

Scope Photography for Bird Study and Documentation

Rex G. Stanford

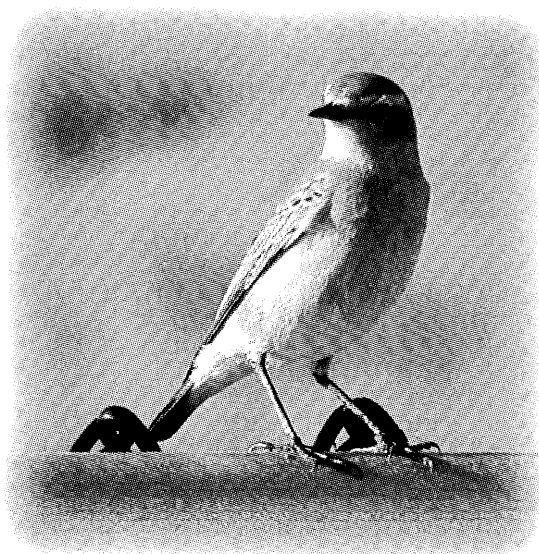
43 Grand St. South, Fl. 2, Westbury, NY 11590-4343

calidris@mindspring.com

Relatively recent very rare (including vagrant and accidental) species for New York State have included: Yellow-billed Loon, Spotted Redshank, Wood Sandpiper, Black-tailed Godwit, Broad-billed Sandpiper, Little Stint, Red-necked Stint, Common Gull (if we allow what is still deemed a subspecies, and we then could include Cayenne Tern, too), Black-tailed Gull, Ross's Gull, Cave Swallow, and Cassin's Sparrow. Photography played an important role in establishing some of these and of additional records. For links to some largely scope-based photos of New York State rarities, see Angus Wilson's New York State Rarities web page and the web site of the New York State Avian Records Committee (NYSARC):

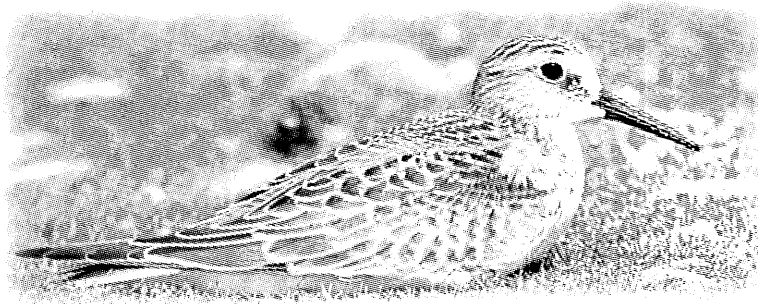
<http://www.oceanwanderers.com/NYRarities.html> [http:](http://www.birds.cornell.edu/fnysbc/NYSARC/NYSARCHome.htm)

[//www.birds.cornell.edu/fnysbc/NYSARC/NYSARCHome.htm](http://www.birds.cornell.edu/fnysbc/NYSARC/NYSARCHome.htm)



Northern Wheatear

*Nikon 880 Digital Camera handheld through a
Kowa TSN-4 Scope with a 20-60x ocular set at 20x
©Angus Wilson*



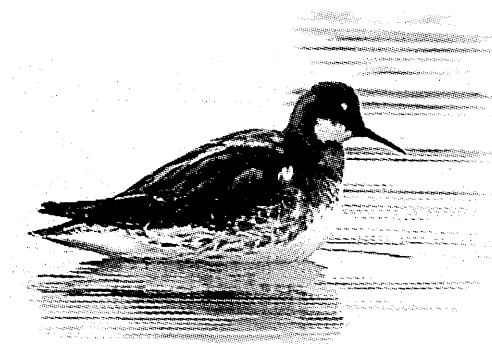
Baird's Sandpiper
*Nikon 880 Digital Camera handheld through a
Kowa TSN-4 Scope with a 20-60x ocular set at 20x*
© Angus Wilson

Suppose that you came across one of these rarities or, more exciting still, a species never before seen in New York State or, conceivably, in the lower 48 states. If you found such a bird, a good quality photograph would immensely aid acceptance of the record and, possibly, even initial identification of the species.

