

Basics of Nature Photography



By Scott Ralston

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Landscape



Portrait



Macro



STOP

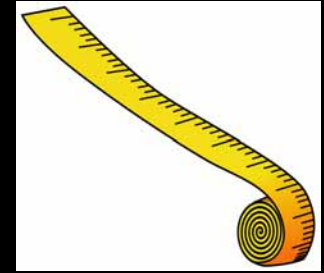
- Photography is simple
 - Be at the right place at the right time
 - Frame the subject properly
 - Take LOTS of pictures
- First you must know how to use your camera
 - This is where the most mistakes are made!
 - Know how to use your camera to get the results you want out of the picture

See The Light



- To understand photography you must understand how a camera captures light
- Exposing Film is like filling a glass of water
 - The goal is to fill the glass full (Proper Exposure)
 - Use a small or large glass (Film Speed)
 - Use a large or small spout (Aperture)
 - Pour slow or fast (Shutter Speed)

How is light measured?



- Light ranges from pure light to pure dark.
- The range is subdivided into “Stops”
- Stops of light
 - Measured unit of light
 - Usually measured in F Stops
 - F Stops generally are in doubled or halved units.
 - F 1/1.4 is half as much light as the next Stop which is F1/1.8

Why doesn't a camera just capture an image the same as I see it with my eyes?

- The Human Eye has an extraordinary range estimated at approximately 14 stops
- Conventional film can only capture 3 stops at a time
- Digital film can capture 5 stops of light
- Fewer stops is less detail in shadows or bright areas



Light Range

Human Eye Range
14 Stops



Detail Captured By Film
3 Stops

Detail Captured By Digital
5 Stops

How Much Light Do I Need?

- Metering

- Cameras have built in light meters
- In most cases trust your camera!
- Spot Meter Metering (Center Reading)
- Center Weighted Metering (Whole Scene but center is given more weight)
- Evaluative Metering (Whole Scene)

Camera Shutter



- Opens and closes like a blink of an eye to let light expose the film
- In low light the shutter must be open longer to let in to fully expose the film
 - Too slow will produce a dim picture
- In bright light the shutter must open and close faster so the film won't be over exposed
 - Too long of an exposure will wash out the image

Proper Exposure

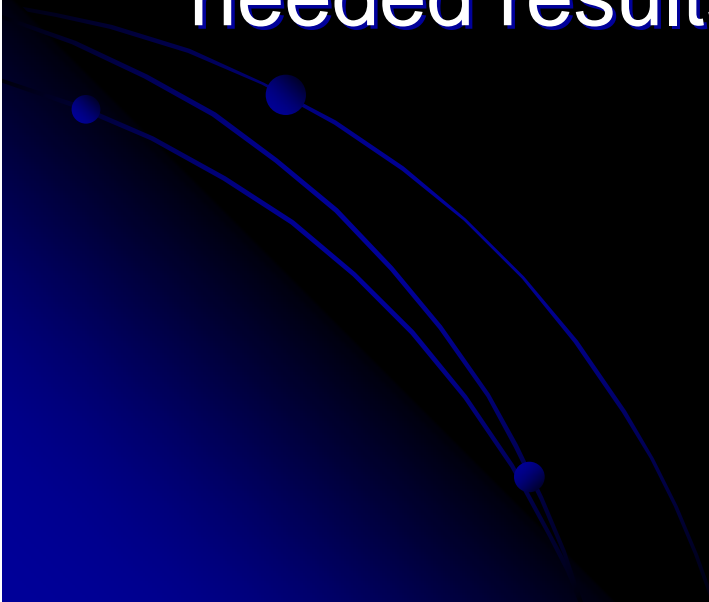


Under - Exposure - Over



Stopping Down or Up

- Manually over exposing or under exposing and image
- Used when a specific effect is desired or automatic metering will not produce the needed results



