PNW DIVER MAGAZINE

FALL 2016

Featuring:

Tiare Boyes
Aaron Moser
Chris Sherwood
Lidia Burlakova
Ron DeVries

and more…

01 About the Magazine

Cover photo by Tiare Boyes

Canon G15, 16mm, f2.5, 1/640sec

The Pacific NorthWest Diver Magazine is published quarterly 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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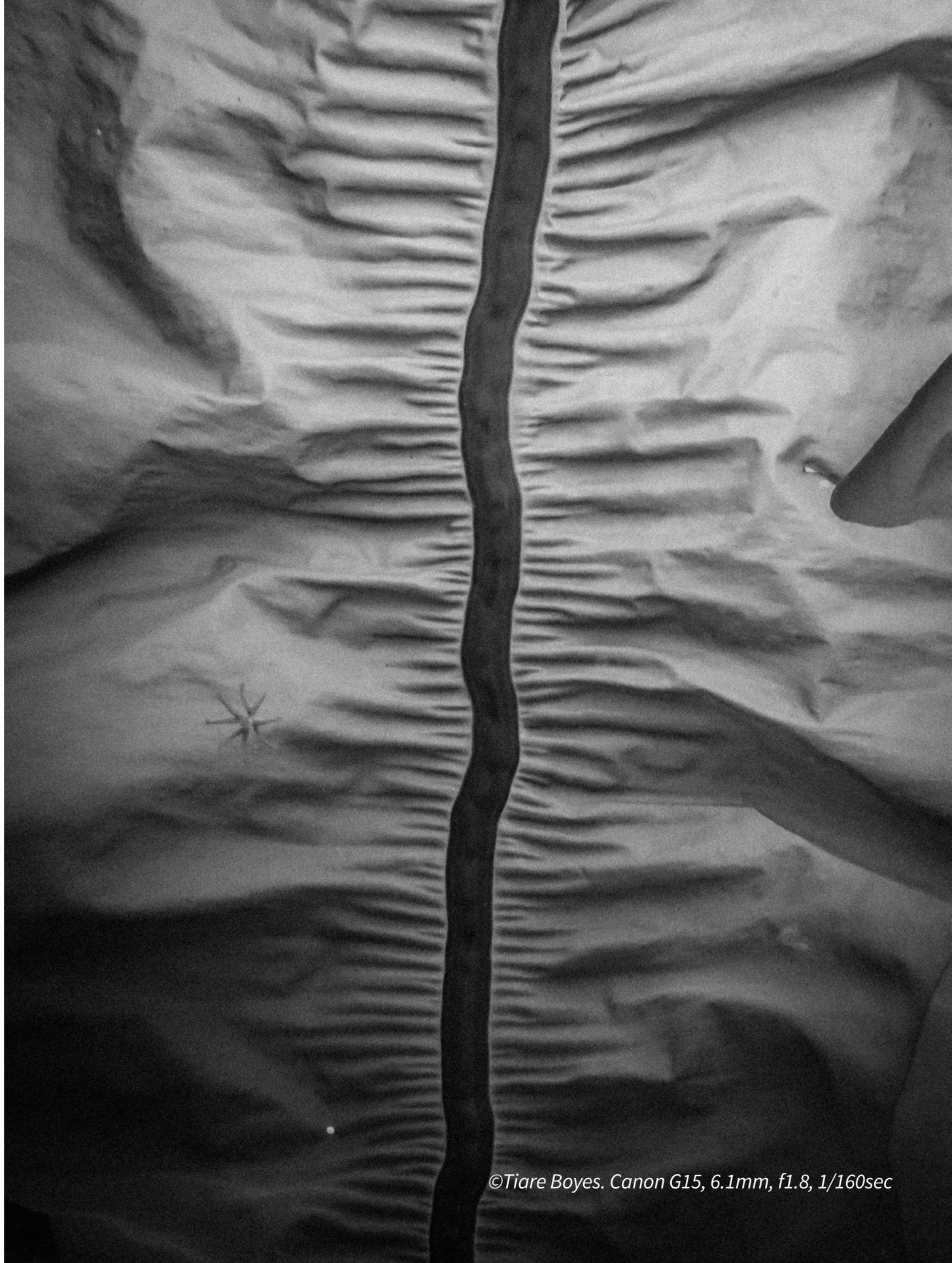

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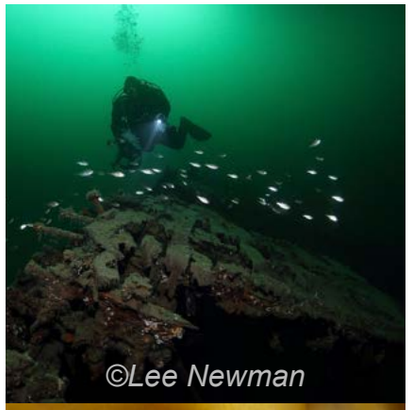
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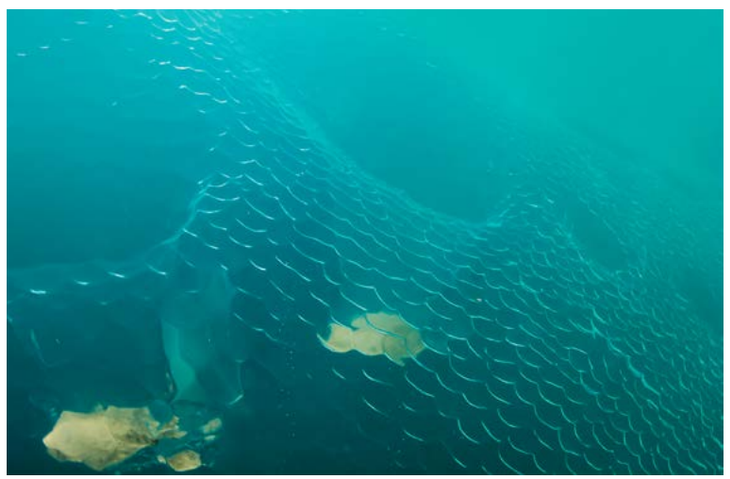


Under the iceberg in Alaska. The deep holes are actually pockets of glacial silt. As the berg melted, this silt releases into the water causing the surrounding waters to be quite murky.

What a busy summer that was! But what fun. The highlight for me was an impromptu trip to Alaska with a friend to camp and freedive. We boated and swam in the Kenai Fjords, and the water was remarkably warm. Freediving around an iceberg was fantastic and the textures below the surface, incredible.

With Fall, we who live in the PNW are looking forward to those clear visibility dives that come with winter. So dust off those dome ports and fisheye lenses. We want to hearabout your vis reports and see your pictures on the PNW Diver Sharing site. Click here and if you are not yet a member and simply ask to join. We are moderating who joins, so if we don't accept you for one reason or another, just send me an email and I'll fix it.

You will notice that there is no Archival article in this issue. We gave Dale Carlisle, our regular contributor, a pass this time. Instead, he tackled an epic trip from Winnipeg to Hope on his bicycle to raise awareness for dementia, an issue close to his heart. You can see the video from his journey here – don't miss it! You can also learn more about his trip on his website: http://wecanride2016.weebly.com.

Finally, I need to post a correction from the Summer 2016 issue that was downloaded by about 150 people. While we do our best to make sure we do things right the first time, we are human and tend to remember or write things down incorrectly. In Andy Lamb's article on Rockfishes, we got the date and buddy wrong on page 18. The dive in which the school of sub-adult juvenile Yelloweyes were spotted, was much earlier than posted. It was in fact in 1984! It makes the image even more remarkable. Bernie Hanby's buddy was Dr. Chris Pharo. If you have one of the first downloads, considering replacing the issue with the current version posted on the website. Our apologies to those affected by this error.

It's another stellar issue! Save it to your tablet for easier reading, cozy up to the fire and enjoy the images and articles. As always, we welcome feedback online or by email.

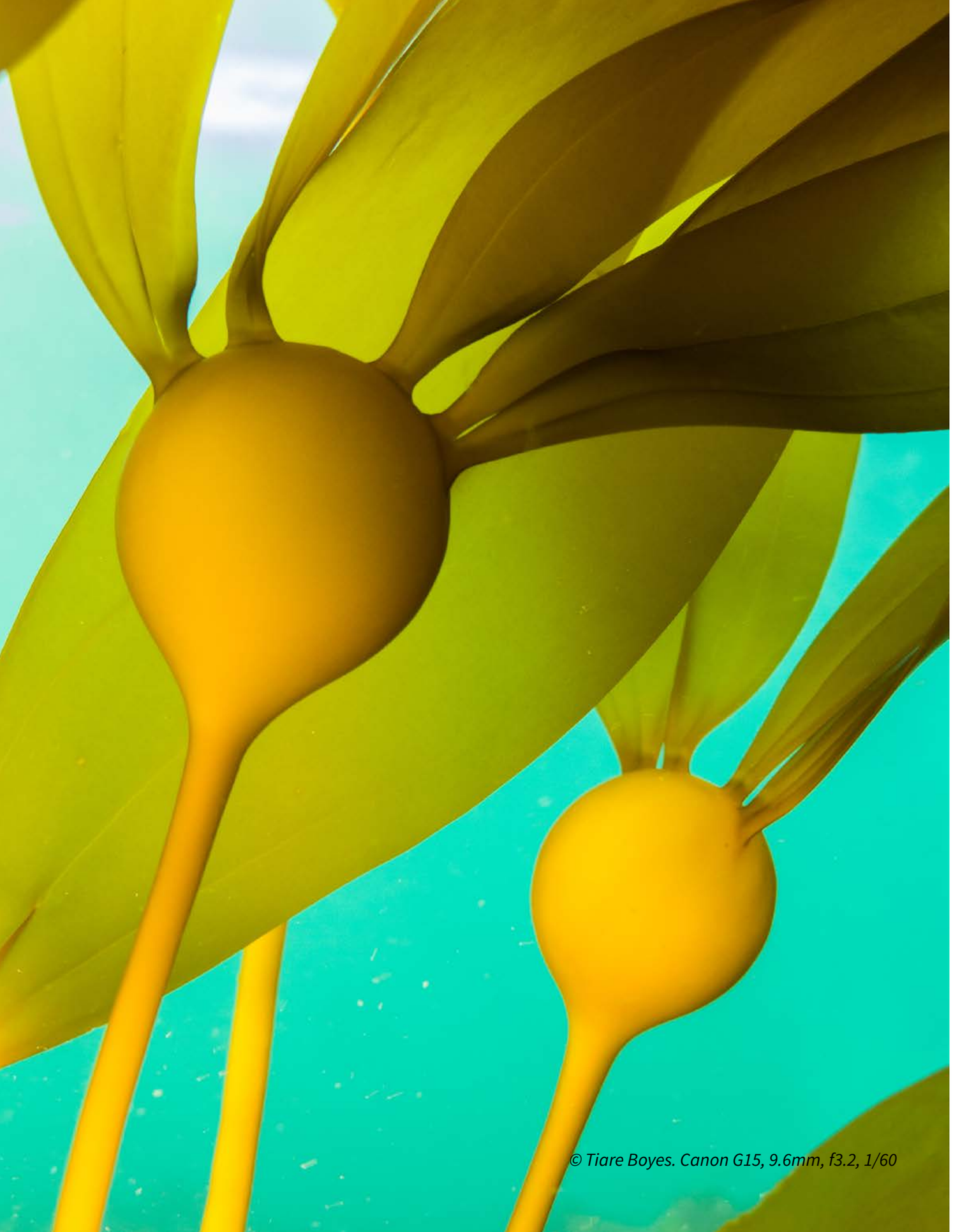
Cheers,
Kerry Enns, editor@pnwups.com

Featured Photographer: *Tiare Boyes*

Growing up on Vancouver Island, I spent much of my childhood at the Comox dock, gazing between the pilings at the captivating world below, or scouring the beach at low tide for fascinating creatures to discover. Diving was a natural progression of my marine fascination. When I was 12, my father and I did our open water in the murky water of Union Bay on Vancouver Island, and I haven't looked back since.

While still in the last year of my undergraduate degree, and having finished my Divemaster course recently, I somehow serendipitously stumbled into a job working on the Nautilus Swell. I had no idea where this immersion into the cold water diving world would take me. From Sitka to Vancouver, Haida Gwaii and all the way down to Guadeloupe and Revillagigedo islands in Mexico, then back up to Browning Passage, I jumped into hard work, adventure and the Pacific Ocean.

Underwater photography for me, started with the humble, but commonly shared, beginning of wanting to know more about the creatures I saw and interacted with on my dives. Bringing a camera on my dives, helped me learn and immerse myself further in the splendours of the sea. My first camera was a Canon, and of course, it was film, given to me at age nine by my grandparents who had moved into the "digital age". Today, I have joined them and the rest of the world, and shoot with the modest and faithful Cannon G15. My housing is Fantasea, I have a Fantasea wide-angle lens and a YS-01 Sea and Sea strobe. For a focus light I use my much loved Sola 800 wrist mount and despite the differences in "temperatures" between the strobe and the Sola, I am quite pleased with the flexibility and reach it gives me to have one light mounted to my wrist. For post processing, I use my MacBook Air and am just beginning to understand the basics of Lightroom.



© Tiare Boyes. Canon G15, 9.6mm, f3.2, 1/60

I have had the profound pleasure to sit in on many slide shows of many brilliant underwater photographers and even the good luck to sit in on a few lectures. I must extend my thanks to Richard Salas who has taken the time to bestow some of his hard earned wisdom upon me. As well, I wish to thank all the photographers who have passed through God's Pocket and the Nautilus Swell, who have been kind, patient and generous with their tidbits of advice. Underwater photography for me is a new challenge in the world of diving and one which stimulates my creative streak while helping to sate my curiosity.

My next adventure is taking me to live in Iceland to do my Masters this fall. I am packing my dive kit, and I can't wait to see what new creatures there are to discover and photograph.

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Surface Bound Sprouts

Bull Kelp *(Nereocystis luetkeana*)

Nereocystis in Greek means "mermaid's bladder" which is pretty neat. Bull Kelp plays an incredibly important role in our coastal ecosystems. It provides habitat for many juvenile species of fish while also providing important erosion protection of our coastline by acting as a wave buffer. The young fronds of kelp settle onto whatever substrate their little holdfasts will cling onto. This sometimes means other pieces of mature Bull Kelp. I found these little sprouts setting up home on one of their older relatives, getting a 'boost' to the surface where they can photosynthesize to grow big and strong like their cousins.

Room With Ocean View

Mosshead Warbonnet (*Chirolophis nugator)*

Diving in Browning Passage, north of Port Hardy, B.C, it is often a challenge to find a piece of rock not covered in soft coral, sponges or encrusting life. Here these Mosshead Warbonnets have found homes in a discarded glass bottles which are covered in barnacles, anemones and coralline alga. Ocean pollution is a terrible problem in our waters, especially plastic which degrades into smaller and smaller pieces over time and is consumed by creatures big and small. Glass bottles are a relatively benign form of pollution, but that being said there are still better ways of disposing with your empties then sending them to the bottom. These ones looks like they been down for at least 30 years judging by the markings, and have now become a tiny artificial reefs. It seems that upcyling is catching on above and below the waves.

© Tiare Boyes. Canon G15, 163mm, f4, 1/60

© Tiare Boyes. Canon G15, 8.3mm, f2, 1/320

© Tiare Boyes. Canon G15, 6.1mm, f1.8, 1/500

Mature Bull Kelp

Nereocystis luetkeana

My favourite place to be in the whole wide world, is swimming through a kelp forest. The buoyant carbon monoxide filled bulbs, hold the fronds of this brown algae near the surface so it can photosynthesize. The long blades stream behind the bulb, rippling in the current. On sunny days, swimming through a kelp forest can feel like you are under a ceiling of beautiful, golden, stained-glass which undulates and sparkles with the moving water. Bull Kelp also make remarkably good didgeridoos.

© Tiare Boyes. Canon G15,6.1mm, f8, 1/125

Wolfeels

Anarrhichthys ocellatus

I have visited this fellow many times at Fantasea Island. These marvellous creatures somehow manage to be both incredibly ugly and adorable at the very same time. Mature males are characterized by their fleshy mandibles and head crest (like this dashing fellow, affectionately named Waldorf (after the Muppet)). They can live up to at least 28 years, becoming sexually mature and forming pairs at around 7 years. Male/female pairs can be found sharing dens for months or even years and co-parenting large round clutches of white eggs. The female enfolds the ball of eggs in the tender embrace of her long body; constantly massaging the eggs to ensure the eggs at the center are rotated to the outside and vice versa for consistent aeration. Known for their “friendliness” towards divers (but who really knows what is going on in the mind of a wolfeel) they usually take up residence in a comfortable den with good views and friendly sculpin neighbours and stay there for a while making it easy for divers to go back and visit them, dive and dive again.

