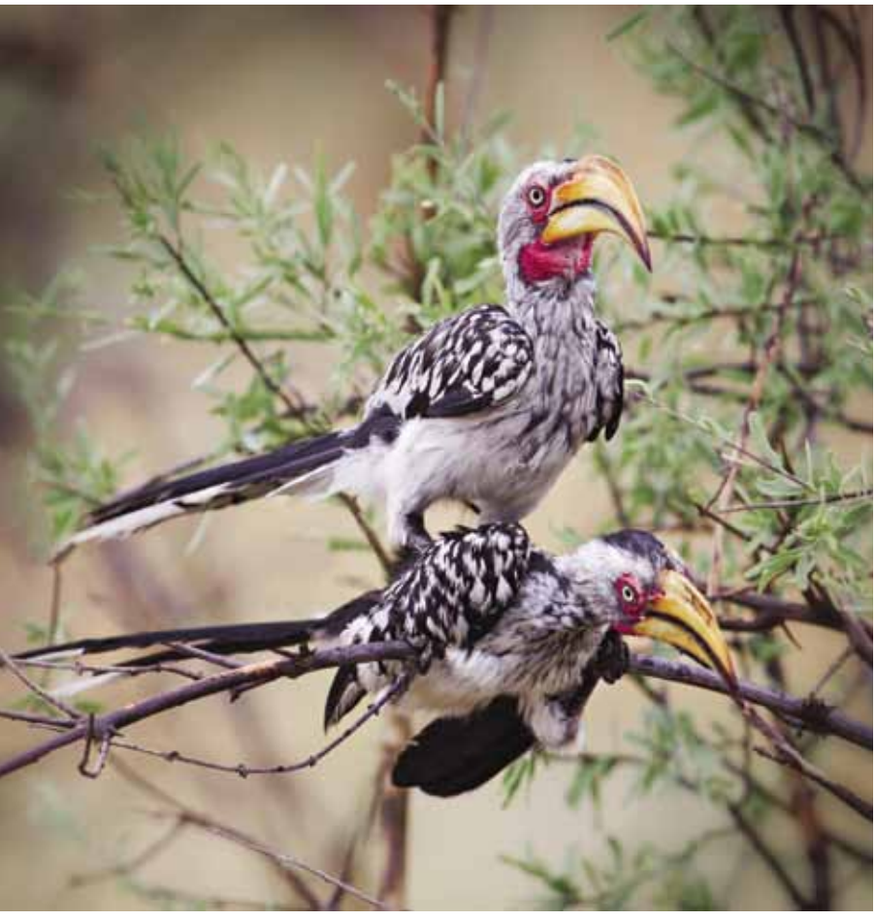
Optical Perfection?

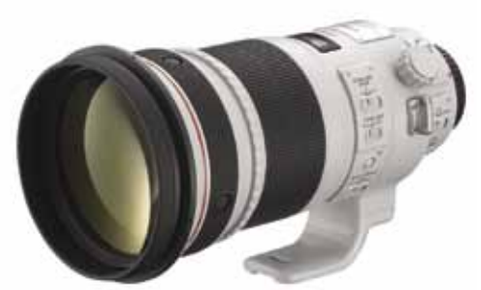
DENIS GLENNON took the new Canon 300f2.8L IS Mk2 to Africa recently – here are his impressions of this highly exotic lens.

What Makes this New Canon Lens Special?

Canon's new EF 300mm f/2.8 L IS II USM lens is as close to optical precision as you will find in any lens today. Add to this optical perfection, superb engineering and top drawer build quality, lightning-fast AF and unbelievable image stabilisation and you are looking at one of the best lenses ever made.



Mating Hornbills. Canon 1D Mk4, 300mm, 1/500sec., f/4.5, ISO=640, Av, Multi-segment, Hand-held.

