

INKJET PRINTING

MAKING IT LOOK THE WAY YOU WANT



Topics

- Printers
- Inks and papers
- Inks for black & white
- The printing process
- Matching the screen image to the print
 - calibrating
 - soft proofing

Inkjet (“Giclee”) Printers

- Canon
 - Pixma series (8- and 13-inch carriage; 4-6 inks)
 - ProGraf series (17-inch carriage; 12 inks)
- Epson
 - Stylus Photo series (8- and 13-inch carriage; 4-8 inks)
 - Stylus Pro series (17-inch to 44-inch carriage; 8 inks)
- Hewlett Packard
 - Photosmart series (8- to 13-inch carriage; 6 inks)
 - Designjet series (18- to 24-inch carriage; 6 inks)

Inkjet Printers: Current Favourites

- Canon
 - Pixma series
 - ProGraf series
- Epson
 - Stylus Photo series
 - Stylus Pro series
- Hewlett Packard
 - Designjet etc.

Printer Considerations

- Output
 - size
 - quality
 - longevity
- Reliability
- Profile availability
- Cost (purchase and operating)
- Speed
- Noise
- Physical size

Inks

Dye-based (Canon / Hewlett Packard)

- Wide gamut / vivid
- Shorter but increasing life
- Expensive

Pigment-based (Epson)

- Narrower but improving gamut / less “pop”
- Longer life but advantage narrowing
- Expensive

Third-party

- Usually dye-based
- Gamut, hue and lifespan unknown
- Relatively inexpensive
- Not recommended for commerce (gift cards?)

Specialty Inks

- Ink for black and white-only printing
 - Lyson bulk ink systems
 - Piezography (Cone) system
- Continuous-feed Systems
 - <http://www.continuousink.com/>
 - <http://www.nomorecarts.com/>
 - <http://www.inksupply.com/>
 - etc.

Papers: Key Attributes

- Appearance
 - colour, contrast, gamut and reflectivity
- Weight and durability
- Print longevity
(see <http://www.wilhelm-research.com/>)
- Cost
- Format (cut vs. roll)

Paper Types

- **Matte**
 - Low contrast, gamut and reflectivity
 - Usually lower cost
 - Various colours (bright white to cream)
 - Good durability & excellent fade resistance (up to 100 yrs with pigment inks)
- **Semi-Gloss / Luster / Glossy**
 - Higher contrast, gamut and reflectivity
 - Higher cost
 - Usually bright white
 - Acceptable durability & fade resistance (up to 40+ years)
- **Fine Art**
 - Low contrast, gamut and reflectivity
 - Higher cost
 - Various colours (bright white to cream)
 - Acceptable durability & fade resistance (up to 40+ years)
- **Specialty e.g. Canvas, Watercolour**
 - Low contrast, gamut and reflectivity
 - Highest cost

Paper: Recent Releases

- Crane Museo Silver Rag
- Epson Exhibition Fiber
- Harman Gloss
- Hahnemuhle Fine Art Pearl, Fine Art Baryta
- Innova Fibagloss
 - High D-max (up to 2.4!)
 - High reflectivity
 - High weight
 - High longevity
 - High cost
 - Low availability

Printing in Photoshop

- Key choices
 - Print size and quality
 - Colour management: Photoshop or printer?
 - Paper size, type and quality
 - Print location on page
 - Photoshop CS2 or CS3

Image Size: What is It?

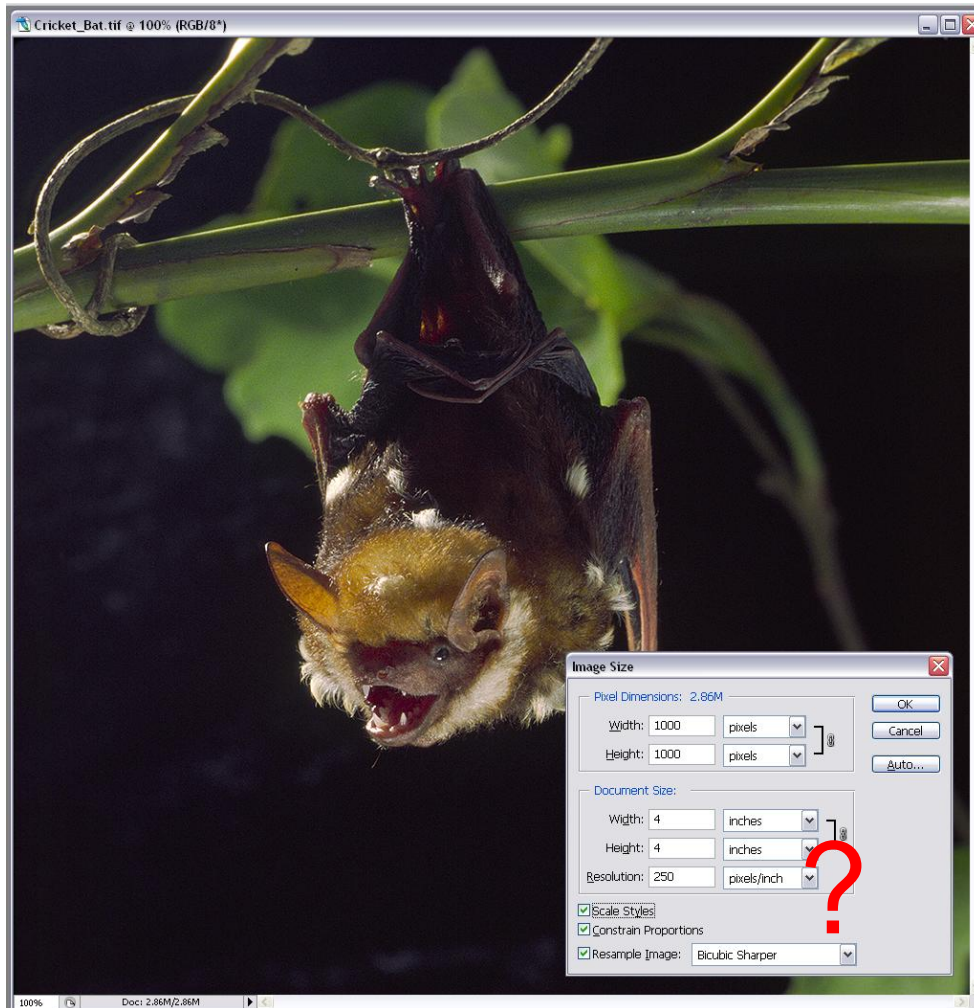


Image Size: What is It?

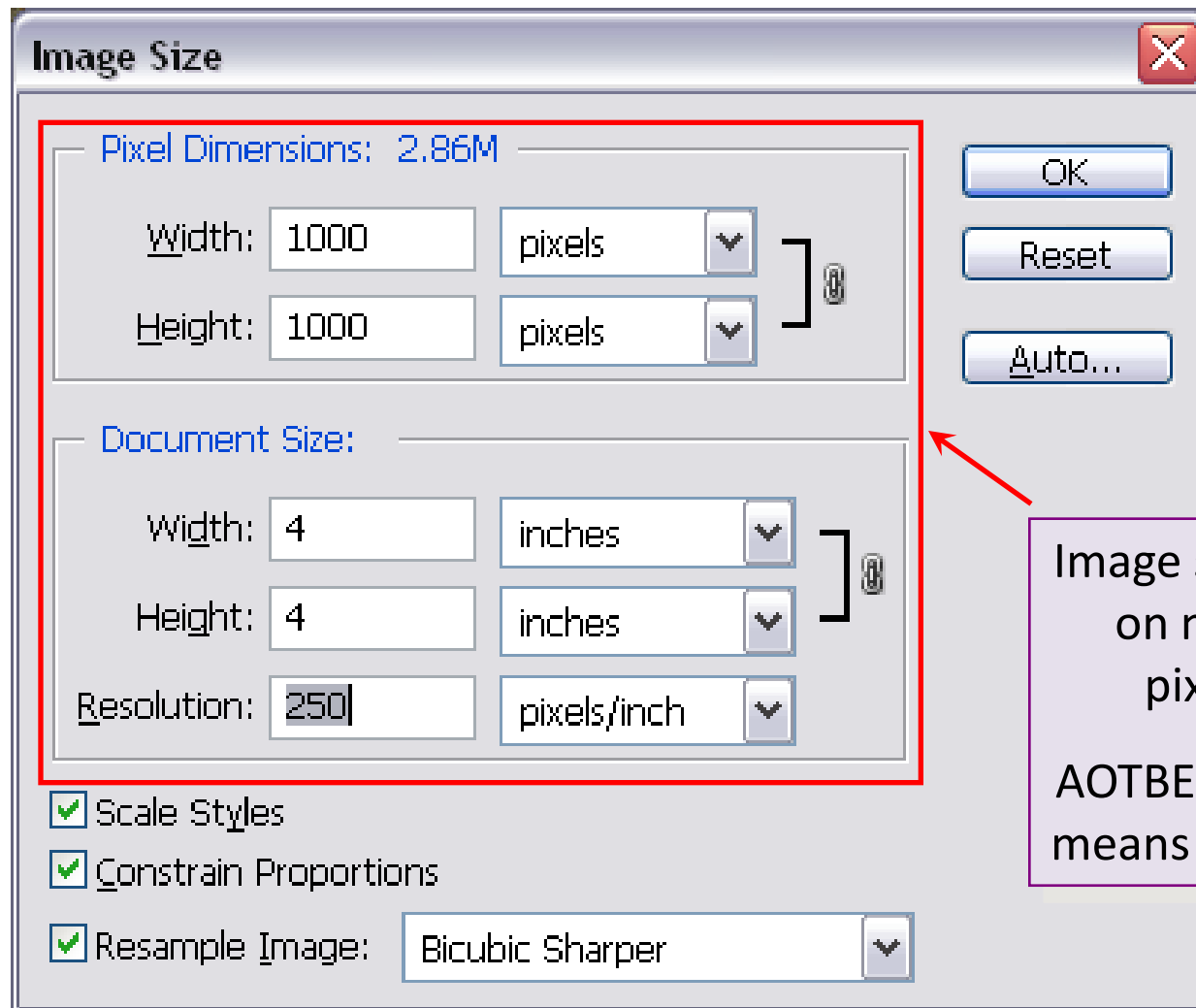
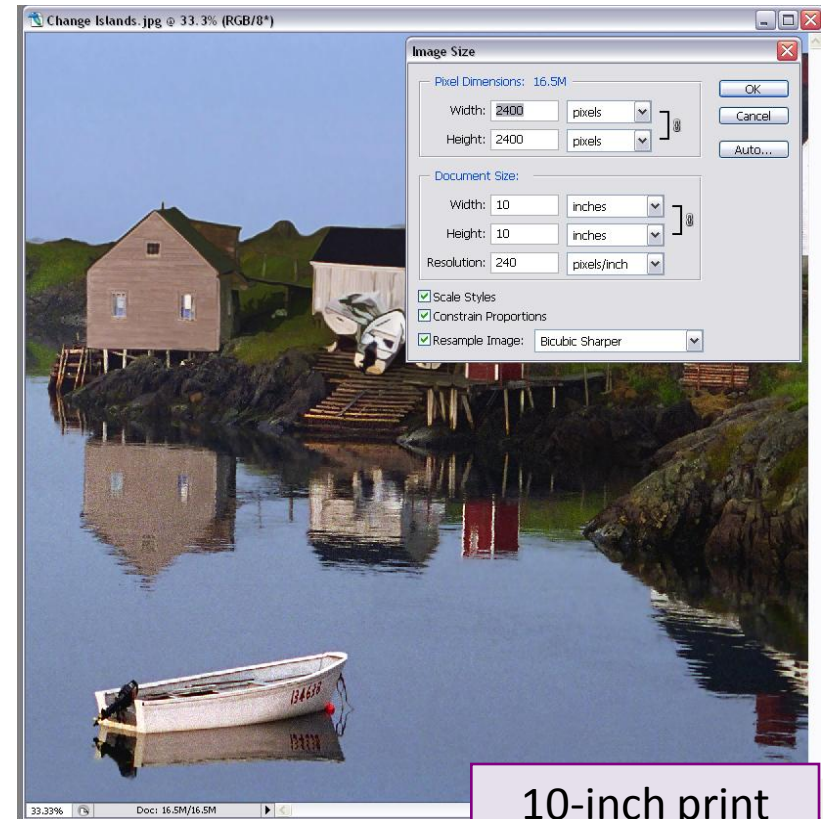
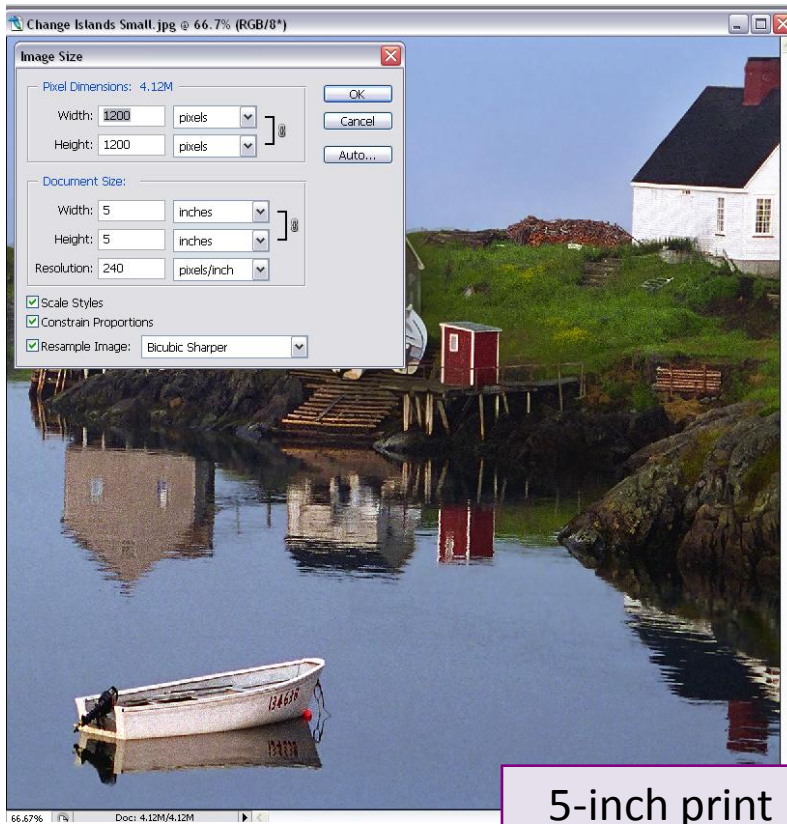


Image size depends on number of pixels only.

