ESTTA Tracking number: **ESTTA491023**
Filing date: **08/24/2012**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding	92054629
Party	Plaintiff Sheltered Wings, Inc.
Correspondence Address	JENNIFER L GREGOR GODFREY & KAHN SC ONE EAST MAIN STREET, SUITE 500 MADISON, WI 53703 UNITED STATES jgregor@gklaw.com, jpeterson@gklaw.com, apeterson@gklaw.com, docketing@gklaw.com
Submission	Other Motions/Papers
Filer's Name	Jennifer L. Gregor
Filer's e-mail	jgregor@gklaw.com, jschwartz@gklaw.com, jpeterson@gklaw.com, apeterson@gklaw.com
Signature	/Jennifer L. Gregor/
Date	08/24/2012
Attachments	Declaration of Daniel C. Hamilton.pdf (9 pages)(45925 bytes) Hamilton Ex 18 Bird Watchers Digest Review 2007.pdf (8 pages)(438259 bytes) Hamilton Ex 19 article_The New Standard, BWD, Vol. 32 No. 3, Jan-Feb 2012.pdf (10 pages)(1729480 bytes) Hamilton Ex 20 Living Bird Winter 2005.pdf (11 pages)(484544 bytes) Hamilton Ex 21 1999 cornell review.pdf (14 pages)(116653 bytes) Hamilton Ex 22 Wildbird JanFeb 2007.pdf (4 pages)(282310 bytes) Hamilton Ex 23_Cease and Desist 4-25-05 to Coin Crafters and Engravers.pdf (6 pages)(209641 bytes) Hamilton Ex 24_Cease and Desist 12-5-06 re EAGLE SERIES.pdf (2 pages)(50112 bytes) Hamilton Ex 25_Swift ad_WildBird_JanFeb2007.pdf (2 pages)(1828907 bytes) Hamilton Ex 26_Cease and Desist 9-5-08 re EAGLE OPTICS COMPANY.pdf (3 pages)(83169 bytes) Hamilton Ex 27_Cease and Desist 5-26-09 re EAGLE VISION.pdf (3 pages)(57797 bytes) Hamilton Ex 28_EML 6-17-09 re shutting down website.pdf (2 pages)(44169 bytes) Hamilton Ex 29_Cease and Desist 4-13-10 re EAGLE EYE OPTICS.pdf (2 pages)(47761 bytes)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

In re Registration No. 3,904,929 SHELTERED WINGS, INC. Petitioner, v. WOHALI OUTDOORS, LLC Respondent.	Cancellation No. 92054629

DECLARATION OF DANIEL C. HAMILTON

I, Daniel C. Hamilton, declare as follows:

1. I am the President and founder of petitioner, Sheltered Wings, Inc., and submit this declaration in support of petitioner's opposition to Wohali Outdoors, LLC's motion for summary judgment. I oversee all the operations of Sheltered Wings, Inc., including the Eagle Optics division of the company, and have primary responsibility for managing the company's branding and trademarks. I have personal knowledge of the facts in this declaration and, if called upon, I could and would testify to these facts.

History of the Eagle Optics Company

2. In October 1986, I opened a Wild Birds Unlimited franchise store in Madison, Wisconsin, with my wife, where we provided products and services, including optics, such as binoculars, to consumers interested in birds and bird watching. We decided to start a separate business selling optics and in 1987 founded the Eagle Optics company.

3. At first, Eagle Optics was operated as a retail store and mail order business out of

our Wild Birds Unlimited franchise store. Initially, we sold other parties' optics, including binoculars, spotting scopes, and telescopes from manufacturers such as Nikon, Swarovski, Bushnell, and Zeiss.

4. We first began advertising our Eagle Optics company sometime in 1988.

5. In 1989, we formed the corporation, Sheltered Wings, Inc., as the legal entity for our Eagle Optics business and created the EAGLE OPTICS logo that we still use today.

6. As we gained more experience and success, we expanded the Eagle Optics company, both in terms of size as well as product offerings and scope. By 1994, we began co-branding optics products, such as binoculars, with other optics companies. For example, the PENTAX/EAGLE 8x24 DCF binocular was one of our early co-branded products.

7. In 1996, we introduced our own EAGLE OPTICS branded optics products. Our first EAGLE OPTICS branded binocular was our EAGLE OPTICS RANGER binocular. Over the years, our EAGLE OPTICS line of optics products grew to include binoculars, spotting scopes, and telescopes.

8. In 1996, we also purchased the domain name, www.eagleoptics.com, and created an informational website to provide information about and promote our Eagle Optics company and EAGLE OPTICS branded products.

9. In 1997, we opened a facility in Middleton, Wisconsin to house our growing optics retail, mail order, catalog, and Internet business in a separate location from our Wild Birds Unlimited store.

10. In 1998, we entered the e-commerce retail market and began to sell products through our website at www.eagleoptics.com, in addition to sales through our Eagle Optics company retail store.

11. In the early 2000s, we also started Eagle Optics' sister company, Vortex Optics, which manufactures and sells optics under the VORTEX brand.

12. In March of 2007, we sold our Wild Birds Unlimited franchise store to focus on the Eagle Optics and Vortex Optics companies.

13. Over the past 25 years, since its inception in the back of our Wild Birds Unlimited franchise store, the Eagle Optics company and the EAGLE OPTICS brand for optics has grown into a multi-million dollar company and well known optics brand. We continue to invest in, and grow, our Eagle Optics company and our EAGLE OPTICS branded optics products.

Eagle Optics' Trademarks and the EAGLE OPTICS Brand

14. Since the company was founded, Eagle Optics has continuously used the term EAGLE in its trademarks for its optics products. Sheltered Wings (d/b/a Eagle Optics) is the owner of the following United States trademark registrations for its trademarks including the term EAGLE:

Mark/Reg. No.	Application and Registration Dates	Goods and Services
GOLDEN EAGLE Reg. No. 3,787,739	App: Dec. 8, 2006 Reg: May 11, 2010	Class 9: Binoculars
EAGLE OPTICS Reg. No. 2,886,199	App: Oct. 5, 2000 Reg: Sep. 21, 2004	Class 9: Binoculars, spotting scopes, and telescopes, all for use in bird watching, and storage cases therefore

Mark/Reg. No.	Application and Registration Dates	Goods and Services
Reg. No. 3,192,083	App: Aug. 24, 2005 Reg: Jan. 2, 2007	Class 9: Binoculars, spotting scopes, telescopes, and storage cases therefore, all for use in birdwatching Class 35: Retail store, mail order and online retail store services featuring binoculars, spotting scopes, telescopes, and storage cases therefore, all for use in birdwatching

15. Eagle Optics has been using the mark EAGLE OPTICS for retail services in the optics field since at least as early as 1987, and has been using the logo in trademark Registration Number 3,192,083 since 1989.

16. Since 1989, Eagle Optics has published catalogs containing the products it sells. Generally speaking, our catalogs are published yearly. We distribute our catalogs nationally, upon request. Some examples of our catalogs are attached. **Exhibits 1-5** are catalogs from 1992-1996, and **Exhibits 6 through 11** are catalogs from 2006-2011.

17. Eagle Optics has been selling EAGLE OPTICS branded binoculars and spotting scopes continuously since at least as early as 1996. The catalogs referred to above and the product offerings on our website at www.eagleoptics.com, (*see, e.g.*, **Exhibit 12,** showing the current line of EAGLE OPTICS binoculars), demonstrate representative uses of the EAGLE OPTICS marks on such products.

18. The GOLDEN EAGLE binoculars were introduced in the line of EAGLE OPTICS branded binoculars in 2010, and have been sold continuously since then.

<u>The 2003 Consent Agreement Between Eagle Optics and Nikon</u>

19. One of our first trademark applications was an application Serial Number

78/029,311 to register the mark EAGLE OPTICS, which was filed on October 5, 2000.

20. During the prosecution of our trademark application for the mark EAGLE OPTICS, which ultimately issued as Registration Number 2,886,199, registration of our mark was refused over Trademark Registration Number 2,084,361 for EAGLEVIEW for binoculars, owned by Nikon Corporation.

21. Nikon's application for registration of EAGLEVIEW was an intent-to-use application filed on November 28, 1994; its registration issued on July 29, 1997.

22. On about November 1, 2002, Eagle Optics, through our prior trademark counsel, filed a Petition for Cancellation of Nikon's '199 Registration for EAGLEVIEW on the basis that our use of EAGLE OPTICS was prior to Nikon's use of EAGLEVIEW. A true and correct copy of the Petition filed in Cancellation No. 92041239 is attached as **Exhibit 13**.

23. In response to our Petition, Nikon's counsel informed us that we had filed our Petition for Cancellation after the five-year statute of limitations for seeking cancellation of a similar mark, but agreed that it would consent to our registration of EAGLE OPTICS if we paid for Nikon's reasonable costs and expenses in connection with the matter.

24. At the time, this seemed like a reasonable resolution of the matter. By the end of 2002, Nikon's EAGLEVIEW mark and our EAGLE OPTICS mark had been co-existing in the market place for at least six years. Nikon's first use of the term was on November 30, 1996, as identified in the USPTO records. Eagle Optics had been an authorized dealer of Nikon products since about 1988, and by the end of 2002, had been an authorized dealer for almost 15 years.

25. As far as I am aware, Nikon has always used its EAGLEVIEW mark as part of a model name for a binocular, namely the Nikon "EAGLEVIEW ZOOM." Attached as **Exhibit 14** is a true and correct copy of a webpage printed from Nikon's website on August 22, 2012,

showing Nikon's use of EAGLEVIEW ZOOM in connection with a binocular.

26. Ultimately, we entered into a consent agreement with Nikon Corporation, which was signed in 2003. Attached as **Exhibit 15** is a true and correct copy of this agreement.

27. Now, 10 years later, Eagle Optics is still an authorized dealer of Nikon products. And I am still not aware of any confusion occurring as a result of Nikon's use of EAGLEVIEW ZOOM, and our use of EAGLE OPTICS.

The Notoriety of Eagle Optics and the EAGLE OPTICS Brand

28. The Eagle Optics company started small, but has grown immensely, and is now is a very significant, and well-known company and brand in the optics industry. Eagle Optics serves a broad range of customers, but its target customers are outdoor enthusiasts, including, but not limited to, birdwatchers and hunters.

29. Eagle Optics sells its EAGLE OPTICS branded optics products through: (1) the Eagle Optics retail store in Middleton, Wisconsin; (2) the EAGLE OPTICS website at www.eagleoptics.com; (3) the Wild Birds Unlimited franchise system; as well as (4) many other retailers, both Internet retailers and physical stores.

30. By about the year 2000, EAGLE OPTICS products had become the primary in-store optics brand for the Wild Birds Unlimited franchise system. Currently, Wild Birds Unlimited has approximately 220 franchise stores that sell EAGLE OPTICS branded products. In many cases, the optics carried by Wild Birds Unlimited stores are exclusively EAGLE OPTICS products.

31. Starting about ten years ago, Eagle Optics branded products have also been sold by additional independent retailers including: B&H Photo, Optics Planet, Binoculars.com, Gold Crest Distribution, Aveoptica Mexico, Eagle Optics Canada, Birdwatching.com,

Optics4Birding.com, and Online Nature Mall.

32. Because of Eagle Optics' success, the company has been the subject of numerous articles in trade publications, both in feature articles and in favorable product reviews of products by industry leaders.

33. Our EAGLE OPTICS company and brand was featured in an article in the February 2005 issue of Birding Business, (attached as **Exhibit 16**), as well as in a feature article published in the Wisconsin State Journal in October 2007, (attached as **Exhibit 17**).

34. EAGLE OPTICS products are also regularly included among other well-known optics brands in third-party product reviews. For example, in 2007 and again in 2012, Bird Watchers Digest, the most prominent publication in the field of bird watching, conducted a comprehensive review of midpriced binoculars from the major optics companies. A copy of the 2007 review is attached as **Exhibit 18,** and a copy of the 2012 review is attached as **Exhibit 19.** The EAGLE OPTICS RANGER binocular scored near the top of both review, among industry leaders such as Leica, Pentax, Leupold, and Eagle Optics' sister company, Vortex Optics. An EAGLE OPTICS binocular was also "singled out" for an individual review both times.

35. The Cornell Lab of Ornithology, a nonprofit organization and unit of Cornell University, has also published positive reviews of EAGLE OPTICS binoculars. For example, EAGLE OPTICS products received favorable reviews in the Winter 2005 issue of their Living Bird publication (**Exhibit 20**), which is their most recent comprehensive binocular review, as well as a 1999 review from the Cornell Lab of Ornithology (**Exhibit 21**). The EAGLE OPTICS Ranger also appeared in the January/February 2007 issue of WildBird (**Exhibit 22**).

36. We have also successfully enforced our EAGLE OPTICS trademarks against infringing third parties:

- In the fall of 2004, through counsel, we contacted Bass Pro who was selling a binocular called the EAGLE EYE under its house brand REDHEAD. After our contact, Bass Pro stopped selling these binoculars.

- On April 25, 2005, through counsel, we sent a cease and desist letter to Coin Crafters and Engravers of Pagosa Springs, CO that registered the domain name www.eagleopticsusa.com to promote the sale of various goods and services. **Exhibit 23** is a copy of this letter. Coin Crafters and Engravers subsequently stopped using the domain name, and Eagle Optics now owns it.

- On December 5, 2006, through counsel, we sent a cease and desist letter to SafeTGard Sport Optics of Lakewood, CO (now Swift Optics), that introduced a line of binoculars under the EAGLE SERIES mark. **Exhibit 24** is a copy of the letter, and **Exhibit 25** is a copy of the advertisement published in December2006 (from a January/February 2007 issue of WildBird magazine) showing Swift's use of EAGLE SERIES. In response, Swift changed the product line to the "SWIFT EAGLET SERIES."

- On September 5, 2008, through counsel, we sent a cease and desist letter to Mr. Istvan Kovary of Glendale, Arizona, formerly doing business as Eagle Eye Optics Company. The letter, which is attached at **Exhibit 26,** objected to: (i) his use of the mark EAGLE EYE OPTICS COMPANY for binoculars and riflescopes; and (ii) his application to register EAGLE EYE OPTICS COMPANY for binoculars, riflescopes, and spotting scopes (U.S. serial number 77/248,564). Shortly after receiving this letter, Mr. Kovary called our attorneys and agreed to abandon his pending application, which was also refused by the USPTO in view of our EAGLE OPTICS mark. Mr. Kovary also agreed to dispose of all remaining inventory within 6 months.

- On May 26, 2009, through counsel, we sent a cease and desist letter to Mike and Kathy Webb of Alexandria, Indiana, who were using the term EAGLE VISION for binocular retailing services from a website at www.eaglevisionbinoculars.com. **Exhibit 27** is a copy of the letter. Mike and Kathy Webb replied by email on June 17, 2009 that they would be shutting down their website by July 1, 2009. See **Exhibit 28.** The website is no longer there.

- In 2010, we learned that QualityRifleScopes.com appeared to be selling Mr. Kovary's "IJK/EAGLE EYE OPTICS" riflescopes. Through counsel, we sent a cease and desist letter to Quality Rifle Scopes, which letter is attached as **Exhibit 29**. Although no written response to this letter was received, it appears that the infringer has stopped using EAGLE EYE OPTICS in connection with its scopes.

I declare under the penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on August 23rd, 2012, in Middleton, Wisconsin.

Daniel C. Hamilton

8304309

EXHIBIT 18
TO DECLARATION OF
DANIEL C. HAMILTON

BWD Field Tests

Midpriced Binoculars Review

A flock of Iowa bird watchers puts some binoculars to the test

DIANE PORTER

Our field testers are all veteran Iowa birders.

If you are a bird watcher with between $300 and $800 to spend on a new pair of binoculars, what can you get? This is the question for a birder ready for something beyond entry-level binoculars or discount-store offerings who can't afford or doesn't choose to spend close to $2,000 for top-echelon binoculars. To answer this question we evaluated 56 midpriced binoculars from 18 different manufacturers. All have suggested retail prices of at least $300, and all can be found (at the time of this writing) at street prices less than $800.

How We Evaluated Them

We numbered and tagged the binoculars and set them up on tables that overlooked an outdoor scene. There were bird feeders, meadow, pond, trees, butterflies, and birds—a great variety of natural subjects to observe.

For more controlled lab-type comparisons, we pinned to a wall an Edmonds Optics Resolution Power test chart that incorporates multiple examples of the standard USAF 1951 Resolution Test Pattern in red, blue, yellow, and black. The chart is large enough to let you see copies of the same test pattern at the center and at the edges of the field of view.

We constructed a beanbag rest 24 feet in front of the chart so that any two binoculars could be set up side by side and compared under identical distance and lighting conditions. A beanbag rest was mounted on a heavy Gitzo tripod that stood on a stone floor. The tripod's crank let us raise and lower the beanbag rest to match each tester's height. After aiming and focusing, we could easily move from one pair of binoculars to another and compare two perfectly still, steady images.

A team of 13 other Iowa birders was invited to rate the binoculars for optical quality, fit, and feel, plus other ergonomic details such as the focus knob, eyecups, and diopter adjustment mechanism. We deliberately omitted price information on the form the testers filled out while evaluating the binoculars. Our intent was to rank the binoculars according to their quality without regard to their cost. We also researched warranties, an important issue when investing in binoculars.

Here are the elements tested for and included on the chart.

Optical Quality

The binoculars were compared for resolution, brightness, contrast, color fidelity, detail in shadowed areas, and freedom from chromatic aberration. Each tester rated the binoculars' optical quality on a scale of 5 (best score among the midpriced binoculars) to 1 (worst). Top-end reference binoculars were also available for comparison—Zeiss FL 8x 42 and10x42, a Swarovski EL 8.5x42, and a Leica Ultravid 8x42.

A word of caution on interpreting the optical quality numbers. The combined scores are rated to the tenth of a point, but the spread is tight, with most of the binoculars scoring within one point of each other. It's wise to not regard the scores as absolutes. Every score on the chart is composed of the ratings of multiple testers, each of whom doubtless brought his or her own preferences and particularities to the test. This doesn't mean subjective comparisons are meaningless. But there is a tendency, when seeing something reduced to a number such as 4.3, to put undue credence in its specificity.

Among the standouts for optical quality were the Leica Ultravid Compacts, amazingly sharp, clear binoculars (see review of Leica Ultravid Compacts). The Vortex Razor 8x42 shared the highest optical score with them.

Ergonomics (Fit and Feel)

Fit and feel are necessarily an individual matter, made up of the size, weight, shape, and balance of the binoculars, the texture of the armoring, and a host of details. People respond favorably or unfavorably to indentations for thumbs; to the size, location, and style of the lugs to which the strap attaches; and to the general tight-

MICHAEL AND DIANE PORTER

ness or looseness of knobs and hinges. Most people seem to like tethered lens covers, but some don't like lens covers dangling down from the binoculars. One of our testers, whose hands are particularly large, scorned the compacts, preferring the way that full-sized binoculars fit his grip. Another tester said that high-quality binoculars that worked with her glasses and would fit in her small purse were "to die for."

A great advance in binocular ergonomics was the use of rubber or synthetic materials to cover and protect the surface. Armoring quiets bumps, secures one's grip, and makes binoculars much more hand friendly. Although virtually all the binoculars in our study incorporate pleasant armoring, the Swift 8.5x44 Audubon (Model 828) got an especially high score for fit and feel. It's pleasant to the touch, it's nonslip, and it accomplishes its tactile effect without any ridges. Quite elegant—just a subtle texture does the job.

DIANE PORTER (2)

All makes and models were tested side by side under identical conditions.

Diopter Adjustment

The diopter adjustment mechanism is a focus knob that lets you focus one side of the binoculars separately from the other, in order to set the binoculars to accommodate differences in the focusing of your two eyes. When you acquire new binoculars, you immediately set the diopter adjustment for your own eyes. If the setting holds, and no one changes it, you can forget about it. If you share your binoculars with others, each user needs to set the diopter personally, each time the binoculars change hands. The correct diopter adjustment is essential to a focused image.

Even though a birder with non-shared use of a pair of binoculars might need to use the diopter adjustment only once, or only rarely, it's important to be able to set it easily. You should be able to turn the diopter knob without straining your fingers or scrinching up your eye with the effort. Ideally, a diopter adjustment should lock so that it can't be accidentally moved from its setting. It should have markings or "stops," called detents, to facilitate putting it back to its normal setting if it does get changed. And the setting should be easy to read so that you can confirm at a glance that it's still adjusted correctly.

We found considerable range in diopter adjustment style and quality among our midpriced binoculars. We found lockable diopter adjustments superior to diopters that hold their setting merely by friction, but only 13 of 56 of the midpriced binoculars in our study offer the locking feature. Those binoculars with lockable diopter adjustments use a variety of ingenious devices.

Our favorite was the Leica Ultravid Compact. The regular focus knob is also the diopter adjustment knob. When you push a button under the bridge, the focus knob changes function and focuses only the right eyepiece, allowing you to set the diopter. When you release the button, the focus knob again focuses both eyepieces. At any time you can read the setting on the focus knob, reassuring you that it is correct or alerting you that it needs adjusting. Other notable examples of locking diopter adjustment mechanisms are the Bushnell Elite2 and Bushnell Infinity, Leica Ultravid, Leupold Cascade, Minox HG, Pentax DCF ED and Pentax DCF SP, Swift Audubon, Vortex Razor, and Vortex Viper.

Focus Knob

Ergonomic quality in binoculars is conveyed by the focus knob. If it turns smoothly, with even resistance throughout its range, you feel confident in the engineering quality of the instrument. A focus knob with slack doesn't feel right, and it doesn't give you immediate, accurate focusing. Our testers rated each pair of binocular on the perceived quality of its focus knob. The results are displayed in the chart.

Most bird watchers also like a focus wheel that goes quickly from near focus to infinity. If you have to turn and turn the wheel, the flying merlin will be long gone before you roll the knob away from the sparrow in the bush. On the other hand, too fast a focus makes binoculars hard to focus precisely.

