

# Photo 101 – Up close

- What is close up or macro photography?
- What gear do you need (or not need)?
- The importance of depth of field in close up photos
- Factors that affect the depth of field (focal distance, focal length, aperture).





60mm macro lens

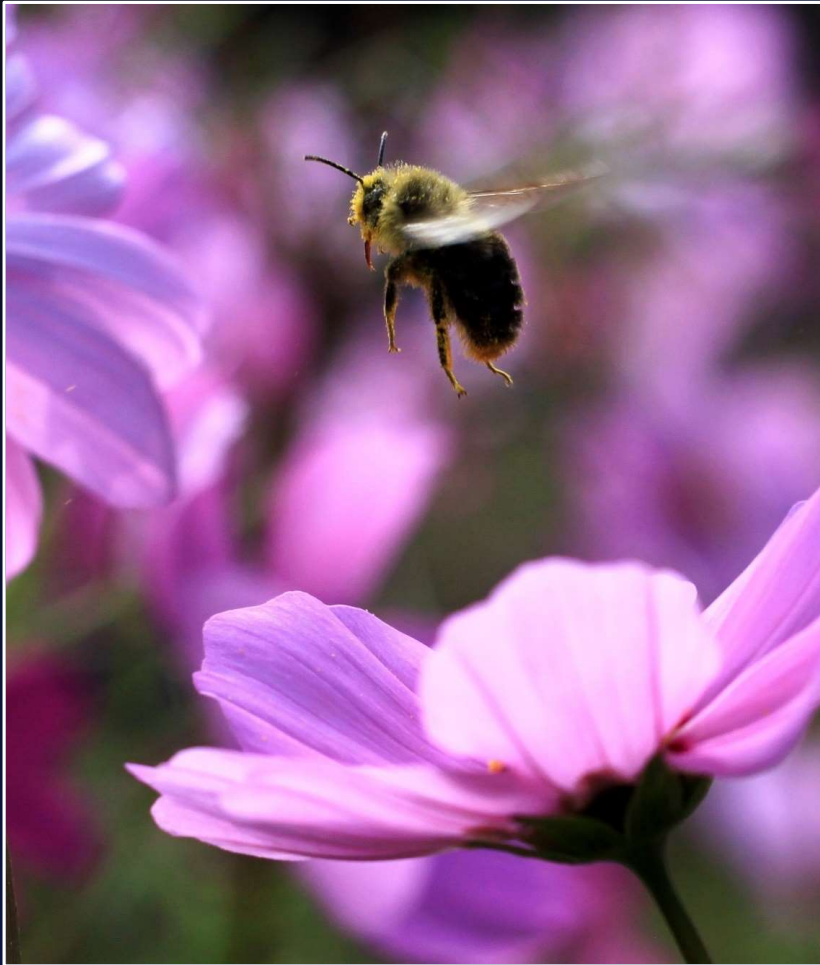


Lumix bridge  
camera

Set to macro



Nifty 50 (50mm) prime lens



Cell phone  
set to portrait  
mode



# Possible gear

- Lenses
- Ring light
- Tripod
- Closeup filter or extension tubes \$25-\$250 (can't focus on infinity)
- Focusing rail
- Articulated screen
- Plastic bag
- Bean bag
- Lens wipes



# Macro lens

- Specially designed lens to permit close focus, at least 1:1 magnification , i.e. 1 cm object is rendered as 1cm on the sensor
- Can be used for non close up shots; can focus at infinity
- Macro lenses are “primes”, i.e. a fixed focal length so no zoom
- Can be heavy and bulky
- Cost: \$350 and up



# Depth of field

- ▶ Macro photography is all about close focus
- ▶ As your point-of-focus moves closer to the camera, the depth of field (the amount of your image in sharp focus) decreases dramatically
- ▶ Macro images have razor-thin depth-of-field
- ▶ Smaller apertures (high f/stop) increase the depth of field

