



opinion

Text and photos
courtesy of Gareth Lock

At the Rebreather Forum 3 conference held in Florida in May 2012, a number of presentations were made which advocated the use of checklists as a means to prevent diving incidents from occurring, or at least reducing the likelihood of occurrence. Consequently, there was a consensus opinion made at the end of the conference that checklists should be more actively promoted by both the manufacturer and the training agencies and should become the norm. Significantly, there should be overt use by senior members of the diving community in the same way that leading figures in snowboarding and skiing have changed the attitudes over the use of helmets, with the result that it is 'not cool' to not wear a helmet. To further emphasise the endorsement of the use of checklists, at the 2014 TEK Dive USA held in Miami from 17-18 May 2014, PADI provided T-Type CCR checklists for all attendees in the delegates' bags.



Checklists

— *A Tick in the Box*

Checklists aren't just about diving equipment, but also about the aim of the dive. Make sure the camera is not stuck on Manual Focus before taking the shot!

The reason why the presentations and consensus statement arrived at this position was because there is considerable evidence from aviation, medi-

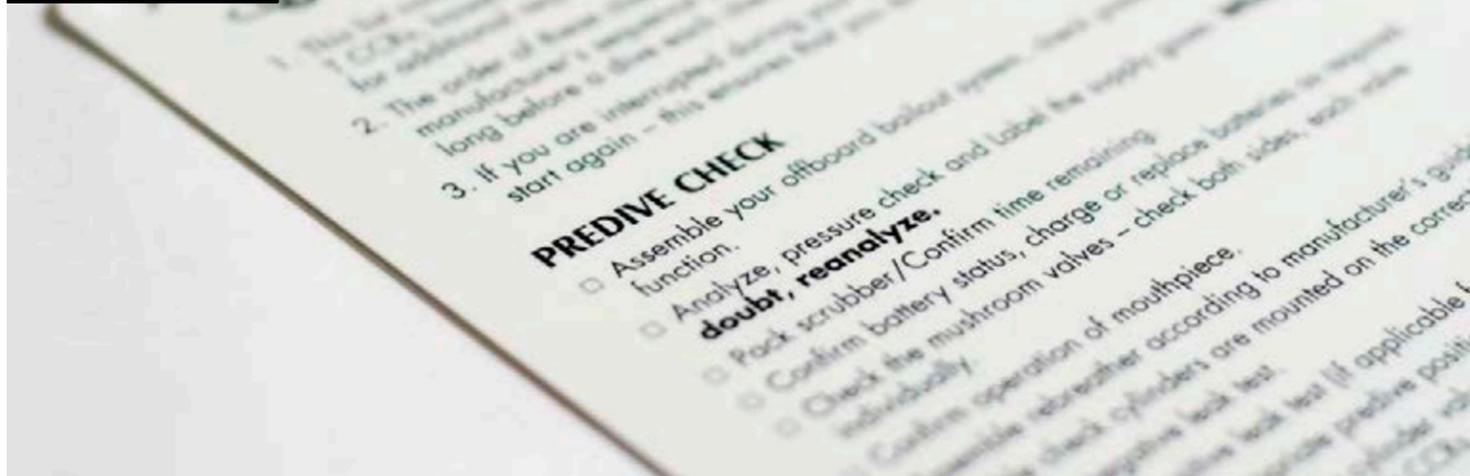
cine and other fields and disciplines that shows the proper use of checklists reduces the probability of incidents occurring. Simple examples of how

checklists have improved safety include making sure the limb for amputation has been actively and correctly identified, positive confirmation of the dose

and identity of the drugs being administered or making sure the correct engine is being shut-down in the event of an aircraft engine fire. Whilst these may

appear to be really obvious situations which should not need an additional level of oversight, there are a considerable number of documented events





Checklist

where these things had gone wrong because the wrong selection or decision was made.

However, just because you have a checklist it doesn't mean you won't prevent incidents from occurring. An oft-quoted line, "In all of the CCR fatality investigations I have been involved in, there wasn't a single checklist present on the diver," can be countered with, "All of the commercial airliners which have crashed in the last ten years have had checklists (hardcopy or electronic) in the cockpit."

This counter doesn't mean that checklists don't have their use, they do, but to make them effective, the community has to create the environment where their use is the norm and also allows divers to be challenged if they are not completed properly. Given the culture in some parts of the community, this will be a major challenge.

The Checklist Manifesto

Between October 2007 and

September 2008 there was a World Health Organisation study to investigate the effectiveness of checklists in operating theatres and hospitals to reduce the numbers of incidents, accidents and fatalities; at the time there were 150,000 people dying every year in hospitals following surgery. Despite these statistics, there was considerable resistance, especially from the more senior doctors, surgeons and consultants because they did not believe they made the mistakes and felt that they should be trusted to carry on with the status quo.

However, despite the protestations, the trial was run across eight hospitals in eight cities around the world. The results were staggering. "Overall, in this group of nearly 4,000 patients, 435 would

have been expected to develop serious complications based on our earlier observation data. But instead just 277 did. Using the checklist had spared more than 150 people from harm—and 27 of

To make [checklists] effective, the community has to create the environment where their use is the norm and also allows divers to be challenged if they are not completed properly.

them from death," and, "The rate of death was 1.5% before the checklist was introduced and declined to 0.8% afterward. Inpatient complications occurred in 11% of patients at baseline and in 7% after introduction of the checklist."

The checklists themselves were really simple but they required an active element to tick off items against a list rather than being verbally completed from memory. However, it wasn't the checklist per se that was the most important factor in improving the safety in the surgical theatres, it was empowering the very junior staff to prevent procedures from start-

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As the dive gets more complicated, the complexity of the checks also increases

Checklists

being rushed, 'rent a buddy' and not being sure what they are expecting, not wanting to question another diver and so on. This situation is made worse when divemasters or instructors do not undertake buddy checks either and therefore set a bad example for their charges to follow: "my instructor isn't doing a buddy check, why should I?"

Following RF3.0 a number of agencies provided CCR checklists for use on their courses, some of which were small enough to be clipped onto the unit at all time, whereas others were the size of a training slate.

Evidence of effectiveness of checklists in diving

A recent study by DAN in the summer of 2013 appears to have shown the benefit of completing checklists by conducting a trial where the group was split into a control group who could choose to complete formal checklists before they started their dive, and the subject group who were given a checklist to use just before they entered the water. The checklist group had fewer reported incidents than the control group and

a number of issues were detected which would have otherwise been missed had the checklist not been followed.

A full analysis is expected to be published shortly in the scientific literature. Now this is only one study and only involved one environment so

there are likely to be some biases involved, but it certainly showed the merit of using checklists.

Another example was the Guam

ing or progressing until the checklist items had been completed.

This empowerment came from the most senior management within the hospitals and, in effect, provided 'top cover' for the nurses and assistants to tell a consultant or surgeon to not progress, no matter how much they protested.

This was a massive change to the culture in the operating theatre where it had always been considered that the surgeon or consultant was 'God', but now one of the most junior staff could question this authority.

By providing a means by which someone else confirms that the checklist is completed, it ensures that someone doesn't pay lip ser-

vice to the checks. (Whilst it can't reduce this possibility to zero, it seriously reduced the opportunity).

This is the same process used in multi-crew flight deck operations where one pilot reads the checklist out loud and the other actions it, confirming that the action has been completed when they have done so. This process is known as "challenge and response".

Notwithstanding the above, care must be taken to ensure that there are not checklists for checklists, or that checklists are appropriate for their intended use. A single checklist cannot cover equipment preparation, pre-dive equipment/configuration checks, in-water emergencies, or post-dive dismantling of

equipment and therefore there is considerable skill required to target checklists and their application.

Diving checklists

Many diver training organisations provide verbal checklists in their training manuals and try to instill the habits and cultures to use them effectively and regularly. Examples include BWRAF (BCD, Weights, Regulators, Air and Final Check), GUE EDGE (Goal, Unified team, Equipment, Environment, Decompression, Gases and Exposure) and BAR (Buoyancy, Air and Releases). The idea being that these are 'last ditch' checks completed just before the diver gets in the water and provide some assur-

ance that their equipment is ready for use and will provide them with a working gas supply and adequate buoyancy.

However, there is significant evidence that these checks are not completed regularly or effectively. The non-completion of checks happens at all levels of diving, from beginners in blue water holiday environments to technical OC and CCR divers with multiple stages.

The reason why they are not completed varies from relaxed or complacent attitudes to checks,

The non-completion of checks happens at all levels of diving, from beginners in blue water holiday environments to technical OC and CCR divers with multiple stages.

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Checks can ensure that the correct equipment is carried on the dive

Application to the real world

So how do we make checklists work in a sport or recreational environment when you don't have the same level of empowerment given to you by someone senior? Even more challenging, when you are just diving with a buddy or friend and not in a commercial environment with a formal hierarchical structure.

You achieve it by creating the norm that checks are done, and if they are not, questions are asked between buddies or team divers. This goes for instructors and divemasters; there should be no

By creating the 'normal' situation such that the divers are empowered to stop someone going diving with them if the gas isn't analysed, we have created a check that can be 'challenged and responded to'.

One of the processes described through all dive training covering nitrox or trimix is that all gas must be analysed to measure the oxygen content before getting in the water to reduce the probability of having an oxygen toxicity event. The analysis should be done on the day of the dive to ensure that there hasn't been a mix-up with bottles or regulators. If you have

shame or disagreement when someone asks for the checks to be demonstrated. Just because you are a divemaster or an instructor, it does not mean you won't make a mistake.

Checklists

the correct social or cultural environment, you can also say you are not getting in the water until your buddy's gas has been analysed correctly—after all, it is your gas too in the event of an emergency.

