

Tack Sharp Images - Notes

John Naman Fall, 2009

Sharpness is the clarity of detail in an image. There are three elements that contribute to sharpness: focus, resolution, and contrast (technically: acutance). When images are not "tack sharp", they look "soft", "out of focus" and detail is "washed out". We know it when we see it.

Photoshop can only help one part of sharpness; the other parts come when the image is taken and when it is printed.

Motion blur seems to be #1 in terms of losing sharpness. **Camera on tripod** on concrete or rock. Never on a wood floor, boat, or vehicle. Tripod is better than monopod is better than handheld.

If you use a tripod, using a remote shutter release (infrared, wireless, or cable) may help a little, especially if you usually stab at the shutter-release button.

Handheld: Flash if I can. Flash is 1/1,000th sec at full power, 1/1,600th at 1/2 power, 1/3,400th @ 1/4 power. Wedding photographers shoot hand-held with flash to get sharpness and good skin color.

Handheld shutter speed at least one over three times the focal length for medium prints, 5x7 or 8x10. For a 200mm zoom, that means $1/3 \times 200 = 1/600$ th sec. For 50mm lens, then 1/150th is the minimum. For even better results: $1/10 \times$ focal length!

VR/IS helps make a bad situation less bad, but doesn't really make tack sharp images. If you do use it, take 2 or 3 times the images, because some or many will be blurred. 1/125 is my minimum for VR.

Contrast: For all brands of camera, the higher the ISO, the less contrast in an image (muddy, washed out). Try to keep ISO as low as you can. Less noise too.

Lens Sharpness is maximum from f/5.6 to f/8, in the center of the lens, and in the middle of a zoom lens range.

For best lens sharpness, using an FX lens on a DX camera is almost the best you can do, because you are not using the softest edges of the lens. Unfortunately you pay double for this one: FX lenses are much heavier and cost way more! This is true for all brands of lens.

If you use a zoom, zoom all the way out, then widen a little (1/4 turn) and later crop the soft edges. Makes a huge difference, no cost. Similar process if zoomed in wide.

The higher you go beyond f/8, the less sharp the image. Softness (diffraction) kicks in for DX sensors at **f/9**, is worst beyond **f/16**. For FX sensor it kicks in at **f/12**, and is worst beyond **f/22**. When diffraction kicks in, depth of field increases, but sharpness and contrast decline, which means a "softer" image. If you always shoot at f/16, why buy a f/2.8 lens?? Depth-of-field is NOT the same as sharpness.

Note: Teleconverters reduce contrast and may also reduce resolution. Close-up lenses also suffer from edge and corner softness. Buy the best add-ons you can afford and use every tip above to improve sharpness.

Photoshop: to avoid "over sharpening", try using "Clarity" or a Contrast Adjustment layer and see what improved contrast will do without the unsharp mask sharpening.

* for general sharpening, amt=125, radius=1, thresh=2; female portrait: 100, 0.8, 8, which tells you about skin pore detail! Detailed nature: 140,1.3, 2. Note: Low Thresh below 2 may sharpen luminosity "noise"

Printing: * print at 720 dpi for Epson, 600 dpi for Canon/HP.

* Small prints look sharper than larger prints. The larger the print size, 8x10 or larger, the more important all of the above tips. If a print looks soft, try printing it a smaller size. "If you are not planning on making large prints, you should not have any problems with most of the amateur telephoto lenses as long as you use a good tripod."

To REDUCE sharpness, try Formatt's new Soft White Mist Filter, which "softens excess sharpness and lowers the contrast". (free: unfocus a tiny bit or fog up your UV filter).

Assignment: A no-cost simple way to improve the sharpness of everything YOU shoot (the way I did).

a) Find something that roughly represents your shooting subjects: the roof of a nearby house, a silk rose in a vase, a mannequin or shirt on a hanger. Be sure they are fixed and completely still and have lots of detail so you can easily see if the images are sharp or soft.

b) Get a pad of paper and number it 1 to 20 (or more).

c) Put your camera in your favorite mode: aperture priority or time priority and fix the ISO for now.

d) Take a series of the pictures at different f-stops. Say f/2.8 at 1/200th, f/4 at 1/100, ... Make a note of each exposure-time on each line of your notepad. Try this with a tripod, monopod, VR, hand-held. Try different ISOs or switch to AutoISO. Try flash, if it makes sense. Test out any tip in these notes that you are not sure about.

e) Go into Lightroom or Photoshop or just a JPEG viewer and view each one, in order, at the highest magnification you can. Try to look at corners and edges. (I like my neighbor's roof because there is detail from edge to edge.) Score each one A, B,C,D,F

* Some of the images will be much sharper than others. Maybe even Tack sharp. Make a note of which ones are sharpest. That is your custom setting, your sweet spot, for YOUR hand, camera, lens combination and the types of subjects you shoot. Try to always shoot where you are sharpest and avoid the combinations that were soft. If you buy a new camera or another lens, do it again. Every camera and lens has it own "sweet spot" and once you find your sweet spot, try to shoot there. Or at least start from your sweet spot and change settings from there.

Write your sweet spot settings on a card and bring it to the VPS Forum on Wed, Oct 28th.