

Prints and Printing 101

A Practical Guide to Prints and Printing

Los Gatos Saratoga Camera Club Program

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First a thanks to:

- Tim Aston
- Eric Gray
- Jim Katzman
- Larry Shapiro
- Rick Whitacre

What We'll Cover

- The importance of the printed image
- Setup and workflow for better prints
- A review of printers – **Eric Gray**
- Printer media options and issues
- 3rd party printing options and resources
- A how-to guide to matting – **Jim Katzman**
- Matting and general printing resources

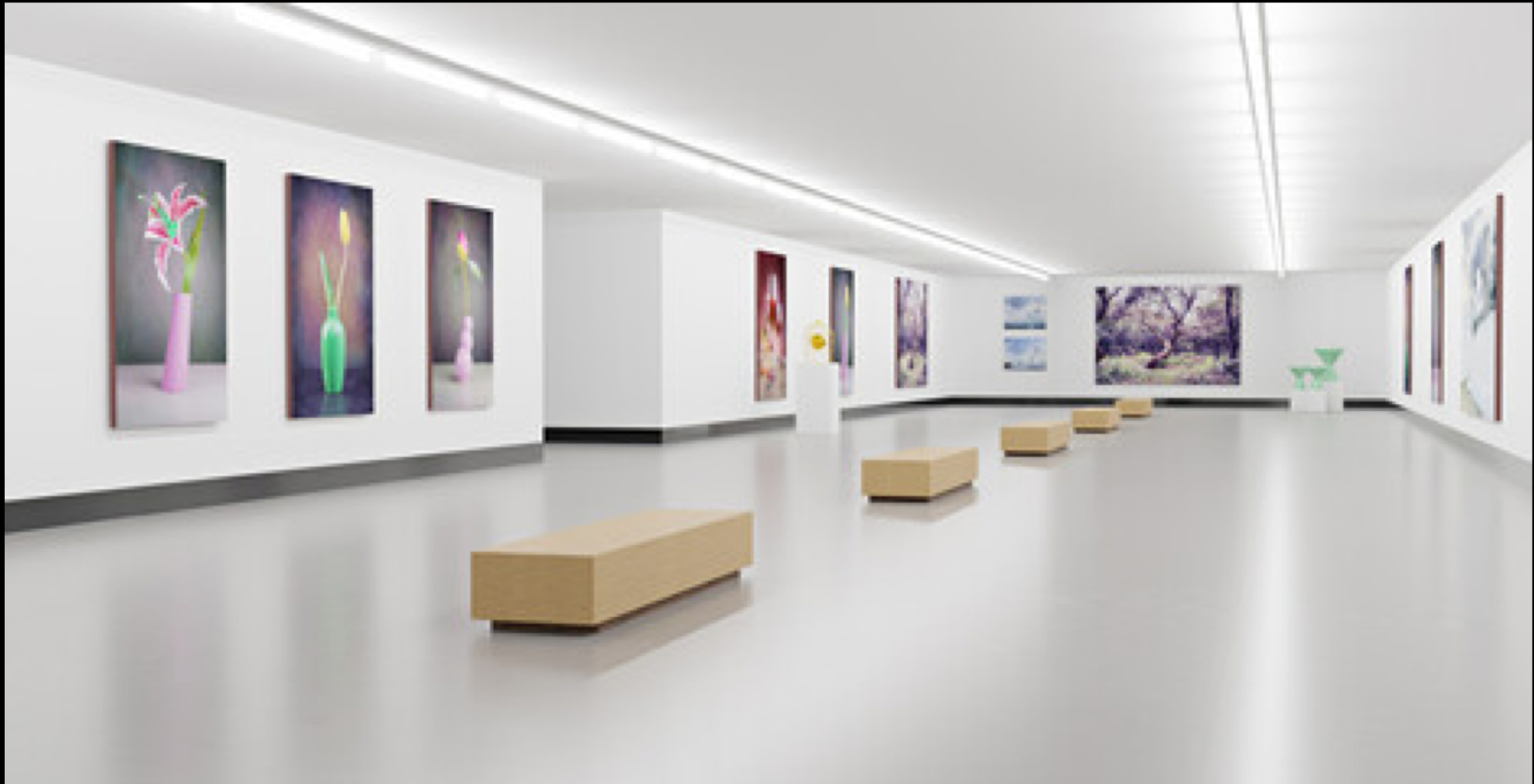
Why Print?

- The **ultimate step** in the process of making an image
- Controls the context – creates its own space, brings the image to life
- Creates a work of art – gives an aura, conveys worthiness and value
- Makes you more selective – pay more attention to detail
- Creates a tangible, tactile relationship between you and your image

Is this your ultimate use?



Or this?



Or *this*?



Some Quotes on the Importance of Prints

- “A beautiful print is a thing in itself, not just a halfway house on the way to the page.” - **Irving Penn**
- “A photograph doesn’t feel real until it is a tangible physical object I can hold in my hand.” - **Stephen Johnson**
- “The electronic image could no more replace a fine photographic print than a synthesizer could replace a violin!” - **Huntington Witherill**
- “A picture is worth a thousand words; A fine art print so much more.” - **Steve Denby**
- “When you make prints you deepen your relationship with your images.” - **John Paul Caponigro**
- “I believe printing and hanging your work is the most valuable part of any photographer’s workflow.” – **Jason Bradley**

Why Don't You Print?

- It's too much work (aka, "I'm lazy" or "I have a printer but I haven't used it in a long time...")
- It's expensive
- I don't have a printer and/or tools and supplies for matting
- I don't really have a need to see my images in print
- Since COVID, I've enjoyed staying home on competition night and now only submit digital images

Color Spaces and Color Theory

- Refer to Jeffrey Pawlan's 2021 program night presentation for more detail:

<https://www.youtube.com/watch?v=udEGFOkQOWw>

Processing Images (for printing)

- Make sure to control the viewing environment:
 - Darkish room
 - No direct light on monitor surface
- Calibrate your monitor once per year:
 - Calibrite Display Pro HL - \$279
 - Datacolor Spyder X Pro - \$139
 - DisplayCal software



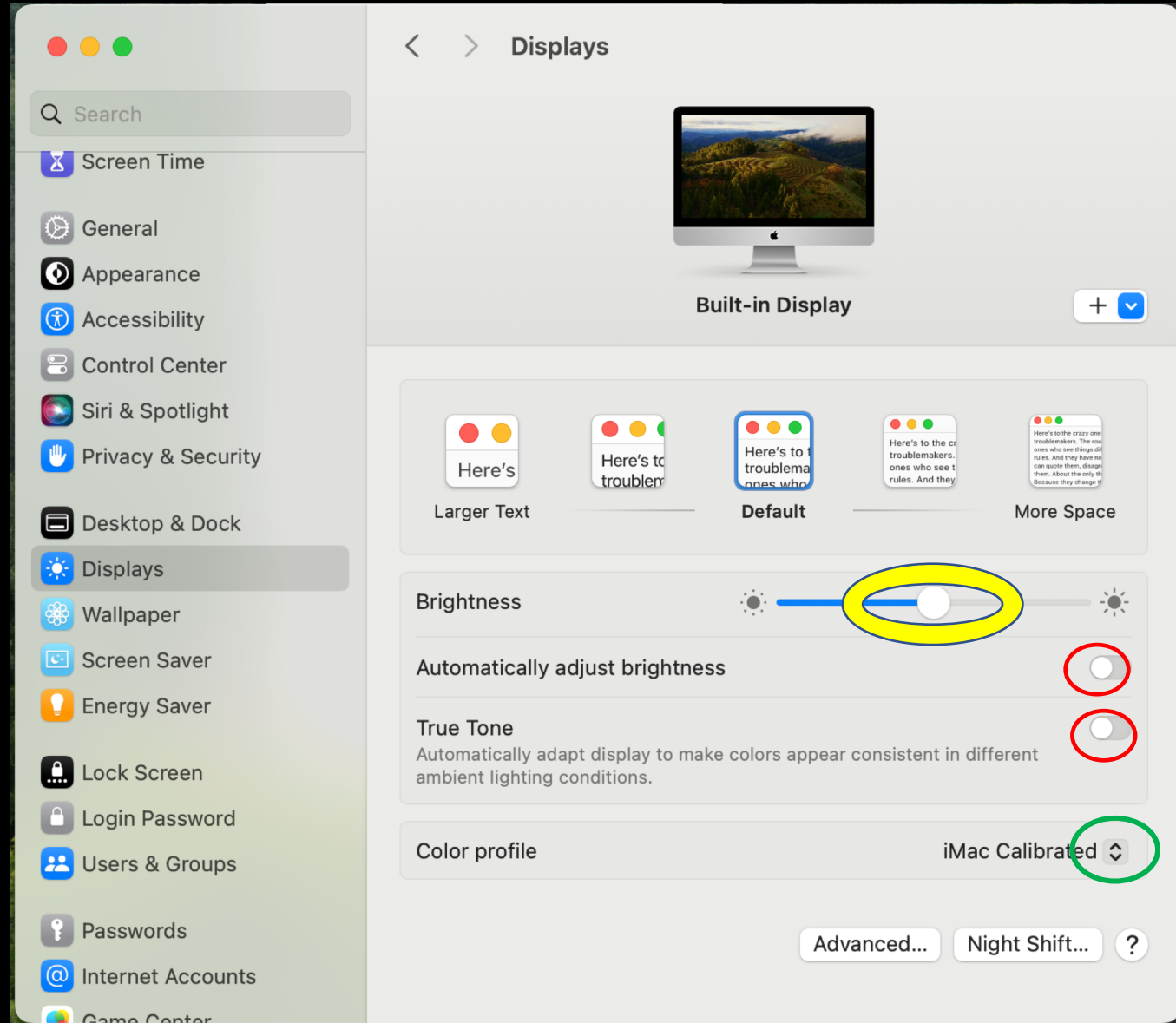
Why Calibration?

