CELESTRON

Blackburnian Warbler

HOW TO CHOOSE AND USE
BIRDING OPTICS

In association with

BIRD WATCHER'S DIGEST

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Chestnut-sided Warbler

CONTENTS

BIRDING OPTICS 101

No bird watcher's toolkit is complete without optics, which means binoculars or a spotting scope. While you can bird without the magnifying power of optics, you won't always get a satisfactory look at the birds, and will likely miss a few IDs.

One barrier to entry for aspiring birders is the belief that quality optics are expensive. They can be, but they don't have to be. Technological and manufacturing advances mean that today's binoculars and spotting scopes are more affordable than ever, while still featuring high-end materials.

So, where do you begin when selecting your first birding optics? In this guide, we discuss how binoculars and spotting scopes work, so you can select the best optics to enhance your birding experience. Once you've made your choice, we'll teach you how to clean and care for your optics. You will learn to love them, because they are your gateway to discovering flocks' worth of amazing birds.

OPTICS DEFINED: WHAT YOU SEE IS WHAT YOU GET

The vast majority of birders use binoculars–also known as "binos," "binocs," or "bins" for short. When you hear birders use the term "optics," they are usually referring to binoculars.

Binoculars are composed of two optical tubes joined side by side–much like two miniature telescopes. Inside each tube is a series of lenses and prisms that reflect and transmit light (see diagrams on pages 6 and 7). When you hold binoculars to your eyes and look at a distant object, you see a magnified image of your subject, which appears closer than it did with your naked eye.

Spotting scopes are a great instrument for high-magnification viewing when looking at distant birds, and can be an essential tool for good looks at waterfowl or shorebirds, for instance. From a design perspective, think of them like one half of a binocular that's larger and more powerful. Because they operate at such high magnifications, spotting scopes are difficult to hand-hold, and unlike binoculars, will require a tripod mount for stable viewing. In addition to getting closer looks at birds, spotting scopes can also be used to photograph birds when coupled with a camera (including the one on most cell phones). This technique is popularly referred to as "digiscoping."

However, because most everyone starts out birding with binoculars of some sort, we will discuss them in detail first. To learn more about spotting scopes, see page 10.

OPTICS TERMS

8x25, 8x42, 10x42, etc.: Pronounced "8 by 25," and so on, these numbers are the common model designation for binoculars. The first number is the magnification or power (an 8x or 8-power binocular magnifies the image 8 times, making it appear 8 times closer to you). The second number indicates the diameter of the objective lens, measured in millimeters; also called the aperture. The larger this number, the larger the lens, and the more light your binoculars gather to produce a brighter image. Also note that the larger this number is, the bigger and heavier the binocular will be.

Armoring: An external coating on the body of the binocular, often rubber or synthetic, that increase the binocular's weather resistance, durability, and ergonomics.

Close focus: The nearest distance the binocular can focus. Between 6 and 12 feet is ideal. Some models can focus as close as 5 feet, while many high-power binoculars can't focus nearer than 20 feet. Observers wishing to look at nearby birds or insects need binoculars with a short close focus. To determine the close focus of a binocular, try focusing on your feet or another nearby object, noting the distance of the nearest object you can bring into sharp focus. While close focus will vary between models of binoculars, you should expect every binocular to be able to comfortably focus to an infinite distance, such as the horizon or the moon.

Diopter: Adjusts the focus of the right optical barrel to compensate for differences in clarity and focus between your eyes. The diopter is usually an adjustable ring on the right eyepiece or the central focus wheel.

Eye relief: The optimal distance (measured in millimeters) from the outer surface of the ocular lens to that of your eyes. This is a specification that is a result of a binocular's design and will vary between makes and models. Binoculars with less eye relief need to be pushed in closer to your eyes while those models with longer eye relief can be effectively used at a greater distance from the surface of your eyes. This is a specification that's important to note for those wishing to use binoculars while wearing eyeglasses. If you are an eyeglass wearer, look for binoculars that have a minimum eye relief of 15mm.

Field of view: The area that can be seen when looking through a binocular. A larger field of view makes it easier to locate your subject. Higher powered binoculars (10x and up) may have a reduced field of view. (Imagine peering through a hole in a fence: the closer your eye gets to the hole, the more area you can see through it.) Field of view is often expressed as a certain number of feet at 1000 yards. Though less common, it is sometimes expressed in degrees.

