Playing the BIG game versus playing the smart game – full frame bulk or small sensor?

Associate Editor Gary Friedman set out to compare three choices of very large zoom and telephoto with his favourite daily RX10 IV camera and its 600mm equivalent capture

So here I was, preparing to lead a photo safari in Africa, when your illustrious editor sends me a message: "I'm going to write an article about a 150-600mm Sigma EF lens with converter, and adapting this Canon fit kit to Sony", he says. "Good timing", I said, "I'm going to be testing two 600mm lenses while in Africa. Why don't we do a comparison?".

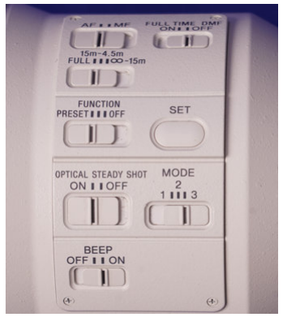
So we started planning. I arranged for a loan of two additional lenses for testing, making a total of five lenses we could compare across the pond. The five lenses were:

1. The **Sigma 60-600mm ƒ4.5-6.3 DG DN OS Sports Lens** (Sony mount) – the 10x range appealed to me, since it meant I wouldn't have to change lenses much and risk getting dirt on the sensor.
2. The **Sony RX10 IV**, my favorite travel camera since it has an incredible 24-600mm equivalent lens permanently attached to the lightweight body. It achieves this portability by employing a small, 1"-type sensor.
3. The **Sony FE 200-600mm ƒ5.6-6.3 G OSS** lens.
4. **Sony FE 600mm ƒ4 GM OSS** lens, at a mere $13K USD.
5. **Tamron's 150-500mm** as covered in three *Cameracraft* tests, in Sony E, Nikon Z and Fujifilm X fit, since July/August 2021. In that issue we also included an extensive round-up of all long teles and zooms, over 400mm, then available. Since then the Tamron 50-400mm and now the Sigma 60-600mm have joined the choice.

You can read the edition with the fullest report on the Tamron by downloading a PDF from: **https://bit.ly/ccJulAug2021**

Ultimately, only the Sigma 60-600mm made it to me in time to fly to Africa. Delivery problems prevented me from testing the first four lenses all at once, so separate tests of the Sony lenses were conducted. The 600mm ƒ4 might not have been practical to take, especially with two other large zooms, as you can see from the first photograph here.

The 600mm ƒ4 and Gary with the RX10 IV, above. Below, Gary on safari with the Sigma 60-600mm lens zoomed to 600mm



200-600mm (left) and 600mm ƒ4 Sony AF and OSS switches. Below left, Sigma switches, with C1/C2/Off acting as Mode 1, 2 and 3. Below right: the 600mm ƒ4 takes rear 40.5mm filters in a slot-in carrier.

Sigma impressions

10x zooms that go to 600mm are some of the most challenging optical designs, and to make them affordable is just as challenging. At USD $2,000 it's a great value. But I wasn't prepared for the weight.

Hand-holding such a large lens for long periods while waiting for something interesting to happen can cause your arms to shake and you have to take a break. And forget about shooting video if you don't have a tripod or a bean bag to rest on the edge of the jeep. My video footage was so erratic that even the warp stabilizer feature of Adobe *Premiere Pro* couldn't smooth it out.

