

# DIGITAL PHOTOGRAPHY

skills °

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OCCAM'S RAZOR IS A PRINCIPLE THAT CAN BE SUMMARISED AS: "ALL THINGS BEING EQUAL, THE SIMPLEST SOLUTION TENDS TO BE THE RIGHT ONE." WHEN IT COMES TO WORKING WITH DIGITAL IMAGES, THIS PRINCIPLE REIGNS SUPREME!

When using Photoshop or Elements or other similar image editing programs, there is usually an alternative way to accomplish any given task. For example, if you need to get rid of some backscatter, you can use the Clone Stamp Tool, the Healing Brush, various filters, move in a clean background image, etc. Some practitioners of the image editing craft will also dogmatically insist on using layers. All sorts of layers. Layer copies, adjustment layers, masks, etc. Then applying all sorts of blur, colour and sharpening filters to eliminate the pesky spots. All very confusing and complicated. Sure, there are times when these processes can give real added benefits but for the most part an application of Occam's Razor will lead you to the simplest solution.

Working on an image is similar to making a cabinet. The basic tools are a saw, a hammer and a measuring tape. But in addition you could also use a planing machine, router, drill, sander, mitre clamp, etc. What we are going to do is learn how to use the basic image editing tools so that the needs of a project will dictate the use of more complex methods if necessary, not the reverse. There is no point in spending an hour fiddling around with complex layer masks to clean up some backscatter when a few seconds



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with a basic tool will do the same job. Since backscatter is an issue in every image you have ever shot underwater (in some shots totally unnoticeable but it is still there) let us use that as a situation to use the basic retouching tools.

Before we go on, let us define 'backscatter'. This term applies to any matter suspended in the water column. It usually refers to gunk between the lens and the subject that is lit by your strobes, 'scattering' light back into your sensor or film. This may show up as huge, pale, out of focus blobs obscuring your subject, as a general fog or haze or even sharp, well defined specks of light-coloured matter such as sand, plankton or similar little annoying bits. Photos taken with ambient sunlight can also contain backscatter though it is more often emphasised by bad strobe lighting. Earlier articles in this series explained how to avoid or reduce backscatter when using artificial lighting. Skilful lighting will avoid most backscatter problems but in turbulent conditions, which are normal in most dive sites, even a well lit subject will show the suspended particles that are on the same focus plane as your subject.

The advantage of working with digital files, either from a digital camera or from scans produced from film, is that you can get rid of the annoying bits before printing or otherwise showing your masterpieces. If you are going straight to print from film or file you are stuck with what is there. In the world of professional photography there have always been people employed to sit hunched over a retouching bench, dabbing away with brushes, dyes, inks, pads, etc cleaning up the dust spots and bits of errant grit and junk that inevitably found it's way into the camera back, onto the camera's film or printing paper in the darkroom. You can do the same on your computer with greater ease and much less skill and experience while munching on a sandwich and listening to your latest music purchase.

The basic retouch tool is the Clone Stamp Tool. When Photoshop introduced this marvellous little doohicky it set the world of retouching alight. Overnight entire retouch companies went out of business, the most flexible and adventurous

switching to a digital workflow to take advantage of the new technology. It is in essence a very simple tool. You select an area of the image you want to copy or 'clone' then click on another area to transfer that selected part of the image onto where you have clicked. You are telling the software to select 'this bit of the image' and copy it 'over here', replacing the original pixels with those you have selected. You are digitally creating a rubber stamp out of detail in one area and stamping it over the information in another area.

Before using the tool, check your software preferences. You will only need to do this once, setting the appearance of all tools. Under the Photoshop item on the main menu bar select Preferences>Display And Cursors. Under 'Painting Cursors' select 'Brush Size', under 'Other Cursors' select 'Standard'. You are telling Photoshop to show you the size of the brush you are using when using tools that can use brushes (such as the Stamp Tool, Eraser Tool, Brush Tool, etc.) which is very useful, logical and sensible while other tools that do not use brushes (such as the Eye Dropper Tool or Paint Bucket Tool) appear as a small icon indicating which tool you are currently using. Click 'OK' and you are done.

It is best to do retouch work on a file set to 100% zoom. While it will limit the amount of image that you can see, it will provide you with a realistic view of what you are doing to your image. Double click the Zoom tool in the toolbar, which will automatically zoom the image to 100%, then either use the Navigator palette to scroll over to your backscatter or use the sliders on the side and bottom of your image. I like to use the Hand Tool to scroll around my images which you can do without changing tools or accessing the Tool palette. Just hold down the space bar on your keyboard and the cursor will temporarily switch to the hand tool. Scroll about until you have the area to be worked on then release the space bar. Your cursor will now be reinstated to the tool that you had previously selected.

