



A green hairy shrimp mimics a small green tunicate. With the tight working distance of a diopter, lighting becomes essential. One of the hidden benefits is less particulates coming between the lens and the subject, decreasing backscatter dramatically.

Text and photos by Mike Bartick

**Supersize your macro images by going beyond 1:1. In the past, going beyond the limits of shooting true 1:1 macro seemed nearly impossible. Homemade magnifiers increased the subject size for sure but lacked in quality, while other “wet lenses” did not offer much in the way of magnification. However, with the surge of wet lenses in the market over the past few years, diopters in varying strengths have managed to achieve both magnification and increased quality, making super macro readily available to anyone wanting to go beyond 1:1.**



# Supersize your macro Super Macro

Diopters or wet lenses are attached on the outside of the housing, giving the name “wet lens” to the diopter. A wet lens increases your magnification while decreasing the working

distance of your camera lens. This makes longer camera lenses such as the 100mm or 105mm the best choice for several reasons. Getting greater than 1:1 can also be achieved using a 60mm lens,

and both combinations of lens/diopters have their place in this area for different reasons.

**Setup**  
The most popular setup for seri-

ous super macro shooters is the 105/100mm lens with an external wet lens attached with a flip adapter. This combination allows a shooter to shoot long for nervous critters or to flip their diopter

down and zero in on the really small subjects. Options are good underwater, and this combination will give any shooter a lot of room and space for creativity.







## photo & video

This hard coral crab was so well camouflaged, it was impossible to see for the untrained eye. My guide pointed it out to me and it was not until I flipped my diopter down, over my lens, before I could see it was a crab. I tried the stacked method but found I could not get the matching coral polyps in the frame too. Sometimes, backing off slightly can make a more visually appealing image. After all, it is not just about magnification.

### Challenges and skills

Super macro will relentlessly challenge you in every aspect of shooting from the technical aspects of the camera settings to your dive skills. To paraphrase a quote by David Doublet, "If you can't shoot exotic subjects, then shoot the common subjects in an exotic way." Shooting super macro will certainly deliver in that

arena and create an exotic flavor for anyone looking to add some punch to a plain vanilla portfolio.

Your main objective or goal for shooting supersized, super macro images should be set at "capturing the image in the camera using true magnification"—this achieved by using said diopters or wet lenses, not through post processing. This lofty goal allows you the



*Limenandra barnosii*. Image taken using stacked macro, Nikon 105mm lens + super macro converter + multiplier. Nudibranchs are an ideal subject for super macro as they are colorful, cute and often very calm. This combination makes a perfect package for punchy images. With proper lighting and a lot of practice, you will soon be pushing your guide for smaller slugs. Many nudibranchs have a crude eyespot (right) that is also revealed when going beyond the standard 1:1 magnification. The striking neon colors of the *Limenandra* (above) are what makes this minuscule slug so different. Watching and waiting for your subject to move towards your lens, working into the frame, is a great technique for critical focus and depth of field.



greatest freedom of dissemination of your images and results in high-quality, high-resolution image files in the finished product. Cropping should be kept to a minimum for purity, but depending on what your final output will be, the choice is ultimately yours.

Shooting super macro and making small subjects appear to be larger (pardon the pun) is the smallest aspect of this style of shooting. Framing, composition and lighting are all key factors to consider, as they will greatly affect all areas of your final product and become the natural jumping-off point to expand on this secretive world of shooting super macro and going beyond 1:1.

Magnifying your subject and shooting super macro images comes at a high price, affect-

ing the following:

- Depth of field
- Composition
- Lighting
- Stabilization

Let's break it down and consider each of these key factors to gain a better understanding of how each of them dovetails into the next. Addressing them in a simple systematic manner will also allow



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## photo & video

Nemo eggs (Nikon 105mm lens + super macro converter + multiplier). Whenever I see a brood of well-matured eggs or embryos of fish, I try to take advantage of the situation and capture a special image. This patch of nemo eggs is a perfect example of what magnification and lighting can achieve. The secret is to locate an egg that can be singled out from the rest and then finessing your focus so that it passes through the clear egg wall. Reflective lighting bounces away, so front flash on the eggs does not work so well. Try experimenting with side or back lighting for something special.



us to strategize and assert better control over vital elements.