A manufacturer that has admirably addressed the challenge of making the focus knob both precise and fast is Minox. The new Minox HG series binoculars (see review) go from close-up to infinity in less than one full turn of the focus wheel. Up-close focusing is fast, and distance focusing is precise. Going a step further, Minox put a distance scale on the focus knob, turning it into a range finder. We love this feature because we often would like to make a note of the viewing distance from a bird, and the Minox GH focus wheel lets us read the distance at a glance.

Dial-up eye cups offer customized eye-relief for birders who wear glasses.

Eyecups

Other details to note among the midpriced binoculars are the eyecup design and quality. Our team (dominated by individuals who wear glasses) strongly preferred eyecups that twist or pull up and down, rather than the older-style rubber folding eyecups. Nearly all of the binoculars in our study did employ twist-ups or pull-ups. However, if you do not wear glasses, you might be perfectly happy with folding eyecups. The chart indicates the eyecup style for each pair of binoculars.

Our team's favorite eyecups were twist-ups with multiple detents, or clicks, that allow a birder quickly to

dial the degree of eyecup extension required. These are marked TC (twist/click) on the chart.

The winner for best eyecups was the Vortex Razor, which has both detents and markings, and an extension range better than that of any other binoculars we tested. Although most twist eyecups have only three detents, the Razor has 15, allowing you to fine tune a repeatable setting. The only improvement we would suggest would be to make them a bit stiffer to turn so that they could hold their setting better.

Eye Relief

For all binoculars there is an optimal distance between your eye and the eyepiece. That distance is called eye relief. If your eye is too close to or too far from the eyepiece, you can't see the whole picture: Part of it is blacked out. The challenge for eyeglass wearers is to choose binoculars with eye relief long enough to accommodate the glasses. Otherwise, your glasses don't allow your eyes to get close enough to the eyepiece, and you can't see the whole picture.

A few years ago it was difficult to find a binoculars with eye relief sufficient for eyeglass wearers. But optics have come a long way on that score. Most manufacturers seem to have realized that people with corrected vision make up a significant portion of the binoculars market. Most of the pairs we looked at work well with eyeglasses.

For the eye relief column on the chart, we relied on the numbers published by the manufacturers. If you wear glasses, a good starting place is to consider binoculars with a listed eye relief of at least 16mm. However, methods of measuring eye relief vary from manufacturer to manufacturer, so you can't rely entirely on the published figures. Oddly, Leica seems to grade their binoculars' eye relief especially conservatively. We found that the Leica Ultravid Compacts had excellent eye relief for glasses wearers, despite published eye relief of only 15mm.

Our team especially appreciated the eyecups on the Pentax DCF SP, with its three-stage indents. The eye relief of the 8x43 model, published as 22mm, is generous enough even for a person whose glasses are large and ride far from the eye. But the three-stage indents allow a person with closer-fitting glasses to dial an appropriate degree of eye relief.

Other binoculars with particularly long eye relief include the Celestron Regal LX 8x42, the Alpen models 493 and 496, and the Vortex Viper 8x42. Binoculars such as these, with eye relief of 20mm or more, are good candidates for anyone who has trouble getting the whole picture while wearing glasses. The safest practice for anyone looking for new binoculars, of course, especially if you wear glasses, is to try 'em before you buy 'em.

Close Focus

Have you ever found yourself backing up so that you could focus on a butterfly or on the birds at the feeder right outside your window? Sometimes you want to magnify what is close, so that you can appreciate tiny details, such as the individual feathers that make up the gorget of a hummingbird. For that you need binoculars that will focus up close. The binoculars in our study have a close focus ranging from 4 feet to 18 feet.

The closest-focusing binocular we looked at was the Minox BV 8x42, with a published close focus of 3.9 feet. Another binocular with a remarkably close focus was the Alpen model 493 8x42, which focuses down to 4 feet. Unlike some close-focusing binoculars, the Alpen 493 has a good overlap between the images presented to the two eyes. That makes for comfortable viewing even up close, and it avoids the squeezed-eyes feeling that comes with some other close-focusing binoculars.

Field of View

Field of view and eye relief are rivals. When a binocular designer increases one, the other one suffers. Only by adding expensive elements to the eyepieces is it possible to maximize both at once. That is probably why we found only a few midpriced binoculars that had both outstanding eye field of view and eye relief. However, for a person who does not wear glasses, eye relief doesn't matter, and binoculars with a wide field of view can be enjoyed without penalty.

We found several binoculars with exceptionally wide fields of view and moderate eye relief that might work well for some, though probably not all, glasses wearers. Among these are three 8x32s—the Kowa BD32-8x, the Minox BL, and the Carson Optical SM-832HD, each with a more than 420 feet field of view at 1,000 yards.

Among the 8x42s, the Vortex Razor turned in the widest field of view by far—410 feet at 1,000 yards, yet it provides 18mm of eye relief, adequate for virtually any glasses wearer. The Leupold Katmai 6x32 also achieves both a wide field of view (425 feet) and long eye relief (19.2mm).

Three 10x42s in our study offered fields of view of more than 340 feet at 1,000 yards, and these all have eye relief of at least 16mm, which is adequate for most glasses wearers. These were the Kowa BD42-10x High Performance, the Minox BL, and the Bushnell Elite2.

The Main Chart

The main chart is sorted by overall quality, with the best at the top. To calculate the overall quality index, we weighted optical quality as 50 percent of the score, with the other 50 percent comprised in equal parts of fit and feel, close focus, focus knob quality, diopter adjustment quality, and eyecup quality.

Not included in the overall quality calculation: price, warranty, prism style, field of view, waterproofing, and size and weight except as they affected fit-and-feel scores. All of these are important aspects of binoculars, but how much to weight them in making a purchase decision will vary from person to person.

The Warranties Chart

It's sometimes difficult to discover exactly what a manufacturer is promising by way of warranty. In some cases we received conflicting information from company spokespeople, or what we were told differed from what we read on the manufacturer's website. The information is reported as accurately as possible, but we recognize that another questioner on another day or with another respondent might possibly produce a different answer.

"Limited warranty" usually means that only manufacturers' defects are covered. "Lifetime warranty," on the other hand, can mean many things. It can mean there is no time limit. It may

(continued on page 59)

Midpriced Binoculars Comparison

Manufacturer (Brand)	Model	Magnification	Objective Lens	Street Price	Weight (oz.)	Prism Style	Field of View	Eye Relief (mm)	Close Focus (ft.)	Length (in.)	Width (in.)	Waterproof	Coatings	Eyecup Style	Diopter Location	Diopter Locks	Diopter Indicator	Fit & Feel	Focus Knob	Diopter Quality	Eyecup Quality	Optical Quality	Overall Quality
Leica	Ultravid	8	20	$619	8.5	roof	341	16.0	7.2	3.6	4.4	yes	FMC	P	FK	✓	M	4.8	4.8	4.9	4.9	4.8	4.8
Leica	Ultravid	10	25	$679	9.4	roof	273	15.0	10.5	4.4	4.4	yes	FMC	P	FK	✓	M	4.9	4.8	4.9	4.9	4.8	4.7
Minox	HG 62155	8.5	43	$789	22.9	roof	321	18.0	7.6	5.7	5.0	yes	FMC	TC	E	✓	M	4.5	4.7	4.8	4.9	4.5	4.6
Vortex	Razor	8	42	$700	29.4	roof	410	18.0	8.2	6.5	5.5	yes	FMC	TC	FK	✓	DM	4.9	2.9	4.8	4.9	4.8	4.6
Minox	HG 62163	8	33	$679	21.3	roof	395	15.0	6.6	5.0	4.9	yes	FMC	TC	E	✓	M	4.5	3.8	4.9	4.9	4.5	4.5
Pentax	Pentax DCF ED	8	32	$799	23.5	roof	393	17.0	4.9	5.0	5.0	yes	FMC	TC	E	✓	M	3.9	4.7	4.4	4.5	4.5	4.5
Vortex	Viper	8	42	$480	23.0	roof	347	20.0	5.1	5.8	5.3	yes	FMC	TC	E	✓	C	4.5	4.8	4.0	4.1	4.5	4.5
Leupold	Katmai	6	32	$290	18.2	roof	425	19.2	4.9	4.1	4.7	yes	FMC	TC	E		D	4.4	4.8	3.9	4.1	4.5	4.4
Eagle Optics	Ranger SRT	8	42	$300	21.8	roof	341	19.5	5.2	5.8	5.1	yes	FMC	TC	E		C	4.5	4.9	4.0	4.1	4.4	4.4
Zeiss	Victory 8x20 Compact	8	20	$450	7.9	roof	351	14.0	8.2	4.0	3.8	yes	FMC	P	CF		M	4.0	3.8	3.9	4.1	4.6	4.3
Nikon	Monarch	10	42	$320	21.1	roof	314	15.5	8.2	5.6	5.0	yes	FMC	T	E		M	4.4	4.7	3.9	4.0	4.3	4.3
Bushnell	Elite 2	10	42	$500	28.0	roof	341	17.0	8.0	5.7	5.0	yes	FMC	T	FK	✓	DM	3.9	4.7	4.4	4.4	4.2	4.3
Nikon	Monarch	8	36	$250	19.8	roof	367	17.0	8.2	4.9	5.1	yes	FMC	TC	E		M	4.4	4.7	3.9	4.1	4.2	4.2
Zeiss	Victory 10x25 Compact	10	25	$490	8.6	roof	285	14.0	13.1	4.7	3.8	yes	FMC	P	CF		M	3.9	3.8	3.9	4.0	4.7	4.2
Zeiss	Conquest	10	40	$800	29.0	roof	315	15.0	9.8	6.0	5.0	yes	FMC	T	CF		C	4.0	3.9	3.9	4.1	4.5	4.2
Zeiss	Conquest	8	40	$770	28.9	roof	360	16.0	9.8	6.0	5.0	yes	FMC	T	CF		C	4.0	3.8	3.9	4.0	4.5	4.2
Pentax	Pentax DCF SP	10	43	$649	25.0	roof	315	17.0	6.6	5.7	5.0	yes	FMC	TC	E	✓	M	3.9	4.8	4.4	4.4	3.9	4.1
Minox	BL 62149	8	32	$349	18.5	roof	429	15.5	6.2	4.8	5.0	yes	FMC	T	E		M	4.1	4.0	3.9	4.0	4.1	4.1
Pentax	Pentax DCF SP	8	43	$599	24.5	roof	330	22.0	6.6	5.7	5.0	yes	FMC	TC	E	✓	M	4.0	3.0	4.3	4.4	4.1	4.1
Celestron	Noble	10	50	$298	27.0	roof	262	20.0	9.0	6.7	5.2	yes	FMC	T	E		M	4.4	4.8	3.9	4.0	3.9	4.1
Kowa	BD32-8x	8	32	$440	19.7	roof	430	15.0	6.0	4.9	4.8	yes	FMC	T	E		M	4.0	3.9	3.9	4.0	4.0	4.0
Zeiss	Conquest	10	30	$520	18.0	roof	288	15.0	9.8	5.2	4.5	yes	FMC	T	CF		C	3.9	4.7	3.9	4.1	4.0	4.0
Leupold	Pinnacles	8	42	$380	23.0	roof	341	17.8	6.6	5.5	4.8	yes	FMC	P	E		D	3.9	3.0	3.9	3.9	4.2	4.0
Vortex	Stokes Broadwing	8	42	$350	26.6	roof	350	18.0	5.0	6.0	5.0	yes	FMC	TC	E		M	4.5	3.8	3.0	3.3	4.1	4.0
Zeiss	Conquest	8	30	$471	17.5	roof	360	15.0	9.8	5.6	4.5	yes	FMC	T	CF		C	4.0	3.7	3.9	4.0	4.1	4.0
Kowa	BD42-8x	8	42	$530	25.8	roof	361	18.3	6.5	5.7	5.0	yes	FMC	T	E		M	4.0	3.9	3.9	4.0	3.9	4.0
Celestron	Noble	10	42	$282	24.0	roof	314	16.0	8.0	5.8	5.1	yes	FMC	T	E		M	4.4	4.8	3.9	4.0	3.7	4.0
Swift	Audubon (Model 828)	8.5	44	$360	23.4	roof	336	19.0	9.0	5.8	4.9	yes	FMC	T	FK	✓	DM	4.7	3.4	4.3	4.4	3.8	4.0
Minox	BV 62167	8	42	$249	27.5	roof	389	18.0	3.9	5.5	5.0	yes	MC	TC	E		M	3.9	3.9	3.9	4.0	3.8	4.0
Minox	BL 62148	10	42	$399	22.9	roof	344	16.0	8.2	5.6	5.0	yes	MC	TC	E		M	4.0	3.9	3.9	4.0	3.9	3.9
Bushnell	Infinity	8.5	45	$380	25.0	roof	314	17.0	6.7	6.0	5.3	yes	FMC	TC	FK	✓	DM	4.4	3.0	4.8	4.7	3.6	3.9
Swift	Eaglet	10	42	$490	23.6	roof	261	16.0	6.5	5.4	5.0	yes	FMC	T	E		D	3.9	3.9	3.4	3.6	4.0	3.9
Swift	Eaglet	7	36	$450	20.6	roof	374	16.0	5.9	5.0	5.0	yes	FMC	T	E		D	4.0	3.9	3.4	3.6	3.9	3.9
Fujinon	HB	12	60	$685	56.0	roof	285	15.5	5.0	9.0	6.1	yes	MC	TC	FK		DM	3.1	3.8	3.0	3.2	4.2	3.9
Swarovski	8X20 BN	8	20	$629	7.6	roof	345	13.0	13.0	4.0	3.7	yes	FMC	T	CC		M	3.5	3.9	3.9	4.0	4.1	3.9
Zeiss	Conquest Compact	8	20	$300	6.3	roof	345	14.0	10.8	4.0	3.7	yes	FMC	F	CC		M	3.5	3.9	3.9	3.9	4.0	3.9
Kowa	BD42-10x	10	42	$560	26.3	roof	344	17.6	6.6	5.7	5.0	yes	FMC	T	E		M	4.0	3.9	3.9	4.0	3.7	3.9
Kowa	BD32-10x	10	32	$465	19.9	roof	344	15.0	4.9	5.0	4.8	yes	FMC	T	E		M	4.0	3.0	3.9	4.0	3.8	3.9
Celestron	Regal LX	10	42	$452	25.0	roof	319	16.0	6.0	5.8	5.3	yes	FMC	P	E		DM	4.0	3.9	3.0	3.2	4.0	3.9
Celestron	Regal LX	8	42	$442	25.0	roof	340	20.0	6.0	5.8	5.3	yes	FMC	P	E		DM	3.9	3.9	3.0	3.2	4.0	3.9
Alpen	Model 493	8	42	$305	19.4	roof	341	20.0	4.0	5.8	5.0	yes	FMC	TC	E		DM	4.0	3.9	3.0	3.2	3.8	3.8
Swarovski	10X25BN	10	25	$681	8.1	roof	285	13.0	16.0	4.6	3.7	yes	FMC	T	CC		M	3.2	4.0	3.9	4.0	4.1	3.8
Carson	XM-832HD	8	32	$270	20.6	roof	420	15.5	9.8	5.5	5.0	yes	FMC	T	E		C	3.9	4.3	3.4	3.6	3.8	3.8
Alpen	Model 495	10	42	$320	24.0	roof	315	16.0	5.0	5.6	5.0	yes	FMC	TC	E		DM	3.9	3.8	3.0	3.2	3.8	3.8
Zeiss	Conquest Compact	10	25	$380	7.1	roof	285	14.0	18.0	4.7	3.8	yes	FMC	F	CC		M	4.0	3.9	3.8	3.9	4.0	3.8
Leupold	Cascades	8	42	$250	22.9	Porro	341	18.0	9.9	5.5	5.5	yes	MC	T	FK	✓	M	2.2	3.0	4.3	4.3	4.0	3.8
Pentax	Pentax DCF HRc	10	42	$299	22.2	roof	315	18.0	8.2	5.7	5.2	yes	FMC	TC	FK		D	4.1	3.9	3.0	3.2	3.8	3.7
Alpen	Teton 84	8	42	$599	26.5	roof	383	17.0	8.2	6.0	5.0	yes	FMC	TC	E		M	3.1	2.9	3.8	3.9	3.9	3.7
Alpen	Model 496	8.5	50	$330	28.0	roof	290	20.0	16.0	7.0	5.0	yes	FMC	TC	E		C	3.9	3.9	3.4	3.5	3.8	3.6
Canon	Image Stabilizer	12	36	$579	31.4	Porro	262	15.0	12.0	6.9	5.0	no	MC	F	E		M	3.1	3.9	3.0	3.1	3.9	3.6
Canon	Image Stabilizer	10	30	$359	22.0	Porro	314	14.5	13.8	5.9	5.0	no	MC	F	E		M	3.1	3.9	3.0	3.1	3.9	3.5
Steiner	Wildlife Pro	10.5	28	$299	11.0	roof	264	13.0	8.5	5.5	4.5	yes	FMC	F	E		C	2.9	2.9	2.1	2.3	4.0	3.4
Steiner	Merlin	8	42	$469	27.0	roof	342	19.0	6.9	6.4	5.2	yes	MC	F	E		C	2.1	2.9	2.9	3.1	3.7	3.4
Steiner	Merlin	8	32	$429	20.0	roof	336	15.0	8.9	5.5	5.2	yes	MC	F	E		C	3.0	3.0	2.9	3.0	3.4	3.3
Steiner	Merlin	10	42	$499	25.0	roof	274	18.0	7.9	6.4	5.2	yes	MC	F	E		C	2.1	2.0	2.9	3.0	3.7	3.3

LEGEND

The chart is sorted by Overall Quality, with best scores at the top.

Mag: magnification

Obj: diameter of objective lens

Street Price: what a buyer has to pay, estimated

Field of View: in feet, at 1,000 yards

Coatings:
MC = multi coated
FMC = fully multi coated

Eyecup Style:
T = twist-up eyecups
T C = twist-up with clicks
P = push-pull eyecups
F = fold-down eyecups

Diopter Location:
E = on eyepiece
CF = on far end of central column
CC = on close end of central column
FK = with focus knob

Diopter Indicators:
M = marks
D = detents
DM = detents and marks
C = center point only shown on diopter

Optical Quality: composite subjective evaluation
Highest = 5. Lowest = 1

Fit & Feel: composite subjective evaluation
Highest = 5. Lowest = 1

Focus Knob: composite subjective evaluation
Highest = 5. Lowest = 1

Diopter Quality: composite subjective evaluation.
Highest = 5. Lowest = 1

Eyecup Quality: composite subjective evaluation.
Highest = 5. Lowest = 1

Overall Quality: based 1/2 on optical quality, 1/2 on ergonomic characteristics

Warranties

Manufacturer	Models	Name of Warranty	Time Limit	Defects	Alignment	Accident	Transferable	Fee
Alpen	All in survey	Limited Lifetime Warranty	No limit	yes	yes	maybe	no	$15
Bushnell	Elite2, Infinity	Limited Lifetime Warranty	No limit	yes	no	no	no	$10
Canon	Image Stabilizer	Limited Warranty	3 years	yes	maybe	no	no	$0
Carson	XM-832HD	No-fault	No limit	yes	yes	yes	yes	$0
Celestron	Regal LX, Noble	No-Fault	No limit	yes	yes	yes	yes	$25
Eagle Optics	Ranger SRT	Platinum Protection	No limit	yes	yes	yes	yes	$0
Fujinon	HB	Lifetime Warranty	Lifetime of original owner	yes	no	no	no	$0
Kowa	All in survey	Lifetime of the product	10 yrs after manufacturing ends	yes	no	no	yes	$0
Leica	All in survey	Passport Protection Plan	Lifetime of original owner	yes	yes	yes	no	$35
Leupold	All in survey	Green Ring Limited Lifetime Warranty	Lifetime of original owner	yes	yes	no	no	$0
Minox	All in survey	Lifetime Warranty	Lifetime of original owner	yes	maybe	maybe	maybe	$0
Nikon	Monarch	Nikon NoFault Warranty	25 years	yes	yes	yes	yes	$10 + S&H
Pentax	All in survey	No-worry Lifetime	Lifetime of original owner	yes	yes	yes	no	$19.95
Steiner	Steiner Merlin		10 year warranty	yes	no	no	no	$0
Steiner	Steiner Wildlife Pro		30 year warranty	yes	no	no	no	$0
Swarovski	All in survey	Limited Lifetime Warranty	Life of & as long as is owned	yes	no	no	yes	$0
Swift	Audubon, Eglet	Swift 25-year Warranty	25 years	yes	no	no	maybe	?
Vortex	All in survey	Vortex VIP Warranty	No limit	yes	yes	yes	yes	$0
Zeiss	All in survey	Limited Lifetime Transferable Warranty	As long as Zeiss exists	yes	yes	no	yes	$0

LEGEND
Defects: Warranted against manufacturer's defects of materials or workmanship
Alignment: Will manufacturer repair alignment problems that arise through use of binoculars?
Accident: Will manufacturer repair damage caused by accidents, even if the fault of owner?
Transferable: Does warranty stay in effect when binoculars are sold or given to subsequent owner?
Fee: Amount that must be sent in with binoculars for warranty service
Maybe: Manufacturer indicates that decision is made on case-by-case basis

mean the lifetime of the original owner, but only so long as that person owns the binoculars. To some manufacturers, "lifetime warranty" is the lifetime of the product, which can be as long as the product is being manufactured or can mean for a certain number of years after production ceases.

Some warranties are written on paper and come with the product. Some are described on the manufacturers' websites. Other warranties might be best described as an oral tradition. That is, the stated warranty is cautious and not overly generous, but the manufacturers say they actually do better by their customers than their warranties would indicate. For example, many warranties state that they cover only manufacturers' defects of materials or workmanship. However, spokespeople for many companies insist that their service departments usually or often provide repairs at no charge, even when the damage results from a mishap that was not caused by the manufacturer. Or they claim that they will provide service to a secondary owner even though the warranty is officially not transferable. (On the chart, "maybe" means that the manufacturer decides on a case-by-case basis whether to charge for the service and how much.)

