Mecklenburg Audubon Society

How to Choose a Scope That's Right for You

Michael and Diane Porter and a team of Iowa birders tested the top birding scopes for Bird Watcher's Digest. (The article, "Scopes Round Up," appeared in the July, 2000, issue). Here is what they found out.

Bottom line, every birder needs a scope. With a scope you will see more birds and see much more of the birds you see. The question is which is the scope for you. This article will help you choose.

Basic Terminology

OBJECTIVE LENS
The lens in front, nearest the object you're looking at. It focuses an upside down and backward image of the object.

EYEPIECE
The lens you look through. It magnifies the image created by the objective lens and presents it to the eye. Many scopes allow you to change eyepieces.

ERECTING PRISMS
They flip the image right side up and left to right, to make it look normal. They fit between the objective lens and the eyepiece, in the big bump near the back of the scope body.

APERTURE
The diameter of the front lens, usually expressed in millimeters (mm). In describing a scope, the aperture is the first specification mentioned. The larger the aperture, the more light the scope takes in, and the better quality the image, but also the bigger and heavier the scope.

MAGNIFICATION
You change the magnifying power of a scope by putting in a different eyepiece. A zoom eyepiece lets you dial the power you want. The new, rather expensive, zoom eyepieces in high-end scopes offer excellent optical quality and are a good choice for birding.

EYE RELIEF
Long eye-relief lets you see the whole picture even if your glasses hold your eye away from the eyepiece. If you wear glasses, eye relief is one of the most important considerations in choosing a scope/eyepiece combination.

Chromatic Aberration

When light passes through glass at an angle, its path bends. This law of nature enables a lens to focus an image. However, each color of light bends to a different degree, as you can see when a prism spreads a rainbow on a wall. In an image focused by a single glass lens, only one color is truly sharp: the others are slightly out of focus. This effect is called chromatic aberration. Telescopes use compound lenses made of different kinds of glass to try to cancel out chromatic aberration and bring the colors into focus at the same point.

To further reduce chromatic aberration, some lenses use special materials, such as fluorite crystal or ED glass, because they disperse the colors less than regular glass. Such lenses can produce sharper images at high magnification, but they cost more, sometimes doubling the scope's price.

A scope that uses a mirror instead of a lens to focus the image, such as the Questar, escapes the problem of chromatic aberration, because the light is not refracted through glass.

Angled or Straight?

You can often choose between two scope styles—straight-through or 45° angle eyepiece. It's a personal choice, but we think the angled scopes have the advantage for birding. Here's why:

1) Most angled scopes can be rotated in their mounts, allowing variable viewing angles. They make it easier to look up, without bending your neck.
2) They can be mounted lower and therefore produce a steadier, better image.
3) They work with shorter, lighter tripods.
4) They let people of different heights see a bird without moving the scope.
5) They have a larger arc of use. For example, on a car window mount, they let you see further ahead and behind the car.

Kinds of Scopes

Birding scopes fall generally into two groups, dedicated birding scopes and astronomical scopes that have been adapted for terrestrial or birding use.

Rugged and well sealed against water, dust and weather, dedicated birding scopes are designed for heavy field use. Many are waterproof, with their focus mechanism and prisms protected inside the scope body.

Astronomical scopes often have their erecting prisms and focusing mechanisms outside the scope body, allowing you to customize the back end. Instead of using prisms, as most birding scopes do, with the inevitable loss of brightness and resolution that results when light passes through the prisms, you can replace the prisms with a 90 degree diagonal mirror and get better image quality. The eyepiece will then look down at a 90 degree angle into the scope. The picture will be right side up but reversed left to right. Note that astronomical telescopes tend to be somewhat fragile, and they need to be protected from the elements.

What Makes a Good Birding Scope?

Optical excellence. We all love bright, high-contrast images with true-to-life colors. Birders also appreciate rugged construction and optics well sealed from dust and weather, preferably nitrogen-filled so they won't fog up.

Usability is equally important. A birding scope shouldn't be too heavy to carry. It should be easy to focus and usable on a car window mount. Built-in, slide-out sunshades and easy-to-use lens caps help a lot.

Last but not least, a birding scope needs a good aiming device, to help you find the bird quickly.

Complete article and accompanying reviews can be found at Birdwatching.com