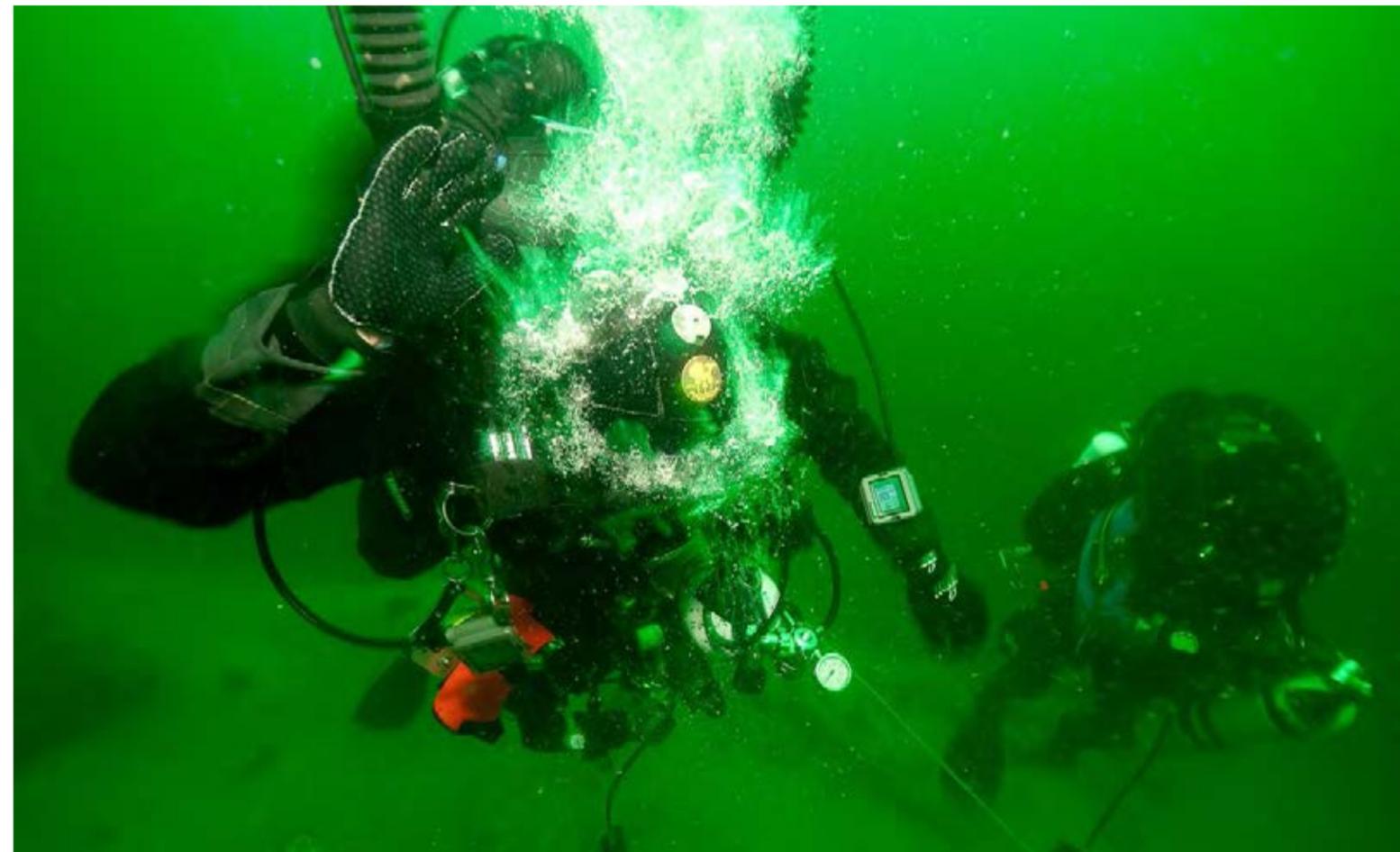
I have personally not gone diving with a very close buddy of mine until they have analysed the gas. I have also been two minutes from jumping off the boat and realised that the stage cylinder hadn't been analysed that day even though the regulator had not been removed. I could have jumped in and hoped it was okay, but hope has no place in diving especially when all it takes is the time to unscrew the DIN, put the analyser on, open the valve, read the display, put the

Project, which ran for five years and completed 9360 hours of in-water CCR diving with a small team of divers operating two Mk15 CCR units. Although there were a number of unit failures and problems detected on the surface, they never had one in-water failure of their CCR units despite the massive number of

hours of in-water time. This was down to following robust pre-dive checklists and procedures.

A final example is the GUE CCR Beta programme which has involved 50 instructors, instructor-trainers and experienced OC and pSCR divers developing the course material for the new GUE CCR Level 1 programme. In all,

the GUE divers had completed nearly 900 hours in water and never had one in-water failure despite a number of failures being detected on the surface, either during the assembly period or the pre-breathe. Again, these were all detected by rigidly following a checklist.



Failures normally follow a predefined process—a process which can be reinforced through checklist use



Really. There are no Dive Police out there!

small plastic checklists that can be clipped onto the unit or harness by a bolt-snap so that it is available to the diver at all times. However, there are examples of these checks not being completed because the diver has been rushed or has had inferred peer pressure to complete the task more quickly. It takes an alert buddy to make sure these checks are completed by watching them complete the check; sometimes this is impossible because they are on the other side of the boat facing the other way!

Whilst the majority of agencies now teach team-diving in-water, only a small number actively promote and teach pre-dive, in-water and post-dive team diving practises. This pre-dive team approach includes equipment configuration demonstration, access to emergency equipment and gas analy-

has a series of actions to be completed with initial blocks next to each one action to show that it has been completed once signed, on the other could be developed. This sticker is then attached to the unit or cylinders pre-dive in the same way that a gas analysis sticker is.

Completing such a checklist has the secondary effect of slowing down the checks which means divers need to be a little more prepared (which is no bad thing) but in some cases, e.g. hard-boat diving where it takes a few hours to travel to the dive site, it may not be possible to write on the sticker (but graphite pencils should work).

By initialling and signing the sticker in the relevant sections, another team member can quickly and easily check to be sure that their team member has

Some of the agencies have produced small plastic checklists that can be clipped onto the unit or harness by a bolt-snap so that it is available to the diver at all times. However, there are examples of these checks not being completed because the diver has been rushed or has had inferred peer pressure to complete the task more quickly.

completed their own checks correctly and that the unit is in a safe condition to dive. In the same way that a diver can stop the dive because there is no completed and signed gas analysis tape, they can do the same for the CCR pre-dive checklist. No completed and signed checklist, no dive. Simple.

This approach is the same as that used in surgical theatres; if the checklist has not

been completed then the procedure doesn't progress. The difficulty will be creating the environment whereby divers are happy to be challenged by their team mate or buddy when they are not necessarily close friends or even know each other; this is because there is no 'norm' at the moment.

Whilst it could be argued that less scrupulous divers could race through and scribble their initials to appear to get the checks done more quickly, there is

reg back on. So that is what I did. The gas was correct. I also had a word with my buddy about not checking my gas analysis!

By creating the 'normal' situation such that the divers are empowered to stop someone going diving with them if the gas isn't analysed, we have created a check that can be 'challenged and responded to'. So why not create a similar process for checklist use, especially CCR where there is a much greater risk of missing something due to the complexity of the equipment compared to OC? Maybe because there isn't the same level of dependency or reliance on other divers when undertaking CCR diving?

Same ocean diving is not an unknown configuration.

Checklists: What are they?

The following section deals primarily with CCR checklists because of the number of steps required to assemble and pre-dive check the units, but the basic premise is the same and could or should be applied to OC.

There are a number of options available to divers when it comes to checklists and their CCR units: build checklists, final pre-dive checklists, emergency checklists and post-dive breakdown checklists. Each checklist has a differing level of detail within the tasks at hand; no one

checklist can cover everything otherwise it becomes too unwieldy and will not be used.

What we need to do is create a simple pre-dive checklist which ensures that ALL of the basic life support capabilities are working in the CCR unit and that there is nothing likely to be lying dormant in the system that will impact the diver later in the dive. We also need to ensure that the other team members can see that the diver has undertaken and completed the checklist, in the same way that a properly completed gas analysis sticker shows that the gas has been analysed correctly and is current.

Some of the agencies have produced

sis markings which are checked by team mates prior to entering the water. If pre-dive checks can be completed in a challenge and response manner with verbal responses or demonstrated actions, why not consider the same process when looking at detailed checklists such as those found in CCR diving?

A potential approach could be the same as gas analysis tape which shows when the analysis took place, the actual gas analysis and the initials of the person who undertook the analysis. A checklist which is self adhesive on one side, and



an expected level of trust and professionalism from divers who undertake dives where CCR is required and therefore this shouldn't be much of an issue. It should also be recognised that it will take nearly as much effort to 'fake' the checklist as it does to undertake the activity properly so why not do it properly the first time?! This responsibility towards your teammate or buddy should be part of the mentality that goes with team-diving—working together for a safe outcome, not same ocean diving.

This suggestion may not be acceptable to those divers who undertake solo dives, but even if they don't have someone else

to check their checklist sticker for them, the use of a checklist will reduce the number of pre-dive issues if it is used properly.

The more technical solution to this is to include the checklist as part of the electronics in the system, e.g. Poseidon Mk VI and SE7EN, VR Sentinel and Hollis Explorer, which would prevent the unit from working (apart from immediate life support) if a checklist has not been completed. A criticism of some of these systems is the lack of reliability, which means the checklist system prevents the diver from diving due to a genuine system failure. Whilst this is a good thing as it fails safe, it can lead to divers shortcutting

Overhead diving introduces additional challenges which means checks are more important

CCR divers on a training course (below). A training course is the best place to develop and reinforce the mindset of checklists

the system to go diving if the system is not reliable.

Another criticism likely to be levelled at such a procedure is that it is taking away personal responsibility and that divers should be able to do everything themselves. In part, this is correct, but pilots are trained to undertake emergencies from memory and then follow up with checks because they may have missed something. Why not CCR checklists?

Application of checklists to the recreational diving community

The majority of this article has been about the use of formal, predominately written, checklists in technical diving. However, the most predominate type of diving is recreational, normally considered to be diving undertaken with no deco, single cylinder and shallower than 40m.

So how do we apply the same methodology and mindset to recreational diving? Easy. Just complete the checklists, albeit verbal ones, that have been taught in recreational diving courses. They are simple and easy to remember, they just need to be completed.

If your buddy, team member or instructor doesn't do a check, prompt them and say that you would like to complete



it, introducing humour if need be. The hard part is if they refuse to do the check. My bigger concern wouldn't be that they don't want to do a check, it would be more about what their attitude is to the rest of diving safety.

Summary

Whilst it is fantastic that all of the agencies and the CCR manufacturers have provided checklists for users, with the majority of unit checklists downloadable from <http://www.tdisdi.com/rebreather-checklist/>, providing checklists isn't enough. There needs to be a change in attitude to their introduction and usage.

