Macro Photography tips and tricks

Macro photography is seen as 1:1 (life size) or bigger. Some would include 0.5:1 (half-life size) also as macro, but it is generally not accepted as such. Anything less than 1:1 must be viewed as close-up photography. No zoom lens I know of will provide true macro magnification used on its own irrespective of what is printed on the lens barrel.

Both above images taken with Canon EOS 1D MkIV and 180mm Macro lens with 25mm extension tube, 1/250, f14, ISO 200

The difference between true macro and close-up photography is demonstrated by the dragonfly images, close-up on the complete insect, then full macro on the head only. He was just finishing off a small white moth at the time.

Macro or close-up can easily be done in your garden, or indoors in your house. Both macro and close-up photography require a very high degree of sharpness and crispness, extreme Depth of Field (DoF) control and very good color rendition.

There-in lays the biggest challenge of proper macro photography – the extremely narrow DoF resulting from the short working distances when focus is set to nearest limit, makes accurate focus and proper DoF selection crucial to obtaining the desired end result. Using a 180mm lens on a 1.3x crop sensor (my Canon EOS 1D MkIV), at a minimum focus distance of 47cm, and an aperture of f3.5, results in a DoF of only 0.5 mm, and at f16 it is still only 2 mm!! An added advantage is the crop sensor effect, it allows for the changes in the perceived focal length of your lens. If you are not using a true macro lens, and going for close-ups with you regular zoom or prime lens, then the issue will not nbe as severe since your minimum focus distance will usually be around 45cm. Check the specs of your lens, and test it before you attempt serious small insect stuff.

For some extra magnification I sometimes use a 25mm extension tube on my 180mm macro lens. It does allow me to use a shorter minimum focus distance, and with the standard longer stand-off distance from the clean 180mm Macro lens it is easier to handle, not scare insects away. Remember with shorter focal length lenses, such as the Sigma 105mm macro, your minimum distance is 31 cm, and with an extension tube it could less than half of that. Makes it easier to scare away those skittish insects. Gets worse if your macro lens is of the 50 or 60mm versions.

To calculate the added magnification when adding an extension tube, use the formula : Tube length, divided by focal length = added magnification eg, 12mm tube / 50mm lens = 0.24x added. If a 180mm Macro lens at 1:1 is used, 12 / 180 = 0.067 thus 1:1.067 Therefor ET's are more effective when using shorter focal length lenses.

With the short lecture out of the way, here are some tips and tricks I've learned over the years.

Let me start of by saying that I do all my macro work hand held and "in the field", ie no light tents, or freezing insects and then placing or posing them, or horrors of horrors; gluing them to a twig for tight macro head and eye pics. Please be ethical in your macro work and never harm or seriously disturb their habitat like destroying spider webs and so on.

My personal preference, used most of the time as basic start setting, is Manual mode, shutter speed (ss) of 1/250, aperture f16, with slight changes according to need and use of flash.

On the subject of flash, use what you have, or get specialist macro flashes such as a ring flash or twin-head flash. I use my standard EX 430 MkII flash gun mounted on a self-made bracket which allows the flash to lie just above the lens barrel, at a slight kink and with a diffuser fitted to the flash head. Nice soft directional lighting and I can change the angle or rotate the bracket as I like. Just make sure you can get enough light onto your subject, and that the flash is not screened by the lens hood or lens barrel. Will cast an ugly shadow over your subject.

Nothing stops you from using any camera mode setting though, pick one you feel works best. Camera mode (Tv, Av, M) will be dictated by the conditions and type of subject material.

If you don't use M mode, then I suggest aperture priority mode if DoF control is required (usually) and in low light conditions where stable support is available which will prevent camera shake at slower ss. If you have a macro lens with stabilization it will be handy

Use shutter priority where subject movement needs to be frozen or adding for e.g. induced wing blurring effect on flying insects. Flash helps to freeze movement but not all of it.

Manual mode can be used where conditions require the use of external light sources, such as flash. Set manual mode to achieve desired ss effect, and aperture to accommodate DoF requirements. Correct exposure will then eb applied by your external light source. An E-TTL setting on your flash gun usually works well enough.

Metering – select partial for accurate metering from a certain area of the subject, but evaluative / matrix / 3D metering can also be used. I have found that spot metering can be too specific leading to exposure errors.

Either AF or MF can be used, I use manual focus for about 80% of my macros - consider subject type, basic shape, static or moving, support system in use etc.