This essay focuses on cameras, not video, but video takes, like still ones, can be had by shooting through a scope. The new-generation scopes used by field birders provide bright, high contrast, high resolution images, not merely enlarged ones, and particularly lifelike, vivid color. With modern cameras, the automatic or programmable settings allow, on most occasions, even the neophyte to get good to excellent pictures. Photographs taken with both traditional SLR and the newer digital cameras, hand-held and sighted through telescopes are shown.

Three reasons why birders should take pictures

1. A series of good images, camera or video, provides an objective record of what was encountered, one not subject to the biases that can affect human memory and perception.
2. Photos can very usefully complement field observation by allowing any desired amount of time for the study of details, even those difficult or impossible to examine carefully in the field.
3. Photos can show critical details that were not noticed in the field, details that may support or refute the bird as a rare species.



Red-necked Phalarope
*Nikon 880 Digital Camera handheld through a
Kowa TSN-4 Scope with a 20-60x ocular set at 20x*
©Angus Wilson

Photo-documenting birds is easier than you might think!

Banishing the specter of vignetting- Birders whom I meet in the field who see me holding a camera to my scope often say, "But don't you get vignetting?" Vignetting is the appearance of a dark, solid arc, or even an entire dark circle at the outer boundary of the photo image. If the camera's view is wider than the image provided by the eyepiece on the scope, there will be vignetting, even if the camera is perfectly centered on the ocular. Many who do scope photography with digital cameras (i.e., "digiscopers"), know that vignetting can be eliminated by shooting with the camera's zoom lens set for some degree of optical magnification (e.g., 3X), which makes the angle of the camera's view smaller. Documentation oriented birders obsessed over the possibility of vignetting should remember (a) that their task is not to emulate the product produced by professional photographers, but to provide useful pictures of a bird, (b) that vignetting likely will not harm the clarity of the photograph, and (c) that there are ways to reduce or eliminate this problem. Additionally, vignetting easily can be electronically "cropped," if the photo is processed with even a very basic photoprocessing program. The fear of vignetting should never be an excuse for birders not to use their scopes for documentation!

The flexibility of optics in bird photography- One can use a great variety of cameras and get decent pictures through a scope if the scope itself is producing good images. I almost always use a 50mm lens on a hand-held 35mm SLR camera when I shoot through my scope, because the image through my wide angle scope squares nicely with what my 50mm camera lens "sees." With practice, a hand-held camera can be used to shoot effectively through many different good

quality scopes, at least if one is willing to tolerate the possibility of vignetting with certain camera/scope combinations. If necessary, one can shoot through a binocular barrel!! Not taking any photo at all guarantees failure in documenting one's exciting find, and a less than optimal photo can be far better than none!

For scope based bird photography one needs a camera, be it film or digital, with a viewfinder/monitor that will show exactly ,or almost exactly, what one will get in the picture. The best new cameras of both types are surprisingly light and easy to use, but digital cameras typically are substantially smaller.

Modern high end cameras, both SLR and digital, typically have automatic and programmable features that can aid very substantially in getting good quality photos even under a variety of difficult circumstances and even in the hands of the photographically challenged.

Slide versus print film- Many who use film for bird photography use slide film because it lacks the grain of the print medium. Slide film is preferable to print film for publication purposes, and the relatively low graininess of slides as contrasted with prints—plus the brightness of a slide—can aid in the study of very fine details of, say, the internal markings on scapulars of shorebirds.



Scarlet Tanager
50mm. lens on handheld SLR through a 30x telescope
©Rex Stanford

Some advantages of digital- The best of the digital cameras provide some distinct advantages for use in photographing through a scope. One important such advantage, present in some, is an optical zoom lens whose diameter fairly well matches that of the ocular lens of certain scopes and can relatively easily and effectively be used to combine the camera's magnification with that of the scope. This can provide startlingly close views of identification details. Very important, with a digital camera one can see instantly what one gets in a given shot, and even if one already has taken a picture, one generally can reuse that part of a memory card if one does not like the result, the memory card being a small card in the camera for recording digital information. The question, "Did I get a good shot of what I had hoped to photograph?" is critical to the birder, especially the one concerned with documentation, and that question is most usefully answered in the field. Even if focus and exposure are correct, a shot may be wrong in terms of a bird's pose. For example, a Curlew Sandpiper dips its head and the diagnostic bill into the water in the split instant between triggering the shot and



Sabine's Gull

50mm. lens on handheld SLR through a 30x telescope

©Rex Stanford

the opening of the shutter, but one does not realize what has happened! Using a suitable digital camera, you can see the result then and there, and if the result is unsatisfactory and the bird is cooperative, the chance may come again.

