BY NORBERT WU

Tools of the Trade

Essential gear for field photographers

You can read all of the books that you want, but nothing substitutes for field experience. In this article, I'll use my experiences from thousands of hours in the field to recommend a few accessories for wildlife and nature shooting that will save you time and money. Most of these tools were designed for still photographers, but they can be used for videographers as well. I also present several tips to make your field photography easier. These are tricks of the trade you'll never find in photography books, but are nevertheless invaluable when working in the field.

Tripods

Almost every book that I've seen on photography stresses the need for a tripod. As a still photographer, I use a tripod when I'm using long lenses, in low light, or when shooting landscapes that require long shutter speeds. I rarely use a tripod when I'm photographing people or animals because a tripod limits movement. As a videographer, I use a tripod in far more situations.

I like my tripods to be simple, stable platforms I can set up quickly and easily. I have no need for tripods that can rotate into a thousand different positions. After years of trying different tripods, I've settled on Gitzo tripods. They're tough, well-made, sturdy tripods that last forever. They're more expensive than many tripods you'll find in local camera stores, but their cost is minimal when you consider they will literally last a lifetime.

I have had three Gitzos for over a decade: a light 200 series with a Gitzo ball head, which I carry when backpacking; a heavier 300 series with a Kirk ball head for longer lenses; and an enormous 400 series with an equally enormous Studioball head, for use with long lenses when I have a vehicle to carry everything in.

Before a recent assignment in the Grand Canyon, I re-evaluated my tripods, looked at new developments and models, created a spreadsheet to compare features and prices, and chose the following models. I stayed with the new line of Gitzos because their features impressed me. The leg clamps are easy to use and better than the older models. The tripods keep getting lighter, without sacrificing stiffness and load capacity. I decided the 400-series tripod and Studioball head were overkill, so I sold them. I kept my 300-series aluminum Gitzo with Kirk head for long lenses. I've often used this tripod with a locked-down ball head to shoot 16 mm and HDCAM scenes that didn't require panning.

For backpacking and field work, I chose a Gitzo carbon fiber leveling tripod (model G1227LVL). This tripod has a street price of $650. The innovative leveling column and light carbon fiber legs allow me to shoot all kinds of still camera work, including panoramas, at a weight of only 3.84 pounds and a load capacity of 17.6 pounds. With a lightweight fluid head, it's a great

tripod for small DV camcorders. I was also impressed with the G2220 Explorer tripod with aluminum legs, which costs about $200, weighs 5 pounds, and holds 13.2 pounds.

When I shoot with large HDCAM cameras, I use industry-leading tripods and fluid heads made by Sachtler and Miller. The only problem with these tripods is that they weigh a great deal and can cost more than a new car. One of the most important parts of a video tripod is the ability to level the fluid head quickly so the horizon stays level throughout a panning shot. The top-quality Sachtler and Miller tripods feature heads that rotate within a bowl, which allow you to quickly level the head with a bubble level. A videographer can get by with Gitzo's new leveling column tripods for a lot less money.

The second important feature of a tripod is the ability to quickly mount the camera. If you're shooting with an HDCAM camera on a high-end tripod, the tripod will come with quick-release systems that cost in the hundreds and thousands of dollars. For my still cameras—and small video cameras—I've always relied on the Arca-Swiss -style of mounting plates and clamps to mount my gear to my tripods. The Arca-Swiss-style clamps are made by several companies. These clamps hold specifically designed mounts firmly within dovetailed jaws. Along with the clamp, you'll need to get mounting plates for all of the cameras and lenses you might be putting onto your tripod. The best source for the clamps and plates is Really Right Stuff (RRA) in Los Osos, CA. On all my ball heads, I have Really Right Stuff's Arca-Swiss-compatible (B-2) clamps on the head as well as complementary RRS mounting plates on my camera bodies and lenses.

Tripods are deceptively simple pieces of equipment. Simply mounting a camera on a tripod does not ensure a sharp image. In most cases, I put the weight of my hand on the top of the lens and camera to provide additional weight to prevent shake. In some cases, with very long lenses, I might have to use two tripods: one for the lens and one for the camera. Other photographers have used bags of sand or rice draped over the long lens that is directly mounted to the camera. The additional weight keeps wind from disturbing the camera and tripod combination.

