

Discovering the Basics of Macro and Close-Up Photography

In This Chapter

- ▶ Defining macro photography
- ▶ Running through the tools for the job
- ▶ Understanding how macro photography is achieved
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- ▶ Using your tools and know-how to get the images you want
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Life presents us with a multitude of potential photographic subjects. Some of them are grandiose and present themselves to you in a blatant way. Others are smaller and a little more difficult to discover; but some subjects can be so small, you may not recognize their potential when it's right under your nose.

By paying attention to the smaller details in life, you can open the door to a whole new realm of photography: One that presents photographic scenes equally as intricate as the grandiose, only smaller in scale.

If you're interested in exploring the complex details of the tiny world, looking for a new hobby, or trying to broaden your photographic abilities, learning the macro photography process will be rewarding and interesting.

In this chapter you find out exactly what macro photography is, how you achieve it, and why it's beneficial for you to know.



What Is Macro Photography?

The term *macro photography* has come to mean many things through time, such as very close-up images, life-size representations of subjects, or photography of magnified subjects.

In reality, *macro* means something very specific and relates to only a small percentage of the ideas associated with it. Macro-specific gear tends to be expensive, so many manufacturers have produced inferior products tagged *macro* simply to increase the size of the market.

By learning the ins and outs, you can know the difference between what's truly macro photography and what's not, which will help you make informed decisions when purchasing gear and producing images. Read on to find out what a true macro photograph is, what has been twisted and referred to as macro photography for the general consumer market, and the technical factors involved.

The 1:1 ratio

Macro photography means creating an image in which the subject is depicted on the digital sensor (or film plane) in its actual size. That means it has a magnification ratio of 1:1, and if you printed an image the same size as your digital sensor (36mm x 24mm for a full frame DSLR), the subject would appear life-size.

I photographed the subject in Figure 1-1 with a 1:1 magnification ratio using a full-frame DSLR camera, and printed it with the sensor's true dimensions. See for yourself that the subject is represented in its actual size.

Macro photography isn't a magnification but a true representation. However, the macro photograph appears to be a magnification because most prints are made to be much larger than the digital sensor's size, and you view most images on your monitor at a larger size as well. A macro subject appears huge in an 8x10 photograph compared to its actual size of about 36mm x 24mm.

Because the size of your DSLR camera's digital sensor is fairly small (relative to most subjects), photographers typically use macro photography

when shooting very small subjects. It's a method for showing detail that would be lost, or unnoticeable if the subject were photographed with less magnification.



100mm, 0.3, f/16, 640

Figure 1-1: A 1:1 ratio captures a life-size depiction of a subject on the camera's digital sensor.

The significance of a 1:4 ratio

In more recent years, the term *macro* has been modified to help manufacturers sell equipment that doesn't have true macro capabilities. (I tell you more about the ins and outs of equipment in Chapter 2.) By doing so, companies can now sell cameras and lenses (in the 35mm format) that enable you to capture a 1:4 magnification ratio — one quarter the magnification of a 1:1 — but refer to it as macro equipment.

The argument for a 1:4 ratio providing macro results is that when making a typical 4x6 inch print, your subject will appear life-size, or close to it. This theory was put to the test in Figure 1-2. As you can see in the 4x6 inch print, the subject appears close to its actual size; but when compared with the 1:1 ratio example in Figure 1-1, you can easily see that true macro photography provides a much more detailed depiction of a subject this size. Notice how much less of the frame's space is dedicated to the subject when using a 1:4 ratio.

The difference between a 1:4 and a 1:1 ratio provides a much different representation of your subject, although each may be referred to as macro, depending on whom you're talking to. To keep things simple, I consider anything with a magnification ratio of 1:1 or greater to be macro photography, and anything less to be close-up photography. (I tell you more about close-up photography in Chapter 2.)



100mm, 1/8, f/16, 640

Figure 1-2: A 1:4 ratio provides a life-size representation of the subject when printed at the typical size of 4x6 inches.

Running Down the Right Tools for the Job

You have numerous options for equipping yourself to capture great macro and close-up images. In fact, you may already have what it takes. Chapter 2 introduces a method for finding out just how close you can get to subjects while achieving sharp photographs of them, and for testing the quality of your results.



