Nikon D5100

From Snapshots to Great Shots

Rob Sylvan

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DEDICATION

For all of the teachers I have had in the past, and all of the ones I have yet to meet.
Thank you.

ACKNOWLEDGMENTS

Contents

Introduction

The D5100 is an amazing bit of technology and a very capable tool for creating photographs that you will be proud to show others. The intention of this book is not to be a rehash of the owner's manual that came with the camera, but rather to be a resource for learning how to improve your photography while specifically using your D5100. I am very excited and honored to help you in that process, and to that end I have put together a short Q&A to help you get a better understanding of just what you can expect from this book.

Q: IS EVERY CAMERA FEATURE GOING TO BE COVERED?

A: Nope, just the ones I felt you need to know about in order to start taking great photos. Believe it or not, you already own a great resource that covers every feature of your camera: the owner's manual. Writing a book that just repeats this information would have been a waste of my time and your money. What I did want to write about was how to harness certain camera features to the benefit of your photography. As you read through the book, you will also see callouts that point you to specific pages in your owner's manual that are related to the topic being discussed. For example, in Chapter 6, I discuss the use of the AE-L button, but there is more information available on this feature in the manual. I cover the function that applies to our specific needs, but I also give you the page numbers in the manual to explore this function even further.

Q: SO IF I ALREADY OWN THE MANUAL, WHY DO I NEED THIS BOOK?

A: The manual does a pretty good job of telling you how to use a feature or turn it on in the menus, but it doesn't necessarily tell you why and when you should use it. If you really want to improve your photography, you need to know the whys and whens to put all of those great camera features to use at the right time. To that extent, the manual just isn't going to cut it. It is, however, a great resource on the camera's features, and it is for that reason that I treat it like a companion to this book. You already own it, so why not get something of value from it?

Q: WHAT CAN I EXPECT TO LEARN FROM THIS BOOK?

A: Hopefully, you will learn how to take great photographs. My goal, and the reason the book is laid out the way it is, is to guide you through the basics of photography as they relate to different situations and scenarios. By using the features of your D5100 and this book, you will learn about aperture, shutter speed, ISO, lens selection, depth of field, and many other photographic concepts. You will also find plenty of full-page photos that include captions, shooting data, and callouts so you can see how all of the photography fundamentals come together to make great images. All the while, you will be learning how your camera works and how to apply its functions and features to your photography.

Q: WHAT ARE THE ASSIGNMENTS ALL ABOUT?

A: At the end of most of the chapters, you will find shooting assignments, where I give you some suggestions as to how you can apply the lessons of the chapter to help reinforce everything you just learned. Let's face it—using the camera is much more fun than reading about it, so the assignments are a way of taking a little break after each chapter and having some fun.

Q: SHOULD I READ THE BOOK STRAIGHT THROUGH OR CAN I SKIP AROUND FROM CHAPTER TO CHAPTER?

A: Here's the easy answer: yes and no. No, because the first four chapters give you the basic information that you need to know about your camera. These are the building blocks for using the camera. After that, yes, you can move around the book as you see fit because those chapters are written to stand on their own as guides to specific types of photography or shooting situations. So you can bounce from portraits to landscapes and then maybe to a little action photography. It's all about your needs and how you want to address them. Or, you can read it straight through. The choice is up to you.

Q: I DON'T SEE ANY CHAPTERS DEVOTED TO VIDEO. DO YOU COVER THAT?

A: I know that one of the reasons you probably bought the D5100 was its ability to capture HD video. I have covered some basic video setup information in Chapter 2, but I really wanted the focus of this book to be the photographic capabilities and possibilities. Don't worry, though; read the next Q&A and I think you'll be happy.

Q: IS THERE ANYTHING ELSE I SHOULD KNOW BEFORE GETTING STARTED?

A: In order to keep the book short and focused, I had to be pretty selective about what I put in each chapter. The problem is that there is a little more information that might come in handy after you've gone through all the chapters. So as an added value for you, there are two bonus chapters: Chapter 11, called "Pimp My Ride," and Chapter 12, "D5100 Video: Beyond the Basics." Chapter 11 is full of information on photo accessories that will assist you in making better photographs. You will find recommendations for things like filters, tripods, and much more. Chapter 12 will lead you through some video tips and techniques to make your D5100 videos even better. To access the bonus chapters, just log in to or join Peachpit.com (it's free) and enter the book's ISBN on this page: www.peachpit.com/store/register.aspx. After you register the book, a link to the bonus chapters will be listed on your Account page under Registered Products.

Q: IS THAT IT?

A: One last thought before you dive into the first chapter. My goal in writing this book has been to give you a resource that you can turn to for creating great photographs with your Nikon D5100. Take some time to learn the basics and then put them to use. Photography, like most things, takes time to master and requires practice. I have been a photographer for many years and I'm still learning. Always remember, it's not the camera but the person using it who makes beautiful photographs. Have fun, make mistakes, and then learn from them. In no time, I'm sure you will transition from a person who takes snapshots to a photographer who makes great shots.

1

ISO 200
1/30 sec.
f/8
60mm lens

The D5100
Top Ten List

TEN TIPS TO MAKE YOUR SHOOTING MORE PRODUCTIVE RIGHT OUT OF THE BOX

I'm going to go out on a limb here and guess that you've already taken your camera out of the box and played around with it a bit. I mean, who can resist that delicious smell of new electronics and the thrill of playing with a new toy? I usually find it easier to sit down and read the manual after having taken the camera for at least one spin around the proverbial block. Of course, it is totally fine if you are reading this book before you've got the camera in hand, and I applaud your restraint.

So, even if your camera is (slightly) out of the box, I've put together some tips to help you get the most out of your D5100 experience. It's never too late to start over and take it from the top. As I mentioned in the Introduction, the intention of this book is to extend the usefulness of your camera manual by expanding on subjects not covered in depth, or by calling your attention to certain aspects that deserve closer inspection, all the while taking you to places in your photographic education that are far beyond the boundaries of the manual. I want you to know not only how to use your camera, but how to use it while improving your ability to take the photos you want to take. To that end, there are some practical matters that should help you build the right foundation.

CAMERA FRONT

A AF-Assist Illuminator
B Flash Mode Button
C Microphone
D Function Button

E Lens Mounting Mark
F Lens Release Button
G Infrared Receiver

CAMERA BACK

A Menu
B Information Edit
C Mode Dial
D AutoExposure/AutoFocus Lock Button
E Command Dial

F Playback Button
G Multi-Selector
H OK Button
I Memory Card Door
J Delete Button

K Playback Zoom In
L Thumbnail/Playback Zoom Out
M LCD/Information Screen
N Infrared Receiver

CAMERA TOP

A Speaker
B Flash Hot Shoe
C Mode Dial
D Live View Switch
E Info Button
F Movie Record Button
G Exposure Compensation/Aperture Adjustment
H Shutter Release

1. CHARGE YOUR BATTERY

When you first open your camera and slide the battery into the battery slot, you will be pleased to find that there is probably juice in the battery and you can start shooting right away. What you should really be doing is getting out the battery charger and giving that power cell a full charge. Not only will this give you more time to shoot, it will start the battery off on the right foot. No matter what claims the manufacturers make about battery life and charging memory, I always get better life and performance when I charge my batteries fully and then use them right down to the point where they have nothing left to give. To check your battery level, insert the battery into the camera, turn on the camera, and look for the battery indicator in the upper-right section of the information screen (**Figure 1.1**).

FIGURE 1.1
The LCD displays the amount of charge left on the battery.

KEEPING A BACKUP BATTERY

If I were to suggest just one accessory that you should buy for your camera, it would be a second battery. Nothing is worse than being out in the field and having your camera die. Keeping a fully charged battery in your bag will give you the confidence that you can keep on shooting without fail. Not only is this a great strategy to extend your shooting time, it also helps to lengthen the life of your batteries by alternating between them. No matter what the manufacturers say, batteries do have a life and using them half as much will only lengthen their usefulness. Trust me, thanks to the increased quality of the LCD display on the D5100 you will spend a lot of time gazing at your images (and eating up battery charge).

2. ADJUST YOUR AUTO OFF TIMER SETTING

One of the things that really bugged me when I first began shooting with the D5100 was the short duration that the playback and menu screens stayed on while I was working with the camera. This can be very frustrating when you are trying to learn about the camera and its features and you have to keep pressing the Menu or Info button to bring the screen back to life. This is also the case when reviewing images on the screen after taking a picture. The answer to this problem is to increase the timer setting to a longer duration. The D5100 has four different settings for the auto-off function: Short, Normal, Long, and Custom. To make things easy, I set my camera to the Long setting when first learning how it works, which gives one minute for playback/menus, 20 seconds for image review, ten minutes for live view, and one minute for auto-meter off. Once I've grown comfortable with the controls, I change the setting to Short to increase battery life. If you so choose, you can use the Custom setting to individually adjust each of these options.

A

B

C

SETTING THE AUTO OFF TIMERS

1. Press the Menu button and navigate to the Custom Menu tab.

2. Select item c: Timers/AE lock and press the OK button (**A**).

3. Select item c2: Auto Off Timers and press OK again (**B**).

4. Highlight your choice of timer settings and press OK a final time to lock in your change (**C**).
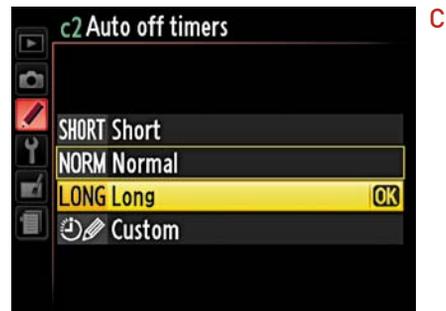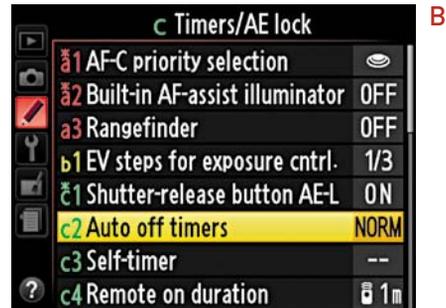
3. SET YOUR JPEG IMAGE QUALITY

Your new D5100 has a number of image-quality settings to choose from, and you can adjust them according to your needs. Most people shoot with the JPEG option because it allows them to capture a large number of photos on their memory cards. The problem is that unless you understand what JPEG is, you might be degrading the quality of your images without realizing it.

The JPEG format has been around since about 1994. JPEG stands for Joint Photographic Experts Group, and the format was developed by this group as a method of shrinking digital images down to a smaller size for the purpose of reducing large file sizes while retaining the original image information. (Technically, JPEG isn't even a file format—it's a mathematical equation for reducing image file sizes—but to keep things simple, we'll just refer to it as a file format.) The problem with JPEG is that, in order to reduce file size, it has to throw away some of the information. This is referred to as "lossy compression." This is important to understand because, while you can fit more images on your memory card by choosing a lower-quality JPEG setting, you will also be reducing the quality of your image. This effect becomes more apparent as you enlarge your pictures.

The JPEG file format also has one other characteristic: to apply the compression to the image before final storage on your memory card, the camera has to apply all of the image processing first. Image processing involves such factors as sharpening, color adjustment, contrast adjustment, noise reduction, and so on. Many photographers now prefer to use the RAW file format to get greater control over the image processing. We will take a closer look at this in Chapter 2, but for now let's just make sure that we are using the best-quality JPEG possible.

The D5100 has nine different settings for the JPEG format. There are three settings each for the Large, Medium, and Small image size settings. The three settings (Basic, Normal, and Fine) represent more or less image compression, based on your choice. The Large, Medium, and Small settings determine the actual physical size of your image in pixels. Let's work with the highest-quality setting possible. After all, our goal is to make big, beautiful photographs, so why start the process with a lower-quality image?

SETTING THE IMAGE QUALITY

1. Press the **i** button on the back of the camera to activate the cursor in the information screen.

2. Use the Multi-selector to select the image-quality setting, then press the OK button (**A**).

3. When the option screen appears, use the Multi-selector to choose the Fine setting, and press the OK button (**B**).

4. Now move the cursor down one step to choose the image size and press OK to get to the options (**C**).

5. Select the L option to use the largest image size available and press OK once more (**D**).

6. Press the **i** button again to return to shooting mode.

◼

As you will see when scrolling through the quality settings, the higher the quality, the fewer pictures you will be able to fit on your card. If you have an 8 GB memory card, the quality setting we have selected will allow you to shoot about 844 photographs before you fill up your card. Always try to choose quality over quantity. Your pictures will be the better for it.

4. TURN OFF THE AUTO ISO SETTING

The ISO setting on your camera allows you to choose the level of sensitivity of the camera sensor to light. The ability to change this sensitivity is one of the biggest advantages to using a digital camera. In the days of film cameras, you had to choose the ISO by film type. This meant that if you wanted to shoot in lower light, you had to replace the film in the camera with one that had a higher ISO. So not only did you have to carry different types of film, but you also had to remove one roll from the camera to replace it with another, even if you hadn't used up the current roll. Now all you have to do is go to your information screen and select the appropriate ISO.

Having this flexibility is a powerful option, but just as with the Quality setting, the ISO setting has a direct bearing on the quality of the final image. The higher the ISO, the more digital noise the image will contain. Since our goal is to produce high-quality photographs, it is important that we get control over all of the camera controls and bend them to our will. When you turn your camera on for the first time, the ISO will be set to Auto. This means that the camera is determining how much light is available and will choose what it believes is the correct ISO setting. Since you want to use the lowest ISO possible, you will need to turn this setting off and manually select the appropriate ISO.

Which ISO you choose depends on your level of available or ambient light. For sunny days or very bright scenes, use a low ISO such as 100. As the level of light is reduced, raise the ISO level. Cloudy days or indoor scenes might require you to use ISO 400. Low-light scenes, such as when you are shooting at night, will mean you need to bump up that ISO to 1600. The thing to remember is to shoot with the lowest setting possible for maximum quality.

SETTING THE ISO

1. Press the **i** button on the back of the camera to activate the cursor in the information screen.

2. Use the Multi-selector to highlight the ISO Sensitivity option and press the OK button (**A**).

3. In the option screen, select the appropriate ISO for the level of light you are shooting in, and press the OK button to lock in the change (**B**).

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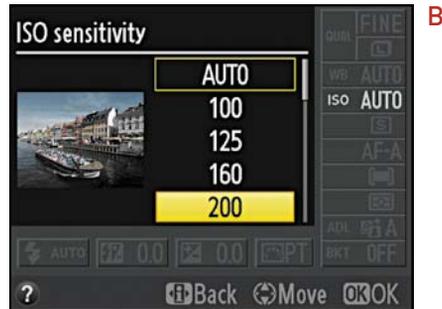
You should know that the Auto ISO option is only enabled as a default when using one of the automatic scene/effects modes. When using one of the professional modes (M, A, S, and P; we'll discuss these in Chapter 4), the Auto ISO feature will be automatically turned off. If you wish to use Auto ISO in one of these modes, you must activate it and set the auto parameters in the shooting menu. If you plan on shooting with the Auto mode, you cannot turn off the Auto ISO option at all.

NOISE

Noise is the enemy of digital photography, but it has nothing to do with the loudness of your camera operation. It refers to the electronic artifacts that appear as speckles in your image. They generally appear in darker shadow areas and are a result of the camera trying to amplify the signal to produce visible information. The more the image needs to be amplified—raising the sensitivity through higher ISOs—the greater the amount of noise there will be.

5. SET YOUR FOCUS POINT AND MODE

The Nikon focusing system is well known for its speed and accuracy. The automatic focus modes will give you a ton of flexibility in your shooting. There is, however, one small problem that is inherent with any focusing system. No matter how intelligent it is, the camera is looking at all of the subjects in the scene and determining which is closest to the camera. It then uses this information to determine where the proper focus point should be. It has no way of knowing what your main emphasis is, so it is using a "best guess" system. To eliminate this factor, you should set the camera to single-point focusing so that you can ensure that you are focusing on the most important feature in the scene.

The camera has 11 separate focus points to choose from. They are arranged in a diamond pattern with ten points around the outside of the diamond and one in the center. To start things off, you should select the focus point in the middle. Once you have become more familiar with the focus system, you can experiment with the other points, as well as the automatic point selection.

FIGURE 1.2
The camera's shooting modes are divided into the automatic scene/effects modes and the professional modes.

When possible, you should also change the focus mode to AF-S so that you can focus on your subject and then recompose your shot while holding that point of focus. Your camera has two different "zones" of shooting modes to choose from. These are located on the Mode dial, which is separated into automatic scene/effects modes and what might be referred to as the professional modes. The automatic modes, which are identifiable by small icons, do not allow for much, if any, customization, which includes focus mode. The professional modes, defined by the letter symbols M, A, S, and P, allow for much more control by the photographer (**Figure 1.2**).

If the Mode dial is set to any of the automatic scene/effects modes, then it is best to leave the focus mode set to AF-A, which means the camera will automatically select either single-servo autofocus or continuous-servo autofocus, based on whether the subject is stationary or moving. If the Mode dial is set to one of the professional modes, then you will have the option to set the focus mode to AF-S (single-servo mode) if your subject is stationary.