This runs from the first dives when the OW instructor or dive-master completes their BAR or BWRAF checks, even when no students are watching, through to instructors and instructor trainers when undertaking fun dives;

this isn't about the Dive Police, but rather about demonstrating sound practices.

Unfortunately human nature means that we are more likely to copy someone's activities rather than listen to what they say and follow that, especially if that person is someone we look up to.

There is limited value in having a checklist to complete an activity if there is no way to make sure the checklist is actually completed e.g. verbal checks without independent monitoring. There is just too much scope for human variable performance to introduce errors, errors which may cost a diver his or her life.

The irony is that divers don't believe they make enough mistakes to warrant the use of a checklist, but how many of those errors or mistakes would have been picked up by using a checklist? Just think, how many

surgeons thought they didn't make a mistake before checklists were introduced? They are professionally trained and undertake these activities more regularly than you go diving and they still make mistakes.

Therefore whilst there is credible evidence that checklists can prevent a significant number of incidents from starting, developing and reaching fruition, the checklists themselves need to be properly used to be effective. □

Gareth Lock is an accomplished technical diver based in the United Kingdom. Currently serving in the Royal Air Force, Lock is undertaking a part-time PhD examining the role of human factors in scuba diving incidents. For more information, visit the Cognitas Incident Research & Management website at: Cognitasresearch.wordpress.com





photo & video

Diver with large school of fish (right), Cebu, Philippines; Diver on coral outcrop (below), Eastern Sea, Korea

Underwater Modeling Tips



KI JOON KIM

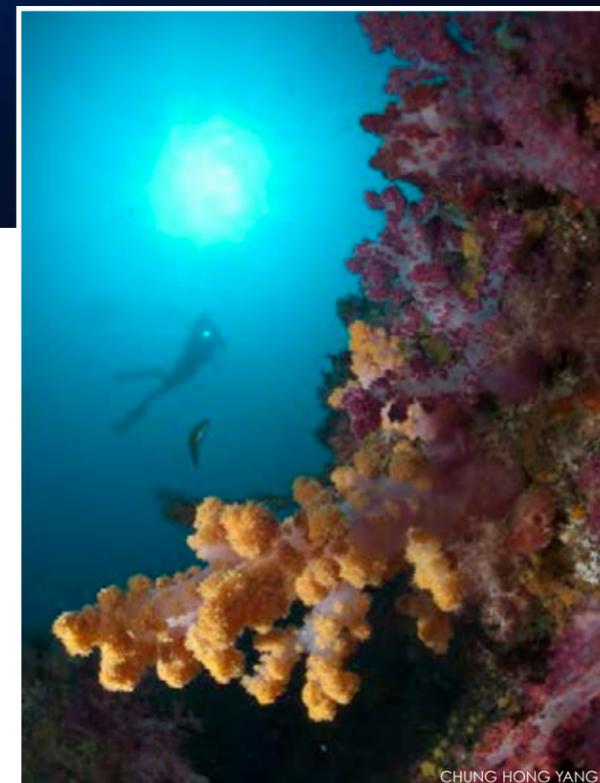
“What do you have to do?” It is the first question asked by most people when it comes to underwater modeling. As an underwater model, my answer is always the same: “I have to blend myself with the underwater environment to further enhance its beauty.”

Text by Lyn Boyun Chung
Photos by Sang Hak Choi, Ki Joon Kim, Jeong Kweon Park, Oh Yong Sung, Ju Won, Chung Hong Yang

Fifteen years ago in my country, underwater modeling was done primarily by fashion models or female divers in swimsuits. Often they were treated less than professionally, usually not paid, and in some cases, expected to provide sexual favors—and the resulting images were not as good as they could have been.

Attitudes needed to change. I wanted to improve conditions and see what women divers in scuba gear could do to improve underwater images. So I established a school for underwater modeling in Korea to give women divers new skills and professional opportunities in the diving industry.

In the beginning, there were complaints about paying underwater models. However, since then, there has been a gradual change in the understanding and appreciation of



CHUNG HONG YANG

Diver on reef, Jeju Island, Korea



photo & video

how models who are scuba divers can optimize an underwater image. They have become recognized as professionals and equals in the field and have even been given an award category at national underwater photography competitions for the past three years.

The technique

Underwater modeling can be divided into two major areas. The first is scuba



JEONG KWEON PARK

diving and the other is skin diving. When scuba diving, the model's primary objective is to make the subject of the photo appear beautiful and



JU WON

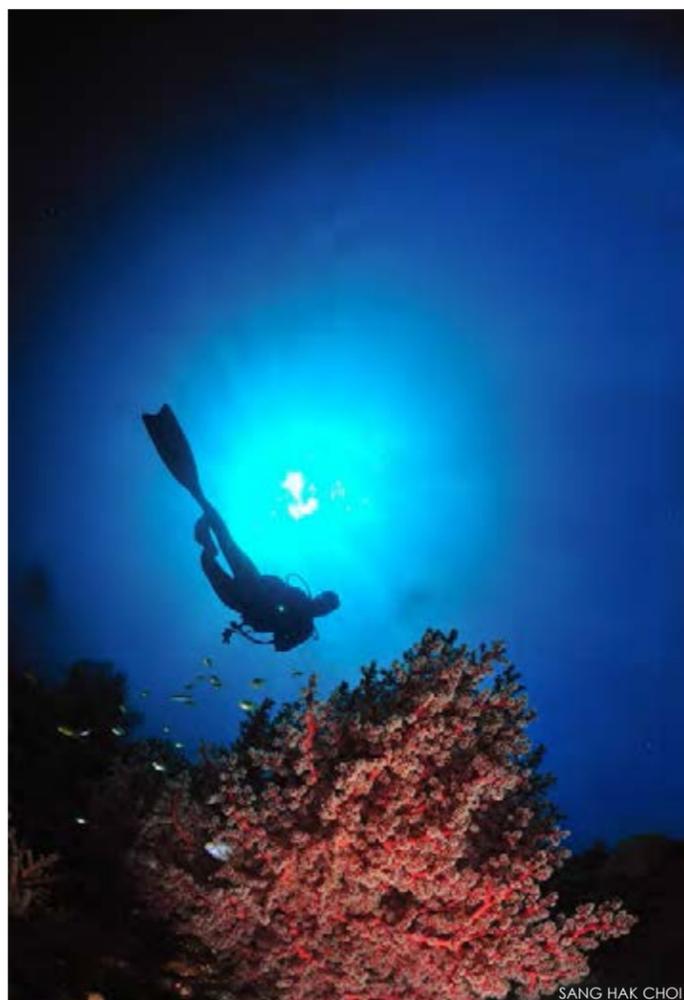
real from the camera's point of view. When skin diving, the model's primary objective is to blend in and project the aesthetics of her form into the water. The model becomes one with the underwater environment while enhancing it with the beauty of her form. Silhouette modeling is the most basic scuba diving modeling.

Understand the camera and the lens

When planning the silhouette scene, it is essential that you and the photographer work as one. To properly assist, the model has to understand how the photographer will take a photo and has to be able to visualize the framing that the photographer is planning.

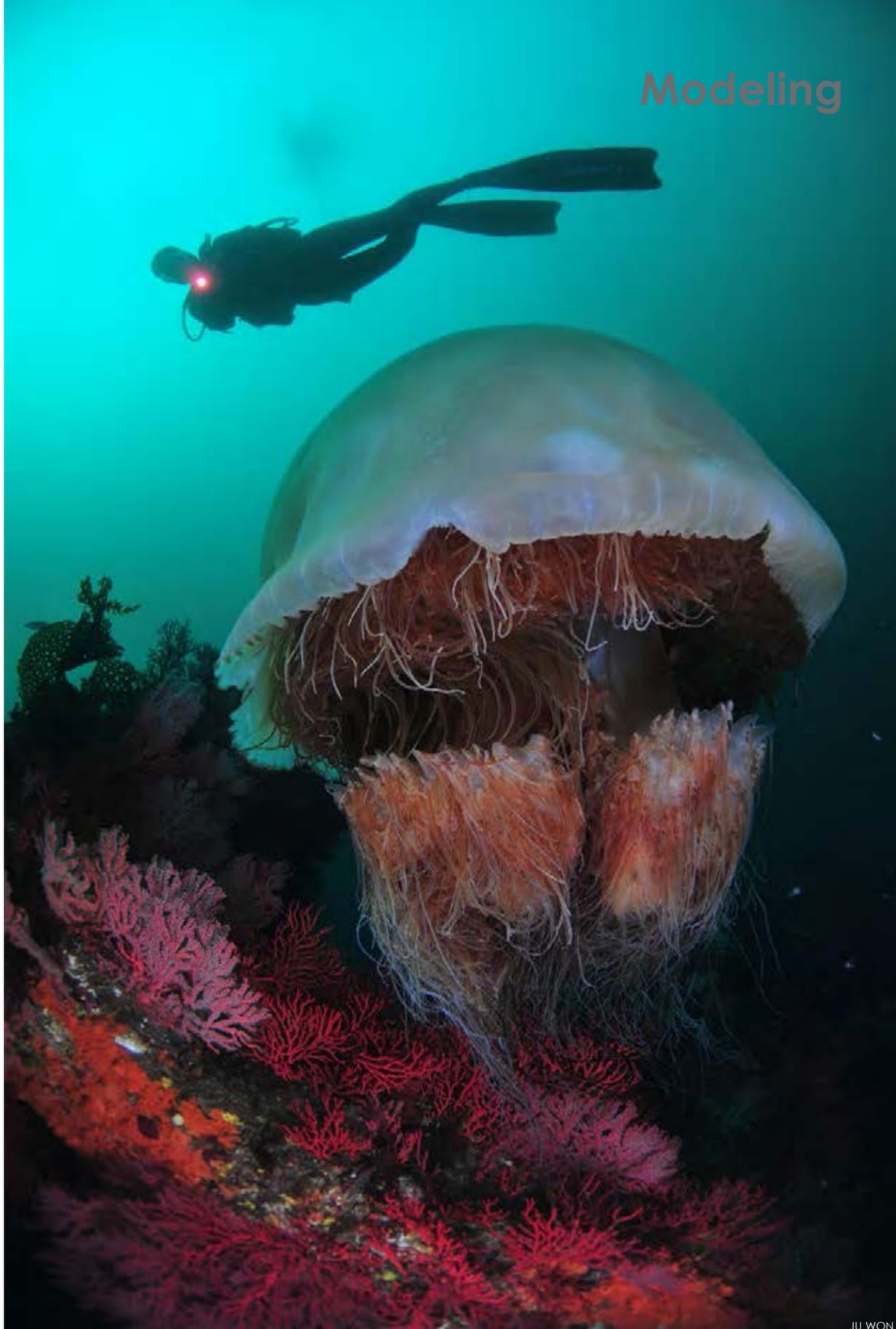
The model has to know what camera is being used, the focal length of the lens, and what aperture will be selected. Cameras can be divided into two major types: those with full or cropped sensors. Depending on the sensor, it will affect the position the model will take in the framing.