© Tiare Boyes. Canon G15, 6.1mm, f4.5, 1/60

© Tiare Boyes. Canon G15, 6mm, f5.6, 1/60

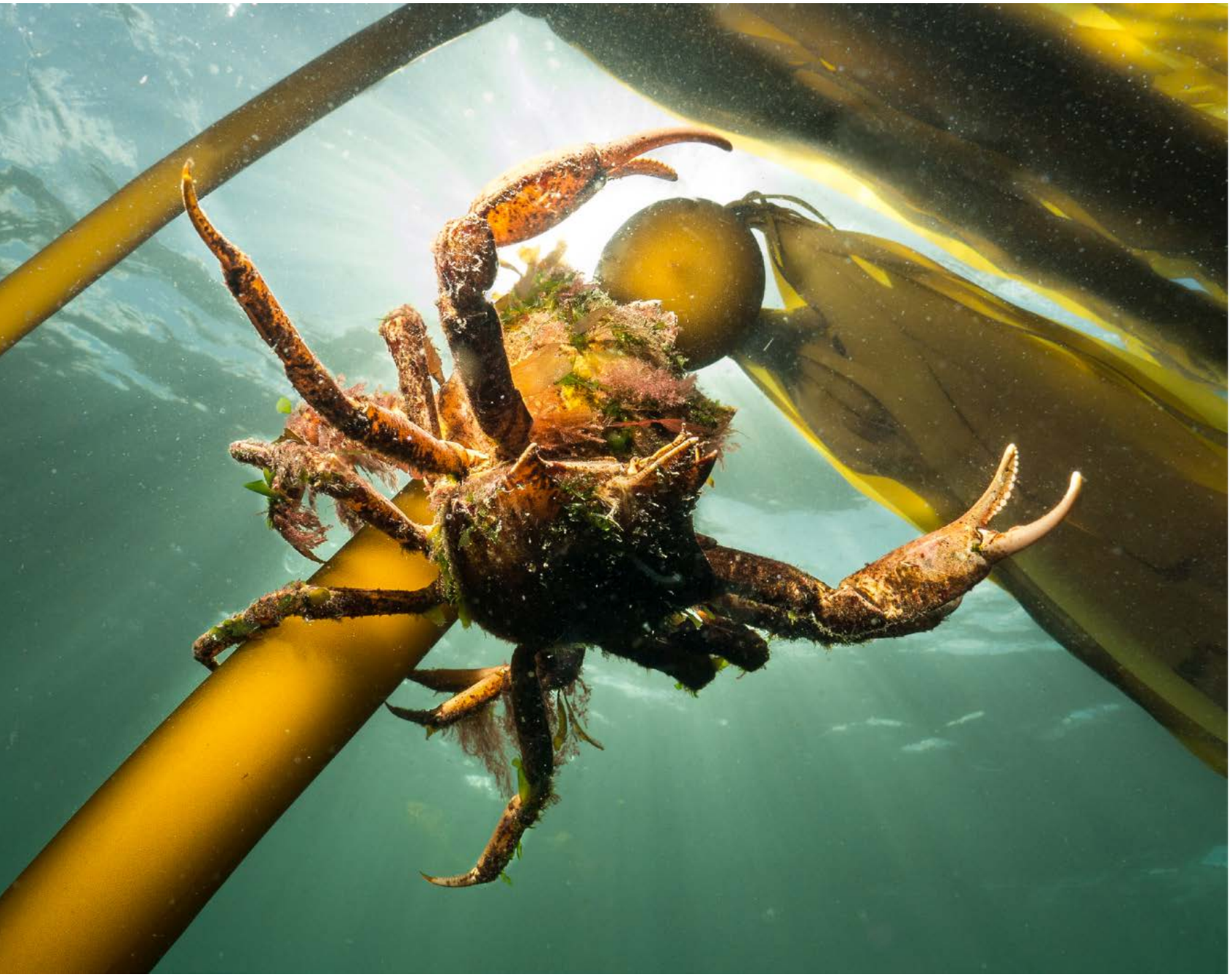
© Tiare Boyes. Canon G15, 6.1mm, f7.1, 1/125

Waving White Metridium

Plumose Anemone (*Metridium farcimen)*

Walls of white Metridium wave in the waters off the coast of Vancouver Island and beyond. Some species can grow to one meter tall and sometimes reproduce via cloning. Fields of clones will fight off other territory encroachers by using specially developed tentacles to attack non-clones. Thought they were pretty boring just sitting there didn't you? There is a slow moving clone war going on right in your back yard.

© Tiare Boyes. Canon G15, 6.1mm, f2.8, 1/80



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Amorous Kelp Crabs

Northern Kelp Crab (*Pugettia producta*)
This species, such as their name implies, spend most of their time hanging out with kelp. With a hard exterior shell, these fellows are ready to take on the world and will wave their claws menacingly if one gets too close. Unlike their rather flamboyantly dressed cousins, the Decorator Crab, Kelp Crab seem to only attach pieces of kelp to their carapaces when saving a snack for later.

The Majestic Orange Tipped Gooseberry

Leucothea pulchra

These guys are commonly mistaken for jellyfish. They are delicate beings which harness the power of rainbows for locomotion; or at least that's what it looks like to me. When these guys are going at full steam, their tiny cilia beat in furious rhythm and often catch the sunlight to produce beautiful pulsating rainbow displays. Mostly though they just get pushed around by currents, a beautiful, squishy example of 'going with the flow'.

© Tiare Boyes. Canon G15, 6.1mm, f4.5, 1/2000

© Tiare Boyes. Canon G15, 14mm, f2.5, 1/125

Penpoint Gunnel

(*Apodichthys flavidus*)

These dashing fellows (and ladies) are commonly found in shallower waters along our BC coast. If you look carefully between the fronds of kelp, you can sometimes spot these guys, almost indistinguishable from the rippling fronds, so closely do their colours and body shape match their environment. Depending on their surroundings (and moral upbringings), they can be found in drastically different hues.

Featured Photographer: *Chris Sherwood*

I moved to Vancouver from parts East in 1983 and have loved it, especially its proximity to the Pacific, the area of ocean known as Howe Sound. The most Southerly fjord in North America, Howe Sound teams with life and is where I do the majority of my diving. I got certified in 2004 and had a camera soon after. Anyone who knows Howe Sound will tell you that it is a challenge to photograph underwater. Frequent algae blooms and run off from the surrounding steep mountainsides can make visibility close to zero.

I think your best bet here is macro. I shoot with a twelve year old Olympus EPL2 mirrorless, a pair of YS-01 Sea & Sea strobes and a video/focus light. My lens of choice most days is a 60 mm with a flat port. If vis permits a 14-42 mm lens with a 7X wet diopter can be a great combo. If conditions are really good I'll break out the 9-18 mm wide angle lens and dome port. I'm a critter guy and I like to shoot behaviors like feeding, egg laying, brooding, predation, courtship etc.

© Chris Sherwood. 1/100 sec, f/10, ISO 320, 9-18mm at 9mm

Beautiful and fragile the Cloud Sponge colonies in Howe Sound are one of my favorite places to shoot. Veritable fish condos you can find all sorts of creatures living in, on, and around their lobes including Grunt Sculpin, Decorated Warbonnet, crabs, shrimps, Squat Lobster and rockfish to name a few.

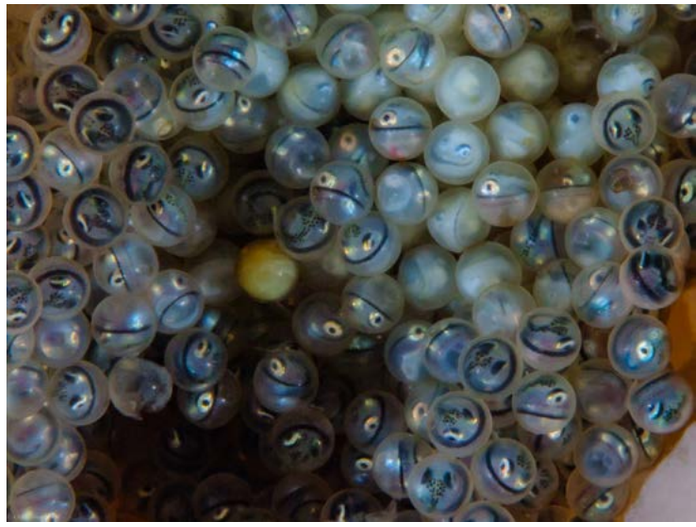
The Grunt Sculpin has to be (with the possible exception of the Spiny Lumpsucker) the most vulnerable fish in Howe Sound. Watching them waddle along on their pectorals or struggling to swim they are slow moving targets and therefor great to photograph! How they manage to elude predators is a mystery to me.

© Chris Sherwood. 1/125 sec, f/20, ISO 250,60 mm

© Chris Sherwood. 1/125 sec, f/16, ISO 320,14-42mm lens @14 mm

Another common sponge in Howe Sound, the Boot Sponge, is also home, nursery and shelter for many. The pair of egg brooding Grunts were very shy and did their best to hide in the farthest recesses of the sponge.

The Greenling embryos pictured below were guarded by a very nervous male who tried his best to frighten me off with some close passes.



© Chris Sherwood. 1/125 sec, f/16, 60 mm

Very cute baby Quillback Rockfish, I think, pictured to the right. The Boot Sponge also seems to be the residence of choice for the Decorated Warbonnet. This fish is a favorite subject for photographers for obvious reasons.

Shooting critters inside sponges is very much hit and miss for me. More often than not the subject ends up much to dark even though I have it lit up like Christmas.

© Chris Sherwood. 1/125 sec, f/16, ISO250, 60 mm

© Chris Sherwood. 1/125 sec, f/7, ISO 250 ,14-42mm lens @ 18 mm

© Chris Sherwood. 1/80 sec, f/18, ISO 320, 60 mm

The 60 mm lens is ideal for shooting the small stuff even in very poor visibility. Howe Sound has nudibranchs that are tiny like this *Dedronotid diversicolor*, shown on the left. This little guy was about the size of a rice grain and almost impossible to focus on at high f-stop.

At the other end of the size spectrum is the Giant Dedronotid. At up to 30 cm in length I like to watch them slowly crawl up to their Tube-Dwelling Anemone prey and, in a flash, dive inside as the anemone retracts.

© Chris Sherwood. 1/100 sec, f/11, ISO 320, 60 mm

© Chris Sherwood. 1/125 sec, f/18, ISO 250, 60 mm

© Chris Sherwood. 1/60 sec, f/8, ISO 200, 14-42mm @ 14mm mm

Flabellina species, pictured above, are quite common and make fabulous subjects to photograph. In 12 years of shooting I have only seen *Janulos* once. I found this specimen, shown on the top right, on the underside of some brown kelp while doing a safety stop.

Large aggregations of Shaggy Nudibranch by the hundreds can be found feeding on Plumose Anemones and laying eggs. There must have been three or four hundred individuals slowly writhing in this mass pictured right.

© Chris Sherwood. 1/125 sec, f/20, ISO 250, 60 mm

When there is not much interesting around the many species of small sculpins always are about. They are beautifully camouflaged and difficult to spot. Only their movement gives them away.

The 60 mm can be used to shoot bigger subjects provided you back away and there's not too much shmutz in the water column. My friend Michelle found this Wolfeel in a crack on Halkett Wall. What a face!

© Chris Sherwood. 1/80 sec, f/22, ISO 320, 14-42mm @ 42mm

© Chris Sherwood. 1/125 sec, f/13, ISO 200, 60 mm

The shallows in Howe Sound are usually teaming with perch, kelp, large schools of baitfish and rock piles covered in Crimson Coralline Algae. Ideal for wide angle shots except that the vis is usually poor. I usually head deeper down for wide shots like the wall at Anvil Island, shown on the right and Halkett Wall, pictured on the left. If you are unfamiliar with diving in Howe Sound a great shore dive is at Kelvin Grove. I do mostly boat diving either with Sea Dragon Charters or New World Diving.

© Chris Sherwood. 1/80 sec, f/11, ISO 320, 9-18mm @ 10mm

© Chris Sherwood. 1/80 sec, f/9, ISO 320, 14-42mm @ 14mm

Featured Videographer: *Aaron Moser*

My SCUBA diving career started in 1994 three months after my 10th birthday. Obviously, as someone who started so young, my interest in this hobby began much earlier. I grew up around water and some of my earliest memories from childhood include swimming and snorkeling in the lakes, rivers, and oceans we are surrounded by in the Pacific Northwest.

My grandfather began diving in the late 1940's using a miner's rescue rebreather pack to extend his time at the bottoms of Mill Lakes while recovering valuable logs to sell to the lumber industry. He regaled me with stories of the early days of diving. Stories of exploration, of finding lost treasures and of encounters with exciting creatures I could only dream about.

At the age of eight, I had my first hard lesson in dive physics when I used duct tape to attach a float to one end of a garden hose and glued the other end to the tip of my snorkel. My dreams of blissfully floating beneath the waves while breathing fresh, free air from the distant surface were quickly dashed when I choked on the water rushing in after descending less than half a meter. Lesson learned I turned to free diving.

My equipment at the time consisted of a purge snout mask, a ping pong ball snorkel, a set of duck foot fins and a Kodak 35mm point-and-shoot camera in a plastic case. That was how I was introduced to the world of underwater photography before I ever had a regulator in my mouth. By the time I had progressed to SCUBA diving my interest in finding and photographing the amazing underwater world was fully established.

I worked the entire summer doing chores for my neighbors at the age of eleven to upgrade my little Kodak into a 35mm Bonika camera. By the time I was fifteen, I was using a full SLR housed system with dual remote strobes and a healthy collection of lenses and ports. At sixteen I graduated from High school and began working in the dive industry at a local SCUBA shop to feed my obsession. By seventeen I began training as a divemaster and teaching others to dive and appreciate the underwater world became my primary focus. By the age of nineteen, to allow me to get closer to the animals I was photographing, I began diving closed circuit rebreathers using a second-hand CCR2000.

While the designs had certainly come a long way since the miner's rescue packs my grandfather used, I decided to return to open-circuit after a close call while diving with the still highly experimental technology. Over the years, my career has lead me to dive all over the world and I have progressed to video being my primary interest over still photography. This lead me back to the world of rebreathers and at the age of twenty-five I began diving a newly developed advanced rebreather from Belgium that I still use today.

I continued to work and teach in the SCUBA industry all through my twenties and into my thirties, but I never stopped diving and photographing just for fun. After just over four thousand dives in my lifetime, I am still discovering new and exciting things to photograph nearly every time I sink below the surface.

Growing up the stories I loved most from my grandfather involved the massive Giant Octopuses found in the Pacific Northwest. They are still my favorite animal to encounter on my dives and I have endeavored to capture their fascinating behavior on film ever since I got my first camera. I shot these videos at Sund Rock in Hood Canal using my Canon G10 video system in an Ikelite housing.

The various Octopuses I filmed here responded to my persistence, and I was able to capture some very unusual displays over the course of several dives. I film through a 16mm wide angle flat port which allows me to get large animals in frame from very close distances. Limiting the amount of water between my lens and the subject gives a clear and detailed shot that wouldn't otherwise be possible. The challenge of filming from so close is, of course, getting the animal comfortable enough with me to allow several minutes of video to be captured while the subject goes about its activities. This is where I have found the substantial benefit of diving closed circuit rebreathers. They offer an unobtrusive silence that gives me a much needed edge in capturing close up detailed shots. Lighting also becomes a challenge when your subject fills the frame from a few centimeters away. I almost always use two wide-beam video lights set at angles to catch the center frame with no overlap. This gives an even smooth lighting to illuminate the subject without hotspots or contrast blowouts.

Soaring with the Giants (Click image for video)

Dance of the Giants (Click image for video)

Of course, large animal encounters offer an incredible experience as well. My most memorable dives include swimming with massive Whales, Manta rays and Sharks, but the Sea Lions take the cake for pure fun. I have spent a considerable amount of time diving with and photographing Steller Sea Lions in the waters around BC and Washington. They are incredibly interactive, and the resemblance in behavior to puppies is undeniable.

I filmed this video at Hornby Island using my Sony S550V in a Light & Motion housing with twin Sola 4000 video lights. The biggest challenge with filming such active animals is maintaining steady shots and focus. It can be very tempting to jump from one animal to the next as they swirl around you vying for your attention, but the visual appeal of a smooth shot is essential to the finished project. I alternated between manual and auto focus to get the shots I was looking for, and I think the results capture the moment well.

Hornby Island Sea Lions (Click image for video)

The Underwater World of Sund Rock (Click image for video)

In underwater filmmaking, a large part of my skill development has been in editing. I like to sequence my shots to music, and finding a score to match the mood and visual feel of a series of shots can be one of the biggest challenges to making engaging videos. For this, I will often spend hours listening to music while reviewing my footage until I find something that just seems to fit.

I usually have some idea of the sequence and subject matter that I am looking for before I start a new project, but it's the music that establishes the feel of the finished product. When editing I always start with the music and then cut my shots to fit the tempo and intensity. I filmed this video at Sund Rock, and the high energy music underscores the action of this fantastic dive site.

Photography and videography have always been the biggest factor in my diving. The pursuit of the perfect shot has lead me all over the world into some of the most incredibly beautiful places imaginable. It is rare that I will get into the water without my camera and it is a lifelong learning process in which I hope never to stop improving. After 22 years, four thousand dives and a lifetime of experiences I feel as though I have hardly scratched the surface of what this blue planet has to show me.

The Underwater World (Click image for Video)

Featured Photographer: *Lidia Burlakova*

Last fall I had the privilege of visiting British Columbia and spending three months exploring and diving various places in the province. I am actually from Rostov-on-Don, Russia. It does not have any sea or ocean, nor does it has forests or mountains. It is located in the flat, steppe area in the south of the Russian Federation, not far away from the Black Sea. However, I spent my childhood in beautiful Siberia in a region very similar to northern British Columbia with lots of lakes, mountains, and rivers, as well as the Russian taiga with wild animals. Probably is why I love the wild nature a lot.

My first SCUBA diving experience was in Turkey back in 2001. My first dives were just regular introductory dives, but I quickly felt in love with SCUBA. I was diving a lot, but underwater photo and video “hunting” fun came to the scene a bit later. I simply wanted to show what I see with everyone. I wanted to share my sense of wonder and the stunning beauty of the underwater world.

My first cameras were a Canon G10 and a Sanyo A1000 and that is how the photo/video “madness” had started. I took underwater photos and videos everywhere - Fiji, French Polynesia, Philippines, Mexico, Costa Rica, Belize, Indonesia, Malaysia, Honduras, Egypt, Thailand and finally here in B.C.

"Local wild seal from Kelvin Grove"
Canon G16, f1.8, ISO640, exposure time 1/500 sec, no flash

I am the founder and owner of a Russian travel agency called "Mega-Tour". We are an international agency that creates custom trips to almost every corner of our planet.
My current underwater video set is Sony HDR CX550E, Light & Motion Bluefin housing and wide-angle glass port made by Fathom. I use two Sola 2000 lights for video. My current photo camera is Canon G16 in native Canon housing. Soon I will switch to universal photo/video set based on the latest Sony camera.