Shooting a long lens (over 300 mm) requires some expertise and knowledge. I traveled to Kenya in the late 90s, one of the world's best places for photographing wildlife. In Kenya, where the photographer is kept to the confines of a vehicle, a long lens in the order of 400 mm to 600 mm is required. Most photographers don't realize how close you must be for full face shots, or how long a lens you need to bring in photographs of zebras that keep their distance at 100 feet or more. Another thing with long lenses is you need to have a fast shutter speed to overcome the effects of hand shake. While in Kenya, I used a bean bag or

~~*(left)* These Emperor penguins were filmed in McMurdo Sound. The penguins use the ice edge as a convenient rest stop between foraging bouts. In their search for food, they've been observed diving below the ice sheet, at times side by side with Orcas.~~

~~For my underwater shooting in Antarctica, I used Nikon N90s (F90X) cameras in Subal and Sea and Sea underwater housings, Ikelite Substrobe 200 underwater flash units, Nikon F4s cameras in Aquatica housings, Nikonos V amphibious cameras, and in later seasons, Ikelite's superb underwater digital light meter.~~

heavy tripod in nearly all of my shots—as well as the highest possible shutter speed possible for the situation. Vibration with long lenses is a problem even when the lens is mounted on a heavy tripod, so I ran some tests before the trip to see what my limits were when supporting the lens with a beanbag as well as shooting off a tripod. The heavier the lens, the more stable the lens tends to be. I recommend a heavy tripod and ball head for most exposures, and a beanbag when room is tight.

To run the tests, I simply photographed a package that had fine writing on it, from a distance of about 25 to 30 feet away. On my first test, I mounted my Nikon N90s and 600 mm f4 lens on my heavy Gitzo 410R tripod, mounted with a Studioball ball head. I took a series of exposures from 1/250 second to 8 seconds, all focused on the writing on the package, and all taken with the camera set to a 10-second delay from the time of shutter release. This ensured that handshake would not be a problem. I found that the camera and lens took sharp exposures at all shutter speeds except for speeds between 1/30 second and 1/2 second. At faster exposures and longer exposures, the effect of mirror vibration was not noticeable. In fact, this test confirmed what I had heard and read repeatedly about most SLR cameras over the years.

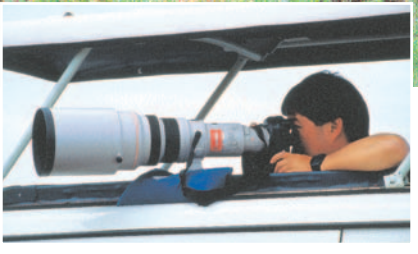
The results were slightly better when I put my hand on top of the lens, above the tripod, and fired off exposures with my hand on the shutter release button. Exposures from 1/30 second to 1/5 second were noticeably sharper than when the camera was fired on self-timer. Again, this test confirms what I have heard before. Placing a weight on the tripod and lens seems to stabilize the system, even against mirror vibration. I next placed the camera on a beanbag. These exposures were identical to the results I obtained with the camera on a tripod triggered by the self-timer.

Camera bags

I have become a true believer in Lowepro's products. They make a bag for everyone and everything. My favorite all-around bag is the Lowepro Orion AW, a waist pack that comes with a waterproof cover, a great waist and

(top) These Emperor penguins were filmed in McMurdo Sound. The penguins use the ice edge as a convenient rest stop between foraging bouts. In their search for food.

(bottom) These Emperor penguins were filmed in McMurdo Sound. The penguins use the ice edge as a convenient rest stop between foraging bouts. In their search for food, they've been observed diving below the ice sheet, at times side by side with Orcas.



shoulder strap combination, and plenty of room and pockets. It's too small, however, for longer lenses such as an 80–200 mm f2.8 or Canon's 100–400 mm IS lens. When I need these longer lenses in the field, I put the camera and long lens inside a Lowepro Toploader Zoom AW, which fits the Canon 100–40 0mm and a camera body perfectly.

For my assignment rafting down the Grand Canyon, I took along Lowepro's new Dryzone backpack, a totally waterproof, soft-sided camera backpack. Even fully loaded, this camera backpack floats. It's like a drysuit for my equipment. The pack, being soft sided, was easily packed on the rafts and gave me peace of mind as we went through the rapids of the Colorado River.

For my Antarctic HDTV film, I used Lowepro bags and Pelican hard-sided cases to carry my gear while traveling and in the field. Lowepro doesn't make bags specifically for the broadcast market, but we used a Lowepro Super Trekker to hike around with our Sony HDCAM camera, along with a Fujinon lens and Anton Bauer battery. The pack performed admirably, and was just the right size to hold this large broadcast camera and lens.

