

## APPROACHING PERFECTION: Swarovski's new flagship binoculars, the 8.5x42 and 10x42 EL Swarovision



The EL series, launched in 1999, established the Austrian firm Swarovski Optik as one of the top binocular makers. These open-bridged, elegantly dark green binoculars soon became a familiar sight in birding hotspots. There was perhaps no single feature, optical or otherwise, that made the EL stand out from its peers, but the 8.5x model especially was such a successful and balanced combination of excellent, relaxing and natural image and superb handling that their popularity was easy to understand.

The renewed EL series, called “Swarovision” in the best McDonald's tradition of marketing, was originally supposed to become available by the end of 2008. The most notable improvements over the original series were the use of fluoride-containing glass (hence the “HD” label) to reduce chromatic aberration, field flattener lenses to make the image sharp to the edge, as well as a minimum focus distance reaching all the way to 1.5 meters. Perhaps less impressive from the marketing viewpoint but nonetheless important for many severely myopic users was focus reach a full 6 diopters past infinity and a +6 diopter adjustment range for the right eyepiece. However, it turned out that mass producing this new, more complicated optical/mechanical design at the required consistently high quality level was more challenging than initially thought, and the product did not become available until about 18 months after its launch. In the early summer of 2010, the long wait was finally over, and I got both the 8.5x and the 10x EL Swarovisions on loan for a week of testing.

The testing period was blessed with pleasant summer weather and varying light conditions. As reference binoculars, I mostly used my own Canon 10x42 IS L and Nikon 10x42 SE binoculars. Brief comparisons were also made with the original EL models as well as Zeiss FL and Leica Ultravid HD models. I also let several birders try them in the field and comment on their experience as I was birding in our nearby nature preserve.

### Optical performance

**Resolution:** I measured the resolution of the binoculars indoors mounted on a tripod, both with and without a Zeiss 3x12 “booster.” The measuring distance was 9 meters, as my current apartment does not allow an unobstructed 10 meter view to a test target (this 10% difference in viewing distance should therefore be taken into account by those comparing my line-pair/mm results now with those from my

earlier reviews). The target was illuminated partially by natural daylight and partially by a halogen desk lamp. Viewing with both eyes, I could resolve 3 lp/mm with the 8.5x Swarovision, and 3.6 lp/mm with the 10x. Using the 3x booster, the 8.5x yielded 5.7 and the 10x 6.4 lp/mm. Compared to my reference binoculars and my earlier tests, these results mean that both Swarovisions are very close to the best resolution for their respective magnifications, but not quite the very best. My reference Nikon's left tube can resolve one pattern better, 7.1 lp/mm, while its right tube is the same as the 10x SV. However, my subjective impression in general viewing was that I was seeing first-class resolution. In looking at diffraction patterns of a point source light (star-test) both binoculars also exhibited excellent performance for a binocular. There was relatively mild spherical aberration, the best-focus point source remained compact and traces of prism defects were insignificantly small. Both Swarovisions exhibited slight coma on one side, and the 8.5x additionally showed a little bit of astigmatism, but for a binocular these aberrations were very mild. The use of HD glass in the Swarovisions has brought their **chromatic aberration** down to a similar low level as in the Zeiss FLs. Objects in the center of the field are portrayed very clearly and cleanly. When you look further towards the field edges, you naturally begin to see more color fringing around high-contrast objects, and since image resolution at the edge of the field is so exceptionally high in these binoculars, you may note this effect more easily than usual. In reality, these binoculars are excellent in this respect as well.

**Contrast:** For subjectively-experienced image contrast, the new EL Swarovisions are the best binoculars I have tried thus far. My guess is that this is also the main reason why their image looks so good overall. After any and all the other binoculars I compared them to, the image provided by the EL Swarovisions always looked at least a little bit richer, deeper and more vibrant.

**Brightness:** Swarovski has also managed to clearly improve the brightness of the new binoculars. In direct side-by-side comparison, the Zeiss 42mm FLs are still just slightly brighter, but the EL Swarovisions are so close that the remaining difference is meaningless.

**Color rendition:** Again, Swarovski has succeeded beautifully. To my eyes, color balance is so close to neutral that when using a white background to see how the binocular would add color bias to it compared to direct view, I struggled to see any bias at all. If I were forced to say something about it, it would be that there is a trace of coldish blue hue, but it is really next to imperceptible.

**Backlight situations and reflections:** Swarovski has also succeeded very well in suppressing inner reflections and stray light in these binoculars. During my testing time, I could not really induce any detrimental glare or reflections in the image. It was possible to see some very slight colored arches of light when viewing as close to the sun as one dared, but even in the worst backlight situations the image contrast remained unbelievably high.

**Sharpness at the field edges** I evaluated by mounting the binoculars on a tripod and viewing a test target 9 meters away with one eye only, placing the target into various points along the radius of the image circle. When the target was 10cm from the middle, I could still resolve the same pattern with both binoculars as in the center. Twenty cm from the center resolution was down by about 10%, at 30cm about 20%. For most binoculars, even the highest quality ones, if you look further off center than this the image usually deteriorates drastically despite anything the manufacturer might say about "sharp to the edge" image. The EL Swarovisions, however, are a different story. At 40cm from center, I could still resolve 2.5 lp/mm with the 10x SV and 2.0lp/mm with the 8.5x. At the very edge of the field, most binoculars I have tested cannot resolve anything on the test targets I use, but with the EL Swarovisions, resolution at the field edge was still about half that of the center or better. With these binoculars you can thus let your eyes roam the view just like you can with a good telescope eyepiece. Until now, the Canon 10x42 IS L had been the clear champion of edge resolution among the binoculars I have tested, but now it has yielded that honor to Swarovski.