Stopping Up



Automatic Metering



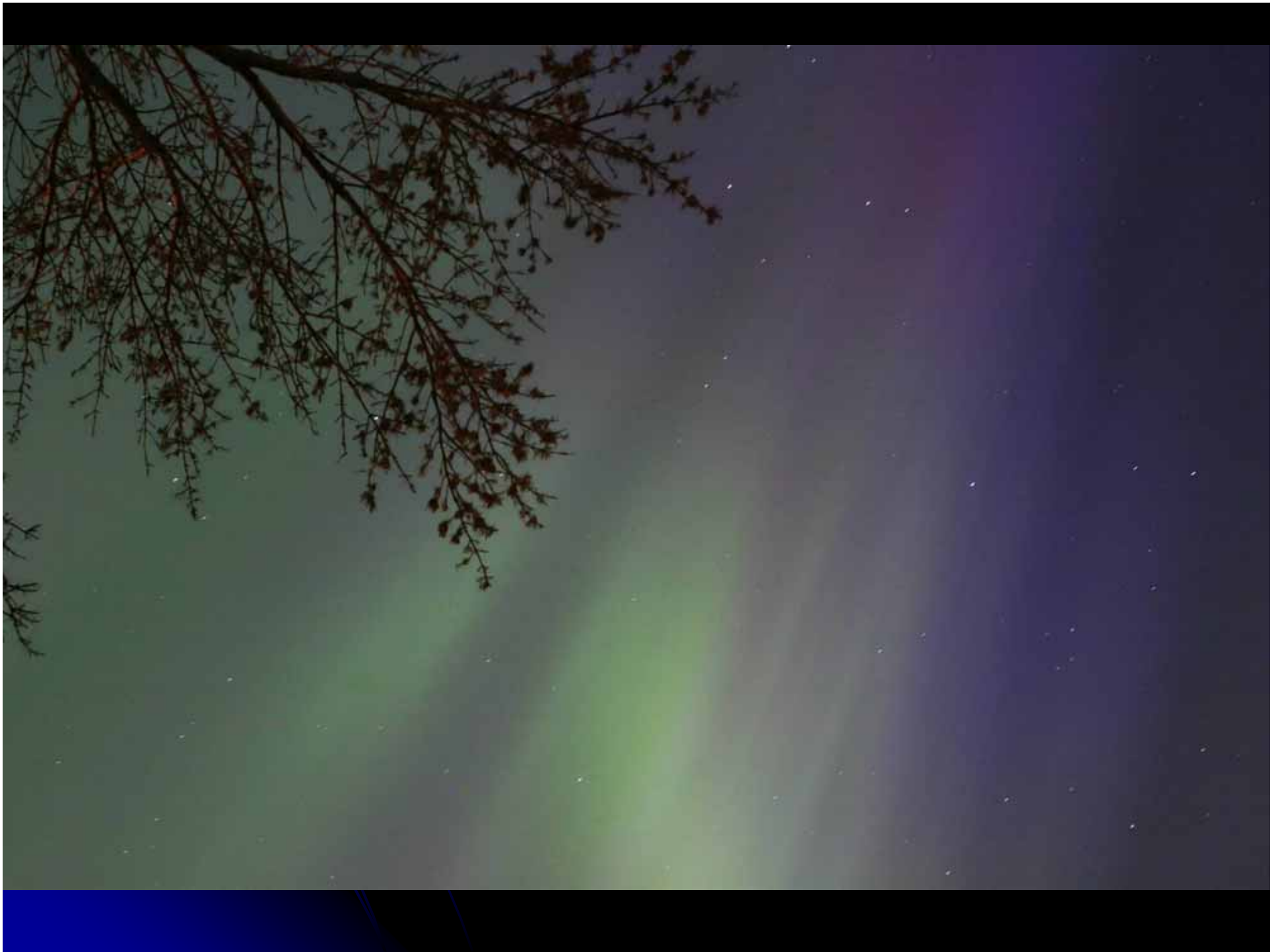
Stopped up 2 Stops
(Overexpose)

Stopping Down



Special Effects With Shutter Speed







Reduce Motion Blur

- Use a monopod or tripod
- Brace against stable object
- Use a flash when appropriate
- Increase light by aperture or ISO speed
- Image Stabilizing Lens (Gyro)
- General rule for hand-holding
 - Shutter Speed > Focal Length of Lens
 - Focal Length = 300mm
 - Shutter Speed should be >1/300 Sec.