When traveling on airplanes and trucks, I use Pelican hard-sided cases, which are just about indestructible. Lowepro worked with Pelican to develop the Omni/Extreme series of bags. A Lowepro Omni Trekker bag (the largest in the Omni/Extreme series) is a flat-sided bag that is designed to fit perfectly into a Pelican 1550 case. We stored all of our HDCAM tools, accessories, and field kit items in Lowepro Omni Trekker soft-sided bags, then transported the bags themselves inside the Pelican 1550 hard cases.

My favorite Pelican case is the 1620 with padded dividers. This is a large, deep case that carries just about all of my still camera gear for any shoot. The extradeep case has two tiers of modular padded dividers. I keep one of these cases by the door of my office, so that I am ready to travel at a moment's notice. On an assignment with little notice, I just snap the case shut, roll it out the door into my van, and know that I have everything I need for a stills shoot.

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Before I bore you, let me give you a last little tip: the Lowepro Z40 pouches fit Rubbermaid 1.7 pint storage containers perfectly. I put batteries, tools, and all kinds of necessary items into these Rubbermaid containers—then the containers go inside the Z40 pouches.

Lighting

Back in the early 80s, when I started taking photographs, photographers had to use manual flash units and the concept of guide numbers. A typical flash may have a guide number of 100 (feet, at ISO 100). The guide number, when divided by the distance to the subject, will give the aperture needed to give a correct flash exposure. Here's an example: it's daylight, you're using ISO 100 film, and the ambient exposure is a typical daylight value of 1/100 at f16 (remember the

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sunny f16 rule!). Your camera's flash synch speed is 1/125, so you set shutter speed to this higher value, giving you an aperture of f11. You're trying to photograph a person standing 5 feet away in a plaza square, but the bright sun is causing shadows to line her face and eyes. To get rid of the shadows, you decide to use a flash as fill. At 5 feet away, the flash's guide number of 100 gives an aperture of f20, which is close to f22, and too powerful for the situation. You have the choice of moving 10 feet away, which will give a flash aperture of f10, or using the flash at ¼ power, which will give the same flash aperture reading. In either case, the amount of light coming from the flash is controlled by the photographer. Shutter speed and aperture setting is governed by the ambient light.

In the 90s, the newer electronic cameras took the calculations out of using fill-flash. The best newer cameras talked back to their flashes, giving correct exposures in almost every situation. Matrix, or multisegmented, metering in Canon and Nikon cameras automatically govern flash power, cutting off the flash when a subject has received enough light. The newer-generation film and digital cameras do everything for you when they are coupled with dedicated flashes that talk directly to the camera. Their metering systems are smart enough to compensate for situations in which the subjects don't fill the frame, and are able to fill in shadows with flash automatically. These small, portable, TTL electronic flash units are essential for nature and wildlife photographers. I usually use a flash diffuser to soften the harsh light of the on-camera flash.

It's interesting that I'm back to using manual flash with digital cameras. My Nikon and Canon digital cameras, when encased in underwater housings, won't work in TTL mode with my underwater flash units. Nor will my older flash units work with my cameras on land. Its not a big problem—I use the LCD monitor on the back of my digital cameras to check the lighting. The histogram, which shows where pixels fall on the exposure scale, is an essential tool for proper exposure.

Regardless of whether I'm using TTL or manual flash, the key to a good photograph is subtle light from the flash. To soften the light, I almost always use diffusers over the flash units. After testing various diffusers, I found that the Lumiquest Ultrasoft is the best light softener. This diffuser bounces the electronic flash on a white bounce card, then further softens the light by using a plastic material that diffuses the light after it bounces.

Ikelite's Lite Link TTL cordless slave is another useful lighting tool in my camera bag. With the Lite Link, I can obtain professional lighting results with just two small electronic TTL flashes. Because the Lite Link is a TTL slave, I can forego complicated mental calisthenics and just concentrate on photographing my subjects. The Lite Link allows me to bring in the light from a second flash unit that avoids the harsh shadows created by use of a single on-camera flash.

For my underwater and topside work, I use Ikelite's amphibious digital light meter, which is waterproof to 200 feet! This meter gives me ambient as well as flash readings, in incident or reflected mode. The size is comparable to digital meters intended for use only above water.

