

Image 1:
Opening the
RAW image
file in Adobe
Photoshop

Text and photos
by Rico Besserdich

When it comes to final editing of your digital underwater images, the white balance should be the first step of your digital post-production workflow. Always.

What is white balance? Different light sources produce light with slightly different colour tints. Think about sunlight, your camera's strobe or underwater video lights, for example. By adjusting the white balance, we tell our cameras or imaging software which area of the photo is supposed to be white or neutral grey. This step of editing removes colour casts, and as a result, displays your image with natural colours.

What is important for underwater photography is that a successful adjustment of white

balance during post-production requires a sufficient amount of light (colour information) to be existing in the (original) image. This is especially important when

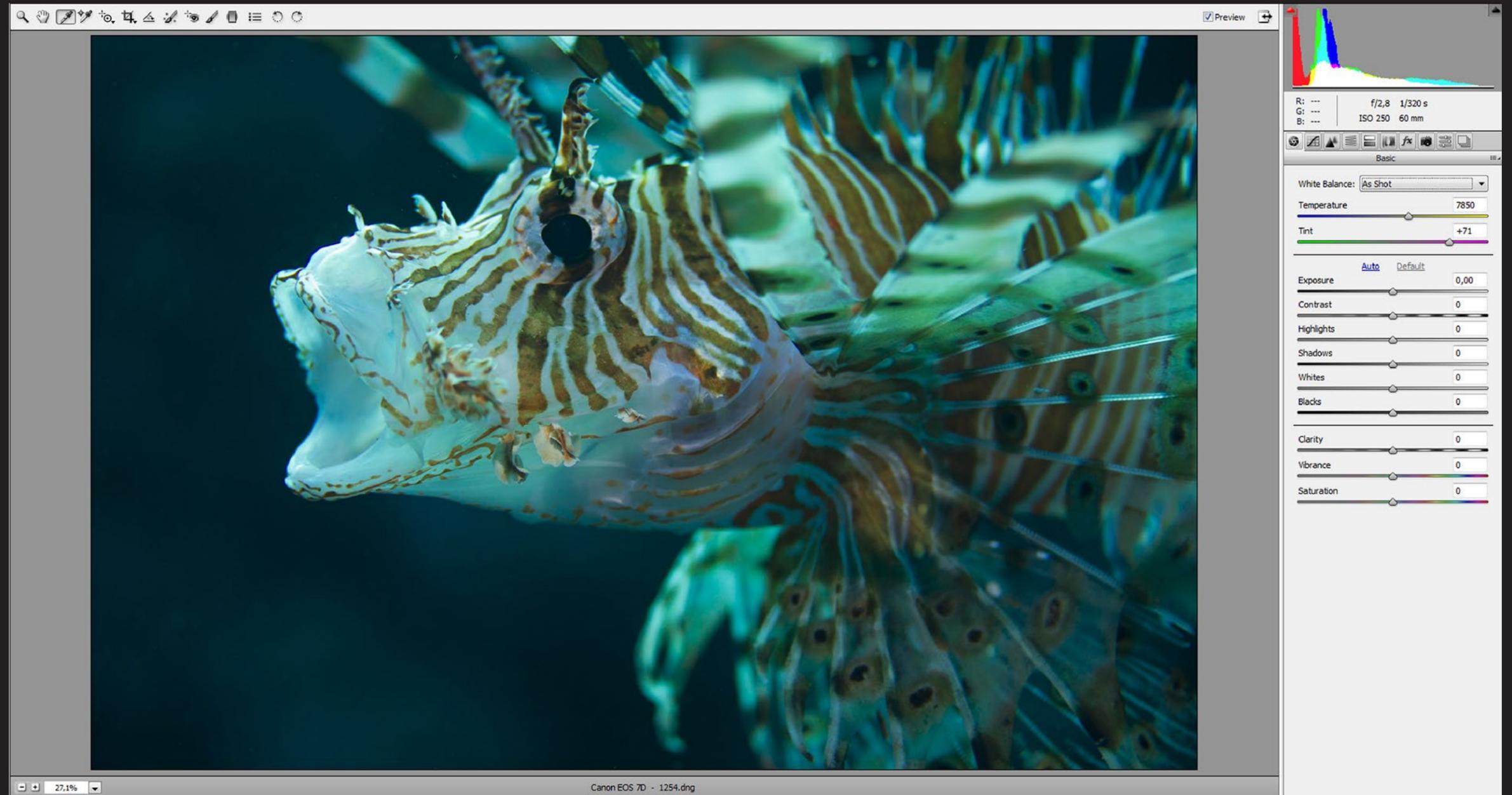
shooting in ambient light (using no strobes or any other light sources other than sunlight). As colours do fade away with the increasing depth of a photo dive,

one should better not expect to be able to restore colours of underwater images taken in deeper waters (10m and more) using sunlight as the only light

source.

