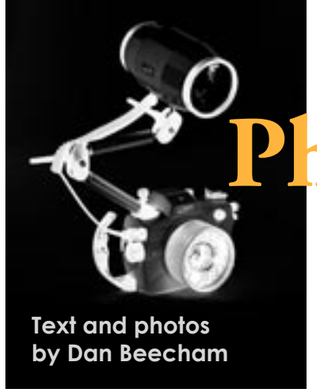


Photography

Text and photos
by Dan Beecham

Digital Underwater Photography: Part One

Digital camera and i-Pod. i-Pods may be used as data-medium to store images. i-Pods come in various models with up to 40Gb of storage

In the past few years underwater photography has been transformed by new technologies and new ideas. It's not only the equipment and techniques that have changed. The way we store and view our photographs has also been revolutionized. This has made underwater photography more popular than ever.

Cameras are everywhere nowadays — on our computers on our phones. In fact, most people have a digital camera of some sort with them at all times. The same is now true for many divers. Entry-level cameras are now so cheap, compact and effective, that they can be carried on every dive — slipped into a BCD pocket for a quick snapshot if the opportunity presents itself. Most divers now enjoy early success with their photography. Whereas, in the past, entry level film cameras took a lot of time and attention to get pleasing results.

Things have also changed in professional level equipment. There are housings available for the top of the line Canon and Nikon digital SLR's, and nearly all professional underwater photographers have now made the switch to digital, this is allowing them to produce new and exciting images which have never been achieved before.

ABOVE: Film vs image card

In this issue, we're going to look at the advantages and disadvantages of digital, and in the future we're going to tackle many different aspects in detail, including specific types of cameras, techniques, lighting, digital enhancement/manipulation, storage of images, and maintenance of cameras. We'll also be looking at diving equipment, locations and resorts that are set up to cater for the needs of the underwater photographer.

Many of the advantages and disadvantages of digital underwater photography are the same as those on land, but it's worth looking at how they affect us as divers.

LCD

The LCD on a digital camera allows you to review images and navigate the camera menus. On a compact camera, this is also used for composing the picture. On a digital SLR (Single Lens Reflex), the screen cannot be used for composition. The camera viewfinder must do instead.

When used as a viewfinder, the LCD screen provides a large, bright, clear viewfinder. This is a very important feature in an underwater camera. When using the LCD, you can hold the camera at arms length, and still clearly see the screen. This feature can be handy when trying to shoot shy critters, which may not like you and your bubbles getting too close.

Previously, on entry level cameras, the viewfinders were very poor. You also had to battle parallax (the difference between the image seen in the viewfinder and the image which is actually recorded by the camera). With an LCD you see exactly what the camera is going to record, and you can see the image after it's been taken. This means you learn on the dive, and this is what has allowed people to get underwater pictures they are happy with much sooner than they would with a film camera.

Sizes: Digital camera and house compared to a UK passport

Another great thing about compact cameras is that you can start off using a camera and housing on its own, and when you want to push your photography forward and explore new areas, you can add on accessories. These include ancillary wide angle and close up lenses, external flash units and colour corrective filters. This allows you to spread your costs over time, and get to grips with using one piece of equipment before moving onto using something else.

Number of Exposures

In the days of film, if you wanted to take more than 36 pictures on a dive, you had to carry two cameras. Only having 36 exposures often stopped you taking risks or trying new techniques or ideas — every shot had to count. Nowadays, by using a large media card, you can take hundreds, or (if you really try) thousands of pictures on a dive. You can just shoot, shoot, shoot — and if you fill up your memory card, you can start deleting the shots you don't want and shoot some more.

Costs

The start up costs with most entry level systems is extremely low, a compact camera and housing may set you back £500 (USD 916) or less. This on its own will offer you tremendous flexibility. At the other end of the scale, the costs can be astronomical. Some manufacturers now produce housings for top-of-the-line DSLR's such as the Canon EOS D1s Mk II, or Nikon D2X. These cameras are the tools of professionals, costing many thousands of pounds. Housing systems often cost as much or even more than the camera.

Compared to film however, the running costs are much lower.

Let's say you're planning a trip to the Red Sea, shooting film. You're going to be doing three dives a day for five days. This means you could get through fifteen rolls at a total cost of as much as £70 (USD 128) for a high quality film. Processing at a reliable lab can cost as much as £5 (USD 9) a roll, that's another £70 (USD 128) or more. If you're using slide film, you now need to pay out for scanning of images if you want to view them on your computer, and the cost of prints if you want pictures to keep in an album or on display in your home.

Now consider that with digital you

could be taking many more pictures per dive, and you would be seeing straight away what you were getting. You could then save the pictures you're pleased with, and even print them out on a home printer. Your only cost for the whole process would be that of paper and ink for your printer.

Adjustable ISO

Traditional film is available in many different sensitivities, or ISO's. Higher ISO's produce a lower quality image, where the grain of the film is often visible at very high levels. A picture taken using a film with a lower ISO yields much higher quality, but you need more light to expose the picture properly. This means you could start the dive using a film such as 100 ISO, but when you get under water you may find out that it's too dark, and that you should have used 400 ISO instead.