Some will fix the alignment if needed. A few manufacturers actually warrant their binoculars against all accidental mishaps except loss and theft. Some let the warranty reside with the binoculars, so that the current owner is covered, regardless of whether the binoculars were purchased new or used.

The warranties chart can give you an idea of what kind of warranty to expect for a prospective pair of binoculars. However, if yours are damaged, it's worth calling the company and asking what they can do for you even if the warranty doesn'timply that the needed service is covered. You might be pleasantly surprised.

Binoculars of Note

There is not enough space to give every binocular model its own review. Many of those we surveyed deserve to be noticed. But we did single out a few that offer something special.

Canon Image Stabilizer 10x30 and 12x36

Canon brings to binoculars the same shake-canceling technology that revolutionized telephoto camera lenses. Push a button near the central focus knob, and your hand-shake goes away. The image floats instead of jumps, and details that were blurred by motion come back into view. Pure magic.

They have a smooth-turning, well-placed focus knob, surprisingly good eye relief, and excellent optics. They require two AA batteries for their stabilization to function, but you can still see through them even with dead batteries—just not stabilized.

Canon Image Stabilizer 10x30 and 12x36

Neither of the two midpriced Canons we tested was waterproof, but a higher-priced 10x42 model is. Weighing in at 31.4 ounces (without batteries), the 12x36 Canon IS is among the heaviest of the binoculars we studied.

Their odd shape makes them stand out from rest of the roof-prism crowd, and this fact may have skewed their overall quality score downward more than they deserved. You set the interpupillary distance by rotating the offset eyepieces. The eyecups are the old-fashioned, fold-down rubber design, which also lost them points. And we're not sure how their high-tech innards would hold up to the heavy use birders would give them, or how well they would maintain their alignment after a fall. However the Canon IS binoculars can do something that no other binoculars can—let a person hand-hold a 12-power pair of binoculars. They are the Shrek of binoculars—big, green, and funny looking but with remarkable and quite useful powers.

Eagle Optics Ranger SRT 8x42

We rated these binoculars a best buy at the $299.95 street price. They have excellent eye relief (19.5mm) for glasses wearers, very close focus (5.2 feet), and twist-up eyecups with good detents. We found the focus knob flawlessly smooth and free from slack. The binoculars feel good in the hand.

Optical quality is quite good, well toward the top of the pack at a 4.4. Considering that the highest optical quality rating was a 4.8, that's a pretty good score. The Ranger scored 9th in overall ratings, a great performance considering the price. Anyone on a budget would do well to take a close look at an Eagle Optics Ranger. It comes in a great range of magnifications and sizes.

Eagle Optics Ranger SRT 8x42

Leica Ultravid Compacts

These tiny binoculars were great favorites among our testers, who extolled the Leica Ultravid Compacts' bright, supremely sharp images. They actually have outstanding eye relief, despite published eye relief of only 16mm. They let even a glasses wearer see an amazingly full, rich image, rivaling a top-end full-sized binocular.

Leica Ultravid Compacts 8x20

Thumb and forefinger naturally fall on the silky-smooth focus knob, making the glasses easy to focus with great precision. The locking diopter adjustment is easy to see and precise to set, one of the most elegant designs of any binoculars in the study.

The Ultravid Compacts have two hinges, allowing them to fold up extremely small. The 8x20 fits neatly in a shirt pocket. Each size comes in a rubber-armored model and a leather-covered version, for which there is no difference in price. The leather version is slightly narrower, because the leather is thinner than the rubber. The optics are identical in both cases. It's available in 8x20 and 10x25. (Most of our reviewers preferred the shorter length of the 8x20.)

Leupold Katmai

The Leupold Katmai 6x32 is a little gem. It has a wonderful build quality, and it fits a large range of hand sizes. Everybody loved it. It's a cargo-pocket or purse-sized pair of binoculars, quite compact for its 32mm objectives. It has that big-picture effect, combining both long eye relief (18.2mm) and a wide (425 feet) field of view. It received very high ratings (4.5) for optical quality.

If you push the twist-click eyecups in slightly when extended, they lock to preserve the setting—a nice touch. The Katmai 6x32 focuses as close as 4.9 feet, and you can push the barrels close enough together to make the images overlap even at that distance.

It got an overall score of 4.4, putting it alongside much more expensive binoculars. The street price is a modest $289.99, making it clearly a best buy candidate. The Leupold Katmai is also available in 8x32 and 10x32 versions.

Leupold Katmai 6x32

Minox HG Series 8x33

Minox HG

Minox binoculars used to be made by Leica—they were Leica's second line, at lower prices than the top products. But in 2001 Minox became an independent company and started producing top-quality binoculars that now compete with Leica for a share of the high-end market. The new Minox HG series includes outstanding binoculars, a few of which fit (barely) into our mid-priced array. We looked at the Minox HG 8x33 and the 8.5x43, each of which can be found for less than $800. Other sizes are available at somewhat higher prices.

In our optical quality tests, the Minox HGs were unexcelled. They also have some of the nicest-feeling engineering and smoothest-turning focus knobs we've found in any make. The addition of a distance scale on the focus knob (made possible because the wheel turns less than one full rotation in going from closest to most distant) gives the HG binocular the unique function of acting as a range meter.

The central focus wheel also serves as the easy-to-turn, locking diopter adjustment wheel. The eyecups, with gentle detents, twist out with unusual smoothness and precision. Eye relief for glasses wearers is excellent, as is the optical quality. Several of our testers remarked that the HG gave a nice feeling in the hand. We judged it to be a great buy for someone looking at the upper end of the midpriced field, for quality comparable to the high-end binoculars.

Nikon Monarch 8x36 and 10x42

Nikon Monarch 8x36 and 10x42

The Nikon Monarch is another best-buy choice. The 10x42 rated 4.3 overall, and the 8x36 a 4.2, and yet they have a street price of only $319.95 and $249.95, respectively.

Optical quality rating was 4.3 on the 10x42 and 4.2 on the 8x36. These are quite good scores considering the prices. Both models have good ergonomics and seem light and well balanced. Both got an excellent score of 4.7 for focus knob quality. They have a barrel design that bulges out gently in the middle, helping them fit comfortably into the palm of the hand. The Nikon Monarch is also available in 8x42, 10x36, 10x56, 12x56, and 8.5x56.

Pentax DCF ED 8x32

These binoculars stand out for their excellent optical quality. Our testers commented admiringly about the DCF ED's locking diopter adjustment, twist-ups eyecups with indents, perfectly smooth focus knob and central hinge, and tethered, unlosable objective lens covers. (In case you don't like having the lens covers dangling off the end of the binocular, you can easily remove them.)

The DCF ED works well with glasses, even if you wear aviator-type glasses that are large and ride far from your face—you don't lose the outer part of the image with these binoculars. Pentax's Extra Low Dispersion glass, which incorporates the rare-earth element lanthanum, is designed to provide extremely pure colors and sharp images. The DCF ED is available in the usual range of magnification and objective lens size. One of them, the 8x32, just makes it into the top of our $300 to $800 price range.

Pentax DCF ED 8x32

Vortex Razor

Vortex Razor is the top model from Vortex Optics. Its body style features the hollow bridge made famous by the revered Swarovski EL binoculars. Because your fingers can wrap around one of the barrels and fit down into the hollow, it's possible to hold and focus the binocular with one hand, leaving your other hand free. The Razor enjoys numerous details that make top binoculars tops, such as its precise locking diopter adjustment. Other desirable features include twist-up eyecups with many closely spaced detents that let you instantly dial exactly the degree of eye relief you need every time.

Vortex Razor 8x42

Look through a Vortex Razor, and you're immersed in big, bright, clear image. Of all the midpriced binoculars we tested, none excelled the Vortex Razor for optical quality. This model would probably have won the top overall rating if its focus knob had been smoother. The Razor is available in 8x42, 10x42, 10x50, and 8.5x50. We looked only at the 8x42 version.

Conclusion

Affordable binocular quality is improving fast. We found that we could reach almost anywhere on our midpriced test tables and get good optics and decent ergonomics. But let's cut to the chase. Is there really any reason to spend close to $2,000 for top-of-the-line binoculars?

We did find that the top-end binoculars were brighter, sharper, and better at resolving detail in deep shadows than any of the midpriced choices tested. The higher quality was perceptible. If we had to use the same scale to rate the Zeiss Victory FL, for example, we would have to give it an optical quality score of at least 6.

But the difference is not as great as it was a few years ago. The midpriced binoculars have come a long way toward catching up with the royals at the top of binoculars society. And we did find some good buys in this price range, where optical quality, good ergonomics, and relatively low price all came together in one pair of binoculars. Good news for the birder on a limited budget! Overall, we were amazed at how good midpriced binoculars have become.

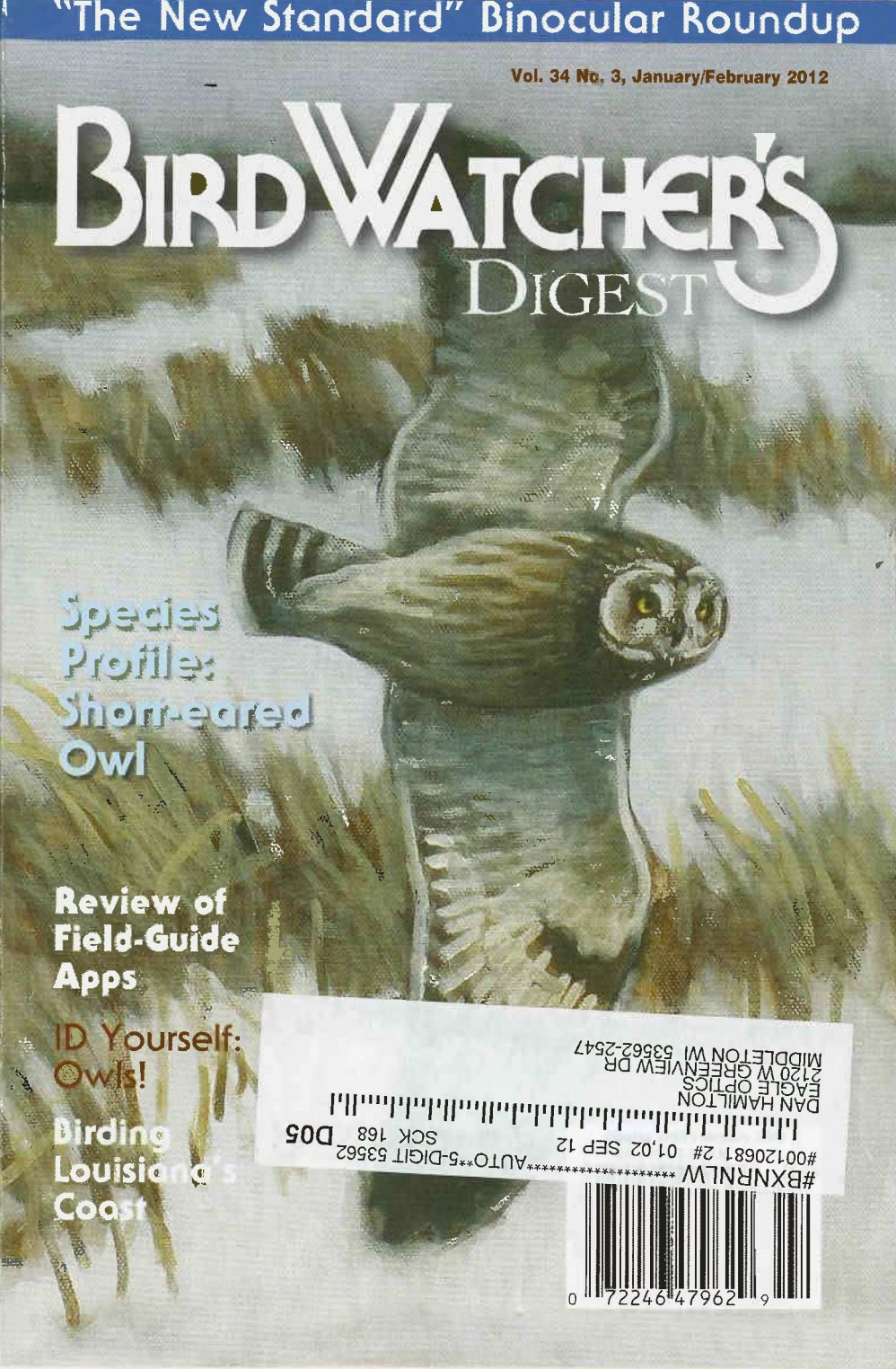
*Michael and Diane Porter are avid bird watchers who operate the website **birdwatching.com**.*

EXHIBIT 19
TO DECLARATION OF
DANIEL C. HAMILTON

"The New Standard" Binocular Roundup

Vol. 34 No. 3, January/February 2012

BIRDWATCHER'S DIGEST



Species Profile: Short-eared Owl

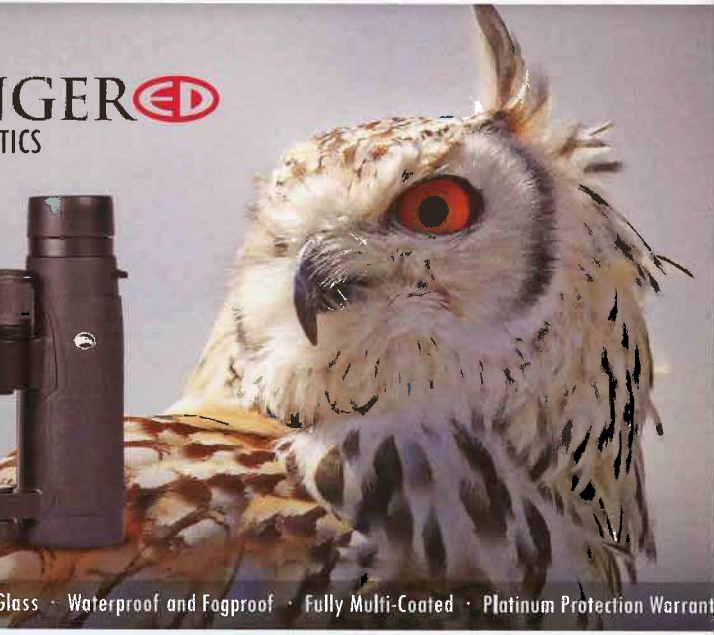
Review of Field-Guide Apps

ID Yourself: Owls!

Birding Louisiana's Coast

#BXNRNLW **********AUTO**5-DIGIT 53562
#0012068 1 2# 01,02 SEP 12 SCK 168 D05
DAN HAMILTON
EAGLE OPTICS
2120 W GREENVIEW DR
MIDDLETON WI 53562-2547
0 72246 47962 9

EAGLE OPTICS®
OPTIC OUTFITTERS®



★★★★★

T VALUE!"..."VERY SATISFIED!"..."AWESOME!"...

just some of the rave reviews for the Eagle Optics Ranger series of Binoculars – now even BETTER with the Ranger ED.

WWW.EAGLEOPTICS.COM

s and friendly expertise from birding enthusiasts and optics professionals.

major optic brands and more are all found at www.eagleoptics.com

VORTEX MINOX STEINER GERMANY Kowa PENTAX Nikon Leica SWAROVSKI Bushnell

isit us online for specifications, customer reviews, and great deals!

eoptics.com | 800.289.1132 | Follow us

BIRDWATCHER'S DIGEST®

January/February 2012

ROBERTMCCAW.COM

CLIFF BEITTEL

DONNA IKENBERRY

GLENN BARTLEY

FEATURES

26 Our Cover Species: Short-eared Owl
Howard Youth

34 ID Yourself: Owls in Black and White
Alvaro Jaramillo

42 The New Standard: 8x42 Midpriced Binoculars
Michael and Diane Porter

54 Louisiana: We're Still Here!
Bill Fontenot

62 The Fabulous Birds
William B. Hughes

68 Field Guide App Roundup
Mark Hedden

74 The Wonder of Western Grebes
Donna Ikenberry

THE BACKYARD

78 Window on My Backyard
Bill Thompson, III

80 A Green-railed Towelry
Al Batt

84 My Way: Supplying Skulkers and Wallflowers
Jim Cirigliano

86 The Bird Watcher's Question Box
Kevin J. Cook

Columns & Departments

8 Letters from Readers

12 Quick Takes
Paul J. Baicich

16 After the Spark: Pokagon
Kenn Kaufman

90 True Nature: Winter Birding: Dead—Until It's Not
Julie Zickefoose

98 Far Afield: Birding Guadalupe Mountains National Park
Stephen Lorenz

114 Book Notes

118 Well-Equipped Birder: eBird
Brian L. Sullivan, Marshall J. Iliff, and Christopher L. Wood

108 Watching Bird Behavior: The Impact of Impacts
David M. Bird

Watch Our Website • birdwatchersdigest.com

About the Cover

"The Openlander—Short-eared Owl" by Paul Hoelscher, acrylic on canvas.
To order a limited-edition print of this painting, please see the inside back cover.

Exclusive online content at *birdwatchersdigest.com*

When you see this icon at the end of an article, follow it to our website for more information on that topic.

BIRD WATCHER'S DIGEST

North America's favorite birding magazine since 1978.

FOUNDING PUBLISHERS	William H. Thompson (1932 – 2011) & Elsa Ekenstierna Thompson
CO-PUBLISHER AND DIRECTOR OF SALES	Andrew M. Thompson
CO-PUBLISHER AND EDITOR	William H. Thompson, III
EDITORIAL	Jim Cirigliano, *Managing Editor*
PRODUCTION	Claire Mullen, *Director*
EDITORIAL CONSULTANT	Elizabeth Pierson
CONTRIBUTING EDITORS	Chuck Bernstein, Edward Kanze, Kenn Kaufman, Jim McCormac, Lola Oberman, Diane Porter, Norma Siebenheller, Julie Zickefoose
FIELD EDITORS	Jeffrey A. Gordon, Alvaro Jaramillo, Howard Youth, John Riutta
EUROPEAN EDITORS	Nicholas Hammond, Peter Holt
CONTRIBUTING PHOTOGRAPHERS	Steve and Dave Maslowski, Arthur Morris
ADVERTISING	Chris Blondel, *Director, Print & Digital*
MARKETING	Laura Thompson Fulton, *Director* Jessica Moyer, *Assistant*
WEB MASTER	Katherine Koch
CONTROLLER	Ann Kerenyi
FULFILLMENT & SUBSCRIBER SERVICES	Michelle Morrison
MERCHANDISE MANAGER	Susan L. Stacy

Read our digital edition at birdwatchersdigest-digital.com

Contact Us

ADVERTISING/SUBSCRIPTION INFORMATION
Bird Watcher's Digest
P.O. Box 110
Marietta, OH 45750

CUSTOMER SERVICE
800-879-2473 or (740) 373-5285

E-MAIL
Advertising: advertising@birdwatchersdigest.com
Editorial: bwd@birdwatchersdigest.com

Coming Up Next

- Cover Profile: Ruddy Duck
- Pirates of the Dry Tortugas
- Far Afield: Kentucky's Wilderness Road
- Purple Martin Passion

BIRD WATCHER'S DIGEST (ISSN 0164-3037) is published bimonthly by Pardson Corporation. Periodicals postage paid at Marietta, OH 45750, and additional entry—USPS 0459-610. Canadian publications agreement number: 40030947. Return Undeliverable Canadian Addresses to: RRD, PO Box 2600, Mississauga ON L4T 0A8; Email: customerservice@birdwatchersdigest.com. Our offices are located at 149 Acme Street, Marietta, OH 45750. POSTMASTER: Send change of address to: Bird Watcher's Digest, P.O. Box 110, Marietta, OH 45750. Printed in the U.S.A. Rates: Single copy $6.00 ppd to U.S. ($7.00 ppd to Canada); Annual subscription price $19.99 per year in the United States; add $5.00 more for Canada and $10.00 for other foreign subscriptions. U.S. FUNDS ONLY PLEASE. Library rate is $19.99 for two years. Address all correspondence to the address above or to our website at www.birdwatchersdigest.com. Although all reasonable care is taken, we cannot accept responsibility for submissions of unsolicited manuscripts, photographs, or artwork. Enclose a self-addressed, stamped envelope if material is to be returned. The opinions expressed by authors do not necessarily reflect the policy of Bird Watcher's Digest.

