



# photo & video

Image 1. The final image after capture and output sharpening in postproduction

Text and photos by Rico Besserdich

**The sharpness of a photograph depends on the camera in use, the lens and the camera settings. Every lens has an optimal range in respect to its sharpness performance.**

As a basic rule, most lenses provide their optimal sharpness with an aperture setting that is two full stops higher than the widest possible aperture of the lens. If you use a lens that comes with an aperture range of f/4 to f/22, it will most likely perform its optimum sharpness at f/8 (which is two full stops over f/4). Cheaper lenses that start with a maximum aperture of f/5.6 will perform well at around f/11.

Another important factor is the focal length of the lens and the shutter speed used. The general rule here is that the minimum (slowest) shutter speed, when shooting without a tripod, should be at least equal to or above the focal length of the lens. If you are using a 60mm lens, the shutter speed should be set to 1/60s (at least) or higher (faster).

As RAW (or DNG) should be the format of choice, we can say that every digital photograph needs to be sharpened during postproduction—some more, some less.

Referring to postproduction of RAW images, the workflow of sharpening



# Sharpening

*Underwater Images in Postproduction*

comes with two steps: capture sharpening and output sharpening.

Capture sharpening fixes the softness characteristic in digital images and is

done in Adobe Camera Raw (ACR) or in Lightroom.

Output sharpening is done at the very end, when finalising an image for digital

presentation or print. Adobe Photoshop is a good tool for proper output sharpening.

Note: Whatever tricks or techniques

are available in sharpening during postproduction, they will never turn a blurry image into a sharp crisp one. See an example in Screenshot 1 on the next page.





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Whatever I try, this surgeonfish will never become sharp, as my shutter speed of 1/60s was too slow for its fast movements in this shot taken with ambient light.

Unless you intend to work with blurriness as a creative element, it is better not to waste your time with attempts in postproduction to make blurry images into sharp, crisp ones.

## Capture sharpening

Now, let's look for an image that comes already with an acceptable level of sharpness but would benefit—as they all

would—from a little extra capture and output sharpening (see Screenshot 2).

This image is opened in ACR. Access the Capture Sharpening Tool via the third icon in the Editor panel (see icon circled in blue).