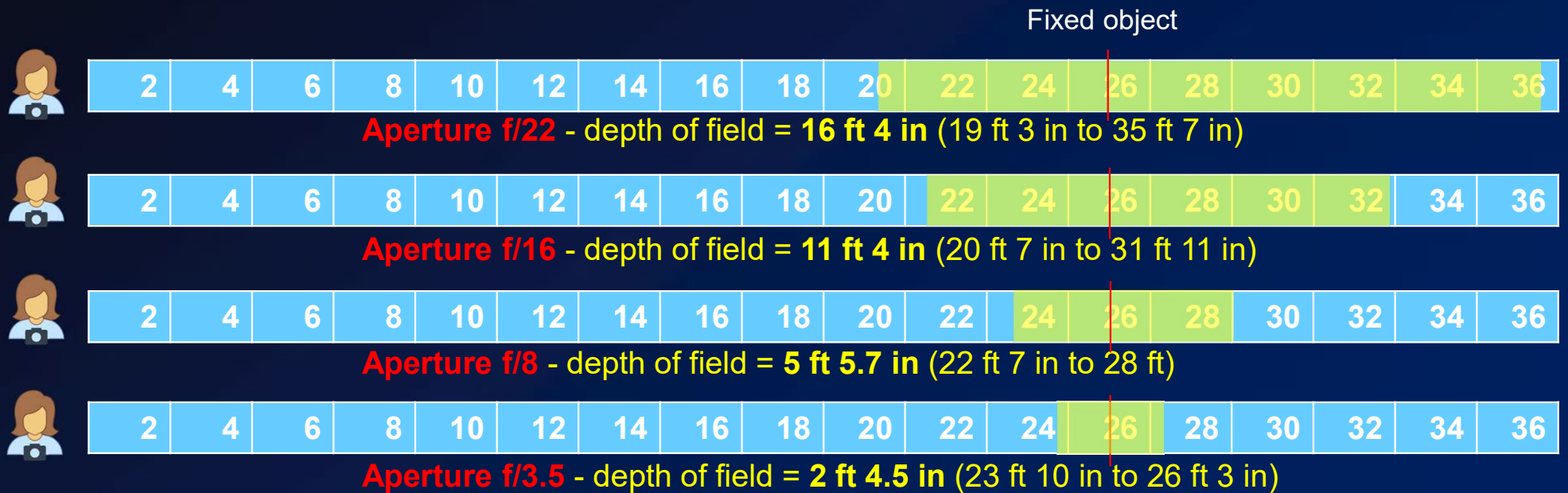




# General effect of **aperture** on depth of field (amount of image in sharp focus)

Example with a Canon APS-C camera (DSLR)

- Focus point **25 feet** lens focal length: **100mm**



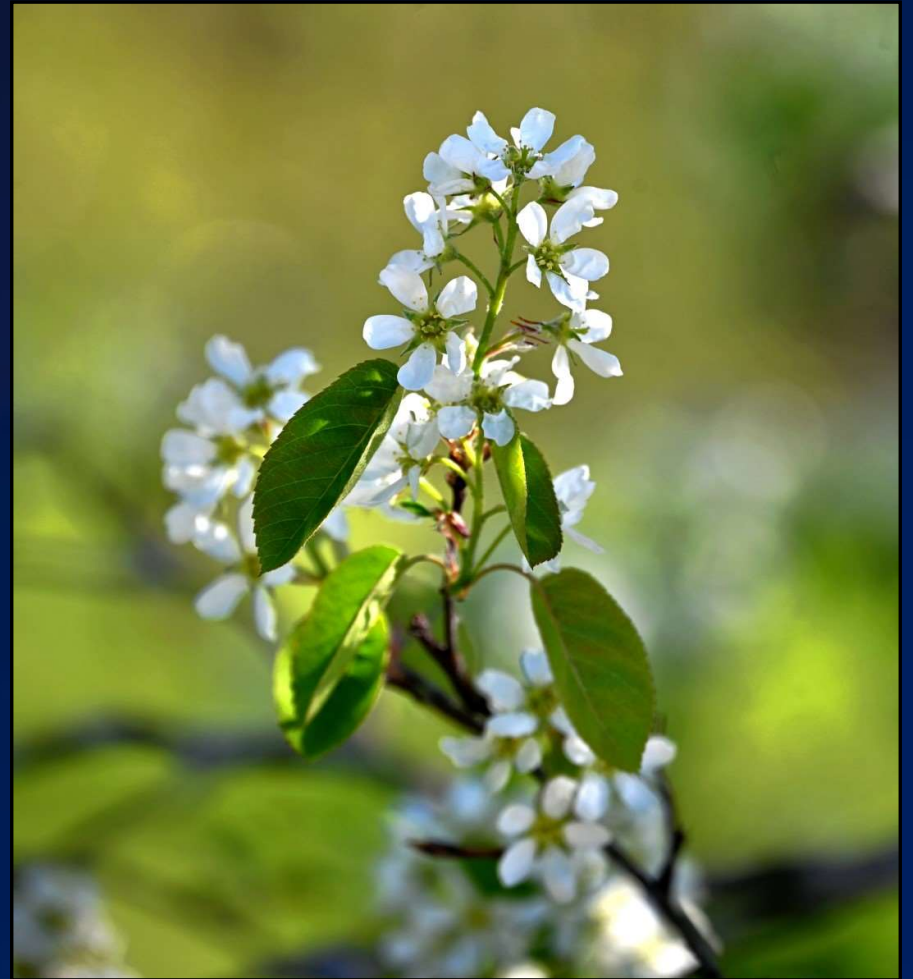
<https://www.pointsinfocus.com/tools/depth-of-field-and-equivalent-lens-calculator/>

