

Off-Camera Strobes

By Alex Mustard

“Today creative daring is no longer an act of courage but a basic requirement if you want your work to be noticed and your stories heard.” These are not my words, but come from nature photographer, Niall Benvie’s excellent new book *Outdoor Photography Masterclass*. There is not a single word on underwater photography in it, but if you want your creative juices stimulated, it is a highly recommended read. Niall’s observation is that with the world awash with quality images, a great subject and technical excellence is no longer enough to be outstanding. Creativity in photography is more important than ever.

Off-camera strobes are not new in underwater photography, but their use has generally been kept out of the mainstream, and they offer significant potential for injecting our pictures with some of that illusive creative flare. The main use of off-camera strobes is in cave photography and one of the undoubted masters was Wes Skiles, who sadly died in July. His article on the caves of the Bahamas in *National Geographic* earlier this year is a must see source of inspiration.

But while this technique is

widespread in cave photography it is not widely used in normal underwater photography. You would be hard pressed to find information on how to do it in any books, magazines or websites. The aim of this article is to describe the whys, wheres, hows and kit for off-camera strobe photography underwater.

Why? Off-camera strobes certainly endow our photos with an innovative sparkle, creating lighting effects that just can’t be replicated with Photoshop skills. But more importantly they provide several useful lighting solutions. In low visibility conditions, off-camera strobes can provide illumination free from backscatter, since the overlap between the strobe and lens is very small. The technique can also boost contrast, particularly for more distant subjects in the frame. Although David Doubilet has tended to use powerful HID continuous light sources, rather than strobes, many of his celebrated images are perfect examples of how off camera lighting can help more distant subjects contribute to an image, creating depth in the picture.

But perhaps the greatest benefit of off-camera strobes is the mood



(Above) Off-camera strobes can add great depth to images. Nikon D700 + Nikon 16mm FE. Subal housing, Subal FE2 dome. 1/15th @ f/9. ISO 800. Single Subtronic Alpha on camera (minimum power), off-camera Subtronic Alpha on stairs on right (high power).

(Right) This is my typical strobe set up for off-camera strobe photos. I actually have two identical set ups because, when possible, I like to use two off camera strobes. The strobe is mounted on gorillapod so it can be positioned and aimed precisely. It is triggered with the negatively buoyant slave sensor at the end of non-coiled cable. A snoot is fitted here, but I wouldn’t usually use one.



that this style of lighting gives to images. Most underwater images require strobes and these inevitably light the front of the image. When we get the strobes away from the camera, suddenly we are able to add light in different ways, for example placing the subject in the middle-ground of the image, framed with a dark foreground. I have found this lighting style is particularly suitable for capturing the atmosphere of wreck interiors and reef caverns.

Kit? There are several solutions for firing off-camera strobes, but first we need to accurately position the strobes. I have found Gorillapods ideal. These plastic, flexible tripods make it much more straightforward to position and aim the strobes. They are more stable if a small diving weight is hung between the legs. I screw an Ultra Light ball to the top, so I can mount the strobe with a standard clamp. At a push you can try off camera strobes by just resting your strobe on the ground, but this is very limiting.

An alternative, which is commonly used in cave diving, is to mount the strobe on the far side of the model, attached to their cylinder, so that the light shines on whatever they are swimming in front of, leaving them as a silhouette against it. This can be particularly effective in large enclosed areas, such as the hold of a



This is my slave sensor. The key design features are unaffected by ambient light, negative buoyancy, uncoiled cable and synch socket for plugging strobe cable.

wreck or a cavern.

There are several ways to fire an off-camera strobe. Long synch cables (electrical or optical) are the most reliable, but can be very troublesome to manage underwater. There are certain underwater forums where you are chastised for even having the snag hazard of an un-needed D-ring on your BC, they'd go apoplectic if you mentioned penetrating wrecks with 20 m of coiled cables clipped to you! It is also almost impossible to keep them hidden in the shots, so you will have to Photoshop them away.

The alternative is using a slave sensor. Most strobes have built in slave sensors, which trigger your strobe when they detect another strobe flashing. However, underwater this means that the off-camera strobe needs to be in line of sight (there are no handy white walls to bounce light off). This can be OK for backlighting,



Off-camera strobes are very useful for lighting wide angle shots in low visibility conditions. Note that the diver's fins are disappearing into the murk, yet there is no backscatter. Nikon D700 + Nikon 16mm FE. Subal housing, Subal FE2 dome. 1/25th @ f/13. ISO 800. Single Inon Z240 on camera (minimum power), 2 x Subtronic Alphas on left, behind partition (high power).

but in most instances we want to hide the off-camera light, so that the source of the light is not revealed and there is no hotspot in the image competing with the main subject for attention.

The solution is an independent slave sensor, which can be placed away from the strobe, so that the strobe can be hidden from view. Ideally we want to attach it to the strobe with an uncoiled synch cable because coiled synch cables are very short, when unsecured at one end! A couple of commercial sensors exist. Ikelite make the EV Controller, which is excellent, but it is only compatible with their strobes. Heinrichs-Weikamp make the RSU, which works very well in dark caves, but I found was very unreliable for triggering in normal underwater light conditions unless additional shading was added around the sensor. This led me to design my own unit, shown in the pictures. The key design features are a slave sensor that works in bright daylight, housed in a negatively buoyant case, with a straight cable, with a Nikonos plug at the end (to plug into the strobes synch cord). A few friends of mine have this too now, but for the record I have no plans to make this commercially available.

