



Diver on the HTMS *Sattakut*. The deep black in this image was used to accentuate the mystery within the shipwreck. Exposures with silhouettes make for bold compositions.

Text and photos by Tony Myshlyaev

Light is the most important thing for all photographers. It is easy to get excited about a critter and start firing away without much consideration for lighting. However, it is the little extra things that you juggle beyond pointing your camera and clicking the shutter that makes your style unique.

When it comes to the discovery of photography, every individual's story is unique. It pulls every person in with a slightly different appeal. In the case of land photographers, the many styles will attract all walks of life. Landscape photography may be tailored to a photographer fonder of solitude and adventure whereas portraiture could be geared towards a socialite whose charisma may evoke the right moments from their subjects in front of the camera. There is a vast range of genres.

Underwater photographers share a special appreciation for marine life.

Often, that is the reason most of them pick up a camera: to begin capturing unique sightings and experiences. The focus of the underwater photographer is to get a nice clean shot in a finite moment of opportunity—simple enough.

Nevertheless, time and time again, common errors arise with underwater photography enthusiasts. With so much additional obligations underwater, it is easy to shift focus to buoyancy, depth, No-Decompression-Limits (NDLs), currents,

temperature and so on.

What about the most important thing in all types of photography? It is light, of course. Underwater photographers often take less notice of it because of the sheer number of distractions inherent in

the act of scuba diving.

As a photographer, light needs to be the primary focus. Without knowing how to utilize it to its full potential, one begins to use repetitive lighting techniques for no reason other than because "that

