Sony a7R III - An Unbiased Review

by

E.J. Peiker

Many photographers including me read and watch a lot of reviews on exciting new camera gear. The problem is that they often just give you a regurgitation of what the manufacturer says or hype the good without giving you the unvarnished truth for fear of upsetting the manufacturer and thereby jeopardizing their access to new models in the future. When Sony introduced the new a7R III camera, they flew many YouTube reviewers and internet bloggers to the beautiful resort city of Sedona, Arizona for several days of shooting with the a7R III. It was an all expenses paid trip at a nice resort and they set-up a number of costly excursions including helicopter trips, balloon rides, staged mountain biking shoots, model shoots, old cars and more. It is no surprise that the reviews produced by the invitees were almost universally gushing with superlatives while glossing over or completely ignoring things that aren't as good as they should be on a $3200 camera body. Watching and reading some of these reviews would have you think that the a7R III is the most flawless and the absolute greatest product ever introduced on the face of the earth. You know that this is not how I approach gear reviews! Even on truly great products, I look for and try to expose flaws, weaknesses and just plain stupid decisions that manufacturers make in order to give you a true feeling of not only the greatness but also the shortcomings of photographic equipment. If I ever write a gushing review with no negatives, you can be sure that I truly feel that a product is fantastic. I do not cover, in any depth, the video features of a camera as I leave that to others that are much more knowledgeable in the world of videography and since I basically do not use cameras like this for video shooting. The reviews are based almost purely on the needs of a wildlife, landscape, or travel photographer working in outdoor environments and don't delve into suitability for studio, portrait, or wedding photography. With that out of the way, let's be clear upfront; the Sony a7R III is the best all around mirrorless camera made for the outdoor photographer. But it has a number of significant flaws, as do all cameras.

Basic Features

- A 42.4 megapixel Back-side Illuminated Sensor that is essentially unchanged from the a7R II
- 10 frame per second maximum frame rate, 8 FPS with viewfinder update and continuous AF
- 1/8000 minimum shutter speed with 23ms shutter lag
- ISO range of 50-102400. Base ISO is 100

- 399 phase detect autofocus points covering 60% of the frame and 425 contrast detect autofocus points covering the entire frame.
- 3.69 million dot OLED viewfinder at 0.78x magnification
- 1.44 million dot LCD
- 4K video at 30FPS, 1080P at 120 FPS
- Dual SD card slots
- WiFi, Bluetooth and NFC
- USB 2 and USB 3.1(C)
- $3200 USD

On paper and physically, the a7R III doesn't look too different from the a7R II since it has the same megapixel count and same general appearance but the camera is quite different internally since it doubles the frame rate, significantly improves autofocus performance, supports a larger battery and adds a number of new or improved features that will be discussed below.

Sony a7R III, Voigtlander 12mm Heliar III

New Features

- New larger and higher capacity battery
- Fully electronic shutter option for zero internal movement before, during, and after exposure
- Claimed 15 stop dynamic range
- 14 bit uncompressed RAW capability in all shooting modes
- Lower vibration and better damped shutter mechanism
- Multi-shot pixel shift mode to eliminate Bayer demosaicing
- AF point selection thumbstick (joystick)
- AF point auto-orientation
- Significantly improved AF system and more responsive eye focus

- Separate programmable AF and AEL buttons resulting in an additional programmable button
- Meter adjustment/calibration capability
- New Screen Average and Highlight metering modes
- More effective in body image stabilization (IBIS) - claimed 5.5 stops
- Dramatically larger image buffer
- All menu options now assignable to function buttons (not just shooting options)
- More organized menu structure and a user programmable My Menu area
- A touchscreen with touch focus point selection
- USB 3.1(C) connector for high speed transfer in addition to the USB 2 micro-USB connector
- One UHS-II high speed SD card slot and one UHS-1 standard speed card slot

There are plenty of new things that distinguish this camera from its predecessor that definitely bring this camera much more into the realm of a full featured versatile and professional grade camera. In use, the camera body itself feels very familiar and similar to the a7R II although there are some necessary changes to accommodate the new features. The customizability of the camera through the menus has been increased substantially so it behooves anyone that purchases this camera to spend a significant amount of time setting it up. The manual that comes with the camera is not much help in this regard but the online and downloadable Sony a7r III Help Guide is a detailed, several hundred page long, manual that should really be studied with camera in hand to make sure that you understand what all of the menu options are and so that you set-up the camera in a way that works best for your shooting style and type of photography. I will share the settings that I have settled on later in this review.

Sony a7R III, Sony 24-70mm GM

Pros

- The a7R III retains the truly excellent 42 megapixel back-side illuminated (BSI) photo sensor and has actually been able to eke out a bit better dynamic range and lower noise than its predecessor due to better electronics throughout the rest of the imaging pipeline while doubling the frame rate to 10 frames per second.
- A truly silent fully electronic shutter is now available which works very well as long as the subject isn't moving significantly. The way a fully electronic shutter works in today's state of camera technology is that the scene is scanned one line at a time. Even if you are shooting at 1/8000 sec, the scan still takes about 1/15s. Each line of pixels is receiving a 1/8000 second exposure but it takes about 1/15 second to complete scanning all lines. If there is significant movement in that 1/15s, it could cause some distortion. A common way this shows up is when something vertical is moving quickly through the frame. Due to the scan time the vertical item now becomes slanted. In most real world situations, even landscapes with some wind, this isn't a problem since the proximity of the top of a blade of grass and the bottom are usually pretty close to each other so the scan time of that blade of grass is short enough where this distortion won't be visible. In situations where there is a risk of scan time distortion, it is best just to use the electronic first curtain shutter which uses actual shutter blades to complete the exposure thereby eliminating this risk. For most nature photographers I recommend electronic first curtain and only go to fully electronic shutter in really noise sensitive scenarios or situations where even the slightest shutter vibration can become a problem.
- While on the subject of shutter vibration, the new heavily damped shutter is noticeably more gentle. The old "clunk" sound of the a7 series shutters is gone - it is much quieter and you can't feel the shutter vibration transmitted through the camera anymore.
- A major complaint on earlier models was that Sony marketed the cameras as 14 bit per pixel capture cameras but this was only true when shooting in single exposure mode and in 14 bit uncompressed mode available with a firmware upgrade. If bracketing, continuous shooting, or compressed RAW was used the camera would drop back to 12 bit or even a pseudo 11 bit per pixel capture mode. On the a7R III all shooting modes are now 14 bit per pixel, however, if compressed RAW is used one will still only get about 11 bits of color depth in certain shooting situations. This is due to the Sony compressed RAW algorithm which is covered as a Con below. Another problem with Sony's RAW implementation will be covered in the cons.
- Autofocus has been improved substantially both in performance and usability. Low light AF acquisition is much more responsive and is now on par with all but the most sophisticated high end DSLR autofocus systems. Eye-autofocus works better than before but still does not work on non-human eyes. Getting eye-AF to recognize the eyes of wildlife and especially birds should be a priority for Sony to address for wildlife shooters. To get the best eye-AF performance, it is necessary to turn off Face Detect AF. With Face Detect AF on, the camera is way too eager to drop out of eye-AF and revert to Face Detect AF thereby not insuring that the eyes are critically sharp. Regular AF modes are very good for wildlife, even wildlife moving in random unpredictable paths such as a bird on choppy water. In this situation setting the camera for continuous autofocus and Expand Flexible Spot is highly effective. In earlier cameras like the a6300 a different AF mode called Lock-on AF:Flexible Spot S worked better but on the a7R III AF accuracy with Expand Flexible Spot mode is superb and can even handle many bird in flight situations, something that was nearly impossible in earlier a7 models. It isn't nearly up to the level of a D5 or D500 for birds in flight but it is certainly very useable on predictable flyers in Group AF mode or in Expanded Flexible Spot mode. I would put the Birds In Flight AF capability about on par with a D7200 or EOS 5D Mk III - very useable but not world class. For non-moving subjects photographed in AF-S or single shot AF mode, the a7R III gains the ability to autofocus while in magnified view for a more precise AF spot placement. It is no longer necessary to first hit a button to enable the capability to move AF points since the camera gains

a traditional style joystick for AF point placement. A click in the center of the joystick quickly returns the AF point to the center of the frame. If the AF point in horizontal orientation has been placed in one location and then you go to vertical orientation you can move the AF point to another location and the camera remembers location of the AF point in both orientations and moves to the correct AF point when you re-orient the camera from vertical to horizontal and vice versa. This is enabled by selecting the very cryptic Swt. V/H AF Area setting in the menu. Many DSLRs have had this for some time, now we have it in the mirrorless world as well.
- Wildlife and bird shooters are always interested in buffer depths or the number of images that can be taken at the fastest frame rate before the camera slows down. I have tested this for the a7R III in its fastest burst rate modes using the fast UHS-II slot with a 150Mb/s SD UHS-II card:

Full Frame 14 bit uncompressed RAW - 35 frames or 4.4 seconds
Full Frame 14 bit compressed RAW - 81 frames or 8.1 seconds
APS-C 14 bit uncompressed RAW - 91 frames or 11.4 seconds
APS-C 14 bit compressed RAW - 195 frames or 19.5 seconds

Slowing down the maximum frame rate or pausing for a brief moment can dramatically increase these numbers. Note that shooting uncompressed RAW slows the maximum frame rate to 8 frames per second. JPEG buffer in all modes is essentially unlimited.
- Another complaint I had about the earlier a7 and a7 II models was that the programmable custom buttons and on screen Functions (Fn) menu could only be programmed with shooting related options so things like formatting a memory card or changing the time zone were still deep menu dives that took time and detracted from the shooting experience. Furthermore, some functions were assignable to some buttons but not others. I was very happy to find that all camera menu options and functions are now assignable to every button. With the addition of separate AEL and AF buttons, we now have an additional programmable button. As a Manual exposure mode shooter, this gives me the AEL button as another Custom Button that I can assign another function to.
- To piggyback on the programmability of the custom buttons and the function menu, Sony has added a My Menu section which allows the user to put any menu item on custom pages. This results in quicker access to functions that are used often but not often enough to warrant giving up a Custom Button which saves lots of time due to not needing to menu dive.
- One capability in Nikon cameras that I have always loved is the ability to calibrate meters. This allows different cameras to have precisely the same exposure reading. Until now, no other 135 format camera manufacturer has given us that capability. The Sony a7R III now allows the user to adjust the meter calibration up to plus or minus one stop in 1/6 stop increments. If you have different cameras that read a bit different, which is common, you can now match them up. I would only attempt to do this with a gray card to adjust the meter response to place the histogram spike created by the gray card dead center. If you are matching to another camera that does not have this capability, first photograph the gray card with that camera in manual mode at a middle aperture with a zero reading on the camera meter. Look at the histogram and see where the spike is, it should be very close to the center. Now do the same with the a7R III using the identical exposure time and aperture and look at its histogram spike. If it is materially different you can then use the a7R III's meter adjustment facility, called Exposure Std. Adjustment to adjust the meter's response in 1/6 stop increments so that you can match histograms. The a7R III allows a separate meter calibration for every metering mode including Multi (matrix), Center weight, Spot, Screen Average, and Highlight Priority.
- The new Highlight Metering mode, something also first introduced by Nikon (on the D810), is very useful when shooting things that are lit but with a dark backdrop. Concerts at night or indoors are a great example of this. In this metering mode the overall exposure is not nearly as heavily influenced by all of the very dark parts of the frame which can cause the performers that

are bathed in spotlights to be overexposed. By de-emphasizing the dark parts of the frame during the metering process, it is much more likely to get a good exposure of the performer.
- One of the biggest annoyances of the previous a7 bodies was that the cameras were essentially inaccessible while photos were being written to the memory card. You couldn't even access the menus and any button you pushed would throw up an error message that the function was not available. That has been fixed! You can now go into the menus and make some changes or select some features to prepare for the next shot while photos are being written to the SD cards.
- An item that I had not previously seen written about or mentioned in any review is the multiple automatic white balance options. All of the standard white balance preselects as well as custom white balance capabilities are still there but for those that prefer auto white balance (AWB) there are two additional options beyond the traditional AWB. One is an AWB mode that tries to match the light source, the other is an AWB mode that tries to preserve white areas of the frame. As an example, if you are shooting in traditional AWB under incandescent lighting, the AWB would not truly recreate the warm tones but it wouldn't eliminate them either. Usually it took the white balance to around 4000 Kelvin when it should be 5500 or so. Alternately if you were shooting under this same incandescent light but wanted a white piece of paper to be white the AWB would still adjust the white balance to 4000 when it should be 2800 or so to reproduce an actual white color. You can change to these modes in the menu by going to the Priority Set in AWB menu item and selecting either AWB Ambi or AWB White. Sony continues to have the easiest and most intuitive method to set a custom white balance in any camera I have used. Simply put it in Custom white balance mode, point the camera at a gray card or whatever your source for white balance is and hit the center button. The camera asks you which custom white balance memory setting you want to use for it (you can save up to three) and you are done. It takes just seconds to do.
- In previous a7 bodies I found the color temperature of the image in the EVF too cool or blue even when set to its warmest value of -2. The a7R III's finder colors appear much more accurate but still need a -2 setting to resemble reality even when white balance is set perfectly via a custom white balance but it still doesn't go far enough especially in the warm light of early morning or evening.
- A usability annoyance on the older a7 series bodies was that the automatic transition from the rear LCD to the EVF was overly sensitive. The brim of your hat or just getting your hand close to the eye sensor would blank out the rear LCD and place that info in the EVF. Sony has addressed this by now disabling the EVF anytime the rear tiltable LCD is pulled out even slightly. This is a very workable solution to the problem - anytime you are working with just the LCD, just slightly pull out the rear screen and the EVF is completely disabled.
- The new larger battery utilized in the a7R III is a big improvement over past generations. The way I shoot, the old battery in the a7R II gave me somewhere between 250 and 300 shots unless I was shooting long continuous bursts or time-lapse sequences where you don't have a long LCD and viewfinder run-time per battery charge. In those situations I could get around 1500 shots. The a7R III is getting about 650 shots when used as a landscape camera with image review being done occasionally. In a straight burst shooting situation one can get over 2000 shots. While this is a big improvement, don't be fooled by all of the bloggers and YouTubers that will tell you that the battery never dies on this camera and that you can easily get 2000 shots or more. That is only true in continuous shooting and action photography. A landscaper will never get that kind of battery life. The real secret is the amount of LCD and Electronic Viewfinder time per shot. In continuous action shooting, there isn't much screen time per photo so the battery lasts for many frames. In landscape shooting where you have a lot of screen time per shot due to taking single carefully considered shots, the battery life is nowhere near as long. I recommend carrying a fully charged spare for a day of shooting.

- A new pixel shift mode was added which shifts the sensor by one pixel three times after the initial shot is taken so that two green, one red, and one blue pixel are recorded at each pixel site thus negating the need for Bayer interpolation and providing the potential for a higher resolution final image. Sony's implementation of this feature has as many cons as it has pros. A separate section on Pixel Shift is provided later in this review.