- Ensures closest alignment between what you see on the screen and what your print looks like
- Will help you avoid common problems – “my print is too dark”, “the blacks are too muddy”
- **Caveat** – projected light of your monitor will never look the same as the reflected light of your print
- Trial and error and experience will help you “dial in” a set of image adjustments that work for you.

Poor Man's iMac Calibration

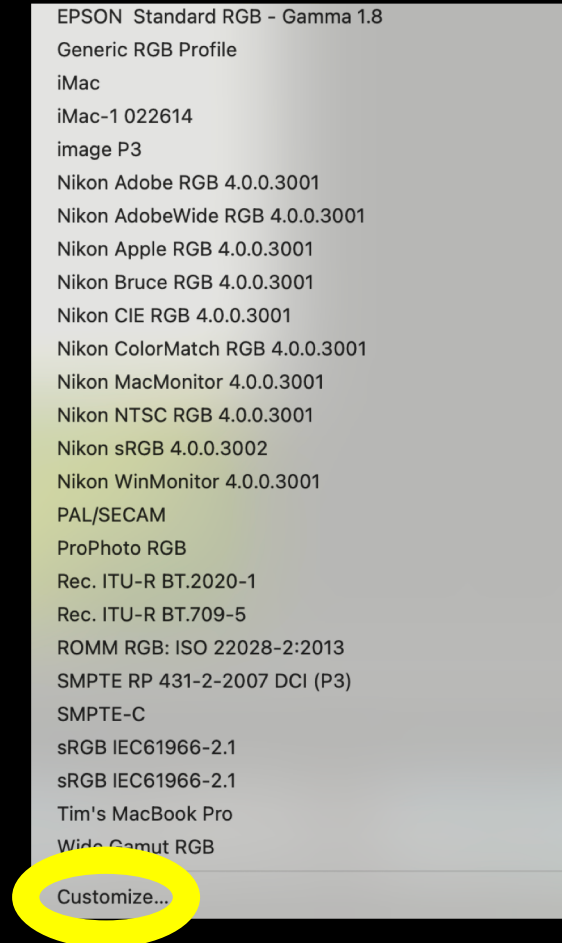
Apple Display Utility

- Click settings, displays
- Set brightness at 50%
- Turn off auto adjust, true tone and night shift
- Click color profile pull-down



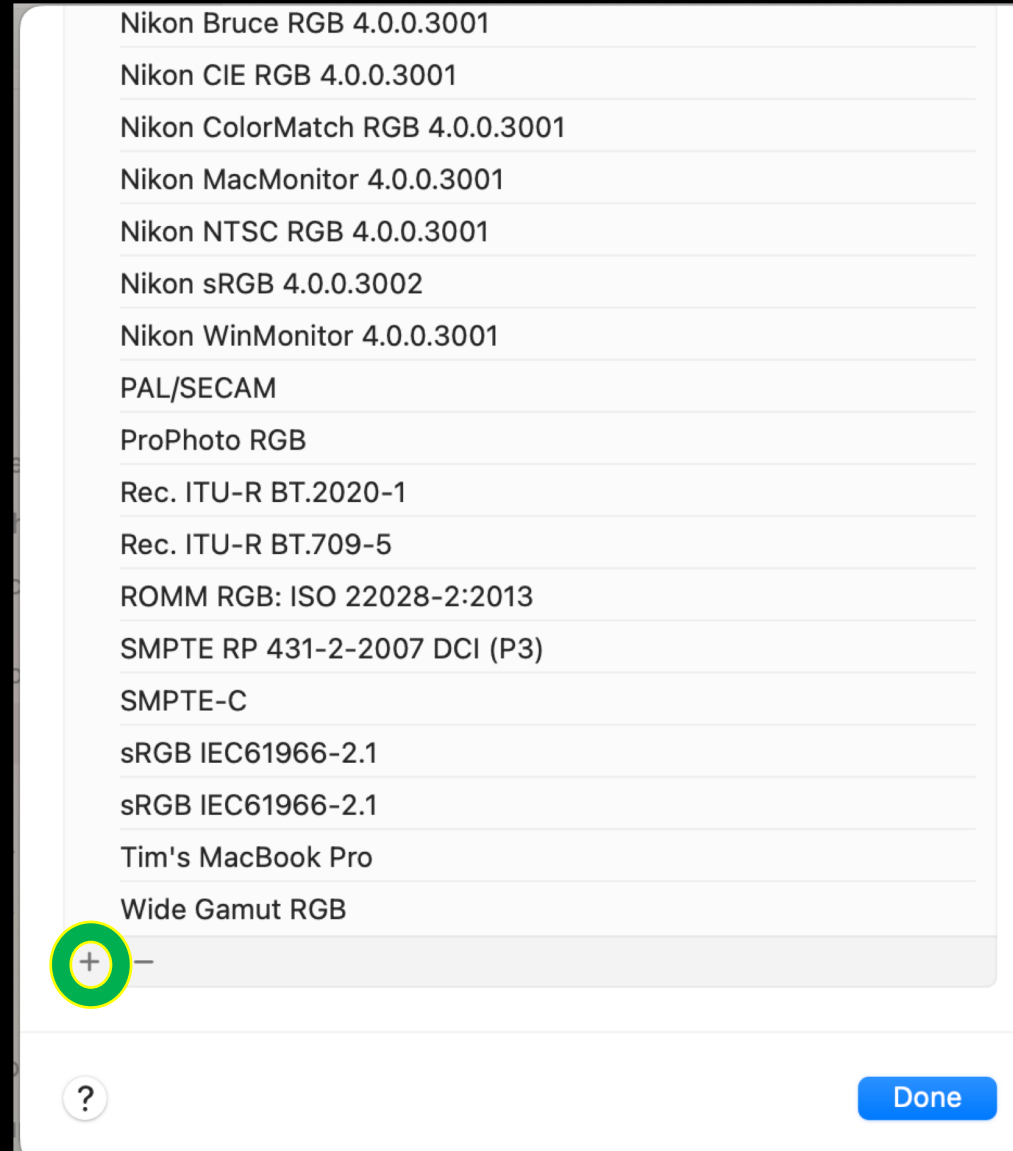
Poor Man's iMac Calibration

- click “customize”



