

Photo Basics

By Jack Vanden Heuvel

I am often asked to explain basic questions in photography. In response to some of these questions, here are some of the basics.

f stops and Shutter Speed go together:

What is an f stop anyway, people ask. An f stop is how large the aperture in your lens is open. That is, how big is the hole open to let the light in. Proper exposure is determined by the combination of how big the f stop is, with how long the hole is open. How long the hole is open to let the light in, is your *shutter speed*. For example, a common combination is f /8 at 250th of a second. Anytime you read the information about a photo, if it has information about exposure, it will give you those two things: the *f stop*, and the *shutter speed*.

The amount of light coming in the lens gets halved each time the main f stop goes higher. In other words, as you go to a higher f number, the hole gets smaller. Here are the main f stops: f /2.8, 4, 5.6, 8, 11, 16, 22. That means that when you go from f /22 to f /16, twice the light gets through that hole to make your photo. When you go from f /16 to f /11, you get twice more light, etc.

The main shutter speeds are 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000, etc. The main shutter speeds are basically opening the aperture half as long (time wise) as you go higher. What this means is that you get the exact same exposure if you shoot a photo with the combination f /8 at 1/250th of a second, as you would with the combination of f/ 5.6 at 1/500th of a second, or again the combination of f /4 at 1/1000th of a second. In each case you choose an f number to let more light in, so you need to choose a shutter speed to balance that by giving less time for the light to come in.

Automatic cameras do this all for you. The nice thing is that many cameras let you choose either the shutter speed (shutter priority, *TV* on Canon) or the f number (aperture priority, *AV* on Canon) and the camera will automatically set the other one for you. Easy!

How do I know what f stop to use?

The smaller the f stop hole is, the more is in focus. The area in focus is called the “depth of field.” Note, the larger the actual number, such as f/22, the smaller the hole. A low number such as f/2.8 has a large hole for the light to come in, and less depth of field, that is, the less is in focus.

This means that if you want to take a picture of something like an individual tree leaf hanging from a low limb, and blur everything else out, you focus on the leaf with an $f/4$, and only the tree leaf will be in focus. On the other hand if you want to take a picture of the tree leaf and have everything in the background in focus too, then you use $f/16$.

How do I know what shutter speed to use?

If you use a shutter speed that is too slow, you will blur the photo, either because the camera moved while you took the photo, or because the subject moved while you took the photo.

For fast moving things such as sports photography, if you want to totally stop the action, you will have to use a shutter speed of at least $1/640^{\text{th}}$ of a shutter speed. Same for a bird flying.

It also depends on the lens you are using. If you have a telephoto lens, you need a faster shutter speed to hand hold it. An important rule to remember, is whatever mm lens you are using, simply put a "1" over it, and you will have the *minimum shutter speed* needed to hand hold that lens without getting blur and bad focus. For example, if you have a wide angle lens of 28 mm, you can get by with hand holding it at $1/30^{\text{th}}$ of a second. If you have a telephoto lens of 500mm, you need to at least use $1/500^{\text{th}}$ of a second shutter speed. Now the Image Stabilization systems (Canon term *IS*) give you another two or three stops slower.

What about wide angle lenses?

Wide Angle lenses help you get more on the photo. For example, if you are in a small room, it is hard to get back far enough to do a group photo. A wide angle is just what you need. (Or, find a different place for the photo!) If you are in the mountains, you might find it frustrating that you cannot get the whole mountain on the photo. The Wide Angle helps you do that. Remember, though, that it pushes back the picture, so you are no longer close to it.

The big thing in wide angle photography to remember in doing landscapes especially, is to have something real close to anchor the shot. A big rock, boulder, flowers, leaves, or something.

What about Telephoto Lenses?

The big advantage of a telephoto lens is the excitement of pulling things close to you without having to go over there. For example, to get a close up of a deer walking in a meadow, or a candid of the face of a child (without getting too close to spoil their spontaneity), or to zoom in on a flower.

A wonderful advantage of telephoto lenses is also that by focusing on the subject, it throws everything else out of focus, and highlights your subject. If you do this through a Single Lens Reflex camera, you can see exactly what you are getting when you do it. This is great whether your subject is a flower and you blur the other flowers into a soft background, or a person's head, blurring the background and making the person stand out strong.

The **North Iowa Photo Club** meets each Third Thursday of the month, at the Rolling Acres Christian Reformed Church, 340 19th St. S.W. Call 424-1369, ask for Jack. See web site, photo club button: **rollingacresrc.org**

What must I know about ISO settings?