Despite some problems with digital as noted later, digiscoping surely has a distinct advantage in terms of sheer optical power if the camera has adequate optical zoom capability. What is more, some modern, high-end digital cameras provide wonderfully high resolution. Some digital cameras also come with an internal program for the sharpening of images. Add to that, with digital, one can dump the photos onto a computer drive, modify them—without one hopes, creative additions!!!—in a variety of ways using a photo program, to crop, eliminate any vignetting, change the brightness, enhance the contrast, send them via e-mail, put them up on a web site, and even print them oneself. What is more, one can have a huge number of light-rich images, ready to view without a projector other than a computer and its monitor, just like slides. The contrast with print photos can be astounding, making the latter seem “flat” in their lack of brilliance. With the crisp images now available with digital, with the small size and low weight of even high function digital cameras, and with the computer technology available for image storage, processing, viewing, distribution, and printing, this is truly a new age for bird photography. Although the initial financial investment for good quality digital is substantial, the ability to reuse the memory cards means that buying film and paying for film processing can be a thing of the past.

Some digital drawbacks- A widely recognized drawback to digital cameras is that, especially under bright sun conditions or with glare, the Liquid Crystal Display (LCD) monitor may provide a less than adequate view that sometimes makes it difficult to focus through the monitor. This is one reason that digiscopers often use the camera’s autofocus, instead of the manual scope focus guided through the LCD monitor, to fine tune the focus *after* they have initially focused the scope’s image visually while looking through the scope. Special hoods or shades may be used for the LCD monitors, but they are not always fully adequate.

Another widely heard complaint from digiscopers concerns the very limited depth of field generally encountered in digiscoped images, due, in part, to the low light level provided by joint camera-scope magnification. Depth of field refers to the physical distance over which an image remains in focus. For example, low depth of field in bird photography could mean, in the case of a bird turned substantially toward the camera, that although its bright eye is delightfully focused, its scapulars, with their identification relevant markings, are not clearly focused, much less its hind parts. If you cannot get the whole bird in focus, you might first take pictures that focus the details most important for identification. You can also try for a side-on image, so that features along the bird’s entire length are roughly equidistant from the camera and hence can be focused simultaneously. It is unwise, though, to wait for the optimum photo opportunity before taking pictures, because it may not come before the bird leaves.



Rose-breasted Grosbeak
50mm. lens on handheld SLR through a 30x telescope
©Rex Stanford

Getting the best from your equipment

Safety precautions- In scope photography the possibility of impact damage to the scope's ocular or to the camera lens may exist because the lenses of these two pieces of equipment must be in very close proximity during photography. A variety of devices, homemade and commercial, intended to center and stabilize the camera's lens relative to the scope's eyepiece, involve a spacer of some kind between these two lenses. That spacer may, depending on its character, reduce the likelihood of lens damage if there should be bumps to the camera/scope system. Naturally, such a spacer should not be considered a license for such bumping! With these and other common sense precautions, the equipment used in scope photography should have a long life and little need for repair. Several digiscoping web sites discuss equipment precautions.

Stabilizing the equipment- Aside from safety related considerations, it is essential to stabilize the camera at the scope's ocular. If there is optical magnification in both camera and scope, even greater stability is needed, so some digis-

copers use simple, homemade or commercial adapter rings . Others use elaborate, occasionally cumbersome, mechanical devices that can require long set-up time or must remain attached to the scope. However one stabilizes, digital cameras that have internal focusing and zoom are naturals for those who wish to use scopes to photograph birds, because they can zoom or focus or auto focus .even if stabilized at the scope's eyepiece. Some digiscopers are able to obtain superb photos without any mechanical stabilization device, simply by hand-holding the camera up to the scope.

