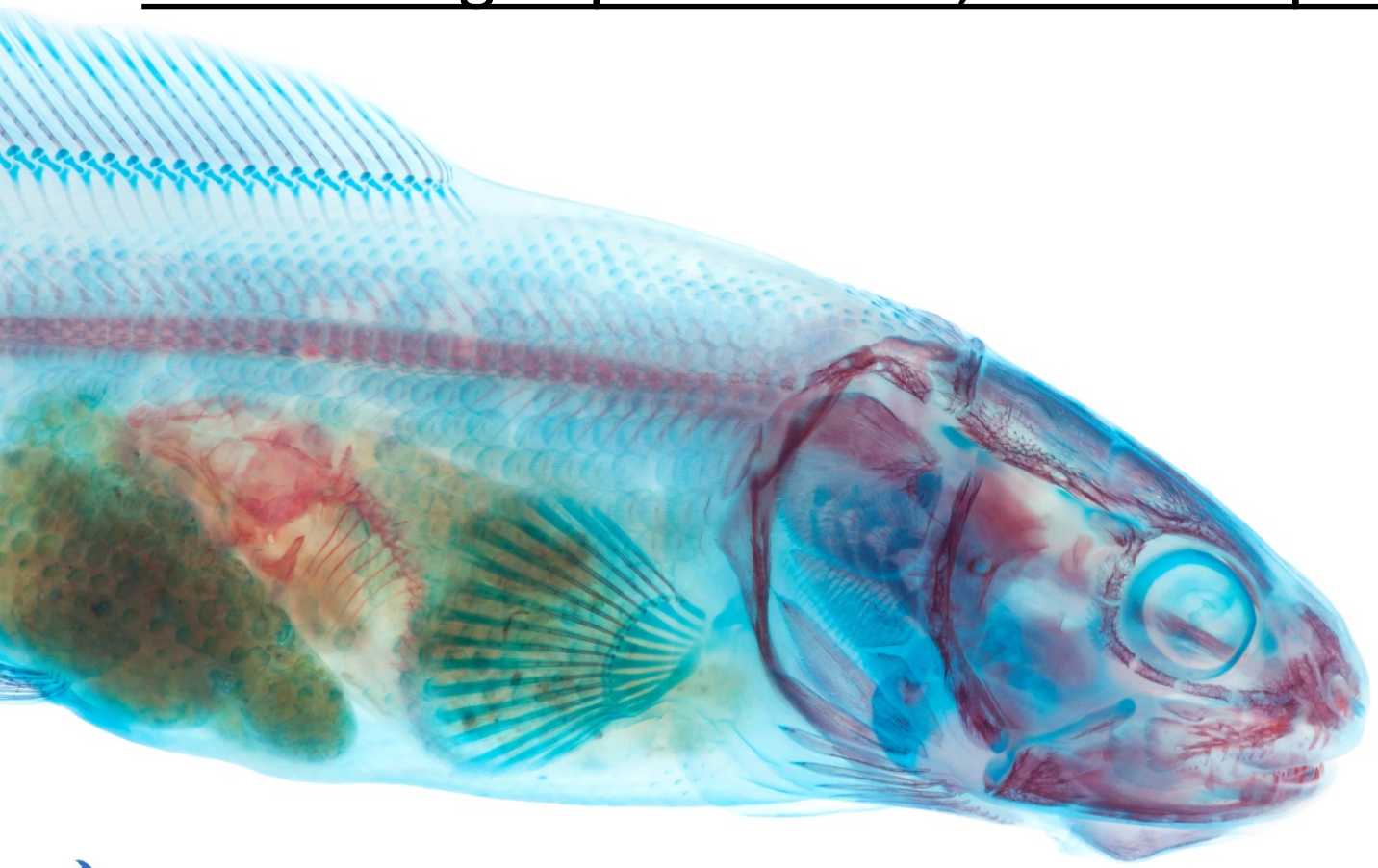
Digital Photography 101: Camera Basics 2.0 Lab: Controlling Exposure: ISO, Shutter Speed, Aperture



