The search for the perfect bird lens goes on...

an informal, informative review of the choices now available in telephoto lenses for bird photography

by Henry Lloyd Bunker, IV

SINCE OBSERVERS ARE increasingly being urged by *American Birds,* its Regional Editors, and State Records Committees to present photographs or slides as documentation of exceptional records, it is probable that more and more birders will start packing telephoto lenses on birding trips. The choice of a long-focus lens best suited to your needs is a personal matter but perhaps it would be helpful to compare and contrast the various types now available.

Before comparing lens types a few points should be explained to readers who are new to photography. First, all prices quoted in this article are list prices but almost any dealer should give you at least a 20% discount. Some dealers discount as much as 25% from list prices. The only exceptions to this policy are for the lenses which are sold directly by the manufacturer, such as the Questar. Second, you will notice that we often refer to the close-focusing ability of a lens: the closest distance your lens will focus on a subject. This is of paramount importance in bird photography. If you want to reproduce prominently a warbler on film with a lens in the 500-600 mm range, it is necessary to get within *fifteen feet* of the subject. Will the lens you purchase accommodate this distance? Third, we will discuss the light-gathering ability of various types of lenses (as expressed in f/stops). Very simply, the lower the f/stop of your lens, the wider the aperture and the faster your shutter speed may be. This is important, of course, in "freezing" birds in flight or rapid motion. A lens with a maximum aperture of f/5.6 will allow twice as fast a shutter speed as one with a maximum aperture of f/8. Many persons over forty years of age have difficulty focusing a telephoto lens, and little wonder when you consider that a 400 mm lens at f/5.6 at fifteen feet has a depth of field (depth of area in focus) of one inch. Incidentally, it is recommended that you use telephotos wide open (maximum aperture) since a good quality lens will perform sufficiently well at maximum aperture and what we really want is the fastest possible shutter speed However, in conditions of extreme light intensity, such as in a mid-day in the Sahara, it may be necessary to stop down (reduce the aperture) to avoid overexposure.

If you follow this advice there will be no reason to buy an automatic lens; (a lens that lets you focus at full aperture, and then stops down to the selected aperture when the shutter is released). You can save money by buying a preset (single aperture lens). We heartily recommend automatic aperture-preferred camera bodies. These will calculate exposure on the maximum aperture of your lens and automatically select the proper shutter speed. If you wish for more automation you can add an auto-winder (motorized electric film and shutter winder). We are limiting this discussion to 35 mm lenses since it is felt that the other formats are impractical for bird photography.

Mirror Lenses

THESE ARE GOOD ALL-AROUND lenses, miniatures of the large astronomical, *reflecting* telescopes. If you're a mobile person, mirrors are for you. Advantages: light weight and small size; most focus to very close distances. They are easy to protect when moving through brush or in sudden downpour, and are easy to use with a beanbag on car windowsills. Most are nicely balanced and can be hand held. The disadvantages are: the quality of workmanship in mirrors can vary sharply. Mirrors cause some shift in color (personally we do not find the change objectionable). They only have a single aperture which is often f/8, but the actual light transmitted through a mirror lens is more likely to be f/9 or f/10 and this makes the view rather dim and as a result, they are hard to focus. Out-of-focus background becomes concentric circles or "doughnuts" which can be distracting. This type of lens causes light fall-off around the edges. This is most noticeable in sky shots (birds in flight). Mirror lenses do not handle backlighting well at all. Author's favorites: (best in class) Questar 700 mm f/8 ($995), which has an excellent focal length for birds. The fact that this lens focuses down to 10 feet recommends it highly. This is a lot of magnification to handhold but it can be done. We suggest using it with a tripod or better yet with a Jones Bracket (designed for movie cameras)—addition of ball head (King Photo Product, $15) is necessary to raise still camera to eye level. Worth considering: Nikkor 500 mm f/8 for Nikon and Nikkormat cameras ($629.50). This lens is a joy to use. It focuses to 13 feet. The Nikkor 1000 mm f/11 ($1319.50) is not a mobile lens, but is capable of excellent results on a tripod. We find it useful in the close-focusing range (25 feet) with birds in the Blue Jay to meadowlark size, combined with a bright day and fast film.

Celestron International manufactures three mirror lenses. The f/6 750 mm 9 ($625) with a near focus of 15 ft., the f/11 1000 mm ($245) with a near focus of 15 ft., and the f/10 1250 mm ($595) with a near focus of 20 ft.