### Depth of field

Our first inclination to increase depth of field is always the f-stop. Stopping down to the maximum of your lens' ability will certainly give you a better depth of field, but it will also leave your images dark and eventually soften the details due to diffraction. Opening the f-stop will give you plenty of light but kill your depth of field and blow out the high-lights. You will find that the best

f-stop for super macro is in the upper ranges of your lens and usually hovers between f/29 and f/36. Your f-stop really needs to be pushed to fight the extremely narrow depth of field created by greater magnification. Use your ISO to amplify the light if needed and push your f-stop.

### Composition

Composition, on the other hand, can be limited depending on your diopter, and this is really where a higher quality diopter leaves the rest behind. Consider

the fact that all lenses have a sweet spot, generally dead center of the lens. There are a couple of ways to get around a bullseye shot so that we can focus, recompose and shoot in a more creative way. Critical focus is paramount, so to achieve the desired composition, you must again assert control over your system by restricting the lens from hunting.

### Lighting

When shooting macro and super macro images, your lighting technique might also need an



Whip coral gobies (Nikon 105mm lens + super macro converter) can be a great target for macro and super macro, depending on the subject's willingness. Some will allow for the close approach, while others simply shy away, just as the camera gains focus. This particular goby has some grotesque parasites that have not only attached themselves to its side but are also carrying eggs.



overhaul. Like in other forms of photography, lighting is critical in super macro. Due to the tight working distances, backscatter is often not an issue, but correct exposure is.

I like to keep things simple, so in most cases, I use the fastest shut-

ter speed possible to eliminate any ambient light, e.g., 1/250. This allows me to concentrate on f-stop, strobe angle and composition. My strobes are angled in, so that I am not directly flashing the subject—using a modeling light is extremely important for this. In

many cases, I use a single strobe over the top and aimed back at my housing (not into the lens) so that most of the light is actually blocked by my camera housing. Just a small curtain of light illuminates my subject. This strobe angle helps to eliminate back-







The copepod parasites in the image above (taken with Nikon 105mm lens + super macro converter + multiplier) are seen with macabre clarity when stacking the diopters. I could actually see the pods sucking blood from their host to nourish itself and the eggs.

Crown of thorns (left) are not very well-regarded as they have populated dramatically in some areas, causing severe damage to coral systems. But they are also beautiful subjects to investigate for passengers. The thorns remind me of a forest of some kind, with the shrimp hiding away within the trees. The extra magnification can push your images towards an abstract level easily and help to create something a little different than the norm.



Photo of porcelain crab (left) was taken with INON UCL67 + super macro converter. Size can be deceiving when shooting super macro, and most viewers would never guess that the subjects are so extremely small. I found this porcelain crab sheltering in the anus of sea cucumber. It moved up and down with the rhythm of the sea cucumber's slow undulations. Using the autofocus lock is a great tool for this type of situation. Shoot an image to check the exposure, adjust, then wait for the subject to move into the plane of focus.

ground light even on a tight reef.

In some cases, I might also use a light-shaping device to help eliminate the distracting background altogether. For dual strobes, I use a similar method of reversing the strobe angle so that just a slight curtain of light flashes my subject.

In other situations, I want big, bright macro images. In this case, I designate a primary strobe in the foreground, and the second is used as a fill light for shadows. Even backlighting with a third light can give your photo an additional layer of interest that will set your photos apart from the pack.

Prior to your next dive, get to know your system a little bit. Find your camera's weak points and learn how to work with them, not against them. Every camera has a weak point, so buying the latest

and greatest is not always the solution. Learning how to squeeze a little more horsepower out your existing system could be as simple as experimenting. Here are a few of the ways that I have revved up the power of my camera system through logic and experimentation.

### Stabilization

Stabilizing your camera and yourself when shooting super macro might be one of the toughest, multifaceted elements for shooting super macro that is frequently overlooked. Consider using a quality float arm to give your heavy system enough lift, allowing you to use a lighter shutter finger. Once you have locked the focus, the system should be light enough to adjust with just your fingertips. Super macro is delicate work and

having a lighter system will allow you to finesse your bulky housing.

The way you hold your housing is also critical. Try using your left hand to hold

the housing under the lens port. The system should feel natural and light in your hands underwater, not heavy.

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Cowry. Composition and technical quality are equally important when shooting super macro. I often like to fill the frame with either the subject or the habitat in which they are found. Big, bright macro images are fun to make and will add yet another dimension to your portfolio. Many macro shooters concentrate on shooting with a black background so much that the natural habitat is often overlooked. Subjects that are slightly larger make for great big macro images and they are fun to shoot.