Freeze Moving Objects



Object - Motion - Camera

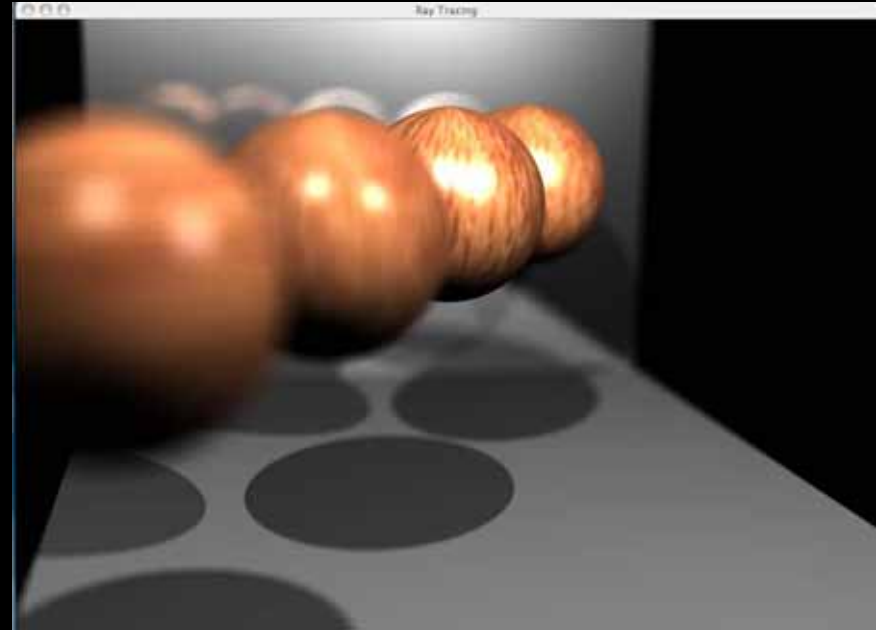


Aperture



- Size of hole for light to enter through lens
- Varies by Lens
- Measured in F# or Focal Length/Aperture
 - Focal Length = 80mm
 - Aperture = 4.5
 - Size of Aperture = $80/4.5 = 17.8\text{mm}$
- Small F# = Large Hole = Lots of Light

Depth of Field



- Amount of scene in focus in front and behind subject
- Large Aperture (small F#) = Narrow depth of field (only subject in focus)
- Small Aperture (Large F#) = Broad depth of field (near and far objects also in focus)

Small Aperture - Large Aperture



F/36



F/5

Film Speed



- Industry Standard is “ISO”
- Film Speed is the Film Sensitivity to Light
- However! – Higher sensitivity produces more “Noise” or speckling in the image
- Digital sensors produce less noise than film in higher speeds (>400 ISO) Which is better for most wildlife photography where higher speeds are used

Noise



100 – ISO – 3200



1/180 Sec.



1/2500 Sec.