Select the Stamp Tool in the toolbar palette or hit the 'S' key ('S' for 'Stamp'). If you click and hold on the Clone Stamp Tool in the toolbar palette you will see that there is also a Pattern

Stamp Tool. You don't want that one so make sure the plain vanilla Clone Stamp Tool is selected. The options for the Clone Stamp Tool are usually displayed under the main menu strip across the top of the window. (In old Photoshop versions it was found in a separate Options window accessed under the Windows menu item.) Make sure that the Mode is set to Normal, Opacity is set to 100%, Flow is set to 100% and the Aligned and Use All Layers options are active. Sometimes you may want to change some of the options but usually you can set them then forget about them. You are now ready to select a part of the image you want to copy and use as a stamp.

Roll the cursor onto your image. Since you have set your preferences to show the size of the brush, a circle will appear showing the circular area that you are going to select. Ideally it should be slightly larger than the spot that you are going to replace. If it is too big or too small you can press the '[' or ']'

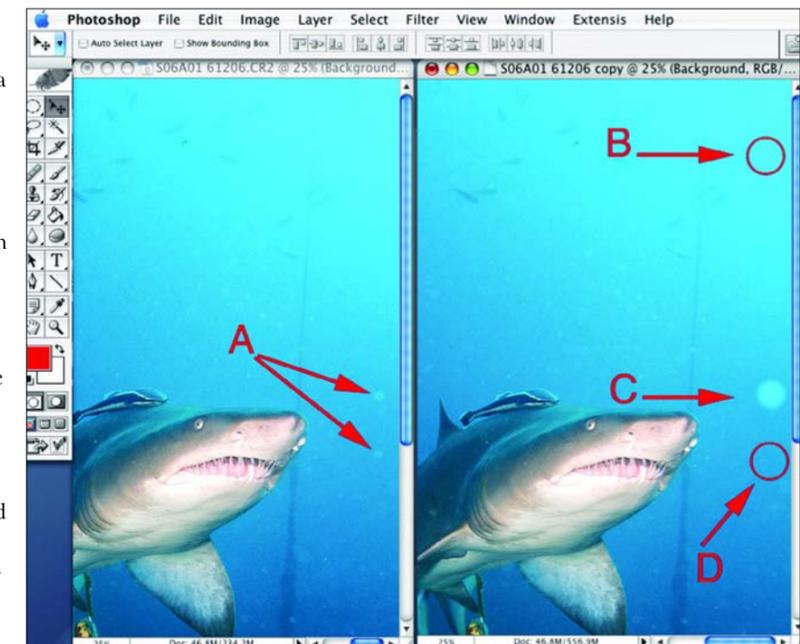


Figure 1: Light fuzzy spots indicate backscatter, suspended particles close to the lens and lit by strobes. The Clone Stamp Tool should select a similar tone, colour and density to avoid mismatched stamps. Area B was too light for the spot resulting in a bigger blob (C) while spot D was eliminated by selecting an area right next to the blemish.

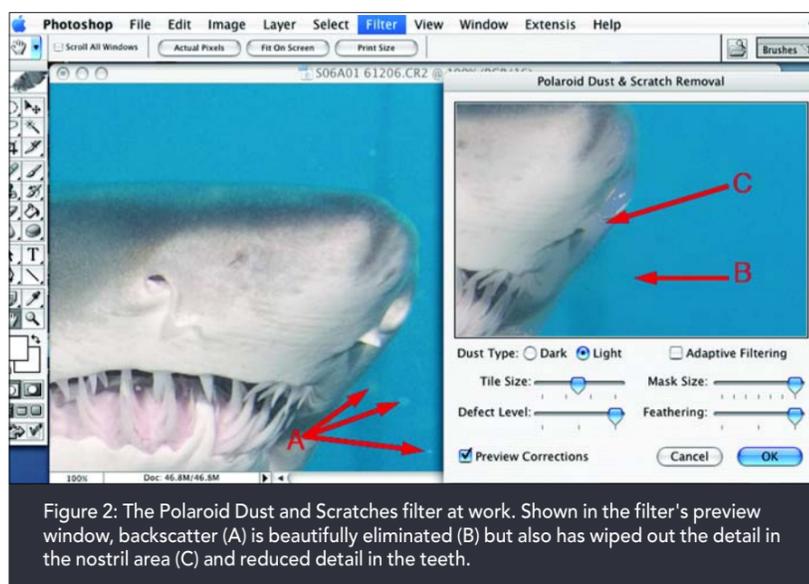


Figure 2: The Polaroid Dust and Scratches filter at work. Shown in the filter's preview window, backscatter (A) is beautifully eliminated (B) but also has wiped out the detail in the nostril area (C) and reduced detail in the teeth.