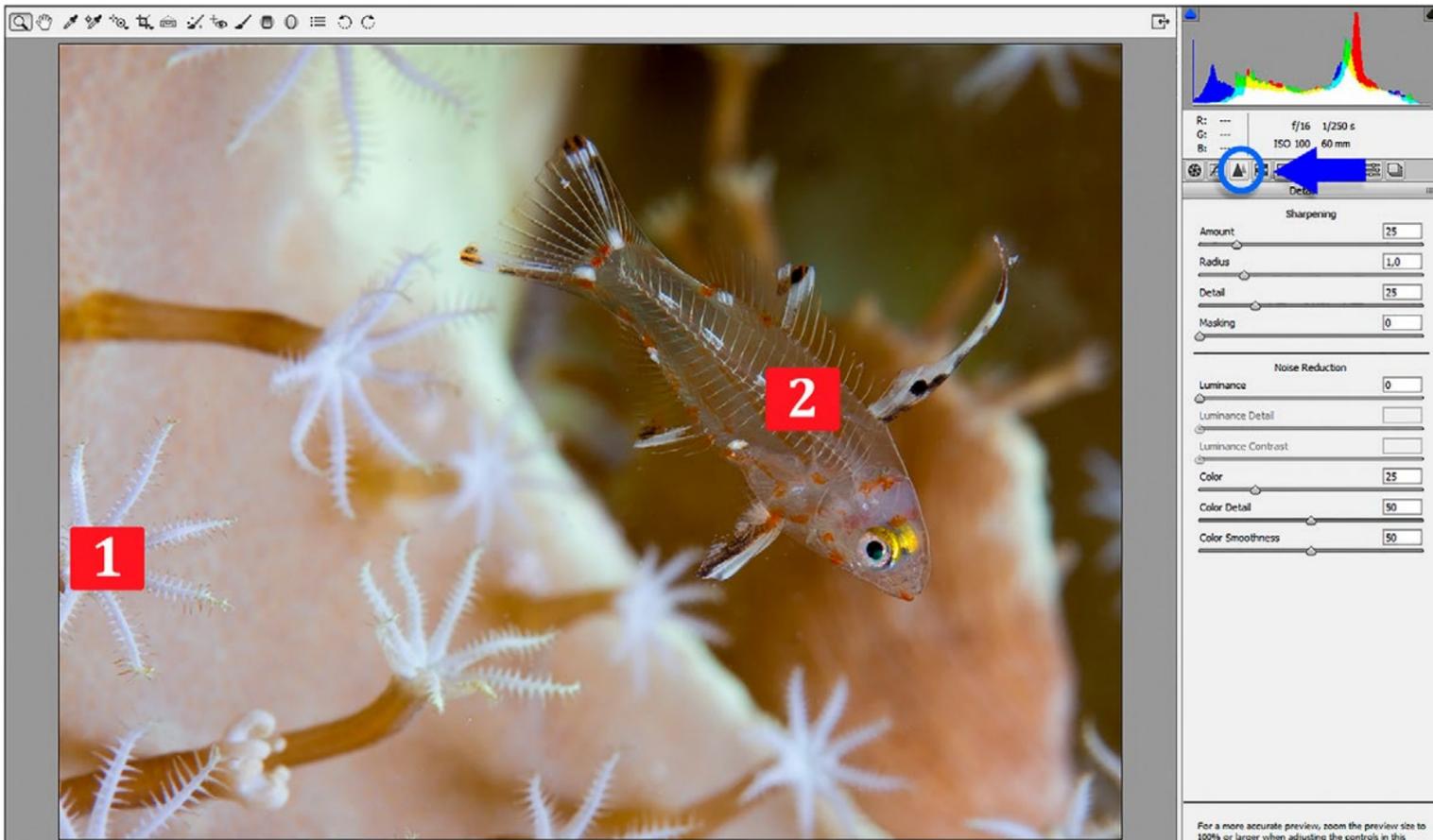
Before sliding the sliders, here is a quick checklist of things to look for:

- Does the image appear sharp in general?
- Are there areas that are in focus, and if so, are these sharp areas where you want them to be?

