

# Stockton Camera Club

## The Shutter Tripper

June 2018

### May Digital Images of the Month



#### Red Shoulder Hawk

Class A Image of the Month - Sheldon McCormick

#### Looking Around

Class AA Image of the Month - Em McLaren



#### Immature Flamingo Feather Details

Class AAA Image of the Month - Dean Taylor

# May Print Images of the Month



**Howard**

Class A Print of the Month - Ron Wetherell



**White Heron Displaying**

Class AA Print of the Month - Paul Chapman



**Durst Mansion in Crystal**

Class AAA Print of the Month - Joanne Sogsti



# March 10's of the Month



**Out of the Blue**  
Joanne Sogsti



**Sandhill Cranes in Flight**  
Christine Blue



**High Spin**  
Rich Bullard



**Stegasaurus at Salt Creek**  
Susanne Nichols



**Donner Party Irony**  
Trey Steinhart





**Cinnamon Teal Preening**  
Christine Blue



**Window on Budapest**  
Rich Bullard



**Glacier in the Spring**  
Sharon McLemore



**Columns at Fioli Gardens**  
Elizabeth Parrish



**Swans with Arched Necks**  
Heide Stover



**Old Village in Norway**  
Joanne Sogsti





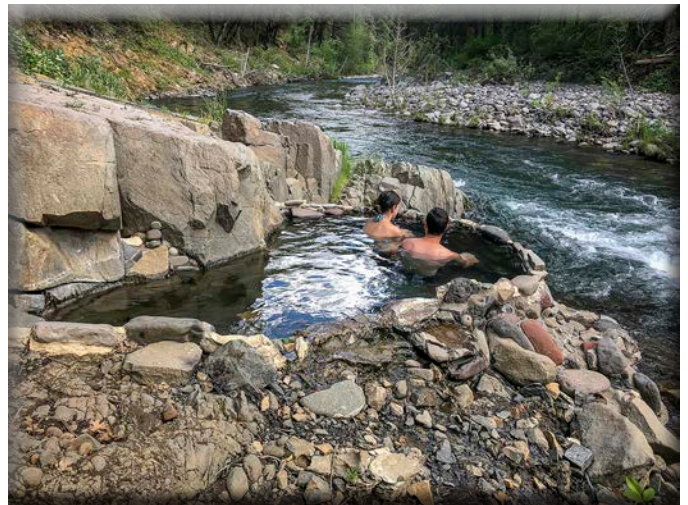
**Golden Eagle - Up Close**  
Dean Taylor



**Edinburgh at night**  
Lanny Brown



**Living the American Dream**  
Elizabeth Parrish



**110 Degree Hunt Hot Springs**  
Kosh Creek, California  
Trey Steinhart



**Kenyan Woman Sewing**  
Mosquito Netting  
Christine Blue



**Not Your Mama's**  
Golden Arches  
Christine Blue





**Young Elephant Dusting Itself**  
Christine Blue



**San Francisco Bay Bridge**  
Sharon McLemore



**Great Blue Heron  
& Baby**  
Mac McCormick



**Hatching Praying Manits**  
Heide Stover



**Doorway to  
the Garden**  
Elizabeth Parrish



**The Old Mill**  
Lanny Brown



**Swimming Pool in Keeler, CA**  
Susanne Nichols





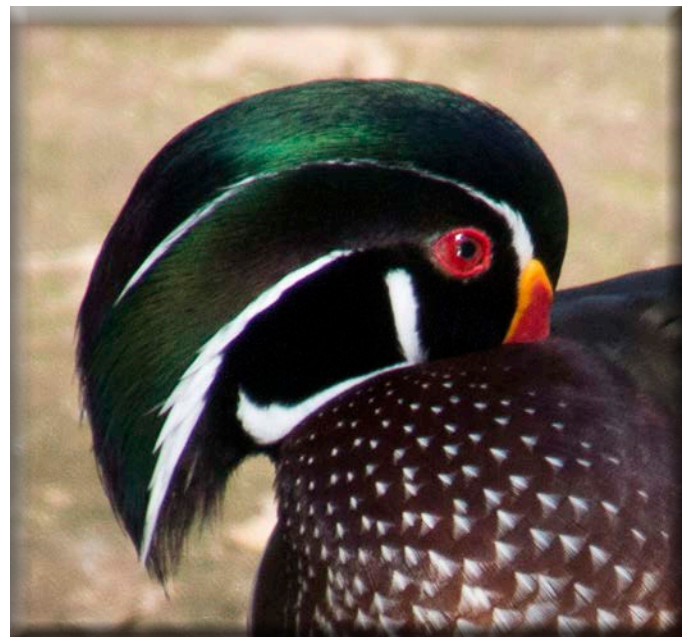
**Winter Games by Palace**  
**Nymphenburg Munich Germany**  
Heide Stover