Sony a7R III, Sony 100-400mm GM

Cons

- While the menus have been improved from earlier versions by at least grouping similar functions, the vast array of options found on 36 menu pages, some nested with more pages underneath each primary page, are daunting; especially for those entering the Sony ecosystem for the first time with the a7R III. Add some arcane naming conventions, and this is a very complex camera and a menu structure that is virtually impossible to commit to memory. As an example, who can figure out what Swt. V/H AF Area means without hurting some brain cells? I, once again, like many former tech industry employees turned professional photographers, renew my offer to any and all camera manufacturers to sit down with them and come up with a menu system that actually works in the field for photographers. As I said, it is improved from previous a7 cameras but it's still a salad of often incomprehensible options. For any level of detail, since the small and brief included manual often gives you little help, one must download the Sony a7R III Help Guide although I can't for the life of me figure out why after 400 pages or so there are another 250 pages that are duplicates of earlier pages - does anybody actually edit these manuals?
- Continuing on with menu issues, an area that has not been improved in the whole Menu experience is that the camera still offers very little help in explaining why certain menu options aren't available. Sometimes menu options are grayed out and it is really difficult to figure out why. In that situation I usually change to a different exposure mode and often those items will

come to life. In other cases, a menu item is available but when you go to select it you get a screen that tells you that this function is not available with your current settings. Sometimes it gives you a cryptic reason as to why, other times not. Once you think about any errors a bit, it usually makes sense why an item wouldn't be available (for example Bulb mode is not available when the camera is set for Continuous shooting) but the camera doesn't tell you why it's not available.
- Sony has now had many years of digital mirorrless cameras on the market and they still do not offer a compressed lossless RAW file option. Every other camera manufacturer on Earth does! We are still stuck with a lossy compression algorithm or a totally uncompressed option that results in file sizes that are almost as big as my 16 bit 101 megapixel medium format file sizes which are losslessly compressed. Since this has been an ongoing and major complaint to Sony pretty much from the day the first Sony a7 shipped, one would think by now they would have developed this capability.
- As mentioned in the Pros section, the a7R III allows 14 bit RAW in all modes; however, the maximum frame rate slows from 10 to 8 frames per second if uncompressed RAW is selected.
- Like the other Sony mirrorless options including all a7 and a6xxx models, the a7R III features a prominent exposure compensation dial which I find a waste of real estate. I am a manual exposure shooter making that dial useless since it cannot be programmed to be utilized with other functions. Even for automatic shooters, since you have both an aperture dial and a shutter speed dial, the control is not necessary since exposure compensation can be tasked to either of those dials for automatic shooting. I feel that either Sony should lose the large exposure compensation dial freeing up space on the camera or it should be a user programmable dial.
- Other cameras that offer a fully electronic shutter option allow shutter speeds as fast as 1/32000 sec in that mode. The a7R III has the same 1/8000 sec limit in electronic shutter mode as it has in focal plane shutter mode. This has little impact on most photographers but it does seem like a feature omission.
- An item that has not been fully addressed in the a7R III is what has been dubbed the "Sony Star Eater Phenomenon". Sony cameras, even in uncompressed RAW mode kick into a noise reduction algorithm that cannot be turned off which can eliminate stars that are fully contained in a single pixel. While this has little impact on Milky Way or many other astro-photography shots, if you are doing documentary or scientific astro photography, it could be a problem as stars simply disappear. On the a7R II there is a workaround - if you put the camera into a continuous shooting mode, the spatial filtering that causes this is turned off, presumably to reduce the workload on the image processor but the downside is that the camera drops back to 12 bit lossy compression. The a7R III has a much faster image processor and does not disable this spatial filtering.
- While one of the two card slots is now the speedy UHS-II standard, the second slot is not. So if you are the type of shooter that makes in camera backups by shooting all of your images to two cards simultaneously, your write speed to the card, and therefore your buffer performance will be dictated by the card in the slower slot. If you do feel more comfortable shooting to both cards simultaneously, my recommendation is to shoot RAW into card one and set the camera up to put JPEGs on card 2. This way you won't be slowing down the camera and still have a full resolution JPEG available to you in case disaster strikes the card that you are shooting the RAW files to. Just set JPEG Quality to Extra Fine, L:42M. I feel that making one slot slower than the other was a poor design choice by Sony that perhaps saved a few dollars but in a $3200 product, this choice should not have been made.
- In the Pros section on the AF system, I touched on a difference in how Lock-on AF: Flexible Spot works on the a7R III for moving subjects compared to previous action oriented Sony cameras. On the a6300, for example, you could lock onto the head of a moving bird and then the camera would track that accurately regardless of where in the frame it went for subsequent

shots. The a7R III seems to track that spot too just like the a6300 but something is clearly different . On my first outing photographing ducks, I could not figure out why only the first shot of any rapid fire sequence was perfectly sharp. As a duck's position slightly receded or proceeded towards me during the burst, despite fast shutter speeds, the first shot was always in perfect focus but subsequent shots were often either slightly front or back focused as if the tracking algorithm wasn't quite keeping up with minor changes in the desired focus plane. Once I changed to continuous AF with Expand Flexible spot mode, all shots were sharp and the camera basically never misses as long as the photographer is good at maintaining the AF area on the subject. This is not quite as convenient as the a6300 where you could simply put the AF on the head and as long as you kept the AF button depressed you were assured that the AF system would continue to track the initial focus regardless of where in the frame that spot moved to. I have seen some sports shooters make similar observations about very minor focus accuracy issues in Lock-on AF: Flexible Spot mode. It is also important to note that if you use the High + frame rate setting of 10 frames per second, continuous AF tracking is severely compromised. It is necessary to move the frame rate to High or 8 frames per second or slower for good continuous AF performance.

- I wrote in my Sony a7R II Field Review that the exposure warning aids are way too conservative. This is still the case in the a7R III. They are clearly designed to prevent JPEG overexposure and as a result cause a RAW shooter to inadvertently underexpose by 1/2 to 2/3 of a stop. The blinkies turn on when there is still 2/3 of a stop of highlight headroom in the RAW file. Similarly, zebras, even when set to 100+ still leave some headroom where this should actually blow out highlights. But you can program the zebras to clip at a specific point - I have found that 107 corresponds to the clipping point of the RAW and allows you to get a nicely exposed RAW file that follows the Expose To The Right (ETTR) philosophy of maximizing dynamic range and image information in the RAW file.
- Under the category of Sony giveth and Sony taketh away falls the Bright Monitoring option. This function, which can be assigned to a custom key will dramatically brighten the viewfinder image. It is really useful in night photography, especially astro photography, for composing the photograph since it allows you to see when otherwise everything would be very dark or even black in the viewfinder. Unfortunately the only thing this function is good for is for composing a picture since it does not work when you try to focus the lens either manually or with AF. The desirable way a bright monitoring option should work would be to allow the photographer to focus in the dark. But, as soon as you touch the focus ring in Bright Monitoring Mode, the viewfinder dims back down to the brightness level (or lack thereof) that was present prior to hitting the bright monitoring button.
- The a7R III is not compatible with the add-on apps found in the Sony PlayMemory store. There were a number of modules and capabilities one could add to earlier a7 versions. While many of them were not serious and clearly targeted at a consumer point and shoot market, some were really useful. One of the most useful apps was the time lapse app. The a7R III does not have a built in intervalometer making time-lapse sequences more difficult. Most reviewers have written that this means one must get an intervalometer cable release in order to shoot time lapse sequences. This is however not true. Time-lapse sequences can still be shot on the a7R III with no add-on accessories but the parameters cannot be modified as much as one could with a true intervalometer or a time-lapse menu option. The a7R II has a mode dial labeled S&Q which stands for short and quick. It allows fast access to slow motion and fast motion video features. If you go into S&Q mode and select the slowest video frame rate which is 1 frame per second and set the playback frame rate to 60p in the separate S&Q Settings menu option you will record a video that compresses one minute into one second. If you want to slow this down, as if you were taking one shot every 2 seconds, you can change the playback speed to 30 frames per second in post processing. If you would like to playback the time-lapse sequence as if you had taken one shot ever 2.4 seconds you can change the playback rate to