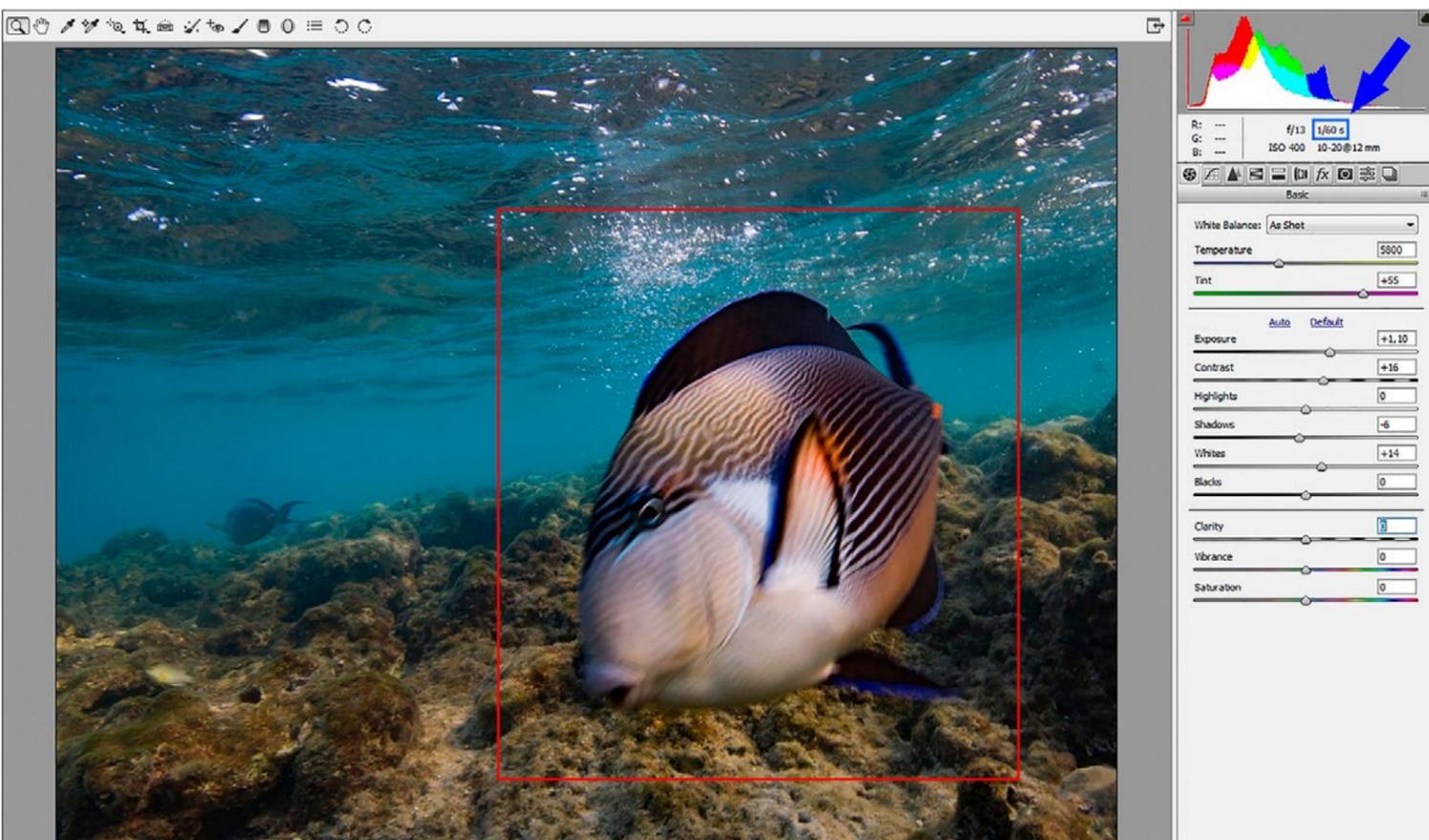
If yes, proceed.

In the example shown in Screenshot 2, the best focus is in areas "1" and "2."

