

Photographing Waterfalls

Achieving the soft water effect

Waterfalls are an attractive subject for many photographers, and they can be captured in many different ways. A lot of photographers prefer the “soft water” look in their waterfall pictures – an image that shows the flowing motion of the water. This is achieved by using a longer shutter speed on your camera so that there is motion blur on the water. Before we begin, let’s look at two images from Victoria Park in Truro, that illustrate what I’m writing about.

The top image at right was taken on a bright, sunny day, in full sun, with a shutter speed of 1/250 of a second. The second image was taken in full shade, with a shutter speed of ¼ sec. Now, it’s up to you as to which rendition of the falls you prefer, but I’m going to concentrate on achieving the look in the bottom picture – the flowing water or soft water effect.



First, it will be more difficult to achieve the soft water look with your camera in full automatic exposure mode. Why? Because your camera will try to use a shutter speed that is appropriate for handheld photography – typically 1/30 sec. or faster. That may be slow enough that the water flowing over *Niagara Falls* is blurred, but not nearly slow enough for a small waterfall such as the one pictured.



Of course, even when you can set a slow enough shutter speed (and we’ll discuss that below) you’ll encounter your first challenge – *you only want the water to be blurred and not the surroundings*. And ¼ sec. is just too slow for a handheld shot (although, with modern camera image stabilization, I’ve made a few successful hand-held images at 1/10 sec.). You need a stable platform for your camera for such a long exposure. *Use a tripod*, or find something to brace your camera against, or rest it on. [Tips: for tripod use, turn camera stabilization *off*, and use a remote shutter release or the self-timer]

So, what options do you have to make sure you can get an appropriate shutter speed? Start, by adjusting your camera’s ISO to its lowest value. This may be ISO 80 on a point and shoot, or ISO 100-200 on a more advanced camera. Next, you’re going to have to learn how to set your camera either to manual exposure mode, or to one of the semi-automatic modes (shutter-priority or aperture priority). Most cameras have a mode dial with these options, and it will depend on your make and model as to what you see (M for manual, A or Av for aperture priority, T or S for shutter priority, etc.). You will also need to learn how to adjust the shutter speed and/or aperture in your particular



camera, and how your camera indicates a proper exposure in the viewfinder or on the LCD screen.

Let's assume that you have set your ISO to its lowest value, your camera is on a stable platform, and you're going to use either manual mode (you select the shutter speed AND aperture) or shutter-priority mode (you select the shutter speed and the camera selects the aperture for the correct exposure). What shutter speed should you use? The reality is that it depends on the speed of the water. So, you're going to have to experiment, review the results and, most likely, try again until you get the look you want.

The second (soft water) picture was taken with a shutter speed of $\frac{1}{4}$ sec., an aperture of f/11, at ISO 160 (the lowest ISO for that particular camera). A slower shutter speed (say, 1 second) would result in an even softer water look, and a faster shutter speed would reveal more detail in the water flow. If the waterfalls had been flowing more slowly, a slower shutter speed would be required for the same effect as pictured.

This is all well and good under dim lighting conditions. But what if it's really bright? The first picture (taken on a different day) was also at ISO 160 and f/11, but required $\frac{1}{250}$ sec. for a proper exposure. If I'd tried to use $\frac{1}{4}$ sec. under those conditions, my picture would have been *dramatically over exposed*, because I'd need an aperture of f/512 for a proper exposure. Well, an aperture that tiny just doesn't exist in my or your camera. In fact, due to the effects of diffraction (which takes away from image sharpness), you really shouldn't be using an aperture any smaller than, say, f/16 for an APS-C DSLR or f/5.6-f/8 for a point and shoot camera. So, what to do?

The answer (aside from returning on a different day) is that you need to cut the light that is getting to your camera's sensor with a filter. A circular polarizing filter (CPL), popular with landscape photographers, may reduce the amount of light reaching the sensor by between 1 and 3 "stops". Neutral density filters (ND) come in different strengths, and can reduce the amount of light by up to 10 stops or more. What do I mean by *stops*? The origin of the word is derived from the aperture ring on traditional lenses. But in the context of the reduction of light caused by a filter, each stop represents a decrease by one-half. The easiest way to see this, is through a chart.

Shutter Speed	Stop Reduction	ND Filter Rating
1/250	None	No filter
1/125	1	0.3 or ND2
1/60	2	0.6 or ND4
1/30	3	0.9 or ND8
1/15	4	1.2 or ND16
1/8	5	1.5 or ND32
1/4	6	1.8 or ND64
1/2	7	2.1 or ND128
1 second	8	2.4 or ND256
2 sec.	9	2.7 or ND512
4 sec.	10	3 or ND1024

On that bright sunny day in the first picture, I would have needed a 6-stop, ND64 filter to bring my shutter speed down to $\frac{1}{4}$ sec. from $\frac{1}{250}$ sec. In the second picture, the ambient light was significantly less ($\frac{1}{30}$ sec.) but I still used a 3-stop ND8 filter to lengthen the shutter speed to $\frac{1}{4}$ sec.

For a point and shoot camera, you may need an adapter in order to mount filters. Some P&S cameras actually have 1-3 stop ND software built in (check your manual). It's also worth mentioning that there are *variable* neutral density filters that one rotates to block light between 2 and 9 or 10 stops. My only recommendation with these is that you don't buy a cheap one, because those will degrade your image sharpness.

There are challenges to using a high-density ND filter, particularly on a DSLR. The filter is so dark that it's hard to see and focus through it (virtually impossible with a 9 or 10-stop filter). And auto-focus just isn't going to work, so switch to manual focus. While some electronic viewfinders or live-view LCD's will "gain up" enough to display an image, the better option is to frame and focus *without* the filter, then put it on for the exposure. Just make sure that you don't accidentally change your focus while screwing on the filter.

Some additional considerations:

A slow shutter speed also affects other subjects that move in your picture. If it is a windy day, not only will the water be soft, the leaves on the trees may be blurred as well.

Pay attention to your exposure. If you overexpose, your water will end up being just a white blob in your picture. I recommend reviewing each image that you take either with "blinkies" turned on (i.e. overexposed highlights blink on the LCD/EVF), or by viewing (and understanding) the histogram. Look for these options in your manual.

It is particularly challenging to achieve a soft water effect in bright sunlight, or when the light isn't consistent across the scene. The contrast can be so great that exposing to retain highlight details also produces very deep shadows. There are some possible remedies (blending multiple exposures, using a flash to fill in the shadows), but those are complex topics all on their own.

If you've read this far, I hope I haven't made it all seem too daunting to achieve the soft water effect. Once you get going, it's not difficult, really. With some experimentation and practice, you'll be able to confidently photograph running water and achieve the look you want in your images.

Best regards,

John Burnett



*Photographing the falls at Victoria Park, Truro.
Photo by James Campbell*