It is also worth mentioning that infrared strobe triggers, which are widely used on land, will not work underwater, because infrared light is



A more subtle use of off-camera strobes, illuminating the cab of this truck inside the Thistlegorm wreck, balanced with front lighting. Nikon D700 + Nikon 16mm FE. Subal housing, Subal FE2 dome. 6/10th @ f/13. ISO 400. Single Subtronic Alpha on camera (medium power), off-camera Subtronic Alpha at bottom of the frame (medium power).

absorbed very quickly underwater.

How? Setting up off-camera strobe shots is time and attention consuming. It is best to attempt them for the first time in shallow, benign conditions on a dive site you know



Off-camera strobes create a unique lighting ambience in photos, well suited to caverns, gullies, walls and wreck interiors. Nikon D700 + Sigma 15mm FE. Subal housing, Subal FE2 dome. 1/30th @ f/13. ISO 400. Single Subtronic Alpha on camera (minimum power), off-camera Subtronic Alpha behind rock in foreground (high power).

well. On land, if you wanted to place a strobe behind the chair opposite you, you would get up, walk round the chair, place the strobe and walk back. If you think about it, underwater, this becomes a much lengthier operation.



A straight strobe can be used for some off-camera strobe shots, but building the right kit will make all the difference for most images. Nikon D2X + Tokina 10-17mm. Subal housing, Subal FE2 dome. 1/90th @ f/11. ISO 100. Single Subtronic Alpha on camera (minimum power), off-camera Subtronic Alpha behind crinoid (high power).

And that is before you have to return to the strobe because the tripod has fallen over, or the strobe power is wrong or the light needs re-aiming. Or all three. Before waiting for the dust to settle.



Most of my off-camera strobe images follow this format. The dark foreground creates atmosphere around the pillar drill inside the wreck. A large object (Peter Rowlands) balances the composition on the right. Nikon D700 + Nikon 16mm FE. Subal housing, Subal FE2 dome. 1/8th @ f/10. ISO 400. Single Subtronic Alpha on camera (minimum power), off-camera Subtronic Alpha at bottom of the frame (high power).

Off-camera strobe shots generally require manual exposures, because of the complex lighting set up. If we are using slave sensors, we typically want the on camera strobe (the trigger) on minimum power and the off-camera strobe (or strobes) on high power. This difference in strobe power ensures we do not see the trigger strobe's light in the image. We then expose for the off camera

strobe (with the aperture) and the ambient light (with the shutter speed). We can then turn up the power of the trigger strobe, if desired, to provide foreground lighting.

It may sound complex, but once dialled in, the exposures are consistent. During my photo workshop in the Cayman Islands, back in January, I set up off camera strobe shots for the group to shoot, with one

of the dive staff modelling. I set the shot up in a coral cavern on one dive and left the strobes down until the next dive, set up for an exposure of f/8 at ISO 100 or f/11 at ISO 200.

What? Perhaps the biggest challenge with off-camera strobes is recognising what will make a suitable shot. Only certain subjects tend to be suitable and I have found caverns and wreck interiors work best. Trying to force these techniques onto the wrong subject matter is a lesson in frustration. Most of the images fall into three categories: 1) backlighting, 2) front lighting the subject, with a dark foreground, 3) selective lighting a feature.

Backlighting is effective on subjects that are fibrous, hairy or translucent, such as soft corals, crinoids, sea fans etc. The technique can transform the ordinary into an extraordinary image. The key is to make certain that the strobe is entirely hidden behind the subject. Any direct light spilling past the subject will dominate the image, overpowering the subject. Backlighting can be particularly effective in low visibility conditions, and can help a background subject stand out in the murk. In these conditions we may also get pleasing light rays appearing around the subject. Also remember to turn the strobe down to a lower power for this type of shot. Because it is firing

directly at the lens, you don't need lots of light. Backlighting can produce striking images, but it should not be overused, as these images quickly become samey.

Most of my off-camera strobe work involves lighting a subject inside a wreck or cave, with a dark foreground. These images have fantastic atmosphere. The trick is to find an interesting subject, in which, between you and it, is somewhere to hide the off-camera strobe or strobes. Generally, we will take these images with fisheye lenses, and this means that the strobe will only cover a small portion of the frame because it is much closer to the subject than the camera. Therefore we should always use the widest flash we have as the off-camera strobe. This is also why it is important to be able to accurately aim our strobe from a stable tripod. In addition, we have to think carefully about the composition, with only a small part of the frame lit. Ideally, we want some ambient light somewhere in the background too, to give the image depth, even if we need a long exposure to get it.

The third type of image is where the off-camera lighting is highlighting a feature in the frame, giving the image an additional focal point and more depth. The illuminated car interiors are this type of image. The foreground may be lit with strobe,



Off-camera strobes can be used to illuminate features of interest in an image. Nikon D700 + Sigma 15mm FE. Subal housing, Subal FE2 dome. 1/13th @ f/16. ISO 400. Single Inon Z240 on camera (minimum power), 2 x Subtronic Alphas inside beetle (high power).

or exposed for the ambient light to reveal detail. These images tend to be quite contrived, unless the effect is used subtly, and again should not be overused.

In summary, off-camera lighting is more of a challenge than standard techniques, but this means that if we can make it work, our images will stand out from the crowd. As is often the case with creativity driven by technical innovation, when we first

experiment with a technique we want to produce images that show off the technique, while over time we start to use the technique more subtly.

I feel that I am still very much on the learning curve with these images, but that is what makes it such an exciting technique.

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