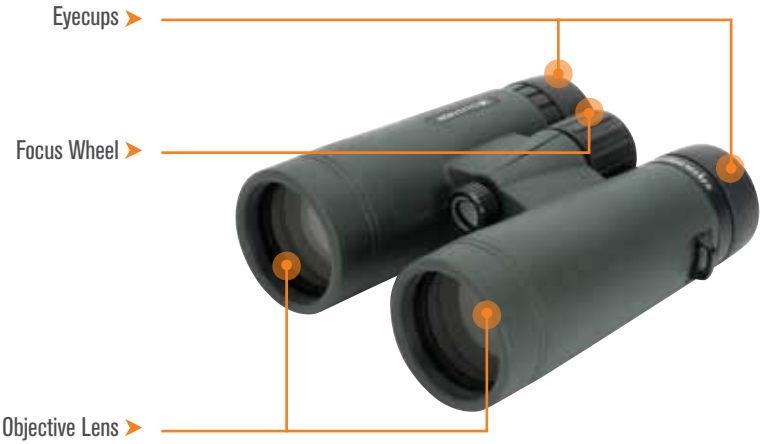
Inter-pupillary distance: Also referred to as IPD, this is the distance between the centers of the user's pupils. IPD is measured in millimeters and can be relevant for binocular users who have closer set eyes than the adjustment limits of some models may be able to accommodate.

Lens coatings: Lens coatings are treatments applied to the lens surfaces that can increase a binocular's brightness, clarity, and color quality. There is a lot of variability in the type, quality, and number of lens coatings on any given binocular. A binocular with fully-coated lenses means that all "air-to-glass" lens surfaces have at least one lens coating. Binoculars with multi-coated lenses means that at least one air-to-glass lens surface will have multiple lens coatings. The best-performing binoculars will have fully-multi-coated lenses where all the air-to-glass lens surfaces will have multiple lens coatings.

Objective lens: The lens nearest your subject. The diameter of the objective lens, measured in millimeters, is the second number used to describe optics (see "8x25" above).

Ocular Lens: The lens you look into to view images through your binocular.

Power: Used interchangeably with the term "magnification," this refers to the degree to which an object viewed through the binoculars is made larger, relative to how it is perceived by the unaided eye.


Eyecups
Focus Wheel
Objective Lens


Focus Wheel
Eyecups
Ocular Lens
Inter-Pupillary Distance
Diopter Ring

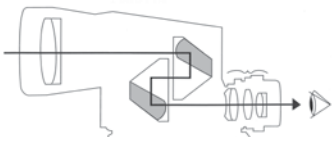
Lesser Yellowlegs

HOW BINOCULARS WORK

There are two basic designs to binoculars: Porro prisms and roof prisms. You can identify the prism construction of your binocular at a glance. Porro prism binoculars have a right-angled bend between the objective lens and the eyepiece, which makes them form an M shape when standing on their objective lenses. Roof prism binoculars are typically straight, with the objective lens in line with the eyepiece, so they take on an H shape when stood upright.

PORRO PRISM BINOCULARS

Porro prism binoculars first appeared in the mid-1800s, the design of an Italian optician named Ignazio Porro, and feature two right-angled prisms in each binocular barrel. Today, Porro prism binoculars are considered "traditional" binoculars, since they were the most common design until roof prism designs gained popularity in recent years.



Porro Prism Binoculars
Porros are designed with two right-angled prisms in each barrel.

Porros rely on an external focus mechanism, which causes the eyepieces to slide forward or backward along an external tube.

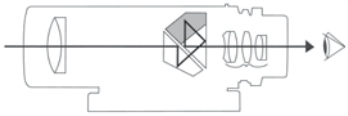
The advantages of Porro prism binoculars are:

- Brighter images due to greater transmission of light
- Fast focusing
- Less expensive to produce
- Tend to allow eyepieces to come closer together, which can more easily accommodate users with narrower-set eyes (including children)

- **The disadvantages of Porro prism binoculars are:**

- Longer close focus distance
- Bulky design because of the angled prisms, making them harder to hold for small-handed birders
- Less durability, as the external focusing mechanism is more easily jarred out of alignment

ROOF PRISM BINOCULARS



Roof Prism Binoculars
This design reflects light through a series of five small prisms in each barrel.

Roof prism binoculars were also developed in the mid-1800s, but by a German manufacturer who oriented the light-directing prisms inside straight barrels. Because of this design, roof prism binoculars produce more reflections than porros, so special coatings are applied to enhance the final image's brightness. These coatings also increase the binocular's cost.

Almost the entirety of the focus mechanism on roof prism binoculars is housed internally, with only the focus knob itself being on the exterior of the binocular. This allows roof prism binoculars to be better sealed from the elements than Porro prism models. Most roof prism models that are labeled "waterproof" can be fully submerged for a short period of time, unlike Porro prism binoculars.

Roof prism binoculars have grown in popularity among birders in the past few decades primarily because many leading optics manufacturers are producing high-quality roof prism optics that are excellent for bird watching. At the mid-to-high price range, roof prism binoculars dominate the birding optics market.