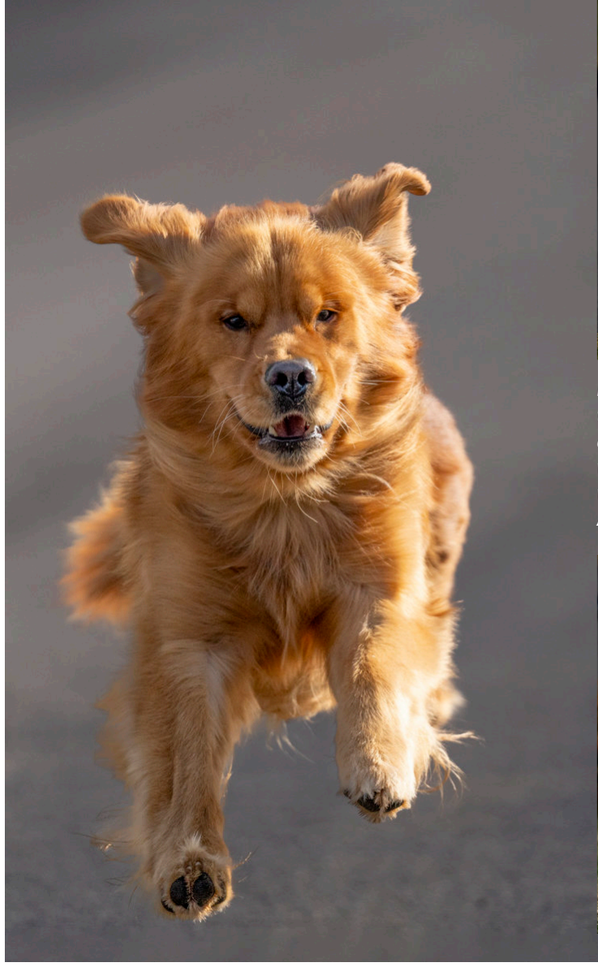
Optically, the lens is outstanding – especially when stopped down to about ƒ6.7 or so. In spite of this, my yield of critically sharp images was low – perhaps in the 5% range. I had not set *Focus Priority* AF and instead was using *Balanced Emphasis* assuming it would work well. I was in Shutter Priority mode at 1/1000s most of the time, with AF-C, Tracking on, and the Sony A7R V's Animal Eye AF enabled. But when compared to equivalent shots taken with the oh-so-much-easier-to-handle RX10 IV, the sharp full frame Sigma shots are like professional wildlife shots, whereas the RX shots are like amateur 'not quite there' versions. There's a reason wildlife professionals go for the big guns.

But the Sigma had a flaw which resulted in the photo safari participants hearing me swear loudly about eight times a day – the lens would lock focus with a noise from its motor still trying to operate even though the AF had locked on. The camera wouldn't take a picture and often I'd have to remove and reinsert the battery.

This was my first safari and my first time using such a lens. Now that I've experienced shooting with such heavy gear I'll be more prepared for next year – I'll work out a system using either a bean bag, a monopod – or both – to increase my yield and enjoy the journey more.

Above and below you see two images both 20 megapixels (which would be enough for a double page spread or A3 print). The top one is the entire frame from the Sony RX10MkIV at its longest setting of 220mm actual focal length, which is equivalent to 600mm on full frame. It was taken at ƒ6.3, 1/125 at ISO 100, though Gary believes the maximum tele aperture of ƒ4 could well be sharper, with little need to stop down to improve this. The bottom shot is a section of a similar composition with the Sony A7RV and Sigma 60-600mm at 600mm – the 61 megapixel image has been cropped to 20 megapixels, showing the effective real telephoto power. If this shot had been taken on an A9 or original A7/A7II, with a 24 megapixel sensor, the crop would be closer to the framing above. Extra megapixels give extra reach for what used to be called selective enlargement. This shot was taken at 1/500, ƒ6.3, ISO 200.

This is the real thing – 600mm ƒ4 bokeh and 61 megapixels, sharp enough for a metre high print you could study with a magnifier. But the retouched 20MP RX10 IV shot, with Gaussian Blur where bokeh was missing, would make a fine 20 x 16"/A2.



Left, the 600mm ƒ4's AF captures movement fast and close towards the camera at 1/5000s. Above, the 200-600mm at ƒ6.3 and below the RX10 IV at ƒ4. both at 1/2500s. A third picture was taken with white dog using the 600mm ƒ4 at 1/2500s, but we liked the shot of the retriever in mid-air. Sony's Eye AF or Animal Eye AF has simply worked well and did for many shots.

The Sony options

The other two lenses finally arrived from Sony – the monstrous 600mm ƒ4 (no zoom) and the more moderate 200-600 ƒ5.6-6.3. You expect lenses in this price range to be painfully sharp, and once I dialed up the shutter speed to 1/250s while handholding they finally were. Below that hand shakiness will blur your images.

