Introduction To Macro Photography
Program

- What really is Macro Photography
- Macro versus Close Up Photography
- Equipment Choices
- Technical Considerations
- Some Subject Ideas
- Demonstrations
Why Macro Photography?

- Macro photography allows us to explore a world that would be quite difficult to explore with the naked eye.
- Macro photography will have you marveling at the world around you.
- There is a wealth of subjects in your house and in your yard – all year long!
Macro Subjects

- Great macro photography subjects are flowers and insects - but don’t just stop there!
- Look for repeating patterns, textures and leading lines
- Water droplets and spider webs can become beautiful subjects
- Small objects around your house can become mysterious when shot in macro
What Is Macro Photography?

In a strict sense macro photography (or Photomacrography) defines how large a subject is captured in the camera

- The image on the camera’s sensor is the same physical size or larger as the subject in real life
- Macro is expressed as a ratio of 1:1 or larger

A simple definition is capturing tiny objects and making them appear larger than the physical object actually is
Ratios - Life Size : Camera Image Size

- 1:1 = image size on camera processor is same size as subject is in real life (true macro)
- 1:2 = image size on camera processor is 1/2 the size as subject is in real life (not true macro)
- 1:4 = image size on camera processor is 1/4 the size as subject is in real life (not true macro)
- 4:1 magnification ratio, meaning that the image projected on the camera's sensor was 4x larger than the subject itself (called extreme macro)
What Is Close Up Photography?

- Close-focus describes any lens where the maximum size of the captured image is smaller than the real life subject
- Usually 1:2 or larger
- Many “macro” images are really only close up images
Macro versus Close Up
Does it really matter?

What macro (and close up) photographers often care about more is simply knowing the size of the smallest object that can fill the frame

Full Frame Sensors
24 mm x 36 mm

Typical APS-C Sensors
~15 mm x 23 mm
Equipment Choices

- Telephoto Lens (Fixed or Zoom)
- Telephoto lens with “macro” setting
- Close Up Filters
- Extension Tubes
- Reversing Rings
- Macro Lens
Zoom Lens With “Macro” Setting

- Just because a lens says “macro” doesn’t mean it’s true 1:1 macro
- Most are just “Close Focus” lens
- Typically ratios of 1:2 or less

Normal – Macro Switch
Close Up Filters

- Basically a magnifying glass for your lens
- Inexpensive and light to carry
- Typically sharper in the middle than on the edges
- A little harder to focus
- +1, +2, +4 and +10 strengths
- Greater magnification by stacking multiple filters
Extension Tubes

- Extension tubes extend the lens away from the sensor to increase magnification
- Tubes are hollow – no glass to degrade the quality of the image
- Lightweight
- Come in a variety of sizes
- Can be used with a variety of lenses
- A little more expensive than close up filters
Reversing Ring

Reverse mounts a lens to the camera body

Some newer lenses can be very difficult to use in reverse
How Reversing A Lens Works

Normal Lens Mounting

Large Image → Converted To Small Image

Reverse Lens Mounting

Small Image → Converted To Large Image
Macro Lenses

- Best choice if you are taking a lot of macro shots
- Macro lenses are the easiest to use
- Best quality but most expensive
- Provides a flat field with edge to edge sharpness
105 Macro Lens @11”

300mm In Macro Mode @31”

50mm Lens & 12mm Ext @7”

50mm Lens & +3D @7”
## Cost Comparison

<table>
<thead>
<tr>
<th>Item</th>
<th>Ease of Use</th>
<th>Effectiveness</th>
<th>New Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reversing Ring</td>
<td>Medium - Difficult</td>
<td>Good</td>
<td>$15-$35</td>
</tr>
<tr>
<td>Close Up Filter</td>
<td>Easy</td>
<td>Fair - Good</td>
<td>$15-$40</td>
</tr>
<tr>
<td>Extension Tubes</td>
<td>Easy</td>
<td>Good</td>
<td>$30-$85</td>
</tr>
<tr>
<td>Bellows</td>
<td>Difficult</td>
<td>Good</td>
<td>$50-$600</td>
</tr>
<tr>
<td>Macro Lens</td>
<td>Easy</td>
<td>Best</td>
<td>$250-$2000</td>
</tr>
</tbody>
</table>
Finished Image