For lighting in HDCAM productions, I use Anton/Bauer Ultralight On-Camera Lights. These small lights mount right on the camera and run off the camera's battery. They provide just enough light to fill shadows that would otherwise have no detail. If I need additional lights in a field situation, I will use Light and Motion's amphibious SunRay-S Pro High Intensity Discharge (HID) light heads. These small HID lights produce a daylight balanced color temperature of 5500ºK (Kelvin) and last over 45 minutes on a small battery pack. I use these lights both topside and underwater, and they are perfect in low-light conditions, where strong fill lighting is not required. We used these lights almost exclusively for the underwater scenes in the HDTV film *Under Antarctic Ice*, which I described in the Spring 2004 issue.

For many grand landscapes, it's simply impossible to capture the range of light between the sky and the foreground. A classic example of this is a foreground of flowers or a river, with dusk light hitting a mountain range in the background. Attempting to capture this scene in a still photograph or video might be impossible, as the exposure on the mountains might differ from the river or flowers by six or more stops. I use Tiffen graduated neutral density filters to solve this problem. For my still cameras, I use a Cokin P holder that handles filters that are 84 mm in width. Tiffen's 84 x 120 mm (extended) graduated neutral density filters fit in these Cokin holders. The extra length of the filter lets me

position the filter anywhere in the frame to cut down the exposure in the area I need. For my video work, I use these filters in the 4 x 5–inch sizes extensively, along with a matte box that holds these filters.

Batteries

Batteries have been a continual problem, and I hope that I have finally figured out a solution. I'm a battery freak because underwater photography takes so much in the way of batteries, and I often spend months in the field away from a source of batteries.

In the past, I've been plagued with problems with battery chargers when traveling around the world. I've burned out chargers by hooking them to the wrong voltage, by having voltage spikes destroy them, and sometimes simply by looking at them. In the past, I've had to bring up to six chargers, voltage converters, and an assortment of electronic gear to ensure that I could recharge my equipment on a long trip. Quite often, I would be down to one charger at the end of the trip, with my other chargers all burned out. I've often wondered why some manufacturers haven't taken advantage of recent advances in electronics. For instance, I can plug the charger for my notebook computer into any outlet in the world; this small, light charger will instantly compensate for any voltage ranging from 110 V to 240 V AC.

In recent years, the advent of newer types of rechargeable batteries and chargers have solved most of my battery problems. I now use rechargeable NiMh (nickel-metal hydride) for most of my still camera work. I try very hard to ensure that all of my gear accepts only AA-size batteries. I only use chargers that can go from 110 V to 220 V electrical supplies immediately and without fuss. Almost every appliance and charger accepts universal voltages ranging from 110 V to 240 V, without a problem and without having to manually switch from one voltage to another. Anton/Bauer chargers do this; Anton/Bauer chargers and batteries are my choice for all of my HDCAM work.

An Anton/Bauer charger automatically adapts to any voltage that you may find worldwide. It's an intelligent charger that automatically senses the voltage of the battery being charged and adjusts its charging current accordingly. This is great stuff! With the fast charger, you simply plug in the battery pack and forget it. If the battery needs a full charge, then the fast charger takes only 2½ hours to fully recharge the battery pack. A battery that only needs a small charge will only get the charge that it needs. Indicator lights on the charger tell you when the battery is fully charged. There's no problem if you forget to disconnect the battery overnight; the charger will not damage or overheat the battery if it is left on. This is decidedly not the case with other battery recharger systems, which will overheat and destroy batteries if left on too long, which often take 16 hours to full recharge, and which will be destroyed if connected to the wrong voltage level.

With the new chargers, I no longer need a 220 V–to–110 V transformer for use in foreign countries. However, I still do carry a small pack that includes a 220 V–to–110 V transformer and adapters so my electrical plugs can fit the electrical outlets of any country. I particularly recommend the Franzus converters that can be found in travel and hardware stores. Get the 1000-watt transformers, not the 50-watt ones. Get a kit that includes a transformer along with all of the plugs needed for any country in the world.

The finale

The final tool in my bag of tricks is a reliable, trustworthy, and excellent retailer. My favorite camera store is B&H Photo in New York. The B&H Web site is astounding, and often gives more information about a product than the manufacturers' Web sites.

The equipment and techniques of photography are fascinating and eternally changing. I'll keep you informed as I discover new methods and equipment to make the life of a field photographer easier. X

Norbert Wu is one of the world's leading wildlife photographers and filmmakers. He is leading trips to photograph sharks in the Bahamas, penguins in Antarctica and South Georgia, and more. For more information, see www.norbertwu.com.

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