

PNW

November/December 2015

DIVER

M A G A Z I N E

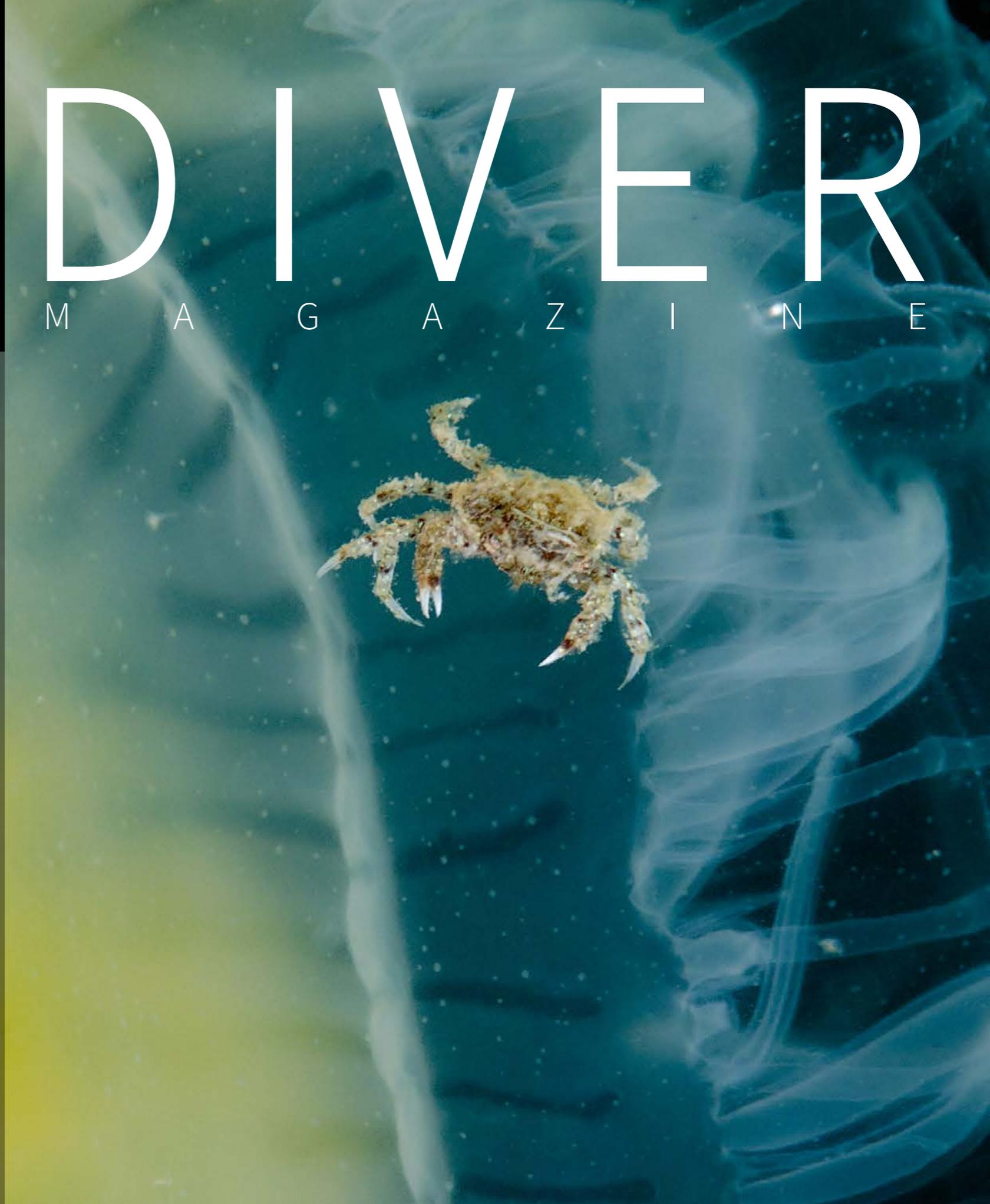
Featuring:

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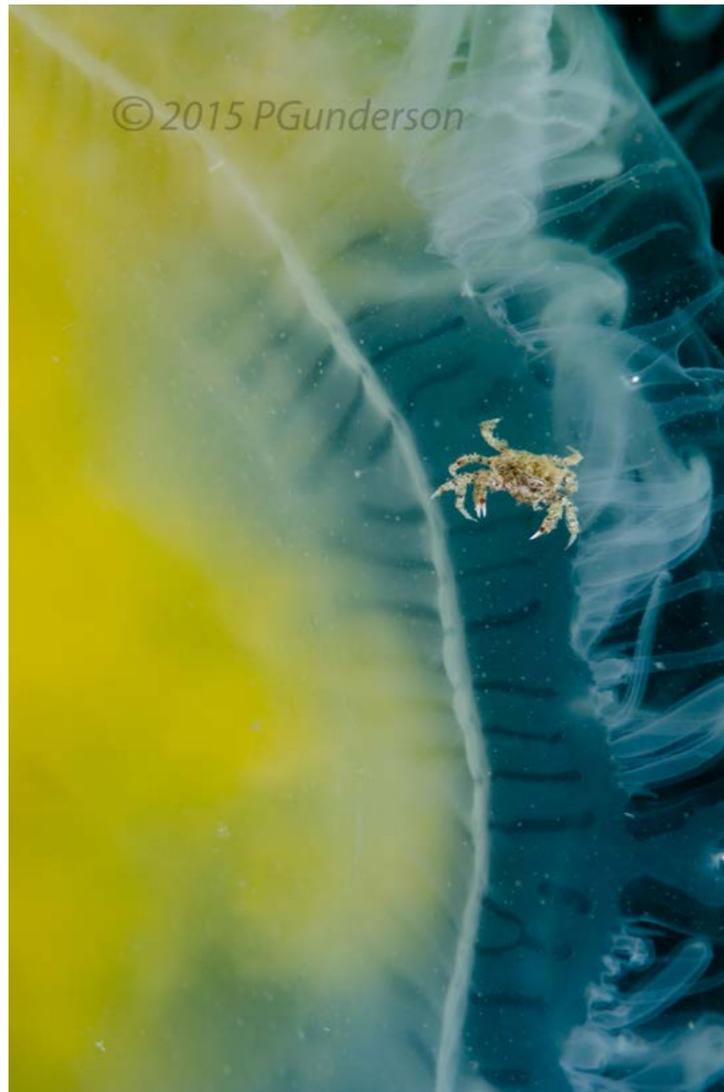
Pat Gunderson

and more..



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2015 November/December PNWDiver



Cover photo by Pat Gunderson

Nikon D7000, 105 Macro, f18, 105mm, 1/250

The Pacific NorthWest Diver Magazine is published bi-monthly and is a publication of the Pacific Northwest Underwater Photographic Society (PNWUPS), which is an organization formed to encourage interest and participation in underwater photography. The organization's central goals are: to provide an environment where photographers can help other photographers improve their skill; to promote Pacific Northwest underwater photographers; and to share the beauty of our underwater environment with the non-diving public. If you have an idea for a story or would like to present an article for consideration, please contact the editor/publisher.



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Canon Powershot G15, f5. 6.1mm, 1/125, ISO100*

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©Dave Ellifrit



Last issue we published an article on the passing of Lynn Flaherty. I'm saddened that we have had to say goodbye to another diver: Ken Gatherum. Ken was a fellow photographer and was featured in the September 2013 issue, which you can view [here](#). I had the pleasure of diving and corresponding with him. In fact, just before he went missing, we were looking forward to a dive in the Hood Canal where he was going to lend me a 45° viewfinder. My deep sympathies go out to his many friends and family.

On a happier note, my own family has expanded and I've become a grandmother. It's a little frightening to see this typed out, but my little grandson is adorable, and I'm counting the years until he can join me in the water. Meanwhile, as an educator and lover of all things watery, I will be inundating him with stories. He already has some cute little ocean themed bath toys. I couldn't help it. It is truly a treat to have a family that understands this passion of ours.

I mentioned in my last note that I was learning how to freedive. For now, as I develop this skill, I go without a camera, but I am looking forward to bringing one along soon. At our local BC favourite dive site, Whytecliff Park, there is a harbour seal that makes its home there. It teases us SCUBA divers by showing itself just before we descend then disappearing. However, as a freediver, my buddy and I had the pleasure of interacting with this adorable creature for over an hour. In only 20-30' of water we dove and played. We started out with staying still and letting it come to us, but as time went on, we played 'hide and seek', both taking turns. We would hide and it would look for us, then it did the same in return. If we had our cameras, I don't think we would've had the same experience. As much as I love taking pictures underwater, I would encourage you to dive occasionally without the camera to simply experience the wonder of the ocean - again. It's awesome!

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In Memory of Ken Gatherum

By Pat Gunderson and Dan Clements

Ken Gatherum was an active diver and an underwater photographer in the Pacific Northwest. After retiring from his job as a Professional Industrial Photographer he pursued his passion for underwater photography. He traveled to many destinations both far away and here in the Pacific Northwest. On a recent trip to photograph Gorgonians, Ken (69) passed away on September 20 during an underwater photo dive in Nootka Sound.

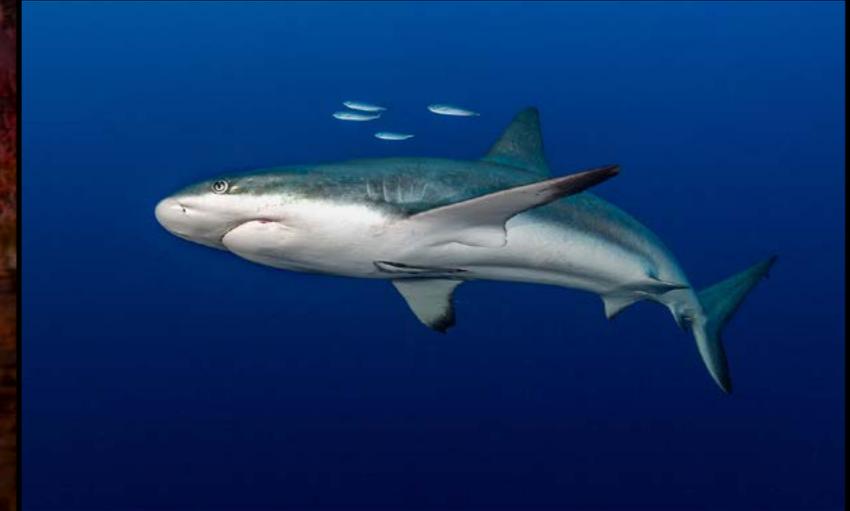
Ken received his NAUI certification at Brooks Institute of Photography in Santa Barbara, CA while attending their Undersea Program in 1972. After graduating from the Brooks Institute with majors in Commercial and Industrial Photography, he returned to the Tri-Cities where he was employed as a corporate photographer for Hanford Site contractors Battelle-Northwest, Boeing Corporation, and Lockheed Martin.

Ken was an active member of the Marker Buoy Dive Club in Seattle and gave encouragement to everyone in their pursuit of Underwater Photography. He contributed photos to the Marker Buoy newsletter "The Buoy Tender" and encouraged others in the club to do so.

For a man with such skill as a photographer, he did not talk much about his background, always praising others and often saying a photo should be submitted to the newsletter. During his professional life he won many awards for his Industrial Photography and was applauded by his peers.



BARE



I have spend many hours with Ken talking about photography and there was no hint of his achievements in photography in his professional life.

Our community has lost an avid member and a great resource. Always positive, even when exhausted and frustrated that he did not get the shots he wanted. It was always great to dive with Ken and then discuss our

shots and the challenges that made it difficult to get a subject portrayed as wanted. He will be missed by many in our community for his skills, his willingness to help and his incredible enthusiasm for underwater photography.

He is survived by his twin sister Gloria Alcorn.



Vintage Equipment Diving with a Double Hose Regulator

Part two

Written by Dale Carlisle

Last issue we discussed some of the characteristics of double hose regulators from a mechanical point of view, detailing the basic features found in them and advances that have been made over time. This issue I want to look at the basics of actually diving with those regulators, or vintage equipment diving as it is called by enthusiasts. Like many, I was trained along present day standards using equipment and techniques we have come to take for granted; BCD's, SPG's and back up regulators. When I bought my first double hose and started down the path of vintage diving, I had a steep learning curve to overcome that included taking on some new techniques as well as abandoning others I had previously assumed.

Of course, no single magazine feature can cover the entire breadth of a diving regime, nor is this meant to be an instructional article in the traditional sense. The usual imperatives regarding seeking qualified instruction by professionals still apply. What I would like to do here is offer a

glimpse into the world of vintage equipment diving in a general sense and some of the considerations I have encountered during my journey into it.

Styles of Diving

Vintage diving is not a one-size-fits-all endeavour. People can move as far down the old school rabbit hole as they wish or they can move anywhere along the spectrum from one dive to another. Basically though, without splitting hairs (see what I did there) there are three ways to look at double hose diving:

- **Vintage:** Using equipment and techniques from an earlier era only.
- **Eclectic:** Using a mixture of old and new equipment, usually to compensate for specific conditions such as cold water or solo diving.
- **Modern:** Using a suitable regulator like a USD RAM or Argonaut Kraken that allows for low and high pressure ports to run systems as any other modern regulator would.

For the purpose of this article I will primarily focus on the vintage and eclectic styles which require adaptation of some unique skill-sets. For those interested in modern diving with a double hose regulator, I would suggest checking out the many discussions regarding the Kraken over at vintagedoublehose.com – and tell them Dale sent you!

If you have decided to dive either vintage or eclectic you now have to make a few decisions as to what equipment systems you want and how you will achieve them. Some of these are exposure protection, alternate air sources, pressure gauges and buoyancy compensators.

Neutral Buoyancy

No discussion of vintage era diving can progress very far

without touching upon the subject of neutral buoyancy. This simply means weighting oneself so you can hover in the water column without the use of a buoyancy compensating device (BCD). It is a fairly straightforward concept in warm water conditions where one wears no exposure protection or at the most, a thin wetsuit. I often dive this way locally in the summer at Pavilion Lake where the water above the thermocline is warm and clear. The lack of compressible neoprene means I can easily calculate the amount of lead I need in these conditions and will experience only a slight weight swing of about 4-5 lbs over the course of a dive as I expend air. Carefully weighted, I can adapt to this shift by over or under expanding my lungs. Some divers, myself included, prefer to be slightly buoyant at the beginning of a dive, swimming downward until compression makes us neutral at diving depth. This means we will be neutral at the end of the dive during the safety stop.

Where things get a bit more complicated is when cold water dictates a different choice in exposure protection. If one chooses a thicker wetsuit, the compression at depth will create a variation in buoyancy that breathing techniques alone cannot overcome. You will either be too positive at the surface or too negative at depth (depending on how you are weighted). In this case some tricks, like wearing a ditch-able weight belt to descend, need to be used or one can simply resort to a basic BCD. If you choose a drysuit things get a little easier, as you can use the suit itself as a BCD. It is still important though to be as close to neutrally weighted as possible as too much air in the suit can create a bubble that is hard to control.

Alternate Air Sources

Most of us modern types were trained in the use of a do-

nate-able alternate air source (AAS) or octo, as it commonly called, but a double hose regulator on a single tank does not come with such a device. Divers back in the day used a technique called Buddy Breathing (BB) to help each other out. This involves two divers facing each other and sharing a single mouthpiece as they ascend to the surface. Most diving texts call for each diver to take two breaths off the mouthpiece and then offer it to the buddy, who then also takes two breaths. With practice this can be a serviceable technique for simple OOA ascents, but it does require practice and no one wants to do deco this way. It would be foolhardy in the extreme to rely on this technique with a partner who has never been exposed to it or who only understands it in theory.