SETTING THE FOCUS POINT AND FOCUS MODE

1. To choose a single point of focus, wake the camera (if necessary) by lightly pressing the shutter release button.

2. Press the **i** button on the back of the camera to activate the cursor in the information screen.

3. Use the Multi-selector to highlight the AF-area Mode option and press OK (**A**).

4. Select the top option, Single Point, and press OK (**B**).

5. With the cursor still active, move up one item to the Focus Mode option and press OK.

6. Select AF-A or AF-S, depending on the Mode dial setting, to configure the focus mode. Press the OK button to lock in your change (**C**).

7. Press the **i** button to return to the regular information screen.
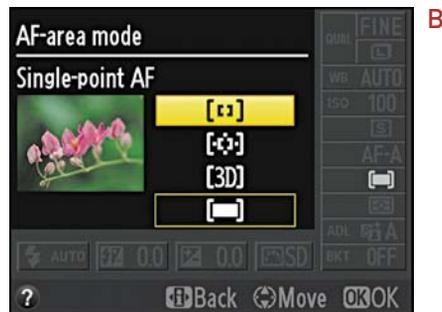
The camera is now ready for single focusing. You will hear a chirp when the camera has locked in and focused on the subject. To focus on your subject and then recompose your shot, just place the focus point in the viewfinder on your subject, depress the shutter release button halfway until the camera chirps, and without letting up on the shutter button, recompose your shot and then press the shutter button all the way down to make your exposure.

6. SET THE CORRECT WHITE BALANCE

Color balance correction is the process of rendering accurate colors in your final image. Most people don't even notice that light has different color characteristics because the human eye automatically adjusts to different color temperatures, so quickly, in fact, that everything looks correct in a matter of milliseconds.

When color film ruled the world, photographers would select which film to use according to what their light source was going to be. The most common film was balanced for daylight, but you could also buy film that was color balanced for tungsten light sources. Most other lighting situations had to be handled by using color filters over the lens. This process was necessary for the photographer's final image to show the correct color balance of a scene.

Your camera has the ability to perform this same process automatically, but you can also choose to override it and set it manually. Guess which method we are going to use? You are catching on fast! Once again, your photography should be all about maintaining control over everything that influences your final image.

Luckily, you don't need to have a deep understanding of color temperatures to control your camera's white balance. The choices are given to you in terms that are easy to relate to and that will make things pretty simple. Your white balance choices are:

- **Auto:** The default setting for your camera. It is also the setting used by all of the automatic scene/effects modes (see Chapter 3).

- **Incandescent:** Used for any occasion where you are using regular household-type bulbs for your light source. Incandescent (also called tungsten) is a very warm light source and will result in a yellow/orange cast if you don't correct for it.

- **Fluorescent:** Used to get rid of the green-blue cast that can result from using regular fluorescent lights as your dominant light source. Some fluorescent lights are actually balanced for daylight, which would allow you to use the Direct Sunlight white balance setting.

- **Direct Sunlight:** Most often used for general daylight/sunlit shooting.

- **Flash:** Used whenever you're using the built-in flash or a flash on the hot shoe. You should select this white balance to adjust for the slightly cooler light that comes from using a flash. (The hot shoe is the small bracket located on the top of your camera, which rests just above the eyepiece. This bracket is used for attaching a more powerful flash to the camera [see Chapter 8 and Chapter 11, which is one of the bonus chapters].)

- **Cloudy:** The choice for overcast or very cloudy days. This and the Shade setting will eliminate the blue color cast from your images.

- **Shade:** Used when working in shaded areas that are still using sunlight as the dominant light source.

- **Pre:** Indicates that you are using a customized white balance that is adjusted for a particular light source. This option can be adjusted using an existing photo you have taken or by taking a picture of something white or gray in the scene.

SETTING THE WHITE BALANCE

1. After turning on or waking the camera, select one of the professional shooting modes, such as P (you can't select the white balance when using any of the automatic modes).

2. Press the **i** button on the back of the camera to activate the cursor in the information screen.

3. Use the Multi-selector to highlight the White Balance mode and press the OK button (**A**).

4. Using the Multi-selector, select the appropriate white balance and then press the OK button (**B**).

5. Press the **i** button to return to the regular information screen.

WHITE BALANCE AND THE TEMPERATURE OF COLOR

When you select different white balances in your camera, you will notice that underneath several of the choices is a number, e.g., 5200K, 7000K, or 3200K. These numbers refer to the Kelvin temperature of the colors in the visible spectrum. The visible spectrum is the range of light that the human eye can see (think of a rainbow or the color bands that come out of a spectrum). The visible spectrum of light has been placed into a scale called the Kelvin temperature scale, which identifies the thermodynamic temperature of a given color of light. Put simply, reds and yellows are "warm" and greens and blues are "cool." Even more confusing can be the actual temperature ratings. Warm temperatures are typically lower on the Kelvin scale, ranging from 3000 degrees to 5000 degrees, while cool temperatures run from 5500 degrees to around 10,000 degrees. Take a look at this list for an example of Kelvin temperature properties.

KELVIN TEMPERATURE PROPERTIES

Flames	1700K–1900K	Daylight	5000K
Incandescent bulb	2800K–3300K	Camera flash	5500K
White fluorescent	4000K	Overcast sky	6000K
Moonlight	4000K	Open shade	7000K

The most important thing to remember here is how the color temperature of light will affect the look of your images. If something is "warm," it will look reddish-yellow, and if something is "cool," it will have a bluish cast.

7. SET YOUR COLOR SPACE

The color space deals with how your images will ultimately be used. It is basically a set of instructions that tells your camera how to define the colors in your image and then output them to the device of your choice, be it your monitor or a printer. Your camera has a choice of two color spaces: sRGB and Adobe RGB.

The first choice, sRGB, was developed by Hewlett-Packard and Microsoft as a way of defining colors for the Internet. This space was created to deal with the way that computer monitors actually display images using red, green, and blue (RGB) colors. Because there are no black pixels in your monitor, the color space uses a combination of these three colors to display all of the colors in your image.

In 1998, Adobe Systems developed a new color space, Adobe RGB, which was intended to encompass a wider range of colors than was obtainable using traditional cyan, magenta, yellow, and black colors (called CMYK) but doing so using the primary red, green, and blue colors. It uses a more widely defined palette of colors (or gamut) than the sRGB space and, therefore, can contain some colors farther toward the more saturated end of the spectrum than sRGB.

A LITTLE COLOR THEORY

The visible spectrum of light is based on a principle called *additive color* and is based on three primary colors: red, green, and blue. When you add these colors together in equal parts, you get white light. By combining different amounts of them, you can achieve all the different colors of the visible spectrum. This is a completely different process than printing, where cyan, magenta, and yellow colors are combined to create various colors. This method is called *subtractive color* and has to do with the reflective properties of pigments or inks as they are combined.

The color space choice is applied only to the JPEG images produced by the camera. When shooting RAW, the color space is determined later when you are using software to process the photos. I typically use the Adobe RGB space when shooting JPEG because it has a wider gamut than sRGB, and it is always better to go from a wider color space to a narrower one when editing. That said, if you are shooting JPEG and sending photos straight to a printer or posting online without much (or any) editing, then sRGB is a good choice.

SETTING THE COLOR SPACE

1. With the camera turned on, press the Menu button.

2. Using the Multi-selector, select the shooting menu and then highlight the Color Space option and press the OK button (**A**).

3. Highlight your desired color space and press the OK button once again (**B**).

4. Press the **i** button to return to the regular information screen.

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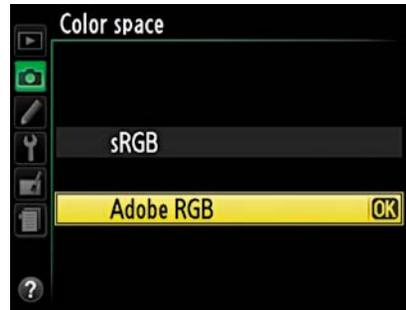
Note that if you choose Adobe RGB, the camera-generated file names will start with an underscore.

8. KNOW HOW TO OVERRIDE AUTOFOCUS

As good as the Nikon autofocus system is, there may be times when it just isn't doing the job for you. Many times this has to do with how you would like to compose a scene and where the actual point of focus should be. This can be especially true when you are using the camera on a tripod, where you can't prefocus and then recompose before shooting (as discussed earlier). To take care of this problem, you will need to manually focus the lens. I am only going to cover the kit lens that came with my D5100 (the 18–55mm VR), so if you have purchased a different lens be sure to check the accompanying instruction manual for the lens.

On the 18–55mm kit lens, you simply need to slide the switch at the base of the lens (located on the lens barrel near the body of the camera) from the A setting to the M setting (**Figure 1.3**). You can now turn the focus ring at the end of the lens to set your focus. Now that you're in manual focus mode, the camera will not give you an audible chirp when you have correctly focused.

We'll cover more manual focus situations in greater detail in future chapters.

FIGURE 1.3
Slide the focus
switch on the lens
to the M position to
manually focus.

Rotate ring to focus   Set Focus Mode to M
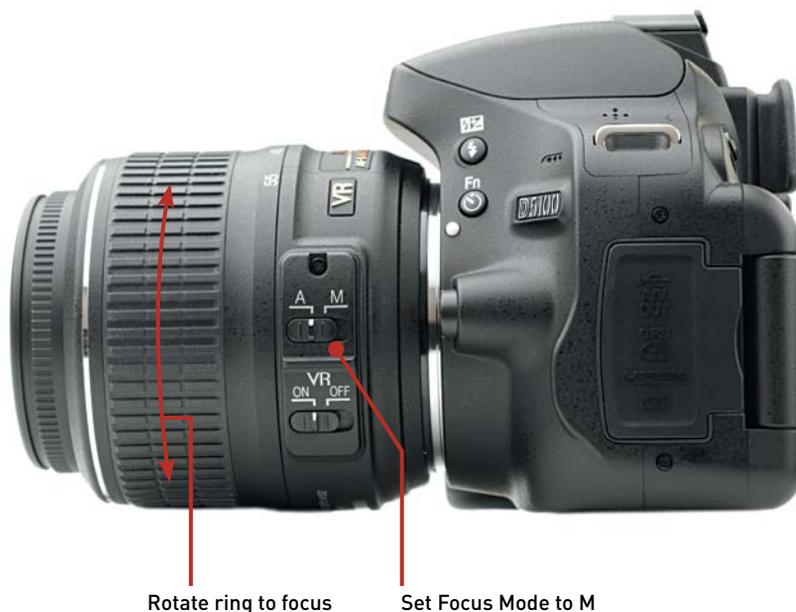
9. REVIEW YOUR SHOTS

One of the greatest features of a digital camera is its ability to give us instant feed-back. By reviewing your images on the camera's LCD screen, you can instantly tell if you got your shot. This visual feedback allows you to make adjustments on the fly and make certain that all of your adjustments are correct before moving on.

When you first press the shutter release button, your camera quickly processes your shot and then displays the image on the LCD display. In addition, you can press the Playback button at any time to review your shots on the card. The default playback view displays your image along with the folder name, image file name, frame number/total number of images on the card, date, time, image size, and image quality setting.

There are other display options available that must be turned on using the camera menu. These options can be found in the Playback menu under the Playback display options (**A**). With this menu option you can add display modes (**B**) such as None (image only), Highlights (**C**), RGB histogram (**D**), Shooting data (**E**), and Overview (**F**).

Once enabled, press the Playback button to display the default view and then press the Multi-selector up (or down) to cycle through each view. There is now a wealth of information—from shutter speed to the histogram (see the sidebar "The value of the histogram")—at your fingertips.

A — PLAYBACK MENU

Delete	🗑
Playback folder	D5100
Playback display options	--
Image review	ON
Rotate tall	OFF
Slide show	--
DPOF print order	🖶

B — Playback display options

- Done
- ☑ None (image only)
- ☑ Highlights
- ☑ RGB histogram
- ☑ Shooting data
- ☑ **Overview**

C — Highlights
NIKON D5100   29/29

D — WB ☀ 0, 0
NIKON D5100   29/29

E

MTR, SPD, AP.   : ⊡, 1/125   , F1. 4
EXP. MODE, ISO   : M, 100
⧗   : 0. 0
FOCAL LENGTH   : 50mm
LENS   : 50   /1. 4
AF / VR   : S
FLASH TYPE   :
SYNC MODE   :
⚡, ⚡   :

NIKON D5100   29/29

F — 29/29   NIKON D5100

⊡ M 1/125   F1. 4 ISO 100   50mm
⧗   ⚡
WB ☀ 0, 0   AdobeRGB ⌨ SD
100D5100   _DSC0194. NEF   ⧼RAW
05/15/2011 22:55:14   4928x3264

In fact, it may actually be information overload. I find the Highlights display (sometimes referred to as the "blinkies") to be very helpful for quickly finding out if I have blown out the highlights in a photo, and I turn to the Overview display for everything else I need to know about a capture. I turn off all the other options to make it faster to cycle through the options I do use. There's more on the Highlight display view and how to use it to improve your image quality in the "How I Shoot" section in Chapter 4. For now, I suggest enabling all display options to get a feel for what each one offers. Then you can circle back and keep only the ones you find helpful.

THE VALUE OF THE HISTOGRAM

Simply put, histograms are two-dimensional representations of your images in graph form. There are two different histograms that you should be concerned with: luminance and color. Luminance is referred to in your manual as "brightness" and is most valuable when evaluating your exposures. In **Figure 1.4**, you see what looks like a mountain range. The graph represents the entire tonal range that your camera can capture, from the whitest whites to the blackest blacks. The left side represents black, all the way to the right side, which represents white. The heights of the peaks represent the number of pixels that contain those luminance levels (the tall peak near the middle means the image contains a large amount of medium-dark pixels). Looking at this figure, it is hard to determine where all of the ranges of light and dark areas are and how much of each I have. If I look at the histogram, I can see that the largest peak of the graph is near the middle and trails off as it reaches the edges. In most cases, you would look for this type of histogram, indicating that you captured the entire range of tones, from dark to light, in your image. Knowing that is fine, but here is where the information really gets useful.

When you evaluate a histogram that has a spike or peak riding up the far left or right side of the graph, it means that you are clipping detail from your image. In essence, you are trying to record values that are either too dark or too light for your sensor to accurately record. This is usually an indication of over- or underexposure. It also means that you need to correct your exposure so that the important details will not record as solid black or solid white pixels (which is what happens when clipping occurs). There are times, however, when some clipping is acceptable. If you are photographing a scene where the sun will be in the frame, you can expect to get some clipping because the sun is just too bright to hold any detail. Likewise, if you are shooting something that has true blacks in it—think coal in a mineshaft at midnight—there are most certainly going to be some true blacks with no detail in your shot.

Black Dark Medium Light White
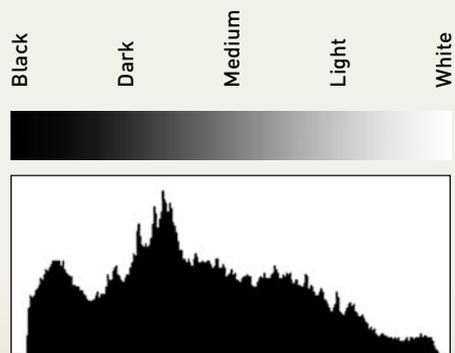
FIGURE 1.4

This is a typical histogram, where the dark to light tones run from left to right. The black to white gradient above the graph demonstrates where the tones lie on the graph and would not appear above your camera histogram display.

The main goal is to ensure that you aren't clipping any "important" visual information, and that is achieved by keeping an eye on your histogram. Take a look at **Figure 1.5**. The histogram displayed on the image shows a heavy skew toward the left with almost no part of the mountain touching the right side. This is a good example of what an underexposed image histogram looks like. Now look at **Figure 1.6** and compare the histogram for the image that was correctly exposed. Notice that even though there is a distinct peak on the graph, there is a distribution of tones across the entire histogram.

FIGURE 1.5
This image is about one stop underexposed. Notice the histogram is skewed to the left.

FIGURE 1.6
This histogram reflects a correctly exposed image.

DELETING IMAGES

Deleting or erasing images is a fairly simple process that is covered on page 27 of the printed user manual. To quickly get you on your way, simply press the Playback button and use the Multi-selector to find the picture that you want to delete. Then press the Delete button (it has a trash can icon on it) located on the back of the camera to the left of the eyepiece. When you see the confirmation screen, simply press the Delete button once again to complete the process.

Caution: Once you have deleted an image, it is gone for good. Make sure you don't want it before you drop it in the trash.