The advantages of roof prism binoculars are:

- Ease of handling
- Close focusing in advanced models
- Increased durability and waterproofing due to fewer external moving parts
- Better power-to-weight ratio (a 10x roof prism binoculars weighs less than a 10x Porro)

The disadvantage of roof prism binoculars is:

- More expensive due to the need for special prism coatings to increase image brightness

BINOCULARS AS MAGNIFYING GLASSES

Most birders know to look through the ocular lenses of their binocular. But if you turn it around, your binocular becomes a magnifying glass, revealing incredible color, texture, and detail. Treat it like you would a microscope by closing one eye and looking through one of the objective lenses. It may feel a bit awkward at first to find your subject in the narrow field of view, but when you do, it'll give you a whole new perspective. If your birding session is a little slow, flip your binoculars around and take a closer look at nearby plants, rocks, insects, feathers, and more.

American Robin

ALL ABOUT SPOTTING SCOPES

When you're ready to get serious about birding, consider investing in a spotting scope. Scopes can be expensive, but their overall quality and versatility for bird watching is unparalleled. Scopes are best for panning open landscapes for birds, and observing distant subjects like shorebirds, waterfowl, and birds of prey. But you can also use one to achieve breathtaking, up-close views of nearby birds. Put a spotting scope on a pied-billed grebe that is 50 feet away from you, and you'll be able to see not only the bill marking that gave this species its name, but droplets of water on the grebe's head feathers.

Aperture

The aperture of a spotting scope is the measurement of its objective lens in millimeters. Because scopes operate at such high magnifications, they greatly benefit from having a larger objective lens diameter than binoculars, allowing them to gather more light. While a good birding binocular will have an aperture of 32 to 50mm, suitable spotting scopes typically range from 60mm all the way to 85mm in objective lens diameter. As a scope's objective lens gets larger, expect it also to increase in both weight and cost. Like binoculars, there is always a trade-off between size and performance, with the smaller models being easier to tote and generally less expensive, yet not providing the brightness and resolution of the larger scopes.

Magnification

Most spotting scopes will either come with, or have available for purchase separately, a variable-magnification eyepiece that holds the ocular lens. Unlike most binoculars, which have magnifications from 7x to 10x and typically have only one power, spotting scopes are designed to work at much higher power, with zoom eyepieces often ranging from 15x on the low end to 60x at maximum power. When using a scope, scan for your subject on low power when your field of view is widest. If a closer look is desired, adjust the eyepiece for more power after the bird is within your view. When considering buying a spotting scope, ask whether it comes with an eyepiece (not all scopes come with one) and what power the eyepiece is.

Angled vs. Straight

Spotting scopes come in two body styles: one that presents the eyepiece straight off the back of the scope, and another that presents the eyepiece at a 45-degree angle from the body of the scope. While some birders find a straight spotting scope better and easier to use, others prefer the angled orientation because it allows them to look down into the eyepiece rather than craning their neck to accommodate the straight scope. As with all optics, try out both types to determine which is most comfortable for you.

Tripods

High-power spotting scopes require a high degree of stability to be used effectively. If you've invested in a quality scope, invest equally in a quality tripod. Occasionally you'll see a birder trying to hand-hold a scope or use it mounted on a gun stock, but neither works as well as a solid tripod. A tripod anchors your scope, holding it steady so you can observe birds without jitters or shakes. Next time you're out with a birding group, ask the scope users about their tripod preferences and test them for yourself.

The best tripods for birding scopes fit these characteristics:

- Sturdy (won't blow over in moderate winds)
- Light: avoid inexpensive, lightweight tripods
- Quick and easy leg extension and adjustment
- Solid scope mount
- Easy to maneuver in all directions

- When mounted, your scope should be tall enough to look through without having to bend over or stoop down.

Digiscoping

Digiscoping–taking photos through your spotting scope–is exploding in popularity among birders because it allows them to easily document sightings and collect images of their IDs. By holding a digital camera or smart device up to your scope's eyepiece, you can quickly capture quality images. Many manufacturers offer camera adapters or brackets designed specifically for digiscoping.

Green Jay

Carolina Chickadee

TOP 10 TIPS
FOR PURCHASING YOUR FIRST OPTICS

By Bill Thompson, III

To enhance your enjoyment of birding, you need some sort of optical assistance. Whether you choose binoculars, a spotting scope, or both, purchasing your first optics is one of the most important decisions you make as a birder. To avoid buyer's remorse, here are our top 10 tips to help you confidently buy your first birding optics.