If you don't understand the camera and think that just posing will work, you're not correct. With a cropped



SANG HAK CHOI

Modeling



JU WON

Diver and giant jellyfish (above), Eastern Sea, Korea; Diver and coral garden (top left), Jeju Island, Korea; Diver and soft corals (left), Raja Ampat, Indonesia; Diver with whip coral (far left)





photo & video

Diver with white-plumed anemone, Eastern Sea, Korea



JU WON

sensor, the model will be too close, filling the frame. With a full sensor, the model will be too small in the frame. Of course the photographer can signal to you how to position

yourself. However, you're wasting valuable time and not performing as a professional underwater model. The objective of a professional underwater model is to be in

Diver on reef (right) and in silhouette under the sun (below) Raja Ampat, Indonesia

the best position for the photographer to take one shot in the shortest time possible.

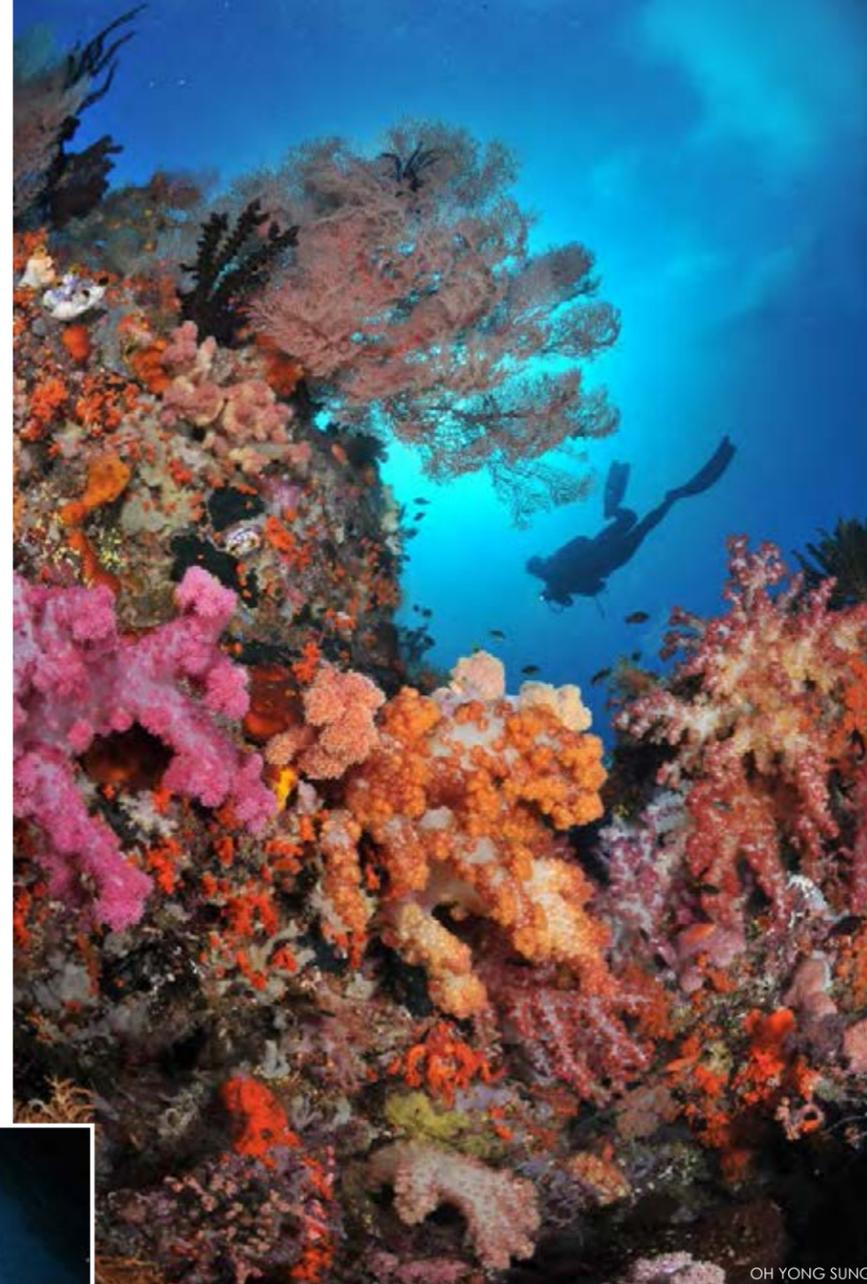
The position of the model also depends on the lens. Most are within the 10 to 16mm focal range. Depending on the angle of view and the characteristics of the lens, it is recommended that a photograph of the model be taken before the dive. This preliminary image helps to identify and analyze the particularities of the selected lens and options. In addition, another photograph should be taken after the underwater housing has been set in place. The image will identify any distortions or angle inflexions the framing will have in the final setup.

Fill empty space with the figure of the model

In silhouette poses, it's not pos-



OH YONG SUNG



OH YONG SUNG

sible to see the details of the model's face or the color of the suit. However, the model's figure can be clearly and precisely seen—every single curve! Therefore, if you pose with a relaxed and comfortable posture, as you would do during a normal dive, it will be very difficult to project a very simple and beautiful figure.

To achieve the desired pose, you need to simplify

your equipment. Lines, hoses, gauges, and other extremities should be secured to your side and not freely moving about. Your body position is critical. You can spread your arms. However, if you do feel confident with the natural expression, place your arms together neatly in front of your chest. Always keep your thighs together! From the knee to the calf, you have to bend slightly to give the impression that wearing your fins is very natural. Also, you can have one leg straight and the other slightly bent, while keeping

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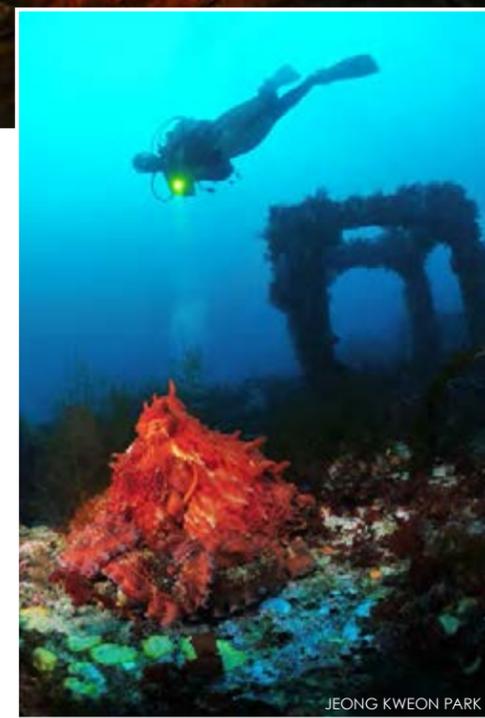
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Diver (right) and soft coral, Raja Ampat, Indonesia; Diver (lower right) with octopus, Eastern Sea, Korea; Diver (below) with coral encrusted wreck remains, Eastern Sea, Korea

Modeling



SANG HAK CHOI



JEONG KWEON PARK

your toes pointed to straighten your fins. Again, always keep your thighs together! In the silhouette pose, you will appear very natural swimming with fins.

Another position is to keep your legs straight in a standing position. Although the pose lacks action, it can be used to emphasize the subject or scene underneath the model.

As a side note, the model should twist her waist a little to make her hips stand out. In this posture it is an advantage if the model is female.

Use an underwater lamp or torch

Preparation of the underwater lamp or torch is essential. When you choose a torch, it should not be too big or too bright—just adequate. It should cast a wide beam. This type of torch will make things easier and more visible. Having red or yellow color filters will bring out the originality of the photo.

Additionally, the position in which the torch is held is important. If the position is too high, it may mostly capture the whole face. If the

position is too low, it may capture mostly the waist and hipline. Hence, it is best to hold the torch right below your chest.

The direction of the light is important, too. If illuminating directly into the lens, the light will be reflected and become too strong, burying the upper body with light. The direction of the light should be slightly tilted downward.

Express yourself freely as if you were dancing

How you're filling the empty space



photo & video

Diver and bright pink coral (right), Eastern Sea, Korea; Diver with sea fans (far right), Raja Ampat, Indonesia



SANG HAK CHOI

Diver and coral reef, Raja Ampat, Indonesia

is the model's role in creating the photograph. Once the distance from the lens and the location of the empty space is understood, your movement within it should be very free and fluid with the subject. You can pose in the same direction as the subject or pose in the opposite direction, creating a very dynamic shot. You can turn off the torch and naturally widen your hand movements to emphasize a feminine look. What is important is how well you want your pose to fit within the color and shape of the other subjects in the angle of the frame.