### Technique revealed

**Amplifying the incoming light** is the first order of business when pushing your f-stops into the higher ranges, achieved by using your native ISO settings. This will also enable you to have some flexibility over your exposure for fine tuning and to retain control over the highlights and to bring back some of the color in an otherwise dark exposure.

### Check your camera functions for focus locking or back button focus.

This becomes a powerful tool for split-second shooting. Once correct focus is achieved, you can restrict the lens from hunting and adjust the critical focus with subtle in and out camera movements or allow the subject to move to you. In addition, you can fire your camera at any time, when the focus is locked. This handy tool is perfect for any environment



Image taken with Nikon 105mm lens + super macro converter + multiplier. "Stacking" diopters is always an option to gain extra magnification, but the image can suffer greatly if you are not using quality glass. Ghosting or achromatic aberrations are typical of a lesser quality lens and can appear as a colorless haze or a colored gloom on all, or portions, of your subject, creating a funky halo effect. Buyer beware when purchasing your diopters.

that has any surge whatsoever, by allowing the subject to move in and out of your focal plane. Resist hunting and minimize your movement.

### Focus, lock, adjust and fire while paying close attention to critical focus.

Remember what we see through the lens and diopter is equivalent to a 2.8 or less due to the extreme magnification. We only see the depth of field returned after the photo is made, no matter what f-stop we use while shooting the photo.

**Visualize your sensor plane as a three-dimensional, rectangular space**, in which your subject will be photographed. The plane of field is linear, but the depth of

the image should not be neglected and will help create stronger compositions if the subject is working into the image.

### After locking your focus, you can re-compose in a linear method.

As long as you do not move your plane of field forwards or backwards, the image will remain sharp—which is easier said than done. Getting low is also important to expose the little critters' habitats and getting a closer look into their world. Shooting anything from front to back or head to tail will always create a greater fall-off of acceptable sharpness, while a slightly horizontal approach will allow for more of the subject to be sharp.

Going beyond 1:1 is not as difficult as one would think. All it takes is a little practice and determination. Remember to be patient with yourself, have a little fun and try to apply a few of the techniques discussed to help you along. Now get out there and have an adventure! ■

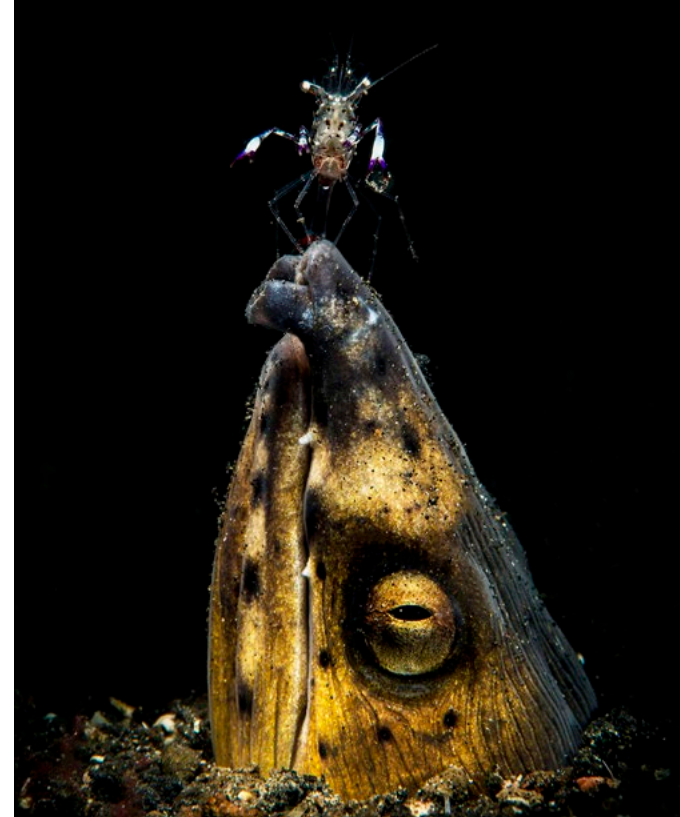
*Mike Bartick is a widely published underwater photographer and dive writer based in Anilao, Philippines. A small animal expert, he leads groups of photographers into Asia's underwater realm to seek out that special critter. For more information, visit: [Saltwaterphoto.com](http://Saltwaterphoto.com).*