10. Spend the money.

Whenever I spend a chunk of money on something fun (as opposed to a necessity like car repairs or dental surgery), I hear my dad's voice saying either, "Spend it like you've got it!" or, "Easy come, easy go." He was being sarcastic, but it has never stopped me. It's well understood that with optics, you can consistently expect higher-price models to perform better than their less-expensive rivals. There's no more important purchase for an avid bird watcher than good optics. You're investing in your own enjoyment, and that's always a sound investment.

9. How does it feel?

There are two important "feel" aspects to consider when buying new optics. The first is how they physically feel when you use them: You want to make sure you're buying optics that feel good in your hands, to your eyes, and around your neck or against your body. The second aspect is how you feel about purchasing your

selected model. If you're at all squeamish about the brand, the model, the price, the retailer, the warranty, or anything else, put them down. If it doesn't feel good now, it won't feel any better after the purchase shows up on your credit card.

8. Compare prices.

If you ask a dozen different retailers about the price of binocular X or scope Y, you'll get a dozen different prices. It's good to get a general idea of where the various retailers stand pricewise, so ask them which brands they are able to price most competitively, as well as additional costs, such as taxes and shipping. But don't spend too much time price shopping: Find a decent price and a retailer you are comfortable buying from, and make your decision. I sometimes base my buying decision as much on my confidence in the retailer as on the optics' brand or price.

7. Check the warranty.

Two words: lifetime guarantee. If you see this warranty on your optics, you know you're going to be okay. Unfortunately, not all optics manufacturers offer this, so a better warranty is worth paying a little extra when you're considering two similar brands. Look for a lifetime guarantee against defects in manufacturing and a contact number or email for a repair shop. Also keep in mind that a lifetime guarantee is only as good as the company offering it. A manufacturer's reputation, good or bad, should also be considered.

6. Consider special features.

This is where research and field testing pay off. For example, one summer, I was able to compare several high-end scopes on a field trip; two of the scopes were the same make and model, but one had specially coated lenses and the other did not. The difference in price was almost $1,000, but the difference in color fidelity was remarkable. So the next time I got a scope, I went for the expensive coatings—and I never would have if I hadn't field tested it first. Special features can include ergonomic design, lens coatings, special construction, waterproofing, and so on. Make your decision based on your personal preferences, not on some special feature you'll never use.

5. Choose a power and model suited to your needs.

This is why it's important for you to try before you buy (see #2). Make sure the model you select is easy and comfortable to use, and be sure its durability and warranty fit your needs. If you are watching warblers in a woodland setting, 7x or 8x binoculars may be better for you than 10x. But if you plan to scour distant mudflats for shorebirds, even a spotting scope with a 20x eyepiece may not be powerful enough. Keep in mind that zoom eyepieces on a spotting scope will give you more flexibility.

4. Choose a few brands.

After you decide on your budget, make a list of brands and models that you can afford to focus your search. However, be aware that some optics are sold under separate brand names despite being the exact same model. Binocular A may be identical to Binocular B, but marketed under a different name. When comparing two seemingly identical products, differences in a brand's warranty or customer service record may help you make the best choice.

3. Set a budget.

With optics, it's almost universally true that the more you spend, the better the product. If you decide you can spend $500, do your research and gather all the names of the products within your budget. If you really love a model that's a few hundred dollars more, my personal suggestion is to go for it! But don't base your decision on price alone-the binocular or spotting scope you choose should feel like the "right" one (see #9).

2. Try before you buy.

When you ask your birding friends what they like about their binoculars or spotting scopes, also ask to try them out. This is the best and simplest way to field test different makes and models. Be sure to keep notes of your impressions-it's easy to forget or get mixed up weeks later when you're ready to buy. If you have no local bird club or hotspot where birders gather, consider traveling to a good birding festival with the goal of trying out lots of optics and asking questions of both the manufacturers and birders present.

1. Do your research.

The first step in finding the right binocular or spotting scope is to familiarize yourself with what's available. Luckily, there are many of sources of in-depth information on optics. The Internet is a fantastic source, with thousands of websites devoted to optics from manufacturers and retailers to birding-centric online forums and discussion threads. You can also scan the ads in birding and nature magazines, then email or call the company for information. But the best sources are your fellow bird watchers. Ask them what they like about their optics, what they don't like, what their ideal optics would be, and so on to get their honest opinions.

TrailSeeker Series
These roof prism binoculars offer sharp, vivid images in a low weight package. Learn more at **celestron.com**

Red-eyed Vireo

The right binocular for you will fit comfortably in your hands and will feel natural for you to use.

ADJUSTING YOUR BIRDING OPTICS

Good birding binoculars should have a central focus wheel and a diopter focus adjustment. The diopter is often found on the right eyepiece as an adjustable ring. The diopter compensates for the differences between your eyes. To get the clearest possible image from your binocular, adjust both the diopter focus and the central focus.