(square bracket keys) to make the brush larger or smaller. You can also use the Brushes palette to change the size, shape and softness of the brush. You can probably just use the default brush options but feel free to fiddle about to see what changes the hardness setting and size setting can provide.

On a Mac, hold down the Option key (when using Windows, hold down the Alt key) and, with your mouse, place the cursor over the area that you want to copy. The cursor will change to what looks like a rifle sight or cross hairs. Click to select the area. Release the Option key and move the mouse over to your bit of backscatter. Click to stamp the information across to cover your blemish. That's it. Simple. All things being equal, that bit of backscatter has now gone forever.

While the basic technique is simple, the art of using the Clone Stamp Tool takes a little longer to learn. If the area you have selected is different in colour, texture or density than the target area, you may find that the newly stamped piece of image stands out as being 'wrong'. For example, if your piece of backscatter is hovering in the open blue ocean then the area you need to select for your stamp will need to be the same colour and of the same tone or density. (Figure 1) Selecting a light bit of blue water and stamping it onto a dark area of blue water will leave you with a light blue circle that stands out worse than the original backscatter. You need to select an area that is identical in hue, saturation, colour, contrast and density. In short, a clean bit of what should be there. With blue water backgrounds you are almost certain to find an area in your image that matches perfectly. If not you can always open another image that does have a matching area, Option click on that then move back to your original image and Clone Stamp between image files. Nifty, huh?

A few years ago the first real addition to the Clone Stamp Tool

was revealed; the Healing Brush. Instead of copying an area the Healing Brush blends the selected area with the target area. The advantage is that you no longer have to worry so much about matching the exact colour, texture and density. The Healing Brush is almost 'magic' in its ability to remove backscatter and other imperfections. Where it fails is near abrupt changes in density. For example, if you are trying to remove a spot of backscatter in blue water and it is right next to a white or dark object, the Healing Brush will tend to smudge the transition area. In those circumstances it is best to briefly switch back to the Clone Stamp tool.

Bundled in with the Healing Brush Tool is the Patch Tool. This is effectively the same tool, intended to be used by selecting a large area and moving that across to 'heal' another large area or one with a particular shape.

Besides selecting an appropriate source area, probably the next thing that will cause issues is if the brush you are using is set to have too hard an edge. This is easily fixed by changing the hardness of the brush in the Brush Options pallet (Window>Brushes). In recent versions of Photoshop you will have to select the Brush Tip Shape item in the options palette before making changes. Then use the sliders to adjust the hardness of the brush edges. You can also change the size and shape of the brush. When using the Healing Brush you can access the brush adjustments on the left side of the strip below

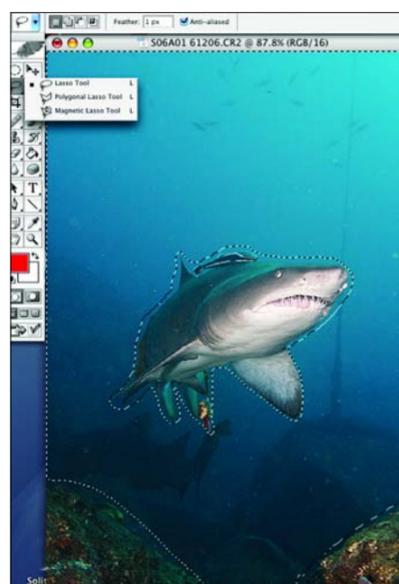


Figure 3: I have selected the entire canvas (Select-All). Using the basic Lasso Tool with the Option (Mac) or Alt (Windows) key, I have roughly traced around the shark thereby deselecting that part of the image. Repeated on the two pieces of reef at the bottom, the selection is now targeting the background only and will allow the Polaroid filter to work without damaging the light areas on the shark.

