

Photographic Equipment Guidelines

The Farm Lodge

Lake Clark National Park, Alaska

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Introduction. Here are some general and specific equipment suggestions for photo tour participants. These start and build from “ground zero”, so just blend this information with the equipment that you already have.

Equipment is important, but...the old cliché “cameras don’t take pictures, people do” really is true. *So don’t put too much emphasis on the equipment.* We’ll help you get the most out of what you have.

On the other hand, a bear’s face would need to be within two or three feet of the lens for a frame-filling National Geographic quality close-up with a small point-and-shoot or cell phone camera. Not healthy for the photographer (or the bear), and not too likely to happen. The right tools do help.

Keep size, weight, and portability in mind. You’ll be traveling to Port Alsworth on a small plane, and deeper into the bush each day on an even smaller one. Space is limited. We’ll also be doing some walking. Bears will require a mile or so of light hiking each way. On landscape days we may hike further and sometimes over rougher terrain, but you can leave heavy wildlife gear at the lodge or in the airplane. We do have options that limit the walking necessary, but there will always be some.

In any given week we’ll have some great weather and some stormy weather, often all in the same day. We’ll be in the Chigmit Mountains where the Aleutian Range meets the Alaska Range, separating the Bering Sea from Cook Inlet and the Gulf of Alaska. Bring protective gear for cameras (like rain hoods) and water repellent or waterproof camera bags. Temporary solutions like zip locks and trash bags don’t hold up well here.

This equipment guide is tailored to digital photography. If you plan to shoot film, I’d be glad to send you the film version of this guide. Film is seeing a resurgence for its unique artistic qualities. I shot film professionally for over two decades in every format from 35mm to 8x10, and still do some fine art landscape and architectural work on film with a 4x5 view camera.

I'm happy to answer specific questions and go over your individual equipment and interests before your trip to Lake Clark. If you have a specialized interest (such as macro, panoramas, time-lapse), or interest in a single specific subject rather than general photography (birds, wildflowers, fish, glaciers, etc.) I can give you more information than is possible in this all-around guide.

On to the detailed recommendations.

Batteries and Charger. Running out of batteries in the field is the most common technical problem that I've seen in my travels throughout the world. A few spare batteries are inexpensive insurance. Guest cabins at the lodge do have electrical outlets, so batteries can be recharged each night. Be sure to bring a charger. The latest digital SLR's consume far less power than earlier generations, but wildlife and aerial photography still uses a lot of juice. For my Nikon D800 DSLR I usually carry at least three spare batteries. My Leaf medium format system needs about four times that.

Memory Cards. Running out of memory is another common problem. With the array of great subjects plus long hours of Alaskan daylight we always end up shooting more than people expect. We won't have the opportunity to transfer files to a laptop while out shooting each day, only at night when we return to the lodge. 16GB of memory will *usually* last a day with a 12 to 18 megapixel camera. It's a good idea to have twice that much with you for heavy shooting days. Double that for high resolution cameras like the 36 megapixel D800.

For cameras with a single card slot (like my medium format Leaf Mamiya) I use a larger number of smaller capacity cards; 4GB, 8GB, or 16GB. If I lose a card over a waterfall or into a lake, I've only lost part of a day's shooting. With dual card slot cameras that allow an in-camera backup of each image (like my Nikon D800E) I use larger 64GB cards. With in-camera backup running I do need more cards since the camera is writing each image to a primary and a backup card simultaneously.

Camera Bodies. Try to be familiar with what you bring, and bring the owner's manual. If you have a second camera, bring it as a spare. Alaska can be hard on equipment. When shooting wildlife it can be nice to have a long lens on one camera and a shorter lens for landscape or people on another. An iPhone is also a great second camera for quick-and-dirty travel shots, but not as a primary camera for wildlife and landscapes.

In March 2014 B&H Photo listed almost 900 different models of digital camera at their on-line store. Since digital began to really take off around 2003 there have been over 4500 different models of camera introduced, many of which went out production after less than a year. It can be daunting to simply decide whether the camera you have will work well on an Alaskan expedition. Choosing a new camera can be even harder.

I've simplified and prioritized camera features here as much as possible to try and help with your equipment decisions.

First choice - A digital SLR camera with interchangeable lenses; manual overrides for exposure, focus, and ISO; a bright optical viewfinder; and the ability to shoot RAW files. This type of camera should also have white balance adjustment, exposure compensation, mirror lock-up mode, and ability to use a cable or other remote release. Control of these features from dials or buttons on the surface of the camera, rather than having to go into camera menus, is very useful. Live View is good to have for landscape and close-up shooting, and should be considered essential on ultra-high resolution DSLRs (about 22MP and higher for full frame and 15MP for smaller cropped sensors). Good quality DSLRs released since 2007 will have most or all of these features.