24 frames per second. It doesn't give you the versatility of doing time-lapse sequences where you would like greater than 2.4 seconds per frame but it also doesn't require an extra intervalometer. Some high end video programs could be set to drop every other frame or drop several frames between rendered frames to get other time-lapse sequence effects. In the end, while not ideal, the a7R III has not completely lost its ability to do time-lapse sequences.
- One marketing item that Sony has been touting is that the a7R III has the largest appearing viewfinder in a mirrorless camera so far. It is larger but, like the large viewfinder in the recently reviewed Nikon D850, they have not increased the eye point which means that eyeglass wearers cannot see the entire frame without shifting around a bit.
- As stated earlier, the camera now has a touchscreen but it is not very useful. About the only thing that can be done with it is to select the focus point. In still photography it won't even focus to that point directly, you still have to hit the AF On button first and then after that you touch the screen where you want to focus (or press the shutter button halfway in lieu of the AF On button if you are using the shutter button to activate AF). In movie mode it's more useful allowing you to follow focus with your finger on the rear LCD but for still photography, the touch screen doesn't add a lot of value. You can't use it to select menu options, you can't even swipe the screen to review images. I find the touch screen implementation on the a7R III to be a complete failure for still photographers.
- Battery charger designs by some manufacturers, including Sony, can be baffling. A charger whose full charged status is "all lights off" falls into the category of just plain stupid. If you insert a fully charged battery into such a charger, you don't know if the charger has failed or if the battery is fully charged. Or worse, you don't know if the electrical outlet you are using is actually working. The supplied battery charger takes about 2 hours to fully charge an empty battery. Charging the battery in camera via a USB cable is much slower, taking about 4 hours from empty to full even with a high power 2.4A charger. The stand-alone charger is only 1.6A yet it takes half the time. This means the power applied to the battery through the camera has been dramatically attenuated.
- I quickly discovered what I would consider a firmware bug that leads to a usability inconvenience in the user interface. If I last used an item on MyMenu and then took a photo and viewed the image on the rear screen via the playback button and then hit the Menu button again, the menu comes up on the Playback 1 page rather than the My Menu page that was last used. This makes no sense at all since the Playback Page is simply to configure how the rear screen and EVF operates after a shot is. These are not items that you change regularly and certainly not something you change after reviewing every shot. The menu should always go back to the last menu page used no matter what. This is very annoying since it forces you to click through 10 pages to get back to the MyMenu page you were on before the shot. The only way to avoid this is to not review your photos with the play button.
- Another item that falls under the heading of "just plain stupid" is the exposure meter scale in manual exposure mode. In auto-exposure mode, the camera has the capability of allowing exposure compensation up to plus or minus 5 stops. As such the meter scale in the viewfinder goes to +5 and -5. However, when shooting in manual exposure mode, the scale still goes from +5 to -5 but the actual readings only go from +2 to -2. If you go beyond that, the meter does not go to +/-3 or +/-4, it just goes off scale beyond 2. The older a7 bodies did this too and were called out for this incredibly dumb logic. It was not addressed in this camera.
- With a camera that literally has over 100,000 possible set-up combinations, it is unconscionable that no facility to write all of your camera settings to a file is provided. While it is possible to write the M1, M2 and M3 shooting settings to an SD card and recall those later, full camera set-up cannot be written to a card. If the camera needs service or is reset for any reason, it could take hours rather than seconds to get the camera back to the exact set-up before the event that caused the reset. Most non-Sony cameras have had the capability to write the entire camera set-up to a file that can later be read back in for over a decade.

- No calibration for the in-camera level is available. My a7R II was always off by 0.5 degrees. While my a7R III seems to not have this problem, it would be nice to be able to calibrate the level.
- The WiFi communications seem buggy. Despite trying several times and even watching several step-by-step tutorials, I was unable to get the a7R III to communicate with my iPhone 8 using iOS 11. Then I tried my iPad on iOS 10 and it connected easily. After that initial iPad connection, the phone then also connected. Clearly there are some bugs in the WiFi communication protocols in the camera. Once I did get it connected I could trigger the camera and make basic exposure changes with my iPhone or iPad. With an Android device, one can simply use NFC to complete the communication handshake between camera and phone.

Missing Items

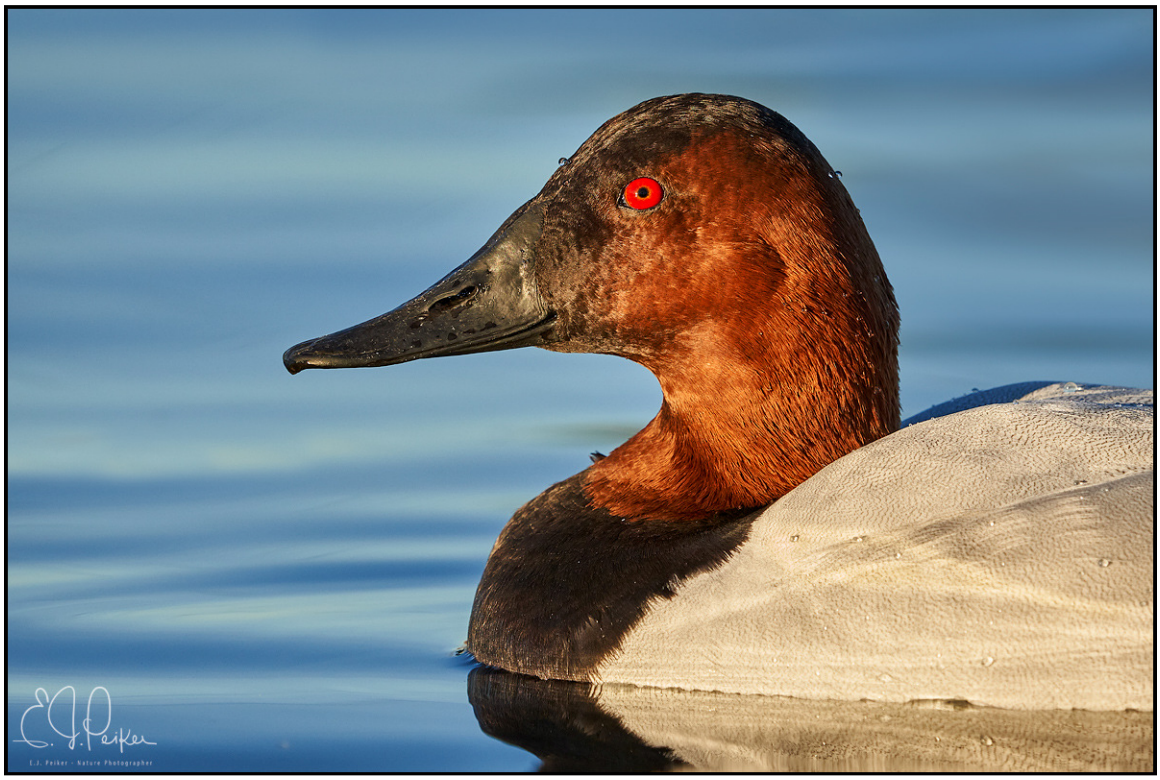
While the a 7R III has come a long way and is an incredibly capable, if highly complex camera worthy of professional status, there are still a number of functions that some manufacturers offer that would be useful additions:
- An intelligent auto focus stacking function where the photographer selects the farthest point, the nearest point, the aperture and the camera then shoots a sequence of shots properly spaced for focus to insure a final focus stacked image that is sharp throughout. Several manufacturers including the main market competitor for this camera, the Nikon D850, have this capability.
- A vibration delay shutter mode where the camera's motion sensor is used to determine when everything is still and then trips the shutter.
- It makes no sense why most (but not all) camera manufacturers limit their exposure times selection to 30 seconds. Any longer exposure requires bulb mode and an external timing device. What's the point of this limit? Why not let us select shutter speeds up to an hour? Perhaps they just want to sell more locking cable releases.
- A fully functional touchscreen that allows you to make menu selections and conduct image review with swipes and gestures.
- A fully articulating rear LCD.
- Built in GPS

