their bellies, and thus have specialized feet to move through the water.

Other species that feed on floating vegetation will have completely differently shaped toes. These are all morphological adaptations that allow a bird to occupy that particular niche. We'll start by looking at the two most obvious adaptations, the bill and the feet.

In simple terms, the bills and feet will give you many clues about a bird's food preferences and habitat. Some may not be that obvious and may require careful observation to notice. The Limpkin is the only bird of its kind, since it has no other representative in its genus or family, and it looks more like a hybrid between a rail and a crane in both behaviors and shape. But what makes this bird so unique is that it is a specialist - it only feeds on freshwater snails and mussels. Its bill is slightly curved to the right near the tip. This allows them to get inside the snail's curved shell to extract the flesh. Now, being a specialist has its own dangers. A sudden drop in the snail population can really have a negative effect on the Limpkin population.

In essence, morphological adaptations are structural changes that allow an animal or plant to survive. Successful bird identification relies on the careful observation of some of these structural changes and the role they play for the survival of the bird. Let's take a look at some of these adaptations, starting with the bills.



Limpkin
Aramus guarauna

Types of Bills



Curved
White Ibis

This long and curved bill is used to probe the mud for small crustaceans and invertebrates.



Straight/Compressed
Royal Tern

Straight bills are slightly flat and are used to spear or catch fish.



Hooked
American Kestrel

This type of bill is found in all raptors where it's used to tear flesh off of their prey.



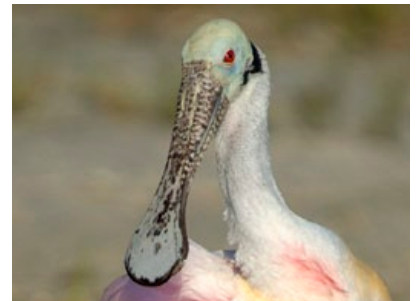
Conical
Northern Cardinal

This large bill is used to crack small seeds and fruits. The finch family of birds is known for its member's conical bills.



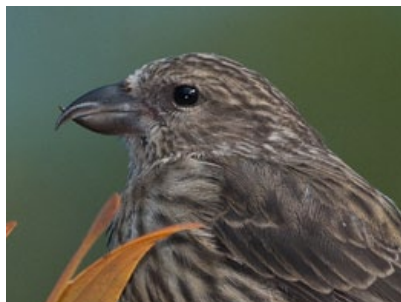
Chisel
Red-bellied Woodpecker

These tapered bills are good for hammering the trunk to remove bark.



Spatulate
Roseate Spoonbill

The spatulate bill is used to sift through vegetation and water. Ducks also have this type of flattened bill.



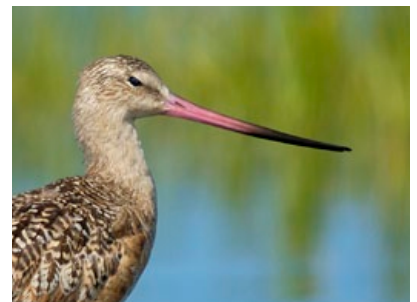
Crossed
Red Crossbill

Crossbills are specialized birds. They only consume the seeds of conifers, "pine cones".



Terete
Green-violet Eardrum

Hummingbirds use their tubular bills to sip nectar from flowers.



Recurved
Marble Godwit

Birds with recurved bills usually swish them over the surface, or probe in the mud.

Types of Feet

Types of toe arrangements



Anisodactyl
Robin



Zygodactyl
Woodpecker



Syndactyl
Kingfisher



Tridactyl
Sanderling



Pamprodactyl
Swift

Birds' feet tell us a lot about their habits. Once you get familiar with the different types of feet and their toes arrangement, you'll be able to identify some species just by looking at their feet. While there are many more types of feet than the ones described below, these are the most common. Ostriches have only two toes

on their feet and swifts have four facing forward. The toe arrangements give you a hint that can be used in identification. For example, woodpeckers have two toes forward and two back. In some species, such as the kingfisher, the 2nd and 3rd toes are fused together in what is called a syndactyl arrangement.