Note that if your binocular does not have a diopter or if it lacks a central focus wheel–some models make you focus each eyepiece individually–then it is not suitable for birding. Consider replacing your binocular with one that has these features.

Focusing

Follow these steps to ensure a perfect view through your binoculars every time.

1. Adjust the distance between the two binocular barrels so they are at the correct width for your eyes. If the barrels are foo far apart or too close together, you will see black edges in your field of view. If your spacing is right, your view will be a perfect circle.
2. Find something to focus on, such as a dark tree branch against the blue sky, a street sign, or an overhead wire. First, you need to adjust the coarse focus. With both eyes open, turn the central focus wheel until the image is clear.
3. Now it's time for fine focusing. Close your right eye and, using only your left eye, adjust the central focus wheel until the object is crystal clear. Then, close your left eye and, using only your right eye, turn the diopter adjustment to bring the object into sharp focus.
4. Open both eyes. The object should be crystal clear. From now on, use only the central focus wheel to focus on objects near and far.

If your focus is correct, the view through your binoculars should appear almost three-dimensional, popping out at you with bright, sharp details. Your eyes should feel natural and relaxed. If using your binoculars doesn't feel like this, repeat the steps above, making small adjustments along the way. Once a binocular's diopter is properly calibrated to suit your vision, this particular adjustment shouldn't need to be repeated unless your vision changes or another user changes the diopter setting on your binoculars.

Note: If you experience eyestrain or develop a headache while using your optics, your binoculars may be out of alignment. Most binocular manufacturers are happy to service their optics, so if you think your binocular has a problem, contact the manufacturer about sending in your optics for repair.

Finally, always use your neck strap or harness. Carrying your optics around unsecured in your hands exposes them to getting dropped or hit. A neck strap keeps the binoculars safe around your neck and against your chest, within easy reach. A binocular harness incorporates straps that go over the shoulders and across the back, distributing the weight of the binoculars for comfort, especially during extended birding sessions.

Finding the Bird

If there's one problem birders encounter more than any other, it's getting their binoculars oriented quickly at the bird, even when the bird is still or perched in an obvious location. Fortunately, you can practice this skill using inanimate objects.

With your naked eye, find a bright spot in the distance–such as a leaf or a spot on a building–and lock your eyes onto it. Now, without moving your eyes from that spot, bring your binocular up to your eyes and into alignment with your view. Keep practicing until you get accustomed to simultaneously locking your eyes in place and aligning your binocular. This will make it easier for you to observe birds with your binocular, even if the birds are moving.

When locking your eyes onto a distant bird, it helps to pinpoint a feature or landmark near the bird. This can be a notch in a tree's outline, a brightly-colored leaf, or even a passing cloud. Note where the bird is in relation to this landmark; it will provide you with a stationary point of reference when aligning your binoculars.

TrailSeeker series
Celestron's TrailSeeker binoculars offer both high light transmission as well as high contrast images. Learn more at **celestron.com**

Northern Cardinal

Cleaning Your Optics

All optics need to be cleaned regularly, whether they cost $100 or $1,000. But use caution, as cleaning them the wrong way can cause damage. Wiping your shirtsleeve across your lenses may seem like the easiest way to quickly remove dust, but you may be leaving lots of tiny scratches on the glass or lens coatings in the process. Over time, these tiny scratches will reduce your optics' image clarity.

Follow these steps whenever you clean your optics:

- Use a soft brush or compressed air to blow away coarse particles (dust, dirt, grit, crumbs, etc.).
- Moisten part of a lens cloth or lens tissue with a cleaning solution designed for coated lenses. (Both are available at camera shops and outdoor stores.) Softly wipe the lenses with the damp cloth.
- Polish the lenses with the dry portion of the cloth.
- Hold the optics up to the light and look for smudges and smears. Repeat the wet cleaning process if needed.

CELESTRON

PROTECTING BIRDS
IN OUR BACKYARD

Less than two miles from Celestron's headquarters in Torrance, California, is the last remaining vernal marsh in Los Angeles County, the Madrona Marsh Preserve. It's a vital stop for migratory bird species along the Pacific Flyway and home to hundreds of native and non-native species.

As an optics manufacturer, we understand that habitat preservation is vital to the hobby of birding. That's why we're a proud sponsor of the Madrona Marsh. Students and visitors can use Celestron sport optics to explore the Marsh or take a closer look at plant and animal specimens in the Nature Center using Celestron digital microscopes.

For everyone at Celestron, stewardship is personal–and it starts in our own community.

