

WHEN BIGGER IS BETTER: DIGITAL PHOTO FILES

Linda Everhart

TAO EDITOR Todd Sisley reports that nearly every day, he has to explain to people that a photo they have submitted for publication in the magazine is not usable because of low resolution. "But the picture looks fine on my computer. What is the problem?" asks the bewildered contributor.

The Demanding Requirements of the Printing Press

Electronic devices are a lot more forgiving than the printed page. Printing requires a much-higher-resolution photo. Your low-resolution photos may look great on your computer screen, or printed on your inkjet or laser printer, but they won't look good in a professionally printed publication like TAO unless they meet the industry standard of 300 pixels per inch. More on that below.

Because low-resolution photos look fine on your computer, you may be tempted to try to submit photos that you have grabbed from the Internet. But this is an instance where you really cannot trust your own eyes. You have to know whether you have enough *pixels*.

What Are Pixels?

Today, most people are using digital cameras, tablets, and smartphones to take pictures. When you take a picture with a digital device, your image is made up of tiny blocks of the image called pixels. Pixel stands for *picture element*. In general, the higher the pixel count, the more information or detail is captured in an image.

If you zoom in close on a photo on your computer screen, you may be able to see the pixels: rows and rows of tiny squares. Pixels are units of visual information. A high pixel count means there is more visual information in your photo. If

you have captured a lot of visual information (pixels) you can print large photos. If you haven't captured enough pixels, there is not enough visual information to "spread out" over a larger print area, and you will be severely limited in the size at which your photo can be printed.

Once you've taken your photo, the number of pixels in your photo is set. It never increases. Your photo's pixel count is determined the second you push the shutter button. The pixel count is expressed in terms of pixel width times pixel height—3264 x 2448 pixels, for example. When you multiply those two dimensions, you realize that your image contains 7,990,272 pixels.

How to Take a High-Resolution Photo

Your camera may enable you to adjust the number of pixels it captures for each image. The language that camera manufacturers use varies, but you should always select the highest image quality available on your camera menu. If your choices are normal, fine, or superfine, choose superfine. If your choices are basic, normal, or fine, choose fine. You get the idea. If you are



This low-resolution photo is made up of only 320 x 240 pixels and looks blurry even at a small size.



This high-resolution photo (3,264 x 2,448 pixels) contains almost eight million pixels. (The image was captured with an iPhone 5.)

using the camera on your smartphone, the image size is fixed; you cannot adjust it.

Don't Let Smartphone Pixels Get Lost in Transmission

The good news for smartphone photographers is that the fixed resolution on newer phones is generally adequate for prints up to five by seven inches, with pixel dimensions starting at 2,688 x 1,520 and going up from there. The bad news is, it's easy to throw away these valuable pixels when you send the file via e-mail.

After you've captured a large image on your camera, be careful to preserve all the visual information when you send the image electronically. When you attach a photo to an e-mail on a smartphone, you will be asked if you want to resize the image. The answer is No! Do not resize your image. You will have four options: small, medium, large, and actual size. Always choose actual size to avoid losing image quality.

The Magic of 300 Pixels Per Inch

Professional printing presses require images that contain at least 300 pixels per inch (ppi). Below this threshold, you will start to see the jagged edges of the pixels; in other words, your photo will be pixelated.

Suppose you've already taken a picture and want to find out if it is suitable for printing. Just divide each pixel dimension by 300. If you have taken a digital photo that is 2,448 x 3,264 pixels in dimension and divide each dimension by 300, you find that you could print the photo up to 8" x 10". Photos featured in AGO Chapter News in TAO are typically 3.5" x 2.5", so you should think of pixel dimensions of approximately 1060 x 750 as the minimum acceptable standard. Of course, bigger is better.

Not Sure of Your Photo Size?

To find the pixel dimensions of your photo, open the image on your computer. Click on *File* on the toolbar. Select *Properties* from the drop-down menu. The Properties dialog box that opens will provide you with the details of the photo, in-

Desired Print Size in Inches	Minimum Pixels Required for Professional Printing
5" x 3"	1,500 x 900
3.5" x 2.5"	1,060 x 750*
6" x 4"	1,800 x 1,200
7" x 5"	2,100 x 1,500
8" x 10"	2,448 x 3,264

*AGO Chapter News

cluding the pixel count. On a Mac, locate the file in *Finder*. Select *Get Info*, and look for dimensions. Once you have located the pixel dimensions for your photos, you will be able to easily determine if it is suitable for publication in TAO. Just divide each dimension by 300 to calculate the largest possible print size for your image.

Why Bother?

They say a (good) photo is worth a thousand words. But what does a bad photo say? Does it say you or your organization are technologically challenged and out of touch with today's media? Does it make you look incompetent? Does it sap your publication of vitality? If you think the answer to any of these

questions might be Yes, then it is worth spending an hour or so wrapping your head around all those little pixels. It's much simpler than the technology of couplers, pistons, and midi-sequencers that you deal with every day.

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