Resolution of about 12 MegaPixels is enough for most uses. Higher resolution does capture more fine detail, allow for tighter cropping, and for bigger prints. The increased flexibility in cropping very high res images can also reduce the number of lenses needed, especially longer focal lengths for wildlife. This does come at a price. Today's very high resolution DSLRs can be harder to use with good results. Images from full-frame sensors with 24MP or higher, and cropped sensors (APS-C or DX) with over 15MP often show a noticeable loss of quality with even tiny amounts of camera vibration, missed focus, autofocus mis-calibration, lens aberrations and flaws, lens misalignment, and diffraction (unavoidable at small apertures like f16 or f22). The results from very high resolution DSLRs like the 36 megapixel Nikon D800 can be stunning, and I now use my D800E's for much of what I once did with medium format digital. It does take extra effort and time to shoot well with these rather demanding high resolution cameras.

A Good Alternative - Mirrorless cameras with interchangeable lenses (like the Sony NEX and A7, or Fuji X series). These should also have manual overrides for exposure, focus, and ISO; the ability to shoot RAW files; white balance adjustment; exposure compensation; and the ability to use a cable or other remote release. A magnifying loupe to aid in viewing the rear LCD and shade it from direct sunlight is very helpful, since they usually have no built-in optical viewfinder. Hoodman and Zacuto make good loupes for use with camera LCD displays. Current versions of these more compact cameras are very capable. They are often great for landscape and close-up shots, but a little less suitable than DSLRs for wildlife, or in other fast moving situations. I use one of these cameras with a fixed lens (a Sigma DP Merrill) as a compact adjunct to my DSLR or medium format system, but not as a substitute (at least not yet).

A Usable Compact Option - Digital camera with permanently attached zoom and at least ten to twelve megapixel resolution. This should also have manual overrides and adjustments. Cameras of this type will be good for landscape, less so for wildlife and aerial photography. Zooms are usually up to 200mm equivalent optically and can zoom further digitally. Using digital zoom for wildlife works, but reduces the quality of the image. One thing to test for in this type of camera is "shutter lag", a delay between pressing the shutter release and the photograph actually being

taken. Shutter lag can make wildlife photography or shooting from a fast moving vehicle (small plane or boat) very difficult.

Last Choice - Compact point-and-shoot with attached zoom. Often fully automatic with no manual overrides. This category has come a long way in the last couple of years with cameras like the Sony RX100 II. Probably still the least capable system, but easy to have with you and ready to shoot all the time. It's possible to get some very good shots under ideal conditions. Generally not suitable for wildlife photography.

There are models with extreme zoom lenses that, from around 28mm out to over 600mm (35mm equivalent). Most of these don't really perform well, especially at the long end of the range for moving wildlife. Optical physics gets in the way.

The iPhone - In a category of its own, the iPhone has become the world's most frequently used camera. I carry mine constantly even though there is no cell service in most of the remote places where I work. I rely on several photography related apps. I also use the phone's camera to document some of the work that I'm doing, and to take basic travel shots when it wouldn't be practical to set up a DSLR or medium format system. The quality of the images doesn't come close to a DSLR, but I end up with shots that I simply wouldn't have taken at all if not for the phone.

I often use an app called "ProCamera" to actually take photos with the phone. It gives me a little more control over focus, exposure, and other settings.

I use the app "DoFMaster" to calculate depth of field to help ensure that my DSLR shots are getting everything I want in focus. I use "LunaSolCal" to calculate time and position of sunrise, sunset, moonrise, moonset, and the phase of the moon to plan shots. I use "ViewFinder Pro" to help visualize shots before setting up my medium format or DSLR, and for scouting locations in advance of a shoot. I also use two programmable scientific calculator apps.

Lenses. Digital cameras have progressed to the point where this old film era adage applies: "with great lenses a modest camera can make great images; with poor lenses the world's best camera still makes poor images."

The best lenses to bring depend very much on whether your primary interest is landscape, close-up, wildlife, or people outdoors. And on how much gear you really want to carry. We can do a lot with just a few good quality lenses.

Wildlife photography does require the most specialized equipment (also the largest, heaviest, and most expensive).

The lens focal lengths listed below are for *full-frame* DSLRs. For smaller DX or APS-C sensors divide the focal length by 1.5 to get the equivalent for your camera (e.g. a 400mm lens on a DX camera is equal to a 600mm on full-frame).

Zooms or Fixed Focal Lengths - The focal lengths discussed below can be obtained with fixed focal length lenses or with zoom lenses that include those lengths in their range. I've used both over the last thirty years. When I shot a lot of action sports, I tended to zooms (with a few fixed lengths mixed in). Now I use almost entirely fixed focal length lenses, not being happy with current zooms on the new very high resolution DSLRs (like the 36MP D800E). For creative purposes, I like really getting to know a fixed length lens (which seems harder to do with a zoom). Go with whichever type is comfortable, or a combination.