I use Lightroom for digital post-processing and Sony Vegas for digital video editing. This is very creative, detailed work and I love doing this. I can do that literally for hours. You take an image of a sea animal, but after spending some time with it, you can create an object of art.

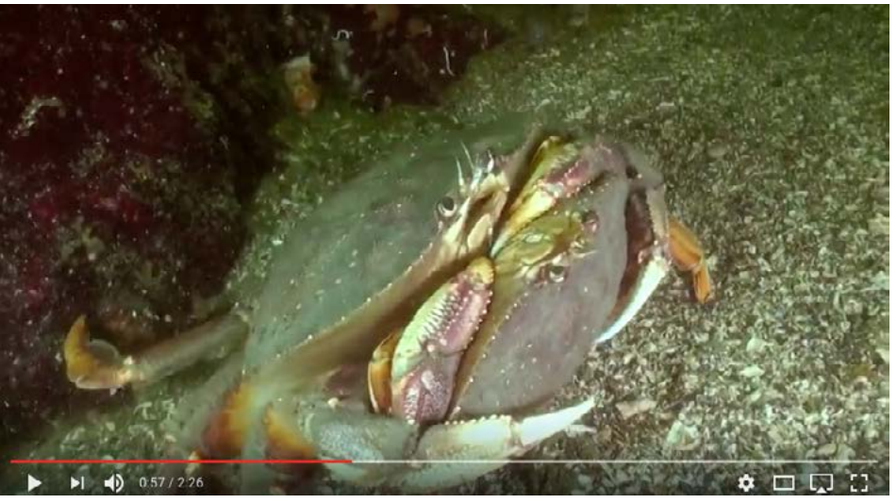
I like SCUBA diving in British Columbia – it's a special place for me. It is beautiful, natural and powerful. Here in BC, I had my first cold water diving experience, and I was surprised and impressed by the beauty of the underwater world in these cold dark waters. I love BC and try to tell everyone about this unique place since my first visit.

In British Columbia my favorite diving places are Browning Pass and Barkley Sound. They are paradise for underwater photographers and videographers. I have been twice to Rendezvous resort and once to Browning Pass Hideaway resort, but I really hope to visit them again and again.

© Lidia Burlakova "Diving in Tuwanek", October 2015
https://youtu.be/8RRcAFgTJGM
Sony HDR CX550E, Light&Motion housing, wide angle glass port Fathom (90 degree), two light Sola 2000

"Dragon Den dragon", Howe Sound
Canon G16, f1.8, ISO60, exposure time 1/320 sec, flash

I hope and dream that someday I'll be able to do an expedition to Haida Gwaii (the Queen Charlotte Islands). I enjoyed diving around Vancouver with Kevin and Jan on the Topline, but sometimes I go to Vancouver Island or the Sunshine Coast (Tuwanek). I enjoyed the night shore dives around Vancouver and visiting Whytecliff, Kelvin Grove and Ansell Place as often as I could. Canada is a diving paradise for all real divers!



© Lidia Burlakova. - "Erotic", Howe Sound
https://www.youtube.com/watch?v=_n_lBRWhOl0
Sony HDR CX550E, Light&Motion housing, wide angle glass port Fathom (90 degree), two light Sola 2000

"Underwater flowers", Barkley Sound
Canon G16, f1.8, ISO60, exposure time 1/320 sec, flash

©Lidia Burlakova. "Diving in Browning Pass", July 2015
https://www.youtube.com/watch?v=kHeCUs05C3E
Sony HDR CX550E, Light&Motion housing, wide angle glass port Fathom (90 degree), two light Sola 2000.

"Underwater Snowflake"
Canon G16, f2, ISO80, exposure time 1/60 sec, flash

“Giant flying nudibranch”, Tuwanek
Canon G16, f1.8, ISO60, exposure time 1/320 sec, flash

“Lighthouse”
Canon G16, f4, ISO80, exposure time 1/500 sec

“Barkley Sound sunset”
Canon G16, f2.8, ISO80, exposure time 1/640 sec

Featured Photographer: *Ron Devries*

The Deco stop. Roughly three minutes in which we lay in wait for the surface to come back to us. Practicing our trim, our buoyancy, or our drills, watching our time tick down and reflecting on what just was. Hopefully it was filled with 'amazing.' One thing I think we all can agree on, though, is that most of these stops are just plain old boring. Warm water, cold water, poor visibility or any combination of those, depending on the seasonal conditions, are what we typically find within this space. The deco stop is something to swim through, not something to savor and certainly nowhere to spend quality dive time.

That was my take on it until one magical day at McCurdy Point in the Saanich Inlet on Vancouver Island. The day 'it' happened. The day I stopped and really took notice of the tiny jellies. When lit just so, the very smallest pulsing spec became a stunningly ornate jelly. They flourish in this ever-so-green living layer of phytoplankton, zooplankton, and copepods. They were all, until that day, going unnoticed. The images in this article are just a sample of what I might see on a typical deco stop. When we do have poor visability, that is when it becomes time to change your prespective from the large to the minute. Slow down and open your eyes just a little wider. I tell people all the time, life really is all around you, if you just take a moment to see it.

© Ron DeVries. Canon EOS Rebel T5i, 60mm, f7.1, 1/250

My Technique for capture.

Achieving these kinds of images is precise work. You need your focus light's beam to be pointed across the focal point of your macro lens out front of your housing. Alignment is everything. The strobes should be about a foot or so out each side, and positioned so their flash is more away from the subject than straight at it. The idea is to catch more of the ambient light than the direct flash. Remember that you are in backscatter heaven within this zone, and the more you pound the light at your subject, the more backscatter you will pick up.

Slow movements when closing in on your subject is also a consideration. These jellies are so small you can push them away with your own motions in the water. They are hard enough to capture in even the softest of current; you don't need any help. It might be wise to warn your dive buddies of your plans. Coming up from the depths, making erratic movements, and chasing after what appears to everyone else as 'nothing,' may put them into rescue mode, and being hauled out against your will kicking and screaming makes it really hard to capture that perfect shot.

My Camera

There are lots of good ones out there and mine isn't ideal for this type of capture. I love Canon, just not this one (T5i) for this application. 'Live view' is disapointing as it takes too long to focus; it rarely lets me capture what I am looking at without a delay which sometimes causes a missed opportunity. Through the viewfinder, the focal points are too small, and the LED that shows what you are focused on is far too dim. It makes it more about knowing what you are capturing by instinct, rather than what is actually happening out front.

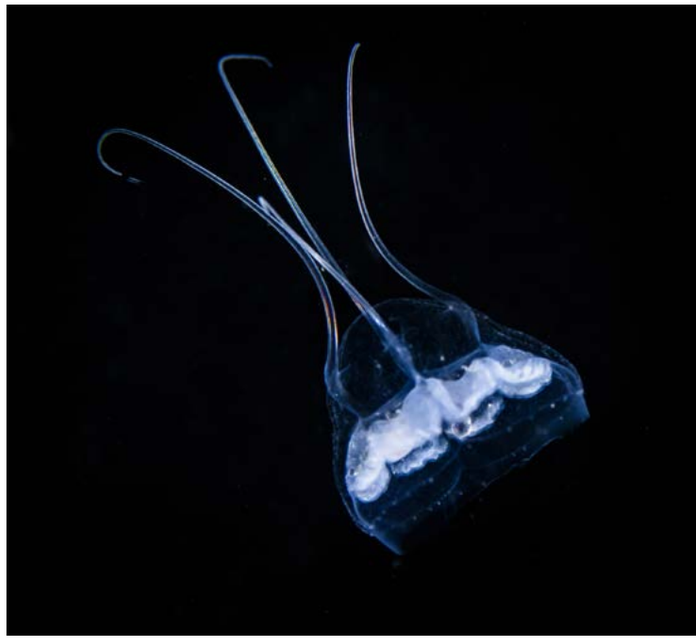
Up close Macro provides only a few centimeters at best to accomplish actual focus. It leaves very little room for error. Lots of practice and lots of frames will hopefully get you the results you are looking for. I manage somehow, though, to get some fun images.

© Ron DeVries. Canon EOS Rebel T5i, 60mm, f7.1, 1/250

© Ron DeVries. Canon EOS Rebel T5i, 60mm, f7.1, 1/250

My Lens

A great lens option is the 60mm f2.8 Macro. It's a solid little lens that is easy to use and doesn't take up much room in my camera case. It enables me to use the small port on my housing, which allows captures in tight spaces. I do want to move up to a 100mm IS L lens but that's just my 'lensitis' talking. For the price of the 60mm, I really can not complain at all.



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My Housing

I have an Ikelite housing. I like them because they are cost effective and see-through. You can see if it is flooding, so you stand a chance at saving your camera by tilting any water away from the electronics. My own maintenance schedule (or rather lack thereof) is the only reason I have had any problems with my housing at all, otherwise it's been as solid as can be.

© Ron DeVries. Canon EOS Rebel T5i, 60mm, f7.1, 1/250

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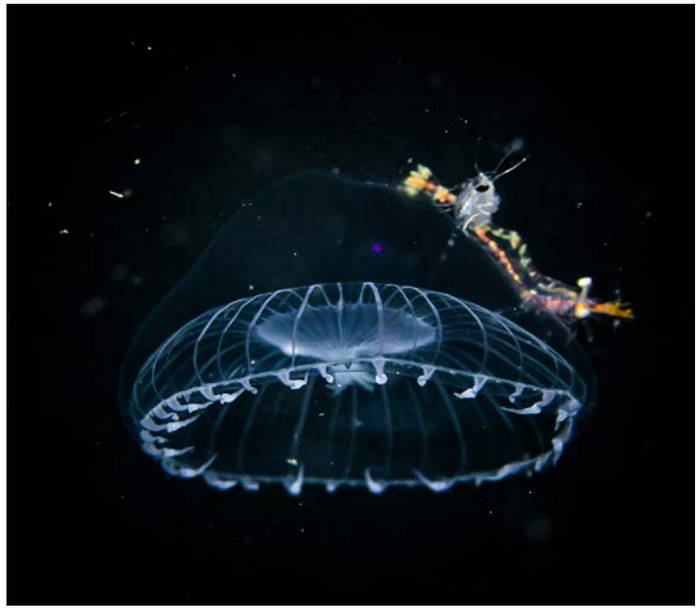

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© Ron DeVries. Canon EOS Rebel T5i, 60mm, f7.1, 1/250

© Ron DeVries. Canon EOS Rebel T5i, 60mm, f5, 1/200

© Ron DeVries. Canon EOS Rebel T5i, 60mm, f7.1, 1/250

I call this one Good Day - Bad Day

I think the title sums it up nicely. Good for one but not so good for the other.

This is the one. The one that started me on my journey into the minute on the line at McCurdy Point.

I hope you enjoyed my stops.

Tips for Underwater Portraiture

text and images by Mazyar Jalayer

Many people think that you have to have an eye for fine arts to create amazing underwater portraits. In reality, it doesn't take much talent to create an artistic underwater portrait. All that is required is to learn a few skills and apply these skills over and over until you master the formula. By using a few tips and guidelines, you too can learn the art of underwater portrait photography. Here are a few tips to help you get started.

Understand Your Subject

The number one rule for portrait photography is to understand your subject. Remember that we are foreign to the underwater habits. It's important to understand, to some extent, your subject's behavior. How does the creature react to your presence? How does your focus light affect the animal behavior? By making a distinct effort to connect with your subject, it puts them at ease with the image-making process.

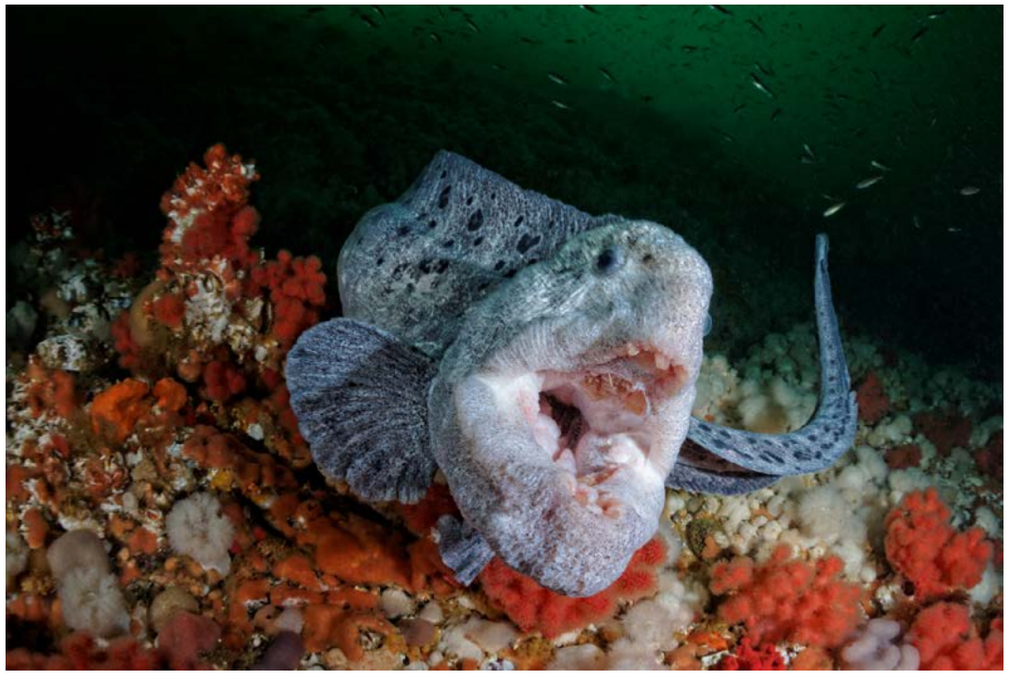
By performing online research or by paying close attention to other photographer's work, you can learn a lot about the creature you want to photograph. You may learn about a certain behavior of an animal you like to photograph. For example, yawning is a behavior that is unique to some fish such as frogfish. Once you find an animal you want to photograph, spend a bit of time observing it. Don't start shooting right the way. Visualize the image you want to create and plan accordingly.

Look for Expressions

The subject's expression allows your viewer to connect with the photograph. It creates real genuine emotion which is more important than lighting, composition or even sharpness. Creating an emotional photo draws the viewer in allowing them to spend more time thinking about the photograph. Fish and many other marine creatures have profound facial expressions. You need to wait a while to observe these expressions. Be mindful of the animal and limit the number of shots as the strobe lights can stress some animals.

Frame for Composition

Framing the subject is essential for building a beautiful composition. Look for patterns, the rule of 3rd, the golden ratio and a funneling or spiral effect that draws in the viewer. You want your viewer's eye to move through the image, scanning the image and following patterns. A perfect portrait is an image that is technical sound, draws the viewer in and can tell a story.

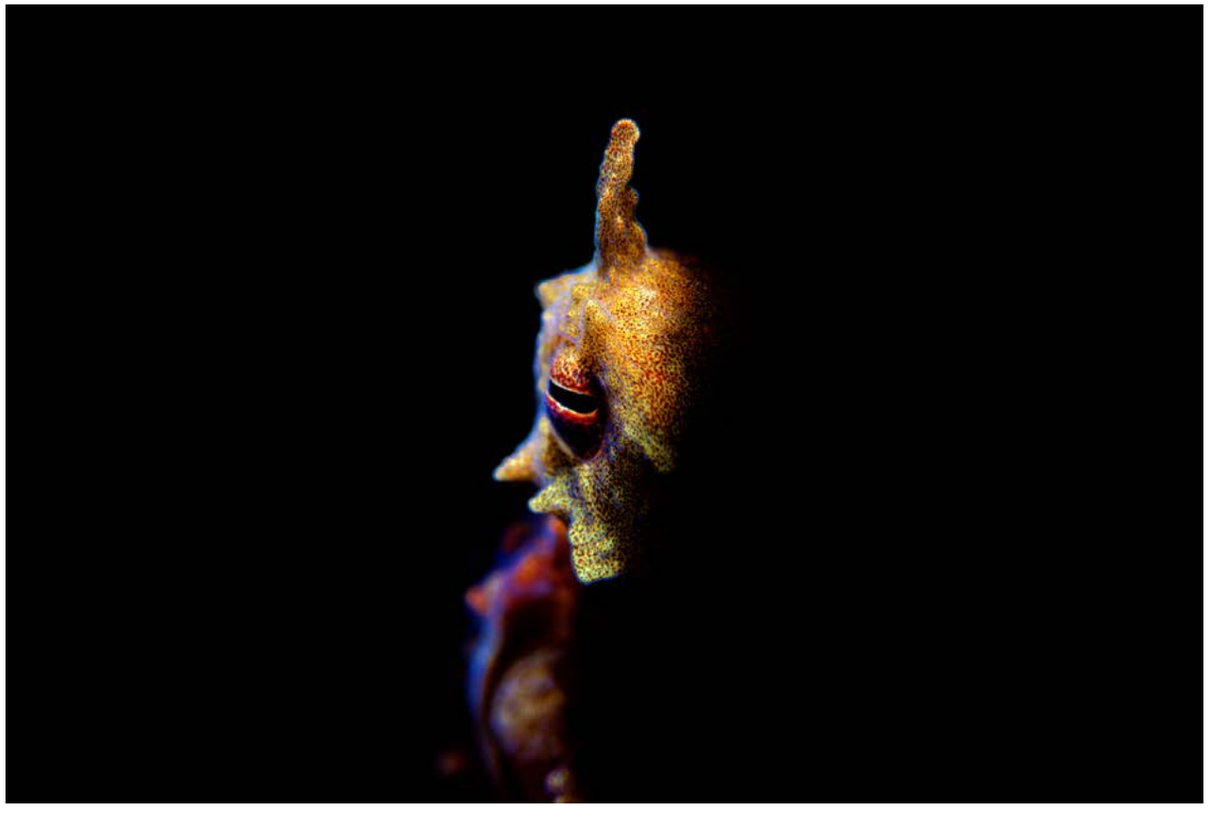


Get Your Strobes off the Camera

Learn to manipulate and master the light. By placing the strobes off the camera, you can create dramatic lighting effects. Experiment a little. By using a snoot (a narrow beam of light) you can create negative space. Most underwater photographers forget that when we go diving we are carrying a mobile studio with manipulating arms and strobes. But what's point of having a studio if you don't use it? Experiment a little, try backlighting, side lighting, and multiple strobe lighting. Use dramatic or harsh lighting to define texture and contrast and to add depth to an image.