[Here's a link to a short video clip of me using a J valve.](#)

A second option is to fit a donate-able single hose regulator to the hookah port of the double hose, if possible, as in the USD DAAM model. Other models, like the Mistral cannot be made to do so.

A third option, and the easiest for most divers starting out, is to carry a pony bottle or to use independent doubles. The pony bottle acts as a reliable AAS for both the vintage equipment diver and their buddy, and can also power low pressure hoses to BCD's or drysuits if needed.

Using a J valve

Another decision that a diver needs to make is which method they will use for monitoring their tank air pressure. Most of us assume that the SPG has always been around, but prior to the mid 1970's most divers dove successfully without them. If one chooses to use an SPG

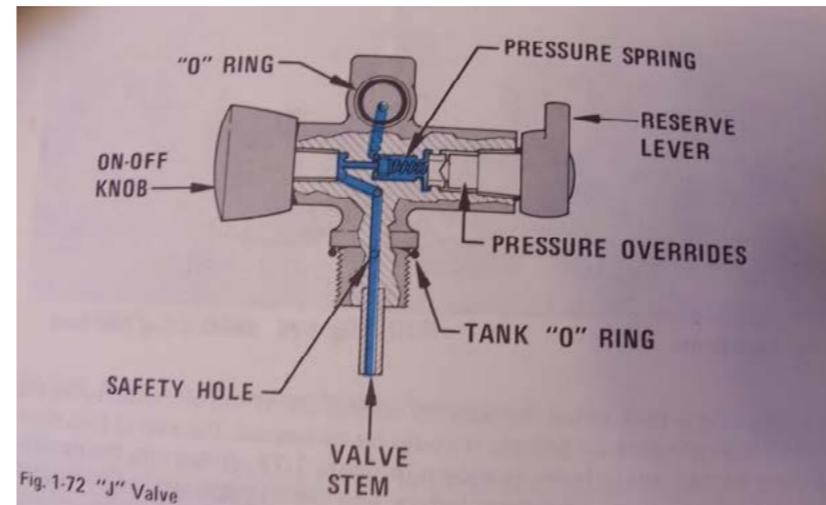


there are several options available. First, choose a double hose that has a high pressure port, such as the Kraken. Problem solved. Second, use a Banjo adaptor along with a long yoked regulator (discussed in last month's article). Problem also solved. Third, use an older valve that has a HP port built into it. I have both a DACOR single tank valve and a USD center post double valve setup that allows an SPG to be fitted directly to it, bypassing the regulator all together.

If you choose not to use an SPG you can still use a J valve to roughly estimate gas volumes.

The J valve gets a rough ride in modern diving discussions because it is often compared straight across to an SPG, which is not a fair comparison. An SPG is a stand-alone, passive piece of equipment, in the sense that a diver need only look at it to determine a value. The J valve on the oth-

er hand is meant to be only one part of a more inclusive method of dive planning and execution. J valves should only be used on recreational no-stop dives, where a direct ascent is always an option so that even a complete failure will mean resorting to a controlled emergency ascent, or "blow and go" as vintage divers would say.



A diver should also use their own J valve enough to understand its individual performance. J valves work by using a spring to restrict flow from the tank when placed in the reserve position, usually relating to about 300-500psi. When the tank volume reaches this level the diver experiences resistance; it becomes increasingly more difficult to breathe. They then know to "trip" the reserve and the resistance is removed allowing the diver to breathe the rest of the volume normally as they head to the surface.

One very common complaint is that the J valve can be tripped prematurely, so that the resistance the diver initially experiences is actually them running out of air, which can happen – but a J valve should be checked as often as an SPG is checked to negate this error. A diver who jumps in with a tripped J valve and swims around until they go OOA is akin to the diver that does the same thing by never referring throughout the dive to their SPG.

Strategies for Gas Management and Bailout

The use of a J valve leads naturally into the subject of gas management and dive planning strategies, specifically those designed for vintage equipment diving. Depending on how far back one goes this can be as complex as modern diving plans or less equipment reliant and more intuitive in approach.

For uncomplicated dives at the beginner level the first step is to discuss your plans with your partner. This may be a single/double hose team, a beginner/mentor team or two vintage divers. What is important is that both people know the plan, the limits of the equipment and what to do if things go pear shaped.

Secondly, dive familiar sites with hard bottoms. Boring some will say, and this is not an absolute rule, but by knowing where I'm going and not being hit by conditions like current or deep walls I can relax and use a very simple dive plan. Over time I have come to understand my personal gas consumption rate and can roughly extrapolate how long a tank will last me at certain depths. At 50', for example, I know my Steel 72 will last about 45 minutes with a non-stressed consumption rate, so that is what sets my dive time. If I become stressed I adjust my time accordingly.

I also check the tables to see if that falls with a no-stop limit, which it does. At 50', I would need to do 67 minutes to require a safety stop, yet I know I cannot come close to that with a single 72 tank. Small tanks were common in the vintage era and this is another naturally occurring safe guard I use. Big tanks, deep depth and vintage diving are not a beginner's route to take.

The second step is to do the deepest part of the dive first. Makes sense you say, but I have two specific and related reasons for this. I want my dive to progress towards a natural safety stop within the 45 minutes I have set for myself and, on the rare occasion that I should run out of air due to a J valve related error, it will be near the end of my dive where I am shallow and able to do a simple blow-and-go to the surface. Again, the equipment and plan naturally leads to a safe method of diving.

The third step is to stay within the NDL no-stop and your own CESA limits. Study those tables! Life underwater becomes measurably simpler when you can directly access the surface if you need to (staying within no stop limits), and within your own personal emergency ascent depth limits.

Bailout is not a subject often discussed since the advent of donate-able alternate air sources but it comes up quite often in vintage equipment diving. Depending on the equipment and the partner, this may range from simply sharing donate-able air sources at depth, buddy breathing while directly ascending, going to a pony or doing a CESA or blow-and-go.

Sadly, this last option is a skill that is not taught any more but some vintage era divers think in terms of doubling their comfortable freediving limits. If you can freedive down to 25' this means you should be able to CESA a total of 50' (down and up while freediving), but this is a rough estimate only and it is better to err on the side of caution. How all this shapes my diving is personal, but pretty straight forward. If I am diving with a buddy I either ask them to carry a pony for their own alternate air source or sling one for both of us. I do not believe in putting a part-

ner who does not know how to buddy breath at risk just because I want to vintage dive. If I am alone, but diving above 50,' I will not use an alternate air source, preferring to rely on experience, simple dive planning, direct surfacing and CESA skills. If I am diving below 50', or doing a more complex dive plan, I sling a pony.

Setting up the “Lung”

Finally we are ready to dive. Almost. Before we splash, it will pay to take a look at our diving set up in order to optimize its performance. Start by checking your tank pressure – never assume you have a full one. Use your modern reg set to do this, or your pony reg set, or your buddy's reg set or an old-school dedicated tank pressure gauge. There isn't any excuse not to.

Next, position your tank in the BCD or back plate so that the cans of the double hose sit low on your back. The optimum position is between your shoulder blades and many



Figure 1. Aqua-Lung in Proper Position on Diver

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vintage equipment divers make a big deal about this, and rightly so, but the truth is your regulator will work fine as long as it is reasonably low on the back. Just look at a lot of old diving photos and you will see regs in all sorts of positions. At the same time, try to get the regulator as close to your back as possible. Low and tight is best. Now, test the J valve, if you have one, to make sure it moves freely. Take a breath or two off the regulator to see if it works. You may have to suck or blow to unstick a wagon wheel or duckbill valve.

Ok... let's dive!

A Note About WOB

When I first started diving a double hose I found I had sore ribs for a few days afterward. I thought this odd and worried that I may have done something wrong or had my regulator tuned poorly but a mentor explained that this was due to my having to learn how to actively breathe. Because breath control plays such a large part in double hose diving I had been using my intercostal (rib) muscles more than usual with the resultant delayed onset muscle soreness (DOMS) that many weekend warrior types experience. With a bit of conditioning my muscles adapted and the soreness went away.

Positioning and Its Effect on Air Flow

In the paragraph above I talked about positioning the tank and regulator properly on the rig and now we are going to see why. Unlike a modern single hose regulator, double hoses are affected by diver position in the water column with the result of increased or decreased air flow and work of breathing (WOB).

As we may remember from diving physiology 101, water pressure changes with even small changes in depth and

this unavoidable fact comes into play with double hose use. Unlike a single hose regulator wherein the second stage is contained within the mouthpiece so that the depth pressure differential between it and our respiratory tract are the same, the second stage of a double hose is housed inside the cans on our backs which creates a noticeable depth differential. The difference in depth between the cans and the respiratory tract makes diving a double hose a very tactile experience which some compare to driving a standard vs automatic transmission in a car. The best way to learn this is to take your time in shallow water and feel how your body position effects flow rate. The following are a few things you should expect. In each case consider where the mouthpiece is (depth wise) in regards to the cans (below/equal/above) and how this effects air flow.

Lying horizontal with a well-tuned regulator, you should be able to breath with minimal effort (If you have an unbalanced type, there may be some resistance that eases up as pressure drops). If you go slowly head-down you will find the resistance or WOB increases; it becomes harder to breathe. As you go heads-up, resistance will lessen to the point that, if you go towards vertical you may even feel the regulator want to free-flow. No problem: keep the regulator in your mouth and you can control it. Now, if we think about it, turning the head to the side or rolling while horizontal achieves the same effect as going slightly heads-up, according to mouthpiece position, so that we can get an easy breath while maintaining our trim. This the first “trick” a diver can use if they feel they need a little more air without changing position. Swim around and test it out. Remember, at any time if you feel air starved, going heads-up will give you more flow. This feeling will dissipate as you get used to the WOB of a double hose.

Free-flows

Going heads-up moves the mouthpiece above the cans in the water column so that air flows unrestricted from it. In your mouth you may get a full feeling but you should be able to control the flow (otherwise your reg may need tuning). Take it out of your mouth and it will free flow. Unlike the uncontrolled free-flows in modern diving this is a good thing, for with double hose diving it gives you an easy way to clear the mouthpiece of water. When buddy breathing, divers will usually pass the loop, mouth piece down, but a flick upward free-flows it and clears out any water. Practice this in a controlled setting to get used to it.

Clearing the Loop

In the last article I made a point of emphasizing the importance of using one-way valves in the breathing loop, to restrict the egress of water from the exhaust side into the mouthpiece and more importantly, beyond it into the intake side. It's possible to dive without them but you need to be very skilled and comfortable with clearing the loop. A loop may become fouled for a couple of reasons. There may be a tear or leak in a hose or valve that allows water to flow in or the mouthpiece may come out of the mouth and fill with water. In any event, it pays to keep cool and remember which way the air flows through the loop.

Ahh... To clear the loop you slowly roll to the left and exhale, forcing water out the exhaust valve. Rolling will decrease resistance, by raising the mouthpiece in the water column, and cause the breathing side to begin to free-flow, giving you more air and helping to clear the loop. You need to practice this and develop a sense of confidence that the system will work. In a controlled setting, take the mouthpiece out and flood it, then replace it in your mouth and roll to the left while exhaling, to clear the

exhaust loop. You may need to push the water forcefully out with your breath, similar to clearing a snorkel. Remember it is exiting behind your head. If you can't clear the loop sufficiently, go heads-up a bit and free flow the reg, regain a breath and then try again.

If you find you have a tear in a hose try to determine what side it is on. If it is the exhaust side you will have no real problem other than needing to clear the hoses more often. In those old Sea Hunt and James Bond shows you will see the bad guys cutting the air hoses –always the exhaust side. Looks good, but stunt man approved!

If the leak is on the breathing side you will want to abort the dive as this can interfere with air flow to the mouthpiece. When it lets go all together you will be in a pickle, though old-school divers could extend a trip in a pinch by swapping over the intake and exhaust hoses.



Here's a funny old clip I made which does show some positioning, free flowing and clearing the loop.

Retrieving the Loop

One last safety skill to learn before a basic dive is how to retrieve a lost breathing loop. The hoses on a double hose are big and buoyant and sometimes the mouthpiece

may come out so they float away behind your head somewhere. In the words of Douglas Adams – Don't Panic! Remember they are attached to the cans behind your head and can't go far. Go heads-up and over onto your back. The mouthpiece will probably be free-flowing and floating above you. Reach up and retrieve it. If you can't do that, trace your harness back over your shoulders and reach behind your head. The cans are there and attached to them are the hoses. Again, practice this in a controlled setting by being horizontal and spitting out the mouthpiece, but warn your buddy about your plans first.

Conclusion

Diving with a double hose regulator can be both fun and a great way to experience diving as it was in the past. Divers today are fortunate in the sense that they can decide at what level they want to pursue the use of a double hose set up; from vintage to eclectic to full on modern configurations. With each set up there are considerations regarding equipment choices, dive planning and techniques to be employed. For me it has been a fascinating adventure that turns even the most humble dive locale into a new playground. I can honestly say that, since picking up my first double hose regulator, and later my first video camera, I have never had a boring dive.

Find a mentor, read old books and join an on line community. Go slow, discuss what you are doing with your buddy and learn the basics in a controlled setting before pushing the limits and expect things to be different. And, when in doubt always ask yourself: What would Mike Nelson do? The answer usually involves a big knife, a wrestling match and a beautiful girl in a swim suit.



1953 Vintage Double Hose Regulator SCUBA Diving Film

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Annual SPCA Fundraiser In Kelowna - Dec. 5th.

An invitation to join divers in the BC Interior to raise funds for the SPCA

by Dwayne Vincent

On December 5th, in downtown Kelowna, the Okanagan Dive Club in association with Kelowna Divers, Innerspace Watersports, and MAB construction are putting on the annual Santa Scuba dive.

This year we expect about 30 to 50 divers, dressed in Santa suits, to brave the chilly waters of Okanagan Lake. They will be collecting sponsors and donations with all proceeds going to the Kelowna SPCA.

The divers will be visiting a decorated underwater Christmas tree and receiving gifts from another underwater Santa. The SPCA will have information booths and fun stuff like a dog kissing booth and raffles.

Last year it was a chilly 34F water with 32F air in steady rain. We raised almost \$1000 with 13 divers.

Please contact the Okanagan Dive Club or Kelowna divers to participate

www.kelownadivers.ca

<https://www.facebook.com/groups/57873228993/>

okanagandive@shaw.ca



New Calf in J pod - J53

by Center for Whale Research - News Release

Subject: New Baby J53 in J pod, first seen Saturday October 24, 2015

A new calf was spotted in J pod on Saturday, October 24th! The calf was first seen in Haro Strait early in the day and later photographed by CWR staff in the Strait of Juan de Fuca. The new calf was seen closely traveling with a 38 year old female, J17, who is the presumed mother. J17 has previously had three offspring: two daughters, J28 and J35 now adult, with two grand offspring J46 and J47 respectively, and a son J44, born in 2009. The new calf is designated by the Center for Whale Research as J53. The previous sighting of J17 without the calf was on the 15th of October, meaning that the calf was no more than 10 days old at the time it was first seen on Saturday.



Featured Photographer: Eli Wolpin



*Fried Egg Jelly© Eli Wolpin
Canon G15, 6.1mm, f/5, 1/125, ISO100*

When I was 11, my dad took me into New York City and we went to B&H Photo. It was there that I picked up my first camera, a Canon T60. My dad showed me the basics and sent me on my path. Over the next few years I went on bouts of taking a lot of pictures to very few. During my studies in architecture and while living in Holland, I had decided to stick with taking slide film. Most of my images were of buildings and ended up with a large inventory.