On a digital camera, you can change the camera sensitivity on the dive to suit the light levels at the time.

Size and Weight

Entry level compact cameras are so small and light that they can be carried at all times. This is beneficial not only whilst diving, but also when travelling. Many underwater photographers have difficulties transporting their heavy and bulky equipment to a destination. This can still be an issue when using an SLR. The size and weight generally remains the same using a compact, however you can slip a whole system into your rucksac and carry it with you on the plane.

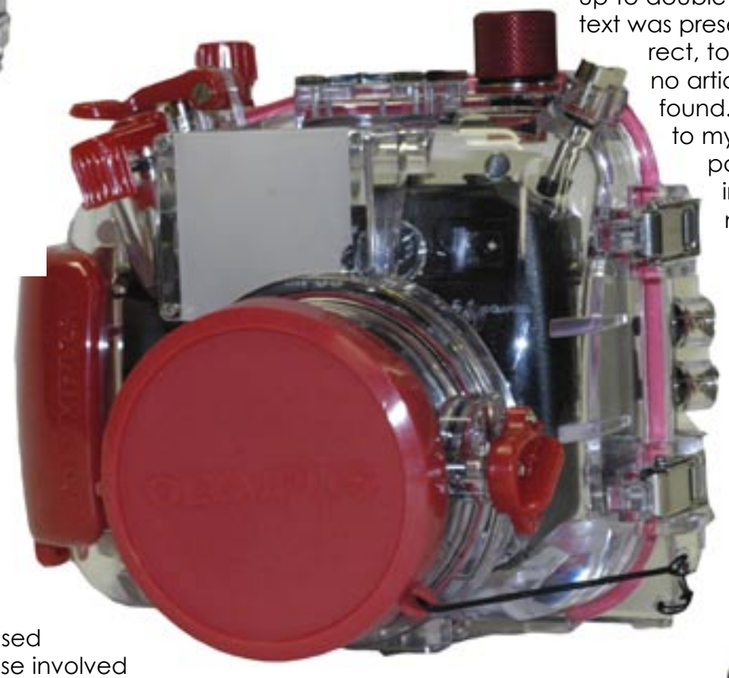
Disadvantages

They're few and far between, but digital photography does have a few disadvantages.

Sometimes digital cameras do not handle strong areas of contrast very well. As an example in an image of a diver with the sun in the background, the sun will not be as crisp and defined as it would have been when using film.

Another problem, which is present only in compact cameras, is *shutter lag*. This is a small delay between pressing the shutter release button, and the camera actually taking the picture. This happens because the camera's on board computer takes time to adjust its settings, achieve focus and record the new image.

When you first use a camera with shutter lag, it can be very distracting, especially if you're used to the instant shutter release on an SLR. If the camera is very slow, it can stop you getting the picture you wanted, especially if you are photographing fast moving subjects such as dolphins or sharks. However, for the majority of subjects, shutter lag is not an issue — take wrecks as an example. There are ways to reduce shutter lag, but if you choose to use a compact camera, expect shutter lag. When using a Digital SLR, the only delay you have is that of the camera's autofocus locking onto the subject, and so is generally unoticeable. The obvious down side to this is the greatly increased expense involved with getting an SLR under the water.



When using many digital cameras, or when using RAW settings on your camera, the images that come off the card and are transferred onto your computer need to be adjusted to get the best possible result. This requires knowledge of software such as Adobe Photoshop, and can often be time consuming. If you do not put the time in on the computer to get the best of your images, you may find your pictures look flat, or the colours may not be as vibrant as you would like.

Reliability

One final point which needs to be made about the disadvantages of digital cameras is something that we are all too familiar with: computers can be unreliable. When I was getting ready to send off the final draft of this article to the editor, I transferred the file on a portable hard drive to broadband over from my work computer. When I tried to open it up to double check the text was present and correct, to my horror, no article could be found. I went back to my laptop, with panic creeping in — the original file was no where to be found.

After some frantic searching, I managed to dig up the article buried deep in my hard drive. I don't know why the file went missing, and I don't know why it didn't transfer properly. I do know, however, that sometimes computers are simply out to ruin my day. I'm blessed with the dolcid tone of my Mac restarting a few times every day. Just remember this, if you've got a picture that's important to you, BACK IT UP!

When you consider all the features that digital offers you over film, the few disadvantages seem insignificant. The trick is to use digital cameras where they are most effective, rather than attempting to replicate pictures where film would outperform.

Digital is here to stay, and day-to-day we're discovering just how much these cameras are capable of. These are exciting times to be an underwater photographer. In the next issue, we'll look at specific types and models of cameras, from Entry Level compacts up to Professional level DSLR's. We'll also look at the housing systems available for these cameras, and find out which one is right for you. ■

*Dan Beecham of **Ocean Optics** in the UK won the Our World Underwater Young Photographer prize at the 31st Annual World Festival of Underwater Pictures in Antibes, France, 2004*

LEFT TO RIGHT: Olympus 5060 camera with underwater housing and lens, Olympus 5060 camera with underwater housing, Olympus 5060 camera body