Think "less is more"

Think of a portrait photograph as a painting, created by adding light. The canvas is black, and the light is your paint – the brush stroke is how you manipulate the light. By leaving out certain details, you can pull the viewer into your photograph and let them paint the rest of the picture.



The Diver

A diver model can be your best tool. You can get a close and personal shot or you can back out and capture wide angle. Be sure to rehearse signals and communication before getting your buddy involved in the shot. Try not to get too close to the creatures and overstep your boundaries.

Get Down on their Level

By positioning the camera at the animal's eye level, you can create an image that is more compelling. This requires laying down very low. Be mindful of your surroundings so you don't damage or harm any creatures. Most DSLR require the use of a viewfinder to frame the subject. If you are using an ultra wide angle lens you can try a technique that I like to call 'point-and-shoot' which pretty much means pointing the camera and shooting without looking into the viewfinder. This technique allows you to place the camera in tight spots without disturbing the reef.

Indulge in Black & White

By eliminating the distraction of color, you can put more emphasis on texture and contrast. It adds depth and makes the image look three dimensional. Try using a red black-and-white-film filter on the lens. The red filter will reduce the image gray scale giving the image a very high contrast monochromatic effect. It helps to have a clean black background.

Photos on the Fly!

Diving with a Camera and Diver Propulsion Vehicle

text and images by Lee Newman

The rocky slope of the 1/4-mile area of Porteau Cove Provincial Park.
Canon 7D, Aquatica A7D housing, Tokina 10-17 fisheye @10mm, f6.3, 1/40th, ISO 640, one Ikelite DS-160 on 1/3 power

Aside from ignoring their dive buddies, underwater photographers are probably most infamous for moving slowly - sometimes painfully so, around the dive site. It isn't uncommon for photographers shooting macro to spend the entire dive in an area no larger than an average kitchen, and sometimes less! It turns out there are some good reasons for moving slowly with a camera underwater.

Very likely, it is the best way to actually find subjects for your photos. In fact, one of the frustrations diving with folks that want to see the entire site in one dive is that it ends up feeling like a bus tour of Europe - not enough time in any one place to truly appreciate what's there! Also, by taking a few seconds to establish a bit of trust between you and your subject, you'll be able to get closer, observe more natural behaviour and get photos of animals that are relaxed, maybe even curious about you. Moving slowly over a site also tends to stir less silt, an all-important aspect in helping to avoid, or reduce, backscatter in your images. So, with some good reasons to go slow, why add a diver propulsion vehicle, or DPV, as they are referred to in short, to your underwater photography?

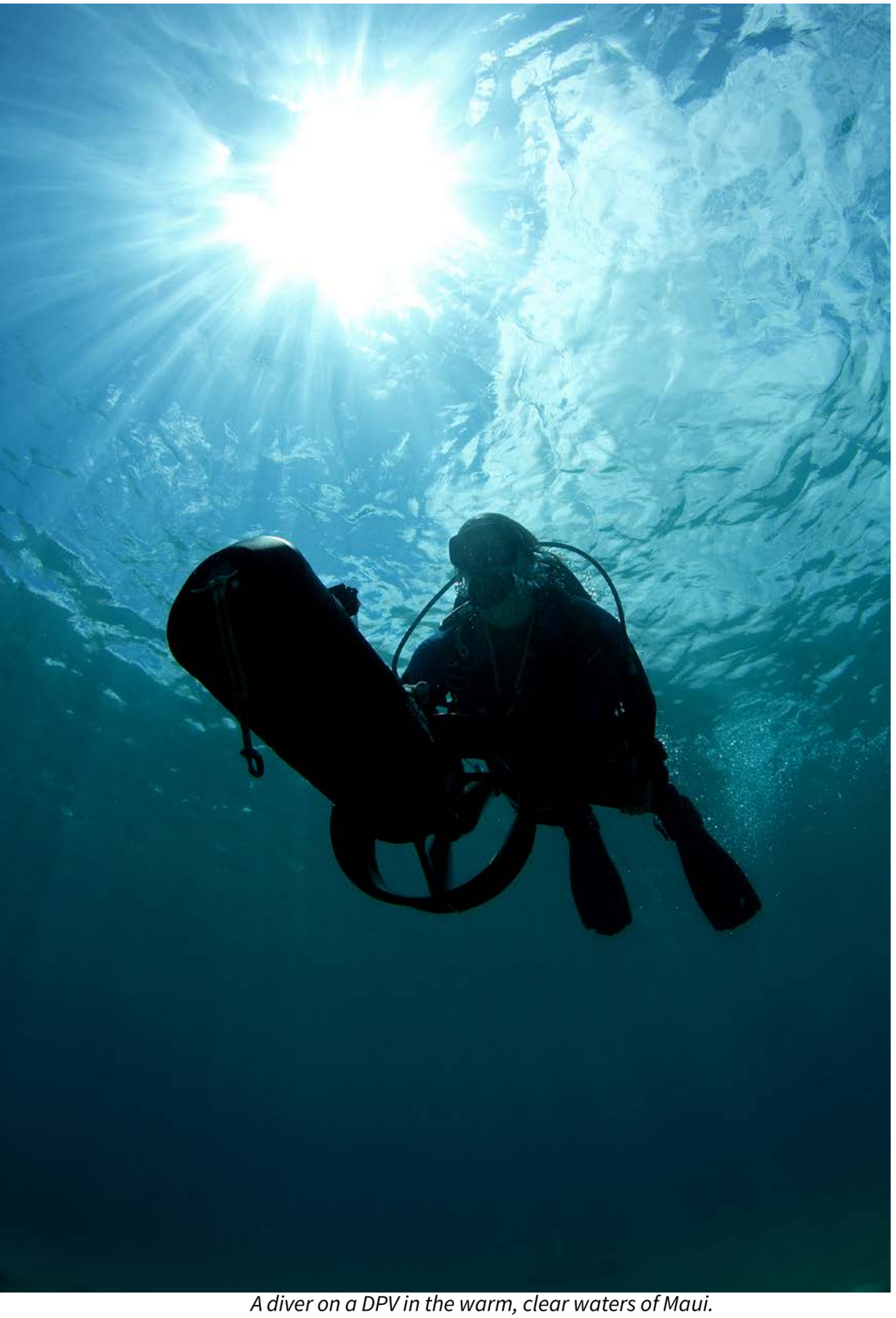
Resistance is Futile

I'll admit that for a long time I had little interest in adding a DPV to my camera's list of accessories. I was happy moving slow on my dives. Oh sure, they looked like a lot of fun, but I wasn't looking to have fun... I was looking for quality images! I stubbornly resisted in an attempt to maintain my "purist photographer attitude", having convinced myself the two activities - making quality photos and blasting around a dive site clipped to a battery-driven U-boat torpedo, were mutually exclusive. That of course changed - more like, had to change, simply because everyone I was diving with had one - including my wife!

The change in my mind regarding DPVs wasn't a sudden landslide moment, more like a slow realization that unless I was okay with tucking my head against the derrière of my dive buddy on a regular basis, I'd eventually have to fold. Yes, if you don't have a DPV, and dive with those that do, you get towed... So if you're on the fence about spending your grocery money for the next year on a DPV, just let your dignity make the decision!

The rocky slope of the 1/4-mile area of Porteau Cove Provincial Park.

Canon 7D, Aquatica A7D housing, Tokina 10-17 fisheye @ 10mm, f5.6, 1/30th, ISO 640, one Ikelite DS-160 on 1/3 power.



A diver on a DPV in the warm, clear waters of Maui.
Check with your airline before flying with your DPV!
Canon 7D, Aquatica A7D housing, Tokina 10-17 fisheye @ 10mm, f13, 1/250th, ISO 100, available light

The Trusty Steed

As with most consumer products, there are plenty of choices with respect to DPVs and rather than make a recommendation for a specific brand or model, let's talk about some of the sensible considerations regarding their use that might impact purchasing decisions.

Consider where you're likely to be using it the most - if the answer is Howe Sound, British Columbia, it likely means the DPV is going to have pull against the drag (water resistance, not the boring kind of drag...) offered by a full kit of cold-water gear. Apparently, cameras are a drag as well, so you'll need to add that to the equation. This is the part that DPV thrust numbers address - the more thrust, the more drag that can be overcome by the DPV. Since there's nothing hydrodynamically efficient about a diver, especially one with a camera, a DPV with significant pulling capacity will be important.

The next consideration, and of obvious relevance, is runtime - meaning how long will the DPV run on a full charge. Some have power settings that allow for longer runtimes at slower speeds, or for the joyriding crowd, faster burns at higher speeds. For most, the objective would be to get two, hour-long, dives out of a single charge. Regardless of runtimes, battery capacity and power management are important for making sure you can reach your intended exit point (this part needs to be part of the dive plan) if you'd rather not be towed, or have to swim with an exhausted DPV clipped to your BCD or harness!

Many of the higher-end DPVs are operated with a single hand, usually the right hand. Given that the crowd I dive with uses the right hand to deploy a regulator in the event of an OOG situation, it was important to all of us to understand, and practice, that scenario in the unlikely event it happened while using the DPVs. The left hand - again, for me and my buddies, is used to hold a can-light used to not only find critters, but to "talk" to each other using light-based signals.

One of the aspects of diving I'm sure we wish we could all change is the sheer weight of all the gear involved! It only takes one walk up a hill from the beach to the parking lot to start rethinking our recreational choices! DPVs are generally designed to be more or less neutrally-buoyant (although many are user adjustable), but first one has to carry it to the water! Obviously, and as mentioned, there are lots of brands and models from which to choose - some weigh more, and some less.

A diver with a DPV over the artificial reef Nakaya, at Porteau Cove Provincial Park.

Canon 7D, Aquatica A7D housing, Tokina 10-17 fisheye @ 10mm, f6.3, 1/40th, ISO 800, one Ikelite DS-160 on 1/4 power.

Only so Much Band-Width...

There's no argument that diving in cold PNW water involves a lot of gear that takes up "band-width", or mental focus. "Take only what you need, and nothing you don't", is a consideration typically used by technical divers, but perfectly applicable to any diver. It is an attempt to give pause, allowing the diver to carefully consider each piece of equipment and leave behind what they really don't need - in order to reduce what is commonly referred to as task-loading.

Task-loading is a term used to describe the mental and physical responsibilities a diver has to contend with at any given time. Obviously, adding a DPV, as well as a camera, dramatically increases the number, and complexity, of responsibilities. So it takes additional effort to maintain awareness of the more basic, but very important, aspects of the dive - such as your dive buddy, navigation, the environmental conditions, and even gas supply. If it all sounds like a handful- it is! Unfortunately, many divers tend to narrow their focus on the specific task at hand and lose their ability to effectively monitor and manage the others. This process is referred to as perceptual narrowing, and it can lead to big problems.

In order to maintain awareness and manage the tasks associated with diving with a DPV and camera, it might be helpful to develop some specific techniques aimed at reducing the number and complexity of tasks. For instance, where are you going to stow your camera while under-way? I've developed my own solution that creates the least amount of drag and still allows the unrestricted deployment of the regulator with the right hand in an OOG event. Where will you stow the DPV while you're shooting? Again, I have my own technique - I dive with a purposely very slightly buoyant DPV and clip it to my left side. That way it doesn't drag on the bottom as I slowly move around looking for subjects or while I'm shooting, and, I can still deploy a regulator in an OOG emergency - if I decide to let go of the camera that is.

The lesson here is to get very proficient as a diver before adding a camera, then get good at using a camera without losing focus on the other dive-related tasks before adding a DPV.

Toy or Tool?

Sure, the benefits of adding a DPV to your kit are obvious if you've ever dreamed of flying a fighter jet - the scenery passes quickly (given more than a few feet of visibility...), barrel-rolls and loop-de-loops are now possible, and cruising along a wall with no bottom in sight in fighter formation with a couple of buddies is nothing short of the most enjoyable stuff you can do in neoprene! However, there really are some practical aspects to adding a DPV to your photo dives.

With the ability to travel further, and faster, than ever possible swimming, dive sites as you know them become tiny. Using a DPV at a familiar dive site opens up lots of potentially interesting new ground. You'll be able to visit areas where no one goes - and where no one is. Think about that regarding underwater photography - no one to stir up silt in your shots, no strange bubbles rising through the middle of your frame and now, no pressure to move along to make room for the next diver. Finally, your very own dive site!

By going to areas outside of the well-known areas of a familiar dive site, there is the potential to find new critters. At one site, well known for boot sponges, and very few cloud sponges, there's a section of the wall around the corner and a few minutes north that is covered in small cloud sponges! At another site, there is a section of rocky habitat beyond the boundaries of the park that supports a population of Lebbeus mundus - a cleaner shrimp, found in the cracks and spaces between the rocks. In this area, Lingcod perch on flat rocks and get cleaned by the shrimp - the commonly-sighted Longfin Gunnels are also cleaners. To swim to this area would take 45-50 minutes, on the DPV, it takes a little over 10 minutes.

In the cracks between the rocks is where to find the cleaner shrimp, Lebbeus mundus, at Porteau Cove Provincial Park.

Canon 7D, Aquatica A7D housing, Canon 100mm macro, f16, 1/160th, ISO 100, two Ikelite DS-160s on full power.

Another cleaner species is the Longfin Gunnel, Porteau Cove Provincial Park.

Canon 7D, Aquatica A7D housing, Canon EF 28-105 @63mm, f22, 1/125th, ISO 100, two Ikelite DS-160s on full power.

A Bicolor Anthias on the outcrop at Old Airport Beach, Maui.

Canon 7D, Aquatica A7D housing, Canon 100mm macro, f11, 1/100th, ISO 100, two Ikelite DS-160s full power.

Another example is one of our favourite shore-diving sites on Maui, “Old Airport”, or Kahekili Beach. The near-shore reef starts just past the surf-zone and extends out to a depth of about 40’. After that is a strip of sand and finally, a field of Halimeda, a calcareous marine algae, that extends as far as you care to go. A couple of my dive buddies exploring the area on DPVs found a coral outcrop sitting in a clearing at about 80’. It was covered in fishes we had not seen at any other site - Bicolor Anthias, Hawaiian Green Lionfish, and Leaf Scorpionfish! It was a photographers paradise with numerous interesting photo subjects all in a 20’ by 20’ area. Had it not been for the DPVs enabling the exploration of the site, we would never have found the outcrop.

A Leaf Scorpionfish on the outcrop at Old Airport Beach, Maui.

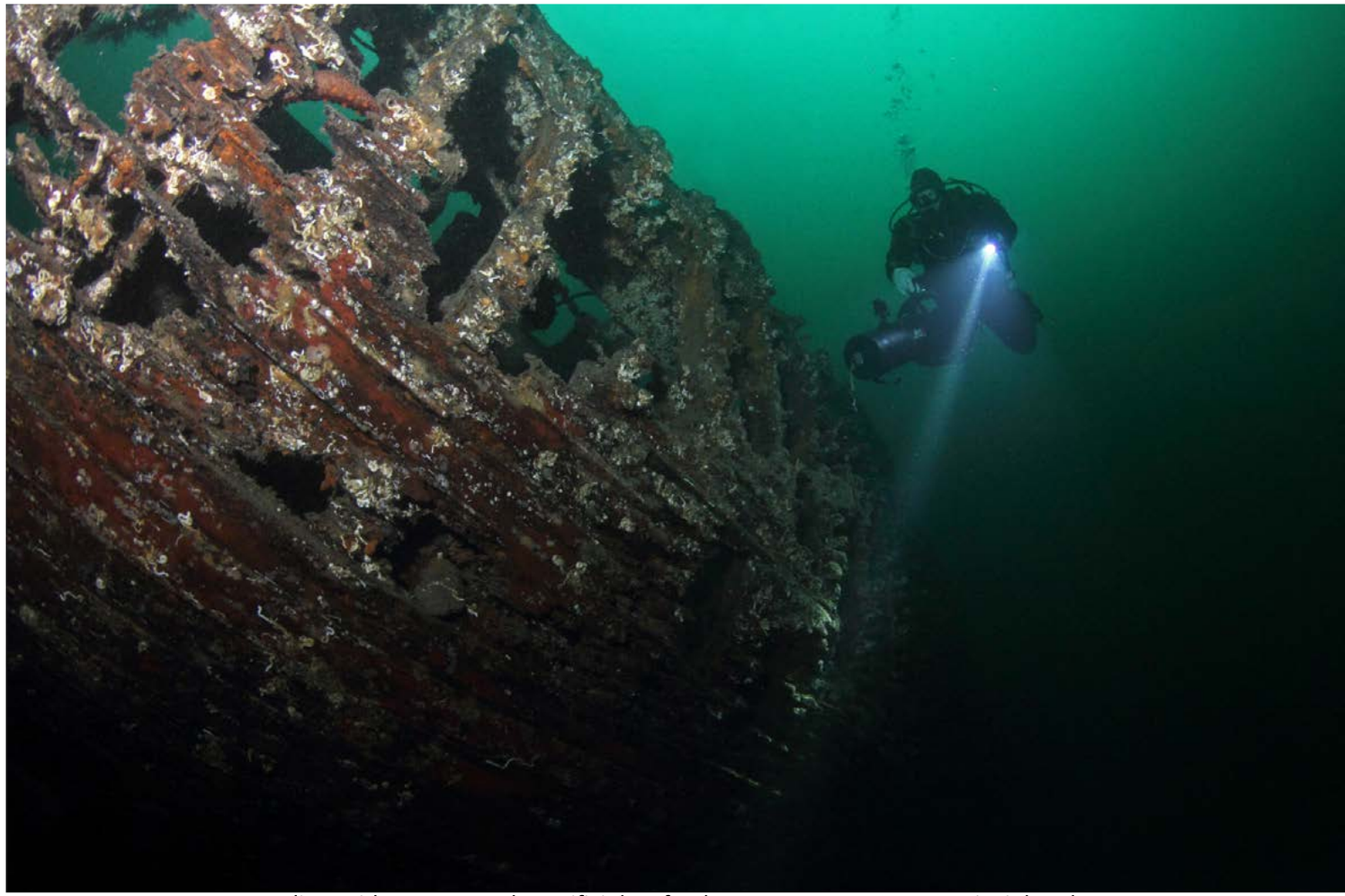
Canon 7D, Aquatica A7D housing, Canon EF 28-105 @105mm, f18, 1/100th, ISO 100, two Ikelite DS-160s full power.

