

Depth of Field in Macro Photography - Handout

Website: <http://www.nimblewillcreek.com>

Issues:

1. Thin depth of field (higher aperture may help a little)
2. Lack of light (camera could block light)
3. Magnified vibration (need fast shutter speed)

Open the Aperture

1. Accept you have almost no depth of field
2. More light coming in
3. Almost impossible to focus hand-held

Close the Aperture down between f/16 and f/32

1. A little more depth of field
2. Lack of light (need a flash)
3. Easier to focus
4. Overall crispness lost

Stacking (focus stacking) (f5.6, f/8, or f/11)

1. Image quality at its highest
2. Depth of field can be extended artificially – you can choose the depth of field
3. Must use a tripod
4. Subject needs to be completely still.
5. Must be finished in post-production
6. Need software (like Photoshop) that can combine focus-stacked images

Tilt-Shift Lens

1. Gives you greater depth of field.
2. Can get much more in focus in a single shot
3. Cons:
 - a. Very expensive (\$1000 minimum?)
 - b. Don't focus 1:1 (about 1:2)
 - c. Manual focus only
 - d. Hard to change focus in the field

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Tips

1. Leave extra space around edges and start with the furthest edge and pull back. Why? You'll need to crop for 2 reasons:
 - a. Some images will be cropped more than others.
 - b. You will see some aberrations around the edges when Photoshop combines the stack.
2. Shoot RAW and JPEG. Merging can take awhile.
 - a. Use the JPEGs to quickly stack and get the depth you want.
 - b. Use the RAW files to create the actual photo.

Equipment for Focus-Stacking

1. Sturdy tripod
2. Tripod head that can be adjusted minutely and stays put once set (solid ball head or pistol grip)
3. Macro lens (\$150+) or Close-up lenses (\$19.00)
4. Macro focusing rail (Manual focusing rail - \$20-\$500, Automatic Stackshot - \$550.00)
5. Software to do the stacking

You will need to capture a sufficient range of exposures to ensure that all surfaces of your macro subject are in focus on at least one of your shots. Some people set their camera for a particular f-stop like f/5.6 or f/8 where their lens may be at its maximum sharpness, then manually focus on different parts of their macro subject without moving their camera or tripod. Other folks like to focus on fewer areas of their subject, but take multiple shots from those specific focus points at different apertures...say f/5.6, f/8 and f/11. If your camera has the capability to focus from the rear touch screen you can simply touch various points on the image to reset focus and get your set of exposures in that manner. (2)

RESOURCES:

1. Photography Life – Macro Photography Tutorial (<https://photographylife.com/macro-photography-tutorial>)
2. Photography Life – How to Focus Stack Images (<https://photographylife.com/how-to-focus-stack-images>)
3. How to Focus-Stack Macro Images using Photoshop (<http://digital-photography-school.com/how-to-focus-stack-macro-images-using-photoshop/>)
4. Tips for Depth of Field Control (<http://digital-photography-school.com/tips-for-depth-of-field-control-in-macro-photography/>)
5. CreativePro – How To: Macro Photography with Deep Depth of Field (<http://creativepro.com/how-macro-photography-deep-depth-field/>)
6. Picture Correct – Tips: Intro to Macro Photography (<http://www.picturecorrect.com/tips/intro-to-macro-photography/>)
7. Image Stacks in Photoshop (<https://helpx.adobe.com/photoshop/using/image-stacks.html>)