Pixel Shift Mode

The a7R III adds a new multi shot pixel shift capability. In this mode when you push the shutter button, 4 exposures are made. Between each exposure, the camera uses the image stabilization mechanism, or IBIS, to shift the sensor by one pixel in a square fashion. This means that for every pixel location in the resultant image, the camera has recorded 2 green values, one red value and one blue value. The need for Bayer interpolation is eliminated and a true color value for every pixel is now possible when the information for all four captures are combined into a single pixel value. Software is then required, via a free download from Sony, to put these 4 captures together into a single image whose result is a very high color fidelity 42 megapixel image, not a 168 megapixel image as Sony implies. It is absolutely true that, if executed perfectly, this is a higher accuracy image and will not suffer from moiré pattern interference and it can deliver a significantly more detailed image. Sony's implementation of this feature leaves a lot to be desired. There are other camera manufacturers that are able to combine the 4 pixel shifted photos into a single file in camera on the fly. The a7R III requires external software processing on your computer to do this. The time it takes to capture the 4 images makes it only useful in situations where you are shooting a still life or a scene where absolutely nothing is moving. It is best suited for product photographs taken in a completely controlled environment on a very sturdy tripod and head that absolutely positively does not

move in any way. Even taking photos on a floor that is not directly on a concrete pad, such as a second floor or higher, or if there is a basement beneath may not be sturdy enough for this feature to work well most of the time. Just moving any part of your body a bit around the camera can result in enough movement for an unsuccessful image stack. A failed attempt is easy to spot in the assembled image with the appearance of severe moiré or what looks like chromatic aberration at high contrast edges. Even if all of the conditions above are met, I still recommend doing the sequence several times to get one where there is no movement at all. Making matters worse, the camera insists on refocusing between each image if in autofocus, even with back-button focus only selected. This can only lead to alignment errors since things are potentially moving. For this reason, switching to manual focus mode prior to taking the shot is a must for pixel-shift shooting. Remember that it requires external software so you can't review whether or not your setup was still enough on the camera's LCD and the camera gives you no warning that things weren't still enough. Finally, the software you must use to combine the pixel shifted images has the RAW processing capabilities of a circa 2005 RAW processor and allows only the most rudimentary adjustments and those tend to be a bit heavy handed. Overall, the pixel shift implementation in the a7R III has a long way to go before it is ready for prime-time and Sony would do well to see how other manufacturers such as Pentax, Olympus and Hasselblad has tackled this. The usefulness of this feature, as it currently stands, is essentially zero for the nature photographer.

Update: As this goes to press, FastRawViewer has a beta version of software that can combine the 4 files into a DNG file which then allows you to do the RAW conversion in your preferred RAW converter such as CaptureOne, Camera Raw, Lightroom, Irident Developer, Luminar, etc... this at least gives you complete control over your RAW conversions. Check it out here: https://www.fastrawviewer.com/SonyPixelShift2DNG



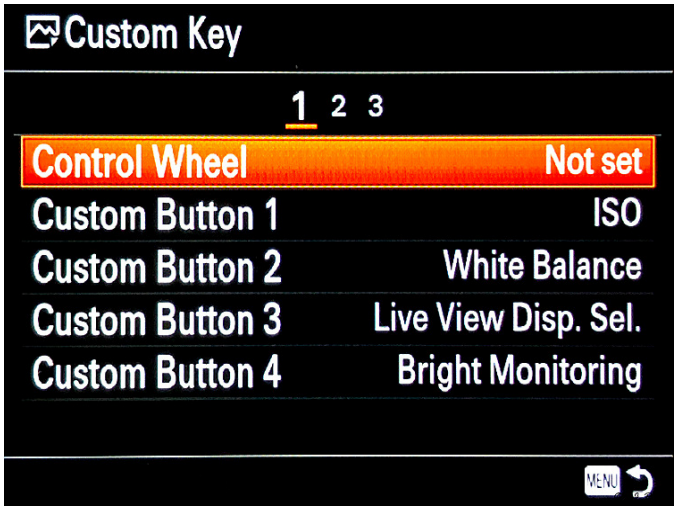
Sony a7R III (100-400mm GM)

Camera Set-up

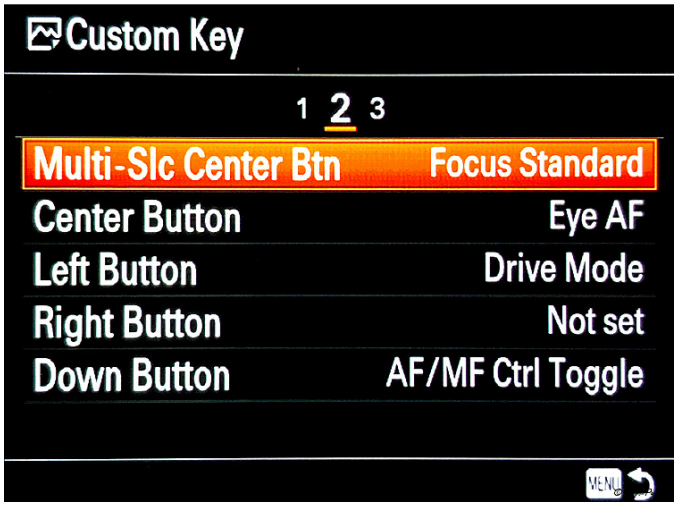
The Sony a7r III has a seemingly infinite number of configuration options and spending some time, more time than with any other camera I have ever used, can really streamline the photographers experience when in the field. I would be willing to wager that if 1000 photographers were handed an a7R III and given two hours to configure it to their liking, every single camera would end up with a different customization, even with photographers that shoot exactly the same subjects. In my previous reviews of the a7R and a7R II, one of the most popular parts of the review were the sections on how I set up my camera. While your customization will almost certainly be a bit different than mine, I will still show you exactly how my camera is set-up with the understanding that this is a landscape, travel, and occasional wildlife camera for me and will not be used for video other than time-lapse sequences. The set-up for time-lapse was covered earlier in the review.

KEY Customization:

I like having all of my exposure tools right at my fingertips. Right next to the shutter button and the front control wheel which I use to change aperture, are the C1 and C2 buttons which I have assigned ISO and White Balance to. This groups everything except shutter speed right by my shooting finger. After playing with several options for the C3 button which is on the thumb of the non-shooting hand, I have settled on a somewhat cryptic option called Live View Display Selection. What this actually does is toggle the Live View preview of your photograph between your actual shooting settings applied to the view or with the lens wide open, similar to what you would see with a DSLR. In darker situations, switching to the wide open view does provide a clearer and lower noise image in the viewfinder. C4 is set to brighten the monitor in very dark conditions to allow composing of the shot even in the dead of night.

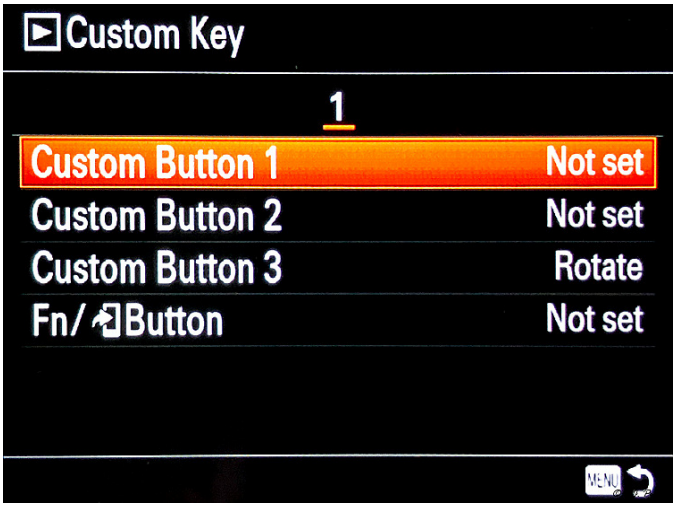


On the second Custom Key page you can assign what the rear control wheel buttons do. I have assigned the center button to activate Sony's excellent Eye autofocus mode which causes the AF system to look for human eyes and critically focus on them. the left button is the default drive mode selection which also includes all of the auto bracketing options. I have disabled the right button (it is ISO by default - I have assigned that to C1) and may task that for something at a future date. The down button is configured to toggle between manual and autofocus as it was on my a7R II.