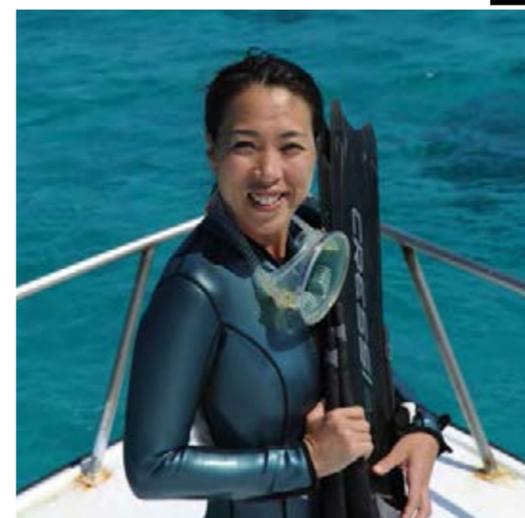
Although silhouette modeling is the most basic of underwater photography, appearing easy, it is how you express yourself that affects the beauty of the final shot. Women, especially, have beautiful figures. As a female diver, you can express your figure. If you are a female diver who loves the ocean, I highly recommend that you to try modeling and feel what it is like to make the underwater environment more beautiful. □

Coming from an artistic background as a ceramicist and



JU WON

designer, Lyn Boyun Chung is an avid diver, dive instructor and underwater photographer based in Korea. She ran her own dive shop for 11 years and participated in several underwater photography competitions. At the time, she saw a need for professional models and established the Korea Underwater Model School in 2001. Since



SANG HAK CHOI

then many photographers have won grand prizes for their underwater images incorporating her as a model, and she has built the school up to ten professional members, hoping to give more women divers in

Korea the opportunity to become professionals working in the dive industry. To that end, she aims one day to establish a women's scuba diving association in Korea. For more information, email: yoonyy73@hotmail.com

Author and model Lyn Boyun Chung



photo & video

Edited by Don Silcock

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Nauticam NA-D4s Housing

Nauticam has announced the release of their new housing for the Nikon D4s top of the range DSLR. The release of the new housing coincides with Nauticam's new Nikon Flash Trigger that enables strobes to be triggered manually via fiber optic with the D4s, which does not have a pop-up flash. The NA-D4s housing is fitted with the necessary electronics for the Nauticam vacuum system and also features improved focus knobs with a higher gear ratio. The housing is available in two versions—one with two Nikonos bulkheads at MSRP of US\$5,100 or without the bulkheads at MSRP of \$5,000. The Nikon Flash Trigger has a MSRP of \$220. □



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Subal E-M1 Housing

The Austrian housing manufacturer Subal has released a new housing for the highly regarded Olympus OM-D E-M1 mirrorless camera. Subal's entry into the mirrorless housing market is a significant development, as it provides further evidence of the growth of these small but highly functional cameras with underwater photographers. The E-M1 is the flagship of the Olympus range and considered one of the best mirrorless cameras available, and Subal clearly sees it as worthy of their support with a premium housing. The Subal EM1 housing provides access to all of the key functions of the camera such as video, menu, white balance, ISO, exposure compensation, OK, multi function keys, Info, AFL and AEL. The housing is manufactured from a solid block of high grade seawater resistant aluminum, which is then anodized and put through a patented chemical hardening process, before a final three layer powder-coating. All control shafts and screws are made from high-alloy chrome-nickel steel to maximize their durability and the housing features Subal's Quick Lock closure system and uses the new T2 port system. The housing is available at a MSRP of US\$3,150. □

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 Fon: +49 7841 668437



photo & video

Aditech Mangrove Video Light

Aditech has announced the release of their new Mangrove VC-3L6 video light. The new light features a 6750 lumen output at a color temperature of 5000°K and is powered by interchangeable Li Ion batteries. Aditech state that the light will run for 55 minutes at full power. The Mangrove VC-3L6 is available at a MSRP of US\$718. □



Sony

Sony has released the latest iteration of their top of the range RX100 compact camera. The new RX100 III is the third iteration of the highly regarded and successful RX series, which has also proved to be very popular with underwater



photographers. An indication of just how popular the RX100 has been is that the first and second iterations of it are still available, at a lower MSRP to the RX100 III. The new version has a large aperture F1.8-2.8, 24-70mm Zeiss lens, built in OLED viewfinder and Sony's BIONZ X processor, which is featured in several high-end Sony cameras such as the full-frame □7, □7R and □7S models. The camera uses the same high-resolution 20.1 MP BSI CMOS sensor as the existing RX100II model, but adds 5 axis image stabilization. The RX100 III retails at a MSRP of around US\$800. □

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Nauticam NA-a6000 Housing

Nauticam has released its new housing for the Sony a6000 mirrorless camera. The NA-a6000 housing is designed for one-handed control of both the Sony a6000 camera's command dials plus the option of rear button AF actuation. The housing also has a redesigned and colored record button to activate the a6000's video capability. The NA-a6000 has a MSRP of US\$1,650. □

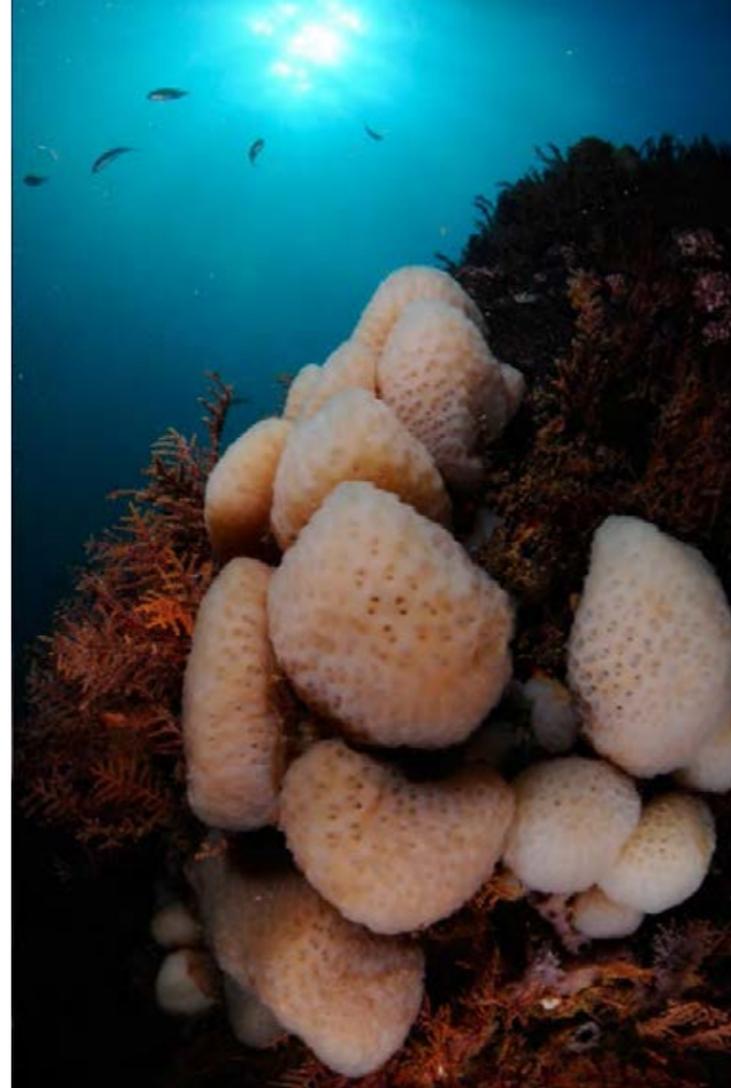


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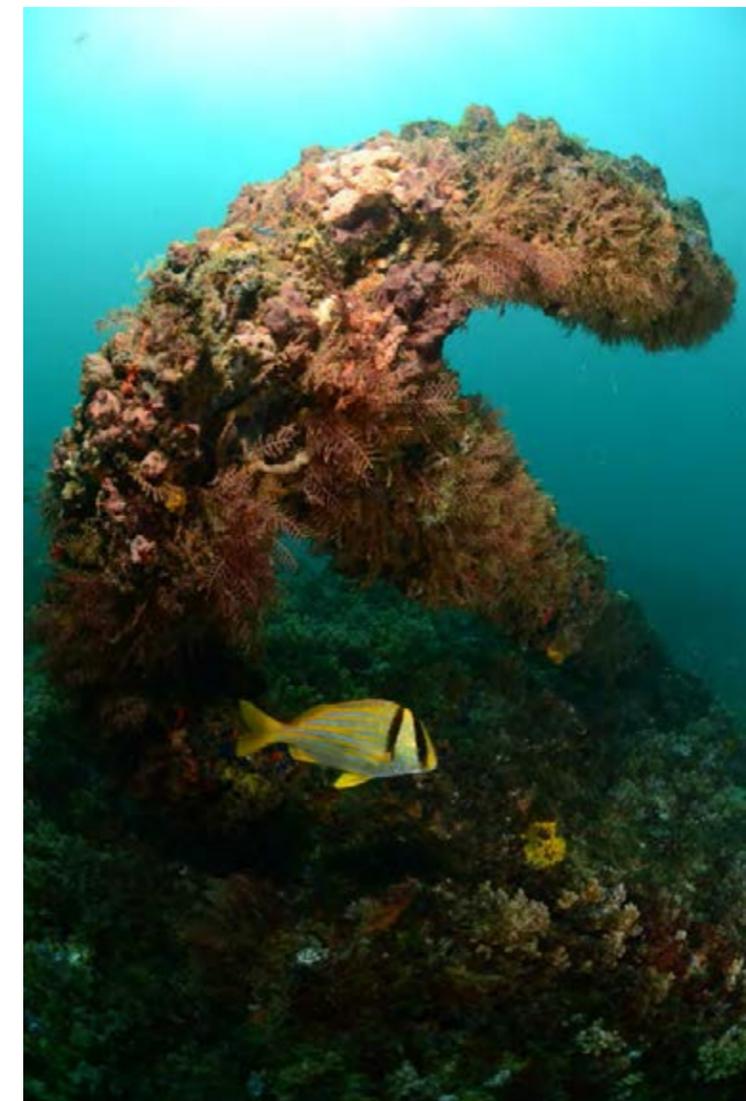




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Environment Category:
First Place, Alvaro Velloso (left); Second Place, Ulisses Turati (above); Third Place, Alexandre Ornellas (right)



Salvador hosts the Brazilian National Underwater Photography Competition

Text by Áthila Bertoncini and Maíra Borgonha

For the very first time, Salvador, the Brazilian capital of axé music (samba-reggae) and Trio Elétrico, was elected to host the country's largest underwater photography competition. On March 26-30, 36 participants—photographers, models and assistants—dived the waters known as the “Brazilian Caribbean”, searching for the best shots to please ten jurors representing five nationalities.

Similar to the other fascinating localities that have hosted previous national photo competitions such as Fernando de Noronha Island and the cities of Vitória, Cabo Frio and Arraial do Cabo, the dives in Salvador provided rich opportunities to photographers from all over Brazil to brilliantly capture its gorgeous diversity of life, highlighting the importance of preserving this marine heritage.

Besides the rich diversity found in Salvador waters, the choice of Salvador as the host city of the Brazilian Underwater Photography Competition represented a great challenge, as all the dives needed to strictly

follow the tide dynamics, which resulted in a variation of visibility quality as well as

The First Rogério Rupollo Prize of Underwater Photography went to author Áthila Bertoncini





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Environment With Model Category: First Place, Alvaro Velloso (right); Second Place, Marcelo Prim (below); Third Place, Fabio Freitas (bottom left)

Close-Up Category: First Place, Carlos Montechi (far right); Second Place, Marcelo Prim (center right); Third Place, Fabio Freitas (bottom right)



mal, showed up at the beach for the photographers who woke up early. Unfortunately it did not show up during the competition days, which were slated for innovations of the competition, such as apnea images.