**Young Zebra Nuzzling Mother**  
Christine Blue



**Splash**  
Trey Steinhart



**Wood Duck**  
Sheldon McCormick

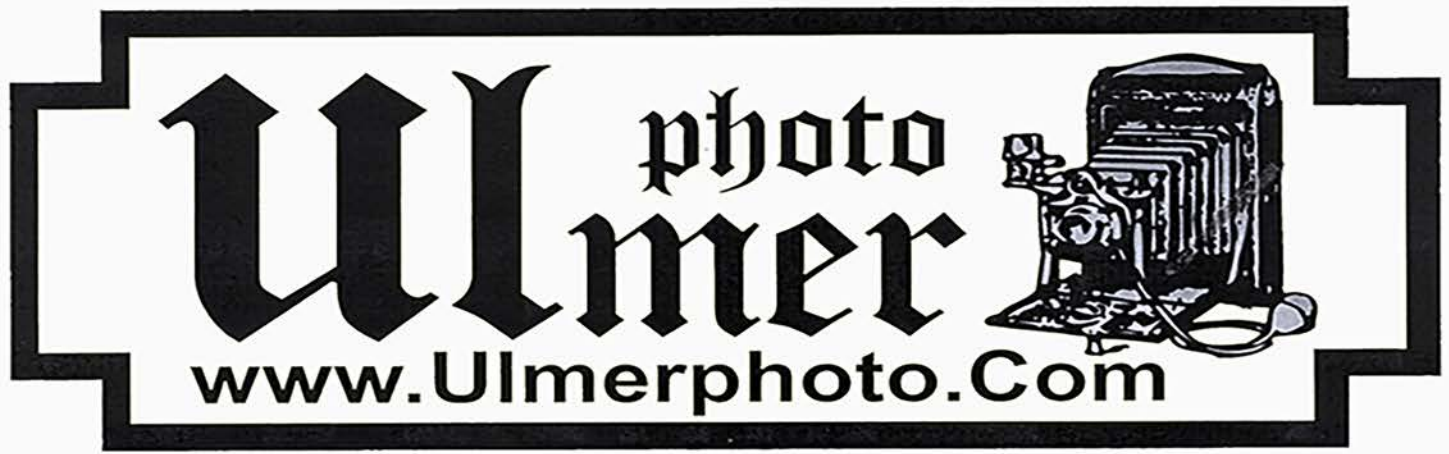


**Time Stands Still in Bodie**  
Sharon McLemore



**Passing Storm**  
Em McLaren





*New Location*

*Opening June* Monday 11th

**182 W. Adams St**

(Miracle Mile across from Valley Brew)

Plenty of Free Parking

464-2299 Ulmerphoto@aol.com

Monday- Friday 10-5pm

Also Visit Pawtastic Just around the corner



**100% Benefiting  
Delta Humane Society**

**Designer Clothing**

**Men, Women & Students**

Decor - Vintage Items - Jewelry

Handbags & Shoes

**Books • Collectibles • Household**

**Tues-Fri 10-6 • Sat 10-5**

Donations Until 4pm • Drive Up Receiving Behind Store

**209-952-2023**



2210 Pacific Ave. • Stockton  
(Miracle Mile)



[www.facebook.com/pawtasticthriftboutique](http://www.facebook.com/pawtasticthriftboutique)



## May Meeting Notes

Dean opened the meeting. We had 3 guests. Bob Stammer had been a member about 10 years ago and it was good seeing him again. Tom Mayfired (sp?) enjoys taking landscape and nature photos. Another person saw the sign by the door and walked in to see what it was about.

1. Dean announced that the Lodi Art Center Spring Show will be held at the Lange Twins Family Winery in Acampo, from June 8 to 10th.

2. Some of the members were able to shoot the Angen Bike Tour that started out in Stockton yesterday.

3. Paul talked about “pool noodles” that can fit on car windows and tripod legs which can be purchased at a dollar store.

4. The next SJVCC Council will meet on June 3. This where the camera clubs up and down the valley, compete with each other and they meet in Fresno. For further info about it, please contact Dean or Sharon.

5. Next month (JUNE) there will be prints only and there is No Special Subject. Please remember matted prints only, no metal, framed, or canvas, etc.

Dean introduced the judge, Mike Schumacher. Mike is the president of Placer Camera Club from Auburn. He is also the new chairman of the PSA chapter of Gold Rush that meets in Sacramento. He is an excellent photographer.

### PRINT OF THE MONTH WINNERS

A “HOWARD” by Ron Wetherell

AA “WHITE HERON DISPLAYING” by Paul Chapman

AAA “DURST MANSION IN CRYSTAL” by Joanne Sogsti

### DIGITAL OFF THE MONTH WINNERS

A “RED SHOULDER HAWK” by Sheldon McCormick

AA “LOOKING AROUND” by Em McLaren

AAA “IMMATURE FLAMINGO FEATHER DETAILS” by Dean Taylor

Congratulations to all the winners!

Remember prints only for next month and there is no special subjects. Please let me know if there are any corrections or additions to the notes. If anyone is getting this e-mail and wants to be taken off the list, please let me know.

Thanks, Em McLaren



## SCC Officers 2017

### President

Heide Stover

Email: [h1stover@aol.com](mailto:h1stover@aol.com)

### Vice President Programs

Dean Taylor, 986-9848

Email: [ditaylor49@aol.com](mailto:ditaylor49@aol.com)

### Vice President Competition

Sharon McLemore, 401-0192

Email: [sfmsap@aol.com](mailto:sfmsap@aol.com)

### Secretary

Em McLaren, 823-7287

Email: [emmclaren@comcast.net](mailto:emmclaren@comcast.net)

### Treasurer

Susanne Nichols

Email: [66susnic@gmail.com](mailto:66susnic@gmail.com)

### Committee Chairs

#### Hospitality Chairperson

Paul Chapman

Email: [uscgchappy@yahoo.com](mailto:uscgchappy@yahoo.com)

