

MACRO PHOTOGRAPHY IN THE FIELD

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They say a picture tells a thousand words, so it is that Macro photography is a very useful tool out in the field, whether it is for photographing insects, flowers or describing habit or habitat. This article refers to use of DSLR (Digital Single Lens

Reflex) cameras.

Manual setting is preferred as this gives you more control over the aperture and shutter speed. A 40 mm macro lens is good for really close up shots, with finer details. If you haven't got a macro lens but still want to capture the specimen a regular 52 mm lens can also be used, along with the close-up setting on the camera mode dial.

The light needs to be even with little or no shadows for the best results. Cloudy or soft light conditions such as at sunrise or near sunset are ideal as full sun can cast shadows and dark spots over the specimen you are photographing.



Macro lenses come in various focal lengths. Short macros are typically lenses in the 30-50 mm range. Standard macro lenses are in the 60-105 mm focal length range, and tele-macro lenses are in the 150-200 mm range, since they are built specifically for close-up photography. They work really well at short focal lengths as well as longer ones.

A true macro lens is designed to create true 1:1 (life-size) replications of very small things on the image sensor of your camera. If you have a coin that is 2 cm diameter, a high quality macro lens will be able to take a photograph of that coin wherein it is literally the same size on your camera's image

sensor. Taking these types of photographs requires a host of light-bending optical gymnastics on the part of your lens. In the process there are almost always trade-offs in image sharpness and overall light-gathering ability, which is why macro lenses cost so much money, because they contain special glass elements to minimize any optical imperfections.

I mostly use close-up filters when I am out so that I don't have to change lenses and this makes it easier to photograph a wider variety of subjects; these come in packs of four from +1 zoom up to +10 and cost around \$60 for a set of 4 (+1, +2, +4, +10) from Photoshack in Auckland (www.photoshack.co.nz).

Introducing close-up filters



So what is a close-up filter? Simply put, it's basically a magnifying glass that you screw onto the front of your camera lens. It can turn a 35 mm lens into a 10x zoom macro lens.

Close-up filters rely on a single curved piece of glass that bends light in such a way as to enlarge whatever you are viewing through the camera lens, just like a magnifying glass alters light to make objects appear bigger. This is an easy inexpensive way to get a macro lens without changing lenses.

Close-up filters rely on a very simple, very old, idea to make it possible for any normal camera lens to focus on objects that are, as their name implies, very close to your lens. All lenses have a minimum focusing distance, which is as close as you can get to an object and still have it be in focus. A +2 filter will make it possible for a lens with a minimum focusing distance of 1 metre to now focus on something 0.3 metres away. A +10 filter would decrease the minimum focusing distance to .09 meters. The math is slightly complicated, but suffice it to say the higher the number on your filter, the closer your lens will be able to focus.

Working with camera flashes and torches

Using a flash will allow you to shoot at a reasonable speed, yet enable you to keep the aperture on a high f/11 for sufficient depth of field.



If you are in the shaded bush with gloomy light, you will need a good bright torch, as well as a camera flash covered with a diffuser. These fit over the flash to diffuse the harsh bright light. A diffuser can be anything soft, white and pliable to fit over the flash; a soft piece of thin wrapping foam works well as does baking paper.

Just tape over the front of and around the edges of the flash. This is so the camera can pick up details of the specimen without the harsh shadows of the flash.



Exposure (shutter speed): 1/200
Aperture: F16, **ISO** 100

The photo (left) was shot with a camera flash with a diffuser, which, in a shady part of the garden, allowed me to capture the moving insect. A flash allowed me to keep the aperture on a high f/16 without

sacrificing shutter speed (exposure). Having the ability to keep the shutter speed at a fast 1/200th of a second allowed me to capture the moving insect sharply. It also allowed me to hand hold the camera without the use of a tripod. Like many macro photographers, I find a tripod really restrictive when photographing insects.

Experimenting with Extension Tubes



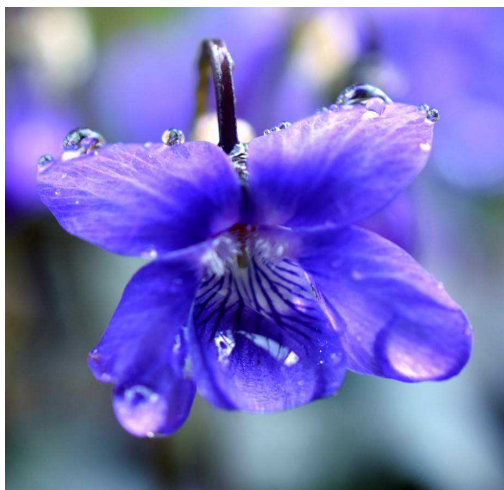
Extension is the term used to describe the distance that the front element of your lens can be moved forwards. The further forward the element, the closer your lens can focus to your subject.