I began diving about five years ago. My friend's girlfriend had just come back from working abroad and had been diving on the Big Island of Hawaii. She had encouraged him to get his certification and he asked me if I would like to join him on a course. I always thought diving was something that I would never do. Those people are crazy! On a whim, I decided to bite the bullet and join him. I was hooked! For the next few years, I was always trying to figure out the next time I was getting in the water. I still am! I kept training and gradually got into technical diving and cave diving. I also took up side mount diving. I've found that I really enjoy taking pictures in side mount. It's like pushing around a small raft underwater with two ballast tanks on either side: it makes a great stable platform for shooting. It also offers redundancy, which is great for the photographer that is often separated from buddies.



*Anemones on the GB Church © Eli Wolpin
Canon G15, 6.1mm, f/5, 1/125, ISO100*



Decorated Warbonnet in the Plumose © Eli Wolpin
Canon G15, 22mm, f/3.5, 1/250, ISO100

As I was developing as a diver, people would always ask me why I was so hooked and what I would see down there. I endeavoured to show them. I started out with a Canon G12 and Canon case but soon found that I wanted a strobe to capture clear images in the often-silty waters of British Columbia. I bought a Sea & Sea YS-110a strobe because I wanted something I could grow into. This was my setup for a number of years until, when living in Hawaii, I decided that I wanted to push my image quality and variety. My impetus was a pending trip to Raja Ampat and Lembah in Indonesia. The Lembah Strait is well known as having some of the best muck diving and consequently great macro shooting. I upgraded my system to a Canon G15 with a Fantasea case as well as a +5 macro lens and Fantasea Big Eye lens. I also got a Sola Nightsea light and yellow filters for fluorescent photography. I often use the sola on wide angle low beam with the yellow filter on as a focus light.

It was at this point that I started to shoot RAW instead of jpg. I had always thought that I wasn't good enough to bother with RAW images but realize now that this was a mistake. I use Lightroom for post processing and seeing some of the results I get now out of some images, I wish that I could go back to older images and clean them up a bit more.

When I shoot, it's always in manual mode. It takes some practice to get used to this, but it's well worth it. Get to know each button on your case until it becomes intuitive. You shouldn't have to check each button when you have live subjects ready to move on you. Because my strobe is controlled with a fibre optic cable, I always need to guess if my settings are in the ballpark of good lighting. One of my habits when I am getting ready to take a picture of a live subject is to take a test shot a bit farther away with the same background so that I get pretty close to what I need. I will



move up on my subject slowly and usually only adjust strobe strength while I shoot. If I want to vary depth of field, I will adjust f-stops as well.

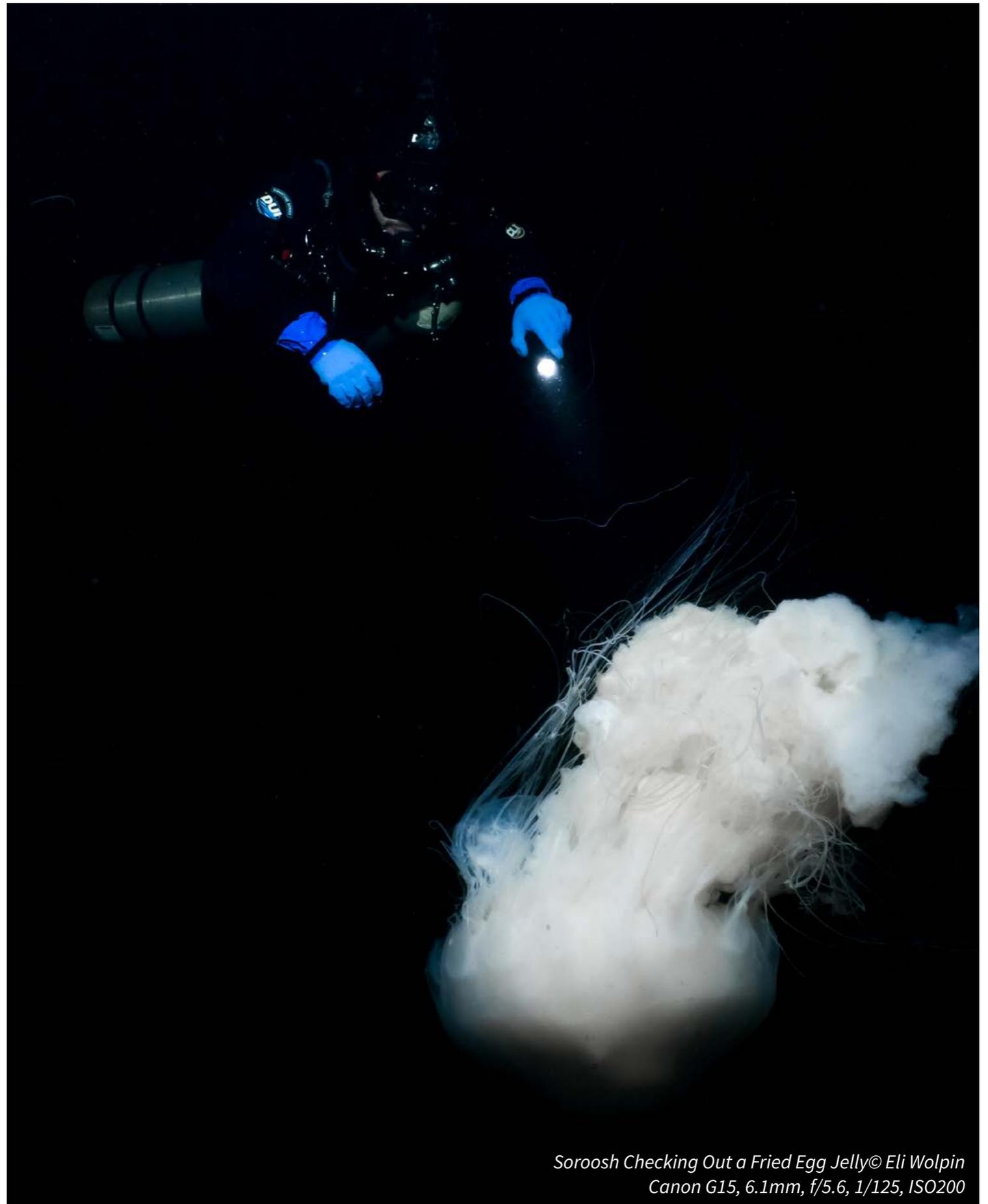
It was only in the past year that I got back into doing a lot of cold water diving, and I am really enjoying it. I mostly dive locally at Whytecliff these days but get out to Tuwanek as much as possible. I have an affinity for wolf eels and know Tuwanek like the back of my hand by now so stop by their dens when I'm in the neighbourhood. I have been pining to get back to Race Rocks in Victoria because there is one area with the most amazing multi-coloured anemones, which is typically peppered with wolf eel dens. With each change in location and water type, it takes me a lot of time to get into a groove. I feel that the last few months have really pushed my images forward and look forward to more cold water diving in the Pacific Northwest.

Contact Information:

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Moon Jellies in Kelp © Eli Wolpin
Canon G15, 6.1mm, f/4, 1/250, ISO400



Soroosh Checking Out a Fried Egg Jelly © Eli Wolpin
Canon G15, 6.1mm, f/5.6, 1/125, ISO200



*Decorated Warbonnet in the Clouds© Eli Wolpin
Canon G15, 13mm, f/2.8, 1/250, ISO100*



Wolf Eel in Anemones © Eli Wolpin
Canon G15, 10mm, f/8.0, 1/125, ISO200

Featured Photographer: Pat Gunderson



I have always loved the water and used to dream of what lived under the surface. When I was a child I went back time and time again to the educational books with information about sea creatures to look at the photos and learn about the habits of underwater life. Always fascinated by water, I spent my summers swimming and fishing. The fish I caught in the local lagoon I would use to stock the ponds my parents had made in our yard and in the house. I could watch the fish in our indoor ponds endlessly.

Finally, on a trip to visit a friend in Honolulu in 1985 I became a certified diver. I purchased a drysuit and began diving in cold water not too long after I was certified. I also bought a Nikonos V. I tried, with not much success, to take photos of the underwater world that I would visit as often as I could. Not many of my film shots came out. I was still hooked on taking photos, even if they did not turn out well. At this time I worked on ships at sea and traveled to many places in Alaska. I worked for several months without a break and then I would get extended time off. I made use of this time to travel and dive.

In 2005 when digital SLR's were affordable I bought a Nikon D70 and a Subal Housing. I have not regretted that and I used that system for over 7 years. When I wasn't working I spent time on Quadra Island





© Pat Gunderson
Nikon D7000, 105mm, f/45, 1/200, ISO160

BC, and had the opportunity to dive the cold waters around the island often. There were also trips to Mexico. My camera was always with me. It was a much quicker learning curve than film, and it did not take too long before I could capture some of the underwater world I love so much with decent results. I actually had photos I was proud to show to others. I was lucky enough to win a contest with a photo of a juvenile Spiny Pacific Lumpsucker, and the prize was Diving and Lodging at Villa Markisa in Bali. What fun that was looking for the incredible tiny creatures that go with some great muck diving. It was a whole new world for me and launched me into an obsession for the very tiny.

Finally, the lust for a more modern camera caused me to buy a Nikon D7000, and although I adapted my old housing for this camera, I had limited settings since not all the levers, buttons and wheels would mate with the ones on the camera. A couple of years ago I purchased the correct housing for my camera. It is wonderful to be able to use most of the camera functions to change settings.

Part of what drives me to photograph under the water is to showcase the ecosystems we do not get to see routinely. Part is to show behavior and unusual creatures. And part is an obsession with the very small.



If someone were to ask what it takes to take successful photos, I would say that it is not the camera gear, it is the eye, and a knowledge of the creature's habit and the habitat. Learn the critter, learn where it likes to hang out, keep your eyes open for something that might not be just the rocks, hydroid, algae, kelp or shell. There might be something unusual that you could miss if you don't spend the time to slow down and learn the environment.

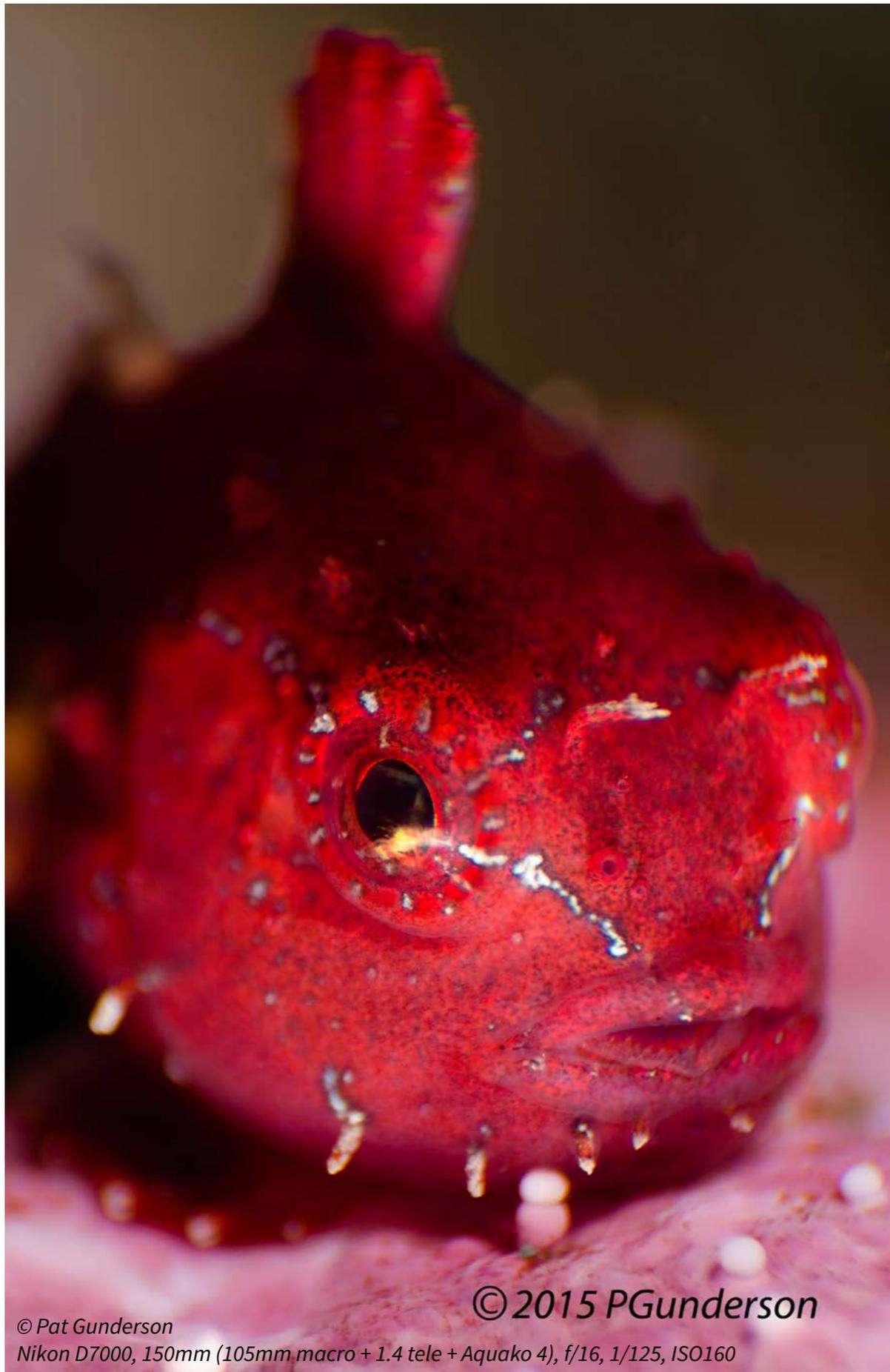
Most of all for me it is just the wonder of what each dive brings and learning new information about the underwater realm. This winter I watched a male Painted Greenling in the dark colors of mating mode, change back to the normal color you would expect to see. I did not know they change color that quickly, I had always thought that the color came on slowly and stayed with the fish until mating season was over. All these years of diving and I did not know this fact!

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© Pat Gunderson
Nikon D70, Tokina 10-17@ 10mm, f/9, 1/50





©2014 PGunderson

© Pat Gunderson
Nikon D7000, 16mm, f/10, 1/125, ISO160

Featured Photographer: Laura Tesler



Battleground Lake © Laura Tesler
Olympus EM5, 8mm, f/7.1, 1/10, ISO200



My name is Laura Tesler and I have been taking photographs since I was 10 years old. I live in Salem, Oregon. I am a freshwater fish biologist by trade so I guess I never get enough of it. Photography was in my blood as my father was a photojournalist and then later became interested in artistic photography. I grew up with the smell of Orbit bath and a red light. My first camera was a Nikon FG-20 and then a Pentax K-1000 (which I still have), although I haven't shot film in years. I was glad that I had two "non electronic" cameras to learn with I was forced to learn manual settings!

In 2006 I decided I wanted to learn how to dive. I had always wanted to especially after growing up watching Jacques Cousteau with my Mom as a kid and my wish came true. On my first dive in Oregon I was sitting on the bottom at 50 feet watching black rockfish swim in front of my face. I'll never forget how I felt that day. Although I sneak off about once a year to do a warm water trip 90% of my dives are cold water to date. In February 2016 I am going to Egypt to dive the Red Sea and I cannot wait!