Shot with 180mm macro lens at f22, 1/90, ISO 800

• Background was crinkled tin foil

• Working distance was 23” providing a 1:2.5 ratio
Set Up For Shot

Portable shooting box with 2 lights cost $30

Would have worked just as well using something to prop up the tin foil and using either an on or off camera flash or 1 or 2 flashlights or work lights

Lens could have been a fixed or telephoto with a close up filter or an extension tube
Technical Considerations

- Focus
- Depth of Field
- Working Distance
- Angle of View
Focus

- Focusing can be the most difficult component of macro or close up photography
- Auto focus may or may not provide focus for the particular area of your subject that you want to be in focus
- Manual focus is most often used
Focus Suggestion

- First, set your lens on manual focus
- Next, turn the focus ring to just before the minimum focus length
- Now simply move your camera closer to your subject until the part of the image that you want to be sharp is in focus
- Final adjust your focus for the sharpest possible image
- Take the shot
Depth of Field

- Depth of field is how much appears to be in focus
- Extremely small when focusing on close objects
- Three things control the depth of field
  - The technical characteristics of the lens
  - Distance to the subject
  - Aperture (f stop)
Smaller Aperture = Wider DoF

F₄ (Large Aperture)  F₂₂ (Small Aperture)
Depth of Field - Some Simple Rules

- The further the distance to the subject (less magnification), the more will be in focus at a given aperture (f stop)
- The smaller the aperture (larger f number) the more will be in focus
- The shorter the focal length of the lens the more will be in focus (less magnification)
Terms Explained

- **Sensor**
- **Angle of View**
- **Working Distance**
- **Closest Focusing Distance** (Manufacturer’s Specs)
Working Distance

Working distance is the closest focusing distance from the lens to the subject

- Choosing the right lens or setup depends on the subject you’re shooting versus what you have available.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Working Distance</th>
<th>Macro Lens or Equivalent Setup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Photography, Jewelry, Artwork, Stamps</td>
<td>Less than 1” to 6”</td>
<td>45-65 mm</td>
</tr>
<tr>
<td>Flowers, Some Insects, Butterflies, Bees, Small Objects</td>
<td>8” to 12”</td>
<td>90-105 mm</td>
</tr>
<tr>
<td>Dragon Flies, Spiders, Flighty Insects, Snakes, Small Animals</td>
<td>18” or more</td>
<td>150-200 mm or more</td>
</tr>
</tbody>
</table>
Angle of View

- With a 50mm macro lens, you have to be very close to your subject to fill the frame.
- A 50mm macro lens has a wider angle of view, so you’ll be picking up things in the background that you may not want.
- A 200mm macro give a much narrower field of view and including less background.
Angle of View

Subject & Background Area Coverage

200 mm Lens

50 mm Lens
Macro Kit Suggestions

- Camera with macro setup
- Tripod
- Remote shutter release (or use camera timer)
- Flash unit or flash light
- Lens cleaning cloth
- Knee pads or small plastic sheet to kneel on
- Small spray bottle with water (or glycerin, corn syrup)
- 3-4 Feet of string
- 2-3 Clothes pins or similar
Some Final Suggestions

- Don’t always place your subject in the middle
- Try shooting vertical and horizontal
- Watch your corners and edges for things that may pop up in the image
- Backgrounds and foregrounds should enhance your subject
- Think outside the box and create your own background
- Don’t be afraid to experiment with different focusing points
- Try using diffusors or reflectors to control the light
- Use a flash or flashlights or even a goose neck lamp to play with lighting
As with any type of photography, always experiment!
Questions?
Dandelion
Water Drop
Cat
Gecko’s eye
Jumping Spider on a CD
Close Up Of a Wet Leaf
Dew Drops
Gerbera Daisy
Common House Fly
Daisy Reflected In Dew Drops
Snail Having Lunch
Oh No!
Dew On A Spider Web
Day Lilly – A Different Perspective
Tiny Mushrooms
Amaryllis
Flower Reflected In A Dew Drop