



The Newsletter of E.J. Peiker - Nature Photographer

Summer 2016 - Vol. 15, Issue 3  
All contents © 2016 E.J. Peiker

Welcome to the quarterly newsletter from E.J. Peiker, Nature Photographer and [www.EJPhoto.com](http://www.EJPhoto.com). In this quarterly publication, I share with fellow photographers my photographic experiences, photo equipment reviews, photo and processing tips, and industry news. I also inform subscribers about upcoming workshops and products that I offer. Please feel free to forward this to other photographers and interested parties but please do so only by forwarding this newsletter in its entirety. All content is copyrighted by E.J. Peiker and may not be reproduced. If you would like to be added to the mailing list, unsubscribe, or access back issues, please visit: [www.ejphoto.com/newsletter.htm](http://www.ejphoto.com/newsletter.htm)



Playa de Gueirua - Asturias, Spain (Sony a7R II, 35mm)

## Three Kits for Three Types of Photography

One of the most common questions that people ask me is what gear I shoot with or for recommendations on what gear to take on different photographic expeditions. While the answer to this is very individual and the right set—up varies from person to person, I can tell you what I have chosen for the time being.



Red-faced Warbler - D7200, 500mm, 1.4x

### Wildlife and Birds:

I continue to use the Nikon crop sensor DX bodies for this type of photography coupled with either the Sigma 150-600mm Sport lens, the Nikon 500mm f/4VR lens or the Nikon 80-400 lens. The 500mm lens is often coupled with the latest Nikon 1.4x teleconverter to achieve a focal length of 700mm. When combining this with the 1.5x crop of the D7200 or the new D500 camera, the effective reach is sufficient for almost any subject. In controlled situations from blinds where I am relatively close to the subject, I may still use the D810 in either full frame mode or 25 megapixel 1.2x crop mode.

### Landscapes:

I have fully switched to the Sony a7R Mk II my landscape photography. The only exception to this would be on a Phase One trip where I would use their camera system or if I am on a Wildlife trip with some landscape opportunities. I have a full complement of prime and zoom lenses including 15mm, 18mm, 21mm, 25mm, 28mm, 35mm, and 50mm, primes which are all small and all of them combined weigh just a little more than a single Nikon 24-70 f/2.8E lens. I also have the 16-35 f/4, 24-70 f/4, 70-200 f/4 and 70-300 f/4.5-5.6 but now that I have the full complement of small and fast primes, their image quality over the zooms usually means that I will not use the zooms except when convenience is of the essence.



Cabo Vidio, Spain (a7R Mk II, 16-35mm)



Luarca Lighthouse, Spain (a6000 - 665nm IR, 70-200mm)

### Travel, Hiking, Cityscapes:

When I need to be nimble agile and have serious weight restrictions, I previously used the Sony a6000 and now use the new Sony a6300 with the Zeiss Batis 12mm, Sony-Zeiss 16-70mm, and Sony 70-300mm lenses in a kit that gives me a 135 format equivalent focal length range from 18mm to 450mm in a small and light three lens kit on the best APS-C sensor made with AF that is even good enough for many wildlife and action situations should they present themselves. Similarly, on a non-photo oriented vacation, the a6300 gets the nod.

## Feature Request

I am extremely fortunate that I get to work with, play with, and test a wide array of photographic gear from virtually all of the manufacturers (much of it is at my own expense). Even when the gear is provided at no expense to me, I have no problem telling the manufacturers what is not as good as it needs to be with their gear. This encompasses everything from small mirrorless 1" sensor cameras to large and heavy medium format systems, their lenses and accessories. As a result, I have been exposed to a number of features not available in all camera systems and also spawned some ideas for new features or refinements of features that I would like to see in all enthusiast, prosumer and pro cameras.

All the way back in 2003 and then again in 2005 I wrote articles similar to this one and within a few years many if not all of the features appeared. I even called for mirrorless cameras back in 2003 and received dozens of emails and online comments telling me that it would never be possible! With all my years working in the technology sector, I have learned never to accept "impossible" as an answer. If we wait long enough, virtually anything we can dream up can become reality; maybe not in my lifetime, but eventually. One of my favorite quotes of all time is Arthur C. Clarke's "Any technology sufficiently advanced is indistinguishable from magic" In other words, just because we can't conceive it and it might seem like wishful thinking or magic, that does not mean it won't be possible in the future, and often much sooner than we think. Just look at the original Star Trek series from the late 1960's, virtually all of the technology and gadgets used in that show, being portrayed in the 23rd century, is available now and in a much more sophisticated fashion. (Well not warp drive and transporters - yet - but just about everything else.)

Now for some of the features that I would like to see in future generations of cameras. I believe all of these are possible now or within the next 2 to 5 years:

Automatic hyperfocal: Cameras already know the aperture you are shooting at, the focal length, the sensor you are using and its pixel pitch; there is no reason why cameras could not include an automatic hyperfocal setting. I would make this customizable to a loose, normal, and precision setting which uses different circles of confusion for quick and dirty work, normal everyday hyperfocal work, and when you really need to maximize sharpness at the sacrifice of something that is close. One simply selects the lens aperture, puts the camera in hyperfocal mode and the camera executes the shot. A very rudimentary version of this feature exists now in the Phase One XF camera body.