#### Print Competition Chairperson

Trey Steinhart 471-8438

Email: [Steinhart4@sbcglobal.net](mailto:Steinhart4@sbcglobal.net)

#### Refreshments Chairperson

Sheldon McCormick 931-0461

Email: [smccormick11@hotmail.com](mailto:smccormick11@hotmail.com)

#### Shutter Tripper/Educational

Doug Ridgway 617-7050

Email: [doug\\_flyfisher@yahoo.com](mailto:doug_flyfisher@yahoo.com)

#### Web Master

Janelle DeRuosi, 838-1881

Email: [jderuosiphotography@gmail.com](mailto:jderuosiphotography@gmail.com)

## President's Message

June 2018

By Heide Stover

Due to work I was not able to make it to the last meeting. I am sorry I had to miss it as I always enjoy seeing the images from everyone and hearing the judges' comments. Congratulations to all of you that received 10's and to those of you that had the prints/images of the month. I look forward to seeing them in the Shutter Tripper.

Our June meeting is coming up. I hope those of you that were at the Boat House learned some new things from Doug and are able to use the new information to help you with getting your prints ready for the meeting. Though it can be quicker and easier to get prints done at Costco or other places there is something to be said for printing your own prints. There is more control over how they turn out. There are also many more options for types of paper to use. This could probably be a class all on its own!

I look forward to seeing all of you at the June meeting.

## A Big Thank You to Our Sponsors!



182 West Adams Street

(On the Miracle Mile Across From The Valley Brew)

Stockton, CA 95204-5338

Phone: 209-464-2299/Fax: 209-464-9229

Phone: 209-464-2299/Fax: 209-464-9229

[www.ulmerphoto.com](http://www.ulmerphoto.com)

Email: [Ulmerphoto@aol.com](mailto:Ulmerphoto@aol.com)



# 2018 Competition Policy

## A. GENERAL RULES

1. Only paid-up members may enter club competition.
2. Regular print and digital image competition period: Once each month except January. A competition year is February through December. Current regular meetings are February, March, May, July, September, October and December. The number of meetings may change from time to time at the discretion of the Board of Directors and approval of the general membership as facilities permit. The Annual Awards Dinner will be held in January.
3. A total of four (4) images (all prints, all digital or a combination of both) may be entered each competition month. A total of three (3) images may be entered in the Open Division and a total of one (1) in the Special Subject Division. The number of entries may change from time to time at the discretion of the Board of Directors and the approval of the general membership.
4. Each image will be scored from 6 to 10 points. All prints or digital images receiving 9 or 10 points will be classed as an honor image. The title of each print or digital image entered will be read before being evaluated. The name of the maker will be read for 9-point honor winners. Maker's names will be announced for the 10 point images after the Print & Digital Image-of-the-Month winners are chosen.
5. A print or digital image that does not receive an honor score, may be re-entered one more time in the same division.
6. A print or digital image may be entered in all divisions for which it qualifies; i.e., an honor image in Open may also be entered in the Special Subject Division at another competition. A print or digital image that receives an honor score may not be re-entered in the same division.
7. Any print or digital image that appears to be ineligible for competition or not qualified for a specific division could expect to be challenged. The Competition Vice-President shall decide whether or not the image is acceptable.
8. The exhibitor must have exposed each negative, slide or digital image entered. All images submitted for judging must be the work of the photographer/maker including the taking of the images and any digital enhancements and/or manipulation of the image. This does not apply to the processing of film or printing by a commercial processor.
9. The same image should not be entered both as a print and a projected digital image in the same competition.
10. In the event of absence or barring unforeseen circumstances, a member may submit make-up prints or digital images for one competition night per competition year; and whenever possible must submit all make-up prints or digital images at the meeting immediately following the month a member failed or was unable to submit the prints or digital images. Make-ups in the Special Subject Division must be the same subject as the month missed. Also, in case of absence a member may assign the responsibility of submitting his or her prints and/or digital images for competition to another member.
11. A club member who serves as judge cannot enter his or her own prints or digital images in the same competition. The judge's make-up prints or digital images can then be entered in another competition during that competition year. This is in addition to the once-a-year make-up provision already

allowed.

12. Prints or digital images may be projected/viewed briefly before the judging of each division if the judge indicates he/she would like a preview.

## B. PRINT ENTRY RULES

1. Each print entered must have a completed label attached to the back of the print including; name of maker, title, date entered and Division (Open or Special Subject). The writing or printing on the form must be legible. Labels must be attached on the back of the print in the upper left-hand corner for correct viewing of the print.
2. All prints must be matted or mounted with a total size (including mat board) of no larger than 18" X 24" and no smaller than 8" X 10". Exception: One side of a Panorama Print may be no larger than 36". Prints that are smaller than 5" X 7" will not be accepted. The maker's name must not appear on the viewing surface of the image. Framed prints shall not be entered.
3. Prints accompanied by entry forms should be submitted no later than 15 minutes prior to the start of the regular monthly meeting.
4. Prints receiving a score of 10 points, in each class, will be regrouped and judged for selection for the Print-of-the-Month honors. Print-of-the-Month honors will be given in Class A, AA & AAA.