Manual or Auto Focus - There has been a resurgence in manual focus lenses in the last few years. Zeiss makes an extensive line of very high quality lenses available only in manual focus. Nikon continues to offer many of their classic manual focus lenses. I currently have seven lenses that are manual focus only. For landscape, close-up, and studio still life I can almost always focus manually more accurately and consistently than the camera's autofocus system, and I can place the focus exactly where I want it. For video with a DSLR, autofocus doesn't work well, and all of the professional videographers that I work with use manual focus.

For wildlife, action sports, and other fast moving subjects, autofocus has a huge advantage, and I wouldn't be without it on lenses for these subjects.

Long Focal Lengths - 300mm to 600mm for wildlife and hard to reach landscapes (and outdoor sports). To fill a 35mm frame with a bear's head using a 600mm lens the photographer needs to be within 20 yards. Very very close! Great (but not frame filling) shots of large mammals are possible with lenses in the 300mm to 600mm range from more common (safer) viewing distances of 100 yards or so. These are also the focal lengths used for birds and other small animals. Lenses shorter than 300mm are usually not suitable for wildlife photography.

There are some substantial tradeoffs at these focal lengths. A 600mm lens gets you in close but is very heavy, large, vibration prone, and extremely expensive. Unless you are very serious about wildlife photography a 500mm or 600mm is overkill. A **300mm lens** is much more portable, easier to use, far less expensive, will usually provide enough magnification, and can be used for non-wildlife subjects such as landscape and even wildflowers. However, a 300mm doesn't always have the magnification to reach small, distant, or dangerous subjects.

A good compromise can be had with the use of **teleconverters**. These supplemental lenses attach between the camera and main lens to increase magnification. A 300mm lens with a 1.4X converter becomes a 420mm lens; with a 2X converter a 600mm lens. Converters do reduce light reaching the sensor making moving subjects in dim light more difficult. A converter may also cause some loss of optical quality. Converters can make shorter lenses usable for occasional

wildlife shooting. On a 200mm lens, or excellent quality 200mm zoom, 1.4X and 2X converters yield effective focal lengths of 280mm and 400mm.

In Alaska I most often use a good quality 300mm f2.8 or 400mm f2.8 lens with 1.4 and 2X converters. I also use a more compact 300mm f4 lens with a 1.4X converter. My converters are made by the lens manufacturer and designed to minimize loss of optical quality and maintain full autofocus when used with those specific lenses.

A good lightweight, reasonably priced combination for general wildlife photography is a **300mm f4** lens with a matched **1.4X teleconverter**, and is what I most often recommend. This is also a nice long landscape lens to isolate details, bring in distant features, or make a full moon prominent. It's also a good lens for close-ups of small living things like butterflies, moths, frogs, and even mosquitos. Current 300mm f4 lenses accept standard polarizers, increasing their versatility.

A good 80-400mm zoom lens also works well for wildlife, although will generally be of lower quality than a 300 f4. It's also a way to cover the short telephoto range with the same lens (80-200mm), but there are smaller and lighter choices for that.

Keep in mind that the longer the lens, the heavier the tripod and head needed to support it (at these focal lengths a tripod is essential.)

Short Telephoto - 80mm to 200mm. Good for landscapes, people outdoors, and for bringing any subject a little closer. In landscapes these longer focal lengths help emphasize distant elements (mountains, glaciers, etc.) by keeping them fairly large relative to foreground elements. Also used to isolate subjects in a busy or cluttered environment, like a forest. The standard focal lengths for professional portraits fall in this range (85, 105, and 135mm). The most often used macro lenses are in this range too.

These commonly used focal lengths can be covered with one good quality zoom lens or, one to three fixed focal lengths. A 70-200mm zoom is a common choice, and new high quality zooms with a maximum aperture of f4 are smaller and lighter than the f2.8 versions that have been the standard. A single 105mm f2.8 lens can also cover this range fairly well, especially with a matched 1.4X teleconverter. A combination that I often carry is an 85mm and a 135mm. Currently, I mostly use fixed focal length lenses rather than zooms in this range.

Normal - 35mm to 70mm. This middle-range is often overlooked, but it shouldn't be. The human eye sees the world in these focal lengths, and photographs with lenses from 35mm to 85mm often look the most natural. These are also the focal lengths most used for professional videography.

They allow a fairly wide view of the landscape without making distant objects look tiny, as wide angles do. The vast majority of my landscape images are shot with lenses from 35mm to 85mm

(followed by 135mm, 24mm, and 200mm in that order, with occasional shots at 14mm, 20mm, and 300mm).

