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CLOSE FOCUS: Milwaukee-area birder Ethan Bott (right) looks through the Leica APO-Televid 82 while Tom Nelson considers the Leupold Kenai 80 HD.

High-end spotting scopes

A team of 25 birdwatchers rank 16 of the best spotting scopes money can buy

A spotting scope can be your most prized possession. It allows you to find birds at much greater distances than binoculars can, and perched atop a stable tripod, it lets you study plumage and behavior for as long as your heart desires (or until your subject flies away).

But getting to the point of being a happy scope owner can be challenging. Surf the web and you'll find hundreds of models from a few dozen manufacturers. And you'll have to ask yourself a number of questions. Do you want an angled or straight scope? Special glass? How much does length and weight matter? Will you use your scope for viewing the night sky as well as birds? And, perhaps most important, how much can you afford?

To help you sort through the options, we asked manufacturers of the best

spotting scopes on the market to loan us models that met the following criteria:

Full-size. Manufacturers typically sell scopes in mid- and full-size models. Mid-size scopes have objective lenses that measure 60-65mm in diameter, and most full-size models measure 80mm or higher. We chose to test full-size models. Be aware that when you buy a bigger scope, its weight, length, and price tag are also bigger.

Angled. Whether you want a straight or angled scope is a matter of personal preference. We went with angled scopes because they're easier for people of different heights to use. The one exception was the Leupold Kenai scope. The manufacturer makes an angled version but didn't have one to loan

us at the time of our test, so we used the straight scope.

Special glass. Most scopes are available, at a higher price, with lenses made of special glass. They come with labels such as HD (high definition), ED (extra-low dispersion), FL (fluoride ions), or FC (fluorite crystals). All of the models we tested have such glass.

Zoom eyepieces. An eyepiece that lets you zoom in and out on a subject relieves you of having to carry two or three single-power eyepieces. Most of the scopes in our test had 20-60x or 25-50x eyepieces.

High-priced. The best scopes for birders often carry manufacturers' suggested retail prices of \$1,000 or above.

COMPLETE TEST RESULTS ON PAGE 30

Overall ratings

Our reviewers liked the Swarovski ATM 80 HD the most and the Tele Vue-85 the least. Models were scored on a scale from 5 (excellent) to 1 (poor). Overall scores are shown.

Swarovski ATM 80 HD	4.6
Kowa TSN-883 Prominar	4.5
Leica APO-Televid 82	4.3
Zeiss Victory DiaScope 85 T* FL	4.2
Vixen Geoma II ED 82-A	4.0
Vortex Razor HD 85	3.9
Pentax PF-80 ED-A	3.8
Brunton Eterna 80 Angled ED	3.7
Swift Sport Optics NightHawk 82 ED	3.7
Bushnell Elite ED 80	3.5
Celestron Regal 80 F-ED	3.5
Nikon Fieldscope EDG 85	3.5
Celestron Regal 100 F-ED	3.2
Leupold Kenai 80 HD	3.0
Tele Vue-76	3.0
Tele Vue-85	2.9

Image quality

We asked reviewers to rate each scope's image quality (i.e., brightness, sharpness, edge-to-edge clarity, field of view, depth of field, detail in shadowed areas, freedom from color aberration) on a scale of 5 (excellent) to 1 (poor). The results:

Swarovski ATM 80 HD	4.7
Kowa TSN-883 Prominar	4.6
Leica APO-Televid 82	4.3
Zeiss Victory DiaScope 85 T* FL	4.3
Nikon Fieldscope EDG 85	4.1
Vortex Razor HD 85	3.9
Vixen Geoma II ED 82-A	3.8
Pentax PF-80 ED-A	3.7
Tele Vue-85	3.7
Brunton Eterna 80 Angled ED	3.6
Celestron Regal 100 F-ED	3.6
Celestron Regal 80 F-ED	3.5
Bushnell Elite ED 80	3.4
Swift Sport Optics NightHawk 82 ED	3.4
Tele Vue-76	3.4
Leupold Kenai 80 HD	3.2

User-friendliness

We asked reviewers to rate each scope's user-friendliness (i.e., size, shape, aiming, and ease of focusing) on a scale of 5 (excellent) to 1 (poor). The results:

Kowa TSN-883 Prominar	4.7
Swarovski ATM 80 HD	4.6
Leica APO-Televid 82	4.3
Zeiss Victory DiaScope 85 T* FL	4.2
Vixen Geoma II ED 82-A	4.1
Pentax PF-80 ED-A	4.0
Brunton Eterna 80 Angled ED	3.8
Vortex Razor HD 85	3.8
Bushnell Elite ED 80	3.7
Swift Sport Optics NightHawk 82 ED	3.7
Celestron Regal 80 F-ED	3.5
Nikon Fieldscope EDG 85	3.1
Celestron Regal 100 F-ED	3.0
Tele Vue-76	2.6
Leupold Kenai 80 HD	2.4
Tele Vue-85	2.4

Dealers charge less, of course, and of the 16 scopes that met our criteria, we found them priced from \$519 to \$3,995. They are listed on pages 30-31.

We asked our friends at two Milwaukee-area nature centers to help. Fifteen birdwatchers evaluated the scopes on June 17 at the Urban Ecology Center, and nine other birders and I put the scopes to the test at the Schlitz Audubon Nature Center on June 28. We asked them to judge the image quality, user- and eye-friendliness, and overall design of each scope. Summaries of their rankings are in the charts above and on the following pages.

Thirteen of our reviewers are scope-owners, and 12 are not, which appears to be a fairly representative sample of scope ownership in the birding community.

After we tallied the results of the tests, the Swarovski ATM 80 HD and Kowa TSN-883 Prominar led the pack.

Mitch Ost, one of the field testers at Schlitz, said the Swarovski was his favorite. Its focusing ring, known as a barrel band, encircles the body of the scope. "Initially I didn't like the single ring to focus because it was so large," he said. "But it allows both fine and coarse focus and is close enough to the tripod center not to be a problem."

Tim Vargo, who tested scopes at the Urban Ecology Center, called the Swarovski's optical quality "unbelievable" and noted, "I've never used a scope that had a seamless transition as I was zooming in and out as this."

Carl Schwartz, who owns a Kowa scope and calls himself a "Kowa fan," gave the model we tested high marks for being "compact, well-designed, easy to use, good field of view, and lightweight."

We also asked reviewers to predict how they would rate each scope before looking through it. After the results were tallied,

we found that testers rated the Kowa, Vixen, and Vortex scopes higher than they had predicted. It just goes to show that it's best not to judge a scope, like a book, before you try it.

Overall, our reviewers were not as keen on the two Tele Vue models, which are manufactured primarily with astronomers in mind. Past reviewers of birding optics, including one who wrote for our February 2004 issue, have noted the excellent views that astronomical telescopes, including Tele Vues, can offer birders. In fact, many of our testers were wowed by the scopes' clear, bright images. The tradeoff is in usability — size, weight, and a lack of maneuverability that our reviewers say is critical.

In addition to learning what our reviewers liked as a group, we also found that for scopes — like cars, homes, or TVs — no two people will want the same thing. A few people gave excellent scores to all of the scopes we tested. It proves, once again, that there's no substitute for shopping around. **Ⓢ**