The New Standard

8x42 midpriced binoculars

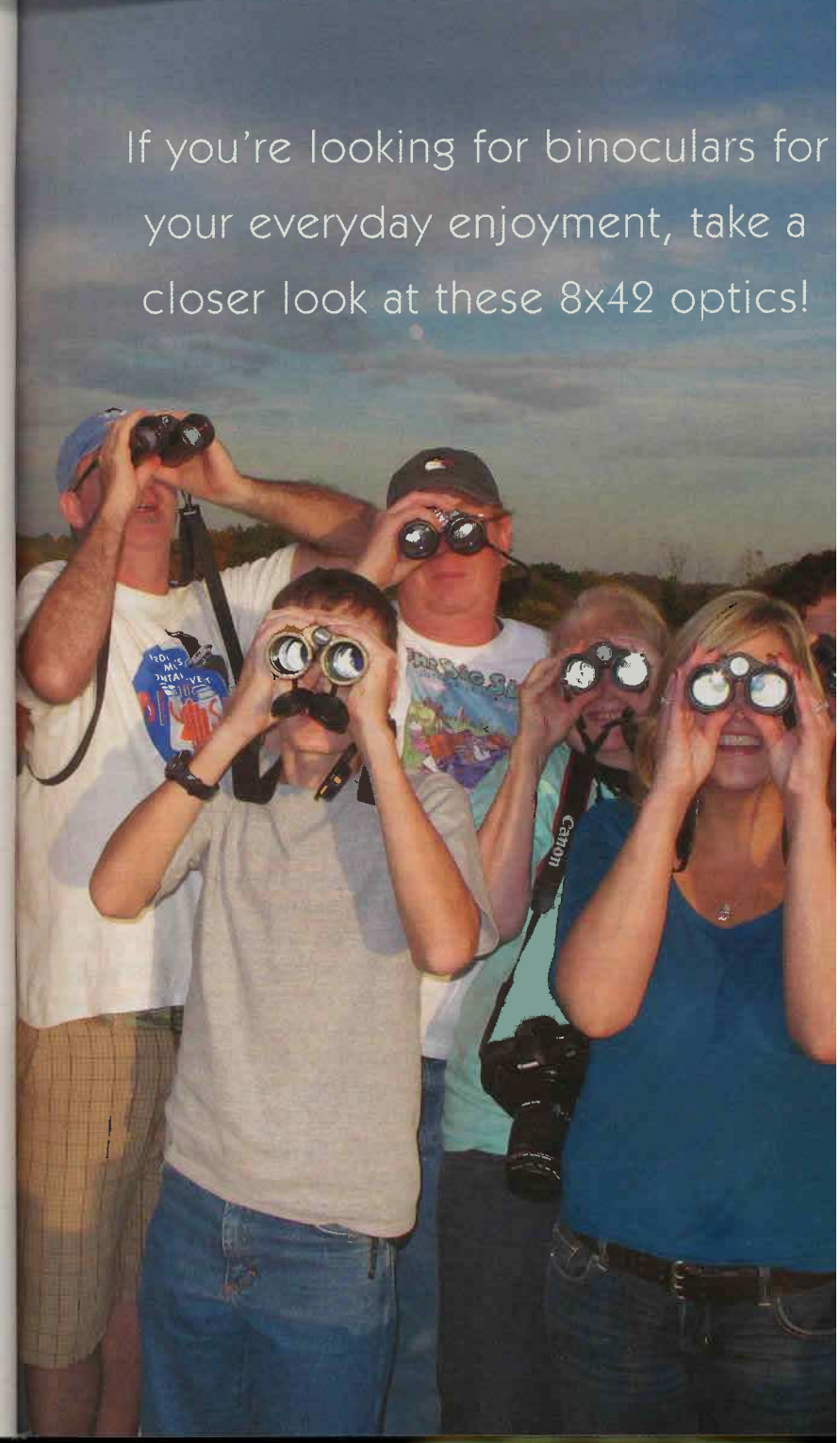
MICHAEL PORTER

move up to better binocu-
can't afford the high-end
Need a second pair for your
nt other? Or maybe you're
class grandparent trying to
orite child a life-changing

present. This review is for you.

In this article we review moderately priced binoculars in the 8x42mm class. All the binoculars are priced between $200 and $600 and have an 8-power (8x) eyepiece

MICHAEL & DIANE PORTER



PHOEBE THOMPSON

and 42mm or slightly larger objective lenses.

All of the binoculars that manufacturers sent to us for this review were H-shaped, roof-prism designs. No one sent a Porro prism design. This reflects the clear trend today in the birding market for the more compact roof prisms.

There were two construction styles, solid bridge and open bridge. The solid-bridge, classic design joins the barrels with one large hinge. The open-bridge design uses two smaller hinges, one close to the focus knob and one near the objective lenses, with a gap in between that allows your fingers to wrap around the barrels. This makes it easier to hold the binoculars with one hand. How well the open bridge works for you depends on the size of your hand relative to the binocular barrels. Only by trying the two types can you be sure which one suits you best.

Why Is 8x So Popular?

Eight-x magnification is a popular choice, and many birders prefer it to 10x. Here's why.

Better with glasses. When wearing eyeglasses, your eyes are positioned farther away from the eyepieces. How far back your eyes can be and still see the whole picture is called *eye relief*. It's much easier to find 8x binoculars with enough eye relief to work with your glasses than it is to find 10x.

Better image stability. More power isn't always a plus in a handheld optic. A 10x image is shakier because any hand movement is magnified as much as the image is. Many people find they can actually see more detail handholding 8x than 10x binoculars. It's personal.

Wider field of view. You spot a bird in the tree canopy and quickly raise your binoculars to your eyes. The wider the field of view, the more likely that the bird will be in it. This is especially true for birds that don't stay put. Lower magnification in binoculars means a wider field of view, so many birders prefer 8x to 10x.

Why Choose a 42mm Objective Lens?

More resolution. All other things being equal, the larger the objective lens, the better the resolution in the image. But you pay, with increased weight and size. How much resolution you need depends on how much you're going to magnify an image. For 8x or 10x magnification, a 42mm objective lens provides plenty of resolution. There's no need to exceed your eyes' ability to see. The reason people might choose larger objectives would not be for increased resolution but for more brightness in dim light or when night viewing or star gazing.

Brighter sometimes. The 8x42 binoculars create a 5.25mm *exit pupil* (42mm ÷ 8 = 5.25mm). The exit pupil is the diameter of the

Team Iowa out in the field.

MICHAEL PORTER

column of light coming out of the eyepieces. A larger objective lens provides a wider column and allows more light to enter your eyes when your pupils dilate at night.

The average youthful pupil dilates only to about 7mm even in total darkness. As we age, our eyes' ability to dilate gradually diminishes, so a 5.25mm exit pupil may deliver all the light your eye can use, even in dim-light conditions. Therefore, a 42mm objective is a good, practical compromise between brightness and weight.

In daylight, when your pupils contract to about 3mm, most of the light coming out of the binoculars will fall outside the pupil and never enter your eyes at all. Making the exit pupil larger won't make the image look any brighter.

Easier to use. An exit pupil that is bigger than the pupil of your eyes *is* sometimes useful. It's easier to position your eyes in the column of light—a helpful feature if you have shaky hands or if you're on a boat!

What and How We Tested

Focus mechanism. Your primary interaction with binoculars is focusing. This should be an intuitive, transparent experience.

There should be little or no slack. One achieves the best focus by turning past the sharpest point and then back to it. Slack in the focus mechanism messes with this strategy. Also, if you detect sloppiness while turning the focus knob, it raises doubts about the overall quality of

ulars.
nob should turn smoothly
ut its entire range. There
e no hint of dragging or
e turning resistance should
h to prevent unintentional
nt and give good kinesthet-
ck but not be too stiff. In
nake fine adjustments, you
e able to initiate turning the
nout a jerk.
e vary in how much turning
e they like. Therefore we
ding" a binoculars' score
e thought the focusing was
o stiff or too loose.
ocus knob should have a
urface, so your fingertip
ecure tactile feedback and
brain you don't have to
n hard for traction—just
ur finger. A soft rubber
vith a pattern or ridges
ell.

d-feel. Ergonomics plays
in choosing binoculars.
optical quality even in
ed binoculars has become
n recent years, fit-and-feel
be the deciding factor
ng one pair of binoculars
her.
ring fit-and-feel, here are
he issues we considered:
e binoculars comfort-
old? How does the armor
eel against the skin? Is
enough without being
gly rough? Do the strap
nto your hand? Are there
any sharp edges? Are there any bumps, depressions, or ridges that work well only for hands of a certain size? Are the binoculars well balanced? How intuitively do they aim? How comfortable is it to reach the focus knob?

Diopter adjustment. The diopter setting lets you customize the binoculars' focusing to accommodate any differences between your two eyes. The setting will differ from person to person. You should have to set the diopter only once, unless you lend your binoculars to someone else who changes your setting.

The best diopter mechanisms lock, so they can't be changed accidentally. And they have an easy-to-read scale, so you can return to your preferred setting if it does get changed. The worst diopter mechanisms have neither lock nor scale and are so easy to turn that they are likely to get changed unintentionally.

Resolution. As in previous reviews, we tested optical resolution using a 1951 U.S. Air Force optics resolution chart. We used a beanbag rest that let us carefully compare two pairs of binoculars side by side. A halogen floodlight provided consistent lighting. In case of ties, we had a 2x doubler handy to place behind the eyepiece.

The human eye's ability to resolve detail can change because of fatigue or time of day. As a control for consistency, we used a pair of high-end binoculars to continually check the level of details that our eyes were able to see.

We mapped the resolution results so that the top score was 5. Note that the resolution scores in this chart (Page 52) are very close. Adjacent gradations represent differences that can be seen only from an absolutely stable platform, and possibly only with a doubler.

We know you're curious how these mid-priced binoculars stacked up against our high-end reference binoculars, so we'll tell you. The high-end binoculars' resolution score would be a 5.5.

It's wisest to use the chart as a rough guide and not to obsess overly on a resolution score difference that you might be unable to see in the field. Furthermore, it's possible that the one sample of each of the binoculars we studied could have been atypical. The best use of this chart is to help you narrow down your choices to a few binoculars that you can test personally and then find out which one suits you best.

Choosing binoculars is always a very individual and holistic task.

Team Test Day

In order to integrate more opinions into our test, we invited some Iowa birders for a testing day. They had access to the same testing tools we used to compare binoculars. We have integrated their evaluations and comments into the reviews.

MICHAEL PORTER

The Vanguard Endeavor shown "in hand."

Chart Scores

The chart is sorted by overall score, with the best at the top. We scored the focus knob, diopter mechanism, fit-and-feel, and optical resolution on a scale of 5 to 1, with 5 being the best. The overall score derives from these four categories, with the optical resolution weighted most, focus knob and fit-and-feel next, and the diopter score least.

Close focus, field of view, eye relief, and size are not scored because people's concerns for these features vary individually. The specifications, however, appear in the chart.

The prices were determined by market research as of October 2011. They are not written in stone.

There isn't enough room in this article to review each of the binoculars individually. Here are some we singled out because they were top scorers, good buys, or interesting in some other way.

dual Reviews

ard Endeavor ED 8x42
verall Score: 5.00

anguard Endeavor got verall score, even though d at a 350. Its ution score the Vor- for top remark- buy!

open-bridge design tanding optics and ergo- It's slimmer and shorter t of the other open- noculars in our study. ing is a soft, textured, rface, as hand-friendly The strap lugs, which rmored, gently curve otect the hands. cave area on the bridge a natural resting place middle finger, position- index finger in line with knob. This small detail ou tend to grip the binoc- same way each time. A t grip assists the kines- elligence you use when ely pointing binoculars

ocus knob has no slack ides just the right f resistance. Its sur- ft, rubbery, and deeply A ¾ turn takes you he entire focus range. se Vanguard owns its own manufacturing facilities in China and has its own in-house optical engineers, the company has complete control over the design and product quality.

Pro: Excellent optical quality; fast focus; 19mm eye relief; wonderful ergonomics, with slender, easy-to-hold barrels; great value for the money.

Con: Minimum focus distance is 8.2 feet.

Vortex Optics Viper HD 8x42
Overall Score: 4.95

The Viper tied for top place with the Vanguard Endeavor for best resolution score and came in second overall. The Viper got a perfect score on fit-and-feel. Its overall score was lower than the Vanguard's only because the Viper's diopter adjustment doesn't have a scale. The main difference between the two models is that the Viper is the smaller, more compact solid-bridge design, whereas the Vanguard is the longer, single-hand-grip, open-bridge design.

At 5.1 feet, the Viper's close focus beats the Vanguard's. The Viper is a little more lightweight and more compact. It also has slightly longer eye relief.

The focus knob is a pleasure to use: grippy, smooth turning, with just the right degree of easy resistance, and perfectly free from slack. It takes 1 ¾ turns to go from lock to lock, with the first ½ turn used to traverse from the minimum focus of 5.1 feet to 8 feet.

Pro: Excellent optical quality and ergonomics; 20mm eye relief; 5.1-foot minimum focusing distance. Manufacturer's unlimited lifetime warranty is unsurpassed: Vortex promises to repair or replace accidentally damaged Viper binoculars at no charge, and the warranty is transferable.

Con: No diopter scale.

Zen-Ray Optics Zen ED3 8x43
Overall Score: 4.46

The Zen ED3 gives the viewer that *Wow* experience that comes with excellent optics and a wide field of view—426 feet at 1,000 yards.

It sports the open-bridge design that allows the fingers to wrap around one barrel. As is common in this design, the Zen ED3 is a little longer (6.5 inches) and heavier (27 ounces) than most binoculars of a conventional solid-bridge design. It has excellent ergonomics, and the strap lugs are covered, soft, and close enough to the eyepieces so as not to conflict with your grip.

Just one turn of the focus knob takes you from a close focus of 6.5 feet to infinity. The focus knob is free from slack and offers the right degree of resistance. It is unusually wide and would be easy to operate even with gloves.

The eyecups have an innovative design. When collapsed, they allow eyeglasses to come closer to the eyepiece glass than most binoculars do, effectively providing a few extra millimeters of eye relief. Birders with close-set eyes may appreciate the fact that the Zen's barrels can squeeze close together. Most binoculars are more limited in this respect.

The diopter adjustment doesn't have a scale, but it has clicks.

Pro: Wide field of view; fast focus; good ergonomics; unique extra tripod adapter socket at center of gravity of the binoculars.

Con: Diopter setting doesn't lock; some judges found the thumb indentations too far from the focus knob.

Nikon Monarch ATB 8x42
Overall Score: 4.38

Another best buy. The Monarch ATB earned an excellent 4.5 optical resolution score, earning a fourth place overall rating, while competing against binoculars costing up to twice as much.

At 21.5 ounces it was the second-lightest-weight binocular in the survey. It's hand-friendly,

MICHAEL PORTER (4)

that don't poke, eye-
wist-click up neatly,
g 19.6mm eye relief
sses, and one of the
, most precise focus
he lot. The focus knob
turns lock to lock.
ing in January 2012,
rch ATBs will be
he Monarch 5 Series.
sport a new logo on
out will be unchanged
.
ong eye relief; light-
utstanding value for a
.
Minimum focus distance
.

Optics Ranger ED 8x42
Overall Score: 4.33

new open-bridge design,
Optics Ranger ED is dif-
ferent than the pre-
vious, solid-bridge
Rangers, which are
still available.

The binoculars
provide an extreme-
ly satisfying view,
the product of their
resolving ability and one
est fields of view (425
r survey. The Ranger ED
have excellent build qual-
. All the moving parts
moothly and neatly, from
b to diopter adjustment.
omically, the binoculars
are well designed. The focus knob is smooth and precise, and it's wide enough even for a person wearing heavy gloves. The focus knob turns 1 ¾ turns lock to lock.

The barrels squeeze closer together than those of most binoculars, thereby accommodating birders with close-set eyes. Like most open-bridge binoculars, these are longer (6.7 inches) and heavier (27.4 ounces) than most binoculars of a conventional solid-bridge design.

Pro: Excellent optical quality; wide field of view; excellent ergonomics.

Con: Armored coating is harder than some people like; diopter setting doesn't lock.

Vortex Optics Diamondback 8x42
Overall Score: 4.32

Another best buy. The Diamondback is a notably hand-friendly binocular. The strap lugs are close to the eyepieces, so they don't cut into your hands, and the armored coating swells out and covers them, making the binoculars exceptionally comfortable to hold.

The diopter adjustment has no lock but does have enough turning resistance to keep it from being accidentally moved. The focus knob turns 1 ¾ turns lock to lock.

MICHAEL PORTER (4)

The Diamondback sports a wide 420-foot field of view. The 18mm of eye relief are enough to make it good with eyeglasses.

Pro: Long 18mm eye relief; wide field of view; lowest-priced binoculars in our top 10 overall scorers.

Con: No diopter lock.

Alpen Apex 8x42
Overall Score: 4.23

Although this is one of the least expensive binoculars in the study, it equaled or bettered all but the top two binoculars with its 4.8 resolution score.

It has an outstanding 20mm of eye relief. The strap lugs are near the eyepiece and are partially protected by a swelling of the armored covering, making the binoculars very hand-friendly.

The diopter adjustment has no lock, but it has a scale and click indents and a clear, red center indicator so you can see at a glance if it's set properly. The focus knob turns 1 ½ turns lock to lock.

Pro: Exceptional optics for the price; good ergonomics; long eye relief.

Con: No diopter lock.

Kowa SV42-8 8x42
Overall Score: 4.17

Another best buy. This new Kowa SV42-8 binocular is long and slim, with a pleasant armored covering. It's hand-friendly and especially good for people with smaller hands. The focus knob turns 1 ¼ turns lock to lock.

At $210 it's among the least expensive binoculars in the study.

Pro: Long 19.5mm eye relief; low price; good ergonomics; good value for a low price.

Con: Rather narrow field of view of 330 feet; minimum focus distance is 13.1 feet.

A Last Thought

One of the joys of living in a technological age is that good equipment keeps getting cheaper and cheaper. You no longer have to mortgage the house to get good birding binoculars.

If you haven't upgraded your optics for a while, it's worth a trip to your local optics store to take a look at some of the new binoculars. Maybe even take a grandchild along.

Michael and Diane Porter are avid bird watchers who operate the website ***birdwatching.com****.*

	Model	Size	Design	Close Focus (ft.)	Field of View (ft. at 1,000 yds.)	Eye Relief (mm)	Weight (oz.)		Length (in.)	Width (in.)	Waterproof	Eyecup Style	Diopter Location	Diopter Lock	Diopter Scale	Focus Knob Score	Diopter Score	Fit-&-Feel Score	Resolution Score	Overall Score	Price
	Endeavor ED 8x42	8x42	OB	8.2	367	19.0	25.8		6.0	5.1	Y	TC	E	Y	Y	5.0	5.0	5.0	5.0	5.00	$349.99
	Viper HD	8x42	SB	5.1	347	20.0	24.2		5.8	5.3	Y	TC	E	Y	N	5.0	4.5	5.0	5.0	4.95	$589.99
s	Zen ED3 8x43	8x43	OB	6.5	426	16.8	27.0		6.5	5.0	Y	TC	E	N	Y	4.5	4.0	4.5	4.5	4.46	$520.00
	Monarch 8x42	8x42	SB	9.8	330	19.6	21.5		5.7	5.1	Y	TC	E	N	Y	4.9	3.5	4.0	4.5	4.38	$279.95
	Ranger ED	8x42	OB	6.0	425	18.0	27.4		6.7	5.0	Y	TC	E	N	N	4.9	3.0	4.0	4.5	4.33	$439.99
	Diamondback	8x42	SB	4.5	420	18.0	25.2		5.9	5.6	Y	TC	E	N	Y	4.9	3.5	4.0	4.3	4.32	$219.99
	8x42 Teton	8x42	SB	8.2	383	17.0	26.0		6.0	4.8	Y	TC	E	N	Y	4.3	4.5	4.0	4.5	4.30	$539.00
	8x42 Apex	8x42	SB	5.0	341	20.0	22.0		5.8	5.0	Y	TC	E	N	Y	4.0	4.0	4.0	4.8	4.23	$279.00
	DCF CS 8x42	8x42	SB	8.2	393	21.0	22.6		5.8	5.3	Y	TC	FK	N	N	4.8	2.9	4.0	4.3	4.23	$279.00
	Ranger	8x42	SB	5.2	341	19.5	21.8		5.8	5.1	Y	TC	E	N	Y	4.5	3.5	4.0	4.3	4.20	$299.99
	SV42-8	8x42	SB	13.1	330	19.5	23.5		6.8	5.3	Y	TC	E	N	Y	4.2	3.5	4.2	4.3	4.17	$210.00
	8x42 Wings ED	8x42	SB	6.5	393	17.0	24.0		5.5	4.8	Y	TC	E	N	N	4.5	3.0	3.5	4.8	4.13	$389.00
	BX-2 Cascades	8x42	SB	9.9	341	18.0	22.9		5.5	4.9	Y	T	FK	Y	Y	3.7	5.0	4.0	4.3	4.11	$279.99
	Elite 8x42	8x42	OB	8.0	330	19.5	25.7		5.5	5.1	Y	T	FK	Y	Y	4.0	4.2	4.0	4.1	4.05	$479.95
	Countryman BGA Oasis	8x42	SB	9.5	358	19.0	23.0		5.4	5.0	Y	TC	FK	Y	Y	3.7	5.0	4.0	4.1	4.04	$349.00
	BD42-8x	8x42	SB	6.6	331	18.3	25.7		5.8	5.0	Y	TC	E	N	N	4.9	3.0	3.0	4.5	4.03	$590.00
	Bx-3 Mojave	8x42	OB	8.0	368	19.0	23.4		5.6	4.9	Y	TC	FK	Y	Y	3.5	5.0	4.0	4.1	3.98	$279.99
s	Zen-Ray Summit HD	8x42	SB	6.0	393	17.3	22.7		5.5	4.8	Y	TC	E	N	Y	3.7	3.0	3.5	4.3	3.76	$205.00
	Granite	8x42	SB	6.5	426	17.0	24.0		6.0	5.0	Y	TC	E	N	Y	3.5	3.5	3.5	4.1	3.68	$439.95
	Foresta HR 8x42 WP	8x42	SB	9.8	389	18.0	23.1		5.8	5.0	Y	TC	FK	Y	Y	4.5	5.0	2.0	4.1	3.68	$349.00
	BL 8x44	8x44	OB	8.0	446	19.5	26.1		5.2	5.9	Y	TC	E	N	Y	3.2	4.0	3.5	4.1	3.64	$489.00
	BV 8x42	8x42	SB	4.9	389	18.0	27.5		5.5	5.0	Y	TC	E	N	N	3.5	3.0	3.5	4.1	3.63	$289.00
	Legend Ultra HD	8x42	SB	8.0	426	17.2	24.7		5.5	5.0	Y	TC	E	Y	Y	3.5	4.0	3.5	3.6	3.59	$289.95
	Caldera Roof	8x42	SB	5.0	438	18.5	25.0		5.3	5.1	Y	TC	FK	Y	Y	3.2	2.0	4.0	4.1	3.59	$447.00
	Discovery WP PC	8x42	SB	4.9	430	22.0	24.8		5.2	5.0	Y	TC	E	N	Y	3.5	3.5	3.0	4.1	3.53	$219.00
	Ultraview EX 8x42	8x42	SB	8.2	394	19.0	23.3		5.8	5.2	Y	TC	FK	N	N	3.5	2.0	3.5	4.1	3.53	$229.00
	Frontier 8x42	8x42	SB	6.0	429	17.0	24.6		5.3	4.9	Y	TC	E	N	Y	4.5	3.0	2.0	4.1	3.48	$199.99
	OP 8x42HD MarkII	8x42	OB	8.2	394	18.0	31.7		6.6	5.7	Y	T	E	Y	N	3.0	3.0	3.0	4.1	3.33	$599.00
	TD-842 3D Series	8x42	SB	9.8	330	19.5	23.0		5.5	5.0	Y	T	E	N	N	3.5	3.0	2.0	4.1	3.18	$249.99

OB=open bridge, SB=solid bridge
le: T=twist-up eyecups, TC=twist-up with clicks
cation: FK=with focus knob, E=on eye piece

Diopter Lock: Y=has a lock, N=no lock
All Scores: 5.0 is highest possible score
Diopter Scale: Y=has a scale, N=no scale
Price: Market price as of October 2011

EXHIBIT 20
TO DECLARATION OF
DANIEL C. HAMILTON

LIVING BIRD

Cornell Laboratory of Ornithology *WINTER 2005*

THE AGE *of* BINOCULARS

BY KENNETH V. ROSENBERG

Are birding binos reaching the pinnacle of evolution?