10. HOLD YOUR CAMERA FOR PROPER SHOOTING

You might think that this is really dumb, but I hope that you take a few seconds to read this over and make sure that you are giving yourself the best chance for great images. I can't begin to tell you how many times I see photographers holding their cameras in a fashion that is either unstable or just plain uncomfortable-looking. Much of this probably comes from holding point-and-shoot cameras. There is a huge difference between point-and-shoots and dSLR cameras, and learning the correct way to hold one now will result in great images later. The purpose of practicing correct shooting form is to provide the most stable platform possible for your camera (besides using a tripod, of course).

dSLR cameras are made to favor the right-handed and right-eyed individual. The basics of properly holding the camera begin with grasping the camera body with the right hand. You will quickly find that most of the important camera controls are within easy reach of your thumb and forefinger. The next step is to create a stable base for your camera to rest on. This is accomplished by placing the camera body on the up-facing palm of your left hand (**Figure 1.7**). Now you can curl your fingers around the lens barrel to quickly zoom or manually focus the lens.

When it comes to rotating the camera vertically to portrait orientation, most photographers favor rotating counter-clockwise (**Figure 1.8**) because it keeps all the controls easily accessible to the right hand, allows visibility in the left eye, and keeps your nose off the LCD screen. That said, it can fling your right elbow into the crowd, and the pressure of your right arm can create a tendency to rotate the camera too far. Some people find it more comfortable to rotate the camera clockwise, which pulls your right hand under the camera and your right elbow tight against your chest. It decreases visibility in your left eye and makes the controls a little more awkward to reach, but it can be more stable in a tight situation.

FIGURE 1.7
The proper way to hold your camera horizontally to ensure sharp, blur-free images.

FIGURE 1.8
The preferred way to hold your camera vertically. Practice rotating the camera each direction to find what is most comfortable and stable for you.

Now that you know where to put your hands, let's talk about what to do with the rest of your body parts. By using the underhand grip, your elbows will be drawn closer to your body. You should concentrate on pulling them in close to your body to stabilize your shooting position. You should also try to maintain proper upright posture. Leaning forward at the waist will begin to fatigue your back, neck, and arms. You can really ruin a day of shooting with a sore back, so make sure you stand erect with your elbows in. Finally, place your left foot in front of your right foot, and face your subject in a slightly wide stance. By combining all of these aspects into your photography, you will give yourself the best chance of eliminating self-imposed camera shake in your images, resulting in much sharper photographs.

Chapter 1 Assignments

Let's begin our shooting assignments by setting up and using all of the elements of the Top Ten list. Even though I have yet to cover the professional shooting modes, you should set your camera to the P (Program) mode. This will allow you to interact with the various settings and menus that have been covered thus far.

Basic camera setup

Charge your battery to 100% to get it started on a life of dependable service. Next, using your newfound knowledge, set up your camera to address the following: Image Quality, Auto ISO, and Color Space.

Selecting the proper white balance

Take your camera outside into a daylight environment and then photograph the same scene using different white balance settings. Pay close attention to how each setting affects the overall color cast of your images. Next, move indoors and repeat the exercise while shooting in a tungsten lighting environment. Finally, find a fluorescent light source and repeat one more time.

Focusing with single point and AF-S

Change your camera setting so that you are focusing using the single-point focus mode. Try using all of the different focus points to see how they work in focusing your scene. Then set your focus mode to AF-S and practice focusing on a subject and then recomposing before actually taking the picture. Try doing this with subjects at varying distances.

Evaluating your pictures with the LCD display

Set up your image display properties and then review some of your previous assignment images using the different display modes. Review your shooting information for each image and take a look at the histograms to see how the content of your photo affects the shape of the histograms.

Discovering the manual focus mode

Change your focus mode from autofocus to manual focus and practice a little manual focus photography. Get familiar with where the focus ring is and how to use it to achieve sharp images.

Get a grip: proper camera holding

This final assignment is something that you should practice every time you shoot: proper grip and stance for shooting with your camera. Use the described technique and then shoot a series of images. Try comparing it with improper techniques to compare the stability of the grip and stance.

Share your results with the book's Flickr group!

Join the group here: flickr.com/groups/nikond5100fromsnapshotstogreatshots/

2

ISO 200
1/100 sec.
f/8
200mm lens

First Things First

A FEW THINGS TO KNOW AND DO BEFORE YOU BEGIN TAKING PICTURES

Now that we've covered the top ten tasks to get you up and shooting, we should probably take care of some other important details. You must become familiar with certain features of your camera before you can take full advantage of it. Additionally, we will take some steps to prepare the camera and memory card for use. So to get things moving, let's start off with something that you will definitely need before you can take a single picture: a memory card.

Wild animals are some of my favorite subjects to capture. Whether they are in the wild, like these three brown bear cubs, or in captivity, they always present great opportunities and great challenges for improving your photographic skills.

ISO 800
1/500 sec.
f/5.6
400mm lens

The use of a telephoto lens allowed me to stay at a safe distance, but still fill the frame.

The aperture was at its widest setting for this lens to decrease depth of field.

The focus point was placed on the top cub.

The ISO was raised to allow for a shutter speed fast enough to stop motion.

CHOOSING THE RIGHT MEMORY CARD

Memory cards are the digital film that stores every shot you take until you move them to a computer. The cards come in all shapes and sizes, and they are critical for capturing all of your photos. It is important not to skimp when it comes to selecting your memory cards. The D5100 uses Secure Digital (SD) memory cards (**Figure 2.1**).

If you have been using a point-and-shoot camera, chances are that you may already own an SD media card. Which brand of card you use is completely up to you, but here is some advice about choosing your memory card:

FIGURE 2.1
Make sure you select an SD card that has enough capacity to handle your photography needs.

- Size matters, at least in memory cards. At 16.2 megapixels, the D5100 will require a lot of storage space, especially if you shoot in the RAW or RAW+JPEG mode (more on this later in the chapter). You should definitely consider using a card with a storage capacity of at least 4 GB, but go with 8 GB if it is in your budget. If you plan on shooting high-definition video, be prepared for some large files. At five minutes, high-def video recording takes up approximately 700 MB of storage space. This means that you can fit about 30 minutes of video on a 4 GB card.

- Consider buying High Capacity (SDHC) cards. These cards are generally much faster, both when writing images to the card and when transferring them to your computer. If you are planning on using the Continuous mode (see Chapter 5) for capturing fast action, you can gain a boost in performance just by using an SDHC card with a class rating of at least 4 or 6. The higher the class rating, the faster the write speed. Class 6 or higher is recommended for video recording.

- Buy more than one card. If you have already purchased a memory card, consider getting another. You can quickly ruin your day of shooting by filling your card and then having to either erase shots or choose a lower-quality image format so that you can keep on shooting. With the cost of memory cards what it is, keeping a spare just makes good sense.

Manual Callout

For a list of Nikon-approved memory cards for the D5100, you should check out page 207 in the Reference Manual on the companion CD that comes with the camera.

FORMATTING YOUR MEMORY CARD

Now that you have your card, let's talk about formatting for a minute. When you purchase any new SD card, you can pop it into your camera and start shooting right away —and probably everything will work as it should. However, what you should do first is format the card in the camera. This process allows the camera to set up the card to record images from your camera. Just as a computer hard drive must be formatted, formatting your card ensures that it is properly initialized. The card may work in the camera without first being formatted, but chances of failure down the road are much higher.

As a general practice, I always format new cards or cards that have been used in different cameras. I also reformat cards after I have downloaded my images and want to start a new shooting session. Note that you should always format your card in the camera, not your computer. Using the computer could render the card useless. You should also pay attention to the card manufacturer's recommendations with respect to moisture, humidity, and proper handling procedures. It sounds a little cliché, but when it comes to protecting your images, every little bit helps.

Most people make the mistake of thinking that the process of formatting the memory card is equivalent to erasing it. Not so. The truth is that when you format the card all you are doing is changing the file management information on the card. Think of it as removing the table of contents from a book and replacing it with a blank page.

All of the contents are still there, but you wouldn't know it by looking at the empty table of contents. The camera will see the card as completely empty so you won't be losing any space, even if you have previously filled the card with images. Your camera will simply write the new image data over the previous data.

FORMATTING YOUR MEMORY CARD

1. Insert your memory card into the camera.

2. Press the Menu button and navigate to the Setup menu screen.

3. Use the Multi-selector on the back of the camera to highlight the Format Memory Card option and press OK (**A**).

4. The next screen will show you a warning, letting you know that formatting the card will delete images (**B**). Select Yes and press the OK button.

5. The card is now formatted and ready for use.
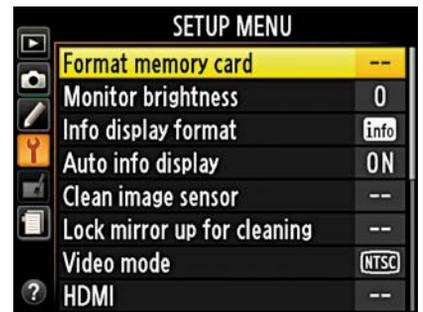
UPDATING THE D5100'S FIRMWARE

I know that you want to get shooting, but having the proper firmware can impact the way the camera operates. It can fix problems as well as improve operation, so you should probably check it sooner rather than later. Updating your camera's firmware is something that the manual completely omits, yet it can change the entire behavior of your camera operating systems and functions. The firmware of your camera is the set of computer operating instructions that control how your camera functions. Updating this firmware is a great way to not only fix little bugs but also gain access to new functionality. You will need to check out the information on the Nikon firmware update page (www.nikonusa.com/Service-And-Support/Download-Center.page) to see if a firmware update is available and how it will impact your camera, but it is always a good idea to be working with the most up-to-date firmware version available.

CHECKING THE CAMERA'S CURRENT FIRMWARE VERSION NUMBER

1. Press the Menu button and then navigate to the Setup menu.

2. Use the Multi-selector on the back of the camera to highlight the Firmware Version option and press OK (**A**).

3. Take note of the current version numbers (there are three of them) and then check the Nikon Web site to see if you are using the current versions (**B**).
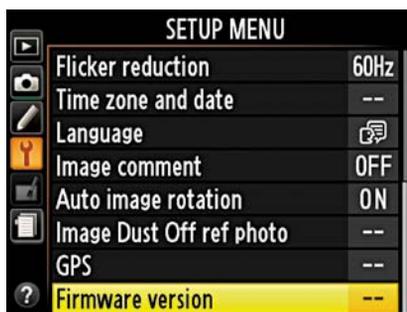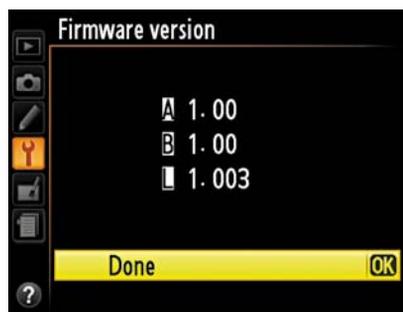
UPDATING THE FIRMWARE FROM YOUR SD CARD

1. Download the firmware update file from the Nikon Web site. (You can find the file by going to the Download Center section of the Nikon camera site and locating the firmware update for your camera and computer operating system.)

2. Once you have downloaded the firmware to your computer and extracted it, you will need to transfer it to your SD card. The card must be formatted in your camera prior to loading the firmware to it.

3. With a freshly charged camera battery, insert the card into the camera and turn it on.

4. Follow the instructions listed above for locating your firmware version, and you will now be able to update your firmware using the files located on the SD card.

   ■

When this book was being written, there were no firmware updates available for the D5100. After you check your camera firmware version and the Nikon site for updates, continue to check back periodically to see if there are updates available.

CLEANING THE SENSOR

Cleaning camera sensors used to be a nerve-racking process that required leaving the sensor exposed to scratching and even more dust. Now cleaning the sensor is pretty much an automatic function. Every time you turn the camera on and off, you can instruct the sensor in the camera to vibrate to remove any dust particles that might have landed on it.

There are five choices for cleaning in the camera Setup menu: Clean at Startup, Clean at Shutdown, Clean at Startup and Shutdown, Cleaning Off, and Clean Now. I'm kind of obsessive when it comes to cleaning my sensor, so I like to have it set to clean when I turn the camera on and off.

The one cleaning function that you will need to use via this menu is the Clean now feature. This should be done every time that you remove the lens from the camera body. That is because removing or changing a lens will leave the camera body open and susceptible to dust sneaking into the body. If you never change lenses, you shouldn't have too many dust problems. But the more often you change lenses, the more chances you are giving dust to enter the body. It's for this reason that I have added the Clean Now function to the custom My Menu list (see Chapter 10).

Every now and then, there will be a dust spot that is impervious to the shaking of the Auto Cleaning feature. This will require you to clean the sensor manually by raising the mirror and opening the camera shutter. When you activate this feature, it will move everything out of the way, giving you access to the sensor so that you can use a blower or other cleaning device to remove the stubborn dust speck. The camera will need to be turned off after cleaning to allow the mirror to reset.

If you choose to manually clean your sensor, use a device that has been made to clean sensors (not a cotton swab from your medicine cabinet). There are dozens of commercially available devices such as brushes, swabs, and blowers that will clean the

sensor without damaging it. To keep the sensor clean, always store the camera with a body cap or lens attached.

The camera sensor is an electrically charged device. This means that when the camera is turned on, there is a current running through the sensor. This electric current can create static electricity, which will attract small dust particles to the sensor area. For this reason, it is always a good idea to turn off the camera prior to removing a lens. You should also consider having the lens mount facing down when changing lenses so that there is less opportunity for dust to fall into the inner workings of the camera.

USING THE CLEAN NOW FEATURE

1. Press the Menu button, then navigate to the Setup menu.

2. Use the Multi-selector on the back of the camera to highlight the Clean Image Sensor option and press OK (**A**).

3. Highlight the Clean Now option and press the OK button (**B**). The camera will clean the sensor for about two seconds and then return to the menu.

■
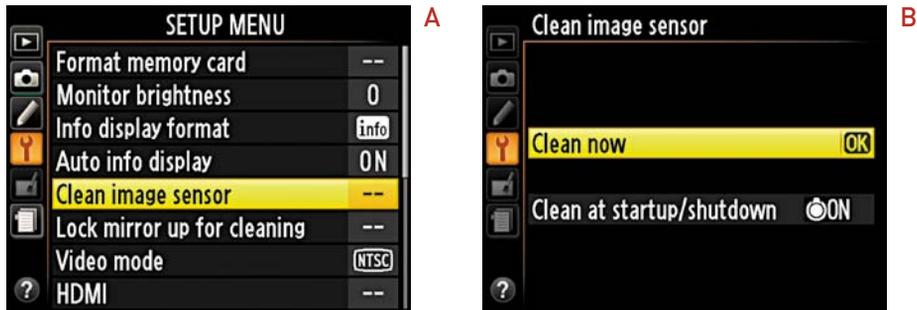
USING THE RIGHT FORMAT: RAW VS. JPEG

When shooting with your D5100, you have a choice of image formats that your camera will use to store the pictures on the memory card. JPEG is probably the most familiar format to anyone who has been using a digital camera. I touched on this topic briefly in Chapter 1, so you already have a little background on what JPEG and RAW files are.

There is nothing wrong with JPEG if you are taking casual shots. JPEG files are ready to use, right out of the camera. Why go through the process of adjusting RAW images of the kids opening presents when you are just going to email them to Grandma? Also, for journalists and sports photographers who are shooting multiple

frames per second and who need to transmit their images across the wire, again, JPEG is just fine. So what is wrong with JPEG? Absolutely nothing—unless you care about having complete creative control over all of your image data (as opposed to what a compression algorithm thinks is important).

As I mentioned in Chapter 1, JPEG is not actually an image format. It is a compression standard, and compression is where things go bad. When you have your camera set to JPEG—whether it is Fine, Normal, or Basic—you are telling the camera to process the image based on the in-camera settings and then throw away enough image data to make it shrink into a smaller space. In doing so, you give up subtle image details that you will never get back in post-processing. That is an awfully simplified statement, but still fairly accurate.

SO WHAT DOES RAW HAVE TO OFFER?

First and foremost, RAW images are not compressed. (There are some cameras, like the D5100, that have a compressed RAW format, but it is lossless compression, which means there is no loss of actual image data.) Note that RAW image files will require you to perform post-processing on your photographs. This is not only necessary, it is the reason that most photographers use it.

RAW images have a greater dynamic range than JPEG-processed images. This means that you can recover image detail in the highlights and shadows that just isn't available in JPEG-processed images.

There is more color information in a RAW image because it is a 12- or 14-bit image (depending on the camera), which means it contains more color information than a JPEG, which is always an 8-bit image. More color information means more to work with and smoother changes between tones—kind of like the difference between performing surgery with a scalpel as opposed to a butcher's knife. They'll both get the job done, but one will do less damage.

IMAGE RESOLUTION

When discussing digital cameras, image resolution is often used to describe pixel resolution or the number of pixels used to make an image. This can be displayed as a dimension, such as 4928x3264. This is the physical number of pixels in the width and height of the image sensor. Resolution can also be referred to in megapixels (MP), such as 16.2 MP. This number represents the total number of pixels on the sensor and is commonly used to describe the amount of image data that a digital camera can capture.

Regarding sharpening, a RAW image offers more control because you are the one who is applying the sharpening according to the effect you want to achieve. Once again, JPEG processing applies a standard amount of sharpening that you cannot change after the fact. Once it is done, it's done.