Let's start with the 600mm ƒ4. OMG what wonderful bokeh! But on a safari you really have to control your distance from the animals because this lens can't zoom. Yes, you have lots of room to crop if you use a 61MP camera, but if you're paying that much for a lens you really want to eke out every last detail your equipment is capable of capturing. The other problem I encountered (again, while handholding) is that it's too easy to accidentally touch the giant focusing ring, putting the camera into Direct Manual Focus mode even if that feature has been disabled on the lens and on the camera. Clearly this lens is best used on a tripod or monopod. Just for fun I tried photoshopping two similar images of a patient dog model – one taken with the 600mm ƒ4, and the other taken with the RX10 IV at "600mm". Initially the difference in bokeh is night and day, but by doing some careful Gaussian blur I was able to the two images pretty close. That saved me USD $11,400, allowing me to send one of the grandkids to college in the US for a week…

After using the Sigma and the Sony 600mm ƒ4, the Sony 200-600mm ƒ5.6-6.3 was a relative joy. Slightly lighter than the Sigma (and slightly cheaper, too!) it's real handling benefit is the internal zoom mechanism, versus the Sigma's extending zoom which requires more force and more torque – fatiguing the hands quite a bit. And there were very few times on safari when I needed the 60-200mm range of the Sigma, something I thought would be the lens' great advantage. Live and learn.

One mystery I had difficulty uncovering is the "Image Stabilization Mode" switch on all three lenses. I was very familiar with the first two – Mode 1 is the equivalent to turning the SteadyShot image stabilization function from the camera's menu. Once you press the shutter release button halfway, the image is stabilized in the viewfinder, and primed for you take the picture. Mode 2 is designed for sports photographers who like to pan with their subjects at shutter speeds that would yield a moving background. It corrects only for up and down shakiness, not for left and right shakiness, so that the lens doesn't try to correct for the panning movement.

Mode three on the Sony lenses was the mystery, and none of the documentation I sought offered a clear explanation. Here's what I figured out: It is identical to Mode 1, except that the image stabilization does NOT engage with the half-press of the shutter. Rather, it activates at the moment of exposure. Sony says this is ideal for trying to frame erratically-moving subjects, although I don't see how that would help.

Finally, let's talk about the Sony RX10 IV, one of the best travel cameras ever made and by far the easiest to handhold for long periods. Its 24-600mm range is achieved by using the same 20MP 1" sensor as their famous RX100 point-and shoot. The actual focal length (from 8.8 to 220mm) is marked, and shown in EXIF, as its 35mm equivalent. If you are a fan of pixel peeping you might be disappointed that the detail on the fur or the eyelashes of an animal aren't as spectacular; but I've learned over the years that printing is the great equalizer. When enlarged to poster size, few photographers could tell which camera took which picture (see blog reference below). Another unexpected quality of the RX10 IV is the close focusing distance – at 600mm, it can achieve focus at 1m, which is closer than it can at "200mm"! Finally, it has one of the few lenses I've ever tested that is actually the sharpest wide open! Most lenses aren't at their peak unless shooting in the middle of their ƒ-stop range.

Given that all three full frame lenses are wonderful optically, I will say that next time I go on safari the Sony 200-600mm lens will be my lens of choice. It is a perfect balance between weight, usability, image quality, and bokeh.

See Friedmanarchives blog:
https://bit.ly/FriedmanRX10IV

Testing close focus and bokeh on the three Sony options, with the RX10 IV at its longest tele setting of 220mm (600mm equivalent) shown left, at ƒ4 full aperture at maximum telephoto in this zoom's ƒ2.8-4 range.

Below left, the exceptionally smooth bokeh of the big 600mm ƒ4 wide open. Although this lens has internal focusing, it does not have focus breathing and gives a true 600mm view when focused close. Below right, the 200-600mm at 600mm and ƒ6.3 full aperture. The internal zoom design means that at very close focus it's not a true 600mm.