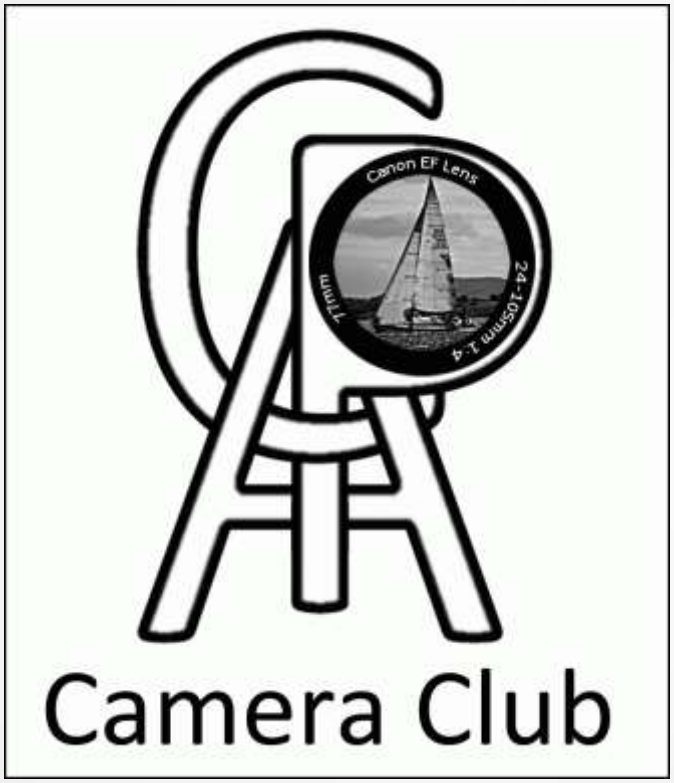


Basic Camera Settings

2nd September 2014

Vittorio Silvestri

Basic Camera Settings

- Aperture
- Shutter speed
- ISO speed

- All three affect the overall exposure of an image and therefore in one respect do the same thing

- They all have specific attributes, which are fundamental to the making of every image

In photography, exposure is the amount of light allowed to fall on each area unit of a photographic medium (photographic film or image sensor) during the process of taking a photograph.

