SIGMA 60-600MM REVIEW: THIS NEW ZOOM IS ALL THE RANGE

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cover shot

Photographer: Julia Cook
Location: Yellowstone National Park
Equipment: Canon EOS R5, Tamron SP 150-600mm *f*/5-6.3 Di VC USD
Situation: I may be the only person who would choose to spend their 21st birthday alone in Yellowstone searching for wolves. A wolf is the most challenging animal to photograph in Yellowstone, with its elusive tendencies and wild, far-ranging territories leaving an encounter up to almost pure luck. Still, last March, I headed into the park's northern range in search of wolves. After five long days of nothing, my luck finally struck on my birthday and my last day left in Yellowstone for the winter.

I was lucky enough to have spent several hours photographing the Wapiti Lake Pack, but this image is the result of perfect timing. The pack had killed a deer along the river earlier in the day and had since retreated up a hillside, leaving one gray wolf overlooking the kill. The wolf sat amid the sage, occasionally looking toward me or smelling the air but never lying down.

With the pack off the carcass, ravens began swooping down to scavenge the leftovers, with one flying directly over the wolf. Neither cared nor acknowledged the other, but I captured the split second where the two aligned perfectly, showing their ancient and wild bond. To me, this image shows all the reasons why I love wolves: the wisdom in their eyes; their sleek, almost ghost-like appearance; but, most importantly, their connection to everything that is wild.

–Julia Cook

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in this issue

In this issue, we take a walk on the wild side with two main subjects that are similar in some ways but uniquely different in others. Both wildlife and wildflowers have "wild" in their names, which is one way to tie these two April issue themes together. Another is that photographing these subjects requires practice and patience. Anyone can take a photo of their cat or dog, but to shoot a sharp and compelling image of a wild animal is something else altogether. Similarly, it's not hard to take a pretty picture of a flower in a curated garden, but to find and photograph flowers in the wild in an artful way requires persistence and a good eye.

Our contributors to this month's issue have persistence, great eyes and much more. **Julia Cook** shares some of her talents along with six helpful tips in her story about how to capture better photos of wildlife. "Wildlife photography is the perfect intersection of science and art, and I crave both," she explains. "Science shows who has been here before me from the muddy tracks along a riverbank. Art dictates how an image is composed in a way that does the animal justice while capturing its wildness in an honest way."

Dave Welling also shares something wild in this issue in his guide to the best spots in California to photograph wildflowers. Along with telling you where to find wildflowers and what times of the year are ideal to photograph them, Welling gives advice on how to best capture these colorful beauties as they start blooming. So even if you aren't in California, Welling's tips will help you shoot stunning images of wildflowers as they emerge in other parts of the country this spring. "Areas of wildflower diversity exist in all regions of all countries," Welling says. "Go out and wander. You will create beautiful images and be happy you did."

And finally, **Josh Miller** explains in his story why he thinks cameras that have small image sensors, such as the APC-C and Micro Four Thirds formats, are great for capturing wildlife and landscapes. "To me, the main advantage of using smaller sensor cameras (i.e., smaller than full frame) is that the lenses can be smaller than their full-frame counterparts," Miller notes. "I am done carrying a backbreaking full-frame 600mm *f*/4 lens. I have fallen in love with the portability of smaller and slower lenses."

So, take a load off and enjoy this issue of *Outdoor Photographer*.

–Dan Havlik, Editor

contributors

Julia Cook is a wildlife photographer and writer based in Wyoming. Primarily focused on photographing the megafauna of the Greater Yellowstone Ecosystem, Julia's overall photographic goal is to capture impactful images of native wildlife to inspire others to spend meaningful time in nature. See more of her work at littlelightningnature.com.

Dave Welling has been capturing evocative nature images for over 25 years. He specializes in wildife and landscape photography and is a charter member of NANPA and the author of *Sanctuary*, a book celebrating the work of Wildlife Waystation. See more of his work at strikingnatureimagesbydavewelling.com.

Josh Miller's photography has appeared in the pages of publications throughout the world. He also leads photo workshops in the U.S. and Central America, including Bald Eagles and Bears of Alaska, Yosemite, and Costa Rica. See more of his work at joshmillerphotography.com.

Proficiency
By Linn Smith

"Tricolored herons are found year-round along the shoreline of Lake Jessup located in Central Florida. I spotted this particular immature tricolored foraging for prey close to the noon hour. As seen in this photo, their plumage changes in color rather dramatically in their juvenile stage when they're grayish-blue overall with dark streaking on the neck and brownish body feathers mixed throughout.

"Tiny fish make up 90 percent of the tricolor's diet. Knowing tricolors sometimes stand motionless, waiting for unsuspecting prey to swim by, I patiently observed this heron until it spotted a tiny fish and bent its beak at that exact moment into the water to retrieve it."

See more of Linn Smith's work at 500px.com/p/LinnSmith.

➤ *Canon EOS 5D Mark III, Canon EF100-400mm f/4.5-5.6L IS II USM. Exposure: 1/2500 sec., ƒ/5.6, ISO 500.*

Lupine Field
By Jeff Nigro

"When I heard that there was a lupine 'superbloom' occurring at Folsom Lake, I made immediate plans to pack my gear and arrive before sunrise. I had never been there, so I spent most of the morning walking around scoping out various compositions. Then I saw this large swath of purple in front of me anchored by the trees and rocks in the background. It was later in the morning and the soft wispy clouds added another compositional element that I enjoyed very much."

See more of Jeff Nigro's work on Instagram @jnigro64.

➤ *Canon EOS 5DS R, Canon EF 16-35mm f/2.8L III USM at 29mm. Exposure: 1/8 sec., ƒ/16, ISO 100. Focus-stacked three images to maximize sharpness.*

Patience
By Karthik Subramaniam

"I visited Brooks Camp at Katmai National Park in Alaska last September to photograph brown bears. One day when I was watching bears at Brooks Falls from the viewing platform, I noticed a coastal brown bear being very still while waiting for salmon. I used that to my advantage to get a long exposure image that showcases his stillness and patience and creates a frozen moment. I learned that he was bear #903, nicknamed "Gully" since he's the only bear known to chase and eat seagulls at Brooks. I ran into Gully at the falls multiple times on my trip and he quickly became my favorite bear due to many of his mannerisms like expressing disappointment when missing a catch, putting his right paw on his chest often and the look of glee after successfully catching a fish."

See more of Karthik Subramaniam's work on Instagram @karthz.

➤ *Sony A1, Sony FE 100-400mm F4.5-5/6 GM OSS at 187mm, Really Right Stuff TVC-34 Tripod, Wimberley WH-200 Gimbal Tripod Head II. Exposure: 1/6 sec., ƒ/11, ISO 100.*

Sigma 60-600mm F4.5-6.3 DG DN OS Review

A versatile zoom lens with incredible range

Text & Photography By William Brawley

Wildlife, nature and outdoor sports photographers should all take note, as Sigma has added yet another extremely versatile telephoto zoom to its arsenal of mirrorless lenses. The new Sigma 60-600mm F4.5-6.3 DG DN OS Sports ($1,999) for Sony E-mount and L-mount full-frame mirrorless cameras is unique among Sigma's existing telephoto zooms for mirrorless cameras—and, indeed, the full-frame mirrorless market as a whole—being the world's only 10x optical zoom lens for full-frame mirrorless cameras.

The new Sigma 60-600mm fits in alongside its 100-400mm DG DN Contemporary and 150-600mm DG DN Sports lenses as yet another option for a versatile telephoto zoom. Meanwhile, Tamron also has its selection of competitors (at least for E-mount systems), including a 100-400mm, a 150-600mm and a somewhat similar 50-400mm wide-ranging zoom lens. However, nothing so far can match the sheer zoom range versatility of Sigma's new 60-600mm lens, offering an impressive all-in-one lens spanning standard focal lengths, telephoto and super telephoto.

DSLR owners and eagle-eyed Sigma fans may recognize a similar lens, the 60-600mm F4.5-6.3 DG OS HSM Sports lens, which was released back in 2018. This new mirrorless version of the legendary "Bigma" lens, however, is more than just a mount change for newer mirrorless camera systems. It's an all-new lens with a different optical formula, new focusing capabilities, an all-new autofocusing system, improved image stabilization, updated design and much more.

This is essentially a do-it-all lens for any sort of outdoor or telephoto shooting pursuits, and if you're a Sony or L-mount system photographer looking for a single-lens solution for nature, wildlife, sports, safaris and beyond, the new Sigma 60-60mm DG DN Sports lens is worth considering.

Just before the lens launched earlier this year, I had a chance to test out a pre-production sample of this new Sigma 60-600mm paired up with a Sony A7 IV. Read on to find out why I think this superzoom could be a great all-in-one lens option for outdoor photographers.

Optical Construction

Although this new 60-600mm lens shares the same focal length range, the same variable aperture and a generally similar physical design, the new mirrorless version of Sigma's 60-600mm full-frame lens is, indeed, different than the earlier 60-600mm F4.5-6.3 DG OS HSM Sports for DSLR cameras and uses a different optical layout. The new 60-600mm F4.5-6.3 DG DN OS Sports uses 27 optical elements, two more than the 2018 DSLR version. Both lenses, however, arrange the elements into 19 groups. This mirrorless version includes two FLD ("F" Low Dispersion) glass elements and three SLD (Special Low Dispersion) glass elements. (The DSLR version used one SLD and three FLD elements.)

Sigma's FLD glass is an ultra-low dispersion glass that behaves similarly to fluorite glass, offering high light transmittance and very low dispersion that helps suppress chromatic aberration and increase sharpness and contrast. Similarly, the SLD elements are another type of low-dispersion glass element and also work to suppress chromatic aberrations and color fringing and help ensure good sharpness.

The 60-600mm DG DN lens features a 9-bladed circular aperture diaphragm for nice, smooth bokeh in out-of-focus areas and features a variable maximum aperture range of *f*/4.5 to *f*/6.3—the minimum aperture at 60mm is *f*/22 and *f*/32 at 600mm. The lens's maximum *f*/4.5 aperture only stays that wide for a short while; once you zoom to 80mm, the maximum aperture narrows slightly to *f*/5.0. It hits *f*/5.6 at 150mm and then *f*/6.3 around 400mm and beyond.

Focusing

Another major update to this new mirrorless version of the 60-600mm lens is its new autofocusing system. This lens uses a newly developed linear motor AF system, dubbed High-response Linear Actuator (HLA), whereas the DSLR version used an HSM, or hypersonic motor mechanism, to rotationally drive the focusing group. With this new lens, the AF group is directly driven with a linear motor, which should offer faster, more precise and quieter autofocusing performance. According to Sigma, the new HLA focusing motor helps provide "unparalleled high speed and high precision" focusing performance as well as fast subject-tracking/follow-focusing performance.

Close focusing is also improved slightly at the shorter end, now focusing down to 45 cm (17.8 inches) at 60mm. At 600mm, the minimum focusing distance remains at 260 cm (102.4 inches). The lens's maximum magnification is also slightly better as well, with a 1:2.4 magnification ratio at 200mm—whereas

Sony A7 IV, Sigma 60-600mm F4.5-6.3 DG DN OS Sports at 556mm. Exposure: 1/2500 sec., *f*/6.3, ISO 1600.

the DSLR version had a 1:3.3 ratio at 200mm. In the field, the close focusing feels surprisingly good, especially at the shorter focal lengths, and I found myself easily capable of photographing fairly close subjects.

In terms of autofocusing performance, the new Sigma 60-600mm lens performed well but with a caveat. As mentioned, the lens I tested had pre-production firmware, and Sigma states specifically that the focusing performance, particularly subject-tracking performance, hadn't been finalized yet. That being said, my experience with the lens was very positive with general shooting and focusing speeds, so the fact that the lens is likely to get even better at focusing and focus tracking is excellent news. I didn't run into any issues with focusing. Speed and accuracy were both up to the performance I expected from a high-end enthusiast zoom lens like this. Using this lens combined with the Sony A7 IV and bird-detection AF worked wonderfully during my time with the lens.

Design & Handling

Much like its DSLR-format sibling, the new Sigma 60-600mm DG DN is a fairly large and hefty lens, weighing in at 2,495 grams (5.5 pounds) and having a retracted length of 279.2mm (11 inches). The lens is slighter than the older DSLR version, which weighed 2,700 grams (5.9 pounds), but the length is the same, as is the diameter, with a maximum diameter of 119.4mm, or 4.7 inches. The lens features a 105mm screw-on front filter size, much like the DSLR version.