## C. DIGITAL IMAGE ENTRY RULES

1. Digital images must be submitted in a format and by the deadline specified by the Competition Vice-President. Digital images may be submitted by email, mailed (CD) or delivered (CD) to the Competition Vice-President. Definition of Digital Image: An image taken with a digital camera, a negative, slide or print scanned into the computer and processed digitally.
2. Images must be in a format compatible with the projector. The key thing to keep in mind when formatting photos for submission is that the projector we use in the competition has a (maximum) resolution of 1400 x 1050 pixels. This means that any photo that exceeds this size in either dimension, could end-up being cropped by the projector. In other words: the image width cannot be more than 1400 pixels and the image height cannot be more than 1050 pixels. If your image is horizontal, only change the width to 1400, if your image is vertical, only change the height to 1050. Do not change both. Down-sizing the image from the "native" resolution coming out of your camera also significantly reduces the file size. This helps when emailing the files and takes-up less space on our hard-drives.
3. The maker's name, title of image, date entered and division (Open or Special Subject) must be included as the title of the image. When you have finished re-sizing your image save your image with a new title. For example do a Save as: Smith Sunrise Splendor 05-15 O.jpeg. (O-Open or SS-Special Subject). Specify whether you're Beginner, Advanced or Very Advanced.
4. Digital Images receiving a score of 10 points, in each class, will be regrouped and judged for selection for the Digital Image-of-the-Month honors. Digital Image-of-the-Month honors will be given in Class A, AA & AAA.



**Stockton Camera Club**  
**May 2018 Competition Standing**

**Digital Image of the Month Class A – Red Shoulder Hawk by Sheldon McCormick**

**Digital Image of the Month Class AA – Looking Around by Em McLaren**

**Digital Image of the Month Class AAA – Immature Flamingo Feather detail by Dean Taylor**

**Print of the Month Class A – Howard by Ron Wetherell**

**Print of the Month Class AA – White Heron Displaying by Paul Chapman**

**Print of the Month Class AAA – Durst Mansion in Crystal by Joanne Sogsti**

Please check out the website, <http://www.stockton-cameraclub.com/home.html>

<b>Class A Standings</b>	<b>TOTAL</b>	<b>OPEN</b>	<b>SS</b>	<b>FEB</b>	<b>MAR</b>	<b>MAY</b>	<b>JUN</b>	<b>JULY</b>	<b>SEPT</b>	<b>OCT</b>	<b>NOV</b>	<b>DEC</b>
Wayne Carlson	115	85	30	37	39	39	0	0	0	0	0	0
Sheldon McCormick	109	82	27	36	35	38	0	0	0	0	0	0
Jim Cahill	63	53	10	25	0	38	0	0	0	0	0	0
Ron Wetherell	46	46	0	27	0	19	0	0	0	0	0	0
Lanny Brown	28	8	20	0	10	18	0	0	0	0	0	0
Monica Hoeft	26	26	0	26	0	0	0	0	0	0	0	0
Gary Brown	0	0	0	0	0	0	0	0	0	0	0	0
<b>Class AA Standing</b>	<b>TOTAL</b>	<b>OPEN</b>	<b>SS</b>	<b>FEB</b>	<b>MAR</b>	<b>MAY</b>	<b>JUN</b>	<b>JULY</b>	<b>SEPT</b>	<b>OCT</b>	<b>NOV</b>	<b>DEC</b>
Heide Stover	115	86	29	39	39	37	0	0	0	0	0	0
Em McLaren	115	86	29	39	38	38	0	0	0	0	0	0
Christine Blue	114	85	29	37	39	38		0	0	0	0	0
Elizabeth Parrish	108	82	26	36	34	38	0	0	0	0	0	0
Paul Chapman	107	79	28	34	37	36	0	0	0	0	0	0
Richard Bullard	73	55	18	0	37	36	0	0	0	0	0	0
Stan Sogsti	37	28	9	37	0	0	0	0	0	0	0	0
Ed Richter	0	0	0	0	0	0	0	0	0	0	0	0
<b>Class AAA Standing</b>	<b>TOTAL</b>	<b>OPEN</b>	<b>SS</b>	<b>FEB</b>	<b>MAR</b>	<b>MAY</b>	<b>JUN</b>	<b>JULY</b>	<b>SEPT</b>	<b>OCT</b>	<b>Nov</b>	<b>DEC</b>
Dean Taylor	117	89	28	39	39	39	0	0	0	0	0	0
Sharon McLemore	116	87	29	38	39	39	0	0	0	0	0	0
Joanne Sogsti	115	86	29	39	37	39	0	0	0	0	0	0
Trey Steinhart	111	85	26	37	37	37	0	0	0	0	0	0
Doug Ridgway	78	58	20	39	39	0	0	0	0	0	0	0
Susanne Nichols	40	20	20	0	20	20	0	0	0	0	0	0



# 2018 Calendar of Events

Every 3rd Thursday (Except April, June & Aug) 6:30 PM	West Lane Bowling Alley Stockton	Membership Meeting Contact Heide Stover <a href="mailto:h1stover@aol.com">h1stover@aol.com</a>
Thursday June 21	West Lane Bowling Alley Stockton	June General Meeting Prints only with no special subject
Thursday July 19	West Lane Bowling Alley Stockton	July General Meeting Special Subject - Flowers
Thursday August 16	To Be Determined	Annual Pot Luck
Thursday September 20	West Lane Bowling Alley Stockton	September General Meeting Special Subject - Agriculture
Thursday October 18	West Lane Bowling Alley Stockton	October General Meeting Special Subject - Black & White/Monochrome
Wednesday October 24	South Parking Lot Woodbridge (Isenberg) Ecological Preserve	Sandhill Crane Photo Opportunity 4:30 - Dark
Thursday November 15	West Lane Bowling Alley Stockton	November General Meeting Prints only with no special subject
Thursday December 20	West Lane Bowling Alley Stockton	December General Meeting Special Subject - Before (Unprocessed) And After (Processed) Photo