When using underwater strobes, it is a different story. Underwater shots that are entirely lit by a strobe or flashgun (i.e.

most macro shots) often require only minimal white balance adjustments—sometimes, none at all. However, the moment two or more different light sources

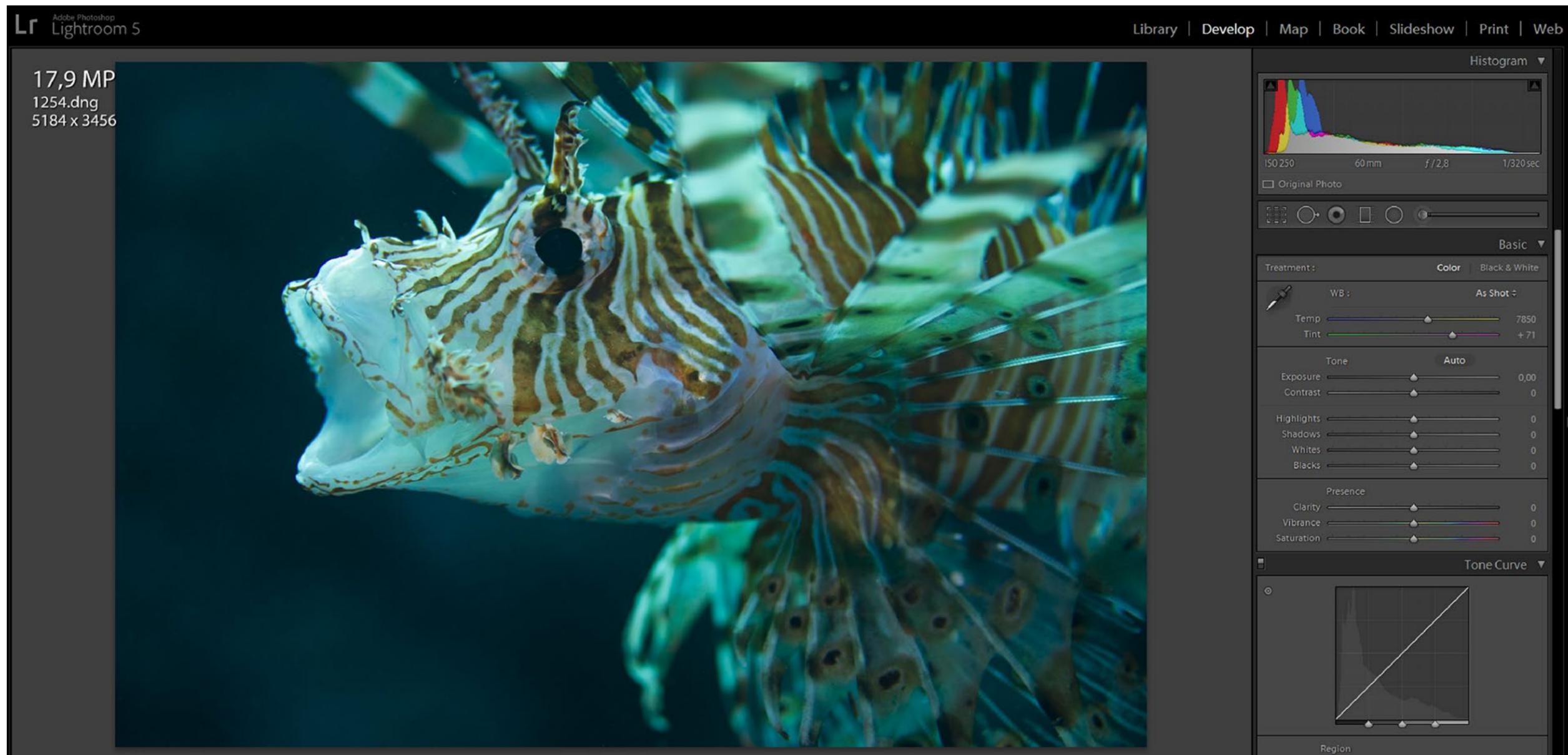


Adjusting White Balance

in Post-Production of Underwater Images



Image 2: Importing the image file into the Lightroom catalog



are present in one image is the moment a colour cast will show up. In underwater photography, we have to deal with a cyan colour cast most of the time. This can be fixed by adjusting the white balance during post-production.