The length of the 60-600mm lens extends outward quite a bit as you zoom, with the length increasing to about 38.1 cm (15 inches) at 600mm. The screw-on lens hood itself is approximately 8.5 cm (3.35 inches) long, and, when attached, it adds about 6.4 cm (2.5 inches) to the length of the lens.

In hand, you definitely notice the weight of this lens. It's built like a tank, much like other Sigma Sports series lenses I've used. It feels incredibly well built and sturdy. The lens is constructed with a blend of materials, including magnesium, Carbon Fiber Reinforced Plastic and Sigma's Thermally-Stable Composite material, which is a polycarbonate material with thermal expansion characteristics similar to aluminum. The lens is both dust- and splash-resistant, with weather sealing built around the mount, zoom and focus rings, and the various switches and buttons around the exterior. Additionally, the front element has a water and oil-repellant coating to help with cleaning and protection against dirt and moisture.

The lens doesn't seem all that large in person, despite the impressive 10x zoom range, but you'll start to notice the weight after carrying it around for a while. Pairing it with a Sony A7 IV, I just managed to squeeze it into my small Lowepro Flipside Sport 10L camera backpack, albeit with

the lens hood reversed and no other camera gear inside. Walking around with the lens in hand, I definitely became keenly aware of the weight after a while. That said, I still only used the lens handheld and felt generally comfortable and balanced, even with a non-gripped Sony camera body. Supporting the lens at the large, ridged zoom ring, I was impressed by how nicely balanced the lens felt, at both 60mm and at 600mm, despite the extended length of the lens. In fact, the lens actually feels slightly more comfortable and balanced at 600mm than fully retracted to 60mm, at least with this smaller, non-gripped A7 IV attached.

In terms of external features, the Sigma 60-600mm DG DN lens has two control rings, a smaller one for focusing and a large zoom ring. The focus ring is about an inch or so wide, while the zoom ring is about twice as wide. The focusing ring freely rotates, whether it's in AF or MF mode, and rotates very smoothly. The zoom ring is also very smooth, though it has much more physical resistance and dampening when you rotate it. As one might expect with a 10x zoom, there's quite a bit of rotation required to zoom through the full range, at over 90 degrees of rotation to go through the full range.

The zoom ring features focal length markings at 60mm, 80mm, 100mm, 120mm, 150mm, 200mm, 300mm, 400mm, 500mm and 600mm. The lens also has a locking switch on the lower left side. The lens does have a tendency to exhibit "lens creep," with the lens extending outward when facing down (or vice versa), so the lock switch comes in handy when you're not shooting and just walking around with the lens. However, you can also lock the lens's zoom position at each of the marked focal lengths, which I think is rather clever and a helpful feature. If you're shooting a longer focal length and pointing the lens upward, the lens can start to retract slowly on its own, so the lock switch can prevent this. That's a nice, helpful usability feature that I don't always see on long-zooming lenses.

Speaking of zooming, in addition to the zoom ring, the Sigma 60-600mm can also be operated as a push-pull zoom lens. There's a ridge right beyond the zoom ring to help grip the lens barrel, allowing for quicker push-pull zoom action. Sigma calls this a "dual action zoom," letting you operate the zoom either with the ring

Sony A7 IV, Sigma 60-600mm F4.5-6.3 DG DN OS Sports at 600mm. Exposure: 1/500 sec., *f*/6.3, ISO 2500.

or by pushing and pulling. When photographing fast subjects that are moving erratically or are moving closer or further away from you, push-pull zooming can be much faster than rotating the zoom ring, so it's great to have both methods here at your disposal.

In terms of buttons and switches, the Sigma 60-600mm lens has a series of switches on the left side of the lens, including an AF/MF toggle switch, three-way focusing distance limiter switch, OIS switch and Custom Function slider switch. The lens also has two customizable buttons placed between the focus and zoom ring.

There's also a built-in tripod foot with soft stops at each 45-degree position. The full tripod foot ring component itself isn't removable, but you can unscrew the foot portion altogether if you want. The foot itself features built-in Arca-Swiss dovetailing for easy compatibility with several different tripod/monopod heads.

Image Quality

Once again, I tested a pre-production sample, so I can't make a final judgment on image quality just yet. However, what I've seen so far is very impressive. I spent much of my time photographing small birds and other tiny critters, as that was pretty much all I found while exploring the outdoors with this lens. Most of my time shooting, I found myself at the longer focal lengths, especially at 600mm F6.3, and the results look great. The image quality so far looks fantastic, with excellent sharpness, great contrast and minimal CA, both at the center and out toward the edges.

Once again, I loved zooming in on a 33MP A7 IV image and seeing all the intricate feather detail. As mentioned, I mainly came across small songbirds, and the 600mm focal length really came in handy to help zero in on these small birds. I was really impressed not only by the lens's versatility but also by the sharp images I managed to capture at the full 600mm focal length.

The built-in image stabilization, too, proved very helpful, especially when using the lens handheld. Compared to the 2018 DSLR version of this lens, the OIS system has been significantly upgraded. The older version offered up to four stops of stabilization correction, whereas this new version is rated for up to six stops at the telephoto end and seven stops at the shorter end. Even with just framing and composing shots at 600mm, having that smooth and steady view through the viewfinder was extremely helpful. The image stabilizer (IS) also helps when shooting in lower-light conditions, such as in the forest or cloudy conditions, and allows for slightly slower shutter speeds and lower ISO settings. **OP**

William Brawley is the managing editor of our sibling website Imaging Resource. Read an extended version of this review and check out additional sample images at imaging-resource.com.

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The Nature Of Change

How photography can help us see things as they are

Text & Photography By Amy Gulick

Dark pillars of lava rock stand tall in the surf, like sentinels guarding the shore. A frothing wave rolls, roils and slams the rocks with the force of more than a thousand miles of open ocean. And then another and another.

Rush, pound, boom, spray—so many sounds of turbulent water colliding with land. The moist air, sticky with salt, mists the tropical rainforest on this rugged, windswept coastline. It also mists my lips, hair and the front of my camera lens.

I'm standing on the Ke'anae Peninsula on the windward side of the Hawaiian island of Maui. In front of me, the Pacific Ocean stretches uninterrupted 4,000 miles to Japan. Behind me, the volcano Haleakala—Hawaiian for "House of the Sun"—rises more than 10,000 feet above sea level. Born of fire a million years ago, this mighty mountain creates its own weather, capturing the rain from moist sea breezes and trade winds, the same forces whipping the waves before me.

As the windward side of Haleakala intercepts the rain, erosion creates streams and valleys. Over tens of thousands of years, the rain together with landslides have created two prominent gaps—Ko'olau and Kaupo—which cut thousands of feet into the volcano. And 43,000 years ago, a lava flow poured into these gaps, spilled into the ocean and created the Ke'anae Peninsula, the land where I now stand.

All of nature's raw ingredients are on display—earth, water, fire, air and space. In this moment, I can see the past. The barren lava rock of fiery origin. The forest that grew from seeds carried here by wind, water and birds. The soil created by decay and the sand that was once rock. I can also see the future. The relentless waves, the constant rain and wind, and the roots of plants all conspiring to break down the rock.

Haleakala, too heavy to bear its own weight, will eventually collapse and sink below sea level, back to the depths from which it came. Rise and fall. Build and dismantle. Birth, death and renewal. Where does it end? Where does it begin? In the words of writer Kurt Vonnegut, "Everything that ever was will be, and everything that ever will be always was."

There's something about experiencing nature's elements on one of the world's most isolated land masses that disrupts our sense of time and space and puts the blip of our lives into sharp perspective. Ten minutes ago, I stopped at Aunty Sandy's food stand in the small village of Ke'anae to sample her delicious banana bread. Ten days ago, I watched the waves of the Pacific Ocean collide with land 2,600 miles away from where I'm standing. And 10 years ago—c'mon, really? I have no idea where I was.

Where I am now on this jagged peninsula, almost all the buildings in Ke'anae were wiped out in the tsunami of 1946 save for one sturdy stone church still standing today. What will be here 10,000 years from now? Change is continuous. Change is permanent.

As the waves pummel the land and coat my banana bread in a salty mist, I look through my viewfinder. Click, click. I'm freezing milliseconds now so that I can journey back in time, relive past moments and see what was. I may hang a moment on my wall, publish a moment in this magazine or share a moment on social

media. And then I'll go out and search for what will be. Time is continuous. Time is permanent.

But what's happening now? As each wave, fast and furious, crashes into land, the lava pillars stand strong, seemingly immovable to the brute impact. And yet, at the same time, the ocean of waves, slow and subtle, weathers the rock into black sand. Change is constant. Change is now. **OP**

Amy Gulick is a founding Fellow of the International League of Conservation Photographers. Her books include *Salmon in the Trees: Life in Alaska's Tongass Rain Forest* and *The Salmon Way: An Alaska State of Mind*, both winners of Nautilus and Independent Publisher Book Awards. See more of her work at amygulick.com.

How To Design Your Photos

Why composition is key to a compelling image

Text & Photography By William Neill

When I work with photographers in the field, I look at their images to give feedback on their compositions. Two design topics often come up: the placement of lines and forms as well as the proportions of key elements in the graphic design in the frame.

I love designing a well-balanced photograph; watching for dynamic lines and shapes is critical to achieving that goal. The photographer's first decision is to find distinctive graphics, so I'm highly selective about where I stop to photograph. In my image of blooming dogwood, the gracefully curved lines of the branches stood out to me as better than most other similar situations.

To my eye, curves are generally more dynamic, whereas straight lines can be static. The photo's graphics are strongly affected by what surrounds the subject, like foreground and background areas. I'm always looking to simplify. In the dogwood image, the graceful curves wouldn't stand out well as they do with the clean background of the rapids.

Common graphic problems I see in the field are spacing between and placement of the lines of a scene: the line of a tree trunk might be cramped against the edge of the picture frame or a curve is cut off the edge such that we don't see the entire shape. Or the spacing between lines of tree trunks in a forest scene aren't well balanced, with lines merging into each other. In each of these situations, minor adjustments of camera position or framing can make a considerable improvement.

The second point I utilize to evaluate photographs is to look at the proportion of the main elements, most often foregrounds, middle-distant areas and sky in a landscape photograph. What's comfortable for most of us is to aim "down the middle" with similar proportions of each of those areas in a scene. We've got to start somewhere!

But what helps me refine a straightforward and obvious framing is to ask myself what excites me the most about that scene. In my black-and-white photo to the right, a stream is flowing into the ocean with an elegant S curve, but the sky was just OK, so I excluded the sky and aimed downward to fill the frame with the "foreground." As often happens in my landscape compositions, my inclination to simplify leads me to make the foreground to be the whole photograph. Now I've created an image that distills the heart of what excited me the most: the curving stream.

The obvious corollary to emphasizing the foreground in a composition is evident in my image of a clearing storm from Big Sur. From a cliff high above the Pacific, the sky was magnificent and deserved all the attention, so I placed the horizon line low in the frame, and the dramatic clouds fill about 80 percent of the photo.

I also think about the tonal or color balance of a composition. If one side of a photo is very bright and another equally important area is dark, then our eyes are pulled toward the lighter area. This imbalance can be distracting, especially when the bright areas overwhelm

Creek Flowing, Big Sur, California 2022. Sony A7R IV, Sony FE 24-105mm F4 G OSS at 53mm. Exposure: 0.5 sec., *ƒ*/22, ISO 800.

significant details in shadows.

Again, not a hard-and-fast rule. However, sometimes a spot of sunlight on the image edge is necessary to convey a sense of light and the direction from where it's coming. The important thing is to be aware of the potential problem and assess the risk/reward. As for color balance issues, I sometimes see situations where the powerful blue color of

the sky, especially when without clouds, can overwhelm warm or otherwise subtle tones.

I don't want to make these design concepts into rules, and I strongly dislike any adage that restricts creative experimenting. In the end, you need to trust your instincts, disregard what others suggest, and listen to your inner voice. As a simple example, sometimes centering a subject or horizon is the best option even though "the rules" say otherwise.

I consider these compositional checkpoints about line and proportion as starting points for you to explore many possible graphic layouts in your viewfinder. Some of these issues can't be fixed later on the computer, so take the time to move your camera or reframe when you're in the field. Embrace the process and enjoy exploring and creating your own graphic designs. **OP**

William Neill's book *Light on the Landscape* is a collection of his "On Landscape" essays written over the past 26 years for *Outdoor Photographer*. To sign up for newsletter updates and info on his workshops, books and portfolios, visit williamneill.com.