LEARN MORE ABOUT HOW THE MADRONA MARSH USES CELESTRON OPTICS AT:

celestron.com/madrona

BECOME A BIRDER IN 5 SIMPLE STEPS

By Kyle Carlsen

1. Be aware of your surroundings. General observation is the heart of bird watching. It starts with noticing the birds in your backyard, during your drive to work, along the beach, or wherever you are. Soon you'll pick out specific birds in prime habitat areas. Always have your eyes and ears in tune with the natural world.

2. Choose good optics. Following the tips outlined in this guide, start with binoculars and then consider adding a spotting scope to your arsenal. Specialty stores, birding festivals and events, and birding club outings are all great opportunities to test different optics and decide what suits you best. If you choose to buy your optics online, be sure your chosen retailer has a generous return policy so you're not stuck with an expensive mistake.

3. Choose a good field guide (or two). A field guide is an invaluable tool in the birder's backpack. Find a guide that's straightforward, easy to use, and includes birds in your region. Study the guide to become familiar with the birds you're likely to encounter. When you do see a bird, remember to look at the bird and not the field guide. Two minutes later the bird may be gone, but the field guide will still be there. Birds have wings; books don't! If you carry a smart phone, consider taking advantage of the many digital field guides and ID tools available for mobile devices.

Laughing Gull

4. Start with local birds. Birds are all around us—all you need to do is look out a window or step outside. Every backyard has at least a few birds. Take a look at them and note their appearances, behaviors, and sounds. Invite more birds into your backyard by putting out feeders, water features, and nest boxes. Then, explore further by visiting a local park, wildlife refuge, or similar natural area. Join a bird club or other organization so you can go birding with others in your area. The more familiar you become with your region's most common birds, the better you'll be at identifying rare birds when they show up or when you encounter new species away from home.

5. Expand your focus beyond birds. It's a big world out there, and birds represent only a tiny fraction of nature's treasures. Apply your optics and observation skills to other areas, such as insects, wildflowers, or even mammals. You'll find that the more you learn about other wildlife, the better you'll understand birds and their habitats. As the naturalist John Muir famously said, "When one tugs at a single thing in nature, he finds it attached to the rest of the world."

Marsh Wren

IDENTIFYING BIRDS

Whether you're relaxing in your backyard, strolling along the beach, or hiking through the woods, the basic steps for identifying a bird remain the same. Follow these guidelines when you spot a bird, and you'll start collecting bird IDs wherever you are.

Size

The first thing to take note of is the size of the bird, because this will narrow your possible IDs right from the start. Think of birds as falling into three broad size categories—small, medium, and large—and associate each category with a familiar object, such as a pencil, a ruler, or a loaf of bread. Soon your judgment of a bird's size will become automatic. In most field guides, the size given is for the bird's overall length, measured from the tip of its bill to the end of its tail.

Keep in mind that a bird hunched over on the ground picking up seeds is foreshortened and thus appears shorter and fatter than if it was perched on a tree limb. A startled bird will stretch its neck, making it look considerably longer or taller than when relaxed. The key to judging a bird's size is to watch it for several minutes, wait for it to relax, and examine both its length and bulk.

Overall Impression

Now that you've gauged its size, what is the most noticeable thing about this bird? The answer is a basic description of the bird's shape and appearance, and it doesn't have to be complicated. For example: This is a large, tall, thin bird with long legs. While sometimes the overall impression isn't enough to get an ID, it is always a good starting point.

Head and Bill

Begin analyzing the bird from the head and bill. The key to an ID often lies in the pattern of the bird's head. Does the bird have stripes on the head? Is there a line over its eye? Are the feathers on its head a noticeable color?

Pay particular attention to the bill, as its shape and size often indicate the family to which the bird belongs. A bird family is made up of species that are closely related and share many characteristics. For example: All sparrows have short, thick bills; warblers have short, thin bills; and thrashers and mockingbirds have long, thin bills that are usually curved downward.

After you have looked at the head and bill, check the back. Is the back darker or lighter than the head or the belly? Does it have streaks or spots, or is it plain?

Wings and Tail

The presence or absence of wing bars is often the key to an ID. Wing bars are contrasting, usually pale, lines across the wings. Many groups of birds—warblers and flycatchers, for example—are divided into those that have wing bars and those that do not. Also take note of the underside of the wing and note if there are streaks or spots.

Finally, look at the tail. Is it long or short, rounded or forked, darker or lighter than the back? Is it all one color? Does the bird bob or wag its tail persistently? Is it held cocked up or angled down?

Range

A bird's range can also be a valuable clue to its identity. Most birds stay within their normal range, so you should expect the expected. If you live in Oregon and identify a bird at your feeder that, according to the guide, resides only in Florida, your identification may be incorrect. Reconsider the other clues you have and try again. Birds occasionally show up a long way from where they are supposed to be, but such occurrences are rare.