The third Custom Key page allows you to program the AEL (Auto Exposure Lock) button. As discussed before, the a7R III now allows you to use autofocus even with the focus magnifier enabled. Due to the way my thumb falls, neither the AF on nor the AEL button is ideal for initiating AF but for my hand, it is more comfortable to use the button labeled AEL and since the AF-ON button also has a magnifying glass on it, I have programmed it to magnify the image for more precise focus. It also places AF in a place similar to my other cameras. The final option is the Focus Hold Button - this tells a lens equipped with a focus hold button (like the Sony G-Master lenses) what the depressing that button should do. By default it is to stop autofocus. In that mode one can focus on a subject and recompose without refocusing when the button is hit. I however prefer to be able to initiate focus with these buttons, especially when using a longer lens like the Sony 100-400mm or the forthcoming 400 f/2.8 FE lens. It allows me to initiate focus in the optimal position of my left hand on the lens, while using my right hand purely to trigger the shutter. Call it a division of labor between the two hands that I find very natural when photographing wildlife in a hand held fashion.

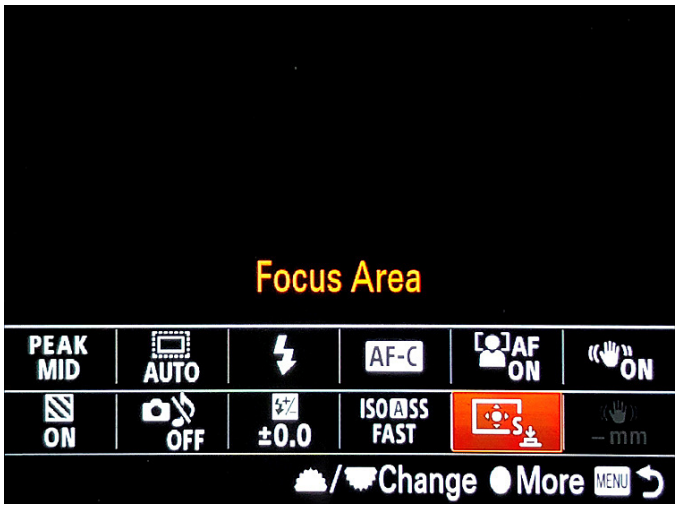
The a7R III adds a new Custom Key page for Playback. I haven't found these to be terribly useful. You can select such features as Star Ratings, Image Protection Lock, etc. I have only assigned one button to rotate an image when the rotation orientation sensor gets it wrong which usually only occurs when shooting straight down or straight up.



Function Menu Setup:

The function menu is displayed on-screen when you hit the Fn button on the back of the camera. It allows almost instant access to 12 items that you may need quickly and don't want to go to the menu to access. I have grouped these from left to right. The first two on the left allow me to change the focus peaking threshold and to turn zebra patterns on and off. The second column allows me to change the way the sensor is configured for imaging. On top, the function mysteriously labeled as Auto selects whether APS-C/Super 35 mode is automatically selected based on the lens attached or if it is manually selected. By clicking on this function and changing Auto to Manual, I can very quickly change the camera between full frame to APS-C which is useful for wildlife shooting. Below this is the silent shooting option which switches the camera from Electronic First Curtain mode to fully electronic shutter and therefore silent mode. See earlier in the review for the pros and cons of enabling this option. The third column pertains to flash operation with the top item allowing me to select between various flash options such as

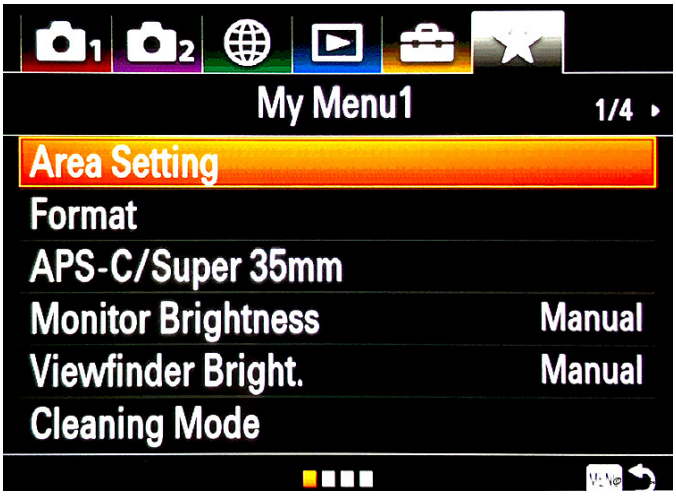
front curtain, rear curtain, slow sync, red-eye reduction, etc. Below that is the flash exposure compensation. At the bottom of the next column, for now I have placed the selection that allows you to select the slowest shutter speed in Auto ISO mode before it starts to change ISO. With super high resolution sensors the old rule of 1/focal length no longer applies. I have it set here in the fast mode which will start to change ISO at 1/2(FL) so if I am shooting with a 50mm lens it would not allow the shutter speed to drop below 1/100. There is an even faster mode that would not allow the shutter speed to drop below 1/150 in this example. The item above that and the fifth column of functions are other AF options with Face Detect on top, and all of the different focus modes such as Group, Wide Area, Single Spot and more. Finally the last column is for image stabilization. On lenses that do not have an on/off switch, the top item will enable or disable the in-body image stabilization or IBIS. The item on bottom will only show up when a non-chipped lens or a third party lens is attached and it allows you to dial in the focal length to optimize how the IBIS works with that lens. It seems logical, that since the camera has a touch sensitive screen that one could select these items by touching them but it does not. However, the Fn button is right below the thumbstick so it is very easy to bring up this menu either on the rear LCD or in the viewfinder and then quickly make the selection with the thumbstick.



My Menu Setup:

The a7R III finally adds user customizable menu capability. With 36 pages of menu options to chose from, it can be extremely had and time consuming to find the things you need so this is a very welcome change. Here's how I configured three pages of options - you can have more pages if you like.

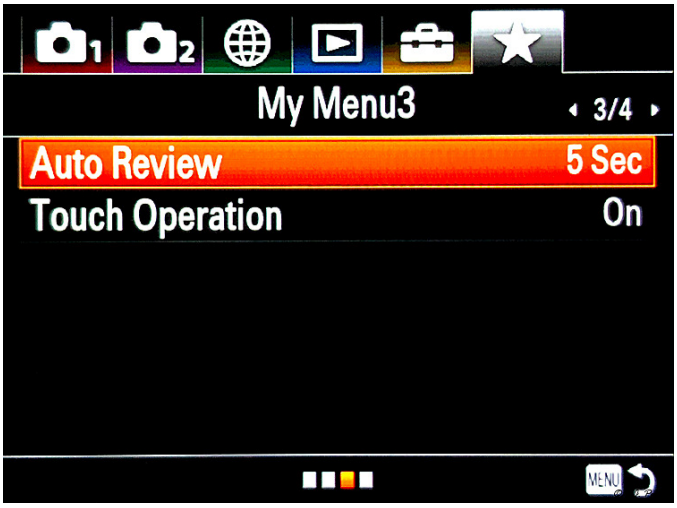
On the first My Menu page I have grouped camera functions that I often use starting with the Area Setting which allows you to select the time zone you are in from a map view. This is followed by the often used SD card formatting option, monitor brightness adjustment, viewfinder brightness adjustment and sensor cleaning.



The second page groups shooting functions that I only occasionally use including putting auto focus back onto the shutter button, changing the focus tracking sensitivity (this does not change accuracy, it just changes how quickly the camera focuses on another object should the AF sensor temporarily fall off of the subject). The third option on My Menu 2 is the only movie related function that I have assigned to anything on the camera - this is where you set-up your

time lapse options via the S&Q Settings as described earlier in this review. I added bracket settings here just so that I can easily turn on and off a self timer between bracketed shots in order to allow the camera to settle from any shutter shake. In the next position I have placed the silent shooting or fully electronic option shutter mode again although I may change that in the future to the pixel shift shooting mode since I already have Silent Shooting available via the Fn button as described above. The last item on this page is the metering mode which allows me to change to a spot meter, averaging meter, highlight meter or other metering options.