It's been five years since we last published a comprehensive review of binoculars for birders, and in that time the number of models available in all price ranges has more than doubled. So it should not have surprised us when our request for sample products from the major optics manufacturers drew such a whopping response. Nearly 80 pairs of binoculars arrived at the Lab of Ornithology this past summer, with a combined value of well over $50,000 and a total weight of more than 100 pounds. This proliferation of binoculars, in every size, shape, and style, made us think of the so-called "Age of Dinosaurs," when these strange reptilian beasts occupied nearly every niche imaginable, only to face a mass extinction that reduced their diversity to only the hardiest forms. Only time will tell whether the current "Age of Binoculars," spurred on by the tremendous growth in birding and the willingness of more birders to splurge for quality optics, will crash like the dinosaurs in the face of over-diversification and stiff competition. For now, the flood of optics is both good news and bad news for a birder in the market for a new pair of bins.

The bad news is that the number of choices can be dizzying, and distinguishing between similar models is increasingly difficult. But the good news is that competition for your hard-earned dollars has resulted in higher and higher quality in binoculars, and many features that were rarely offered only five years ago have now become standard.

Among the encouraging trends we've noticed is that optics manufacturers are continuing to improve the quality of their glass and their lens coatings, creating products that provide unbelievable images. Today's mid-priced binoculars in many cases seem better than the top-of-the-line models of a decade ago. The vast majority of models we reviewed are lightweight, ergonomic roof-prism binoculars that—according to their manufacturers—are fully waterproof. Seventy-seven percent of the models we tested have a minimum close focus under 10 feet. And a majority of the models offer turn-and-lock eyecups and excellent eye relief, so that eyeglass wearers should never again have to settle for anything less than a perfect view.

The Five-Step Plan

Even with all the complexity and subtlety in the binocular market, choosing the right pair for you still involves a rather simple, straightforward process.

Step 1. Decide how much you can afford to spend. There's no point in lusting over optics you can't afford. On the other hand, remember that if you buy inexpensive binoculars that don't hold up, you may be purchasing another pair soon. An investment in quality binoculars today may last you a lifetime and will definitely enhance your enjoyment of birding.

Step 2. Decide whether you want 10x or 8x (or 7x) binoculars. People's preference in magnification is highly subjective and depends in part on the kind of birding you do. Many tour leaders and instructors recommend using lower magnification binoculars, because they usually have a wider field of view, which allows you to find birds faster and more easily, especially in dense forests. And, in direct comparisons, the 8x models often provide a noticeably brighter image than the corresponding 10x models—although, by a quirk of design, 10x binoculars usually weigh slightly less. But higher magnification can make a big difference in discerning the field marks of distant birds, especially when you're hawk watching, scanning flocks of shorebirds, or looking out over the ocean. My personal bias leans toward 10x binoculars for all kinds of birding. I've been using 10x and even 15x binoculars since I was a kid. I find that the greater magnification compensates for my poor eyesight, and I love seeing the fine detail on a close sparrow or warbler as much as making out the scapular pattern on a distant peep. Your budget could influence your choice. In general, it's more difficult to manufacture an inexpensive yet decent quality 10x, so if you're spending less than $500, you'll get higher quality for your money in the lower magnification models.

Step 3. Decide what other features are most important

to you. To many birders, a wide field of view is essential for finding birds quickly. To others, depth of field or quickness of focusing might be more important. If you combine birding with stalking butterflies or dragonflies, a close focus distance (under 6 feet) is critical. If you bird while backpacking, weight and compactness might be your first considerations. Many of our reviewers favored the lighter, more ergonomic models, although some birders prefer a heavier, more "solid" feel. Two of my Sapsucker teammates from the World Series of Birding, for example, insist on carrying the heaviest (by far) binoculars in this review, because to them nothing surpasses their bright image. To me, the bottom line is always image quality—nothing can compensate for an image that is not sharp and clear. As you use the accompanying table in this review, you might find that binoculars with the features you care most about do not necessarily rate highest in terms of overall quality.

Step 4. If you wear eyeglasses (or share your bins with a spouse or child who does), pay special attention to the "eyeglass friendliness" column in our table. Our reviewers rated the degree of "tunnel vision" (due to poor eye relief) as well as the sturdiness and ease of use of the retracting eyecups. In general, turn-and-lock eyecups are far better than the older rubber eyecups (which tend to crack from frequent folding), but the long-term durability of the turning cups may be a problem too. Some manufacturers don't make much of an effort in this regard, but these days you should have little trouble finding a "friendly" pair of binoculars in almost any price range.

Step 5. After you've narrowed your search to a few likely candidates (good luck!), there's no substitute for testing binoculars with your own eyes and hands. One thing I've learned in conducting these reviews is that no two birders hold or look through binoculars exactly the same way. The size of your hands, the shape of your face, how far apart your eyes are, how you focus, all help shape your personal preference. If possible, find a store that will allow you to test many models side by side before laying down your money. This is especially important if, like me, you bird with eyeglasses.

Sifting Through the Pack

One advantage to conducting a binocular review at the Lab of Ornithology is the ready availability of volunteer testers among our staff and friends, who range in experience from beginners to ace members of our big-day team, the Sapsuckers. In the end, 40 reviewers donated their time and their strong opinions. Each participant compared at least 10 models, and each model was tested by at least 10 reviewers. Five of us die-hards looked at every single pair. Some features were easy to measure precisely, such as weight, close-focus distance, and field of view. I measured the width of the visible field at a relatively close distance (15 feet), rather than using the "feet at 1,000 yards" reported by most manufacturers. I reasoned that the time when the field of view is most critical is when a bird pops up at close range.

TIM GALLAGHER

Several die-hard binocular reviewers (including author Ken Rosenberg at the far left) do their final testing the morning after the first snowfall of autumn.

Other features—image brightness, depth of field, and ergonomics—are more difficult to measure and can vary greatly from person to person. Here's where I relied on the subjective opinions of the reviewers, asking them to rate three important aspects of each pair on a scale from 1 (poor) to 5 (excellent). First was overall image quality, taking into account brightness, sharpness, edge-to-edge clarity, and any color aberrations or other problems. Second was overall feel—ergonomic design, balance, ease of focusing, and other usability features. Finally, I asked each reviewer with eyeglasses to rate the "eyeglass friendliness" of each model, considering the degree of tunnel vision due to poor eye relief and the usefulness and durability of the retracting eyecups. In the accompanying table, we present the average of all reviewers' ratings for each model.

To derive an overall quality rating for each model, I converted the range of values for close focus and field of view into a similar 1 to 5 rating. For example, any model that focused to less than 7 feet scored a "5" (excellent), whereas models focusing only to 15 feet or more scored a "1" (poor). Next, I totaled all the scores for each model, counting the score for image quality twice because of its overriding importance. Among the 78 binoculars we tested, the overall quality rating ranged from 12.6 to 29.4 out of a possible 30. Finally, within each broad price category, I used the overall quality ratings to rank each model from best to worst. This all might sound complicated, but the results are pretty straightforward and represent the subjective preferences of a wide range of reviewers.

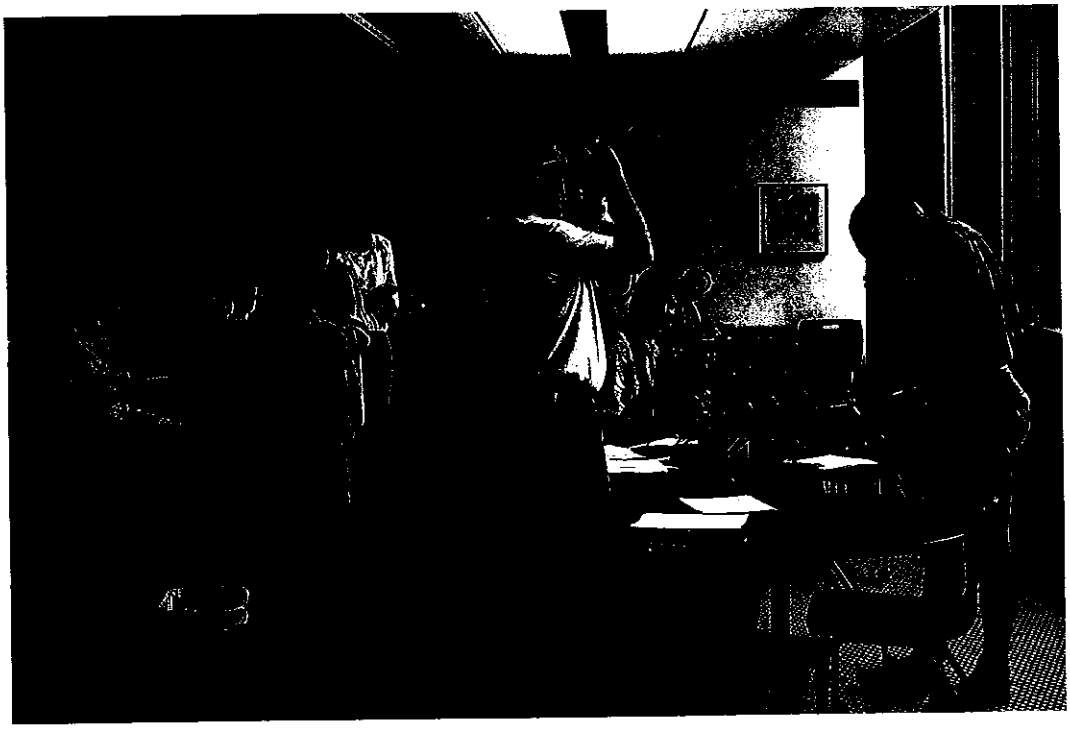
Budget Bins

For the first time, birders on a tight budget have some real choices for decent binoculars. In past reviews, testing the economy models gave us such eye strain, we kept a bottle of ibuprofen handy, but this time only a few of the cheapest compacts were truly awful to look through. Leading the economy group in overall quality was the Nikon 7x35 Action, a basic Porro prism model with an exceptionally wide field of view. Close behind was the Eagle Optics 7x32 Denali, a small, lightweight roof prism that certainly seems worth its very low price. Rounding out the top five economy models were the Audubon 8x42 Raptor, the two Bushnell Nature View models, and the Opticron 8x42 Imagic (all except the Raptor are a Porro-prism design). All of these models offer a very passable image, especially in the center of the field, and all work fairly well with eyeglasses. The Bushnell 10x42s offer the best choice for a truly inexpensive 10x binocular. The several compact models, along with the larger 8x42 Triumphs, are not recommended for birding and are especially useless if you wear glasses.

Affordable Quality

Perhaps the most pleasant surprise in this review was the high quality and usability found among binoculars in the $200 to $500 range. Top-rated among the 27 models in this category was the Leupold Wind River 6x32 Katmai, which has a bright clear image, compact and eyeglass-friendly design, wide field of view, and an exceptionally close focus. Although their low power will limit the usefulness of these binoculars for many types of birding, they are excellent for butterfly watching and would be great to keep by the window for close-up viewing of your backyard feeder birds. Unfortunately, the similar 8x32 model (at least the pair we tested) would not focus as crisply and had a flimsier overall feel. Close behind the tiny Leupolds was the Nikon Monarch 8x42, clearly the top-rated of any mid-priced, full-power birding binoculars. These lightweight, waterproof, and very comfortable binoculars focus down to 6 feet (they were given the name "Monarch" to attract butterfly watchers) and offer an image and feel that surpasses many models costing two or three times more. Only in a direct comparison with the top-priced binoculars could our reviewers discern the narrower, slightly duller image, which was not quite sharp at the edges. But with a street price well under $300, the Monarchs are a steal.

Several other 8x42 models present some nice choices in this very affordable price range. The Opticron BGA Imagic, Leupold Wind River Pinnacle, and Celestron Noble all offer an image comparable



Many of the tests took place indoors in the Lab's second-story lunch room, which overlooks Sapsucker Woods Pond.

with the Monarchs, but their overall feel did not impress reviewers quite as much. The Eagle Optics Ranger PC, which ruled the mid-priced market for years, doesn't have quite as crisp an image and shows slightly greater distortion at the edge of the field. All of these models focus to about 6 feet or closer and work very well with eyeglasses. The Monarch 10x42 is the only 10x model among the top-10 rated mid-priced binoculars; these are also the most lightweight of any 10-power we tested. Comparable to the Monarchs in terms of image quality is Leupold's Wind River 10x50 Olympic, but a narrower field of view and a close-focus distance of only 10 feet contributed to their lower overall ranking. Other decent 10x binoculars in this price range are Celestron's Regal LS 10x42 and 10x50 and Noble 10x50 models (interestingly, the less expensive Nobles ranked higher, especially in terms of feel and eyeglass-friendliness), as well as the Eagle Optics 10x42 Ranger PC. Again, the Rangers are not quite up to the competition in terms of image quality, but they have a nice lightweight feel and offer a wide field of view and excellent close focus.

KENNETH V. ROSENBERG (2)

A group of schoolchildren looked through the binoculars one afternoon and rated them from their unique perspective.

Finally, worth mentioning in the $200 to $500 price range are several compact binoculars that can put high-quality optics in your shirt pocket. Top-ranked among the compacts was the Nikon 8x20 Premier LX, a tiny waterproof roof prism binocular with a sharp image and excellent close focus. Our testers complained about their awkward feel, however, and especially about having to focus with the pinky or ring finger. By comparison, the Bushnell 7x26 Custom Compacts, with nearly comparable image and a much more user-friendly design, are still perhaps the best compact binoculars available for birding. Also in this mix are the miniature Zeiss 8x20 Victory and the slightly pricier Swarovski 8x20 B; both provide a sharp image but suffer from an awkward feel and focusing mechanism. Most reviewers felt that these miniature binoculars were too small for serious birding.

In the $500 to $1,000 category, we were hoping to see some exceptional quality at prices that a wide range of birders could still afford. In general, though, the 14 models in this group did not rate any higher than the top-ranked, less expensive models. Once again, Nikon led the field with the 8x32 HG DCF, which received an overall quality rating comparable with many top-of-the-line binoculars. Although they offer a wider field of view and slightly closer focus, these Nikons were not noticeably better than the inexpensive Monarchs in terms of image quality or overall feel. The only other model in this category worth mentioning is the Zeiss 8x30 B T* Conquest, which some reviewers felt offers the brightest, sharpest image of any binocular under $1,000. These are extremely lightweight and nitrogen-filled, but they do not focus particularly closely and don't have the solid, rugged feel of other roof prism binoculars. It's worth noting that Zeiss offers the Conquest in a 10x, 12x, and even a 15x45, and they all weigh less than 20 ounces each.

Neck and Neck at the Top

Frequently as our dedicated and discerning binocular-testers sorted through the morass of glass, a loud "WOW!" would rise above the din. This signaled that someone had picked up one of the top-of-the-line offerings from Leica, Swarovski, or Zeiss. The stiff competition between these manufacturers has resulted in a superb set of choice models that not only provide almost unbelievable optical quality but are simply a joy to hold and use. It's safe to say that no clear winner emerged at the top of this heap, and I urge would-be buyers of $1,000-plus binoculars to "test drive" your selections before taking out a second mortgage on the house or sending your kids to work in the mines. Each company boasts its own proprietary glass, coatings, and body designs, so these new models differ more from each other than do the "standard" roof prisms in the less expensive categories. All, however, offer the highest quality edge-to-edge image possible in a fully waterproof, nitrogen-purged, and eyeglass-friendly body, and they come with a lifetime warranty.

It's fair to say that Swarovski has set the pace for this burst of innovations by paying close attention to the

Category rank	Model	Power	Price	Quality index	Weight (ounces)	Close focus
	ECONOMY (under $200)					
1	Nikon Action EX	7x35	$130	22.7	29.4	8'4"
2	Audubon Raptor	8x42	190	21.3	29.0	11'7"
2	Eagle Optics Denali	7x32	89	21.3	22.9	8'6"
3	Bushnell Nature View	10x42	179	20.3	26.6	9'8"
4	Bushnell Nature View	8x42	149	20.1	26.7	11'4"
5	Opticron Imagic	8x42	189	19.3	24.3	12'3"
6	Audubon Raptor	10x42	199	18.6	29.1	11'10"
7	Tasco World Class	10x42	180	18.0	25.9	10'4"
8	Audubon wp Intrepid	8x40	150	17.8	24.8	10'0"
9	Audubon wp Intrepid	10x40	160	16.6	25.3	11'9"
10	Tasco World Class	8x42	160	16.5	25.8	10'2"
11	Eagle Optics Denali	9x32	99	16.2	22.0	9'0"
12	Eagle Optics Triumph	8x25	70	15.0	9.9	5'9"
13	Eagle Optics Triumph	10x25	80	14.9	11.4	8'2"
14	Eagle Optics Triumph	8x42	89	14.0	22.4	15'10"
15	Celestron Traveler	8x26	25	12.6	9.92	8'9"
	MID-PRICE ($200–500)					
1	Leupold Wind River Katmai	6x32	370	27.7	19.5	4'4"
2	Nikon Monarch	8x42	431	26.0	21.3	6'0"
3	Opticron BGA Imagic	8x42	485	24.6	25.3	6'0"
4	Leupold Wind River Pinnacle	8x42	495	24.3	24.3	5'0"
5	Celestron Noble	8x42	269	24.1	22.7	6'1"
6	Nikon (compact)	8x20	500	23.3	9.7	6'0"
7	Eagle Optics Ranger PC	8x42	379	23.2	23.0	4'5"
8	Nikon Monarch	10x42	471	23.1	21.1	6'0"
9	Celestron Noble	8x32	249	23.0	20.0	3'6"
10	Leupold Wind River Katmai	8x32	390	22.9	24.3	3'10"
11	Zeiss B T* Victory	8x20	429	22.8	8.0	6'11"
12	Leupold Wind River Olympic	8x42	385	22.7	22.9	6'0"
13	Bushnell Custom Compact	7x26	380	22.5	13.0	8'3"
14	Celestron Regal LS	10x42	389	22.2	25.9	5'9"
15	Brunton Eterna	8x32	399	22.0	26.1	3'10"
16	Eagle Optics Ranger PC	10x42	399	21.8	22.7	4'6"
17	Bushnell Legend	8x42	418	21.7	29.8	6'0"
18	Audubon Equinox	8x42	240	21.6	23.6	3'9"
19	Audubon Equinox	10x42	260	21.4	23.4	4'0"
20	Celestron Noble	10x50	289	20.4	26.9	8'10"
21	Bushnell Legend	10x42	438	20.3	29.1	6'0"
22	Leupold Wind River Olympic	10x50	450	19.6	25.8	10'
23	Celestron Regal LS	10x50	424	19.0	29.8	9'11"
24	Bushnell Legend	12x50	460	18.9	33.3	9'6"

ld of iew	Close focus score	Field of view score	Image quality	Overall feel	Eyeglass friendliness
3.0"	4	5	3.2	2.9	4.4
8.0"	3	5	3.3	2.9	3.8
4.5"	4	4	3.2	3.2	3.7
1.0"	4	2	3.4	3.7	3.8
2.0"	3	3	3.3	3.5	4.0
3.0"	2	3	3.5	3.3	4.0
4.0"	3	3	2.8	3.0	4.0
0.0"	3	2	2.9	3.4	3.8
2.5"	3	3	2.8	3.1	3.1
0.0"	3	2	2.7	2.6	3.6
2.0"	3	3	2.3	2.8	3.1
8.0"	4	1	2.4	3.1	3.3
2.0"	5	2	1.9	2.2	2.0
6.5"	4	1	2.4	2.3	2.8
3.0"	1	3	2.4	2.2	3.0
9.0"	4	1	1.6	2.0	2.4
3.0"	5	5	4.5	4.4	4.3
2.5"	5	3	4.3	4.7	4.7
2.5"	5	3	4.1	4.1	4.3
3.0"	5	3	3.8	3.9	4.8
2.5	5	3	3.8	4.2	4.3
3.0"	5	3	4.0	3.0	4.3
2.0"	5	3	3.6	4.0	4.0
0.0"	5	2	3.8	4.5	4.0
6.0"	5	4	3.2	3.8	3.8
3.5"	5	3	3.6	3.8	3.9
4.5"	5	4	3.6	3.1	3.5
2.5"	5	3	3.5	3.9	3.8
4.0"	4	3	3.8	4.0	3.9
.0"	5	2	3.7	4.2	3.6
6.0"	5	4	3.3	3.1	3.3
2.0"	5	2	3.4	4.0	4.0
6.0"	5	3	3.6	3.1	3.4
.0"	5	3	3.1	3.4	4.0
2.0"	5	3	3.0	3.4	4.0
.0"	4	1	3.6	3.9	4.3
1.0	5	2	3.3	3.3	3.4
.5"	3	1	3.9	4.0	3.8
.0"	4	1	3.6	3.4	3.4
.5"	4	1	3.3	3.6	3.7

Chart continues on the following pages.