Internal Focus Stacking: As sensor pixel counts go up, more and more people are using focus stacking to get a sharp image from near to far - this is a technique where a number of shots are taken at different focus points and then combined with focus stacking



Ragged Range, Western Australia (Phase One XF, IQ3-100MP, 80mm)

software to maximize depth of field. Macro photographers have been using this technique for years and landscape photographers are using it more and more. With this feature you would first focus on the closest point that needs to be in focus and then you would focus on the farthest point. The camera then calculates and executes the number of shots required bumping the focus the required amount to keep everything sharp automatically for as many shots as necessary to have perfect sharpness throughout the scene. The output would either be a TIF or JPEG and the RAW shots taken to create the stack could optionally also be saved for using stacking software in post production

Advanced Automatic AF Fine Tune: Nikon recently introduced the first rudimentary implementation of this with the D5 and D500. While their implementation is not yet perfect, it hints of a future where the long drawn out process of focus fine tuning is done quickly and automatically. The current system only works at a single focal length and distance. In the future, this feature needs to be made more accurate and include multiple distances and focal length in effect creating a focus calibration table within the camera or lens for every lens. This is similar to what one can achieve with the Sigma lens dock on their lenses but there is no automation and the process for a complex zoom lens can take hours and is highly labor intensive. Properly implemented, in a few seconds a complex lens calibration table could be written to the camera or lens resulting in optimal performance throughout the lens' zoom range and shooting distance range.

Seismic shutter trigger: One of the biggest problems photographers face in a world of ultra high resolution sensors is that micro motion of the photo platform can degrade pixel level image quality. Camera manufacturers have eliminated shutter and mirror slap by including electronic first curtain and mirror lock-up but this does not solve the problem of externally induced vibrations due to wind, soft ground, vehicle traffic,

etc. The simple addition of motion sensors or an upgrade of the current sensors that determine camera orientation coupled with a seismic readout can be used to determine when there is no motion and trigger the shutter. I recently used such a system on the Phase One XF camera and it is fantastic. One simply puts the camera in seismic trigger mode and programs this function for a maximum allowed wait time. One then pushes the shutter button and the camera will take the shot as soon as the vibration drops below a set threshold. If it never does, the photo is taken once the maximum wait time elapses. The increase in sharpness that such a feature provides cannot be understated.

Direct Internet connection: Today's cameras, other than smart phone cameras, are very clumsy when it comes to an



Ord River Delta - Western Australia (Phase One XF, IQ3-100MP, 80mm)

internet connection. They usually need to be connected to a smart phone via WiFi, and then the phone needs to be disconnected from the camera and reconnected to the internet to upload a picture. This is cumbersome and uses the phone as an unnecessary intermediary. Why not just allow the cameras to connect directly to the internet. Sony does now have a very limited capability to do this to some photo sharing sites like Flickr and Google but it would be nice to upload a photo directly with a programmable resizing to NatureScapes or Facebook or Instagram or wherever one wants. An even better productivity enhancement than direct internet connect would provide is the capability of background upload and backup of your photos in real time. Wouldn't it be great if you got home and the photos were already on your main photo storage array without having to use your phone or tablet as an intermediary?

Automatic Keywording: Take any photo and drop it into Google's image search function and in a fraction of



Playa de Portezuelo, Spain (a7R Mk II, 25mm)

digital and I am constantly thinking of new ones. I'll save the really "out there" ideas for another time. If you have any great ideas, don't hesitate to drop me a line.

## My Journey into Infrared Photography Continued

In last quarter's newsletter I gave an overview of Infrared photography. I got a number of emails asking me more on how I got into this specialized area of photography...

a second you will know where the photo was taken. Similarly, drop just about anybody's picture into Facebook and in a matter of a seconds, Facebook knows who the person is and asks you to tag them. While this may be scary on some level, if we get truly connected cameras with direct internet connection as I've outlined above, we should be able to have our photographs keyworded automatically by the time they are on our computers. I despise keywording so much that I just don't do it ... ever! It's not that I wouldn't mind having my pictures labeled with keywords, it's just that I will not waste the time to do it especially given that my file structure makes it easy to find things since my brain's memory is geographically based. But with automatic keywording we would have all our files properly tagged and just a quick review for accuracy is all we would need to do.

User Defined Menus: Being enslaved to illogical factory preset camera menus should be a thing of the past already. It needs to be soon! Let's have an application or website that allows you to design your own menu structure for your camera based on all of the available options that the camera allows on a computer or smart device or even the camera itself. We should then be able to simulate how the camera will work, do an error and menu item exclusion check and then upload it to the camera. Menu problems solved!