Natural Bridge Recreation Area

Bankhead National Forest, Alabama

Text & Photography By Keith Bozeman

Location

Natural Bridge Recreation Area (not to be confused with Natural Bridge Park in Haleyville, Alabama) is located within the 181,230 acres of Bankhead National Forest in Alabama. It's the oldest national forest recreation site in Alabama. Although not the largest natural bridge in the state, it certainly is the most scenic. The natural bridge itself can be accessed from a parking lot just a short distance away. A 0.38-mile paved trail leads down a steep incline to the natural bridge area. There's also a very scenic 0.5-mile loop trail that goes around the recreation area.

Weather

Temperatures in north Alabama can reach as high as 100 degrees Fahrenheit in the summer months and down to below freezing in the winter. The humidity can get extremely high in the summer months, which can lead to heat exhaustion. The best time to visit the Natural Bridge Recreation Area would be between the months of February and June and October and November when the temperatures are fairly pleasant and there's plenty of rainfall. Bankhead National Forest contains some of the most scenic canyons and waterfalls in the Southeast. The natural bridge is just one of many beautiful locations in the forest.

Photo Experience

There are several features in the park that can be used as photographic subjects. The natural bridge would be the primary subject, but there's a twisted beech tree below it that needs to be included in some of the photographs. A great composition is to use the natural bridge as a frame, which creates a skylight effect on the tree and mossy boulder below it. This can be achieved with a wide-angle lens. Shooting in the early morning, late afternoon or on an overcast day would be best to eliminate any harsh light. A sturdy tripod is necessary when shooting in these low-light conditions. Another great composition is to use a super wide-angle lens to capture the almost dinosaur-like beech tree with the natural bridge behind it. Having a very strong foreground element really gives the viewer the feeling that they're there in person. **OP**

See more of Keith Bozeman's work at keithbozemanphotography.com.

Best Times

The ideal times to visit for photography would be either in the spring or fall. During the spring, the early green leaves really produce a nice contrast in color with the dark canyon walls. Fall is also another great time to visit because of the leaf color change. Bankhead National Forest is a wonderful place to capture fall colors with its many species of deciduous trees. A polarizer is recommended to help cut down reflections on leaves and further saturate the fall colors. The recreation area opens at 7 a.m. all year long.

Contact: USDA Forest Service, fs.usda.gov/recarea/alabama/recarea/?recid=30089.

➤ *Canon 6D, Sigma 12-24mm f/4.6-5.6 EX lens at 18mm. Exposure: 4 sec., ƒ/16, ISO 100.*

Spring is my favorite season in Yellowstone, with bear cubs being my favorite part of spring. These black bear cub twins had only recently ventured into the world with their mother, causing them to be cautious about most everything. However, they were already skilled tree climbers, balancing on branches while their mother napped below.

GO WILD

6 ways to capture better photos of wildlife

Text & Photography By Julia Cook

Spending time in nature has always been deeply rooted in who I am. I feel at home in nature; I'm reenergized by the subtle smell of pine forests, the sound of a flowing creek, the way the seasons shift. I'm beyond lucky to have grown up in Wyoming, where wildness seems to be everywhere.

As a young kid, I loved taking family drives into Yellowstone, fishing on mountain lakes and learning anything I could from nature. As I grew, my love of nature grew with me; in high school, I'd skip class to visit Yellowstone on opening day. Even though I was always surrounded by nature, it wasn't until a few years ago that I even picked up a camera as a creative outlet, curious about capturing the wildness I encountered. After one snowy spring day photographing grizzly bears, I knew I was hooked.

Now, my love for wildlife photography dictates my whole life, even my college experience. I'm a senior at the University of Wyoming and choose online courses during fall semesters, allowing me to spend every waking moment either photographing wildlife or thinking about photographing wildlife. While my peers have been on campus studying in stuffy libraries, I've been learning from the wild and experiencing some unbelievable moments: being sung happy birthday by a chorus of wolves, spending many sunrises alongside bison or moose and witnessing a bear cub grow up before my eyes.

Wildlife photography is the perfect intersection of science and art, and I crave both. Science shows who has been here before me from the muddy tracks along a riverbank. Art dictates how an image is composed in a way that does the animal justice while capturing its wildness in an honest way. Neither is more important or at odds with one another, but both are needed. For me, the wildlife will always be my biggest motivation and inspiration. I feel drawn to the wildness held deep in a bear's eye and the secrets told through the howl of a wolf, known only to the wild itself.

It's that wildness that I try to capture in my photography, allowing others a glimpse of the wild in hopes of inspiring them to love nature the way I do. Here are six tips to help you become a better wildlife photographer.

1. Envision Your Shot

Before you grab your camera and head out into the field, excited for the

wildlife you may soon encounter, take some time to consider what exactly you're setting out to create. Envision the image you wish to capture, fitting into one of two categories. First are the dream images, the ones that make you excited just thinking about them, the ones that send a chill down your spine and cause your heart to nearly skip a beat. If you're a list person, describe your dream images in detail. If you're an artist, sketch what you imagine. Either way, never forget them. These images are long-term goals and will serve as your motivation for the long days of nothing when you teeter toward burnout.

For me, a dream image for years had been a brown bear walking head-on through a river with a freshly caught red sockeye salmon. While that may sound impossibly specific, the more specific, the better. Once you have your list of dream images, pick one or two to focus heavily on and put yourself in the best possible place to successfully make the image as you've envisioned it. I finally created one of my dream images in Alaska when watching brown bears fishing for salmon. Surrounded by bears and the roar of the river, I easily could have become overwhelmed with possible shots and missed the one I was there to create, but keeping that dream image in the back of my mind grounded me and let me focus on my goal before eventually successfully creating my dream image.

The second category is the realistic "today" images, the spontaneous goals you decide just before heading out the door, camera in hand. These are less specific and can be as simple as a subject, environment or behavior.

Above: As the sun rose in Rocky Mountain National Park, the whole meadow came to life with bull elk bugles. Two bulls met in the middle of the golden meadow to spar, silhouetted as the sun just crested over the mountain.

Opposite: I visited Alaska for the first time this past summer with the main goal of photographing bears, specifically a bear with a sockeye salmon. After a few hours along the Brooks River, a bear successfully caught a red sockeye, which he quickly carried back to shore to eat before once again returning to the river

Above: These two young bears spent well over a half hour wrestling together in the Brooks River, filling the air with groans and growls as they pawed at one another with water flying. It was clear to me the two were simply playing, despite their somewhat ferocious look.

Opposite: In July, I always head into the Beartooth Mountains in search of mountain goats amid the steep and rocky terrain. At such a high elevation, snow typically still scatters the landscape, but this past July, the snow had melted, turning the alpine meadows to a vibrant green backdrop behind a goat that had already shed its thick coat for summer.

They'll guide you and significantly increase the chances of walking away satisfied rather than disappointed and empty-handed. These can be something as simple as a species or location. I find when I go into the field without a goal, I become distracted and overwhelmed, unsure what to focus on. Time is wasted, and I end the day feeling unaccomplished. Having short and simple goals for each day in the field helps provide a sense of accomplishment and allows for better time management.

2. Take On The Characteristics Of Your Wild Subject

The wildlife you wish to photograph is specially adapted to the environment you'll be in, so emulate them to be successful. It's not as hard as it seems; for moose, wear waders or rubber boots to enable you to move as they move, easily crossing creeks, marshy terrain and muddy riverbanks. For alpine animals like mountain goats, carry trekking poles to maneuver the rocky terrain as easily as they do.

Winter can be an especially challenging time for wildlife photography, with temperatures hovering around zero with deep snow, yet the otters, foxes, wolves, bison and all other wild species that brave the cold couldn't care less. Taking extra steps in winter to become as insulated as your wild subjects will help you stay outside longer when entering their winter haven.

Warm layers are essential, an insulated outer layer being a must, with an extra bonus if it's water-resistant or waterproof for days with snowfall. My favorite extra piece of gear for winter is heated gloves to keep my hands warm while remaining nimble enough to change settings quickly. Snowshoes are another great way to emulate winter wildlife like snowshoe hares and lynx, helping to distribute weight and move easily throughout deep snow. Camera equipment that can also keep up with the cold, wintery conditions is also important. I use the weather-sealed Canon EOS R5 mirrorless camera, so I don't have to worry about heavy snowfall. Always remember to bring an extra camera battery in the winter, too—the cold runs the charge out fast!

3. Pay Attention To What Your Subject Tells You

Paying attention to body language is extremely important in being successful in wildlife photography, and learning about an animal's behavior will increase your chances of successfully finding and photographing that species. Learn everything you can about your target species—habitat, diet, breeding seasons, when they're most active, what they sound like—then use what you've learned in the field to locate an animal. Once you've found an animal, position yourself in the best

Above: Just before dawn in Colorado, a bull elk began herding his harem to protect them from other competing bulls. As he walked, he carried his antlers high, remaining alert and prepared to challenge any competitor.

Opposite: Bighorn sheep are my favorite winter subjects, especially when their rutting season begins. This particular ram had just finished sparring with a younger ram and glanced defiantly at his defeated opponent before walking away with his herd.

place to be successful by observing the animal's behavior and body language.

Imagine you've spotted a grizzly bear in an open meadow, foraging along at a steady pace parallel to the road. Instead of stopping where the bear is now, move forward to where the bear is headed. By doing so, you can be prepared with a composition in mind and have more shooting time before the bear has passed. Subtle clues given through body language can also tell you when a bird is about to take flight, where an animal is headed and even the mood of your subject. Continually evaluate and reevaluate your subject's body language; if any signs of stress are shown, like continual staring, back up or leave the area.

4. Control What You Can

In wildlife photography, there's usually very little you can control in comparison to other types of photography. Lighting may be too bright, too dark, too harsh or not at the right angle. The weather may be warmer than anticipated, snowing, windy or any combination Mother Nature can conjure. Maybe only a squirrel has shown itself when you'd hoped for a grizzly bear. Regardless of the scenario, a few aspects of the creative process can be controlled, and by doing so, help create an effective image.

While wild subjects can't be posed, pay attention to their environment and explore how a change of perspective can improve an image. Start by taking a few steps left or right, then changing directions, all while evaluating the background behind the subject. Often, just a few steps are enough to photograph an animal on a clean background, without any twigs obstructing the subject's face or strange branches looming behind.

Perspective is another key aspect to control, and a change in angle can create an image that better fits the environment and subject. I try to always shoot eye-level at a subject, giving the final image a more intimate feel, even if it entails lying on the ground or balancing on fallen logs. The greatest amount of control comes with editing and post-processing, where there's full creative control. Editing all depends on personal style and preference, but for me, I try to edit an image to look and feel the way I felt in the moment while still remaining true to reality.

5. Acknowledge Your Subject's Wildness And Keep It That Way

Whenever you spend time in nature with wild subjects, acknowledge their wildness and do everything you can to keep them wild. Even if an animal may appear less wild—a wolf with a radio collar, a bear near the road, an elk with an ear tag—they're still wild, and nothing within the photographic process should interfere with their ability to live their lives. This is where gear comes in. For wildlife photography, I recommend at least 300mm of lens or more.

Above: I created this image in Grand Teton National Park at the end of summer, when the bull moose still had their velvet, and the leaves were still green. This moose was stripping leaves off a willow tree at sunrise before bedding down for the day.

Opposite: Bison always amaze me with their resilience and ability to thrive in the harsh Wyoming winters. This bull walked through deep snow as the first flakes of a coming storm began to fall, catching in his fur and turning his beard to icicles.

Teleconverters are another tool that can be used to extend your reach without moving any closer to wildlife. I personally use a Canon 300mm f/2.8 lens, often paired with a 1.4 teleconverter; in the past, I used a Tamron 150-600mm zoom before upgrading to a prime lens. With a longer focal length, you'll be able to get a tighter image of the animal without physically approaching too close; this keeps your subjects behaving naturally and avoids causing stress.

Additionally, remaining a respectable distance is also key to your own personal safety, especially when photographing large animals like grizzly bears or bison. Familiarize yourself with any regulations regarding the legal minimum distance to remain from wildlife, especially in locations like national parks. Remaining ethical in wildlife photography should be at the forefront of the photographic practice. Practices such as baiting, using calls or approaching too close to an animal should be avoided for the well-being of your wild subjects. No single image is worth compromising an animal's wildness or safety.

6. Look For Interesting Interactions

As much as I love a tight wildlife portrait, I'm always waiting for interesting wildlife behavior or interactions between two or more animals. Photographing these scenarios often results in images that tell a story and depict the interconnectedness of nature. Regardless of what animal you photograph, remain alert for other animals nearby that may provide a unique shot.