Zoomed to 170mm with 24 to 200mm lens

f10



f6

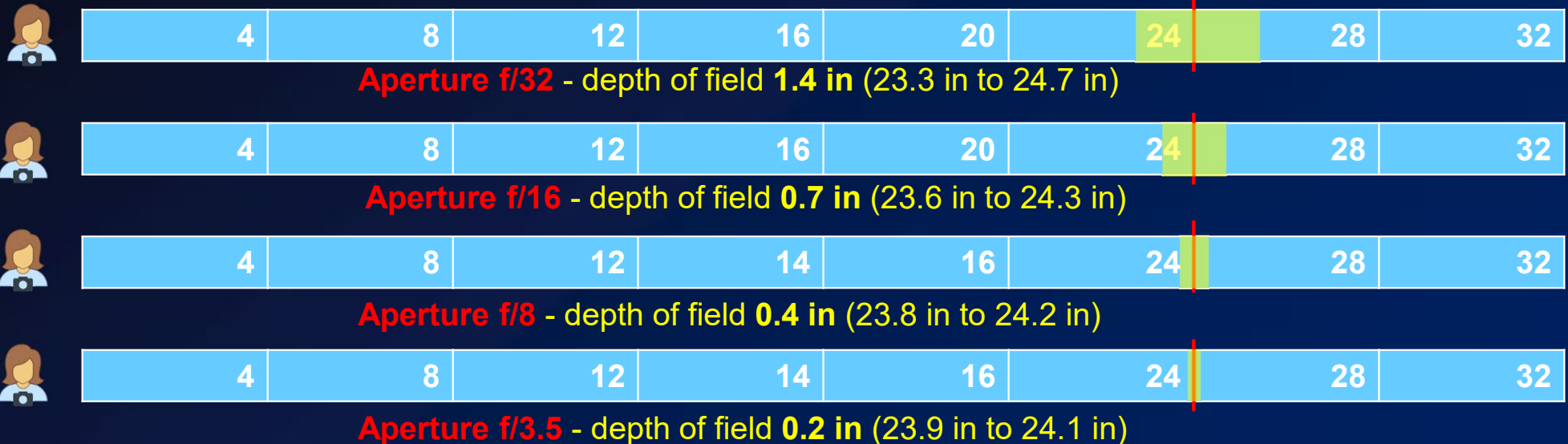


# Effect of **aperture** on depth of field (**close focus**) (amount of image in sharp focus)

Example with a Canon APS-C camera (DSLR)

- Focus point **24 inches**, lens focal length: **100mm**

Fixed object



<https://www.pointsinfocus.com/tools/depth-of-field-and-equivalent-lens-calculator/>

