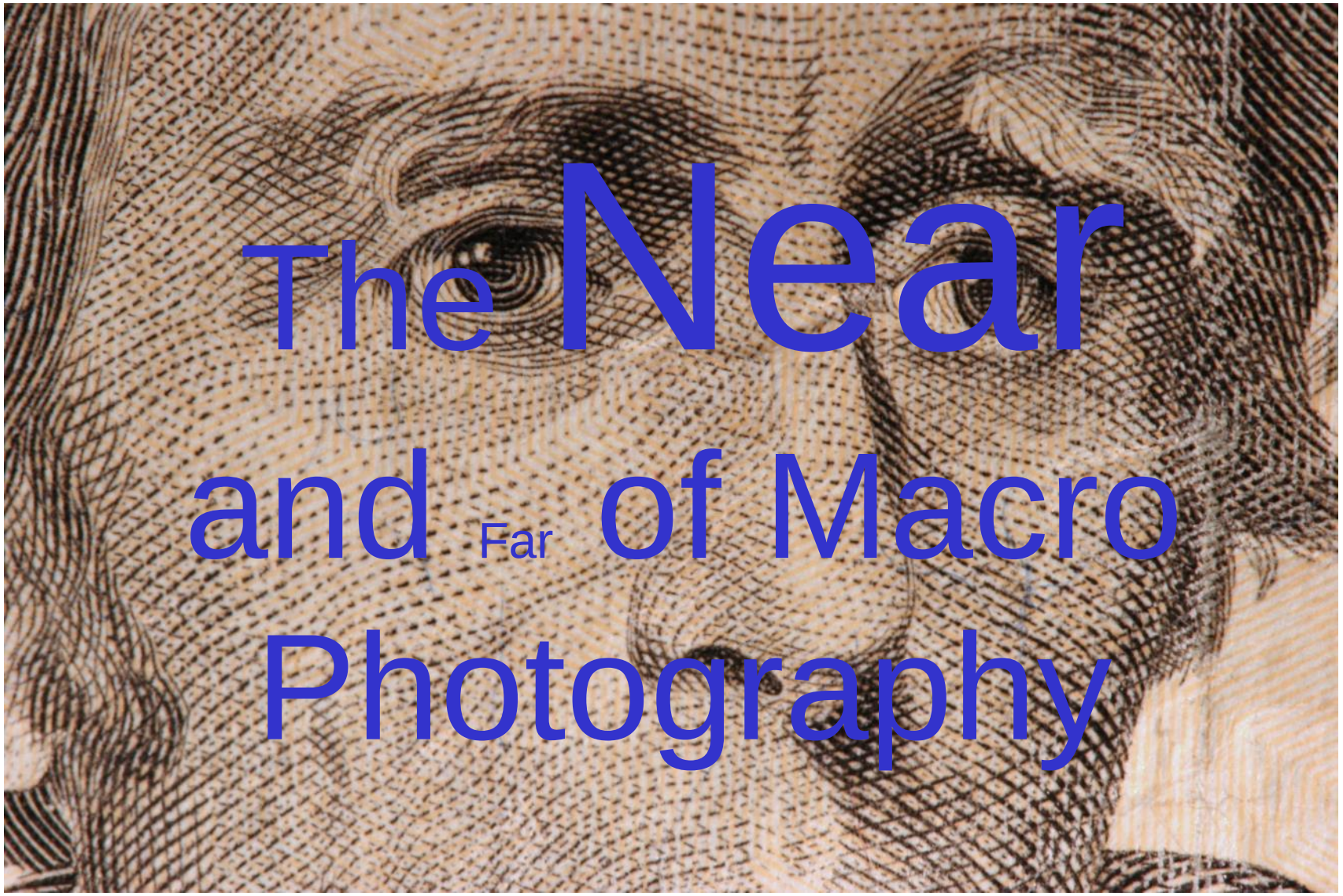
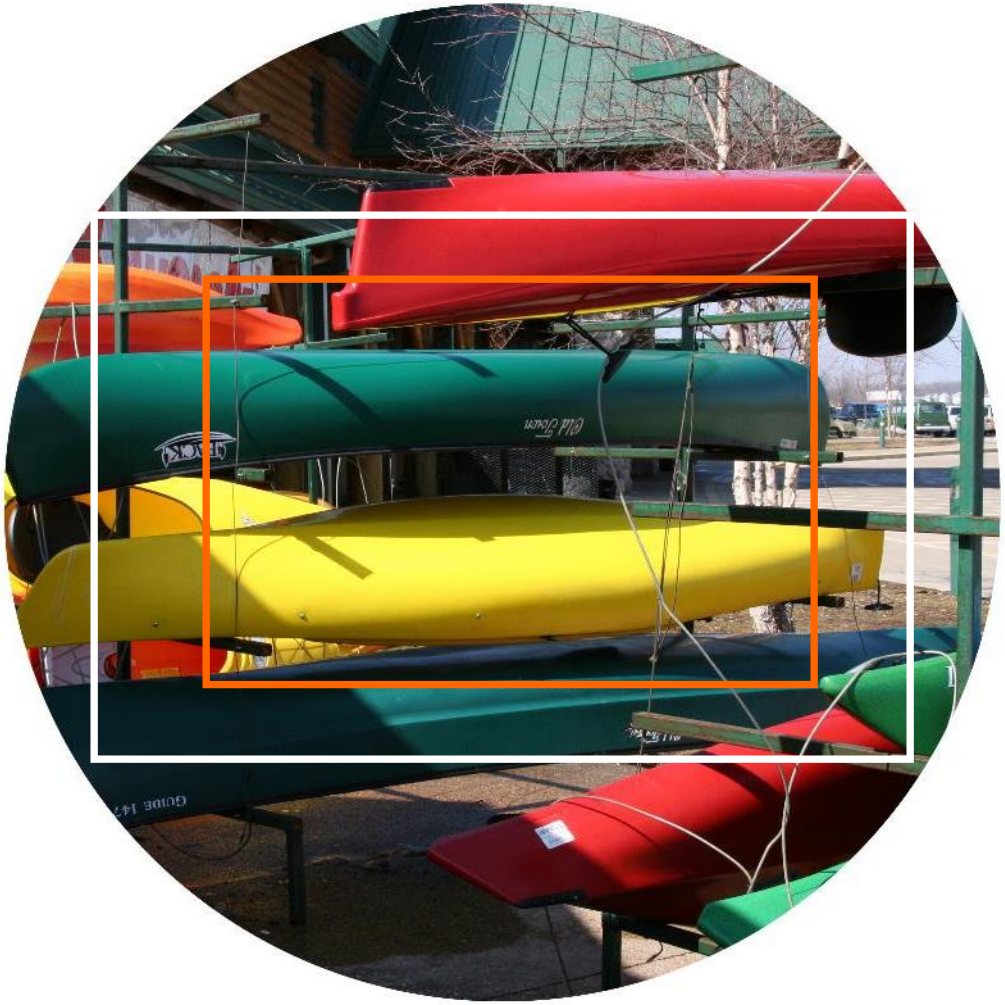