If you find that the limits of your gear fall short of where you want to be in terms of magnification, accessories are available to get you there:

- ✓ *Extension tubes or bellows* are hollow spacers that you place between the lens and camera body to increase your ability to focus on close-up subjects.
- ✓ *Tele-converters*, optical devices that you place between the lens and camera body, magnify the image collected by the lens before it reaches the digital sensor.
- ✓ *Reversing rings* are attachments that enable you to reverse a lens in order to create more magnification in the image it provides.
- ✓ *Close-up filters*, attachments that you position in front of a lens, enable you to achieve focus nearer to your subjects.

I discuss tools like these in detail in Chapters 4 and 6.

Macro-specific lenses, which enable you to achieve macro and close-up results without additional accessories or attachments, are ideal for minimizing the amount of gear you have to drag around with you, and for providing pure, unfiltered (straight from the lens to the sensor) results. These types of lenses are for the serious photographer who is very interested in creating amazing macro and close-up images. I talk about macro-specific lenses in Chapter 5.

In addition to lenses and lens attachments, other types of equipment can help you achieve high-quality macro and close-up images. In Chapter 6, you find out about different types of tripods, tools for lighting your scenes, blocking light or wind, items useful for adjusting fine details in a scene, and more.

You don't have to have a DSLR to shoot great macro and close-up images. If you prefer to work with a digital point and shoot camera, check out Chapter 7. There you'll find out ways to use manual settings for enhancing your image quality, composition, and message in macro and close-up scenarios. I also give you information on increasing the macro and close-up capabilities of your digital point and shoot camera.

Attaining Life-Size Representations of Your Subjects

Typically in photography, your subjects appear very small on the digital sensor (or film plane) in relation to their true size. A landscape photograph can cause mountains to fit comfortably into a 36mm x 24mm frame. A portrait fits a person's head into the same tiny frame.

When used in the traditional fashion, ordinary lenses can't produce an in-focus, life-size representation of your subject on your digital sensor. This is fine for subjects that are much larger than your camera's digital sensor; but if you want to photograph a very small subject, or a small detail of a larger subject, then ordinary equipment used in the traditional way won't cut it.

Focal length, focusing distance, and final output determine how large a lens can depict a subject. Understanding these three elements and how they affect your photography gives you a foundation for making wise decisions when purchasing macro and close-up equipment, and when creating your shots.

Focusing distance and focal length

A lens's *focal length* (distance from the lens to the digital sensor, when focused at infinity) is measured in millimeters and determines how a scene is depicted on your digital sensor. When a 50mm lens is focused on a faraway subject, the lens is 50mm from the digital sensor, and because a 50mm lens is a normal lens (in the 35mm DSLR format), it produces an image that's similar to how you see the scene with your own eyes. In order to focus on an object that's closer in distance, the lens must be moved farther from the digital sensor.

At some point, your normal 50mm lens reaches its minimum focusing distance, which falls short of depicting a life-size image of the subject. If you move closer to your subject at this point, you won't be able to achieve focus on it. Figure 1-3 provides an example of how focal length and your focusing distance are related.

Moving the lens farther from the digital sensor

The closer you get to a subject (while still achieving focus), the larger it appears on your camera's digital sensor. Therefore, when it comes to magnifying a subject, you're limited by the closest distance at which a particular lens enables you to achieve focus.

The idea behind macro photography is to move the lens farther from the digital sensor so that you can move closer to your subject. The farther the lens goes from the sensor, the closer you can get and the more magnified your subject appears in your frame.