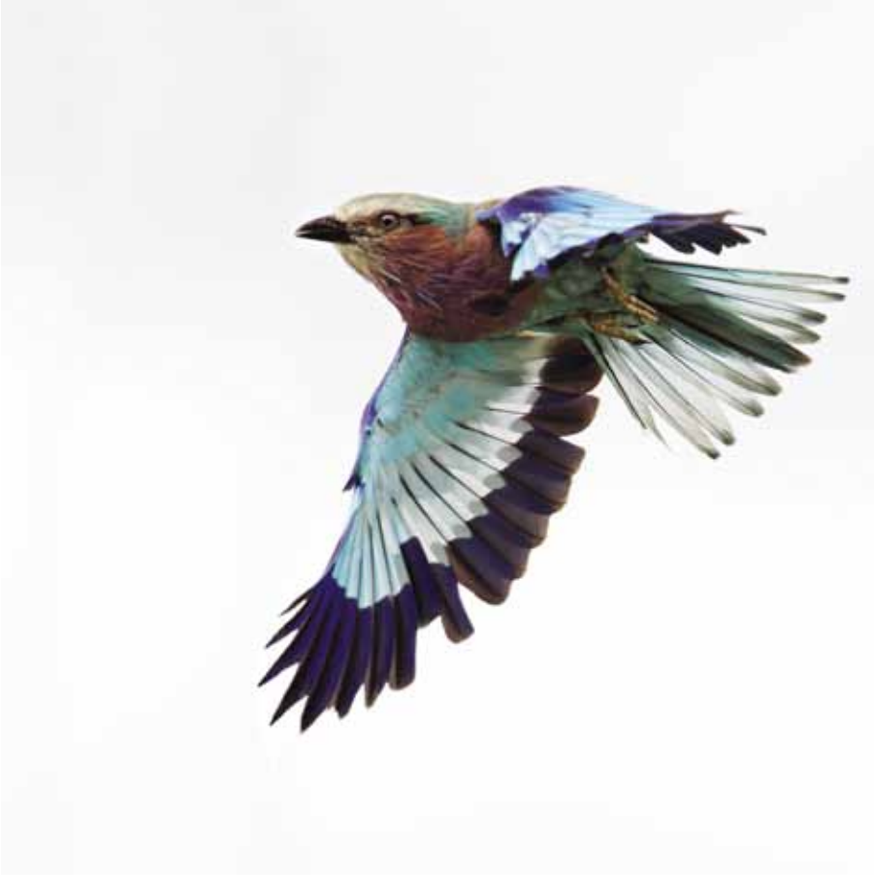


It has just about every feature you could wish for in a lens. Here are the most significant benefits:

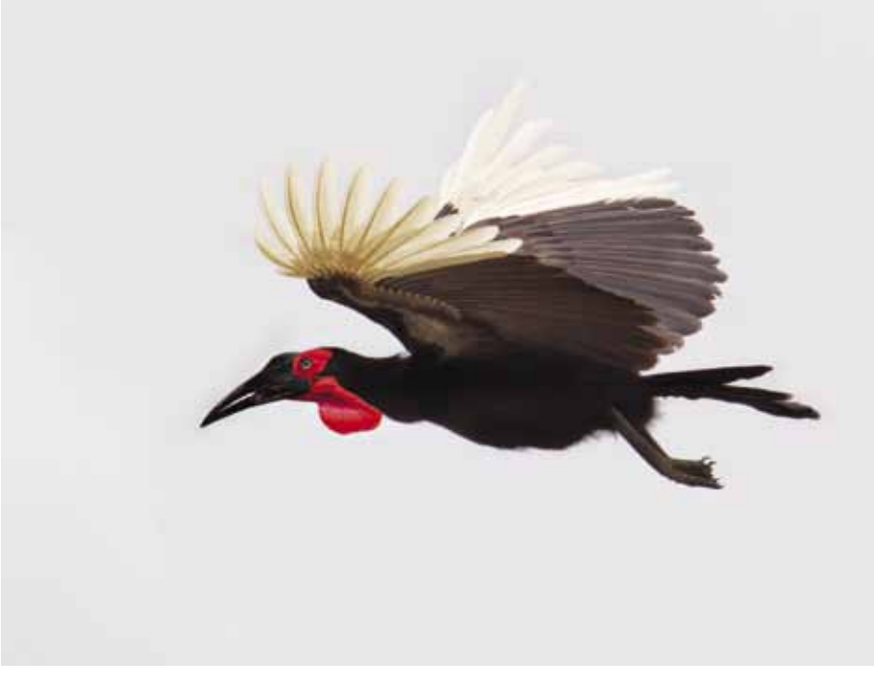
- Ring-type almost noiseless USM autofocus of the highest standard that comes complete with Power Focus mode and a Focus Preset facility.
- Select Power Focus (totally new feature) from the three-position AF/PF/MF switch and a separate focus ring, called the Playback ring, enables dual speed motorised focus adjustments – great for video shooting.
- A three-position focus limit switch facilitates the selection of the full focus range, or retains it to 2 to 6m, or 6m to infinity.
- New Image Stabiliser III (IS), that gives a 4-stop benefit and comes with three separate modes – Mode 1 for regular shooting, Mode 2 for panning in either portrait or landscape shooting (only one axis of stabilisation is operative), and Mode 3 which does not apply stabilisation until the shot is actually taken; wonderful when trying to track subjects moving unpredictably. This latter mode is designed for panning motion and when detected the lens only applies IS at 90° to the direction of the detected motion. The view in the viewfinder is not stabilised which enables you to follow subjects moving unpredictably without fighting against the IS trying to prevent you from doing the same. I suspect Mode 3 will be used pretty much all the time by wildlife photographers when shooting action.
- Like all of Canon's super telephoto lenses the 300mm boasts a secondary IS mode that automatically senses when the lens is mounted on a tripod and seeks to eliminate mirror slap, shutter and tripod vibrations.
- Focus Preset button that allows you to store a focus position in memory, then return to it at any time by pressing the button again and in addition to the on/off positions, there's a bonus 'on' setting that emits a confirmation beep.

- Four AF Stop buttons around the circumference of the lens for locking focus in AI Servo mode.
- Canon's Sub-Wavelength-Structure-Coating (SWC) – to reduce ghosting and flare. According to the Canon literature SWC uses minuscule cone-shaped elements smaller than a wavelength of visible light to reduce ghosting caused by light bouncing back from the sensor. This seems to work if the sharpness, great colour and remarkable contrasts of images, taken with this lens, are anything to go by.
- Fluorite lens elements to maximise image quality, with fluorine coatings on the outer surfaces of the front and rear elements - to repel dust and dirt for clearer shots and assist cleaning, especially fingerprints.
- A drop-in 52mm filter holder at the rear of the lens. You can also purchase a drop-in circular polariser filter.
- Seals that guard against (but not entirely prevent) the ingress of moisture and dust, and an O-ring in the lens/camera mounting plate (the presence of these seals does not mean the lens is waterproof or submersible).
- It works exceptionally well with Canon's new 1.4X MkIII extender; it is virtually as sharp as without the extender. I have not tried it with the 2X extender but numerous photographers have won international awards with images taken using the 300mm and 2X, and printed up in the media they look stunning. Using the 1.4X extender with a Canon 1D Mk4 body (crop factor of 1.3), you are shooting with a rig that is a full-frame equivalent of 546mm. To repeatedly capture pin sharp images using this configuration, hand held, is just stellar performance as well as being a pleasurable experience. You will like what you can do with the new Mk III extenders on this lens.
- A new design of lens cap that is a vast improvement and actually works well in the field (its predecessor complete with its drawstring was a horror bit of kit).
- A lens strap that fastens to the tripod ring instead of to the lens barrel as it did in the Mk I lens. This improvement allows the camera/lens to be rotated without the neck strap choking you! The tripod ring has also been updated. It now feels more comfortable to hold for long periods and has 90° indentations for precise framing alignment.
- The tripod ring has a slot for a Kensington ClickSafe-type security lock; look under the flip-out cover on the tripod ring tightening knob. The idea is to allow photographers to keep their lenses secure during location-based shoots.
- Custom made fibreglass, lockable hard case, which is well constructed, nicely padded and a god-send for those of us who lug these kinds of lenses around in the luggage compartments of small planes.
- No trees being cut down to print user manuals. Instead you get a CD with all of Canon's lens manuals in PDF format. Make sure you load a copy onto the laptop you carry with you on trips.
- An affordable price tag? Sadly not! Yet, there is a waiting list worldwide! Like most good things in life, this stunning piece of engineering and optics comes at a cost that will be beyond the budget of many photographers.