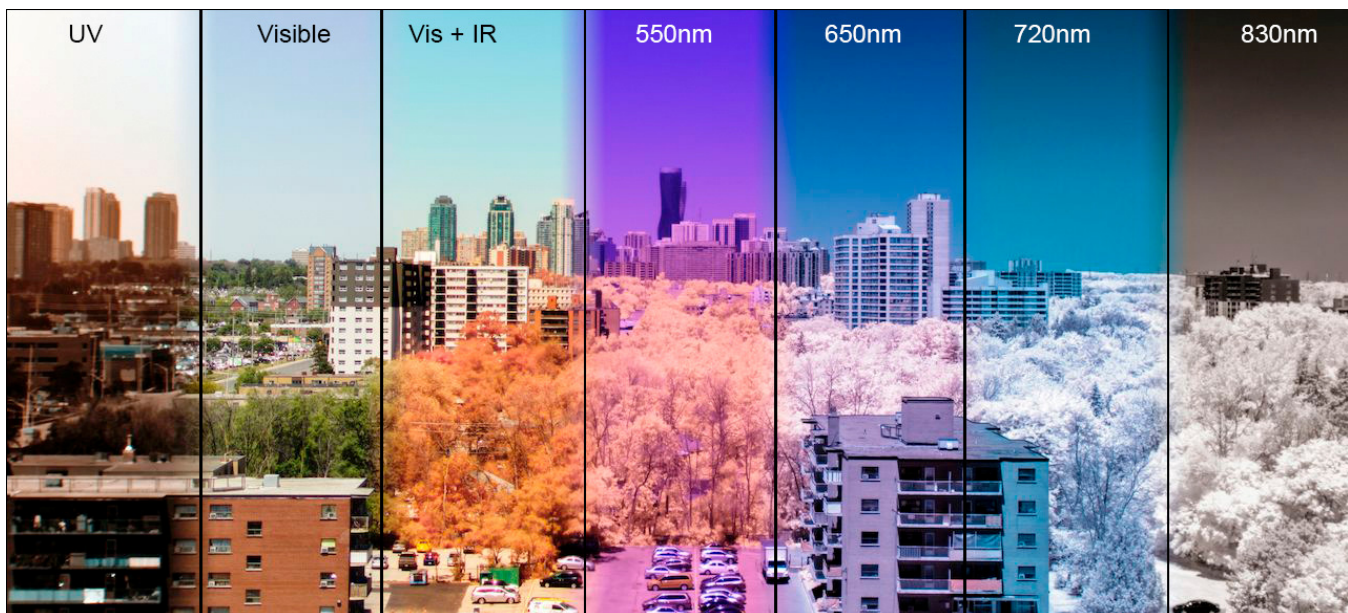
None of these items are anywhere near as "far out" as some of the ideas I wrote about in the early years of

Over the last two years I have been doing more and more infrared (IR) photography. It all started when I had a client, who has since become a friend, hired me to help him with his photography but he shoots nearly 100% in infrared. I had not done any serious IR photography since the days of IR film, IR filters and super long exposures that resulted in very grainy images so I did some studying before his arrival. The few days with him photographing the Sonoran Desert in IR sparked my desire to get into digital infrared photography. Soon after he left, I had my old D7100 converted to IR. I have since also converted a Sony a6000.



False Color IR Pistachio Grove (a6000IR-665nm, 16-35mm)

When converting a camera to IR, one must first choose the wavelength cut-off point filter to be installed on the sensor. In general, filters in the 800nm range give a high contrast image that is useful for black and white only. If you want a little more tonal gradation with stronger midtone grays and a slight bleed of the red channel into your images making some false color IR possible, then a filter in the low 700nm range is ideal. Once you get into the 600nm range you are allowing a significant portion of the red spectrum into your images and, with proper processing techniques, very vivid false color images can be achieved as well as the more traditional black and white IR look where foliage turns white and a blue sky turns black. This sort of conversion is also known as a High Red IR conversion. Going even lower with a filter that has its cut-off around the mid 500nm point allows nearly full color photos with infrared overtones and full color range + IR filters allow a unique color photo effect.



Comparisons of different cut-off filters from UV through high IR by Andy Broomé. Visible is a standard camera, the others are various conversions available.

In general, most photographers exploring IR photography will choose a filter that cuts off light below one of the mid 600nm to 800nm wavelengths. The most common conversions are in the 700nm range. There are many companies that do this type of conversion; the two most popular are Lifepixel ([www.lifepixel.com](http://www.lifepixel.com)) and Maxmax ([www.maxmax.com](http://www.maxmax.com)). I had my D7100 converted to 720nm by Lifepixel. While the result was very good, it took about 5 weeks, to get the camera back from a conversion that takes only a couple of hours to do. For my a6000 I decided to give Maxmax a try based on the experience of my client. He had had a Sony a7R Mk II converted by Lifepixel and it showed quite a bit of banding in darker areas so he had it redone by Maxmax and the result was better and the turnaround time was also faster. I was getting ready to go to Spain and wanted the conversion back before I left in order to take the camera with me so I called Maxmax and they turned the camera around in under a day. I had it back 4 days after I sent it and they did a high quality job.

It is important to select lenses for IR photography that are known to not produce hot spots. Most lenses aren't really designed or made for IR photography so there can be anomalies in the final images. I found the Sony Zeiss 16-70mm f/4 to have a very pronounced hot spot in the center of the frame but the Sony FE 16-35mm f/4 does not. It is important to Google the lenses for IR compatibility to insure you will get good results. Here is one site that has many lenses characterized: <http://kolarivision.com/articles/lens-hotspot-list/>

Infrared is great to extend the shooting day into the mid day hours. As landscape photographers we often shoot at the edges of the day and have huge holes of time to fill in the middle of the day. Infrared is best when the sun is higher giving images that IR look where green leaves turn white in monochrome IR or a pink hue almost like cherry blossoms in false color IR. While conversions aren't cheap – good ones run between about \$350 and \$600 and may exceed the value of the camera that the conversion is being done on but it may be just what you need to utilize those middle hours of the day. If you have an older camera that is still a very good camera around, give IR a try - you just might get addicted.



