

## ***Macro photography***

When an object is projected at life-size onto sensor, it is at “1:1 magnification”. If you have a one-inch subject, its projection at “life-size” would be one inch on the camera’s sensor (sensor normally under 1.5 inches). If an object is projected at half of life-size (say, that one-inch object takes up just 1/2 inch of the sensor), it is at 1:2 magnification. Macro is normally defined as between 1:10 and 1:1.

### ***1. Working Distance***

Working distance is the distance between your sensor and your subject at the closest possible focus distance of your lens. The longer the working distance, the easier it is to stay away from your subject (useful if that subject is skittish or dangerous).

A working distance of ten inches means that, with a camera/lens combo of eight inches long, the front of your lens will be two inches from the subject at its closest focusing distance.

Macro lenses are designed to have a close focusing distance. With 50 mm macro lenses this can be very close. Longer macro lenses have longer working distance eg Nikon 200mm f/4

*To test your nearest focusing distance, put the camera on manual focus, turn the focus ring to the closest focus and move closer to the subject until it comes into focus.*

### ***2. Choose the Best Lens***

The focal length of macro lenses ranges from 50mm to 200mm. Although many zoom lenses boast a macro setting, these are usually less than half life-size.

A 50-60mm lens is suitable for general macro work but if you want greater subject-to-lens distance a 100mm lens will give you this at a price.

For creatures like butterflies and dragonflies, lens-to-subject distance becomes even more important so focal length needs to be greater 180, 200 mm.

### ***3. Make a Standard Zoom Focus Closer by Adding Tubes***

Extension tubes fit between the rear mount of the lens and the camera body to make the lens focus closer and therefore produce a much bigger image of a small subject.

*Disadvantage:* you lose light and with an extension tube fitted and you lose the infinity end of your focusing range. Add more tubes and this becomes increasingly more limited.

### ***4. Add a Dioptre to Make a Lens Focus Closer***

Close-up filters are single-element lenses that look like magnifying glasses.

These filters screw into the front element thread and can provide an inexpensive alternative to splashing out on a macro lens.

They come in a variety of strengths that are measured in dioptres.

Close-up filters are often available in sets of +1,+2 or +4 dioptre magnification.

Dioptres are also available to fit Cokin style square filter systems.

Add a dioptre to a bridge camera or a compact to achieve real close-up shots.

*Disadvantage* – you lose quality.

### ***5. Use Apertures to Control Depth of Field***

To get the most out of available depth of field, select a small aperture like f/16 or even f/22. You will find that at half-life size the depth of field you can achieve at f/22 will be only around 15mm at best. On the other hand you may wish to go to the other extreme and show as little sharpness as possible by opening up to full aperture like f/2.8 or f/4.

One advantage of the latter option is that any out-of-focus highlights will show as circle-like bubbles that can look very attractive and backgrounds can be thrown out of focus to give a pleasing even backdrop .

### ***6 Flash and other lights***

It is often helpful to use flash to give a better exposure to your subject but you need to avoid too dark backgrounds and hence use as fill-in.

Set camera to the correct exposure for ambient light and then underexpose by around one to two stops (experiment with this). Using the flash on ETTL should result in a good exposure but again you may

need to turn the flash output compensation down. If you want to shoot moving subjects, you will need to set your flash gun to High speed setting. There are various good small flash guns that allow this to be done quickly.

Although on-camera flash can be used for some subject, a dedicated flash gun is useful. There are several special set ups for macrophotography including ring lights and multiple flash arms. You can also use continuous light sources (ring setups and off-camera lights)

Reflectors are an essential part of most nature photographers' kit)

### **7. Method of focus**

There are several methods of focusing for macro work.

For static objects, then use a tripod, focus manually using live view to check that it is critically sharp. Moving object including flowers on a windy day etc, set focus mode to continuous and use the viewfinder to keep the object in the centre of the field.

### **8. Fine-tune Macro Pattern Compositions**

Although you can crop things using software later, it is best to fine-tune composition in-camera at the time of shooting as much as possible to ensure you have what you intended.

### **9. Point of Focus**

It is imperative to consider the actual point of focus when working close-up with tiny subjects. You can dramatically change the appearance by where you chose to focus.

### **10. Check LCD Panel**

Use your rear LCD facility to ensure focus is correct and depth of field adequate. Look carefully at the corners to make sure there are no intrusions etc etc. Tidy up any unwanted debris in the scene and make sure that your composition concentrates on your subject as intended.

### **11. Use a 'Third Hand'**

A 'third hand' device is an essential macro photography accessory. It will enable you to support or position subjects just where you want them. Small sticks with bendy wire or purchased supports.

### **12. Backgrounds**

Check backgrounds carefully – an out-of-focus bright object in the background can ruin a shot. For good pictorial macro shots your subject needs to be a good distance from the background. You can use artificial backgrounds to give a more pleasing result

### **13. Focus Stacking**

A technique that is becoming very popular especially as it can be done in camera with Olympus cameras. Otherwise it depends on taking a series of images focusing through the image and combining these either in special software Zerena or Helicon or in Photoshop. Generally a wide aperture is used so the backgrounds are diffuse

Link to All About focus Stacking: <http://extreme-macro.co.uk/focus-stacking/>

### **Instructions for Taking Photos and then Focus Stacking in Photoshop**

1. Take photos using Manual focus, Manual exposure, a Tripod, f2.8 or equivalent, Focus Rail or changing Focal point with camera
2. Import photos into Adobe Lightroom and develop one image i.e. Exposure, noise reduction, clarity (maybe). Do not crop at this stage
3. Select all images and sync the changes from the first image to all of them
4. Make sure all still selected and Right click - Edit in - Open images as layers in Photoshop
5. Select all layers
6. Select - Edit \ auto align
7. Edit \ auto blend. Select focus stack
8. The resulting image will be large, depending upon the number of images you started out with. So you may need to flatten image before processing with any other adjustments you may wish to do.
9. You may have to clone out defects in the final image