As with most super telephoto lens, (Canon's or others') purchasers will predominantly be professional sports or wildlife photographers, serious and wealthy amateur photographers and perhaps a smaller number of photojournalists.

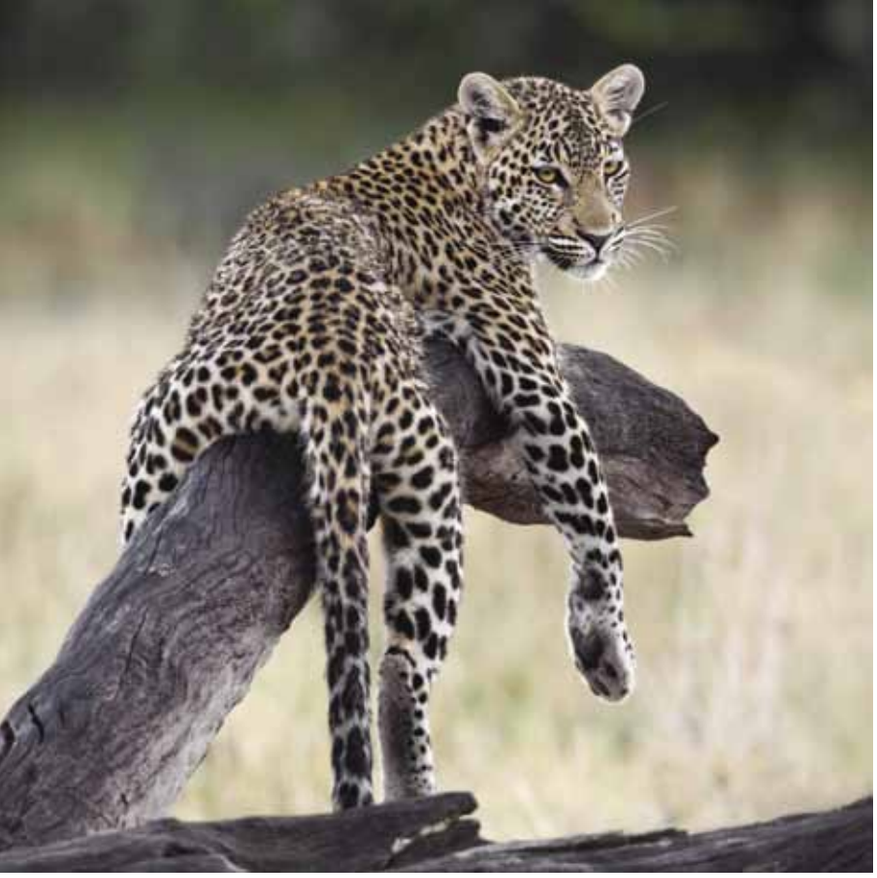


Lilac Breasted Roller In-Flight. Canon 1DMk 4, 300mm Mk II + 1.4 X extender, 1/8000 sec., f/4.5, ISO 1600, Manual, Spot Metering, Hand held.



Ground Hornbill. Canon 1DMk 4, 300mm Mk II + 1.4 X extender, 1/200 sec., f/6.3, ISO 500, Manual, Spot Metering, Hand held.