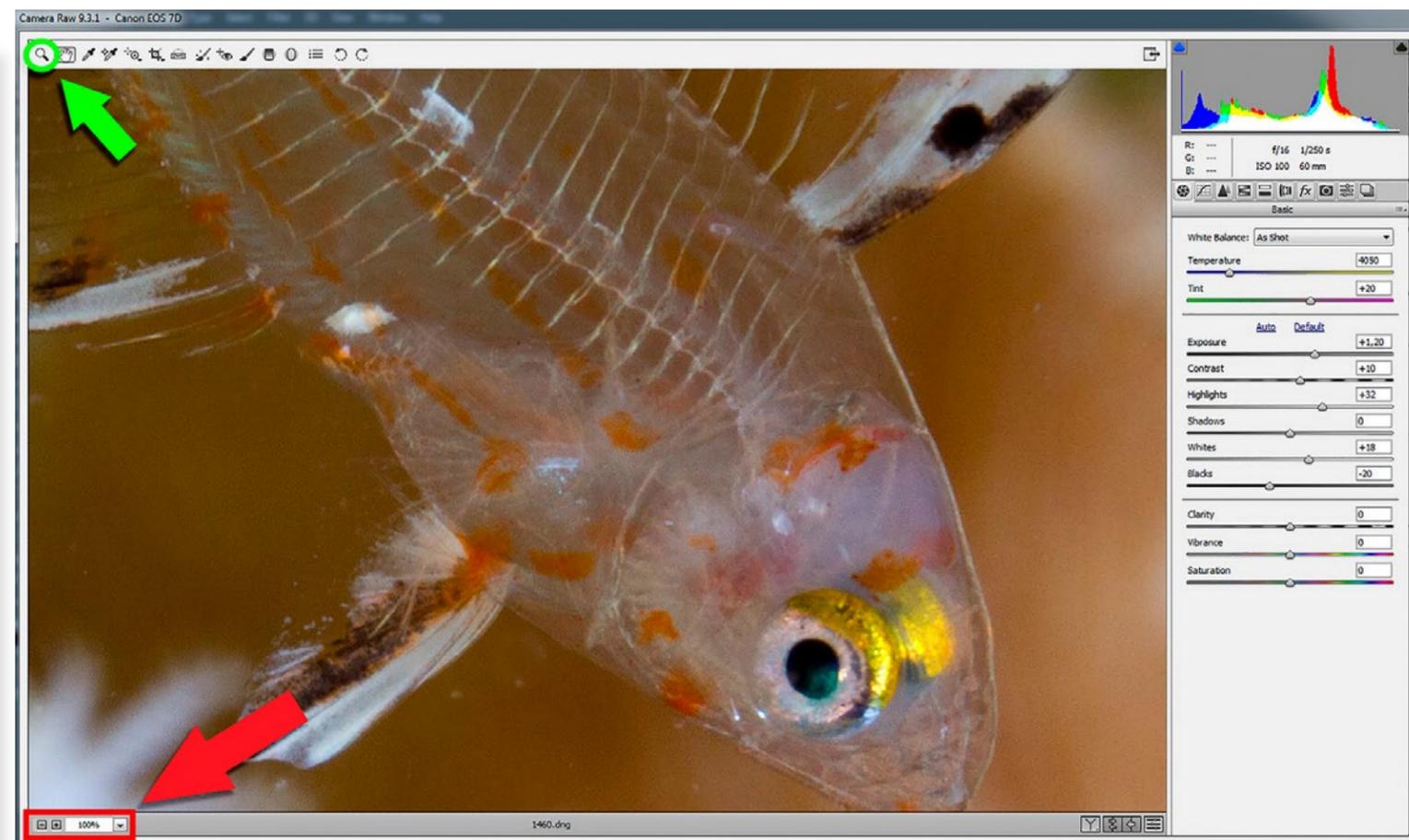
Every time we look at an image to check its details and see what can be done in postproduction, we need to zoom in to 100% (by using the magnifying Zoom Tool) and then move around the image with our mouse (using the Hand Tool) to determine fine but important details (see Screenshot 3).



Screenshot 2. Areas "1" and "2" have the best focus. The blue arrow points to the Sharpening icon circled in blue.



Screenshot 1. Surgeonfish image in Adobe Camera Raw (ACR). The blue arrow points to the shutter speed of 1/60s.