Extension tubes work by increasing the extension of your lenses. An extension tube is a hollow, light-tight tube that fits between your lens and your camera mount. It moves your lens further from the camera, and the front element closer to the subject. The closer you can focus, the more magnification you get.

The biggest drawback of these extension tubes is aperture control. If your lenses don't have manual aperture rings (i.e. the aperture setting is controlled by the camera) then the lens aperture will remain locked open at the widest aperture. While wide apertures can be used creatively, the narrow depth-of-field you get with close-up photography means that you usually need to stop down to get a large enough zone of sharpness to suit the image.

However, if you have a lens with a manual aperture ring, this may not matter too much, as you can stop down manually (although the viewfinder will get darker as you do so, making it hard to see at small apertures). An advantage of extension tubes is that you can use them with any of your lenses. If you buy a set, you can join two extension tubes together to give you even more magnification.

When to use a tripod



Use a tripod if you cannot shoot faster than the length of your lens. For example, this photograph was taken with the use of a tripod and a remote release had a slower shutter speed of 1/30th of a second. A general rule of thumb for hand held macro shots, is that if your lens is 100 mm focal length, then the shutter speed needs to be at least 1/100th of a second or faster to achieve a sharp photograph. Therefore, if you are shooting in a shady spot of the garden, a tripod will achieve good results for things that are steady like flowers. However, this can be a bit restrictive with fast-moving insects, such as the insect image above, which was taken with a flash.

Technical tips

The key thing to note in macro photography, is that depth of field depends primarily on two factors: aperture value and magnification. For any given aperture value, the higher the magnification ratio, the smaller the depth of field will be, so the depth of field tends to be very shallow for macro photography (higher f-stop).

From an application perspective, focus on the main point of the subject that you want to target. If your camera supports live view, use it to zoom-in and ensure that the image is sharp. Set the aperture around f/11 (experiment to find the optimal setting for your lens, filter, and extension tube combination). If you want a greater depth of field (so that more of the subject is in focus) use a smaller aperture like f/16 or f/22.

Another thing to note is that when photographing objects that tend to move suddenly, like insects, a higher shutter speed is an advantage, to stop motion and freeze the subject. As a rule of thumb try not to drop below 1/200th shutter speed.

Learn to focus manually



Learn to use manual focus when shooting insects. As the bee was constantly moving, this was shot in our garden when the borage was in flower. I found turning off the lens' automatic focus (AF) function made the job so much easier.



This macro was taken with a Nikon D5300 DSLR camera, a Nikon Nikor f/2.8 Macro lens and Nikon on camera flash with a diffuser and a torch in native bush at Dansey Road, Mamaku.

Exposure (shutter speed):

1/400

Exposure Program: Manual

Metering Mode: Pattern

ISO Speed: 200

Aperture: f/11

Focal Length: 100 mm

Aperture Settings



Exposure (shutter speed): 1/200
Aperture: f/16
Focal Length: 40 mm

This huntsman spider on a leaf was at Okere Falls Scenic Reserve, seen during an evening group visit. For this shot, the ISO was increased to 500 speed so I could keep the aperture at a higher F number of f/16.

ISO Speed: 500
Exposure Program: Manual
Metering Mode: Pattern

Shutter Speed This damselfly was shot in Rotorua Government Gardens in late



afternoon with an on-camera flash and natural light. When shooting macro, shutter speed is more important than ISO. Because this damselfly was moving around a lot, I increased the camera ISO speed to 400, so I could shoot with a faster shutter speed of 1/400th of a second.

Exposure (shutter speed): 1/400 **ISO Speed:** 400
Aperture: f/16 **Exposure Program:** Manual
Focal Length: 40 mm **Metering Mode:** Pattern

speed of 1/400th of a second.

Make good use of backlight



Make good use of morning sunlight to capture detail not seen otherwise. This particular photograph was taken at 8.30 am in our garden just after it had been raining, with strong sunlight coming from behind the wasp. While many photographers don't like shooting into the sun, I find when it comes to macro photography, it can often help to highlight an insect's tiny hairs.

Learn to see



This is what I've always imagined fairyland to be like. However, in actual fact it's a macro shot of the tiniest moss, on the paving stones in our garden. This is the beauty of macro photography, in that you get to really appreciate the smaller things in life and see them in a whole different light.

Exposure (shutter speed): 1/40

ISO Speed: 200

Aperture: f/8

Exposure Program: Manual

Focal Length: 40 mm

Metering Mode: Pattern

Never give up

If you don't photograph the shot you initially want, that's OK. Keep trying and have



fun. This was shot in our garden just before sunset. The cicada was sitting on top of our wooden archway so busy **stridulating** he was totally oblivious to the camera.

Exposure (shutter speed): 1/1250

ISO Speed: 400

Aperture: f/5

Exposure Program: Manual

Focal Length: 400/10 mm

Metering Mode: Pattern