The Science of Lighting



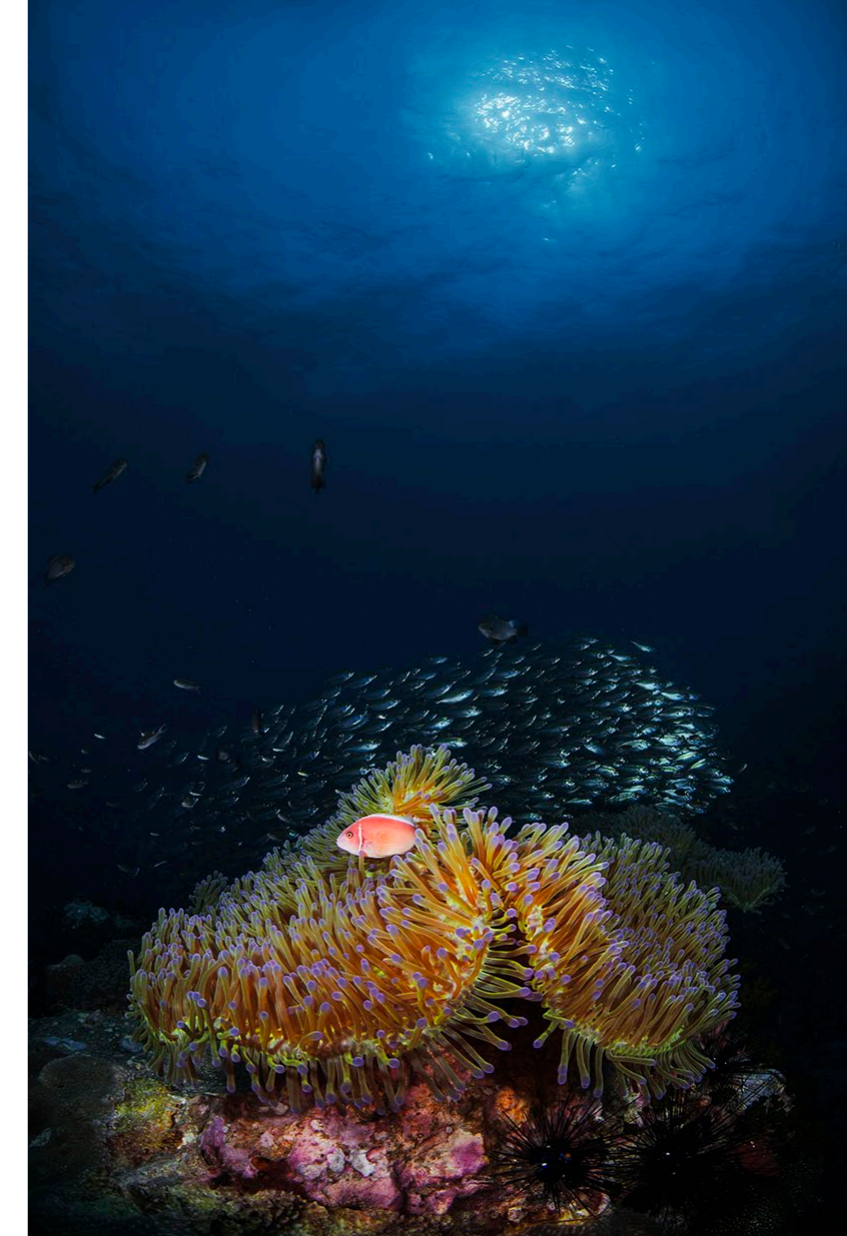


To complement the eerie feeling of the murky shipwreck (left), a low-key exposure was the best choice. Although most of the image is dark, there is a lot of detail, compared to the image on the previous page; Balancing natural light with strobes (right) can be difficult with calm seas and a bright sky above. Even at the lowest ISO and maximum power, the strobes may struggle to overpower the intensity of the natural light. This is when applying the inverse square law by getting the strobe as close as possible will help control the overexposed sun ball.

both the exposure of natural light and the strobe, whereas the shutter speed will only control the exposure of natural light. How bright the natural light is in relation to the strobe light will determine the ratios of the exposure.

Expression and mood
Lighting can be an expressive language. A variety of moods can be achieved based on the characteristics of a light source. The language is prac-

tical in theory, but as always, putting theory to action tends to be more difficult. Like with all languages, the more one practices, the more fluent one becomes. This is a great way to diversify a portfolio because skillfulness will



subject needed more color and light."

Are the shadows meant to be pure black? Or was that an accident? Was the sun meant to make the whole top of the image pure white? Or is that to be darkened in Photoshop?

For photographers who are looking to excel, I recommend that they do as much of the work in-camera as possible. Correcting exposure in post-production software can degrade the quality of the image.

Strobe techniques

When using strobes in the water, it is important to remember what the three camera settings affect. A low ISO is a best friend in keeping a high dynamic range. The dynamic range is the camera's ability to capture details in the darkest and brightest areas of

the exposure. Light below the surface falls off abruptly but it is important to retain as much information in the exposure as possible.

When shooting wide-angle, it is common to have an issue with the surface looking too bright or even going pure white in the image. It is best to avoid exposures with pure whites or pure blacks unless there is a specific aim.

The relationship of aperture to shutter is vital in helping understand strobe techniques. The aperture will control



High key versus low key. The above images were taken just moments apart, yet one is much brighter than the other. The light is much more dramatic in the image on the right. By controlling the ratios, it is possible to manipulate the mood.

always produce better images than expensive gear.

So what kind of mood should the image have? All lighting is broken down into two categories: high key and low key. High key refers to bright exposures that complement cheerful or light moments. Low key refers to

exposures that utilize more shadows and tend to be more dark and moody images. In real life, nothing is black and white, and thus, there are ways to control the degree to which the photograph is high key or low key.

Five characteristics

There are five characteristics of a light source that affect the feeling of an image: intensity, quality, distance, angle and color. All of them push a photo in the direction of being a little more high key or low key.

Intensity. Firstly, intensity plays a major role. It is fundamental in getting the desired exposure and accurate colors. Whether



On a cloudy day (left), the natural light is less intense. Often without having to push the strobes to their limit, an even exposure can be easily achieved; The image (right) was shot with reverse ring macro. Having such a thin focal plain meant a wide aperture. Even at the lowest power and ISO, the strobe was overexposing the image. Applying the inverse square law and moving the strobe away from the subject doubles the distance and halves the intensity of the light.

it travels the more power is lost. This is exponentially important underwater where the density of water absorbs light at a profound rate.

There is another important reason to consider distance—a principle based on the inverse square law that states: double the distance, half the power. So a subject positioned one meter (3.2 feet) away from the light source is half as intense as it could be when positioned

the goal is balancing the lighting to be equal to that of the sun above, or to blacken everything in the background entirely, there will always be a need to adjust the power of the light source in order to attain optimal exposure.

Quality. The quality of light determines how hard or soft the light is. Hard light gives hard and defined shadows that complement a more dramatic and edgy look. Soft light has very soft shadows that do not have defined lines but rather transition by a gradient. Soft light is suitable for gentle moments. This is strictly controlled by the size of the light source.

