

Smartphones Underwater in the UK

by Martin Stevens

The world beneath the ocean surface is magical and photography is a powerful way to showcase its diverse environments and creatures. Historically, underwater photography has tended to be a somewhat niche pursuit, and not always accessible to many. Along with the challenges of shooting under water, the equipment tends to be expensive, specialist, and bulky. Yet times are changing.

One key reason is the ever-increasing use of smartphones for photography and videography, alongside kit to use them underwater.

One route to underwater imaging without specialist kit has been through action cameras, such as a GoPro. I've long used one and they're easy to jump in the water with, feature good-quality video, and are more affordable than even most compact camera set ups.

However, action cameras have major drawbacks: GoPro, for example, suffers in low light, has a fixed focus with nothing in focus closer than about 30 cm (without using an additional wet lens), and has only limited control over camera settings.

Smartphones are an excellent alternative.

Many of us own a recent smartphone, often capable of taking impressive photos and video, equipped with multiple lenses, which can focus both automatically or manually on different parts of a scene (including close-up and far).

Although I have a mirrorless underwater rig (using an OM1, which I still absolutely love), I've always liked small and portable set ups that are good for freediving, snorkelling, or even in shallow rock pools.

Recently, I was lucky enough to have a few photos awarded in the Underwater Photographer of the Year (UPY) competition and chose as a prize a DiveVolk housing for my iPhone. DiveVolk were kind enough to send me not only the housing,

Kelp forest scene off the Cornish coast Camera: iPhone 14 Pro Max Lens: 0.5x ultrawide phone lens, plus DiveVolk wide angle lens Housing: DiveVolk SeaTouch 4 Max Plus Lighting: Natural light Aperture: f/2.2, Shutter: 1/40, ISO: 340





Compass jellyfish . Camera: iPhone 14 Pro Max. Lens: 0.5x ultrawide phone lens, plus DiveVolk wide angle lens. Housing: DiveVolk SeaTouch 4 Max Plus. Lighting: Natural light / LetonPower Sealion B15 video light. Aperture: f/2.2, Shutter: 1/640, ISO: 40

but a full ocean kit with a wide-angle lens, their Macro 18+ Pro diopter, and more recently their new Bluetooth shutter. I'd been keen to try my phone underwater for a while (and already use it a lot above water), so this was perfect timing. I've been using the set-up for a few months with my iPhone 14 Pro Max.

Although many phones claim to be somewhat water-resistant, most of us wouldn't want to deliberately dunk

them in the sea without a housing.

What makes DiveVolk housing special is that you have full use of the phone's touch screen. Not only does this allow things such as being able to make emergency calls if in trouble at the surface, or using other apps for diving, but it also enables a suite of third-party apps for film and photography. In a nutshell, unlike with many other smartphone housings, you're not forced to use a



A kaleidoscope stalked jellyfish on sea lettuce . Camera: iPhone 14 Pro Max. Lens: Main 1x phone lens, plus DiveVolk +18 macro pro lens . Housing: DiveVolk SeaTouch 4 Max Plus. Lighting: LetonPower Sealion B15 video light. Aperture: f/1.8, Shutter: 1/11600, ISO: 100

particular app that goes with them, which are often not great, and you keep full control over the phone. This really matters, since to get the most out of smartphone photography/videography, you want control over as many settings as possible: shutter speed, ISO, white balance (though not aperture, since this is often fixed on smartphone cameras).

For photography, there are many great apps and I use ProCamera. For

video, many iPhone users above and below water use Blackmagic, which is free and excellent.

Having used the DiveVolk housing for a while, it's been brilliant. The membrane is accurate and responsive, and besides sometimes needing a slightly firm press, I've had no issues. At times, having to stretch my hand across to press the screen to take a photo has been a bit limiting, and for macro, I sometimes



(Above) A common hermit crab in a rock pool. Camera: iPhone 14 Pro Max. Lens: Main 1x phone lens, plus DiveVolk +18 macro pro lens . Housing: DiveVolk SeaTouch 4 Max Plus. Lighting: LetonPower Sealion B15 video light. Aperture: f/1.8, Shutter: 1/720, ISO: 80

(Left) Eggs of the rock goby. Camera: iPhone 14 Pro Max. Lens: Main 1x phone lens, plus DiveVolk +18 macro pro lens . Housing: DiveVolk SeaTouch 4 Max Plus. Lighting: LetonPower Sealion B15 video light. Aperture: f/1.8, Shutter: 1/1500, ISO: 64

inadvertently end up moving the phone and the focus point slightly. This is where the underwater Bluetooth shutter is really useful, allowing you to control everything on the phone with the touchscreen, but when needing to actually take a photo or start a video, simply squeezing the trigger.

The wide-angle lens is very good too and does an effective job of restoring some of the field of view that's lost when placing the camera behind a flat port and correcting for distortions.

There is still some distortion in the outer parts of the photo (especially photographing something



Beadlet anemone in a rock pool. Camera: iPhone 14 Pro Max. Lens: Main 1x phone lens, plus DiveVolk +18 macro pro lens . Housing: DiveVolk SeaTouch 4 Max Plus Lighting: LetonPower Sealion B15 video light. Aperture: f/1.8, Shutter: 1/2700, ISO: 100

on the seabed), but nothing too unusual.

I often shoot a lot into the sun, and one thing the wide lens set up does sometimes have is reflections in the image from the housing. This would be the main thing I'd love to see improved in future lenses, but it's a common problem with many lenses like it.

Otherwise, as with most underwater photos, the wide lens with the ultrawide iPhone camera shines best when very close to subjects with classic 'close-focus wide-angle' shots.

For macro, I've been extremely impressed by the 18+ Pro lens. Made

of solid glass and metal, it gives very sharp images and, at least to my eyes, with the standard 1x iPhone lens, some nice bokeh.

On the 1x lens, I can take photos of things like small sea slugs, hermit crabs, or cushion stars. Given that my main phone camera has a 48-megapixel resolution, there's scope to crop in too.

For video, the results are especially impressive (If you are online, you can see a couple of short clips

[here](#)

It's got to the point where I'd use this in preference to the macro video on my main camera (and a lot more easily too)!

Just as with action cameras, one of the main restrictions of smartphone photography is that, at present, there is no way of using strobes with a smartphone because they can't be triggered. This seems like a problem that could be easily overcome though, especially since phones often have internal flashes already. So a strong video light or two is valuable, especially for macro.

All in all, I'm excited about the possibilities of using smartphones underwater. Naturally, they come with limitations, but recent, especially the high-end 'Pro' models are capable of very good photos, and perhaps even more so impressive video.

Perhaps this shouldn't be surprising since the budget of a company like Apple or Google to develop camera technology on their phones must dwarf that of specialist camera manufacturers. Consequently, smartphone cameras have progressed immensely in recent years.

They clearly have far smaller sensors and optics than something like a mirrorless, or even higher-end compact camera. However, this issue is sometimes exaggerated - after all, the sensor size of the main camera in a recent Pro iPhone (like the 14 or

above) is bigger than that of the OM System (Olympus) TG7 camera, which is rightly very popular with divers and photographers especially for macro, and bigger than the sensor on a GoPro Hero 13.

There's much more to this than sensor size, of course, and modern smartphones have sophisticated computational photography that is partly designed to overcome issues of the physical optics; for better or worse - the strong processing is not to everyone's taste but can be toned down in post.

The images do sometimes benefit from delicate adjustments, so shooting in RAW is valuable.

Overall, I've had fun using this set up and look forward to seeing what it can do going forward.

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