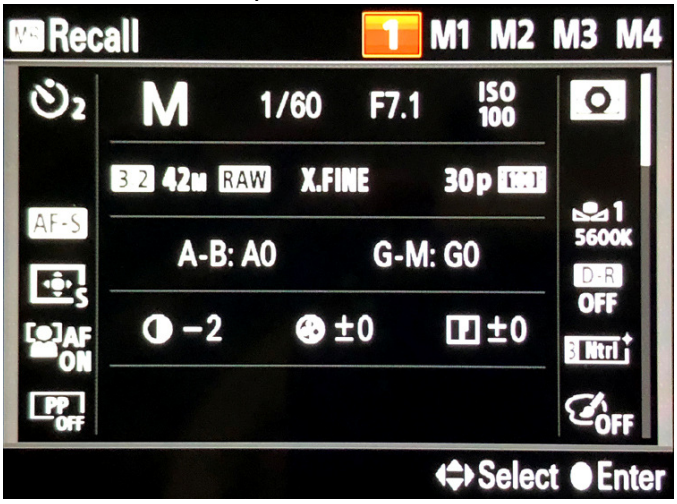
Currently I only have two items on the third page, one that changes how long the photo I just took is displayed and another that allows me to turn on or off the touch function on the rear LCD. The fourth page (not shown) is the default Sony page that allows you to add, order or delete items.



As I find other items that I have to go menu diving for, I may add them to the My Menu pages. I have not experimented with how many My Menu pages are possible but I have gone to at least 5 with no trouble. More pages then that might make your MyMenu almost as overwhelming as Sony's own menus.

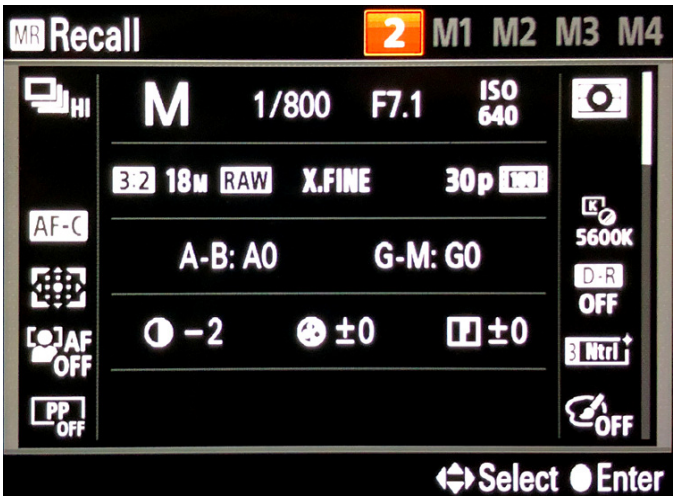
Memory Banks:

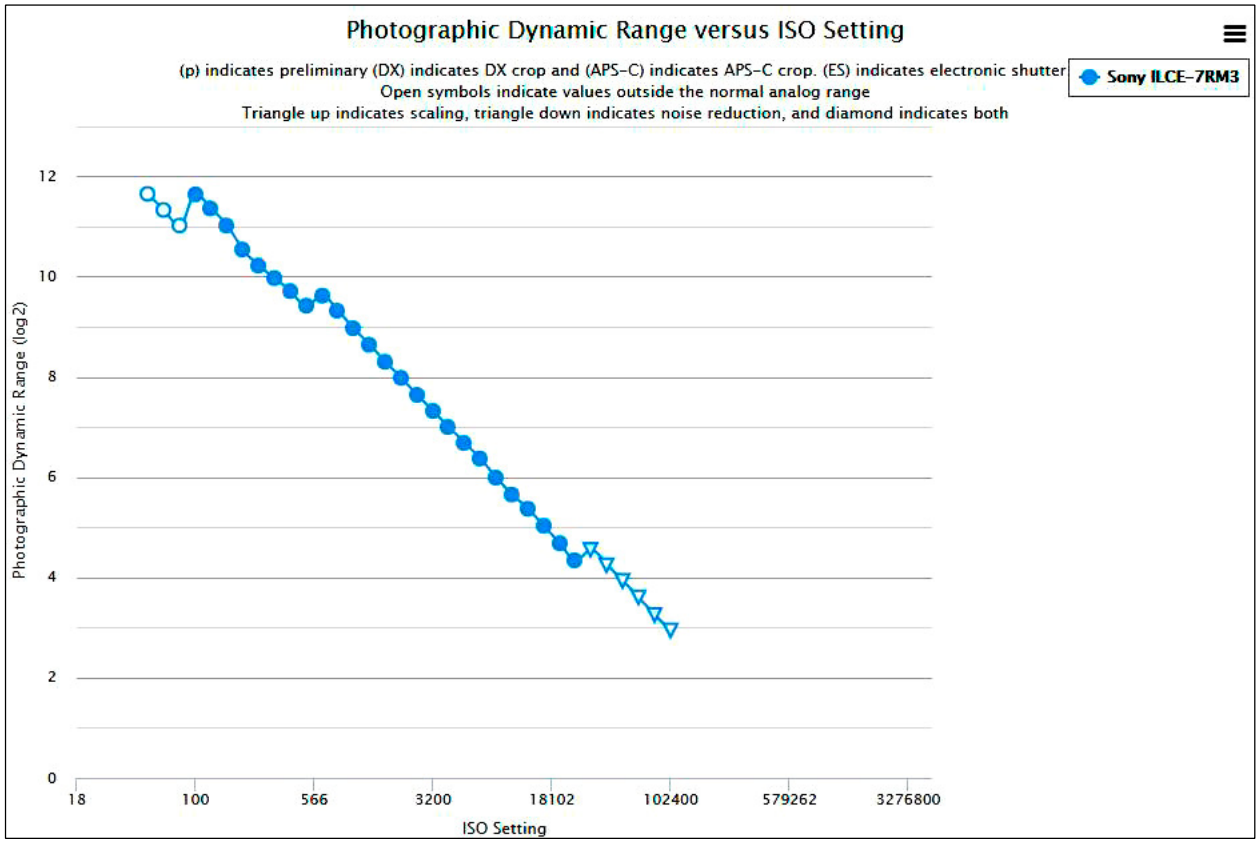
The a7RIII allows up to 7 custom configurations to be stored for quick recall. Three of these are available for instant recall simply be selecting them on the Mode Dial on top of the camera. I have configured Mode Dial position 1 for a landscape photography starting point and mode dial position 2 for a wildlife/birds photography starting point. Programming these is very simple - just set-up the camera how you wish and then store them via the Memory menu (Camera 1 Page 3) selection. From then on you just select the appropriate number on the dial.



You can see my initial settings in the Recall 1 and 2 screens. I am using AF-S

or single shot autofocus in my landscape photography and AF-C or continuous autofocus for wildlife. My landscape settings use a 2 second self-timer delay to allow things to settle between pushing the shutter button and taking the picture. Note that the Recall 1 screen says 42M and the Recall 2 screen says 18M - that is due to selecting full frame mode at 42 megapixels for landscape photography and APS-C mode at 18 megapixels as a starting point that can always be changed for wildlife photography. Similarly the landscape starting point ISO is 100 while it is 640 for wildlife. Both are set to a custom white balance of 5600 which I measured off of a white balance card in mid day sunlight. You may wonder why I selected ISO 640! This is due to Sony's dual gain sensor design. Basically if you need to go to an ISO of 400 or higher, you are better off from a dynamic range and noise standpoint to go to 640. This is illustrated by the dynamic range plot from Photons to Photos:





One may notice that the actual photographic dynamic range is nowhere near the 15 stops that Sony advertises for Dynamic Range in its press release. Overstatement of dynamic range by about 3 stops is true for all manufacturers as they use a theoretical calculated dynamic range referred to as Engineering Dynamic Range. One will also notice from the plot that the best ISO values for Dynamic Range are 50 and 100 with a roll-off from there. For high ISO shooting 640

is the best value as long as that is fast enough to work for your photos. ISO 50 is an expanded value that isn't native to the sensor. When you select it, you basically need to underexpose the shot by one stop making the exposure identical to the ISO 100 exposure.