Monochrome IR - Santa Rita Mountains - Arizona (a6000IR-665nm, 16-35mm)

## Mini Reviews

Much new gear in the time since the spring newsletter has been evaluated. Here are some quick summaries:

**Voigtlander 15mm f/4.5 Heliar III:** Around the 2016 New Year, Cosina's premium brand, Voigtlander announced a series of three native E-mount super wide angle lens - a 10mm f/5.6 (the widest non-fisheye full frame camera lens in the world, a 12mm f/4.5, and a 15mm f/4.5) The first of these to ship was the 15mm. The appeal of the 15mm lens to landscape photographers is that they are tiny compared to other offerings in the same class yet they feature a high precision full metal construction and exude quality in the hand almost to the level of a Leica or Zeiss lens. The maximum aperture of f/4.5 is relatively slow but for daylight landscape photography this really doesn't matter since we are usually shooting stopped down any way. Out of the box impressions of the 15mm lens are very good. While in Spain photographing the Asturias coast, I got to use this lens extensively. Sharpness of the lens, especially in the center is very good and stopped down it is good at the edges too. Vignetting is significant but easily fixed in post processing. As of this writing, my RAW converter, Capture One, does not have lens profiles to automatically correct for it yet so this must be done manually. When objects are in the near foreground, the corners due tend to distort in a way where corner objects are elongated – the bane of virtually all super wide lenses but my Zeiss 15mm f/2.8, which does cost 6 times as much and is three times the size and weight does not do this. I was also pleased that the lens takes standard 58mm filters and a thin filter is not necessary. I have taken only a very brief look at the just shipped 10mm and it is too early to form any opinions of it other than it appears to have the same pros and cons as the 15mm. The 12 mm is not shipping yet.



Playa de Cadavedo, Spain (a7R Mk II, Voigtlander 15mm)



Cabo Blanco, Spain (a7R Mk II, Zeiss Batis 18mm)

**Zeiss Batis 18mm f/2.8:** This is the 3<sup>rd</sup> lens in the autofocus series of full frame Sony E-mount lenses from Zeiss. The first two, the 25mm f/2 and 85mm f/1.8, to this day well over a year after first hitting the market can still be tough to find at times. The Batis line is a smashing success and it's no secret why – exceptional quality optical performance, modern light weight design both internally and externally, full weather sealing, and a coolness factor one rarely finds in lenses. This is due to their sleek design and OLED distance scale that reads out focus distance and gives an indication of the near and far distance for objects in the frame that will be in

focus based on aperture and focus position of the lens. The 18mm brings a super wide

angle to the Batis party and like its predecessors, it is exceptional. The old Zeiss 18mm f/3.5 lens for Nikon and Canon was easily the poorest performing member of the Zeiss family of lenses and this brings the 18mm focal length up to the usually excellent Zeiss image quality standards. Nikon and Sony shooters will have to wait for a replacement of the mediocre 18mm for their mount. Center to edge sharpness of the Batis 18mm is the best I have seen for a lens in the sub 20mm regime for mirrorless cameras and is second



only to the 3 times as expensive 15mm f/2.8 DSLR lens for the best ever sub 20mm lens that I have tested. The only weakness is the same weakness that all Zeiss lenses have and that is a bit of vignetting in the corners but sharpness in the corners is excellent, and is exceptional stopped down to f/5.6. If you need a reasonably fast super-wide prime for you Sony a7 series camera, get this lens ASAP!

**Sony FE 70-300mm f/4.5-5.6 G:** I received this lens just a few days before a trip to Australia with Phase One. Even though I would primarily be using the Phase One gear on this shoot, I did throw the a6300 with the new 70-300mm lens into my carry-on luggage just to be able to take any wildlife or birds. I used the lens extensively one afternoon in a local park photographing some of the foraging birds on the grounds and the lens is impressively sharp, very quick to focus for an f/5.6 optic and a pleasure to work with. Build quality is a step up from most Sony branded lenses that I have used and it is part of their G series of professional grade lenses. Overall first impressions are very positive and the lens has far exceeded my expectations. It easily blows away the Nikon 70-300VR and is on par with the excellent Canon 70-300 f/4.5-5.6L professional lens.



Australasian Swamphen, Western Australia (a6300, Sony 70-300mm)

**Nikon DX 16-80mm f/2.8-4E VR:** This is the DX version of the very popular 24-120 f/4 lens for FX. And we get a nice little bonus of an f/2.8 maximum aperture on the wide-angle end making its depth of field equivalent to a 24-120 f/4 on a full frame body too – at least on the wide-angle end of the zoom range. It is a very nice lens for a nearly 5x zoom and is relatively light weight yet built well using mostly advanced composites and it features a very effective Vibration Reduction system as well as being one of the few electronically controlled aperture lenses in the Nikon line-up. This eliminates the number one failure mode among Nikon lenses - the mechanical aperture linkage but it also means that it isn't compatible with all Nikon bodies, especially older ones. Make sure you check its compatibility with your camera before purchasing. Image quality wise, my only real complaint is that it has some fairly noticeable linear distortions as the zoom goes to the wide end. Fortunately these are easily corrected and if you have automatic lens correction turned on in your RAW converter, which I always recommend, then you will likely never even notice. It is the go to everyday walking around lens to have for Nikon DX bodies including the new D500, in my opinion.