We'll be flying almost every day, and a fast 50mm lens (f1.4 to f2.0) is the best overall lens for aerial photography. They're also small, light, and inexpensive. While I have special purpose high speed lenses from 20mm to 135mm for aerial photography, over 90% of my shots are made with a simple 50mm f1.8.

A 50mm or 60mm macro lens is also great for close-ups of flowers and the tundra. Much of my close-up work is done with a 60mm macro lens, and I've had one version or another of this lens for over twenty years. Some of my best selling landscapes were made with the same lens.

One or two compact fixed focal length lens in this range can often take the place of a heavier, bulkier mid-range zoom.

I often carry a lot of specialized equipment in the field but, for a light weight compact hiking kit I take just high quality 35mm and 85mm lenses. This is good for landscape, close-up, documentary, travel, shots of fellow hikers and photographers, and pictures of my dogs. If I have little more room, I'll add in a 135mm. If I need to have some wildlife or outdoor sports capability, I'll substitute a 300mm f4 for the 135mm.

Wide Angle - 12mm to 28mm. Nice, but not absolutely necessary for most subjects. Wide angles can create dramatic images with unusual, eye catching lines. They may be the only way to photograph large objects in tight spaces, such as tall buildings on narrow city streets (which we don't have here). They can also be difficult to use effectively, and extreme wide angle lenses are also very expensive. Contrary to some common beliefs, a wide angle is usually not the best landscape lens, as they reduce apparent size of distant objects (making the rugged Alaskan mountains in the background look like low Nebraska hills). However, under the right circumstances, wide angles can be used to create sweeping vistas, capture tight interiors, and even for dramatic close-ups (with attachments) You may want to consider one. A good all around choice is a 24mm or 28mm. This is wide enough to get most of the benefits, but with less perspective distortion and other difficulties that come with wider angles. A wide angle lens may require a special low-profile polarizer or other filters, if used. Some can't be used with filters at all.

Macro Lenses - These special purpose lenses are designed for close-up work, such as wildflowers. They are available in focal lengths from 45mm to 200mm. If wildflowers, tundra details, or other close-up subjects are your primary interest, a macro lens may be a good investment. 50mm or 60mm lengths can also serve as good general purpose normal lenses, and a 105mm is a great short telephoto (as long as the lens is designed to focus at infinity as well as close-up). I find the images from the 60mm focal length to be the most pleasing, although it is easier to isolate subjects with a 200mm lens. With a shorter lens, you will also be working very close to the subject, within a few inches or less. A 200mm will give the same image size at a

distance of 12” or more. A good compromise can be a 105mm macro, which gives intermediate working distance, and also makes a nice landscape lens.

Many lenses have a “macro mode”. Most don’t allow close enough focusing for true macro work, but are fine for occasional close-ups. When focusing close-up, these lenses will have more distortion than macros.

Close-up photography can also be done with close-up filters or extension tubes attached to a normal lens. This is how I do wide angle close-up photography with lenses in the 17mm to 35mm range. Close-up filters magnify the image, while extension tubes allow the lens to focus when placed very close to the subject (but contain no glass optical elements). The best close-up filters that screw on to the front of the lens are Canon’s 500D and 250D series, which also work on lenses made by Nikon or any other company. Kenko makes extension tubes that retain the electronic connection between camera and lens.

Tilt-Shift Lenses - These are special purpose lenses that provide some of the capabilities of a large format view camera traditionally used for landscapes. They allow for extension of depth of field to bring more of a scene into sharp focus, can do the reverse and limit focus to a very small area, and also help eliminate perspective distortion with some subjects. They can also be used to create distortion-free panoramic images. When tilted, the process of focussing is very different and takes some practice. These lenses can be difficult to use, are manual focus only, and may require some special exposure metering. I have all of Nikon’s tilt-shift lenses and use them often.

VR or IS - Nikon’s Vibration Reduction (VR) and Canon’s Image Stabilization (IS) are built-in lens features designed to reduce the blurring effects of camera shake or vibration. They are quite useful in some situations, especially when the camera must be handheld rather than on a tripod. They allow for slower shutter speeds before the effects of vibration are noticed. With the camera locked down on a tripod the VR/IS can actually induce shake, and has to be turned off. For fast moving subjects, like wildlife, I find VR somewhat useful, but not very important. A fast shutter speed is still needed to freeze the subject’s motion. I find VR/IS to be most helpful with mid-range zoom lenses that will be used handheld to shoot a wide variety of subjects. Lenses with VR/IS may also produce slightly lower quality images when used on very high resolution cameras like the Nikon D800E. If a lens has it, fine. I wouldn’t replace an otherwise great lens just to get a VR version.