— Matt Mendenhall

MODEL	STREET PRICE	MSRP	OBJECTIVE	MAGNIFICATION	EYE RELIEF (mm)**	LENGTH (in)	WEIGHT (oz)	CLOSE FOCUS (ft)	FOCUS DESIGN	FIELD OF VIEW (ft. at 1,000 yds)**	IMAGE QUALITY	USER FRIENDLINESS	EYE FRIENDLINESS	DESIGN	OVERALL SCORE
Swarovski ATM 80 HD	\$2,799 *	\$3,110	80mm	25-50x	17	15.5	55.6	16	Barrel band	138-89	4.7	4.6	4.3	4.6	4.6
Kowa TSN-883 Prominar	\$2,144 *	\$2,570	88mm	20-60x	17-16.5	15.5	54.7	16.4	Two knobs	115-55	4.6	4.7	4.3	4.2	4.5
Leica APO-Televid 82	\$3,995	\$4,395	82mm	25-50x	19	14.75	63.7	12.2	Two knobs	134-92	4.3	4.3	4.1	4.4	4.3
Zeiss Victory DiaScope 85 T* FL	\$2,399	\$2,999	85mm	20-60x	16	15.38	51	16.4	One knob	129-60	4.3	4.2	4.1	4.2	4.2
Vixen Geoma II ED 82-A	\$1,259	\$1,800	82mm	21-63x	19	16	54.8	49	Two knobs	94.1-42	3.8	4.1	3.9	4.1	4.0
Vortex Razor HD 85	\$1,599	\$2,000	85mm	20-60x	20-18	14.5	65.7	16.4	Two knobs	117-60	3.9	3.8	3.9	3.9	3.9
Pentax PF-80 ED-A	\$1,029	\$1,332	80mm	21-63x	18-22	19.13	75.8	19	One knob	93-49.5	3.7	4.0	3.6	3.9	3.8
Brunton Eterna 80 Angled ED	\$799	\$1,600	80mm	20-60x	17	16.88	56	20	One knob	98	3.4	3.8	4.0	3.5	3.7
Swift Sport Optics NightHawk 82 ED	\$1,449	\$1,569	82mm	20-60x	19	16.38	51.4	39.3	Two knobs	105.3-51.1	3.4	3.7	3.8	3.8	3.7
Bushnell Elite ED 80	\$699	\$1,325	80mm	20-60x	18	17	53	15	One knob	98-50	3.6	3.7	3.2	3.6	3.5
Celestron Regal 80 F-ED	\$519	\$1,078	80mm	20-60x	20	19	72	20	Two knobs	112-56	3.5	3.5	3.6	3.3	3.5
Nikon Fieldscope EDG 85	\$3,299	\$4,800	85mm	20-60x	18.4-16.5	17	71.6	16.4	Barrel band	115-58	4.1	3.1	3.6	3.3	3.5
Celestron Regal 100 F-ED	\$639	\$1,303	100mm	22-67x	20	21.5	89	26	Two knobs	100-50	3.6	3.0	3.3	3.1	3.2
Leupold Kenai 80 HD	\$799	\$999	80mm	25-60x	17.4-17.9	14.5	58.5	12	Barrel band	113.1-63.8	3.2	2.4	3.1	3.3	3.0
Tele Vue-76	\$1,699	\$1,725	76mm	20-60x	15-20	21	96	28.5	Two-sided wheel	NA	3.4	2.6	3.4	2.6	3.0
Tele Vue-85	\$2,150	\$2,775	85mm	25-75x	15-20	24.25	128	29.1	Two-sided wheel	84-38	3.7	2.4	3.1	2.3	2.9

* Eyepiece sold separately

** At lowest and highest magnifications

What we tested

Urban Ecology Center members tested scopes outside the center on a path overlooking a high-school sports field. Schlitz Audubon Nature Center members gathered on a deck in the woods next to a clearing. The weather on both days was warm and sunny, so the conditions during both tests were comparable.

Image quality

First, we had our reviewers judge brightness, sharpness, edge-to-edge clarity, field of view, depth of field, detail in shadowed areas, and freedom from color aberration for each model. Evaluators were instructed to take each quality into consideration to rank image quality on a scale ranging from



A THOROUGH TEST: Tim Vargo, manager of research and citizen science at the Urban Ecology Center in Milwaukee, evaluates the Leupold Kenai 80 HD scope.

5 (excellent) to 1 (poor). Numbers in the first green column show the average response.

User-friendliness

Next we asked reviewers to assess the size, shape, aiming, ease of focusing, and other usability features to rank user-friendliness on the same scale (5-1). Numbers in the second green column show the average response.

Eye-friendliness

Third, reviewers scored each scope's eye relief, eyecups, and suitability with eye-glasses to determine overall eye-friendliness. Numbers in the third green column show the reviewers' average response.

Design

Finally, we instructed testers to judge the appearance, tactile appeal, and color of the scopes. Numbers in the fourth green column show the reviewers' average response.

Overall score

Numbers in the yellow column at far right are the averages of the ratings in the four green columns.

Notes: We did not ask our reviewers to carry the scopes or evaluate them based on weight. But a scope's weight is important when you have a long hike ahead of you, so don't overlook it when you're shopping.

Street prices were obtained from Adorama, Binoculars.com, Eagle Optics, Optics4Birding.com, and Telescopes.com. You may find the same models available for sale from other vendors at different prices.

Find reviewers' comments, photos, and links on www.BirdersWorld.com.

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Urban Ecology Center

www.urbanecologycenter.org

The Urban Ecology Center, an environmental-education organization in Milwaukee, offers outdoor programs and resources for schools, families, adults, teens, and youth groups.

Schlitz Audubon Nature Center

www.sanc.org

The Schlitz Audubon Nature Center, located north of Milwaukee, connects people with nature and inspires them to become responsible stewards of the natural world.