Palmate
Wood Stork

Ducks as well as many other water birds have this type of webbed feet that allows them to move through water.



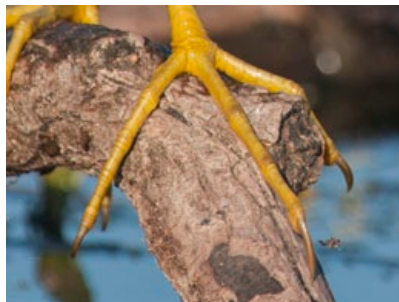
Semipalmate
Royal Tern

Wood Storks and many other birds that forage on muddy shorelines have this kind of feet.



Perching
Boat-tailed Grackle

All song birds have this type of feet. This arrangement of three toes forward and one back is good for perching.



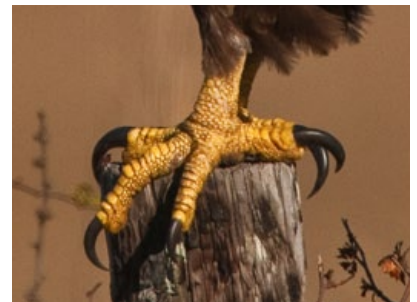
Long-toed
Purple Gallinule

These feet allow the bird to walk on floating vegetation at ease as they distribute the weight evenly over the surface.



Lobate
American Coot

The flattened toes of lobate feet are adaptations for swimming, but allows the bird to move on land as well.



Raptorial
Bald Eagle

Raptorial feet are those found on eagles, falcons, hawks and owls. They are good for grabbing prey.

More on Toe Arrangements

The illustrations to the left show different types of toe arrangements. Each one has particular adaptations that best fit the bird's needs. The zygodactyl feet of woodpeckers and creepers with two toes forward and two

facing back work perfectly fine for climbing trees. The tridactyl with only three toes forward is perfect for running with speed and is a common arrangement among shorebirds such as plovers and sandpipers.

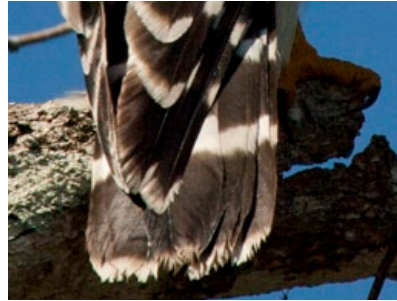
Types of Tails

The same way we use feet to identify major groups of birds, we can also use the tail for guidance during identification. Most species of birds within the same family have similar tail arrangement. As always, there are exceptions, but learning the basic shapes will make your identification a lot easier. For example,

most buteos (hawks) fan their fairly short tails when soaring; falcons tend to have longer tails relative to their bodies. Most sparrows have notched tails, while wrens have rounded tails. Few birds have a forked tail such as in the case of the Swallowtail kite, the Scissor-tailed Flycatcher and the Barn Swallow.



Rounded
Red-winged Blackbird



Square
Red-shouldered Hawk



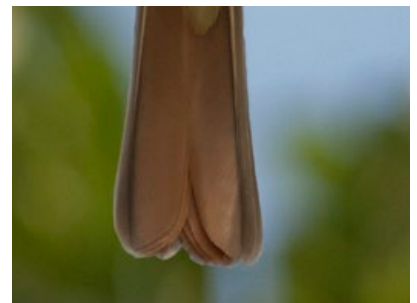
Graduated
Boat-tailed Grackle



Pointed
Northern Pintail



Forked
Swallow tail Kite



Emarginate/Notched
Great Crested Flycatcher

Few more thing can be gathered from looking at a bird's tail. The size of a tail is an important clue used in identification. Other clues includes behaviors that involve the motion of the tail such as fanning (spreading of the rectrices), bobbing (up-down) or wagging (left-right).