When I had about 60 dives, I decided my buoyancy was to the point that I would try and take pictures. This was after years of my looking at Flip Nicklin and David Doubillet photographs and Stan Waterman videos and observing other photographers that I knew and dove with. I purchased my

first underwater setup, a “point and shoot” Canon G10 in a waterproof case. In 2008 I took a photography class and I got to use a DSLR set up with arms and a strobe and my appetite was whetted for more, especially a wide angle lens. My diving had improved to the point where my buoyancy was better and I was shooting up instead of down on fish. I was also thinking about composition, close ups, landscapes than just taking pictures of fish that I could ID later.

In October 2011, I decided to buy myself a nice birthday present. I sold my old camera to another beginning photographer and set about researching a new kit. It quickly became apparent that my budget could not accommodate a traditional DSLR and housing without an impending divorce from my husband once I told him I spent \$10,000 on a camera! I heard about the new 4/3 mirrorless systems and decided to go that way due to the smaller size. That was my first Olympus PEN camera. I now have upgraded to an Olympus OMD-E and I love it. I have two sea and sea YS01 strobes, a Nauticam housing (very durable and can take shore diving), ultralight tray and arms, a dome and flat port, and a slew of lenses (8mm fisheye, 50 mm for fish portraits, 14-42 for unknown sites, and a 120 mm for macro). One in a while I take my 14mm prime too for fun. All of this equipment fits in a small regulation airline carry on which makes travel a lot less stressful.



*Long Nosed Nudibranch© Laura Tesler
OMD-E (4/3 mirrorless), YS01, f/13, 1/250, ISO200*



*Crimson Anemone © Laura Tesler
Olympus EM5, 60mm, f/4.5, 1/250, ISO200*

I do a lot of fish portraits or head shots. I also like to shoot nudibranchs and of course I like macro as it's the Pacific Northwest and when viz isn't good we go for macro shoots right? Luckily I dive with people who are patient as I will wait 10-15 minutes to get a good shot of shy fish. I am playing around with snoots I made out of beer cozies. I have also been trying to shoot more freshwater lately.

I like shooting at so many dive sites... but Keystone Jetty is always a blast with lots to see. Neah Bay area is always chock full of opportunities. The San Juans can be very rewarding. Canada has amazing opportunities. I love shooting pacific spiny lumpsuckers in the winter at Redondo Beach. It's all good really!

I started going to local photography club meetings and I got inspired by the members to start shooting topside pictures which I hadn't done in many years. They love my pictures as I'm the only one who shoots underwater! I now really enjoy shooting street photography and am exploring the world of black and white. I think shooting topside pictures makes you a better photographer underwater.

I want to thank all the people I have met who answer my questions, give me tips, and share their pictures. I have learned so much from you. You know who you are. I hope you enjoy my pictures and I always appreciate any comments that you may have as I feel constructive criticism makes us all better photographers.



Spawning Anemone Metridium spp © Laura Tesler
Olympus EM5, f/3.7, 1/125, ISO200



Sea Hares© Laura Tesler
Olympus EM5, f/4, 1.180, ISO200



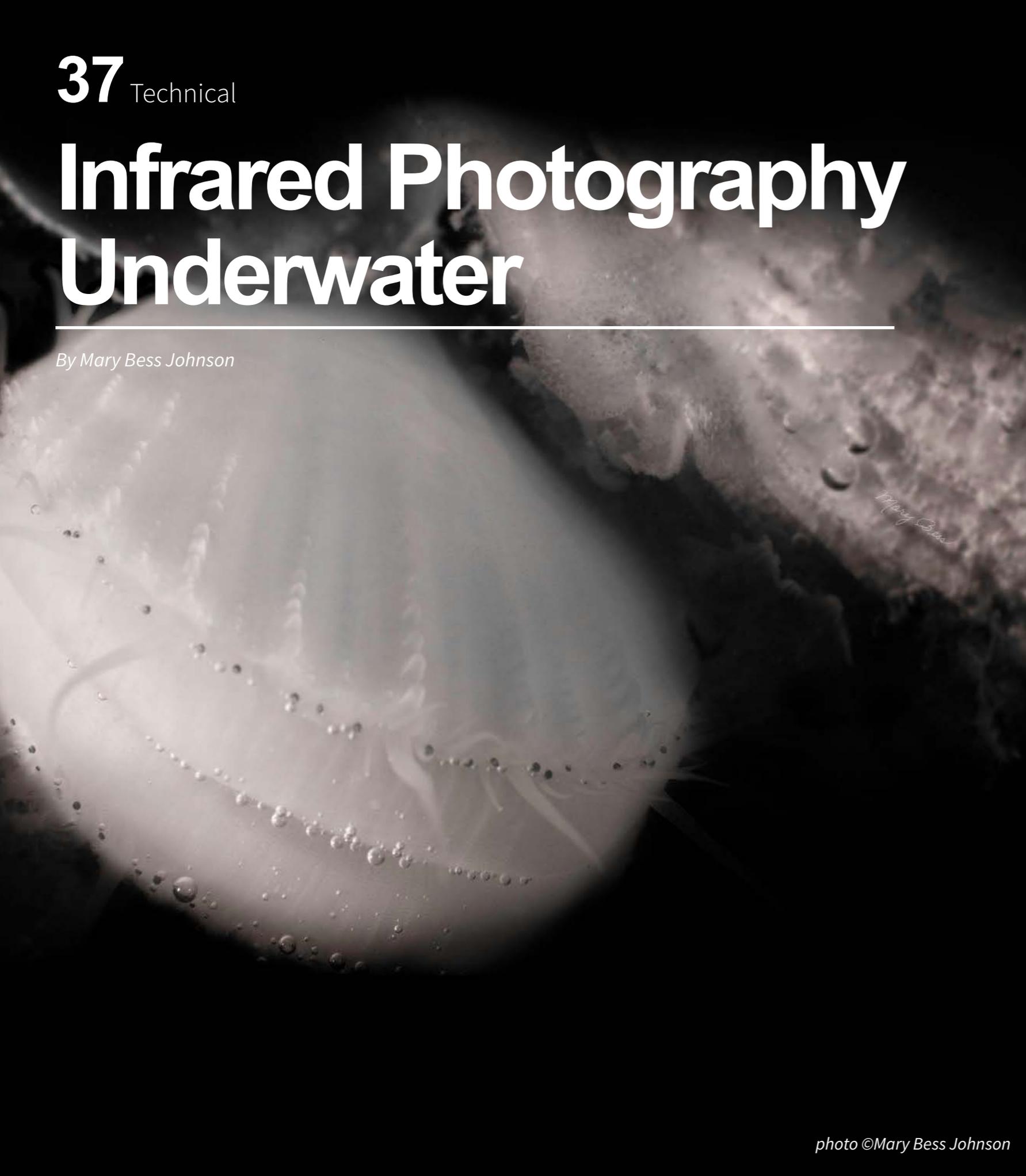
Battleground Lake© Laura Tesler
Olympus EM5, 60mm, f/3.5, 1/250, ISO200



Cedar Creek © Laura Tesler
Olympus EM5, 8mm, f/10, 1/125, ISO200

Infrared Photography Underwater

By Mary Bess Johnson



This article pertains to black-and-white “near” infrared photography, especially as it relates to underwater photographic issues.

See the Light ... or Not

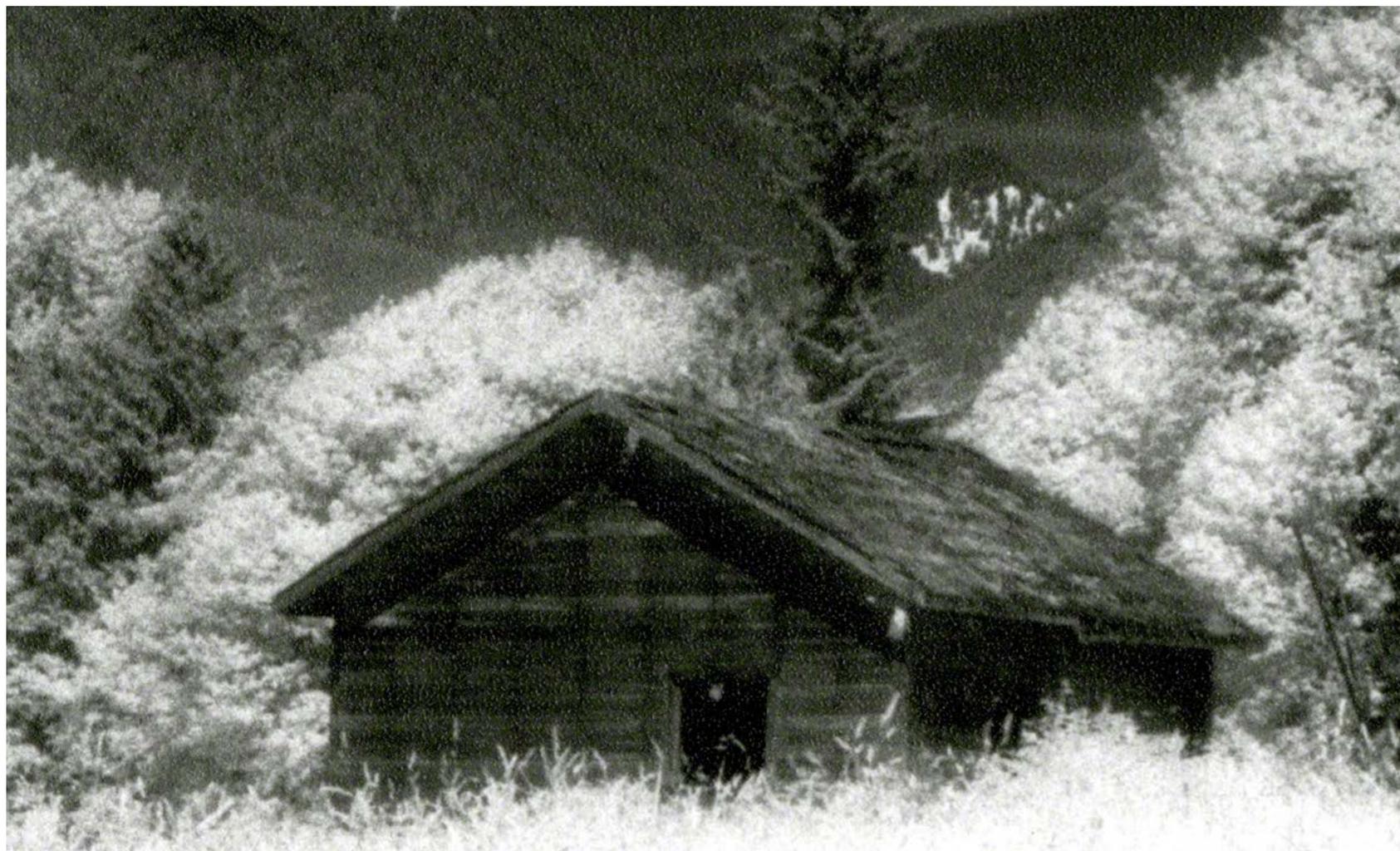
What can actually be photographed begins with the illumination of a particular scene. If the light source emits a sufficient amount of full-spectrum light, the scene can reflect a full range of color. In addition to colors we can see, some light is reflected that is beyond the capacity of the human eye to record. Reflections of some of the non-visible light can be recorded in a camera.

Both the sun and camera strobes provide a generous amount of energy beyond that which can be seen but which a camera can capture on film or digitally; sunlight itself consists of more than 50% infrared light, that is, light which we cannot see (<http://solar.physics.montana.edu>). For most photographic purposes, this extra energy is a nuisance and interferes with the sharpness and clarity of the final photograph. A cutoff filter, or hot-mirror, inside the camera filters out most of the infrared light that would otherwise make its way to the camera's film or digital sensor.

To make an infrared photograph, it is necessary to block the visible color light from the film or camera sensor while still admitting infrared light. This is done by placing a red

filter either over the lens, between the light source and the film or sensor, or - if using only a strobe to light the scene - over the strobe. Because most digital cameras are so efficient at blocking infrared light, they must be modified internally to admit infrared light waves. Thereafter the modified camera produces only infrared photographs.

The otherworldly look of an infrared photograph is due to the fact that not only are whites rendered as white and lighter shades of gray but other warm colors: yellow, orange, red, green and brown, are rendered in shades of white and gray. Things that are blue or black look black. With this understanding, it is relatively easy to visualize what the infrared rendering of a landscape will look like.



Making Underwater Infrared Photographs

The major differences between landscape infrared photography and undersea infrared photography are due to the difference in light source and the interaction between light and water.

Scuba divers know that underwater scenery becomes less colorful as depth increases. Undersea photographers know that red is the first color that is lost to the deep. That is why strobes are such an important part of undersea photography, and why they are essential for undersea

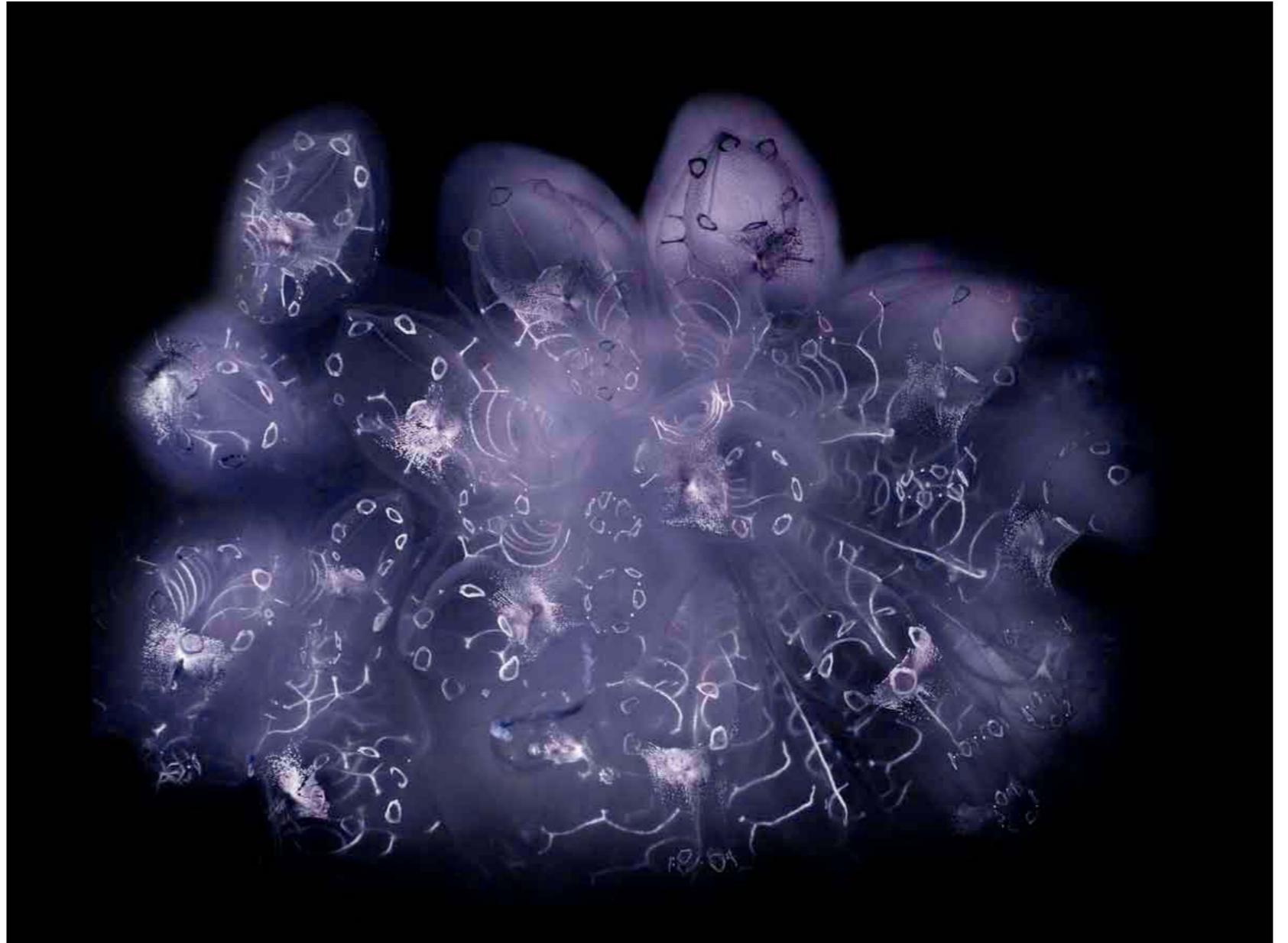
infrared photography. Strobes provide the source of infrared light for underwater photography.