AOTBE, more pixels means bigger prints

Image Size Example 1: Change Islands



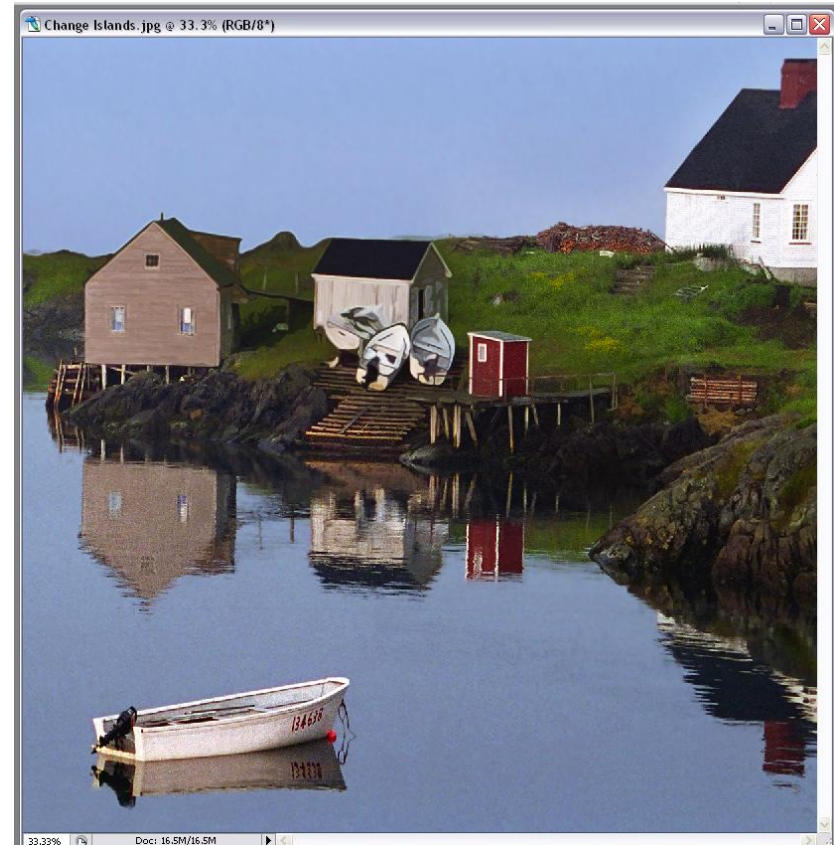
AOTBE, document (print) size depends on image width & height only

Size Example 1: Change Islands (cont.)



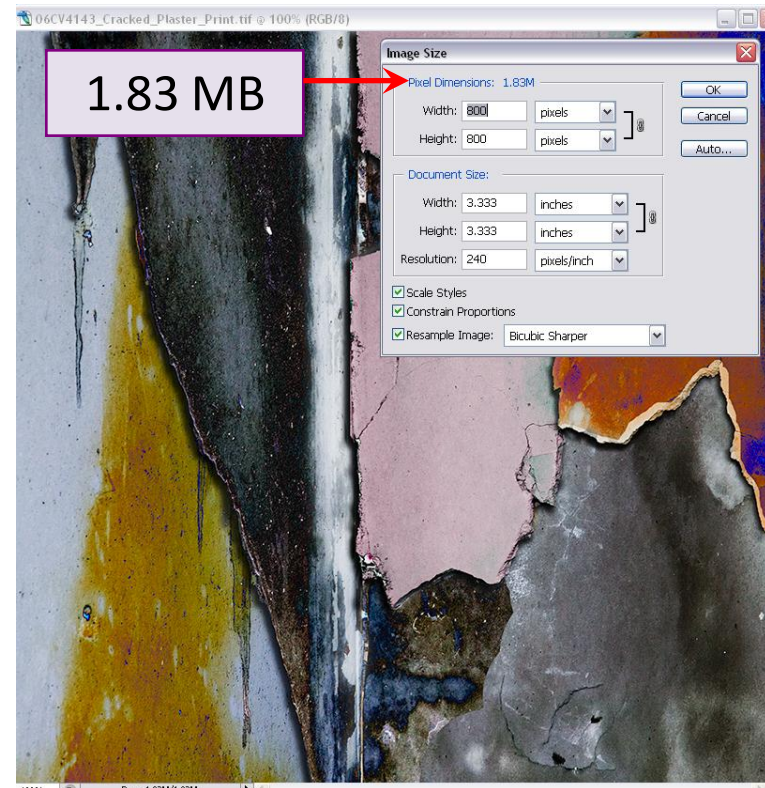
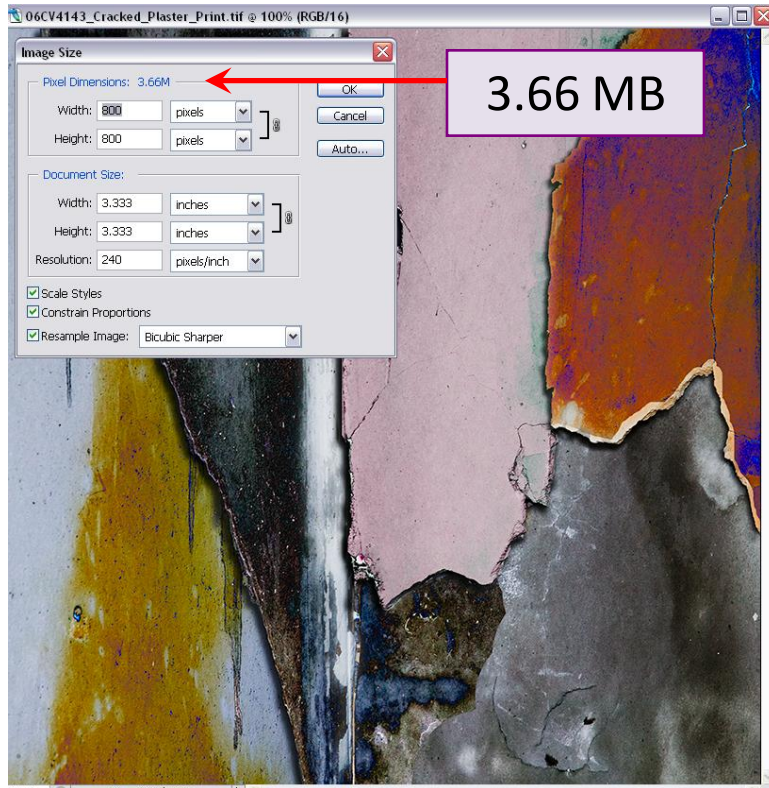
1200 pixels / side

Doubling the number of pixels on each side of the image file doubles the length of each side of the print, without affecting print quality (ppi)



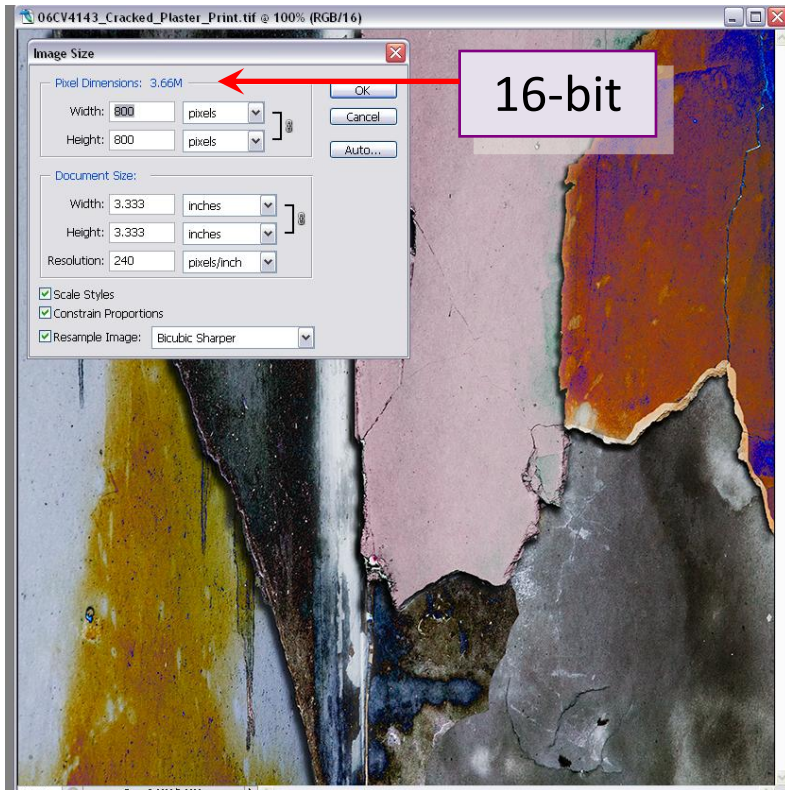
2400 pixels / side

Image Size Example 2: Cracks

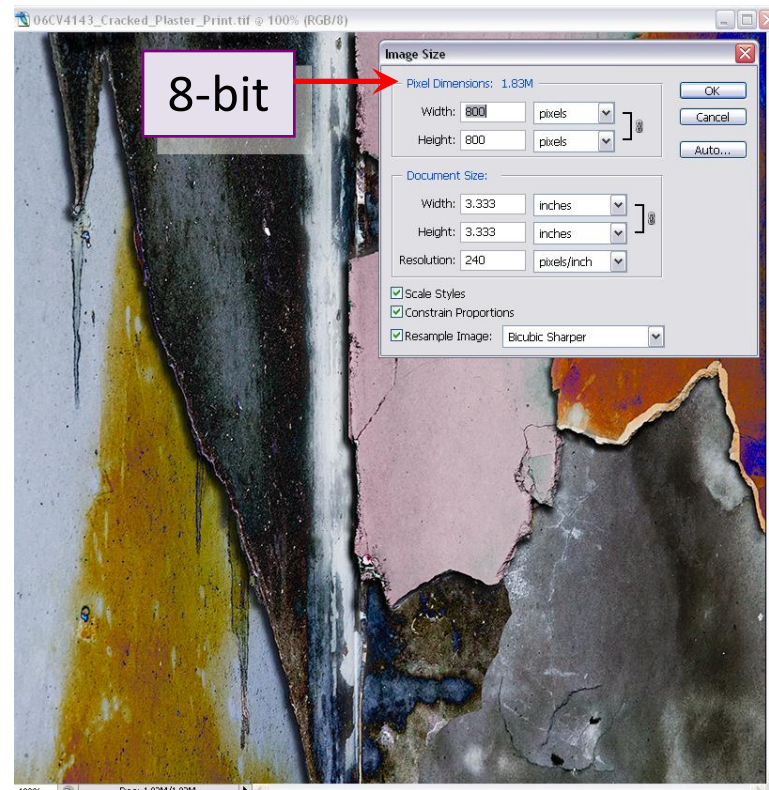


How can the same number of pixels produce the same print size but different pixel dimensions?

Image Size Example 2: Cracks (cont.)