Herd animals like elk and bison can provide numerous photographic opportunities of same-species interactions, especially during their rutting seasons, when males become competitive for breeding rights. Similarly, the spring and summer can be a great time to photograph interactions between mother and offspring, revealing impactful moments of meaningful wild relationships. Interactions between different species also can be exciting photographic opportunities, whether it's predator-prey interactions, a peaceful crossing of paths or animals with mutually beneficial relationships.

Wolves and ravens are my favorite species to attempt to photograph together; the two are so expressive and wild in their own ways, but both rely on the other at times to be successful, with wolves following ravens to locate a carcass and ravens picking scraps off wolves' leftovers. Photographing moments like these shows the complexity of nature beyond one specific individual or species, potentially inspiring others to look at nature in a deeper way. **OP**

See more of Julia Cook's work at littlelightningnature.com.

CALIFORNIA BLOOMIN'

A guide to photographing wildflowers in the Golden State (and beyond)

Text & Photography By Dave Welling

Desert sand verbena and brown-eyed primrose with Coyote Mountain in the background at Anza-Borrego Desert State Park.

Above: California poppies and desert dandelions at Lancaster Poppy Reserve.

Opposite: Joshua tree about to bloom in Joshua Tree National Park.

Colorful wildflowers announce a new year, new growth and freshness on the land. "Spring" wildflowers bloom not just in spring but throughout the fall in many regions of the country. Blooming depends on seasonal weather, altitude, temperature, habitat and latitude.

I live in California, a state over 1,000 miles from north to south, blessed with all these elements. I can photograph wildflowers from early February through September. You can find similar situations in many regions of the country.

Join me as I go on the road in California to reveal the best spots to photograph wildflowers. I'll also share tips with you on how to capture these colorful beauties at their best as they emerge in other parts of the country this spring.

Desert Blooms

The deserts of Southern California produce the first spring wildflowers if winter rains cooperate. One of the earliest blooming areas is the low desert in Anza-Borrego Desert State Park. Wildflowers bloom here in February, and you will be amazed at the diversity of species. Dune primrose bloom among desert sand verbena, and the color combination makes great images. The park has a website with wildflower blooming information.

You can find sand verbena carpeting the desert floor. I captured an image that isolated just the expanse of flowers emphasizing the lushness of the new growth. But I also like to capture grand landscapes of the flowers and their habitat.

I recomposed to include Coyote Mountain in the background, an interesting contrast of arid desert and lush new growth. I used a low angle of view in these compositions to emphasize the wildflower elements.

Anza-Borrego Park is immense, and driving distances are significant. Plan a few days in Borrego Springs, a small town with all facilities in the park. When I find a field of flowers, I like to spend time capturing the different faces of the

Above: Fully opened California poppy at Lancaster Poppy Reserve.

Opposite: Lemmon's paintbrush at Mammoth Overlook in the Eastern Sierras.

flowers, from wild-angle vast landscapes to macro detail. Plan on using a tripod and have lots of patience waiting for a break in the ever-present wind.

If you arrive in March or April, you can find a wide variety of cacti, which produce spectacular flowers. I usually spend a lot of time with one flowering cactus looking for different perspectives and ways to capture the flowers.

Joshua Trees and Santa Monica Mountains

North of Anza-Borrego, Joshua Tree National Park is a vast, protected land of arid Colorado desert. The park is named for the Joshua trees that grow there. These "trees" are not your usual wildflower subject, but they produce spectacular white blooms. I photographed a tree with the buds just forming to emphasize an old, gnarled-looking tree still has life.

There are cactus gardens throughout the park. Go in March and April for the Joshua tree and cactus blooms. Another beautiful plant in the area is the ocotillo. During most of the year, they are spindly, dried-out branches. But in spring, they produce lush green leaves and brilliant red flowers. They make a great subject. I like to photograph the complete plant and include the arid surroundings. Then I turn to the flowers for intimate closeups. The plant supports insects and other wildlife, and I like to show their relationship.

The Santa Monica Mountains National Recreation Area in Los Angeles is a protected, wooded wonderland of trails, streams and wildflower opportunities. In spring, you may see spectacular wildflowers, like hummingbird sage and California mariposa lily.

Surprisingly, you can find orchids in the Santa Monica Mountains. Stream orchids grow in lightly shaded areas along ephemeral streams. Look closely along the banks.

In spring, following a wildfire burn now common in Southern California, wildflowers often spring up in large displays. Look for these displays surrounding charred remnants of plants and trees lost in the fire. Images like lupine surrounding a burned tree stem contrast the fire devastation with the feel of new life signified by the wildflowers.

Poppy Fields

In March or April, if winter rains were good, head for Lancaster Poppy Reserve (officially known as the Antelope Valley California Poppy Reserve State Natural Reserve) north of Los Angeles for spectacular wildflower photography. The diversity of flowers and color are outstanding. The Reserve sponsors wildflower days and has extensive information on species and locations.

Wander the area early in the morning

Above: Pipevine swallowtail on desert thistle.

Opposite: California poppies and wildflowers at sunrise at Lancaster Poppy Reserve.

to capture flowers before they open, then stick around for fully opened blooms for entirely different images like my photo of a poppy field taken just a little later in the morning. Later morning light can be very harsh, so photograph as early as possible, when the poppies open.

These massive wildflower displays only occur every few years. If you are in the area, make sure you visit during a display. When wandering fields of flowers, PLEASE respect them and DO NOT tramp them down to get your image.

I wander around the wildflowers looking to isolate individual flowers for another perspective. Early in the morning, you can photograph the poppies just as they are about to open. Stay a while and capture images of the fully opened flower. It looks like a completely different species.

Head North

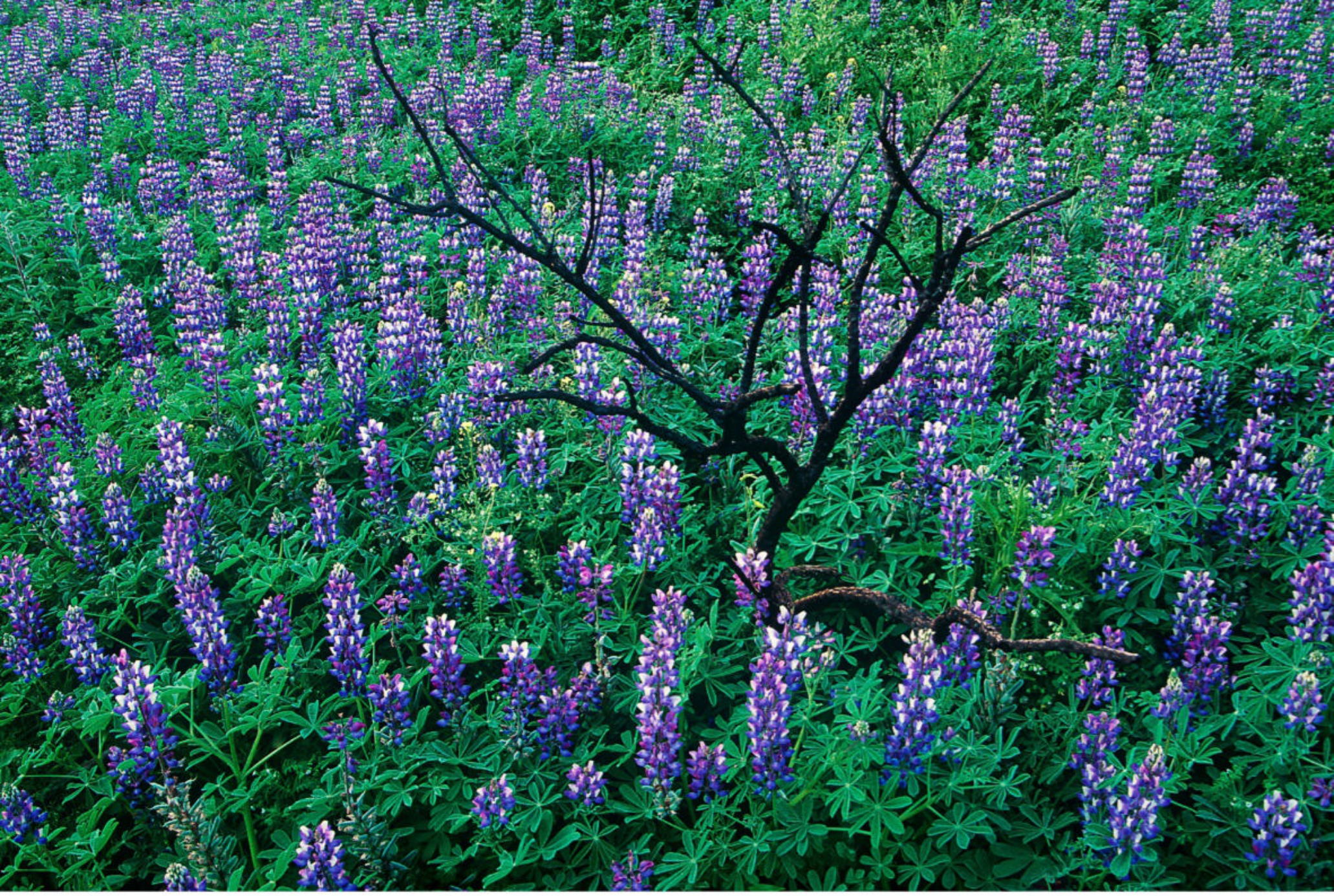
Wildflowers bloom depending on warming trends, so work your way north from Los Angles as the temperatures rise. In early June, head to the Eastern Sierras in California. Drive to the Eastern Sierras via U.S. Route 395 north of Los Angeles. Stop in the Alabama Hills, just west of Lone Pine, for high desert wildflowers. Wildflowers here are tiny, like desert calico and Parry's gilia. The whole flower bouquets were 3 feet high. Walk carefully. This is "on your belly" photo time.

In the summer, head to Bishop in the Eastern Sierras via Route 395 north of Lone Pine. Take California State Route 168 west of Bishop into the Sierras for spectacular higher-altitude wildflowers. Stop along the highway for wildflower hikes. You could be rewarded with flowers like Kelly's tiger lilies. Bishop is a full-service town and a great location for photo day trips.

North of Bishop, on Route 395, take the California State Route 203 turnoff to Mammoth Lakes. Go through Mammoth Mountain ski area to the overlook. The view here is spectacular. In early summer, you may be able to capture grand landscapes of the distant Sierras with fields of Lemmon's paintbrush in the foreground. Lemmon's paintbrush are soft pink multi-petaled flowers worthy of isolated photographs of just the blossoms themselves. Use your wide-angle lens and get low to feature the wildflowers or a little higher to bring out the Sierras. Sunrise offers the best light.

The Birds and The Bees and The Butterflies

A great late summer to early fall location in northern California is Prairie Creek Redwoods State Park. Drive and hike the area for wildflowers



like mountain iris. Multiple blooms or blooms in interesting spots make for unique images.

Lupine bloom throughout the park, and early summer is breeding time for birds. With a little luck, you might capture a male perched on colorful lupine singing to announce his territory.

Driving the back roads in California can be especially productive. I found several Rocky Mountain bee plants blooming along a dirt road. Wildflowers provide nectar and food for a variety of insects. Find a flower with insects buzzing, set up and wait. I photographed a honeybee visiting his namesake. I sat in my car and used a medium telephoto lens with shallow depth of field and a bean bag to stabilize my camera on the windowsill.

Another roadside gem was a stunning goatsbeard. Drive slowly, enjoy the scenery and watch for unique colors in the landscape. Or lock your car and wander. The scenery everywhere is beautiful.

Wildflowers are diverse, and so are the insects that feed on them. Butterflies on wildflowers make great images. Find an area where they are feeding, set up on a photogenic blossom and wait. Use a long telephoto lens with shallow depth of field to diffuse the background and give you distance from the butterfly. You might be rewarded with an image of a pipevine swallowtail.

Wildflowers are interesting, colorful, challenging subjects. Look for grand landscapes, isolated flowers, interaction with wildlife that depend on them for food and abstract interpretations that challenge the viewer, like a close-up of cactus flower leaves. Animals feeding among wildflowers also make great wildflower/species interaction images.

Areas of wildflower diversity exist in all regions of all countries. Go out and wander. You will create beautiful images and be happy you did. **OP**

See more of Dave Welling's work at strikingnatureimagesbydavewelling.com.

Above: Foothill lupine and charred plant stem at Santa Monica Mountains National Recreation Area.

Opposite: Lazuli bunting on lupine in Prairie Creek Redwoods State Park.