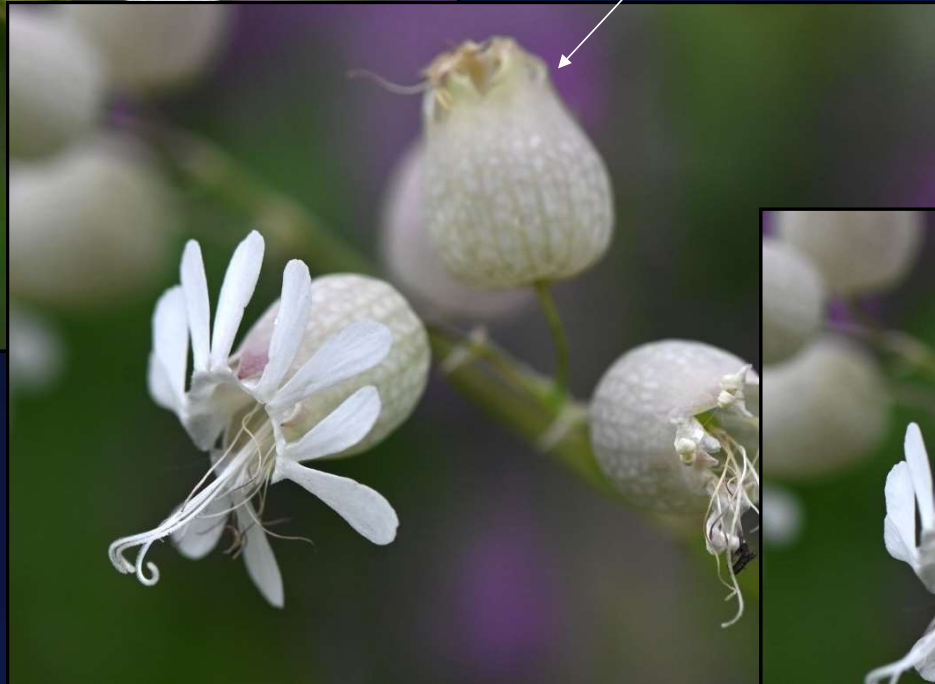


f/14

105mm macro

Lost focus

f/10



Lost focus

f/9

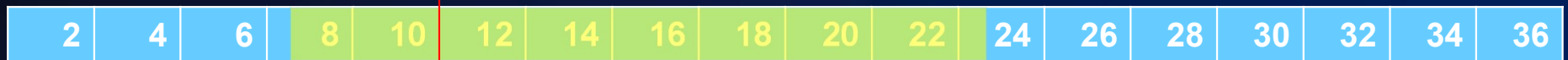


# Effect of **focal length** on depth of field (amount of image in sharp focus)

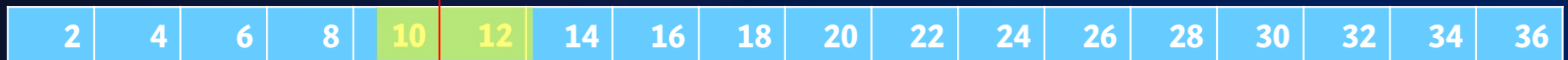
Example with a Canon APS-C camera (DSLR)

- aperture: **f/8**, distance to focus point **10 feet**

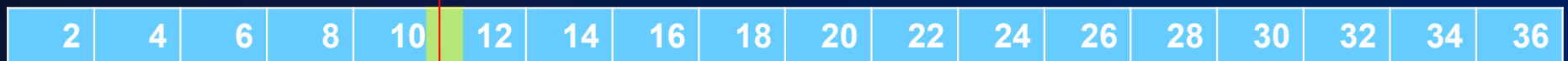
Fixed object



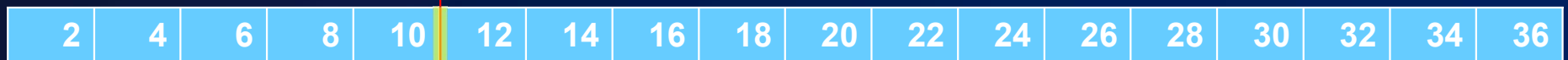
**Focal length 28mm** - depth of field **16 ft** (6 ft 5.2 in to 22 ft 5 in)