A Green Lionfish on the outcrop at Old Airport Beach, Maui.

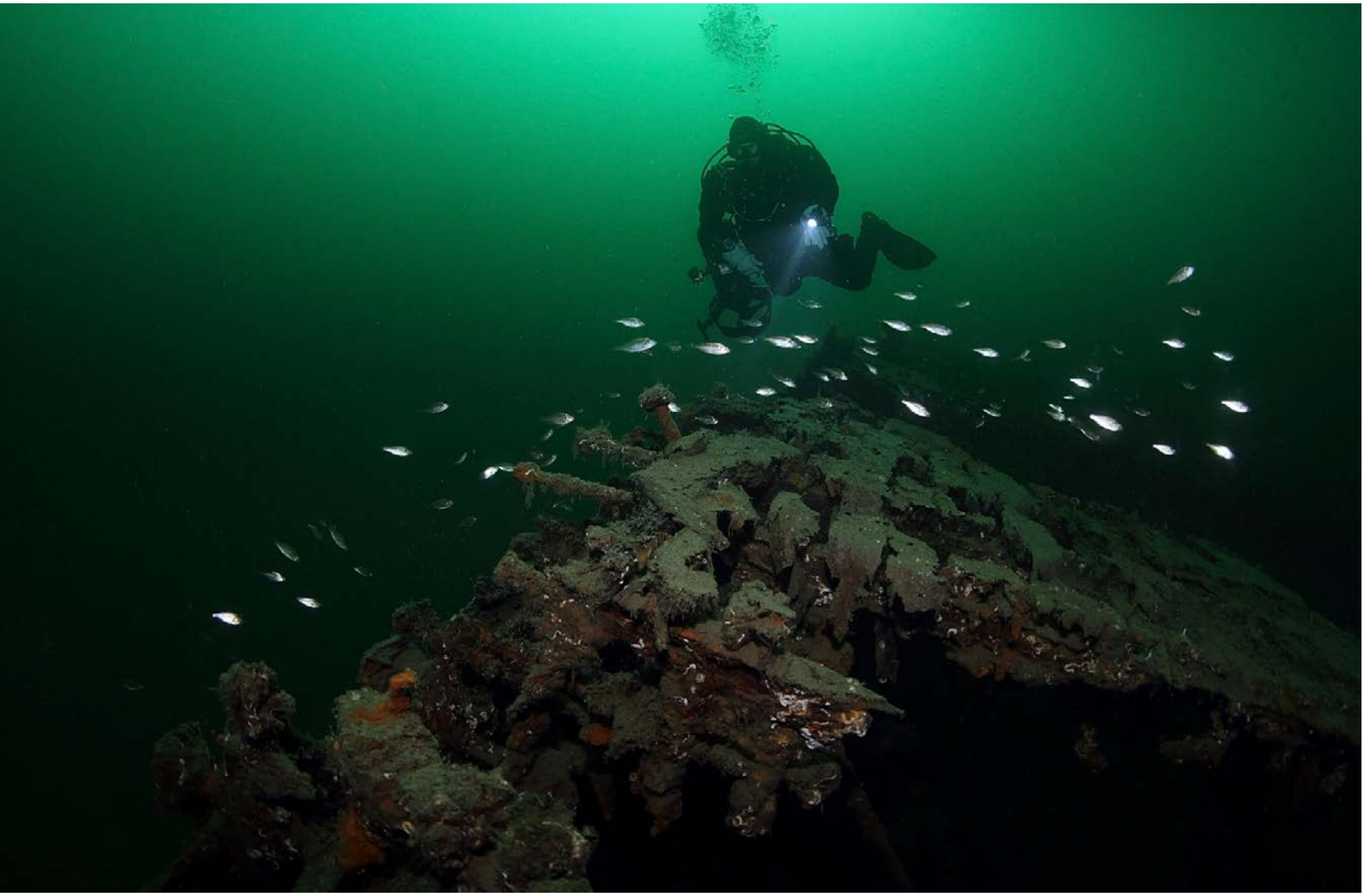
Canon 7D, Aquatica A7D housing, Canon EF 28-105 @82mm, f13, 1/60th, ISO 100, two Ikelite DS-160s on full power.

There's a joke among DPV users, "Surface swimming is for ducks!" However, surface-swimming does offer the ability to save breathing gas and bottom time - it's just that you have to swim against wind, waves and currents to do it! Take for example, a dive on the artificial reef Nakaya, an old wooden minesweeper in an advanced stage of deterioration, and home to many interesting species of marine life, in Porteau Cove Provincial Park along the eastern shore of Howe Sound. The Nakaya is located near the marker at the northern end of the park boundary, so it is some distance from the entry point. There are at least three ways to do a dive on the Nakaya - first, it can be done by surface swimming from the entry to the northern most marker - easily a 20-30 minute swim. Arguably, it should only be attempted in very calm weather conditions and with favourable tides. Another way of getting to the old minesweeper is swimming out to her underwater. By following the fire-hose and then the 45' depth contour east and north, at a steady pace, it will take about 20-30 minutes. Unfortunately, the entire time spent swimming out to her underwater uses up breathing gas and NDL time. The third way is to use a DPV - you get to take the scenic underwater route, and it takes less than 6 minutes, which obviously uses less gas and bottom time - time that can then be used to concentrate on photography.

Lastly, the other somewhat obvious benefits to using a DPV is a reduction in SAC rate. The reduction in SAC rate is obviously in direct response to the reduction in effort because you're no longer swimming. I generally find my SAC rate falls by .05-.1 cu'/min when I'm using the DPV. However, plan the dive as if you're going to have to swim back - how much gas you save can often be the difference between a relaxing, albeit slower, swim back underwater, or spending a bunch of time getting better acquainted with the waterfowl in the area!



A diver with a DPV over the artificial reef Nakaya, at Porteau Cove Provincial Park.
Canon 7D, Aquatica A7D housing, Tokina 10-17 fisheye @ 10mm, f6.3, 1/40th, ISO 1600, one Ikelite DS-160 on 1/4 power.



A diver with a DPV over the artificial reef Nakaya, at Porteau Cove Provincial Park.
Canon 7D, Aquatica A7D housing, Tokina 10-17 fisheye @ 10mm, f5.6, 1/100th, ISO 800, one Ikelite DS-160 on 1/4 power.

With Great Power, Comes Great Responsibility

As with any piece of dive gear, you should be completely familiar with its operation, limitations and associated safety procedures. I recommend those new to DPV-diving, that you seek qualified, experienced instruction. Ideally, that would be an instructor that regularly dives with a DPV, and is certified to teach a DPV specialty course. Some of the things you'll learn will include how to adjust the buoyancy of your DPV, proper buoyancy and trim for yourself while diving with the DPV, considerations and techniques for potentially much faster depth changes, and of course, how to properly share gas on a DPV dive and how to tow a buddy - all are important if you're to safely get the most out of your DPV.

I admit, I'm a convert - I very much enjoy using my DPV on photo dives. We can zoom out to areas with no one else around, explore new areas of old, familiar dive sites and hunt for seldom-visited critters in the never-ending pursuit of novel images. However, I also still very much believe in going slow... once I get there!

SCUBA & H2O ADVENTURE SHOW RETURNS!

by Author

The SCUBA & H2O ADVENTURE SHOW will be held in Tacoma, Washington on March 31 - April 2, 2017 at the Greater Tacoma Convention & Trade Center. The former Dive and Travel Expo has expanded to embrace all watersports, while continuing to embrace its core audience of SCUBA divers and their families.

The SCUBA & H2O Adventure Show is partnering with a variety of companies within and outside of the dive industry to create synergy for all. Now in its tenth year, the show is about connecting the dive community with the greater watersports community and the vendors who serve them all-from kayak operators to dive shops.

By expanding the focus of the show to include other watersports groups, non-divers can be exposed to diving as a sport, and divers can explore other water sports. Exhibitors and water loving enthusiasts will all be under one roof with the common bond being water based adventure."

Public Safety & Self-Rescue Diving

On Friday, SCUBA&H2O SHOW will combine with Lifeguard Systems, Butch Hendriks and Andrea Zaferes to offer an Aquatic Death and Homicidal Drowning Investigations (ADHDI) class for Public Safety Divers and dive teams. This seminar is highly valuable for public safety professionals.

Lifeguard Systems will offer several other courses aimed at recreational divers including Self Preservation - Self Rescue and How to Teach a Better Rescue Diver Class and Increase Profits.

Photography

Cathy Church, leader in Underwater Photography training will teach a three hour Underwater Photography workshop on Saturday 9am - 12pm.

Treasure Hunt is back!

After being discontinued for the past three years, the Tacoma Treasure Hunt is back and will be held on Sunday, April 2nd at 9am. The highly successful event makes the SCUBAH2O Show a weekend of fun and a can't miss event. The entire event is a fundraiser for the Washington Scuba Alliance (WSA) who is making waves with Olympia policy makers to protect and increase dive sites throughout the Northwest. Cost will be $35 including a show T-shirt with unique TREASURE HUNT tattoo!

Emerald Seas Symposium

The event will be featuring a professional development style conference on Friday, March 31, 2017 before the SCUBA & H2O Adventure show in Tacoma. The conference, entitled the Emerald Seas Symposium will offer a full day of seminars for a variety of audiences in and about the dive industry. ESS will be broken down into three different tracks or user groups.

Public Safety Track: Rick is working with experts in Public Safety Diving to offer CME credit for attending our courses.

Science Diving Track: This is geared to accredited scientific diving professionals, Diving Safety Officers and others who offer a unique perspective to this fast growing segment of the industry.

Technical Diving Track: This track will offer an exciting and engaging content based seminars on selected topics and field within technical diving, including rebreathers, cave diving, deep and wreck diving.

The show is a production of the Dive News Network Media Group. Founded in 1996, the Dive News Network has become a media group of five regional scuba magazine and a national watersports magazine - SCUBA & H2O Adventures. Expanding the focus of who a diver is and what a diver does, this innovative company constantly seeks new markets and new customers. The SCUBA & H2O Show was founded in Tacoma in 2006 as an offshoot of the popular Tacoma Treasure Hunt, founded in 2001.

IF you would like additional information, please contact Rick Stratton at RickStratton.dnn@gmail.com, or 360.639.8205
http://www.scubah2oshow.com

Project ABIS Update

An HMCS Annapolis study

Compiled from Artificial Reef Society of BC

The Artificial Reef Society of BC is pleased to present Project ABIS – the Annapolis Biodiversity Index Study, an academic science study designed to observe and report marine species recruitment on the former HMCS Annapolis.

In November 2015 the ARSBC launched the Annapolis Biodiversity Index Study (Project ABIS). This study was intended to monitor and catalogue the progression of marine life accumulation on Annapolis. We asked divers who were visiting the Annapolis to document the life they were seeing. This information was then sent to Donna Gibbs, taxonomist at the Vancouver Aquarium, who has agreed to create an ongoing taxon of marine life that is accumulating on the ship over time. This information has resulted in recording the existence of about 60 species of flora and fauna on the ship.

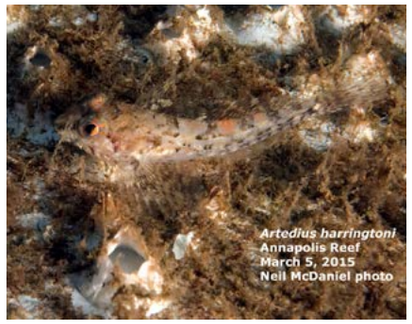
©Kerry Enns

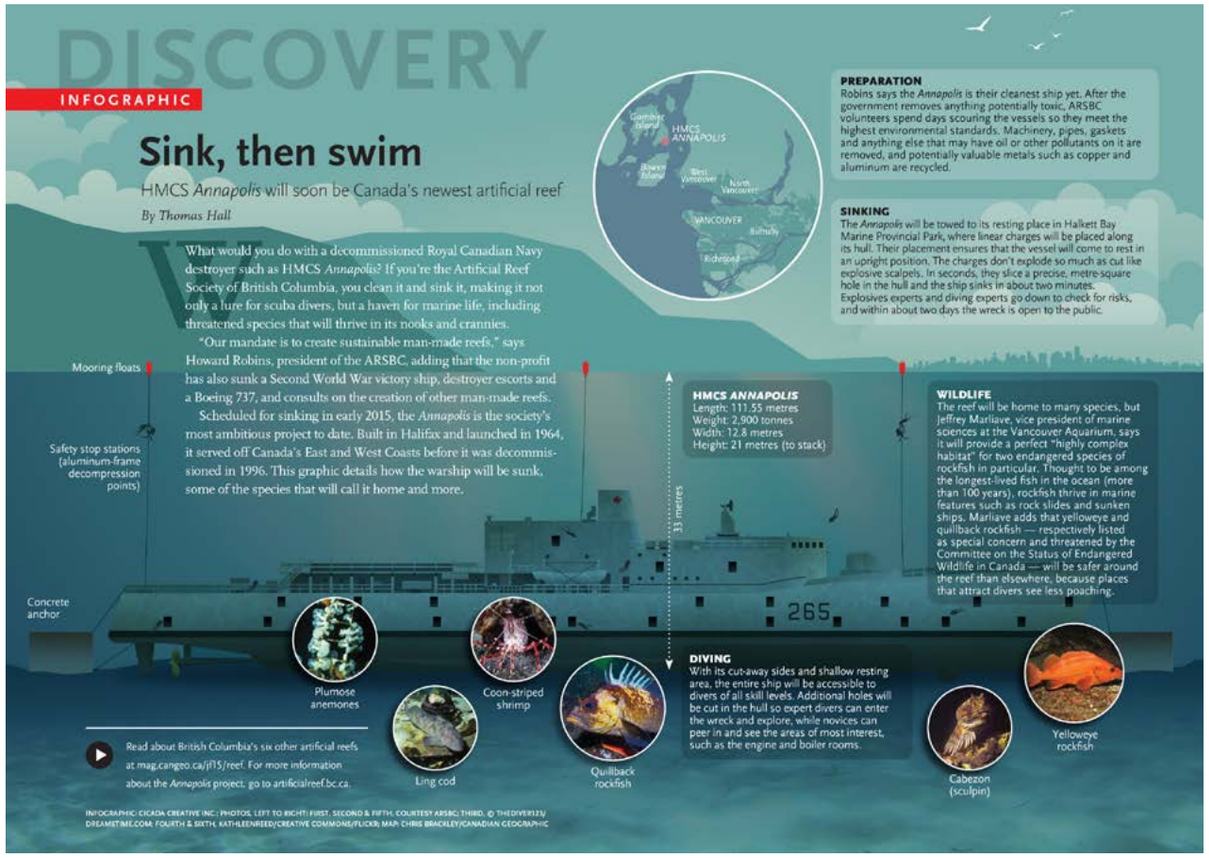
We have been encouraged by the response to this study and by the results that have been recorded so far; however documenting efforts have been sporadic and inconsistent. Understandably it is difficult to expect divers who are on their own time to devote their limited time underwater to another cause. However, any photos or videos of any life on the Annapolis would be much appreciated. Please send it to: donna.gibbs@vanaqua.org

One of the critical pieces of information is to landmark as precisely as possible where on the ship pictures and videos are taken. Physical structures on the ship are useful reference points, as is a record of depth and your diving position on the port or starboard side of the ship. The more specific you can be about which feature of the ship you're diving, the better. It's also helpful to make note of your distance from specific landmarks. To assist you in identifying landmarks, photos with identified structures can be found at: http://www.artificialreefsocietybc.ca/bulletin-board.html

As well, 360 degree images of the Annapolis decks 1, 3 and 4 may be viewed at: http://www.artificialreefsocietybc.ca/annapolis.html

Recognizing that data was limited, we wanted a dedicated team of qualified divers to periodically go to the ship and document specific areas. We are pleased to announce that ARSBC successfully applied and received a Parks Enhancement Funding grant in May 2016. With these funds we can now help to offset the cost of getting a dedicated core of citizen scientist divers out on the ship on a regular basis and augment data that is obtained by fellow divers with consistent and knowledgeable observations. This is an ongoing project and with future grants we expect to continue this research in future years.





Infographic from http://www.artificialreefsocietybc.ca/annapolis.html

Understanding Gas Management

by Bob Bailey

People often ask me what I mean when I use the term "Gas Management." My answer is that it means you have developed diving habits that enable you to base your dive plan on the amount of breathing gas you are bringing with you. Often they ask why that is necessary. Isn't it enough to just watch your SPG and start your ascent when you start to get low? Well, that might work, but it depends on the type of dive you are doing, and how comfortable you are "winging it."

Let's consider an analogy. When you are driving in your car, you monitor your gas supply by occasionally glancing at your fuel gauge. When it reaches a certain point, you start looking for a gas station. Now, imagine that you are driving along and see a sign that says "Next Gas 100 Miles". Your first instinct is to look at your gas gauge. However, does that really tell you enough information to know that you will make it? You also need to know how many gallons your tank holds, and how many miles per gallon your car gets, on average. You might even need to consider that your miles per gallon vary with terrain and driving conditions.

