

Macro Photography

I enjoy macro photography for 2 main reasons, firstly I love seeing the crazy things in nature that are normally too small to see clearly with the naked eye and secondly it's a type of photography that can be done almost anywhere as there is always something small around. Even if it's a bee, a wasp or tiny grains of salt there can be hidden detail in everything and it's just a case of finding it.

What is Macro photography?

It is close-up photography. The classical definition is that the image projected on the "film plane" (i.e., film or a digital sensor) is close to the same size as the subject. On 35 mm film (for example), the lens is typically optimized to focus sharply on a small area approaching the size of the film frame. Most 35mm format macro lenses achieve at least 1:2, that is to say, the image on the film is 1/2 the size of the object being photographed. Many 35mm macro lenses are 1:1, meaning the image on the film is the same size as the object being photographed.

With a crop sensor camera you would need an object of only 22 x 15mm to fill the sensor and give you a 1:1 reproduction

Examples

There are many fantastic macro photographers in the world. For me, I find most of my favourites on flickr where there is a whole host of people photographing anything from insects to water drops.



<http://www.flickr.com/photos/dalantech/>



<http://www.flickr.com/photos/lordv/>

So what do you need ?

Well nearly all cameras can take close up shots to a certain degree of magnification. Most Point and shoot cameras have a macro function where it will allow close focusing to the subject. With SLR cameras it depends on the lens you are using.

The options out there for gaining greater magnification are Dioptres, Extension tubes, reversed lens and of course dedicated macro lens. This list is pretty much in price order and to some extents image quality or too.

Dioptres, these are magnifying glasses that screw or clip onto the end of the lens, reducing MFD and increasing magnification. They are cheap and do end up degrading image quality.



Extension tubes, these range in price from the cheap plastic tubes to full contact tubes that allow full control of the lens. The function of the tubes is to move the lens further away from the sensor which in turn reduces MFD and increases magnification. There is no glass in extension tubes so image quality is not degraded like it is with dioptres.

With extension tubes and dioptres you lose the ability to focus to infinity.



Reversing a lens onto the front of another lens or directly onto extension tubes can provide some excellent results. This is where you take a lens and mount the front element onto the front element of a second lens. This can be done with tape, just holding it in place or using a special connector ring. It leaves the rear element and contacts of your lens exposed and would require you to stop the lens down, this will result in a dark viewfinder and make focusing more difficult.

Macro lens, these are dedicated lens which allow smaller focusing distances and most good macro lens will give you 1:1 reproduction at their MFD.

Focal length of a macro lens affects the working distance you have, so with a 60mm you would have a working distance of around 9 inches. Moving up to a 150mm macro lens you would have a min working distance of around 12 inches. Now obviously this varies depending on which make and model you are using.

A greater working distance is beneficial in several ways, firstly if you are shooting insects it gives you more room to move without scaring them. It also allows more light as you won't be blocking the subject with your lens



Other important pieces of equipment are a tripod and a flash. A tripod like in any form of photography helps stabilize the camera and aid in getting a nice sharp shot. With insect photography this can be a bit of a pain as setting up and moving around will normally disturb the critter you're trying to shoot. This is where flash comes in, by using the flash you can create a virtual shutter that can allow you to freeze the action and get a nice sharp shot.

The intensity of light that a flash produces stays constant whatever power setting it is set to, but what does change when you lower the power is duration of the flash. If you can use a lower power setting, this will give a faster pulse and will help to freeze faster moving subjects.

There are various flash units for macro but I won't go into detail on them here. Here are a few examples



So now you have all the gear, how do you take macro shots ?

Well the same way as you take any other type of shot. You still have to expose and compose the shot the same as you would any other shot but with macro photography you are more susceptible to the effects of depth of field.

Depth of field affects every type of photography but with landscapes a 50mm lens at f11 focusing on a subject 30m away will give you great depth of field resulting in a image which is sharp from 8.5m to infinity. With macro however 50mm @f11 and a MFD of 30cm will give you a sharp image from 29.4cm to 30.7 a DOF of around 1.28cm. This makes getting the bits you want in focus difficult and then forces to you to consider composition and camera position even more.

Focusing

Focusing is a tricky part and generally manual focus is used. Turn the lens to its closest focus point and maximum magnification then start to focus by moving towards the subject. Start farther away rather than close in, moving back and forth to get the focus you require. Turning the focus ring will result in changing magnification.

Try to place the lens just beyond the point where it will be in focus, then slowly move in. One goal, of course, is to not whack the subject with the lens.

When focusing on your subject, there are two things you must always keep in mind.

1) The angle of the subject to the lens. This will determine what is in focus, and what is not. By moving the camera's focal plane more perpendicular to your subject you can create the impression of greater DOF by getting more of the subject in focus.

2) When determining focus in the viewfinder, look at only the most important part of your subject. When focusing on insects, I look only at the eyes. I do not pay attention to the rest of the insect, as I already know what will be in focus and out of focus based on the angle of the insect to the camera. Once I know I have the eyes in focus, I will take the shot.

For insects, the eyes are incredibly important. With rare exceptions, if the eyes lack focus the shot is lost.

Finally there are other devices which you can use such as macro rails and bellows, which allow fine control over focusing and magnification and really the possibilities are endless. Google and photo sharing sites are great sources of knowledge so read up on techniques and equipment and go out shooting.

Have fun

Some points of reference

Basic Macro Tutorial - <http://www.bmpt1.com/>

<http://homepages.tig.com.au/~parsog/photo/macro.html>