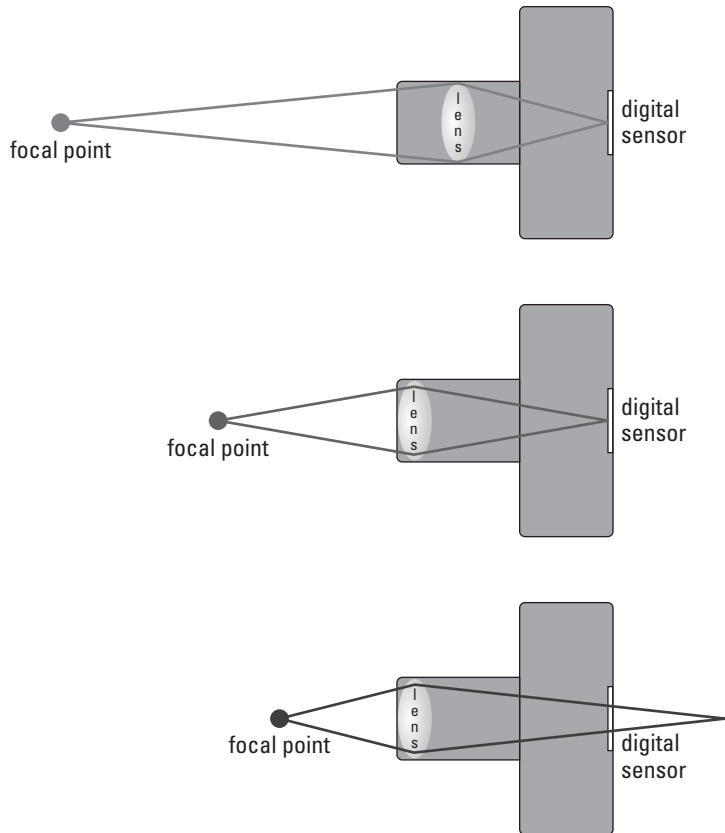


Figure 1-3: As the lens moves farther from the digital sensor, you can achieve focus at nearer distances.

Figure 1-4 reveals the difference between an ordinary 50mm lens and a macro-specific 50mm lens. The macro-specific lens is designed to enable the lens to move farther from the digital sensor, making a 1:1 ratio possible.

The appropriate viewing distance

Do you really need a true macro image? Some photographers argue that the final image — not the magnification ratio behind it — is the only thing worth worrying about. Make sure that you consider the intended usage of an image when determining whether you need a true 1:1 macro ratio to capture the necessary level of detail.

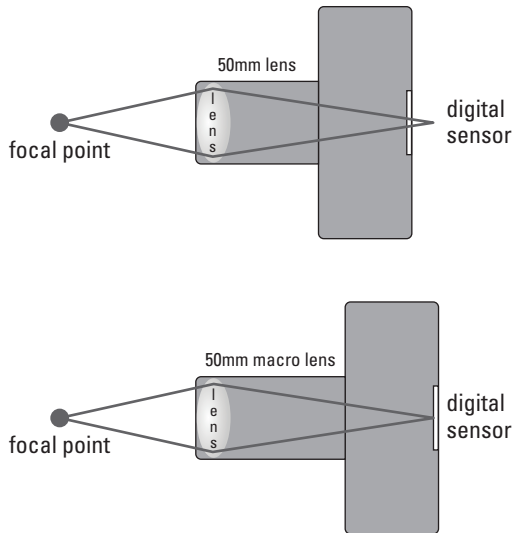


Figure 1-4: An ordinary lens falls short when it comes to creating macro images.

A 1:4 magnification ratio produces an image that depicts the subject at its life-size proportion when printed as a 4x6. If this is the size you intend to make your final print of an image, then everything should work out just fine. Viewers usually look at a 4x6 while holding it. If they wish to see more detail, they can bring the print closer to their eyes.

If that same print were hung on the wall in a gallery or a museum, then the viewer would have a difficult time seeing much detail at all. With a macro 1:1 ratio, the subject is depicted at its actual size in a 36mm x 24mm print. If you blow up that image to 4x6 inches, then your subject appears much larger than life-size when a viewer holds the print in her hand. She can actually stand back a bit and still see detail in the subject. If you blow the print up to 11x14 inches, the viewer will be able to see detail from a pretty far distance, whereas the 1:4 ratio would not be as effective.

Why any of this matters

If you're in a scientific field, such as forensics, or you're discovering and documenting new species in the less-explored parts of the world, you might need to create images that reveal the subject in its actual size.

You can also use macro techniques to create the “life-size” image of shredded wheat that appears on the cereal box, create a series of artistic pieces that show subjects in their true size, or just to brag to your friends that your subjects have so much detail in them because you photographed them at life-size on your digital sensor.

Knowing is simply better than not knowing, and perhaps the best reason to understand the difference between macro and close-up photography is so you know what gear you’ll need to produce the style of images you’re going for.

When you drive into a mechanic’s garage to have your car looked at, you probably throw a few key words out there to let him know you’re aware of the parts that make up your car and the purposes they serve. This helps you feel confident that you won’t get taken for a ride (so to speak), and it shows your knowledge of the heavy machine you operate on a daily basis.

The camera shop is a lot like the mechanic’s garage. You want to be prepared and knowledgeable before walking in, or you may feel overwhelmed by the camera jargon being tossed around by salespeople. This awkward moment can cause you to make poor decisions based on what a salesperson thinks is a good idea, rather than making wise decisions based on what you know is a good idea.