Besides Porto da Barra, two shipwrecks served as competition areas, accessed by boat with Sharkdive and Bahia Scuba

The shipwrecks and shore dives provided unique opportunities to photographers resulting in high quality images, which can be observed in their portfolios and the medalists' images.

About the competition

The Brazilian Competition follows the CMAS Underwater Photography World Championship rules, while it showcases Brazilian representatives.

During the competition, each photographer is requested to present five images as follows: Environment, Environment With Model, Close-Up, Close-Up With a Theme (which was the color blue) and Fish.

Unique to the 2014 competition, a special prize was created—the First Rogério Rupollo Prize of Underwater Photography. This prize consisted of an image, obtained during the competition days and selected by each photographer, to be printed, exhibited and voted on by photographers, models and assistants, during the night of the prize ceremony.

This prize was a tribute to the memory of Rogério Rupollo, a great friend, passionate underwater photographer and marine life enthusiast who passed away last year. His wife, Denise Glaser Rupollo, daughter,

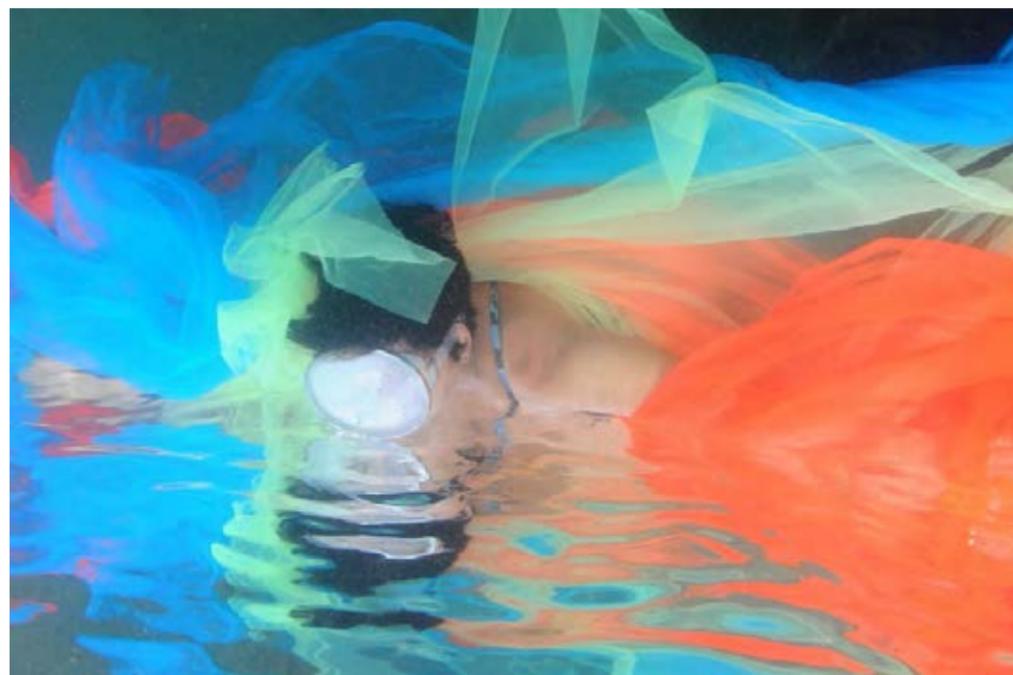


marine fauna.

Salvador is known for great dive sites, such as the *Cavo Artemidi* shipwreck, and the shallow reefs of Baía de Todos os Santos, particularly rich in coral cover. The diving site of Porto da Barra served as the headquarters of the event. The place offered calm waters for training dives, where it was just 20 paces to the beach from the Dive Bahia dive center, crossing a short avenue.

Located next to two of the city's postcard spots—Farol da Barra (or Santo Antônio Lighthouse) and Forte de Santa Maria, a white colonial fort built from 1614 on—Porto da Barra is blessed with some of Brazil's most dramatic, gorgeous scenery at its urban beach, with amazing sunsets.

The greatest surprise at Porto da Barra occurred two days before



the competition when an easy-going peixe-boi (or manatee, *Trichechus manatus*), the most endangered Brazilian marine mam-

dive centers. The *Germânia* and *Bretagne* shipwrecks sank close to each other in 1876 and 1903, respectively.

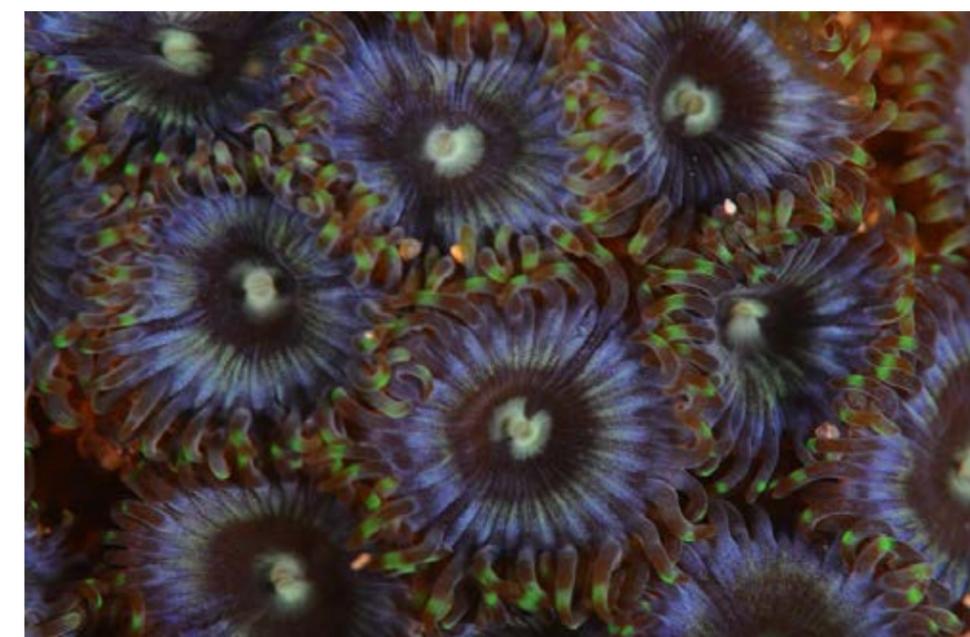
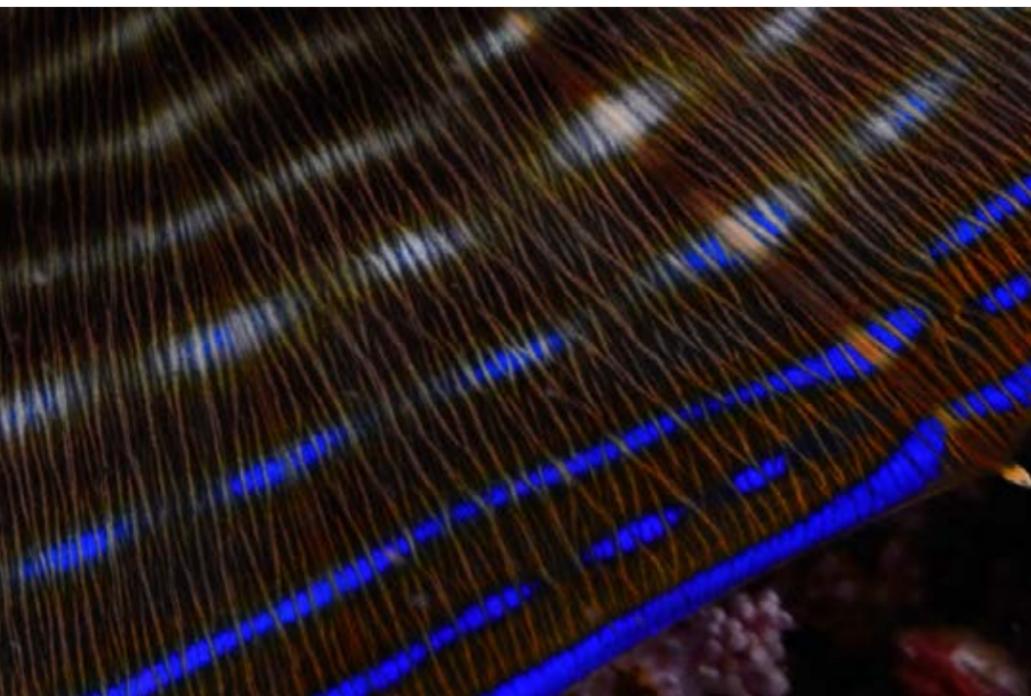
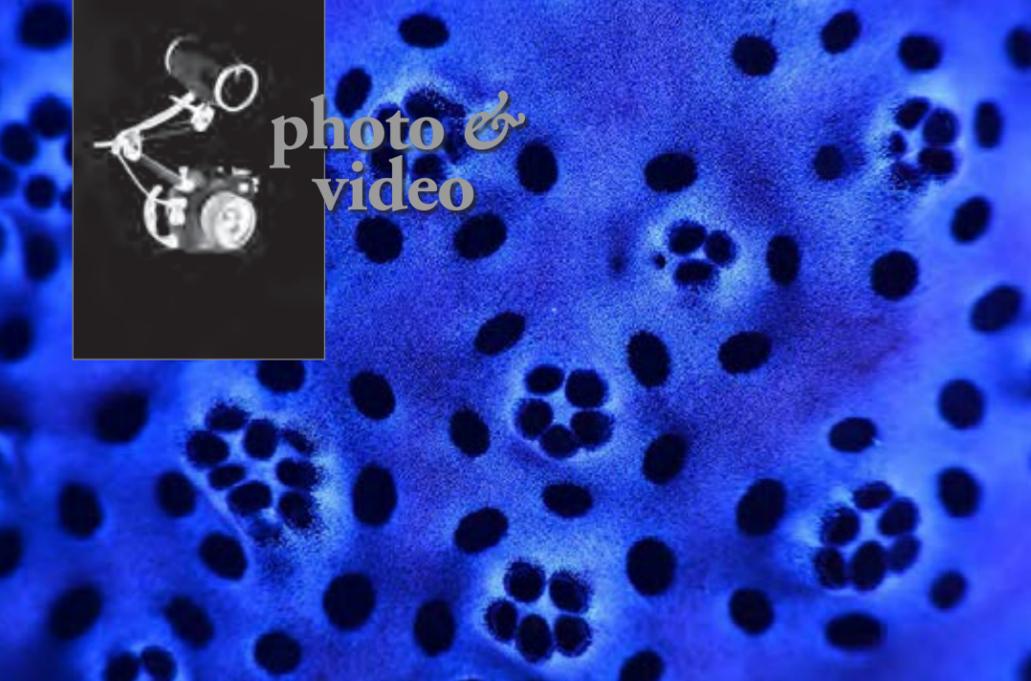




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ter Mel Rupollo Calixto, and grandson, little Jorge, were at the ceremony to receive the photographers' tribute and hand the special prize to the winner. Below are the winners lists.

