Small ads

SOLD! – Ikelite housing for a Canon 5D MKII

~~Ikelite housing for a Canon 5D MKII, Ikelite 8" dome port (no scratches) for a Canon fish eye lens, Ikelite ports Canon 17-40mm and a macro 100mm IS lens. I am based in Scarborough, U.K. £1100 ovnoroaminrobin@hotmail.com~~

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For sale – extrem'vision(up to 100 m!!) and video camera sony vx 2000

I'm selling a fantastic underwater housing extrem'vision(up to 100 m!!) and video camera sony vx 2000 in really good condition!!!coming with a pelican case!!!!The underwater housing is coming with :- 2 lenses (1 macro and 1 wide angle) - 1 red filter. - 2 set of o'rings - Sillicon for the o'rings. - Digital screen.The sony camera vx 2000 is coming with : - A set of batteries (2 large,i medium,1 small) - 5 new dv tapes. - 2 cleaning tapes.Extrem'vision is a French Brand known worlwide.it's strong,reliable and easyto repair if any problems....REALLY GOOD CONDITION!!!2000 euros!!!!!!fabien mouret

Email: maddox666@gmail.com [Ref:c147]

SOLD! – Subtronic Nova analog version no ttl converter

~~Subtronic Nova analog version no ttl converter~~

~~The strobe is 3 years old in good condition~~

~~All sockets in S6~~

~~800 €~~

~~Rudolf Sollböck~~

~~Ref C146~~

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For sale – Aquatica housing 5D, 8 inch dome, dome shade and canon 5D body

Aquatica housing 5D, 8 inch dome, dome shade and canon 5D body including 2 spare batteries and spare charger for sale £1600 + p&p.Housing:Aquatica 5D housing - good to 90m, 8" optical acrylic dome port – some minor scratches but not visible in photos, 8" dome shade / guard, for wide angle lenses, Spare O ringCameraCanon 5D, 3 Batteries, 2 Chargers, StrapAll for £1600+ p&p, will accept paypal, or cashPlease feel free to ask any questionThe equipment has not been used for a while but I have just upgraded to a canon 5D mark II package so have this for sale.I am based in London and if you wish to come round and have a look/examine the equipment prior to parting with your money we can arrange that.

Email: martin.abela@hotmail.co.uk [Ref:c145]

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Light Loss

by Rob Cuss

I volunteered to give a talk to my topside camera club entitled "Underwater Britain: A colourful place believe it or not..." My passion in underwater photography is showing the general public how wonderful the underwater world is in their own back yard and to let fellow divers know that you don't have to go to the Red Sea to see wonderful things underwater.

I talked to a few friends that had done similar talks and all seemed convinced that a short introduction on the challenges of underwater photography was necessary. I included a slide that had a comment on it that underwater photography in the UK is like photography in fog, another that light drops off quickly with depth and one that the red part of the spectrum quickly diminishes – all elementary facts. To make sure the talk was fit for the general public I ran through it with a topside photographer friend and was somewhat taken aback when challenged on the facts stated above "how quickly does light drop off? How much red disappears?" I couldn't quantify it and had to resort to the teacher's favourite of "I don't know, so I'll find out for you."

I went away and thought a quick Google search would come up with the required info, but it didn't; not just for the green water world, but not much to speak of for blue water. At this point I should point out that my day job is research science, so I'd have to devise an experiment and get the results myself.

My methodology was simple and I'm sure some would argue was flawed. I sacrificed the start of a dive I was doing at the inland dive site at Stoney Cove, UK, by descending a shot line from the surface to a depth of approximately 20 metres. I set my camera (Nikon D80, Tokina 10-17mm in an Ikelite housing) to "P" mode at ISO200 and continually took pictures of my arm, wrist slate and computer at regular intervals along the shot line. I was careful that the shot was similar each time and that the camera to arm length was consistent and the camera was always pointing horizontally. Fortunately the weather conditions on the day were consistent and I am confident that the topside light levels did not alter during the quick 5 minute experiment.

