



Leica APO Televid



Nikon EDG Fieldscope



Nikon Prostaff 16-48x 65mm



Swarovski ATS/ATM



Vortex Razor HD 85mm



Zeiss Diascope

THE AUDUBON GUIDE TO SPOTTING SCOPES

Choosing the right scope can be a complicated process, with plenty of options—and pitfalls. But make the right choice and you'll reap the rewards for years.

PLAYING THE ANGLES

Your first decision will be whether to purchase a scope with a straight body (with the eyepiece in a straight line with the objective, i.e., the lens at the tube's fat end) or one with an angled body (with the eyepiece offset at a 45-degree angle). I strongly recommend that you opt for the latter, because the angled variety is, in many situations, easier to use and more convenient to share. (Keep in mind that while binoculars are not for sharing, spotting scopes definitely are.) You can set an angled scope at a comfortable height for the shortest person in your group and it will still accommodate the tallest. Angled scopes allow you to aim skyward at a bird in a tree, soaring hawks, the mountains of the moon, or the rings of Saturn. They have an adjustment that lets you rotate the scope body to position the eyepiece to the side or bottom. This feature enables you to raise your scope's height and rotate the body to look down a hillside or to look over high vegetation. If you do most of your viewing from a blind or a car, you will prefer a straight scope, but angled is best in most situations.

SIZING UP THE OPTIONS

Most manufacturers offer scopes in at least two sizes. The most popular small ones have objective lenses ranging from 60-65mm in diameter. The bigger typically have 80-85mm objective lenses. Smaller scopes are lighter, more compact, and easier to carry. Big scopes admit more light and provide a marginally superior image in the dim light of sunrise and sunset. Their increased brightness and resolution are most evident when using a zoom eyepiece at high magnification and in digiscoping (using a digital camera to take photographs

through your spotting scope). Big scopes are bulkier and heavier than small scopes and may need a heavier tripod to be properly supported. The weight difference is negligible in the newest magnesium-bodied scopes offered by some makers, but the large models from other makers can outweigh their little brothers by up to a pound and a half. Since you could be carrying your scope for several miles at a time, consider the weight difference when making a decision. Four years ago I sold my 80mm scope and aluminum tripod, which together weighed 12½ pounds, and bought a new 65mm compact

scope with a carbon fiber tripod—a combination that weighs in at just over 6 pounds. The difference may not sound like a lot, but my wife swears that trading down has made me a much nicer person. If you are planning to use yours primarily for viewing rather than digiscoping, a small scope will give you all the brightness and detail you will need for 95 percent or more of your birding. But if you plan to do a lot of digiscoping, I suggest an 80-85mm model. A big scope will yield better photos, and the larger aperture will allow your camera to select a faster shutter speed.

GLASS ACT

Many models advertise low dispersion glass, which is designated (depending on the manufacturer) as ED, APO, HD, EDG, or FL in the model name. Low dispersion glass is designed to correct certain optical flaws inherent in a "normal" lens. A normal lens disperses light along its optical path, resulting in a failure to bring all the wavelengths to a common focus—which, in turn, can cause a type of distortion known as "chromatic aberration." CA is most apparent when looking at a high-contrast object at high magnification. It appears as a "halo" (magenta on one side and

cyan on the other) at the object's edges and is particularly irritating when looking at dark birds against a bright background (or the converse). Chromatic aberration is more pronounced in telescopes than in binoculars because of the telescope's longer focal length. Lenses made from low dispersion glass are designed to eliminate CA and the annoying halo. Such glass increases color saturation, contrast, and brightness. The difference can be extremely subtle and difficult to discern in normal light at magnification up to 30x, but it can be very apparent in low light and at magnification of 40x and higher.

When these lenses were first introduced they were considerably more expensive to make than "normal" ones, so buyers were faced with a dilemma: Is it a good idea to spend, perhaps, an additional \$500 to correct a fault that isn't apparent in most viewing conditions? In recent years the price gap has closed to the point where some makers of alpha-class scopes have stopped selling non-ED models altogether. So what should you buy? I suggest the most product you can afford, even if it means stretching your budget a bit. You will amortize the extra cost over the scope's long, useful life; more important, you will never regret purchasing one that is too good. If you are interested in digiscoping, an ED scope is essential, because chromatic aberration is far more noticeable in photographs than it is to your eye. CA will ruin your otherwise good photographs, especially when they're enlarged

to 11x14 inches or more. If you cannot afford an ED scope, consider a 30x fixed power eyepiece rather than a zoom, because chromatic aberration will be far less apparent at lower magnifications and you'll also save some money.