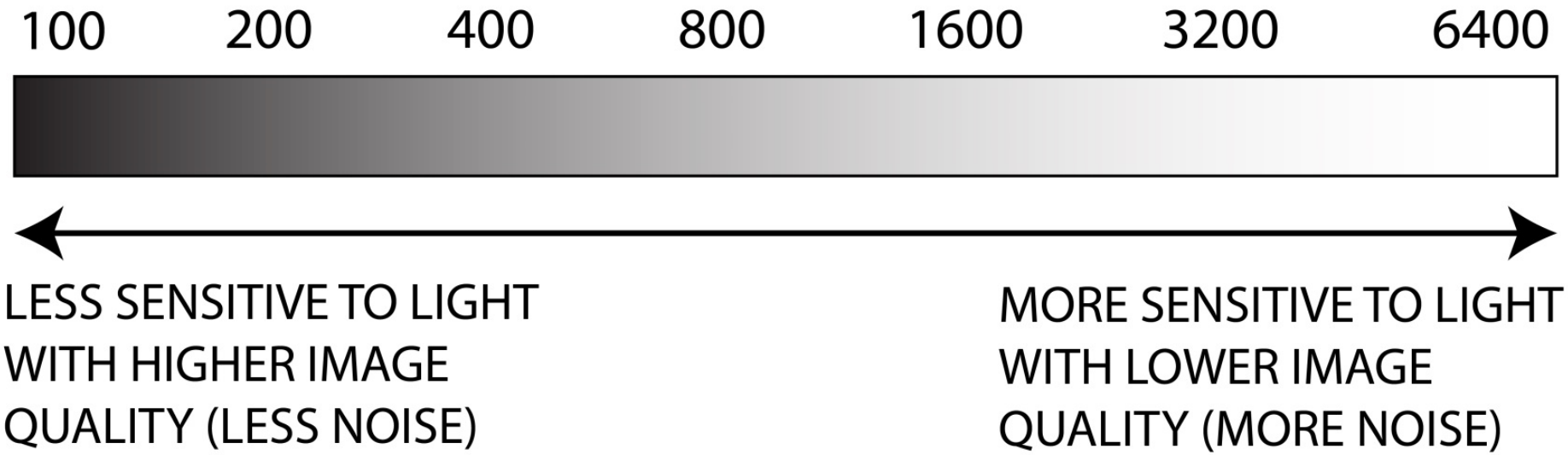
FLORIDA MUSEUM
FISH COLLECTION

iDigBio
Integrated Digitized Biocollections

Zach Randall
Florida Museum of Natural History
iDigBio

ISO

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



Canon


AF
DRIVE
ISO
ONE SHOT
ISO 100
100 5.6(37)

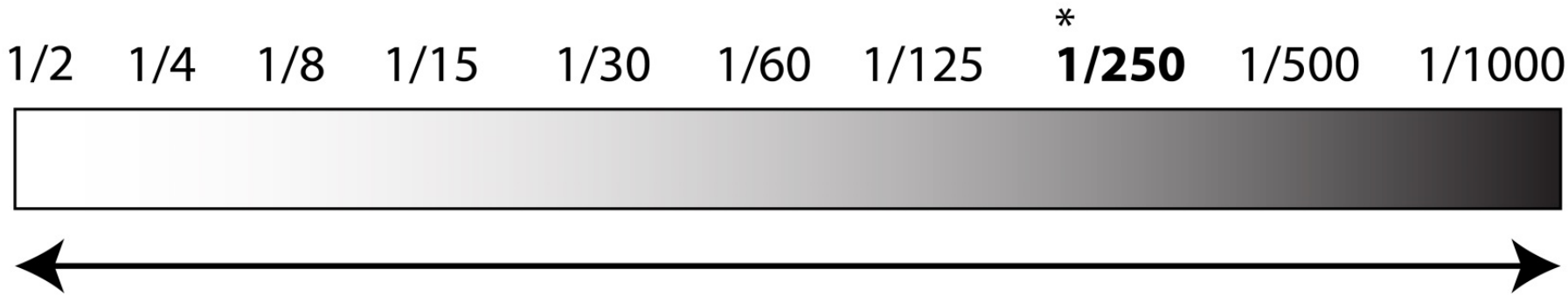
Nikon


FORMAT
REAR
RAW+
FINE
WB A
ISO
320
F4.5
BKT


DISP.
MENU
JUMP
Av
ISO
AF
WB
1/125
F5.6
ISO 100
M
-2..1..0..1..+2
AWB
ONE SHOT
L
925
Canon

SHUTTER SPEED

- Light control (length of time)
- Motion control



MORE LIGHT REACHES THE SENSOR WITH SMALLER CHANCE OF STOPPING SUBJECT AND CAMERA MOVEMENT

LESS LIGHT REACHES THE SENSOR WITH GREATER CHANCE OF STOPPING SUBJECT AND CAMERA MOVEMENT

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

*flash sync

Canon


AF
DRIVE
ISO
ONE SHOT
ISO 100
100
5.6(37)

