

GreenWater Magic

By Peter Rowlands

Before we start, let's get one thing out of the way and into the open. If you didn't already know, I am one half of Magic filters and a complete part of Underwater Photography magazine. The latter gives me control of what appears in the Magazine while the former has allowed me to play my part in producing filters which give exciting results in blue water. That's right, I'm biased but, I'd like to believe, honest so if you choose to believe that the following is propaganda, stop here and save your time.

If, however, you are interested in hearing about how green water photography underwater is about to get an amazing new tool to produce a completely different set of results and, to a certain extent, re-write the rule book, read on.

Having moved down to Devon in the southwest of England last March I dusted off my drysuit and had my tanks re-tested in readiness for a season of diving in the colder, greener waters we have around the UK coast. As a long time fan of filter photography in blue water with UR Pro and Magic filters I was curious to see if there was a way to apply the same successful formula to achieve

similar results in green water.

Traditional filter theory based on film emulsion dictates that a magenta filter can be used to counteract the green colour, magenta being the opposite colour to green. The strength of that filter would depend on the total light path from the surface down to the camera plus the camera to subject distance. Any filter will reduce the amount of light reaching the camera and add to this the low light levels so you already have a photographic challenge.

Fortunately film has been replaced with image sensors backed up by clever electronics and this combination is helping to improve the shots we can take underwater. The most important function is to be able to adjust the 'white balance'. This means fine tuning the colour of pictures to remove any strong cast such as the redness of a setting sun on land or the naturally strong cyan colour of clear water. Such control requires the digital camera to be able to 'manually white balance' (MWB) i.e. take a test shot of a scene which the camera then interprets how to restore to 'white light' rather than with a colour cast.

As a long time video shooter

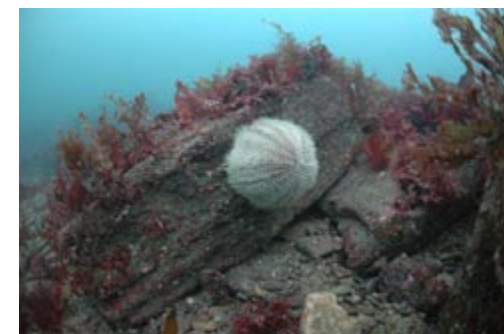
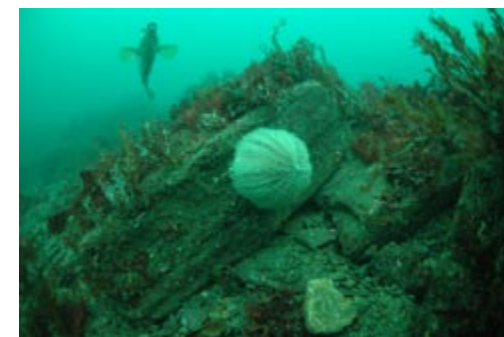


(Above) Filters affect colour throughout the frame and create more even lighting and an improved perception of clarity.

Subal Nikon D70, 10.5 lens, available light, 400asa, 1/10th @ F2.8. Depth 23 metres

(Right) The top shot is taken with a Magic filter and Auto White Balance and the bottom one with a filter and Manual White Balance. I know which one I prefer!

Subal Nikon D70, 10.5 lens, available light, 800asa, 1/25th @ F2.8. Depth 12 metres



underwater I was already aware of the capability of electronics to manually white balance and I eagerly awaited the arrival of digital stills cameras with the same function. Indeed if you check the back issues of UwP you will find that in UwP8, as far back as Aug/Sept 2002 I was extolling the virtues of this new found function.

So back in the UK I pestered Alex Mustard's younger and more flexible brain to come up with a green water version of his already successful blue water magic filter formula. A day or two later I received a clandestine call enquiring if I was alone and had I swept the room for bugs? Having reassured him on both counts he whispered "Try XXX with a bit YYY and a dash of ZZZ" and then he hung up. It was only then that I realised Alex had never volunteered to test the formula with me. Apparently he can only take photographs in water warmer than 25°C otherwise his trigger finger gets a teeney bit cold...