The Near
and Far of Macro
Photography

Crop Factor



Digital Sensor “Magnification” 1.5X, 1.6X etc. is not magnification

Macro Photography Defined

- Macro = 1X or object same size on “film”
- Less than 1X = Close-up
- Any movement magnified
- Depth of field limited – as small as 1 mm
  - Get used to it
- 35mm Camera
  - 50 mm lens focused at 12”
  - F4 = 1/16” dof
  - F11 = ½” dof

Close Up Lens

- Poor mans macro
- Reading glasses for your lens
- A threaded magnifying glass
- Most are single element
- No exposure compensation (no light loss)
- Can put them in your pocket

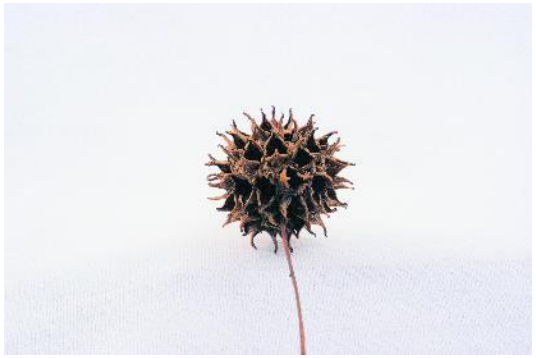
Close Up Lens

- Reduces minimum focusing distance
- Quality varies considerably
- Edges may be soft
- Use large filters + step-up rings
- Typically +1, +2, +3, +5, +10
- Lenses may be stacked
- Normally stack no more than 2
- Highest power closest to lens

