Aspect Ratio: The Enemy of Digital Prints

What You Can Do To Reduce the Effect

Even if aspect ratio is an unfamiliar term to you, you're probably well aware of the effect it has.

You've just returned from vacation to find that you captured a glorious shot of the Grand Canyon at sunrise.

This is a frame-worthy photo that really needs to be printed at a larger size.

You send the digital image off to your favorite printing service and request an 8x10. The print that you get back is less than satisfying.

It appears that almost a quarter of the image was lost!

The culprit: aspect ratio. The good news: there are steps you can take to minimize the effect it has.

Two Sides of a Rectangle

In its simplest form, aspect ratio is used to describe the relationship between two sides of a rectangle.

It's not the **measurements** of each side of the rectangle, it's the **ratio** of one side compared to the other.

For example, if I have a rectangle that measures 1120 by 840 inches, this rectangle has an aspect ratio of 4:3.

In this case, the aspect ratio is just both sides of the rectangle divided by 280.

1120 / 280 = 4 and 840 / 280 = 3

If my rectangle measured 840 by 560 the aspect ratio would be 3:2.

Digital SLR Sensors

Every consumer digital SLR sensor is in the shape of a rectangle.

When people talk about the aspect ratio of a particular camera, they are simply referring to the dimensions of the digital SLR sensor.

The two most common aspect ratios for digital SLR cameras are 3:2 and 4:3.

Even this is sort of a half-truth.

The vast majority of digital SLR cameras have sensors with an aspect ratio of 3:2. This is a good thing, and I'll explain why in just a moment.

A smaller number of cameras made by Olympus use a new system called the 4/3 standard, and guess what? The aspect ratio of these sensors is 4:3 (the name's a bit of a give-away).

Why 3:2 Is a Good Thing

The mathematically inclined may have already figured this one out.

If not, here it is: **an aspect ratio of 3:2 matches the aspect ratio of a standard 4x6 inch print**.

Just multiply the aspect ratio by two: 3*2 = 6 and 2*2 = 4.

What this really means: when you take photos with a camera that has a 3:2 sensor, none of the prints that you make at 4x6 will get cropped. What you see on the monitor is what you see in the print.

Since 4x6 is such a common print size, it makes sense that the aspect ratio of most digital SLR cameras is 3:2.

Problems With Large Prints

It's not until you want to print at larger sizes - 5x7, 8x10, 11x17 - that the 3:2 aspect ratio becomes more problematic.

Here's why: a 3:2 aspect ratio is not equivalent to ANY of the print sizes that I just mentioned.

Put another way, every 8x10 print that you make from a camera with a 3:2 sensor is going to get cropped.

Let's dig into this a bit deeper.

First, some simple multiplication shows us that the numbers don't work. If you multiply 3:2 by 4, you get a ratio of 12:8. In print terms, an 8x12 print has the same aspect ratio as your 3:2 sensor.

You'll notice that the long side of this print measures 12 inches rather than 10 - which clarifies an important point: when you make an 8x10 print from a camera with a 3:2 aspect ratio, **you are losing a full 2 inches of the original image**.

While the cropping of a 5x7 image isn't quite so severe, you'll find that no amount of fancy math is going to make 3:2 equal to 7:5.

The 4:3 Difference

I mentioned above that a few digital SLR cameras have sensors with a 4:3 ratio rather than 3:2.

This ratio causes problems across the board when it comes to prints, because 4:3 is not equivalent to ANY standard print size like 4x6, 5x7 or 8x10.

Every print you make from a camera with a 4:3 aspect ratio will get cropped in some way.

This is something to keep in mind if your goal of owning a digital SLR is to make lots of prints.

Visualizing Aspect Ratios

Many photo editing programs today provide you with a cropping tool, where you can set the aspect ratio of the tool.

For example, you can set the cropping tool so that it crops with a 3:2 ratio, which will work for 4x6 prints. You can also set it to 5:4 if you ultimately want to make an 8x10 print.

Using a tool like this will clearly show you how much of your original image you're going to lose when you make a print.

For those not well-versed in photo editing programs, here are some visual examples to help you out.

4x6 or 3:2 Aspect Ratio

Here's the original image taken by a camera with a 3:2 sensor. In this case, a 4x6 print will not get cropped in any way since the dimensions of the sensor match the dimensions of the print.

5x7 or 7:5 aspect ratio

Here's what happens to this same image when I want to print it at 5x7. Since the 5x7 ratio is not the same as 3:2 parts of the left and right of the image are going to get cut off in the final print.

8x10 or 5:4 aspect ratio

And last but not least, the 8x10. In this case you can see the extreme cropping that happens when you try to print a 3:2 image at 8x10. Two important points: it's nothing wrong with you and it's nothing wrong with the camera. That's just the way it is.

Combatting The Crop

Faced with losing a huge portion of your image when you want to make a nice big 8x10 print, what's a photographer to do?

It's fairly simple, really: **don't get too close**.

In the example that I provided above you'll notice that the original 3:2 image is tightly cropped around the parrot - there's not a lot of extra space. When you go to make an 8x10 print of this photo, the parrot's beak is getting clipped.

Instead of getting quite so close to your subject, leave some breathing room.

When you do this, you'll ensure that no part of the subject gets cut off when you make a print that isn't the same aspect ratio as your camera's sensor.

8x10 Improved Crop

In the case of this photo, I did leave extra room around the parrot. The image that you see at right is cropped for an 8x10 print size (5:4 aspect ratio) but in this case none of the parrot is getting clipped off.

http://www.digital-slr-guide.com/aspect-ratio.html