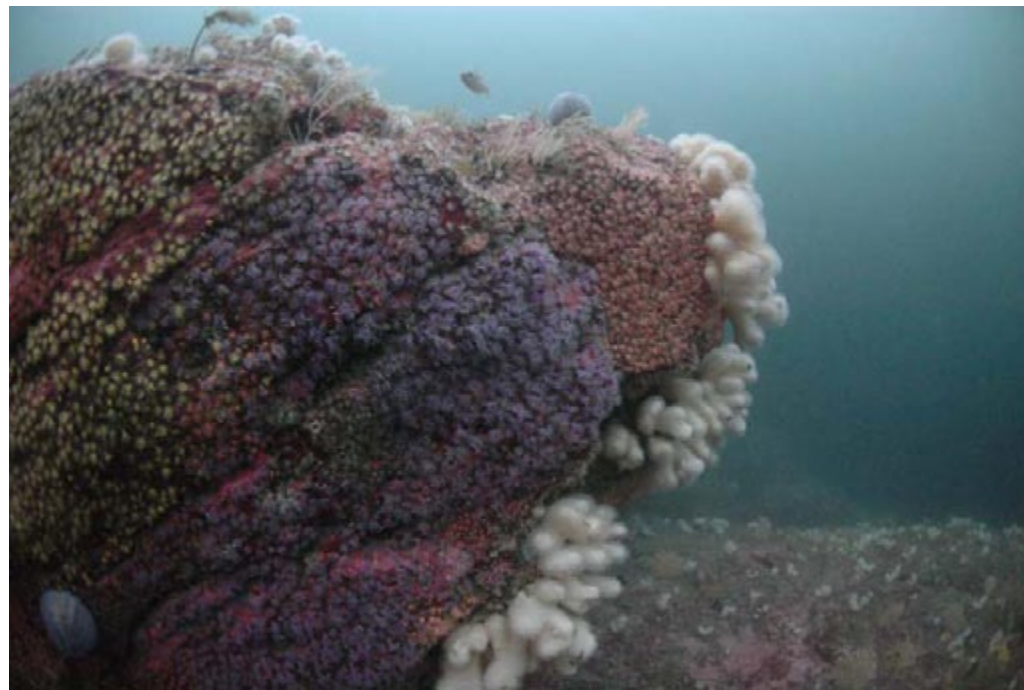
And so it was that I have spent the last six months testing several combinations in order to get what we feel is the right formula for the situation and I have to say that they have been probably the most exciting months of my underwater photography career ever.

Right from the start it was obvious that light levels would be low. This necessitated using maximum aperture (F2.8) all the time. Secondly

visibility would be limited and the only lens to use would be the 10.5mm full frame fisheye on my Nikon D70 in a Subal housing. Thirdly such low light levels, even at F2.8, resulted in slow shutter speeds which rarely went above 1/30th and were usually 1/15th or slower. Finally the depth of field at F2.8 is very limited so concentrating on subjects over a metre away would be beneficial. Fortunately we are not short of a wreck or two in Plymouth waters and these proved the ideal subjects as, as far as I am aware, they don't move much and usually have strategically placed wreckage to lean the camera on to steady it during a long exposure.

The early results were impressive and the immediacy of seeing the digital image was extremely exciting. I was like a Ferrari test driver. I thought I had the best day job in the world and the reactions of my fellow divers was 'Wow' whenever I showed them the results.

One particular dive did it for me. It was a flat calm morning in May when we rendezvoused at Sound Diving in Plymouth to get our tanks filled. It was 8am and owner Steve Carpenter was twiddling knobs and venting hoses. Suddenly he looked at a chart on his wall and then at his watch. "Hand Deeps" he said and went back to his tanks. Being new to the area I assumed this was some sort of veterinary term but it turns out



At 23 metres the subtle colour changes of these jewell anemonies together with background light would not have been as succesful if lit by strobes. Subal Nikon D70, 10.5 lens, available light, 400asa, 1/10th @ F2.8

there is a reef close to the Eddystone lighthouse by the same name. 20 minutes later we were there in Peter Mitchell's superb Boston Whaler 22' Outrage. Peter is the author of several books on wrecks in the Southwest and an inspirational diving enthusiast.