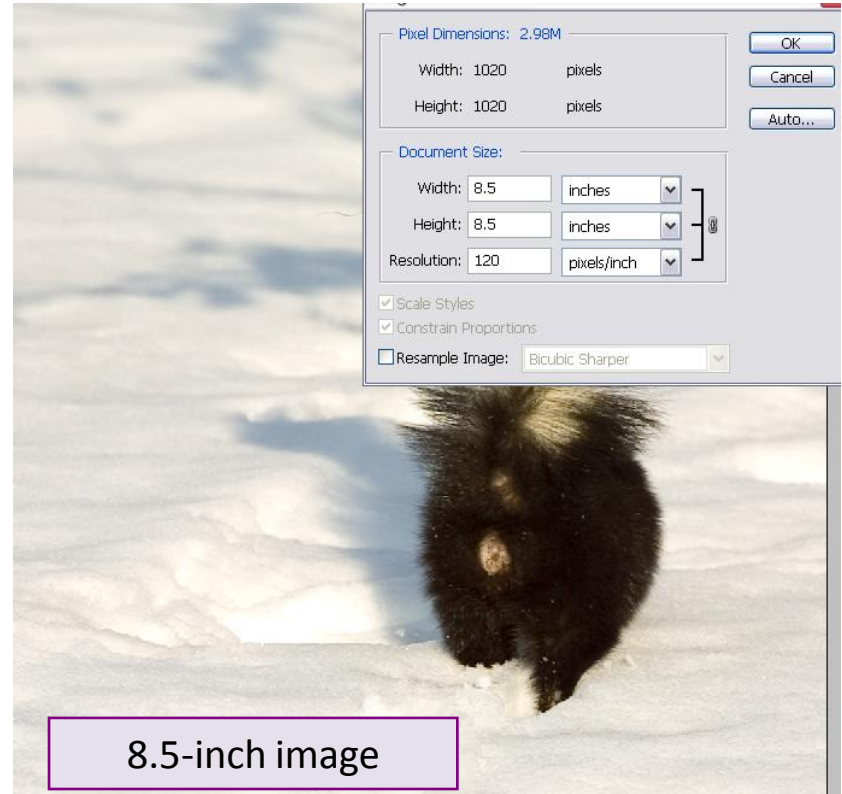
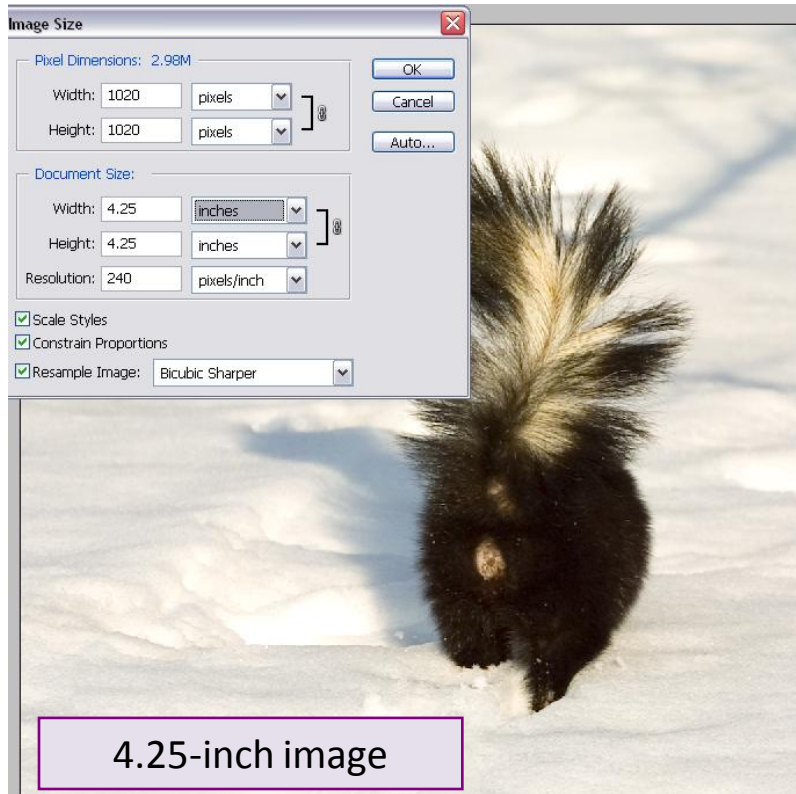
16-bit



8-bit

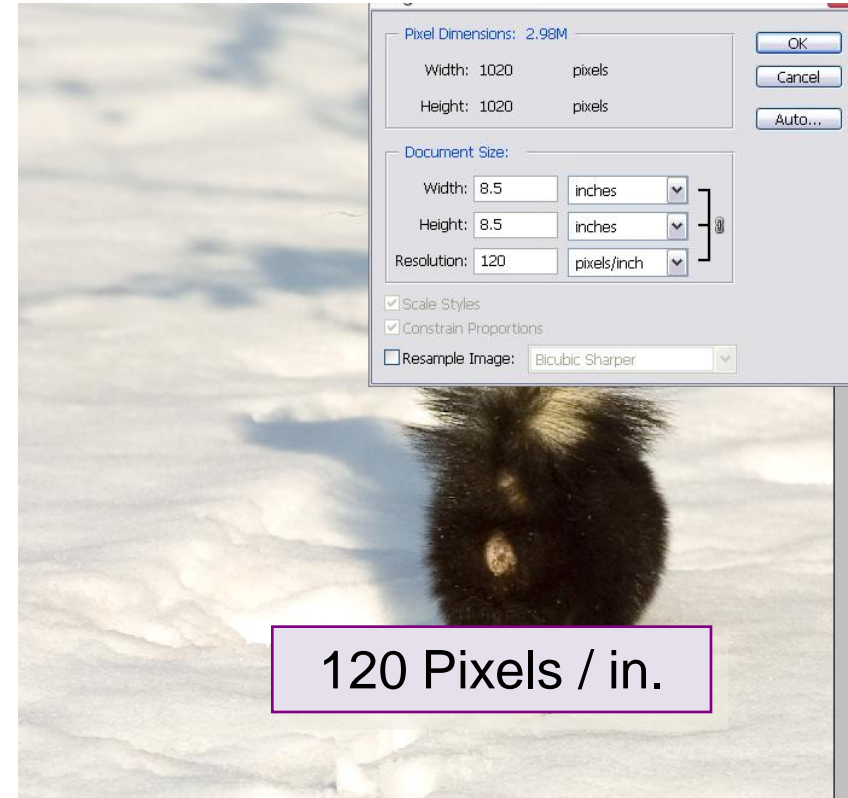
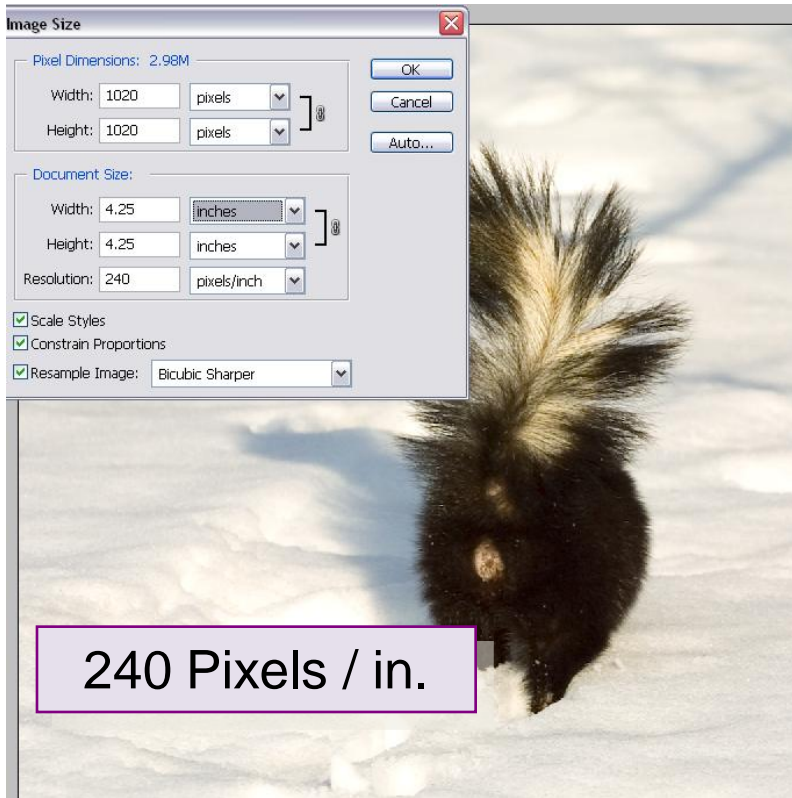
Pixel dimensions depend on image size and bit depth

Image Size Example 3: The Skunk



How can the same number of pixels lead to the same pixel dimensions but different document (print) size?

Image Size Example 3: The Skunk (cont.)



Print dimensions depend on image size and printer PPI

Image Size, Pixel Dimensions and Print Size

Image Size depends on

- Number of pixels on each axis (H x W = megapixels)

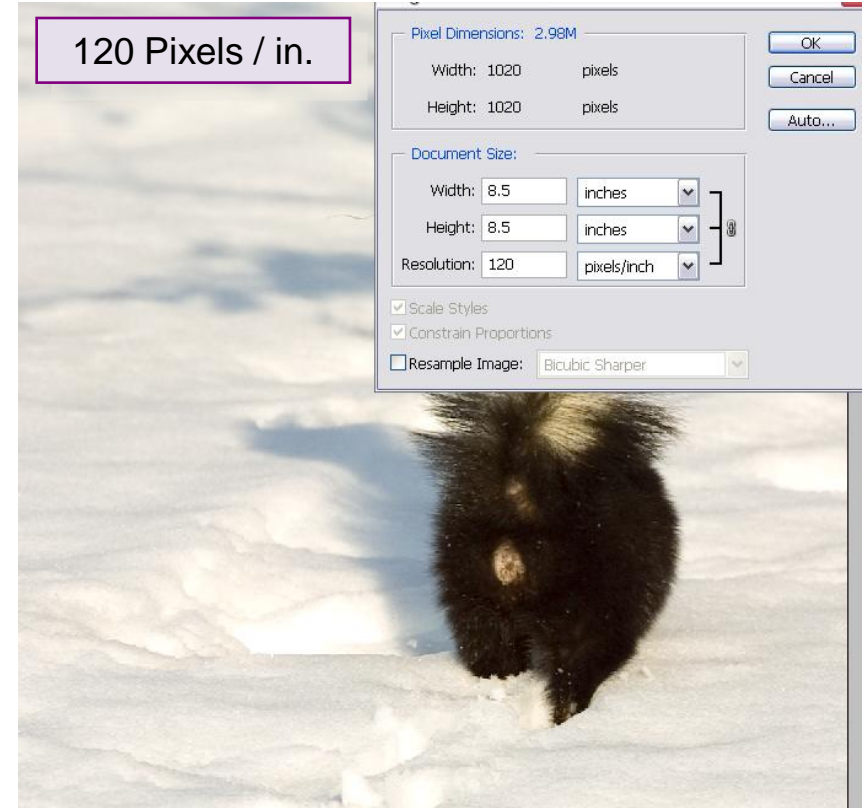
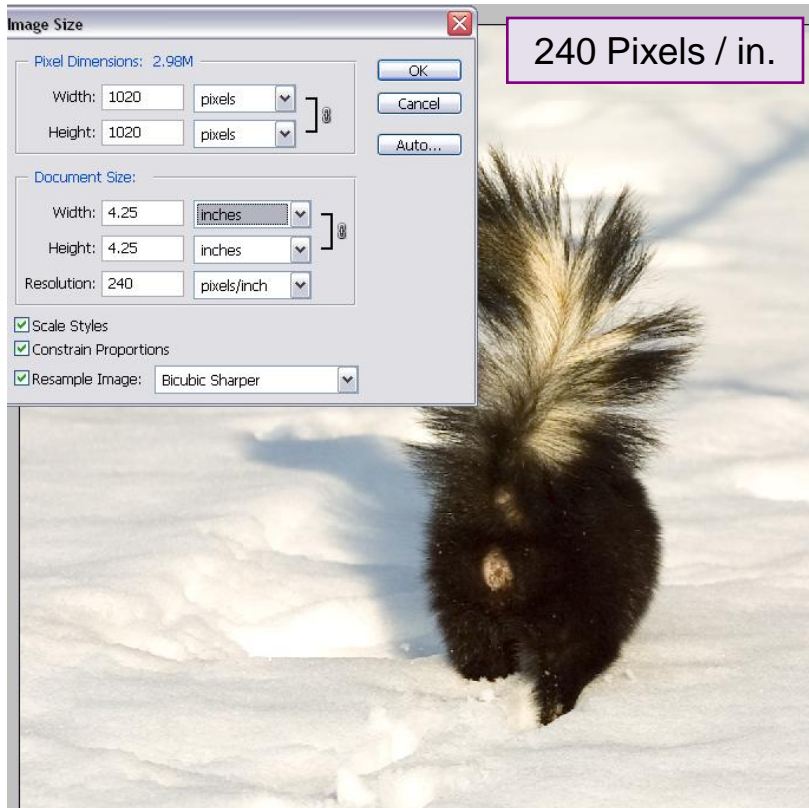
Pixel Dimensions depend on

- Image size
- Bit depth (8 or 16 bits)

Print size depends on

- Image size (not file size or pixel dimensions)
- the pixels per inch (PPI) setting of the printer