Category rank

Based on quality index scores for price-range category

Price

Manufacturer's suggested retail price

Quality index

Sum of scores for image quality (times two), overall feel, eyeglass friendliness, close focus, and field of view. Possible range from 6.0 to 30.0

Field of view

Measured at a distance of 15 feet

Close focus score

1 = more than 15 feet
2 = 12–15 feet
3 = 10–12 feet
4 = 7–10 feet
5 = less than 7 feet

Field of view score

1 = less than 20 inches
2 = 20–22 inches
3 = 22.5–24 inches
4 = 24.5–27 inches
5 = more than 27 inches

Image quality, overall feel, eyeglass friendliness

Average of 10 or more reviewers' ratings, from 1 (poor) to 5 (excellent)

Category rank	Model	Power	Price	Quality index	Weight (ounces)	Close focus
	MID-PRICE ($200–500, continued)					
25	Fujinon BFL	8x42	$235	18.8	25.4	12'10"
26	Steiner Merlin	8x32	399	18.1	21.9	8'6"
27	Fujinon BFL	10x42	240	16.5	25.9	11'6"
	TOP AFFORDABLE ($500–1,000)					
1	Nikon HG DCF	8x32	700	27.0	26.2	5'6"
2	Minox BD ALT BR	10x42	799	24.8	29.1	6'0"
3	Opticron Oasis WP	8x42	849	24.6	25.4	5'11"
4	Pentax DCF SP	8x43	698	24.0	25.3	4'8"
5	Minox BD ALT BR	8.5x42	759	23.7	28.5	6'0"
6	Zeiss B T Conquest	8x30	550	23.6	19.5	9'7"
7	Pentax DCF XP	8x33	558	23.0	18.6	3'9"
8	Fujinon CD	8x42	760	22.8	32.5	9'8"
9	Swift Audubon (RP)	8.5x44	629	22.6	25.6	9'10"
10	Fujinon CD	10x42	790	22.0	32.8	9'6"
11	Steiner Peregrine	8x42	899	21.3	26.2	5'2"
12	Brunton Compact Epoch	8x21	629	20.8	14.2	5'6"
13	Swarovski B	8x20	599	20.7	7.7	7'0"
14	Optolyth Alpin NG	10x50	611	13.5	29.0	26'0"
	TOP GUN (over $1,000)					
1	Zeiss FL T*	8x42	1500	29.4	27.3	6'2"
2	Swarovski EL WB	8x32	1666	28.9	23.7	6'0"
3	Leica Ultravid BR	7x42	1500	28.6	28.5	9'11"
4	Leica Trinovid BN	8x32	1200	28.3	23.4	6'0"
5	Swarovski EL	8.5x42	1821	27.9	30.9	7'6"
6	Leica Ultravid BR	8x42	1550	27.5	28.8	9'3"
7	Zeiss Victory FL T*	10x42	1550	27.4	27.8	5'4
8	Leica Ultravid BL	8x42	1600	27.1	26.7	9'2"
9	Swarovski EL WB	10x42	1888	26.2	29.0	7'5"
9	Leica Ultravid BR	10x42	1600	26.2	28.5	8'10"
10	Swarovski EL WB	10x32	1755	26.1	23.2	5'10"
11	Leica Trinovid BN	8x42	1300	26.0	33.8	9'1"
12	Swarovski SLC B	7x42	1254	25.6	36.0	12'0"
13	Nikon Premier LX	8x42	1200	24.8	28.3	8'6"
14	Leica Trinovid BN	10x42	1350	24.7	33.1	8'7"
14	Brunton Epoch X8S	8.5x43	1449	24.7	28.6	2'7"
15	Swarovski SLC WB	8x30	1066	23.1	23.5	13'0"
16	Brunton Epoch X10S	10.5x43	1499	22.7	29.3	2'6"
17	Swarovski SLC WB	10x50	1643	22.1	44.8	15'0"
18	Swarovski SLC WB	10x42	1310	20.9	33.8	12'8"
19	Optolyth BGA	8x56	1031	16.0	36.8	12'9"

eld of view	Close focus score	Field of view score	Image quality	Overall feel	Eyeglass friendliness
24.5"	2	4	3.1	3.1	3.5
22.5"	4	3	2.9	3.0	2.3
25.0"	3	4	2.4	2.7	2.0
27.0"	5	5	4.3	4.0	4.4
22.0"	5	3	4.1	4.2	4.4
4.5"	5	4	3.8	4.0	4.0
3.0"	5	3	3.7	3.9	4.7
1.5"	5	2	4.1	4.0	4.5
4.0"	4	3	4.4	3.7	4.1
3.0"	5	3	3.4	3.9	4.3
6.0"	4	4	3.7	3.4	4.0
2.0"	4	3	3.8	4.0	4.0
3.0"	4	3	4.0	3.5	3.5
3.0"	5	3	3.7	3.7	2.2
6.0"	5	4	2.7	2.7	3.7
4.0"	4	3	3.9	2.7	3.2
n/a	1	3	2.4	2.3	2.4
7.0"	5	5	5.0	4.4	5.0
7.0"	5	5	4.7	4.7	4.8
8.0"	4	5	5	4.6	5.0
7.0"	5	5	4.7	4.1	4.8
6.0"	4	4	5.0	4.9	5.0
6.5"	4	4	5.0	4.5	5.0
2.5"	5	3	5.0	4.5	4.9
6.0"	4	4	5.0	4.1	5.0
2.0"	4	3	4.9	4.8	4.6
2.5"	4	3	4.9	4.5	4.9
.0"	5	3	4.6	4.6	4.3
.0"	4	4	4.7	3.8	4.8
.0"	3	5	4.8	3.4	4.6
.0"	4	3	4.7	3.6	4.8
.5"	4	3	4.8	3.4	4.7
.0"	5	2	4.3	4.3	4.8
.5"	2	4	4.6	3.5	4.4
.5"	5	1	3.9	4.3	4.6
.0"	1	3	4.9	3.4	4.9
.5"	2	2	4.5	3.6	4.3
.0"	2	3	3.1	2.2	2.6

Category rank

Based on quality index scores for price-range category

Price

Manufacturer's suggested retail price

Quality index

Sum of scores for image quality (times two), overall feel, eyeglass friendliness, close focus, and field of view. Possible range from 6.0 to 30.0

Field of view

Measured at a distance of 15 feet

Close focus score

1 = more than 15 feet
2 = 12–15 feet
3 = 10–12 feet
4 = 7–10 feet
5 = less than 7 feet

Field of view score

1 = less than 20 inches
2 = 20–22 inches
3 = 22.5–24 inches
4 = 24.5–27 inches
5 = more than 27 inches

Image quality, overall feel, eyeglass friendliness

Average of 10 or more reviewers' ratings, from 1 (poor) to 5 (excellent)

needs and criticisms of serious birders. Swarovski's EL series was the first to sport a combination of lightweight magnesium-alloy body, wonderfully ergonomic features, twist-and-lock eyecups, and the highest-quality optics. Zeiss and Leica have now followed with their own versions, offering a lightweight, ergonomic design and a superb image, bucking their previous trends towards heavier and bulkier binoculars. Although your choice will undoubtedly come down to personal preference (or brand loyalty), a close look at the ratings in our table will reveal some subtle differences that might tip the balance toward one model or another.

In terms of pure image quality, six models received "perfect scores" from our reviewers, indicating an absolutely flawless, bright, and crisp-from-edge-to-edge image. Of these, the Zeiss 8x42 FL T* scored the highest for overall quality of any binocular tested, combining its exquisite image with perfect eye relief, a relatively wide field of view, and excellent close focus. The similar Zeiss 10x42 was the only 10x model in our test to receive this highest image rating. Some reviewers were critical of the ergonomics of these Zeiss models, however, labeling them as "forward-heavy," "not comfortable," "too knobby," and even "flimsy." Rounding out the "perfect-image" club were Leica's 7x42 and 8x42 Ultravids and Swarovski's 8.5x42 EL. These ELs received the highest scores of any binocular for all three subjective categories, with especially high marks for overall feel. Typical comments were "very ergonomic," "nice feel," "well balanced," and "wow!" (Personally, I'd like to have a pair of these surgically implanted in my palms.) The Ultravids represent a leaner, meaner version of the rather bulky Leica Trinovids, with an even brighter, crisper image in direct comparison. Although the new Leicas won instant fans among our testers, others were less than enamored with their overall feel, and these Leicas don't focus as closely as the other top models.

Both the Leica Ultravid and Swarovski EL 10x42 models ranked only slightly behind their 8x42 counterparts, primarily due to a slightly less bright (but still superb) image and a correspondingly narrower field of view. Again the ELs won out in terms of ergonomics, but they unfortunately do not offer quite enough eye relief to avoid slight tunnel vision with eyeglasses. The new Swarovski 8x32 and 10x32 EL models represent an even further innovation in lightweight, ergonomic design. The slight loss in image brightness is compensated for by a wider field of view and an even closer focusing distance than the larger ELs—in fact, the 10x32s offer the widest field of any 10x roof prism binocular we've seen. In addition, I found the small ELs to be especially easy and fast to use with one hand, for example, when I was carrying a scope. Unfortunately, I don't get a full field of view from the 10x32s with my eyeglasses on.

Leica did not send us their brand new 8x32 or 10x32 mid-sized models, which are even more lightweight than the ELs and undoubtedly will give Swarovski another run for their money. The older Trinovid 8x32s—which led the mid-sized category in our last review—still ranked fourth in terms of overall quality. Finally, worth mentioning because of its exquisite image is Swarovski's honking big 10x50 SLC—still probably the brightest 10x on the market. At least a few top birders I know insist on carrying these, in spite of their excessive weight, relatively narrow field of view, and poor close focus. I'd love to see these in an EL version.

Three additional manufacturers have vied for a share of the top-of-the-line binocular market, and two of these should be commended for their efforts. Nikon, which now leads in all of our less-expensive categories, sent us a prototype of their brand new 8x42 Premier LX, a reworked, more lightweight version of their acclaimed Venturer. Although the image offered by these new Nikons is excellent, it didn't quite match the top-ranked models (one reviewer noted slight color-fringing), and some reviewers did not care for their heavier and bulkier feel (ironic, because the Nikon Venturer set the standard for usability five years ago). But a lower suggested retail price than most other top models may make these binoculars quite attractive. The newest player in the fine optics game is Brunton, which offers the 8.5x43 and 10x43 Epoch XS models. These have some nice features, such as eyecups that lock in multiple positions and unheard of close-focusing distances (though at these distances you need to use one eye), and they are very cool looking. But our reviewers were disappointed by their optical quality, and several of them cited visible color fringing and the relatively narrow field of view on both models.

Ken's Parting Thoughts

So, if your birding has evolved to new levels, but this new age of binoculars is passing you by, I offer the following thoughts and personal recommendations. First, if you think your old binoculars are still just fine, you may want to think again. The improvements in image quality and usability really do make a difference, both in your ability to identify birds and in your enjoyment of birding. Look through a new pair and see for yourself. Second, if you're in the market for new optics, I recommend spending as much money as you can afford. Even beginners and kids will benefit from higher quality binoculars, and the investment in durability or a lifetime warranty might save you money in the long run. Finally, if you buy some new binoculars, I ask you to consider the fate of your old optics. As birding and bird-conservation efforts flourish worldwide, ornithologists and birding guides throughout Latin America and the Caribbean often lack the means to purchase the basic tools of their trade. Fortunately, at least two programs have been set up to deliver donated used binoculars to these very deserving and grateful people, and I urge you to support these efforts. For more information, check out the American Birding Association's Birders' Exchange at <www.americanbirding.org/bex> and Optics for the Tropics at <www.opticsforthetropics.org>. ■

Kenneth V. Rosenberg is director of the Conservation Science program at the Lab of Ornithology and co-captain of the Sapsuckers, the Lab's World Series of Birding team.

EXHIBIT 21
TO DECLARATION OF
DANIEL C. HAMILTON

Desperately Seeking Binos

by Ken Rosenberg

In search of the best and the brightest binoculars for birding

Click here to view the binocular comparison table

Master optical reviewer Ken Rosenberg poses with a few of the many worthy binoculars sent to us by eager manufacturers.

If you're in the market for new binoculars these days, chances are you're confused by the bewildering array of makes and models available in nearly every price range. Indeed, when we set out to conduct this binocular review–our first in more than three years–we were unprepared for the onslaught of optics that arrived at the Lab of Ornithology. We ended up with 61 pairs, and some manufacturers didn't even respond to our request for test products. This proliferation of new models reflects the stiff competition in the top-of-the-line markets as well as the budget categories, brought about by several savvy companies entering this formerly stagnant field and by the tremendous boom in recreational birding during the past decade.

To help sort through this morass of glass, I gathered together 10 certified Lab of Ornithology bird-heads, ranging in ability from novice and casual birders to three members of the Sapsuckers, the Lab's do-or-die World Series of Birding team. Reviewing optics is largely a subjective exercise, and our panel included some of the most opinionated birders I know. I myself bring certain biases to this review, which I will shamelessly share. I've been birding for roughly 40 years, and for more than half this time I've worn eyeglasses. As a professional ornithologist and fanatical birder, I've always demanded the highest-quality optics. For many years, I suffered the tunnel-vision image inflicted by binoculars that were poorly designed for the seeing-impaired. It's also no secret that a certain Austrian optical instruments manufacturer captured my attention during our 1995 review. The company, Swarovski Optik, has since become sponsor of the Sapsuckers, bestowing upon us the best binoculars and scopes it produces. I must admit that I entered this review wondering if anything out there could beat my Swarovski 10x50 SLCs.

How to choose binoculars: What's your bottom line?

When you're shopping for binoculars, it's important to consider the kinds of birding you enjoy most as well as the cash resources you're willing to expend. For most people, price is an important limiting factor and, as with most high-tech toys, price largely sets the limits on quality and other features. For example, less-expensive binoculars are rarely very durable or waterproof, and some of them produce such

a poor image they'll cause severe eyestrain if you look through them too long. With virtually all of the models we tested, price was an excellent predictor of overall quality, as assessed by our reviewers. But one of the refreshing surprises for us was the array of decent binoculars in the mid- and low-priced categories, which shows that manufacturers are finally rising to the challenge of producing good birding optics at an affordable price.

In general, however, I recommend spending as much as you can afford on binoculars. Consider the following points: (1) It's a myth that beginning birders (or older children) should start with inexpensive binoculars. Using high-quality optics right away will enhance your enjoyment and speed up your ability to learn more about birds. This could make the difference between someone becoming a lifelong birder or a confirmed nonbirder who gets an instant migraine headache at the sight of binoculars; (2) Dropping a mint on binos may not be a bad investment–most top-of-the line models are practically indestructible, come with lifetime warranties, and may be the only binoculars you'll ever need to buy.

A variety of certified Lab bird-heads, ranging from beginning birders to professional ornithologists, took part in our latest binocular evaluations. The binocular features chart reflects their combined optical wisdom.

Other factors to consider, in addition to price, include magnification, weight, overall image quality, field of view, and minimum close-focus distance. Most of these factors present tradeoffs–that is, making improvements in one factor usually entails making sacrifices in another. For example, if you demand high-quality lenses and a wide field of view, the binoculars you buy will most likely be very heavy. Conversely, if you go for a lightweight compact or even midsized model, you'll generally get a narrower and dimmer image, particularly when viewing in low light.

Surprisingly, no relationship appears to exist between the field of view and the minimum close-focus distance of a given binocular, although remarkably few models are designed with both features in mind. Also, for almost any given binocular design, the 7x or 8x models almost always have a wider field of view, brighter image, and closer focus distance than the comparable 10x models. It is no longer true, however, that 10x binoculars must always be heavier than models with less magnification. Among many top-of-the-line brands, the loss of field or brightness in 10x binoculars is barely discernible and is probably compensated for by the greater detail and resolution that the increased magnification provides.

In the mid- and high-priced categories, our reviewers preferred roof-prism over Porro-prism binoculars, even when the Porro-prism binoculars weighed less. In case you're not sure which design is which, Porro-prism binoculars are easy to distinguish because their ocular (eyepiece) lenses are much closer together than their objective (front) lenses. (These are the common binoculars you've seen everywhere since you were a kid.) With roof-prism binoculars, the eyepieces are

directly in line with the objective lenses. Porro-prism binoculars tend to cost less than comparable roof-prism binoculars, but they're usually heavier, bulkier, and less resistant to water. Just to confuse the issue, there's a third binocular category: the reverse-Porro-prism, in which the standard Porro-prism design is inverted, placing the objective lenses closer together than the eyepieces. This is a common design in compact binoculars.

Our reviewers also tended to favor 10x models over comparable lower-magnification models. One of our binocular testers (a crazed Sapsucker team member) declared that 10x magnification was a must, the only other consideration being to get the widest possible field of view. For others, a comfortable feel and moderate weight were all-important. My own bias (and you've heard this before) is also toward higher power. As a teenager, I inherited a pair of World War II—vintage Zeiss 15x50s (why don't they make those anymore?), and I've been hooked on high-power binoculars ever since. The extra detail I can pick out on everything from the eagle-shaped speck high overhead to the antwren rummaging in the rainforest canopy to the sparrow popping up in the bushes 20 feet away far outweighs the slight reduction in brightness or field of view.

On the other hand, my brother, who is a professional bird-tour leader and is as blind as I am, prefers 7x binoculars, so I begrudgingly acknowledge that other opinions exist. Note also that I don't recommend buying low-budget 10x binoculars. It's far easier for a manufacturer to produce a decent inexpensive 7x binocular than a 10x model, and any optical flaws in a low-cost instrument will only be magnified by the increased power. With budget binoculars, getting the maximum quality (acceptable image and field of view) usually requires going with 7x or 8x at the most.

To choose the best binoculars for your needs, there's absolutely no substitute for testing a variety of models yourself. As I watched our reviewers frolic in the piles of optics, I was struck by the amazing diversity in their hand sizes, face shapes, and gripping styles–all contributing to a wide range of subjective ratings. For some reviewers, even the highest-priced models just didn't fit right. People who had a narrow interpupillary distance (the space between the pupils of their eyes), for example, found that the barrels of some models could not be moved close enough together to produce a single image. Or the focus wheel was placed awkwardly for their fingers, or the thumb grips were in the wrong place.

Another reason to test binoculars in a store is to evaluate the quality control–sometimes a great deal of variation exists in the quality of individual binoculars, especially in the low-priced models. It's not that unusual for an inexpensive binocular to be out of alignment right out of the box. This means that you should avoid ordering binoculars sight unseen from catalogs or magazines unless you know exactly what you want beforehand and the company you deal with has an acceptable policy for returning or exchanging substandard merchandise.

Additional tips for bespectacled birders (or complaints about rubber eyecups)

If, like me, you no longer dare to venture afield without wearing eyeglasses, choosing binoculars entails some special challenges. If you bird with eyeglasses, pay special attention to the eyeglass ratings in our table. Also, it is doubly important for you to test before you buy. Even the brightest, sharpest optics may provide a dismal, tunnel-vision view for you. The good news is that nearly all binoculars are more eyeglass-friendly now than they were even five years ago. Some manufacturers seem to pay more attention to eye relief and eyecup design than others, however, making me wonder if the engineers at some companies wear glasses and others do not. For example, although fold-down rubber eyecups are now standard issue, some manufacturers apparently don't expect them to be used. Some of the rubber cups were too stiff to fold back easily (Zeiss Night Owls), while others were too pliable and difficult to keep symmetrical (Swift Ultra Lites). And with many binoculars, the rain guard won't fit if the eyecups are rolled down. In a few cases, the eyecups simply wouldn't stay down and kept rudely popping up in my face. In addition, some eyecups were so deep that when I folded them down there was too much eye relief, making it impossible to form an image without the edges blacking out. Finally, if you need to switch frequently between the up and down positions (for example, to accommodate a non-eyeglass-wearing spouse), fold-down eyecups are a real pain–even during our review some of these eyecups showed signs of cracking.

Several optical manufacturers (such as Leica, Pentax, and Fujinon) solved the problem by designing eyecups that pop easily up and down instead of folding. Most eyeglass wearers find these eyecups far superior to the fold-down type, but non-eyeglass-wearers complain that they sometimes snap down unexpectedly. A further innovation is the turn-and-lock eyecups used by Swarovski and also by Nikon in their new roof-prism binoculars. These are fantastic. Not only do they stay where you want them, but you can adjust them to get exactly the right eye relief for your glasses. For example, when I tested the Swarovski 10x42s, I turned the cups slightly back from the fully lowered position to avoid blackout on the edges. I even know some non-eyeglass wearers who turn their cups half-way down to get a wider field of view. My clear message to shoppers as well as manufacturers is to go for the turn-and-lock eyecups; you'll never go back to the fold-down style.

Using the table

In the table on pages 32—33 [Click here to view table], we initially grouped the 61 models into price categories, ranging from the top guns, priced at $700 or more, to budget models, costing $200 or less. Two cautionary notes: (1) The manufacturers' suggested retail prices are usually much higher than the actual prices you'll find in stores or catalogs, and the allowable price markdowns vary greatly from company to company; (2) Some virtually identical binoculars are sold under more than one brand name, and their retail prices often differ significantly. For example, Swift Ultra Lite look-alikes appear under the Celestron name at Wild Birds Unlimited stores and again as Eagle Optics Voyagers. The Eagle Optics Ranger series binoculars are essentially the same models as Swift Eaglets and

Celestron Regals. In the case of the models "manufactured" by Eagle Optics (many of which are actually built by Celestron), the prices reflect those of a discount retailer rather than more typical manufacturers' suggested retail prices–which is great for binocular shoppers but makes it tricky for us to make direct comparisons based on price categories.

Each model listed in the table was weighed (with the strap on) on the same scale by Living Bird editor-in-chief Tim Gallagher, and I personally measured all minimum-close-focus distances and fields of view. To accomplish the latter, I stood 15 feet from a tape measure mounted on a wall at eye level and recorded the width of the visible field, both with my glasses on and without them. This measure, although undoubtedly correlated to the "feet at 1,000 yards" figure frequently cited, is, I hope, more relevant for birders–field of view is mostly a factor when a bird pops up quickly close to you or in dense vegetation.

I tried to capture as much of the subjective nature of this review as possible in the table. I asked each reviewer to provide four ratings for each model tested. The first three were rated on a scale of 1 to 5 (with 1 being excellent and 5 being poor) and included "overall image," which took into account sharpness, brightness, center-to-edge focus, and other viewing qualities; "feel," which rated the ergonomics, weight, ease of focus, diopter adjustment, and other handling qualities; and "eyeglass friendliness" (if the reviewer was an eyeglass wearer), rating the degree of tunnel vision the particular binoculars caused, the quality of the eyecups, and so on. For the fourth measure, each reviewer ranked the models within each price category in terms of how likely he or she was to actually buy them. The numbers in the table are average ratings or ranks, based on the six to eight reviewers who tested each model. For example, in the midpriced category the 12 models were given ranks from 1 to 12, and the averages of these ranks ranged from 3.2 to 9.4.