Even though it sports a new magnesium alloy body with titanium components it is not a lightweight or small lens, weighing in at 2.4 kg (200 grams lighter than its predecessor) and measuring 128mm in diameter, 258mm long, and extending to 374mm when the lens hood is fitted. Yet, I am happy to carry this lens all day in a backpack, if necessary.

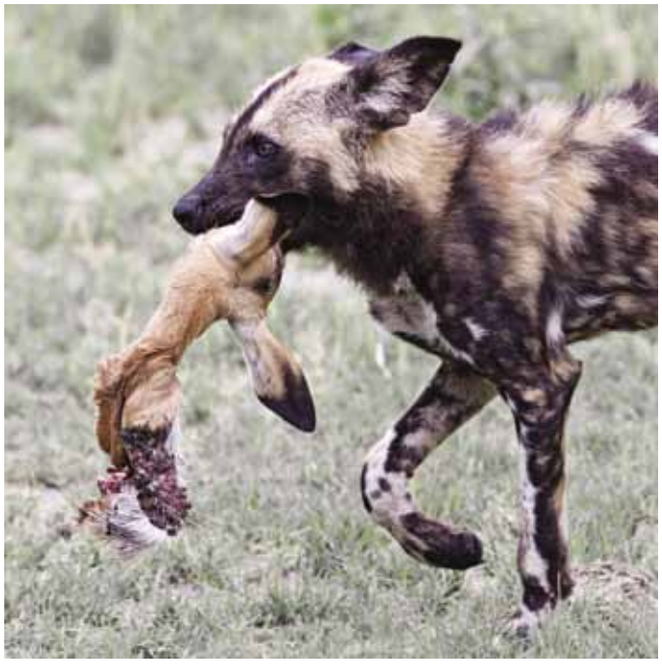


Tree Leopard. Canon 1D Mk4, 800mm, 1/200 second., f/7.1, ISO 640, Manual, Spot Metering, on beanbag in vehicle.

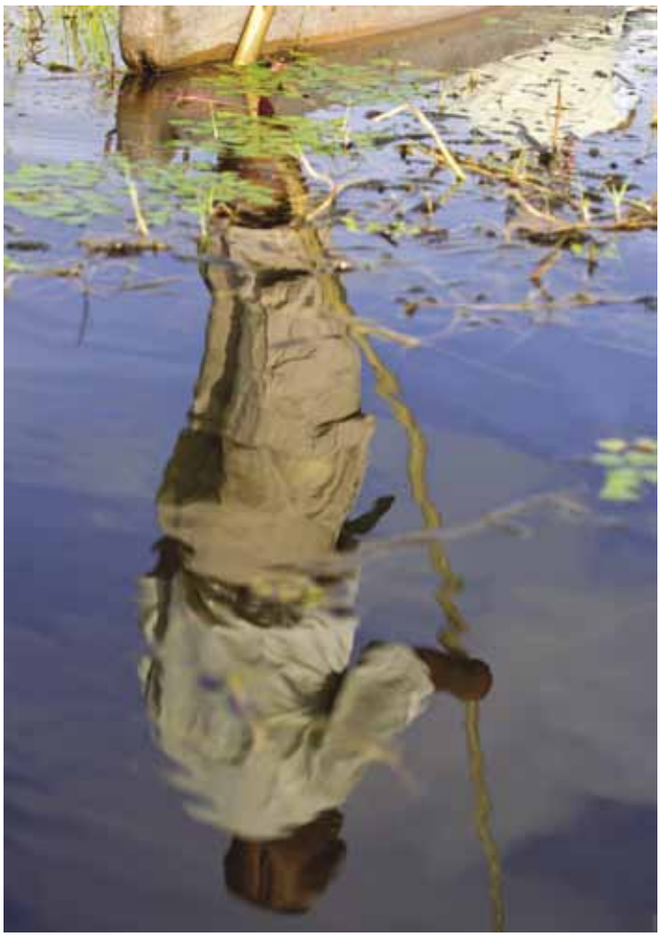
But Does All This Innovative Technology Work in the Field?