Macro: Marchione Giacomo, Italy (right); Compact Camera: Dragos Dumitrescu, Romania (top far right); Young Talent: Garri Immanuel, Philippines (lower right); Wide Angle: Yen-Yi Lee, Taiwan (below); Freediving: Cendric Peneau, Reunion Island (bottom left)



Creative: Kenji Cheow, Malaysia (right)

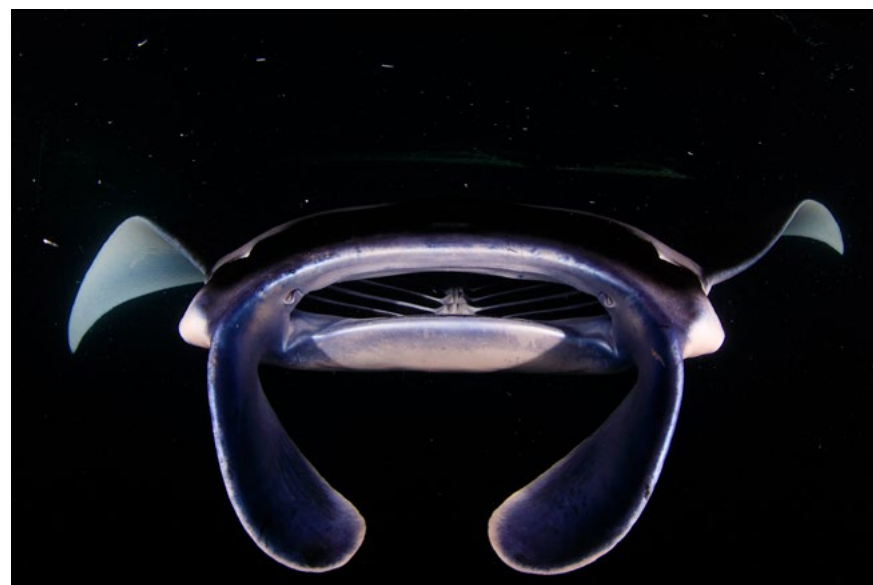


## Lens Beyond Ocean 2017 winners featured at MIDE

Winners of the 5th annual international underwater photography competition, Lens Beyond Ocean, were featured in an exhibit at the Malaysia International Dive Expo in Kuala Lumpur 12-14 May 2017. The competition received an overwhelming response, with entries from 46 participants from 13 countries.

**Macro.** The Macro category was won by Marchione Giacomo of Italy, with the Memorable Photo honor going to Wu Yung-Sen of Taiwan. The prize for this category was a 5-day/4-night dive package at Nusa Ceningan Resort in Bali, Indonesia.

**Wide-Angle.** The Wide-Angle category was won by Yen-Yi Lee of Taiwan, with the Memorable Photo



honor going to Tang Mun Phun of Malaysia. The prize for this category was 4-day/3-night dive package at Sangalaki Dive Resort in Indonesia.

**Creative.** The Creative category was won by Kenji Cheow of Malaysia, with the Memorable Photo honor going to Masmawi Rahim of Singapore. The prize for this category was a 4-day/3-night dive package at Seaventures Dive Rig in Sabah, Malaysia.

**Compact Camera.** The Compact Camera category was won by Dragos Dumitrescu of Romania, with the Memorable Photo honor going to Aliah Roslan of Malaysia. The prize for this category was a 4-day/3-night dive package at 7SEAS Dive Resort on the island of Gili Air in Lombok, Indonesia.

**Freediving.** A new category this year was Freediving, which was won by Cedric Peneau of Reunion Island, with the Memorable Photo honor going to Yen-Yi Lee of Taiwan. The prize for this category was a 4-day/3-night dive package at Tenggol Coral Beach Resort in Malaysia.

**Portfolio.** The winner of the Portfolio category was Lillian Koh of Singapore, with the Memorable Portfolio honor going to Iyad Suleyman of Ukraine. The prize for this category was an interview for a feature editorial article in X-RAY MAG, which you can read on the next page.

**Young Talent.** The Young Talent category was won by Garri Immanuel of the Philippines. The prize for this category was a 3-day dive package at Nusa Penida, Manta Point, Bali, Indonesia sponsored by AquaMarine Diving Bali.