What we need:

- Photographs in RAW or DNG format. Those are the only formats that give you the opportunity to adjust the white balance after you take the shot. If you shoot in JPG, you had better go for a manual white balance in your camera.
- A colour-calibrated computer screen. Proper monitor calibration will ensure that your colours and black levels are true, which is crucial for proper image editing and for later printing.
- An image editing software that is able to process RAW (or DNG) images. Adobe Photoshop or Lightroom are the classics here, but any RAW processor can do the job, even the (free) one on your camera's software CD-ROM.

This tutorial utilises Adobe Lightroom (LR) and Photoshop (PS). In terms of editing RAW images, Photoshop's ACR (Adobe Camera Raw) and Lightroom are based on the same software engine. The only difference is the user interface.

Note: It is not necessary to own the newest versions of PS and/or LR; older versions work fine, too.

Adjusting white balance

In this tutorial, we are using the example of an image of a yawning lionfish from the Ras Mohammed National Park, Red

Sea, Egypt. Depth: around 8m. Light source: one 2500-Lumen video light, plus some ambient light from the sun.

In Photoshop, open the RAW file in ACR by double-clicking in Adobe Bridge or by dragging and dropping your RAW file on the Photoshop icon. Photoshop starts and ACR pops up. (See Image 1 on the previous page)

In Lightroom, import the image into your Lightroom catalog by using the import option. (See Image 2)

Lots of fancy sliders here, but we only need the white balance section, found at the top-right corner of both programmes. (See Images 3 and 4)

In this example, the camera was set to "AWB" (automatic

white balance), and I think we can agree that something needs to be fixed here, as this image suffers a serious cyan colour cast.

ACR and Lightroom offer a couple of white

balance presets (such as "auto," "daylight," "cloudy," etc.), but those rarely work well with underwater images. So, let's leave the image as it is: "as shot."

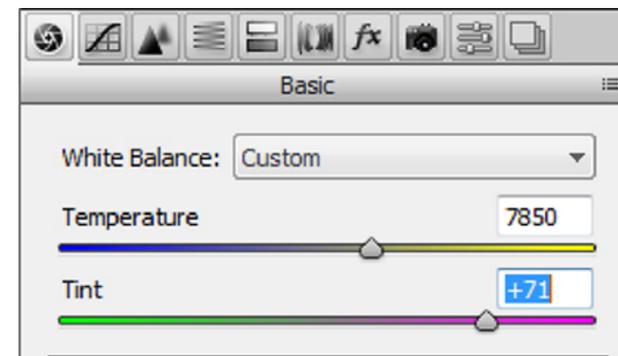


Image 3: White balance sliders in Photoshop

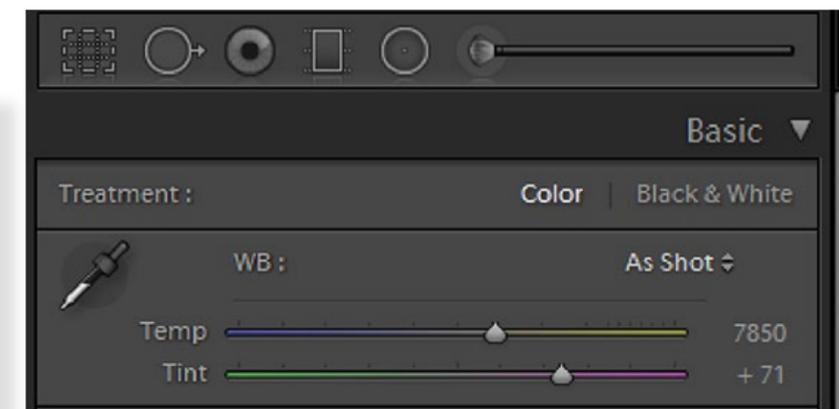


Image 4: White balance sliders in Lightroom



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Image 6: How the image looks after using the white balance colour picker. The cyan is gone but there is a bit too much magenta.

