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*In this series of articles on mirrorless cameras, we have explored the potential of this new technology by, first of all, looking at what it is and why it may be suitable for underwater photography. Then we looked at the various cameras, lens choices and available underwater housings, which quickly narrowed down the field to the Micro Four Thirds (MFT) technology from Olympus and Panasonic and the NEX cameras from Sony.*

*I used those initial articles to help define my personal choice—opting to buy the Olympus OM-D EM-5 camera, the Panasonic-Leica 45mm and Olympus 60mm macro lenses together with a Nauticam housing and macro port. In the subsequent articles, I documented my initial experience with those lenses, together with the Panasonic 20mm and Sigma 30mm “pseudo” macro lenses.*

*In this article, the final one in the series, I will explain my personal experience with wide-angle underwater photography using the Olympus OM-D EM-5 camera.*

#### **Dynamic range**

When it comes to underwater wide-angle photography, probably the single most important technical characteristic of a digital camera is its dynamic range, which is basically the capability of its sensor to record detail in both the shadows and highlights.

With macro photography, the dynamic range is rarely very wide, as there are typically no extreme highlights if an image has been properly exposed, so virtually all modern digital cameras are eminently capable of doing a good job of macro with the right lenses and in the right hands.

Wide-angle photography, however, is quite different—with many of the best images in this genre, and certainly the ones that really have that “wow” factor, having a broad or even extreme dynamic range. A typical example being that in addition to the main subject of the image, the sun (or at least its rays) is

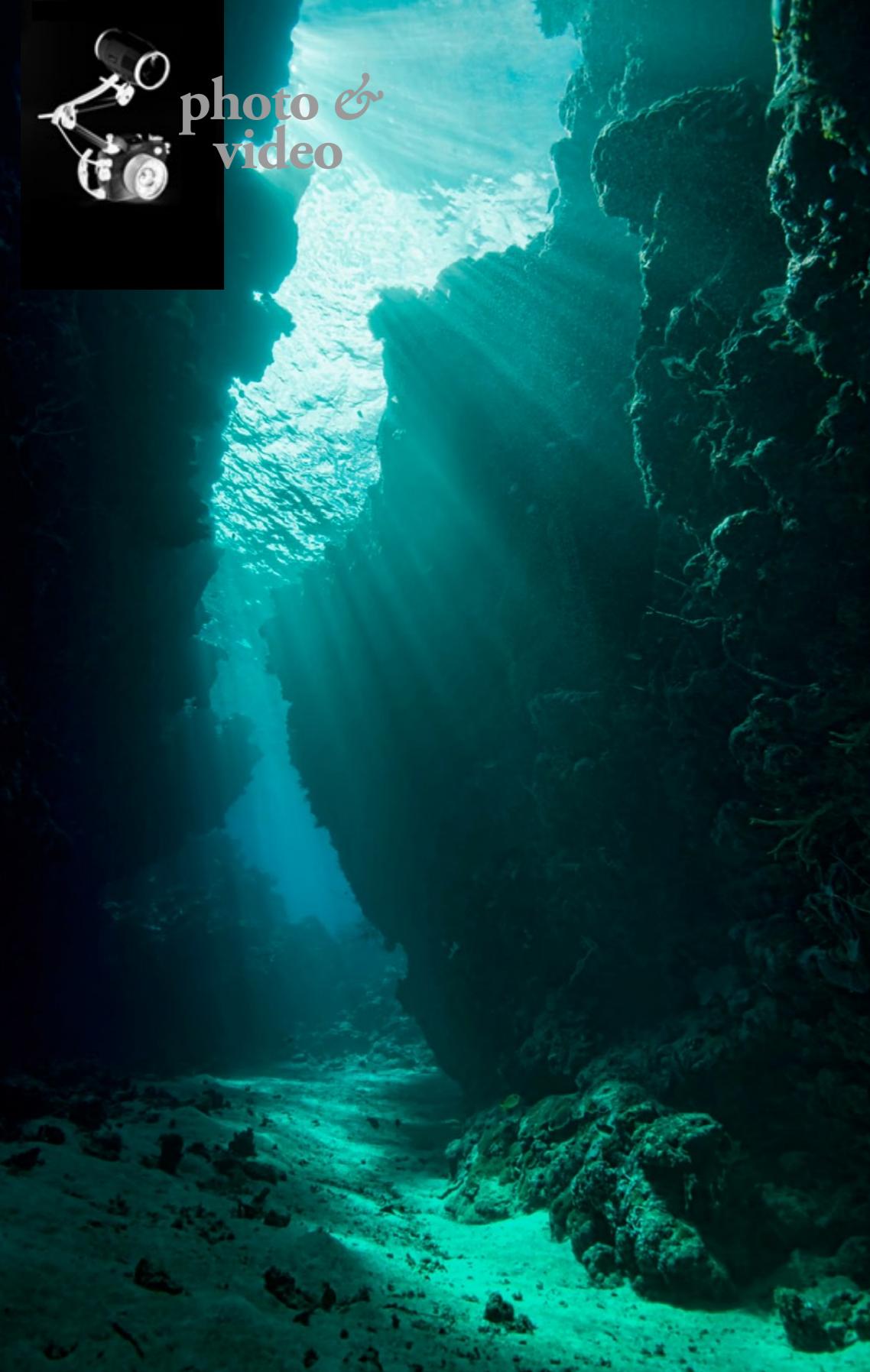
included in the image to provide a dramatic backdrop and create a vibrant and emotive photograph. Recording detail on the main subject is largely a function of using strobes to properly illuminate it, while capturing detail in the extreme highlights of the sun is very much related to the capability of the digital

camera's sensor.