One of the most notable differences between landscape photography and underwater seascape photography is the penetrating power of the light. With infrared landscape photography, a good deal of sunlight-driven infrared light is absorbed by the atmosphere, but enough IR wavelength light penetrates so that sunny mid-day infrared photographs show objects from the foreground to the horizon. On the other hand, infrared light from an underwater strobe does not travel far from its source before being completely absorbed by the water. Because of this, objects even a short distance from the strobe recede into the shadows.

Things that are normally photogenic because of their bright colors may look uninteresting when photographed in IR since the brightly-colored objects are likely to be rendered as the same shade of white. Consequently, what makes infrared images interesting are their shapes and textures. Digital IR photographs may exhibit a color cast as an artifact of the particular white balance selected. It can be left as is or digitally modified.

Side lighting highlights textural irregularities. Distance from the lens creates variation in shades of light and dark. The farther an object is from the lens, the darker it appears.

Since infrared light is invisible to the human eye, it is impossible to predict precisely how an image will look; however, with experience, it is possible to spot a likely subject for a good infrared photograph and visualize lighting that will enhance its appearance. This makes a



Cover Image from March 2012 Issue PNWDiver

digital camera's display an excellent tool for evaluating various lighting effects.

Converting from Color to Infrared

Software is available to use with color photographs that can approximate the look of infrared and there are also tutorials on how mimic the same thing can be accomplished with image processing programs such as Photoshop. Underwater, however, there is no substitute for taking infrared photographs with actual IR technology.

No algorithms are available for calculating the distance from lens to objects in the scene, nor for simulating the light-absorbing effect of water. In a true infrared underwater photograph, distracting background clutter is eliminated and attention is focused on the foreground. It is a distinctive look and opens up an entire world of new possibilities for adventurous photographers.

Comparison of True Infrared Image (top 3 images) to Mock Infrared (bottom 3 images)

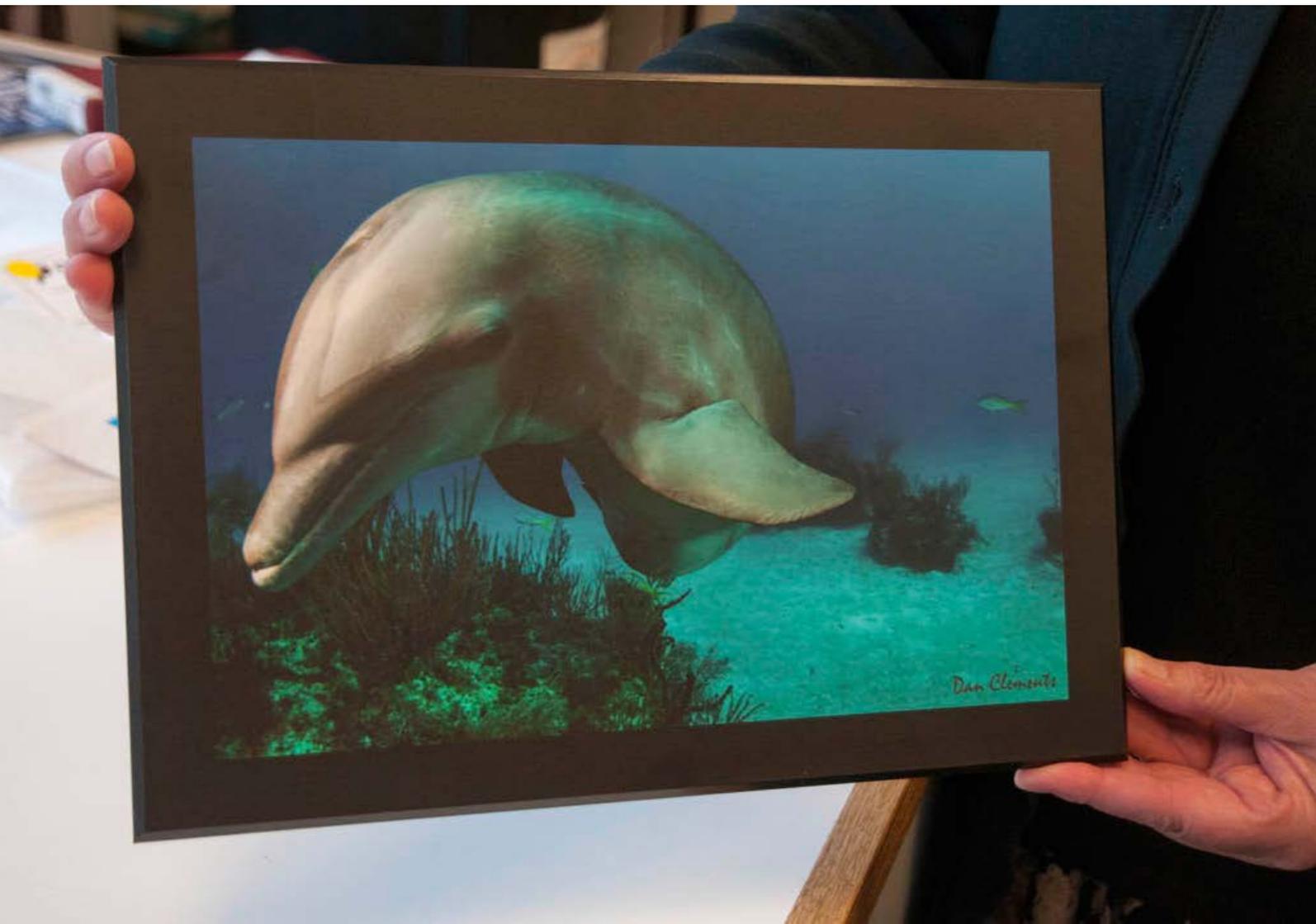
Here are some pairs that are as close as I can come to the same situation/critter with digital infrared image and a false infrared image created by interpreting colors as they would be by an infrared camera. The false infrared images show that merely manipulating color does just that. There is no substitute for the IR light-absorbing effect of the water for producing the lovely effects of true undersea infrared photography. In the true IR photographs, the background fades to black, leaving fluted textures with lighter tones close to the light source and darker tones farther away. The look of the true IR is very distinctive.



Prolam Framing

Some New Framing Options for Prints

By Dan Clements



Several weeks back I was visiting my local picture framer to have three prints mounted for a client, and noticed a new framing method I had never seen. It is done by a company called ProLam, and is a great way of mounting photos.

Photos (or other documents) are mounted on Medium Density Fiberboard, or MDF as it is commonly called, and then heat pressed. A special UV protective vinyl is laminated over the print and heat pressed with 2.5 tons of pressure. The edges are then beveled or floated, and finished with your choice of hundreds of different colors and patterns. Standard colors are applied in the manufacturing cycle with a polyester foil at over 300 degrees. Custom colors are painted. They can handle sizes up to 4'x8'.

Being somewhat traditional, I still like borders on my prints. In the dolphin photo, I simply increased the size of the canvass in Photoshop by 2 inches, changed the new border area to black, and sent ProLam a digital image.

The result is a very clean presentation of your photo, with no glass, mat, or frame. This makes it ideal for shows, as the lack of glass and frame really reduces the weight of the exhibited photos. There is also no glare from lights or windows.

It turns out their shop is about 10 miles from our house, so I stop by to pick up my final products. They will also ship photos for non-local customers. What's nice about shipping photos mounted in this manner is that they are much less likely to be damaged in transit than photos sent through the mail or UPS.

After speaking with owners Marita and Roger Mallory, I found out why I had never seen this mounting style before. There are only two or three shops in the US where this type of mounting is done: one in LA, the other in Chicago.

They are presently not set up to handle custom calibration settings. Their monitors and printers are calibrated with Spyder technology. If this is really important to you, I would suggest having your prints made at your regular processor, then shipped to ProLam. The mountings made from digital images I sent them were very good, the printed photos they prepared for me were perfect.

So, after showing and delivering photos on everything from framed with glass, without glass, metal printed, foam core mounted, it will be ProLam from here on out for my display shots.

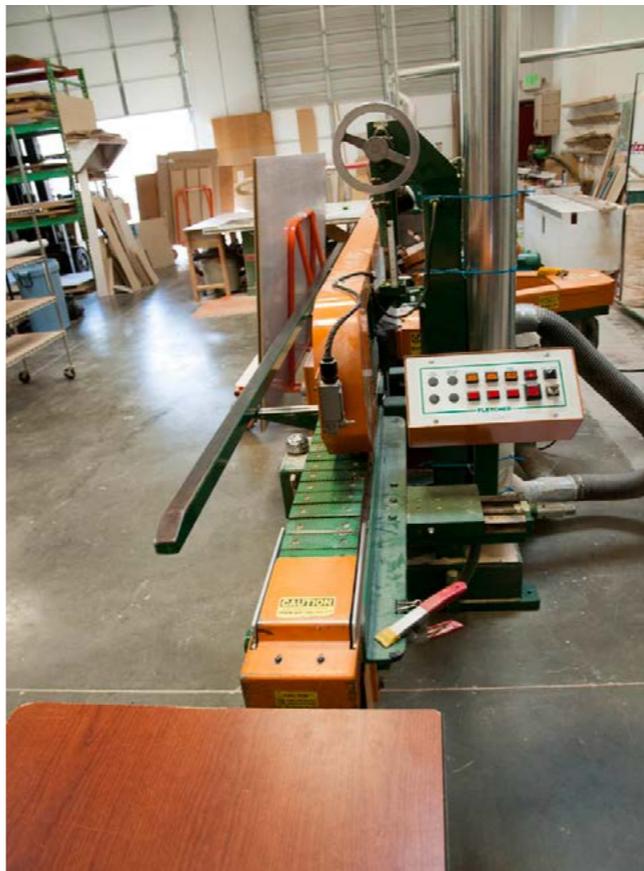
Company: ProLam Art Services
Owners: Marita & Roger Mallory
Web: <http://www.prolam.com>
Phone: 360.805.5463



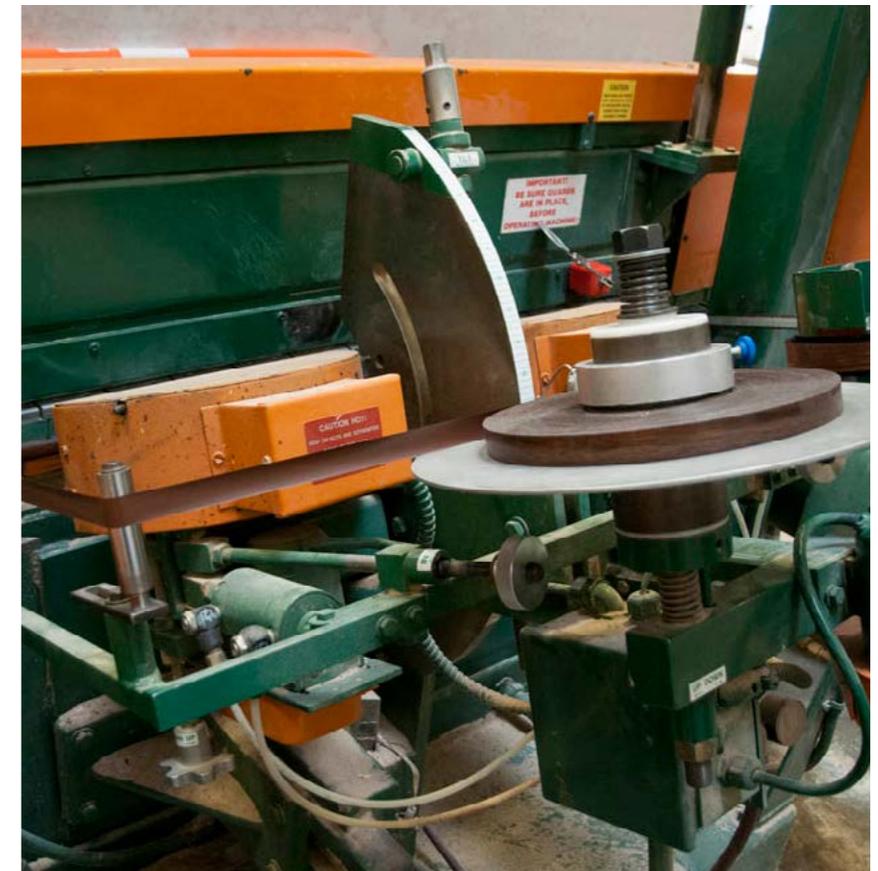
Photos are mounted on MDF



UV protective vinyl is laminated over the print



Edges are then beveled or floated



Colors are applied with a polyester foil at over 300 degrees

iPad Pro for Underwater Photographers

by Dan Clements

Last month I had an interesting exchange with Jeff Carlson, a tech writer for the Seattle Times. Jeff had just written a piece about Apple's iPad Pro, due out in November.

For some time, I have been lusting after a tablet that would have laptop power so I do not have to take two devices on shoots. I need to process RAW images and video. My preference would be to be able to edit photos in Photoshop, and video in Premier Pro. A stylus is absolutely necessary. To date, my iPad's have not had the horse-power to use professionally. Also no stylus. While my Surface Pro has the horsepower and stylus, many of the apps I use on a day to day basis are not available on a Windows platform.

My hope was that the new iPad Pro would fill in the missing piece of Apple hardware needed for me to move totally into Apple's ecosystem. Possibly process RAW images with Photoshop Express, and video with a soon to be released Premier Pro "lite?" Will I be able to ditch my app deficient Surface Pro and MacBook Pro on overseas trips and just take an iPad Pro?