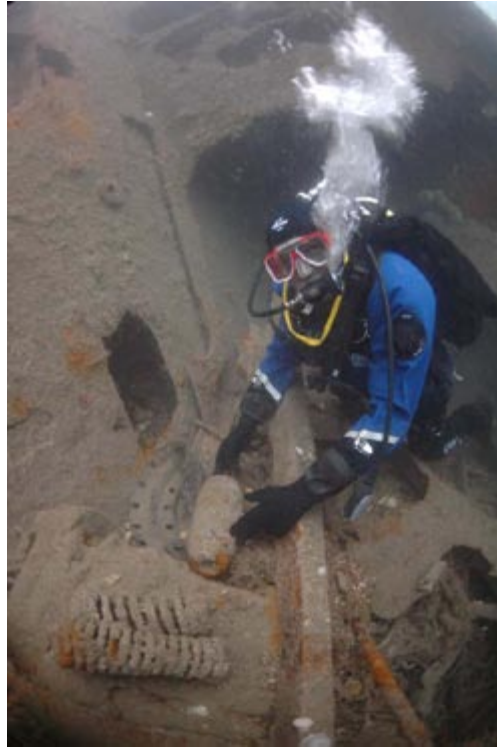
We dropped down to 23 metres – the deepest I had ever taken a GreenWater Magic filter. Despite the flat sea and bright sun, light levels were low but the water clarity was reasonable. I took a test shot for Manual White Balance (MWB) thinking it would be pointless - at this

depth there was hardly any colour at all to the naked eye. However I was pleasantly surprised when the camera replied "Good". This meant that it would be able to adjust the colours even at that depth.

The next 20 minutes remain etched in my photo brain. Hand Deeps is a series of gullies and drop offs with walls of jewel anemonies in a variety of colours. The traditional method to photograph them would be with electronic flash (strobe) to capture their colour and detail yet here I was armed with just a thin piece of



Wrecks are the ideal subject as they don't move about a lot. Subal Nikon D70, 10.5 lens, available light, 400asa, 1/30th @ F2.8. Depth 19 metres



Dive models need to keep still for sharp results at slow shutter speeds. Subal Nikon D70, 10.5 lens, available light, 400asa, 1/15th @ F2.8. Depth 18 metres



(Above) Magic filters also work well with compact cameras which have a Manual White Balance setting. Panasonic FX01, 200asa, 1/20th @ F2.8. 8 metres.

(Right) Magic filters enhance the natural fluorescence of some subjects. Subal Nikon D70, 10.5 lens, available light, 400asa, 1/15th @ F2.8. Depth 23 metres.



polyester behind the lens and a camera saying "Good". The light meter said 1/15th sec so I had to hold the camera steady. Fortunately with such a wide angle coverage of the 10.5mm it is not too difficult to get sharp results at this speed and slightly slower.

The first few shots were, quite frankly, amazing. I had never seen anything like it. Whole walls of anemones were captured not only showing the subtle change of colour

but also the background water as well. Traditional strobe lighting would have produced the colour but made the background dark or even black.

Back on land I emailed Peter Scoones, my mentor from way back, a few low res examples. Almost immediately my phone rang. "Where, what, why, how?" was the gist of our conversation. As far as I was concerned that was the final proof that we were onto something significant.

For the next few months I would email low res shots to all involved to gauge their reaction and, to a man, there was amazement.

From a photographic point of view the GreenWater Magic filter has revealed some interesting anomalies. The first, and one of the reasons the anemone shots are so colourful, is that fluorescence plays a significant

part, even in green waters. According to Dr Alex M (aka The Wimp, don't forget), filter photography highlights the natural fluorescence of marinelife. Technically speaking, fluorescence occurs when a subject emits light at a different wavelength to the light shining on it. Underwater green and blue light excites fluorescence in a variety of marine life from corals to algae, which emit orange, yellow, green and red light. Normally this light is hard to see because the fluorescence is swamped by the ambient light reflected by the subject. However, filters act as a barrier to the ambient light revealing this natural fluorescence. Practically speaking in green waters you may see algae appearing red and cup corals/ anemones fluorescing many colours.

The second anomaly is that there can be a difference between a RAW picture and a JPG of the same scene taken simultaneously so the camera is doing a significant amount of processing. Surprisingly we have not been able to exactly match the look of the JPG files using Adobe Camera Raw to adjust the RAW files. We attribute this difference to additional processing applied to the JPG files in the camera. We can match them using the fine control in Photoshop, and we expect that we could in the manufacturer's RAW converters and that all takes time so I always shoot RAW + JPG with the GreenWater.

In terms of the depth range of the filter I would say that anything between 5 and 25 metres should be OK with a DSLR in reasonable light levels. I haven't had enough time to shoot much with a compact camera but, on the couple of dives I have, I got good results down to 15 metres. I would imagine that these ranges may vary from camera manufacturer.

My work with GreenWater Magic filters is very much a work in progress. Not in terms of finalising the formula for that is now in production but in terms of the type of shots it can produce.

One of the pleasing aspects of being involved with Magic filters has been seeing the results others produce with them and I feel sure that the GreenWater Magic will, I hope, be no exception.

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