**Focal length 50mm** - depth of field **3 ft 6.7 in** (8 ft 6 in to 12 ft 1 in)



**Focal length 100mm** - depth of field **10.2 in** (9 ft 7 in to 10 ft 5 in)



**Focal length 200mm** - depth of field **2.4 in** (9 ft 11 in to 10 ft 1 in)

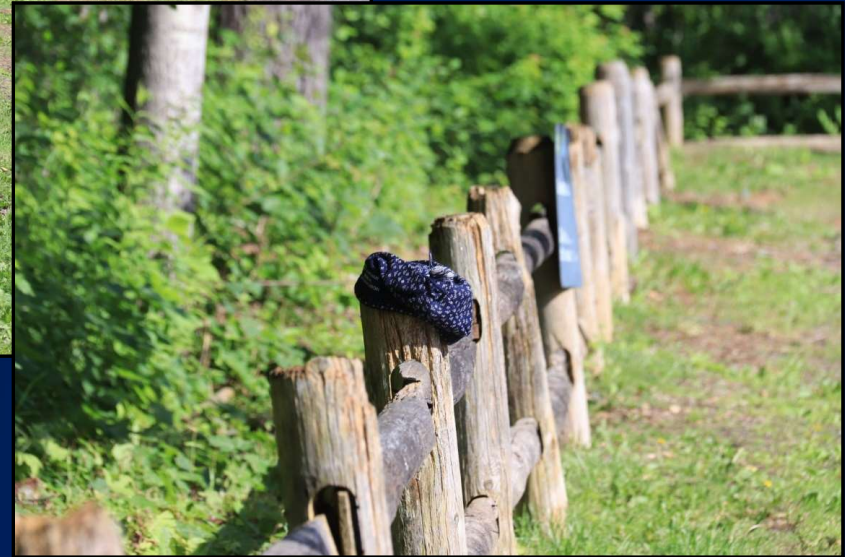
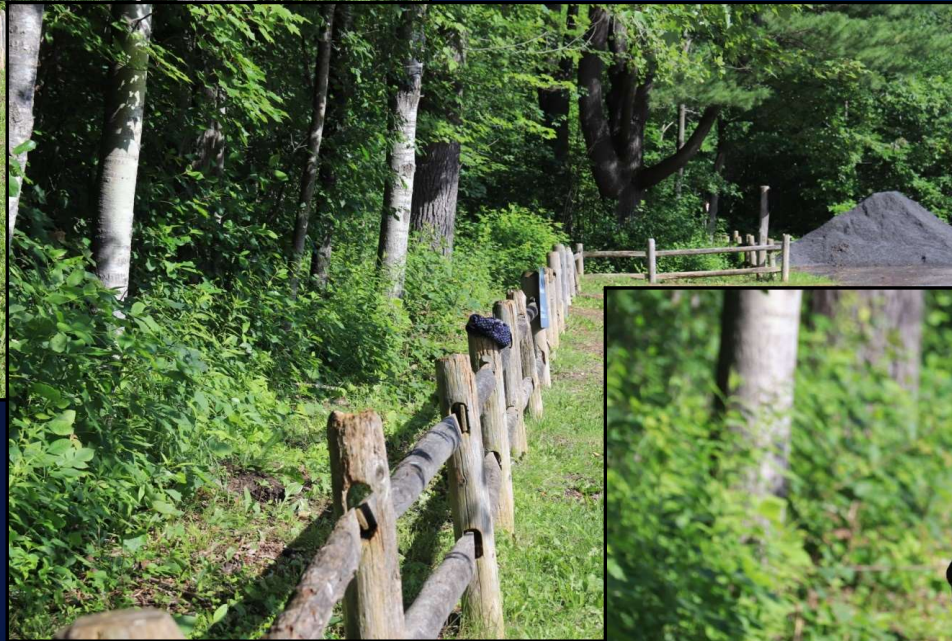
<https://www.pointsinfocus.com/tools/depth-of-field-and-equivalent-lens-calculator/>