# How to Enlarge Photographs for Printing

By [Nasim Mansurov](#)

A discussion on image cropping sparked up the idea to write this post after I exchanged a couple of comments in my “[How to Photograph Birds](#)” article with Tim Layton, who was concerned with cropping bird images and losing resolution for printing. He suggested to try to increase the size of cropped images with a product called [Genuine Fractals 6](#), so that he could get to 8×10 or larger sizes. Since I have had experience with Genuine Fractals in the past and used it for some of my work, I decided to write a quick

article about professionally enlarging photographs for printing, in addition to doing a comparison between the resize tool within Photoshop and Genuine Fractals 6 Pro.

## 1) How Large Can You Print?

One of the most frequently asked questions by photographers who do not have much experience with the printing process is how big they can print their photographs from their DSLR cameras. Traditionally, the rule has been to divide the width of the image in pixels by 300 to get the highest quality print size in inches. For example, if you are shooting with the Nikon D90 camera, the image resolution is 4,288 (width) x 2,848 (height). This literally means that there are 4,288 horizontal pixels and 2,848 vertical pixels on the image sensor. If you multiply these numbers together, you will get to 12,212,224 pixels or 12.2 megapixels – the total number of pixels available on the sensor. So in the above case with the D90, dividing 4,288 and 2,848 by 300 gives 14.3 x 9.5 inch size prints. Why divide by 300 and what does that number mean? This number represents “DPI” (dots per inch) or “PPI” (pixels per inch), which means how many dots/pixels per inch the printer will print on paper. The more the number of “dots” per square inch, the more dense and close to each other the printed dots will be, resulting in smooth transitions and less space between those dots and therefore less “grain”. 300 dots per inch gives magazine-quality prints, while lower numbers below 150 introduce more grain and fuzziness to the printed image.

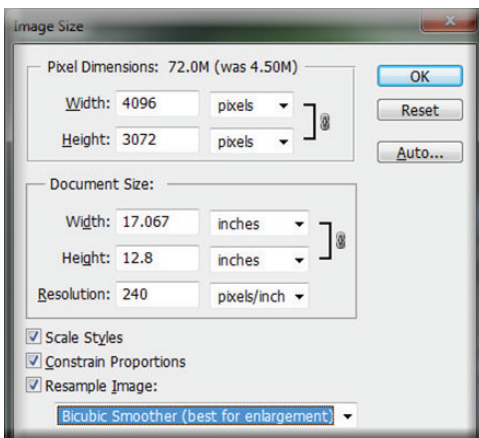
Given the above information, how large could you print an image from the Nikon D90 camera? Now that you know what dots per inch means, the first question that needs to be asked, is how good of a quality the print should be. Take a look at the following chart:

1. Nikon D90 12.2Mp 300 DPI (Highest Quality) – 14.3” x 9.5”
2. Nikon D90 12.2Mp 240 DPI (Good Quality) – 17.9” x 11.9”
3. Nikon D90 12.2Mp 200 DPI (Average Quality) – 21.4” x 14.2”
4. Nikon D90 12.2Mp 150 DPI (Poor Quality) – 28.6” x 19”

If you wanted to make the highest quality print for publication in a magazine at 300 DPI, you could easily print a full standard 8” x 10” page and could even afford cropping the image to fully fit the page or print at non-standard sizes all the way to 14.3” x 9.5”. Some professional photographers print at 240 DPI and find it pretty good for the work they sell, so you could go a little lower. Going below 240 DPI, however, is not acceptable by most photographers due to loss of quality and “fuzziness” or “blur” (if the image is not properly resized) in the images.

So, does it mean that you are limited to such small prints with your DSLR camera? What if you want to hang your beautiful picture on a 24” x 36” frame? This is where proper image resizing can help you achieve great results with your prints.

Printing photographs during the film days was pretty easy – photographers already knew the print size from 35mm or medium format films and it was easy to find out what sizes could be printed without losing much details and sharpness. With the invention of digital photography, everything is now different, at times more complicated with all the DPI/PPI language and image resizing options with different algorithms. The new advancements in digital image processing are now allowing much larger prints with minimum loss of quality and details. Let’s take a look at the two most frequently used methods to enlarge images by professionals.



## 2) Enlarging Images Using Adobe Photoshop

Adobe Photoshop is the most popular graphic program used for enlarging images. The tool within Photoshop to enlarge images is called “Image Size” and it is available under Image->Image Size in the top navigation menu. Once you open an image and go to Image Size, you will see something like this:

The initial width and height indicate the size of the image you loaded into Photoshop. In the above example, I took an image that was 1024 x 768 and quadrupled its size by changing the width to 4096 (the height automatically changes since I have “Constrain Proportions” checked). As I increased the size, the middle section is pointing out that if I printed that photograph at 240 DPI, I would get a 17.067” x 12.8” print size. If I change the value from 240 to 300 DPI, the print size gets lowered to 13.653” x 10.24”, while keeping the image size the same.