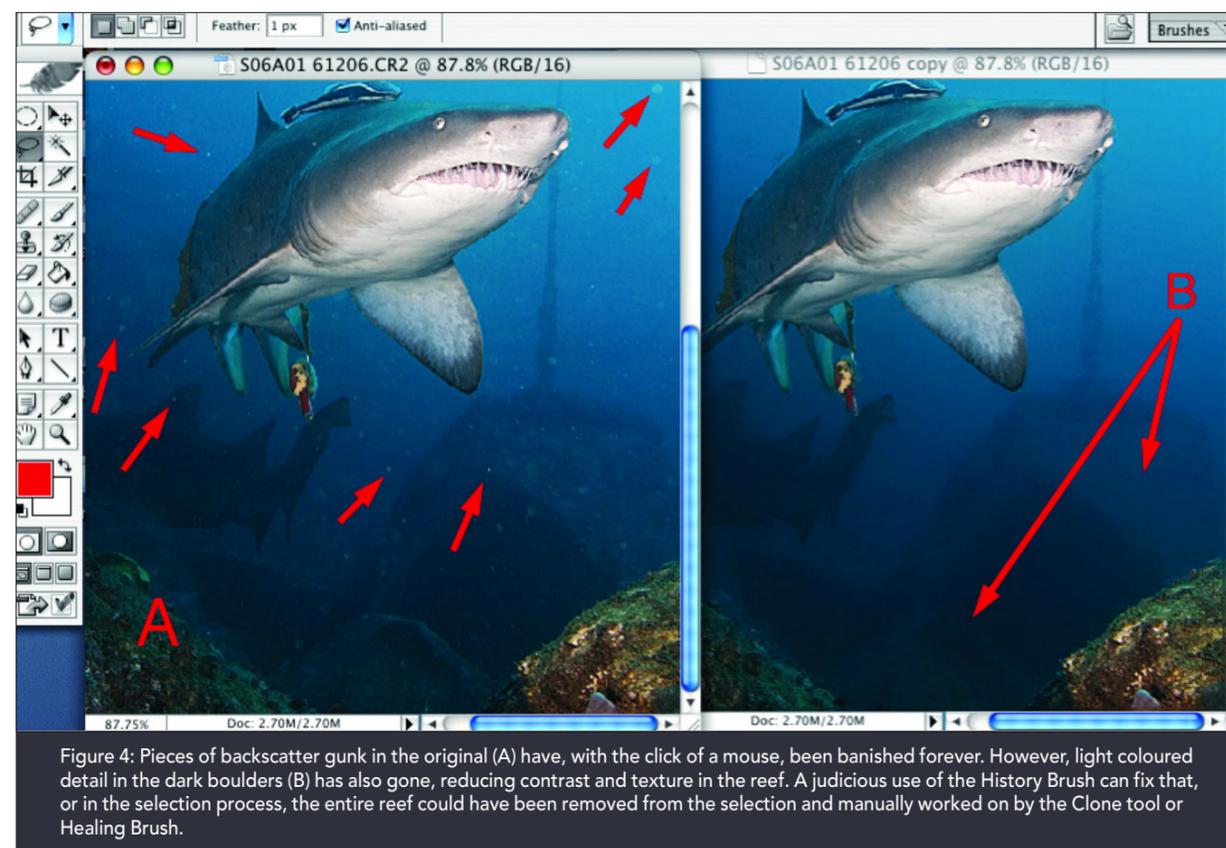


Figure 4: Pieces of backscatter gunk in the original (A) have, with the click of a mouse, been banished forever. However, light coloured detail in the dark boulders (B) has also gone, reducing contrast and texture in the reef. A judicious use of the History Brush or Healing Brush.

