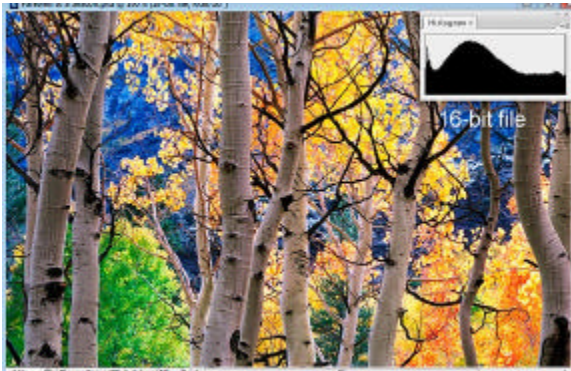


## Digital Printing Insights #2:

### *“How important are 16-bit scans over 8-bit scans?”*

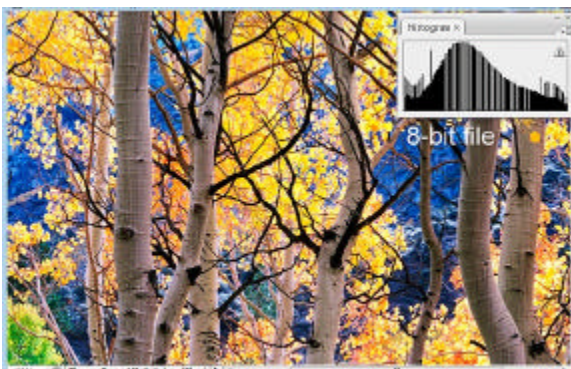
© 2009 Michael E. Gordon

*“How important are 16-bit scans over 8-bit scans?”* This is a good question that I receive fairly regularly. First things first: An 8-bit file (8-bits per color channel [R/G/B]) contains only 256 data points per color channel. A 16-bit file contains up to 32,768 data points per color channel. Trick question: which bit mode contains more extensive and workable data? I knew you’d get it! I’m no mathematician myself, so to get right to the nitty gritty: when you’ve got the option and the money, always choose a 16-bit scan over 8-bit. You want MORE data to work with, not less. When one really starts “cranking” on their files (large brightness or contrast adjustments, for example) the additional bit depth becomes obvious.



Take a look at my 16-bit sample at left. I added one gross contrast adjustment via a curve adjustment layer in ‘Normal’ blending mode (when I say “gross” I mean it! The hyper-color saturation would be greatly controlled by switching to Luminosity blending mode, but my experiment would fail with this example). Notice that even after this adjustment, the histogram appears “uncombed” and good

(“combing” = the choppy separations that occur between the histogram data).



Now take a look at the 8-bit sample, also at left. I dragged the same curve adjustment layer from the 16-bit file to the 8-bit file. Take a look at this 8-bit histogram. See the combing? Combing of the histogram = lost data, and I know you don’t want this. You can try this experiment at home.

Photoshop now offers extensive support for 16-bit editing, so when cost, availability, and time is not an issue, always go for a 16-bit scan. What if you don’t have lots of disposable income to shed on 16-bit scans and you need to be a bit more selective? My general rule is this: if it’s a difficult negative or chrome (meaning under/overexposed or other such imperfections); if you have a fair bit of sky; or large areas of continuous tone



(think water and reflections in water); or if you plan on “cranking on” the image in post-production (large contrast/levels adjustments), then 16-bit is definitely a better bet. With skies, water, and continuous tones, banding is always a possibility – especially at 8-bits and with large adjustments. Better data in = better data out.

I now scan everything 16-bit, but I still have a large number of files I print from that began as 8-bit scans. Some of them are just fine – no rescan necessary – and some would benefit by rescanning and reworking with 16-bits.

If you have any questions, comments, or suggestions for future Printing Insights, I would love to hear them! Thanks for reading.

*Michael E. Gordon is an award-winning fine art landscape photographer and respected digital print maker. Michael leads photographic workshops and tours and provides printing services and custom printer/paper profiles for photographers. He lives in Southern California with his wife Shauna and their menagerie of rescued animals.*