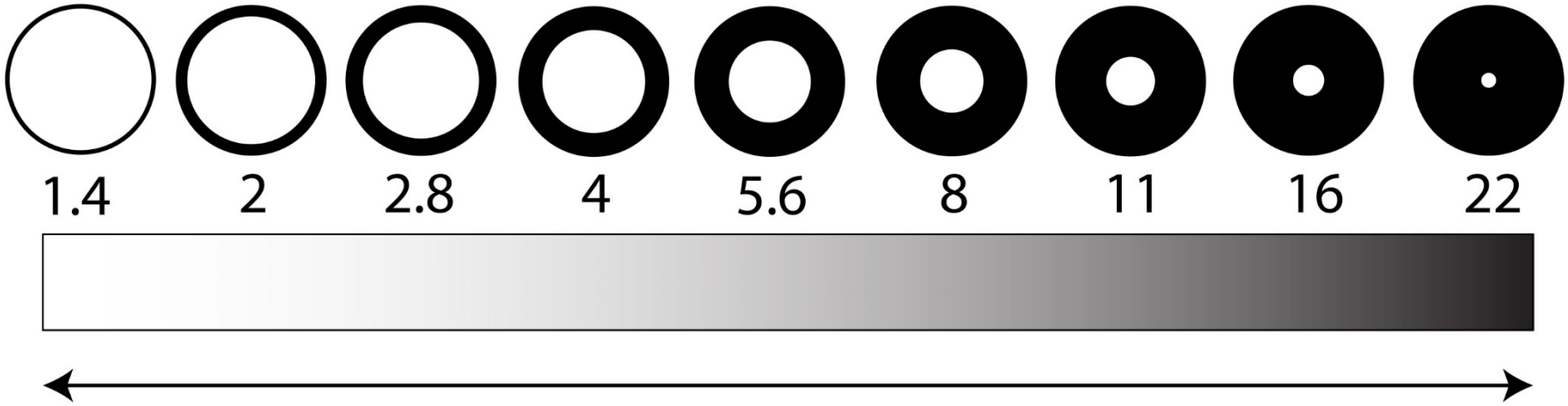
Nikon


FORMAT
800
F4.5
REAR
BKT
RAW+
FINE
ISO
320
WB A


DISP.
MENU
JUMP
Av
1/125
F5.6
ISO 100
M
-2..1..0..1..+2
AWB
ONE SHOT
925
L
ISO
AF
WB
Canon

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

Canon


AF
DRIVE
ISO
ONE SHOT
ISO 100
100
5.6

Nikon


FORMAT
F4.5
REAR
RAW+
FINE
ISO
320
WB
A
AUTO


DISP.
MENU
JUMP
Av
1/125
F5.6
ISO 100
M
-2..1..0..1..+2
AWB
ONE SHOT
925
L
ISO
AF
WB
Canon

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 1/60th sec).

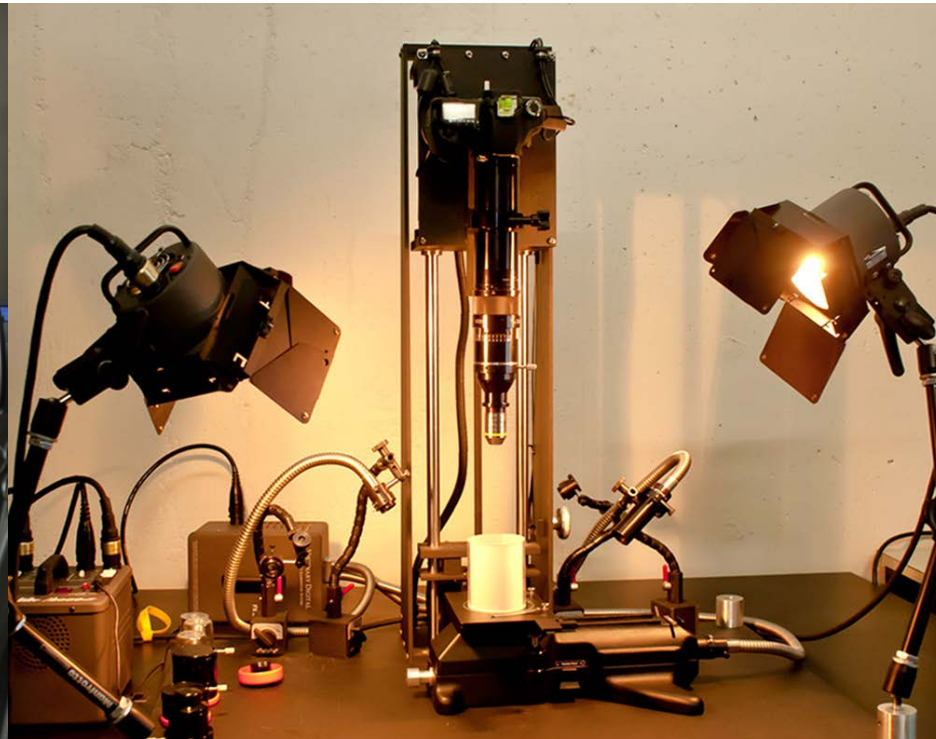
- Capturing movement prioritize with shutter than aperture
- Capturing depth of field prioritize with aperture than shutter speed
- If more light is needed, adjust ISO accordingly