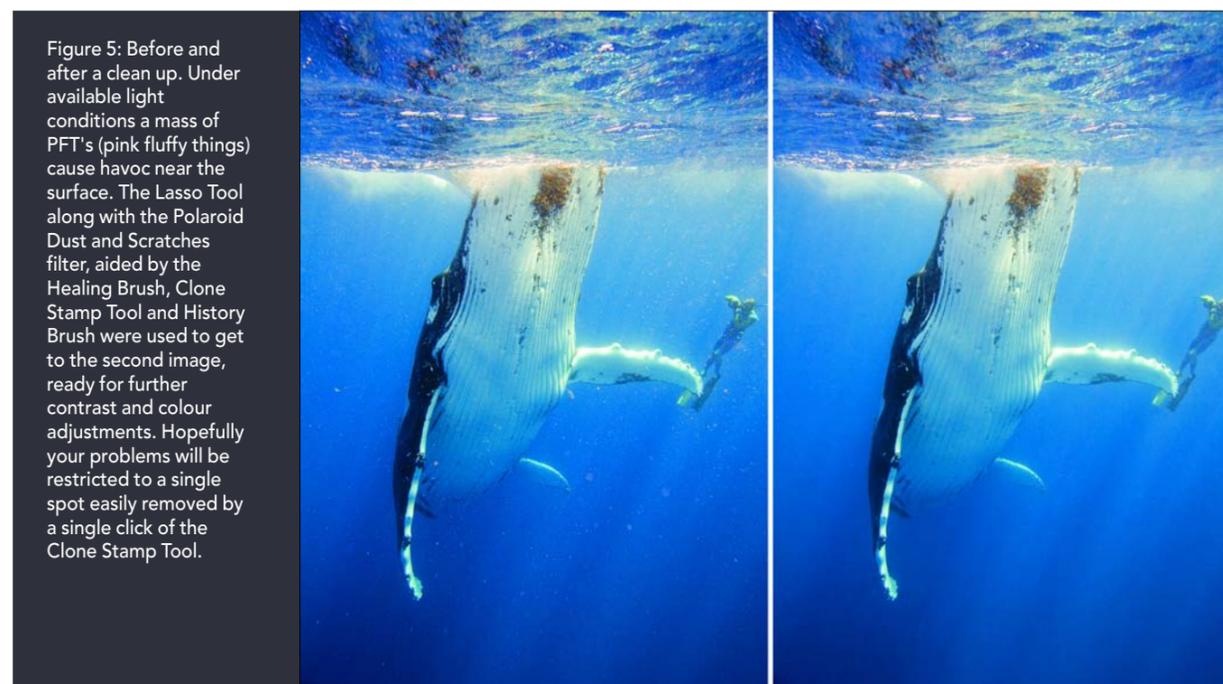


Figure 5: Before and after a clean up. Under available light conditions a mass of PFT's (pink fluffy things) cause havoc near the surface. The Lasso Tool along with the Polaroid Dust and Scratches filter, aided by the Healing Brush, Clone Stamp Tool and History Brush were used to get to the second image, ready for further contrast and colour adjustments. Hopefully your problems will be restricted to a single spot easily removed by a single click of the Clone Stamp Tool.

the main window menu. With a little practice you will soon be cleaning up your images with ease. Remember to do all spotting at 100% magnification.

Another way to clean up a lot of backscatter on a blue water background is to use the nifty Polaroid Dust and Scratches filter. This can be downloaded for free for either Mac or Windows systems. (See the side bar for the link) Put it in your Plugins folder in the Photoshop application folder then restart Photoshop to access the filter under the Filters menu item. The advantage of this plugin, besides the price, (there is a Photoshop Dust & Scratches filter under Filter>Noise but is not as flexible as the Polaroid filter) is that it will work on either dark or light coloured imperfections. (Figure 2) As with all 'magic', there are limitations. If you apply the filter to the entire image there will be light areas affected that you do not want touched, or dark areas if you are using it to remove dark spots such as, well, dust and scratches on a film scan. If the area you want untouched is small you can use the History brush to return small parts of the image back to a previous unfiltered state. If the area is large you can select the area you want to be affected by the filter, leaving everything else untouched. (Figure 3)

You do not have to be too fussy with borders and edges so just use the basic Lasso selection tool. With my shark image, suffering from backscatter due to bad viz and bad lighting, I selected the entire canvas (Command-A on the Mac, Control-A on Windows or Select>All) then, while holding down the Option key (Alt key on Windows) I roughly sketched an outline around the shark. This deselected that area, leaving me with the large blue water background and reef selected which I needed to work on. You will notice (Figure 3) that I also deselected the two bottom corners as the reef there

had light coloured areas that I did not want to change or lose. The result (Figure 4) is, well, magical. All of the backscatter (A) has gone leaving the shark untouched. Notice that a lot of detail has disappeared (B) in the dark background rocks. I could use the history brush to revert selected parts back to the original state. Or I could have removed the rocks from the initial selection and later manually cloning the backscatter from those areas.

You will soon gain experience which will tell you when to use the Clone Stamp Tool, the Healing Brush or the Dust and Scratches Filter. I have found that often I will use all three tools on one image file. (Figure 5) When a slide is scanned you will often find that dust is more evident in the top corners of the slide more than anywhere else. Of course this is often where a bit of blue water background is found so I may, if it is badly speckled with dust or gleefully abundant in light backscatter spots, quickly select the blue water areas with the Lasso tool (or the Magic Wand tool which is often not 'magic' at all but more suited to objects of a single solid colour) and apply the filter to the selection then, after deselecting (Command-D on Mac, Control-D on Windows) move around the image using the Healing Brush or Clone Stamp Tool to clean up any other imperfections.

The above acknowledges that in many instances there are areas of an image that need a particular form of adjustment (such as removing backscatter) but the adjustment is either irrelevant or harmful to other parts. Next issue will go beyond the basic Lasso tool to help you create selections to target particular areas for colour, density and other adjustments.

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