How to get high quality, large photo prints.

The key is to start with the right digital file; high resolution with little compression.

As digital cameras have proliferated throughout our society, we have become used to taking pictures of everything and sharing them electronically. Much of what people see on the internet has been reduced in size to reduce the amount of data stored and to speed up page loading. As a result, the files that are displayed on your screen are a tiny fraction of the original file. Problems start when you want to print those files, especially if you want to print something large.

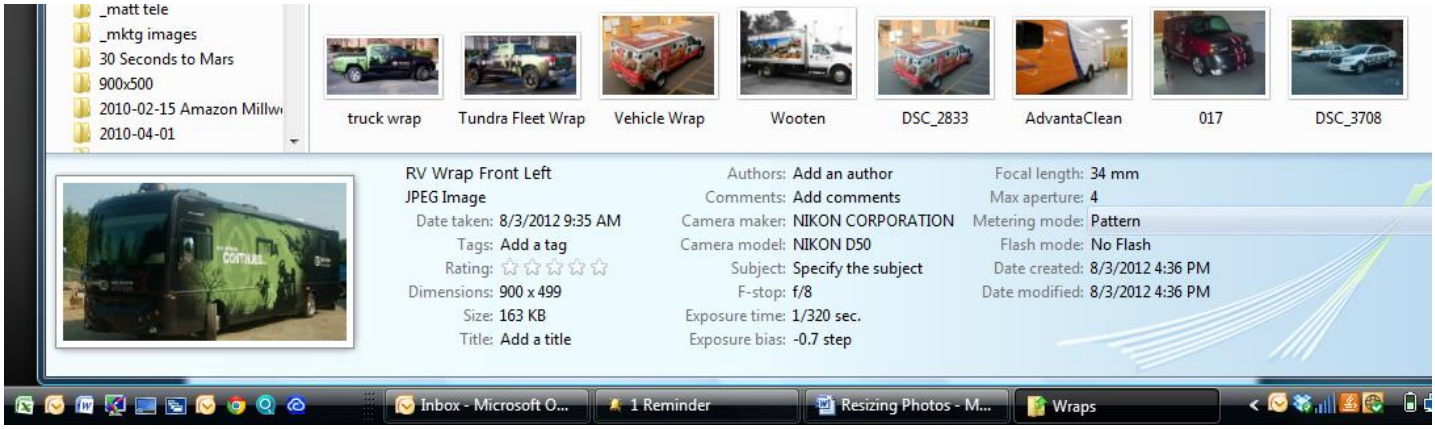
Many of the images on the internet have been reduced to a resolution of something like 640 x 400 pixels and may be in the 100 kilobyte (KB) size. Now consider that a modern camera (let's say a 24 Megapixel) creates files that are about 20 Megabytes (MB). That's about 20,000 KB. 99.5% of the information in that original file is lost when files are reduced for the internet! If that photo were a book, the size reduction is similar to keeping the title and table of contents and throwing away the chapters.

Reducing files like this is great if you are viewing it on a monitor or sharing over the internet. You will see an image about 6" x 4" on a monitor and you will enjoy speedy page loads. If you want to print that reduced file, you can expect great results in a picture that is 2.13" x1.33".

Why so small? Printing is a different medium than digital monitors and typically requires 300 dpi (dots per inch) for good results. If your image will be part of a display that is to be viewed at a distance, you can print it up to about three times that size. In printing, each pixel becomes a colored dot. The dots need to be small and close together for the human eye to interpret the dots as a smooth picture. For high quality images in small printed materials, like books and brochures, the dots need to be printed so that 300 of them will add up to 1 inch. (AKA 300 dots per inch or 300 dpi)To calculate how big we can print an image we divided the number of pixels by the number of dots per inch to get the size in inches. (640 pixels/300 dpi = 2.13") With large format prints, we can often get away with fewer dots per inch as the images are viewed from a distance.

How to tell if you have a good file for printing?

The first thing to check is the resolution of the file. This is easily done by clicking on the file properties or looking at the properties when the file is selected. One of the properties is called "Dimensions". What follows is the number of pixels; width x height. In the example below we have a file selected that is 900 pixels wide by 499 high. This image is sized for the web. The original picture was 3000 pixels wide by 2000 pixels high when I took it with my camera.



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That original file would print great if sized to 10” long because you are at that 300 dpi point. (3000 pixels wide / 300 DPI = 10”) In practice, you can still get very good results at 30” x 20”, with careful processing, and the fact that most people stand a little farther away from a 30” print. (We recommend 100 DPI minimum for display purposes. 3000 pixels/100 dpi = 30”)

In order to make good large prints, you need a great image file. The photographer who takes the picture needs to control exposure carefully, use excellent lenses and have flawless technique. To find out if your image meets those requirements, you must “Pixel Peep”! When we print large, everything, including mistakes, shows so you need to look at the image zoomed in. Zoom in till you can make out the pixels as little squares. The image must hold up at this level. Your image should be sharp, have good contrast and be free of colored halos or other anomalies. If the detail is not there, nothing can be done to retrieve it in the printing process.

Resizing small photos to lots of pixels gains little

Consider the following Original High Resolution Photo

The image on the left is high resolution (21 megapixels) but displayed on your monitor in a reasonable size. By zooming in on just the eye (image on the right), you can see the photographer’s excellent technique reflected in the clarity of the lines and the capture of fine detail! Also note the smoothness of color.

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Now consider a reduced resolution version of the same photo.

I reduced the file resolution and added some compression to display well on a typical monitor. The image holds up pretty well at the intended web size but there are a few minor differences if you look very closely. The file size was reduced to 21 KB. This is exactly what is wanted for the web. Looking at the zoomed in image at the right, you can see much was lost. Colors are blocked, lines are blurred, fine details are missing and other issues are present.

What happens when we resize the reduced image to add Pixels – no significant improvement

The image on the left was returned to its original size using Photoshop. Little has changed from an image quality standpoint but the file is large again. When we look at the close up of the eye we see that it is slightly smoother and lower contrast but the information lost by size reduction is gone forever.

What it all means

While I would readily print the original high resolution file of this woman about 40” wide, the reduced file would make an acceptable print about 1” wide in a brochure.

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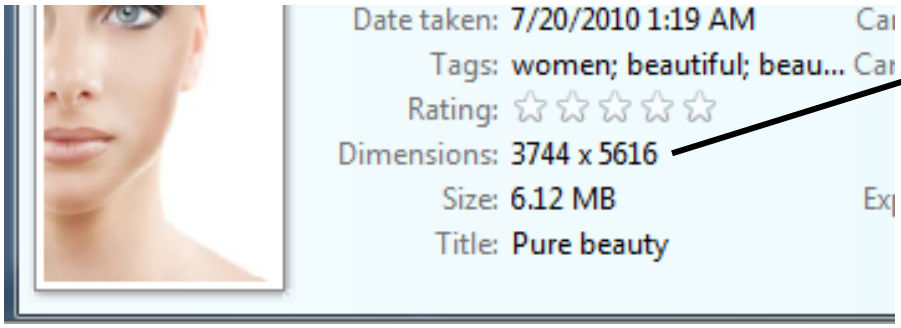
Handy rule of thumb – When printing large format image, drop the 2 right digits off the “dimensions” and you will have the approximate largest size you should consider printing for indoor display or advertising.



3744 x 5616 becomes
37” x 56”