Tail Details

When identifying birds using their tails as references, we need to pay attention to details. In many species of raptors, the only way to tell them apart when using only the tail is by counting and comparing the number of bands and their colors. This happens in extreme cases when the rest of the bird is not visible but only the tail. As a birder, you will encounter many situations where you only catch a partial glimpse of the bird, and like an investigator making sense of a crime scene, you're left with only a few pieces of the puzzle. A good understanding of tail shapes and which species

they belong to may add to the evidence in the process of identifying your subject.

Can you tell the bird by its tail?



Based on the forked tail with white feathers on the outer rectrices, this tail belongs to a Scissor-tailed Flycatcher.



The solid yellow tips at the end of the rectrices are the trademark of the Cedar Waxwing.

Steps to Bird Identification

There are few basic rules to follow when doing bird identification. A little background on bird families and groups may help. Taxonomy is the science of classification. Every living organism found is classified based on a series of natural relationships and common traits. In this way, birds with similar characteristics are grouped within a specific group. All animal species are organized by order, family, subfamily, genus, species and subspecies. The average birder needs not to get that complicated, but understanding the differences between a thrush and a warbler is important. Recognizing the differences between wading birds and water birds is more important than knowing which family the bird belongs to. In time, you'll gain enough knowledge to understand the importance of the scientific names given to most species you encounter.

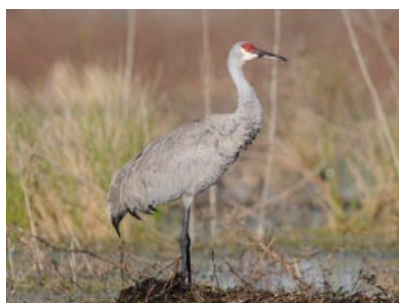
For the most part, you want to be able to gather as much information as possible from that bird that you are seeing. First, concentrate

on the basic shape, then colors, bills and feet and finally, do not forget to get a description of the area in which it was found. To ensure the proper identification, you may use also field marks such as eye-rings, wing bars and other features such as type of tail or even the color of the eyes.

Shapes are unique among birds of a particular group. Ducks, swans and geese all seem to have similarities in their overall shape and habitat preferences. Within this group of the family anatidae, you'll find several differences between them. For example, the bill of a goose tends to be higher and slightly bulkier than that of a duck. Occasionally, you'll find birds that seem to be alike at first sight, but close inspection reveals a lot of differences. Anhingas and cormorants may look similar in many ways, but the bill of the cormorant is slightly hooked at the tip while the anhinga has a spear-like bill.

Basic Shapes

The following section concentrates on the most common bird shapes. Once you learn to associate these shapes with their respective bird groups, the proper identification will depend mainly on field marks or other observations, including habitat and behaviors.



Sandhill Crane



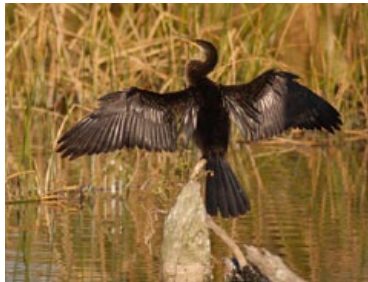
Wood Stork



Roseate Spoonbill



White Pelican



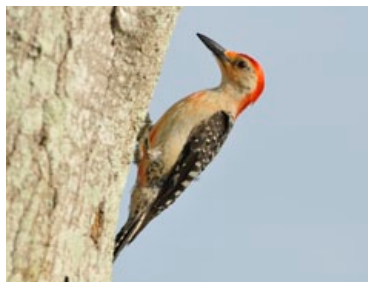
Anhinga



White Ibis



Clapper Rail



Red-bellied Woodpecker



Northern Cardinal



Least Tern



Laughing Gull



American Kestrel

Field Marks

Once you learn to identify by shape, you have a better idea of what type of bird you're seeing. Now it's time to pay attention to the details to get the right ID. Field marks are references that can be used to identify a bird in the field. These are characteristics that

distinguish one bird from another. Pay close attention to the eyes, the eyebrow, the rump, wingbars and the outer tail feathers. In many cases, they hold the key evidence to identify your unknown bird.