Top guns

The competition is fierce in this top-of-the-line category. Only a decade ago, just one or two models dominated the entire market. Today, more than 20 binoculars vie for the attention of serious birders, offering superb optics, a wide range of designs and styles, and a host of innovative new features. If any of these bins ended up on your next birthday gift list, you couldn't go wrong. But hey, for that kind of money you might as well be picky, and among our reviewers opinions were flying around like a covey of flushed quail. The ratings for feel and style were based largely on the personal preference of each reviewer, but several important distinctions came to light. With few differences in optical quality to worry about, your choice will probably depend more on factors such as weight, power, field of view, and close-focus distance. For the latter two factors, you may want to compare the various models in the table, to select the right combination to suit your needs.

In terms of pure image quality, the original Zeiss 7x42s still reign, along with all of

the full- and "oversized" Swarovskis, Zeiss Night Owls, and the new Nikon Venturers. The view of even an ordinary male Mallard on Sapsucker Woods pond through any of these binoculars is simply breathtaking. The Leicas we tested, although similar in design to the Swarovskis, seemed slightly less bright and crisp than their counterparts, except for the midsized 8x32s. For close-focus capability, nothing beat the Bausch and Lomb Elites, although the Nikon Venturers were close. If you really do watch butterflies, or need to examine your toes at close range, the Elites are probably your best choice, even though their image quality is not quite equal to that of the others in this category. And for widest field of view, Zeiss far outdid its competitors with both the older 7x42 and the new 7x45 models.

If you're after the absolutely highest quality 10x binoculars available, in my opinion it's now a tossup between the Swarovski 10x50s and the Nikon Venturer 10x42s. When a Swarovski representative handed me a pair of the nearly 3-pound 10x50s last year at Cape May, my reaction was "no way would I ever carry these." Then, when a box arrived at my office and I focused on the chickadees and House Finches outside my window, I knew instantly that I could never go back to my lighter 10x42s. I can honestly say that after 40 years of birding, these binoculars give me the finest, crispest image I can imagine and definitely the widest 10x field of view available for eyeglass wearers. If you value your vertebrae, however, I still would not recommend carrying these behemoths around your neck. The comparable Leica 10x50s, although optically excellent, are not as well designed for use with eyeglasses and give me an unacceptable tunnel-vision image.

I eagerly reached for the much-acclaimed Nikon Venturers as soon as they arrived–and I was not disappointed. The image they provided was virtually identical to that of the Swarovskis, and the field of view was only slightly narrower. When I focused them down to 8 1/2 feet, I was truly impressed. These binoculars weigh 25 percent less than my Swarovskis, and they felt so good in my hands, I found myself reaching for the Nikons whenever I spotted a bird. Then one evening I went looking for Short-eared Owls in some nearby fields and scanned with the Nikons until nearly dark. About the time I could no longer make out a cornstalk against the snow, I reached for the Swarovskis and was amazed at their brightness. The 10x50s allowed me to scan for five full minutes longer than I could with the Nikons (but I still couldn't find any owls). So under these extreme conditions, the Swarovskis did outperform the Nikons–and this could be critical if you're trying to make out a Piping Plover on its nest on a New Jersey beach at 11:00 p.m. during the World Series of Birding. But I believe that Nikon has set a new standard by offering a superb image in a much friendlier package, and I hope that other manufacturers will take up the challenge and continue to develop better and better binoculars.

Across all of the full- and oversized models, these Nikon 10x42 Venturers were clearly the top choice among our reviewers. The combination of extra-crisp image, moderate weight, wonderful feel, turn-and-lock eyecups, and excellent close-focusing capability allows these binoculars to buck the recent trend toward

ridiculously heavy optics. Our reviewers didn't like the highly touted Nikon Superior E Porro prisms as much, however. The Swarovski 10x models ranked next in terms of overall ratings, followed by the old standby Zeiss 10x40s and 7x42s. In spite of their exceptionally bright and wide field of view, the Zeiss Night Owls did not achieve a high ranking; our reviewers were critical of their extreme weight, poor balance, and stiff rubber eyecups. Our advice to Zeiss is to simply modernize their tried-and-true models–as one reviewer stated: "Optically, the 7x42s are still top dog in my mind. I just wish they would make a more ergonomically designed housing and eliminate the external focus." At a suggested retail price of $800, these binoculars are a steal. Another disappointment was the Swarovski 8x56s, which weighed in at a neck-aching 46.5 ounces, had a narrow tunnel view, and, with a minimum close focus of 20 feet, seemed to represent a move in the wrong direction for a company that has otherwise paid close attention to the desires of birders.

When we separately considered the six midsized models, the Leica 8x32s were clear favorites, with a very sharp image and nice feel (a bit reminiscent of their predecessors, the beloved old Leitz Trinovids). The Swarovski 8x30s and 7x30s are optically similar to the Leicas, but their awkward design forces you to focus with your ring finger or pinky. Still, if you wear glasses, these Swarovski binoculars provide less of a tunnel-view image, and they have the superior turn-and-lock eyecups, making them a better choice.

All in all, these midsized models offer superb optical quality at about half the size and weight of their larger counterparts, and they may represent the perfect compromise if a wide, bright field is not your most important consideration.

Mid- and Low-priced choices

Okay, enough talk about all those binoculars that you can't really afford. If you're looking for good binoculars at very reasonable prices, there is finally a range of solid options. Although no single model stood out in the mid-priced category, our reviewers were impressed with the Fujinon and Kowa binoculars, as well as the Swift Eaglets and Celestron Regals. All of these offer roof-prism design and very good image quality. The Fujinons have snapping eyecups and an overall feel like the highest-priced models. I personally liked the Celestron Regal 10x50s best–although they're not quite up to the optical quality of the top guns, their wide field of view, short minimum close focus (about 8 feet), fully sealed and waterproof body, and sleek, lightweight feel were impressive. These binoculars are also marketed as Eagle Optics Rangers, and they're a phenomenal bargain at one-third the price of my Swarovskis. Swift Ultra Lites, which not long ago ruled the midpriced market, no longer rate as highly as these other models in terms of image quality or feel.

In the $200 to $400 range, the Ranger 7x36s by Eagle Optics were clearly the first choice of our reviewers. These binoculars are waterproof, provide a sharp image, and their price is unbeatable, making them probably the best buy of the entire lot.

The other Eagle Optics models we tested were also superior to anything else in this category. Somewhat disappointing were the Zeiss 8x30s, which did not live up to the company's fine reputation and standards but are still a decent choice within this price range. Both Optolyth samples we tested were badly out of alignment, contributing to their low rankings and making us wonder about quality control. The image provided by the Pentax 10x50s seemed darker than that of other 10x50s, plus they were poorly balanced and couldn't focus closer than about 18 feet.

Budget bargains and compacts

In the under $200 category, the Eagle Optics Ranger 8x32 was the top choice, followed by the Eagle Optics Voyager 8x42 and the two Nikon models. These all offer an acceptable image for general birding and are a vast improvement over the majority of budget models we've tested in the past. The Nikon Naturalist IV gave the best view with my eyeglasses on and an incredibly wide field without glasses. At the bottom of the list, the Celestron Enduros elicited visible pain on the faces of the reviewers–I wouldn't wish these on any beginning birder.

All but one of the compact models we tested fell in the budget price range. The one exception, Bausch and Lomb's 7x26 Custom Compact, is still the only compact model I'd recommend for birding. I'm always amazed when I look through these. Their sharp, bright image and surprisingly wide field of view (even with glasses on) are roughly equal to those of the company's much larger and pricier 8x42 Elites. Our reviewers' second choice was split between the Nikon Diplomat 8x23s and Eagle Optics Voyager 8x25s, which both performed much better than the remaining compacts. If you like compacts and don't wear glasses, the Voyagers are certainly the best buy in their price range; in fact, in terms of image quality and feel, these surpassed many of the low- and even mid-priced models. They also may be a perfect choice for kids.

The final word

I applaud the many optical manufacturers who provided such a wide range of binoculars in every size, shape, and price range. I know there are quite a few other models out there that we didn't test, but we'll try to cover many of them in future "Critics' Corner" columns. My final words of advice to binocular shoppers are these: (1) Determine your spending limit, then narrow your choices by selecting the power, weight, and specification ranges that best fit your needs; (2) Test as many models as possible to find the ones that work best for you; (3) Go for the highest optical quality you can afford–in the long run, all other factors will be secondary; (4) If you're shopping for budget binoculars, don't peek through the $1,000 models on the next shelf–you may have to go to the bank for a loan; and (5) No matter what you buy, get out there and find some good birds.

Eagle Optics will donate 5% to the Lab when you buy from their online store through this link.

Binocular Features Table

"Top guns" (over $700)

Oversized

	Price	Weight (oz.)	Close focus	Field of View	Overall image	Feel	Eyeglasses	Category rank	Features
Leica 10x50 BA	$1,345	43.1	14'8"	14 (16)	1.5	2.8	1.7 (s)	7.0	rp, w, c
Leica 8x50 BA	$1,295	43.0	16'2"	22 (19)	1.5	2.8	1.7 (s)	7.3	rp, w, c
Swarovski 10x50 SLC	$1,332	45.5	14'8"	**19 (19)**	1.3	2.5	**1.2 (t)**	3.6	rp, w, c
Swarovski 7x50 SLC	$1,221	43.5	12'	**24 (24)**	1.3	2.5	**1.2 (t)**	8.3	rp, w, c
Swarovski 8x56 SLC	$1,498	46.5	21'2"	24 (21)	1.3	2.8	**1.4 (t)**	8.5	rp, w, c
Zeiss Night Owl 7x45	$1,300	45.2	**8'8"**	**28 (28)**	1.3	3.0	1.7 (r)	8.2	rp, w, c

Full-sized

	Price	Weight (oz.)	Close focus	Field of View	Overall image	Feel	Eyeglasses	Category rank	Features
Bausch & Lomb Elite 10x42	$ 860	28.8	**5'**	16 (16)	1.9	2.0	2.0 (r)	7.8	rp, w, c
Bausch & Lomb Elite 8x42	$ 840	30.1	**5'**	19 (20)	1.9	2.0	2.0 (r)	9.0	rp, w, c
Leica 10x42 BA	$1,145	33.2	13'2"	15 (14)	1.5	2.1	2.0 (s)	5.8	rp, w, c
Nikon Venturer 10x42	$1,782	34.5	**8'6"**	18 (18)	1.3	1.5	1.2 (t)	**1.6**	rp, w, c
Nikon Venturer 8x42	$1,660	35.5	**7'11"**	22 (21)	1.3	1.5	1.2 (t)	2.8	rp, w, c
Nikon Superior E 10x42	$1,320	**25.7**	14'	18 (18)	1.8	2.4	2.3 (r)	9.0	pp, c
Swarovski 10x42 SLC	$1,098	33.8	13'11"	18 (14)	1.3	1.9	1.6 (t)	4.4	rp, w, c
Swarovski 7x42 SLC	$1,043	35.7	11'10"	**25 (22)**	1.3	1.9	1.4 (t)	7.8	rp, w, c
Zeiss 10x40 B/GAT	$1,149	**26.0**	16'2"	17 (15)	1.6	1.8	1.6 (r)	5.3	rp, w, c

Zeiss 7x42 B/GAT	$ 950	28.1	11'6"	**28 (23)**	1.2	1.7	1.4 (r)	5.5	rp, w, c
Midsized									
	Price	**Weight (oz.)**	**Close focus**	**Field of View**	**Overall image**	**Feel**	**Eyeglasses**	**Category rank**	**Features**
Leica 10x32 BA	$1,095	24.9	**8'**	17 (14)	1.6	1.8	3.0 (s)	2.8	rp, w, c
Leica 8x32 BA	$ 945	23.9	**6'**	21 (16)	1.4	1.4	2.0 (s)	2.0	rp, w, c
Swarovski 8x30 SLC	$ 832	22.8	13'	22 (17)	1.6	2.8	1.7 (t)	2.6	rp, w, c
Swarovski 7x30 SLC	$ 732	23.1	12'2"	**25 (20)**	1.6	2.6	1.7 (t)	3.8	rp, w, c
Nikon Superior E 8x32	$ 936	20.8	8'6"	**24 (21)**	1.6	2.2	2.7 (r)	3.8	pp, c
Midpriced ($400—$700)									
	Price	**Weight (oz.)**	**Close focus**	**Field of View**	**Overall image**	**Feel**	**Eyeglasses**	**Category rank**	**Features**
Celestron Regal 10x50	$ 700	28.8	**7'10"**	16 (18)	2.6	1.9	2.7 (r)	3.6	rp, w, c
Celestron Regal 8x42	$ 650	24.3	**4'10"**	21 (21)	2.4	2.4	3.0 (r)	4.4	rp, w, c
Fujinon 7x42	$ 690	31.9	10'	**22 (24)**	2.2	2.2	3.0 (s)	3.7	rp, w, c
Kowa 8x45	$ 416	29.9	18'10"	20 (19)	2.2	2.8	3.0 (r)	**3.2**	rp, w, c
Mirador 8x40	$ 440	24.4	15'8"	21 (18)	3.0	3.3	3.0 (r)	7.7	pp, c
Optolyth Alpin NG 8x40	$ 459	21.6	22'5"	17 (18)	3.5	3.8	3.3 (r)	9.0	pp, c
Optolyth Alpin NG 7x42	$ 479	21.5	25'	19 (18)	3.5	3.8	3.3 (r)	9.4	pp, c
Pentax 10x42 DCF HR	$ 550	24.8	15'	16 (17)	3.2	3.1	2.7 (r)	7.6	rp, w, c
Swift Viceroy 10x42	$ 690	25.0	**4'10"**	15 (16)	3.2	2.6	2.7 (r)	6.1	rp, w, c
Swift Eaglet 7x36	$ 680	21.5	**4'**	21 (23)	2.1	2.3	2.7 (r)	4.4	rp, w, c
Swift Ultralite	$ 460	20.9	16'2"	16	2.7	3.0	3.2 (r)	6.3	pp, c

10x42				(14)					
Swift Ultralite 8x42	$ 440	21.1	11'4"	18 (18)	2.7	3.0	3.0 (r)	5.6	pp, c
Zeiss 8x30	$ 450	**15.5**	13'2"	19 (18)	2.6	4.0	3.3 (r)	6.0	rp, w, c
Low-priced ($200—$400)									
	Price	**Weight (oz.)**	**Close focus**	**Field of View**	**Overall image**	**Feel**	**Eyeglasses**	**Category rank**	**Features**
Celestron Ultima 8x40	$ 340	20.9	14'	21 (18)	3.0	3.5	3.0 (r)	5.7	pp
Celestron Ultima 8x32	$ 325	19.2	13'10"	19 (17)	3.5	3.5	3.0 (r)	6.7	pp
Celestron Adventurer 8x32	$ 240	25.2	10'3"	14 (17)	4.0	4.0	3.5 (r)	7.8	pp
Eagle Optics Ranger 10x42	$ 348	25.0	**5'**	16 (16)	2.3	2.7	3.0 (r)	2.3	rp, w, c
Eagle Optics Ranger 7x36	$ 288	22.4	**4'**	**22 (23)**	2.2	2.3	3.0 (r)	**1.7**	rp, w, c
Eagle Optics Voyager 9.5x44	$ 298	24.9	15'2"	19 (16)	3.0	3.0	3.0 (r)	2.3	pp, c
Mirador 7x42	$ 377	22.2	18'6"	**24 (21)**	3.0	4.3	3.5 (r)	6.3	pp, c
Pentax 10x50 PCF	$ 274	34.5	17'10"	14 (16)	3.3	4.3	3.0 (r)	6.0	pp, c
WB Unlimited (Celestron) 8x42	$ 370	20.7	13'6"	19 (18)	2.7	3.0	3.0 (r)	5.6	pp, c
Budget (under $200)									
	Price	**Weight (oz.)**	**Close focus**	**Field of View**	**Overall image**	**Feel**	**Eyeglasses**	**Category rank**	**Features**
Bushnell 8x42 WA	$ 119	26.5	13'6"	19 (19)	4.0	3.6	3.0 (r)	6.4	pp, c
Celestron Bird Watcher 10x50	$ 180	28.3	17'6"	14 (16)	3.5	4.0	3.7 (r)	6.0	pp, c
Celestron Bird Watcher 8x40	$ 170	24.2	10'10"	18 (17)	3.9	3.3	3.7 (r)	6.6	pp, c
Celestron Bird	$ 160	21.9	**8'**	**22**	4.0	3.4	3.7 (r)	5.4	pp, c

Watcher 7x35				**(21)**					
Celestron Enduro 8x40	$ 80	24.3	12'4"	21 (15)	4.8	4.2	4.3 (r)	9.4	pp, c
Celestron Enduro 7x35	$ 80	21.2	15'	20 (18)	4.4	4.4	4.7 (r)	9.6	pp, c
Eagle Optics Voyager 8x42	$ 168	21.6	11'6"	21 (19)	3.4	3.0	3.7 (r)	3.4	pp, c
Eagle Optics Ranger 8x32	$ 158	19.6	12'	20 (18)	3.4	2.8	3.3 (r)	**2.4**	pp, c
Nikon Egret II 8x40	$ 170	25.4	13'6"	19 (16)	3.4	3.0	3.7 (r)	3.2	pp, c
Nikon Naturalist IV 7x35	$ 144	23.8	**8'10"**	**30 (21)**	3.8	2.8	3.0 (r)	3.0	pp, c
Mirador 8x32	$ 188	21.7	**7'2"**	18 (14)	4.3	3.3	4.0 (r)	6.3	pp, c
Compact									
	Price	**Weight (oz.)**	**Close focus**	**Field of View**	**Overall image**	**Feel**	**Eyeglasses**	**Category rank**	**Features**
Bausch & Lomb Custom 7x26	$ 279	**7.2**	**7'11"**	**20 (19)**	2.0	2.2	2.8 (r)	**1.4**	rpp, c
WB Unlimited (Celestron) 7x25	$ 99	11.0	9'6"	18 (16)	3.4	2.5	3.8 (r)	5.3	rpp, c
Eagle Optics Ranger 8x24	$ 144	8.0	9'	17 (13)	3.0	3.6	3.5 (r)	5.0	rp, c
Eagle Optics 8x24 UCF (Pentax)	$ 108	12.9	**5'**	18 (14)	3.2	3.2	3.3 (s)	4.8	rpp, c
Eagle Optics Voyager 8x25	$ 59	11.5	9'10"	17 (14)	2.8	2.4	2.8 (r)	2.5	rpp, c
Nikon Diplomat 8x23	$ 272	10.5	**7'5"**	16 (16)	2.8	2.3	3.3 (r)	2.6	rpp, c
Swift Micron 8x25	$ 130	9.4	9'4"	17 (14)	3.6	3.4	4.0 (r)	5.6	rpp, c

Price: Manufacturer's suggested retail price. Actual prices are often much lower.
Field of View: Measured as width of field (inches) seen from a distance of 15 feet. ( ) = field of view with eyeglasses.
Overall image: Compared across all models (scale of 1-5, with 1 being the best).
Feel: Compared across all models (scale of 1-5, with 1 being the best).

Eyeglasses: Overall "friendliness" to eyeglass wearers (scale of 1-5, with 1 being the best), r = rubber eyecups, s = snapping eyecups, t = turning eyecups.
Category rank: Overall subjective ranking by 10 reviewers within price/size category (the lower the number, the better the ranking).
Features: rp = roof prism, pp = porro prism, rpp = reverse porro prism, w = waterproof (sealed), c = case.
Please note: Numbers in bold type represent noteworthy ratings within a given category and price level.

Click here to return to the binocular review.

Eagle Optics will donate 5% to the Lab when you buy from their online store through this link.