Managing Print Size

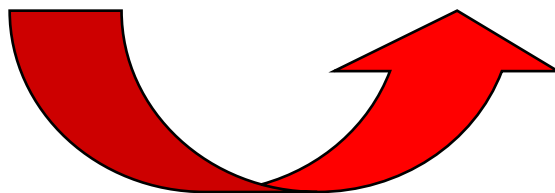
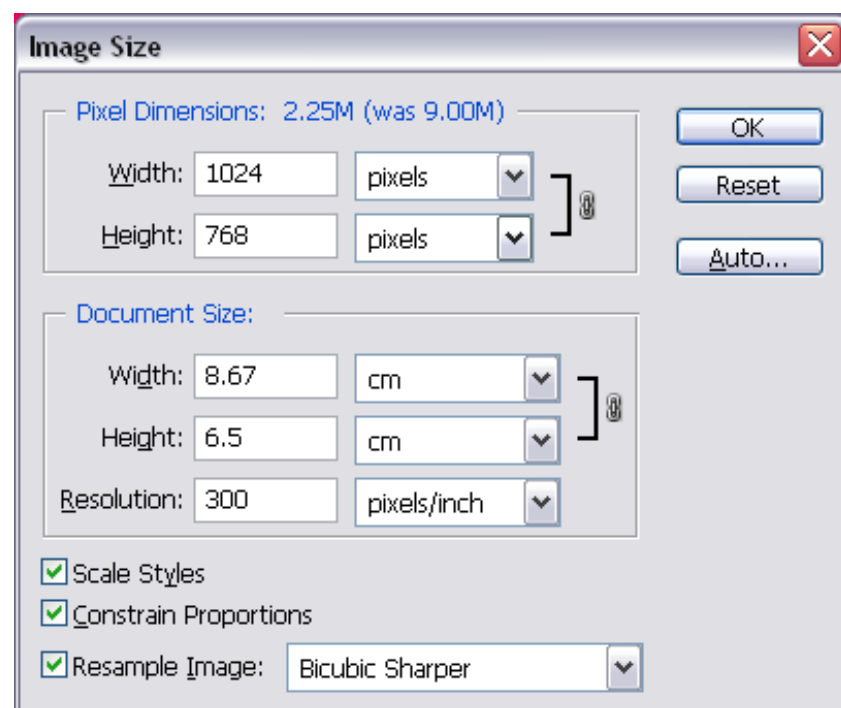
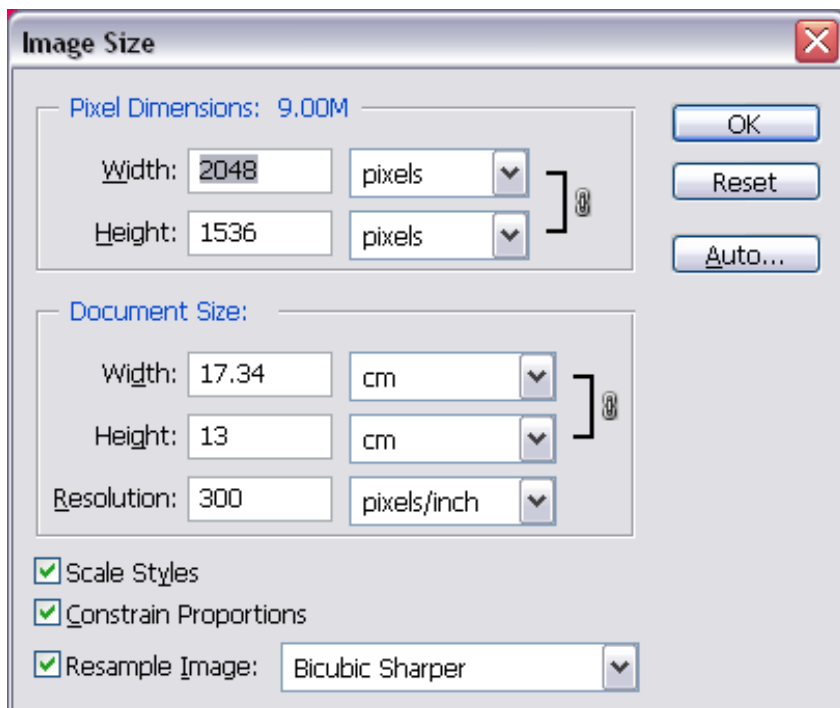


For a given image size, print size is a simple function of the Pixels per Inch setting

How Many Pixels per Inch Do You Need?

- No universal answer: printers, papers and inks differ
- Not even a widely agreed answer.....
- but many agree that 240 – 360 PPI is optimal
- and many prints look good at PPI as low as 180

Not Enough Pixels? Too Many? Re-sampling To Manage Image Size



Re-sampling To Manage Image Size

- Re-sample a little bit at a time (maybe)
- Scale Styles and Constrain Proportions (usually)
- Use bicubic sharper when down-sizing
- Use bicubic smoother when up-sizing

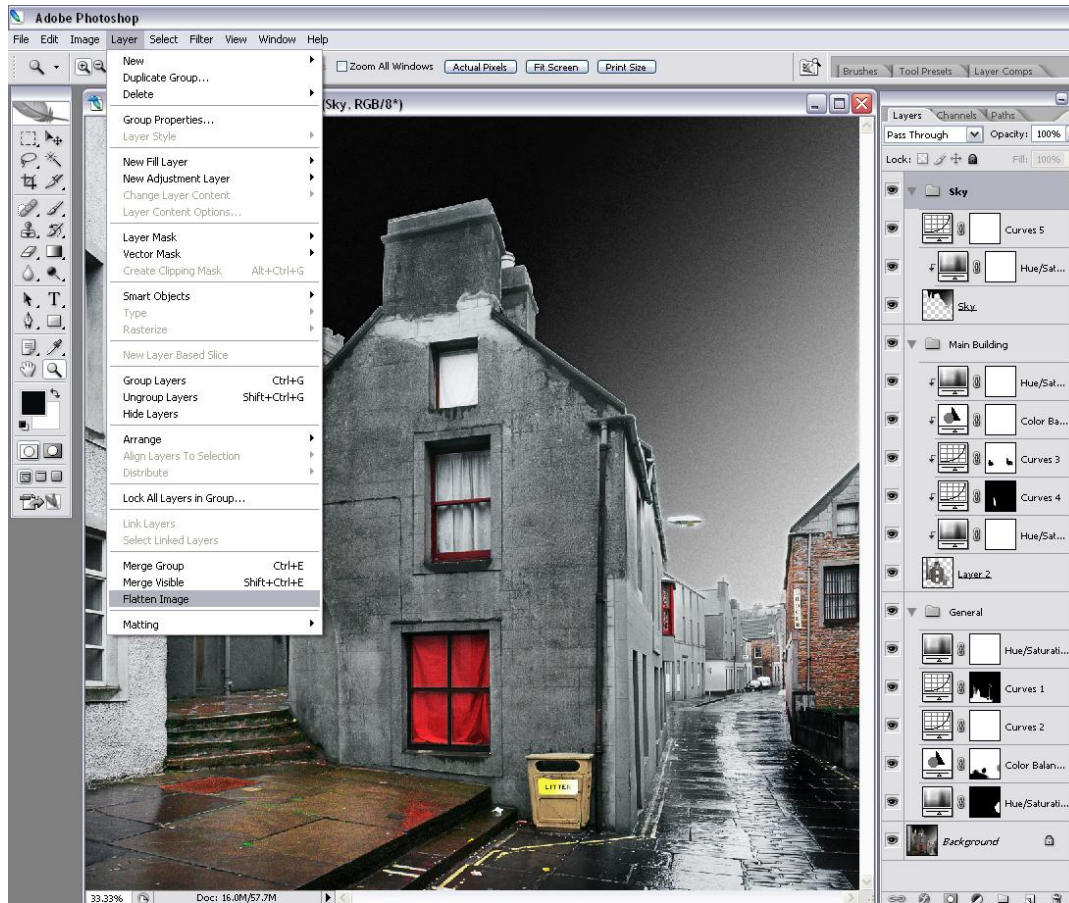
File Sizes and Print Sizes: Bit Depth, PPI and DPI

- Changing print pixels per inch (PPI) changes print size but not the number of pixels, hence does not change file size
- Re-sampling changes the number of pixels, hence it affects both print size and file size. It may also affect image quality
- Changing printer dots per inch (DPI) – e.g. from 720 dpi to 1440 dpi - changes print quality but not file size, print size or image quality
- Changing image bit depth changes file size and potentially image quality, but not image or print size

Printing: Basic Steps

- Finalise image
- Flatten and save under a new name
- Re-size and sharpen if necessary
- Set and view proof colours
- Check Gamut Warning
- Adjust colour as needed
- Choose Print With Preview....

Flatten Before Printing

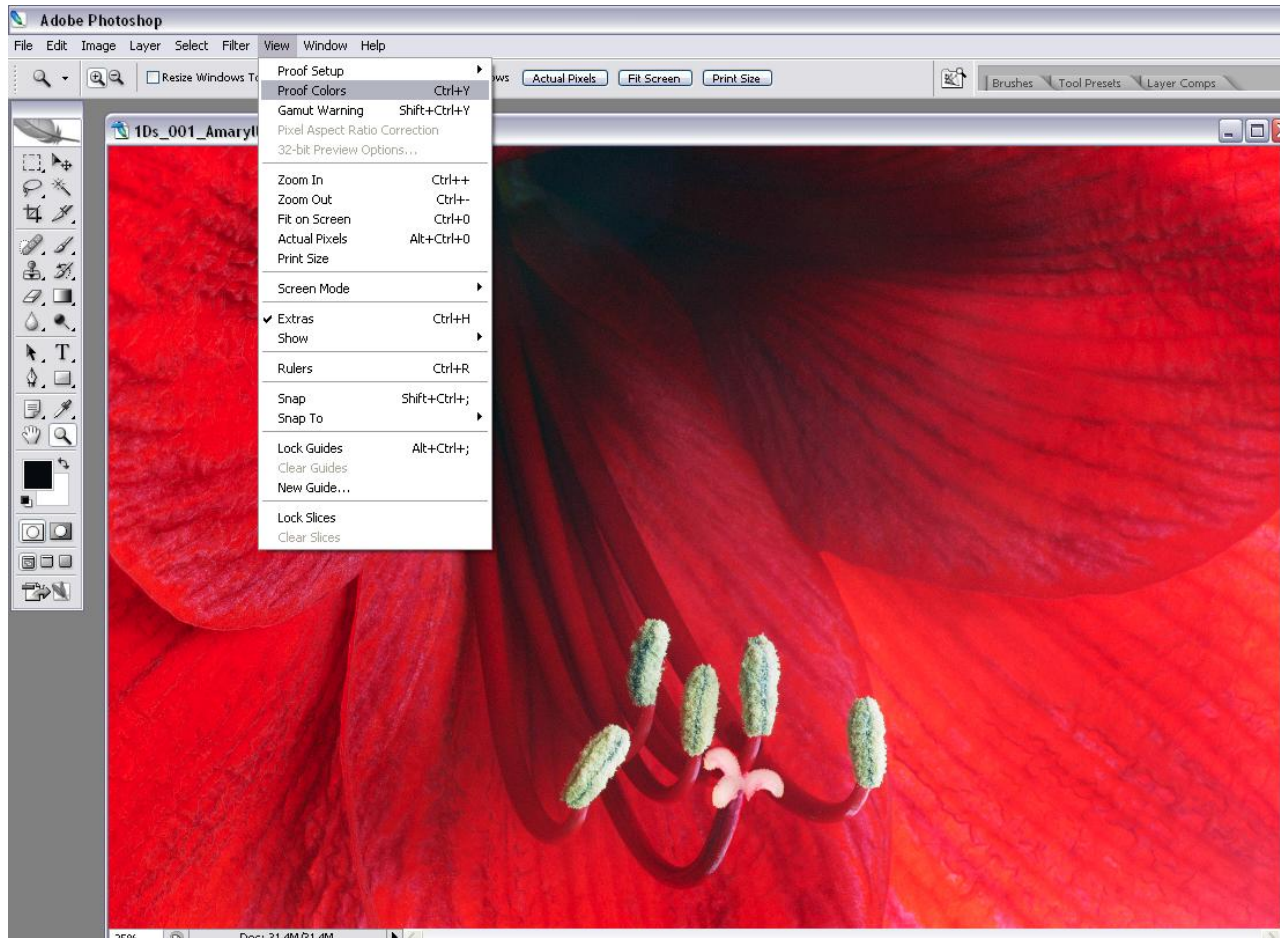


- Speed and simplify the printing process
- Allow print-specific layers (e.g. color, contrast etc.)
- Allow print-specific sharpening
- Sometimes useful to use Flatten Visible Layers only

Re-Size and Sharpen Before Printing

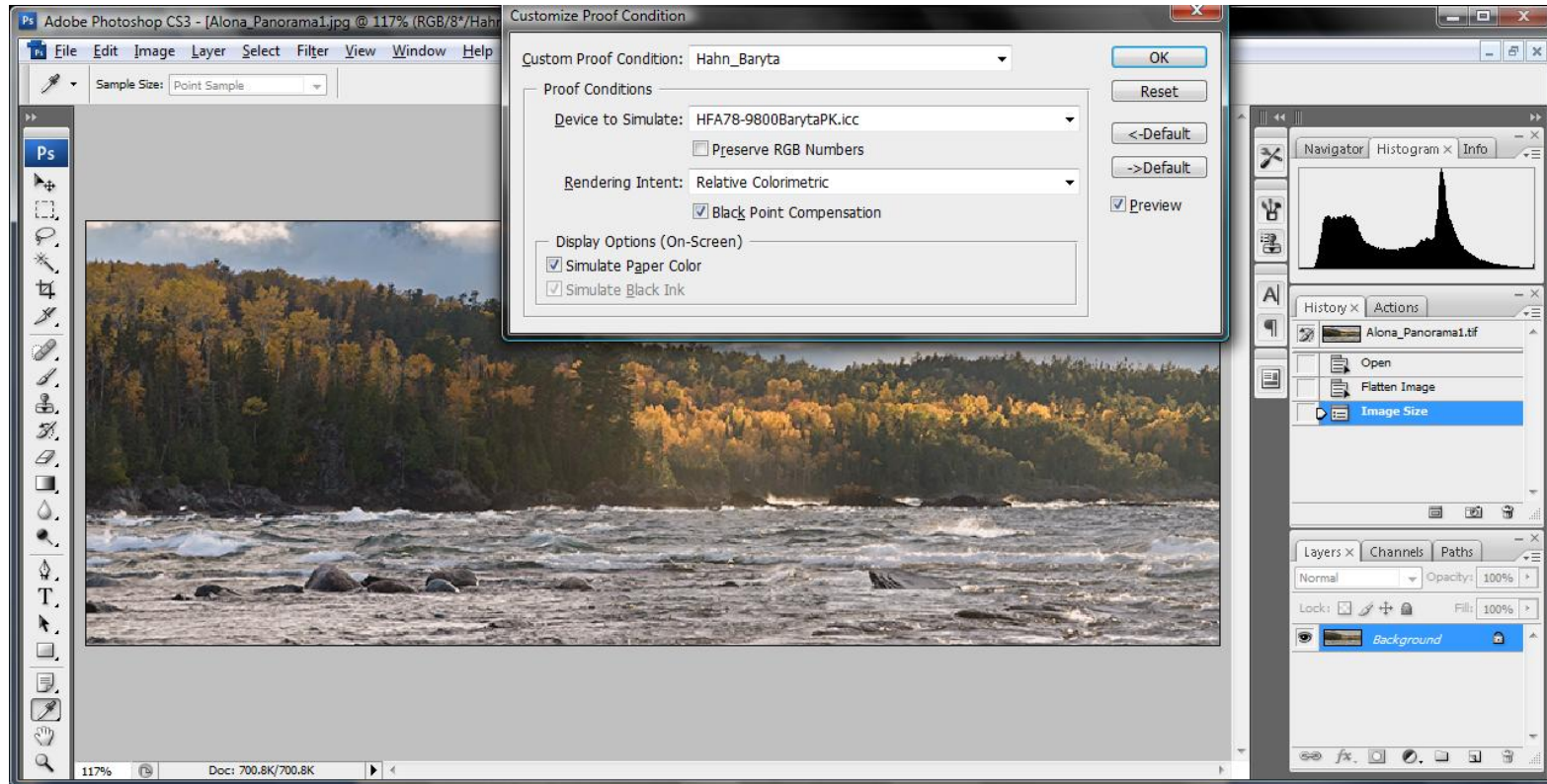
- Match image size to print requirement (i.e. print at 180-360 PPI): re-sample as necessary
- Sharpen using unsharp mask or similar (prints often need a little extra)

