



Text by Rico Besserdich

Scuba diving is not really an inexpensive hobby, considering the costs of training, equipment and travelling. Furthermore, many divers love to capture images and videos of all the things they have seen underwater. So, underwater photography then adds an additional burden onto one's piggy bank.

Powerful cameras, lenses, solid and reliable underwater housings, plus all the other extras such as ports, underwater strobes, etc., can make a "professional" underwater photography system an investment that can easily exceed US\$10,000. This kind of expensive system will, of course, if configured correctly, produce technically sound images.

However, let's remember the good ol' saying: "It's not the camera that makes the image. The photographer does." This message gives one hope—especially when the will to take images underwater is strong but the budget is limited to, let's say, US\$500.

This article introduces a few solutions for underwater photography within this economic limit. In case some of you may believe "cheap stuff delivers cheap results," I would like to point to Tim Laman (timlaman.com) who won the grand title

## Underwater Photography

# On a \$500 Budget

of Wildlife Photographer of the Year in 2016, with an image that was made with a camera that easily fits into the US\$500 budget and is introduced in this article, among other models. It was Laman

who won this internationally desired and respected award, not his camera.

Before we begin, let's briefly summarize what we need to take images underwater:

- a) Any kind of camera and a designated housing, which protects it from water, or
- b) A so-called aquatic camera,

which comes in one piece and is designed to operate in water

Note: Some aquatic cameras have limits regarding their maximum operational



Olympus Tough TG6 camera and PT-059 housing







## photo & video

depth, whilst cameras supported by an extra, designated housing can usually operate within the limits of recreational diving, meaning 40m. Yet, it really simply depends on where, how, and most of all, how deep you want use your camera.

### Olympus Tough TG-6

The Tough TG-6 is Olympus' newest flagship of compact outdoor cameras, which has become popular among scuba divers, too. This is the sixth model in this series, featuring many improvements over older models.

The camera features an f/2, 4.5-18mm (35mm equivalent: 25-100mm) built-in zoom lens, which covers all the basic needs, from macro to wide-angle to telephotography. The image resolution is 12MP (megapixel). Various video-capturing options (up to 4K) are supported as well.

Unusual for its class, the TG-6 is equipped with a high-speed, high-sensitivity, back-lit

CMOS image sensor and a TruePic VIII image processor—the same image processor used in the OM-D E-M1 Mark II professional model. This allows for low noise and high-resolution image quality. Furthermore, the TG-6 supports shooting in RAW format.

Good to know for underwater photography enthusiasts is that the Olympus TG-5 offers five different dedicated underwater modes: macro, underwater microscope, underwater wide, underwater snapshot, and underwater HDR. There are three underwater white balance options from which to choose, in order to achieve the optimal colour reproduction, depending on water depth. Each of the five underwater modes has the optimal underwater WB pre-set (which can be changed if desired). Furthermore, focus stacking and focus bracketing do add useful functionality to the macro-modes of this camera.

As its name already indicates, the TG-6 is designed for

“tough” outdoor use. It is shock-proofed, freeze-proofed, and (of course) water-proofed. The depth rating of this aquatic camera is 15m. Retail price: US\$449. For more information, go to: [asia.olympus-imaging.com](http://asia.olympus-imaging.com)

Pro tip: Once your piggy bank is topped up, go for an extra housing (around US\$300). This will keep the camera even safer and allows one to take it down to a maximum depth of 40m. The camera can capture video, yes, but it is mostly designed for photographers. The TG-6 can be extended with various accessories such as a fish-eye converter, underwater strobes, and strobe diffusers, among others.

### Ricoh WG-70

The Ricoh WG-70 is an aquatic camera in compact format. It is depth-rated to 14m. The WG-70 captures images in 16MP resolution and shoots video in Full HD. It also offers a High-Speed Movie mode for recording slow-motion video and an Underwater Movie mode especially designed for underwater movie recording. Movie and Underwater Movie modes offer shake reduction, reducing the effects of camera shake.

The WG-70's Digital Microscope mode makes it easy to take impressive macro photographs, which capture details that cannot be resolved by the naked eye. The camera is equipped with 6-LED Ring Light, which helps to light up even the smallest macro subjects, right in front of the camera's lens. The 4x optical zoom lens covers a focal range of 28 to 100mm (35mm equivalent).

The underwater mode uses white balance optimized for underwater photos,

Minolta MNN40WP digital camera

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making colours appear more natural. In total, the WG-70 includes 25 different shooting modes. The camera does not support shooting in full manual mode; however, automatic settings can be altered by using the exposure compensation function. SD/SDHC/SDXC Memory Cards are supported as a storage device. Retail price: US\$246.95. For more information, go to: [ricoh-imaging.co.jp](http://ricoh-imaging.co.jp)

Pro tip: The included LED lights are very useful for underwater macro photography.