- When using AF – note that the selected AF point won't always align with the section of the subject required for sharp focus or might be too big giving accurate focus on for instance the eyes of a fly, therefor MF can be used to fine-tune the focus. Some lenses allow full MF override when in AF mode.
- Focus and recompose is not a technique to be considered due to the short working distance and resultant narrow DoF – the parallax error can result in soft images.

ISO – high ISO can steal textures and detail if NR needs to be applied to limit digital noise. Use high ISO setting with caution. Generally, ISO 800 should be considered as maximum. Pro-series bodies can handle high ISO better than entry and mid-range bodies, test your body under typical conditions and determine your own ISO limit.

WB setting to suit conditions. Remember that most flash heads are daylight balanced.

Viewpoint and angle of view play a major role in creative presentation of the subject. Always consider all the angles, from side-on, three-quarter view, head-on, top, even bottom if available. Again, refer to the dragonfly images.

For maximum magnification use MF; set the focus ring to its closest focus setting, then focus on the subject by moving the camera body forwards and backwards. Note that very small increments are required due to sensitiveness of focus plane and narrow DoF. With some practice you can master this focus by movement quite easily.

You can use AI servo and fast frame rate to compensate for camera movement. This is not of much use if flash is required, most flash guns cannot recharge that quickly.

Use a bounce card on a hot-shoe mounted flash head angled upwards to minimize harsh lighting and hot spots.

A PL filter will help to reduce glare and saturate colors.

If DoF is very sensitive, don't use minimum focus distance, sacrifice a little magnification and increase DoF by increasing the working distance. You can always crop the image a little afterwards during processing.

Approach insects slowly, with camera already in proper hold. Do not adjust your hands on the camera body when up close to insects, it may scare them away. Rather pull away and approach again. Some insects might be scared off by your shadow falling across them, especially if your body is also in close proximity to the subject. This is true for butterflies and small hunting spiders.

Align the camera with front lens element parallel to subject focus plane if you're going for a side-on shot or want to include the length of the subject. Skew alignment will result in softer edges towards one side – DoF is limited and will show up clearly on flat subjects due to the parallax error. Butterflies with their wings closed will easily suffer from this. Refer to the image of the two mating butterflies, wings parallel to the focus plane.

Learn to use both eyes, it helps to locate the subject in the viewfinder when working distance is minimal.

Focus at a distance, then refocus as you move closer to the subject, otherwise it may be difficult to pick it up in the viewfinder due to the narrow DoF and angle of view. Subjects with a predictable travelling plan – pre-focus and wait for them to reach a specific point for a quick refocus/focus confirmation and taking the shot. Typically waiting for bees to visit the ideal flower, insects moving along a branch, etc. This what I did with the bee approaching the yellow flower, I focused on the flower, and waited for him to make it his next stop, and when he did I adjusted the focus manually and tripped the shutter. Have captured many bees this way.

Mating butterflies, close-up with Canon EOS 1D MkIV and 180mm Macro lens, 1/300, f13, ISO 400.

Canon EOS 1D MkIV and 180mm Macro lens, 1/300, f20, ISO 800

By choosing a subject with a background more than one meter behind. And setting manual settings which will cause three to four stops underexposure without flash, you can then expose the subject correctly against a dark or black background. Refer to the yellow flower with rain drops. Getting out there right after a rain shower can

yield some interesting images with the droplets on flowers and insects, such as the yellow flower and the fully wet honey bee.

Set up your camera before approaching live subjects, including confirming metering, mode and settings for the effect required. Learn familiarity to change mode settings without removing your eye from camera viewfinder or having to move away from subject.

Remove the lens hood with skittish insects; this effectively lengthens the distance of the front of the lens to the subject. Beware however of lens flare and damage to front element.

Trying to capture insects in some form of activity can be a challenge, luck must be in your side, along with some knowledge on their behavioral patterns, can help you to capture that nice moment of a Crab spider feasting on his catch, or having a showdown with an ant.

Part of the thrill with macro photography is to locate the subject in its natural habitat, then plan and set up the photo in a few seconds and capture the moment.

If you wish to learn more about the art of macro photography, contact me to attend one of my specialist macro photography workshops.

Canon EOS 1D MkIV and 180mm Macro lens, 1/300, f11, ISO 800

Canon EOS 1D MkIV and 180mm Macro lens, 1/300, f18, ISO 800

Canon EOS 1D MkIV and 180mm Macro lens, 1/250, f20, ISO 800

Canon EOS 1D MkIV and 180mm Macro lens, 1/250, f11, ISO 400