In a nutshell, the Canon EF 300mm f/2.8L IS II USM lens performs splendidly on every front, straight from the box.

In addition to the features mentioned above, the lens incorporates some AF advancements relative to the 300 f/2.8 IS Mk I - a new high-speed CPU and new dedicated AF algorithms.



Victorious Wild Dog. Canon 1D Mk 4, 300mm MkII + 1.4X extender, 1/1250 second., f/7.1, ISO 2500, Manual, Spot Metering, Hand-held in vehicle.



Okavango Delta Emerald Season Reflections. Canon 1D Mk4, 70-200mm MkII, f6.3, ISO 400, Av, Multi-segment, Hand-held in mokoro.

How well they work in the field is what is vital for professional photographers.

The USM autofocus is accurate and blazingly fast. AF accuracy is extremely important especially when shooting in AI Servo mode. With a shallow depth-of-field, even small focusing errors will destroy a shot series. If there is a small number of shots out-of-focus, the reason for this is not likely to be associated with the focusing speed. Should there be some undesirable front or back focusing evident, this can be easily addressed by adjusting the AF Tracking custom function in the camera, or in very rare cases, by micro adjusting the lens/camera combination, using a tool such as the LensAlign Pro focus calibration system, or getting Canon Australia to adjust and test.

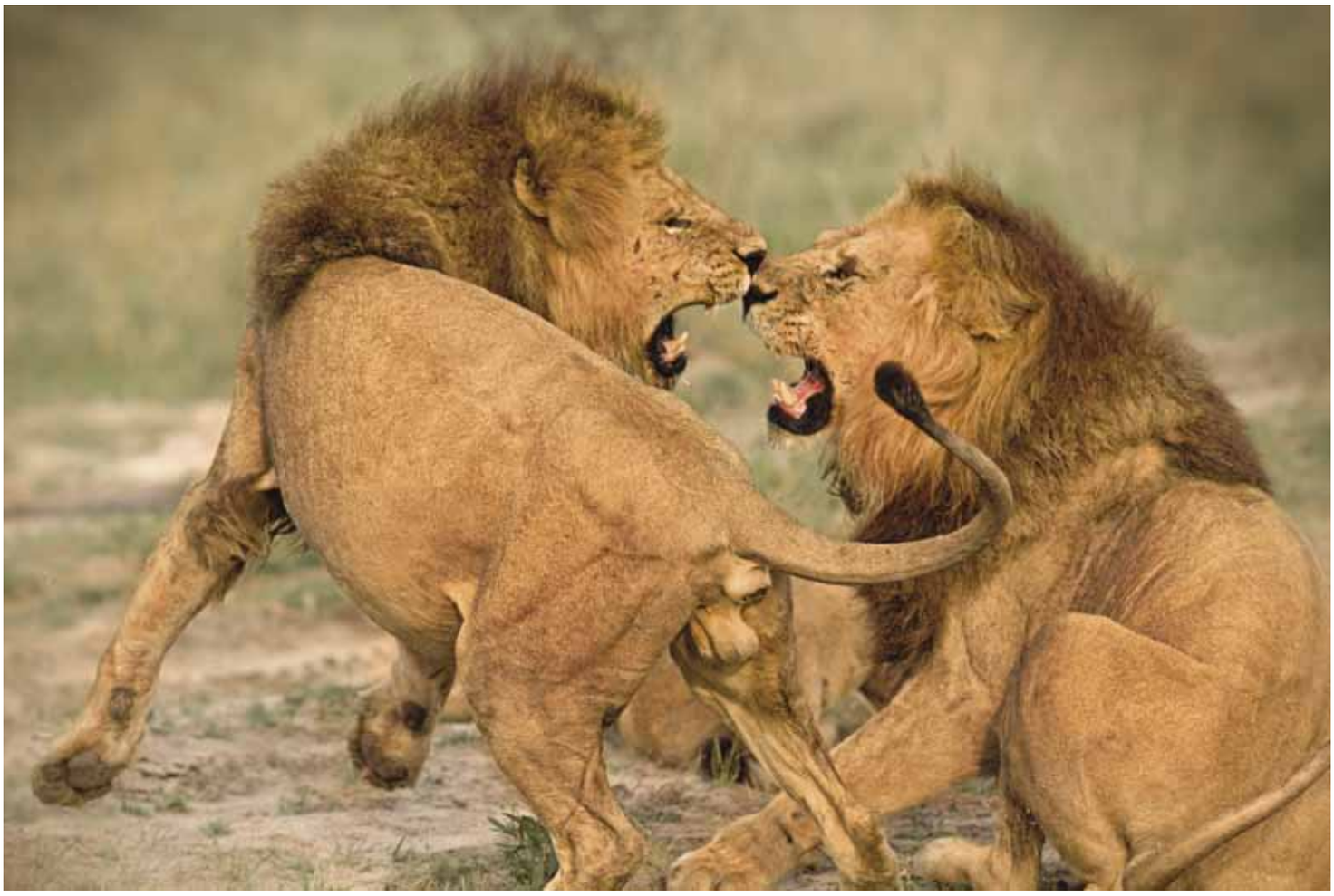
I do not own the specialist equipment or software required to undertake scientific bench testing of sharpness so the following comments are based solely on my experience in the field, shooting wildlife on a dedicated photographic safari in the Okavango Delta, Botswana in November 2011 – a good testing ground, particularly when photographing hand held from vehicles. The capabilities of any lens are rigorously tested when photographing birds in flight; this lens did not disappoint.