Diving is like that. Simply checking your gauge does not give you enough information. You also need to know the rate that you consume the air in your cylinder, and possibly factor in conditions that might cause your breathing rate to vary. Only by considering all of these factors will you know that you have enough gas to dive your plan. This is what we mean by "Gas Management".

The elements of gas management include knowing:

- How much gas you consume, on average, over a specified period
- How variations in depth (i.e. your planned dive profile) affect your consumption rate
- How variations in dive conditions and your own physical and mental state affect your consumption rate
- How to know, based on your tank pressure, when it is time to turn around or begin your ascent
- How to use the gas in your scuba cylinder efficiently
- How to reduce the risk of equipment malfunctions that could cause a loss of breathing gas

Thinking Ahead

A typical recreational dive briefing ends with “End the dive with 500 psi”. However, what does that mean? How do you do it? Moreover, is it enough gas in reserve if you or your dive buddy has a problem?

Instead of thinking in terms of how much gas we have in our tanks after the dive is over, let’s think in terms of whether or not you have enough gas during your dive. During the dive ask yourself “If I need to share my gas with my buddy right now, would I have enough to get both of us to the surface safely?”

Even if you are diving with a DM or other dive professional, it is your responsibility to know how much gas you need to dive your plan. Remember that the guide is there to show you the dive site, not manage your dive for you. It is your responsibility to stick to your plan and manage your gas. In diving, we are each responsible for our own safety.

Why it is Important

Gas management is critical because we carry with us a limited supply of gas, and none of us can breathe water. We cannot manage more than a few seconds without breathing if we run out of gas. If we allow ourselves to run too low, we might have to ascend at a rate that increases our risk of DCS or lung overexpansion injury. So it is important to do everything we can to keep ourselves out of a situation where we are either too low on gas or out of gas altogether.

It is also important to consider that one reason we dive with a buddy is so that if an emergency does occur, you and your buddy can provide each other with a reserve supply of gas to be able to ascend to the surface in a controlled manner. For this reason, each of you should manage your gas supply with both divers in mind.

How to Develop Good Gas Management Skills

We start by finding out how much gas we breathe under different circumstances. Everyone is different, and the rate at which you consume the gas in your scuba cylinder varies from dive to dive, depending on factors such as your dive profile, your state of mind, your physical condition, and events that occur during the dive.
To help us get an idea of how much gas we breathe, we use a standardized form of measure known as Surface Air Consumption (SAC) rate.

Your SAC rate is defined as the amount of gas you breathe in one minute at the surface. It can be expressed as pressure (PSI) or volume (cubic feet). For the purpose of this discussion, and to avoid confusion, we will refer to your SAC rate in terms of pressure. When expressing your air consumption rate as volume, we will refer to it as Respiratory Minute Volume (RMV).

Frequently, we hear someone describing their SAC rate as a number. That is not exactly correct as it is only expressing your air consumption as calculated for a single dive. Your SAC rate is a range because it is based on your breathing rate, which does not remain constant over a period of several dives, or even during a single dive.

At the low end of the range is your resting SAC - the rate you breathe when you are very relaxed At the high end is your working SAC - the rate you breathe when you are working hard. Many factors can affect your air consumption rate

such as depth (due to narcosis effects), current (because of exertion), stress (because it psychologically causes you to breathe faster), fatigue, excitement, or swimming with a sh-sh-sh-sh-shark.

Because of this, the best way to calculate your SAC rate for dive planning purposes is to track your gas consumption over a number of dives, watch the trends, and consider what factors are affecting your air consumption, and by how much they are affecting it. Then, when planning a dive, you will have a better idea of how to calculate your gas consumption for the anticipated conditions of the dive.

However, something else factors into our gas consumption rate - depth. Water pressure affects our air spaces. The deeper we go, the more squeezed our air spaces become. Water pressure also affects the gas we breathe. When we take a breath, our regulator delivers the gas at a pressure that equalizes the pressure of the water around us. Without this equalization, our lungs would not be able to function properly, and our breathing would be inhibited.

So the deeper we go, the more gas we remove from our cylinder when we take a breath. That is why you can kick around a shallow reef for an hour, while at 100 feet the same cylinder might only last you 25 minutes!

Calculating SAC Rate

So how does this all relate to calculating your SAC rate? The amount of gas you inhale with each breath is directly proportional to the pressure of the water in which you are swimming. By knowing your SAC rate, which is calculated at the surface, you can determine how much gas you are consuming at any depth. To do this, you convert depth to pressure expressed in ATA (absolute atmospheres). The relationship between depth and pressure is expressed as:

Pressure (ATA) = depth/33 + 1

In salt water, every 33-foot increase in depth increases our pressure by 1 ATA. By dividing our depth by 33, we can make a conversion from depth to pressure. We add 1 ATA because that is the pressure we are exposed to when we are at the surface.

So let's look at an example. If you are swimming at 60 feet, the pressure of the water on your body is 60/33 + 1 which equals 2.82 ATA. To equalize that pressure and allow you to breathe, your regulator delivers the gas to you at 2.82 times the rate that it would if you were breathing from it at the surface.

Now that we know the relationship between depth, pressure, and gas consumption, let's look at how this applies to your SAC rate.

Let's suppose you are doing a dive to an average depth of 40 fsw (Feet of Sea Water) for 30 minutes and you consume 1,600 psi from your cylinder. To find out how much you breathe per minute at depth you would calculate as follows:

1,600 psi / 30 minutes = 53.33 psi per minute

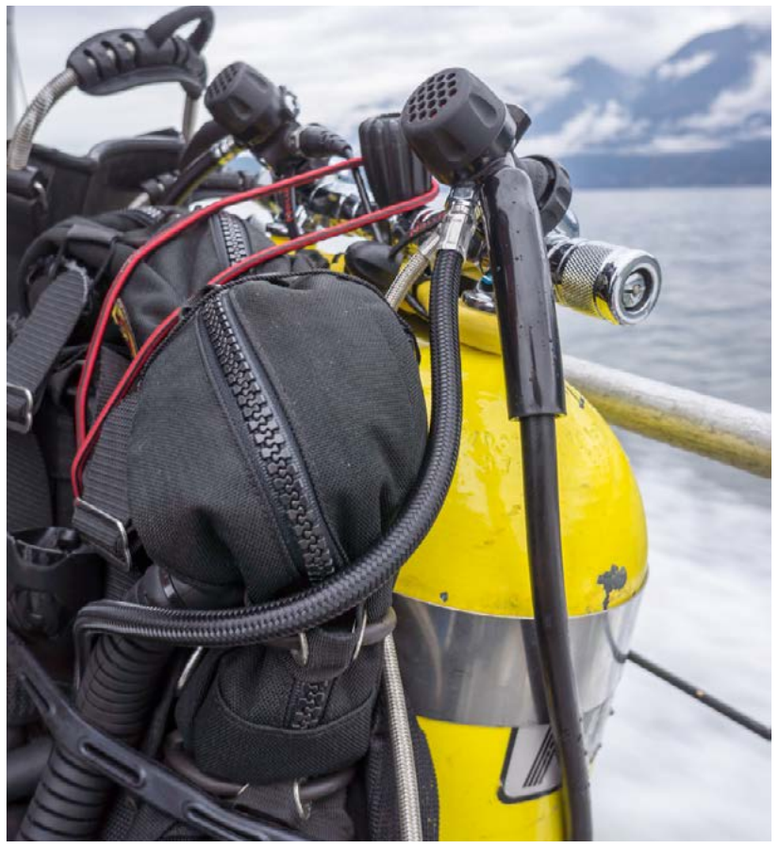
To convert this to how much gas you breathe at the surface you must determine the pressure, in atmospheres absolute, at 40 fsw:

40/33 + 1 = 2.21 ATA

Then determine your SAC rate by dividing your depth consumption rate by the pressure, in atmospheres absolute:

53.33 /2.21 = 24.13 psi per minute

To use this number for gas planning, round up to 25 psi per minute.



Pressure and Volume: converting SAC to RMV

As I mentioned earlier, your consumption rate can be expressed in equivalent terms of either pressure (SAC = PSI per minute) or volume (RMV = cubic feet per minute). Both of those numbers are important and are used for different purposes: RMV is used for dive planning and SAC is used for dive execution

Although SAC and RMV are the same value expressed in different terms, there is one important difference. SAC is specific to the cylinder you are using - RMV is not. This is because your cylinder holds a certain volume of gas for every PSI it displays on your pressure gauge. To convert from SAC to RMV, you need to understand how many cubic feet of gas your cylinder holds for every PSI of pressure you can read on your pressure gauge. This is referred to as your cylinder's "baseline", and is expressed as follows:

$$\textbf{baseline} = \frac{\textbf{volume (in cubic feet)}}{\textbf{working pressure (in PSI)}}$$

Once you've determined a cylinder's baseline you can use it to convert from SAC to RMV.

RMV = SAC x baseline

Let's look at a couple of examples of calculating baseline for different cylinders.

- A low-pressure steel 95 holds 95 cubic feet of gas at 2,640 PSI … so the baseline for this cylinder is 95/2,640 = 0.036 cubic feet per PSI (which is a very small number)
- By contrast, an AL80 holds 77.4 cubic feet of gas at 3,000 PSI … so the baseline for this cylinder is 77.4/3000 = 0.026 cubic feet per PSI (which is even smaller)

Let's look at an example. If you have a SAC rate of 25 PSI per minute using an AL80, you can convert this to volume as follows:

25 (PSI per minute) x 0.026 (cubic feet per psi)
= 0.65 cubic feet per minute.

Turnaround pressure

For simple dives, gas management often requires no more than for you to keep a couple of simple numbers in your head. When your gauge reaches that point, you know it is time to take a specific action. Turnaround pressure is one of those numbers.

Turnaround pressure is exactly what the name suggests - the minimum pressure at which you can safely turn the dive and begin to make your way to the surface. It is most often used for shore diving, where you make your way up a slope to a specific exit point, usually the same place where you entered the water.

Turnaround pressure is fairly simple on dives where you will be making your way down a slope until it is time to return, then turning around and retracing your route back to the entry point. In that case, you subtract your desired reserve from your starting pressure, divide the remaining gas pressure in half, and subtract that from your starting value.

For example, let's say you are starting with 3,000 psi and you want a reserve of 500 psi. So your usable gas is 2,500 psi. You will use 1,250 to go out, and 1,250 to return.

3,000 starting pressure – 500 reserve
= 2,500 usable gas

Subtracting 1,250 psi from your starting pressure yields a turnaround pressure of 1,750 psi.

In practice, however, dives with that sort of profile are rare. More commonly, you will take a certain amount of time to reach your destination, spend a certain amount of time at your destination, and then return. In this case, take note of your starting pressure and the pressure you are at when you arrive at your destination - let's say, a wreck you want to explore. By noting how much gas you used to get there, and adding it to your desired reserve, you can arrive at a turnaround pressure.

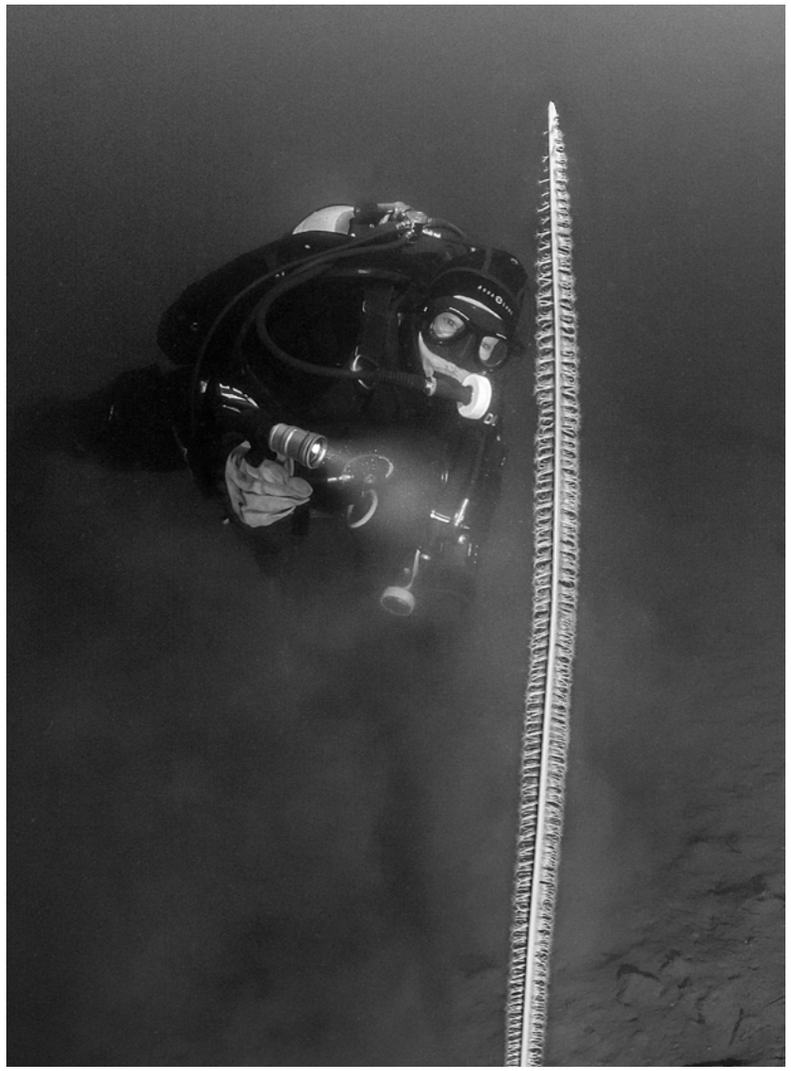
For example, let's say you start with 2,800 psi and arrive at your destination with 2,100 psi. You used 700 psi to get there. Adding that to your desired reserve of 500 psi yields a turnaround pressure of 1,200 psi. So by making a simple calculation in your head, you can know that when you reach 1,200 psi in your cylinder, it is time to start heading back upslope to end the dive.

Don't forget that on your return you will need to add some gas to your reserves because you need to do a safety stop. By knowing your consumption rate and the depth of your safety stop you can quickly and easily calculate how much gas you need for your safety stop and factor that amount into your turnaround pressure.

Rock Bottom

Rock bottom is defined as the absolute minimum amount of gas you need to get both yourself and your buddy safely to the surface from a specified depth while you are both breathing off of one cylinder. It assumes a worst-case where one of you had an out-of-air emergency, and that you will be sharing air during the ascent.

There are some "rules and assumptions" that you should take into account when calculating rock bottom pressure.



These are:

- Use working SAC rates for both you and your buddy (assume stress).
- Allow one minute at your deepest depth to make the OOA regulator exchange and sort out whatever problem caused the emergency before beginning your ascent.
- Ascend at a rate of 30 feet per minute.
- Make a three-minute safety stop at 15 fsw.
- Allow at least 200 psi reserve at the surface.
- For dives below 80 fsw, add a 1-minute safety stop at one-half the deepest part of your dive.

Calculating Rock Bottom

Calculating Rock Bottom is simple if you envision the actions that must need to be taken after the emergency occurs in segments. In other words, first you will do the regulator exchange and assess the problem, then you will ascend to your first stop, perform your first stop (if dive was deeper than 80fsw), ascend to 15' for the safety stop, perform the safety stop, then ascend to the surface. All you need to do is determine how much air you need for each segment. To calculate RB simply follow these steps:

Step 1- OOA Regulator Exchange & Problem Assessment at Depth
time at depth (in minutes) X depth (ata) X RMV of 2 divers (working RMV) = *a*

Step 2- Ascent from Depth to 1st Stop
time to ascend (in minutes) X avg depth (max depth to stop depth, in ata) X RMV = *b*

Step 3- *Stop (1 minute deep stop or 3 minute safety stop)
stop time X stop depth (ata) X RMV = *c*

Step 4- Stop *Ascent from 1st Stop to Safety (max depth deeper than 80fsw)
time to ascend X avg depth (stop depth to safety stop depth) X RMV = *d*

Step 5- Safety Stop
time at stop X stop depth (ata) X RMV = *e*

Step 6- Ascent from Safety Stop
time to ascend X avg depth (stop depth to surface, ata) X RMV = *f*

Step 7- Total Gas Used
Add steps 1-6 (*a*+*b*+*c*+*d*+*e*=+*f*)

Step 8- Convert to PSI
CuFt of gas needed / rated volume of tank X rated pressure of tank = *g*

Step 9- Add 200psi for Reserve
Add 200 to step 8 for total Rock Bottom (200 + *g*)

Let's look at an example. You and your buddy are both diving AL80 cylinders. Your working RMV rate is 1.82 cubic feet per minute and your buddy's is 1.3 for a total RMV of 3.12 CF per minute. You are planning a dive to 66fsw. Let's follow the steps to determine your Rock Bottom:

Step 1- OOA Regulator Exchange & Problem Assessment at Depth
1 (minute) X 2.97 ata of 65') X 3.12 (combined RMV) = 9.27 CuFt

Step 2- Ascent from Depth to 1st Stop
Max Depth was not deeper than 80fsw, bypass this step

Step 3- *Stop (1 minute deep stop or 3 minute safety stop)
Max Depth was not deeper than 80fsw, bypass this step

Step 4- *Ascent from 1st Stop to Safety Stop (max depth deeper than 80fsw)
1.66 (1:40, ascent time, 65' to 15') X 2.21 (avg depth (40'), in ata)X 3.12 = 11.44 CuFt

Step 5- Safety Stop
3 (minutes) X 1.45 (ata of 15') X 3.12 = 13.57 CuFt

Step 6- Ascent from Safety Stop
.5 (30 seconds, 15' to surface) X 1.22 (avg depth (7.5'), in ata) X 3.12 = 1.91 CuFt

Step 7- Total Gas Used
9.27 + 11.44 + 13.57 + 1.91 = 36.19 CuFt Total

Step 8-Convert to PSI
36.19 / 77.4 X 3000 = 1403

Step 9-Add 200psi Reserve
1403 + 200 = 1603 psi Total Rock Bottom

For this dive, you want to start your ascent no later than when there is 1,600 psi in your cylinder or your buddy's cylinder.