Finally, and most importantly, a RAW file is your negative. No matter what you do to it, you won't change it unless you save your file in a different format. This means that you can come back to that RAW file later and try different processing settings to achieve differing results and never harm the original image. By comparison, if you make a change to your JPEG and accidentally save the file, guess what? You have a new original file, and you will never get back to that first image. That alone should make you sit up and take notice.

ADVICE FOR NEW RAW SHOOTERS

Don't give up on shooting RAW just because it means more work. Hey, if it takes up more space on your card, buy bigger cards or more small ones. Will it take more time to download? Yes, but good things come to those who wait. Don't worry about needing to purchase expensive software to work with your RAW files; you already own a program that will allow you to work with your RAW files. Nikon's ViewNX software comes bundled in the box with your camera and gives you the ability to work directly on the RAW files and then output the enhanced results. That said, you will have more control with dedicated RAW processing software such as Nikon's Capture NX2, Apple's Aperture, or Adobe's Photoshop and Lightroom.

My recommendation is to shoot in JPEG mode while you are using this book. This will allow you to quickly review your images and study the effects of the lessons. Once you have become comfortable with all of the camera features, you should switch to shooting in RAW mode so that you can start gaining more creative control over your image processing. After all, you took the photograph—shouldn't you be the one to decide how it looks in the end?

SHOOTING DUAL FORMATS

Your camera has the added benefit of being able to write two files for each picture you take, one in RAW and one in JPEG. If you have a RAW+JPEG setting selected, your camera will save your images in both formats on your card.

I think shooting RAW+JPEG is actually a good way to transition to shooting RAW. You get the ease and safety of the familiar JPEG, and the ability to compare the JPEG against your RAW processing experiences. Obviously this will take up more of the space on your memory card and hard drive, but think of it as a stepping-stone on the

path to shooting only RAW in the future. It took me a little while to make the transition, and looking back there are some shots I took in JPEG mode that I now wish I had a RAW version of that I could try to improve. Live and learn.

SHOOTING IN RAW+JPEG

1. Press the **i** button to activate the cursor in the information screen.

2. Use the Multi-selector to highlight the Image Quality setting, located at the top right of the screen, and press OK (**A**).

3. Press up on the Multi-selector to highlight the RAW+JPEG option of your choice. The three options include RAW+B (Basic), RAW+N (Normal), and RAW+F (Fine) (**B**).

4. Press the OK button to lock in your changes.

You will notice when you are in the selection screen that you will be able to see how much storage space each option will require on your SD card. The RAW+F option, which is the one I use, will take up approximately 32 MB of space for each photograph you take.

LENSES AND FOCAL LENGTHS

If you ask most professional photographers what they believe to be their most critical piece of photographic equipment, they would undoubtedly tell you that it is their lens. The technology and engineering that goes into your camera is a marvel, but it isn't worth a darn if it can't get the light from the outside onto the sensor. The D5100, as a digital single lens reflex (dSLR) camera, uses the lens for a multitude of tasks, from focusing on a subject, to metering a scene, to delivering and focusing the light onto the camera sensor. The lens is also responsible for the amount of the scene that will be captured (the frame). With all of this riding on the lens, let's take a more in-depth look at the camera's eye on the world.

Lenses are composed of optical glass that is both concave and convex in shape. The alignment of the glass elements is designed to focus the light coming in from the front of the lens onto the camera sensor. The amount of light that enters the camera is also controlled by the lens, the size of the glass elements, and the aperture mechanism within the lens housing. The quality of the glass used in the lens will have a direct effect on how well the lens can resolve details and on the contrast of the image (the ability to deliver great highlights and shadows). Most lenses now routinely include things like an autofocus motor and, in some cases, a vibration reduction mechanism.

One other aspect of the camera lens is often the first consideration of the photographer: lens length. Lenses are typically divided into three or four groups depending on the field of view they deliver.

Wide-angle lenses cover a field of view from around 110 degrees to about 60 degrees (**Figure 2.2**). There is also a tendency to get some distortion in your image when using extremely wide-angle lenses. This will be apparent toward the outer edges of the frame. As for which lenses would be considered wide angle, anything 35mm or smaller could be considered wide.

FIGURE 2.2
The 18mm lens setting provides a wide view of the scene but little detail of distant objects.

ISO 100
1/500 sec.
f/5.6
18mm lens
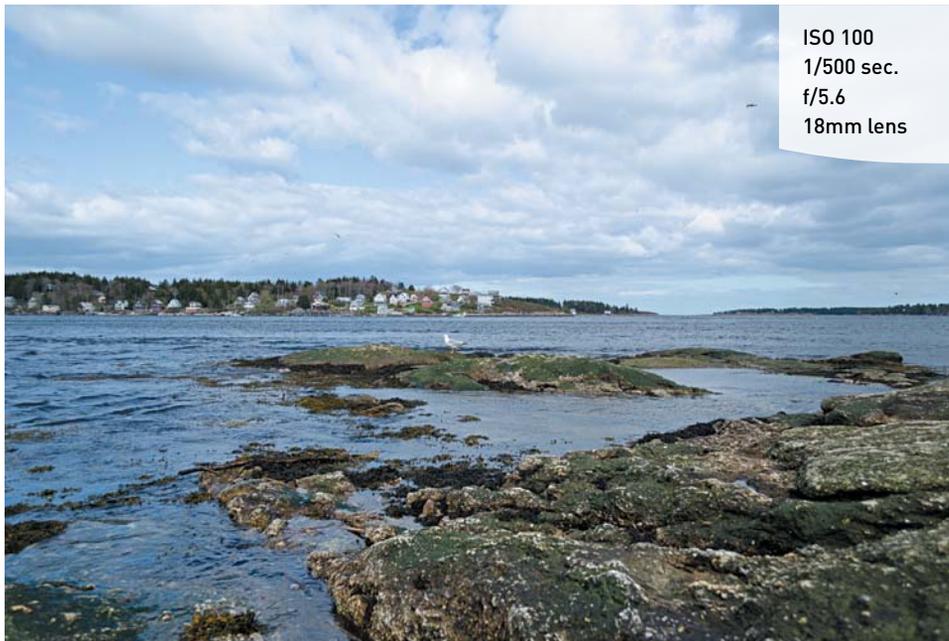
Wide-angle lenses can display a large depth of field, which allows you to keep the foreground and background in sharp focus. This makes them very useful for landscape photography. They also work well in tight spaces, such as indoors, where there isn't much elbow room available (**Figure 2.3**). They can also be handy for large group shots but, because of the amount of distortion, not so great for close-up portrait work.

ISO 200
1/25 sec.
f/4
18mm lens

FIGURE 2.3
When shooting in tight spaces, such as indoors, a nice wide-angle lens helps capture more of the scene.

A *normal* lens has a field of view that is about 45 degrees and delivers approximately the same view as the human eye. The perspective is very natural and there is little distortion in objects. The normal lens for full-frame and 35mm cameras is the 50mm lens (**Figure 2.4**), but for the D5100 it is more in the neighborhood of a 35mm lens because of its sensor's 1.5x crop factor.

ISO 100
1/200 sec.
f/5.6
50mm lens

Normal focal length lenses are useful for photographing people and architecture and for most other general photographic needs. They create very little distortion and offer a moderate range of depth of field.

Most longer focal length lenses are referred to as *telephoto* lenses. They can range in length from 135mm up to 800mm or longer, and have a field of view that is about 35 degrees or smaller. These lenses have the ability to greatly magnify the scene, allowing you to capture details of distant objects, but the angle of view is greatly reduced (**Figure 2.5**). You will also find that you can achieve a much narrower depth of field. They also suffer from something called distance compression, which means they make objects at different distances appear to be much closer together than they really are.

Telephoto lenses are most useful for sports photography or any application where you need to get closer to your subject (**Figure 2.6**). They can have a compressing effect—making objects look closer together than they actually are—and a very narrow depth of field when shot at their widest apertures.

FIGURE 2.5
By switching to my 200mm lens, I was able to bring the opposite shore right up close.

ISO 100
1/200 sec.
f/5.6
200mm lens

ISO 200
1/320 sec.
f/8
400mm lens

FIGURE 2.6
The long telephoto lens makes the moon appear close to the treetop.

A *zoom* lens is a great compromise to carrying a bunch of single focal length lenses (also referred to as "prime" lenses). They can cover a wide range of focal lengths because of the configuration of their optics. However, because it takes more optical elements to capture a scene at different focal lengths, the light must pass through more glass on its way to the image sensor. The more glass, the lower the quality of the image sharpness. The other sacrifice that is made is in aperture. Zoom lenses typically have smaller maximum apertures than prime lenses, which means they cannot achieve a narrow depth of field or work in lower light levels without the assistance of image stabilization, a tripod, or higher ISO settings. (We'll discuss all this in more detail in later chapters.)

The D5100 can be purchased with the body only, but many folks will purchase it with a kit lens. The most common kit lens is the 18–55mm VR f/3.5–5.6. With my D5100, I have been working the 18–55mm as well as the 70–200mm VR AF-S lens.

Throughout the book, I will occasionally make reference to lenses that are wider or more telephoto than these, because I have a multitude of lenses that I use for my photography. This doesn't mean that you have to run out and purchase more lenses. It just means that if you do this long enough, you are sure to accumulate additional lenses that will expand your ability to be even more creative with your photography.

WHAT IS EXPOSURE?

In order for you to get the most out of this book, I need to briefly discuss the principles of exposure. Without this basic knowledge, it will be difficult for you to move forward in improving your photography. Granted, I could write an entire book on exposure and the photographic process—and many people have—but for our purposes I will just cover some of the basics. This will give you the essential tools to make educated decisions in determining how best to photograph a subject.

Exposure is the process whereby the light reflecting off a subject reflects through an opening in the camera lens for a defined period of time onto the camera sensor. The combination of the lens opening, shutter speed, and sensor sensitivity is used to achieve a proper exposure value (EV) for the scene. The EV is the sum of these components necessary to properly expose a scene. A relationship exists between these factors that is sometimes referred to as the "exposure triangle."

At each point of the triangle lies one of the factors of exposure:

- **ISO:** Determines the sensitivity of the camera sensor. ISO stands for the International Organization for Standardization, but the acronym is used as a term to describe the sensitivity of the camera sensor to light. The higher the sensitivity, the less light is required for a good exposure. These values are a carryover from the days of traditional color and black and white films.

- **Aperture:** Also referred to as the f-stop, this determines how much light passes through the lens at once.

- **Shutter Speed:** Controls the length of time that light is allowed to hit the sensor.

Here's how it works. The camera sensor has a level of sensitivity that is determined by the ISO setting. To get a proper exposure—not too much, not too little—the lens needs to adjust the aperture diaphragm (the size of the lens opening) to control the volume of light entering the camera. Then the shutter is opened for a relatively short period of time to allow the light to hit the sensor long enough for it to record on the sensor.

ISO numbers for the D5100 start at 100 and then double in sensitivity as you double the number. So 200 is twice as sensitive as 100. The camera can be set to use 1/2- or 1/3-stop increments, but for ISO just remember that the base numbers double: 100, 200, 400, 800, and so on. There are also a wide variety of shutter speeds that you can use. The speeds on the D5100 range from as long as 30 seconds to as short as 1/4000 of a second. When using the camera, you will not see the 1 over the number in the viewfinder, so you will need to remember that anything shorter than a second will be a fraction. Typically, you will be working with a shutter speed from around 1/30 of a second to about 1/2000 of a second, but these numbers will change depending on your circumstances and the effect that you are trying to achieve. The lens apertures will vary slightly depending on which lens you are using. This is because different lenses have different maximum apertures. The typical apertures that are at your disposal are f/4, f/5.6, f/8, f/11, f/16, and f/22.

When it comes to exposure, a change to any one of these factors requires changing one or more of the other two. This is referred to as reciprocal change. If you let more light in the lens by choosing a larger aperture, you will need to shorten the amount of time the shutter is open. If the shutter is allowed to stay open for a longer period of time, the aperture needs to be smaller to restrict the amount of light coming in.

HOW IS EXPOSURE CALCULATED?

We now know about the exposure triangle—ISO, shutter speed, and aperture—so it's time to put all three together to see how they relate to one another and how you can change them as needed.

When you point your camera at a scene, the light reflecting off your subject enters the lens and is allowed to pass through to the sensor for a period of time as dictated by the shutter speed. The amount and duration of the light needed for a proper exposure depends on how much light is being reflected and how sensitive the sensor is. To figure this out, your camera utilizes a built-in light meter that looks through the lens and measures the amount of light. That level is then calculated against the sensitivity of the ISO setting and an exposure value is rendered. Here is the tricky part: there is no single way to achieve a perfect exposure because the f-stop and shutter speed can be combined in different ways to allow the same amount of exposure. See, I told you it was tricky.

Here is a list of reciprocal settings that would all produce the same exposure result. Let's use the "sunny 16" rule, which states that, when using f/16 on a sunny day, you can use a shutter speed that is roughly equal to the ISO setting to achieve a proper exposure. For simplification purposes, we will use an ISO of 100.

RECIPROCAL EXPOSURES: ISO 100

F-STOP	2.8	4.0	5.6	8	11	16	22
SHUTTER SPEED	1/4000	1/2000	1/1000	1/500	1/250	1/125	1/60

If you were to use any one of these combinations, they would each have the same result in terms of the exposure (i.e., how much light hits the camera's sensor). Also take note that every time we cut the f-stop in half, we reciprocated by doubling

our shutter speed. For those of you wondering why f/5.6 is half of f/8, it's because those numbers are actually fractions based on the opening of the lens in relation to its focal length. This means that a lot of math goes into figuring out just what the total area of a lens opening is, so you just have to take it on faith that f/5.6 is half of f/8 but twice as much as f/4. A good way to remember which opening is larger is to think of your camera lens as a pipe that controls the flow of water. If you had a pipe that was 1/2" in diameter (f/2) and one that was 1/8" (f/8), which would allow more water to flow through? It would be the 1/2" pipe. The same idea works here with the camera f-stops; f/2 is a larger opening than f/4 or f/8 or f/16.

Now that we know this, we can start using this information to make intelligent choices in terms of shutter speed and f-stop. Let's bring the third element into this by changing our ISO by one stop, from 100 to 200.

RECIPROCAL EXPOSURES: ISO 200

F-STOP	2.8	4.0	5.6	8	11	16	22
SHUTTER SPEED	–	1/4000	1/2000	1/1000	1/500	1/250	1/125

Notice that, since we doubled the sensitivity of the sensor, we now require half as much exposure as before. We have also reduced our maximum aperture from f/2.8 to f/4 because the camera can't use a shutter speed that is faster than 1/4000 of a second.

So why not just use the exposure setting of f/16 at 1/250 of a second? Why bother with all of these reciprocal values when this one setting will give us a properly exposed image? The answer is that the f-stop and shutter speed also control two other important aspects of our image: motion and depth of field.

MOTION AND DEPTH OF FIELD

There are distinct characteristics that are related to changes in aperture and shutter speed. Shutter speed controls the length of time the light has to strike the sensor; consequently, it also controls the blurriness (or lack of blurriness) of the image. The less time light has to hit the sensor, the less time your subjects have to move around and become blurry. This can let you control things like freezing the motion of a fast-moving subject (**Figure 2.7**) or intentionally blurring subjects to give the feel of energy and motion (**Figure 2.8**).

FIGURE 2.7
A fast shutter speed was used to freeze the action.

ISO 400
1/1250 sec.
f/5.3
210mm lens

FIGURE 2.8
The slower shutter speed relays a sense of motion as the globe spins around its axis.

ISO 100
1/30 sec.
f/4
50mm lens

The aperture controls the amount of light that comes through the lens, but it also determines what areas of the image will be in focus. This is referred to as depth of field, and it is an extremely valuable creative tool. The smaller the opening (the larger the number, such as f/22), the greater the sharpness of objects from near to far (**Figure 2.9**). A large opening (or small number, like f/2.8) means more blurring of objects that are not at the same distance as the subject you are focusing on (**Figure 2.10**).

ISO 400
1/80 sec.
f/22
20mm lens

FIGURE 2.9
By using a small aperture, the area of sharp focus extends from a point that is near the camera all the way out to distant objects, which we can see by the level of detail in the foreground rocks, the helicopter, and even the distant mountains.
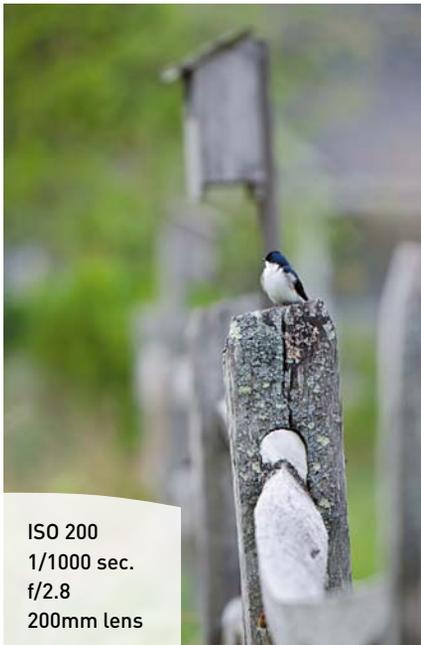
ISO 200
1/1000 sec.
f/2.8
200mm lens

FIGURE 2.10
Isolating a subject is accomplished by using a large aperture, which produces a narrow area of sharp focus, while blurring the foreground and everything in the background as well.