Canon 60D

Nikon D40

Dials

Canon 60D

Nikon D40

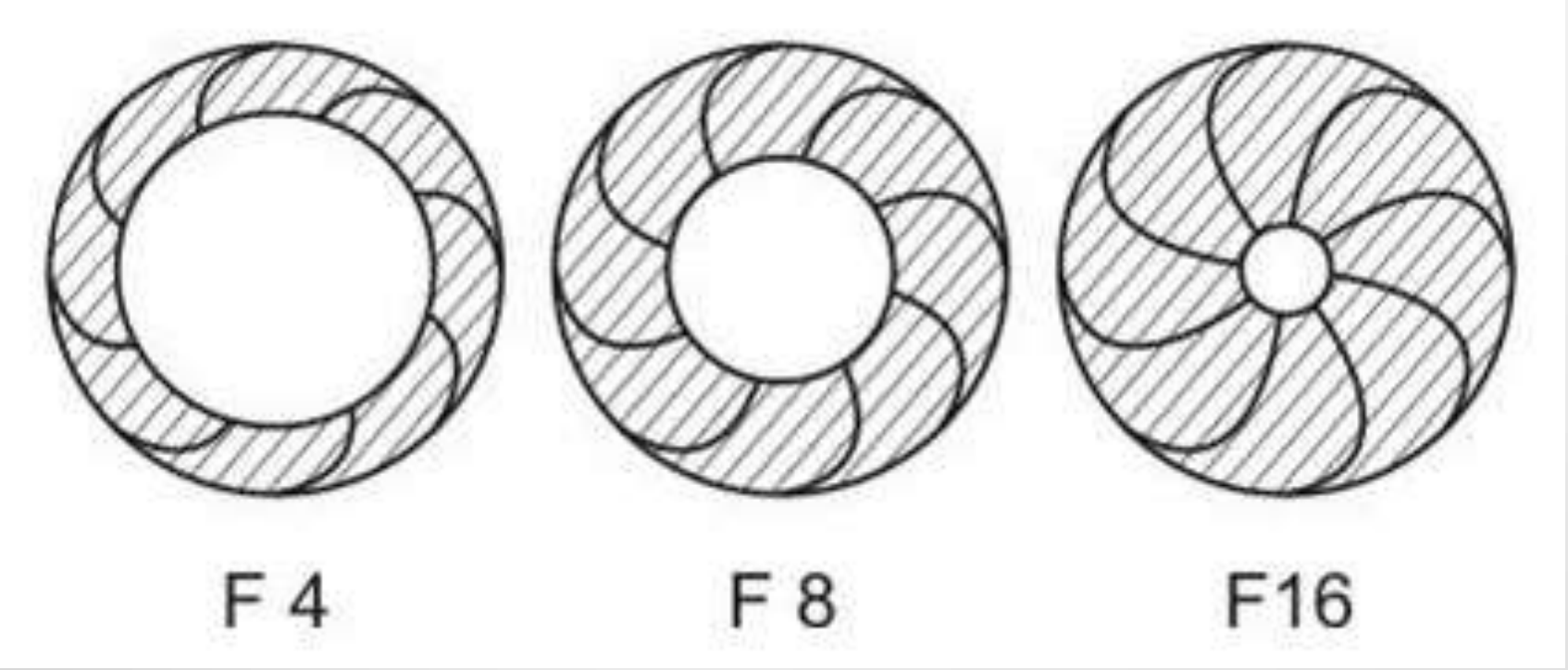
Dials

Canon 60D

Nikon D40

Aperture

- The aperture of the lens determines the amount of light that gets to the digital sensor or film. A small number (2.8) indicates a large aperture
- The following numbers represent full stops of light : **F 1.8 | 2.8 | 4 | 5.6 | 8 | 11 | 16 | 22**
- Therefore: F8 lets in twice as much light F11
  F11 twice as much as F16


F 4
F 8
F16

Shutter Speed

- The shutter is the device that controls the length of time light is allowed to get to the sensor or film
- The exposure time usually begins at 1/2000 sec. and goes up to 30 sec:

1/2000 | 1/1000 | 1/500 | 1/250 | 1/125 1/60 | 1/30 | 1/15 | 1/8 | 1/4 | 1/2 | 1sec

- Obviously 1 sec lets in twice as much light as 1/2 sec

ISO Speed

International Organization for Standardization

- This indicates the sensitivity of the digital sensor
- ISO is represented by the following numbers:
  50 | 100 | 200 | 400 | 800 | 1600 | 3200
- Doubling the ISO speed, makes the sensor twice as sensitive to light:

  i.e. 200 is twice as sensitive as 100

- There is a direct relationship between Aperture, Shutter Speed and ISO Speed

Exposure

- Maintaining identical exposure

A	S	ISO		
F8,	1/60,	100	=	a) F11, 1/30, 100 b) F11, 1/60, 200

- Closing the aperture by one stop (F8 - F11)
  a) Decrease shutter speed by half (1/60 - 1/30)
  b) Double the ISO (100 - 200)

Aperture, It's true strengths

- Apart from restricting the amount of light that is allowed to get to the sensor, the aperture also determines the Depth of Field (DOF)
- A large aperture F1.8 gives a shallow DOF and a small aperture F16 gives a deep DOF
- This allows the photographer to selectively control which parts of the image are in or out of focus

aperture....f 1.8
shutter.....1/500
ISO.....100
distance...~3ft

aperture....f 4
shutter.....1/125
ISO.....100
distance...~3ft

aperture....f 8
shutter.....1/30
ISO..... 100
distance...~3ft

Shutter Speed, It's true strengths

- Once again, apart from restricting the amount of light that is allowed to get to the sensor, the shutter speed also changes the way movement appears in the image
- A fast shutter speed (1/500 or more) will freeze movement in the image, while a slow shutter speed will capture movement (tripod will be needed)
- If hand holding, the shutter speed MUST be fast enough to eliminate camera shake:

General rule: 1/lens focal length

1/2

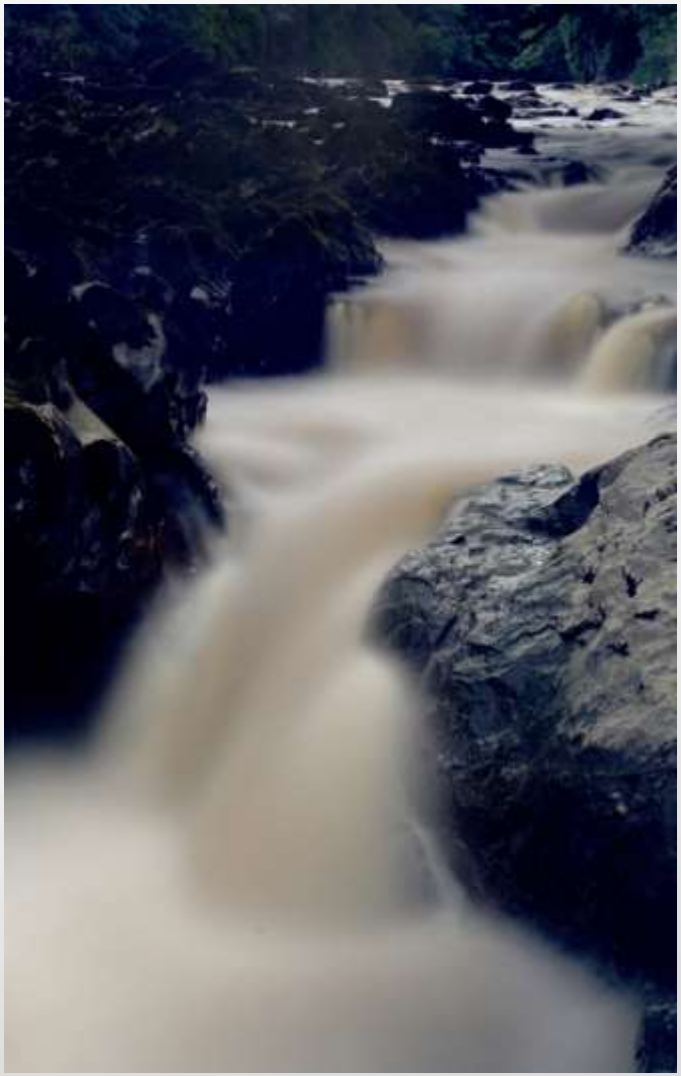
1/5

1/20

1/60

1000sec / F4 / ISO400

30sec / F11 / ISO100



ISO, Advantages & Disadvantages

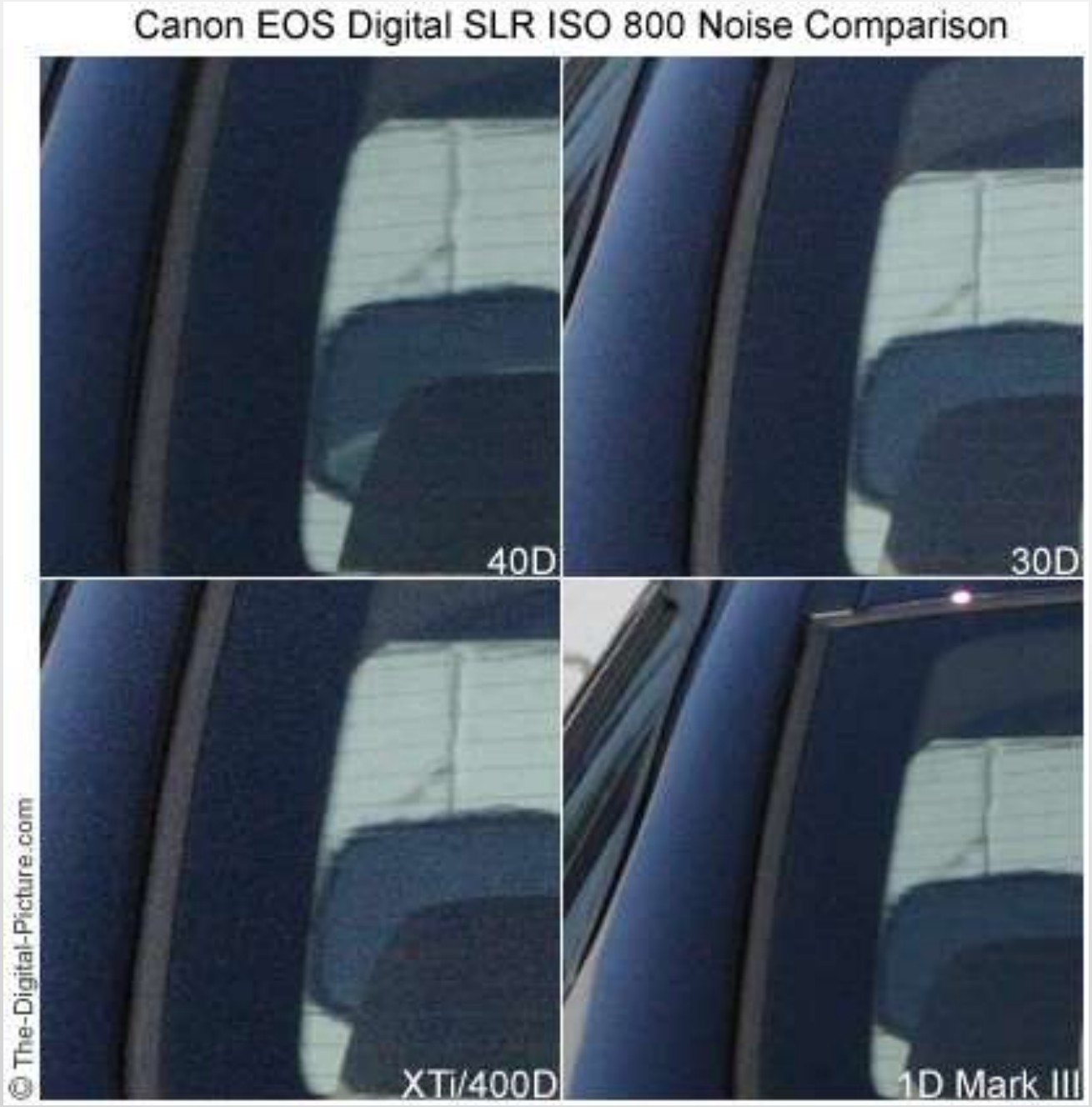
- Apart from doubling the sensitivity of the digital sensor, increasing the ISO introduces more noise (the same as grain on film) to the image
- Smaller sensors suffer from this more
- Therefore unless this is an effect you want for your picture, always shoot at the lowest possible ISO

ISO 100

ISO 1600

ISO 100

ISO 1600


Canon EOS Digital SLR ISO 800 Noise Comparison
40D
30D
XTi/400D
1D Mark III
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Useful Links

- http://www.digital-cameras-help.com/photography.html
- http://www.digital-photography-school.com/21-settings-techniques-and-rules-all-new-camera-owners-should-know
- http://photo.net/equipment/digital/basics/