Exuma Point - The Bahamas (D7200, 16-80mm)

**Sony a6300:** I wrote a spec review and comparison of the a6300 to its predecessor, the a6000, in the last newsletter so I won't rehash that here. Since then I have had opportunity to really put this camera through its paces. In short it is the highest image quality APS-C camera from any manufacturer ever made. The new 24 megapixel backside illuminated copper wire sensor beats every other sensor in its class hands down. Handling of the camera is very familiar if you are an a6000 user or a user of other high end Sony mirrorless cameras with one exception, and it is a good one! For the first time in a Sony E-mount camera, the



Kununurra, Australia (Sony a6300, 16-70mm)

camera can be set for direct autofocus point selection without having to hit another button first every time you want to shift the AF point. It's still not as convenient as Fuji's joystick or the joystick used on many DSLRs but it is a major improvement for quickly changing the AF point. Speaking of AF, the camera had no problem whatsoever tracking moving birds as long as the AF was set to the smallest spot AF and set to continuous. Any other AF mode would often capture surroundings or the background – very similar to the behavior of many consumer DSLRs. Once I figured this out, virtually every shot was sharp. On paper, Sony's Lock-on AF, where you focus on a point in the viewfinder and then the camera automatically tracks that point should be better for action photography but in practice, as soon as something with more contrast than what your initial focus point was enters the viewfinder, the AF system wants to latch onto that and track it. I haven't yet been able to thoroughly test flight shooting and the AF on a bird or moving subject in low light is still more of a challenge than it is on a higher end DSLR. The 8FPS continuous Live Feed mode is excellent for tracking subjects in the viewfinder – far better than any other mirrorless camera on the market. This does not work in the maximum 11 frame per second mode though. For stills or landscapes, this camera performs like other Sony mirrorless cameras and is a very solid and predictable camera – just as it should be. It will produce better images than any other APSC camera on the market if photographed with a high quality lens. One has to wonder why Nikon did not use this superior 24 megapixel sensor in the D500 instead of the 20 megapixel sensor - well not really - I'm sure Nikon didn't want the DX D500 to have more pixels than the FX D5. Not only would it have increased resolution on that camera without sacrificing noise, it would have allowed 11 frames per second and dramatically increased the D500's Live View and video capability due to its on sensor phase detection autofocus system which would be dramatically better than the mediocre Live View AF system on the D500. The Sony a 6300, other than the typical Sony nonsensical menu structure and its lack of fully manual external controls, is the best APS-C mirrorless camera on the market and its image quality is the best of any APS-C camera on the market although it could actually be better if Sony gave us a lossless RAW format - the a6300 still uses Sony's much maligned lossy RAW compression algorithm. Handling wise it is still beat handily by the now relatively old Fuji X-T1 due to the X-T1's full array of manual controls.

**Phase One XF and IQ3 100MP:** Just three words: “Unsurpassed Image Quality.” This is the Bugatti Chiron of cameras. I had the opportunity to use the new Phase One XF camera body with the 100 megapixel IQ3 digital sensor back for 8 days in Australia shooting all day every day. Basically, if you think something like a Canon 5DSr or Sony a7R Mk II, or Nikon D810 produces medium format image quality like the manufacturer's of these cameras sometimes try to claim, think again – they aren't even in the same space-time continuum. The detail level as one ventures into the frame is mind blowing. A detail in the distance that is rendered as a fuzzy blob by any 135 format camera is rendered with detail, sharp edges and acuity. While doing aerial photography with an 80mm prime lens (50mm equivalent for standard full-

frame DSLRs) from 2500 feet above the ground, individual blades of grass are sharply rendered. Of course this level of performance comes at the price of a luxury car or a small house in many parts of the USA - a kit including the XF camera body, IQ3-100MP back and 35mm, 55mm, 80mm, 110mm, and 150mm (22mm, 35mm, 50mm, 70mm, 95mm equivalent) will set you back a cool \$72K + tax. But, if you have the means and the muscle to carry the incredibly heavy gear then unparalleled image quality can be yours.

The new XF camera body shares absolutely nothing with its predecessor, the Mamiya derived 645DF+, except the lens mount and the Phase One logo on the pentaprism. The new camera features an AF system that works well although it is still a single point which is disappointing (I never used the AF on the old body because it was basically worthless). It would have been nice to have an AF point on either side and above and below of the center AF point but the new AF point does have a small spot precision mode and a slightly wider area AF mode. With the 100mp back, I would recommend using the spot AF mode. Other innovations include a seismic sensor vibration reduction shutter mode (described above in the Feature

Request article), HDR tagging of files so that Capture One automatically knows which shots are part of an HDR sequence and a similar focus stacking mode where the camera can actually execute a focus stack for you in a semi automatic way and let Capture One know which files are part of the stack. The camera is designed in such a way that apps can be added to enable new capabilities and features in the future.

The Sony made IQ3-100 megapixel back renders a whopping 11608x8708 pixels with a native ISO of 50 and highly usable files all the way out to ISO 3200 with the sweet spot being in the ISO 50-400 range. The output is a full 16bit per pixel data word rendering a dynamic range approaching 15. The majority of the Schneider Kreuznach Leaf Shutter lenses for the Phase One system have been redesigned so that all of that sensor resolution can be utilized. These lenses are designated with a blue ring. When you combine this sensor with the new blue-ring lenses, the detail that is captured is mind boggling. As I stated above, I spent about 2 hours doing aerial photos in two different session from a helicopter and images taken from 2500 feet or a half mile above the ground render individual blades of grass on the ground with a high degree of detail. Similar images taken with the best 35mm sensors on the planet with the very best lenses money can buy render what can only be described as mushy detail in the grass.