Wayne Mones has been an avid birder since childhood, and leads birdwalks. He has written about birding optics for *Better View Desired*, *Bird Watcher's Digest*, and *The Perch*, the Audubon magazine blog. To read his guide to buying binoculars, go to <http://audubonmagazine.org/features0911/betterBirding.html>.

EYE ON THE EYEPIECE

Once upon a time all scope makers sold the scope body and eyepiece separately. The zoom eyepiece has since become so popular that many makers now bundle all their scopes with one. These eyepieces (typically offering 20-60x magnification) are popular because they are convenient—allowing you to find a bird in the wider field at low magnification and then zoom in for more detail. There are, however, some manufacturers that still sell scopes and eyepieces separately, giving you a choice between zoom and fixed power wide-angle models. The best zoom eyepieces are true optical marvels, but they are not as bright and have a narrower field of view than the best fixed power models. They are also considerably more expensive. I believe that high magnification is less important than most people realize. Keep in mind that exceeding 40x is often of marginal value in field conditions because the effects of atmospheric impurities and rising hot air currents ("heat shimmer") are more apparent in a highly magnified image and because all images degrade at high magnification. I use a 30x fixed power wide-angle eyepiece because I prefer the image it offers to the one offered by a zoom. Beginners often prefer fixed power eyepieces because it is easier to find birds with the scope than with zoom eyepieces. (Nevertheless, I confess to occasionally wishing for a wee bit more oomph.) A fixed power wide-angle eyepiece is a better choice for digiscoping because it is brighter and causes less vignetting (fading at the photo's edges) than a zoom. The scope makers that bundle their products with zoom eyepieces typically sell a fixed power wide-angle eyepiece as an accessory. You may, in fact, want both—a zoom for that once-in-a-lifetime trip where it's all about making a once-in-a-lifetime ID, and a fixed power wide-angle for the most satisfying images in most birding situations and for digiscoping.



Manfrotto 055XDB

A FEW RECOMMENDATIONS

There are too many scopes in too many configurations for anyone to test them all. But I have used all of the models below in the field. Before you put your money down you should attend field trips and birding festivals, where you can try out a bunch and ask lots of questions. The prices quoted are commonly available from Internet retailers and include the eyepiece. I have given a range because cost depends on size, choice of ED or normal glass, and choice of eyepiece (where there is a choice). All models come with either an angled or a straight body.

Leica APO Televid Body and eyepiece sold separately. All models have apochromatic objectives (\$3,350-\$4,250).

Nikon EDG Fieldscope Sold with 20-60x zoom. A fixed power wide-angle eyepiece is sold as an accessory. All models have ED glass (\$2,700-\$3,300).

Nikon Fieldscope III Sold with 20x-60x zoom. Sold with ED or normal glass (\$800-\$1,300).

Nikon Prostaff 16-48x 65mm An entry-level scope that provides a surprisingly bright, detailed image at lower (16-25x) magnifications. Lightweight, and the controls are very smooth and well done (\$400).

Swarovski ATS, STS, ATM, or STM Body and eyepiece sold separately. Sold with HD or normal glass (\$1,550-\$3,600).

Vortex Razor HD 85mm Sold with 20-60x zoom. A 30x wide-angle eyepiece is sold as an accessory. Sold only with ED glass (\$1,600).

Zeiss Diascope Body and eyepiece sold separately. Sold only with ED glass (\$2,000-\$2,500).

LEGS TO STAND ON

Mount your \$3,000 spotting scope on a \$75 tripod and you'll have, essentially, a \$75 spotting scope. Your tripod must hold your scope still in a breeze, and shouldn't be knocked over by a stiff wind or friends crowding around your scope. Aluminum tripods have done the job for generations of birders, but they are heavier than carbon fiber, which is also better at dampening vibration (and way more expensive). The following tripod legs are reliable, sturdy, and proven.

Manfrotto 055XDB (aluminum; about \$150)

Manfrotto 190CX3 (carbon fiber; about \$250)

Gitzo GT2331 (aluminum; about \$370)

Gitzo GT2541 (carbon fiber; about \$685)

HEAD OF THE CLASS

Most people use a video tripod head rather than a head designed for still cameras because a scope should move smoothly and because you should be able to adjust the tension for vertical and horizontal movement rather than locking the scope in position. All of the above legs will work well with the following heads.

Manfrotto 701HDV (about \$125)

Manfrotto 128RC (about \$95)

Swarovski FH101 (about \$320). If you own a Swarovski scope, this tripod head is the best available. It's sturdy, easy to use, and reliable. It has a very smooth movement and locks along the vertical and horizontal planes for carrying.