Canon 10D

Noise Reduction Software



Original ISO 3200

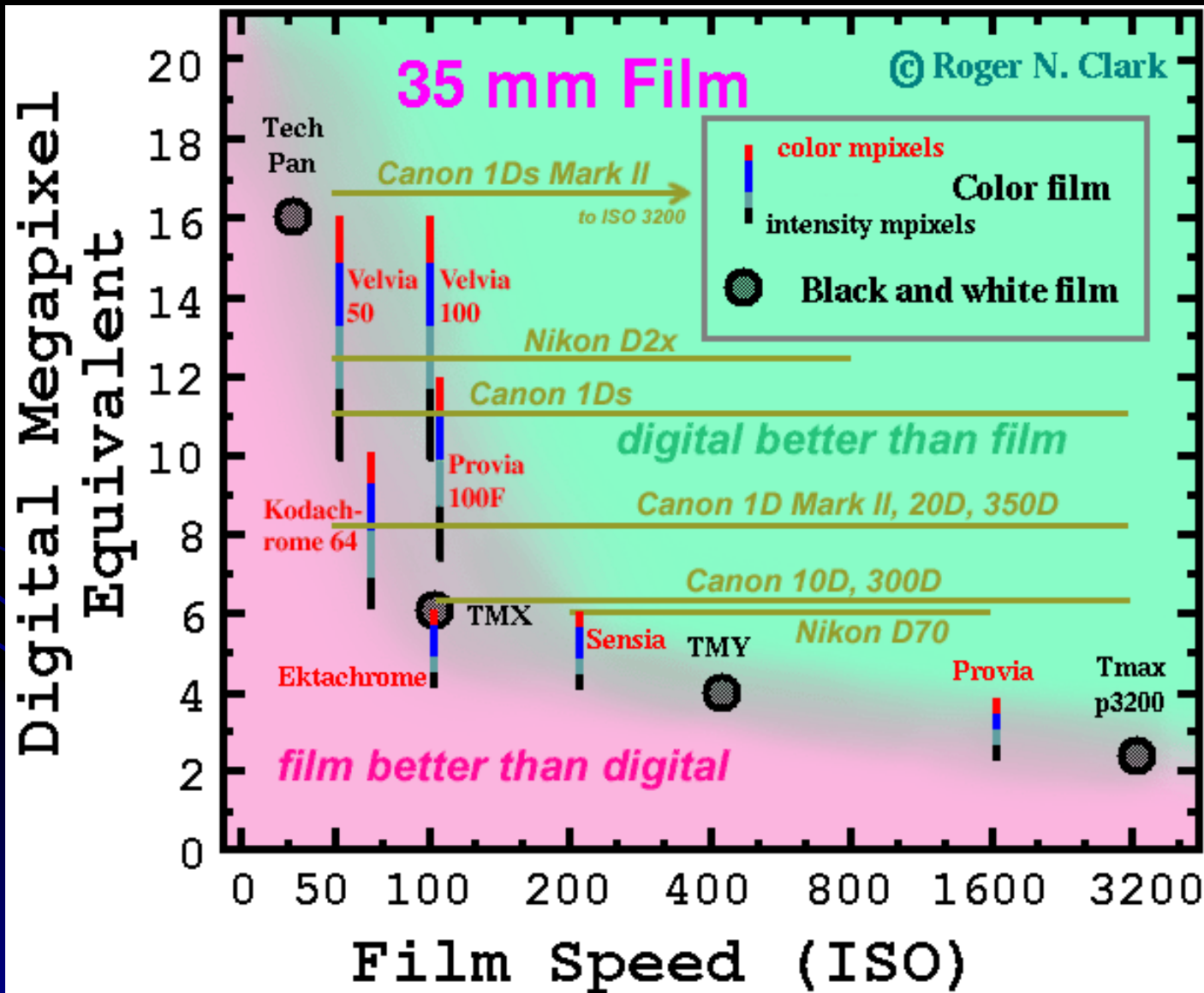


**Original ISO 3200
Processed with
Picture Code – Noise Ninja**



Original ISO 100 – Unprocessed

Digital Vs. Film





Camera Body



- Point & Shoot

- Cheaper
- Smaller
- Video Options
- Auto Adjusts sharpness, contrast, saturation on the camera
- Fewer parts to change
- Wide variety of choices
- Best for candid

- SLR (Single Lens Reflect)

- Heavier
- Larger
- Interchangeable Lenses
- More Customizable
- More Expensive
- Post processing needed for optimum image quality
- Often higher quality components
- Wider variety of uses depending on lenses used

What Your Lens Sees

What 35mm Film Sees

What 1.5 Crop Digital Sees

Digital Crop Factor



Digital Vs Film



- Film

- Better quality image at low ISO speeds
- Generally higher resolution than standard digital
- Film body cameras are much cheaper
- Lighter camera bodies
- Some custom effects such as double exposure are only available in film
- Easier to keep film free of specks and dust
- Full frame use of lens
- High cost of developing film over time
- No instant results

Digital Vs Film



- Digital

- Better image quality at higher mega pixels or higher ISO speeds
- Greater light range (5 Stops)
- Very high number of frames per media card
- Easily change ISO speeds without changing film
- Instant review of images
- Digital record stored with every photo of camera, lens and settings specs.
- Most lenses are cropped limiting wide angles but increasing telephoto.
- Higher cost of camera body
- Risk of dust or specs on camera sensor
- Always shoot on highest quality setting! Image size can always be reduced later but can never be increased

Lens



- Bends Light to magnify or widen the image
- Magnification is measured in Power (#X) or focal length (#mm).
 - Approximately for 35mm film 50mm focal length equals 1X or normal human sight.
 - 400mm lens approximately equals 8X on a 35 mm camera
 - 400mm lens on a digital camera with a 1.5 crop factor would be 12X
- NEVER use “digital zoom” only Optical
 - Digital zoom is just a cropping of the image and loss of image quality. Shoot only what your camera can do optically and crop later in the digital darkroom later if needed (Photoshop)