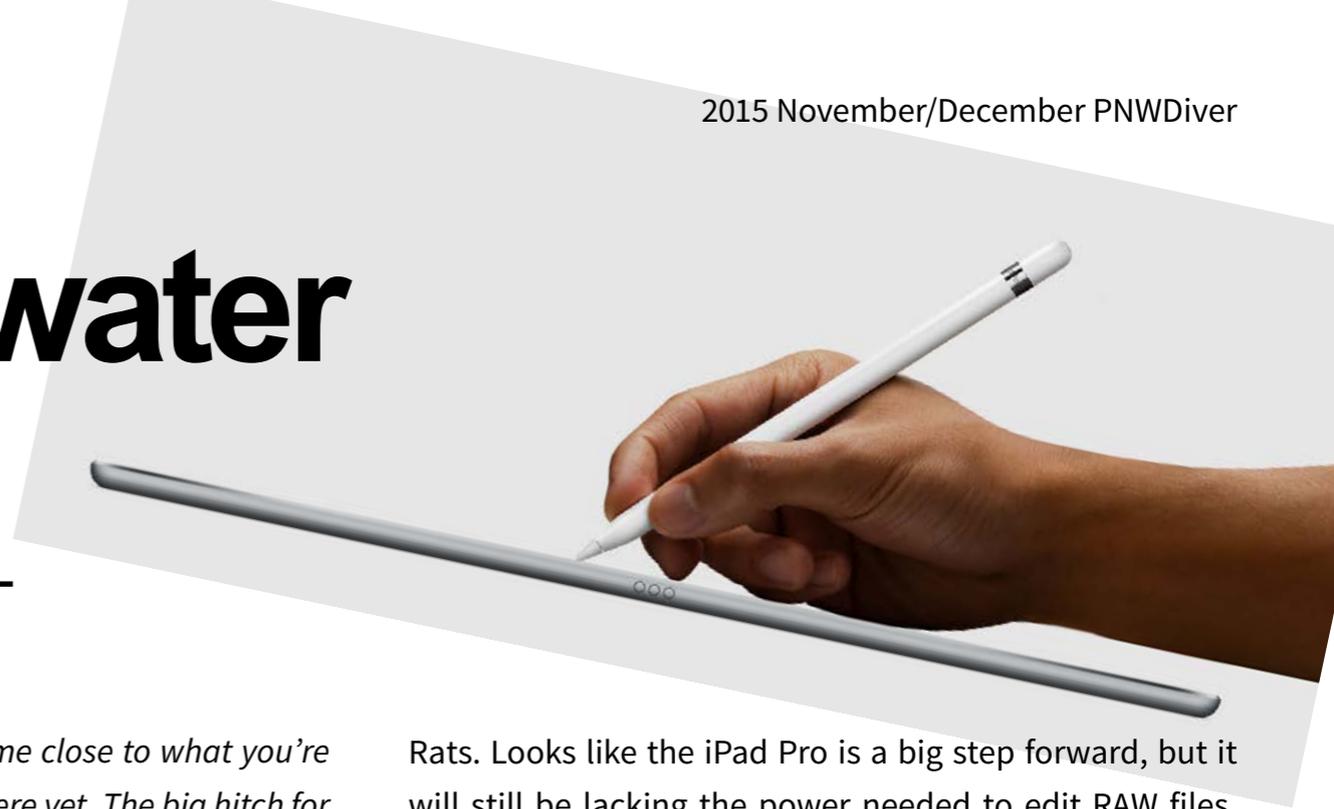
Here is John's take on the iPad Pro and related photo editing software:

"I think the iPad Pro will come close to what you're looking for, but isn't quite there yet. The big hitch for photographers is that you can't actually edit raw files. That's a limitation at the OS level. When you import a raw file, what you're actually viewing and editing is the often low-resolution JPEG preview the camera creates. iOS has no facility for decoding raw files.

Adobe partially gets around this in Lightroom mobile by converting raw photos to DNG in Lightroom CC on the desktop, and then syncing those DNG versions. But it has to go through the Mac or Windows first.

Actually, there are also a couple of apps that will decode and edit raw files directly (like PiRAWhna), but they've been constrained by the iPad's RAM and processor in the past. Maybe the Pro has the oomph to really make those work. Something I definitely need to try.

So, we're getting closer, but not quite there yet."



Rats. Looks like the iPad Pro is a big step forward, but it will still be lacking the power needed to edit RAW files. Looks like I won't be cutting down on weight and devices on trips anytime soon!

Jeff Carlson

Author and photographer Jeff Carlson is a columnist for the Seattle Times, a contributing editor for TidBITS, and writes for outlets such as Macworld and Lynda.com.

He is the author of numerous books, including Photos for OS X and iOS, Apple Watch: A Take Control Crash Course, The iPad for Photographers (Third Edition), Take Control of Your Digital Photos, iPad and iPhone Video, and The Connected Apple Family.

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Creating a Book With Lightroom

By Kerry Enns



Guilty! I've taken 100's of pictures of underwater critters, and there they sit, unviewed, on my harddrives. My house guests certainly don't want to be dragged into my cluttered office to see me sort through my images to find that favourite picture of the octopus.

Before Lightroom came out, I started a tradition of making sure I created a photo book for each major holiday. I have a book from Guatemala, Portugal, Prince Edward Island, my daughter's UK weddings, UK travels, Ireland, India and a couple of non travel books. These sit nicely tucked in my coffee table awaiting for the conversation to appropriately veer to where I can show my pictures. I have yet to create one for my underwater photos, but that is near the top of my To Do list.

Creating a book is very easy in Lightroom. There are several templates from which to choose from and there is a fair

amount of play, within those templates. Once completed, you simply upload the book to Blurb.com where you can place your order. You can even make the book available to the public for purchase.

All you need to do is create a folder in LR for the images you want to consider. While in the Develop module, create a new collection, and drag the images you want to use into that folder. You then click on the Book module and follow the instructions. The last book I created I chose Premium Lustre paper and was very happy with the vivid colors. I published a book earlier on standard paper and found it dull. Just my two-bits. Although I preferred Apple books, and in particular Aperature over Lightroom, it fills a niche. Aperature allowed me to make far more adjustments to the template than LR does, but maybe Adobe will make those changes soon. The turn around time is only one to two weeks – just in time for Christmas gift giving. My 64-

page book on Ireland, in 8x10" format on Premium paper was around \$36US.

Adobe TV has an excellent 20 minute teaching video on this found [HERE](#).

If you are more tech savvy and have access to Photoshop, then there are templates that can be downloaded for various books from 5"x 8", 12" square, or even magazine format.

So on your next holiday, take your laptop and create day-by-day entries along with the day's photos. When you come home, send it off and soon you will have a book to show your friends.

www.blurb.com

Creating Great Underwater Videos

Part 5, The Underwater Video Shoot

by Mike Meagher



In the prior parts of this series we built a foundation covering the underwater video camera, underwater optics and related topics that you will need to understand. In this section we cover the actual tasks and techniques that you might use while underwater. Future articles will address pre-production steps such as script writing and shot planning, as well as post production tasks of editing, grading and delivery.

So let's take an imaginary dive with our camera rig and

discuss the tasks that the underwater Director of Photography (DP) or cameraman needs to accomplish while on the bottom in order to capture great video.

Below are some basic steps you should perform for every take.

- Block: Setup, Composing the Scene and Subject.
- Light: Fine Tuning, Fanning the Bubbles, Fine Tune Focusing and Lighting
- Record the Image: use SLOW camera movements and Pans.
- Repeat and Bracket

Let's take a look at each step in more detail.

Block: Setup, Composing the Scene and Subject

The first step in filming a scene for any movie involves arranging the subjects and actors. This is called Blocking. Some divers simply enter the water with a camera and swim around hoping to come across something interesting to film. That works but given that your bottom time

is limited I suggest that you hit the water with at least a mental "shot list" of some subjects you might encounter during the dive and have a pre conceived idea how you would film them if you came across them. Doing so will save you time and make you more efficient.

There are many books and online articles published regarding the basic rules of composition, leading lines, framing, contrast and the like. There is simply too much to cover here which has already been printed elsewhere. However, let's discuss some important considerations.

First, always have a definite "subject"; something that the viewer sees and identifies. It can be a seal swimming with a diver, or a large whale shark, or a nice looking anemone. Give the viewer something to look at. Sometimes I will swim about the subject looking at it at different angles and positions with my camera in hand, and once I decide on a "look", then I settle down for the shot. In other words, determine the scene for the subject and get the composition figured out before you move on to the next step.

Lighting the Scene, Subject and Set Exposure

Now that you have the basic scene figured out and the camera distance it's time to set up your lighting and exposure. Your goal at this step is threefold: obtain the artistic look, expose the subject properly, and to minimize back-scatter.

Start off by playing with the lighting and figure out what works artistically: full flat lighting, harsh single light with shadows, backlit,

etc. For example, perhaps you are shooting macro on a translucent subject such as a nudibranch or anemone. Try backlighting the subject from the sides or rear, which will make the translucent subject "glow". On the other hand, a subject such as a crab or wolf eel might look more dramatic with harsh side lighting and some shadows. For a diver on a wall you may want them to hold a video light lighting the wall with no other lighting or a gentle fill light.

Determine What to do with the Background Water

Decide if you want to see any background water or not. If you point the camera upwards that will give you brighter



"...set your camera exposure for the background water then move lights closer or further away to balance the subject lighting..."

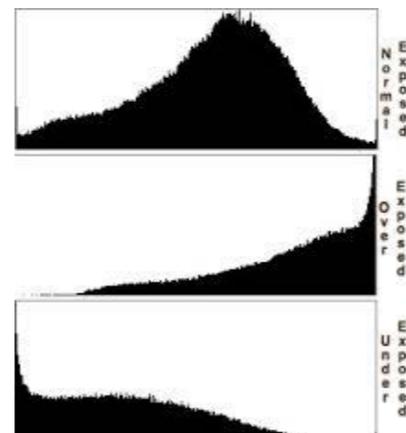
background water, but you will need strong video lights to "fill" the near subject. If your lights do not have adequate intensity for this, try pointing the camera horizontally or even downward so that the background water becomes darker. Experiment and decide what works for you. One method is to set your camera exposure for the background

water then move lights closer or further away to balance the subject lighting to the water. Another technique is to keep the light intensity fixed and to adjust the angle up or

down to bring the background into proper exposure with the foreground.

There are several ways to determine proper exposure when using video and it is subject of much online debate. No single method is perfect in all cases. Your camera's exposure meter will give an approximate exposure if a neutrally reflective subject is exposed. Light meters are designed to indicate the proper exposure of a neutral gray or reflective subject. The light meter has value and is important, so don't ignore it.

Another video exposure method is to use the camera's Histogram which shows darks to whites in a horizontal scale and how they fall into the range of your sensors recording capability. Darks are on the left, Whites on the right. Some people use a ETTR method, which

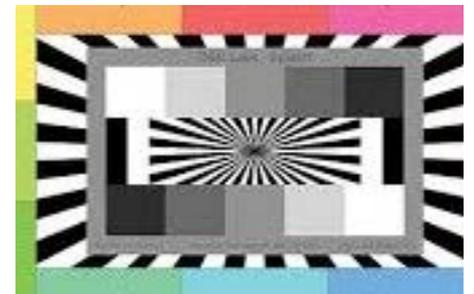


stands for Expose To The Right. Using this method, you open up the exposure as high as possible so the Right side of the histogram just shy of where the Whites are not over expose or "clipped". This gives you as much image data in the highlights as possible.

No one-method works for all situations and it depends on the subject, the scene and your creative desire. If your goal is preserving detail in highlights use the ETTR method (see below), if mid-tones and shadow details are more important the light meter method may work better.



For example you are filming a field of white anemones that have lots of white subjects, then controlling over exposure of the whites is very important. I will set my zebra indicator on the camera set to 100 IRE. (Editor's note: My Nikon still-camera will flash black on over exposed images telling me to try again) When the subject hits overexposure you'll see diagonal stripes on that part of the subject, I then back off the exposure or lighting so that the whites just barely show the zebra stripes. If you see zebra stripes on the whites it's over exposed and image detail is being lost. You can never recover detail in blown-out whites with any amount of color grading.



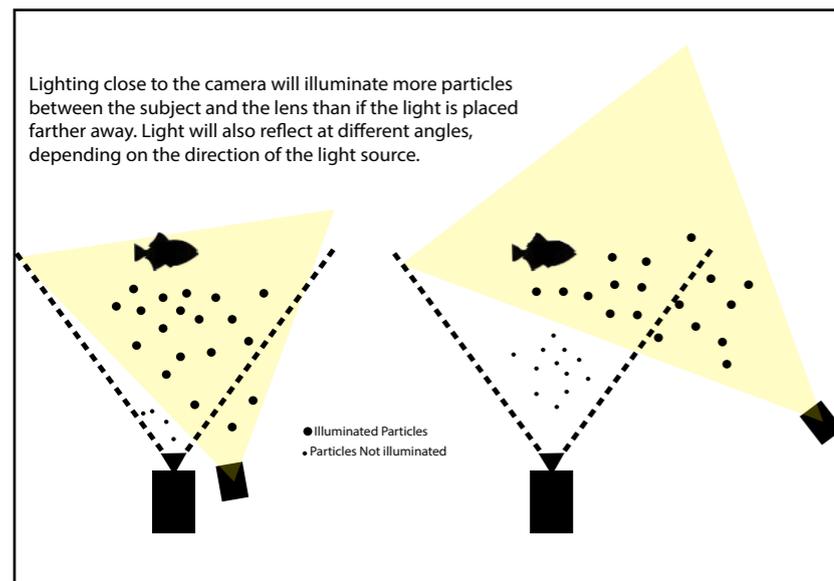
On the other hand, perhaps your scene is a wall of colorful anemones and sea stars and there is a small occasional white speck on the wall. In this case it's much more important to expose the entire scene properly and a light meter method is more relevant here. In this scene it's okay to allow a few small white objects become over exposed if needed and you may prefer to have more shadow detail.

Just remember, the key is to have properly exposed the video in the water, rather than relying on post-processing. Underexposed or over exposed video lack contrast and detail. Always strive to make your video look beautiful at capture it so that you can make it brilliant in post.

Backscatter Management and Lighting

This step is vital during the lighting step, especially in our local waters. If your video light is positioned close and parallel to your lens the harsh video light will be reflected off small particles suspended in the water. It's like taking a flash photo in a snowstorm and the white specks will ruin your image.

In gin-clear waters you can get away with more central-



ized lighting setup, but in dirtier waters try to position the video light(s) away from the camera and aim the lights in



Same Subject - Different Lighting

from the side at a roughly 45-degree angle toward your subject. This causes the light reflection off the particles back to the light source and not to the lens. Side lighting significantly reduces backscatter but introduces uneven illumination and shadows. Both may or may not work for your artistic needs and to even the illumination you may have to use two, or even more video lights from different directions.

A related trick is to illuminate just the subject and to not allow video light to pass through water in front of your lens. Avoid lighting the water unnecessarily and you will reduce backscatter.

But this requires long video light arms. I sometimes use a left, top and right video light for this very purpose or I have a buddy hold a video light on the subject and I turn lights on my camera. Or if when filming a diver along a wall I turn off the light on



the open ocean side so no water is illuminated.

All scenes are not the same and you need video light arms that you can easily adjust on the fly. During a typical dive I am constantly moving and adapting my video lights for each scene's particular need and the ability to quickly adjust one handed is helpful. I prefer the Loc-Line system of segmented joints as they allow me quick on the fly infinite adjustments but they are not for everyone. Use any type of arms that work for you.

I have also found that very wide video lights are a detriment in dirty water. Light manufacturers pride themselves on selling lights that are very wide, but I find that a 120 degree wide light is difficult to "aim" selectively and difficult to minimize illuminating the water in front of my dome. In dirty water I prefer to use multiple narrow beamed video lights versus a very wide one.



In our local PNW waters you will have to actively work at managing backscatter and this will become paramount for making great video. Experiment with lights, arm lengths, multiple lights and tricks like these until you find what works for you. This is a reminder why a good wide angle lens is vital in dirty waters, so that you can get close to your subject to minimize the sheer number of particles in the scene. BTY, if you use the same backscatter mitigation techniques in clear waters then your video will look amazing.

Set the White Balance and / or Record a Color Standard

The color of your subjects will vary as depths change as the ambient light changes and as the distance between your video lights and the subject change. If you are not concerned about the color balance of your video then just skip the steps below and simply configure your camera to Auto White Balance. Set your camera up with a generic color profile that works for you and keep it simple. There's nothing wrong with doing so if it meets your needs.