The camera was acting as a light metre and I could get the shutter speed (S) and aperture (A) from the EXIF file data, whilst the photo of my computer gave me the depth. Little

Nikon D80, Ikelite housing, Tokina 10-17mm at 10mm. ISO 400 1/8th sec @ F3.5

(Above) Stoney Cove, UK

(Right) My left arm.

had I appreciated how slow the shutter speed would get and several of the 15 images I took were very blurred, but I could just about read my computer depth reading. I also got the histogram information for red, green & blue (RGB) and shade to be able to see the loss of colour.

Taking the S and A values the Exposure Value (EV) of each photo is calculated as:

$$EV = \log_2\left(\frac{A^2}{S}\right)$$

and

$$EV_{relative} = EV_{surface} - EV_{depth}$$

The day was quite sunny and at the surface EV had a value of 14. As you can see from Figure 3, I took my first photo at about 6 metres depth and already 5 stops of light had been lost! Let's put that into context, if conditions at the surface are giving shutter speeds of 1/250th second, at 5 metres depth shutter speed would have reduced to 1/8th second; and camera shake would be a problem.

By 20 metres depth nearly 10 stops of light have been lost and in anybody's book that is a big drop in light. The data also suggest that light is dropping off about a stop every 3.4 metres (11 feet), which really puts into context how stunning the work of the deep wreck photographers is in such low levels of light. Ordinarily we'd switch our strobes on, but there are times when that solution isn't going to be the best option.

When I did this little experiment I thought it would be pretty useless information, but I've since started to use it to help newcomers. Many divers in the UK start out with housed compacts and take them to beautiful sunny climes, then bring them back to the darker temperate waters of the UK and wonder why they can't get good results, most often through blurring. I simply ask them to take a photo at the surface and see what the ISO, S and A readings are for their cameras, we then go through the numbers and try and take off 10 stops and it then sinks in that this is getting into difficult territory and that hand-held natural light photography is very tricky; "So that is why my shots are getting blurred!"

Figure 1 shows the results from the loss of colour. The loss of colour with depth is simply a plot of the average values from the histogram (data from Figure 2). Although I know it is obvious, I was still surprised that 80% of red had disappeared by 5 metres depth. I think the confusion in my own mind has always come from the teachings that ALL red disappears. I remember a long debate on a trip to the Ras Mohammed National Park in the Egyptian Red Sea where there are red anemones at 20 metres depth. So if I've been taught that all the red has gone, why can I still see red at that depth? My drysuit also has red arms and I can clearly see the red at 35 metres depth on a wreck in Scapa Flow. Our eyes and brains must be powerful at processing this spectrum change and it will be some time before camera sensors can resolve these low levels of red.

The data also confirm something that is obvious to us in the UK. By 20 metres we've only lost 20% of the green, whereas we've lost 80% of blue and almost 100% of red, giving us the beautiful emerald greens we see in temperate waters. I often make my monochrome photos taken at depth from the green spectrum and this shows why that gives the least noise. I had always put this down to the fact that there are twice as many green pixels than