The larger the light source in relation to the subject, the softer the light becomes. So a strobe would be soft light when used up close on a hairy shrimp that is a mere speck in comparison but

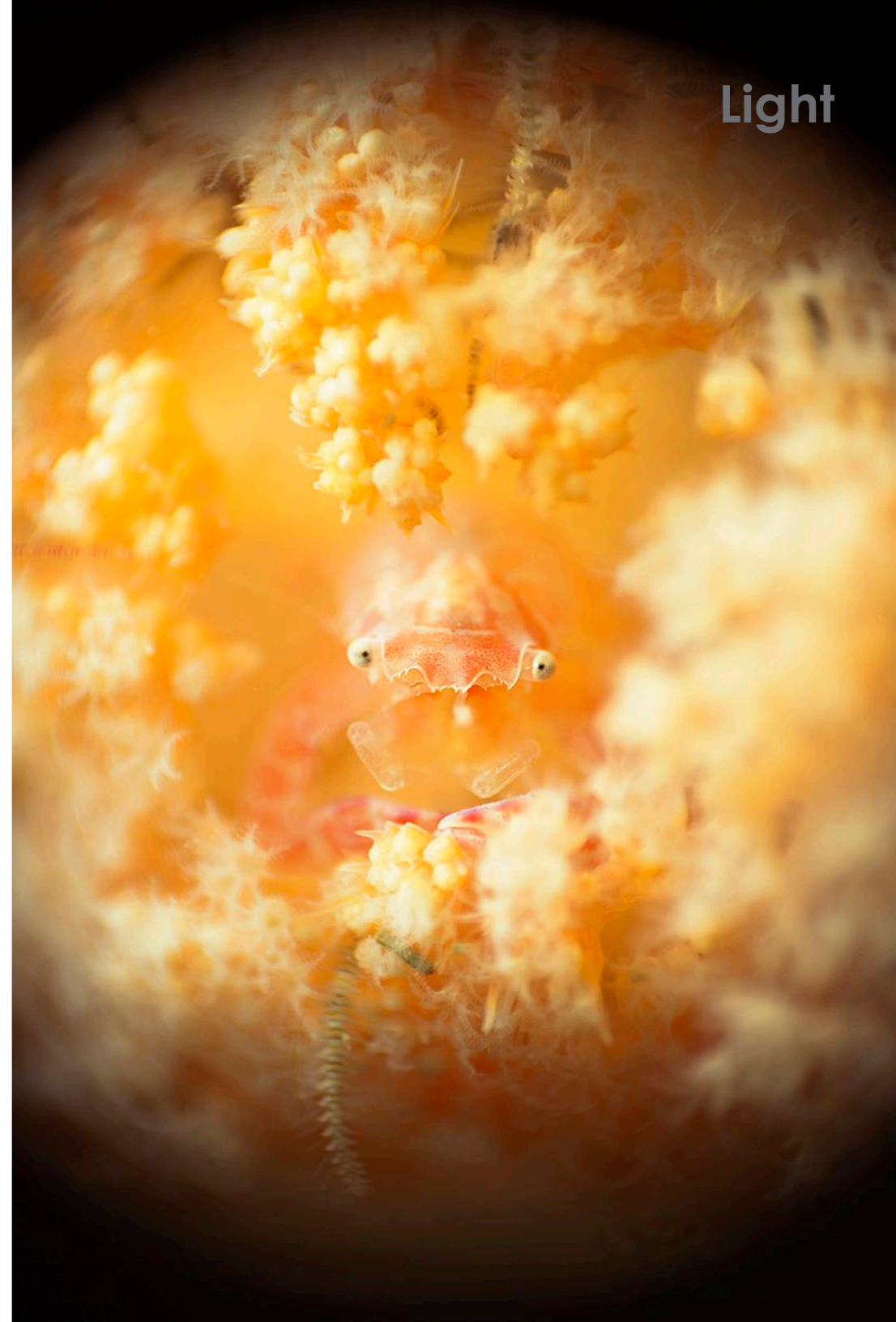
a hard light to a giant grouper that is larger than the light source itself.

Distance. The distance of the light source from the subject works hand in hand with both quality and intensity. The farther away the light source is, the smaller it becomes in relation to the subject, thus creating a side effect of hard light.