But before a dive, I pre-set my camera to a generic "daylight" color setting. This is a good starting point when using video lights since most lights have a color temperature close to a daylight range of 5500K to 6500K. Your video will be somewhat close to proper color balance and will be consistent. If you don't have an opportunity to set a proper white balance you'll at least have something set close that can be adjusted later.

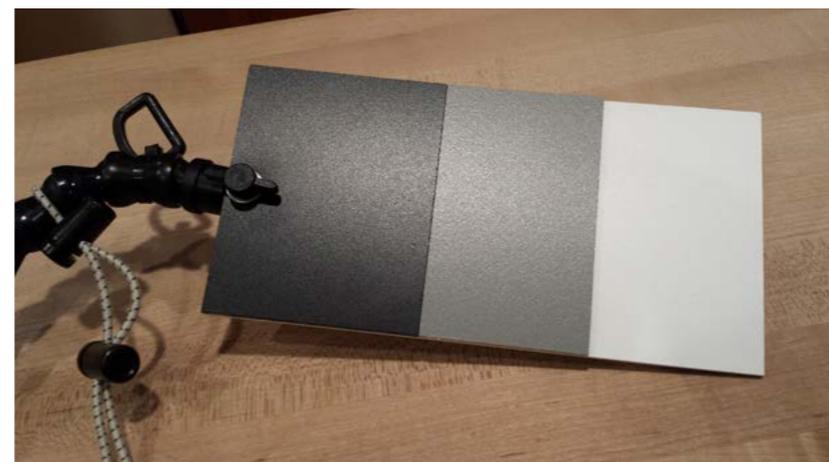
A few years ago when I started shooting underwater video, I simply took what came out of the camera and showed that to my friends and family. That was adequate for a while, but then I discovered the art of color grading and correction. Now I make at least some minimal adjustments to every shot for contrast, saturation and exposure in post and doing so improves the image. Lately I have discovered the power of advanced color grading tools such as the Vectorscope and RGB Parade Histogram and I am learning how to adjust color more exactly using these tools as guides. Higher-end editing suites and stand alone color grading programs such as Resolve feature these advanced tools which are indispensable for fine tuning colors and contrast.

If color management is important to you, you'll need a video camera that supports setting a White Balance manually. Be sure to turn off Auto White Balance (AWB) because AWB will change the color of your video during the take. It's almost impossible to color grade a video shot with AWB constantly changing colors.

Setting the Video Camera to Manual White Balance (WB) Controls

Once on the bottom with your scene set up and lit, it's time to "set" a white balance. Grab the pure white or neutral gray White Balance (WB) slate that you brought along with you. I carry a slate on every dive clipped to my BCD a quick release clip. Sometimes my GH4 is fussy about locking on to a pure white slate that is overexposed and I switch to the DSS Splash slate's neutral target side.

Position the WB slate at the subject or under similar illumination that you intend to film. I use a removable Loc-Line arm on my housing as a third arm to hold the slate for me at 2-3 feet out. This frees my hands to hold the housing and to invoke the WB settings. Or, I detach the slate and set it near the subject or hand it to my model. Point



the camera at the WB slate and manually invoke whatever buttons and "set" the WB of to the slate. Its important to

set the WB to either a pure white slate, or the neutral side of the DSS slate. If you're camera locks on, your colors are now as close to perfect that you can get while underwater.

The method used here is to set the color balance and exposure as close to perfect on the bottom and use post color grading adjustments for fine tuning. Don't rely on post production adjustments for salvaging video that is grossly out of color balance or improperly exposed.

Underwater you should set WB often whenever you change depth or change distances to your subject. Some higher-end cameras let you "store" and recall several custom set white balance that you set during the dive. This can be handy.

Set up 'Flat' Log-Type Color Profile

This second method of color management can be used with a video camera, but is really helpful if using a cinema camera or a camera that is set up to record to a "flat" Log-type color profile such as a GH4 using its new V-Log color profile, or the A7S and its S-LOG.

This method also applies if you are using a GoPro Hero with Protune turned ON and Color Profile set to Native. All of these profiles are flat, unsaturated and have low contrast color and are designed to capture as much image detail as possible. The idea is not let the camera decide on the final colors but instead you do so later at color grading. However shooting in a flat or Log color profile means there is more work in post production.

Filmmakers shooting Log or other flat color profile will often in post production apply a 'LUT' (Look Up Table) to their video at color grading. A LUT file adjusts a record-

ed flat color image and applies consistent adjustments and returns returning proper colors and saturation to the video. There are LUTs for filming with a GoPro in Protune, LUTS for using the GH4 and V-Log, and so forth. Applying a well made LUTs to a video take a lot of the guesswork out of color grading and serves a good starting point for color grading. LUTS can be found online for free or at minimal costs and are often provided by most camera manufacturers that shoot a flat Log color profile.

Regardless, if relying on LUTs or not, I also suggest using some type of “standard” which helps you fine-tune the colors with greater fidelity in post. The DSS Splash slate is the best underwater video slate on the market and is designed for professional color grading and exposure control. One side has color and exposure standards which aids in focusing, exposing and color calibration. The other is a pure white side ideal for setting white balance. By recording a few seconds of the Splash underwater, you can later use a professional editing suite’s color grading tools (RGB parade and Vectorscope) to fine tune the contrast, exposure and colors perfectly.

A simpler method involves recording a few seconds of a slate which has white, gray and black panels. Using these zones of colors, you can later fine tune excellent color balance in post The DeepPro Systems WBCC slate is simple and ideal for this use. We will expand on how to apply color grading methods in a later article.

Regardless of which method is used, set a WB every time when depth or lighting setup changes on your subject and record a few seconds of that new ‘standard’ if you can. If you do both then you are well prepared for post color correcting.

Fine Tuning: Fan the Bubbles, Fine Tune the Focusing and Lighting

The third step used by most film maker is to fine tune the setup. Before you hit record there are a few things to check.

First, take your hand and ‘fan’ the front of your dome port to wash away any small bubbles. Bubbles will adhere to the dome during a dive and a beautiful shot will be quickly ruined by a stray bubble. If the bubble is on your dome



in a strategic location the camera’s autofocus may get confused and focus on that bubble instead of your subject. Don’t touch the optics with any gloves as it’s easy to scratch and a scratch on an dome AR coating may appear as a black spot in your video. I fan my port very often during a dive and it’s just part of my routine.

Also take a moment to insure that your subject is in focus. If using a GoPro, which has a fixed focus lens, make sure you are not too close. GoPro’s have a minimum focus distance as do some larger system dome ports. If using a camera with auto focus, invoke the push to focus button and insure focus is locked on often before pushing the record button.

Watch for the auto focus ‘hunting’ for a lock-on. Sometimes you may have to override auto focusing and set the camera focus manually at a predetermined distance. If a dive is very dynamic, like a drift dive, then I suggest that you set your camera to manual focus and pre-focus on the most likely subject distance. Other times you may have to focus manually when you have a close-in subject way off to the side or on a diver in the far distance.

Some people believe that you should always set a wide angle lens focus to a generic predetermined distance and keep it at that for the entire dive. In reality every image has only one optimal focal point, which varies with the subject distance. Focus should always be fine tuned if you can.

I have old eyes and have difficulty seeing the camera’s small video screen underwater with a mask on. This is when my camera’s “focus peaking” feature is handy. When turned on colorful lines appear around the subject when in acceptable focus and acts as an aide. Make use of focus peaking if your camera supports it.

Record the Image

The next to last step is to push record. When recording, record more than you think and move slower than you think. Always record a scene for longer than you believe that you will need. Record at least a 10 second long ‘take’ on any subject. Count in your head slowly to about 12 or 14 (because we sometimes count faster mentally than the clock ticks) or watch the camera’s time code counter on your screen if you have one.

Also record what are called ‘Handles’; a few extra seconds of video both prior and at the end of the main action. Han-

dles allows you to add transitions and fades when editing and give you some leeway to fine tune timing when editing. An editor loves video that contains handles!

I've ruined more shots with poor camera movement than I can remember. Slow, solid, non jerky, and subtle camera movements are vital if you want your audience to come back to see more. Generally, the more stable your video the more professional it will look. Purchase lenses that have image stabilization and use it. This is where your "waterman ship" skills as a diver come into play. Buoyancy control is key. Keep your body in control. Keep your body still. Hold the housing still. Try to use your body mass to stabilize the camera. Let air out of your BCD and kneel on the bottom (if you wont hurt any life) and stabilize the camera by locking your elbows to your sides turning your body into a tripod. Retard your breathing if it's safe to do so then gently push record.

Go Slow with Pans or Tilts of the Camera

Try to slow down the pans. Video that you think was panned slowly, when viewed later will often be too quick when viewed. One rule of thumb when panning is that the pan should take at least seven seconds for the subject to cross from one side to the other of the frame. Any shorter time and it's too fast. I force myself continually to pan slowly or not at all.

Make a conscience effort to use minimal, slow or little camera movement unless there is a desired effect. Use a tripod if it's practical and safe to do so and if the dive site suits it. The look of a 'lock down' shot is very professional. I sometimes use a small Gorilla Pod attach to my wide angle GoPro housing which does wonders for the look of the

video. When shooting macro with a narrow Field Of View lens on my GH4 or camcorder I often use a customized tripod. If no tripod is handy, consider setting the camera on the bottom to stabilize it if the bottom permits and is void of life.

Slow movements and good buoyancy control also prevents kicking up the silt. If you're bouncing off the bottom or continually kicking your fins to maintain a depth then you may be stirring up the silt. I also dive "into" the current always trying to seek out as clean of water as possible and I move away from other divers and look for scenes to film upstream. My own activities will kick up sediment and moving from shot to shot upstream results in encountering clearer water conditions.

If you're in a strong current or surge moving water dive you will need to do the opposite and use your body and arms as a human dampener to smooth out camera motion. Here the arms and body is used as a dampening system to stabilize the housing. This just takes practice to learn.



Wolf Eel Video - Notice the slow pan

Final Step: Repeat and Bracket

After you press stop on the recording button, do yourself a favor before you swim away. Do it all again. However, this time double check everything. Again fan the lens for stray bubbles. Adjust the exposure slightly. Fine tune the lighting. Hold the camera stiller. Pan slower. Then Record a longer take. Give yourself one more version of that subject just in case you got something wrong prior.

Some other Film Making Considerations

Consider allowing the subject to move about the frame rather than tracking it. Instead of following subjects, much as a hunter takes aim, allow the subject to roam inside the frame and let your viewers eyes track the subject. It's a much more pleasing look. Try allowing the subject to enter the frame, pass through the scene and then depart. The opening scene in Star Wars Episode IV comes to mind. Take a look at that and you'll know what I mean.

Take at least three different takes from slightly different angles or perspectives of every subject. This will give you material to work with later when editing. For example, let's say you are filming a wolf eel. Take a shot wide, one closer, one close-up, and from slightly different angles or distances. Take one of a diver and wolf eel. Take one of just the wolf eel's face. One of the mouth. One of the eye. Cut back to the full face. This allows you to have material to edit into a "sequence" later.

Record lots and be picky. Only show people the "good stuff" and they will think you are amazing. A good rule of thumb is 10:1. For every ten minutes of video recorded, you should hope to get 1 minute of exceptional stuff. If you are getting a 10:1 ratio you are doing very well. I average between 10:1 to 20:1

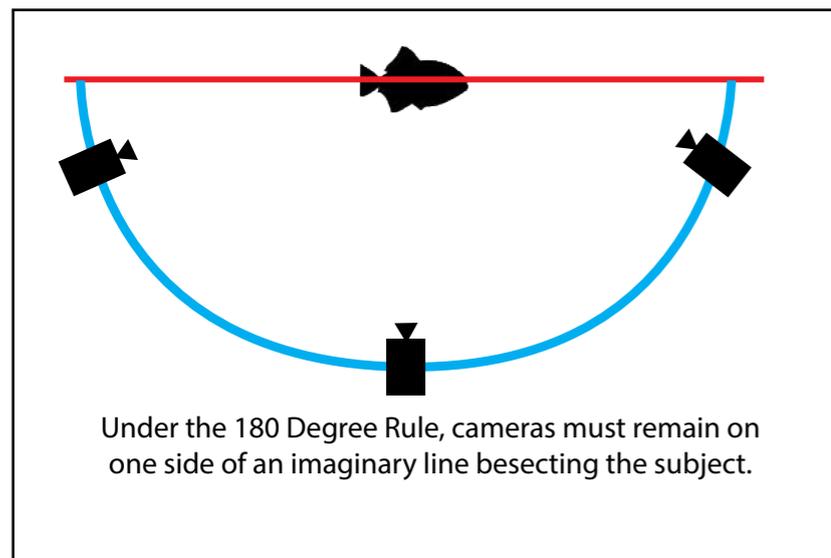
If possible, dive a particular dive site more than once, once recording wide angle and again recording macro of the same subjects. This allows you when editing a segment later to set the scene with the wide shots, then bring attention to the subject with the close ups.

Try to dedicate your dive to wide or macro but not both. You'll be more productive if you do this. Diving a spot several times will allow you to learn where to find certain subjects.

Consider following the Rule of 180

Imagine a line drawn in front of your camera from left to right in the horizontal direction. The camera is on one side, the subject on the far side. The 180 rule says to always capture from the same side of that line and never crossing it. This gives continuity visually to the various takes of the subject when edited later. If you suddenly cross that line and record from a radically different angle that may confuse the audience and break the continuity of the segment. It's just a suggestion.

Pick a spot on the bottom and camp out. Find a nice rock outcropping and work it: look at it, swim around it and



discover what is there from different angles. Then set up the shot. Figure on getting only 3-4 really good scenes recorded during a dive instead of a lot of marginal ones.

Don't forget to look up. Some of the most beautiful shots that I've made are where when I turned the camera recording on and set the housing on the bottom pointing upward to the surface or up a wall. Then my buddy and I swim about the scene in the background or above it. It gives a different perspective that the audience will enjoy.

Some Dive Day Considerations

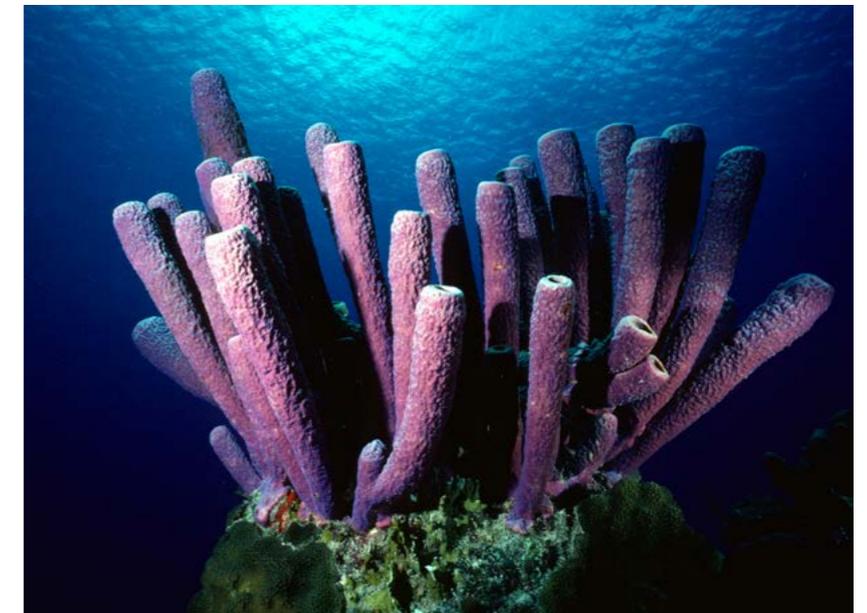
Try to prep and pre-configure your camera, before splashing, with a generic "catch all" setting. I set the camera to a fully "auto" mode just in case I jump in and get all excited by that rare whale encounter and forget what to do.

