

Day 9: Make Your Images Tack Sharp

How to make your pictures tack sharp is one of the most common questions I get. Who doesn't want sharp photos? And yet, what I find is that everyone has it exactly backwards. They start by thinking they have an equipment problem. After a while they decide there is post processing magic they aren't privy too. Only reluctantly do they accept that it might have something to do with their shooting fundamentals.

Don't Blame Your Gear!

- Gear is almost certainly not your problem.
- Any DSLR or mirrorless camera being sold today has sufficient resolution.
- Most lenses are capable of taking sharp photos.

Number one cause of sharpness problems is camera stability

- When hand-holding your camera:
 - Be sure you are using a fast shutter speed!
 - Use the Reciprocal Rule as a bare minimum.
 - If shooting a moving subject, go even faster.
- When using a slow shutter speed:
 - Use a tripod.
 - Use a remote shutter release or intervalometer
 - Use mirror-lock up or live view.
 - Make sure your tripod is stable and not susceptible to movement.
 - Make sure the controls on your tripod are tight.
 - Make sure your image stabilization is off.

Another culprit is focus and depth of field

- Be sure to set your focus point properly. Remember, focus on the subject, for people aim for the eyes, and in landscapes set the focus about 1/3 of the way into the picture.
- Ensure sufficient depth of field, but this can be tricky when you are balancing the need for a fast shutter speed with a smaller aperture (both cost you light).

You can add sharpening later - but only if the original photo is solid

We'll talk about how to take your pictures and add additional sharpness later, but you have to start with a good foundation. You cannot sharpen away blur.

Additional Commentary

Today we are going to learn to make your pictures as sharp as possible.

Everyone wants their pictures to be sharp. Most people run into problems in this regard and are quick to blame their camera or lens. Or else they think there is some secret post processing technique they need to learn (and fear not, we will talk about processing for sharpness later in the course). But the reality is that most of your sharpness problems happen in the field and they aren't your equipment's fault.

Today we are going to talk about how you can ensure you are taking sharp pictures in the field. The good news is that you really don't need to learn anything new for today's lesson. We have already covered everything you need to know in order to take very sharp pictures. It will just be a matter of combining these things and applying what you already know.

The Importance of Shutter Speed

The number one cause of unsharp photos is using a shutter speed that is too slow.

On day 6 of this course we talked about using shutter speeds that are fast enough to avoid camera shake. Specifically, you should use the Reciprocal Rule to ensure that your shutter speed is fast enough to avoid any blur from camera shake. But that's not the end of the matter.

First of all, think of the Reciprocal Rule as a bare minimum. There's nothing wrong with using a faster shutter speed than the Reciprocal Rule calls for. Indeed, it can help make the picture sharper. Remember that blur is caused by movement during the exposure process. The faster the camera opens and closes, the less likely there can be any movement associated with the exposure, which would cause blur.

In addition, the Reciprocal Rule only addresses *camera* movement. It does not consider movement in what is in front of you. Often, you can comply with the Reciprocal Rule (and then some), but still have a blurry photo because of movement in what was in front of you.

For example, think about the speed at which birds move. Even 1/500 of a second maybe too slow to catch a sharp image of a bird. That shutter speed would comply with the Reciprocal Rule on virtually any lens (as long as the focal length was under 500 mm) but it might be inadequate for the situation you face. In addition, the movements of people - while certainly not as quick as those of birds or other wildlife - are surprisingly quick. That's true not just in athletic or sporting competitions, but in other contexts as well. Therefore, you need to be aware of your shutter speed and consider whether it is fast enough for the situation.

Again, this is the number one cause of unsharp photos that I see. Using a fast shutter speed is half the battle when it comes to image sharpness.

Stability, Revisited

On the opposite end of the spectrum, when you are using a very slow shutter speed (sometimes it cannot be helped), you need to make sure you are doing everything possible to minimize movements in your camera. Here are some things you should be doing:

- Use a tripod.
- Use a remote shutter release or intervalometer
- Use mirror-lock up or live view.
- Make sure your tripod is stable.
- Make sure the controls on your tripod are tight.
- Make sure your image stabilization is off.

I won't dwell on these here since we already covered them on Day 7, but did want to list them here again as a reminder.

In addition, where you are hand holding the camera, remember to use good solid technique. Remember to think of yourself as a tripod or means of support. You support the camera much better with your arms tucked in against your chest, rather than with your elbows flying out to the sides. You sway much less with your legs spread wide or when you lean against something.

If there is something to prop the camera on or against, do it. Anything solid will help restrict movements more than you can do on your own.

Even if you do not see the blur in your LCD, it might still be there. Your LCD is 3 inches; your monitor will be 8 - 10 times as large. Things that are simply not visible on your LCD will show up clearly on your monitor (or in print). There is nothing more disappointing than getting home and realizing that a shot that looked sharp on your LCD is actually ruined by blur.

Focus and Depth of Field

The next most important issue when it comes to image sharpness is focus. Usually, the problem is not that the entire image is out of focus, but rather that the focus was set in the wrong place.

When shooting outdoors, a common problem is setting the focus on the distant horizon when there are foreground elements in your picture. You might be fixated on the background because it is what caught your attention. But if there is anything in the foreground, it needs to be sharp. Often it is more important for the foreground to be in focus than the background.

You have two options for addressing this. First, you can set your focus closer or increase your depth of field. Usually setting the focus closer is the way to go. First of all, it is easier and does not involve changing other exposure controls. Secondly, you usually already have sufficient depth of field, it is just a matter of using it properly. With the wide-angle lenses that usually get used in outdoor photography, you are going to get a pretty deep depth of field even with moderate aperture settings. In fact, it can actually be difficult to get a shallow depth of field with a wide-angle lens.