Set and View Proof Colours



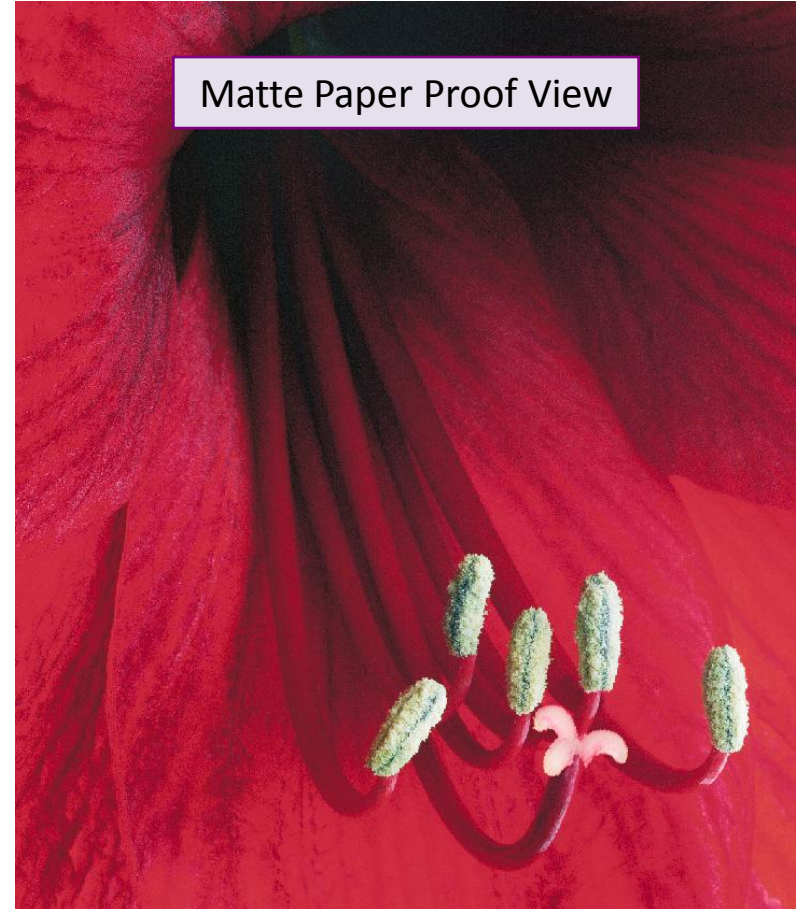
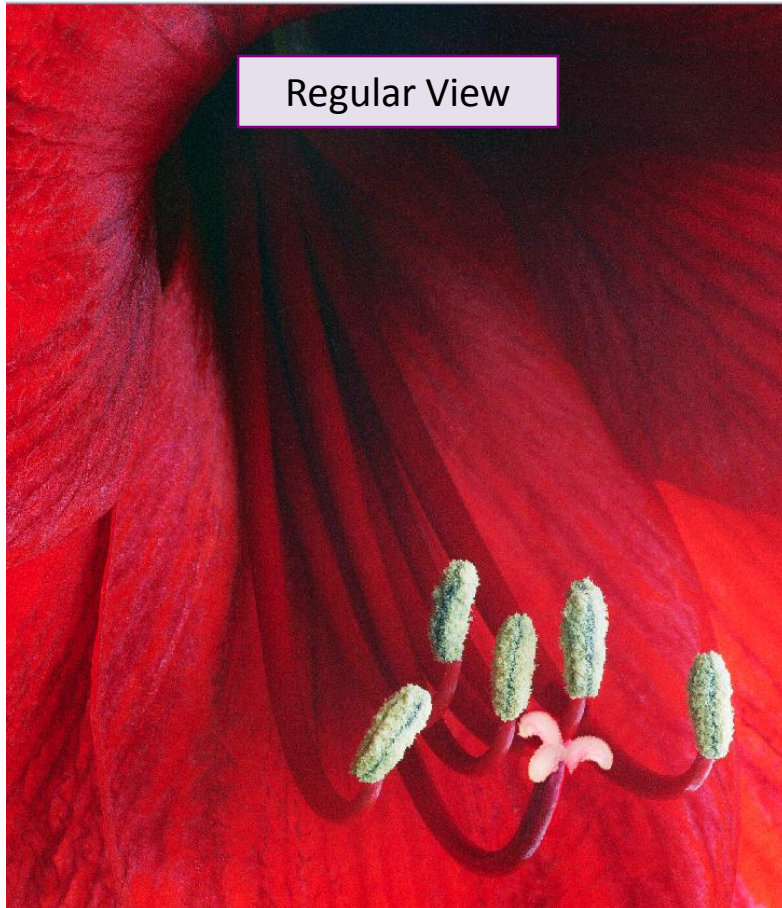
- Gives “soft proof” of final print
- Evaluate contrast etc. before printing

Choosing a Custom Proof Setup



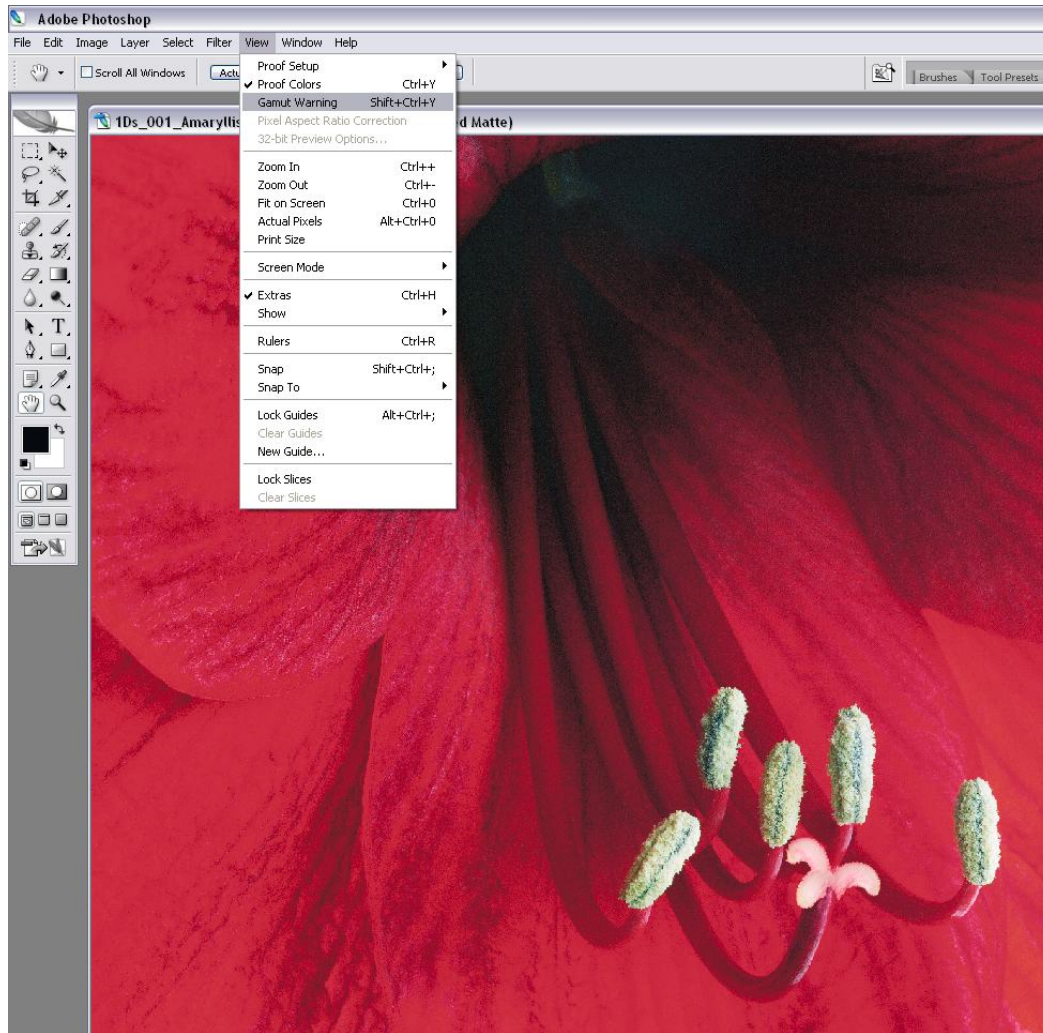
- Choose appropriate printer profile as Device to Simulate
- Save as Custom Proof Setup if used regularly
- Soft Proof using setup that matches your paper and printer

Set and View Proof Colours (2)



The difference between a screen image and a proof (printed) image can be substantial