**Ease of view** the EL Swarovisions are a less clear-cut case, however. It is easy to get immersed in the view, easy to find best focus, and any point in the viewfield looks excellent when you study it. This is the case when the image is stationary. But when deciding on how to optimize the image quality at the edge of the field, Swarovski has made the unusual choice of trying to get rid of visible rectilinear (pincushion) distortion. This has succeeded and straight lines remain commendably straight even at the edges, but an unavoidable consequence of this is that magnification is markedly reduced in the outer tenth or so of the

field. When you are panning with the binoculars, you see this as exceptionally visible rolling of the image, as if it were a surface of a large rotating sphere. Getting used to this so that your brain stops paying attention to it varies from individual to individual. Some get used to it quickly, others more slowly, yet others maybe not at all. For myself, it took a few days before viewing with the EL Swarovisions began to feel natural, and one birder friend of mine who tried them said he could not consider these binoculars for himself because of this trait. Another perhaps unwanted side-effect of this type of eyepiece design is that as objects towards the field edge shrink, the perceived field of view is not as wide as the objective field of view would lead one to expect.

### Technical properties and usability

The real **fields of view** are 7.4° for the 8.5x and 6.4° for the 10x EL Swarovision. These figures represent normal good wide-angle levels. **Close focusing distance and focus wheel operation:** both models can focus down to about 1.5 meters. Focusing is not particularly quick. Focusing from ten meters to infinity requires turning the wheel for about 115° with the 8.5x model and 100° with the 10x model. The feel of the focus wheel is good and the movement is relatively smooth, but there is more resistance when focusing from near to far than vice versa. This is due to a spring in the focus mechanism that is there to prevent any play that might shift the diopter setting, so it is not a flaw, but it might annoy some users. For my preferences the slowish gearing Swarovski has chosen is just fine, but butterfly viewers for instance might well prefer a faster focus ratio.

**Use with glasses and diopter adjustment:** I measured the eye-relief as about 16mm for both models. This represents a good figure for use with eyeglasses, and should suffice for most users. The eyecups twist out 13mm and have intermediate click-stops at 3 and 9mm positions. The eyecup diameter is 40mm. The eyecups are solid and comfortable. Focus travel beyond infinity is exceptionally long which helps severely myopic viewers who prefer not to use glasses while viewing. There is also unusually generous diopter adjustment range at +/-6 diopters. Diopter adjustment has click-stops at 1/3 diopter intervals, and is done by pulling out the focus knob and turning for the preferred setting. This works well enough, but my preference is for finer adjustment steps or no steps at all.

**Other observations:** The EL Swarovisions are waterproof and nitrogen-filled. Unlike in the old models, the green neoprene armoring also covers the area between the tubes. It is nicely textured and provides a good grip. Another small but welcome change is that the thumb indents under the binocular body are now shallower and better contoured, whereby the fit at least to my hands is better. The look of the binoculars is also a bit more streamlined and modern, although there is a clearly family resemblance with the old series. Looks are a matter of taste, of course, but I would certainly not turn elsewhere because of the way the EL Swarovisions look. On my trusty scale, the binoculars weighed in at 831g (8.5x) and 838g (10x) with no accessories on them – the carrying strap and objective & eyepiece covers add another 130g to what you carry. This is a bit heavier than, say, the top Zeiss models, but the balance of the binoculars is excellent. Like other top European manufacturers, Swarovski has unfortunately economized by leaving out a threading for a simple tripod adapter. Finnstick users will therefore have to use a clumsy strap-on or clamp-on adapter. The eyepiece rain guard is a similar hinged cap as in the old ELs, and fits rather tightly. I would prefer a looser one-part guard that does not need to be adjusted according to the interpupillary distance of the binocular and is also faster to flip on and off. The objective covers have been improved to make them stay better attached to the binocular. The carrying strap is nicely contoured and padded. It features a new kind of adjustment and attachment system, where a metal peg locking the strap length is hidden underneath a plastic sheave. The system seems well thought out, and the strap should not be able to slip loose. The case that comes with the binoculars is large, sturdy and contoured. It is big enough to fit a small field guide alongside the binoculars.

## Conclusion

The Swarovski EL Swarovisions are impressively good premium binoculars. Optically, they have reached a level where any significant further improvement will be difficult to achieve. Extremely high contrast, lifelike colors and an almost total absence of all forms of disturbing reflections bring about a beautiful viewing experience, and in a direct comparison, easily makes other top binoculars look a little subdued.

Unprecedented image quality at the outer third of the viewfield also helps in making viewing effortless, since the eye can pick up detail anywhere in the field. However, the bending and twisting that takes place at the edge of the image while moving the binoculars around may bother some users enough that it is advisable to try out the EL Swarovisions properly yourself before buying. The usability of these binoculars is also very good, and their construction is solid and inspires confidence. Eyeglass users have been kept in mind unusually well. In the area of usability, the only meaningful item remaining unfulfilled on my wishlist is a tripod adapter thread, the lack of which is very hard for a Finnish birder to understand. On the whole, this is a small matter however, and for the experienced and enthusiastic birder who wants to have the best and can afford it (and does not require their binocular to be stabilized), the new EL Swarovisions are an obvious choice.

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