Lens

- Zoom

- Range of focal lengths
- More versatility
- More complex
- May not have the same performance in all parts of the range

- Fixed

- One set focal length
- Generally sharper crisper image
- Less to go wrong
- Cheaper



Lens

- Focus

- Manual Vs. Auto

- Most Auto has manual override

- Front Vs. Rear Element

- From element focus will turn the front of the lens as you focus

- Rear element focus turns internally so outer portions don't move

- Ultrasonic motor Vs. Standard

- Ultrasonic motor will focus much faster and silently

Field of View



17mm
Subject 2ft Away



280 mm
Subject 50ft Away

Teleconverter

- Multiplies focal length of the lens (X1.4 or X2)
- Cheaper way to achieve higher magnification
- Drawbacks
 - Can't be used on all lenses
 - Cuts light by about 2 Stops
 - Reduces depth of field by same magnitude
 - Auto focus may be disabled if lens aperture is reduced past F/8
 - Can be overridden by tapping 3 pins



Macro Lens

- Very Close Focus
- Macro built into lens or use a screw on macro filter
- Lower Light
- Use tripod
- Smaller Aperture



Lens Filters



- Change effect of light entering camera
- Warming or Cooling Filters (Orange or Blue)
- Polarizing Filters (reduce glare)
- Neutral Density Filters (reduce total light)
- ONLY use filters needed to produce the photographic effect. All other filters (warming or cooling) can be done in a digital darkroom (Photoshop)

Polarizing filter



With



Without

Using a Flash

- Illuminate in dim light
- Fill Shadows in bright light
- Allows faster shooting speeds
- Use diffuser for close subjects to avoid harsh shadows and lines
- Enhance reflective colors in many species
Especially Birds!
- TTL Flash is better – Through The Lens
 - Reads light and amount of flash needed through the camera lens instead of an external sensor making the result more accurate for your scene.