### Minolta MN40WP

The Minolta MN40WP Digital Camera shoots 48MP pictures and 2.7K Ultra HD video. This aquatic camera in a compact format comes with a 16x digital zoom lens, a 3" Rear TFT LCD screen and a 2" Front TFT LCD “selfie” screen. Special features include Panorama Shooting and Face & Smile Detection. The MN40WP is depth-rated to three metres. It supports microSD cards up to a maximum of 128GB. Retail price: US\$149.99. For more information, go to: [minoltadigital.com](http://minoltadigital.com)

Pro tip: As it is limited to just three metres of depth, this camera is a fun tool for

very shallow dives and snorkelling. However, image resolution and video quality promise good results when using the camera in its limits.

### GoPro HERO8

Named the “grandfather” of all action cameras, GoPro is mostly known for its video-capturing capabilities. However, it can shoot stills, too—even underwater.

The HERO8 Black supports up to UHD 4K video resolution and time-lapse, up to 1080p240 slow motion and super-slow-motion video. Still images can be captured in up to 12MP resolution in bursts of up to 30 images per second with the updated SuperPhoto, with HDR support that helps reduce blur and enhance detail in low-light situations.

The LiveBurst function allows you to record 1.5 seconds before and after your photo, to give you more choices for the best frame. The inbuilt lens offers four choices of focal length: Narrow, Linear at 24.4mm, Wide at 16.5mm, and SuperView at 15.1mm.

Paired with a smartphone with the



Ricoh WG-70 aquatic camera in compact format





# photo & video

GoPro app installed, stills and videos can be edited, stored or shared within the app. Furthermore, the HERO8 can be controlled by voice commands, but that might be not the easiest thing to do when scuba diving.

The way it comes right out of the box, the GoPro HERO8 is depth-rated to 10m. However, an additional housing (which is still within our budget) would make a GoPro dive-ready, up to 60m. Retail price: US\$299.99 (Additional



housing: add US\$49). For more information, go to: [gopro.com](http://gopro.com)

Pro tip: Despite this camera's limits regarding individual settings for photography, someone still won the grand title of Wildlife Photographer of the Year with an image made with a GoPro—even with a much older model, to be precise. Go for the extra housing.

For just US\$49 more, the GoPro can dive down to 60m. With hundreds of different accessories available, GoPro is a very practical and modular system.



GoPro HERO8 action camera (above), shown inside an extra housing (upper left)

Fujifilm FinePix XP120 aquatic compact camera



## Fujifilm FinePix XP120

The Fujifilm FinePix XP120 Lime is an aquatic compact camera that offers wireless sharing, and a robust water, shock, freeze and dustproof construction. Utilizing a 16.4MP CMOS sensor, this camera can capture stills as well as Full HD 1080p video. It is depth-rated to 20m.

The inbuilt Fujinon 5x optical zoom lens, with a 28-140mm equivalent focal length range, covers a variety of photography scenarios, and the optical image stabilization minimizes the appearance of camera shake for sharper handheld shooting. The “underwater mode” adjusts the white balance in order to obtain natural colours when diving.

In addition to straight photos and movies, the XP120 also enables the creation of Cinemagraphs, where a still photo contains select moving elements to compile a unique multimedia image. Time-Lapse Movies can also be produced in-camera, as can wide-format panoramas and other creative effects. Built-in Wi-Fi is a feature that enables wireless sharing of images or videos with a smartphone or tablet. Retail price: US\$389. For more information, go to: [fujifilm.com](http://fujifilm.com)

Pro tip: As always, Fujifilm cameras are a far cry from being cheap.

## Diveroid waterproof phone case

This device is obviously not an

underwater camera, but it can turn something you probably own and use every day—your smartphone—into an underwater camera. Diveroid is a solid underwater case compatible with (almost) all modern smartphones, regardless of whether they are based on iOS or Android. It is depth-rated to 40m.

Together with the case comes the Diveroid app (iOS and Android), which allows one to trigger several smartphone camera functions with just three buttons. The app has an inbuilt algorithm, which autocorrects white balance, thus taking care of correct colours. Furthermore, the app includes a dive computer function, showing depth and dive time. Retail price: US\$428. For more information, go to: [en.diveroid.com](http://en.diveroid.com)

Pro tip: The inbuilt cameras of many modern smartphones are, in terms of image quality, often superior to “classic” compact cameras. With a trustworthy housing, a smartphone can become a surprisingly good underwater camera.

## Final word

No doubt, high-end professional underwater camera systems do still have their reasons for existence—not just because a “great” camera is included but also because their modular systems allow for specific configurations (of equipment modules) for specific photographic tasks. Even so, some professional underwater photographers still struggle to earn the money back that they once spent on US\$10,000-20,000 (or more) of photography equipment. Again, there is no doubt that, in the right



Diveroid waterproof phone case

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hands, such pricy gear will deliver extraordinary images. “Extraordinary” is then pretty much a question of personal perception and preferences.

Being able to capture some of the wonders of the underwater world and share them later with others can truly be called “extraordinary” as well. The good news is: It does not have to cost the world. Technology is just a humble servant to your imagination. Remember, a Wildlife Photographer of the Year grand title was awarded for a photo captured by an old model action camera. Even with just a US\$500 budget, or even less, never forget: The next grand title could be yours.

“Everyone knows the songs of John Lennon. None cares which brand of piano he used to compose them.” — Daniel Botelho ■

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