The tool offers us a colour picker, a slider for the temperature, and a slider for the tint. "Temperature" defines the colour temperature in Kelvin. This slider goes from blue (cold light) to yellow (very warm light). "Tint" defines the colour range between green and magenta. Slide the sliders and see what happens. No

worries, going back to "as shot" always brings you back to the original state of the image. What is important here is developing a sense for the colours by watching the change of the finest details very carefully. And then there is the

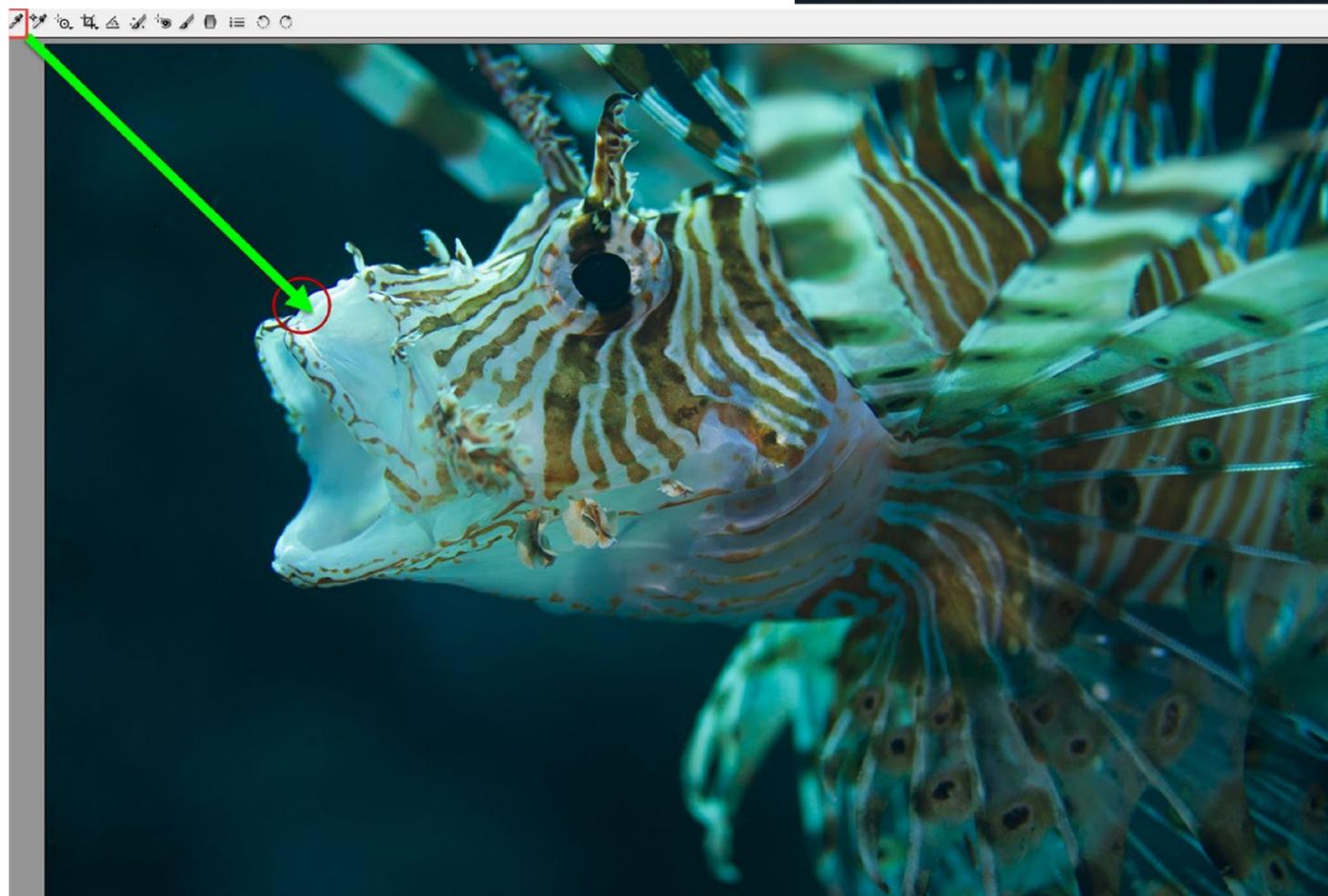
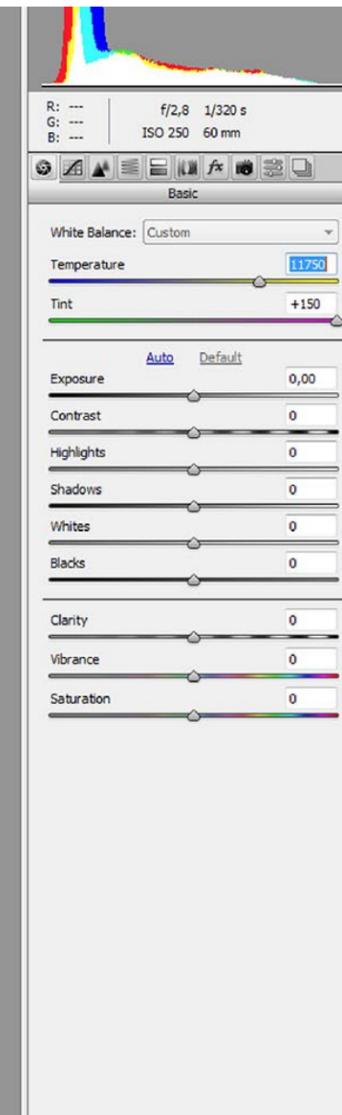
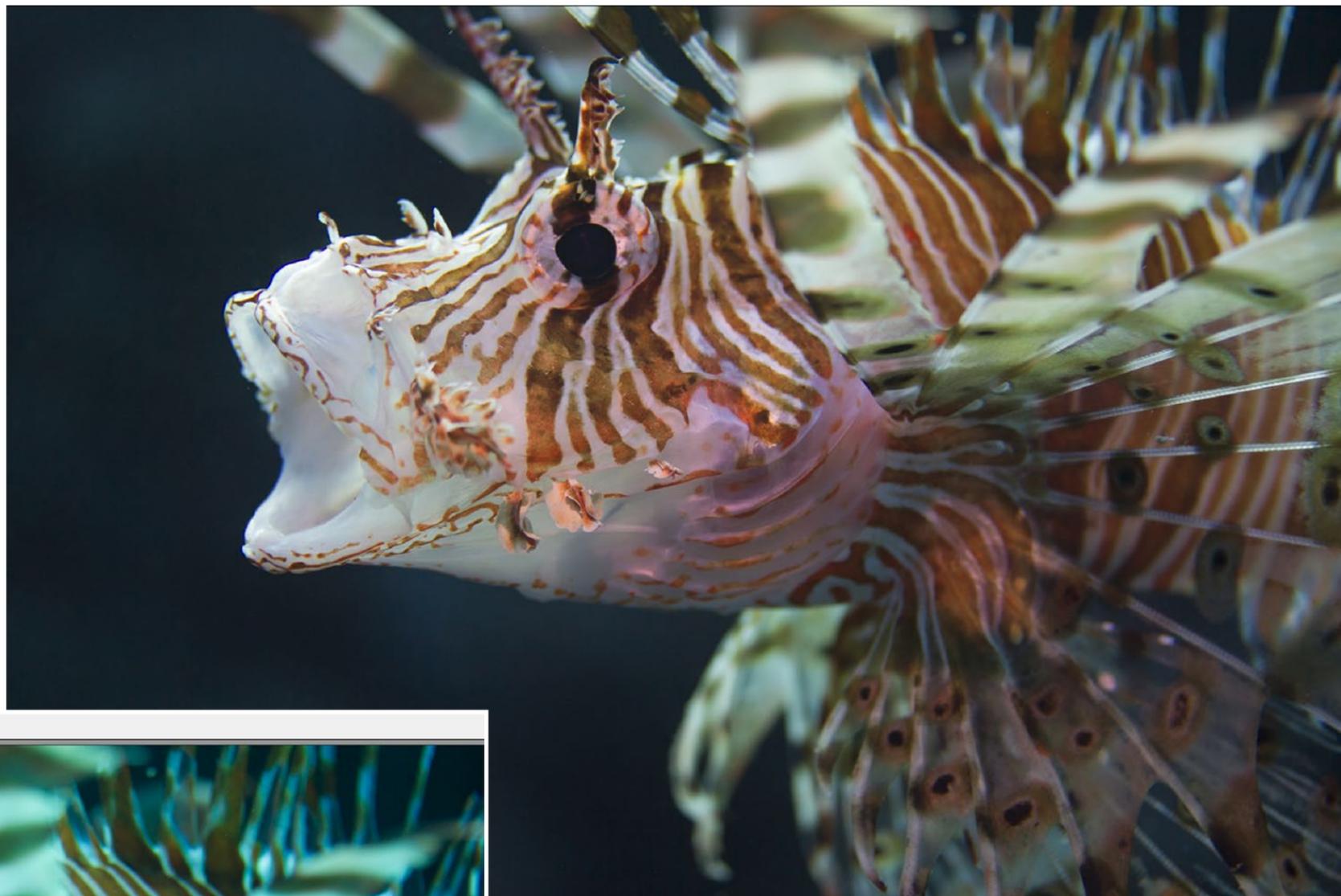