By understanding the difference between a piece of equipment that actually produces macro results, and one that just sort of gets you close to the action, you can ensure that you purchase what’s right for you and for the type of photography you’ll be looking to produce.

Lighting for Macro Photography

Lighting is an important factor in all types of photography, but the issues you encounter with light in macro photography can be somewhat more challenging than in most other types of photography.

As Chapter 4 discusses, focusing closer to your subjects causes some of the light you’re working with to fall off before it reaches the digital sensor. This can cause your images to be underexposed and requires that you adjust your camera settings (see Chapter 6) to compensate for the loss of light. But apart from losing light in this manner, you might also encounter situations in which your camera casts its shadow on your subject (because of its close proximity) or the lighting in your scene fails to serve your intended message.

Chapter 8 covers methods, equipment, and techniques for working with natural light, providing information on altering the quality, intensity, and direction of the sunlight, working in different weather conditions, and ensuring your colors are represented correctly based on the color temperature of the light you're working with. Mastering the art of shooting with natural light can be very beneficial, as it ensures you're prepared for and capable of creating beautiful macro and close-up photographs in any lighting conditions.

You typically use artificial lighting when shooting indoors, at night, or in dark, shaded areas where there isn't sufficient light for macro photography. The tools you might bring in to add light include the following:

- ✓ *Strobes*: professional quality flash lighting equipment for which you can easily alter the quality, intensity, and direction of light
- ✓ *Battery-powered flash*: small, lightweight flash devices that are great for travel and nature photography situations
- ✓ *Ring flash*: circular flash units that surround the lens and provide a flat, even light when your camera is extremely close to its subject

Chapter 9 tells you more about using lighting equipment for your macro and close-up photography.

Composing and Exposing Macro and Close-Up Images

When you find yourself in tight areas, or very close to your subjects, you'll find that each little movement has a dramatic effect on your composition. Changing your camera angle by one inch won't make a noticeable difference when photographing a wide landscape of a mountain range, but when your camera is within inches of your subject, a one-inch change in camera angle will alter your composition entirely.

When you're shooting close-up and macro images, you have less room for adjustment and so need to be precise about even minor changes in

- ✓ Focal length
- ✓ The position of your focal point
- ✓ Your camera's position and proximity to the subject
- ✓ Camera settings



Even the tiniest changes in your camera settings or set-up can have major ramifications to your macro or close-up composition.

Chapter 10 gives you detailed information about composing macro and close-up images, and Chapter 11 tells you about the camera exposure settings in detail. Each of these elements impacts your composition and the final look of your photographs.

Seeing Macro's Mega-Potential

Macro photography is a valuable scientific tool and an art form. It can be technical and beautiful at the same time, and can be put to use by all sorts of photographers.

Getting in close to a subject to reveal its intimate details can prove very useful, whether you're selling the sparkles in a diamond ring or selling your own message of how rust and decay is the inevitable fate of manmade consumer products. When working with very small subjects, macro and close-up techniques enable you to reveal the details necessary to create compelling images that draw viewers in.

I shot the image on the left in Figure 1-5 with an ordinary 100mm lens at its closest focusing distance, providing the maximum level of magnification for the subject. The resulting photograph doesn't have nearly as much impact as the image on the right, which I photographed using a 100mm lens with macro capabilities. The subject really comes alive when all of its intimate details can be seen clearly. People aren't used to seeing so much detail in small things, and providing that new vantage point can help to grab their attention.



100mm, 1/250, f/9, 400



100mm, 1/250, f/5.6, 400

Figure 1-5: Showing more detail draws more attention from viewers.

Macro photography can reveal the process of nature taking its course by giving viewers a detailed glimpse of a bee harvesting pollen from a flower. It can reveal tiny patterns in natural subjects that give an idea of universal order. A very close look into the rough texture of a kiwi fruit can give a viewer the sense that he could walk through the tiny world as if it were a massive forest.

Scientists use macro photography to learn from tiny subjects and to educate students about what they've discovered. The crafty work of artists can reveal tiny perfections and imperfections in items such as jewelry, clockwork, and spider's webs. Water drops can reveal detailed reflections of their surroundings, creating the illusion that each drop contains its environment.

There's a whole world of photographic subjects out there that you've overlooked, stepped on, and passed by. Take a moment to notice those things around you, and you'll find that your own back yard is full of interesting photographic opportunities.