As we further explore the features of the camera, we will learn not only how to utilize the elements of exposure to capture properly exposed photographs, but also how we can make adjustments to emphasize our subject. It is the manipulation of these elements—motion and focus—that will take your images to the next level.

VIDEO AND THE D5100

Probably one of the reasons you purchased the D5100 instead of other competing camera models is its ability to capture video. Not just regular video, but full high-definition video. As I discussed in the book's introduction, I am going to keep the focus of this book on the photography aspects of the camera, but that doesn't mean I am going to simply ignore the video functions completely. In fact, I am dedicating a bonus chapter to some fun video tips, but I thought that I would at least cover the video basics here in Chapter 2 since we've already looked at a lot of other camera functions. First, let's cover some of the basic facts about the movie-making features.

Video recording is a feature of the Live View capabilities of the camera, so you'll have to put the camera into the active Live View mode to begin to capture video. This is accomplished by rotating the Live View switch (**Figure 2.11**) on the top of the camera, which activates the Live View on the rear display. If you want to control the aperture, you should set the aperture value to either Manual mode or Aperture Priority mode before switching to Live View. Otherwise, switch to one of the other modes and let the camera adjust it automatically.

Once Live View is active, press the **i** button and choose a focus mode. It is possible to use the full-time-servo (AF-F) mode while recording video, and you should try it out because it does a fine job in some situations, but I strongly urge you to refine your manual focus (MF) skills. Using manual focus not only gives you creative control of what is in focus, it also eliminates the sound of the lens trying to maintain autofocus.

Once your subject is in focus, you can push the Movie

Movie Record Button

Live View Switch

FIGURE 2.11
Rotate the Live View switch to start.

Record button (Figure 2.11) to begin the recording process (there is no special movie mode). When the camera begins recording, you will notice a few new icons show up on the LCD (**Figure 2.12**). At the top left is a blinking red Record icon to let you know that the camera is in active recording mode, and just below that is the audio recording indicator. In the upper right, you'll notice the timer that is counting down your remaining recording time. This number is directly related to the quality you have selected for your video. To stop the video recording, simply press the OK button a second time. This will take you back to Live View mode.

A   Recording Active
B   Audio Recording Indicator
C   HD Crop Guide
D   HD Crop Guide
E   Recording Time Remaining
F   Movie Frame Size

VIDEO QUALITY

The highest-quality video setting on your D5100 will render high-definition video with a resolution of 1920x1080 pixels. This is also referred to as 1080p. The 1080 represents the height of the video image in pixels, and the "p" stands for progressive, which is how the camera actually records/draws the video on the screen. You can select lower-resolution video depending on your needs. The other two video resolutions are 1280x720 and 640x424. For high-definition TV and computer/media station viewing, you will be served best by using the 1920x1080 recording resolution. If you don't need full 1080p HD, such as when recording for the Internet, iPods, or portable video players, you might want to consider using the 1280x720 or 640x424 choices since they require less physical storage and take less time to upload to the Internet.

PROGRESSIVE SCAN

When it comes to video, there are usually two terms associated with the quality of the video and how it is captured and displayed on a monitor or screen: *progressive* and *interlaced*. The two terms describe how the video is drawn by line for each frame. Video frames are not displayed all at once like a photograph. In progressive video, the lines are drawn in sequence from top to bottom. Interlaced video draws all of the odd-numbered lines and then all of the even-numbered lines. This odd-even drawing can present itself as screen flicker, which is why the progressive video standard is preferred, especially when viewing higher-definition images.

SETTING THE MOVIE QUALITY

1. Start by pressing the Menu button.

2. Navigate to the Shooting menu using the Multi-selector, highlight the Movie Settings option, and press OK (**A**).

3. Highlight the Movie Quality setting and press OK (**B**).

4. Select the video quality of your choice and press the OK button (**C**).

5. Press the Menu button twice to exit the menu mode and return to shooting, or rotate the Live View switch to jump right into the Live View/video recording mode.

Manual Callout

Refer to page 53 of the printed user manual for a complete rundown of the video quality and frame rate settings.
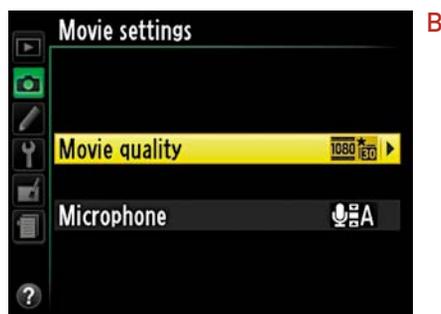
SOUND

The D5100 can record audio to go along with your video, but there are a couple of things to keep in mind when using it. The first is to make sure you don't block the microphone. (If you look closely at the front of the camera body, you'll notice three small holes right above the silver D5100 nameplate). This should not be a problem if you are holding the camera as discussed in Chapter 1.

The next thing you need to know about the sound is that the built-in microphone records in mono, not stereo. This means that when you are watching the recorded video on your TV or computer, you might only hear the sound coming from one speaker. The D5100 does have an external microphone jack on the side panel (**Figure 2.13**), so you might want to consider investing in an external mic that is capable of recording in stereo (as well as of producing higher-quality audio recordings).

You do also have the option of turning off the audio altogether. This can be useful if the sound might be distracting or you plan on using your own soundtrack to be added to the video at a later time.

USB and A/V Port

Acessory Terminal

HDMI Port

External
Microphone Jack
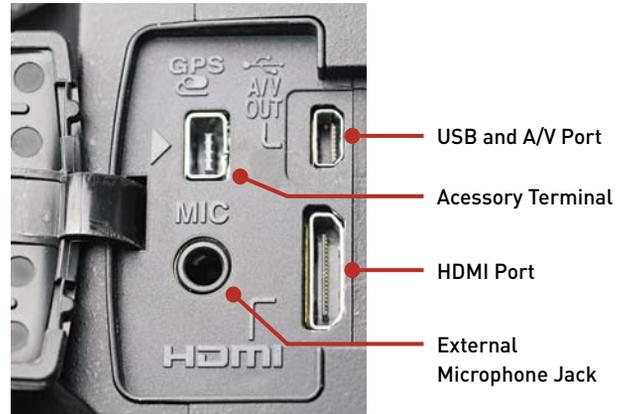
FIGURE 2.13
D5100 ports and mic jack

TURNING OFF THE SOUND

1. Following the directions for setting the movie quality above, locate the Movie Settings menu and press the OK button.

2. Highlight the Microphone option and press OK again (**A**).

3. Select the Microphone Off option and press OK to lock in the change. Press the Menu button twice to return to shooting mode (**B**).
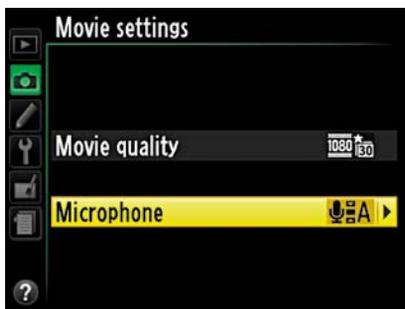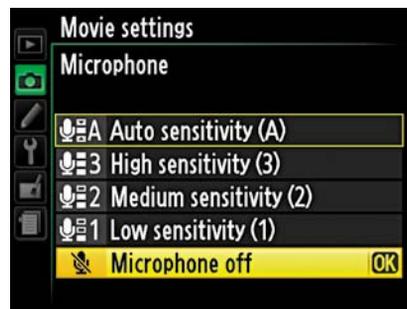
◼

WATCHING YOUR VIDEOS

There are a couple of different ways you can review your video once you have fin-ished recording. The first, and probably the easiest, is to press the Playback button to bring up the recorded image on the rear LCD screen and then use the OK button to start playing the video. The Multi-selector acts as the video controller and allows you to rewind and fast-forward as well as stop the video altogether.

If you would like to get a larger look at things, you will need to either watch the video on your TV or move the video files to your computer. To watch on your TV, you can use the video cable that came with your camera and plug it into the small port on the side of the camera body (Figure 2.13). This lets you watch low-resolution video on your TV. To get the full effect from your HD videos, you will need to purchase an HDMI cable (your TV needs to support at least 720 HD and have an HDMI port to use this option). Once you have the cable hooked up to your TV, simply use the same camera controls that you used for watching the video on the rear LCD screen.

If you want to watch or use the videos on your computer, you will need to download the video using the Nikon software or by using an SD card reader attached to the computer. The video files will have the extension .mov at the end of the file name. These files should play on either a Mac or a PC using software that came with your operating system (QuickTime for Mac and Windows Media Player for the PC).

For even more information about using video with your D5100, be sure to download the Chapter 12 bonus chapter from Peachpit.com (as discussed in the introduction).

Chapter 2 Assignments

Formatting your card

Even if you have already begun using your camera, make sure you are familiar with formatting the Secure Digital card. If you haven't done so already, follow the directions given earlier in the chapter and format as prescribed (make sure you save any images that you may have already taken). Then perform the format function every time you have downloaded or saved your images or use a new card.

Checking your firmware version

Using the most up-to-date version of the camera firmware will ensure that your camera is functioning properly. Use the menu to find your current firmware version and then update as necessary using the steps listed in this chapter.

Cleaning your sensor

You probably noticed the sensor-cleaning message the first time you turned your camera on. Make sure you are familiar with the Clean Now command so you can perform this function every time you change a lens.

Exploring your image formats

I want you to become familiar with all of the camera features before using the RAW format, but take a little time to explore the format menu so you can see what options are available to you.

Exploring your lens

If you are using a zoom lens, spend a little time shooting with all of the different focal lengths, from the widest to the longest. See just how much of an angle you can cover with your widest lens setting. How much magnification will you be able to get from the telephoto setting? Try shooting the same subject with a variety of focal lengths to note the differences in how the subject looks, and also the relationship between the subject and the other elements in the photo.

Recording video clips

Take a little time to discover how the video function works on your camera. Set the video quality to high definition and record a short sequence, and then try it with some of the lower resolution settings. Open the video clips on your computer or hook up the camera to your TV, then review the different video clips to see how the quality setting affects the video.

Share your results with the book's Flickr group!

Join the group here: flickr.com/groups/nikond5100fromsnapshotstogreatshots/

3

ISO 100
1/30 sec.
f/8
80mm lens

The Auto Modes

GET SHOOTING WITH THE AUTOMATIC CAMERA MODES

The Nikon D5100 is an amazing camera that has some incredible features. In fact, with all of the technology built into it, it can be pretty intimidating for the person new to dSLR photography. For that reason, the folks at Nikon have made it a little easier for you to get some great-looking photographs without having to do a lot of thinking. Enter the scene modes. The camera modes on the automatic side of the Mode dial are simple, icon-labeled modes that are set up to use specific features of the camera for various shooting situations. In addition, a new feature of the D5100 is a collection of in-camera special effects. Let's take a look at the different modes and how and when to use them.

Don't let rainy days dampen your enthusiasm for shooting. As the rain starts to soften and the sky starts to lighten, I'll grab my tripod and head out to see what jewels I can find sparkling in the garden. Colors seem richer and flowers look fresh. The camera was set to Close-up mode for a good mix of aperture and shutter speed settings.

Wait for the wind to be still to reduce blurring caused by the subject moving.

The focus point was placed on the closest flower and moved off center for a stronger composition.

The use of a tripod gave a
steady base when using a
slower shutter speed.

ISO 100
1/40 sec.
f/5.6
55mm lens
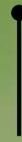
The depth of field is shallow
in close-up photography,
which results in a softly
blurred background.

AUTO MODE

Auto mode is all about thought-free photography (**Figure 3.1**). There is little to nothing for you to do in this mode except point and shoot. Your biggest concern when using Auto mode is focusing. The camera will utilize the automatic focusing modes to achieve the best-possible focus for your picture. Naturally, the camera is going to assume that the object that is closest to the camera is the one that you want in sharpest focus. Simply press the shutter button down halfway while looking through the viewfinder and you should see one of the focus points light up over the subject. Of course, you know that putting your subject in the middle of the picture is not the best way to compose your shot. So wait for the chirp to confirm that the focus has been set and then, while still holding down the button, recompose your shot. Now just press down the shutter button the rest of the way to take the photo. It's just that easy (**Figure 3.2**). The camera will take care of all your exposure decisions, including when to use the flash.

FIGURE 3.1
The Auto mode info screen.

FIGURE 3.2
The Auto mode works great when you don't want to think too much and just want to snap some shots.

ISO 140
1/125 sec.
f/11
45mm lens

Let's face it: This is the lazy man's mode. But sometimes it's nice to be lazy and click away without giving thought to anything but preserving a memory. There are times, though, when you will want to start using your camera's advanced features to improve your shots.

AUTO (FLASH OFF) MODE

Sometimes you will be in a situation where the light levels are low but you don't want to use the flash. It could be that you are shooting in a place that restricts flash photography, such as a museum, or it could be a situation where you want to capture the feel of the available light, such as an indoor scene lit by interesting lighting. This is where Auto (Flash Off) mode comes into play (**Figure 3.3**).

FIGURE 3.3
The Auto (Flash Off) mode info screen.

By keeping the flash from firing, you will be able to use just the available ambient light while the camera modifies the ISO setting to assist you in getting good exposures (**Figure 3.4**). If the camera feels that the shutter speed is going to be slow enough to introduce camera shake, it will give a warning on the rear information screen that reads "Subject is too dark." It will also list the shutter speed as "Lo" so that you know to check the camera settings. Despite what the camera may say, you'll want to either use a tripod or brace yourself really well if the shutter speed is 1/60 of a second or slower to avoid blurred images from camera movement.

Fortunately, most of the new Vibration Reduction (VR) lenses being sold today allow you to handhold the camera at much slower shutter speeds and still get great results. The two downfalls to this mode are the Auto ISO setting, which will quickly take your ISO setting up as high as 1600, and that there is still the possibility of getting blur from subject movement if the shutter speed is slow.

FIGURE 3.4
Auto (Flash Off)
mode made sure
the pop-up flash
stayed disabled
in the low-light
environment.

ISO 1600
1/100 sec.
f/3.5
60mm lens

PORTRAIT MODE

One problem with Auto mode is that it has no idea what type of subject you are photographing and, therefore, uses the same settings for each situation. Shooting portraits is a perfect example. When you take a photograph of someone, you usually want the emphasis of the picture to be on the person, not necessarily the stuff going on in the background.

This is what Portrait mode is all about (**Figure 3.5**). When you set your camera to this mode, you are telling the camera to

FIGURE 3.5
The Portrait mode info screen.

select a larger aperture so that the depth of field is much narrower and will give more blur to objects in the background. This blurry background places the attention on your subject (**Figure 3.6**). The other feature of this mode is the automatic selection of the D5100's built-in Portrait picture control (we'll go into more detail about picture controls in later chapters). This feature is optimized for skin tones and will also be a little softer to improve the look of skin.

FIGURE 3.6
Portrait mode is useful for getting the right settings under the current lighting conditions for people photos. (Photo by Paloma Sylvan)

ISO 200
1/60 sec.
f/2.8
50mm lens

USING THE BEST LENS FOR GREAT PORTRAITS

When using Portrait mode, use a lens that is 50mm or longer. The longer lens will give you a natural view of the subject, as well as aid in keeping the depth of field narrow.

LANDSCAPE MODE

As you might have guessed, Landscape mode has been optimized for shooting landscape images (**Figure 3.7**). Particular emphasis is placed on the picture control, with the camera trying to boost the greens and blues in the image (**Figure 3.8**). This makes sense, since the typical landscape would be outdoors where grass, trees, and skies should look more colorful. This picture control also boosts the sharpness that is applied during processing.

FIGURE 3.7
The Landscape mode info screen.

The camera also utilizes the lowest ISO settings possible in order to keep digital noise to a minimum. The downfall to this setting is that, once again, there is little control over the camera settings. The focus mode can be changed—but only from AF-A to Manual. Other changeable functions include image quality, ISO, and AF-area. Note that the flash cannot be used while in Landscape mode.

ISO 200
1/500 sec.
f/9
18mm lens

CHILD MODE

The Child mode (**Figure 3.9**) is like a blend of the Sports and Portrait modes. Understanding that children are seldom still, the camera will try to utilize a slightly faster shutter speed to freeze any movement. The picture control feature has also been optimized to render bright, vivid colors that one normally associates with pictures of children (**Figure 3.10**).

FIGURE 3.9
The Child mode info screen.

FIGURE 3.10
The Child mode tries to use a fast shutter speed, as well as make colors brighter and more vivid.