The shooting experience with the new camera can be a bit quirky as there are still some issues that sometimes cause lock-ups or strange behavior. Some of these are actually user error but the complexity of the product and the ease of making a mistake, can result in the camera doing unexpected things at times. It is however a large improvement over the previous body and will only get better with firmware updates. I



Ord River Delta - Western Australia (Phase One XF, IQ3-100MP, 28mm)

had absolutely no issues with the sensor back at all the entire time but did have some camera lock-ups and a recurring issue where the camera would switch itself from manual exposure mode to Av mode on its own. For my style of shooting the biggest drawback is the size and weight of the system. The camera and back with a lens like the 40-80mm f/4 (24-48mm equivalent in 135 terms) is about the same weight as a professional DSLR with a 300 f/2.8 and it is nearly the same size. The lenses need to be large due to needing to cover the 645 class sensor which measures 53.7 x 40.4mm. The system is also a poor performer for astrophotography since the super wide lenses like the 28mm (17mm equivalent) or the 35mm (22mm equivalent) are only f/3.5 lenses. I had to go all the way up to ISO 6400 with the 35mm shot wide open at f/3.5 to keep star trails in check during a nighttime shoot which resulted in more noise than I am comfortable with. On the other hand a 35mm f/1.4 lens would have to be almost as large as a 200mm f/2 lens for a normal 135 format full frame system. Overall if you need or want the absolute best image quality money can buy for your landscape or non-supertele studio or daylight shooting this is the absolute ultimate!

**Nikon D500:** It is the best crop sensor camera Nikon has ever made but it is flawed in several ways. The camera has the most capable autofocus system I have ever used, has excellent image quality and introduces new features like automatic AF-fine tune (see later in this issue on how to use this) and Bluetooth connectivity. I did a spec review in the last newsletter: (<http://www.ejphoto.com/Quack%20PDF/Quack%20Spring%202016.pdf>). The photo experience with this camera is exceptional and it is a true pleasure to use despite another change in control layout from Nikon. Every AF mode is improved over other Nikon DX bodies and also over previous FX bodies. The D500 AF is identical to the flagship D5 body. Virtually everything I write in this D500 mini-review applies to the D5 except the battery issues that I discuss below. Initial AF acquisition is dramatically improved as is the ability for the camera to stay locked onto the subject. 3D tracking now works as advertised since the AF system is no longer sharing duty with the imaging processor due to a new Application Specific Integrated Circuit (ASIC) that controls AF functions. Group mode is also much better as are the individual focus point options. Another major improvement over previous DX bodies is the buffer. I am getting nearly 50 shots with a 95Mb/s SD card and the buffer hits the camera's consecutive exposure limit of 200 frames with fast XQD cards. Lifting the shutter button and repressing it allows the camera to go on and on at a very fast 10 frames per second (14 bit lossless compressed RAW files). I am a big fan of tilt screens so this is a welcome addition and it has some touch capability although this capability is limited and doesn't even allow you to select menu functions much less use it to tap to focus like good touchscreen implementations allow. It almost seems an afterthought to give marketing another bullet point. Noise performance is excellent, very similar to the D7200 (which has 20% more pixels!) and the sensor is largely ISO invariant meaning that if you underexpose the shot significantly, bringing the exposure up in post processing is nearly the same as if it were exposed correctly to begin with.



Miramar - Western Australia (Phase One XF, IQ3-100MP, 28mm)



Black-necked Stilt (D500, 150-600mm)

Unfortunately the D500 is having some teething problems with its power distribution system. Many EN-EL15 batteries that came before the D500, even if they are a Nikon original battery, are not working properly and third party batteries don't work at all. There are many theories but clearly the camera is having some sort of internal power demand issues that the older batteries cannot supply. Nikon is offering a replacement of older EN-EL15 (labeled Lilon-01) batteries if you own a D500 but this is really only a Band-Aid and does not solve the problem 100% of the time. Even with the proper battery, many are experiencing very short battery life and significant drain even with the camera

turned off. In my testing this appears to be due to the WiFi and Bluetooth staying enabled. To solve this simply Enable Airplane Mode. Additionally, some SD and XQD cards are identified randomly as being damaged when they are not - this may be related to the power demand issues. The much touted SnapBridge connectivity which utilizes a low power Bluetooth connection for your camera to communicate with your phone only works with Android phones. iOS support is promised for a later date but it is looking more and more like there may be a design flaw in the way the D500 handles communication protocols making it currently incompatible with Apple products. Furthermore, the WiFi connectivity does not work without the camera also being connected to the device via Bluetooth simultaneously. Other disappointments include a lowering of the fastest flash sync speed from 1/320 on previous bodies to 1/250 second and a body that is a bit larger and heavier than I would like to see. As I've stated before, I'd gladly pay an additional \$200 for more use of exotic materials that weigh less without sacrificing strength rather than magnesium. My recommendation on the D500 is to wait a while and let the power, memory card and communication issues get sorted. This camera seems like it was released well before it was ready making early adopters be paying beta testers.

### **Auto AF Fine Tune Procedure That Works on Nikon D5/D500 Cameras**

Much has been said about the convenience of the new Nikon auto AF Fine Tune function but its accuracy has also been called into question. I have spent two days fully characterizing the new function and coming up with a procedure that will give you accurate AF fine tune values. A big part of the problem is that there is as much as a plus or minus 5 point shot to shot variance in AF fine tune values due to the inherent inaccuracy of having the AF sensor in a completely different place than the sensor that the lens is supposed to be focusing the image on. In a DSLR that is being shot in its normal reflex mode, that is NOT in live view mode, a small percentage of the light that passes through the lens is transmitted through the mirror. This light is then bounced off of a secondary mirror to the autofocus sensor array, typically somewhere in the bottom of the camera. This is where the AF data is taken and a signal is then sent to the lens to adjust its focus point to where this AF sensor array thinks the optimal focus setting is. There are inherent inaccuracies in doing autofocus this way due to manufacturing tolerances in the light path to the AF sensor and the light path to the imaging sensor which are different. Live view does not have this inherent inaccuracy since AF is done on the sensor itself. So, when doing normal off sensor Phase Detection Auto

Focus, which is what the normal AF module is doing, these tolerances plus moving parts in the whole camera/lens system will have shot to shot differences.