Close Up Lens

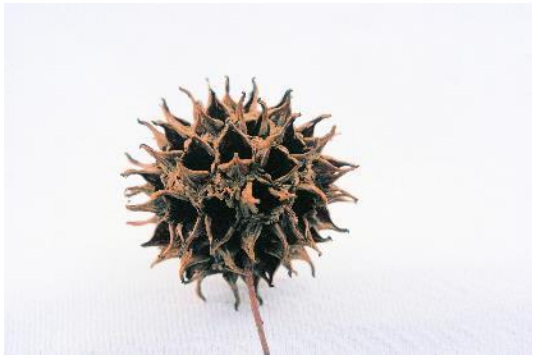
Sweet Gum Seed Ball = 35 mm

Sensor 22.5 X 15



50 mm +0

50 mm +1



50 mm +2

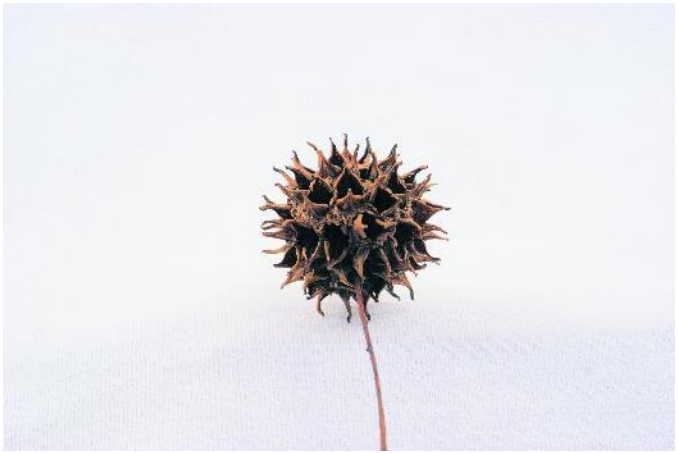
50 mm +3

50 mm +4

50 mm +5

“Macro Zooms”

- Most not true macros
- <u>May</u> be .4X or .3X



50 mm

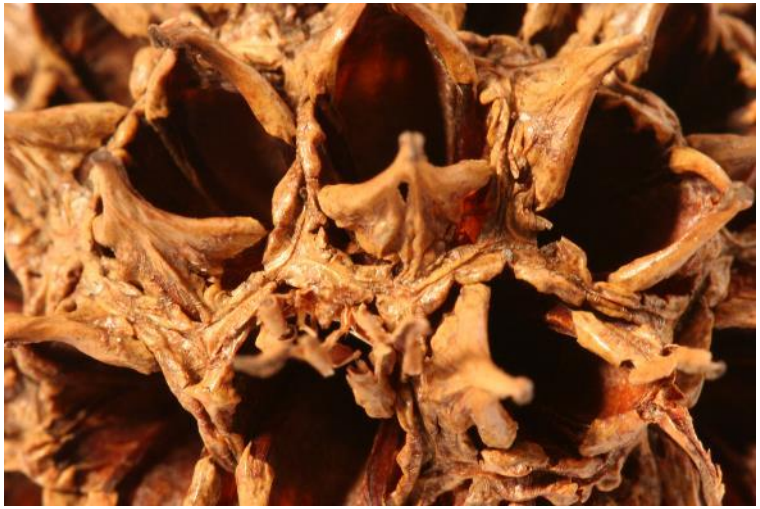
Canon 17-85 mm “Macro”

Macro Lens

- Not all are 1X without adapters
- Can function normally (focus to infinity)
- No light loss
- Longer lens give flatter perspective than shorter (Similar to portraits)
- Longer lens give greater working distances (100 mm good compromise)
- Effective aperture may be different than listed (Non TTL)

Macro Lens

50 mm +5



100 mm Macro

Specialty Macro Lens

- Canon MP-E 65
- 1X to 5X
- Will not focus to infinity
- Not for the “average person”
- Learning curve
- Handholding very difficult (Impossible??)