Image 5: The red circle indicates the area to do a colour pick, which should be white (or gray)

colour picker. Let's start with that one. Using the colour picker, you basically click on an area in your photo that is supposed to be white or grey. It comes in handy here to be able to remember what should be white (or grey) and what should not.

I recommend using the colour picker for a first "rough mix" and then doing the fine adjustments by using the temperature and tint sliders.

Getting back to our yawning lionfish—as I recall, the "lips" of that fish are supposed to

be (more or less) white. I use the colour picker and just click somewhere on the area of the fish's lips. (See Image 5)

The red circle indicates the area where to do a pick. In some cases, several attempts are needed to achieve a pleasing result. See Image 6 for how the picture looks after using the white balance colour picker.

The cyan colour cast is gone, and the colours (and thus the overall image) look better already. But looking carefully at the image, we notice that there is now a bit

too much magenta in it.

In this example, we just need to move back the tint slider a bit. Remember, this slider adjusts colours from green to magenta. After using the colour picker, the tint slider went to "+150"—obviously, too much magenta. Moving it back to around "+1242" fixes the problem here. Now, you can move the temperature slider a bit, making your image look warmer or colder. That is totally up to you and how you want your image to look like. I leave it here at the "picked" value of "11750."



"Before" shot—the original image before processing.

Image 7: "After" shot. This is how the image looks after the white balance correction in post-production is completed.

Now, the image looks like this. (See image 7)

Tip 1: When PS or LR displays extreme high "temperature" and "tint" values (temperature at or near 15,000; tint at or near 150) after applying the above-mentioned technique, this often indicates an insufficient amount of light and colour information in the original image file. Colour information that does not exist (in the original image) cannot be restored.

Tip 2: When placing the white balance picker tool on parts of your image, PS and LR always display the RGB values (right below the histogram) of that specific area. If the value shows "255, 255, 255," this means that a pure white already exists in the image and not much can be done regarding white balance. ■

Rico Besserdich is a widely published German photographer, journalist and artist based in Turkey. For more information, visit: Maviphoto.com. See his latest book at: Songofsilence.com.

Tip of the Day

by Peter Symes

Are your colours off?

There is a simple way to check whether your computer monitor reproduces the colours of photographed subjects with reasonable fidelity.



Calibration devices

Professionals and other serious users will know about colour profiling and calibrating all of their equipment, and using a colour-balanced workflow throughout, for consistent and accurate results. To ensure correct calibration of monitors and printers, calibration devices have to be used. Professional-grade monitor calibration devices, such as X-Rite i1Display Pro, Datacolor Spyder or ColorMunki, will set the user back some \$/€ 200-300, with colour target charts included. And then a proper wide-gamut monitor should really be used, which may be an additional and more substantial investment. The casual shooter may not want to go down that road just yet.

There is an easier, and much cheaper, way of checking a computer monitor's fidelity and making some adjustments for a better match between rendition and the original subject.

Colour charts and underwater cards

The credit card colour chart shown is a ColorChecker rendition card seen on Amazon for about US\$/€ 20. There is a reason why these specific colour patches are used, but that will be a story for another time. Suffice it to say, this chart represents a standardised set of colours, and the card is a reference we can easily carry with us in the field, and even underwater if the card is plastic.