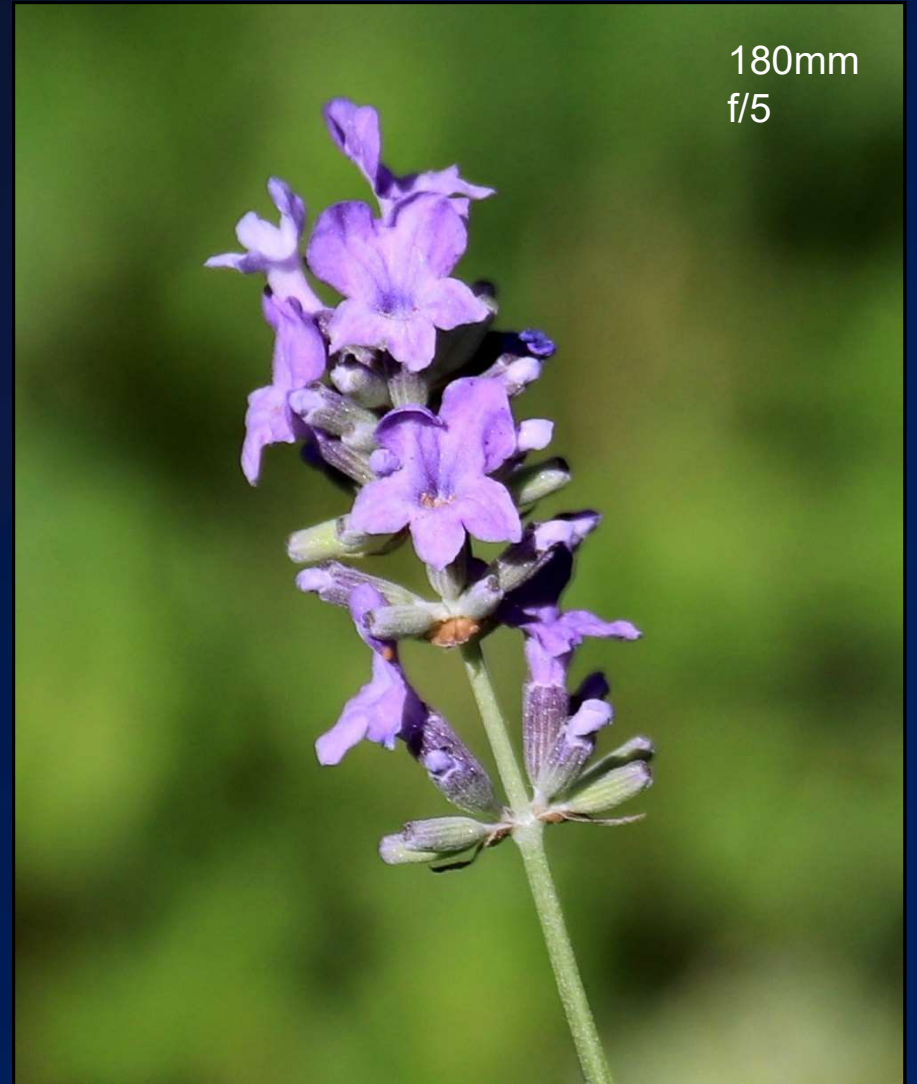
