



ALL PHOTOS AARON GEKOSKI

Underwater world

What's the appeal of taking pictures of aquatic creatures? Aaron Gekoski tells us why he's hooked on underwater photography and offers tips for budding scuba diving snappers who want to take their EOS cameras below the surface.

"Breathing underwater just isn't natural." This is often what people say when I tell them what I do for a living – photographing and writing about marine animals. Diving's not everyone's cup of tea. After all, we're not built to be 'down there'.

The ocean is an alien environment full of knowns, unknowns, and not-sure-I-want-to-knows. There are gelatinous objects that sting, schools of toothy predators, and mammals larger than buses. The sea itself is unpredictable, sometimes murky, and makes us throw up. No wonder some people don't see the attraction.

However, the marine world – while a little unfamiliar and occasionally scary – can also provide us with thrilling experiences. I've been lucky enough to dive with humpback whales and their calves in Zanzibar, prehistoric cow sharks in Cape Town's kelp forests, bizarre mouthbrooding cichlids in Malawi, and feed killer whales and bull sharks in Mozambique, and manta rays in Madagascar.

But it's not all about the big things. Elsewhere on kaleidoscopic reefs, shrimps clean eels' teeth, turtles chomp jellyfish, clownfish ferociously defend their lairs, and rays nestle on the seabed.

Above Diver with clownfish. *EOS 7D, EF-S 10-22mm f3.5-4.5 USM lens, 1/200 second at f9, ISO 160.*

Paraphernalia

A surprising amount of paraphernalia is required to take your precious DSLR under the waves. Along with the housing, you may also require specialist lenses and individual dome ports to accommodate them, Pelican cases to protect your gear, flashguns, and more accessories than you'd believe. It's not a cheap hobby.

No easy task

Capturing these scenes is one colossal, unrelenting challenge (remember, we're not meant to be down there). Consider all the decisions a photographer has to make on land. Then factor in buoyancy, diminishing air supplies, the delicate coral beds below you, water currents and other flailing divers. And then there's your subject – often scarpering at the merest whiff of a bubble-breathing interloper.

As you hover above the fragile reef you have a nanosecond to consider your artistic options and camera settings before your photo opportunity is gone. And by the time you've made up your mind your subject has hidden under a rock or bolted towards the deep blue.

While underwater photography is undoubtedly a demanding discipline it can also be hugely rewarding and a lot of fun. It's best to be well-informed before you set out though – there are some fundamental 'rules' that apply to all new shooters, a bewildering array of equipment to choose from and a few creative techniques that will help you take eye-catching pictures.

The gear

To shoot underwater you have two choices:

- 1) use a dedicated underwater housing that has been designed around your camera.
- 2) use a camera and housing system designed specifically for use underwater.

It's unlikely that newcomers will want to submerge their sparkling EOS, so I recommend kicking off your underwater love affair with a compact camera. While it won't look as impressive as an SLR replete with dome ports and flash, it's possible to achieve excellent results with cheaper, less elaborate systems.

Compact cameras

Cameras Underwater (www.camerasunderwater.com), one of the UK's leading distributors in the

field, recommends the Canon PowerShot S120. "It's small and very easy to use, yet still takes excellent quality shots," says Managing Director, Jenny Rosenfeld. It's reasonably priced at £545 for the camera and housing. If you already own a PowerShot S120, the housing (Canon WP-DC51) is available separately for £199.99. Wet mount conversion lenses can also be purchased for wide-angle and macro photography.

SLR cameras

Canon doesn't make underwater housings for its SLR cameras, but there are other manufacturers catering for this market including Ikelite, Sea & Sea, Nauticam, Aquatica, and Subal. Expect to pay between £700-£3000 for the housing alone.



Above Canon manufacturers underwater housings for a number of its compact cameras, including the WP-DC51 (above), priced £199.99, which is compatible with the PowerShot S120 (top).

Third party housings for both Canon compact cameras and Canon DSLR cameras are available from manufacturers such as Ikelite, Sea & Sea, Nauticam, Aquatica, and Subal. The Ikelite housing for the EOS 100D/Rebel SL1 costs £949.99 (below).