See the images of the Lilac Breasted Roller and the Ground Hornbill – you require a dependable, fast and accurate AF system to give you the assurance and confidence you will capture such images. You cannot ask the subject to do a re-run!

Scarred Warrior. Canon 1DMk IV, 300mm Mk II + .4 X extender, 1/500 second., f4.5, ISO 800, Av, Spot, Hand-held.

The same applies to the Scarred Warrior image. I had no warning of the approach of this magnificent, if battled-scarred male lion, as he stealthily joined a pride of eight lions, in fading light. Note the high ISO of 800. I caught him in the peripheral vision of my left eye as I was concentrating on an interaction between a female lion and a juvenile, about 120° to the right. I was using the 300mm lens with a 1.4 X extender on a Canon 1D MkIV at the time. I simply swung around and focused on the eye. That familiar initial inquisitive stare into the lens was all over in about a second but I captured twelve sharp, usable images. Look at the detail (right), the excellent sharpness and the absence of noise, at ISO 800, in the cropped image (no noise reduction software used). This lens delivers.

The Victorious Wild Dog (opposite) image is another example of the advantages of having a lens that has super-fast and accurate focusing. A pack



Male Lions Contest.

of wild dogs caught an impala. It was literally torn apart in less than five minutes by the frenzied pack of about twenty-five dogs. Suddenly I spotted this particular dog fleeing from the pack with the prized head of the impala. Again, it was a matter of swinging onto the dog, a rapid focus and blasting away in AI Servo, at 10fps (frames per second) as the dog dashed off with the head. The 1D MkIV will shoot at 10fps for around 30 shots (in raw), before the buffer fills. I counted twenty-seven shots of the dog running, all in perfect focus and usable. You cannot ask more than this of any lens when shooting hand held.

When shooting in AI Servo mode, from an AF perspective, I could not discern any difference when the 1.4X extender was fitted; this is an excellent improvement. See the technical details for the two birds-in-flight shots.

Note: Canon Europe CPN advises, "To get the best out of the new lenses and the Mark III extenders photographers must ensure they attach the extender to the lens first, before attaching the whole unit to the camera. This ensures that the combined lens information is transmitted correctly to provide the optimum image quality and focus performance." Since coming across this advice, I fit the extender to the lens before I fit them to the camera, every time.