Figure 1 illustrates some relationships between depth, the amount of gas required, common cylinder sizes, and rock bottom pressures for a new/inexperienced diver. Rock Bottom is based on a working RMV of 2.0 or a working SAC rate of about 70 psi per minute on an AL80 cylinder. Note the diver is not able to safely dive to 100fsw unless he uses a cylinder with 98CuFt capacity. Additionally, using an AL80, the diver would probably hit his Rock Bottom for 90fsw (2913) before even reaching 90fsw. A common rule of thumb for some divers use is never to dive deeper than the volume of gas your cylinder holds. In other words, if you are using an 80CuFt cylinder, you would limit your maximum depth to 80fsw, 100fsw if you are using a 100CuFt cylinder, etc.

Depth	Cylinder Specifications (rated volume/rated pressure)									
	72 3000	80 2640	80 3000	80 3500	98 2640	100 3500	119 3442	120 3500	130 3442	Gas req'd (CuFt)
130'							3009	3034	2772	97.14
120'						3424	2865	2887	2640	92.12
110'					2490	3175	2659	2680	2451	85
100'					2275	2895	2427	2465	2239	77
90'		2510	2913	3263	2086	2650	2225	2242	2054	70
80'	2536	1999	2312	2585	1668	2108	1777	1790	1643	54.5
70'	2305	1821	2103	2349	1523	1919	1621	1632	1500	49.1
60'	2086	1652	1902	2125	1386	1740	1473	1484	1365	43.9
50'	1876	1491	1716	1911	1254	1569	1331	1341	1236	39.1
40'	1690	1347	1547	1721	1137	1417	1206	1214	1121	34.75

Figure 1. Rock Bottom Pressure & Volume for Common Cylinders - Inexperienced Diver (w/ 200psi Reserve)

Note that while this is the RMV of an actual diver, consumption rates could be higher for divers with less experience, or lower for divers with more experience.

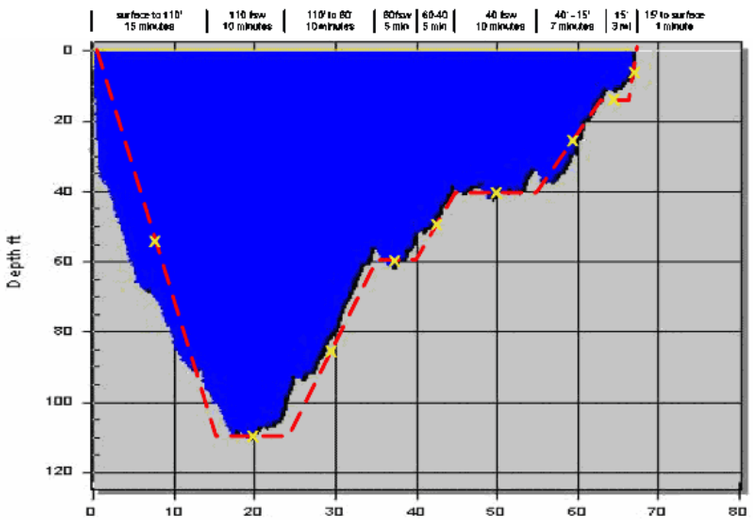


Figure 2. Planned vs. Actual Dive Profile

Calculating How Much Gas Needed for Your Dive Plan

For most recreational dives, knowing your turnaround pressure and rock bottom pressure are all the dive planning necessary. The nature of your dive dictates that you will get in the water and conduct your dive until either the pressure in your cylinder or your no-decompression limit dictates that you begin your ascent.

However, for some dives, where a particular destination or goal is the objective of the dive, it may be useful to plan in advance how much gas you actually need for the dive. In this case, you can estimate your dive profile and calculate your gas requirement in a manner very similar to what we just did for calculating rock bottom pressure: by breaking the dive into segments, calculating how much gas we needed for each segment, and adding them together.

For example, one segment could be your descent to your target depth. By estimating how many minutes it will take, and how deep you are going, you can use your average depth over that interval to determine a reasonable estimate of how much gas you will use for the descent. Multiplying the pressure (ATA) at your average depth by your RMV will tell you approximately how many the cubic feet of gas are required for that part of the dive.

Likewise, you can do the same thing for the time spent at depth, for the ascent to your deep stop, your ascent to safety stop, and the time spent at each of your stops.

Figure 2 illustrates a planned dive profile superimposed over an actual dive profile. The red dashed line is the planned profile, the callouts along the top are the planned "segments" of the dive, and the yellow X's represent the average depth for each segment.

By using the relationships we have learned so far, we can estimate our gas consumption within a reasonably close limit. You can see that while slight variations exist over the course of the dive, the actual dive is fairly close to the planned dive. Actual gas consumption on this particular dive was within just a couple of cubic feet of the planned consumption - well within the limitations of your expected reserve.

This skill can be very valuable for the dive team who has a specific goal in mind, or is planning a deep dive, and wants to be assured that they are carrying enough gas to execute their dive plan.

For most of us, this is a skill we will rarely, if ever, need to use. It depends entirely on the nature of the dive we are planning. However, from a conceptual perspective, it is a useful skill to have as an aid to understanding how much air you will actually use on a given dive.

Some Good Gas Management Habits

No matter how much effort you put into understanding gas management skills, it is important to develop basic good habits. These habits include things you should do before the dive, during the dive, and after the dive.

Before the dive:

- Confirm each other's tank pressure, and verbalize both divers' turnaround pressure and rock bottom pressure.
- Perform buddy checks to assure that all tank valves are fully opened and that all second-stage regulators are properly stowed and accessible.
- Perform bubble checks on each other to make sure all hose connections are secure and there are no leaks.

During the dive:

- Monitor your own gas on a regular basis … every five minutes, at a minimum. It's a good idea to monitor your gas more frequently as you go deeper, since you will be breathing it down faster at greater depths.
- If you are diving with an unfamiliar buddy, make sure to communicate your pressure to your buddy on a regular basis, and that they communicate theirs to you. This will give you an idea of their actual gas consumption compared to yours, and vice-versa. Familiar dive buddies have established this relationship already, through previous experience.

- Keep both your own and your dive buddy's turn pressure and rock bottom pressure in mind. If you have difficulty remembering, write it on a slate or wet notes for reference during the dive.

When not diving:

- Maintain your equipment properly. Keep your regulator serviced by manufacturer's specifications. Remember that drysuit and BCD valves should be maintained on an annual basis as well.
- Properly rinse your gear in clean, fresh water after every dive to assure that salt deposits, sand, and debris does not cause issues with valves.
- Regularly inspect your regulator hoses and connections for signs of wear or damage.

Some Tips for Using Your Air More Efficiently

Air consumption is often related to other aspects of your diving, such as buoyancy control, weighting, trim, your breathing pattern, and swimming speed. Once you have determined your air consumption rate, you should track it over a period and see if you notice how it changes over time. As overall skills improve, so will your air consumption, often dramatically.

Here are some tips that can help you improve your air consumption, and in general get more enjoyment out of your diving experience.

Breathing

For most of us, scuba diving is the first time in our lives that we have ever actually had to think about breathing. Moreover, there is a technique for proper breathing on scuba gear. In general, you want to take long, slow, deep breaths. A complete inhale and exhale should take anywhere from 5 to 8 seconds, sometimes longer for more practiced divers. Rapid breathing affects your buoyancy. Shallow breathing tends to build up carbon-dioxide in our body, which causes us to feel oxygen starved and breathe harder and faster. Practice long, slow, deep breathing on land and then try it in the water. You will often notice an immediate improvement in your buoyancy control, and over time will notice that as your buoyancy control improves, so does your gas consumption.

Weighting

Improper weighting affects your gas consumption considerably. Too much weight causes you to carry excessive gas in your BCD or wing to maintain neutral buoyancy, and even small changes in depth cause large buoyancy shifts due to the expansion or compression of that gas. You should perform weight checks anytime you get a new piece of gear, and occasionally as your diving skills improve, because even something as simple as becoming more relaxed underwater allows you to lose weights you thought you needed.

Conversely, underweighted divers struggle to stay down, especially toward the end of the dive as your cylinder loses gas and becomes more buoyant. All that extra work causes you to breathe harder and consume your gas supply at a faster rate.

Trim

Humans are psychologically oriented in a vertical position, after all, it is what we've done since we learned how to walk. When learning scuba we must teach ourselves to move about in a horizontal position. Proper trim is vital to good gas consumption. Water is 800 times heavier than air, and we cannot efficiently move through the water in the same way we move through the air. Maintaining a horizontal position means that as we move through the water, we have to push less water out of our way than we would in a vertical position. It also radically increases the efficiency of our fins to move us in the direction we want to go. Both of those are huge factors in terms of our air consumption because it reduces the amount of work we need to do to move around.

Swimming speed

Many divers, new divers in particular, tend to swim rather quickly. While get you from point to point faster, it also increases your air consumption dramatically. In fact, the faster you go, the more air you consume getting from one place to another. Slow down, it's not a race! There are lots of tiny creatures (and even some large ones that are good at camouflage) that you will likely not see if you are swimming quickly. Going slow, and keeping your fin kicks relatively small, will not only improve your air consumption dramatically, it helps you get more enjoyment out of your dive.

Underwater Headlamps:

Product review of BigBlue Head Lights

by Kerry Enns

BigBlue introduced headlamps this year to their huge array of lighting. Two at 450-lumens and two at 1000-lumens. The Head Light 450N and Head Light 1000N offers a very focused narrow beam of 8-degrees, both with varying output levels of light. The Head Light 450XW and Head Light 1000XW are 120-degree wide beam lights with several output levels including red. Both styles have an emergency S.O.S. function.

The concept is pretty exciting, and I was thrilled to have to opportunity to try them out in a few scenarios. I tried them while freediving, SCUBA diving in the daytime and SCUBA diving at night. While they are not perfect for every situation, I certainly think there are some positive aspects to these lights.

The Positive

I love the handsfree light idea. Where ever I looked, there was light. My buddy would also see me searching for them as I scanned around me. Having a light on your head would be a great tool for a live-boat dive, making the diver very easy to spot from a boat or in an emergency scenario.

Since I typically keep a light on my hand, if I need any adjustments to my camera or my gear, my light tends to flash around, unwittingly falsely alerting my dive buddy. This did not happen with the headlamp - movements were slow and deliberate. Checking gauges on my night dive was a real treat, too. A while ago I was trying some underwater sketching, but hands-free lighting was a problem. I can see having a system like this for drawing in my case, or scientific diving a huge benefit.

What I loved about the night dive was being able to see where I was going before and after I entered the water and while I was swimming to the buoy where we would descend. It was an amazing backup light, too.

The dive light stayed on my head without issue on both my SCUBA dives, but I had the light straps under my mask strap for extra security. I did try putting the headlamp under my hood, and that worked well, too.

I'm not a videographer, but I can imagine that the wide angle lights would be perfect for video as long as you weren't using a small viewfinder.

The Challenges

The great part of having a light pointed to where you are looking is also its drawback. Communicating to your buddy with the headlamp shining in their eyes is not very nice buddy behaviour. Habits need to be in place to flip the lamp up out of their eyes or quickly turn it off when communication under and above water. This is easily learned, though. I thought for a beginner, taking an object such as a light, out of their hands would be a good idea, however, I wonder if new divers would be able to remember not to blind their buddies? I suppose it depends on the diver.

My biggest concern was losing the headlamp. While freediving, they did flip off my head on my ascent due to the higher velocity of freediving. Happily, my mask strap kept it on. This problem could be solved by adding a chin strap or by putting the headlamp under the hood. In the same way, this wasn't an issue shore diving since water entry is slow and deliberate, but I could see this being a problem boat diving. Entry could cause the light to come off. Again, not a huge issue if you hold onto it during the giant stride entry.

At under $100USD for the 450-lumen version and around $170USD for the 1000-lumen version, these are a great addition to your dive kit. My favourite application is on night dives, and if you live in the PNW, we do that a lot!

Specs for these lights can be found on the BigBlue website or by clicking here.

Removing Scratches from an Acrylic Dome

Trying out the Micro-Mesh product

Text and Images by Kerry Enns

I've had my 240mm Sea & Sea Dome for a while, but since most of my dives are local, with minimal visibility, I haven't used it much. The few times I have used it, I have managed to garner a few scratches. Most of the time they didn't bother me and I'd simply 'heal' or 'clone' out any issues in post-processing.

That was until I started freediving. Macro, my favorite form of photography, had to take a back seat to wide angle. Freediving with a large dome is challenging, don't let me steer you wrong, but it has fantastic opportunities of over-unders and big-water images. The scratches I had accumulated became a problem, especially when shooting into the sun. In fact, two issues became apparent, and I address the second one (lens reflections) in a short article also in this issue.

After some research into which product to use, I ordered the Micro-Mesh NC-78-1 kit from Amazon. It was about $57USD before shipping and arrived quickly.

The kit's instructions were very wordy for me to easily comprehend and with the specialized nature of the dome, I went to YouTube. It took a lot of the fear away. I removed the hood from the port and made a mental note that the screws were not overly tight. I assume that over-tightening could cause the acrylic to break or crack.

Since my scratches weren't too deep, I was able to start with the 1500 grit paper. Deep scratches would require coarser paper from the hardware store. This step was the scariest. My dome went opaque. While sanding, fine bits of acrylic would build up on my dome and paper, which I rinsed away often. I sanded for about 20 minutes until the scratches were gone – now the scratches were all in one direction from my sanding.

The second paper was an 1800 grit paper. I rotated the dome 90 degrees and proceeded to sand in straight lines as I did the first step. I knew I was done when I checked the dome after drying and all the scratches were in one direction. In other words, no cross-hatched lines. I repeated this process for each paper, the last being 12,000 grit! Even then, I was slightly disappointed that there were a few hair-like marks.

The magic came when I applied the liquid abrasive that comes with the kit. I polished in one direction, rinsed and polished again in the opposite direction. My dome was now like new on the outside.

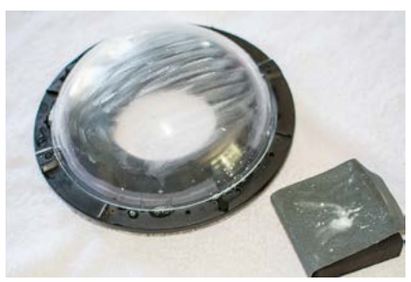
Sadly, I still had a few scratches on the inside, which happened a long time ago when my gear fell off the lens during a dive. I decided that I would try to get those scratches out with the liquid abrasive. Overall it worked, but I need to find a curved sponge to do a better job.

I finished it all with applying an antistatic cream. I also applied the antistatic cream to the inside to repel dust. The scratches have definitely been minimized, even on the inside, and my healing tool doesn't need to work so hard.

That is the scourge of the over-under image. I hope this helps you and gives you courage. Eventually I hope to get a small glass dome, but until then, this will do.

Steps from Panic to Relief

1. Removin the hood (So far so good)



2. Initial wet sanding (Yikes)

3. After the first sanding (slight panic)

4. Halfway Point (looking better)

5. Almost Done

6. Final step with liquid polisher (Whew!)

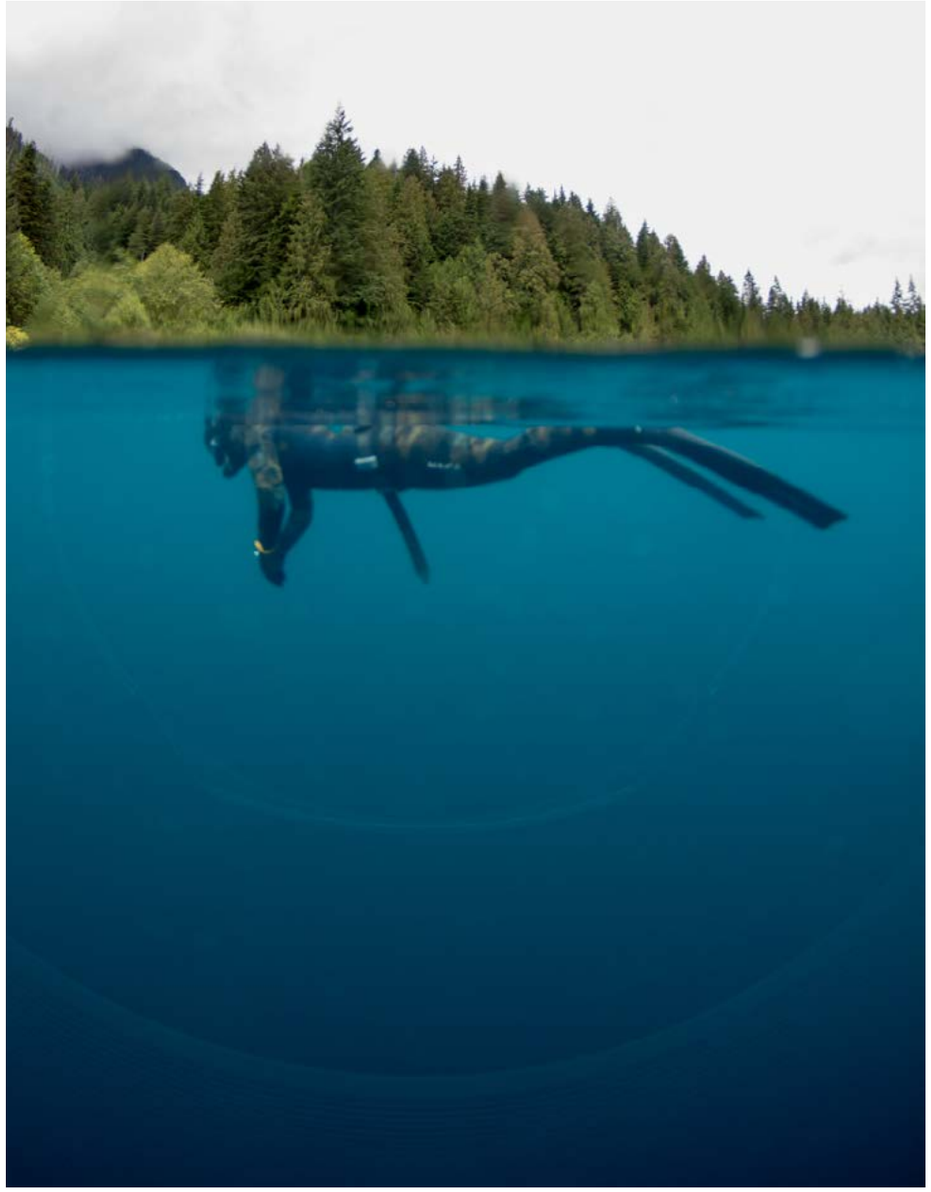
Dome Port Reflections:

An attempt to reduce reflective rings in a large dome port

Text and images by Kerry Enns

Freediving has given me many more opportunities for wide angle photography. Particularly fun, are the times I've been able to go to a clear lake and photograph fellow divers. The freediving form is beautiful and graceful and a fun diversion from my super-macro passion.