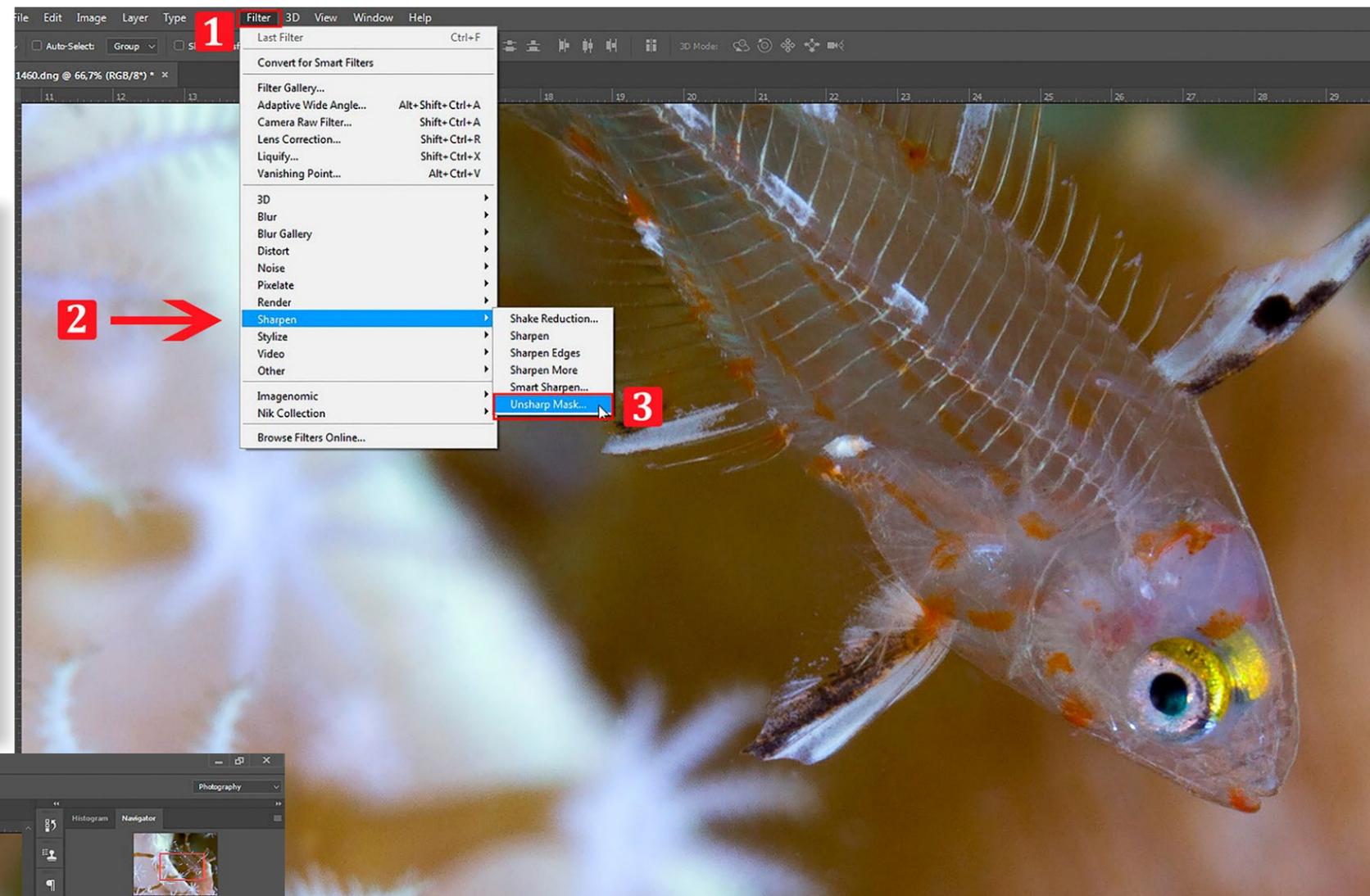


Screenshot 3. The green arrow points to the Zoom Tool icon. The red arrow points to a magnification level of 100%.