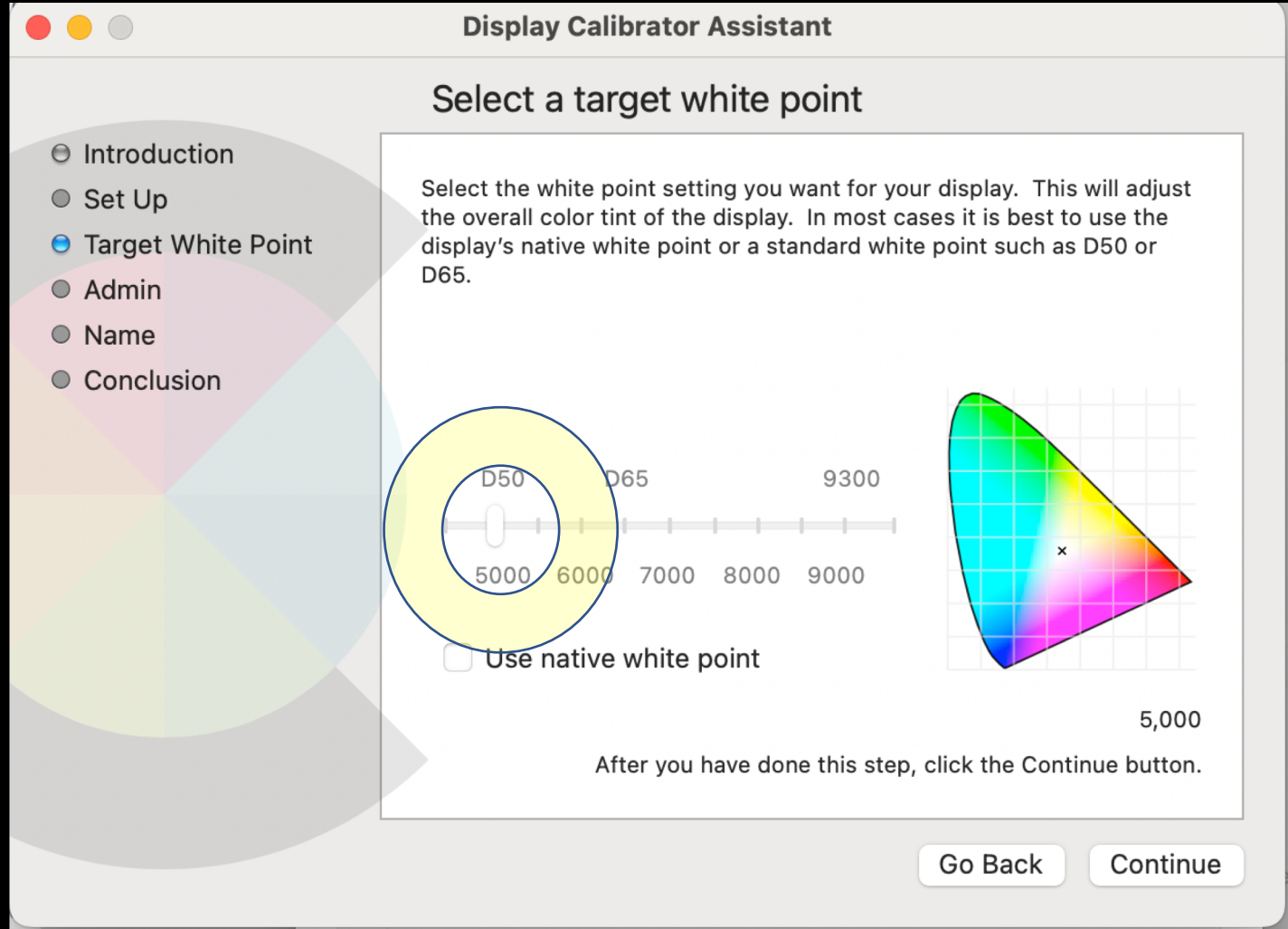
Poor Man's iMac Calibration

- Click “+” at bottom



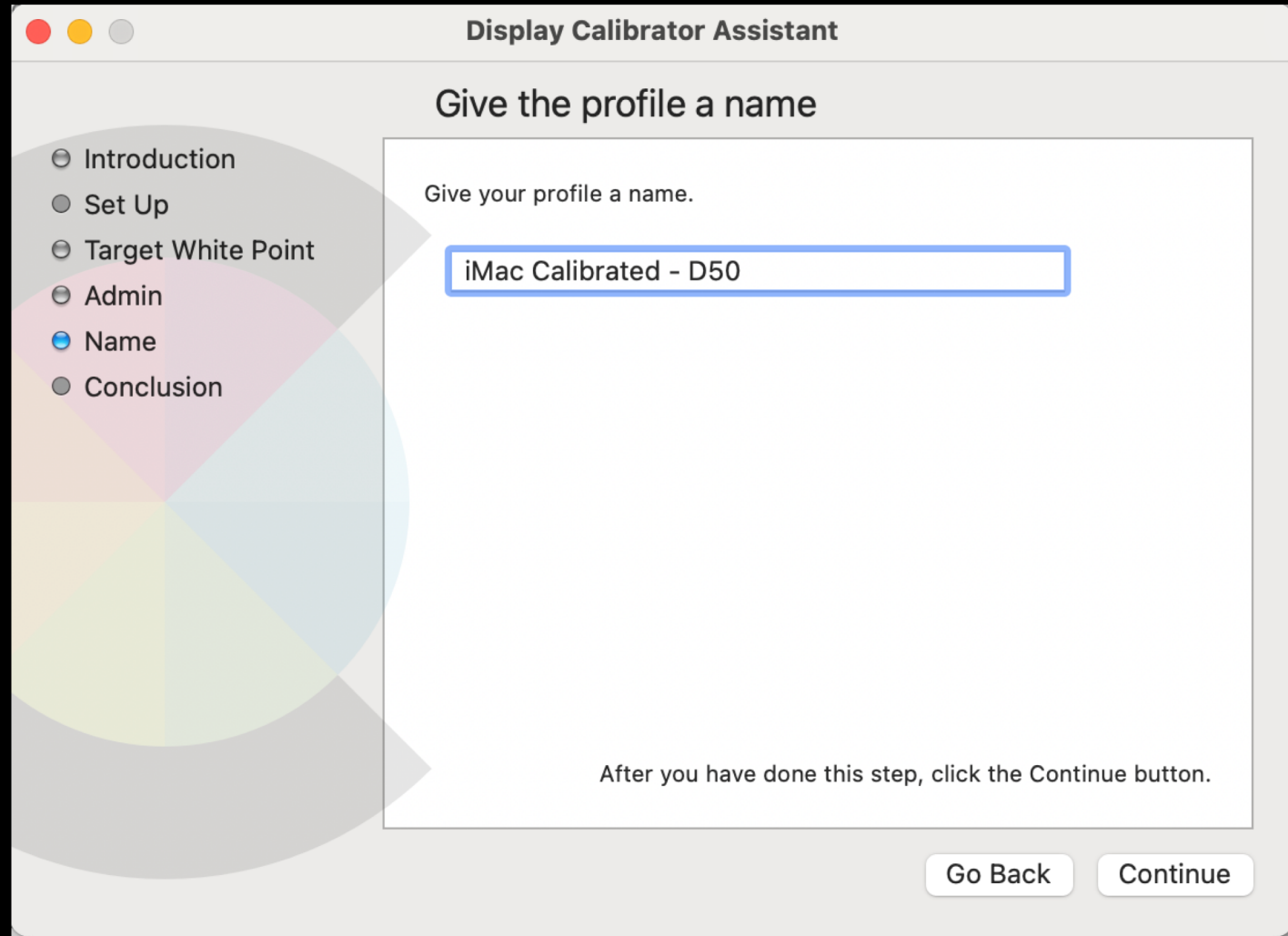
Poor Man's iMac Calibration

- Select a white point
 - 5,000K or D50
- Best for prints
 - This point is somewhat controversial as some paper suppliers suggest 6,500K better for paper matching. Try it yourself.



Poor Man's iMac Calibration

- Give it a name



The screenshot shows the 'Display Calibrator Assistant' window. On the left is a circular progress indicator with six segments: Introduction, Set Up, Target White Point, Admin, Name (highlighted in blue), and Conclusion. The main area is titled 'Give the profile a name' and contains the instruction 'Give your profile a name.' Below this is a text input field containing 'iMac Calibrated - D50'. At the bottom right are 'Go Back' and 'Continue' buttons. A note at the bottom center says 'After you have done this step, click the Continue button.'

Display Calibrator Assistant

Give the profile a name

Give your profile a name.

iMac Calibrated - D50

After you have done this step, click the Continue button.

Go Back Continue

Common Workflow Steps – Tips from LGSCC Printing Members

- Make sure monitor is calibrated – color and luminance
- Control lighting environment while editing – consistency
- Most print from LightRoom
- Common pre-print adjustments:
 - Increase saturation/vibrance – color; contrast for B&W
 - Increase exposure/brightness, shadows up
- Make a series of hard proofs – small size to confirm color and exposure