I love the portability of using smaller cameras when scrambling. Having left my wider lens and tripod in the car when I climbed up some roadside cliffs, I really appreciated the ability to handhold a series of vertical frames and stitch them together afterward using Lightroom to make a higher-resolution final image.

— SMALL WONDERS —

Why smaller sensor cameras are great for outdoor photography

Text & Photography By Josh Miller

As a photographer, I'm lucky to have come of age in photography at the very end of the film era. In college, I worked as a darkroom assistant and for several newspapers shooting sports with manual-focus prime lenses on super grainy black-and-white film. But it wasn't too many years after college that I bought my first digital camera.

As those of us "lucky" enough to have shot film know, while fun, film was a temperamental medium. Film was unforgiving, from scratched negatives and developing mistakes to minimal dynamic range and grain that would make today's noise-adverse photographers cry. When you compare that to the abilities of today's modern cameras, there's no question we have it easy today. Any digital camera made in the last 10 years can easily blow away the best of the film era, and the current generation of high-end full-frame cameras is just mind-blowing. But as digital cameras have gotten better, they have also gotten bigger.

For us outdoor photographers, full-frame camera systems from Nikon, Canon and Sony are the most popular and offer the best combination of image quality and lens options. But at what expense? Full-frame lenses and bodies are expensive and heavy. As an outdoor photographer who regularly travels to both front-country and backcountry destinations, I have always made weight and portability big priorities in my choice of equipment.

Going Small

In my never-ending search for lighter and more portable gear, I have tried just about every camera system and format on the market over the years—everything from a tiny Sony RX100 compact camera for lightweight backcountry ski or climbing

Above: For many years, Canyon de Chelly has been a place I wanted to visit and photograph. When we spent a couple days there during a road trip this fall, I couldn't wait to photograph the ruins with the full moon. This single-frame sunrise image was made by shooting the ruins from a distance and zooming in with the Olympus 40-150mm lens to make the moon larger and add compression to the image.

Opposite: While camping in Grand Staircase Escalante region, I hiked out to these falls in the early morning to avoid any sunlight reaching into the canyon. By photographing the falls and leaves in full shade, I was able to both avoid high-contrast light and slow my shutter speed down to blur the water. Sadly, the sunlight came in faster than I expected, and I only got to make this one composition before the top of the falls came into the sun.

days to APS-C sensor cameras from Fujifilm and the newest Micro Four Thirds sensor camera, the OM System OM-1, from OM Digital Solutions (formerly Olympus).

What really turned me on to the abilities of smaller sensor cameras was when I printed a 30x40-inch image shot with my Sony RX100 for the local climbing gym. I was blown away by how great the image of my friend traversing a ridge in the Yosemite high country looked. Sure, the print would have looked better if it was shot from my full-frame Nikon, but there was no way I could carry the big Nikon camera on the climb. And the print from the tiny 20-megapixel RX100 was perfectly usable in that size.

To me, the main advantage of using smaller sensor cameras (i.e., smaller than full frame) is that the lenses can be smaller than their full-frame counterparts. When Sony first started making

Above: While the weight savings of a smaller sensor camera wasn't really needed at this roadside pullout, I was amazed at how well the bracketed HDR file from the OM-1 held up as a print. I ran some test strips all the way up to 20x30 inches from this image, and they looked really good, especially once they were upsized using Topaz. Maybe not 45MP full-frame good, but still, the files from this smaller sensor camera blew me away and were totally printable.

Opposite: Only having a single day to visit Petrified Forest National Park this past fall, we were in the park from opening till sunset. I really appreciated how small and light the OM-1 was because I shot for about 12 hours straight without a break. With a storm breaking at sunset (the same time we were required to exit the park), I knew I had to be fast and light. After shooting as many sunset compositions as possible, I literally had to sprint for the car in order to make it out of the park in time.

One of the most important skills I have developed over the years as a wildlife and adventure photographer is how to previsualize and build an image. While it is fun, often we get sucked into following the action and miss the more time-consuming compositions that really tell a story of place. As in the case of this image, after a couple of days of photographing eagles fighting over salmon, my group was ready to start looking for something a bit more composed and less reactionary. So, we previsualized an eagle flying into our carefully composed mountain scene. It took a couple hours of waiting, but eventually a few eagles played their parts, and we all came away with some dramatic mountain/eagle landscapes.

full-frame mirrorless cameras, much of the marketing hype was about how much smaller they were. In reality, even though the bodies were a little smaller than an equivalent full-frame DSLR, the lenses were very similar in size to the DSLR versions. The real size and weight advantage of mirrorless cameras comes from reducing the sensor size and thus the size of the glass needed to cover it. Depending on the imaging chip size, smaller sensor mirrorless camera lenses can weigh as much as 40-50% less than their full-frame counterparts.

But this weight savings does come at a cost. Smaller sensors have less dynamic range and tend to have a bit more noise at high ISOs than their full-frame counterparts. While each camera/sensor has its own unique characteristics, a general rule of thumb is that for each sensor size reduction, i.e., full frame to APS-C, APS-C to Micro Four Thirds, you lose about a stop of high ISO ability and dynamic range. While this may seem like a deal breaker, the newest generation of smaller sensor cameras is really quite good. An easy way to think of it is that they're more similar to a full-frame camera of about five years ago. Aside from pixel peeping, were full-frame cameras five years ago up to the task? Absolutely!

Testing The OM-1

This past fall, after spending the summer carrying my heavy full-frame kit around Alaska leading bear workshops, my arms and back hurt. After years of urging from my good friend and OM System ambassador Eric Rock, I decided it was time to give the new OM-1 camera a spin. I borrowed an OM-1 and a few lenses for a road trip through the Southwest and an eagle workshop in Alaska. I was blown away by the abilities of this Micro Four Thirds-based pro camera and the tiny size and sharpness of the lenses.

While APS-C-sized sensors might seem like the best choice, as they don't give up too much image quality to full frame, they also aren't that much smaller than full frame. To me, the sweet spot in terms of really reducing your camera system weight is Micro Four Thirds. This is especially true for wildlife photographers who typically would carry huge telephoto lenses.

Top: Having photographed eagles in Alaska many times over the years, I really appreciated how light and portable the OM-1 was when paired with the Olympus 150-400mm lens. During my week of shooting, while others lugged around their heavy full-frame prime lenses and tripods, I seemed to always have the right focal length at my fingertips and didn't need a tripod to hold it. In this case, I was able to quickly be ready for the action when the two eagles started fighting.

Bottom: One of my favorite things about photographing wildlife is looking for the more subtle moments that help tell a story. In this case, it was less about the action of two eagles fighting over salmon and more about the intimate details of an eagle's hot breath on a cold morning.

The smaller sensor size of Micro Four Thirds means that lenses have a 2x crop factor and thus are about half the size of their full-frame equivalents for the same reach (sometimes smaller). Imagine a handholdable 600mm f/4 equivalent lens that's the same size as a full-frame 70-200mm f/2.8 lens. It's pretty remarkable.

Zooming In

While not cheap, the real winner for me (and, potentially, for other wildlife photographers) is the Olympus M.Zuiko 150-400mm f/4.5 TC1.25x IS Pro lens ($7,500) that I tested with the OM-1. I used this handholdable and super-sharp zoom during one of my eagle workshops in Alaska this fall and was blown away by the portability and ease of use. Not only is it equivalent to a 300-800mm f/4.5 in full frame, it also includes a built-in 1.25x teleconverter, which makes it a 1000mm f/5.6 lens that I was able to regularly handhold down to 1/125th of a second or slower.

Not only that, the lens and camera are fully sealed and weatherproof. When I borrowed the setup to test, I asked if "all that weather sealing stuff was just marketing hype?" My contact told me the camera could take anything I could throw at it. I shot with it all day in the rain and snow and even had an eagle poop directly on me and the camera. Nothing phased it (though I did clean the lens in the shower after the pooping incident).

For comparison, the OM-1 and 150-400mm f/4.5 were similar in weight to my much-loved Nikon Z 9 paired with the Nikkor 100-400mm f/5.6 lens. But the OM System lens lets in more light, has more than double the reach and seems sharper.

As a workshop leader, I've seen a shift in the lenses carried by my clients over the years. In the past, a big $12,000+ 600mm f/4 lens used to be almost a requirement for serious wildlife photography. Now most photographers are choosing telephoto zooms in the 200-600mm range, which, while slower and not quite as sharp, are far more portable and fun to use than big telephoto primes.

Image Quality Considerations

Let's talk image quality. The real question is, how much is enough? Saying smaller sensors have lower image quality than their full-frame counterparts isn't quite accurate. The image quality coming from today's smaller sensor cameras (APS-C or Micro Four Thirds) is amazing and as good or better than anything the top-level full-frame pro cameras from a few years ago could produce.

Top: This photo shot with the OM-1 at ISO 4000 blew me away. With a bit of noise reduction and upsizing from Topaz, I was able to do a major crop and then print the file up to 16x20 inches, and it looked stunning. More than anything, combining new software with newer small sensor cameras has opened a new world of photographic possibilities that were only possible with much heavier and more expensive full-frame cameras a few years ago.

Bottom: Nothing is more fun than photographing fast-action wildlife. Years ago, the only way to shoot distant action in low light was with huge and expensive telephoto lenses mounted on a tripod. Well, times have changed, and if I learned anything from my time working with smaller sensor cameras recently, it is how freeing it is to ditch the tripod. Not only can you follow action more effectively handheld, but no tripod means you are more likely to move your feet and thus improve your composition, depending on where the action takes place.

So again, the question is, how good is good enough? How often are you making prints beyond 16x20 inches or even 20x30 inches? I found the only real noticeable advantages of full-frame files vs. smaller sensor files were when I was making big crops or huge prints or pushing high contrast files beyond what anyone should really be pushing.

After spending a couple months shooting with the OM-1, I ran a bunch of print tests with my photo lab and found that when showing prints in the 16x20-inch or 20x30-inch range at a normal viewing distance, most non-photographers couldn't tell the difference. What was even more surprising was that even some photographers couldn't tell the difference.

Traveling Light

Spending lots of time with workshop clients in the field, I think the number one thing many of them can do to improve their photography is to reduce the weight and size of their gear in order to be more mobile. Often, I see people missing shots because they are fumbling with a heavy tripod or lens. For most users, I think the tradeoff in terms of slight image quality reduction vs. portability is 100% worth it (maybe even 150%).

Now, having returned the OM camera gear, the real question for me is, what do I plan to do? Do I put my money where my mouth is or keep carrying my heavier full-frame gear?

I loved shooting with the OM-1 this fall and was sad to return it. But the tricky thing for me as a professional is that I have regular print orders in the 30x40-inch range, which pushes the ability of the Micro Fourth Thirds sensor, especially at higher ISOs.

Time will tell, but I can say that either way, I'm done carrying a backbreaking full-frame 600mm *f*/4 lens. I've fallen in love with the portability of smaller and slower lenses. And with the high ISO abilities of modern cameras, I'm willing to give up a stop of light in exchange for portability. As the saying goes, "location, location, location." Lighter camera gear makes being in the right location easier for all of us. **OP**

See more of Josh Miller's work and learn about his workshops, including Bears and Eagles of Alaska, Costa Rica, Lake Tahoe, Yosemite and Patagonia, at joshmillerphotography.com.

FIGURE 1: In Part 3 of this article series, we discussed the value in exploring different developmental styles and paths. But what does it mean to develop well? Read on to gain some insights.

A MODERN APPROACH TO VISUALIZATION

PART 4

DEVELOPING A STYLE

Text & Photography By Jason Bradley

Welcome to Part 4 of this article series on a modern approach to visualization and this series' final installment. Picking up where I left off in Part 3, my hope is that the last article left you with a sense of freedom to explore an assortment of different developments in pursuit of your style as a photographer. Still, playing with different looks is just part of the process. What constitutes a well-developed image? What is a good developmental technique versus a bad one? Is there a formula?

Truth be told, there are no right or wrong answers. I believe you'll know a good development when you see it. My apologies for the nebulous answer, but I think it would be bad form to pretend to know the definitions of good art or bad, or a good vs. bad development. It's a subjective thing.

Instead, allow me to offer a suggestion. An image that's developed well is one that clearly conveys its subject, translates feelings clearly and adroitly expresses its narrative. Needless to say, to convey subjects and translate ideas, you need to know what they are. As you know if you've been following this article series, this is the tricky part. Visualization helps us connect with our ideas and subjects and dictates much of our workflow.