ISO is the speed of the film, if you were shooting film. It is how “fast” the film is. On a digital camera, it works the same. A slow ISO is ISO 100. That is great for when things are not moving, and you have no great depth of field needs. But you need a faster ISO like 400 or 800 if you are shooting in low light, or you want to use a telephoto lens and shoot at high shutter speeds. If you have a tripod, and nothing is moving, you can use ISO 100. One thing to remember, is that the higher the ISO, the grainier the pictures get. Don’t go higher than you need to. ISO 400 is pretty safe with cameras with 8 meg. 200 is a bit better. 1600 is pushing it, and you will pay a price, even though it is better than getting a blurred picture. However this is changing. As of 2008 and 2009, cameras are coming out with much higher ISO numbers, with hardly any grain! Know how to change your ISO on the spot. [Automatic settings set the ISO for you] A common photo for me is with a wide angle lens, getting a lot of depth of field and a close anchor, I will shoot at f/22, demanding a tripod or a high ISO.

Why is a Flash unit so wonderful?

Anytime it is too dark, you need a flash. But I especially like flash as “fill flash.” During the day, you can have your subject with their back to the sun, and then have your flash automatically fill in the shadows to balance the other light. That way your subject does not squint the eyes, and the hair stands out strong with backlighting, and there are no harsh shadows. Good flash units will let you manually back off your flash intensity by up to 2 f stops, to give you control over just what you want. Check your LCD to find out how it is working, as you take a photo! Instant feedback lets you adjust as you want. In the old days, you had to figure out things with a slide rule (almost) to know what to do, count of the yardage, etc. Now your camera does it automatically! Also play with bounce flash off ceilings, and putting a diffuser on your flash, etc. so it is not so harsh.

Where do I buy my Photo Supplies?

Many pros are very up front about where they go to buy their photo supplies. They go to **B&H Photo**. Find them on the web, or just call them up on the telephone for free, 1-800-947-9953. You can find many other places to buy, but you never know who you are dealing with. Scott Kelby recommends B and H too!

What is a good magazine to subscribe to?

Outdoor Photographer is the best for nature photography. It is so exciting to read through an issue. The best nature photographers are featured here. But, I confess, I am into nature photography. There are many other choices for you if you are not into nature photography. When I get done reading this magazine, I just want to go out and shoot pictures! I have never talked to anyone disappointed by this magazine!

There are many good books on photography. Two I recommend highly, and give all kinds of interesting tips, is *The Digital Photography Book: The step-by-step secrets for how to make your photos look like the pros!*, by Scott Kelby, Volume 1, 2007, and Volume 2 in 2008. These books are excellent.

Have fun taking pictures!

Some Quotes I like:

Rollo May: *Beauty is the experience that gives us a sense of joy and a sense of peace simultaneously.*

Galen Rowell, *Outdoor Photographer*: p. 32, October, 2001

“Many of the children who parents drag through my photo gallery openly express doubt about the reality of my nature images. They’re aware that many of the images they’ve been exposed to in films, magazines, and posters never looked that way in front of the camera. But they’re unaware of how a genuine wild scene in magical light might appear before their own eyes. Surveys show that two-thirds of parents believe their children define their self worth in terms of possessions, with most preferring to go to a shopping mall rather than go hiking.

An old Irish proverb: *Who to Rome goes, much labor, little profit knows; For God on earth though long you’ve sought him, you’ll miss at Rome unless you’ve brought him.*

Nature Photographer **Leonard Lee Rue III:**

“I am a photographer because I am a frustrated artist. I always wanted to draw and paint wildlife, and I cannot. I capture it on film instead of canvas. I lecture and write because I want to show the beauty of God’s creatures to others and share my knowledge of these creatures with others.”

I never say that I am lucky. I always say that I have been truly blessed by God....

Every day of my life I thank God for my eyes that allow me to behold the natural beauty that He has created....

The best photos are recorded in your mind and heart, not on film....

My reason for being is to make others aware through words and photographs, of the beauty with which our Lord has surrounded us.

Philip Yancey: p. 48 *Soul Survivor*:

In childhood, nature had been my place of refuge. We lived in a 12 x 48 foot aluminum trailer parked on church property, and home involved more tension than peace, yet always I could find woods nearby where I could explore the squirrel’s nests and bee

swarms, the rotten logs full of exotic beetles, and the marshes buzzing with the sound of dragonflies and small frogs. I collected butterflies, beetles, turtles....
...Nature stuck me as a symphony that plays on whether or not I stop to listen.

Acts 14: 17.

He has not left himself without testimony:

He has shown kindness

by giving you rain from heaven

and crops in their seasons;

he provides you with plenty of food

and fills your hearts with joy.

Romans 1:

**For although they knew God,
they neither glorified him as God
nor gave thanks to him...**

Spring, *When faces called flowers float out of the ground...*-- ee comings.

The flowers appear on the earth; the time of the singing of the birds has come.

The Song of Solomon