Left Diver with butterfly fish. *EOS 7D, EF-S 10-22mm f3.5-4.5 USM lens, 1/120 second at f9, ISO 160.*



My choices

I began shooting with an EOS 40D before upgrading to a 7D, which is perfect for fast-moving marine life due to its rapid-fire continuous shooting of up to 8 frames per second. Unfortunately, I flooded it while filming sharks off the side of a commercial tuna fishing vessel, enforcing a second upgrade – this time to an EOS 5D Mark II. The superior low-light capability and image quality more than compensates for its clunky shutter. It's also excellent for movies. Launched seven years ago, Mark II bodies can be picked up for under £1000. However, if you have the additional budget, the 5D Mark III is a class choice. The EOS 100D is also a popular model for underwater shooters. Being more compact, housings are smaller and therefore cheaper (see above right).



Above Dolphins. *EOS 5D Mark II, EF 16-35mm f2.8 II USM lens, 1/200 second at f4.5, ISO 320.*

Lenses and flash

The two main types of lenses used by underwater photographers are macro and wide-angle.

Macro lenses

Everyone knows what a dolphin or whale looks like, but what about a mantis shrimp, thornback cowfish, or orangutan crab? I get a kick out of introducing people to strange and wonderful miniature creatures.

Most compact cameras have a perfectly good macro function. For SLR users I recommend the EF-S 60mm f2.8 Macro USM (for cameras with an APS-C sensor) and the EF 100mm f2.8 Macro USM (for full-frame cameras).

Wide-angle lenses

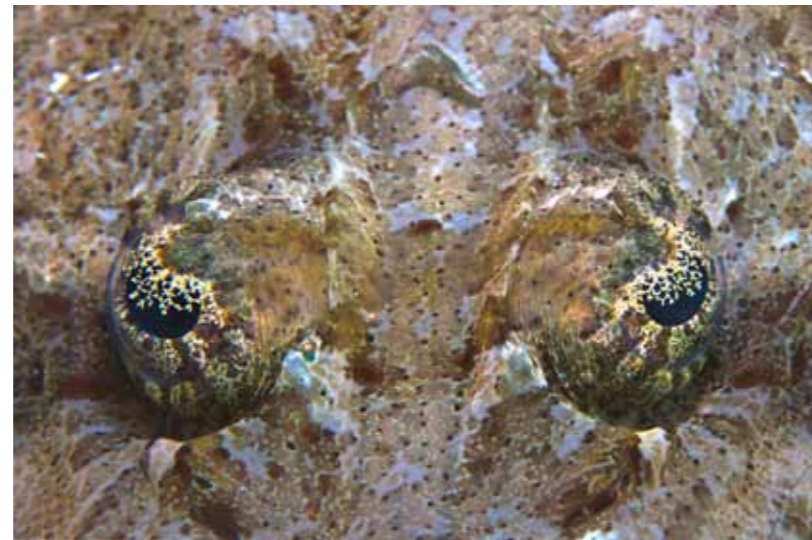
Wide-angle underwater photography can be very challenging for beginners as it involves striking a fine balance between natural and artificial light.

In the past I used the EF-S 10-22mm f3.5-4.5 USM lens with my EOS 40D and 7D. I now use the EF 16-35mm f2.8L II USM lens on my full-frame EOS 5D Mark II – a sublime lens that I love.

Other photographers favour extreme fish-eye lenses such as the EF 8-15mm f4L Fisheye USM, but you have to be virtually on top of your subject for it to fill the frame. I also find the distortion distracting.

Top right Octopus. EOS 7D, EF-S 10-22mm f3.5-4.5 USM lens, 1/160 second at f5, ISO 160.

Right Crocodile fish close up. EOS 7D, EF-S 60mm f2.8 Macro USM lens, 1/125 second at f11, ISO 320.



“A kiss of flash”

You may remember from school science classes that blue or green light penetrates further into water than red, orange or yellow light. The deeper you go, the less red light there is. In order to restore natural colours – particularly on deeper dives where there is less light – most underwater photographers dive with big external flashguns. The skill comes in using the best flash position and power to produce a vivid, visually appealing foreground (such as fish, coral, diver), while changing your camera settings to create your ideal background colour. Jacques Cousteau, guru of all things underwater, referred to ‘Painting with light using a kiss of flash.’