Of course, the intensity of the light is affected by how far it must travel; the farther



A cute five-lined coral goby hardly calls for dramatic lighting. A high key exposure such as this will resonate better with the chosen subject.



half a meter (1.6 feet) away and only half of that when positioned at a quarter of a meter (0.8 feet) away and so on.

When observed, the change in intensity of light becomes more gradual as the subject is placed farther from the light source. So if a photographer wanted to light a large scene evenly, it would

be prudent to put the light source farther away (and turn up the power to compensate for lost intensity). If it is a bright and sunny background that needs to be underexposed, the strobes should be brought as close as possible in order to take full advantage of the strobe's maximum intensity. It is up to the photographer to





The angle of the light source creates dramatic shadows giving a unique perspective to this golden goby on a clamshell.

decide what is the priority for their image.

Angle. Another important characteristic is the angle at which the light source is positioned. Shadows are important for creating a sense of depth in a two-dimensional image. As the angle

of the light, away from the lens, increases, the more apparent the shadows become. The more shadows there are, the more dramatic the lighting begins to look. This is why on-camera flashes tend to make images look flat: the light source is at the same angle as the lens, reducing the amount of



In relation to the catfish (above), the strobe is an enormous stadium light. Positioned at half a meter away, it lights the entire scene evenly; On a clear and calm day (right), when the sunlight can penetrate efficiently through the surface of the water, it is possible to get accurate colors with natural light while still maintaining a distance. However, colour deviation is inevitable and can be noticed taking place in the background.

shadows and making the image look flat.

Color. The last characteristic in the list is greatly emphasized in underwater photography. This one challenges underwater photographers on a whole other level

beyond what land photographers face, and it is, of course, color.

Lighting an image warmer (more yellow) or cooler (more blue) can also influence the mood in obvious ways. Whether working with natural light or strobes, it is important to remem-



Having the light source positioned so close to the subject retained most of the light intensity, underexposing the background and eliminating distractions.



ber that water acts as a color filter. The greater the depth, the more abruptly warmer colors are filtered out. This also applies to horizontal distance. That is why it is important to eliminate the water column between the lens and the subject—to get more accurate colors.

When using natural light, I rec-

ommend that you use Magic Filters to compensate for the color deviation that water creates. White balancing and natural light can allow retention of color to a greater distance than a strobe. However, a strobe gives more control.



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Application

So what does all this mean? How does one apply this information? That is like asking, "What am I supposed to say next?" These are merely some of the rules of the language of light, but expression is up to the individual. This is the fun and creative part of being a photographer.

Everyone has their own bag of tricks—lighting techniques that are tried and true. Breaking out of a routine is hard. Humans are creatures of habit and will opt for

what they know rather than take a chance on something new. But it is important to ask: "Am I a diver with photography gear or a photographer with dive gear?"

Learning all of the information is quicker done on land than down below where nitrogen slows thought. Learning light theory does not happen overnight. It takes months and months of practicing every day to have the information sink in on a subconscious level. Often, adding such information can cause one to feel



like we become worse before we become better. This is a normal process of reconfiguring and applying a sophisticated level of understanding.

Once it all sinks in and begins to make sense, the added benefits are worth the effort. The ability of foresight is gained. Being able to picture an image in the mind's eye and figure out the lighting requirements before finding the subject in nature allows for efficient and accurate results.

Photography is about the subtleties, and it is much easier to observe these subtleties with a greater understanding of light. The characteristics of light can be observed in every image. By spotting and distinguishing each

This octopus was moving in and out of crevices making it difficult to set up a specific lighting technique. It was best to play it safe and light the whole scene evenly making it easier to capture the moment.

characteristic, a student is able to reaffirm his or her own knowledge.

Certainly, nobody is perfect, and there is no such thing as the perfect photograph. Applying what is learned is the only way to improve. However, the rules are merely a guideline. After learning and applying them, break them! For example, create a high key image with a dramatic or moody subject matter, or vice versa.

Anomalies exist and often pave the way for some of the most profound images, but everyone must begin with a good foundation. Having good gear, but no understanding of its potential, is unacceptable. ■

Tony Myshlyayev is a formally trained Canadian underwater photographer based in Koh Tao, Thailand. More of his content and prints are available at www.tony-myshlyayev.com.