The f/6 750 mm Celestron is unique among long lenses because of its f/6 aperture which allows you to operate under light conditions that would eliminate most of its competition. Its near focus is 15 ft., although my own lens is sharp at 13 ft. The use of fast film that can be pushed (developed at a higher speed rating) puts this lens in a niche of its own. Professional Camera Repair in New York City can also add a fast focus gear box to this lens which is extremely important in bird photography. The combination of fast focus, f/6 aperture and fast film gives one the ability to shoot in poor light which makes this lens worthy of consideration.

Because mirror lenses have one aperture the use of neutral density filters give these lenses added flexibility. These filters and others can be fitted into most lenses.

Because all long lenses present focusing problems, a matte screen or ground glass can eliminate this problem. Conventional split image finders just don't work (they black out)

Some mirror lenses can be hand held with care and experience. In bird photography tripods are not always available or practical and the use of tree trunks, rocks and many other objects as braces should not be overlooked.

A word about the field model Questar. This is a fine optical instrument but in our opinion is better suited for observation than for photography. Its main drawback is the dimness encountered when the camera is added on. Shutter speeds of one-quarter of a second are not uncommon, even on a bright day. The Questar takes considerable time to set up and is not a mobile lens in spite of its small size.

All-glass Lenses

THESE OFFER THE BEST quality, bar none They will present you with the finest color rendition, best sharpness and fastest speed Advantages: all-glass lenses are not subject to the same problems as mirrors, such as light fall-off, barrel distortion, dim viewing or out-of-focus doughnuts. If you are going to do a lot of photography and you are by nature competitive you will probably opt for these. Disadvantages: the main drawback is bulk. They are longer and often heavier than mirror lenses Instead of fitting in neatly between the socks and the T-shirts they often require their own cases. They are likely to focus less closely than a mirror lens. A 600 mm lens that focuses to 50 feet is great for ostriches but worthless for bluebirds. Author's favorites: (best in class)—Novoflex. This lens has a spring-

loaded grip that allows parallel focusing and a bellows attachment for close-focusing. It has a shoulder brace and a front pistol grip and it is, in our opinion, the best lens ever made for bird photography. It has interchangeable lens heads (600 mm f/8, 400 mm f/5.6 and 280 mm f/5.6) and with the proper adapter can be used on most cameras. The entire kit with 400 mm lens is $800. The 600 mm head alone is $440 and the 280 mm head alone is $288. (Cambridge Camera, New York City sells these at a 25% discount). Like any other lens, though, it is not perfect. The front pistol grip and cable release are junk, cheap and flimsy. If you use a Nikon I suggest you buy the Nikon Pistol Grip II and cable release which is a very sturdy combination. The main weakness of this system is the bellows. (A bellows enables you to focus down to within 6 feet). Bellows are too prone to malfunction. If you're going out in the boonies for any length of time be sure you take an extra bellows ($88). I have no complaint about the quality of Novoflex lenses.

If you insist on even better than the best, however, buy a Leica Telyt; you'll spend more and you won't see that much difference. Leica offers a telephoto with 400 mm and 560 mm interchangeable heads. The focusing is accomplished by a trombone-type slide. Leitz also offers an 800 f/6.3 Telyt that costs about as much as a Chevrolet, but only focuses down to 44 feet. Lenses like the Telyts and Novoflexes look much like bazookas, and in fact are banned by the U.S. Secret Service from use by the presidential press corps. I have often fantasized that these lenses would pay for themselves quickly if used to rob a few banks.

Perhaps we should explain the high cost of some telephotos. Many manufacturers such as Minolta, Nikon, and Canon are now using fluorite and fluorite-type glass for their telephoto lenses, and at greatly increased cost to them. This glass is more resistant to scratching and gives distinctly better color rendition. The combination of a new glass and new lens designs is producing a generation of telephotos that are shorter and lighter. It used to be that a 500 mm lens had to be 500 mm long.

BOTH LEICA TELYTS and Novoflexes use "doublets" for lens configurations which means just two elements at the end of the lens barrel and that is all. It leads one to wonder why other manufacturers use many elements in many groups without achieving the same quality. I hope that Novoflex will start coating their lenses in the future. They don't perform as well as they should in backlighted situations. Leica has been coating its lenses since long before it was fashionable to do so.