Using Your Field Guide

After you've watched the bird carefully, crack open your field guide and try to put a name to your mystery bird—and don't get overwhelmed by the number of choices. For new birders, it's often best to start at the beginning of the guide and work your way through to the end. It won't be long before you naturally flip to certain sections when you have an ID in mind. Small brown birds with thick bills will have you checking sparrows; chunky gray-brown birds with long tails and bobbing heads will find you looking at pigeons and doves, and so on.

All this sounds like a lot to remember, but after observing a few birds, most of the questions will become an automatic checklist. As with most activities, there is no

substitute for practice, so run through these steps several times with a familiar bird. Remember to look for the most obvious clues to a bird's identification and don't get mired in minute details.

Misidentifying Birds

Here's an inside tip about birding: Everyone makes wrong IDs. Beginners frequently make mistakes, but even experts do, too. Misidentifying birds is part of the learning process, so don't worry about it. The occasional mistake should not discourage your excitement for the hobby.

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THREE TIPS FOR IDING BIRDS

1. The first several times you go through your field guide, be sure to read all the way through, even if you think you have found the bird that matches the one you're watching. Always check to see if there are similar species with which the bird might be confused–many field guides list these. A common error many birders make is to settle on the first bird in the guide that resembles the bird they are trying to identify.
2. The wild bird you are seeing may not look the same as the image in the field guide. Birds, like people, are variable. If almost everything matches and there are no similar species, then you almost certainly have the right bird.
3. If your mystery bird's identity has been narrowed down to three or four species but a no-doubt identification remains elusive, check another guide. Each has unique information the others lack.

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TRAVELING WITH OPTICS

By Alvaro Jaramillo

One of the greatest things being a "bird guy" has allowed me to do is travel. I visit wonderful places, meet amazing people, and experience biodiversity firsthand. For most of us, if we want to see a bristle-thighed curlew or a Magellanic plover, we need to get on an airplane and go somewhere other than where we live! When you're ready to take your birding above and beyond, these packing and travel tips will help ensure your favorite optics arrive in one piece, ready for adventure!

First, it is imperative is to identify the "weakest link" in your travel plan–the one that will require the most compact or lightest-weight packing. Travel can be straightforward for a short hop, but it's much more complicated for a multi-destination domestic or international trip where your journey may involve changing planes or additional modes of transportation such as a ferry, a ride up a mountain in a pickup truck, or a seaplane. It doesn't matter what the bag weight limits are for your international flight if you then have to transfer to a puddle jumper where the weight limits are much lower. This weakest link will determine the size and weight of your luggage, so be aware of the necessities you need to have throughout your trip. If a charter flight is involved in your itinerary, make sure you ask about weight restrictions; in most charter turboprop planes, you will likely have to check your carry-on bag and hand-carry essentials such as your binoculars, a book, or a tiny bag. Always strive to simplify–bring as little as possible, but enough to make your trip all that it can be.

Also, take into account that it is not rare for checked bags to arrive late, particularly when there is a short layover between flights. I see it happen all the time, so factor this possibility into your planning. Consider arriving at your destination a day early to catch up with sleep, see a few of the cultural sights, and allow delayed luggage to arrive. However, if that's not possible, think about what you would need at your birding site if your checked baggage is delayed. You definitely want your binoculars, and maybe your field guide. (A scope may not be so important initially.) Depending on how keen you are on photos, you may want to have your camera. Finally, suitable clothing, a toothbrush, a hat, and–perhaps the most important item–comfortable birding shoes! I recommend wearing shoes that do double-duty as both travel and birding footwear.

If you can board early, particularly on full flights, do it. If you have elite, frequent-flier status, take advantage of early boarding to ensure you have space for your carry-ons. Otherwise, book seats farther back on the airplane; these sections board earlier than those in front. You don't want to get on board when all the overhead space is gone.

When I travel, I take a large backpack as my main carry-on bag and a smaller computer bag for my laptop. I need to travel with a computer; you may not, although if you are a photographer, having a secondary place to store photos and begin editing and cataloging is a huge help. A backpack works well because I like to use things for multiple purposes: I need a pack in the field, so why not have the same pack function as my carry-on? Remember, simplify! In my backpack, I take my camera, telephoto lens, scope, and binoculars. It's heavy, but it fits easily in overhead baggage compartments. If I have a connection to a smaller plane, where overhead compartments are smaller, I travel with my camera and lens in a padded holster-type bag in my backpack, so it is easy to remove. Then the backpack fits nicely into the overhead compartment, and I can put the camera on the floor or my lap if I have to. I try to avoid checking carry-ons at the gate. With thousands of dollars in sensitive equipment inside that could be damaged, checking these items is not a risk worth taking.