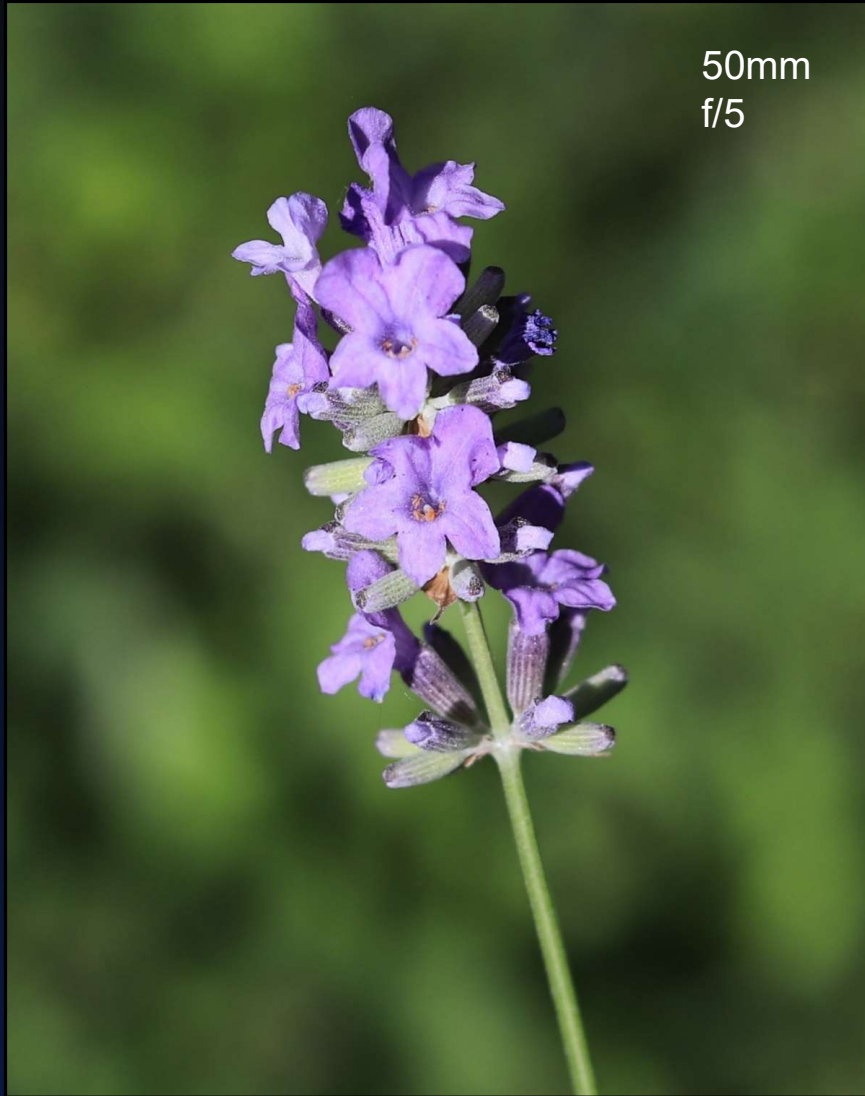
All taken at f/8 – I did not move