ISO 200
1/2000 sec.
f/3.2
60mm lens

SPORTS MODE

While this is called Sports mode, you can use it for any moving subject that you are photographing (**Figure 3.11**). The mode is built on the principles of sports photography: continuous focusing, large apertures, and fast shutter speeds (**Figure 3.12**). To handle these requirements, the camera sets the focus mode to Dynamic, the aperture to a very large opening, and the ISO to Auto. Overall, these are sound settings that will capture most moving subjects well. We will take an in-depth look at all of these features, like Continuous shooting mode, in Chapter 5.

FIGURE 3.11
The Sports mode info screen.

FIGURE 3.12
This is the type of shot that was made for Sports mode, where action-freezing shutter speeds and continuous focusing capture the moment.

ISO 200
1/2000 sec.
f/5.6
200mm lens
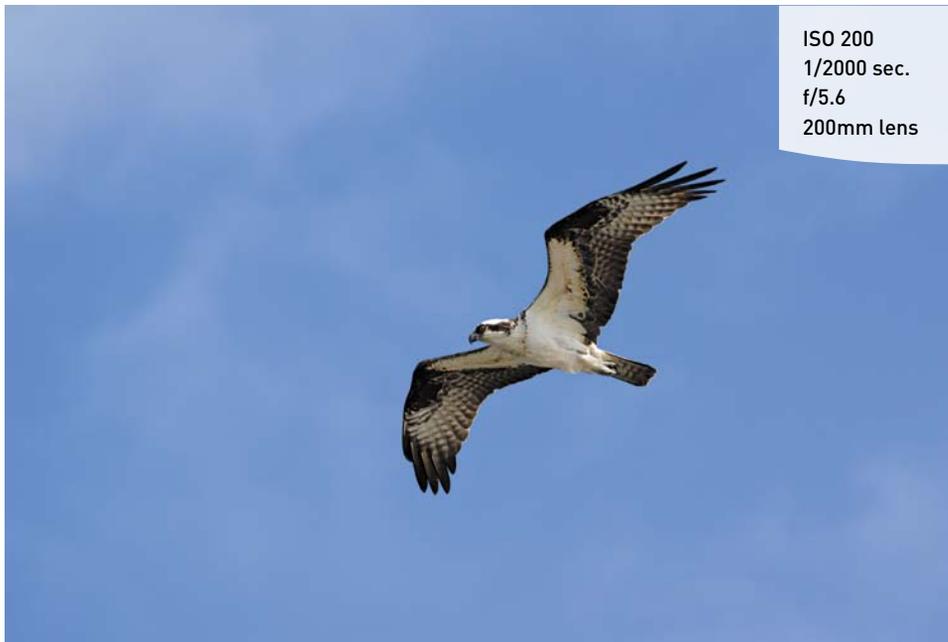
You can, however, run the risk of too much digital noise in your picture if the camera decides that you need a very high ISO (such as 1600) because the available light is low. This is why you have the ability to change some options within the Sports mode, such as ISO and the Release mode (single or continuous). Also, when using Sports mode, you can change the focus mode from AF-A to Manual. This is especially handy if you know when and where the action will take place and want to prefocus the camera on a spot and wait for the right moment to take the photo.

CLOSE-UP MODE

Although most zoom lenses don't support true "macro" settings, that doesn't mean you can't shoot some great close-up photos. The key here is to use your camera-to-subject distance to fill the frame and still achieve sharp focus. This means that you move yourself as close as possible to your subject while still being able to get a good, sharp focus. Oftentimes, your lens will be marked with the minimum focusing distance. On my 18–55mm zoom, it is about 6 inches with the lens set to 55mm.

FIGURE 3.13
The Close-up mode info screen.

To help get the best focus in the picture, Close-up mode (**Figure 3.13**) will use the smallest aperture it can while keeping the shutter speed fast enough to get a sharp shot (**Figure 3.14**). It does this by raising the ISO or turning on the built-in flash—or a combination of the two. Fortunately, these are two of the settings that you can change in this mode. The flash will be set to Auto by default, but you can also change it to Auto-Redeye or Off, depending on your needs. The ISO can be changed from the Auto setting to one of your own choosing. This probably only needs to be done in low-light settings when the Auto-ISO starts to move up to maintain exposure values. Other settings that can be changed are the image quality, release mode, focus mode (AF-A or Manual), and AF-area.

FIGURE 3.14
Close-up mode
provided the proper
exposure to capture
the smallest of
details.

ISO 100
1/40 sec.
f/5.6
55mm lens

SCENE MODES

Most digital SLR cameras will have only seven or eight automatic modes at their disposal, but the D5100 takes things to a whole new level with 11 additional scene modes to choose from (plus the seven effects modes covered later in this chapter). Nikon has anticipated many of the typical shooting scenarios that you will encounter and has created scene modes that are optimized for those situations. Let's take a quick look at these modes, but first, here's how to find them.

USING THE SCENE MODES

1. Set the Mode dial to the SCENE setting.

2. Rotate the Command dial until the appropriate scene appears on the information screen.

■

FOOD

Food photography is very popular as of late, and Nikon has provided you with a scene mode that is perfect for this type of photography (**Figure 3.15**). When you select this mode, the camera will use large apertures for fairly narrow depth of field, slightly over-exposed settings to keep things bright, and a picture control that makes colors slightly more vivid.

FIGURE 3.15
The Food scene mode.

NIGHT PORTRAIT

You're out on the town at night and you want to take a nice picture of someone, but you want to show some of the interesting scenery in the background as well. The solution is to use Night Portrait mode (**Figure 3.16**). When you set the dial to this mode, you are telling the camera that you want to use a slower-than-normal shutter speed so that the background is getting more time (and, thus, more light) to achieve a proper exposure.

FIGURE 3.16
The Night Portrait scene mode.

The typical shutter speed for using flash is about 1/60 of a second or faster (but not faster than 1/200 of a second). By leaving the shutter open for a longer duration, the camera allows more of the background to be exposed so that you get a much more balanced scene. This is also a great mode for taking portraits during sunset. The camera uses an automatic ISO setting by default, so you will want to keep an eye on it to make sure that setting isn't so high that the noise levels ruin your photo.

NIGHT LANDSCAPE

A tripod or stable shooting surface is defi-
nitely recommended for the Night Landscape
mode (**Figure 3.17**). By using low ISOs, longer
shutter speeds, and noise reduction, you can
capture great cityscapes with more-accurate
colors. The flash and focus-assist functions are
turned off for this mode, so focusing might
be a little difficult. If so, try moving your
focus point to a different location or switch
to manual focus.

FIGURE 3.17
The Night Landscape scene mode.

PARTY/INDOOR

This mode is very much like the Night Portrait
mode except it is optimized for indoor use
(**Figure 3.18**). The flash is automatically set
to Auto+Red-eye Reduction and will use the
red-eye reduction lamp to help eliminate
the red-eye problem that often occurs when
using the flash indoors.

FIGURE 3.18
The Party/Indoor scene mode.

BEACH/SNOW

Shooting in a bright environment like the
beach or a ski resort can have a bad effect
on your images. The problem is that beaches
and snow often reflect a lot of light and can
fool the camera's light meter into under-
exposing. This means that the snow would
come out looking darker than it should. To
solve this problem, you can use the Beach/
Snow scene mode (**Figure 3.19**), which will
overexpose slightly, giving you much more
accurate tones.

FIGURE 3.19
The Beach/Snow scene mode.

SUNSET

This mode is set to optimize the colors that are present in a sunset (**Figure 3.20**). It will utilize slightly longer exposures, so a tripod or steady shooting surface is advised. You also won't be able to use the flash in this mode since it would interfere with the settings necessary for capturing the sunset.

DUSK/DAWN

There are some great photo opportunities that take place both before the sun rises and after it sets. The only problem is that the typical camera settings don't truly capture the vibrancy of the colors. The Dusk/Dawn camera setting is optimized for low-light photography and helps boost colors and eliminate noise from longer exposures (**Figure 3.21**).

PET PORTRAIT

This mode is similar to the Portrait mode in that it uses larger apertures and faster shutter speeds (**Figure 3.22**). The difference is that the Portrait mode is optimized for human skin, with adjustments to the hues and color values. Pets don't normally have any skin showing, so the sharpness and hues are adjusted accordingly.
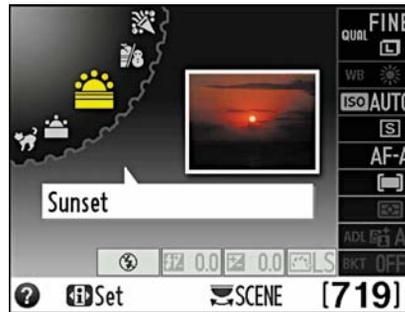
FIGURE 3.20
The Sunset scene mode.
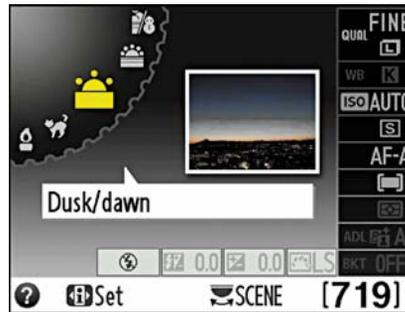
FIGURE 3.21
The Dusk/Dawn scene mode.

FIGURE 3.22
The Pet Portrait scene mode.

CANDLELIGHT

Sometimes it's pretty easy to know when to use a particular mode. This mode is similar to the Auto (Flash Off) mode, but it is tweaked for the color of candlelight and will give you much more pleasing results (**Figure 3.23**). If you are photographing people in candlelight, try using a tripod and have them hold fairly still to reduce image blur.

BLOSSOM

This mode is very similar to the Landscape setting but with a few slight adjustments. The color settings for Blossom have been optimized for use outdoors where there are many flowers in full bloom (**Figure 3.24**).

AUTUMN COLORS

If you live in an area that has great fall color (like I do), you will want to give this mode a try (**Figure 3.25**). The big advantage to this scene mode is that it is optimized for the red and yellow hues that are present in autumn, and it really makes them pop. It also turns off the flash since the light from a flash can wash out the color in the leaves. Try using this mode when the leaves have turned and the skies are overcast. You will get some amazing color in your images.

FIGURE 3.23
The Candlelight scene mode.
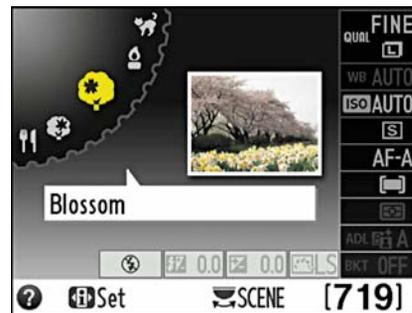
FIGURE 3.24
The Blossom scene mode.
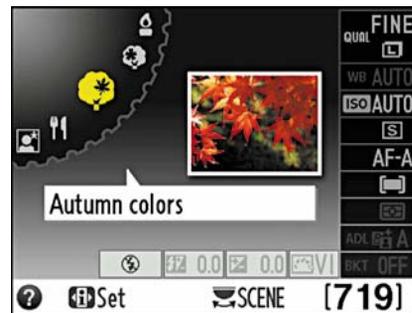
FIGURE 3.25
The Autumn Colors scene mode.

EFFECTS MODES

Beyond the scene-specific settings, there is a collection of in-camera special effects that are actually kind of fun to use. Remember, a digital camera is not only a light-capturing device but also a small computer in its own way. After an image is captured and saved to memory, these special effects modes give you the power to process your photos before they ever leave the camera. In fact, all of these effects can even be applied to video. Because the Night Vision, Color Sketch, Miniature Effect, and Selective Color effects require additional in-camera processing, it is not possible to shoot in RAW mode with them. In addition, due to the extra work the camera has to do to process these effects, be prepared to wait between exposures and expect the charge on the battery to be consumed faster.

I was a bit skeptical about these effects when I first heard about them. After all, one of the most important selling features of the D5100 is its stunning image quality, so it felt a bit risky to take the chance of capturing a good photo in, say, Color Sketch mode but not have any way to get the unprocessed original photo. But after giving each one a thorough test drive, I found some of them quite enjoyable to use. And once I started getting used to the effects, I started looking for specific instances that might be better suited to a given effect, and I found it much more satisfying.

USING THE EFFECTS MODES

1. Set the Mode dial to the EFFECTS setting.
2. Rotate the Command dial until the desired effect appears on the information screen.

   ■

SILHOUETTE

The Silhouette mode (**Figure 3.26**) does things like adjust the exposure for the brightest area of the scene as well as turn off the Active D-Lighting feature (see Chapter 10 for more on Active D-Lighting). This is necessary, since Active D-Lighting tries to boost exposure in shadow areas, which is the opposite of the effect you want when trying to get a nice silhouette. Look for situations with strong backlighting behind your subject.
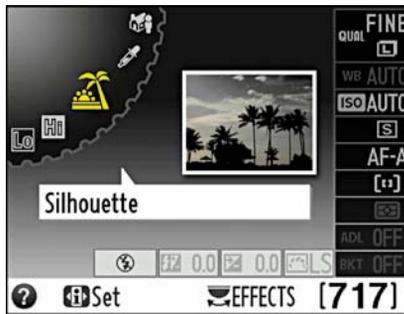
FIGURE 3.26
The Silhouette effects mode.

HIGH KEY

High-key photos are meant to have an overall bright, almost overexposed, look to them (**Figure 3.27**). Using the High Key setting forces the camera to overexpose a little and really lighten up those bright objects in your image. Subjects on bright backgrounds can work well with this effect. Note that the internal flash turns off in this mode to make full use of available light.
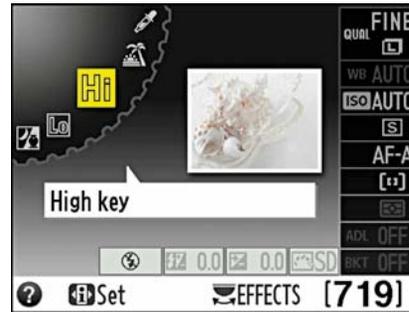
FIGURE 3.27
The High Key effects mode.

LOW KEY

Low-key photos are typically meant to have an overall dark look to them. Much like the beach/snow scenario in reverse, your camera's light meter will usually try to add some exposure when shooting a low-key scene to make everything brighter. If you want to keep things on the dark side, use the Low Key mode (**Figure 3.28**), which will keep the flash turned off and underexpose things just a little bit. Edgy and moody scenes can lend themselves more to this effect. Since the internal flash turns off and the scene may be dark, you'll want to have a solid base (or even a tripod) to avoid blur in your shots.

FIGURE 3.28
The Low Key effects mode.

NIGHT VISION

For times when it is so dark you're usually thinking it is time to put the camera away, the Night Vision (**Figure 3.29**) effect can be fun to experiment with. The internal flash and autofocus illumination assist turn off, and autofocus is only possible when in Live View (and it is on the slow side). You'll need a little light to see what you are doing, but this was my favorite effect to use. The camera will automatically adjust the ISO to the equivalent of 102,400 ISO
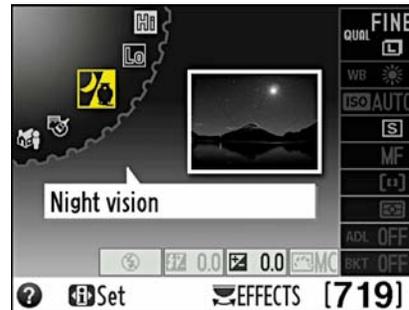
FIGURE 3.29
The Night Vision effects mode.

if needed, but the resulting JPEG images will be very noisy and only in grayscale. Think bad security camera footage. Since you're most likely to use this in extremely low-light situations, I do recommend a tripod or some other firm base.

COLOR SKETCH

Color Sketch (**Figure 3.30**) detects all the outlines in the scene and boosts the color to simulate a sketch-like effect. Turn on Live View to see a real-time updated preview of the effect in action. Bright and colorful scenes with recognizable shapes will benefit most from this effect.

FIGURE 3.30
The Color Sketch effects mode.

MINIATURE EFFECT

A very popular effect seen in photography these days is achieved by using a tilt-shift lens to produce a narrow area of focus, which on certain scenes (typically taken from a high vantage point) can make the subjects appear miniaturized. There is something about the effect that is indeed very eye-catching. The D5100 simulates this with the Miniature Effect mode (**Figure 3.31**) without a special lens by simply allowing only a narrow band (which you can widen slightly while in Live View) of the image to be in focus and then gradually blurring the rest of the scene.

FIGURE 3.31
The Miniature Effect effects mode.

SELECTIVE COLOR

The Selective Color effect (**Figure 3.32**) can make a vibrantly colored object really stand out of the scene by desaturating all the colors in the scene except for the color you choose (up to three) to keep. The color selection process and a live preview is available when in Live View. It can be a little tricky selecting the color at first (use the image zoom button
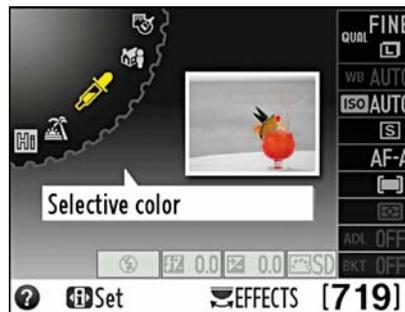
FIGURE 3.32
The Selective Color effects mode.

to zoom in on your color for easier selection), but it won't take long to get the hang of it. I'm more of a fan of doing this type of effect via software on my computer (to ensure I have a full-color original), but in a pinch (or for use in a video) it works pretty well.

