

MACRO PHOTOGRAPHY & CLOSE UP PHOTOGRAPHY



Presented to the SMCCC

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SO... WHAT IS MACRO PHOTOGRAPHY

- Wikipedia: **macrophotography** is extreme **close up photography**, usually of very small subjects, in which the size of the subject in the photograph is greater than life size. By some definitions, a macro photograph is one in which the size of the subject on the negative or image sensor is life size or greater. However in other uses it refers to a finished photograph of a subject at greater than life size.



Today's discussion will address issues pertinent to both definitions.

WHAT'S ACTUALLY DIFFERENT HERE? NOTHING

- Sorta...
 - The subject is usually a lot closer to the camera when the picture is taken.
 - When done right the detail can be incredible
 - Can shed a totally new “light” on the subject
- All the factors we have for “normal” photography still are present and evident.
- But.....
 - We really now become much more focused (pun intended) on what is in focus



SOME ISSUES THAT SHOW UP IN MACRO WORK

- Extremely limited DoF, Why:
 - Longer focal length lenses
 - Much closer subject distance
- Image blur due to camera shake
 - Just like telephoto work, close up photography requires a very steady hand (read a good tripod)
 - This can be mitigated some with strobe/flash, VR/IS, autofocus, and/or slightly larger subjects.
- Subject out of focus because:
 - Image/camera motion



TOOLS IN A DIGITAL AGE



- If we hold to the definition of a macro photograph being one in which the subject is actually reproduced at 1:1 (read one to one) then a "macro" lens is required for most cameras.
- However if we refer to a macro photograph as one in which the final print is larger than the actual subject the combination of camera and lens becomes much more flexible.
 - In fact the APS-c Nikon D7000 with 16MP has a native print size of: 11x16, therefore there are a host of lenses that could be considered "macro" for that size sensor.

CLOSE UP TOOLS

- Obvious first answer: Macro lenses, they come in all shapes and sizes and price ranges:
 - 40mm to 200mm, tilt shift, zoom etc. ~\$300 - \$3000
- Mid range zooms can often make excellent substitutes; eg Nikkor 70-200 f/4
- Favorable lens characteristics:
 - Sharp, sharp, sharp....
 - Larger f/stop makes its easier to focus in lower light
 - Longer makes it easier to get close to fidgety insects
 - Good diffraction control at smaller apertures

OTHER OPTIONS

- Diopter Lenses
 - Canon 500 D on my 80-400 @ 400mm = ~1:1
Min focus distance ~ 2'
 - Vice ~1:8 Min focus distance ~9'
- Extension tubes
 - My PN 11 51mm takes my 50mm @ ~1:7 and makes it ~1:1
- Bellows

DOF & IMAGE STACKING

- By decreasing the aperture we can increase the DoF some but even with a good lens somewhere around f/8-f/16 diffraction starts to soften an image.
- The only good option to increase DoF then is post process image stacking. There are now several GOOD programs for doing this.
 - Three I've used and can recommend
 - Photoshop
 - Zerene Stacker
 - Helicon Focus
- Keys to good image stacking:
 - Overlapping layers with consistent lighting and no movement ;o)
 - Easier said than done

IMG 1



IMG 2



IMG 3



IMG 4



IMG 5



STACK



IT'S STILL "ALL ABOUT THE LIGHT"

- If the goal is still to get an artistic image vice just a photojournalistic shot, the quality of light is still very important



IT'S STILL "ALL ABOUT THE LIGHT"

- Light quality still has the same characteristics:
 - Larger/closer light is softer
 - Smaller/farther light is harder
 - The big difference comes from light falloff
 - To reduce the light by one stop across the image the light should be about 1.4 times the width of the image away
 - Or in other words if the light is 5-10 times the image width away you won't experience much falloff at all.



SO HOW DO I DO IT?

- Solid tripod and good ballhead (w/ possible focus rail)
- Tethered Camera
- Good macro lens 105mm f/2.8 macro (w/ possibly PN11 extension tubes)
- One to many off camera flashes (with some sort of light modifier)

- WHY
 - Lets me see the effects of my lights,
 - I can check focus clearly
 - Easy to decide to stack

WITH A SLIGHTLY LARGER SUBJECT?

- Tripod with a good ballhead
- Aperture priority
- Camera with good telephoto



QUESTIONS

WHAT CAN WE CONTROL

- Talking about working with the camera
 - ..
- Post
 - Lets not talk about this here.

SO: WHAT CAN WE CONTROL?

- Composition
 - Nothing significant has changed here in comparison to “non-macro” photography except it may be easier to determine the subject in a good macro shot.
- Exposure
 - Working distances and f/stops may make getting a good exposure significantly more difficult, particularly without supplemental light.
 - Light meters may not behave as well as you’d like, consider alternative metering
- DoF
 - As a general rule DoF has been significantly reduced !!!!
- Light
 - The effects of working close are even more exaggerated.