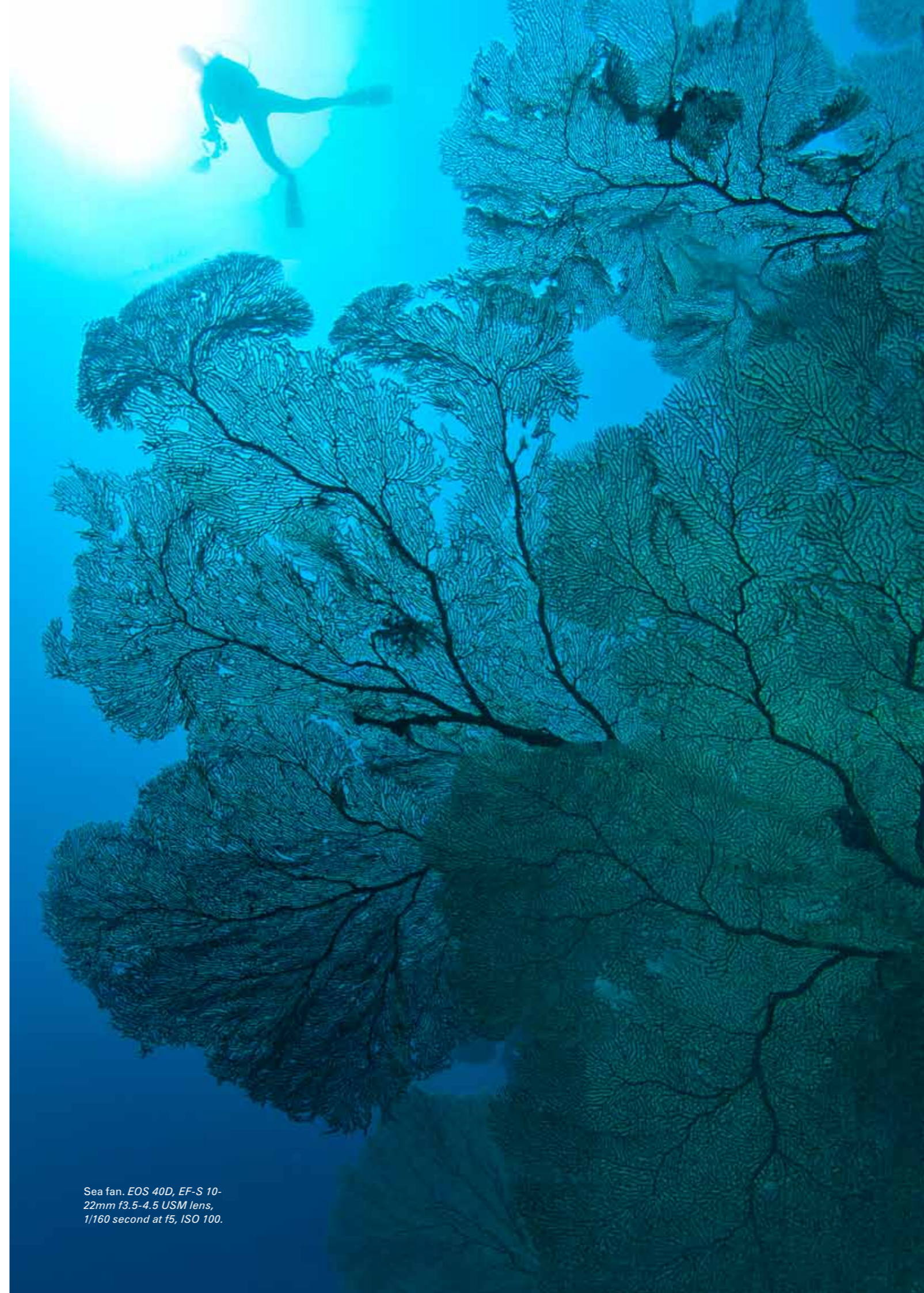
Back-scatter created by flash is one of the scourges of the underwater photographer and is caused by flash illuminating particles between the lens and subject. To minimise the amount of back-scatter, it is best to angle the flash away from the lens and point it outwards; you should aim to illuminate your subject with the outside of the beams. Some photographers use one flashgun, but I prefer two for better coverage and even illumination. I always use diffusers to soften the light from the flash.