Judges included marine biologist and editor-in-chief of *Scubazone*, Massimo Boyer (Italy); founder of *ScubaPortal.it*, Marco Daturi (Italy); underwater photographer Eric Goh (Malaysia); and publisher and editor-in-chief of *X-Ray Mag*, Peter Symes (Denmark). ■

MIDE thanked the sponsors of the contest prizes, the judges and the participants. For more information, please visit: [Mide.com.my/lensbeyondocean](http://Mide.com.my/lensbeyondocean)







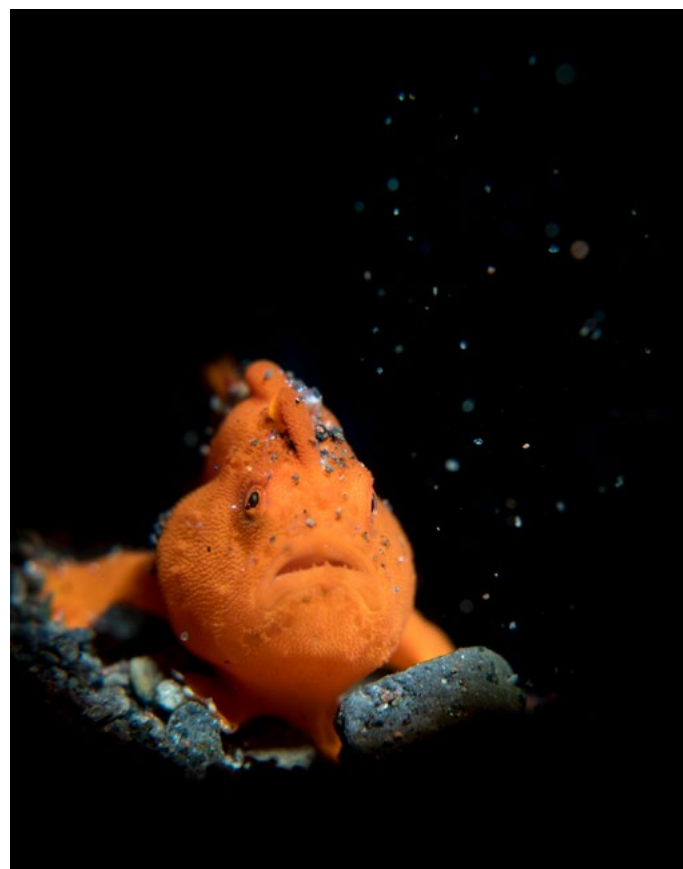
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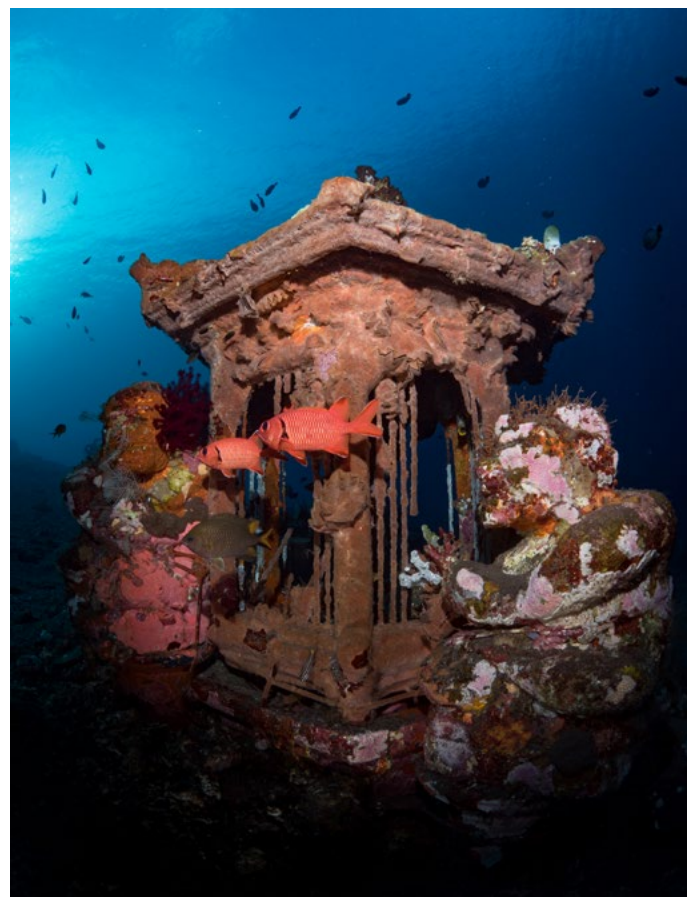
# Lilian Koh

— *Lens Beyond Ocean Portfolio* winner

A close encounter with manta rays in 2000 inspired Lilian Koh of Singapore to take up scuba diving and underwater photography. Also drawn to tiny critters, her macro photography has won top awards.