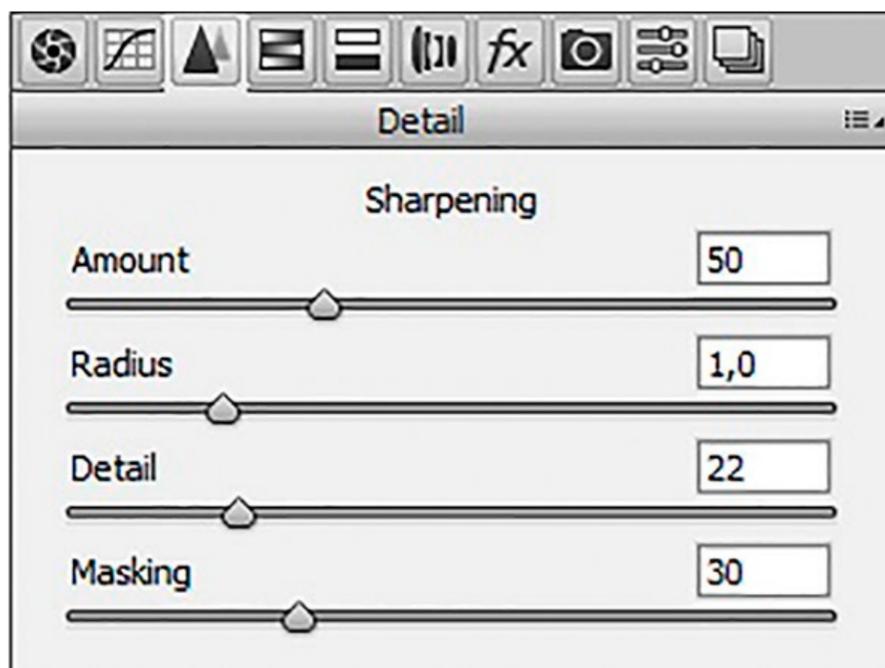




Screenshot 6. To find the Unsharp Mask panel, first click on Filters in the top navigation bar (1). Then, scroll down to Sharpen in the dropdown menu (2). Then, click on Unsharp Mask (3).



Screenshot 4. The preset Amount, Radius, Detail and Masking settings in the Sharpening panel



The RAW sharpening tool in ACR offers us four different sliders for sharpening options. Let's see what they can do:

**Amount:** Controls the strength of the sharpening effect. ACR preapplies an amount of 25% to all RAW and DNG images (but not to JPGs or TIFFs). A range of 25 to 45% is just fine.

**Radius:** Determines the number of pixels around the edge in which the sharpening effect is applied. ACR's preset here is 1.0, and a range of 0.7 to 1.3 usually works well.

**Detail:** The higher the value, the more the enhancement of finer details and texture are applied. How much detail depends on the photograph.

**Masking:** Restricts sharpening in less detailed areas of the image. Hold down the "Alt" key

on your keyboard while dragging the slider to see the masked areas in black. We rarely need to sharpen the water or backgrounds, so an amount of 25 to 35 does a fine job here.

In the image example, I have applied the presharpening settings shown in Screenshot 4.

### Output sharpening

Now, it is time for the output sharpening—the final step! I opened the image in Photoshop, quickly erased a few spots of backscatter, and applied a curves adjustment layer for final colour adjustments.

A zoomed-in view shows me that the details of the fish now look better, while the background still appears smooth, thanks to the masking option in ACR (see Screenshot 5).

1. Go to Filters > Sharpen > Unsharp Mask (see Screenshot 6).

Screenshot 5. A zoomed-in view shows that details of the fish look better now, while the background is still smooth, due to the masking option in ACR.



Screenshot 7. Set the Amount, Radius and Threshold in the Unsharp Mask panel. Check the Preview box to see changes.

2. Set the sliders for "Amount" to somewhere between 50 to 90, the "Radius" to 0.7 to 1.5, and the "Threshold" to 3. You have a small preview screen that shows you areas of the image in 100% magnification (which you can select with your mouse). Move around your entire image and check that there are no unwanted halos in bright areas or nasty outlines. If you spot those problems, decrease the values of the "Amount" and "Radius" until the problems disappear. You will see all modifications in real-time (see Screenshot 7).

Note: You can check or uncheck "Preview" to see the changes before and after.