Getting qualified

You do not have to learn to be an underwater diver to shoot underwater images. You can simply use a snorkel, which will allow you to breathe while shooting in shallow waters. However, learning to use underwater breathing apparatus will open up much greater opportunities, not to mention the thrill of being under the surface, face to face with your subject for extended periods. To do this you need to qualify as an open water diver. Courses, which vary in cost, are offered by a number of bodies including the British Sub-Aqua Club (BSAC) www.bsac.com and the Professional Association of Diving Instructors (PADI) www.padi.com



Above Mantis shrimp. EOS 7D, EF-S 60mm f2.8 Macro USM lens, 1/125 second at f7.1, ISO 160.



Sea fan. EOS 40D, EF-S 10-22mm f3.5-4.5 USM lens, 1/160 second at f5, ISO 100.

Six basic steps to successful underwater shots

These fundamental 'rules' will help those starting out achieve better results, more quickly.

1) Become a competent diver If you're not in total control of your diving you can't begin to take decent shots. You don't want to be worrying about kicking the reef or floating towards the surface.

2) Get close And then get closer again. Water is laden with image-ruining particles; the closer you are to your subject, the better chance you have of a sharp, clear shot. Less than 1 metre away is preferable. If you're too far away your image may appear washed out and too blue.

3) Shoot at an upward angle A clear aquamarine background will isolate your subject and is preferable to shooting downwards onto a cluttered reef or deep into the gloomy abyss. Consider the position of the sun and try to shoot away from it, particularly if you're not using flash.

4) Let there be light The opposite to photography on land, it's generally best to shoot when the sun is at its highest and the light penetrates deepest. However, end of day dappled rays of sun can also provide pleasing results.

5) Snap away Don't worry about taking hundreds of shots on every dive. Almost all of them will be deleted, but it's useful to compare which techniques and settings have been successful and which haven't. If I come away with one photograph I'm happy with after a dive it's been a good day. So keep practising!

6) Know thy animal In time you will learn how to interact with different species and the best ways of approaching them. For example, if you spot a manta ray, chase it and you'll probably never see it again. But wait, bide your time, and this curious animal will often circle overhead as you click away.



Above Cow shark. EOS 7D, EF-S 60mm f2.8 Macro USM lens, 1/200 second at f8, ISO 160.

How to shoot...sharks

There are over 400 species of sharks so there are no universal rules for photographing them. Some, such as cow sharks (left), are very curious and will saunter right up to the lens, whereas – and contrary to popular belief – great whites are very skittish.

Shark numbers are plummeting world-wide due to Asia's demand for shark fin soup. However, one way to almost guarantee seeing them is on a baited dive. This will also help squash some misconceptions that sharks are indiscriminate man-eaters – they prefer a tasty sardine over a human any day.

In terms of camera settings, generally fast shutter speeds (1/125 second or shorter) are needed to ensure sharp images. Flash should be set on low so as not to overexpose white bellies. Getting up close and personal with a shark may seem counter-intuitive, but it's the best way of getting satisfactory shots.

Camera settings

Once you have applied some of the basic 'rules' of underwater photography and spent ample hours in the water, it's time to put the camera into manual mode and start playing around with the settings.

• **Aperture** A shallow depth-of-field helps focus the viewer's attention on one of your subject's attributes. Macro photographers often highlight some patterning, an eye, lips, or another feature. With wide-angle you generally want as much as possible in focus, so apertures of f8 and smaller are preferable. If you're shooting fast moving subjects you may need to boost the ISO setting.

• **Shutter speed** While flash controls foreground exposure, shutter speed should be used to manipulate background exposure. Bright blue backgrounds are achieved with slower shutter speeds (perhaps 1/20 to 1/60 second) and darker backgrounds with faster shutter speeds. Both have their place in underwater photography (see advanced techniques). Particularly fast movers, such as dolphins, may require the highest shutter speed with which your flash is able to synchronise: with my EOS 5D Mark II and Ikelite housing combination it's 1/250 second.

• **ISO** The higher the ISO, the more grainy the water will appear. I don't generally like to boost the ISO higher than 400 unless the conditions are especially gloomy or subjects particularly fast-moving. How high an ISO you can get away with depends on the model of your camera since some EOS models perform better at higher ISO settings than others.