Manual callout

You can learn more about the specific controls for each of these effects on page 58 of the printed user manual.

WHY YOU MAY NEVER WANT TO USE THE AUTO SCENE MODES AGAIN

With so many easy-to-use camera modes, why would anyone ever want to use anything else? Well, the first thing that comes to my mind is control. It is the number one reason for using a digital SLR camera. The ability to control every aspect of your photography will open up creative avenues that just aren't available in the automatic scene modes. Let's face it: There is a reason that the Mode dial is split into two different categories. Let's look at what we are giving up when we work in the scene modes.

- **White balance.** There is no choice available for white balance. You are simply stuck with the Auto setting. This isn't always a bad thing, but your camera doesn't always get it right. And in the scene modes, there is just no way to change it.

- **Picture control.** All of the automatic modes have specifically tuned picture controls. Some of them use the control presets, such as Landscape or Vivid, but there is no way to change the characteristics of the controls while in the auto modes.

- **Metering.** All of the auto scene modes use the Matrix metering mode to establish the proper exposure. This is generally not a bad thing, but if there are scenarios that would benefit from a center or spot metering solution (which we'll cover in later chapters), you're just out of luck.

- **Autofocus.** While each of the modes may use a specific focus area mode, such as Single or Dynamic, the actual focus mode for all of the scene modes is limited to either AF-A or Manual when shooting using the viewfinder. The problem is that you can't just use AF-S (single) or AF-C (continuous) as the default setting (unless you switch to Live View; see the sidebar "Live View").

- **Exposure compensation.** You will notice that in each and every automatic scene mode, the ability to adjust the exposure through the use of the exposure compensation feature has been completely turned off. This makes it very difficult to make the slight adjustments to exposure that are often needed.

- **Active D-Lighting.** This is another feature that is unavailable for changing in all of the auto modes. There are default settings for this feature that change from scene to scene, but there is no way for you to override the effect.

- **Flash compensation.** Just like the exposure compensation, there is no way to make any adjustments to the power output of the flash. This means that you are stuck with whatever the camera feels is correct, even if it is too weak or too strong for your particular subject.

- **Exposure bracketing.** One way to make sure that you have at least one good exposure is to use the bracketing feature of the camera, which takes images at varying exposures so you can get just the right look for your image. Unfortunately, this feature is also unavailable when using the scene modes.

Another thing you will find when using any of the automatic modes is that there are fewer choices in the camera menus for you to adjust. Each scene mode presents its own set of restrictions for the available menu items. These aren't the only restrictions to using the automatic scene modes, but they should be enough to make you want to explore the other side of the Mode dial, which I like to call the professional modes.

AUTOFOCUS MODES ON THE NIKON D5100

Four autofocus modes are available on the D5100. You can easily select the mode that will be most beneficial for the type of photography you are doing. The standard mode is called AF-S, which allows you to focus on one spot and hold the focus until you take the picture or release the shutter button. The AF-C mode will constantly refocus the camera on your subject the entire time you are depressing the shutter release button. This is great for sports and action photography. The AF-A mode is a combination of both of the previous modes, using AF-S mode unless it senses that the subject is moving, when it will switch to AF-C mode. When in Live View you will also have the fourth choice of AF-F, which is when the camera automatically attempts to keep a moving subject in focus without pressing the shutter, such as during video recording.

LIVE VIEW

Live View is the feature on your D5100 that allows you to see a real-time view of what the camera is looking at via the rear LCD display. Using Live View can be helpful when you want to see or shoot from an angle that doesn't allow you to place your eye to the viewfinder. It is also an excellent way of previewing any changes to white balance or the picture control because their effects will be visible on the screen. There's more on Live View in Chapters 6 and 7, but I want to mention that Live View does allow the AF-S autofocus mode while in the auto scene modes.

Chapter 3 Assignments

These assignments will have you shooting in the various automatic scene and effects modes so that you can experience the advantages and disadvantages of using them in your daily photography.

Shooting in Auto mode

It's time to give up complete control and just concentrate on what you see in the viewfinder. Set your camera to Auto and practice shooting in a variety of conditions, both indoors and outside. Take notice of the camera settings when you are reviewing your pictures. Try using the single-point autofocus area mode to pick a spot to focus on and then recompose before taking the picture.

Checking out Portrait mode

Grab your favorite photogenic person and start shooting in Portrait mode. Try switching between Auto and Portrait mode while photographing the same person in the same setting. You should see a difference in the sharpness of the background as well as the skin tones. If you are using a zoom lens, set it to about 55mm if available.

Capturing the scenery with Landscape and Close-up modes

Take your camera outside for some landscape and macro work. First, find a nice scene and then, with your widest available lens, take some pictures using Landscape mode and then switch back to Auto so that you can compare the settings used for each image as well as the changes to colors and sharpness. Now, while you are still outside, find something in the foreground—a leaf or a flower—and switch the camera to Close-up mode. See how close you can get and take note of the f-stop that the mode uses. Then switch to Auto and shoot the same subject.

Stopping the action with Sports mode

This assignment will require that you find a subject that is in motion. That could be the traffic in front of your home or your child at play. The only real requirement is that the subject be moving. This will be your opportunity to test out Sports mode. There isn't a lot to worry about here. Just point and shoot. Try shooting a few frames one at a time and then go ahead and hold down the shutter button and shoot a burst of about five or six frames. It will help if your subject is in good available light to start with so that the camera won't be forced to use high ISOs.

Having fun with the effects modes

Carve out some time to give each of the effects a good test run and have fun with it. It is all too easy to get hung up on getting the perfect shot, but with the effects modes you have permission to play. See how the world looks with just a single color; try envisioning things in miniature; check out your pets in Color Sketch mode. Just focus on being creative and exploring the results. You never know when one of these effects might come in handy down the road.

Share your results with the book's Flickr group!

Join the group here: flickr.com/groups/nikond5100fromsnapshotstogreatshots/

4

ISO 200
1/320 sec.
f/11
400mm lens

The Professional Modes

TAKING YOUR PHOTOGRAPHY TO THE NEXT LEVEL

If you talk to professional photographers, you will find that the majority of them are using a few selective modes that offer the greatest amount of control over their photography. To anyone who has been involved with photography for any period of time, these modes are known as the backbones of photography. They allow you to influence two of the most important factors in taking great photographs: *aperture* and *shutter speed.* To access these modes, you simply turn the Mode dial to one of the letter-designated modes and begin shooting. But wouldn't it be nice to know exactly what those modes control and how to make them do our bidding? Well, if you really want to take that next step in controlling your photography, it is essential that you understand not only how to control these modes, but why you are controlling them. So let's move that Mode dial to the first of our professional modes: Program mode.

I looked out my west-facing window one cold January morning to see the moon setting while the sun was rising in the east. I reached for my camera and put the 70–200 mm lens on as I noticed the crow in the branches above. Just as I framed the shot, the crow swooped down and the moment passed. It pays to always have the camera charged up and ready to go.

Increase ISO when you need a fast shutter speed to stop action and a smaller aperture for greater depth of field.

Look for frames within the frame to draw the eye to the subject.

The focus point was placed on the tree to keep detail in the branches.

ISO 400
1/640 sec.
f/8
135 mm lens

I used the spot meter on the tree bark to ensure I retained the highlight detail.

P: PROGRAM MODE

There is a reason that Program mode is only one click away from the automatic modes: With respect to apertures and shutter speeds, the camera is doing most of the thinking for you. So, if that is the case, why even bother with Program mode? First, let me say that it is very rare that I will use Program mode, because it just doesn't give as much control over the image-making process as the other professional modes. There are occasions, however, when it comes in handy, like when I am shooting in widely changing lighting conditions and don't have the time to think through all of my options, or when I'm not very concerned with having ultimate control of the scene. Think of a picnic outdoors in a partial shade/sun environment. I want great-looking pictures, but I'm not looking for anything to hang in a museum. If that's the scenario, why choose Program over one of the scene modes? Because it gives me choices and control that none of the scene modes can deliver.

Manual Callout

To see a comparison of all of the different modes, check out the table on page 216 of the reference manual on the CD that came with the camera.

WHEN TO USE PROGRAM (P) MODE INSTEAD OF THE AUTOMATIC SCENE MODES

- When shooting in a casual environment where quick adjustments are needed

- When you want more control over the ISO

- If you want to make corrections to the white balance

- When you want to change shutter speeds or the aperture to achieve a specific result

Let's go back to our picnic scenario. As I said, the light is moving from deep shadow to bright sunlight, which means that the camera is trying to balance our three photo factors (ISO, aperture, and shutter speed) to make a good exposure. From Chapter 1, we know that Auto ISO is just not a consideration, so we have already turned that feature off (you did turn it off, didn't you?). Well, in Program mode, you can choose which ISO you would like the camera to base its exposure on. The lower the ISO number, the better the quality of our photographs, but the less light sensitive the camera becomes. It's a balancing act with the main goal always being to keep the ISO as low as possible—too low an ISO, and we will get camera shake in our images from a long

shutter speed; and too high an ISO means we will have an unacceptable amount of digital noise. For our purposes, let's go ahead and select ISO 400 so that we provide enough sensitivity for those shadows while allowing the camera to use shutter speeds that are fast enough to stop motion.

STARTING POINTS FOR ISO SELECTION

There is a lot of discussion concerning ISO in this and other chapters, but it might be helpful if you know where your starting points should be for your ISO settings. The first thing you should always try to do is use the lowest possible ISO setting. That being said, here are good starting points for your ISO settings:

- 100: Bright, sunny day
- 200: Hazy or outdoor shade on a sunny day
- 400: Indoor lighting at night or cloudy conditions outside
- 800: Late-night, low-light conditions or sporting arenas at night

These are just suggestions, and your ISO selection will depend on a number of factors that will be discussed later in the book. You might have to push your ISO even higher as needed, but at least now you know where to start.

With the ISO selected, we can now make use of the other controls built into Program mode. By rotating the Command dial, we now have the ability to shift the program settings. Remember, your camera is using the internal meter to pick what it believes are suitable exposure values, but sometimes it doesn't know what it's looking at and how you want those values applied (**Figures 4.1** and **4.2**). With the program shift, you can influence what the shot will look like. Do you need faster shutter speeds in order to stop the action? Just turn the Command dial to the right. Do you want a smaller aperture so that you get a narrow depth of field? Then turn the dial to the left until you get the desired aperture. The camera shifts the shutter speed and aperture accordingly in order to get a proper exposure, and you will get the benefit of your choice as a result. Just keep in mind that the camera is always trying to maintain the right exposure at every setting, and so the available light and the maximum and minimum aperture values of the attached lens will limit the range of shutter speeds at a given ISO value.

FIGURE 4.1
This is my first shot using Program mode. The camera settings are affected by the large area of white blossoms in the background.

FIGURE 4.2
By zooming in on the bleeding hearts in the foreground, the area of white blossoms was reduced, which reflected less light on the light meter and resulted in a reduction of shutter speed for proper exposure.

You will also notice that a small star will appear above the letter P in the viewfinder and the rear display if you rotate the Command dial. This star is an indication that you modified the exposure from the one the camera chose. To go back to the default Program exposure, simply turn the dial until the star goes away or switch to a different mode and then back to Program mode again.

Let's set up the camera for Program mode and see how we can make all of this come together.

SETTING UP AND SHOOTING IN PROGRAM MODE

1. Turn your camera on and then turn the Command dial to align the P with the indicator line.

2. Select your ISO by pressing the **i** button on the back of the camera.

3. Press up or down on the Multi-selector to highlight the ISO option, then select OK.

4. Press down on the Multi-selector to select a higher ISO setting and then press OK to lock in the change.

5. Point the camera at your subject and then activate the camera meter by depressing the shutter button halfway.

6. View the exposure information in the bottom of the viewfinder or by looking at the display panel on the back of the camera.

7. While the meter is activated, use your thumb to roll the Command dial left and right to see the changed exposure values.

8. Select the exposure that is right for you and start clicking. (Don't worry if you aren't sure what the right exposure is. We will start working on making the right choices for those great shots beginning with the next chapter.)

■

S: SHUTTER PRIORITY MODE

 S mode is what we photographers commonly refer to as Shutter Priority mode. Just as the name implies, it is the mode that prioritizes or places major emphasis on the shutter speed above all other camera settings.

Just as with Program mode, Shutter Priority mode gives us more freedom to control certain aspects of our photography. In this case, we are talking about shutter speed. The selected shutter speed determines just how long you expose your camera's sensor to light. The longer it remains open, the more time your sensor has to gather light. The shutter speed also, to a large degree, determines how sharp your photographs are. This is different from the image being sharply in focus. Two of the major influences on the sharpness of an image are camera shake and the subject's movement. Because a slower shutter speed means that light from your subject is hitting the sensor for a longer period of time, any movement by you or your subject will show up in your photos as blur.

WHEN TO USE SHUTTER PRIORITY (S) MODE

- When working with fast-moving subjects where you want to freeze the action (**Figure 4.3**); much more on this is in Chapter 5

- When you want to emphasize movement in your subject with motion blur (**Figure 4.4**)

- When you want to use a long exposure to gather light over a long period of time (**Figure 4.5**); more on this is in Chapter 8

- When you want to create that silky-looking water in a waterfall (**Figure 4.6**)

As you can see, the subject of your photo usually determines whether or not you will use Shutter Priority mode. It is important that you be able to visualize the result of using a particular shutter speed. The great thing about shooting with digital cameras is that you get instant feedback by viewing your shot on the LCD screen. But what if your subject won't give you a do-over? Such is often the case when shooting sporting events. It's not like you can go ask the quarterback to throw that touchdown pass again because your last shot was blurry from a slow shutter speed. This is why it's important to know what those speeds represent in terms of their capabilities to stop the action and deliver a blur-free shot.

FIGURE 4.3
Even the fastest of subjects can be frozen with the right shutter speed.

ISO 100
1/1000 sec.
f/4
12mm lens

ISO 200
1/8 sec.
f/4
24mm lens

FIGURE 4.4
Slowing down the
shutter speed
and following the
motion conveys a
sense of movement
in the shot.

ISO 200
1 sec.
f/8
105mm lens

FIGURE 4.5
Long exposure
coupled with a
steady tripod
capture a portrait
of our pet scorpion
under a single
blacklight bulb.

ISO 200
1/2 sec.
f/22
70mm lens
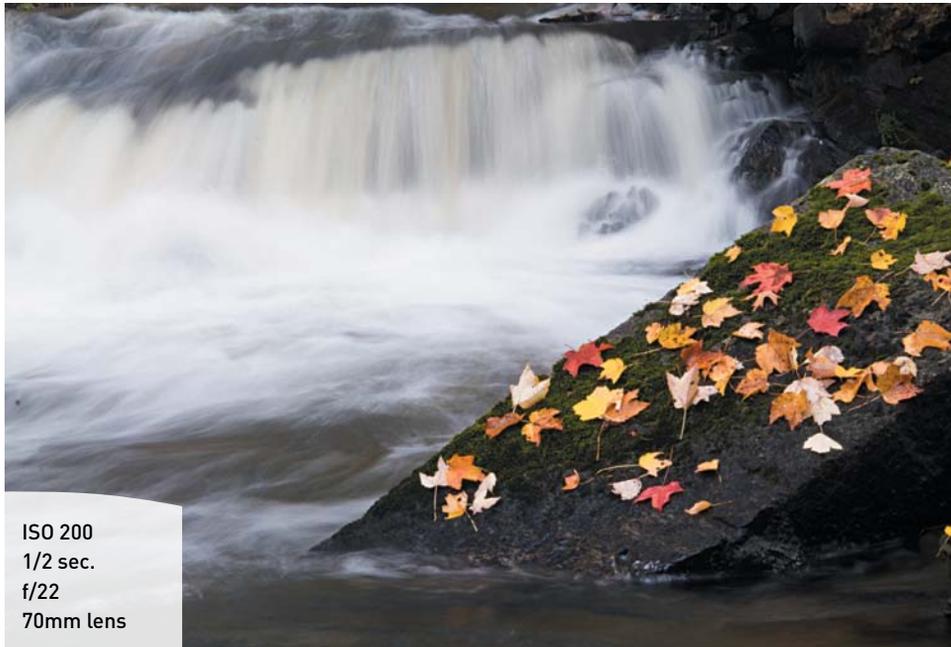
SHUTTER SPEEDS

A *slow* shutter speed refers to leaving the shutter open for a long period of time—like 1/30 of a second or less. A *fast* shutter speed means that the shutter is open for a very short period of time—like 1/250 of a second or more.