*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.

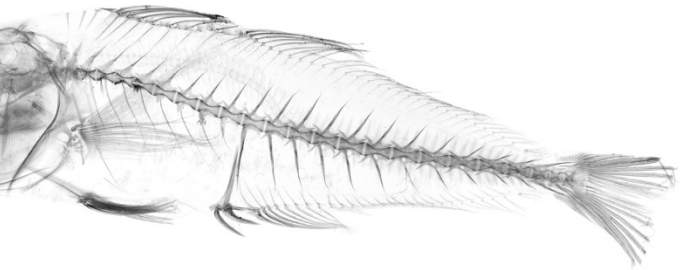
Specimen Photography

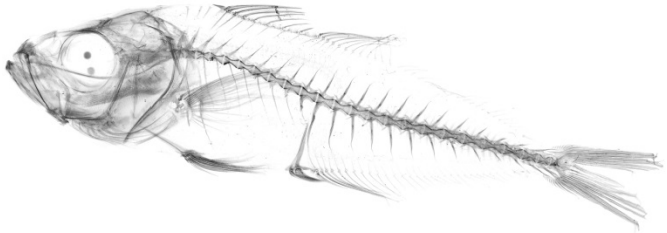
*Smaller apertures result in diffraction (e.g., F. 22).

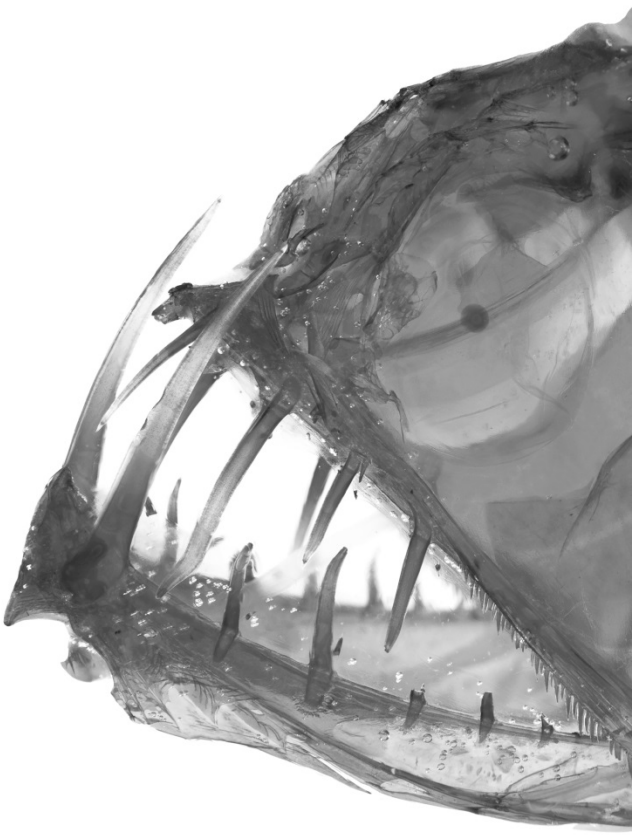
*Too slow of a shutter speed can cause camera shake resulting in out of focus image (use remote shutter release, mirror lock-up)

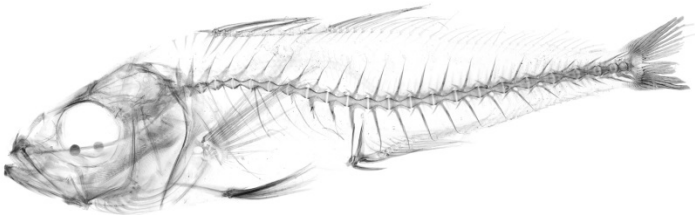
FIELD TRIP (5:00-6:30) Sweetwater Wetlands Park – Try shooting manual!

Take a handout and try the quiz!









Email: zrandall@flmnh.ufl.edu