

PRESHARPEN UNSHARP MASK SETTINGS			
SENSOR SIZE PIXEL COUNT	RADIUS SETTINGS	AMOUNT SETTING Camera Dependent	NOTES * Starred settings from Fraser
<= 4 Mpx	1* px (1.4 px)	500% (500 %)	no Amount given, confusion
6 Mpx	0.6* px	500* %	Fraser: Canon EOS 300D
8 Mpx	0.5* px	400* % (410 %)	Fraser: Canon 20D (CAB interpolated)
11 Mpx	0.4* px	(320%)	Canon Rebel XTi, 40D, 1Ds Mark III, CAB interpolated
13 Mpx (5D)	0.3* px	(280%)	CAB interpolated, web sources

Radius settings are fixed in stone by the sensor pixel count and are, in Fraser's words, "tuned" to the resolution of the camera.

The Amount settings depend on lens and anti-alias filter strengths and are tuned to produce the maximum detail the camera can resolve, but not more. This is a much more unknown quantity and the values above are just guesses based on Fraser's book and the web and my own experiments. 500 % is the highest Amount setting, so we have increased the radius instead of the Amount in the <= 4 Mpx case. The interpolated values for 4 Mpx would have been 0.8 px at 700 %.

PreSharpen LAYER ACTION			
STEPS	LOW FREQ IMG	MID FREQ IMG	HI FREQ IMG
1. Select Background Layer	✓	✓	✓
2. Make New Layer	✓	✓	✓
3. Merge Visible (Command / Ctrl + Shift + E)	✓	✓	✓

4. Set Layer to 66% opacity, blending mode to Luminosity, blending range to 20, 75, 185, 235	✓	✓	✓
5. Move Layer to Top (Layer>Arrange>Front)	✓	✓	✓
6. Rename current layer to “presharpen”	✓	✓	✓
7. Stop Recording	✓	✓	✓

This Action sets a layer named “presharpen” at the top of the layer stack but it does not yet perform any sharpening or apply any masks.

SOURCE SHARPENING AND CONTENT SHARPENING ACTION (merged together)

SHARPENING LAYER ACTION			
STEPS	13 Mpx (5D)	11 Mpx (Rebel XTi, ...)	8 Mpx (20D, Rebel XT, ...)
1. Play “Presharpen” Action	✓	✓	✓
2. Run Filter UnSharp Mask	R = 0.3px, A = 280%	R = 0.4px, A = 320%	R = 0.5px, A = 410%
3. Stop Recording	✓	✓	✓

CONTENT SHARPENING LAYER ACTION			
STEPS	LOW FREQ IMG	MID FREQ IMG	HI FREQ IMG
1. Merge Visible	✓	✓	✗
2. Gaussian Blur	10px	2px (pg 202)	✗

3. Image>Calculations using Red channel, Green channel and PIN light	✓	✓	✓
4. Filters>Stylize>Find Edges	✓	✓	✓
5. Image>Adjustments>Levels (Command + L) with input sliders set to 200 , 255	✓	✓	✗
6. Invert (Command + I)	✓	✓	✓
7. Filter > Gaussian Blur	R = 10px	R = 0.4px (pg 203)	0.8px
8. Image>Adjustment>Levels	5, 1.0, 220	15, 1.0, 195	✗
9. Channels, select alpha channel, make selection from channel.	✓	✓	✓
10. Layers, select Presharpen Layer, make new mask from selection.	✓	✓	✓
11. Select Layer 1 and Delete	✓	✓	✓
12. Select Channel, Select Alpha Channel, Delete Alpha Channel	✓	✓	✓
13. Layers: select presharpen layer	✓	✓	✓
14. Unsharp Mask	180%, 3px 0 Th	200%, 0.8px, 0 Th	200%, 0.6px, 0 Th
15. Rename to:	Content Low Freq	Content Mid Freq	Content Hi Freq
16. Stop recording	✓	✓	✓

This completes the Actions and Workflow for the basic sharpening. Not shown are Creative Sharpening techniques using the Sharpening Brushes introduced by Fraser. Noise Reduction, if necessary, should precede all of this, however, in well exposed images at ISOs less than 800 it may be that you can get away with just using the edge-protected sharpening techniques in the actions above.

Also, these actions can be run with stops in them so that you can change any of the parameters on-the-fly.

Next comes the sharpening for Output!

OUTPUT SHARPENING LAYER Workflow and ACTION: INKJET GLOSSY/ SEMI-GLOSSY PAPER				
STEPS	Output Resolution = 360ppi	Output Resolution = 300ppi	Output Resolution = 240ppi	Output Resolution = 180ppi
1. RESIZE image to desired Output Resolution: Image>Resize>... (this is not part of the action but must be either done apriori or another action included to do it.	360 ppi	300 ppi	240 ppi	180 ppi
2. Make a new layer	✓	✓	✓	✓
3. Merge Visible	✓	✓	✓	✓
4. BLENDING MODE = NORMAL	✓	✓	✓	✓
5. Rename new merged layer to	Output Inkjet 360	Output Inkjet 300	Output Inkjet 240	Output Inkjet 180
6. Layer>Arrange>Front Layer	✓	✓	✓	✓
7. Unsharp Mask		320%, 0.6px, 4 th		
8. EDIT>FADE with Blending Mode		Opacity = 70% Luminosity		
6. Set Blending Mode to Overlay with Opacity of		50%		
7. Filter>Other>High Pass		R = 2px		

NOTES:

1. The resizing is done in Photoshop Image Size dialogue. Inkjet resolutions of between 180 ppi and 360 ppi are acceptable depending on application. So, to make a 11 x 14" print at 300 ppi, both the print size and the resolution have to be set and interpolation used to get to the final print size.
2. The blank items in the table are simply unknown by me.

3. Matte paper is often printed at a slightly lower resolution, say 260 ppi (Katrin Eismann suggests that to me) because the ink tends to spread a little more and we don't want to muddy the detail. I have not analyzed it.
4. All of these parameters are subject to your own preferences and judgements.
5. All of these adjustments are intended to arrive at haloes that are confined to 3 pixels in the final print/image. This will provide no visible sharpening artifacts at normal viewing distances of 15" and farther. If things get too crunchy, meaning artifacts are obvious in normal viewing, then the opacity sliders can be adjusted to reduce the amount of sharpening. Or, the masks can be edited. And so on. So the sharpening is not cast in stone by these techniques.

From Fraser's book, one gets the notion that he is actually to physically determine these USM settings, and the mask blur, etc., to get that 3 pixel halo with the right contrast. I don't know how.

6. REMEMBER: Only viewing the finished print will provide critical analysis of the effectiveness of the sharpening.

If this all sounds like a lot of work, it is, at least to set it up. I can attest to the fact that it is only really practical when the workflow is automated with Actions. A set of actions that is not guaranteed to match the above is provided on disk to the participants.

Fraser suggests that using the Actions to batch sharpen similar images up to the archival state is a good economy: making *good* images that the best of which can be further improved to make **truly great images** from. These are for the fine art enthusiast.

The ease of using the PKS sharpening tools, plus the work of getting all the settings correct, convinced me to purchase the tool and I have not been sorry. The output prints show a remarkable improvement over my traditional results, probably because I learned that more sharpening can be tolerated without getting too many artifacts using these techniques.

EXPERIMENT AND HAVE FUN.

Chuck Brackett