Think back to Part 2 in this series. I used the images in Figure 2 to illustrate an example of how I can express the same scene, shot at the same time of day, with the same lens and from the same perspective, but they're completely different in their execution. They're different because the idea of how I wanted to express the subject was different with each image, and each idea dictated how I set and used my camera. When I develop an image, clarity of subject matter and what I want to say about it also guide what tools I choose to use. To illustrate my approach with this process, allow me to introduce you to printing notes.

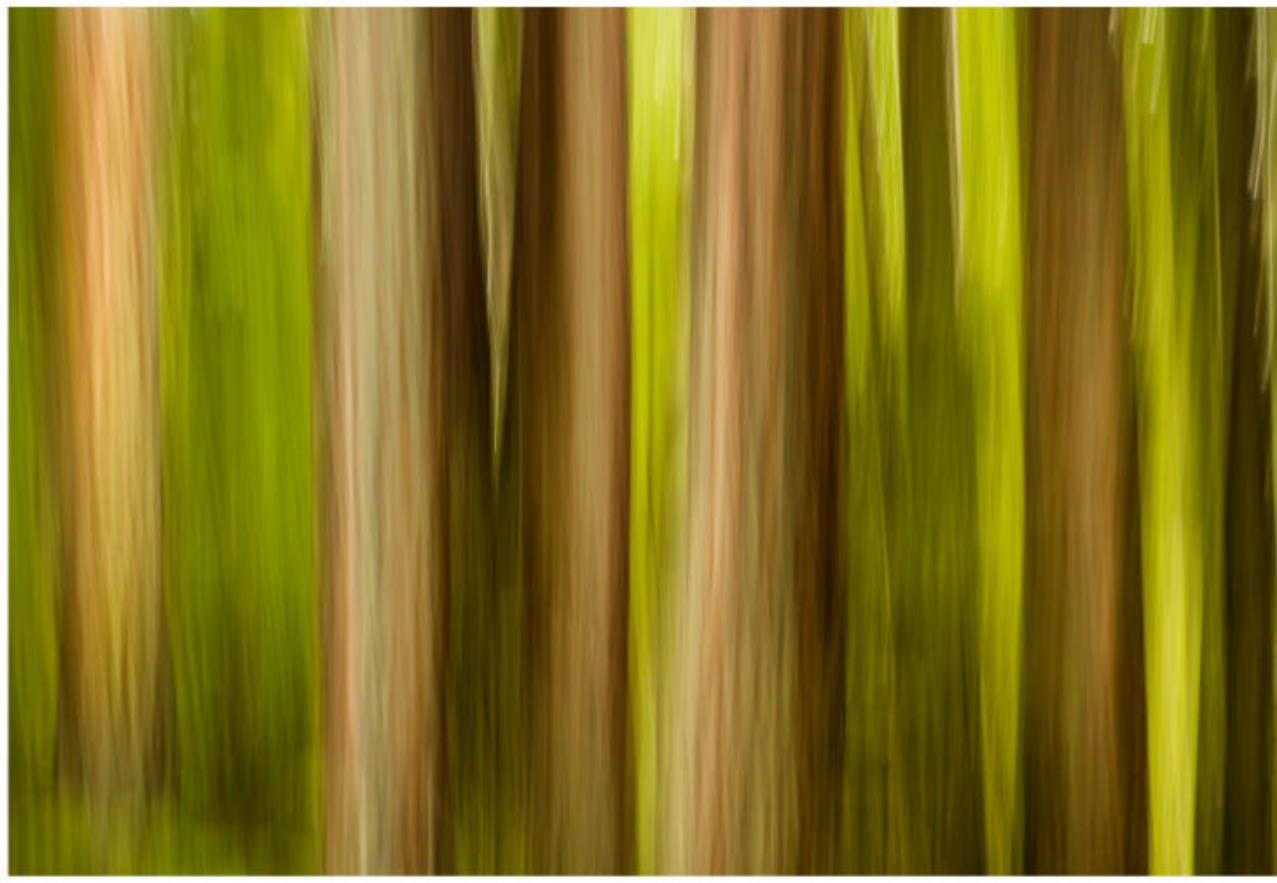


FIGURE 2: Concepts visualized clearly help guide how we configure our camera settings. Here are two images shot at the same place, same time of day, but with two distinct results based on the different messages I wanted to convey.

Printing Notes

With digital technology, creating identical reproductions is simple. Well, simple once you know the technique, of course. Either way, if one practices ICC color management when printing, then you can print as many as you like, and each print

FIGURE 3: Visualization helps me gain clarity on what my subject is and how I want to express it, which further helps me know what elements should or should not be in frame. In this case, the first image is my sketch, and the second is my final version after determining what elements I can crop out from the first composition.

will be exactly the same as the last. With analog printing, not so much.

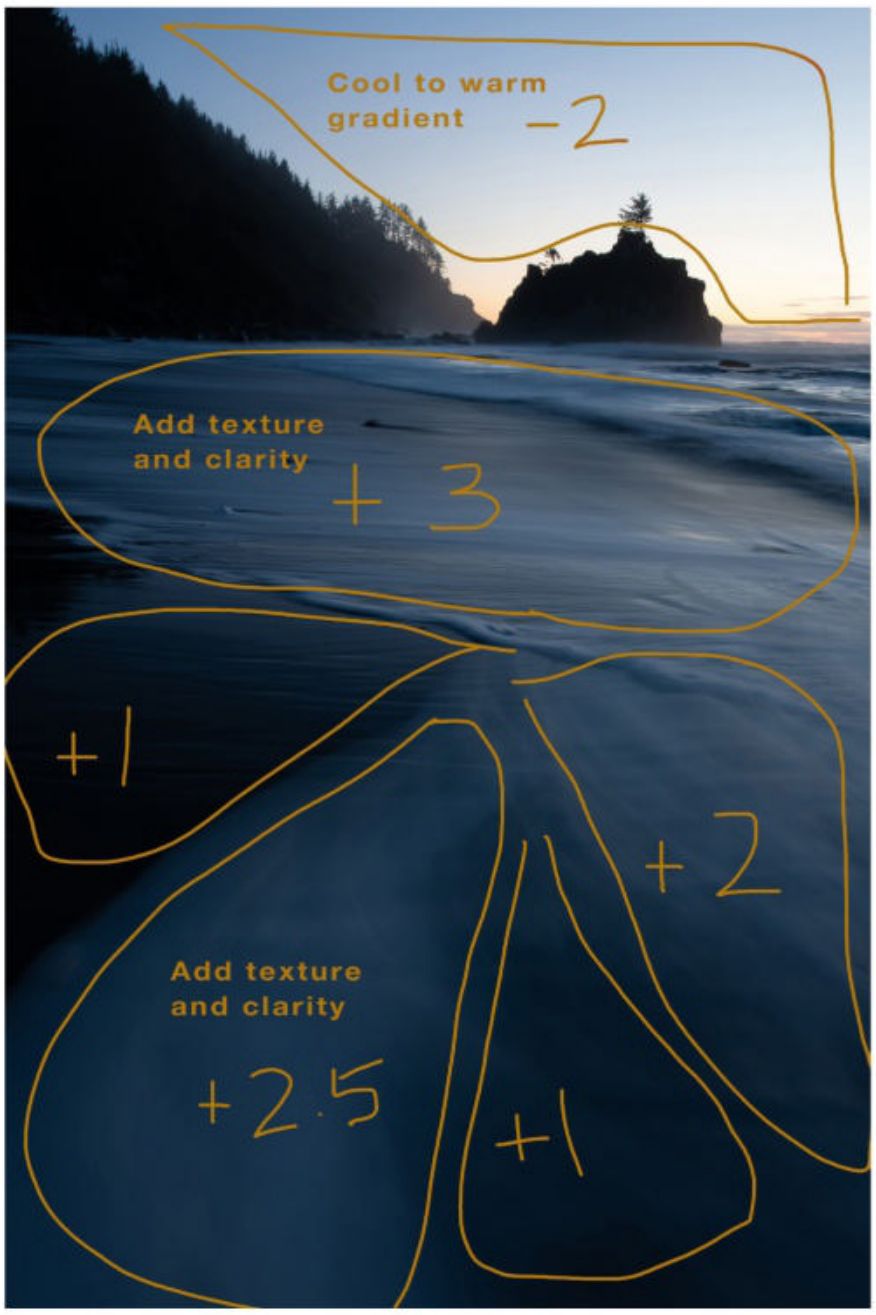
Analog printing is an art all unto itself. It requires a depth of knowledge of equipment, chemicals, papers and a variety of techniques to fine-tune a negative. There are so many variables in the process that creating two prints that are identical, even with the most skilled of darkroom technicians, is challenging at best.

One of the secrets analog printmakers use to create consistency is, drumroll please, printing notes. Printing notes, used by darkroom masters such as Ansel Adams and Pablo Inirio, are written guides to reproducing a photographer's vision with consistency with each iteration. But more important to the context of visualization and developing well, printing notes represent the aesthetic choices that have evolved with trial and error working toward a final version that's worthy of duplicating.

I almost always start with making printing notes. To be more precise, I have a process that includes analyzing my raw materials, studying what's working and what's not, making choices on how I want to work with my image in Lightroom's Develop Module (my tool of choice), and then I begin to play with different tools and settings until something begins to emerge that's reminiscent of what I visualized. No, I don't actually scribble all over my computer screen. This is a "modern approach" to visualization, and the printing notes I take are mental, of course.

Frame Of Reference

My "scribbles" always have a frame of reference. When developing, I think back to how I crafted my composition. Or, better yet, I think back to what I visualized and what I determined should or should not be in my frame. How I make those determinations is not too different than how a sentence is constructed. In order for a sentence to make any sense, there needs to be both a subject and a predicate. Similarly, as I make photographs, I often ask myself: What's the subject of my composition, and what do I want to say about it? My images need those essential elements to make some sort of sense to me.



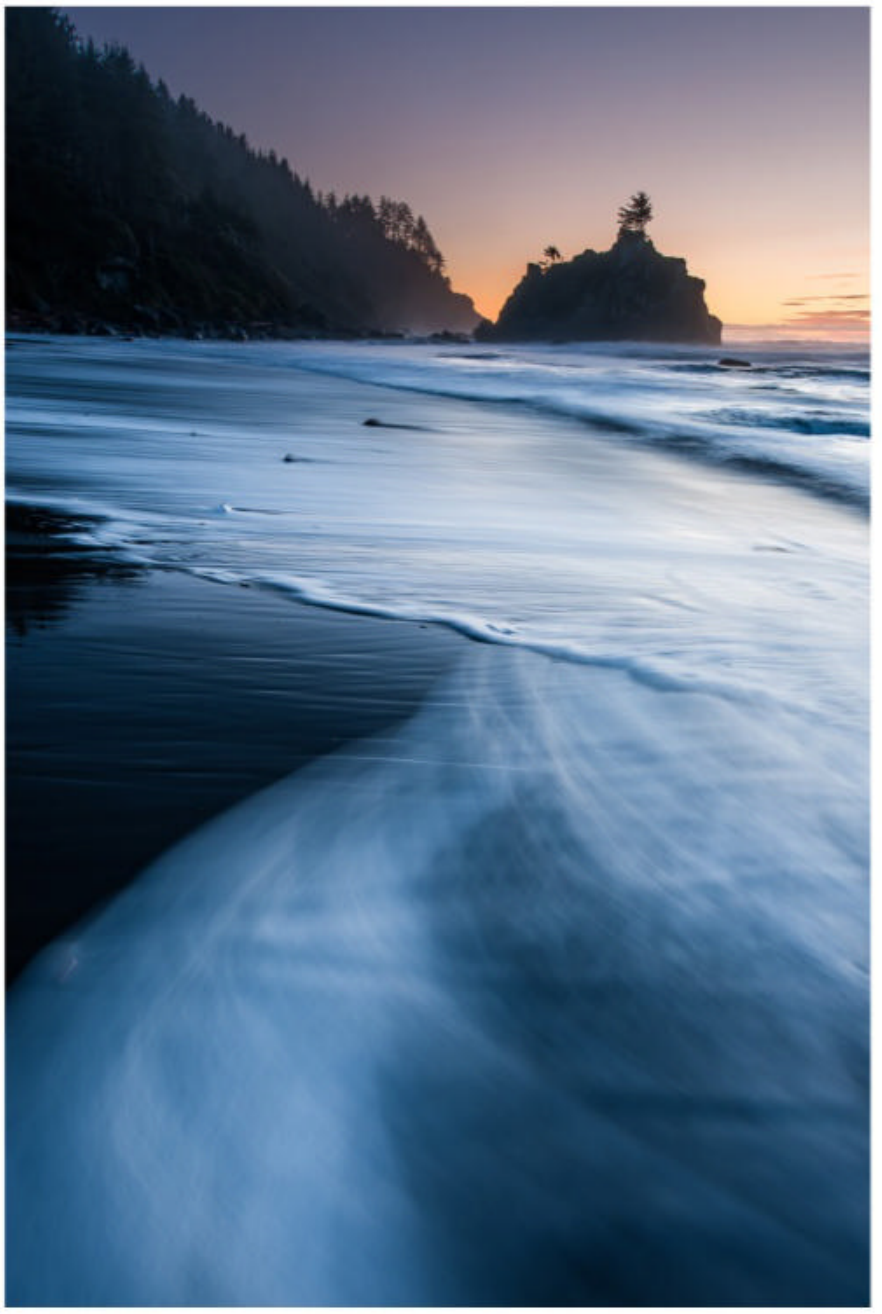


FIGURE 4: This is a set of files showing my printing notes, or "scribbles," as I work through a set of developmental considerations to balance tones and draw the attention of my viewer to the subject.