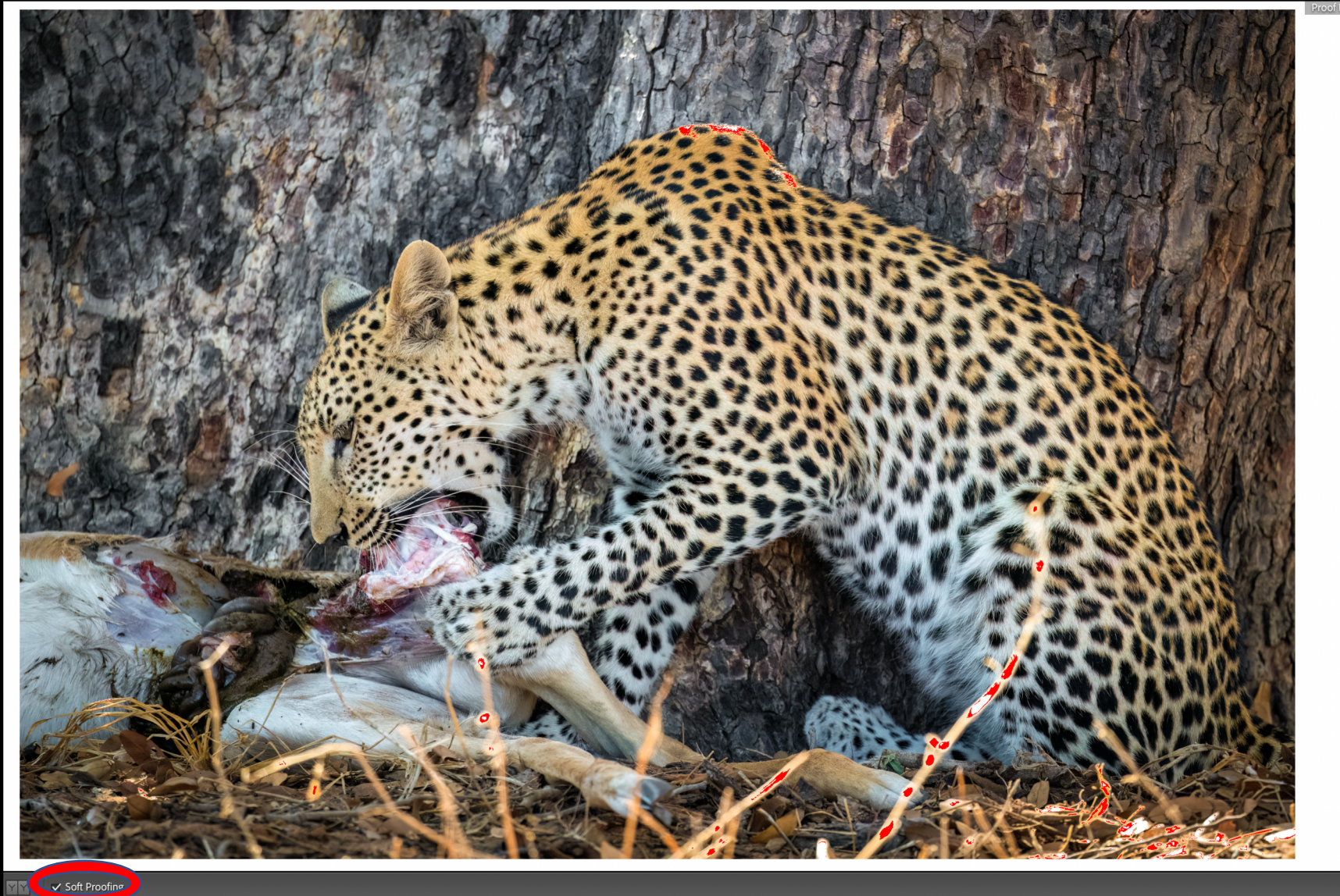
Hard proofs



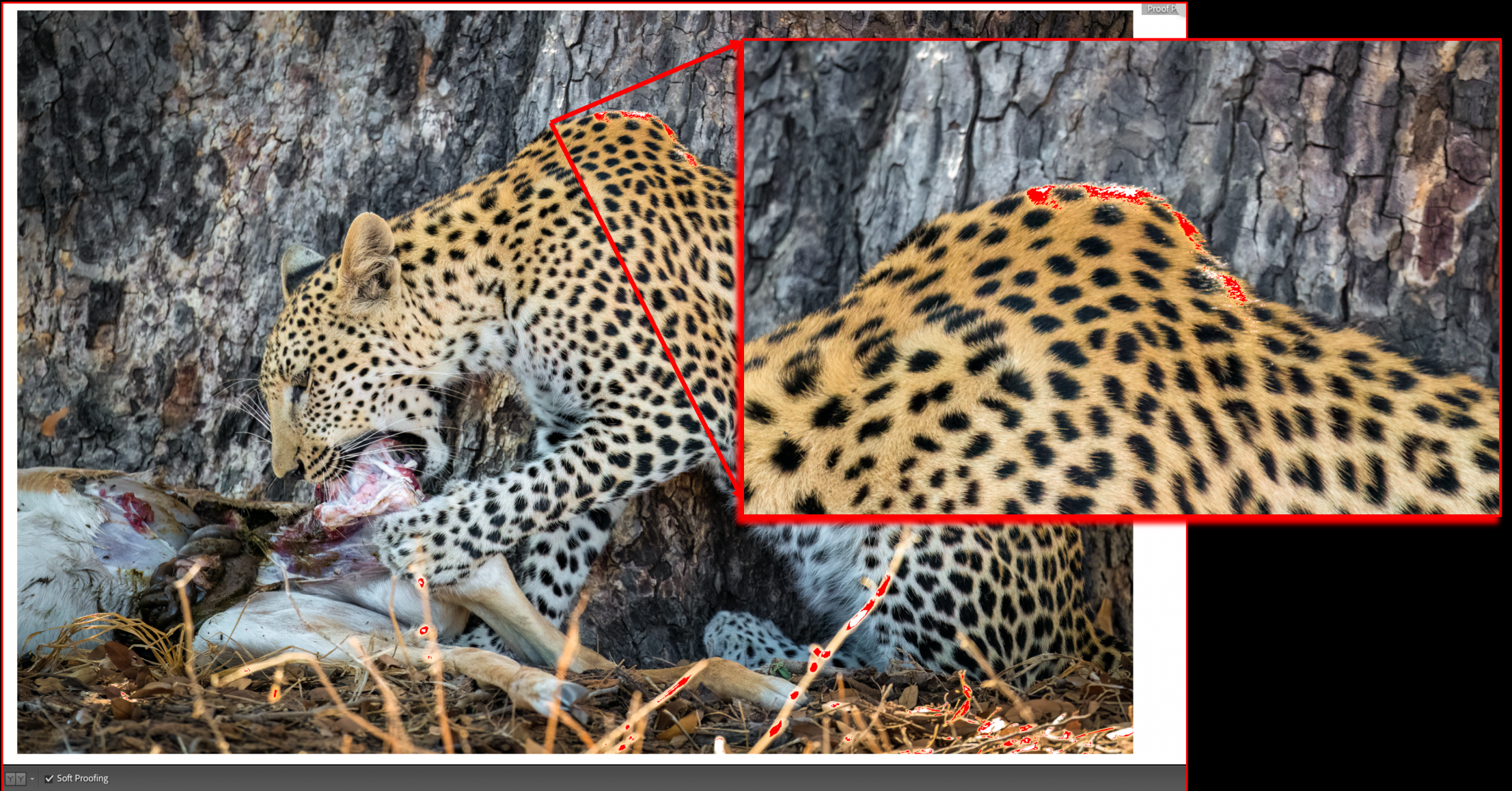
Printing from Lightroom – Soft Proofing

- Found in Develop module
- Will show out-of-gamut colors and generally how your image will look
- LR allows you to create a proof copy of the image and adjust it to bring within color space