Canon MP-E65

1X

2X

4X

5X

Extension Tubes

- Fixed increments (8 mm, 12 mm, 24 mm etc)
- More distance = more light loss (50 +50 = 2 stops)
- No glass involved
- Automatic tubes may lose auto focus (light loss)
- Automatic tube pass lens, meter info.
- Decreases Min/Max Focus Distance

Extension Tubes

Non-automatic tubes lose:

- Autofocus
- Lens & camera info
- TTL flash

- Auto Kenko set includes 12, 20 and 36 mm
  - 12 mm extension = .25X
  - 20 mm extension = .4X
  - 36 mm extension = .7X
  - 20 mm + 36 mm = 56 mm = 1.1X

Using a

50 mm lens

- Extension/FL = Magnification Ratio

Bellows

3rd Party bellows for Canon Autofocus

Novoflex Auto Bellows $1300

- Infinitely adjustable “extension tube”
- Somewhat fragile
- “Rough” Exposure Compensation

  Each 25% extension of focal length

  = ½ stop increase in exposure

Miscellaneous Options

- Teleconverters
  - Some loss of resolution due to more “glass”
- Lens reversing rings (reversed on body)
- Stacking lenses (front lens is reversed)
- Home made
  - Body cap cut out
  - Pringles tube
  - 50 mm manual focus lens
  - Duct tape

Focusing Rails

- Focuses by moving camera, not lens
- Single or double plane movement
- Slider or geared

Lighting

Lighting

- More difficult than “normal photography”
- Use diffusers, reflectors
- Block the wind with reflectors/diffusers
- On-board flash probably partially blocked
- Many flash options (usually diffused and reduced)
- Dedicated flash cords keep TTL flash
- Small flashes work well (close distance)
- Ring Flash – Natural lighting??

Exposure

- Use automatic if possible, then bracket
- Trial and error easier with digital
- Be aware of changing light
- Use self-timer or remote release
- Use mirror lock-up to reduce vibration
- Be ready for “loss of light” when focusing
- Using “small” f-stops may not be best due to diffraction
- DOF preview difficult
- Bracket

Composition

- Difficult with moving subject
- Focusing may change composition
- Autofocus difficult if much light loss
- Most photographers use manual focus
- Use a tripod
- Use focusing rail
- Check DOF with LCD enlargement
- Plane of subject parallel with camera

Close-Up Lens Pricing

+1, +2,+4 Sets 72 mm

Hoya - $100
Tiffen - $152
Vivitar - $15

Macro Lens Pricing

- Canon RF 100mm f/2.8 L Macro IS USM Lens $1200
- Canon EF 100mm f/2.8L Macro IS USM Lens $1300
- Sigma 105mm f/2.8 EX DG OS HSM Macro Lens for Canon EF $569
- Canon RF 85mm f/2 Macro IS STM Lens $500

- Nikon NIKKOR Z MC 50mm f/2.8 Macro Lens $647
- Nikon NIKKOR Z MC 105mm f/2.8 VR S Macro Lens $1047

Extension Tube Pricing

- Canon EF12 II $80 EF and EF-S Digital ***
- Canon EF25 II $130 EF and EF-S Digital ***
- Nikon AI 8 $75
- Nikon AI 14 $75
- Nikon AI 27.5 $80
- Kenko 3 tube set (12,20,36)$179 for Canon*, Nikon** and Minolta

* Not for use with Canon EF-S “Digital” lenses
**Nikon AF-S requires manual focus
*** Canon EFII required for EF-S “Digital” lenses

Focusing Rail Pricing

- Novoflex Castel-XQ II Macro Focusing Rack
  $573

- Really Right Stuff Macro 150 Single-Axis Focusing Integrated Arca-Type Clamp
  $395

- Manfrotto 454 Micrometric Positioning Sliding Plate
  $115

Final Comparison

210 Zoom “Macro”

Distance 38”

210 “Zoom” +1

Distance 20”

Final Comparison

210 “Zoom” +2

Distance 13”

210 “Zoom” +3

Distance 10”

Final Comparison

210 “Zoom” +4

Distance 8”

210 “Zoom” +5

Distance 6.5”

Final Comparison

210 “Zoom” +4

Distance 8”

100 Macro

Distance 6”

Final Comparison

210 “Zoom” +50 mm

Distance 1”

210 + 68 mm Tubes

Distance 32”

Final Comparison

70 + 68 mm Tubes

Distance 3”

210 + 68 mm Tubes

Distance 32”

Final Comparison

100 mm Macro

Distance 6”

100 mm Macro 68 mm Tubes

Distance 4.5”

Final Comparison

100 mm Macro

Distance 6”

100 mm Macro 68 mm Tubes

Plus 50 mm Reversed

Distance .7”

More Information

www.macrophotography.org

- www.macrobellows.com
- www.nikonians.org
- www.shutterfreaks.com
- shutterbug.com
- www.photo.net/learn/macro/
- Many excellent books
- Kodak photo guide – Close Up lens/Ext.