# Image File Formats - JPG, TIF, PNG, GIF
# Which to use?

The most common image file formats, the most important for cameras, printing, scanning, and internet use, are JPG, TIF, PNG, and GIF.

- Digital cameras and web pages normally use **JPG** files - because JPG heroically compresses the data to be very much smaller in the file. However JPG uses lossy compression to accomplish this feat, which is a strong downside. A smaller file, yes, there is nothing like JPG for small, but this is at the cost of image quality. This degree is selectable (with an option setting named JPG Quality), to be lower quality smaller files, or to be higher quality larger files. In general today, JPG is rather unique in this regard, using lossy compression allowing very small files of lower quality, whereas almost any other file type is lossless (and larger). The meaning of Lossy is discussed Below.

  Frankly, JPG is used when small file size is more important than maximum image quality (web pages, email, memory cards, etc). But JPG is good enough in many cases, if we don't overdo the compression. Perhaps good enough for some uses even if we do overdo it (web pages, etc). But if you are concerned with maximum quality for archiving your important images, then you do need to know two things: 1) JPG should always choose higher Quality and a larger file, and 2) do NOT keep editing and saving your JPG images repeatedly, because more quality is lost every time you save it as JPG (in the form of added JPG artifacts... pixels become colors they ought not to be - lossy). More at the JPG link at page bottom.

- **TIF** is lossless (including LZW compression option), which is considered the highest quality format for commercial work. The TIF format is not necessarily any "higher quality" per se (the image pixels are what they are), and most formats other than JPG are lossless too. This simply means there are no additional losses or JPG artifacts to degrade and detract from the original. And TIF is the most versatile, except that web pages don't show TIF files. For other purposes however, TIF does most of anything you might want, from 1-bit to 48-bit color, RGB, CMYK, LAB, or Indexed color. Most any of the "special" file types (for example, camera RAW files, fax files, or multipage documents) are based on TIF format, but with unique proprietary data tags - making these incompatible unless expected by their special software.

- **GIF** was designed by CompuServe in the early days of computer 8-bit video, before JPG, for video display at dial up modem speeds. GIF always uses lossless LZW compression, but it is always an indexed color file (8-bits, 256 colors maximum), which is poor for 24-bit color photos. Don't use indexed color for color photos today, the color is too limited. PNG and TIF files can also optionally handle the same indexed color mode that GIF uses, but they are more versatile with other choices too. But GIF is still very good for web graphics (i.e., with a limited number of colors). For graphics of only a few colors, GIF can be much smaller than JPG, with more clear pure colors than JPG). Indexed Color is described at Color Palettes (second page of GIF link below).