Best of show

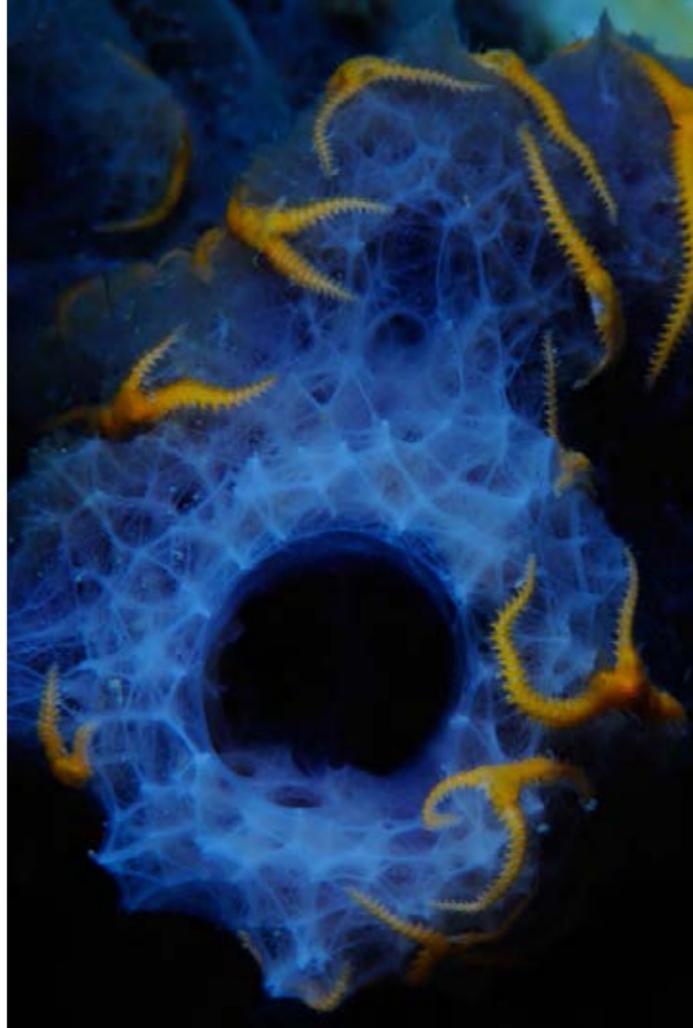
First Place: Álvaro Velloso
Second Place: Carlos Montechi
Third Place: Ulisses Turati

Environment Category
(and Environment With Model)

First Place: Álvaro Velloso
Second Place: Ulisses Turati
Third Place: Marcelo Prim

Close-Up Category
(and Close-Up With a Theme)
First Place: Carlos Montechi
Second Place: Álvaro Velloso
Third Place: Fábio Freitas

Fish Category
First Place: Ulisses Turati
Second Place: Edson Acioli
Third Place: Marcelo Prim



Close-Up With Theme (Blue) Category: First Place, Carlos Montechi (far left); Second Place, Álvaro Velloso (left); Third Place, Fernando Clark (lower left)
Fish Category: First Place, Ulisses Turati (right); Second Place, Edson Acioli (lower right); Third Place, Marcelo Prim (below)

on technical matters as well as opportunities to meet old friends and make new ones.

The complete ranking and portfolios can be viewed at the Brazilian National Confederation of Underwater Photography and Video website at: www.imagemsub.com.br

Acknowledgements
The Brazilian Underwater Photography Competition 2014 was promoted by

The Rogério Rupollo Prize
Áthila Bertoncini

The grand winner in Salvador 2014 was Alvaro Velloso, with his model, Carlos Saade. They will compose the Brazilian team with the 2013 winners (Áthila Bertoncini and his underwater model, Maíra Borgonha) to run the 15th CMAS Underwater Photography World Championship in the Netherlands during May 2015 (www.netherlands2015.com). Now it is time to start training for cold water dives. Netherlands, here we come!

Following tradition the Brazilian Underwater Photography Competition 2014 turned out to be an opportunity to meet some big names in Brazilian diving and underwater photography. This celebration of underwater images traditionally promotes moments of learning, exchanges



many people who believed in the project and dedicated their precious time to organize this successful event. Thanks go to FUNDIVE; Sharkdive, Bahia Scuba and Dive Bahia; Grande Hotel da Barra; Scuba Lab; Centro de

Mergulho Ocean; the environmental projects Meros do Brasil, Coral Vivo and Garoupa; Andrômeda T-shirts; Etiquetando do seu jeito; Revistas Mergulho and DiveMag; Clínica de Olhos Dr Waldemar Oliveira; and to Pleuston & Neuston Photo.

Oceanographers Áthila Bertoncini and Maíra Borgonha work on conservation projects in Brazil such as Projeto Meros do Brasil and Projeto Ilhas do Rio. Among their research tools are local ecological knowledge, scientific diving and underwater photography. Email: athilapeixe@gmail.com and eumaira@gmail.com. Or visit: www.athilapeixe.com



Marionette Taboniar



P O R T F O L I O

portfolio

Painting on plexiglass, the self-taught American artist Marionette Taboniar creates liquid worlds of tropical fish life and colorful reef scenes. X-RAY MAG interviewed the Michigan native who now lives and teaches at her studio on Kauai.

Humuhumu 4 (right) and *Humuhumu 3* (previous page) by Marionette Taboniar
Reverse acrylics on plexiglass, 12 x12 inches.
Humuhumu is short for *humuhumunukunu* -*kuapua*'a which is the Hawaiian State fish. It translates to "fish with a nose like a pig"



Humuhumu 5, by Marionette Taboniar. Reverse acrylics on plexiglass, 12 x12 inches

Taboniar



Edited by Gunild Symes
Photos courtesy of
Marionette Tabonair

X-RAY MAG: Tell us about your background. How did you become an artist, and how did you develop your artistic method or process?

MT: I am mainly a self-taught artist, learning mostly through

workshops, reading books, and lots of practice. I studied pastel portrait painting with my neighbor when I was about 12 years old back in Michigan. That was really my first introduction to professional art and art materials. Before that, I was always drawing and painting with markers, crayons and poster paint. I took a few classes in art as electives while I was getting

my biochemistry degree from the University of Michigan. After I graduated, I worked for a chemical company for 14 years while doing my art part time. In 1992 I took my first vacation to the island of Kauai, Hawaii, and knew I would move there some day to pursue my art career full time. I just fell in love with the bright and bold tropical colors of the island both above and below





Humuhumu 6, by Marionette Taboniar. Reverse acrylics on plexiglass, 12 x12 inches

the water. In 1999 I opened a small studio in Michigan where I was more of a weekend artist while I was still working at my day job. This gave me the opportunity to discover that I loved to teach art, and then I put my plan into action to move to Kauai to teach art full time. I made the move in 2004 and haven't looked back. I now own and operate Painting

Paradise in the town of Waimea, Kauai, on the island's sunny west side. I create my art there as well as teach watercolors, acrylics, pastels, silk painting, encaustics, Chinese brush painting, mixed media and more. Through teaching almost every day, I have been able to develop my artistic process over these last ten years, and it has been a blast.

X-RAY MAG: What is your artistic mission or vision?

MT: With my art, I aim to capture the bright and beautiful colors of Kauai. Being in the middle of the ocean, the air is so clean here which makes the sky a really amazing shade of blue. Due to the daily trade wind showers, rainbows are a frequent

vision here as well as bright and warm sunlight. All of these things contribute to the bold, tropical colors seen in the landscapes, foliage and sea life of Kauai.

X-RAY MAG: What about the sea and its creatures inspires you?

MT: I love the fact that I am surrounded by the ocean. Anywhere you go on the island

of Kauai, you are only moments away from its beautiful and breathtaking seascapes. I love to park by the ocean and just watch the waves. You can sometimes see a turtle or tropical



Hawaiian Tropical Fish 3, by Marionette Taboniar. Reverse acrylics on plexiglass, 12 x12 inches



Taboniar

CLOCKWISE FROM ABOVE:: *Honu*, *Honu 4*, *Honu 2*, *Honu 6*, *Honu 3*, by Marionette Taboniar. Reverse acrylics on plexiglass, 12 x12 inches. *Honu* means sea turtle in the Hawaiian language

fish riding inside the wave itself. In the winter months, the enormous humpback whales come to mate and give birth in the warm waters of Hawaii. I never tire of seeing these amazing creatures jump out of the water as they breach. I can sit and watch them for hours.