Snowing – Frogfish at Kuwanji, Tulamben, Bali. ISO100, f5.6, 1/250



X-RAY MAG: Tell us about yourself, your background and how you became a diver and underwater photographer.

LK: I am from Singapore and formally worked in the banking sector as an executive assistant, with an interior design background. Currently, I

Underwater photographer  
Lilian Koh of Singapore



JOHN GOODRIDGE

Swoosh (right) *Favorinus mirabilis* nudibranch with eggs, Kuwanji, Tulamben, Bali. ISO100, f8, 1/250; Shrine (left) Temple at Coral Garden, Tulamben, Bali. ISO200, f6.3, 1/250

dive and shoot whenever I can, after quitting my job many years ago.

I did my Discover Scuba program in the Great Barrier Reef, and it took me more than two years after that to be certified. I was on a dive trip as a non-diver and had a close-encounter with manta rays, which peaked my interest to discover more. I signed up to be a scuba diver within a couple of weeks. My brother was the first one in my family to be certified and I continued where he left off.

My first big trip was to Sipadan where I was armed with a tiny camera with a one-inch display. From then



Keyhole – *Costasiella kuroshimae*, affectionately known as the “Shaun the Sheep” nudibranch, at Malesti, Tulamben, Bali. ISO100, f10, 1/200



onwards, I have always dived with a camera to capture beautiful marine life.

X-RAY MAG: What is the backstory behind each of your winning images. How did you get the shot?

LK: For Keyhole (left) I was exploring a variety of ideas while using a snoot and wondering how to shoot everyone’s beloved Shaun the Sheep nudibranch (*Costasiella kuroshimae*) differently. The idea was conceived during a surface interval. Simple materials like duct tape and a penknife helped me to execute my idea and get the shot I wanted.

For Shrine (center): When in Bali, it's hard not to pay a visit to a temple. These magnificent structures were placed underwater and acted as sanctuaries for marine life. This image was taken during one of my visits. I picked a location and waited for the right moment for the fish to appear in my frame.







# photo & video

Underwater photographer Lilian Koh with her camera rig (below)



BENEDICT SEAH

For *Snowing* (previous page, far left): This image was taken using a snoot. While I was shooting it, several divers swam passed and kicked up some sand. As you can see in the image, the sand added another element and created a snowing effect.

For *Swoosh* (previous page, top right), I found this nudibranch feeding on a ribbon of eggs. At the time, the surge was strong. Every time the ribbon of eggs moved along with the surge, it created different compositions. While shooting and snooting in these kinds of conditions, usually I

Nauticam housing, with Inon z240 strobes, plus a Retra LSD snoot.

*X-RAY MAG: How did you develop your style of photography?*

LK: Personally, I love isolation. That is why I am addicted to snooting. Able to control light, illuminating and isolating a subject from a busy environment, snooting helps the subject to pop in your images. Normally, during a dive, I do not have a specific critter to shoot. I will have a few ideas in my mind and look for critters and a suitable environment, which is



would have given up. I am glad I persevered and managed to get a series of images.

*X-RAY MAG: What camera and lighting equipment do you use?*

LK: I use an Olympus EM5 Mark II camera with a M.Zuiko ED 60mm f2.8 Macro lens or a M.Zuiko ED 8mm f1.8 Fisheye PRO lens, housed in a

but a truck load of patience as well.

*X-RAY MAG: Who are your role models in underwater photography or diving and why?*

LK: Basically everyone who takes photos underwater. Critters might be similar, but how photographers

*Transparent,*  
photo by  
Lilian Koh

*Co-exist,*  
photo by  
Lilian Koh

best-suited to executing the image. I will always bring my snoots during my dives and make sure they are always available when I need them. Setting up and positioning them requires time. Shooting critters with snoots requires not just time,

see them and what they see translates to their images. By studying other photographers' photos, one will start to explore how they shoot and compose. It is always good to learn from others.