3. Confirm by clicking on "OK," save the image, and enjoy your awesomely sharp photograph. Congratulations! (See the final image in Image 1 on the first page of this article). ■

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### Nauticam NA-EM10IV underwater housing

The NA-EM10IV is a new underwater housing designed for the Olympus OM-D E-M10 Mark IV mirrorless camera. It includes Nauticam's ergonomic layout of controls, dual fiber-optic ports for optical TTL strobe triggering from the camera's pop-up flash, and vacuum check and leak detection system installed as standard features. Tray and handles are available as optional accessories. The housing is compatible with Nauticam's range of underwater optics, including the WWL-1 and new WWL-C wide-angle attachments, and the CMC series macro wet lenses. Its dimensions are 184 x 138 x 100mm, and it weighs 1.08kg topside and 0.1kg underwater (including the camera and battery). It is depth-rated to 100m and has a Nauticam N85 port mount. [nauticam.com](http://nauticam.com)



### Keldan remote flash control

The RC1 remote control unit from Swiss manufacturer Keldan uses ultrasonic technology to control flash units up to 50m away. It has two channels controlling brightness, each of which can connect with an infinite number of lights simultaneously. The remote control unit works with Keldans XR Series of video lights. The RC1 remote control has eight transmitting power settings. At the highest level the range is about 50m. By using a triple clamp, the unit can be easily attached on the top or on the side of a camera housing. The ball adapter can be attached on either the top or the bottom. [Keldanlights.com](http://Keldanlights.com)



### Haweel underwater case for iPhone

Chinese manufacturer Haweel has extended its range of underwater housings for Apple iPhones with a new model that supports iPhone 11, XR, XS, X, 8 and 7 (including 8+ and 7+). The housing is made of transparent polycarbonate, allowing one to easily view the iPhone's LCD screen. It is depth-rated to 40m. The case converts the iPhone into an action camera. Underwater use is limited to photo and video functionalities only. Its dimensions are 19 x 10 x 3.5cm and it weighs 369g. O-ring, lanyard and cleaning cloth are included. [haweel.com](http://haweel.com)



### Pixelmator PRO 2

The image-editing software Pixelmator Pro 2.0 (code name: "Junipero") is designed as a universal app that supports the new Apple M1 processor. Intel CPU systems are supported as well. It is integrated with Metal, Apple's hardware-accelerated 3D graphics and compute framework, standard library and GPU shading language, thus providing increased speed in various image-editing processing steps, by a factor of 15x. The user interface has been completely overhauled, and now matches the macOS 11 (Big Sur) design. A new Effects Browser, interface customization, and workspaces for photography, design, painting and illustration are included. In addition, the Pixelmator PRO also has a new presets browser, including seven new color adjustment preset collections and eight new effect preset collections. For users of former Pixelmator versions, the update to the PRO 2 version is cost-free. [pixelmator.com](http://pixelmator.com)



### Insta360 ONE X2

The ONE X2 action camera by Insta360 is a major update to its previous model, the One X, and includes a new (circular) full-color OLED touchscreen display. While the ONE X2 is waterproof to 10m, a dive depth of 45m can be reached by using an optional dive case. It features stabilized 5.7K 360-degree video recording, updated FlowState image stabilization technology, and a special underwater shooting mode called "AquaVision," which automatically balances color. The camera supports both HDR photo and video. It is able to capture and merge multiple images to increase dynamic range, as well as reduce noise and maintain detail when shooting in low-light situations. Further features include SteadyCam mode, voice control, AI editing, dual-lens capture, 4-mic 360-degree audio, GPS and TimeShift. The ONE X2 supports shooting stills (6080 x 3040px) in JPG and RAW/DNG formats. The (fixed) aperture is f/2.0, the focal length (35mm equivalent) is 7.2mm. It supports one MicroSD as a storage device and is powered by a rechargeable 1630mAh battery (via USB connector), permitting a runtime of approximately 80 minutes. It weighs 149g, with dimensions of 4.62 x 11.30 x 2.98cm. [insta360.com](http://insta360.com)