What You Need to Know Before Preparing Digital Images for the Web

The three golden rules:

1. Always save a lossless copy first.
2. Evaluate the size vs. quality compromise.
3. Edit in lossless; distribute in lossy.

Resolution

- dpi (dots per inch) = ppi (pixels per inch)
- Standard resolution for displaying images on screen: 72 dpi
- Standard resolution for newspaper half-tones: 180 dpi
- Standard resolution for full-color printing: 300 dpi

Color

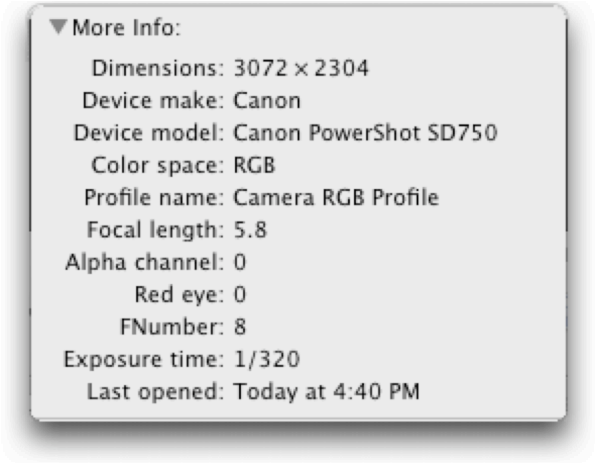
8-bit = 1 byte = 256 possible colors
24-bit = 3 bytes = 16 million possible colors, or "true color"

Megapixels

1 megapixel = 1 million pixels
1 million pixels x 24 bits = 24,000,000 pixels per image (uncompressed)

EXIF (Exchangeable image file format)

Most cameras append extra data (including settings, date, time, aperture, shutter speed, etc.) to each image file to enable the sharing of this info with editing and viewing software.



Raster vs. Vector Images

The information contained within digital images is stored in two ways: raster and vector. Raster refers to data organized in a grid. Vector

refers to data organized with a mathematical formula, such as an algorithm.

Raster images have absolute values for each pixel. Vectors construct data points based on relative values.

Because raster images rely on absolute data, they are not very scalable. That is, when they are resized to be larger than the original dimensions, the quality will degrade considerably; scaling down, however, is less destructive. In addition, the size of a raster file depends on the image's dimensions.

Vector images, on the other hand, scale well because the image is constructed as the script runs to build the best quality image possible. The size of a vector file always stays the same: the size of the file that contains the formula and script.

Common raster formats include:

- bmp
- gif
- jpg
- png
- tif

Common vector formats include:

- svg
- swf animation files

Raster formats are better for saving/rendering:

- Photographs
- Complex images with a wide range of colors/tones

Vector formats are better for saving/rendering:

- Line art
- Typography

Depending on what you're doing with the images, it's also possible to convert from raster to vector or vice versa using some of the tools widely available on the web.

Lossy vs. Lossless

There are two broad categories of image compression: lossy and lossless.

Lossless algorithms compress a file without sacrificing quality, but result in a larger file.

Lossy algorithms compress a file with a noticeable reduction in quality—because they discard information that cannot be retrieved—but result in smaller files that can be more easily manipulated for the Web. To compensate for lossy-ness, you can specify the "quality" of a lossy file.

Each time you open, edit, and save a lossy file, you will lose some quality because the computer will sample to fill in missing data. Files that have been compressed too much will begin to look blurry. Flaws such as these, called artifacts, should be avoided.

Cropping
Cropping is one of the few acceptable alterations in photojournalism. Unless your blog is focusing on photojournalism, it's generally acceptable to crop photos. Make sure to attribute them, however. And don't rely on hotlinking, unless you have permission. This is considered a no-no because by doing so, you're draining other people's bandwidth. To crop a photo, follow these steps:

- Change the image to the desired resolution first.
- Know your target dimensions.
- Select/highlight the area to be cropped.
- Then crop.
- Save for Web.

For further reference
Web Style Guide's Comparison of gif, jpeg, and png files
http://www.webstyleguide.com/graphics/gifs.html

Web Style Guide's primer on browser-safe colors
http://www.webstyleguide.com/graphics/safe.html

Free Image Editing Software for Windows
http://graphicssoft.about.com/od/pixelbasedwin/tp/freephotoedw.htm

Wikipedia: Image editing
http://en.wikipedia.org/wiki/Image_editing

Wikipedia: Comparison of graphics file formats
http://en.wikipedia.org/wiki/Comparison_of_graphics_file_formats