28mm

50mm

180mm

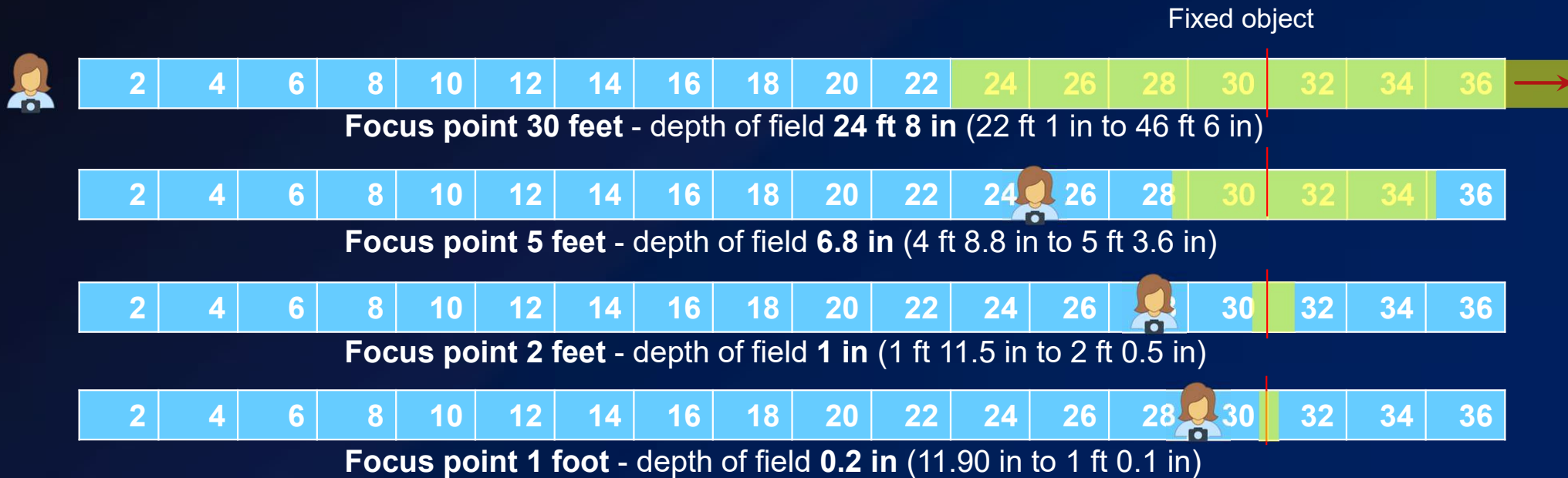




# Effect of distance on depth of field (amount of image in sharp focus)

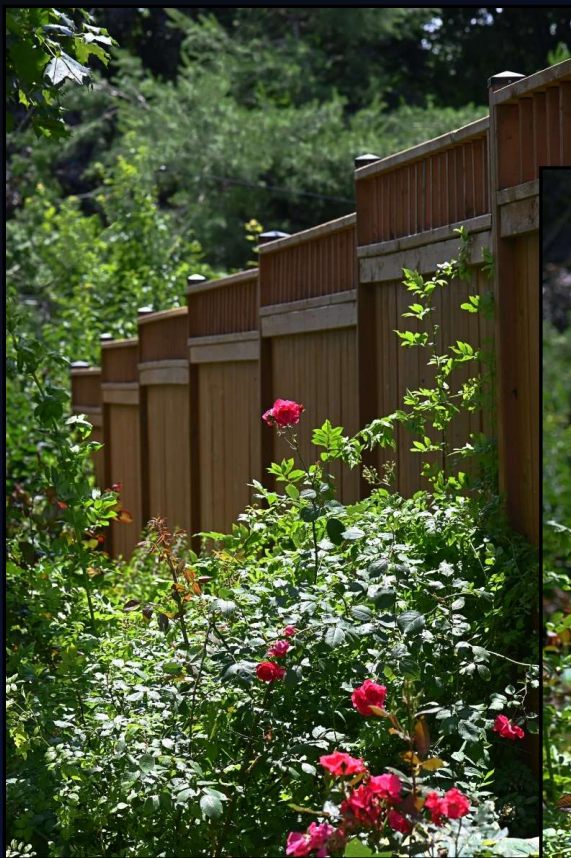
Example with a Canon APS-C camera (DSLR)

- aperture:  $f/22$ , lens focal length: 100mm

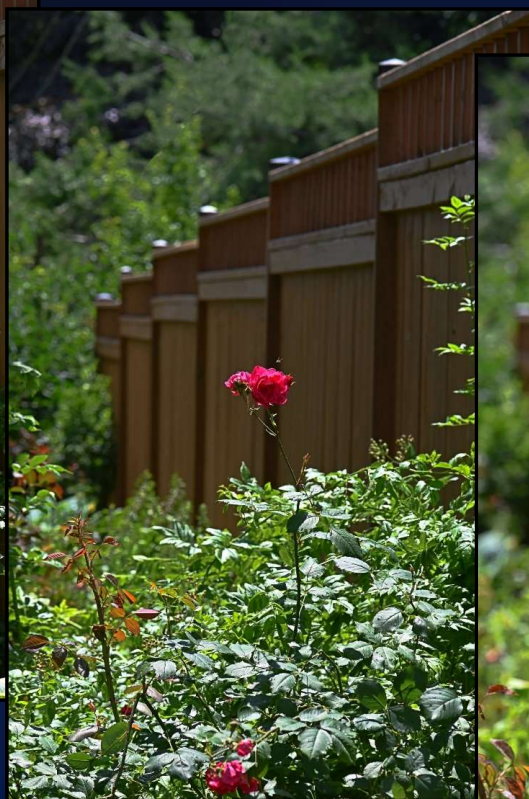




All taken with 105 mm lens and f/9 – I moved



30 ft



10 ft



6 ft



3 ft



Both taken at f/10,  
105mm



Better separation  
between subject  
and background

# Achieving desired depth of field

- Wider aperture for normal lenses
- Perhaps smaller aperture for macro lenses
- Zoom from a distance
- Set bridge cameras or cell phones to macro/portrait/close up
- Create separation with background