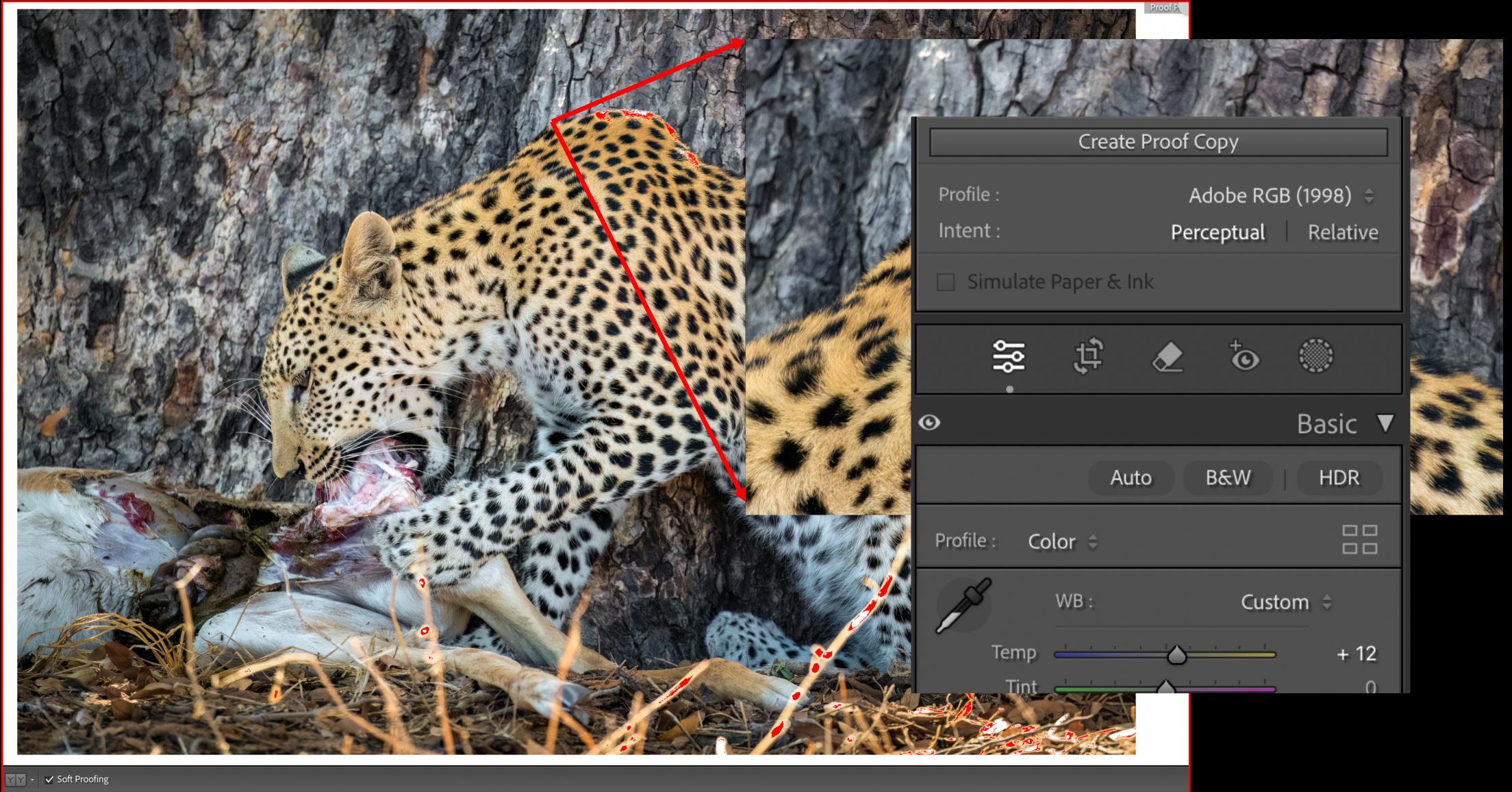
Printing from Lightroom – Soft Proofing



Printing from Lightroom – Soft Proofing

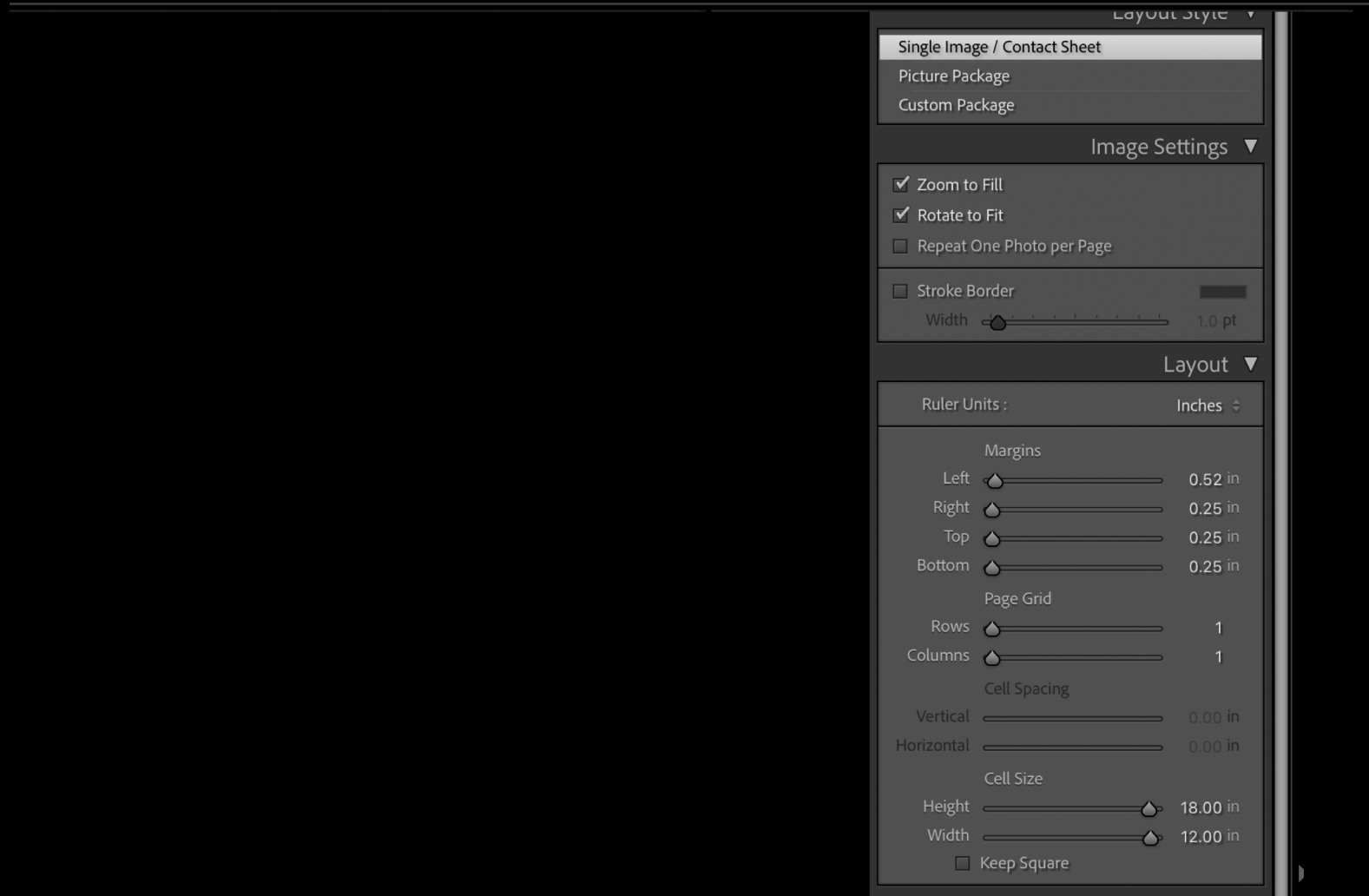


Printing from Lightroom – Soft Proofing



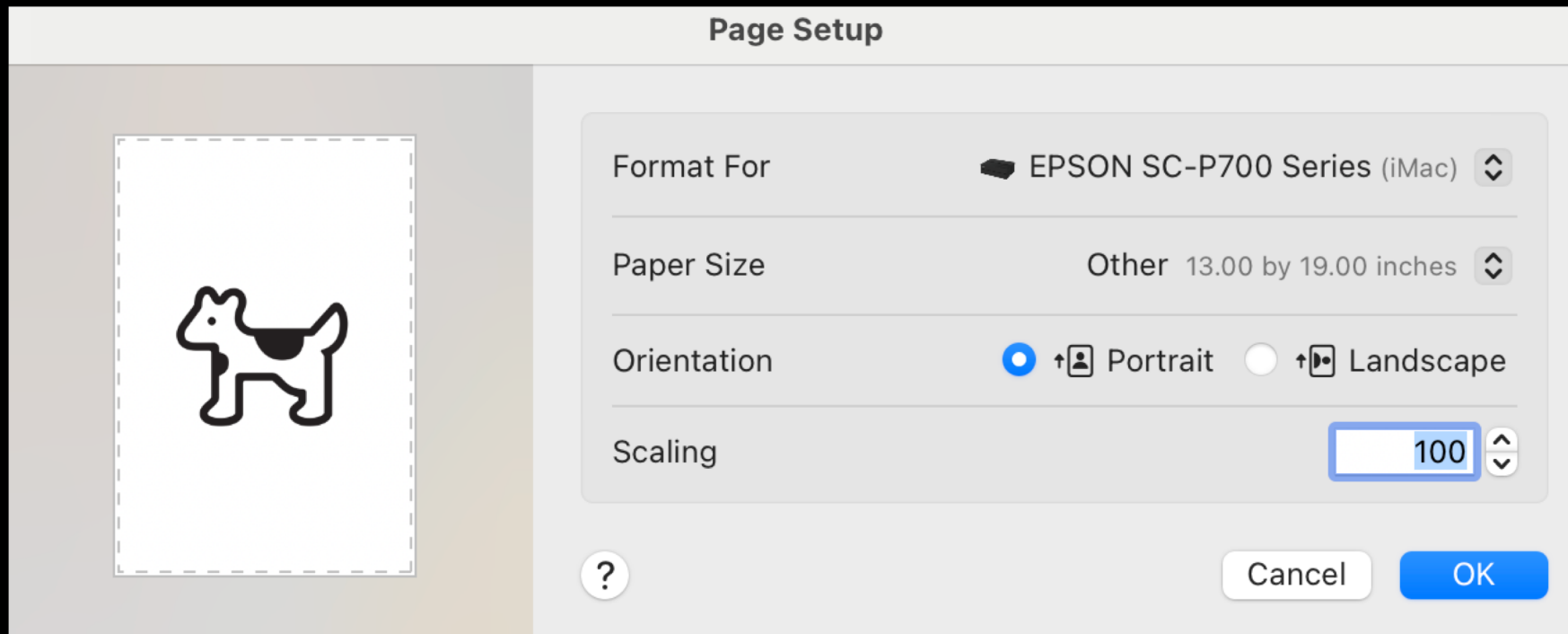
Lightroom's Print Module

Library | Develop | Map | Book | Slideshow | **Print** | Web | 



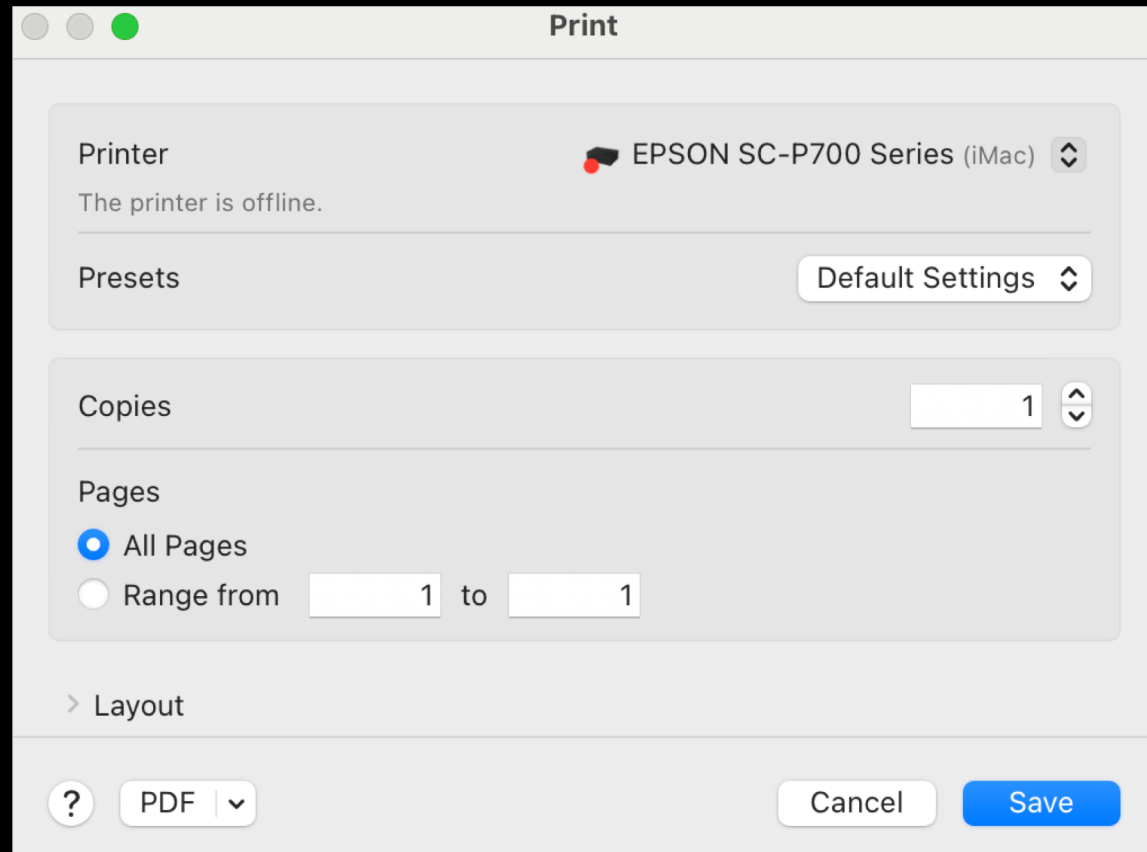
Printing from Lightroom – Key Steps

- Page Setup:
 - Choose paper size and target printer



Printing from Lightroom – Key Steps

- Print settings:



Printing from Lightroom – Additional Settings

Epson paper

Print Job ▼

Print to : Printer ▾

☐ Draft Mode Printing

☒ Print Resolution 240 ppi

☒ Print Sharpening : High ▾
Media Type : Matte ▾

☒ 16 Bit Output

Color Management ◀

Profile : Managed by Printer ▾
Intent : Perceptual | Relative

☒ Print Adjustment ▼

Brightness + 5
Contrast 0

Non-native
paper
requiring
ICC profile

Print JOB ▼

Print to : Printer ▾

☐ Draft Mode Printing

☒ Print Resolution 240 ppi

☒ Print Sharpening : High ▾
Media Type : Matte ▾

☒ 16 Bit Output

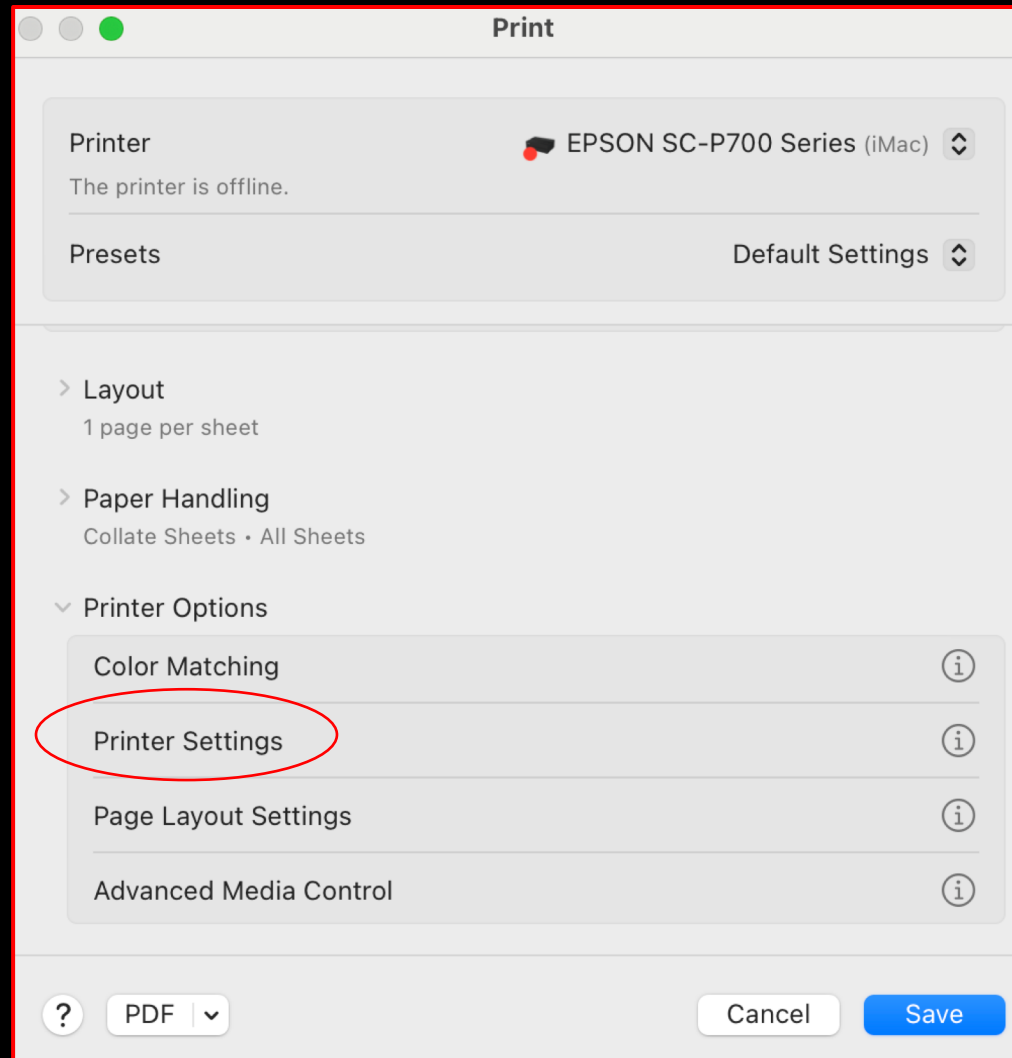
Color Management ◀

Profile : MOAB Moenkopi Unryu P700 W... ▾
Intent : Perceptual | Relative

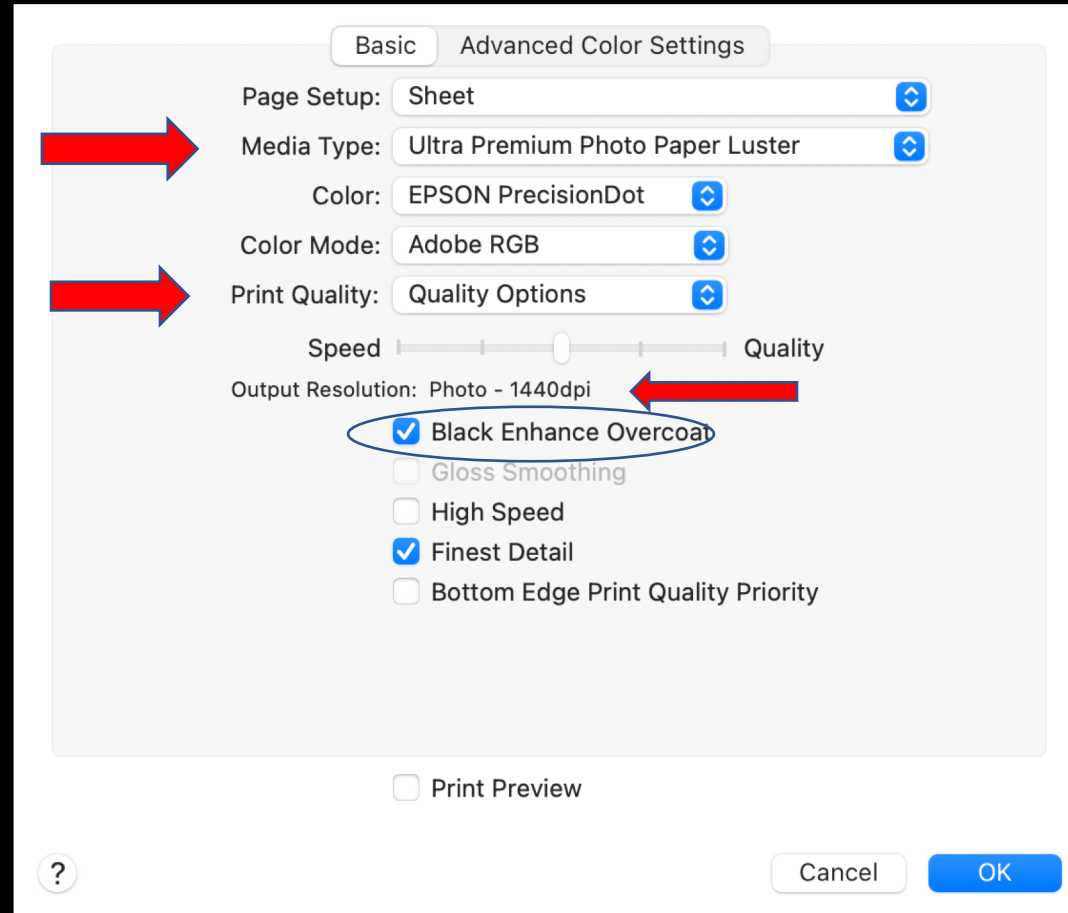
☒ Print Adjustment ▼

Brightness + 20
Contrast 0

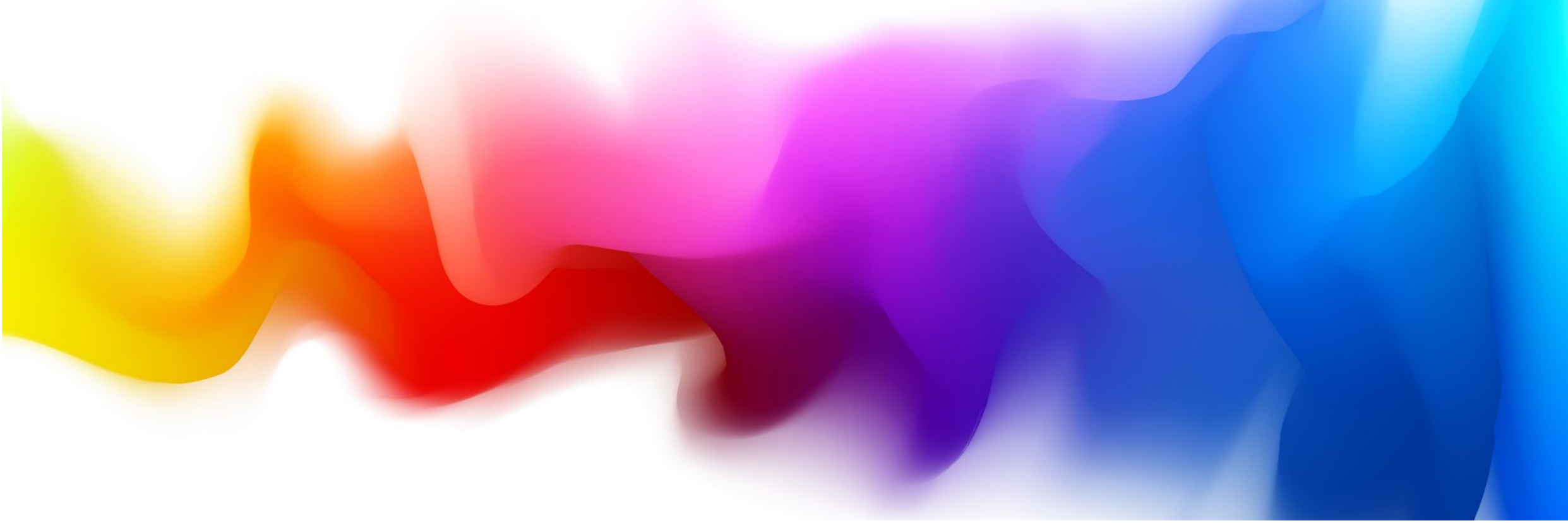
Printing from Lightroom – Printer settings



Printing from Lightroom – Printer settings



A Review of Printers – Eric Gray



Printers for Photographers

The Good and the Ugly

Epson P700 Specs and what they mean

- **Ultrachrome Pro10 Pigment Ink cartridges:**10 (25ml) colors takes paper up to 13" x 19" with numerous choices (makes 35+ pro level, 11 x14 prints per ink set)
- **Wider color gamut for photography** - might just be marketing but I like the results
- **Max Resolution** - 5760x1440dpi piezo inkjet microdot
- **Industry-Leading Print Permanence** Up to 200 years for color
- **Secondary** - Large, 4.3" color LCD screen simplifies print tasks
- **Print from Virtually Any Device via cable or WiFi:** PC, iOS, Android
- **Smallish size:** Fits on desktop. WxDxH: 20.3"x14.3"x8"



Canon Image PROGRAF PRO-300

- **9-color** Chroma Pigment-based ink system + Gloss optimizer
- **Easily check ink levels**, and settings with the 3.0" COLOR LCD
- **Wide color gamut**, and deeper blacks on fine art paper
- **Max resolution** - 4800 x 2400 dpi piezo inkjet microdot
- **Large paper** size 13 x19" – numerous types
- **Reasonable size** - 25.2" x 15" x 7.9" (LxDxH)
- **Print from Virtually Any Device via cable or WiFi:** PC, iOS, Android



Compare

Epson P700 or P900

- # Inks
 - LCD
 - Paper
 - Size/Weight
 - WiFi
 - Cost Unit
 - Cost Ink
- **10-color** Pigment-based ink system
 - **Check ink levels**, and settings with the 3.0" COLOR LCD
 - **Large paper** size 13 x19" – numerous sizes and types
 - 20" x 14.3" x 8" (LxDxH) 27 lbs.
 - **Yes**
 - **\$849** (often \$200 discounts)
 - 10 Epson 25ml cartridges \$378

Canon Pro 300

- **9-color** Pigment- ink + optimizer
- **Check ink levels**, and settings with the 3.0" COLOR LCD
- **Large paper** size 13 x19" – numerous sizes and types
- 25.2" x 15" x 7.9" (LxDxH) 31 lbs.
- **Yes**
- **\$849**
- 10 Canon 14ml cartridges \$129
smaller cartridges dry out faster

Cost per Print Comparison

Printer	4x6	5x7	8x10	11x14	13x19
P700	\$0.39	\$0.57	\$1.30	\$2.51	\$4.03
Pro-300	\$0.24	\$0.35	\$0.81	\$1.57	\$2.52