Digital technology continues to advance rapidly, and the latest generation of full-frame sensors has really moved the goalposts on dynamic range, with the current overall champion being the Nikon D800, which the camera ratings site Dxomark.com measured at an

# *Mirrorless Cameras &* **Wide-Angle** *Underwater Photography*





incredible 14.4 Evs. This means that images that were not previously possible, because the dynamic range between the shadows and highlights was too

large, can now be captured.

### Can mirrorless cut it?

My personal journey with mirrorless cameras was driven by a

Example of the Nikon D800's dynamic range

desire to have a small and dedicated macro rig that could also double-up as back-up to my main D800 wide-angle outfit. Overall, my experience to date with the OM-D E-M5 has convinced me that mirrorless cameras offer a great alternative to DSLR's for macro photography because they are capable of producing excellent images but are smaller, lighter and most importantly cheaper, which lowers the entrance bar and has to be a good thing.

However, I was less convinced about wide-angle photography, as I doubted whether the Olympus' relatively small sensor had adequate dynamic range—although Dxomark.com did measure the E-M5 at a very capable 12.3 Evs.

A recent trip to Raja Ampat, Indonesia, provided me with the chance to try out the E-M5 on sites I knew would provide numerous wide-angle photo-opportunities.

### Lens and port options

The Olympus-Panasonic Micro Four Thirds technology has by far the best range of lens options for wide-angle underwater photography, with Panasonic offering its 8mm (16mm equivalent) fish-eye lens with a bright f3.5 maximum aperture and close-focus distance of just four inches. Panasonic also offers a very nice

Example of the OM-D E-M5's dynamic range: Cropped highlights (right); Cropped shadows (lower right)



Crop - Highlights



opted for the Panasonic 8mm fish-eye and the small Nauticam 4.33-inch dome port that is designed specifically for it.

### Testing

I will spare you all the gory details, but a variety of unplanned and unpleasant surprises

I was pleasantly surprised at the overall result, with the E-M5 producing a very nice image, while zooming in to 100 percent showed both detail and clarity in the highlight and shadow areas. While not at D800 levels of performance, the E-M5 produced a very nice image that could easily grace the walls of your living room or the pages of a magazine.

From there I wanted to see how the E-M5 would cope with strong highlights right in the image and a dive at Blue Magic in the Dampier Strait provided a quite unique photo-opportunity when one of the boat boys decided to check out who was on the deco line.

Similar crops of the highlights and shadows demonstrate that the OM-D E-M5 does a very credible job in

extreme rectilinear zoom lens—the 7-14mm zoom—which is their equivalent of Nikon's very highly regarded 14-24mm zoom. While Olympus offers their 9-18mm (18-36mm equivalent) zoom lens, which is both small and compact plus has a close-focus distance of just six inches.

The good news is that Nauticam supports all of these lenses. However, the bad news is that dedicated ports are required—not one dome port and different extension rings as is usually the case with DSLR's. So, I

turned my 28 days of diving in Raja Ampat into just 12, and all my carefully laid plans for a variety of different tests had to be boiled right down to the bare minimum. So, I decided to start by establishing how the E-M5 would perform on a clear water reef scene with a bright highlight in one corner of the image and dark shadows in another.

such situations—again, not D800 quality but most acceptable.

### What about the ISO?

No review of a camera's ability to capture wide-angle images would be complete without some discussion on what happens to the quality of the image as the ISO is increased.



Crop - Shadows



Example of wide-angle photography with the OM-D E-M5 (below) at Blue Magic dive site in the Dampier Strait at Raja Ampat; Cropped highlights (left); Cropped shadows (lower right)