Field Marks of the Head



Facial Disc
Barred Owl



Facial Patch
Crested Caracara



Rump Patch
Yellow-rumped Warbler



Wing Coverts
Blue-winged Teal



Epaulets
Red-winged Blackbird



Eye Ring
Killdeer



Iris Color
White-eyed Vireo



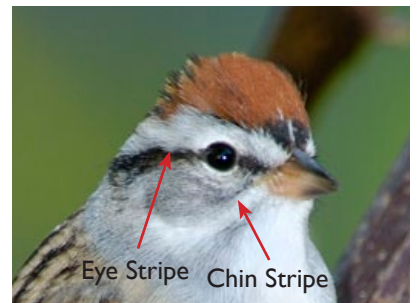
Crescents
Northern Parula



Crown Stripe
Henslow's Sparrow



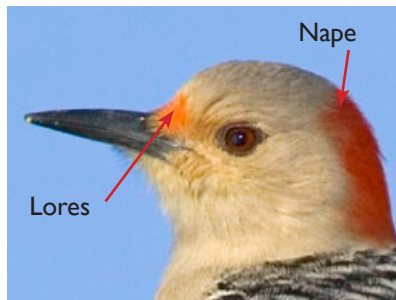
Eyebrow Stripe
Carolina Wren



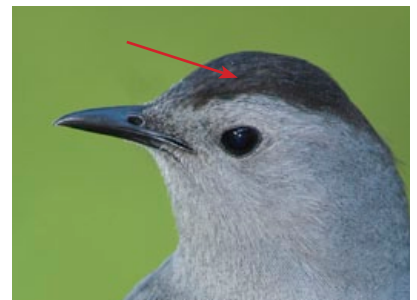
Eye Line/Chin Stripe
Chipping Sparrow



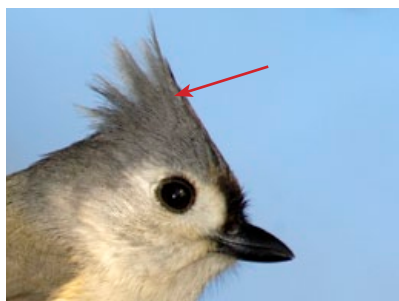
Throat Patch
Common Yellow-throat



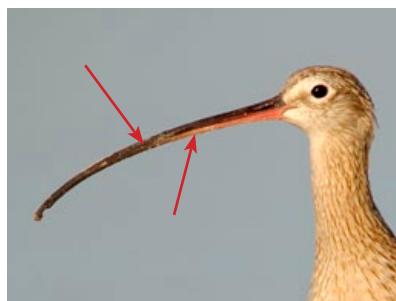
Lores/Nape
Red-bellied Woodpecker



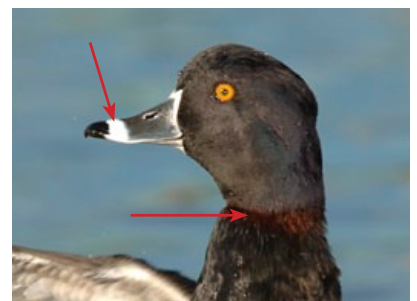
Crown
Gray Catbird



Crest
Tufted Titmouse



Upper/Lower Beak
Long-billed Curlew

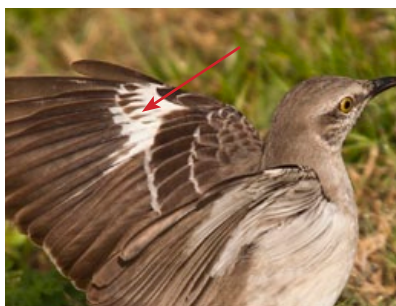


Rings
Ring-necked Duck

Field Marks of the Wings



Wingbars
American Goldfinch



Wing Patch
Northern Mockingbird



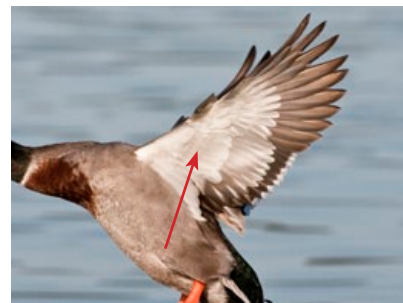
Speculum
Green-winged Teal



Wing Tips
Ringed-billed Gull

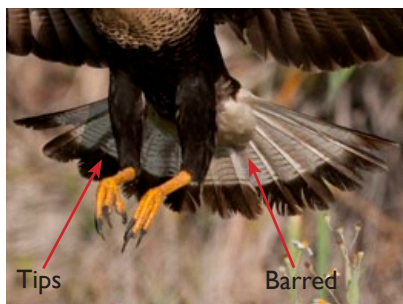