NIKON D3S @ 300mm, ISO 1400, 1/1600, f/7.1

Let's jump to a real example and see what we get by enlarging a photograph using Photoshop. Here is a bird image I picked that I shot earlier this year:



It has plenty of details and is very sharp, so it is a good sample to test. Here is how the image looks like when viewed at 400%:

As you can see, it is very “pixelated”, meaning that there are lots of squares in the image. This happens because the original image is comprised of pixels and when you increase the size of the image, the only thing the computer can do is increase the number of pixels that represent a single pixel. In the above case, approximately 4 pixels now represent a single pixel, because the image is viewed at 400%, hence the “pixelated” image. If you were to do the same for print, it would not look good at all with all those squares. To fight this problem, Adobe came up with several image interpolation algorithms that go through the image and convert the square pixels to smooth transitions for both increasing and decreasing image sizes. However, Adobe highly recommends not to increase the sizes of images, because the additional pixels are created by analyzing the neighboring pixels and then coming up with a neutral colored pixel in between to have a smooth transition, which ultimately results in blurry details. Take a look at the following image that was enlarged through Photoshop using the “Bicubic Smoother” image interpolation algorithm:

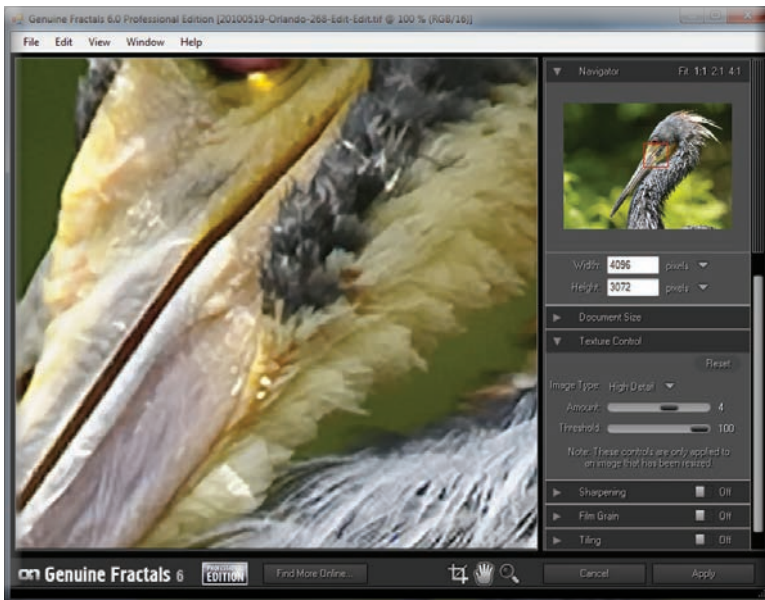


As you can see, the pixelated areas are gone and replaced by smooth transitions. However, the edges are now too smooth and the image lost some of its sharpness that was there in the original image. This might not be very noticeable when the image is viewed from a distance, but when viewed very closely, the lack of sharpness will be quite obvious. Some additional sharpness could be added manually after resizing, but it has to be done carefully, as sharpening could introduce more artifacts and unnatural-looking details.



### 3) Enlarging Images Using Genuine Fractals

One tool that is quite popular among photographers for enlarging images is OnOne Software's Genuine Fractals 6 Professional – an advanced resizing tool for professional photographers that is specifically designed for enlarging images for large and gigantic print sizes. Compared to Photoshop, it has a more complex algorithm that not only analyses the nearest neighbor, but also does a decent job at retaining the sharpness and details of images. Here is how it looks like:



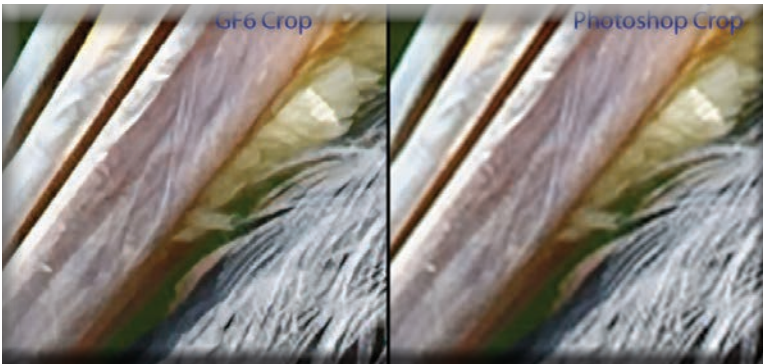
Using Genuine Fractals 6 is very easy – all you have to do is type the new image dimensions or indicate the print size from the “Document Size” panel and the program will automatically enlarge the image and crop it to the selected print size. For more control over transitions, the program allows you to specify the type of image using the “Texture Control” panel:



As you can see, I picked “High Detail”, because I wanted to retain as much detail as possible for feathers and other parts of the bird. Here is how Genuine Fractals rendered the image after I clicked “Apply”:

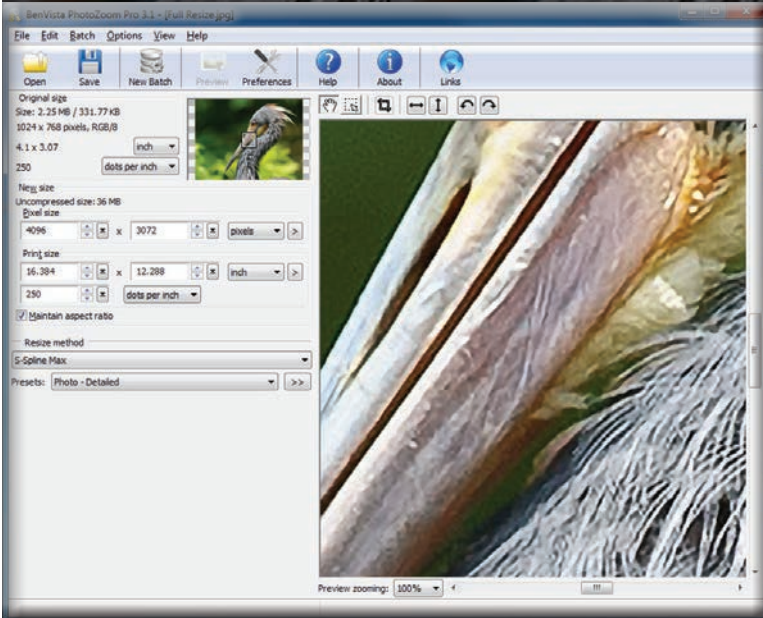
NIKON D3S @ 300mm, ISO 1400, 1/1600, f/7.1





Now compare Photoshop's Image Resize with Genuine Fractals 6 Pro:

Pay attention to the amount of blur from the Photoshop image (right) and relatively good retained details on the Genuine Fractals image (left). And that's without applying any additional sharpening on the Genuine Fractals image!



#### 4) Enlarging Images Using BenVista PhotoZoom Pro

Another software package that is very similar in its functionality to Genuine Fractals is BenVista PhotoZoom Pro. Here is how the product looks like:



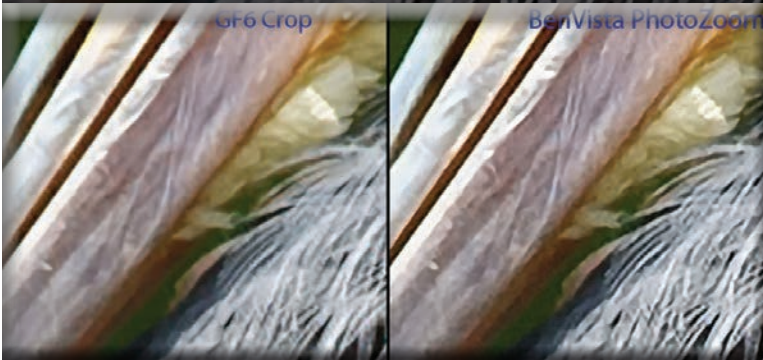
And here is the same image processed by PhotoZoom:  
NIKON D3S @ 300mm, ISO 1400, 1/1600, f/7.1

Compared with Genuine Fractals:

BenVista PhotoZoom seems to retain sharpness a little better than Genuine Fractals, especially in feathers. I used the "S-Spline Max" patented algorithm to get the above results and chose the "Photo - Detailed" preset.

#### 5) Conclusion

If you are thinking about printing your images on large paper, you do not have to be limited by the number of megapixels on your sensor. As I have shown above, you can enlarge your images using the available tools and algorithms for proper image resizing from various manufacturers. I'm sure there are other products in the market that can achieve the same or similar results, so you can certainly give them a chance and see how you like them. If you want professional-looking prints, however, you should seriously consider investing in such great tools as Genuine Fractals 6 Pro or BenVista PhotoZoom that will give you large prints and still preserve as many details as possible.





## Photography

You shot the perfect photo.  
Here's how to get the perfect print



Peter Dressel/Blend Images/Getty Images

Now that we all walk around with [high-resolution cameras](#) in our pockets (i.e., our smartphones), people are taking more photos than ever before. But rarely do we turn our digital images into prints, let alone put the time and effort into printing the correct way. This is too bad. Not only does a print allow you to better appreciate your photographs, but we also have the technology today to make the best prints possible, turning your home office into a professional photo lab.

Digital Trends recently spoke with Adobe's director of Experience Design, Matthew Richmond, about how to print digital photos at home that look great every time. From file type to color management and paper selection, the path to producing great art starts with a lot of science. If you've tried printing at home and been frustrated by inaccurate color or brightness, don't throw away your [photo printer](#) — the solution to your problem is likely below. And for anyone who hasn't yet made the plunge and bought a good printer, we've got [a good place to start](#).

### Why does my print look different from the screen?

The most confounding issue when it comes to making your own prints is the inevitable mismatch between what you see on your computer screen and what you see on the print. Shadows come out too dark, reds look orange, what have you. In truth, this doesn't have to be inevitable.



“The challenge of making a great, bright, color-accurate print is a journey that starts with two primary questions,” Richmond told us. “One, are the colors you see on the screen actually what you think they are? Two, is the printer set up to accurately reproduce the colors on the screen?”

While there are standards for calibrating computer screens, many monitors aren't adjusted to them at the factory. The reasons for this can vary, but it probably boils down to what a photographer needs versus what a marketing department thinks consumers want. Monitors often boast about how impressively bright they can get (some say [manufacturers are trying to fool you](#)), but a display set to its maximum brightness is rarely good for photography. Judge exposure on a screen that's too bright and you might adjust your image to make it darker,

leading to a print that is much too dark.

From file type to managing colors to paper type, the path to producing great art starts with a lot of science.

While brightness is relatively easy to fix, color is a much trickier issue. Even if a monitor is properly calibrated at the factory, its color will shift over time.

“Color calibration should be an essential part of any digital imaging workflow,” Richmond said. “Otherwise, it is impossible to tell whether the colors displayed are truly accurate.”