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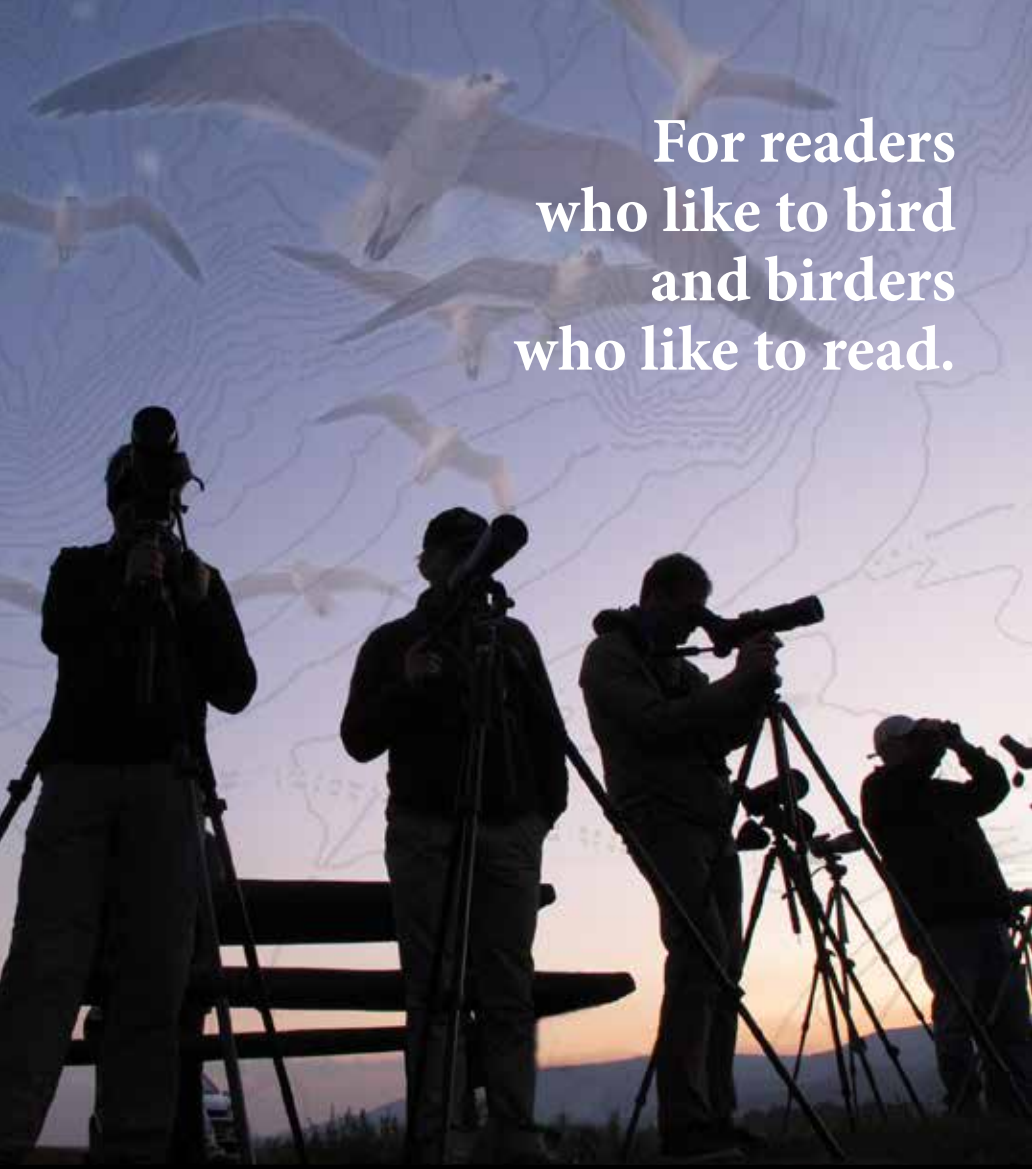
Try to pack multipurpose items. For example, before putting them in my backpack, I wrap my scope and binoculars in a fleece throw to protect them. The fleece serves a double purpose–in fact, a triple purpose, because I often use it on the plane to keep warm or as a pillow. Some people like to travel wearing a photographer's vest with multiple pockets instead of carrying an extra bag. This works if you like wearing one of these vests in the field, but it's not necessary for travelling; I'd rather have everything on my back than hanging off my body.

I hope this alleviates your fears about traveling with your birding gear and gets you excited for your next trip. Remember to relax and enjoy your birding experience, and don't worry too much about the trivial things. In the long run, a bit of preparation and forethought will more than pay for itself. **Bon voyage!**

Allen's Hummingbird

NOTES



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