Tripod and Head. A key accessory. I strongly recommend a good sturdy tripod, and remember that the head is just as important. A great tripod loses all its benefits with a small weak head attached. I own six different tripods, and at least that many heads, which gives you some idea of how important I think they are to good photography.

I normally use a Gitzo Series 3 carbon fiber tripod. I have the version with four leg sections (rather than the more common three-section), which collapses to a smaller size for airline travel. I normally use this with no center column, just a flat mounting plate. It’s more stable and gets

lower to the ground that way. I do occasionally use a short removable center column when I know I'll need to be making small precise adjustments in height.

For wildlife, a good ball head with a ball diameter of at least one inch is a good choice. A ball head is the best choice for all-around general purpose use. Kirk Enterprises, Really Right Stuff, Markins, and Arca-Swiss all make good quality ball heads. For landscape and macro a pan-tilt head works well, and usually allows more precise adjustment. If in doubt about ball head sizes, go slightly larger than you think you'll need. The few extra ounces and small increase in size are worth it.

I currently use a Markins Q40 ball head, and a Manfrotto 410 geared pan-tilt head for most shooting. I also use a Kirk BH-1 ball head that is now almost 20 years old and still going strong.

Tripod Head Release Plates - Almost all current tripod heads have a "quick release" system that allows camera or lens to be added and removed without screwing them onto the head. These require a release plate that is screwed onto the bottom of the camera and to lenses that have a tripod collar and foot. You will need a release plate for each camera body and tripod collar equipped lens. The release plate must be compatible with your tripod head. On my DSLR's I use an "L-bracket" release plate which allows the camera to be mounted for vertical shots without having to tilt the tripod head 90° (*highly recommended*). The de facto industry standard type of release system is the "Arca-Swiss" or "Arca Style" but, some companies use their own unique system. Kirk Enterprises and Really Right Stuff both make excellent release plates and L-brackets.

Flash. The weather and light are changeable and unpredictable in the Alaska bush, and a flash (mostly at low power for fill) can make good shots possible when the light is less than ideal. The best choice is a removable flash unit, rather than built in, with a TTL connection cable to allow full function of the flash when used off-camera. Flash mounted on the camera creates harsh flat light, and just holding the unit in your hand off to the side will greatly improve images.

For wildlife an inexpensive **flash extender/magnifier** (a small fresnel lens similar to those used in lighthouses) is very helpful. I use flash with an extender to add a little light to eyes, pull out a bit more color, and get a little more detail in fur or feathers. (Note that flash is not allowed on the bear viewing platforms at Brooks Falls, but can be used elsewhere.)

With close-up photography a little fill flash can make the difference between a dull flat image and a great three dimensional shot.

I usually carry one or two flash units, TTL cords, and an external battery pack.

Reflectors. For close-up photography a collapsible reflector (like the Photoflex Light Disc) is extremely helpful. A little reflected light will expand the depth, deepen the colors, and sharpen the details. These are also great for portraiture, and can add light to close foreground elements in

a landscape. Reflectors can often replace a flash, providing a more natural look. I always carry one medium and two small Light Discs in my camera pack. If my primary objective is close-up, I add at least one more. I prefer white on one side and “soft gold” (gold and silver mixed) on the other.

Cable Release. A must for close-up, landscape, and low light photography to reduce camera vibration. These can be a physical cable or an infrared wireless remote. Some allow for control of many camera functions, but I find the simple ones that just trigger the shutter are what I use most.

Filters. While less important with digital than with film some filters are still very beneficial.

Polarizers are recommended as part of any basic outdoor photography outfit. The polarizer cuts glare, reduces haze, eliminates unwanted reflections, increases color saturation, and improves contrast. Polarizers are also very useful in close-up photography. There is no true digital equivalent of a polarizer that can be applied later in the computer. Polarizers (and any filter) should have an anti-reflective coating to reduce flare, just like the coating on lenses. Don't waste money on an uncoated filter. B+W makes consistently good polarizers. Tiffen and Heliopan are other reliable brands. Wide angle lenses usually require low-profile filters so the front edges of the filter don't get into the corners of the shot.

A **graduated neutral density** filter is the only other filter that I regularly use for color digital photography. These movable rectangular filters mount in front of the lens and are used to balance exposure when part of a scene is bright and the other is dark, like snow capped mountains above deep green forest. A two-stop soft edge filter is the most useful variety. Singh-Ray and Lee Filters both make high quality graduated neutral density filters. I do still use these, just not as often as I did with film. They are basically the optical equivalent of HDR (high dynamic range) processing of digital images.