When shooting a series of images, start by taking some test shots in which the card is placed somewhere in the scene where it is clearly visible. Once back at your computer, you can then directly compare how the colours on the card in the images are rendered on your monitor to the colours on the physical card, which you can simply hold up beside the monitor.

Any discrepancies in colour reproduction and white balance will immediately stand out, enabling you to make some appropriate corrections in an image editor such as Photoshop.

Digital colour chart

Having said that, a good-quality, correctly calibrated screen is always the better option. To check how accurate your screen is, download a digital copy of this chart, <https://bit.ly/2U2HUPy>, which can then be compared to the physical card. ■



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Ball Mount for Shearwater Teric

With diving safety and comfort for underwater photographers in mind, Jon Anderson has designed a universal ball mount, which allows one to attach the popular Shearwater Teric dive computer to any underwater camera housing. The ball mount comes in a standard 1-inch size, and, while still attached, allows the dive computer to be charged using the Shearwater charging station. Using this ball mount makes all diving-related data visible right on top of the housing's viewfinder. When the dive computer's vibration alarm is activated, underwater photographers can "feel" the vibration notifications while still having their hands on the handles of the housing. jonandersonphoto.com



10BAR Adjustable Flip-Frame for Dive Masks

With age, it might become more difficult for one to read camera displays and other related display information while diving with an underwater photo or video system, especially when using cameras that do not have a built-in viewfinder that is adaptable for visual impairment. Spotting tiny critters might be an issue for aged eyes as well. Underwater housing manufacturer 10BAR has designed a flip-frame with corrective lenses (ranging from +/-3 to +/-5 in strength), which can be attached to most common diving masks. The flip-frame is made of anodised aluminium. In addition, it comes with two quarter-inch threads, which allow one to attach smaller accessories such as lights or action cams. 10bar.com

Easydive's Easybag Trolley

With the needs of underwater photographers who are frequent travelers in mind, Italian underwater photography gear manufacturer Easydive has designed a new, super-lightweight trolley. With a weight of only 2,000 grams, dimensions of 46 x 38 x 24cm, durable Cordura material, and adjustable compartments and safety straps, the Easybag Trolley allows one to safely and comfortably transport a camera housing, ports and other gear as carry-on luggage. For usage as a rucksack (shoulder straps are included), the trolley unit can be removed, which then reduces the weight by 800 grams. An extra pocket on the front of the trolley provides additional space for tablets, documents or smaller accessories such as cables, O-rings, batteries, etc. easydive.it



Fantasea NP-FW50 Battery Cradle A

For owners of Sony Alpha mirrorless cameras, Fantasea has designed a battery cradle that holds one additional Sony NP-FW50 battery (of the Sony Alpha and NEX series), doubling battery life, and thus avoiding the necessity of replacing camera batteries between dives. The cradle unit connects itself to the camera's micro-USB port and is stored together with the camera in the housing. The cradle is compatible with the Fantasea line of mirrorless camera housings but can be used with housings of other brands as well, as long as the housing provides enough space. In length, width and height, the cradle's dimensions are 55 x 37 x 25mm (2.16 x 1.46 x 0.98in). fantasea.com

Geneinno Titan

In case you like to sip your cocktails while shooting underwater images or videos, or if circumstances do not allow one a safe dive, an underwater drone might be a possible solution. The Titan underwater drone made by Geneinno is equipped with a 1/2.5-inch CMOS sensor to capture 8MP still photos and 4K video (with a fixed lens angle of 160°), and it can also stream a 1080p live view to the handheld controller. Two 1500-lumen lights help to bring light into the depths. Its 9000mAh, 10.8-volt battery delivers a runtime of four hours per charge. The Titan can operate at depths up to 150m (492ft). Its maximum controllable thrusters allow easy control of the drone. The Titan dimensions are 390 x 347 x 165mm and it weighs 4.4kg. The unit can be remote-controlled via cable (with 50m, 100m and 150m cables available as extra accessories). Visual control works via a special app (IOS and Android), which allows the operator to see what the drone sees, controlling it accordingly by using a tablet or smartphone as a device for visual reference. geneinno.com