The 4-stop IS function delivers consistently sharp hand held shots with an impressive number of them being absolutely in-focus even when shooting at 10 frames per second with the lens mounted on a Canon 1DMkIV body, (accepting that no lens on the market delivers 100% accurately in focus images when shooting hand held in testing conditions).

It performs faultlessly across its aperture range. Not surprisingly, the sharpest images are captured between f4 and f7.1, but even experienced photographers will be hard put to discern any difference in image edge sharpness at any aperture. The normally expected rise in fringing at the edge of the frame is simply not noticeable (unless you blow the image up to 300%+ on a computer screen). Fringing is not an issue. Similarly the lens is practically distortion-free and chromatic aberration-free.

Only the more expensive prime lenses have outstanding image quality at their widest apertures and this lens simply performs at f2.8; it is impressively razor sharp right into the full frame corners. There are few lenses this sharp at their wide open apertures.

For wildlife and sports photographers the f2.8 aperture at 300mm focal length is a strongly desired feature. When a subject is shot at f2.8, the background is rendered an appealing to the eye "soft out-of-focus appearance" by this lens. This background bokeh effect is not how far the background is out-of-focus but the creation of the character or "feel" of the background blur the lens creates. As far as I am aware, there is no technical measurement for bokeh; like everything else in art, you gauge bokeh by looking at the image. It pleases the eye or it doesn't.

Lion in Searchlight. Canon 1D Mk4, 300mm Mk II, 1250 sec., f/2.8, ISO 2500, Av, Multi-segment, on beanbag in vehicle.

The bokeh from this lens is very pleasing, as seen in the Lion in Searchlight image. This image was taken in total darkness with the lion being lit solely by a searchlight powered by the vehicle battery. Look at how sharp the eye is. To achieve this degree of sharpness in the kind of lighting conditions present for this shot, is simply spectacular performance.

This kind of performance is also excellent from Canon's larger lenses, i.e. the 500mm f4, 600mm f4 and the new 800mm f/5.6.

The Tree Leopard image (see previous page), taken with an 800mm lens illustrates the point on bokeh (as well as sharpness). Note the sharpness despite the very slow shutter speed used, on a beanbag from a vehicle. When photographing a lion or leopard on a "kill" run; we want the animal to be pin-sharp and the unwanted distractions in the distance to literally "fade away into a nice soft background."

For bird photographers capturing in-flight shots, this feature is a must in a lens and the new Canon 300mm delivers it in spades. For some mysterious reason, the more colourful and photogenic birds always seem to want to fly with unsightly foliage in the background!

The same principle applies for sports events. These events are notorious for having distracting backgrounds – commercial adverts, excited fans, corporate boxes, lots of equipment, etc. When nicely blurred, these unattractive distractions melt into a colourful, soft background from which the subject literally "pops" into the viewer's attention.

Is It Worth The Price?

There is no doubt the price tag on this new lens will be a "deal breaker" for some photographers and they will likely opt for the much less expensive, and superbly sharp, f4 version.

My experience with Canon's super telephoto lenses has been financially satisfactory. I have owned the 400mm f4 DO and the 600mm f4. I now own the 300mm MkII and the recently released 800mm f5.6 MkII. There is always a pre-used market for this type of lens if it has been properly cared for and you can demonstrate it has been serviced professionally immediately prior to sale. They tend to retain their value.

If you desire a 300mm Canon lens, this is an incredible lens; the best currently available.

(Having used this lens myself in Borneo I can understand Denis's enthusiasm for this lens, it's truly stunning – Ed.)

Denis Glennon AO, Member AIPP, spent over thirty-five years in the Australian corporate world, and was appointed as an Officer in the General Division of the Order of Australia (AO) for "service to environmental protection through management control and treatment of industrial and hazardous wastes, and to the community." He has served as a Board Member of the Western Australian Environmental Protection Authority (EPA) for over thirteen years. He believes that every photographer who leaves a legacy does so because of an underpinning purpose to his photography. For Denis, this purpose is conservation, and his special interest is in wildlife and conservation photography. Visit his website at: **www.denisglennon.com.**