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Seacam for Sony A7II series

At Boot, we got to handle Seacam's new housing for Sony's game-changing A7II series. Built to the same exacting standard as the existing range housing for dSLRs, this compact housing is Seacam's first foray into mirrorless cameras and the first to be made to house camera brands other than Nikon and Canon since a couple for Minoltas in the 1990s. Most notable was the absence of a viewfinder but most controls—and there are quite a few on the Sony bodies—are accessible. The housing weighs 1,600g (3.5 pounds) and is neutral in water depending on ports. It is depth-rated to 80m. More details will follow in an upcoming review. Seacam.com

Portable SSD

Samsung's Portable SSD T3 drive holds 2TB of data, and with 450 MBs read or write speeds, it is up to four times faster than traditional external hard drives. Yet, it only weighs 51 grams and its dimensions are roughly the size of a business card. A strong, shock-resistant metal case and internal support frame handles the daily wear of being moved from place to place. Samsung.com



Strobe and light "symbiosis"

First seen at the recent DEMA, the SS-2 from I-Torch pairs a dive lamp, or focus or video light, with a strobe. Having a video light and strobe in one body carries the advantage of being able to use them both separately or together. The LED head can be used as a stand-alone video light and is upgradeable by the user anytime when newer LED heads become available. itorch.ca

Nikon Keymission 360

GoPro killer? In early January, Nikon announced its entry into the action camera market by introducing its Keymission 360. Labelled as a rugged camera capable of recording true 360-degree video in 4K UHD and designed to be easy to use and withstand the elements—and ready to stand up to dust, shock and low temperatures—divers will take note that the specs state a 30m (100ft) depth rating. Nikonusa.com



Leica goes underwater ...ish

Branded as "a shockproof, dust and water sealed expedition camera", perhaps the rugged Leica X-U is not a dedicated underwater camera. Nonetheless, the specs state that the sealed body is not only shock and dustproof but also waterproof to 15m (60 ft) and good for dives up to 60 minutes. The fixed fast 23mm lens (35mm equivalent in 35mm format) is provided with an "underwater protection filter". Us.leica-camera.com

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Sealife Micro 2.0

Having no doors or openings that could possibly leak, what could go wrong? Sealife's aptly named Micro 2.0 camera is permanently sealed and comes with 64GB of onboard memory, high capacity internal battery and Wi-Fi, negating the need for memory cards, batteries, O-rings or maintenance. Charging the camera and transferring files is simple through the waterproof USB port. A full charge will run the camera for approximately three hours. Images are downloaded wirelessly using the free Sealife Micro Cam App available for Apple and Android devices. The 16MP CMOS image sensor is provided by Sony. The camera is capable of both high resolution stills and recording full HD video at 1080p / 60 frames per second and 1296p / 30 fps. Sealife-cameras.com



Carbon arms from Inon

As airlines' luggage allowance keep getting tighter, every ounce saved counts. Inon's Carbon Telescopic Arm series, which was released in January 2016, is made of ultra light yet super durable carbon fiber, offering telescopic arm sections that can adjust to any desired length. The adjustable arm sections can be lengthened or shortened by loosening or tightening two lock dials. By collapsing the Carbon Telescopic arm when not in use, it makes the camera system more compact and comfortable to carry both on land and underwater. The arm comes in three different lengths weighing 211, 238 and 262 grams respectively.

Inon.jp

Wi-Fi Mobile Storage

Saving and backing up days of shooting while on the road is an issue most traveling underwater photographers have to contend with. Enter Western Digital's Passport Wireless external harddrive, which is portable, wireless and equipped with a SD card reader and USB 3.0 interface. The drive can be connected to up to eight devices at the same time, and its built-in, rechargeable battery provides up to six hours of continuous video streaming and up to 20 hours of standby time. In addition, the Passport Wireless doubles as a Wi-Fi hub to share an Internet connection with multiple devices. The drive is compatible with both Windows and Mac and comes in two models with 1TB and 2TB capacity. Wdc.com



LenzO for iPhone

Putting an iPhone in an underwater housing is nothing new, but the LenzO for iPhone 6 plus/ 6S, which we got a closer look at, came across as sturdier and more finely machined than most of the lot. Perhaps unsurprising, as the founder of the manufacturer Valstech was also behind the renowned Aquatica range of underwater housings. The LenzO has interchangeable ports, although, at its debut at the BOOT expo in January, only the dome port (pictured) was available. The dome lens is designed for use both above and underwater and provided an antireflective coating and hood to prevent flares. The controls were accurate, easy to use and felt like a natural extension of one's digits. The housing is depth rated to 100m (330 ft). Valstech.com