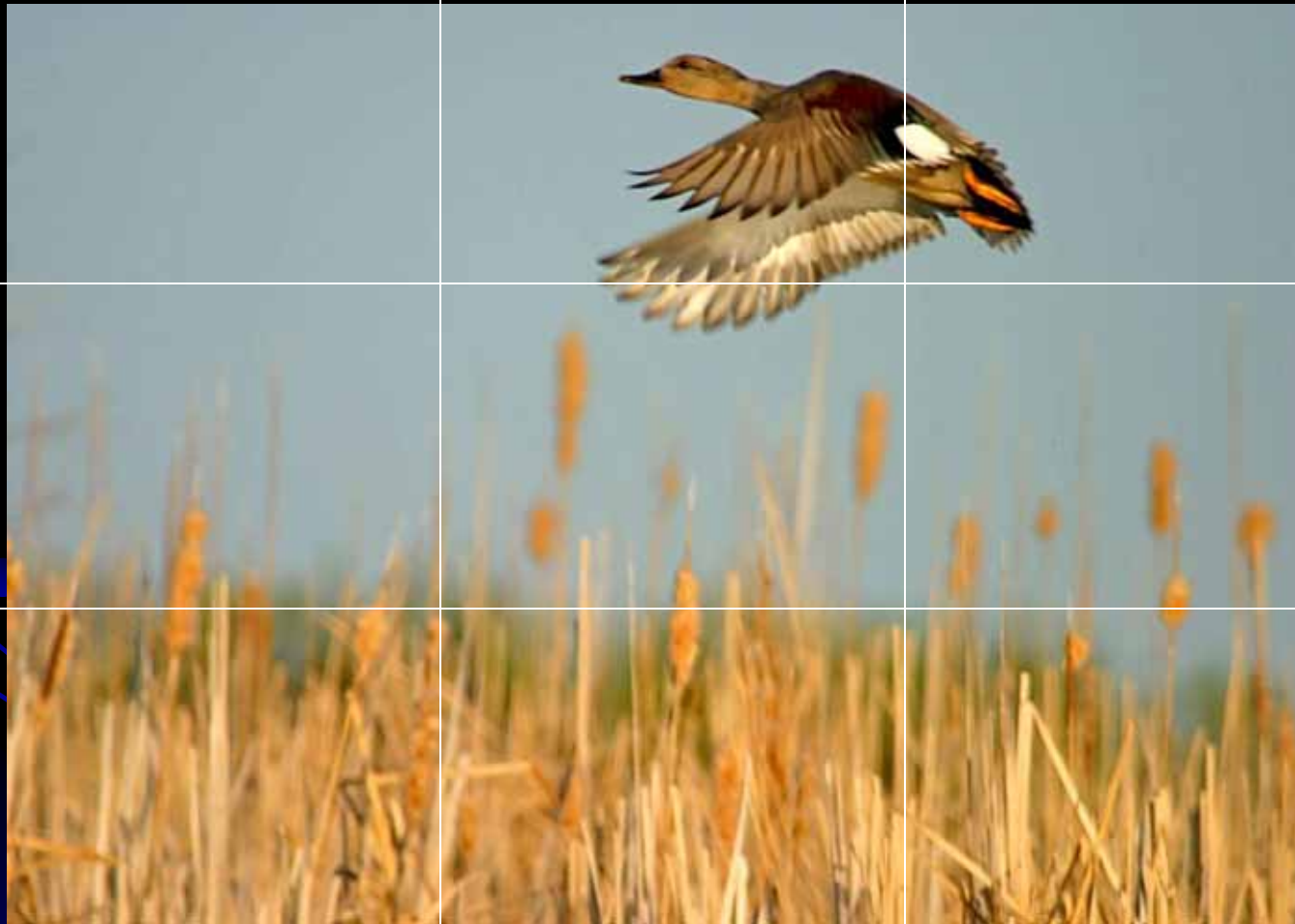
Flash



Composition

- Proper Framing of the Subject within the scene
- Composition can dramatically change the image
- Except for Portraits, follow the rule of Thirds
 - Subject or horizon should be in a third of the image instead of centered

Rule of Thirds



Landscape or Portrait



Framing



Framing



Foreground Subject in Landscape



Path for the eye to follow



Path for the eye to follow



Abstract



Contrast

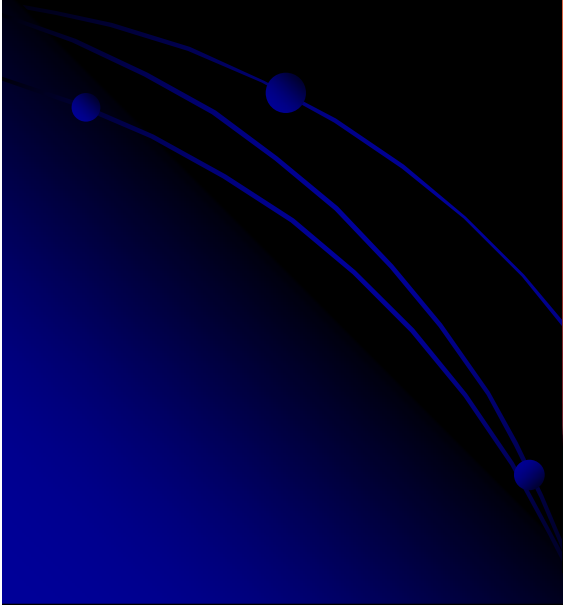
Bright subject needs dark background &
Light subject needs dark background



Environment



Mood



Mood



Digital Darkroom



- In film photography much can be manipulated in the darkroom
 - Brightness, contrast, cropping, saturation, etc.
- Digital darkroom is very powerful and can do all or more that a real darkroom can
 - Compensate for limitations of the camera or of the lighting situation at the scene
 - Correct minor flaws such as dirt specs on the lens
 - Always keep an original un-altered image just like you would keep a negative from a film camera

Digital Darkroom

- Ethics

- To keep an image “True” only manipulate the image to enhance what is there not to change the reality of the scene

- Common enhancements

- Noise reduction, brightness & contrast compensation, white / dark balance, digital filters (warming), cropping, sharpening.

Total Enhancement



Before



After

Taking good Pictures

- TAKE LOTS OF PICTURES

- The best photographers take 100's – 1,000's of images during a shoot.
- With digital the poor images can easily be discarded with no cost
- Experiment with various settings to find what works best in different situations.
- Learn about the habits of your subject so you can anticipate where and when to get good photos

Find animals even when they hide



The End



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