LCD Loupe. These are magnifiers that are held against, or attached to, the camera LCD. They block out stray light and provide a clear magnified view of the LCD. They make critical review of shots possible, allow for very accurate focusing using Live View, and function as the primary viewfinder when shooting video with a DSLR. These are very useful accessories for landscape and close-up shooting. Hoodman makes a good economical loupe, and Zacuto makes excellent high-end loupes. I use a Zacuto Z-Finder on my Nikon D800's.

Camera Bags. Think portability. We will be doing some hiking, and you also want to protect equipment from the environment. Even for those whose only destination is Brooks Falls at Katmai, the float plane landing area is about a mile from the viewing platform. Look for a camera bag that is comfortable to carry, won't interfere with hiking, and doesn't have to be opened completely to the elements to get at equipment. Backpack style bags work well. Shoulder bags can be hard to hike with and are easy to drop. I use a Mountain Hardware alpine summit pack (2000 cubic inches or so) to which I've added the removable divider inserts from a Pelican

photographic equipment case. The same thing can be done with a less expensive Kelty Redwing pack. It's important to have a good adjustable suspension system, comfortable shoulder straps, and a wide padded hip belt.

We will encounter periods of rain while out in the open. The camera bag doesn't have to be fully waterproof (as for river running), but should be highly water resistant to protect equipment. A trash bag pulled over the camera bag will not last in the Alaskan environment. I discourage this approach not only because it doesn't work well, but torn trash bag pieces can become litter in the wilderness.

It helps greatly to seal all of the seams in a camera bag with backpack or tent sealant (available from REI and similar stores.) I highly recommend taking the time to do this. A basic camera bag can usually be made very water resistant by just sealing the seams.

Miscellaneous -

Chamois Cloth - These are great for wiping rain off cameras and lenses. I carry two small ones with me at all times. (**Caution:** some inexpensive chamois are tanned in fish oil. The fish smell will never completely disappear, and these are downright dangerous in bear country. *Don't bring a fish oil treated chamois.*)

Microfiber Towel - Serves the same function as a chamois, but are easier to find. The ones I use are designed for drying and polishing cars, are very soft and absorbent, and came from an auto supply store.

Camera Rain Cover - These keep rain off the camera and lens while still allowing access to camera controls. I use one quite often. The newer clear plastic ones are nice. Be sure that it can be adjusted for the lenses that you have, and that it allows comfortable access to your specific camera's controls.

Lens Hoods - Designed to prevent flaring and ghosting on the lens from a direct light source like the sun, these are also great for keeping light rain off the front of the lens. *I never shoot without one.* Custom hoods matched to individual lens models are available from all lens manufactures. Generic collapsible rubber hoods that screw in to the lens filter threads are also available, and are much less expensive. I use both, depending on the lens and conditions. The screw-on type can be added on top of a polarizer allowing the polarizer to rotate for adjustment without removing or reaching inside the lens hood.

Cleaning Gear - Your equipment will need cleaning at least daily in this environment. Bring the following:

Blower bulb - There are models designed specifically for camera cleaning. A large bulb syringe (sometimes called an ear syringe) available at most drug and grocery stores may also work well. I use blower bulbs from Micro-tools.com.

Soft Lens Brush - Again there are items designed just for this, but I use very soft cosmetics brushes available at drug and grocery stores. Soft brushes will pick up and retain oils and other contaminants, and need to be replaced often.

Lens tissue and cleaner - The last resort when blowing or brushing isn't enough. For this I mostly use items specially designed for photographic lenses. I use plain distilled water in an eye-dropper bottle as my primary cleaning fluid, and Zeiss lens cleaner to remove oily or stubborn spots. Microfiber lens cloths work well, but I find old fashioned paper lens tissue still works the best. I carry both.

Sensor Cleaning - In the field I usually limit myself to blowing dust off the sensor with the same blower I use for lenses. I also carry a "Speck Grabber" made by Kinetronics to remove large particles of dust (or sometimes dog hair) if absolutely necessary. I do clean my sensors, but only in the controlled environment of my studio using pure isopropyl alcohol and distilled water on pads made for sensor cleaning (handled with static-free plastic tweezers also made for that purpose).

Bubble Level - a "three-way" bubble level mounts to the flash hot-shoe on top of the camera. This is helpful in getting horizons level for landscapes and close-ups, especially when there is no clear flat horizon to line up on. Most DSLR's have a built in level or horizon indicator; some are sensitive and accurate enough, most are not.

Gloves - Metal and plastic cameras and tripods pull the heat out of your hands, and your fingers can get quite cold even when the day is fairly mild. Fingerless or "half finger" gloves provide some protection while leaving finger tips free for delicate camera operation and use of touchscreens. I use a pair of fingerless windblock fleece gloves or get double duty from my "half finger" neoprene kayaking gloves.