Many of my wide-angle images are simply composed, with lots of water and a diver. As with scuba photography, I try to shoot up, into the light to maximize light and contrast. However, I'm getting annoying reflections on the bottom of my images, as you can see in the image on the right. This image was particularly dramatic on an overcast day. I wonder if the diffused light exacerbated the problem.



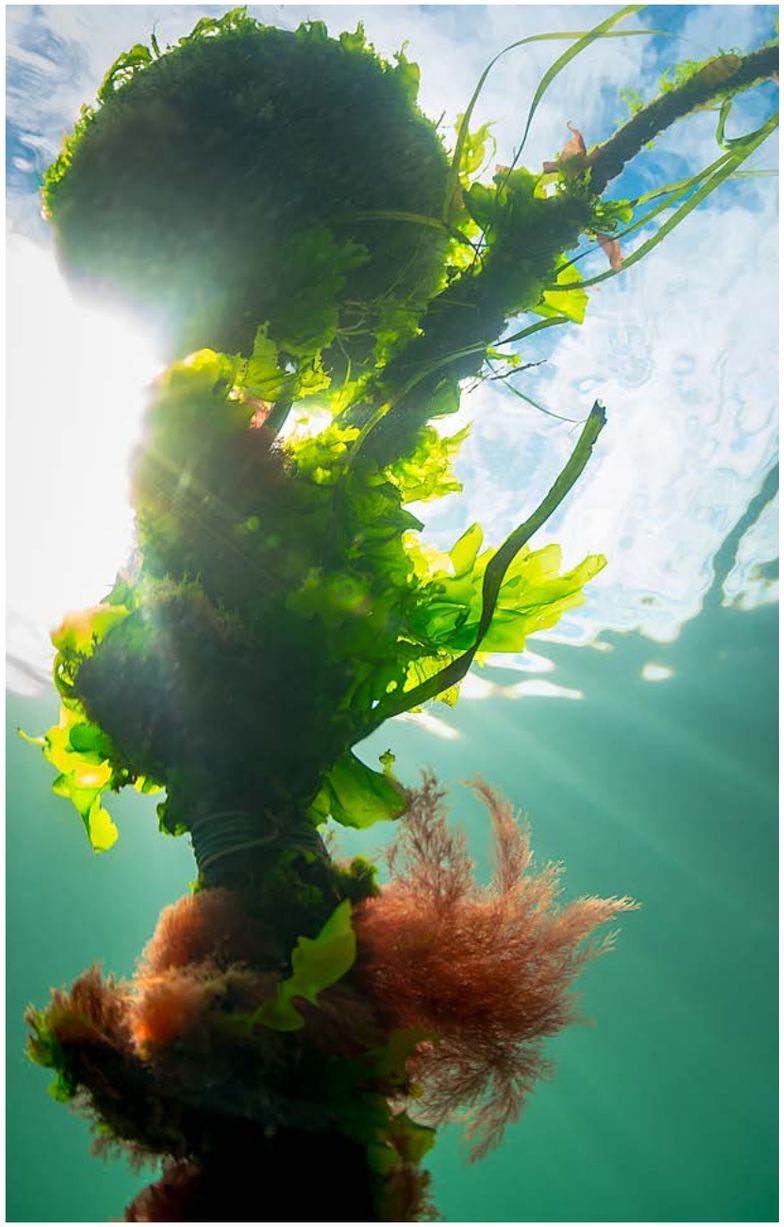
At first, I thought it was the inside of the dome port itself since I saw tiny ridges. To solve this problem, I cut a piece of black, non-reflective neoprene, the exact size of my dome. I then cut a hole for my lens to fit through it. It solved some of the problem areas, but my above-water test shot still showed an annoying reflection. That reflection, I realized, was the lower hood of the lens catching the light.

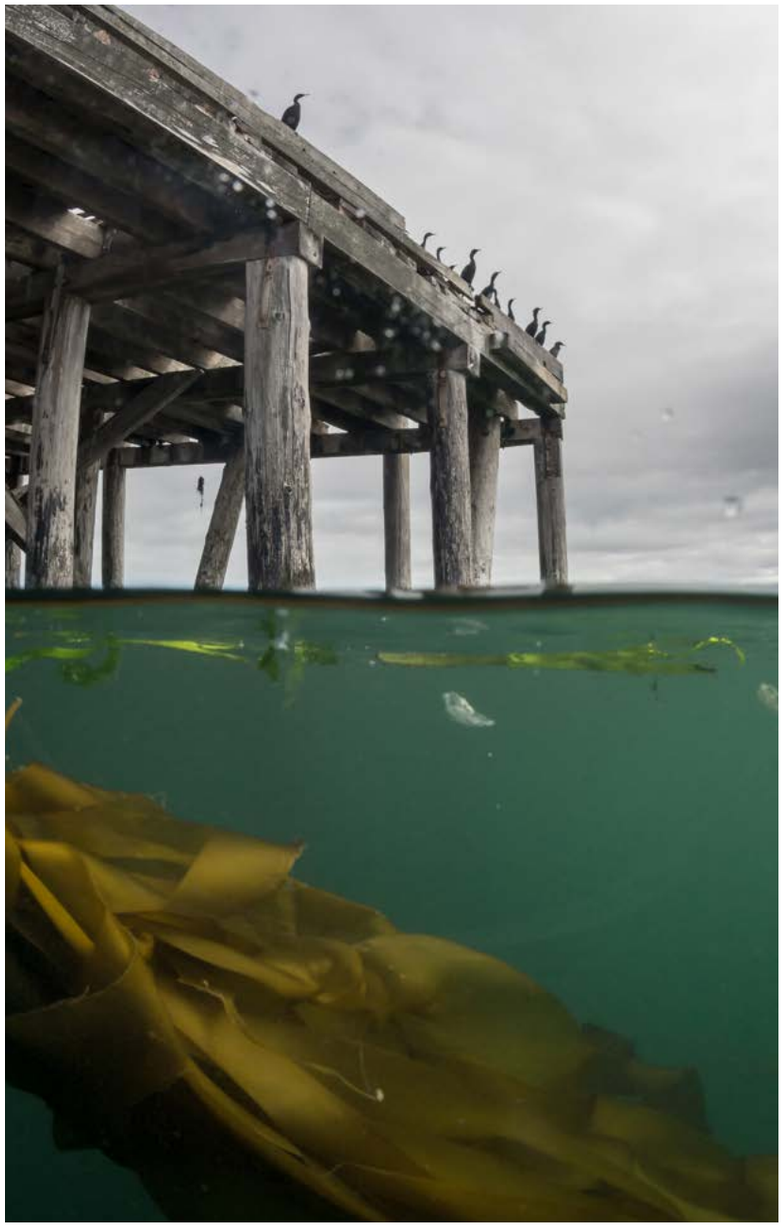
An online search suggested using a Sharpie to black out the letters and numbers from the lens. I understand that the Nikon or Canon lenses might have this issue, but not with my Tokina.

Although the lens hood is already black, I needed to come up with a way to make that rim non-reflective. I decided some matte acrylic paint would do the trick. Sure enough, the test shots showed significant improvement.

To test my alterations I took to Keystone where I tried various over-unders, pushing the limits by facing the sun. In the case of the buoy shot, the reflections were not there. Hoorah! However, the over-unders still showed a trace of the lens hood. The problem still remains, to a degree, and I must remain cognisant of that when composing my over-under images.

I'm curious about how some of you have dealt with this issue. Post your solution on the PNW Diver Sharing site on Facebook.





Retra LSD Ultimate Snoot

by Dan Clements

The last issue of Pacific Northwest Diver featured several photos using "snoots" to enhance lighting. Snoots are attached to the end of strobes, and focus light in very specific areas.

Retra has released a new snoot called the LSD Ultimate, and it has several advantages over many other models. Most importantly, there are adaptors for most types of strobes, so if you up-grade or change lighting, the snoots can be adapted.

Figure 1: Ultimate Components

The housing of the LSD Ultimate is made from two modules: the optical tube and the mounting module. They are connected via four screws which makes the mounting module exchangeable. If strobe models are changed, one needs to simply purchase a new mounting module.

Second, Retra has a unique mask system that provides different lighting "shapes." Please see Figure 2 below as an example.

Figure 2: Different Lighting Shape Options

The new LSD Ultimate starts selling today at €300 (excluding shipping and taxes). For all orders above €379 (excluding taxes) we are offering FREE Worldwide Express shipping.

Underwater Photography Guide recently ran a comparison of snoots, and the Retra model received high marks. Here is a link to the article: UW Photo Guide Snoot Review.

For more information, please see:
www.retra-uwt.com, facebook.com/retra.uwt

Yellow House

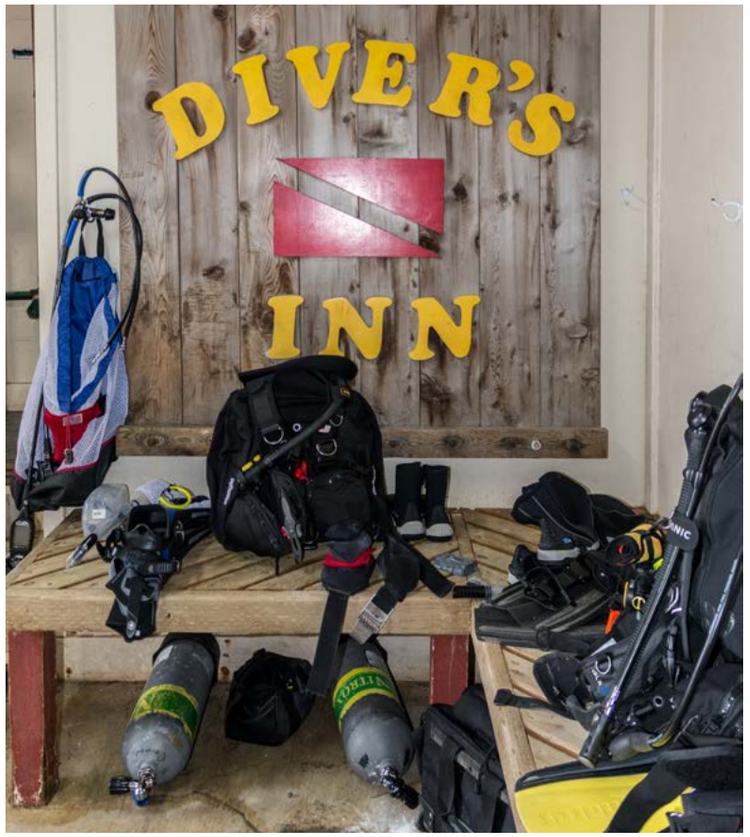
A divers' gathering place in the Hood Canal

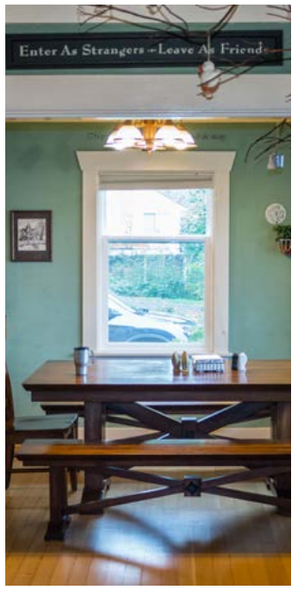
by Kerry Enns, images by Kerry Enns and Kenn Zahn

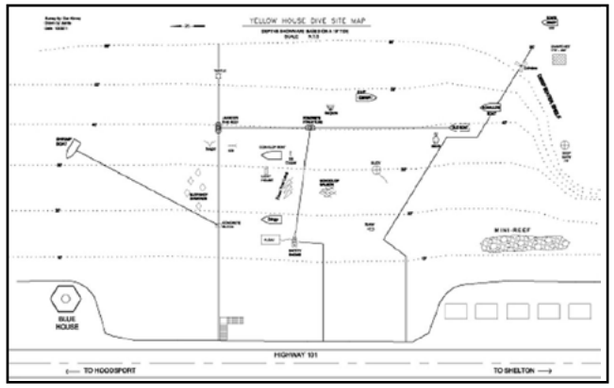
I had the pleasure of joining the Yakima Dive Club for their annual Yellow House retreat. I met several of the dive club members in the Spring at God's Pocket Resort, and we agreed to meet again. This was a perfect opportunity to catch up.

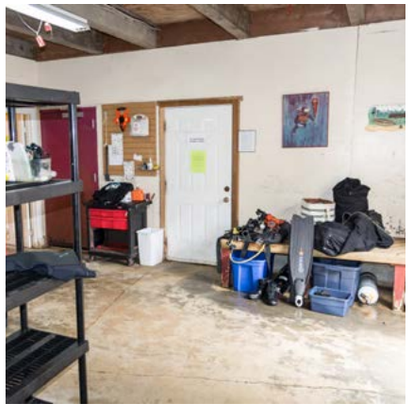
Yellow House is located in Hoodsport, Washington. Just down the road is the the dive shop, IGA, and Sund Rock. Yellow House is a big yellow house that accommodates up to 16 guests. There are three private bedrooms, four cubicles with a full-size bed and a trundle style twin bed. So there are various bunking options including a futon and a couple of couches. Bedding is provided, but you need to make your own bed. Five bathrooms means no one needs to wait too long.

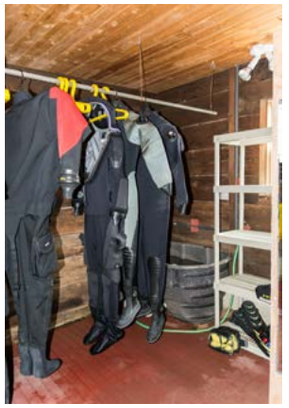
The kitchen is fully stocked with even some extra non-perishable food other guests left behind. I was happy to find a couple of ingredients for my pie making that I didn't bring along. There are visiting areas on each of the three levels, a couple of TVs, lots of dive books, wireless internet and more.

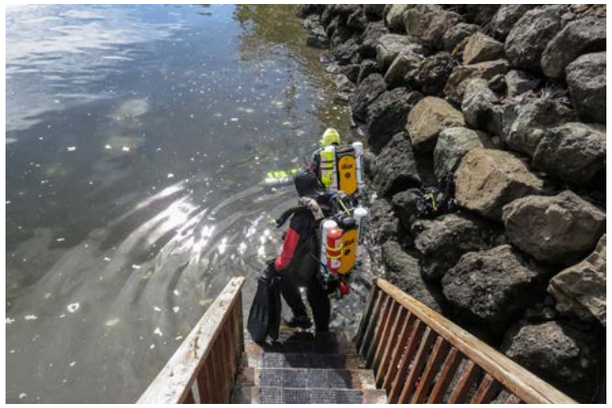












What makes this place extra special is the side building specially designed for divers. It has an area with benches to kit up your gear. There's a classroom area which we used for our camera gear. Best of all, there is a heated drying room with a large rinse tank. By morning all our gear was dry!

There is a private dive site across the street. It's a muck dive, but on my first dive, I found a small octopus and a juvenile wolfeel. Various sculptures have been placed over the years. Guide ropes to prevent divers from getting turned around. We even did a nice night dive. Sund Rock, which requires a $20 fee, is about three miles down the road. For the after-dive relaxation, a hot-tub and a firepit is in the back. There is a ton of parking at the rear of the house.

Prices are very reasonable. You can get detailed pricing by emailing info@hoodsportndive.com or by calling 360-877-6818. Online details are at two sites: https://www.vacationrentals.com/listing/p3998685 and http://www.hoodsportndive.com/index.php/vacation-rental-property

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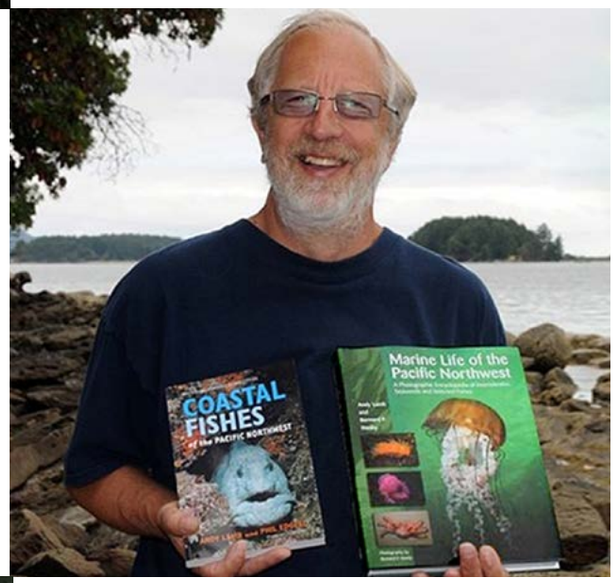

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