Setting the View Gamut Warning



Indicates printer's ability to render image colour values

View Gamut Warning: Paper Surface Effects



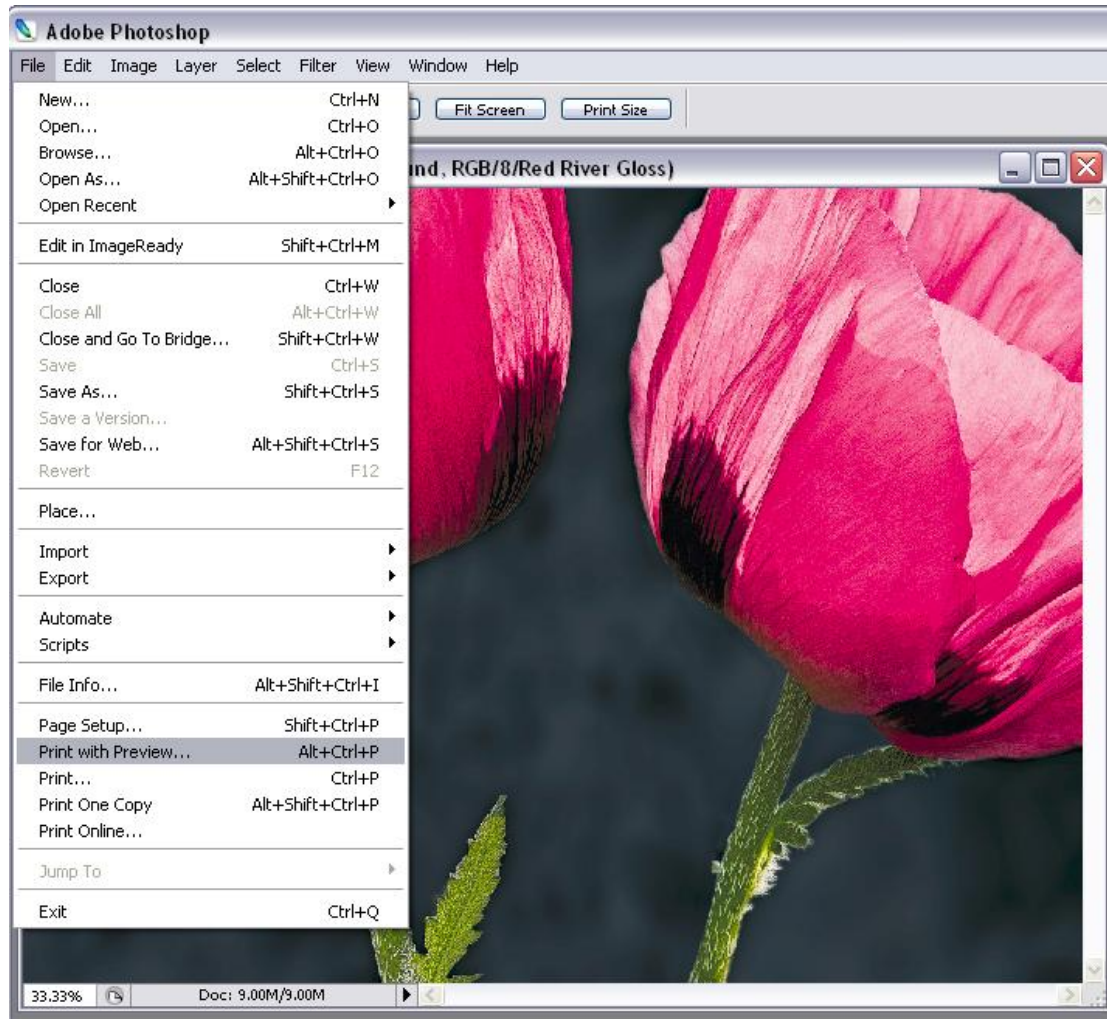
Different papers have different gamuts

Glossy paper gamut warning

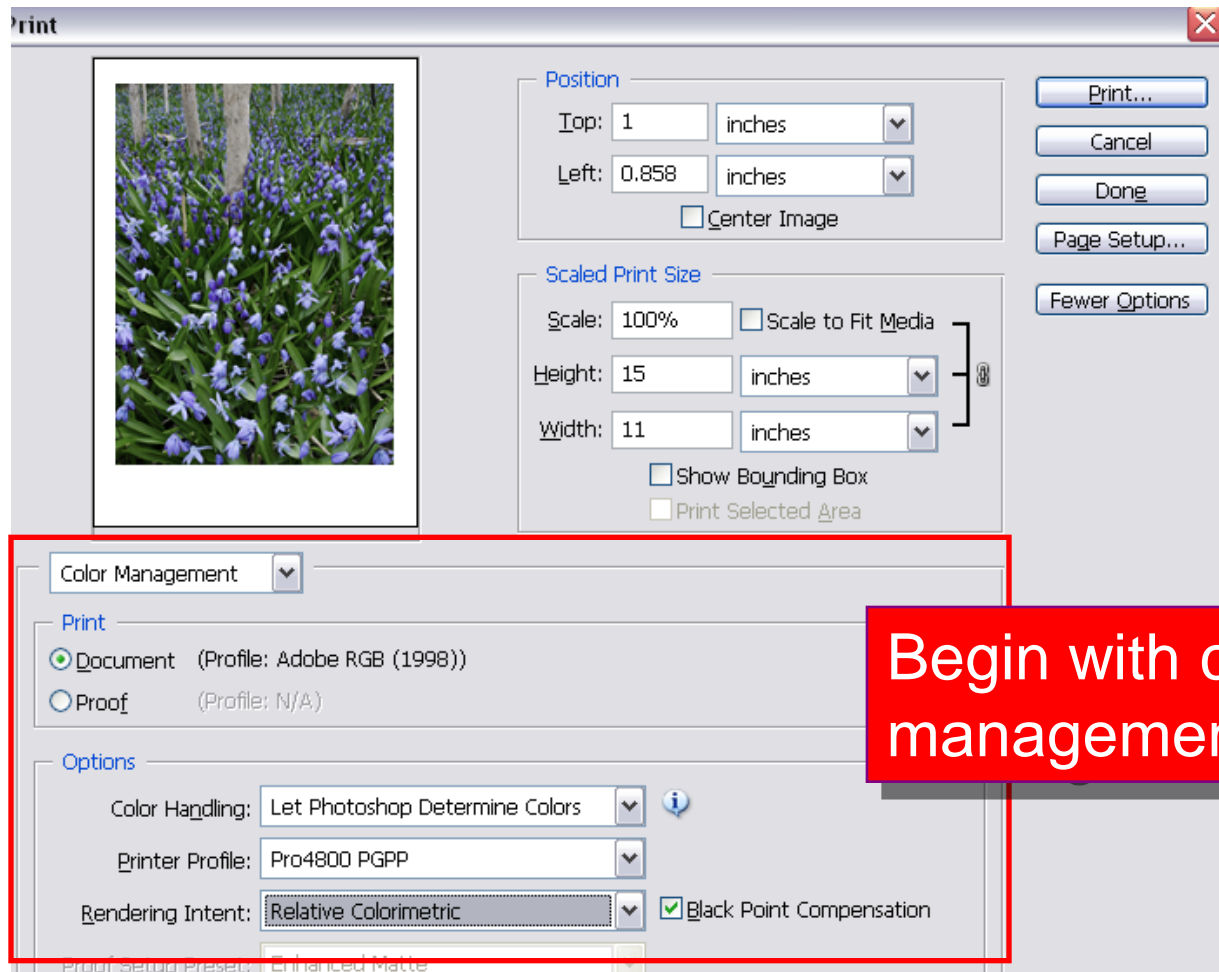


Matte paper gamut warning

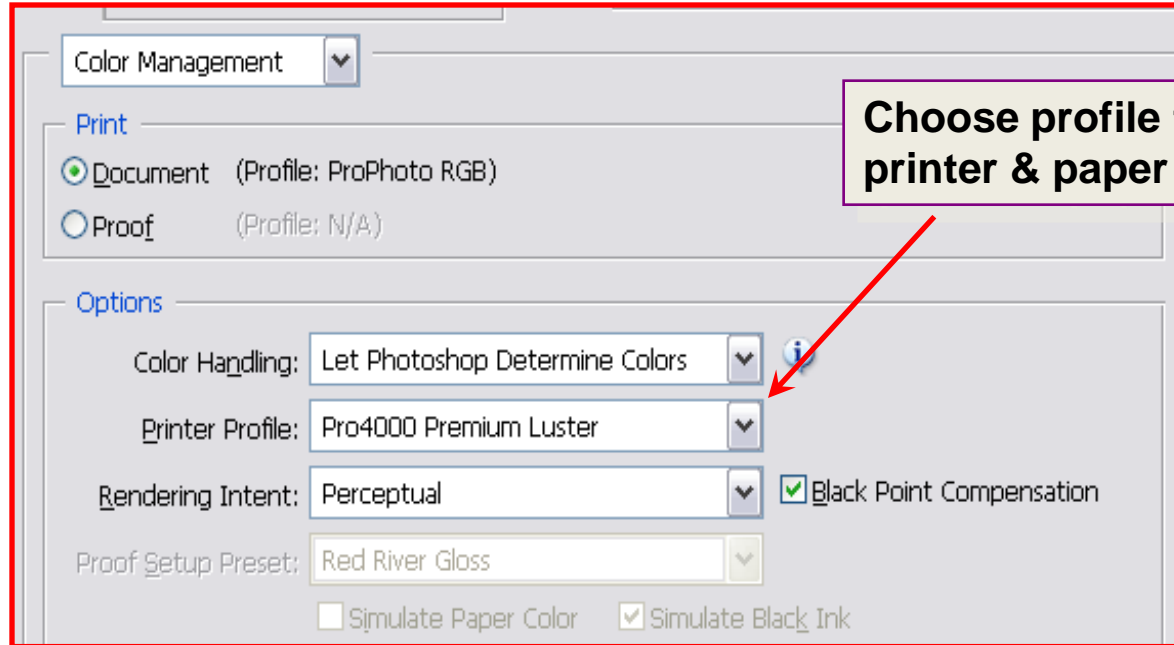
Print with Preview... (CS2)



Print with Preview...



Begin With Colour Management

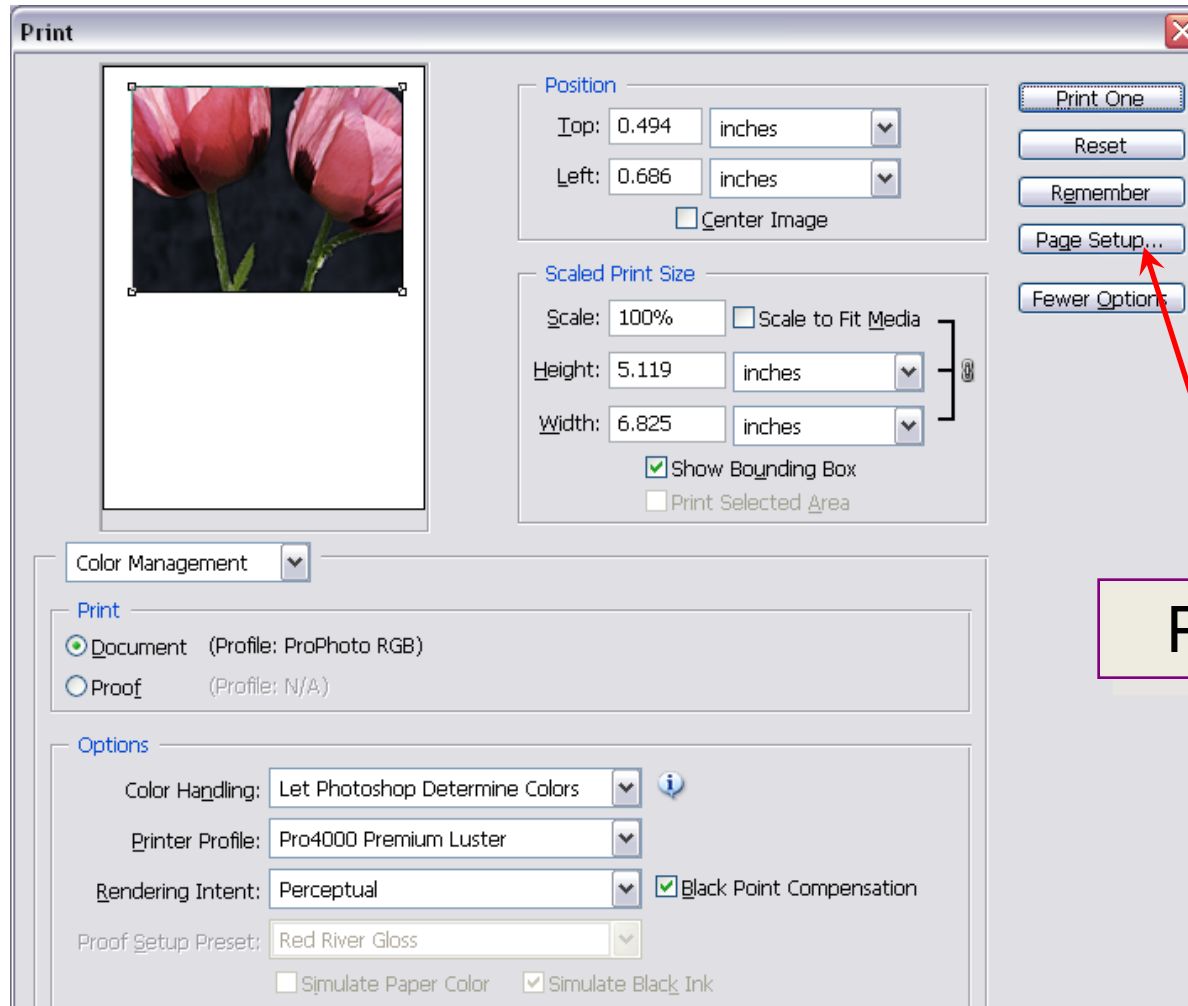


Choose profile to match your printer & paper

Use

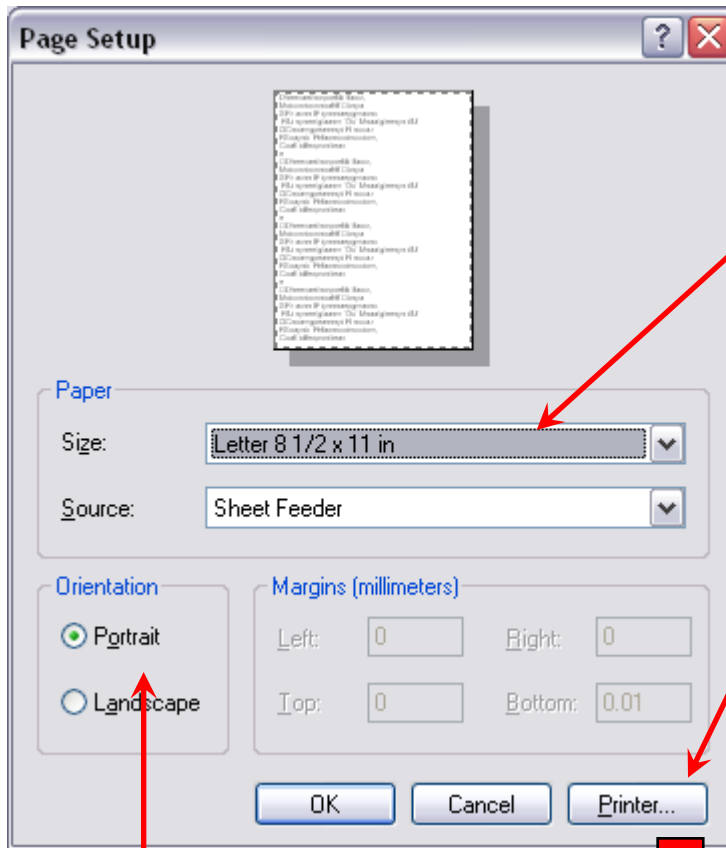
1. Document as source
2. Photoshop colour handling
3. Profile for your printer / paper combination
4. Perceptual/Relative Colorimetric intent and black point compensation