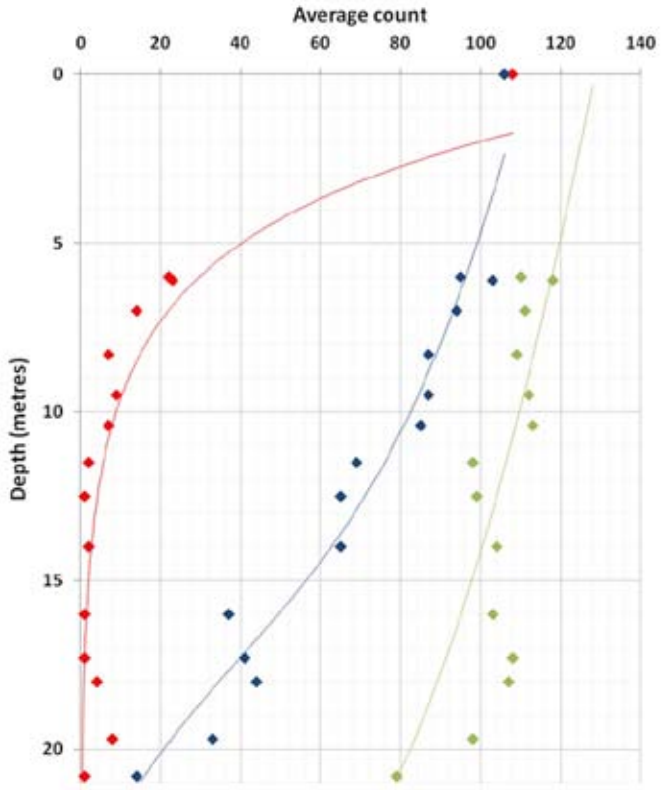


Figure 1

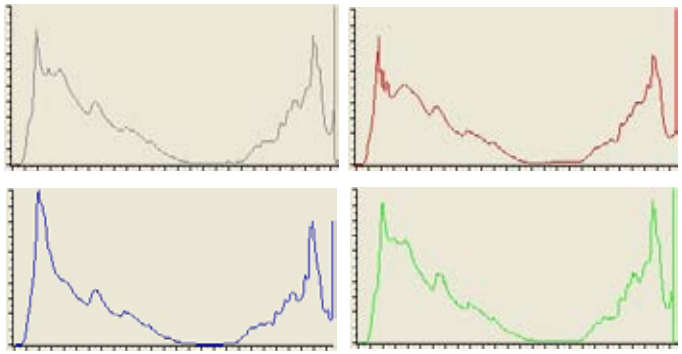
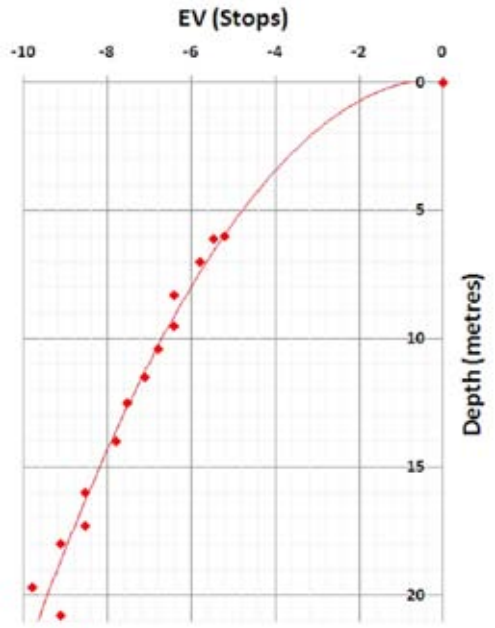


Figure 2



red or blue in the Bayer pattern used by most digital cameras sensors. The blue end of the spectrum should also be the one that is last to be absorbed, but the phytoplankton in the water results in the blue wavelengths of light reducing.

So is this information actually any use? I have already used it in explaining concepts to newcomers to underwater photography and they seem to have understood what I was saying. I've also used it to gauge what sort of photography I can achieve on a given day. I enjoy the liberating feel of natural light photography from time to time and for wreck photography it can often be the only available technique to get the shot you want.

Taking a photo on the day to see what the light level is topside means I can now see if loosing 10 stops of light is something I can live with and on those cloudy over-cast days it helps to make the mind up and switch to macro if close-focus wide-angle isn't possible.

So are we fighting a losing battle with physics? Absolutely not! The wreck and pike shots are natural light shots taken in Stoney Cove at different depths. Pike tend to stay shallow and in about 5 metres of light the loss in red can easily be restored to give pleasing natural light photos. At depths of 20 metres (wreck shot) photos in Stoney Cove appear green, but with careful manual white balance or post-processing from RAW files, the blue and red can be restored to the images. Although not immediately obvious in this photo, the red on my buddy's wing is visible even at 20 metres.

The same physics is also going to be at play in balanced light photography, only we add artificial light to illuminate our foreground, whilst the background lacks red. I find that my close-focus wide angle photos are a lot easier to white balance in post processing when at shallow depths, as it can be difficult to balance the full colour spectrum in the foreground with a restricted background spectrum.

I make few apologies if this article is too technical. I hope the information in it is useful to at least one other person. I should note that the result is dependent on water turbidity and that different locations may give different rates of light drop-off. Maybe someone could do a similar experiment in the blue water of the tropics to see if it is similar. I can now explain underwater light levels in a quantitative way that has become second nature to us where previously it was only described in a qualitative manner.

Dr Rob Cuss

Dr Rob Cuss is a keen underwater photographer and founder of the East Midlands Underwater Photographers.

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