Chemical Hand Warmers - Famed adventure photographer Galen Rowell once said that he would have given up cold weather photography completely if not for this invention. I use Grabber Mycoal hand warmer packs in a coat pocket to rewarm chilled fingers. These are especially nice when photographing fall foliage or wildlife, as Alaskan mornings can be crisp that time of year.

Insect Repellent - Yes we do have a few bugs in Alaska. Fortunately we have no ticks, chiggers, or poisonous spiders. Mostly we have mosquitos, "white socks" (a biting fly), and "no-see-ums" (small gnats). Repellents with DEET can be a real problem around photographic equipment. DEET is a solvent that will dissolve many plastics, vinyls, and synthetic rubbers. Just what most camera gear is made of. It was also a huge problem in the film days, as it dissolves

acetate film base. I use DEET-free repellents with **Picaridin** as the active ingredient. This works well, but only in products with at least a 20% concentration of picaridin (some have only 7 or 8% and they don't work). I sometimes use a head net, but find it hard to actually take photographs while wearing one. I also use a Thermacell, a small device that repels insects in an area around it (which doesn't do well in wind or rain, or when moving).

Other Non-Photographic Items - In my camera pack I also carry a small first aid kit, water bottles, iodine water purification tablets, a compass, paper topographic maps, cliff bars, digital audio recorder or small notebook, sunscreen, insect repellent, rain jacket, ball cap, and spare boot laces. I may carry other outdoor gear if I will be climbing, crossing rivers, traversing glaciers, and so on.

Computer and Software - A laptop has become standard equipment when traveling with digital cameras. Which model of laptop is really a personal choice that's often rooted in non-photography requirements, so I'll just cover software, disk drives, and other add-ons. I use Apple computers, but Windows machines run all of the same photo software just fine.

As of early 2014 **Adobe Lightroom** has become the standard photographer's software. With just this one program, most people can do everything they need to with all of their photos. I highly recommend it.

I also use Adobe Photoshop, Capture One Pro, Helicon Focus, Photomatix Pro, and Iridient Developer regularly. If you want to create stitched panoramas, create HDR images, do advanced RAW file development, composite images, focus stack images to extend depth of field, or do advanced retouching, then you may need Photoshop and/or similar programs as well.

Transferring images from camera memory cards to the computer requires a card reader and hard drive for storage. Many laptops have built-in SD card slots, but if your camera uses CF cards then a USB card reader and cable are needed. You probably already have what you need for this.

I never erase a memory card until I have the files stored in two separate places (a primary copy and a backup). Memory cards are much more reliable than standard spinning hard drives. There are three primary strategies that work well for this.

For option one, the image files can be transferred to the laptop's internal hard drive, and a backup copy transferred to an external USB disk drive, which requires one external drive and cable.

For option two, the image files can be transferred to an external USB hard drive, and a backup copy made to a second external USB drive, which requires two drives and cables (this is what I normally do).

Option three is only available with cameras that have two card slots and allow in-camera backup of all images to be made to one of these cards as they are shot. In this case I transfer files from the primary card to the laptop hard drive (or usually to an external USB drive). That primary card is then erased and re-used. The backup card which contains a copy of all the images I just moved from the primary card to a hard drive is removed and stored separately from the computer. This replaces the step of writing files to a second hard drive. This works well, but requires a lot more memory cards. I erase and re-use the backup cards once I'm back at my studio and the images are safely on my main hard drive systems there.

Lightroom can manage all of the necessary file transfers for any of these options in one easy step, including making a backup copy and saving it to the desired device.

There is a fourth option that I use when on remote assignments with no power source for a laptop. In this case I shoot with two memory cards in the camera, one primary and backup as in option three. When the cards are full I store them both in two separate places and only transfer files to a computer when I get back to my studio. This is very reliable, uses far less power, and frees me from packing a laptop with external drives. It does require a lot of memory cards. And I can't review images on the laptop at the end of each day.

Checklist - Traveling as much as I do, I find that making a list of crucial equipment before each trip helps make sure that what I need gets packed.

If you have additional questions, e-mail me at jim@jimbarrphoto.com and put "Lake Clark Photo Question" in the subject line. I'm in the field or off on assignment quite a bit, but I'll answer as quickly as possible.

Remember, we'll help you get the most the most from whatever equipment you have and work to your individual level of interest. So come and enjoy, just bring plenty of memory and batteries.

Here's a generic checklist that serves to summarize some of the detailed information in this guide along with some notes on modifying it to suite you.