When doing scope photography, I use a hand-held 35mm SLR camera with 50mm lens, forgo any adapter, and still get good shots most of the time, shots that often very substantially exceed in quality the needs of simple documentation. Because I have learned to work without any mechanical adapter ring or stabilization device, I am able to work with a wide range of high quality scopes. I first compose the shot in the scope, tighten the pan head . then carefully focus the subject in the scope, with no camera interposed. My camera earlier has been set to manual focus and its lens at infinity, where it will stay. Then I squarely center the scope ocular's image in the camera's viewfinder and, still using that viewfinder, manually fine tune the focus by using the scope's focus ring. All the while, I press the camera's lens firmly against the rubber casing of my scope's ocular (sans eye cup, which I have removed). Finally, with manual arm support of the camera to counteract the pressure of pushing the trigger, and while bracing my arms against my rib cage, I hold my breath (to avoid shoulder/arm movement and to help brace things) and trigger the shot. The same approach should be useful with a hand-held digital camera. Quickness and flexibility are reasons I use this method, but its reliable use requires some practice. Having the camera lens at infinity before it is placed to the scope's visually focused eyepiece means easier, quicker, fine focusing of the scope once the camera is in place.

In my personal use of a hand- held camera, with my specific equipment, simply holding the camera reasonably firmly against the scope's eyepiece helps greatly in stabilization, and I never have had trouble with banging, scraping, or scratching either lens. The likelihood of harm of this kind will depend on the characteristics of particular lens casings and, naturally, on how carefully the equipment is handled. Considerable caution and common sense always should be used here.

An angled-eyepiece scope may be somewhat helpful in scope photography, thanks to its erect eyepiece providing some camera support, but a straight-through scope can work very well, too. Tripod stability, though, is essential. A solid, stable tripod is an extremely wise investment. In a very strong, gusty wind any tripod will need substantial stabilization, both against vibration and against the possibility of its toppling.

In order to prevent movement and vibration—and, hence, blur—potentially created by pushing the camera's trigger, some birders use a remote cable release for their shots, especially when the light level requires long exposure.

Under reasonable light, a cable release may be most useful for those who have the camera firmly attached to the scope in some manner and thus have both hands free to manipulate the release.

Fast shutter speed- Digiscopers and film camera users generally should plan to shoot at a fast shutter speed in order to reduce the consequences of any form of vibration. When a camera's optical zoom capacity plus the scope's magnification are combined, one has a superb vibration/movement amplifier that could ruin a picture. Shutter speed can be boosted in the following ways: (i) use of high-sensitivity (i.e., high-ISO) film (I regularly use 400 ISO film); (ii) selection of the camera's maximum aperture for more light to enter, with shutter speed then being automatically maximized in response to the full, available level of ambient light but with depth of field reduced; and (iii) whenever possible, working under good light, which also favorably affects a photo's contrast and may increase depth of field, at least if aperture size is not preset. Approach (iii) can, of course, be effectively combined with either of the others .

Minimal magnification for the purpose at hand -Persons interested in identification often need detail in birds, and detail is what optical magnification, used responsibly, can supply. Magnification is easy—perhaps too easy—to get when the optical zoom power of a digital camera is combined, multiplicatively, with the optical power of a birding scope. There are, though, serious drawbacks to ultra-magnification. Higher magnification lowers the level of available light. It therefore can reduce the ability to focus , reduce depth of field if it forces a large aperture, and decrease the shutter speed, allowing movement and vibration blur. Also, the magnification that reduces the light level will amplify any movement in the system! When magnification is treated respectfully, it shows its good side, but if it is over exploited, it can show its bad one. A conceptually related maxim is, if you really need very high magnification, “Magnify maximally while the sun shines,” that is, when there is excellent light. If the light is less than very good, one ordinarily should, in the interest of image quality, stay away from the highest scope-zoom levels.

A number of digiscopers routinely zoom down to 20X scope magnification when, as is customary, they use their digital camera's optical zoom at 3X to do away with vignetting. This combination of camera and scope magnification provides sufficient total optical power for many digiscoping situations, but if one must go further, very bright light may help. The same is true of high quality, bright image optics.

The difficulties associated with ultra magnification do not stop with the optical considerations just discussed. Under very high magnification there can be a problem in locating the bird using the narrow view-angle provided, and this problem sometimes occurs even if one first sights it under lower magnification and then zooms up. Lost time can mean a lost shot. Finally, there is the fact that high magnification, more than just magnifying the bird, also magnifies the image distorting effects of the atmospheric convection or heat waves that are visible on hot, sunny days.