Make sure you have desiccants packs installed or taped inside your housing. The more the merrier. Condensation build up on the inside of a dome will ruin your dive. Dive boat cabins in our PNW cold waters have high humidity and opening a housing will invite condensation. (Editor's note: Make your own reusable desiccant packages with supplies from a craft store)

The Last Word

Locate a book on Visual Storytelling such as the book *The Visual Story* by Osgood. It's an good read and give you some ideas on how to visually construct scenes that have mood, tempo, flow, and to visually take control of the viewer's experience. The concept is that you control what the viewer reaction to the story and complement the script by controlling where they will look and how their eyes move about the scene. You control the subject placement, motion, contrasting or similar colors, subject

and camera movement, angles, tempo, timing of cuts, tone and contrast and more. All of these things come together and work to influence the tempo and flavor of the segment. It's an interesting read, check it out. Until the next article... happy diving.



Boat Diving with Camera Gear

How to keep your gear safe

By Mike Meagher

Diving from a boat is wonderful and much easier than lugging that camera gear on shore. But there are a few things you can do to keep that dive from costing you even more money in damaged gear. Here are a few things I've learned.

I always enter the water with a lens cap on my camera and only take it off underwater at the beginning of the dive. I have a clip on the cap and D rings on my BCD. At the end of the dive I reverse the steps putting the lens cap back on the camera before exiting the shore or boarding the dive boat. Well-intended deckhands and rocky shorelines can accidentally damage your delicate optics.

Always inform any dive boat deckhands and dive masters before the dive where to handle the camera and how to carry it. My video lights and Loc-Line arms are not meant as handles out of the water. They may come apart out of the water if held by the arms. If you don't tell them they will not know.

I kindly ask the deckhand to not place my camera in a fresh water rinse tank. Too many housing ports get scratched in there, controls get bumped and a camera may get turned on allowing the battery to run dead. What I do is simply pour some fresh drinking water on the dome to prevent salt buildup. The rest of the housing will be fine for the remainder of the day. If I plan to open the housing, then sure, I'll give it a quick fresh water rinse but I never leave my rig in a bucket with other cameras unattended. I've seen other divers manhandle a rig to get to theirs or the moving boat causes housings so slosh about and bang.

When on a dive boat and doing multiple dives, between dives I always swap out batteries on my lights with a fresh cell. LED video light intensity tends to drop as batteries diminish. A battery swap between dives insures adequate light power for the next dive. This is why I try to purchase video lights that have the ability to swap batteries.

If using a GoPro between dives I also swap the camera



Prepping for the dive day

battery as they are only good for about one dive. For the rest of my cameras I do what I can to avoid opening the housing between dives. Doing so might introduce condensation or be the potential for a leak. I try to use memory cards with sufficient capacity for two dives worth of recording. I budget for 20 minutes of video storage per dive and 50 minutes of camera power. I purchase the highest capacity batteries for my camera possible, and often use the Wasabi line of cells as they are as good or better than the OEM in most cases. Beware cheap batteries that have false amperage claims.

Here's hoping this will save my fellow photographers and videographers some pain. Happy boating!

Your Lens. Your Story.



This issue we have two stories sent in by our readers: A night dive at Deception Pass and an Underwater Pumpkin Carving Challenge.

If you have a story that you would like to send in for this section, please include a paragraph or two describing the event or story along with some images for support. We prefer images that are approximately 1Mb. We look forward to hearing from you! editor@pnwups.com

Deception Pass: Above & Below

Jeff Aspines

On September 21st I had just completed a photo shoot. I was taking some twilight images and suddenly saw bright lights shining all around. I thought this the end of my night shoot.

I approached the individual with the light and asked what they were looking for. "We are looking for you," he said. It turned out he was. He was part of a scuba diving group planning on making a Deception Pass night dive. But they did not have anyone to photograph the dive. I was happy to give it my best shot. Here are the results.

I had 15 minutes to run to the north end of the bridge to take the photo below. I used a Canon 5d mark 2. 40mm f2.8 60second exposure. The major challenge here is that I am shooting toward the moon. The South side ridge where the divers were was in complete darkness. I extended my exposures and used my flashlights to capture some detail in the background.

The divers made their way along the shore to a point directly below the bridge. In these images I shot down from the bridge with a 100mm lens at 4 minute exposures with an f2.8 aperture.

Meanwhile, while I was photographing from above, Elena Sera Jose from La Jolla, California, was photographing the marine life below.

aspnesphoto@aaahawk.com

<http://www.aspnesphoto.com>





The Winning entry by Brenlan

11 Year Old Boy Wins Carving Challenge

by Khrista Zand

Fall is upon us and that can only mean one thing: UNDERWATER PUMPKIN CARVING!! This year Coastal Divers from the Whytecliff Wednesday community dive group were challenged by the Okanagan Dive Club to a Coast vs Interior Underwater Pumpkin Carving Contest. The winner to own the bragging rights to the Best Pumpkin Carved Underwater in BC!



Above and below: Winner Brenlan Doyle

Okanagan divers braved -2 surface temperatures while the Coastal group fended off a dark and rainy night, all for the chance to win the title of 'Best Pumpkin Carved Underwater in BC!' The winner to be determined by the most votes.

In the end it was 11yr old Brenlan Doyle from the Okanagan Dive Club who claimed victory sending all others back to the drawing board until next year.



Travel Corner

This issue we are featuring travel opportunities from Eiko Jones. Featured in May 2014 issue of PNWDiver, his work can be seen at <http://www.eikojonesphotography.com>

There are several spaces still available on the Sea of Cortez trip. Don't miss out on this opportunity!

Eiko is also planning a trip to Hornby Island and to the Blue Sharks next summer. Keep tuned for those events here or contact him directly.



Underwater Photography Workshop on Hornby Island

With Eiko Jones Photography

June 10-15 2016

Join Eiko Jones on a fun and informative Underwater Photo Adventure on spectacular Hornby Island

This workshop will be filled with learning opportunities and exciting diving adventures. Huge schools of Rockfish and Lingcod, multitudes of macro subjects and possibly 6 gill Sharks will fill your dive days. Classroom sessions and discussions will occupy the evenings. Two boat dives a day with shore diving on location as well. Hosted at **Hornby Island Diving**, you will be spoiled beyond belief and have a great learning experience.

Whether you prefer wide angle or macro photography, this workshop will help you go from taking underwater snap shots to producing images that will really stand out. Contact now to guarantee your spot.

Contact: Eiko Jones Ph 250 203 0254 sales@eikojonesphotography.com www.eikojonesphotography.com

Workshop cost

\$1199

Accommodation, meals, diving and workshop cost included.



SEA OF CORTEZ

July 9th – 16th 2016: Midriff Islands Photo Workshop



Join us July 9-16 2016 on the well-equipped Rocio del Mar for a fabulous week of maximum diving with sea lions & fish, and snorkeling off pangas with as many big animals as we can find - whale sharks, sperm whales, pilot whales, dolphins, etc.

Your host is Pro Photographer Eiko Jones, an award winning UW photographer who specialises in creative and dramatic photography. Eiko will show you how to take that perfect wide-angle, macro or critter behavior shot. As well as plenty of opportunities for topside images.

Eiko typically leads trips in British Columbia's rugged waterways, including its oceans, rivers, lakes and canyons. His unique trips guiding divers to witness the marvel of migrating salmon have helped him to gain experience in challenging and varied conditions. His work has been

featured in many magazines and he has had his images shown in Galleries in Canada and the US.

Trip Features

- Extended time with whale sharks
- Expert underwater photo instruction daily
- Extra dives with sea lions & any large schools of fish we find
- Extra time snorkeling off pangas with sperm whales, dolphins & pilot whales Up to 4 dives a day, best time to dive Northern Sea of Cortez
- Fly into Phoenix, or drive from LA - it's so easy!
- Beginner photographers and non-photographers welcome

Daily Photo Workshops

- Workshops will be given daily on topics such as wide-angle and macro underwater photography, ambient light shots, snorkeling with large animals, strobe exposure and positions, avoiding backscatter, composition, post processing and workflow, and topside photography.
- We will be spending extra time photographing big animals - sperm whales, dolphins, sea lions, whale sharks, and schools of fish. The Northern Sea of Cortez also has plenty of small fish, nudibranchs, moray eels, arrow crabs, jawfish, hawkfish, horn sharks, pike blennies, rays and seahorses.

Trip cost: \$2395 USD (see [pdf](#) for details)

Email sales@eikojonesphotography.com or

call 250.203.0254





Dan Clements

*Washington, USA
Founder/Columnist*

Dan is an adventurer who has a deep appreciation and respect for the world's natural wonders and life in its many varied forms. He has climbed, skied, sailed, SCUBA dived, and traveled throughout the world. He has made first ascents in North and South America, and run major white water rapids in Africa and the Western Hemisphere. He wrote the now sold out *Critters, Creatures, and Kelp* in 2009.

He was fortunate to have parents who exposed him to Hopi, Navajo, Seri, and Lacandon First Nations populations. Later in life he was privileged to be able to spend time among the Bushmen (San) of southern Africa, and Qechua and Aymara in the Andes. He is working to try and increase knowledge and appreciation of Pacific Northwest indigenous populations.

He holds an MBA in international finance and has sat on boards for United Way, Housing Hope, Cayenta Systems, Eden Systems, Snohomish County Public Facilities District, and Ibis Publishing.

When he is not underwater photographing he enjoys cooking, back country skiing, distance running, mountain biking, and opera. Everett, Washington is home base and where he and his wife Karen raised two sons.



Kerry Enns

*British Columbia, Canada
Editor/Publisher*

Kerry grew up in Brazil as a missionary's child and moved to Wisconsin at the age of 10. While her father worked on his studies, she entertained herself by cycling, swimming and fishing and earned spending money by delivering papers and babysitting. Her family moved to Winnipeg during her high school years. After graduating, she found herself heading to British Columbia to go to Trinity Western University. She married and stayed in BC raising 2 children.

She holds a degree in Geography and is certified to teach elementary and middle school students. She currently works part-time as a Teacher on Call in order to fund her diving, photography and travel.

She enjoys traveling and has had recent visits to the India, the UK/Ireland and Maui. She hopes to continue to travel as much as her finances allow it and would like to someday dive the beautiful tropical waters world wide. She particularly wants to visit Brazil, not only to dive but to work on her fluency of the Portuguese language.

She has recently taken up freediving and hopes to learn photography in that new venue.



Talia Cohen

*British Columbia, Canada
Creative Consultant*

Talia grew up in South Africa, and has lived in Missouri, Rhode Island, and New York. She now calls Vancouver her home with her husband and 2 dogs.

She is a Creative Director, and has attended the Rhode Island School of Design, Brown University, MIT and Babson. Talia has produced work for some of the world's leading companies and organizations including Unilever, General Mills, SportChek, and The BC Dairy Foundation.

Since a young age she has been enchanted with the world below the surface. And, when not at the studio, she takes every opportunity to explore the underwater world, camera in hand.



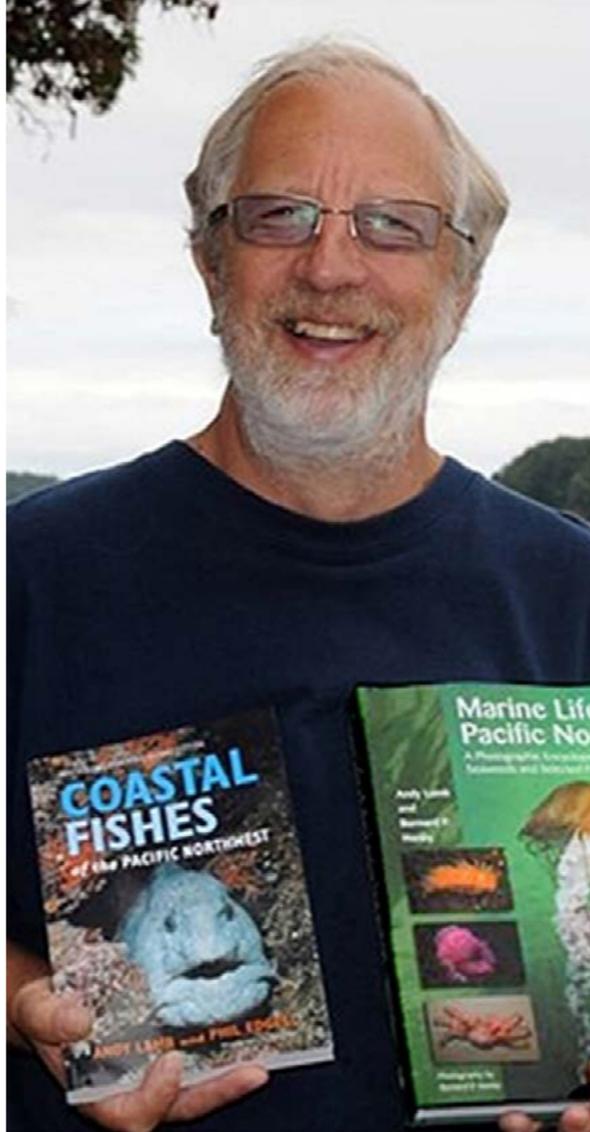
Dale Carlisle

British Columbia, Canada
Columnist

Certified in 2007, Dale is interested in several facets of diving. As a long time fishkeeper and naturalist, he loves being able to access the aquatic realm in order to better observe fish habitat and behavior. In 2010 he began a long term study of a local lake (The Cultus Lake Project) in order to learn more about an endangered species of fish that resides there.

Out of that interest, he began learning how to capture images of his subjects and continues to develop his underwater videography as both a vehicle of communication and art form.

Dale also enjoys researching the historical aspect of diving and often uses vintage era gear and techniques himself, which he shares with others at www.manfish.ca.



Andy Lamb

British Columbia, Canada
Scientific Consultant

Andy Lamb is a marine naturalist and educator who has worked as Chief Collector at the Vancouver Aquarium and as a fish culturist with Fisheries and Oceans Canada. He is the co-author of *Coastal Fishes of the Pacific Northwest* and *Marine Life of the Pacific Northwest: A Photographic Encyclopedia of Invertebrates, Seaweeds and Selected Fishes*, both are found in almost every diver's library of the region.

Andy has served as the team for PNWDiver since the beginning and helps members identify marine life and keeps us abreast of news in the scientific community.
<http://www.cedar-beach.com/about.shtml>
andy@cedar-beach.com



Michael Meagher

Washington, USA
Guest Columnist

Mike began diving in 1976 in Southern California and hasn't stopped diving since. In 1977 he purchased his first underwater camera, the Nikonos III and began learning how to take photos underwater. He worked in a dive shop in So. Cal for a few years, became a PADI instructor and learned the trade in the mid 80s. During that time Mike read extensively on underwater photography, purchased more equipment as well as a small dive boat named the "Shark Bait" in order to explore the shipwrecks and reefs. It was also during those years that Mike was an active member of the Los Angeles chapter of the Underwater Photographic Society, and won several awards and international competitions. Graduating from Cal State Fullerton, Mike relocated to Washington in the early 90s, and began exploring local dive sites. In 2008 he took up videography using Sony camcorders. Mike enjoys custom modifying his underwater photography and video equipment. He is a regular contributor to the San Diego Underseas Film Exposition and his short underwater films can be seen on-line at youtube/wolfeeldiver. Recently mike founded DeepPro systems, a niche manufacturer of underwater video equipment, and resides in Bellingham, Washington.