Digital Photography 101: Camera Basics 2.0 Lab: Controlling Exposure: ISO, Shutter Speed, Aperture

Zach Randall
Florida Museum of Natural History
iDigBio
ISO

- Light control (sensitivity)
- Image quality (noise)

- LESS SENSITIVE TO LIGHT WITH HIGHER IMAGE QUALITY (LESS NOISE)
- MORE SENSITIVE TO LIGHT WITH LOWER IMAGE QUALITY (MORE NOISE)
Canon

Nikon
SHUTTER SPEED

- Light control (length of time)
- Motion control

Need to make sure your shutter is high enough in order for the image to be sharp!
*flash sync
APERTURE

- Light control (intensity)
- Depth of field

MORE LIGHT REACHES THE SENSOR WITH SMALLER DEPTH OF FIELD

LESS LIGHT REACHES THE SENSOR WITH GREATER DEPTH OF FIELD

Larger F. stop the more refraction
Now What!!??

- Available lighting
- Tripod vs. hand held
- Capturing movement, Depth of field, both?
Start with ISO

• Controlled Light: Lowest ISO (best quality)
  – Then prioritize shutter or DOF depending on what your imaging

• Uncontrolled light: Lowest ISO as possible (unless you like “noise”)
  – More flexibility with tripod than hand held (sacrifice capturing motion)
  – “noise” becomes noticeable around 800 (depending on camera model)
Tripod

Tripod – more flexibility (not as much concern for camera shake).

– Capturing movement prioritize with shutter than aperture
– Capturing depth of field prioritize with aperture than shutter speed
– If more light is needed, adjust ISO accordingly
Handheld

As a general rule shudder speed should be larger than lens size (e.g., 50mm lens, shudder speed $1/60^{th}$ sec).

- Capturing movement prioritize with shutter than aperture
- Capturing depth of field prioritize with aperture than shutter speed
- If more light is needed, adjust ISO accordingly

*Hold the camera properly*
Specimen Photography (lab)

- Controlled environment
- Controlled lighting
- Emphasis on depth of field

- ISO 100
- Aperture F.11 (F.8-F.16)
- Shutter 1/250th (sync)
- Adjust lighting accordingly
Specimen Photography (Field)

- Chaotic
- Lighting variable
- Emphasis on depth of field and motion

- ISO as low as possible
- Aperture up to F.11
- Shutter no less than 1/125th
- Option of using flash units, diffusers, etc.
Specimen Photography

*Smaller apertures result in diffraction (e.g., F. 22).

*Too slow of a shutter speed can cause camera shake resulting in out of focus image (use remote shutter release, mirror lock-up)
FIELD TRIP (5:00-6:30) Sweetwater Wetlands Park – Try shooting manual!

Take a handout and try the quiz!

Email: zrandall@flmnh.ufl.edu