While there are built-in tools for calibrating your screen by eye, Richmond explained the only truly accurate solution is to use a hardware colorimeter, such as those from [X-Rite](#) and [Datacolor](#). These devices rest against your screen and measure the hue,



saturation, and luminance of specific color patches and then create a monitor profile that tells your graphics card how to adjust its output to display the proper color. It may sound complex, but the software handles everything more-or-less automatically, which can make using a colorimeter far simpler (and more accurate) than calibrating manually.

### **That still sounds too complex (and expensive) for me...**

If you'd rather not bother [calibrating your monitor](#) (you should, but we get it, not everyone is going to), there are still a couple steps you can take to make sure your prints look good.



First, you can't rely on your eyes. If you adjust color and brightness to your taste on an improperly calibrated monitor, you might just be wasting time. Instead, rely as much as possible on data. Looking at [the histogram](#) in Lightroom or Photoshop can quickly tell you if an image is over or underexposed, and you can make adjustments accordingly without clipping your shadows or highlights.

If there is something in the image you know is supposed to be white or neutral gray, you can use Lightroom's auto white balance tool to accurately set the white balance, but try to set white balance by eye and you could end up way off in the print.

Next, make sure to download paper profiles from the manufacturer of the paper you use. In the case of first-party papers, like those from Epson and Canon, the profiles are likely already built in to the printer. But any good third-party paper manufacturer will make their

profiles available for download (here are [Moab's](#), [Hahnemühle's](#), [Canson's](#), and [Red River's](#)).

A paper profile is to your printer what a monitor profile is to your GPU: It lets the printer know how that particular paper is going to react to the ink so that the printer knows how to put it down. Papers differ in various ways, from the quality of the surface (e.g., luster or matte) to their actual color gamut (the range of colors they are able to reproduce), so using the proper profile is important.

For the best results, print from an application that has the option to manage printer colors, like [Adobe Photoshop or Lightroom](#). This is where you can select third-party printer profiles.

Using the right profile for your combination of printer and paper doesn't mean your prints will automatically look like your monitor, but it does reduce the number of variables in the equation. If you make a test print and, say, it comes out too dark, you know the error is in your display. You can make a simple brightness adjustment to the image to fix it.

Okay, cool, but I'm just going to send my images to a lab.

Great! We understand not everyone wants to invest or bother with owning and operating a photo printer, but that doesn't change the importance of the above steps.



Tom Grill/JGI/Getty Images

A photo lab, at least one worth its salt, should offer profiles for the printers and papers it uses. You can download these profiles and use them to [soft proof](#) your images on your home computer, so you have an idea of what to expect (assuming you have a calibrated monitor).

## What file type should I use to print?

For best results, you should shoot in RAW and stick with an uncompressed image format throughout the editing pipeline, like TIFF or PSD. A JPEG will take up much less space, but Richmond cautions you should avoid using the format for print.

“JPEG files, and even PNG files, are designed to be compact and portable,” he told Digital Trends. “By definition, they do not store the same wonderful depth of information as the file formats most creatives use for ‘working.’ Exporting an image as a JPEG will most often result in a file with less color depth and detail.”

“I have seen great looking prints happen as low as 120ppi.”

So what if your camera isn’t capable of shooting RAW, or you had it set to JPEG and it’s too late? The trick is to make sure you don’t degrade file quality any further. Using a program like Lightroom can take the JPEG from the camera through the entire editing process without having to worry, since Lightroom is nondestructive.

If you want to export it to work with in another editing application, like Photoshop, you should still choose TIFF or PSD (or open the original JPEG). This won’t magically make the image more detailed, but it will guarantee that all of the information that’s in the original JPEG remains in the image, whereas saving a new JPEG will recompress an already compressed image, resulting in more quality loss.



Marc Pfizenreuter/Getty Images

## What resolution do I need to make a good print?

In cameras, we generally talk about resolution in terms of megapixels. When it comes time to print, however, we have to think about pixels per inch, or PPI. More is generally better, but it’s not that simple. Larger prints are typically viewed from greater distances, so you may be able to get away with a much lower PPI in those cases.

“The standard go-to resolution is 300ppi,” said Richmond. “Depending on the type of artwork, printer, paper, and so on, I have seen great looking prints happen as low as 120ppi.”

You can determine the maximum print size for a specific PPI with some simple math. Let’s say you have a 24-megapixel camera, so that’s 6,000 × 4,000 pixels, and you want to see how big you can print at 300ppi. Just divide 6,000 pixels by 300ppi and you get 20 inches. If you’re OK dropping to 200ppi, you can push that to 30 inches, while 120ppi will take you all the way 50 inches.

“Honor the information density that you have,” said Richmond. “It’s fine if the best you have is lower than 300ppi, just understand that the image will start to fall apart if the resolution gets too low.”

So, like, is matte or glossy paper better?

Ah, the answer is so much more wonderfully complex than the question. One of the best reasons to do your own printing at home is the sheer number of different papers that are available to choose from, with myriad surfaces that go far beyond matte and glossy.

There is no one “best” paper, so this is where your personal preference will come into play. Richmond believes you should approach the search for the right paper as empirically as possible.

“My advice is always to approach printing like a scientist,” he said. “Try every pack of paper samples from Epson/Canon, Moab, Hahnemühle, Red River, and so on. Find a great printer evaluation file [like the ones from Onsite] or make your own (with the color bars). Use reference prints and test prints to tweak and truly define the desired result before you hit print on that limited edition of large, beautiful prints.”