The Ugly Truth – matte paper problems

- A P700 review on Epson's site-
- I print about 50 holiday greeting cards on thick, matte paper. It worked very nicely, feeding the paper flawlessly. When I tried to print more of the greeting cards again recently (same paper) I found that the paper pickup would not feed the paper. The pickup roller just spins on the paper, leaving a dark skid mark. In any case, when I read the Epson warranty, it specifically excludes pickup rollers from coverage.
- *Eric's note – I had same matte problem on two previous Epson's*

The Ugly Truth – small ink cartridges

- Pro300 review on Amazon site-
- The Pro -300 prints nicely, but it's laboriously slow. Not so much the printing, but it's the time of the pre-printing routine. It seems that on start-up and again before every print, it prepares each of the 10 cartridges during which it consumes ink from each of them. Cartridges are constantly needing replacement. When you insert a new cartridge, it goes through a routine that seems to consume ink from each of the 10 cartridges. When an ink gets low, after the pre-print routine the unit provides a warning and it wants you to order ink. In my opinion, If you are solely planning to use the Pro-300 for 8x10 or larger prints, the Pro-300 may be tolerable. *Eric's note – my older Epson printers had the same issue*

Good Printers Not Quite Pro Level

Epson Expression Photo **XP-15000**

- **# Inks**
 - **LCD**
 - **Resolution**
 - **Paper**
 - **Size/Weight**
 - **WiFi**
 - **Cost Unit**
 - **Cost Ink**
- **6-color** Pigment-based ink system
 - **2.4" LCD** on printer
 - 5760 x 1440 optimized dpi
 - **Large paper** size 13 x19" – numerous sizes and types
 - 18.7" x 14.5" x 6.3" (LxDxH) 18 lbs.
 - **Yes**
 - **\$299** (on sale now)
 - 6 Epson 10ml cartridges \$88



Canon **PIXMA PRO-200**

- **8-color** dye-based ink
- **Check ink levels**, with 3.0" Color LCD
- Up to 4800 x 2400 dpi
- **Large paper** size 13 x19" – numerous sizes and types
- 25.2" x 15" x 7.9" (LxDxH) 31 lbs.
- **Yes**
- **\$599**
- **8** Canon 13.5ml cartridges \$103



Media Options and Considerations

- Paper-based prints are required for competition. Many other options exist: metal, wood, canvas, or other non photo-paper-based media
- Metal and other substrates like wood give images a completely different feel
- Lots of paper options:
 - Epson (Ultra Premium Photo Paper Lustre) and Canon (Photo Paper Plus Luster)
 - Other favorites include:
 - Hahnemuhle Photo Rag Baryta
 - Moab Entrada
 - Red River Polar Matte

Media Options and Considerations - 2

- Fundamentally two types of photo paper:
 - Wood pulp-based – alpha cellulose
 - Cotton-based – rag
- Some are treated with optical bleaching agents (OBAs) to get brighter whites
 - Can yellow over time

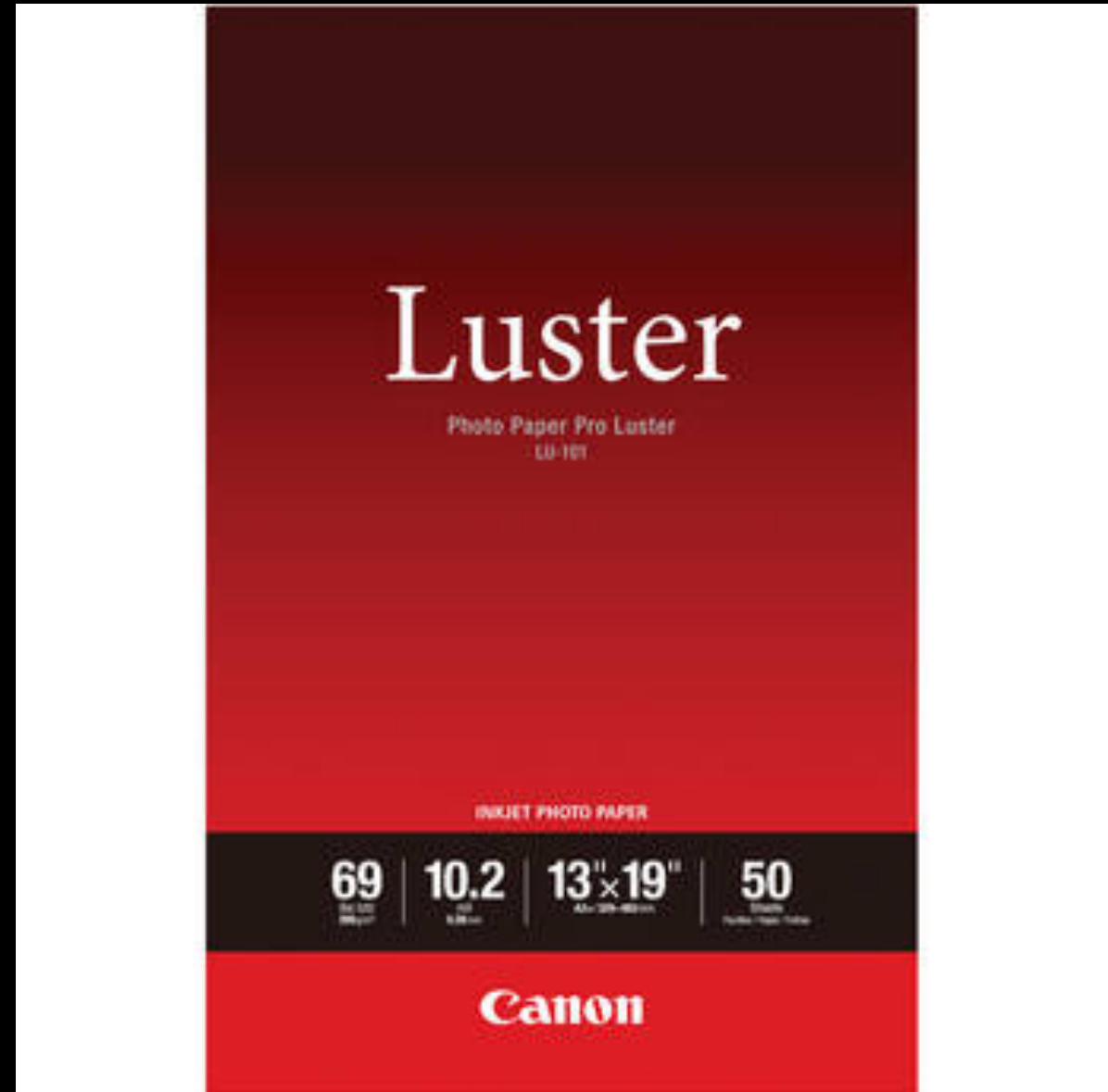
Pairing Paper to Photographic Style

	<i>Cotton Rag Paper</i>	<i>Fiber Paper</i>	<i>Luster Paper</i>	<i>Matte Paper</i>	<i>Metallic Paper</i>	<i>Canvas</i>	<i>Glossy Metal</i>	<i>Baryta Paper</i>	<i>Glossy Paper</i>
<i>High-contrast B&W</i>		▪	•		•	•	•	•	•
<i>Low-contrast B&W</i>	•	•	•	•				•	
<i>Vibrant color</i>		•	•		•	•	•	•	•
<i>Soft pastels</i>	•	•	•					•	
<i>HDR images</i>		•	•		•	•	•	•	•
<i>High-key imagery</i>	•	•	•	•				•	
<i>Low-key imagery</i>	•	•	•	•				•	
<i>Smooth textures</i>	•	•	•	•	•			•	
<i>Rough textures</i>		•	•			•		•	
<i>Portraiture</i>		•	•					•	
<i>Large-print murals</i>	•	•	•	•	•	•	•	•	•
<i>Gallery & exhibition prints</i>	•	•		•				•	