• **White balance** If you're shooting without flash and are able to perform a manual white balance underwater, this function will save your images from the blues. If you can't, then always shoot RAW image quality and post-process.

• **Focus** For wide-angle I tend to use AI Servo in order to keep the subject in focus at all times. I often use One Shot for macro photography, when there may be more time to compose the picture.



Far left Photographer with large school of fish. EOS 40D, EF-S 10-22mm f3.5-4.5 USM lens, 1/80 second at f4, ISO 200.

Left Wreck diving, Madagascar. EOS 40D, EF-S 10-22mm f3.5-4.5 USM lens, 1/100 second at f6.3, ISO 200.

Right Clown fish. EOS 40D, EF-S 60mm f2.8 Macro USM lens, 1/250 second at f13, ISO 200.

Bottom right Damsel fish. EOS 7D, EF-S 60mm f2.8 Macro USM lens, 1/160 second at f8, ISO 160.

Below Scorpion fish. EOS 5D Mark II, EF 16-35mm f2.8L II USM lens, 1/80 second at f9, ISO 160.



Advanced techniques

Once you've acquired an underwater system, grasped the fundamentals and played around with different settings, you can start getting creative. You may even want to break some rules in the process.

Composition Given that you can't adequately communicate with other divers or speak 'fish', forming an aesthetically pleasing, balanced, underwater scene can be difficult. With human models, agree on hand signals before you dive. Classic shots often feature illuminated fish/coral, with divers hovering behind in clear blue waters. Try giving a diver a torch – the beam adds another dimension to the shot. Also think about including a silhouetted boat in the picture, or try shooting into the sun to create a starburst.

The over/under shot If you thought creating one pleasing image was hard enough, what about two? A favourite creative tool of mine is the half in/half out, also known as the over/under (right). This allows the viewer to see what's going on above the surface as well as beneath. It is also one of the hardest shots to perfect as it involves balancing two exposures and finding two interesting scenes. Along with this you have to consider a moving water line in the middle of your dome port. But get it right and the results can be outstanding.

All in the eyes No-one enjoys looking at a rear view of fish. It's far more powerful when your subject stares you dead in the eyes. Along with symmetry, this gives the image an intimacy it's difficult to achieve when your subject's attention is elsewhere.

The great blackout I'm a huge fan of employing a dense, dark background which makes the subject pop out. It's achieved by using Cousteau's 'kiss of flash' combined with higher shutter speeds and smaller apertures.

Composites Blending individual photographs of one subject in different positions can create interesting composites. This technique comes into its own when the subject displays intriguing behaviour, such as contorting or performing a mating dance.

Black-and-white Occasionally I like to get arty and convert the colour images into black-and-white. I find this works particularly well for wreck photography and high contrast photographs.

Aaron's work can be viewed at www.aarongkoski.com
For more information on underwater photography classes he runs in Zanzibar, e-mail info@aarongkoski.com



Two divers, Likoma, Malawi. EOS 7D, EF-S 10-22mm f3.5-4.5 USM lens, 1/125 second at f9, ISO 160.

The edit

Post-processing skills are an integral tool in the underwater photographer's repertoire. Photoshop can turn an average, cluttered, blue offering into a crisp, vibrant and powerful shot. I don't regard it as cheating – it's just enhancing what is already there. The following are the most useful tools:

- 1 Cloning stamp** Remove unsightly backscatter and even take out ill-positioned divers.
- 2 Dodge and burn** Add contrast and achieve the 'black out' effect by selectively darkening the background.
- 3 White balance** It's always best to shoot RAW quality images underwater so you can adjust the white balance afterwards if necessary. This is particularly the case if you are not using flash.
- 4 Unsharp mask** Most underwater images will need a touch of sharpening.

Caring for your gear

Salt water and bumpy boat rides will take their toll on your equipment. That's why underwater camera gear needs to be well maintained and cleaned regularly. Rubber O-rings create watertight seals and help avoid the dreaded 'f-word' (flooding). Housings and flash have several O-rings, which should be removed, cleaned, and lightly greased with silicon gel before every dive. Housings should be soaked in fresh water after diving and serviced often. A good Pelican case, while heavy, is an essential accessory for travel and storage.



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