The fundamental flaw of the new Automatic AF Fine tuning, as Nikon has implemented it, is that it takes a single shot to determine the AF Fine Tune value which could be as much as 10 points off due to the plus or minus 5 point shot to shot variance. When somebody that knows how to perform an accurate autofocus fine tune does a manual tuning procedure, they take several shots to obtain a median or average value based on the shots taken. We can do the same with auto AF Fine tune. Here is the procedure - it should only be performed with the camera mounted on sturdy tripod and the head locked down:

1. Set up a high contrast focus target. The downloadable and printable target for the FoCal AF software (which I don't currently recommend) is a great target for this purpose. Print it, or another target and tape it to a perfectly vertical surface such as a wall. Now perfectly align the camera both in height and tilt to the target so that the sensor is perfectly parallel to the camera's sensor. You can also utilize the LensAlign II target if you own this as it has a simple to use target alignment system. The camera should be about 25 times the focal length away from the target for general use or at the distance that you do your shooting at if you are in a controlled environment such as a studio.
2. Now put the camera in live view and focus the image with the focus target in the center. Now initiate the auto AF Fine Tune system by hitting the Focus selection button on the lower left of the lens mount (with you standing behind the camera) and the movie record button (small red button next to the shutter button) simultaneously and hold until the screen asks you to confirm that the camera is steady. Select yes and a value will be entered in the AF Fine Tune table. Now go to the AF Fine Tune menu item at the bottom of the first page of the Tools Menu (wrench icon), make sure that AF Fine Tune is set to On and then read out the value that was entered in the Saved Value item. Write this value down.
3. Repeat the same procedure as in number 2 above 9 more times for a total of 10 samples. Write all of them down.
4. Now cross out the lowest value (the most negative if a negative number) and the highest number (the least negative number if the highest number is also negative) to get rid of any weird outliers. Next, take an average of the remaining 8 values by adding them up and dividing by 8. Round this to the nearest whole number and enter this value in the Saved Value line item of the AF Fine Tune menu.
5. Repeat the above for every lens and every lens/teleconverter option. On zoom lenses, use a focal length at or near the longest focal length unless you do not use your lens at that focal length.

Here is an example of a 200-400 f/4G lens that I just fine tuned on a D500. I first manually did it and came up with a value of -2. The following AF Fine Tune values were obtained using the auto AF Fine Tune procedure 10 times:

-1, +3, -3, -2, -2, -3, -4, -1, -5, -1, -3

Throwing out the highest and lowest values (+3 and -5) and then averaging the rest gives a result of -2.37. Rounding that to the nearest integer, you get a value of -2 which is identical to the value I came up with.

I have repeated the above on many different lenses and in every case the procedure and my manual method was either identical or within one point of each other. One point difference is well inside the shot to shot error and is inconsequential.

## The Best Lenses For Your Nikon DSLR, Canon DSLR, and Sony (FE) Cameras

I keep the table below of the best lenses for the Canon EF, Nikon F and Sony FE mount systems up to date and include the latest version in every newsletter. There are of course other great lenses but these are the best of the best. A trend over the last couple of years, with the increasing ascension of Zeiss and the incredible Sigma Art line, is the slow disappearance of Canon and especially Nikon lenses from the best lenses available list. The OEM's still dominate in the telephoto arena but in the wide to standard arena, they are getting beat handily. A few additions and changes were made this quarter especially on the ever growing Sony FE front.