EXHIBIT 22
TO DECLARATION OF
DANIEL C. HAMILTON

WILDBIRD®

BIRDING AT ITS BEST

JANUARY/FEBRUARY

BONE UP ON BACKYARD ABCs

Check out New Binos

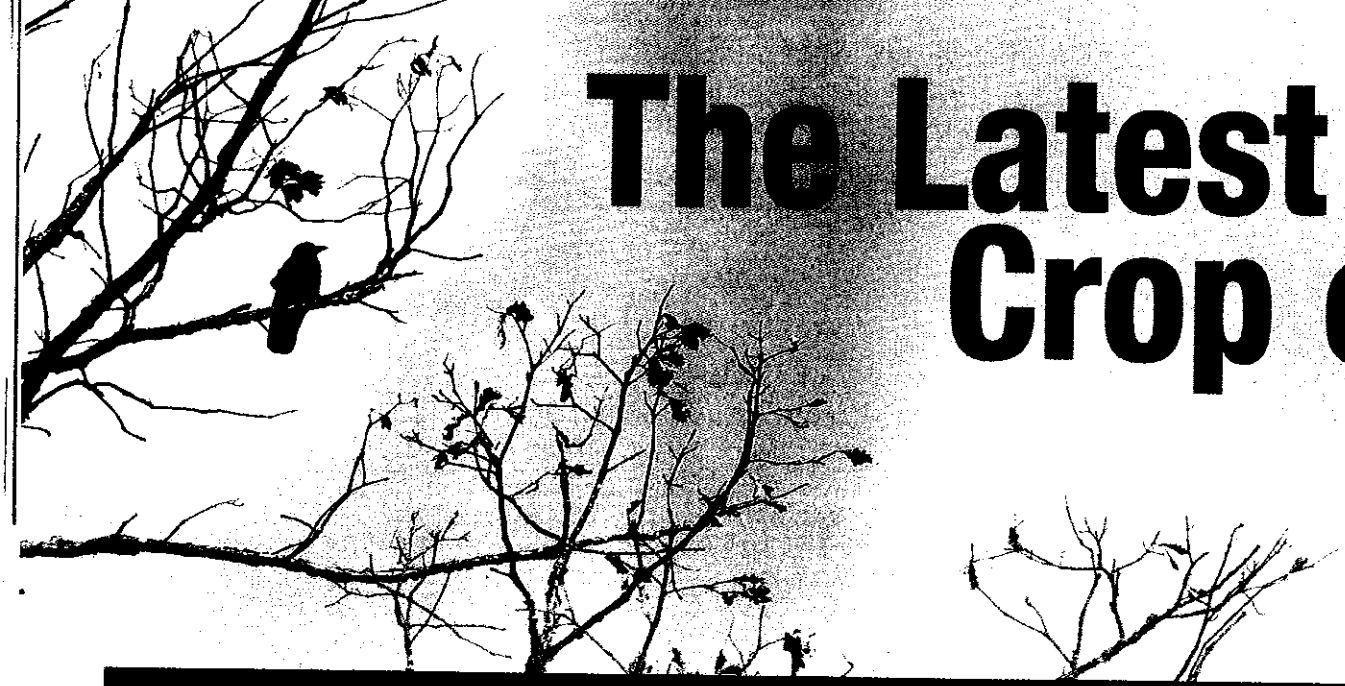
EXPERIENCE ALASKA'S ADAK ISLAND

EXPLORE LOCALLY BY BICYCLE

Antarctica

Feet

*DXNQDNH ********** ALL FOR ADC 530
WB1 COMP
/61473/CNO
JOE HAMILTON
SHELTERED WINGS USA
2120 W GREENVIEW DR STE 4
MIDDLETON WI 53562-2547 S0001



The Latest Crop of

Model	Optics	Weight (oz)	Close focus (ft)	Field of view at 1000 yards (ft)	Exit pupil (mm)
Rainier 8x42	extra-large BAK4 prisms, UBX fully multi-coated, SHR metallic coating, PXA phase coating	32	6.5	393	5.3
Naturescape 10x42	fully multi-coated, BAK-4, phase coated	21	6.6	293	4.2
Elite 10x50	Bak-4 prisms with XTR coating, fully multi-coated lenses with RainGuard	29	10	288	5.0
XM-842 HD	BAK-4 glass, fully multi-coated lenses	28	13.1	330	5.25
Outland LX 8x42	four-element objective lens, fully multi-coated roof prism	23	6	388	5.3
Ranger SRT 8x42	phase-corrected fully multi-coated	21.8	5.2	341	5.25

Binoculars

If you want to stay abreast of new optics, then check out this roundup of models released within the last year. Perhaps you'll find a suitable gift—or an item to put on your wish list.

Eye relief (mm)	Waterproof	Nitrogen-filled	Rubber-armored	Included accessories	Suggested retail price	Contact info
18	yes	yes	yes	quick-release neck strap system, carrying case	$1,200	Alpen Optics, 877-987-8370, www.alpenoutdoor.com
15.1	yes	yes	yes	lens cleaning cloth, neck strap, soft carrying case	$250	Barska, 909-445-8168, www.barska.com
17	yes	yes	yes	molded case, quick-connect strap, microfiber cleaning cloth	$1,600	Bushnell Outdoor Products, 800-423-3537, www.bushnell.com
22	yes	yes	yes	soft case with carrying strap, lens caps, neck strap, cleaning cloth	$350	Carson Optical, 800-967-8427, www.carson-optical.com
18	yes	yes	yes	Neoprene carrying case, lens caps, neck strap	$150	Celestron, 310-328-9560, www.celestron.com
19.5	yes	yes	yes	Cordura case, tethered objective lens covers, rainguard, neck strap	$300	Eagle Optics, 800-426-0048, www.eagleoptics.com

EXHIBIT 23
TO DECLARATION OF
DANIEL C. HAMILTON

St. Onge Steward Johnston & Reens LLC
986 Bedford Street
Stamford Connecticut 06905-5619
(203) 324 6155
(203) 327 1096
ssjr.com

April 29, 2005

Via Express mail
And Email: charles@coincrafters.com

Ms. Cynde Jackson
Coin Crafters and Engravers
P.O. Box 1928
Pagosa Springs, Colorado 81147

Re: Infringement of Eagle Optics Trademark
SSJR Ref: 03584-I0029A

Dear Ms. Jackson:

We are attorneys for Eagle Optics (Sheltered Wings, Inc.), owner of the trademark EAGLE OPTICS, U.S. Trademark Reg. No. 2,886,199 for Binoculars, Spotting Scopes, And Telescopes, All For Use In Birdwatching, And Storage Cases Therefor (copy enclosed). Eagle Optics also uses its trademark EAGLE OPTICS in connection with its retail store and mail order services for optical products. Eagle Optics has used its name as a servicemark since 1986 and as a trademark since 1996.

Recently, we have noted that you are the domain name registrant of the **eagleopticsusa.com** domain name, and are using the name "Eagle Optics USA" and are operating a website at www.eagleopticsusa.com to promote the sale of various goods and services.

We believe that your use of Eagle Optics USA is likely to cause confusion or mistake and may lead customers to believe that your website is affiliated with or sponsored by Eagle Optics, giving rise to claims for trademark infringement under Sections 32 and 43 of the Lanham Act and other statutes.

Also, the use of the domain name **eagleopticsusa.com** to sell products is improper. A recent case decided by a WIPO arbitrator under an ICANN domain name arbitration recently awarded a brand owner the domain name in a similar situation. See Kabushiki Kaisha Toshiba d/b/a Toshiba Corporation v. Telephone Island, Case No. D2004-0711, http://arbiter.wipo.int/domains/decisions/html/2004/d2004-0711.html (toshibastrata.com transferred to Toshiba where domain name registrant is not an authorized reseller of Toshiba Strata telephones).

Accordingly we request that you:

(1) Terminate all further use of "Eagle Optics USA" or any other similar name;
(2) Transfer the **eagleopticsusa.com** domain name to our client.

Please provide us with a response, either directly, or through your attorneys, by May 16, 2005. If we do not hear from you we will assume that you intend to continue the trademark infringement and domain name misuse and will take such legal steps as we deem necessary to protect our client's rights.

We look forward to your response.

Very truly yours,

Stephen P. McNamara
spm@ssjr.com

SPM:pas
Encl.
C: Eagle Optics

The United States of America

CERTIFICATE OF REGISTRATION
PRINCIPAL REGISTER

The Mark shown in this certificate has been registered in the United States Patent and Trademark Office to the named registrant.

The records of the United States Patent and Trademark Office show that an application for registration of the Mark shown in this Certificate was filed in the Office; that the application was examined and determined to be in compliance with the requirements of the law and with the regulations prescribed by the Director of the United States Patent and Trademark Office; and that the Applicant is entitled to registration of the Mark under the Trademark Act of 1946, as Amended.

A copy of the Mark and pertinent data from the application are part of this certificate.

To avoid CANCELLATION of the registration, the owner of the registration must submit a declaration of continued use or excusable non-use between the fifth and sixth years after the registration date. *(See next page for more information.) Assuming such a declaration is properly filed, the registration will remain in force for ten (10) years, unless terminated by an order of the Commissioner for Trademarks or a federal court. (See next page for information on maintenance requirements for successive ten-year periods.)*

Director of the United States Patent and Trademark Office

Int. Cl.: 9

Prior U.S. Cls.: 21, 23, 26, 36 and 38

United States Patent and Trademark Office

Reg. No. 2,886,199

Registered Sep. 21, 2004

TRADEMARK
PRINCIPAL REGISTER

EAGLE OPTICS

SHELTERED WINGS, INC. (WISCONSIN CORPORATION)
2120 W. GREENVIEW DR. #4
MIDDLETON, WI 53562

FOR: BINOCULARS, SPOTTING SCOPES, AND TELESCOPES, ALL FOR USE IN BIRD WATCHING, AND STORAGE CASES THEREFORE, IN CLASS 9 (U.S. CLS. 21, 23, 26, 36 AND 38).

FIRST USE 1-1-1996; IN COMMERCE 4-1-1996.

NO CLAIM IS MADE TO THE EXCLUSIVE RIGHT TO USE "OPTICS", APART FROM THE MARK AS SHOWN.

SER. NO. 78-029,311, FILED 10-5-2000.

APRIL L. RADEMACHER, EXAMINING ATTORNEY

REQUIREMENTS TO MAINTAIN YOUR FEDERAL TRADEMARK REGISTRATION

Requirements in the First Ten Years*

What and When to File:

- First Filing: A Declaration of Continued Use (or Excusable Non-use), filed between the 5th and 6th years after the registration date. (*See* 15 U.S.C. §1058; 37 C.F.R. §2.161.)
- Second Filing: A Declaration of Continued Use (or Excusable Non-use) **and** an Application for Renewal, filed between the 9th and 10th years after the registration date. (*See* 15 U.S.C. §1058 and §1059; 37 C.F.R. §2.161 and 2.183.)

Requirements in Successive Ten-Year Periods*

What and When to File:

- A Declaration of Continued Use (or Excusable Non-use) **and** an Application for Renewal, filed between each 9th and 10th-year period after the date when the first ten-year period ends. (*See* 15 U.S.C. §1058 and §1059; 37 C.F.R. §2.161 and 2.183.)

Grace Period Filings*

There is a six-month grace period for filing the documents listed above, with payment of an additional fee.

The U.S. Patent and Trademark Office (USPTO) will NOT send you any future notice or reminder of these filing requirements. Therefore, you should contact the USPTO approximately one year prior to the deadlines set forth above to determine the requirements and fees for submission of the required filings.

NOTE: ***Electronic forms for the above documents, as well as information regarding current filing requirements and fees, are available online at the USPTO web site:***

www.uspto.gov

YOUR REGISTRATION WILL BE CANCELLED IF YOU DO NOT FILE THE DOCUMENTS IDENTIFIED ABOVE DURING THE SPECIFIED TIME PERIODS.

*Exception for the Extensions of Protection under the Madrid Protocol:
The holder of an international registration with an extension of protection to the United States must file, under slightly different time periods, a Declaration of Continued Use (or Excusable Non-use) at the USPTO. *See* 15 U.S.C. §1141k; 37 C.F.R. §7.36. The renewal of an international registration, however, must be filed at the International Bureau of the World Intellectual Property Organization, under Article 7 of the Madrid Protocol. *See* 15 U.S.C. §1141j; 37 C.F.R. §7.41.

EXHIBIT 24
TO DECLARATION OF
DANIEL C. HAMILTON

St. Onge Steward Johnston & Reens LLC
986 Bedford Street
Stamford Connecticut 06905-5619
(203) 324 6155
(203) 327 1096
ssjr.com

COPY

December 5, 2006

VIA FEDEX AND FACSIMILE
TRK NO: 7915 9530 3370 / 800-382-6789

Mr. Scott Jacobs
SafeTGard Sport Optics, LLC
12105 W. Cedar Drive
Lakewood, CO 80228

Re: Infringement of **Eagle Optics** Trademark
SSJR Ref: 03584-I0048A

Dear Mr. Jacobs:

We are attorneys for Eagle Optics (Sheltered Wings, Inc.), owner of the trademark **EAGLE OPTICS**, U.S. Trademark Reg. No. 2,886,199 for Binoculars, Spotting Scopes, and Telescopes, all for use in Birdwatching, and Storage Cases therefor (copy enclosed). Eagle Optics also uses its trademark **EAGLE OPTICS** in connection with its retail store and mail order services for optical products. Eagle Optics has used its name as a servicemark since 1986 and as a trademark since 1996.

We have noted that you have introduced a line of binoculars under the trademark EAGLE SERIES.

We believe that your use of EAGLE SERIES as a trademark for binoculars is likely to cause confusion or mistake and may lead customers to believe that your products are affiliated with or sponsored by Eagle Optics. The use of EAGLE SERIES is therefore an infringement of our client's trademark **EAGLE OPTICS** under Sections 32 and 43 of the Lanham Act and under state law. We therefore demand that you immediately discontinue all use of EAGLE SERIES and rebrand all your existing inventory to a new name.

Please respond to this letter within seven (7) days of your receipt hereof so we can confirm that you will terminate the infringement. If we do not hear from you we will assume you intend to continue the infringement and will take legal steps as necessary to halt the infringement and recover damages.

Very truly yours,

Stephen P. McNamara
spm@ssjr.com

SPM:pas
Enclosure

New York (212) 730 4554
New Haven (203) 562 0400

EXHIBIT 25
TO DECLARATION OF
DANIEL C. HAMILTON

Swift Sport Optics • www.swift-sportoptics.com • 877.MYSWIFT (697.9438)

Triumph over the Ordinary with the Extraordinary

SWIFTPREMIER HP
EAGLE SERIES

Why settle with the ordinary when extraordinary is within your grasp. The Swift Eagle Series is a MUST SEE for all outdoor enthusiasts. This extraordinary series features CFT (Cold Fusion Technology) Prisms, the latest advancement in prism coating technology. CFT provides increased reflective performance up to 99.8%, enhanced brightness and superior color definition ideal for dawn to dusk use. Visit us as BirdWatch America or see an authorized Swift Sport Optics dealer for a better view.

825 Swift Eaglet 7x36, 826 Swift Eagle 8x42 and 827 Swift Eagle 10x42

SWIFT Sport Optics

© SafeTGard Sport Optics, LLC 2006. All rights reserved

EXHIBIT 26
TO DECLARATION OF
DANIEL C. HAMILTON

September 5, 2008

Istvan J. Kovary
3923 W. St. John Road
Glendale, AZ 85308

VIA FACSIMILE 602-548-4963

Re: Infringement of "EAGLE OPTICS" trademark

Dear Mr. Kovary:

I am the attorney for Sheltered Wings, Inc. My client owns the trademark EAGLE OPTICS for binoculars, spotting scopes, and telescopes. My client owns US Trademark Registrations 3192083 and 2886199, which are based on use of the mark going back to 1996.

I am writing to object both to your use of and application to register the term "EAGLE EYE OPTICS COMPANY" for riflescopes, and to demand that you immediately cease and desist using the terms "Eagle" and "Optics" on your optical products. As you use and promote your brand, we are being substantially and irreparably damaged, and will continue to be as long as your use continues.

Your brand adopts the entirety of our trademark, and uses it as the dominant part of the mark. You use the infringing mark on riflescopes and binoculars, which are closely related or identical to the goods and services to which our mark applies. It is a fundamental principle of trademark law that trademark rights extend not just to identical goods, but to related goods.

There are substantial damages you may be liable for, including potential criminal penalties for certain forms of infringement. You will learn more about these when you consult a trademark litigation specialist. I can tell you that fighting the opposition we will file with the Patent and Trademark Office will be in the $50,000 range, and litigation over infringement is on the order of six figures in a basic case. Please keep in mind that this is one of my client's core brands that they have investing heavily in, and the value to them is well beyond even the worst-case legal fee scenario.

Your Application for Registration

We have reviewed the public records showing your attempt to register your brand, and note that the US Patent and Trademark Office examiner has properly rejected your application for various reasons, including the likelihood of confusion with my client's trademark. This shows that our claim of infringement is unquestionably strong, as viewed by an unbiased third party. However, even if you overcame the rejection, we would still file an opposition to the registration, requiring a substantial investment in a battle you would most surely lose. And even if you received the registration, that would not change our opinion that your use of the trademark, registered or not, infringes my client's rights.

To be clear, we are not just asking for you to withdraw your application, but to immediately discontinue using the brand you currently apply to your products. Meanwhile, you are accruing increasing legal and financial liability for your infringement of my client's trademark rights.

P.O. Box 759 Genoa, Nevada 89411 tel + fax 877.230.5950 patent@langlotz.com

We would also take appropriate action with US Customs Service to ensure that infringing goods are not imported.

Conclusion

We're asking you to immediately discontinue using the words "Eagle" and "Optics" together on your products in any manner, remove it from your promotional materials and website, and destroy any materials you have created that bear the word. The simple solution is to pick another brand, one which you can secure, register, and invest in.

You will need to file an express abandonment form (http://www.uspto.gov/teas/eTEASpageF.htm), and agree in writing that you will discontinue using your brand. If you reply promptly and agreeably, we should be agreeable to a resolution that avoids your having to scrap substantial inventory.

This applies to those retailers who are carrying infringing inventory. We will momentarily defer notifying them of the liability they are incurring for selling your infringing products, so that you may contact them and advise them of your brand transition in a way that better preserves your relationship. If we do not receive an agreeable reply, we will take steps to contact your retailers, and stop their sales of infringing product.

Please contact me by September 19, 2008 with your assurance that you agree to proceed as we require. Please reply by fax or email so that your response reaches me by then.

Sincerely,
LANGLOTZ PATENT WORKS, INC.

Bennet Langlotz, Patent Attorney

P.O. Box 759 Genoa, Nevada 89411 tel + fax 877.230.5950 patent@langlotz.com

EXHIBIT 27
TO DECLARATION OF
DANIEL C. HAMILTON

LANGLOTZ
patent works, inc.

May 26, 2009

Mike & Kathy Webb
15200 W County Rd 550 N
Alexandria, Indiana 46001-9327

VIA FACSIMILE 1-866-696-9954

Re: Infringement of "EAGLE OPTICS" trademark

Dear Mr. and Mrs. Webb:

I am the attorney for Sheltered Wings, Inc. My client owns the trademark EAGLE OPTICS for binoculars, spotting scopes, and telescopes. My client owns US Trademark Registrations 3192083 and 2886199, which are based on use of the mark going back to 1996.

I am writing to object both to your use of the term "EAGLE VISION" for binocular retailing services, and to demand that you immediately cease and desist using the terms "Eagle" in conjunction with sales of optical products. As you use and promote your brand, we are being substantially and irreparably damaged, and will continue to be as long as your use continues.

Your brand adopts the dominant element of our trademark, and uses a closely related term to the second part of our trademark. You use the infringing mark for sales of binoculars, which are closely related or identical to the goods and services to which our mark applies.

You will note that the only registered trademark for binoculars employing the word "Eagle" is owned by Nikon, and only with my client's permission. All others have been cancelled or abandoned.

There are substantial damages you may be liable for, including potential criminal penalties for certain forms of infringement. You will learn more about these when you consult a trademark litigation specialist. Please keep in mind that this is one of my client's core brands that they have investing heavily in, and the value to them is well beyond even the worst-case legal fee scenario.

We're asking you to immediately discontinue using the word "Eagle" on your products in any manner, remove it from your promotional materials and website, and destroy any materials you have created that bear the word. This includes discontinuing use of your current domain name in conjunction with binocular sales.

We recognize that this enforcement of my client's longstanding rights will be disruptive, and we are willing to allow a reasonably limited transition period. However, we are firm in our intention to fully enforce our rights and to preserve the value of an extremely valuable business asset by preventing any attempt to use the term "Eagle" on related goods.

Please contact me by June 1, 2009 with your assurance that you agree to proceed as we require. Please reply by fax or email so that your response reaches me by then.

P.O. Box 759 | Genoa, Nevada 89411 | tel + fax 877.230.5950 | patent@langlotz.com

Sincerely,
LANGLOTZ PATENT & TRADEMARK WORKS, INC.

Bennet Langlotz, Patent Attorney

EXHIBIT 28
TO DECLARATION OF
DANIEL C. HAMILTON

REDACTED

From: mikawinc@hughes.net
To: Bennet Langlotz
Sent: Wed Jun 17 17:51:59 2009
Subject: Re: EAGLE OPTICS Trademark
We're in the process of closing down our website and it should be shut down before July 1, 2009.

Mike & Kathy Webb

On May 26, 2009, **bennet@Langlotz.com** wrote:

> Please see attached letter.
>
> Best regards,
> *Ben*
> **LANGLOTZ PATENT & TRADEMARK WORKS, INC.**
> Bennet K. Langlotz, Patent and Trademark Attorney
> tel, fax 877 230 5950
> bennet@langlotz.com
> PO Box 759
> Genoa, NV 89411
> (Mail only, please inquire for parcel delivery address.)

EXHIBIT 29
TO DECLARATION OF
DANIEL C. HAMILTON

LANGLOTZ
patent & trademark
works, inc.

April 13, 2010

Quality Rifle Scopes
PO Box 3326
Butte, MT 59701

Via First Class mail and via facsimile to (760) 810-0749

Re: EAGLE OPTICS Trademark

To Whom It May Concern:

We represent Vortex Optics, the owner of Sheltered Wings, Inc. Sheltered Wings is the owner of Trademark Application Number 77/641594 for EAGLE OPTICS for riflescopes and Trademark Registration Nos. 3,192,083 and 2,886,199 for both the EAGLE OPTICS logo mark and word mark for binoculars and spotting scopes. Sheltered Wings Inc. has used the EAGLE OPTICS trademark since 1996.

It has come to our attention that you are offering a line of "IJK/EAGLE EYE OPTICS" riflescopes on your website (www.qualityriflescopes.com). Quality Rifle Scopes is infringing our client's trademark because "Eagle Eye Optics" and "Eagle Optics" are virtually identical. The mere addition of the word "Eye" between "Eagle" and "Optics" does not distinguish the marks. The use of the "Eagle Eye Optics" brand is likely to deceive a consumer into believing that the goods advertised on your website come from our client. A retailer who sells goods with a confusingly similar mark commits trademark infringement just as surely as the maker of the scopes does. The scope maker has acknowledged their infringement, and has stopped producing these riflescopes. Now Quality Rifle Scopes must stop selling them.

Accordingly, we hereby demand that you immediately remove the "Eagle Eye Optics" name and products from your website and any marketing materials and product packaging or labeling that you may have. The EAGLE EYE mark is one of our client's most valuable core brands, and it will vigorously defend against any infringement on that brand.

Please contact our offices no later than May 1, 2010 with word that you have removed any reference to "Eagle Eye Optics" riflescopes from your website. If we do not hear from you by then, we will take appropriate measures to enforce our client's rights.

Sincerely,

LANGLOTZ PATENT & TRADEMARK WORKS, INC.

Angela V. Langlotz

Angela V. Langlotz, Trademark Attorney

PO Box 96503 #37585 | Washington, DC 20090-6503 | The Firearms Trademark Attorney™ | tel + fax 866.280.5242 | trademark@langlotz.com
Please inquire for Nevada Office parcel delivery address