Source: Jason Bradley

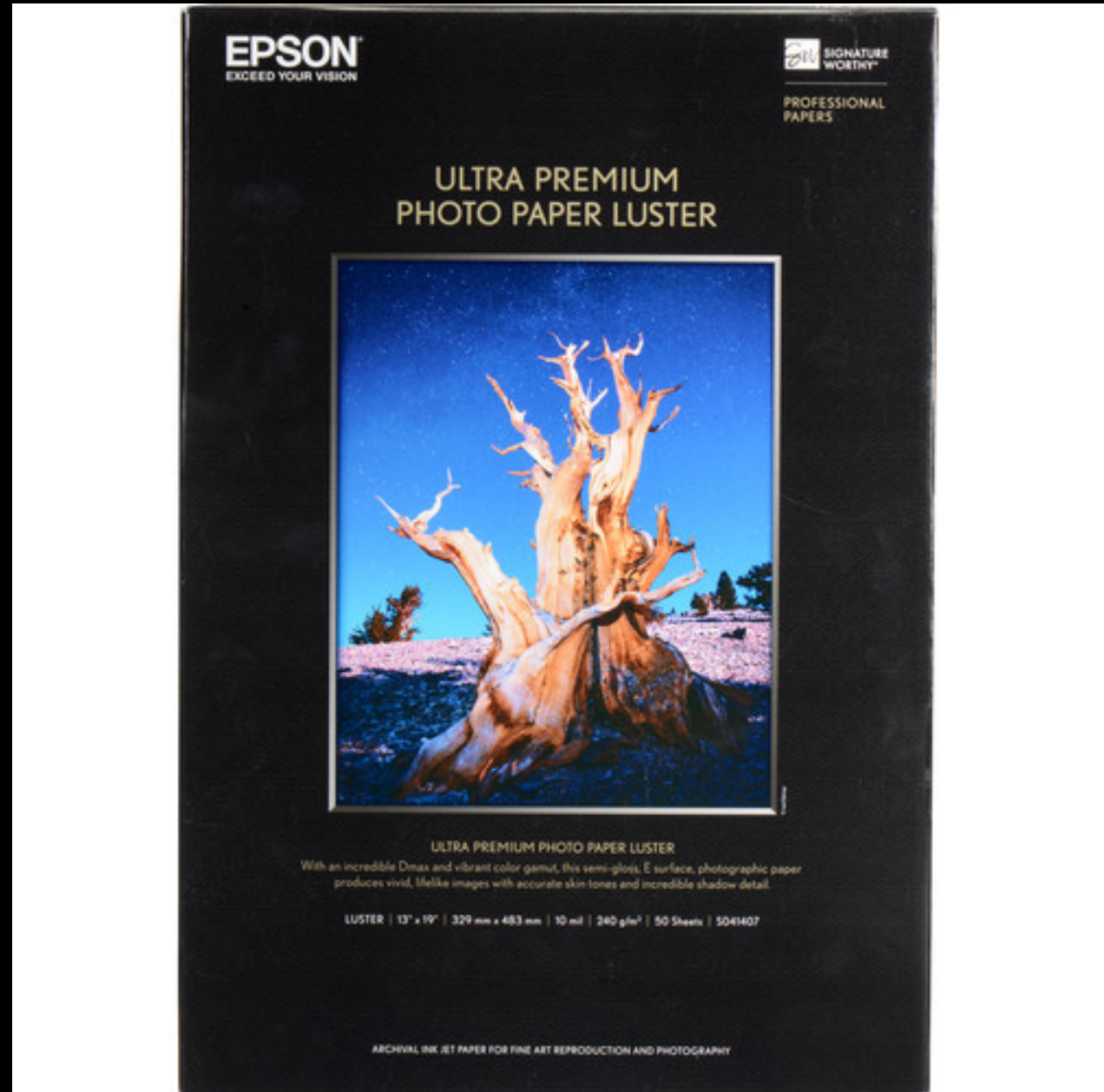
Canon Paper

- 13 x 19"
- 250 gsm
- 10 mil thickness
- Brightness – 92
- \$2 per sheet*



Epson Paper

- 13x19" or 11.7x16.5"
- 240gsm
- 10mil thickness
- 97 brightness
- Under \$2/sheet



Try Sample Packs

- **Epson Signature Worthy Paper Sample Pack**
- **Canon Pro Paper Sampler Pack**
- **Hahnemuhle Glossy Sample Pack FineArt Assortment**
- **Canson Infinity Photo & Fine Art Discovery Pack**
- **Moab 8.5 x 11" General Sampler**

The Economics of Epson Paper Size

- Epson offers A3 (11.7"x16.5") option
- Perfect for my 11x16 prints
- Almost all other brands use Super B (13x19") sheets
- Epson A3 pricing (per sheet) \$0.82
- Epson Super B pricing (per sheet) \$1.80

A Note About ICC Profiles

- Epson and Canon printers have native profiles for their various paper stocks
- You will need to download and install a paper-specific ICC profile for your printer if using other papers
- An ICC profile is a translation between the source set of colors in the digital image and the destination on screen or in print, the latter using different profiles for specific printers, inks and papers

Print Ordering Options – Outside Print Labs

- Bay Photo: <https://bayphoto.com/>
- Nation's Photo Lab: <https://www.nationsphotolab.com/>
- K&H Digital Photo: <http://www.khdigitalphoto.com>
- MPIX: www.mpix.com
- Whitewall: <https://www.whitewall.com/us/>
- Walgreens: <https://photo.walgreens.com>
- CVS: <https://www.cvs.com/photo>

Note: Standard camera sensor aspect ratio is for prints in sizes 8X12, 10X15, and 12X18. Others will require cropping or leaving extra white space in mat

Sample Print Pricing (Lustre Paper)

<u>Size</u>	<u>MPIX</u>	<u>Nations</u>	<u>Bay Photo</u> (color corr)	<u>BayPhoto</u> (no cc)
8x10	\$3.29	\$3.00	\$3.55	\$2.70
8x12*	\$3.99	\$4.50	\$4.99	\$4.90
10x10	\$4.99	\$5.00	\$5.75	\$3.80
10x13	\$6.49	\$7.25	\$6.75	\$5.15
10x15*	\$8.49	\$7.50	\$7.75	\$5.79
11x14	\$9.79	\$7.50	\$6.99	\$5.80
12X18*	\$14.99	\$15.25	\$11.99	\$9.60

* Same as 2:3 aspect ratio of our sensors

File Formats for Outside Printing Labs

- **Bay Photo** – jpg, png, or flattened tiff, 8 bit per pixel, 200-300 dpi, sRGB or Adobe RGB
- **Nation's Photo Lab** – jpg, png or flattened tiff, 125-300 dpi, 8 bit, sRGB

Cutting Your Own Mat

- Logan Compact Classic Mat Cutter (Model 301-1) ~\$120
- https://www.logangraphic.com/products/mat-cutters/board-mounted/301-1-compact-classic_p_1.php

Materials and Tools needed to make your own mats

- [Mats](#)
- [Mat Cutter](#)
- [Spreadsheet to calculate the cuts](#)

Cutting Your Own Mat – How I do it

- Buy 32x40" sheets of mat board - \$12-20. Makes 2 full 16x20" mat sets
- Cut in quarters (4 x 16x20")
- Cut 11x16 opening – close to 2x3 format, but gives 2"x2.5" border
- Will either make my images 11.125"x16.125", or 10x15" with a border (more formal look)
- After accumulating 100s of images, I now make reusable mats

How to Mat a Print – Jim Katzman

- [Video by Jim Katzman](#)

Mat Options for Competitions

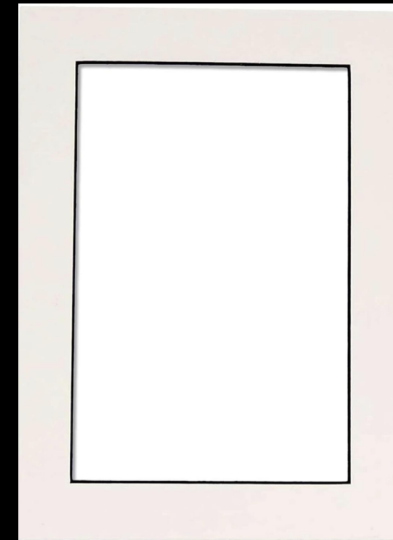
- Buy pre-cut mats and adjust your prints to fit within pre-cut window
 - Easiest to get started
 - Mats can be reused over and over again
 - Least flexible. Limits your prints to pre-cut dimensions
- Buy blank mats and cut them yourself with a mat cutter
 - Requires purchasing a mat cutter (~\$150)
 - Takes more time and effort than pre-cut mats
 - Allows you to crop your image the way you want and have the mat conform to the image
 - Mats can be reused if you stick with same aspect ratio

Common Mat and Print Sizes for Competitions

- Mats: 11X14 and 16X20 (max allowed in competition)
- Prints (in 2:3 format): 8X12 and 12X18
 - Pre-cut mat openings don't often match our camera's 2:3 format
 - Many more options exist if you can crop your image to 8X10 or 11X14 format
 - Or you can print your image in 2:3 format and have white space within mat opening

Pre-cut Mat Options

- [8X12 opening in 11X14 Mat](#)
- [8X10 opening in 11X14 Mat](#)
- [12X18 opening in 16X20 Mat](#)
- [11X14 opening in 16X20 Mat](#)



Archival vs Conservation

- **Archival** – cotton rag, 100% acid free
- **Conservation** – wood pulp treated with acid neutralizer. Often claim acid free but not really
- Both are more than acceptable for competition.
- Use archival materials for images that you mat and frame and will keep forever

Matting Suppliers

- Local Art Supply Stores: **University Art, Lenz Art, Michaels**
 - Good source for full sheets (32"x40") \$15-20, expensive for pre-cut
- Online Retailers:
 - **Golden State Art** (<https://goldenstateart.com/photo-mats>)
 - Pre-cut 16x20 (12x18) "Conservation archival" - \$5.38 *actual opening is 11.5" x 17.5"
 - Blanks - \$1.90 x 2 = \$3.80
 - **Redimat** (www.redimat.com)
 - Pre-cut 16x20 (12x18) archival - \$24, conservation- \$22.50
 - Blanks - \$5.46 x 2 ~ \$11
 - **Mat Boards Plus** (www.matboardsplus.com)
 - Pre-cut 16x20 (12x18) archival - \$19.24, conservation - \$17.94
 - Blanks - \$5.98 x 2 ~ \$12

The Economics of Print Making

- Complete DIY - Use your own printer, cut your own mat:
 - Ink - \$2.50-\$4
 - Paper - \$1-2
 - Mat - \$6 (but reusable)
 - Misc tape, etc - \$0.50
 - Total (excluding printer and mat cutter) - \$4-6.50 per image
- Buy everything – print, mat:
 - Print - \$10
 - Mat board - \$6 (but reusable)
 - Misc tape, etc – \$0.50
 - Total - \$10.50 per image
- Breakeven (including cost of printer and mat cutter) ~150 prints

Summary

- Creating prints...
 - ...can help develop a new relationship between you and your images
 - ...is within reach even if you do not have a printer
 - Lots of resources for: prints, matting, additional supplies
 - ...maintains relevance in today's digital world
- Challenge yourself and enter prints in competitions!

Additional Resources

- Modern Printmaking – Jason Bradley
<https://static1.squarespace.com/static/64155ef0b151c40495aa990b/t/642db1a42ef0fc5b66aa227c/1680716200849/Modern+Printmaking+BradleyPrintServices.pdf>
- Fine Art Digital Printing Hands-on workshop – Stephen Johnson <https://stephen-johnson-gtt1.squarespace.com/store/fine-art-digital-printing-hands-on>
- How to install ICC profiles - <https://www.redrivercatalog.com/profiles/how-to-install-color-profiles-macos.html>
- Julianne Kost Lightroom Printing tips - <https://jkost.com/blog/2022/02/printing-in-lightroom-classic.html#:~:text=Tap%20%E2%80%9CS%E2%80%9D%20to%20toggle%20Proof,Destination%20Gamut%20Warning%20on/off.>