| Lens Category                    | Canon EF Mount   | Nikon F Mount  | Sony (F)E Mount                                  |
|----------------------------------|--|--|--|
| Ultra Wide Prime                 | Zeiss 15mm f/2.8 ZE<br>Canon TS-E 17mm f/4                             | Zeiss 15mm f/2.8 ZF.2  | Zeiss Batis 18mm f/2.8<br>Voigtlander 15mm f/4.5 |
| Extra Wide Prime                 | Zeiss Milvus 21mm f/2.8<br>Sigma 20mm f/1.4                            | Zeiss Milvus 21mm f/2.8<br>Sigma 20mm f/1.4                            | Zeiss Loxia 21mm f/2.8                           |
| Standard Wide Prime              | Zeiss Otus 28mm f/1.4<br>Zeiss Milvus 25mm f/2<br>Sigma 24mm f/1.4 Art | Zeiss Otus 28mm f/1.4<br>Zeiss Milvus 25mm f/2<br>Sigma 24mm f/1.4 Art | Zeiss Batis 2/25<br>Sony 28mm f/2                |
| Moderate Wide Prime              | Sigma 35mm f/1.4<br>Canon 35mm f/1.4L II                               | Sigma 35mm f/1.4<br>Zeiss Milvus 35mm f/2                              | Sony-Zeiss 35mm f/1.4<br>Zeiss Loxia 2/35        |
| Standard Prime                   | Zeiss 55mm f/1.4 Otus<br>Sigma 50mm f/1.4 DG Art                       | Zeiss 55mm f/1.4 Otus<br>Sigma 50mm f/1.4 DG Art                       | Sony-Zeiss 55mm f/1.8<br>Zeiss Loxia 2/50        |
| Portrait Prime (short telephoto) | Zeiss 85mm f/1.4 Otus<br>Canon 85mm f/1.2L II                          | Zeiss 85mm f/1.4 Otus<br>Nikon 85mm f/1.8G                             | Sony 85mm f/1.4<br>Zeiss Batis 1.8/85            |
| Medium Telephoto Prime           | Zeiss 135mm f/2 Apo Sonnar ZE<br>Canon 135mm f/2L                      | Zeiss 135mm f/2 Apo Sonnar ZF.2<br>Sigma 150mm f/2.8 Macro OS          | N/A  |
| 200mm Prime                      | Canon 200mm f/2L<br>Canon 200mm f/2.8L II                              | Nikon 200mm f/2G<br>Nikon Micro Nikkor 200mm f/4ED                     | N/A  |
| 300mm Prime                      | Canon 300mm f/2.8L IS II   | Nikon 300mm f/2.8G VR<br>Nikon 300mm f/4 PF                            | N/A  |
| 400mm Prime                      | Canon 400mm f/2.8L IS II<br>Canon 400mm f/4 DO II                      | Nikon 400mm f/2.8E VR  | N/A  |
| 500mm Prime                      | Canon 500mm f/4L IS II   | Nikon 500mm f/4E VR  | N/A  |
| 600mm Prime                      | Canon 600mm f/4L IS II   | Nikon 600mm f/4E VR  | N/A  |
| 800mm Prime                      | Canon 800mm f/5.6L IS<br>Sigma 800mm f/5.6APO DG                       | Nikon 800mm f/5.6E VR<br>Sigma 800mm f/5.6APO DG                       | N/A  |
| Wide Angle Zoom                  | Canon 11-24mm f/4L<br>Canon 16-35mm f/4L IS                            | Nikon 14-24mm f/2.8G<br>Tamron 15-30mm f/2.8 Di VC                     | Sony-Zeiss 16-35 f/4                             |
| Standard Zoom                    | Canon 24-70mm f/2.8L II<br>Tamron 24-70mm f/2.8 Di VC                  | Tamron 24-70mm f/2.8 Di VC<br>Nikon 24-70mm f/2.8E VR                  | Sony 24-70 f/2.8 GM                              |
| Telephoto Zoom                   | Canon 70-200mm f/2.8L IS II<br>Canon 70-200mm f/4L IS                  | Nikon 70-200mm f/4G VR<br>Nikon 70-200mm f/2.8L VR II                  | Sony 70-200 f/4 G<br>Sony 70-300 f/4.5-5.6G      |
| Super Telephoto Zoom             | Canon 200-400mm f/4L 1.4x Ext<br>Canon 100-400 f/4.5-5.6 II            | Sigma 150-600 f/4.5-6.3 Sport<br>Nikon 200-500 f/5.6 VR                |  |
| Macro                            | Sigma 150mm f/2.8 Macro OS   | Nikon Micro Nikkor 200mm f/4   | Sony 90mm f/2.8 Macro                            |

### Facebook Page

Please visit my Facebook page and click the Like button for multiple updates and my latest photos every week:

<http://www.facebook.com/pages/EJ-Peiker-Nature-Photographer/150804446733>

## Newsletter Info

This is the 15th year of my quarterly Newsletter. I try to cover the wide array of digital imaging and products from mirrorless to medium format and everything in between. Throughout the years, the information contained herein has always been free and will continue to be free despite the many hours it takes to put it together and significant equipment and travel expenses. Most of the products I have tested and reviewed, I have purchased myself; some have been made available to me for review and evaluation by loyal readers and



Playa del Silencio (a7R Mk II, 50mm)

a few have also been made available to me by the manufacturers themselves. While the newsletter is free either via eMail subscription or via accessing it on my website at <http://www.ejphoto.com/newsletter.htm>, if you find the information useful to you and you do wish to donate for my continuing efforts, you may do so via PayPal and sending the funds to [ejpeiker@cox.net](mailto:ejpeiker@cox.net).

## Disclaimers

E.J. Peiker conducts consulting services and product design services for a number of photographic product companies. Those that know me know I would not endorse a product even for compensation if I did not feel it were a superior product.

E.J. Peiker is a member of Nikon **Professional Services** and receives some services free of charge from Nikon USA [www.nikonpro.com](http://www.nikonpro.com)

E.J. Peiker is a **Sony Digital Imaging Pro** and receives some services at a reduced cost and free of charge from Sony USA <https://esupport.sony.com/info/1523/US/EN>

E.J. Peiker is a **Wimberley Professional Services** featured photographer and receives non-monetary compensation from Wimberley. Visit Wimberley at [www.tripodhead.com](http://www.tripodhead.com)

E.J. Peiker is sponsored by **Hunt's Photo and Video** - New England's largest photography retailer. Visit them at [www.huntsphotoandvideo.com/](http://www.huntsphotoandvideo.com/)

E.J. Peiker is a co-founder of [www.Naturescapes.net](http://www.Naturescapes.net) and leads photographic workshops under the **NatureScapes** Certified Workshops banner

**Legal Notice:** Written and Photographic Content ©2016 E.J. Peiker, Nature Photographer. The text and photographs contained herein may not be copied or reproduced without written consent. This newsletter may be forwarded without restriction unaltered and in its entirety only.





Early Morning Photographers in The Kimberley, Australia (Phase One XF, 40-80, multi-frame pano)