Dunlin
*50mm. lens on handheld SLR
through a 30x telescope*
©Rex Stanford

Getting photos in the proper light- When one encounters a rarity, quick setup for shots can be important, but suitable lighting conditions also are important, for showing detail. If one has the time (or can change position), one looks for light that does not create undue glare, that is not opposite the photographer, and that is not from more or less directly overhead. A subject can look chromatically flat and appear featureless if the light is from overhead, so relatively low angle light often is desirable. Taking pictures with strong backlighting or a bright background can, with simple automatic exposure, cause the subject to be underexposed and look murky and dark with few, if any, visible details. Conversely, a dark background can cause the subject to be overexposed, with light washing out details and color. Users of modern 35mm SLR cameras and of high-end digital cameras often can finesse these backlight problems through implementing particular “metering options” as explained in the manual. These are usually easy to use and can give special weight to the exposure needs of a particular, specifiable, area of the frame.

Redundancy-Because what one thinks will be a good shot can turn out not to be—or even can show an undesired pose, as when the bird suddenly has stuck its head under water—it can be important, in filming rarities, to take more

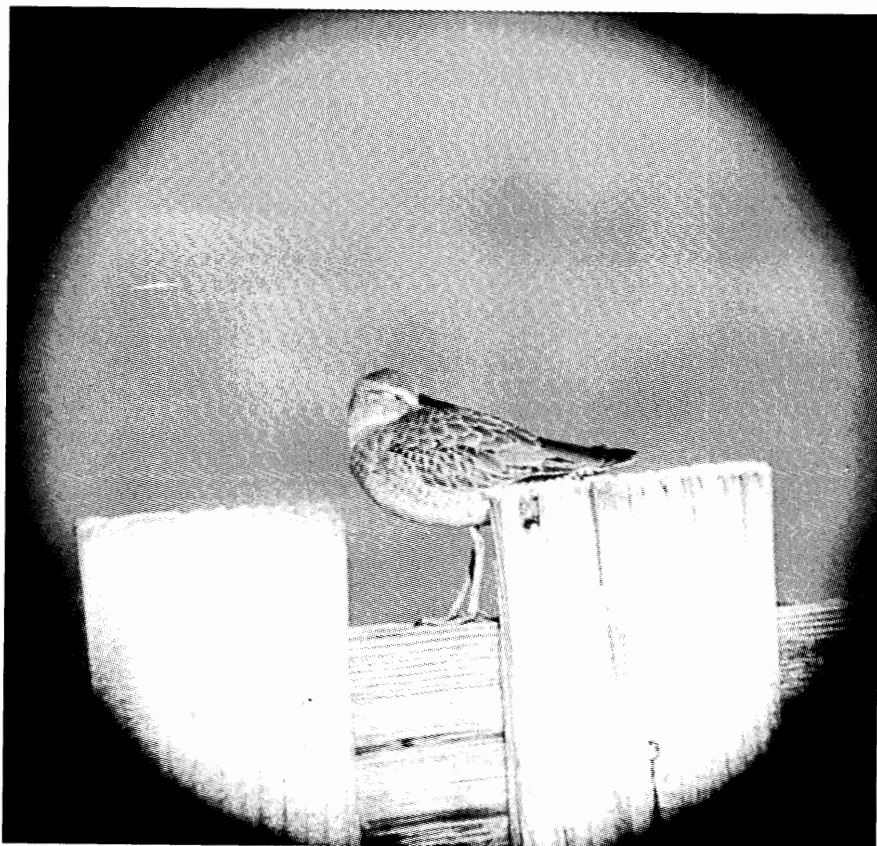
than one shot of any and all desirable poses or views. If you are using film and follow this advice, you may feel that you are wasting film, but you can never be sure ahead of time that a given, important shot will turn out as you expected. If you are working in digital, you can view your shots on-site, and your camera presumably will allow you to overwrite a shot that proves inadequate. Both digital and film photographers should note that having more than one shot showing a particular relevant feature—especially, a somewhat subtle one—can be important to definitive identification because such a feature's presence across more than one shot can demonstrate that the feature is not an artifact. There is still another reason for digital photographers to exercise special caution before overwriting, on site, good, clear shots. The photographer not familiar with all the individual features that differentiate a rare species from a similar common one, might overwrite a seemingly "redundant" shot that is unique in capturing a critical identification feature (e.g., the lack of webs on the foot of a small calidris sandpiper)! Scope photography beginners, please note: In the absence of adequate practice with non-rarities, taking multiple pictures can play a major role in ensuring good, clear photos of a rarity. All this implies the need for carrying adequate supplies.