*X-RAY MAG: In your relationship with reefs and the sea, where have you had your favorite experiences?*

LK: It has always been my dream to dive with dolphins. Most of the time, I saw them from afar, while on a boat. Finally, during a trip to Cocos Island, Costa Rica, I encountered a small pod, swimming and playing around me. I just stopped taking photos and took in those moments just to enjoy their presence.

*X-RAY MAG: What are your*



*thoughts on ocean conservation and how does your photography relate to these issues?*

LK: I hope that through my photography I am able to show people the beauty of Mother Nature and her creations. I want viewers of my photography to see the amazing critters we can see and find in the ocean. From pelagic to macro critters, we divers need to do our part in protecting them.

*X-RAY MAG: What are the challenges and benefits of being an underwater photographer in the world today?*

LK: Too many places, too little time to explore them all. I will slowly tick each location off the checklist.

*X-RAY MAG: How do people respond to your works?*

LK: I get positive comments from fellow photographers. I am very glad they like the way I present

my images and are inspired by my art.

*X-RAY MAG: Do you teach photography?*

LK: I'll be at the Anilao Photo Academy (Philippines) as an in-house coach for a month, from 21 June until 21 July 2017.

*X-RAY MAG: What are your upcoming projects or events?*

LK: I am thinking of running workshops, so stay tuned for any updates. I am constantly looking for and learning new techniques. I recently upgraded my whole camera set-up from a mirrorless camera to a DSLR so there are new and exciting adventures ahead, which I will share on my social media pages. ■

Please visit the photographer's webpages on Facebook at: [Facebook.com/liliankohphotography](https://www.facebook.com/liliankohphotography); and Instagram at: [Instagram.com/liliankoh](https://www.instagram.com/liliankoh).



Tiger, photo by Lilian Koh





photo & video

Edited by Don Silcock



### Paralenz

The Danish-designed Paralenz is a newly developed tough little video and stills action camera, which has been specifically designed for divers. As such, it is a world's first. Part of the design philosophy, the company stated, was to create a product that would allow anybody—regardless of their diving experience or photographic expertise—to take quality underwater pictures and record high definition footage of their diving experiences. Some of those key features include: temperature and pressure sensors, which log your dive and display this information in your videos; automatic depth-controlled color correction, eliminating the need for lens filters; long battery life, allowing recording of 4K video at 30fps for over two hours; Paralenz Dive App, allowing you to display dive profile information alongside recorded footage and share it all with other divers; 200m depth rating, with no additional housing—a first in the recreational dive market. The Paralenz dive camera has a retail price of US\$599.00 and EU€649.00.

[Paralenz.com](http://Paralenz.com)



### Nauticam Arri Alexa Mini Housing

Nauticam has released its new housing for the Arri Alexa Mini, the highly regarded, super-lightweight carbon bodied, m43 format, film and commercial video camera. Produced in collaboration with HydroFlex, the underwater cinema equipment rental house, the Nauticam housing features an array of interesting and innovative features focused on the professional film maker. [Nauticam.com](http://Nauticam.com)

### Ikelite Mark II Housing for Canon 7D

US manufacturer Ikelite has released a completely re-designed housing for the popular Canon 7D DSLR. The housing incorporates Ikelite's new Dry Lock (DL) port system, which it said is much more robust and easier to assembly than its legacy Four Lock (FL) system. The new DL ports are lighter than the FL ones and able to accommodate extremely large diameter lenses such as the Canon 16-35mm or Canon 11-24mm. Ikelite stated that the DL and FL system ports are not interchangeable, but the DL port mount can be removed and replaced with old style FL port locks for legacy users. The housing also features a new, large, soft-touch lobed zoom knob, which makes changing the focal length of the lens much easier. [Ikelite.com](http://Ikelite.com)



### BS Kinetics Leica S Housing

BS Kinetics has released its new housing for the Leica S-Series medium format digital cameras. The company, which is based in Germany, uses an innovative combination of carbon fiber and epoxy to manufacture its housings, which are then provided with stainless steel and the advanced plastic material POM fittings. BS Kinetics stated that manufacturing its housings this way allows them to be very light but also very strong and capable of depths up to 160m. The housing for the Leica S-Series features a LiveView-Finder, which allows the screen of the camera to be viewed, plus the shutter release, mode dial and shutter speed are controlled by the right hand. On the back of the housing is a wheel control that is accessible by the right-hand for the camera's aperture and four buttons that provide access to all the other camera's functions.

[BSKinetics.com](http://BSKinetics.com)



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