First, let's examine just how much control you have over the shutter speeds. The D5100 has a shutter speed range from 1/4000 of a second all the way down to 30 seconds. With that much latitude, you should have enough control to capture almost any subject. The other thing to think about is that Shutter Priority mode is considered a "semiautomatic" mode. This means that you are taking control over one aspect of the total exposure while the camera handles the other. In this instance, you are controlling the shutter speed and the camera is controlling the aperture. This is important, because there will be times that you want to use a particular shutter speed but your lens won't be able to accommodate your request.

For example, you might encounter this problem when shooting in low-light situations: If you are shooting a fast-moving subject that will blur at a shutter speed slower than 1/125 of a second but your lens's largest aperture is f/3.5, you might find that your aperture display in the viewfinder and the rear LCD panel will display the word "Lo."

This is your warning that there won't be enough light available for the shot—due to the limitations of the lens—so your picture will be underexposed.

Another case where you might run into this situation is when you are shooting moving water. To get that look of silky, flowing water, it's usually necessary to use a shutter speed of at least 1/15 of a second. If your waterfall is in full sunlight, you may get a message that reads "Hi" because the lens you are using only stops down to f/22 at its smallest opening. In this instance, your camera is warning you that you will be overexposing your image. There are workarounds for these problems, which we will discuss later (see Chapter 7), but it is important to know that there can be limitations when using Shutter Priority mode.

SETTING UP AND SHOOTING IN SHUTTER PRIORITY MODE

1. Turn your camera on and then turn the Mode dial to align the S with the indicator line.

2. Select your ISO by pressing the **i** button on the back of the camera.

3. Press up or down on the Multi-selector to highlight the ISO option and then press OK.

4. Press down on the Multi-selector to select a higher ISO setting, then press OK to lock in the change.

5. Point the camera at your subject and then activate the camera meter by depressing the shutter button halfway.

6. View the exposure information in the bottom area of the viewfinder or by looking at the rear LCD panel.

7. While the meter is activated, use your thumb to roll the Command dial left and right to see the changed exposure values. Roll the dial to the right for faster shutter speeds and to the left for slower speeds.

■

A: APERTURE PRIORITY MODE

You wouldn't know it from its name, but Aperture Priority mode is one of the most useful and popular of all the professional modes. The mode is one of my personal favorites, and I believe that it will quickly become one of yours, as well. Aperture Priority mode is also deemed a semiautomatic mode because it allows you to once again control one factor of exposure while the camera adjusts for the other.

Why, you may ask, is this one of my favorite modes? It's because the aperture of your lens dictates depth of field. Depth of field, along with composition, is a major factor in how you direct attention to what is important in your image. It is the controlling factor of how much area in your image is sharp. If you want to isolate a subject from the background, such as when shooting a portrait, you can use a large aperture to keep the focus on your subject and make both the foreground and background blurry. If you want to keep the entire scene sharply focused, such as with a landscape scene, then using a small aperture will render the greatest amount of depth of field possible.

WHEN TO USE APERTURE PRIORITY (A) MODE

- When shooting portraits or wildlife (**Figure 4.7**)

- When shooting most landscape photography (**Figure 4.8**)

- When shooting macro, or close-up, photography (**Figure 4.9**)

FIGURE 4.7
A large aperture created a very blurry background, so all the emphasis was left on the subject.

ISO 100
1/800 sec.
f/2.8
60mm lens

ISO 200
1/160 sec.
f/10
24mm lens

FIGURE 4.8
The smaller aperture setting brings sharpness to near and far objects.

ISO 200
1/40 sec.
f/11
60mm lens

FIGURE 4.9
Small apertures give more sharpness in macro images.

F-STOPS AND APERTURE

As discussed earlier, when referring to the numeric value of your lens aperture, you will find it described as an *f-stop.* The f-stop is one of those old photography terms that, technically, relates to the focal length of the lens (e.g., 200mm) divided by the effective aperture diameter. These measurements are defined as "stops" and work incrementally with your shutter speed to determine proper exposure. Older camera lenses used one-stop increments to assist in exposure adjustments, such as 1.4, 2, 2.8, 4, 5.6, 8, 11, 16, and 22. Each stop represents about half the amount of light entering the lens iris as the larger stop before it. Today, most lenses don't have f-stop markings since all adjustments to this setting are performed via the camera's electronics. The stops are also now typically divided into 1/3-stop increments to allow much finer adjustments to exposures, as well as to match the incremental values of your camera's ISO settings, which are also adjusted in 1/3-stop increments.

So we have established that Aperture Priority (A) mode is highly useful in controlling the depth of field in your image. But it's also pivotal in determining the limits of available light that you can shoot in. Different lenses have different maximum apertures. The larger the maximum aperture, the less light you need in order to achieve an acceptably sharp image. You will recall that, when in Shutter Priority mode, there is a limit at which you can handhold your camera without introducing movement or hand shake, which causes blurriness in the final picture. If your lens has a larger aperture, you can let in more light all at once, which means that you can use faster shutter speeds. This is why lenses with large maximum apertures, such as f/1.4, are called "fast" lenses.

On the other hand, bright scenes require the use of a small aperture (such as f/16 or f/22), especially if you want to use a slower shutter speed. That small opening reduces the amount of incoming light, and this reduction of light requires that the shutter stay open longer.

SETTING UP AND SHOOTING IN APERTURE PRIORITY MODE

1. Turn your camera on and then turn the Mode dial to align the A with the indicator line.

2. Select your ISO by pressing the **i** button on the back of the camera.

3. Press up or down on the Multi-selector to highlight the ISO option, then select OK.

4. Press down on the Multi-selector to select a higher ISO setting, then press OK to lock in the change.

5. Point the camera at your subject and then activate the camera meter by depressing the shutter button halfway.

6. View the exposure information in the bottom area of the viewfinder or by looking at the rear display panel.

7. While the meter is activated, use your thumb to roll the Command dial left and right to see the changed exposure values. Roll the dial to the right for a smaller aperture (higher f-stop number) and to the left for a larger aperture (smaller f-stop number).

■

ZOOM LENSES AND MAXIMUM APERTURES

Some zoom lenses (like the 18–55mm kit lens) have a variable maximum aperture. This means that the largest opening will change depending on the zoom setting. In the example of the 18–55mm zoom, the lens has a maximum aperture of f/3.5 at 18mm and only f/5.6 when the lens is zoomed out to 55mm.

M: MANUAL MODE

Once upon a time, long before digital cameras and program modes, there was manual mode. In those days it wasn't called "manual mode" because there were no other modes. It was just photography. Let's face it—if you want to learn the effects of aperture and shutter speed on your photography, there is no better way to learn than by setting these adjustments yourself. However, today, with the advancement of camera technology, many new photographers never give this mode a second thought. That's truly a shame, as not only is it an excellent way to learn your photography basics, but it's also an essential tool to have in your photographic bag of tricks.

When you have your camera set to Manual (M) mode, the camera meter will give you a reading of the scene you are photographing. It's your job, though, to set both the f-stop (aperture) and the shutter speed to achieve a correct exposure. If you need a faster shutter speed, you will have to make the reciprocal change to your f-stop. Using any other mode, such as Shutter Priority or Aperture Priority, would mean that you just have to worry about one of these changes, but Manual mode means you have to do it all yourself. This can be a little challenging at first, but after a while you will have a complete understanding of how each change affects your exposure, which will, in turn, improve the way that you use the other modes.

WHEN TO USE MANUAL (M) MODE

- When learning how each exposure element interacts with the others (**Figure 4.10**)

- When your environment is fooling your light meter and you need to maintain a certain exposure setting (**Figure 4.11**)

- When shooting silhouetted subjects, which requires overriding the camera's meter readings (**Figure 4.12**)

FIGURE 4.10
Using Manual mode allowed me to set the exposure for the bright detail in the leaf and let the background go dark.

ISO 250
1/50 sec.
f/5.6
60mm lens

ISO 200
1/320 sec.
f/11
400mm lens

FIGURE 4.11
Beaches and snow are always a challenge for light meters. Using Manual mode allowed me to prevent the scene from being underexposed.

ISO 100
1/350 sec.
f/8
30mm lens

FIGURE 4.12
Although the meter was doing a pretty good job of exposing for the sky, I used Manual mode to push the foreground elements into complete black silhouette and get richer color in the sunset.

SETTING UP AND SHOOTING IN MANUAL MODE

1. Turn your camera on and then turn the Mode dial to align the M with the indicator line.

2. Select your ISO by pressing the **i** button on the back of the camera.

3. Press up or down on the Multi-selector to highlight the ISO option, then select OK.

4. Press down on the Multi-selector to select a higher ISO setting, then press OK to lock in the change.

5. Point the camera at your subject and then activate the camera meter by depressing the shutter button halfway.

6. View the exposure information in the bottom area of the viewfinder or by looking at the display panel on the rear of the camera.

7. While the meter is activated, use your thumb to roll the Command dial left and right to change your shutter speed value until the exposure mark is lined up with the zero mark. The exposure information is displayed by a scale with marks that run from +2 to -2 stops. A proper exposure will line up with the arrow mark in the middle. As the indicator moves to the left, it is a sign that you will be overexposing (there is too much light on the sensor to provide adequate exposure). Move the indicator to the right and you will be providing less exposure than the camera meter calls for. This is underexposure.

8. To set your exposure using the aperture, depress the shutter release button until the meter is activated. Then, while holding down the Exposure Compensation/ Aperture button (located behind and to the right of the shutter release button), rotate the Command dial to change the aperture. Rotate right for a smaller aperture (large f-stop number) and left for a larger aperture (small f-stop number).

HOW I SHOOT: A CLOSER LOOK AT THE CAMERA SETTINGS I USE

The great thing about working with a dSLR camera is that I can always feel confident that some things will remain unchanged from camera to camera. For me, these are the Aperture Priority (A) and Shutter Priority (S) shooting modes. Regardless of the subject I am shooting—from landscape to portrait to macro—I am almost always going to be concerned with my depth of field. Whether it's isolating my subject with a large aperture or trying to maximize the overall sharpness of a sweeping landscape, I always keep an eye on my aperture setting. If I do have a need to control the action, I use Shutter Priority, my fallback mode. It's not really a fallback; it's more like the right tool for the right job. If I am trying to create a silky waterfall effect (**Figure 4.13**), I can

depend on Shutter Priority mode to provide that long shutter speed that will deliver. Maybe I am shooting a soccer game; I definitely need the fast shutter speeds that will freeze the fast-moving action.

ISO 200
1 sec.
f/22
70mm lens

FIGURE 4.13
A small aperture decreases the light hitting the sensor and requires a longer shutter for proper exposure, which is the perfect combination for silky water and a wide depth of field.

While the other camera modes have their place, I think you will find that, like me and most other working pros, you will use the Aperture Priority and Shutter Priority modes for 90 percent of your shooting.

The other concern that I have when I am setting up my camera is just how low I can keep my ISO. This is always a priority for me because a low ISO will deliver the cleanest image. I raise the ISO only as a last resort because each increase in sensitivity is an opportunity for more digital noise to enter my image. To that end, I always have the High ISO Noise Reduction feature turned on (see Chapter 7).

To make quick changes while I shoot, I often use the Exposure Compensation feature (covered in Chapter 7) so that I can make small over- and underexposure changes. This is different than changing the aperture or shutter; it is more like fooling the camera meter into thinking the scene is brighter or darker than it actually is. To get to this function quickly, I simply press the Exposure Compensation/Aperture button, then dial in the desired amount of compensation. Truth be told, I usually have this set to –1/3 so that there is just a tiny bit of underexposure in my image. This usually leads to better color saturation. (Note: The Exposure Compensation feature does not work in the Manual shooting mode.)

One of the reasons I change my exposure is to make corrections when I see the "blinkies" in my rear LCD. Blinkies are the warning signal that part of my image has been overexposed to the point that I no longer have any detail in the highlights. When the Highlight Alert feature is turned on, the display will flash wherever the potential exists for overexposure. The black and white flashing will only appear in areas of your picture that are in danger of overexposure.

SETTING UP THE HIGHLIGHT ALERT FEATURE

1. Press the Menu button, then use the Multi-selector to access the Playback menu (**A**).

2. Once in the Playback menu, move the Multi-selector to Playback Display Options and press OK (**B**).

A

B
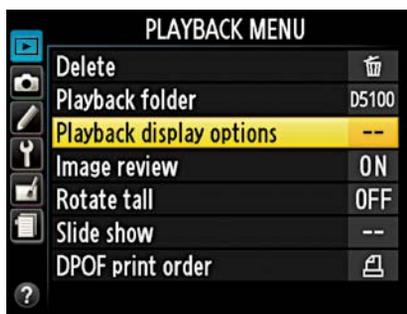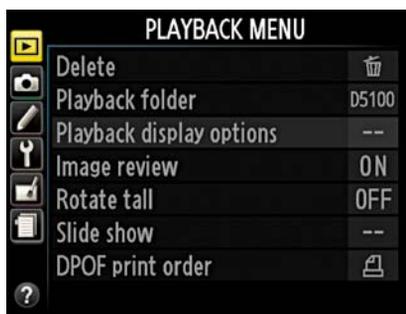
3. Move the Multi-selector down to select the Highlights option, then press OK to place a check mark next to the word Highlights (**C**).

4. Now move back up to select Done, and press OK again to lock in your change.

   ▪

Once the highlight warning is turned on, I use it to check my images on the back of the LCD after taking a shot. If I see an area that is blinking, I will usually set the Exposure Compensation feature to an underexposed setting like –1/3 or –2/3 stops and take another photo, checking the result on the screen. I repeat this process until the warning is gone.

Sometimes, such as when shooting into the sun, the warning will blink no matter how much you adjust the exposure because there is just no detail in the highlight. Use your best judgment to determine if the warning is alerting you to an area where you want to retain highlight detail.

As you work your way through the coming chapters, you will see other tips and tricks I use in my daily photography, but the most important tip I can give is to understand the features of your camera so that you can leverage the technology in a knowledgeable way. This will result in better photographs.

Chapter 4 Assignments

This will be more of a mental challenge than anything else, but you should put a lot of work into these lesson assignments because the information covered in this chapter will define how you work with your camera from this point on. Granted, there may be times that you just want to grab some quick pictures and will resort to the automatic scene modes, but to get serious with your photography, you will want to learn the professional modes inside and out.

Starting off with Program mode

Set your camera on Program mode and start shooting. Become familiar with the adjustments you can make to your exposure by turning the Command dial. Shoot in bright sun, deep shade, indoors, anywhere that you have different types and intensities of light. While you are shooting, make sure that you keep an eye on your ISO and raise or lower it according to your environment.

Learning to control time with the Shutter Priority mode

Find some moving subjects and then set your camera to S mode. Have someone ride their bike back and forth or even just photograph cars as they go by. Start with a slow shutter speed of around 1/30 of a second and then start shooting with faster and faster shutter speeds. Keep shooting until you can freeze the action. Now find something that isn't moving, like a flower, and start with your shutter speed at something fast like 1/500 of a second and then work your way down. Don't brace the camera on a steady surface. Just try and shoot as slowly as possible, down to about 1/4 of a second. The point is to see how well you can handhold your camera before you start introducing hand shake into the image, making it appear soft and somewhat unfocused.

Controlling depth of field with the Aperture Priority mode

The name of the game with Aperture Priority mode is depth of field. Set up three items an equal distance from you. I would use chess pieces or something similar. Now focus on the middle item and set your camera to the largest aperture that your lens allows (remember, large aperture means a small number, like f/3.5). Now, while still focusing on the middle subject, start shooting with ever-smaller apertures until you are at the smallest f-stop for your lens. If you have a zoom lens, try doing this exercise with the lens at the widest and then the most telephoto settings. Now move up to subjects that are farther away, like telephone poles, and shoot them in the same way. The idea is to get a feel for how each aperture setting affects your depth of field.

Giving and taking with Manual mode

Manual mode is not going to require a lot of work, but you should pay close attention to your results. Go outside on a sunny day and, using the camera in Manual mode, set your ISO to 100, your shutter speed to 1/125 of a second, and your aperture to f/16. Now press your shutter release button to get a meter reading. You should be pretty close to that zero mark. If not, make small adjustments to one of your settings until it hits that mark. Now, this is where the fun begins. Start moving your shutter speed slower, to 1/60, and then set your aperture to f/22. Now go the other way. Set your aperture on f/8 and your shutter speed to 1/500. Now review your images. If all went well, all the exposures should look the same. This is because you balanced the light with reciprocal changes to the aperture and shutter speed. Now go back to our original setting of 1/125 at f/16 and try just moving the shutter speed without changing the aperture. Just make 1/3-stop changes (1/125 to 1/100 to 1/80 to 1/60), and then review your images to see what a 1/3 stop of overexposure looks like. Then do the same thing going in the opposite way. It's hard to know if you want to over- or underexpose a scene until you have actually done it and seen the results.

With each of the assignments, make sure that you keep track of your modes and exposures so that you can compare them with the image. If you are using software to review your images, you should also be able to check the camera settings that are embedded within the image's metadata.

Share your results with the book's Flickr group!

Join the group here: flickr.com/groups/nikond5100fromsnapshotstogreatshots/

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