Photo-documentation for Records Committees

Sending to the New York State Avian Records Committee (NYSARC) one's photo-documentation of rarities is important for advancing public knowledge of what species have appeared in this state. It should become part of the ethic of birding. Submission of photos is simple and easy. Tell when, where, equipment, any special camera settings or picture processing, under what lighting/weather conditions, and by whom the photos were taken. Name the species reported, and pinpoint its location in the frame, if there are multiple birds. You also may elect to describe photographic details that support your identification (or even include on-site field notes that provide supplementary observations), but, if the photos would seem to stand by themselves in establishing the record, the additional material may be considered optional. Birders whose photos are accepted as part of a state record can take justified pride in an important accomplishment

Some ethical considerations in bird photography

One can only hope that the trend toward photographing birds does not result in an increase in the already substantial toll that certain bird photographers sometimes take on the creatures they study and on their habitats. Among the sometimes observed questionable deeds of some photographers are: (a) cutting away obscuring vegetation where increased visibility could pose a threat to a bird by destroying the safety of its roost or could harm its potential for successful nesting and rearing of young, (b) inflicting stress or harassment on migratory species such as flushing migrating shorebirds to get an on-the-wing shot, (c) placing oneself and one's equipment in front of birders who want to see a bird, (d) chasing, even repeatedly, after birds that flee one's too close approach, such as pursuing a



Short-billed Dowitcher

75-300 mm. zoom on handheld SLR

through a 30x telescope

Note: The extreme vignette does not effect the photo

©Rex Stanford

Snowy Owl up and down the beach, and (e) trying to get extremely close to a rare bird even at risk of stressing or flushing it, thereby potentially denying other observers the opportunity to see a much desired species. Others may have their own special "favorites" in this category.

Actions that threaten or harm the well-being of the birds or that degrade the quality of their habitat should be avoided by birders, be they photographers or not. Likewise, actions that assail or harm the rights of other human beings, including those of other birders and of property owners, should be deemed beyond the pale unless explicit permission is had from the others potentially affected by the actions. Fortunately, there are many responsible photographers who do all they can to avoid harm to the creatures they photograph, who obey relevant laws, and who are very considerate of others who may be present and of the property rights of land owners.

Although the focus of this paper has been on getting non-photographing birders to start taking pictures with their scopes, it is also hoped that certain birders already into bird photography might change the ways they do it. Those who have been lured by small telephoto lenses into the very close approaches that can disturb or flush birds and that can irritate other birders should very seriously consider switching to scope photography for appropriate subjects. With the scope's vastly greater optical power will come greater fairness to the birds and to other birders, and the resulting pictures will likely, in many instances, be far more suitable for documentation, study, and enjoyment. It can be hoped, too, that those who use traditional long lenses directly attached to cameras might consider the advantages, for many situations—especially very distant birds—of digiscoping.

An important virtue of scope photography is that it allows high quality shots *at the same distances at which we normally observe and study birds in the field*, or at even less a distance if the photographer also uses a digital camera's optical zoom. Normal scope viewing distances do not unduly disturb or flush the birds. A digiscoping birder confronted by a rare shorebird and standing at the same range as other scope using birders sometimes may even have to back off to get the full bird into the shot! With the optics discussed here we can, at unintimidating distances, get images ranging from very adequate to frame filling. By waiting patiently, without intervention, for the bird to do what we wish to photograph, by consideration of the rights of others, by sparing the habitat, and by zealously guarding the best interests of the birds, we will be advancing a different style of bird photography than we sometimes see in the field.

Recommended Paper

McGowan, Kevin J. (Autumn, 2001). Snap judgments. *Living Bird*, 40-44. (Provides an account of documenting rarities with a pocket digital camera. McGowan and his son, Jay, have taken many fine bird photos using scope photography, and some may be found on McGowan's photos webpage, <http://birds.cornell.edu/crows/brdphoto.htm>)