If you want to buy an inexpensive lens that will be worth something later as a trade-in on one of the big guns, if you decide to pursue my interest, Vivitar makes a 400 mm ($235) that is a very good performer and fits most cameras with an adapter. Still too much money? There are many 400 mm's on the market in the $40-50 range. They are surprisingly good optically but the workmanship is shoddy and the lenses won't withstand much abuse. They are almost worthless as trade-in items.

Combination Glass/Mirror

THIS IS AN ODD LENS and I'm not sure why it is manufactured. Perhaps because it is sturdier than a true mirror lens. The glass element between the mirrors keeps them from being knocked out of alignment. While it is shorter than a comparable mirror lens it is not as well-balanced and hence harder to handhold. Vivitar currently offers a 600 mm f/8 that only focuses to 23 feet. Price? $600.

Zoom Lenses

ZOOMS ARE BEST for working from a blind or any situation where you can't move around. When I was photographing Common Puffins at Machias Seal Island off the Maine coast I observed that the birds would land but would not sit for long before jumping down to their burrows because the rocks were hot Since the puffins were landing anywhere from 10 to 35 feet from my blind I decided that a zoom lens in the 200-600 mm range with close-focusing would have been the perfect tool Nikon makes what would seem to be the best available. It covers 180-600 mm with an aperture of f/8. It focuses down to 8½ feet, which is spectacular. However it weighs over 7 lbs. and costs $5795. The price is about equal the cost of all the prime lenses between 180 and 600 mm. Tamron makes a 200-500 mm zoom

for much less money ($730) and it fits most cameras with an adapter. If you are a stickler, it doesn't compare in quality to the Nikkor. Pentax is another company that makes an exotic zoom—a 135-600 mm f/6.7 ($2000). Minolta also offers a zoom—100-500 mm f/8—at $908. There are some optical problems inherent to zooms. They suffer from light fall-off at the edges and while they may yield sharp pictures, they lack the overall crispness possible with a prime lens. Also a 600 mm f/8 lens is quite normal and acceptable but a 180 mm lens that weighs over seven pounds and is 16 inches long, with a maximum aperture of f/8, is a nightmare. The smaller focal length zooms are of little use to the bird photographer and will not be discussed here.

Teleconverters

TO SIMPLIFY THIS DISCUSSION I will only refer to 2X converters although they are also available in 1.5X, 3X and 4X. No essay on telephotos would be complete without mentioning teleconverters. The question I'm asked most is "are they any good?" Some are and some aren't. Some will work well with one lens and not another. A few photographers have been lucky enough to find a low-priced teleconverter that works extremely well with one of their favorite lenses. Many photographers have not had this luck and now use their teleconverters as paperweights or bookends. I suppose the best approach to buying a teleconverter is to take your favorite prime lens to the camera store and make test exposures with their entire stock. However this will not earn you points towards their "customer-of-the-year" award. Canon and Nikon both make very sophisticated (and expensive) coated teleconverters. Both of these double the focal length without any apparent loss of sharpness. Advantages: teleconverters double the focal length of a lens without appreciably adding to the length or weight. They do not change the focusing range. Thus a 300 mm lens that focuses to ten feet will become a 600 mm lens that focuses to ten feet. Teleconverters are less expensive to buy than extra telephoto lenses. Disadvantages: A 2X teleconverter will double the maximum aperture of a lens. A 500 mm f/8 lens used with a 2X teleconverter becomes a 1000 mm f/16 This means slower shutter speeds and dimmer viewing. Most teleconverters degrade the image quality of a prime lens, especially at the edges. Their performance is more acceptable if the lens is stopped down several apertures.

CONSIDERING THAT WE HAVE touched bases with all types what then would be the perfect bird lens? They haven't made it yet We look to plastic lenses in the future which already could be manufactured to finer tolerances, weigh less and hopefully cost less than glass lenses. We see no reason why the entire lens couldn't be made out of a tough plastic. Rather than approach focal lengths from a zoom direction, perhaps manufacturers should copy the movie cameras and offer a lens turret—perhaps a 400, 500 and 600 mm combination. Auto-focus lenses will some day be the norm but this principle may be hard to apply to telephotos. For instance, an auto-focus lens can't be primed with the information that it should focus on the bird and not the branch in front of the bird. Or that it should focus on the eye of the bird and not the beak.

The current technology gives us many fine choices but not the perfect lens. It exists only in our imagination.

— 904 Mt. Holyoke Place, Swarthmore, Penna 19801.