FIGURE 5: Color also captures our attention and can draw the viewer's eye to subject matter or parts of the frame we want to emphasize.

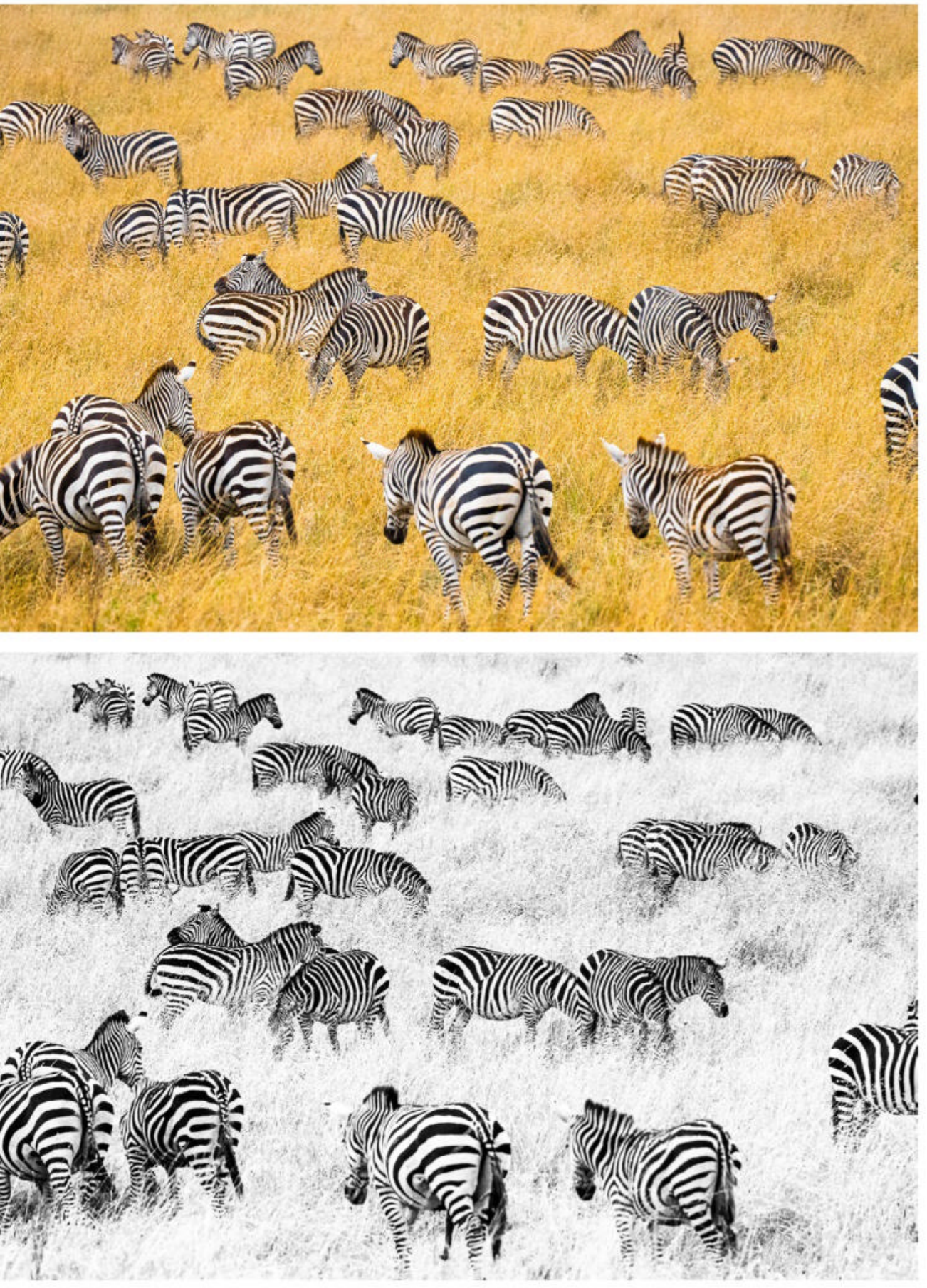


FIGURE 6: Here are a color and black-and-white version of the same image. Removing color changes the focus or narrative of the photograph.

Let's look at Figure 3 as an example. As I was strolling through a small harborside town somewhere in southeast Alaska, I became intrigued by this large dark red shed. Initially, I wasn't sure why, I just knew that I liked it and thought it might have potential for a photograph, so I began to sketch some ideas.

The first image was my sketch, which didn't do much for me. There were a lot of extraneous elements in the frame that didn't offer anything of value. But, after some thought and consideration to what my subject was, I was able to make a decision about what should be in the frame and what I could crop out. I realized I was intrigued by the floats hanging on the side of the shed. I liked their pattern, their form and the color of the shed's siding. Anything in frame that didn't support those elements in some way was incidental to what was framing my thoughts, which dictated how I framed my composition. The second image in Figure 3 bears the fruit of that process.

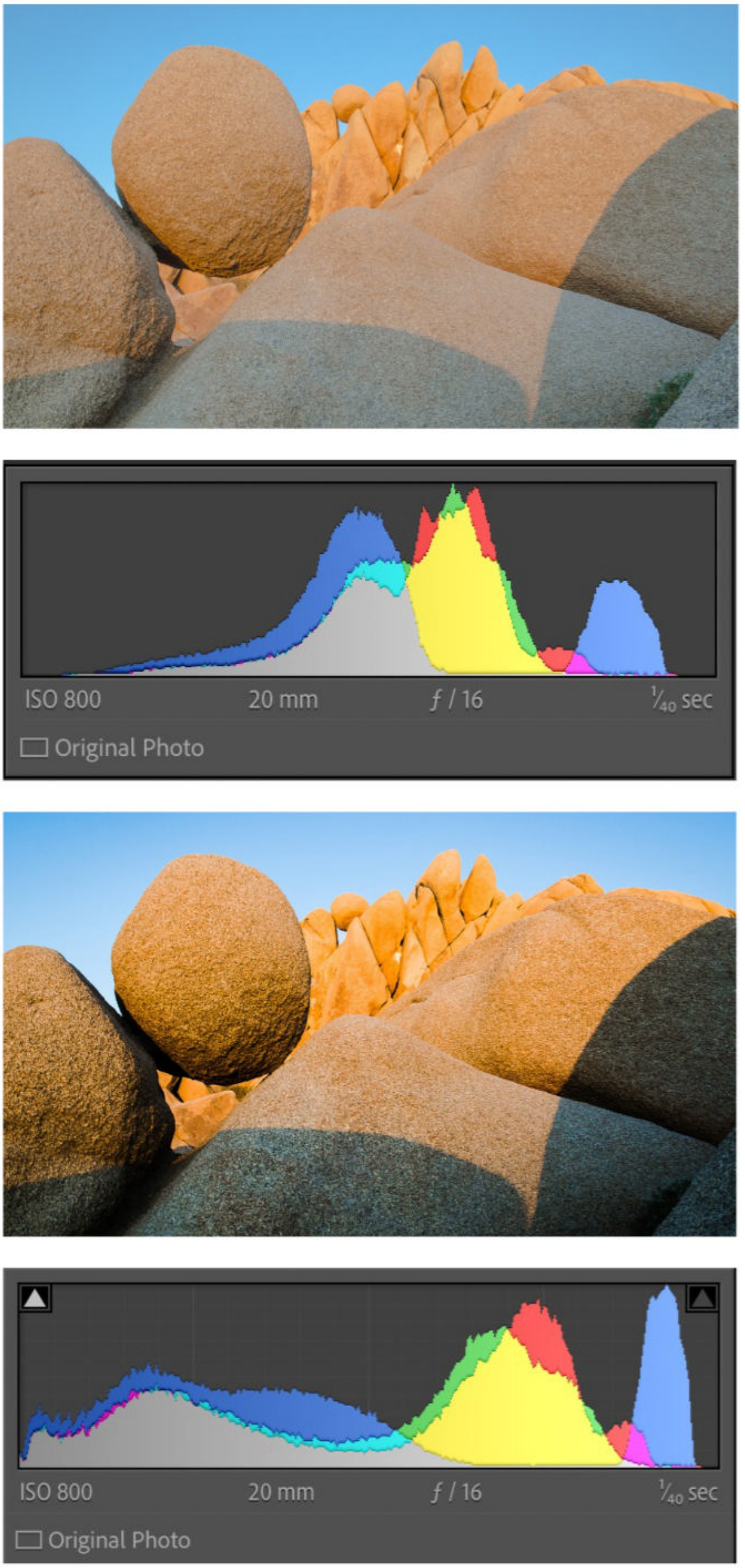
My frame of reference when developing is much the same. Instead of thinking about how elements are arranged compositionally, I consider more how they're portrayed or how to stylize my image to convey effectively what I want to say about my subject. I consider the mood I want to create and the feeling I want to project as a start.

Developmental Considerations

Generally speaking, there's no order in which one needs to do their developments with RAW workflow. However, I have become accustomed to focusing on tonal balancing as a first step. I've found that it helps me see the developmental playing field a bit better, which helps me play with color and contrast more effectively.

What's tonal balancing? It's a fancy way of saying dodging and burning. Figure 4 shows a before and after view of an image I took at a place called Hidden Beach in Redwood National Park, California. The first image shows the RAW untouched file. The second image is the same, with the addition of my digitally added printing note scribbles and then the final result. The big question then becomes, what's my process for deciding what and where to scribble?

FIGURE 7: This is a view of an image of a rock from Joshua Tree National Park with and without contrast. Contrast is a tool for adding depth to a landscape by emphasizing dimensionality of shapes and objects. Conversely, reduce contrast if your goal is to deemphasize dimensionality.



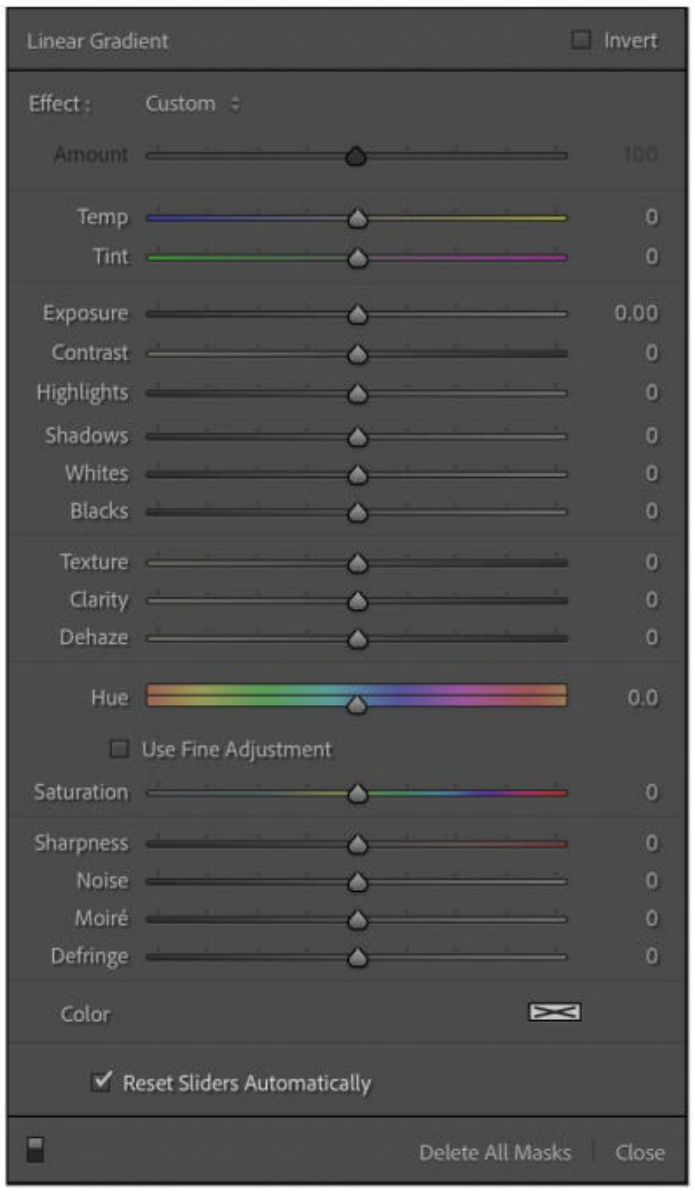
Typically, attention is given to the brightest part of the frame, or the part of the frame that expresses the most contrast. When I first look at my RAW untouched file, I start by evaluating where my eye goes or identify what parts of the frame my attention is drawn to. If I'm drawn to something other than the subject, I can use a few developmental tricks to balance tones to redirect focus to that subject.