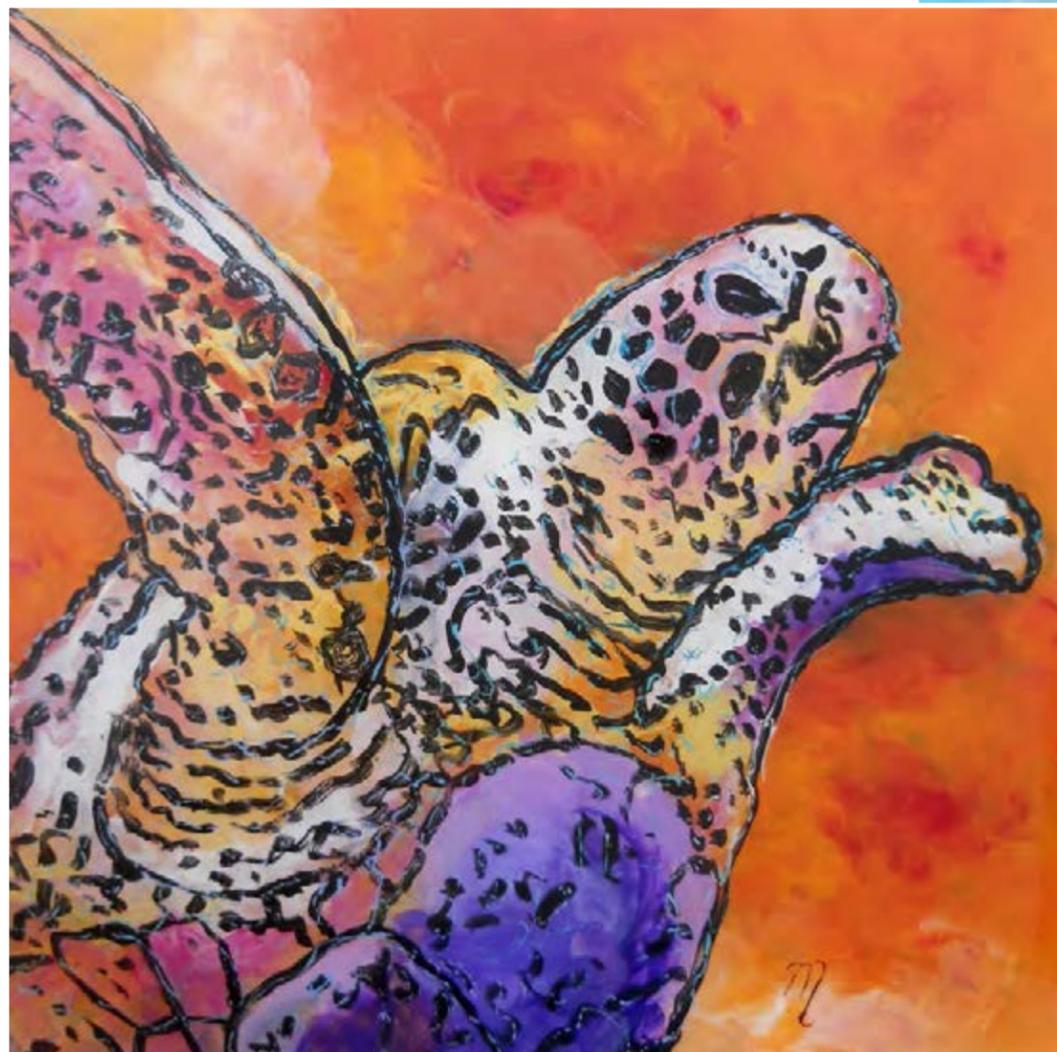
X-RAY MAG: Tell us about your experience in the underwater world, scuba diving or snorkling.

MT: I first learned to snorkel as a tourist on my many trips to the Hawaiian Islands before I moved here. On almost any boat trip, they will stop the catamaran and

you can jump into the ocean with your snorkel gear, look down into the water and see lots of colorful tropical fish, turtles and dolphins. It is a truly amazing experience and it's so easy.

X-RAY MAG: What are your favorite dive sites, underwater subjects, locations?

MT: On Kauai the best places to snorkel on the north shore are Tunnels Beach, where there are actual lava tubes under the water, and Ke'e Beach, which is protected by a reef, making it a wonderful place to snorkel



portfolio

and safely swim in the summer months. On the south shore, I like to snorkel at Lawai Beach, which is a small beach just steps away from a very nice reef. There I can

see lots of turtles, and the rare Hawaiian monk seal will make an appearance there now and then.

X-RAY MAG: How are your paintings made?

MT: In my recent series of underwater paintings, I use a



Hawaiian Tropical Fish 5, by Marionette Taboniar. Reverse acrylics on plexiglass, 12 x12 inches



Taboniar

Hawaiian Tropical Fish 4, by Marionette Taboniar. Reverse acrylics on plexiglass, 12 x12 inches

painting method called reverse acrylic painting on plexiglass. It's exactly what it sounds like. I paint with acrylics on the back of a piece of plexiglass. Because I'm painting on the back surface, the details have to be painted first, then you work towards the background. That's why it's called "reverse" painting. It sounds very challenging, but it's

actually quite easy once you know the process. After the first layer is painted, I often come back with a scratching tool to scratch in more detail and then fill that in with more paint. When I am almost finished, I actually paint the ocean by finger painting. I love the feel and effect of swirling around the paint with my hands. When you view

the painting, you are actually looking through the plexiglass at the subject. To me it reminds me of looking through the glass of an aquarium.

X-RAY MAG: Do you use underwater photography in your creative process and how is it incorporated in the art work?





Mermaids, by
Marionette Taboniar
Reverse acrylics on
plexiglass, 12 x12 inches

Taboniar

MT: I have found that in teaching art, you also teach people to relax and enjoy life. Art is a form of meditation, because while you are painting, you are basically thinking of nothing else... your problems and worries seem to vanish. You are literally living "in the moment". In today's world, we are constantly being bombarded by left brain activities, such as using a computer, cell phone, video games, etc. We need a little right brain creativity to keep us balanced. I encourage all of my students to do some kind of artistic activity at least once a week, if not once a day. It's good for your health and well being, plus it's just beautiful!

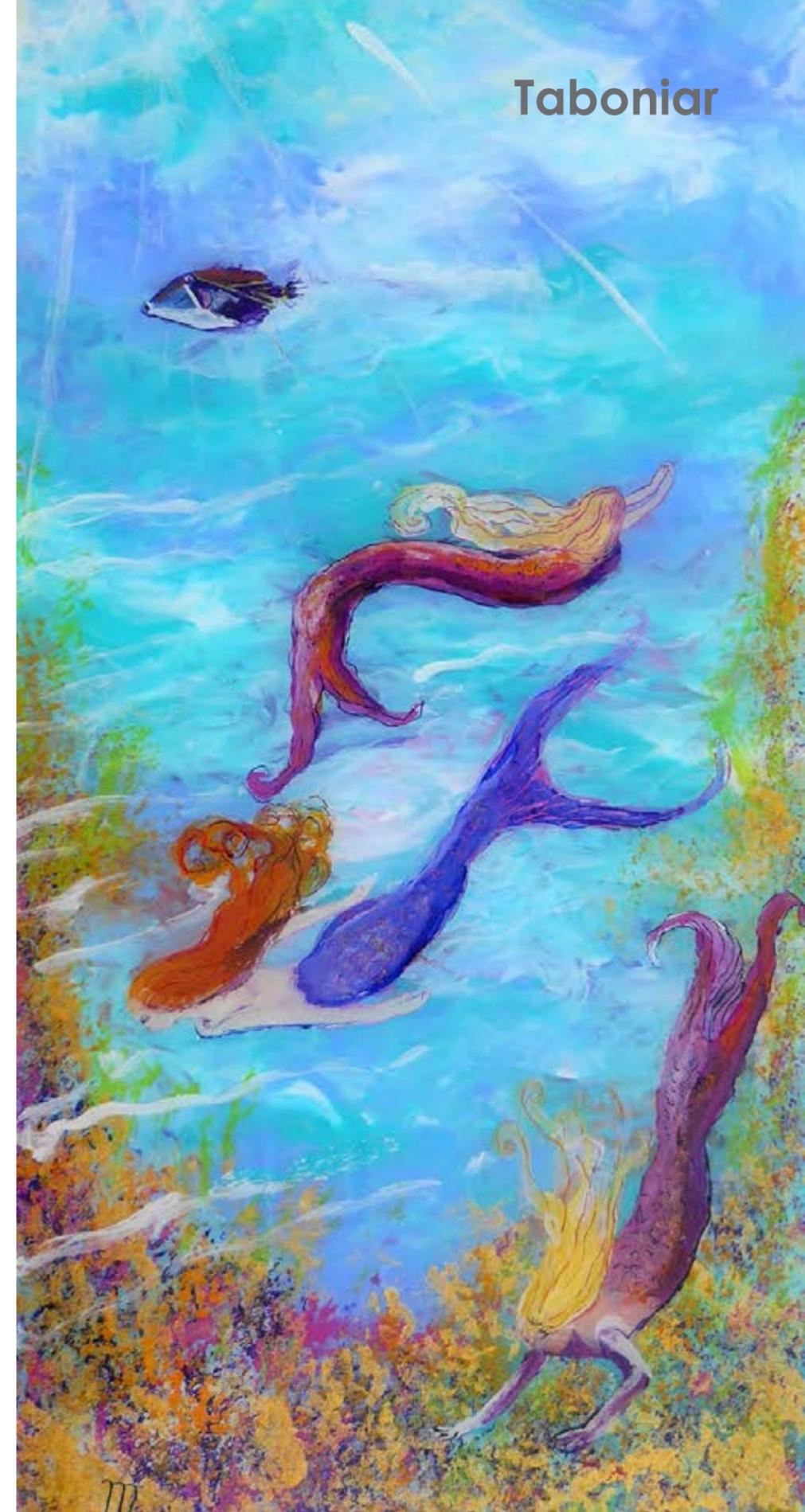
X-RAY MAG: What's new and what's next?

MT: My artwork recently appeared in the November 2013 issue of *The Artist's Magazine*, and last year I did a special commission painting for Victoria's Secret.

This summer I hope to finish putting together my next online class, *Painting Seascapes and Waves in Watercolor*. I have been practicing waves, lava rocks and water a lot recently and would love to pass this information on to my many students.

I currently have one online class available for purchase, *Painting Plumerias in Watercolor*. It is available as an instant download here: http://www.etsy.com/listing/110539880/instant-download-pdf-online-watercolor?ref=shop_home_active_1 and it is a work-at-your-own-pace class. □

For more information, visit the artist's website at www.kauai-artist.net. From there you can find more information about classes, purchasing art and links to the artist's YouTube page where she has several, free tutorials available.



Mermaids 2, by Marionette Taboniar. Reverse acrylics on plexiglass, 12 x 24 in.

MT: I have mainly used the disposable underwater cameras but am now looking to buy a nice underwater digital camera, after my friend let me borrow one last year. Most of my sea life paintings come from my imagination, especially when it comes to color. In my turtle paintings, I love to use a rainbow of colors, and my

mermaid paintings come strictly from my imagination.

X-RAY MAG: How does your art relate to conservation or environmental issues facing our oceans and reefs?

MT: My ocean art is used mainly to celebrate the beauty of

our ocean life. My paintings bring good memories to my art collectors of their trip to Kauai and the wonderful time they had snorkeling or scuba diving.

X-RAY MAG: Why do you think art is important? What are the challenges and benefits of being an artist today?