Then Setup Your Page



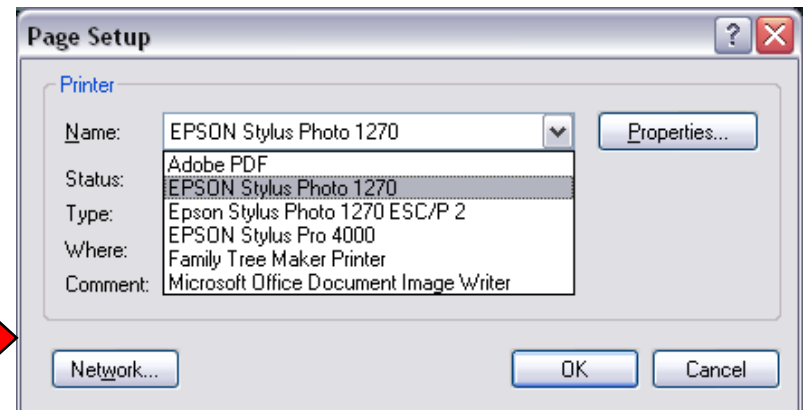
Page Setup

Page Setup & Printer Choice

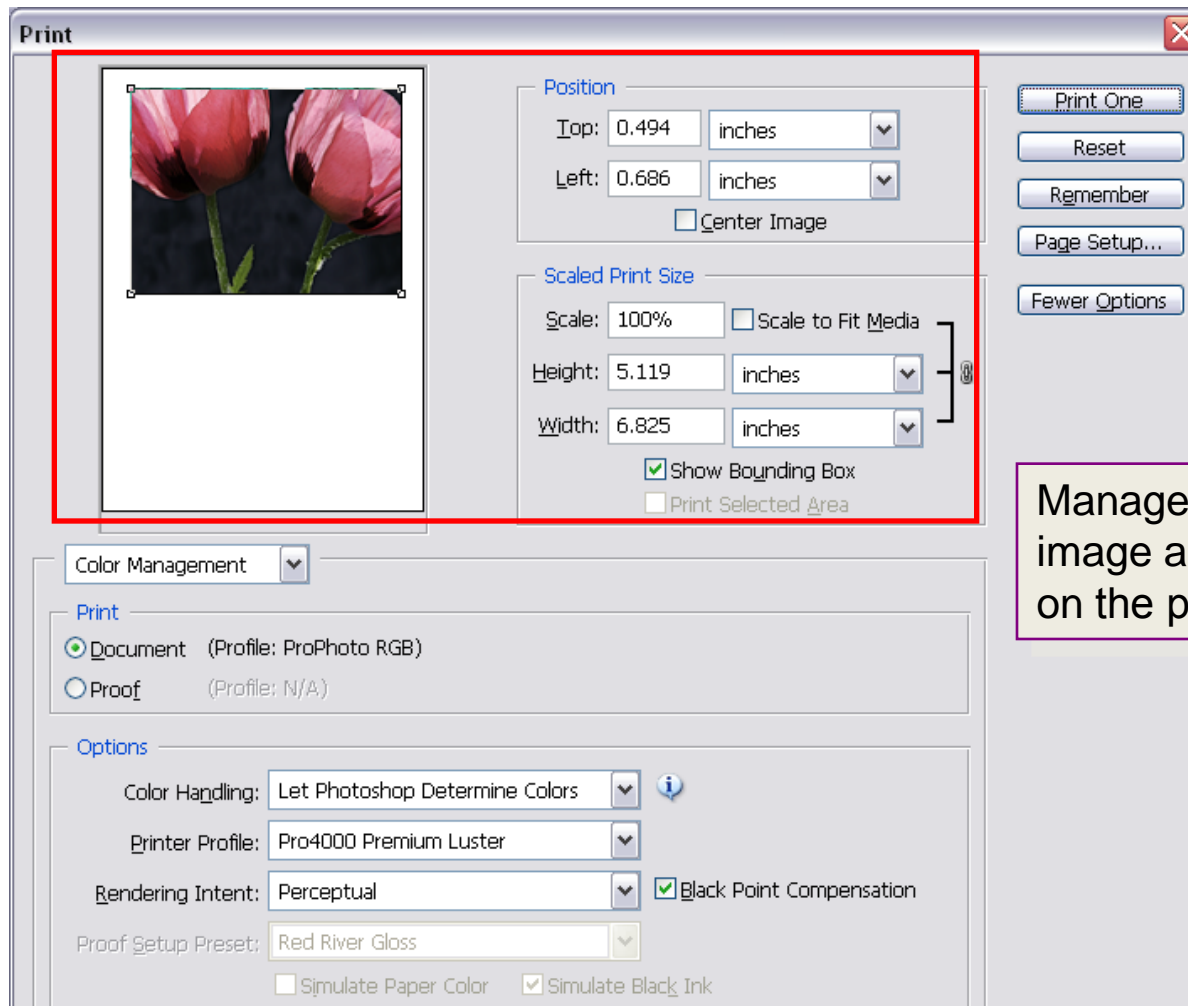


Page sizes available may depend on the printer chosen....

Set orientation to match image

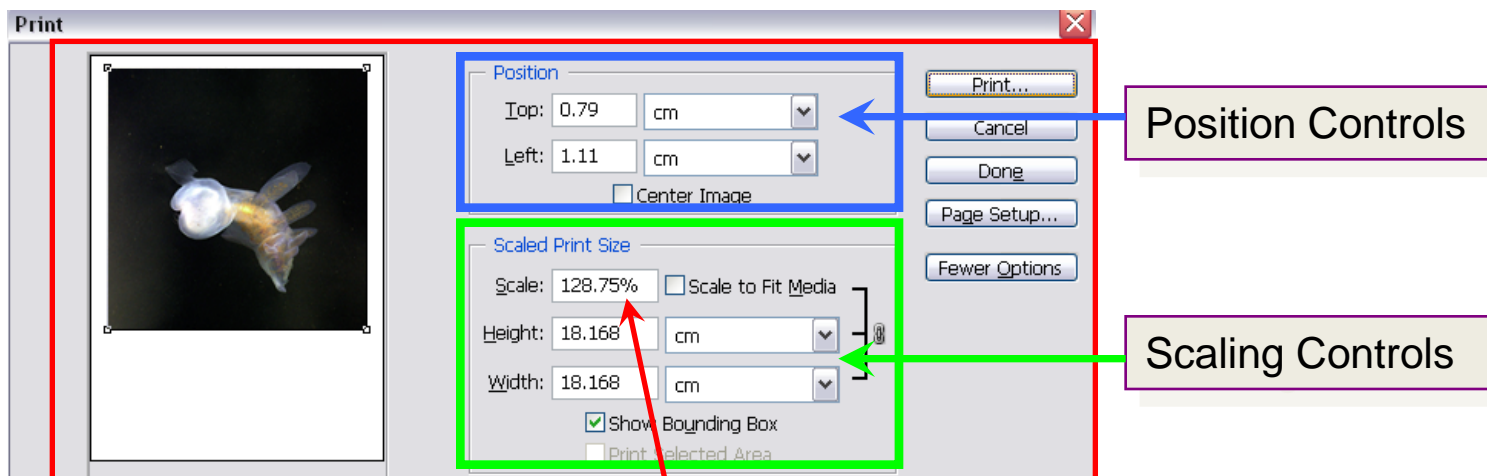


Positioning & Scaling the Image



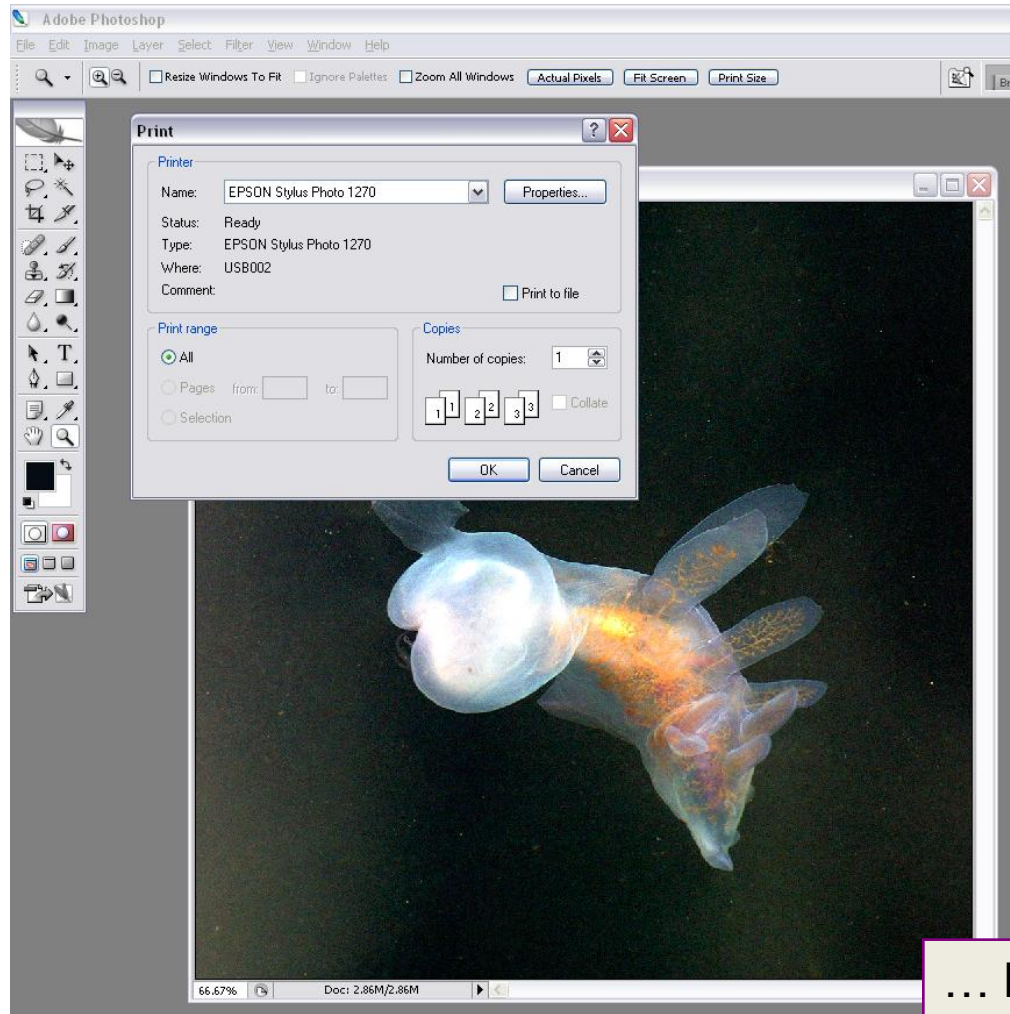
Manage the size of the image and its location on the page ...

Positioning & Scaling the Image: Details



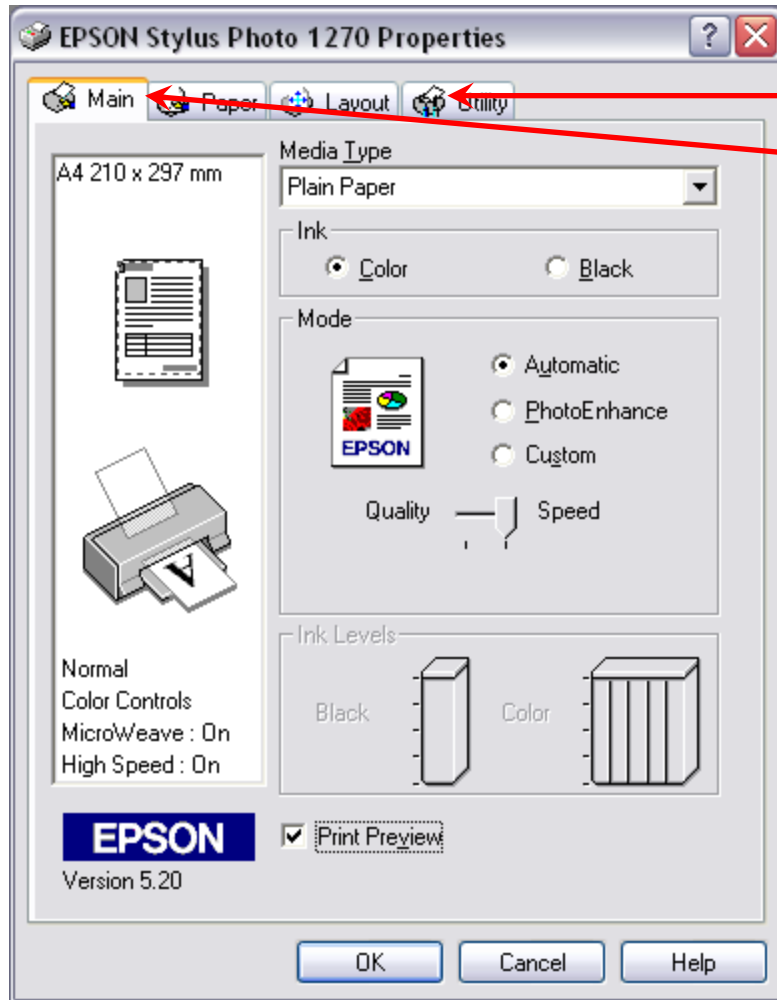
If re-scaling, be careful not to over-size to a print with a low-quality PPI setting

And Now For the Big Kahuna...