When shooting people, just remember to focus on the eyes. Focus on the near eye if they aren't even. If you have problems here it is just execution. Practice will make perfect.

Adding Sharpness

Problems with sharpness are probably not from your camera or lens. For some reason, we all want to think that it is. Maybe it is just easier for us to think that we can simply buy a better camera and lens and suddenly get sharper images. To a certain extent that is true, but not to the extent you might think.

We are all impacted a little bit by the advertising and claims of the manufacturers. But it isn't all their fault. Whenever someone buys a new camera or lens they inevitably boast a little bit about how great it is and how much better it is than whatever they had before. It seems to be a little bit of a justification for their purchase. Not only that, but the testing labs tend to display their data in such a way that it makes tiny differences appear huge. The point is that you are being influenced to buy better and more expensive gear from a variety of sources - marketing, the testing labs, and even people you know. It can be tough to resist.

I'm certainly not above it, and have experienced it myself on occasion. Several years ago, I owned a Canon 6D and the lens I used most often was a Canon 24-105 mm f/4. It worked just fine and I was generally pleased with the quality of the pictures I was taking with this set-up. After a while, however, I decided to upgrade. I decided to get the Canon 5DS-R and I also decided to get a new lens, the Canon 24-70 mm f/2.8 II. This combination of camera and lens was supposed to be absolutely lethal. Consider the DXO Mark testing (if you are not familiar with DXO Mark, it is a group that tests all cameras and lenses on the market). DXO Mark tested the 24-105 mm f/4.0 lens that I had been using, and when used on a 6D, gave it a sharpness sort of 14. That was quite respectable. But when DXO Mark tested the 24-70 mm f/2.8 II on the 5DS-R, they gave it an otherworldly 32 sharpness score. This was insanely high. With that score, my pictures would now have to be super-sharp, right?



Canon 5DSR with 24-70 mm f/2.8

Sharpness: 32
Overall: 35



Canon 6D with 24-105 mm f/4.0

Sharpness: 14
Overall: 19

Well, they are certainly sharp, and perhaps a tiny bit sharper than what I had, but nowhere near the level the scores would suggest. The pictures above offer a comparison. Would you call the picture on the left above *over twice as sharp* as the picture on the right? I doubt it. And I understand that these are small pictures you cannot see that well. But I invite you to test your own lenses for yourself and see. I think you'll come to the conclusion that the testing scores really inflate the differences. This isn't peculiar to DXO Mark either, and I actually really like their testing, so I don't want this to come across as me bashing them.

In fact, let's take this test a step further. I'll now add a picture taken with the Canon Rebel T5 with the kit lens that I bought my daughter for Christmas a few years ago.



Canon 5DSR with 24-70 mm f/2.8

Sharpness: 32
Overall: 35

Canon T5 with 18-55 mm f/3.5 - 5.6

Sharpness: 8
Overall: 12

Canon 6D with 24-105 mm f/4.0

Sharpness: 14
Overall: 19

I know the colors are different for each (and this could easily be corrected in post), but is there a big difference in sharpness? I understand that these are small pictures you are viewing here, so you'll have to take my word for it that there just isn't as much of a difference in gear as you might

think. Certainly, there is nowhere near the 4x difference the scores suggest. And probably not worth the incredible prices you might pay for the top cameras and lenses.

Are there things you can do to make your pictures sharper? Yes, and I'm going to show them to you in the post processing part of this course. But you cannot fix a lack of sharpness later. And the sharper the picture you start with, the more luck you'll have in sharpening it in post.

A Note About Today's Assignment

Shooting wildlife is hard. Just finding the critters can be difficult, and then getting your settings right very quickly adds to the difficulties. Because of that, I want to help you a little bit with this one before you get started.

What I am trying to show you with this assignment is the extent to which a fast shutter speed can result in crisper pictures. When shooting wildlife, you often have to use *very* fast shutter speeds. The extent of this might surprise you. There are two reasons for this.

- First, you will be using very long focal lengths (generally use your longest lens for this assignment). If you recall the Reciprocal Rule, this fact alone means you will need to be using a very fast shutter speed.
- Secondly, these animals are very fast. If you are trying to shoot birds, then this is particularly acute. A shutter speed of 1/500th of a second might be inadequate!

Therefore, here are a few tips to get you started. First of all, set the aperture of your lens to its widest setting (smallest f/number). That will allow the most light possible, which will allow you to use a faster shutter speed. In addition, it will tend to blur the background, which removes distractions from your subject. Secondly, raise that ISO quite a bit. I would default to something like 800, but I wouldn't be shy about raising it further.

These settings will help you get started, but feel free to adjust from there as the need arises. In addition, keep in mind that focus is very important here. That is always true, but remember that you will be using a very shallow depth of field, so a slight miss will hurt you.

Good luck!

Day 9 Assignment Wildlife

Description:

Create a compelling wildlife photo. If you cannot go out on a hike, just look for birds or squirrels near your home. The idea is to put your exposure and focusing skills to work to create a tack sharp photo of a fast-moving subject.

Keys to Success:

- You'll need a very fast shutter speed to stop the action and avoid camera shake.
- A large aperture will give you the light you need and blur out the background to isolate your subject.
- Have your exposure settings dialed in before you start looking for subjects. Also, given the fast-moving nature of this exercise, you might want to work in Aperture Priority mode (A or Av on the Mode Dial).
- Watch your focus; and focus on the eyes if you can. You'll have to be quick.

Upon Completion of this Assignment:

If you can create a tack sharp wildlife photo, then you can create a tack sharp photo of anything! The moving subject creates exposure challenges; and the distances involved make focus and camera shake an issue. If you didn't get the shot you wanted, don't worry - this is a tough one. Keep working at it and you'll end up with a stunning wildlife shot.