## Wide-angle

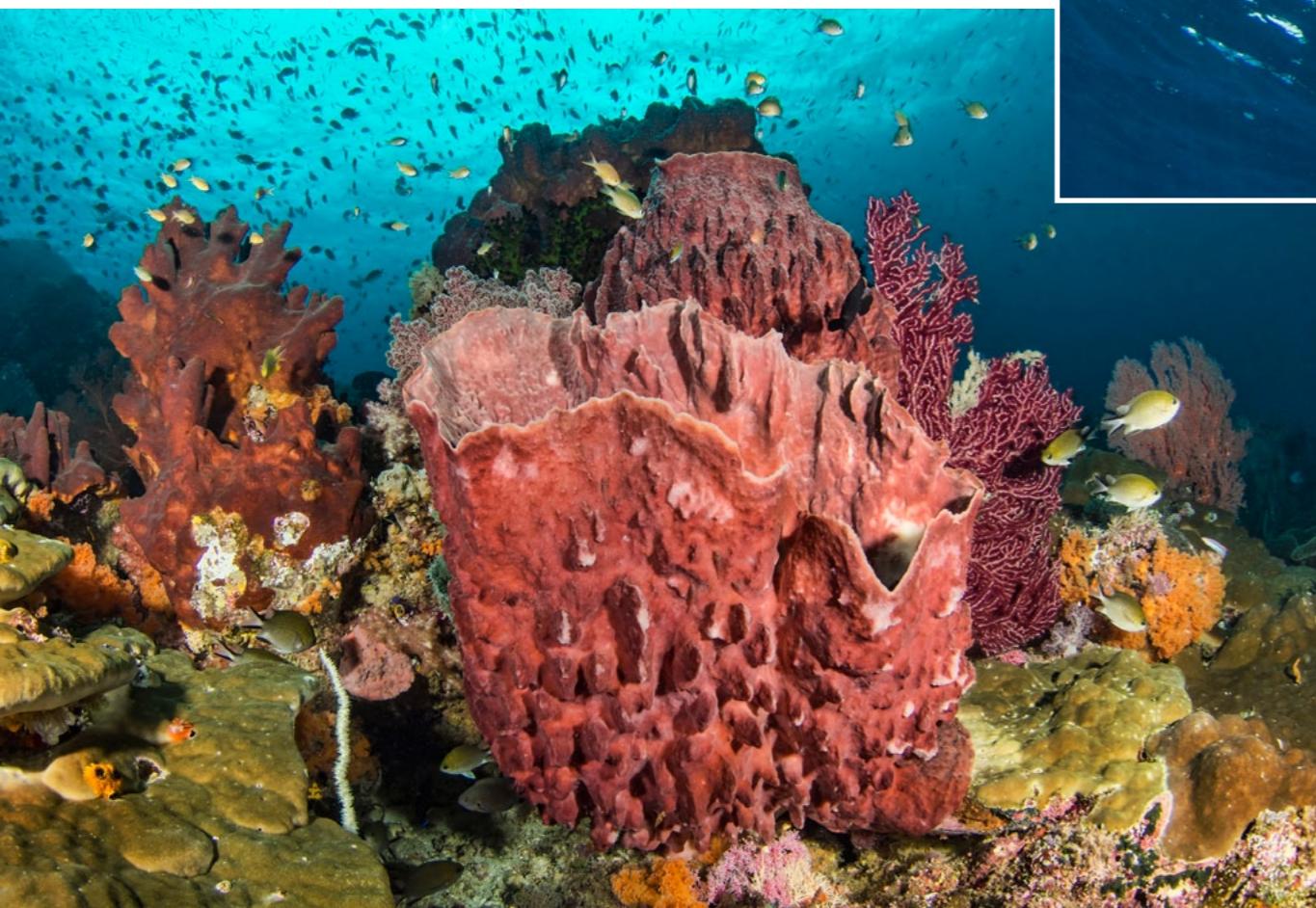
In today's digital age of full-frame sensors, ISO has become just another adjustable parameter that is used along with shutter speed and f-stops. But with the smaller sensors used in mirrorless cameras, there is not the same latitude to simply increase ISO as is the case with full frame sensors.

With my D800 I do not hesitate to increase the ISO up to 1600 or more when necessary, however, my experience underwater with the E-M5 was that above ISO 400 there was a noticeable deterioration in overall image quality. The results were still usable at ISO 800, but pixel peeping at 100% showed some serious noise in the shadows and over ISO 1000 was questionable in my opin-

ion. All the OM-D E-M5 images used to illustrate this article were taken at ISO 400.

### Conclusion

Alltogether the Olympus OM-D E-M5 is a very impressive camera, and I have been very pleased with its performance. It's not perfect and comparing it to the D800, which costs almost three times as much, is not really fair, but wide-angle photography can be a challenge, and very often the



best technology wins the day by enabling the user to take the best image.

So would I give up my D800 for the E-M5 for wide-angle photography? No! Do I consider the E-M5 as a great back-up for the D800? Absolutely, yes!

It will be very interesting to see what results come from new mirrorless cameras as the manufacturers push the technology envelope—particularly the very impressive Sony A7 and A7R full-frame cameras and the Olympus top of the range OM-D E-M1 camera.

Example of wide-angle photography



Watch this space... ■

*Don Silcock is a Bali based photo-journalist who specializes in underwater and travel photography. His articles and images can be seen on his websites [www.indopacificimages.com](http://www.indopacificimages.com) and [www.nomadicpixel.com](http://www.nomadicpixel.com).*



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