... launching a print job

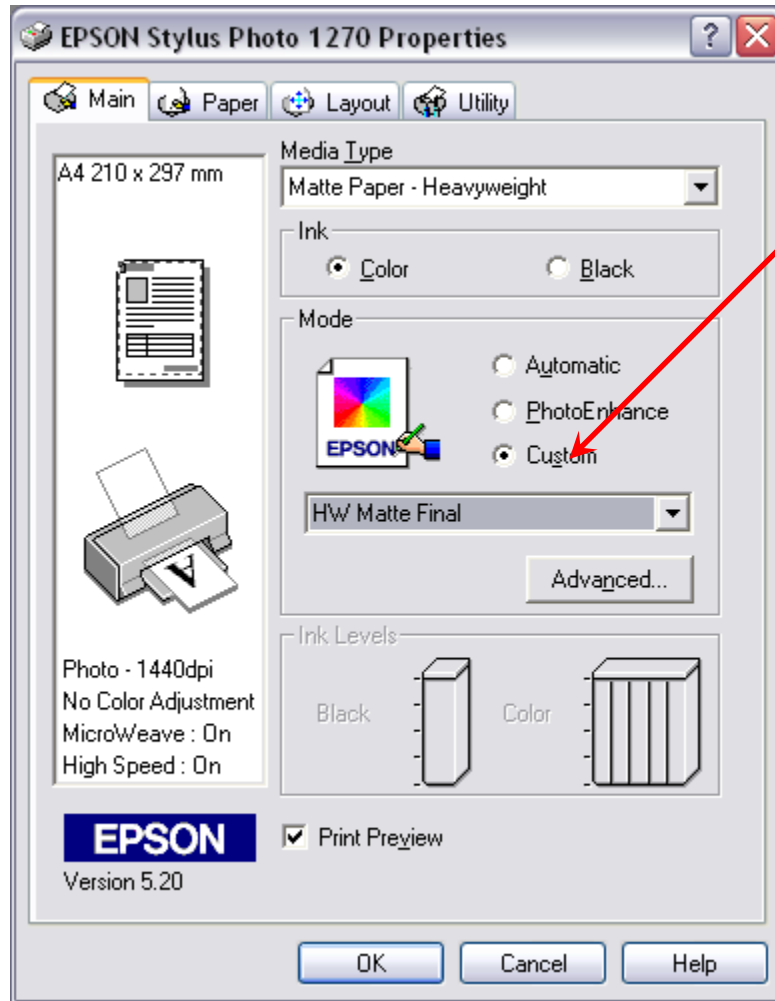
Setting Printer Properties



Printer setting tabs and controls are printer-specific, but all allow a choice of:

1. Paper type
2. Print quality (eschew “Speed”)
3. Printer dot pitch
4. Enable / disable printer colour management (**DISABLE**)
5. With / without print preview (a good idea)

Save Time With Custom Print Modes

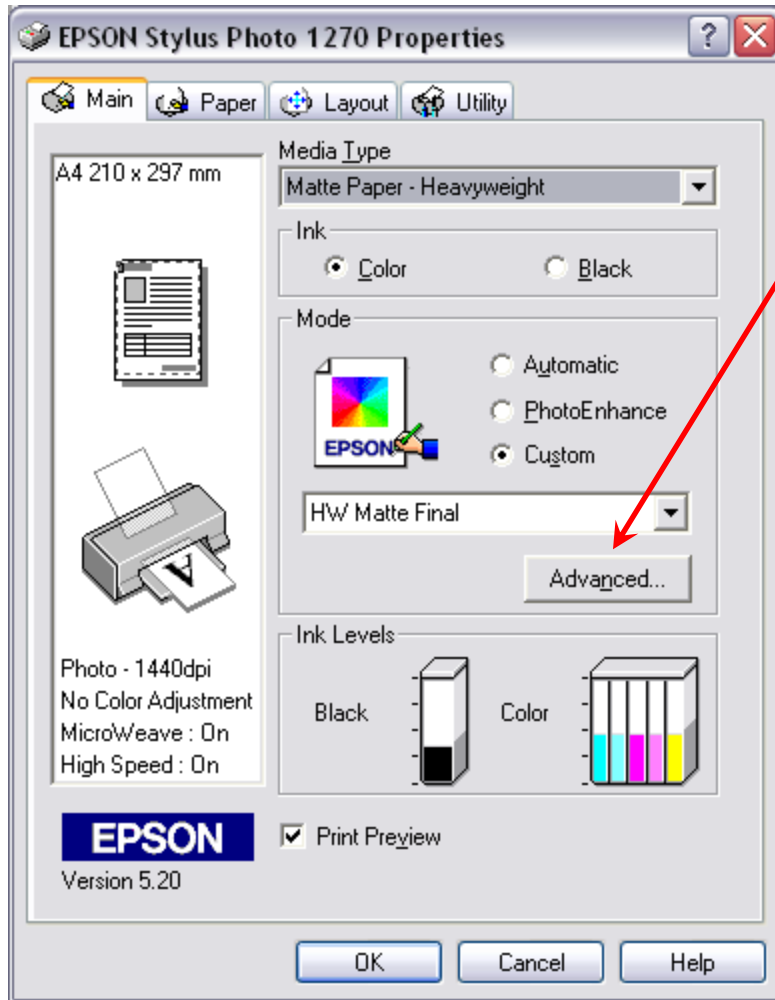


Save custom mode settings for single-command control of:

1. Paper type
2. Print quality
3. Printer dot pitch
4. Disabling printer colour management (**DISABLE**)
5. Etc.

Use a separate custom mode for each paper / print quality / ink combination

The Advanced... Settings Button



Use the Advanced... button to specify and save for future use:

1. Paper type
2. Print quality
3. Printer dot pitch
4. Disabling printer colour management (**DISABLE**)
5. Etc.

Sample Advanced Printer Settings

The screenshot shows an 'Advanced' printer settings dialog box. The settings are as follows:

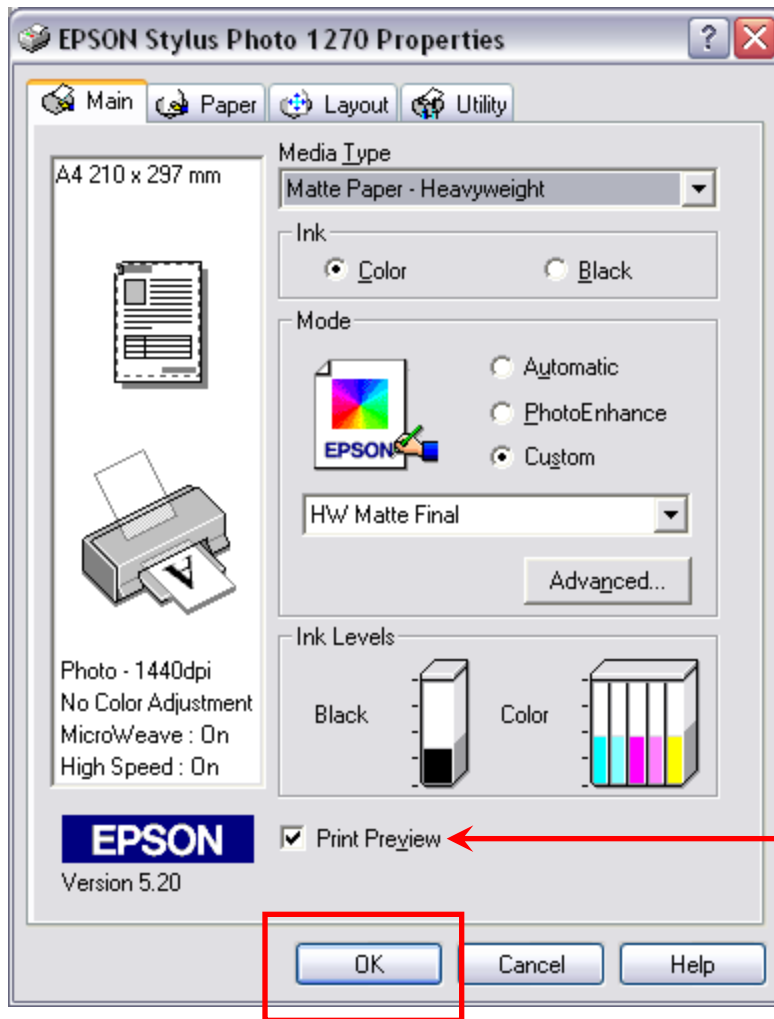
- Media Type: Matte Paper - Heavyweight
- Ink: Color
- Print Quality: Photo - 1440dpi
- Halftoning: High Speed Halftoning
- MicroWeave:
- High Speed:
- Flip Horizontal:
- Finest Detail:
- Color Management: Color Controls, PhotoEnhance4, No Color Adjustment, sRGB, ICM

Red arrows point from a callout box to the following settings:

1. Paper type
2. Print quality
3. Disabling printer colour management (Important)
4. Etc.

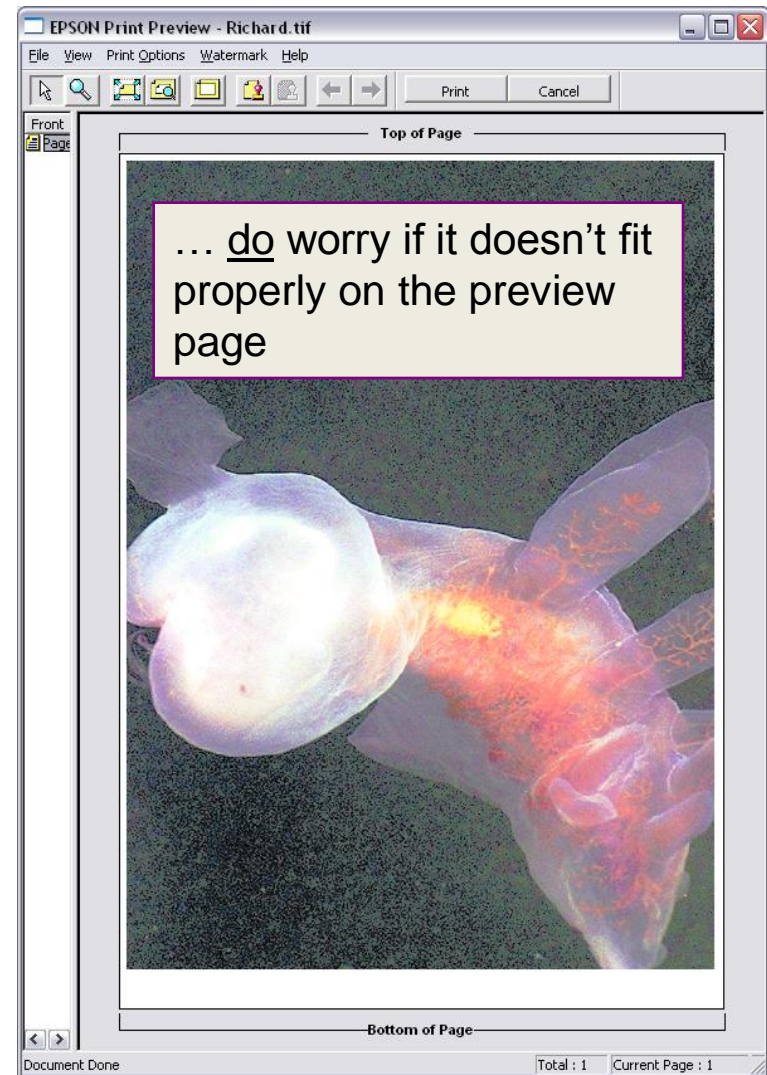
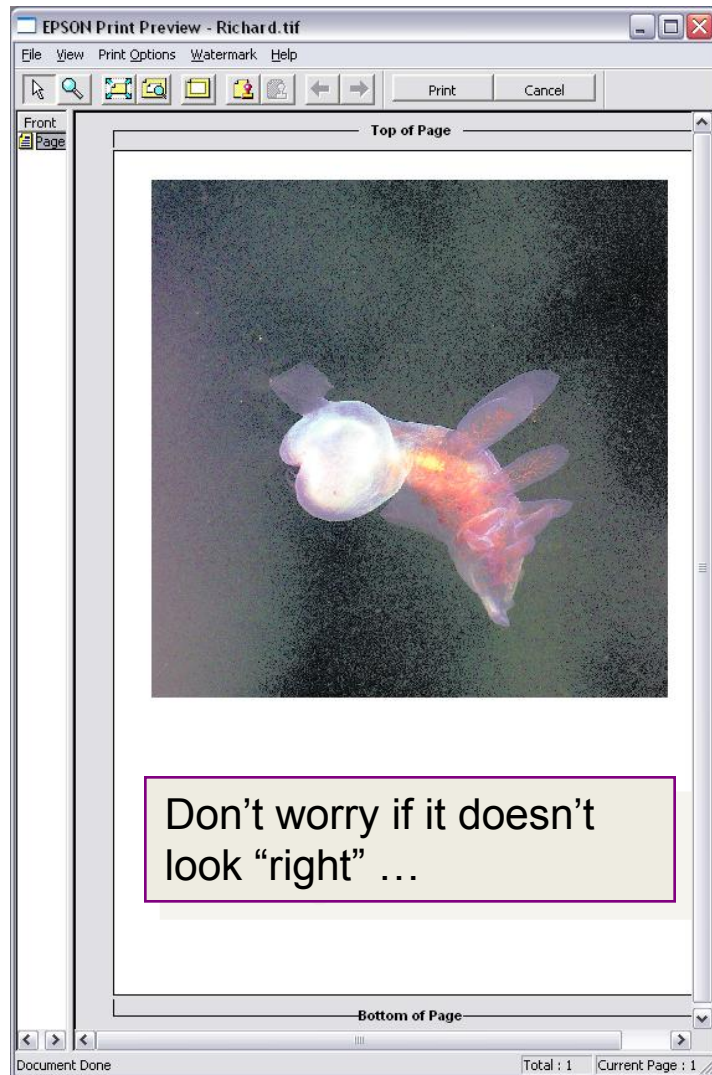
At the bottom, red arrows point to the 'Save Settings...' and 'OK' buttons. A callout box below the dialog box contains the text: 'Save settings here... then click OK'.

At Last, Click OK...



Use the Preview button to ensure correct size and orientation

...Check Your Print Preview...



...and Click Print