Other Camera Settings

In addition to the My Menu pages, Custom Key assignments and Function menu assignments, there are a few other settings that I find useful in the camera for nature photographers. These are listed below:

- Color Space - AdobeRGB
- Bracket Settings - Bracket Order - 0 +
- Priority Set in AF-S - Release
- Priority Set in AF-C - Release
- Focus Area - Flexible Spot S (Landscape), Lock-on AF: Flexible Spot S (Wildlife)
- AF Track Sens - 4
- AF w/ shutter - Off. This takes AF off of the shutter button and leaves it on the button you have assigned for focusing. Make sure you assign a button for focus prior to turning this off. By default it should already be assigned to the AF ON button but this can be changed to any other button. Just be sure it is assigned to at least one button! I actually have AF assigned to the AEL button as well as the lens barrel button for lenses that offer a lens barrel button)
- Pre-AF - Off - this stops the annoying automatic AF to wherever the camera is pointed without you even touching any button - it also saves battery to turn this off.
Phase Detect Area - On (displays the area in which the more sensitive Phase detect AF point are)
- Exp.comp.set - Ambient only - this unlinks your flash exposure compensation from your ambient exposure compensation - important for properly exposing a subject in shade with a bright background by using flash to light the subject and normal exposure settings for the background.
- DRO/Auto HDR - Off if shooting in RAW so that the preview and histogram does not fool you into exposure errors
- Creative Style - Neutral with contrast set to -2 if shooting in RAW to more accurately reflect what is going on in the RAW file with the histogram. Note that your pictures on the LCD may look a bit flat.
- AF in Focus Mag - On
- e-Front Curtain Shut. - On
- Steady Shot - Off (Landscapes on Tripod), On for all others
- Finder Frame Rate - High (important if tracking moving subjects)
- Display Quality High
- Zebra Display - On
- Zebra Level - 100+
- Exposure Set. Guide - Off (On position blocks bottom of the frame making composition harder if on)
- Finder Color Temp - -2 (I wish it would go to -4 - even at -2 the image in the viewfinder is still cooler than reality in most outdoor shooting situations)
Bracketing is set to take 5 images at 2 Ev steps when I turn it on
- Airplane Mode - On. There's no point in burning battery by having all of the camera's wireless communication protocols running all the time. Just turn this off when wireless communication is needed and then turn it on again.

Shooting Experience

a7R III, 100-400mm GM

The Sony a7R III handles much like its predecessor for the landscape photography mission. There are very few, if any, changes needed in the workflow, both in the field and in post processing. The improved autofocus, especially at the edges of the day are very much welcome as is the enhanced customizability of the camera. I continue to use the small flexible spot AF mode for this type of photography and the ability to now use autofocus with a small spot in magnified view is a great addition when extremely precise placement of the AF point is needed. Even with the fully eclipsed moon during the recent Lunar Eclipse, shooting with the f/5.6 100-400mm lens at 400mm, the AF had no problem whatsoever in locking focus accurately on the very dim blood moon. The fully eclipsed moon required an ISO 800, f/5.6, 1s exposure which is equivalent to -1.5 Ev - that's serious DSLR Dedicated Phase Detect AF territory - on sensor PDAF has come a very long way in just a few years. I tried the previous generation a7 II camera and it had absolutely no chance of auto focusing in this situation. I have assigned dial position 1 on the mode selection dial to instantly go to my default landscape set-up relieving me of at least a dozen different changes between my wildlife set-up and landscape set-up. This means I can immediately switch between landscape and wildlife, which is programmed for dial position 2. I have saving the set-up to an old low capacity SD card in case the camera ever gets full reset. It won't return all of the unrelated settings like the My menu settings, button assignments, etc but at least I can get my shooting set-ups back in such an event.

For wildlife photography including birds, the a7R III is a completely different camera compared to its a7 predecessors. While I would not recommend the earlier a7 models to anyone for this type of shooting, the a7R III is a capable performer in this arena. The biggest thing that is missing is long lenses beyond 400mm but a Canon mount Sigma 500mm f/4 with the Sigma MC-11 adapter provides very good AF, if not excellent capability; however, when the TC-1401 teleconverter is added, the AF no longer performs up to the task for most moving subject photography. At local parks with acclimated wildlife such as the wintering ducks in the Phoenix Metro area, coupling the a7R III with the Sony 100-400mm G-master lens becomes a capable and highly portable combination. The AF mode I use most for this type of shooting is Expand Flexible Spot . With earlier Sony cameras like the a6300 which is also capable of action photography, the Lock-on AF - Expand Flexible Spot mode worked to lock onto a subject and then track focus but on the a7R III, the Expand Flexible Spot option provides better shot to shot accuracy. Flight shooting and AF tracking is very good in light levels needed for fast enough

shutter speeds to shoot in-flight birds on predictable flyers but the tiny bit of EVF lag on really fast flyers takes some getting used to - the a9 without its zero blackout viewfinder is significantly better at this than the a9 its AF system also outperforms the a7R III's system. Unfortunately if you crop the a9 to the equivalent frame size as the a7R III's 18 megapixel APS-C crop mode you are only left with 9 megapixels making the a7R III the more desirable camera if cropping is necessary and for anything but close and fast action. Once the sun has risen flight shooting is definitely possible but in early light, before it has risen several degrees above the horizon, I would not attempt flight shooting with the a7R III and the f/5.6 100-400mm lens. Perhaps once the announced 400mm f/2.8 lens is available enough light will get to the sensor to even allow flight shot tracking prior to sunrise. For now, serious flight shooters will find a DSLR is still a superior option but for larger predictable flyers in good light, the a7R III is capable.

Sony a7R III, 100-400mm GM

Summary

Overall, the a7R III improves the shooting experience over the previous generation cameras substantially due to its better autofocus, faster frame rate, larger capacity battery, and being able to much more fully customize the camera to your exact liking. Being able to autofocus in magnified view is a big improvement but annoyances like not being able to focus in Bright Monitoring mode remain. While Sony touts significantly improved image quality over the a7R II, much of that is due to specsmanship and the real world image quality improvement, while present, is not very significant. The a7R III is a great update for people that need better AF performance and higher frame rate or are annoyed by constant battery changes. If you are a slow methodical landscape shooter, the older a7R II will serve you very well for the foreseeable future. For those shooting with something like a Canon 5D model and thinking about making the jump to mirroless, this is a good generation to make that leap from any of the 5D cameras

as the Sony a7R III is superior in virtually every way. Nikon users looking to upgrade will need to make a call on whether going to go to a new system (Sony) or moving to a D850 is the best choice for them. The two cameras are direct competitors with similar capabilities. For fast action the D850 holds a bit of an autofocus edge. For landscape photographers, it has a negligible megapixel advantage. Other than that, the Sony a7 R III is the equivalent or better camera depending on your evaluation criteria. For most, a switch will likely come down to lenses already owned or whether specific lenses that you need are available for the Sony system. As with other Sony cameras, virtually every lens made back to the dawn of 35mm format photography can be adapted to work on Sony E mount cameras with varying degrees of capability from full AF with many Canon lenses attached to the the right adapter (Metabones or Sigma adapters are the only ones I recommend for Canon lenses) to full manual capability with virtually everything else. The a7R III is easily the best and most versatile all around mirrorless camera on the market.

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 co-founder of www.Naturescapes.net and leads photographic workshops under the NatureScapes Certified Workshops banner

E.J. Peiker is a member of Nikon Professional Services and receives some services free of charge from Nikon USA 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

E.J. Peiker is sponsored by Hunt's Photo and Video - New England's largest photography retailer. Visit them at www.huntsphotoandvideo.com/

E.J. Parker · Nature Photographer