Primaries
Crested Caracara



Underwing Linings
Mallard Duck

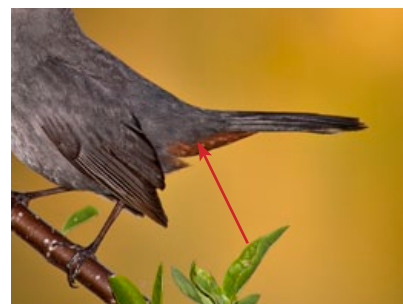
Field Marks of Tails



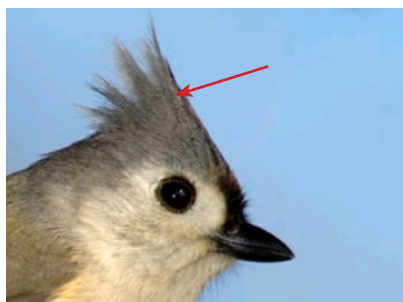
Barred/Tail Tips
Crested Caracara



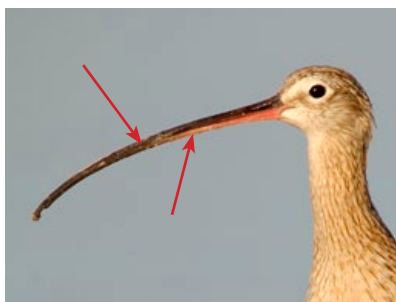
Outer Rectrices
Blue-gray Gnatcatcher



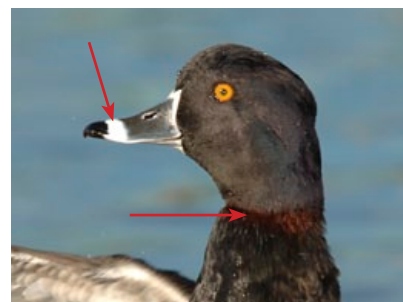
Undertail Coverts
Gray Catbird



Crest
Tufted Titmouse



Upper/Lower Beak
Long-billed Curlew



Rings
Ring-necked Duck

Now that you have learned some of the basic field marks, it's time to try them out in the field. Do not get frustrated when you can't identify a bird at first sight. Take notes and share them with a seasoned birder, he or she

may be able to point you in the right direction. Take your time, nature runs its own clock and birds don't always cooperate. Make birding a learning experience and teach what you learn to others. It will make you a better birder.



Feathered Feet
Barred Owl



Striated (Long lines)
American Bittern



Streaked (short and blotchy)
R.S. Hawk



Speckled
Black-bellied Plover



Iridescence
Wood Duck