Sample All-around Kit

- DSLR Camera Body
- DSLR Camera Batteries (minimum of three)
- DSLR Battery Charger
- Memory Cards (at least 32GB total)
- remote release for DSLR (cable or wireless)
- LCD Loupe for DSLR
- iPhone or Point-and-Shoot pocket camera with charger
- 300mm f4 lens

- 70-200mm f4 zoom
- 1.4x teleconverter for 300mm f4 lens (the same converter should also fit the 70-200 zoom)
- 50mm f1.8 lens OR mid-range zoom lens
- 60mm or 105mm macro lens, OR close-up filter to fit 70-200mm zoom
- 24mm f2.8 lens
- Lens Hood for each lens
- Polarizers to fit each lens filter thread size
- Lens hoods for each lens
- Tripod (sturdy carbon fiber)
- Tripod Head (medium or large ball head)
- Quick Release Plate or L-bracket for each camera and tripod collared lens
- External Flash for DSLR
- TTL connector cable for external flash
- Flash Extender
- Bubble Level - three way hot shoe mounted
- Folding Reflector (e.g. PhotoFlex LiteDisc Soft Gold/White 22" or 32")
- Backpack-style camera bag
- Rain cover for DSLR
- Microfiber towels (2 small ones)
- Cleaning Kit
 - Blower
 - Soft Brush
 - microfiber lens cloth (2 or 3)
 - paper lens tissue (1 pack)
 - lens cleaning fluid
 - distilled water
- Gloves - lightweight windproof
- Insect Repellent (20% picaridin)
- Laptop and Charger
- External Disk Drive(s) and Cable(s)
- Other Outdoor Gear

For a Compact All-around Kit - Replace all of the lenses with the following:

- 300mm f4
 - 1.4X teleconverter
 - 24-70mm zoom
 - 105mm f2.8 macro
- (this is a very versatile combination)*

A second optional lens combination without zoom is:

- 300mm f4

- 1.4x converter
- 135mm OR 150mm macro
- 60mm macro OR 50mm f1.8
- 24mm or 35mm

You can also skip the flash and bring one 22" and one 12" LiteDisc folding reflector.

For a Standard All-around Professional Zoom Kit - Replace all of the lenses with the following:

- 300mm f4
- 1.4x converter
- 70-200mm zoom (f2.8 or f4)
- 24-70mm f2.8 zoom
- 14-24mm zoom
- 105mm macro

For Serious Wildlife Photography - You may want to substitute a 300mm f2.8, 500mm f4, or 200-400mm f4 zoom for the 300mm f4; and add in a 2X teleconverter to go with the 1.4X. Be sure that your tripod and head can handle the load. A good large ball head or gimbal head (like a Wimberly) are crucial. You might also skip the macro lens and mid range zoom. Stick with a fixed 50mm f1.8, and one wide angle lens. You may also want to substitute a faster 70-200mm f2.8 lens for the slower f4 version.

For Serious Close-up/Macro Photography - Consider adding a 200mm macro lens. This could replace the 70-200mm zoom. You could go with 60mm, 105mm and 200mm autofocus macro lenses, all of which will double as landscape and general purpose lenses, and that easily replaces 70-200 and mid-range zooms. Zeiss also makes very high quality 50mm f2 and 100mm f2 manual focus macro lenses that could replace the 60 and 105 if you're OK with manual focus. Chose a wide angle lens that works well at close-focusing distances like the Nikon 24mm f3.5 PC-E tilt/shift, Nikon 28mm f2.8 AIS manual focus lens, or Sigma 35mm f1.4 art lens. The 300 f4 is actually a very capable close-up lens, especially when combined with a teleconverter and/or extension tubes. Add in at least one more reflector. Make sure that your tripod allows working low to the ground. Consider a pan-tilt tripod head in addition to the basic ball head for more precise control at high magnification. A camera with Live View and a good LCD Loupe are very helpful for precise macro work. The "DoFMaster" depth of field calculator iPhone app, and/or ExpoImaging's analog ExpoAperture Depth of Field Guide are very useful for determining the area of sharp focus.

For Serious Landscape Photography - Consider tilt/shift lenses for some of the capabilities of the large format view cameras traditionally used for landscapes. These also function as macro lenses. For long stitched panoramics consider what's usually called a "nodal slider". These allow any lens to be positioned with the lens center of perspective (entrance pupil) directly over the

rotation axis of the tripod head, allowing low distortion, parallax-free multi-shot panoramas. I use a Kirk Enterprises macro focusing rail for this. A camera with Live View and a good LCD Loupe aid in precise focusing, and can be especially helpful for focusing tilt/shift lenses. The “DoFMaster” depth of field calculator iPhone app, and/or ExpoImaging’s analog ExpoAperture Depth of Field Guide are very useful for determining the area of sharp focus and hyperfocal distance in landscapes. I also carry a Leica laser range finder to measure distances and choose focus points accurately. The distance scales on DSLR lenses that have them at all are not very accurate.

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