In the case of Figure 4, the bright sky in the RAW file draws my attention, where in the developed file, the sky is toned down, the foreground tonality is brought out, and the texture and color contrast between foreground and background is subtly emphasized. The water on the beach in the final version clearly becomes the point of interest and where my eye goes first.

Image development offers us the opportunity to deflect our audience's attention to the parts of the composition we want them to experience or draw them away from parts of the composition that are more incidental to what we're trying to say. Think of it like stylistically cropping something out of frame.

Figure 5 illustrates an example of how color can direct our attention. This is an image I took in Olympic National Park, and even though the subject is taking up a very small portion of the frame, there's little doubt what the subject is, and color grabs the eye—the figure wearing the red jacket. In this case, my direction developmentally was to emphasize the contrasting colors since they were the central focus of my narrative.

Color images are always about color to some degree, and color can trigger an array of emotions and psychological responses. Colors can be saturated, making a bold and strong statement. Or they can be subtle, imbuing peaceful, calming feelings. In contrast (pun strategically intended), black-and-white imagery is



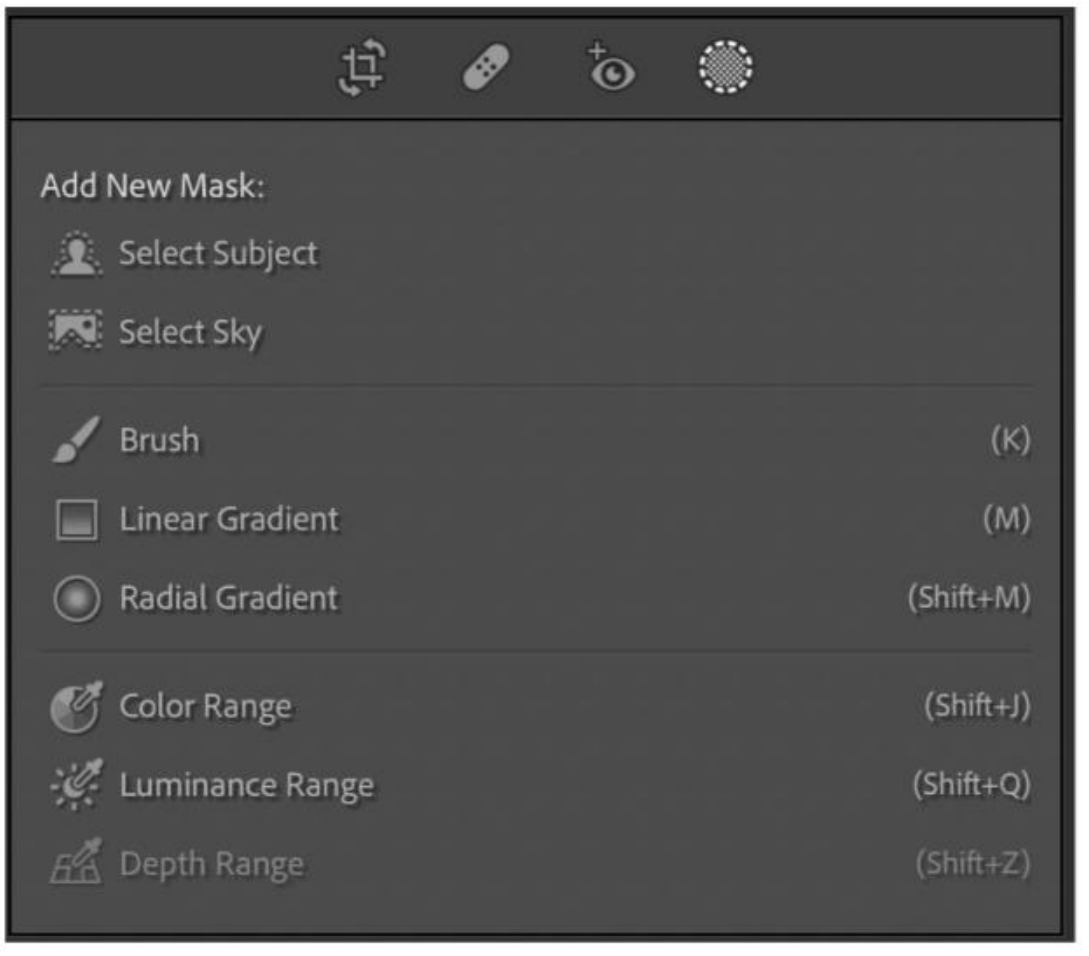


FIGURE 8: Lightroom's localized correction tools offer us a tremendous amount of developmental control we can apply to specific zones of our images.

often about light and shadow, patterns, textures, shapes or basically anything but color.

Figure 6 shows an example of how color, or lack thereof, dictates the narrative. With each image, the subject is the herd of zebras, but one expresses them grazing in a warmly toned bright yellow field, while the black-and-white version is simply about the zebra pattern placing the grass and grazing aspect of the narrative out of context.

In Lightroom Classic (as with other RAW converters), there are plenty of ways we can work with color. Lightroom has white balance adjustments, vibrance and saturation sliders, the HSL/Color panel, which allows for the shifting hue, saturation or luminance of specific color channels or combinations of color channels, and the Color Grading panel.

What about contrast? Have you ever heard of an image referred to as "flat?" It's a relative term, of course, but it typically refers to the level of contrast in an image, or lack thereof, usually. Tonally speaking, flatness is perceived as the result of areas of light and shadow being more homogenous than they're different. Figure 7 shows an example of a rock formation from Joshua Tree National Park. The first image, purposefully made flat, lacks tonal differentiation. As contrast is added, shadow areas become darker, and highlight areas become brighter. The byproduct of this contextually or aesthetically is that contrast emphasizes depth or dimension. The rock appears rounder in the second image as contrast is added.

Like color, Lightroom and other RAW file converters have multiple ways of working with contrast. Lightroom, for example, has tools allowing photographers to play with contrast globally or in more specific tonal ranges or in more specific micro regions. Tone Curve is a great tool for working with contrast in just your highlights, midtones or shadow regions. The Texture and Clarity sliders allow me to play with contrast to emphasize edges or details, or smooth them out if my goal is to deemphasize a texture.

Then there are localized corrections. Ansel would tremble with jealousy at the ease by which our modern tools allow us to work with images and dodge and burn today. Localized corrections in image editing software give us a tremendous amount of aesthetic control. We have the ability to work with light and shadow, contrast, color, textures and details, all in specific zones, along definitive lines or within distinct shapes.

As I stated in the first article in this series, a camera by itself is simply a tool that records. Good photography is thus more a function of good ideas, and the camera translates those ideas. Visualization, whether the approach is modern or not, is key to helping us get into the headspace we require to connect with those ideas. Some of us experiment and play in the absence of a clear concept until ideas begin to take shape.

But regardless of where they come from or how they manifest, they drive what we shoot, how we shoot and certainly how we develop. May all your future shoots be a bit less about copying a technique and more about making something that comes from your imagination. **OP**

See more of Jason Bradley's work at bradleyphotographic.com.

Backyard Bobcat

A camera trap in Lassen County, California

Text & Photography By Randy Robbins

I live at the edge of the woods in the Northern Sierra of California, and I've used cheap trail cameras to keep tabs on local wildlife for years. This particular bobcat has been a regular on my trail cams, and it was my inspiration for finally diving into DSLR camera trapping. Knowing that this cat was on my property regularly without ever showing itself for a "real" photo finally pushed me over the edge. I narrowed down the cat's preferred path of travel to this log using trail cameras.

My camera trap uses a Camtraptions passive infrared wireless trigger that was placed just out of frame on the left, perpendicular to the log. When it detects motion, it sends a "wake" signal to wireless receivers mounted on three separate Nikon SB28 speedlight flash units (favorites for camera trapping because of their incredibly long standby time) and then a second "Wake, Fire" signal (on a different frequency) to a receiver that's plugged into the camera (in this case, a lower-end Canon T7 DSLR with an 18-55mm kit lens, chosen because it has the larger 24MP sensor of some of the more expensive models, but it's still not a huge loss if a bear destroys it).

The camera fires using a separate wireless trigger (mounted in the hot-shoe) to fire the flashes, which are already awake because the motion trigger woke them up first. The flashes are manually set at a very low 1/16 power for a soft pop of light that doesn't send animals bolting into the woods. Video from a trail camera showed that after this photo (and several others) were taken, the bobcat stuck around grooming itself on the log for three minutes.

Ironically, although nighttime creatures are usually the target, the best camera trap photos I've been able to produce have been daylight shots (or at least dawn and dusk shots with some ambient light), which has led me to get a little creative with camera settings when dialing in the camera trap. The manually set, fixed lighting of a camera trap allows you to know that you're going to nail the lighting when planning strictly for a nighttime shot. But those same settings used during the day will give you a blown-out, overexposed image.

On the off chance one of these nocturnal creatures shows up in the daylight, you don't want to miss the shot. A long shutter at night is fine as the flashes will freeze the subject, but that will result in "ghosting" during the day. I've landed on 1/100th of a second as a good starting-point shutter speed, gambling that the animal won't be moving too fast for daytime shots. For aperture, I used *f*/9 for this set for a little forgiveness with depth of field. I manually set the focus on a point on the log just a bit ahead of where the beam of the trigger was pointing. This allows for the small delay before the camera fires. The hope is that the animal will step into the plane of focus just as the shutter clicks. This time, my estimate worked like a charm. Focus, flash settings, shutter and aperture were all manually set. I used ISO as the one variable that the camera can use to compensate for ambient light.

The lowest ISO I can get away with at night with those settings is around 1600. The T7 doesn't do great in the noise department above that anyway, so I set the ISO on auto, but I limit the max ISO when using auto to 1600. ISO will then slam all the way up to 1600 at night but adjust down as needed if there's ambient light. Since the flash settings are manual and not TTL, the camera meters and sets ISO as if there were no flashes, so it tends to overexpose a bit during the day. In this case, it landed at ISO 800 with a RAW file that was pretty well "exposed to the right," giving me lots of data and plenty

of room to adjust in the editing process.

The "perfect" lighting is what makes the image work, in my opinion. It's not an image you could ever get without off-camera flashes, but it feels impossible to the viewer that there could ever be three off-camera flashes at work here with a wild animal. The number of variables can make camera trapping an incredibly frustrating undertaking, but occasionally, all of those variables line up, and you wind up with a shot like this. It's definitely one I'll treasure. **OP**

See more of Randy Robbins' photography at randyrobbinsphotography.com.

➤ *Canon EOS Rebel T7, EF-S18-55mm f/3.5-5.6 IS II, three Nikon SB28 speedlight flash units. Exposure: 1/100 sec., ƒ/9, ISO 800.*

High Tea

"This image was taken after many attempts visiting the same location within Richmond Park, London, during the annual rutting season," explains photographer Mark Rowe. "I noticed the stags using the trees as cover and reaching for the branches above for food as well as to use as a headdress to make them appear larger in front of their competition. I waited in position while this stag circled the area and finally reached up in front of me and my lens—something I had been waiting many months for!"

See more of Mark Rowe's work at markrowecaptures.com.

➤ *Sony A1, Sony FE 200-600mm F5.6-6.3 G OSS at 600mm. Exposure: 1/60 sec., ƒ/6.3, ISO 1250.*

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The new WhiteWall Design Edition frames by Studio Besau-Marguerre in yellow, purple and green
Images by Kim Holtermand

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