Underwater Photography

Mar/Apr 2011

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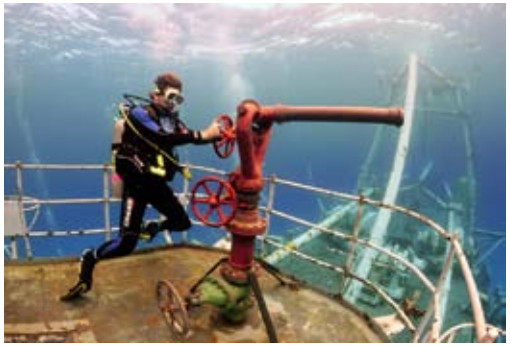
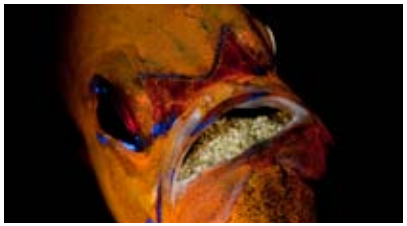
A web magazine UwP59 Mar/Apr 2011





Underwater Photography

Publisher/Editor Peter Rowlands
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Cover shot by
Paul Colley

Editorial

There will always be a new one along very soon

I feel sorry for todays housing manufacturers, I really do and in a way also for the camera manufacturers. The latter need to constantly develop new models to tempt our wallets and when they've squeezed all they can out of a format, they create another one to shift the goal posts.

The former, the housing manufacturers, that is, have to work at mercurial speed to keep up with the major camera manufacturers before they go and introduce a new model or, worse still, let it be known that there will be a new model imminently. Nothing gives the market more jitters than the thought of buying a camera which might be old hat in a couple of weeks.

I can understand why major camera manufacturers are very secretive about their developments but it would really help our industry if they would involve our housing manufacturers early on in the design process so that they could be up to speed as soon as a new model is launched.

I'm obviously not talking about the compact camera market here because this is very well catered for by own brand housings which appear at the same time as the new model. No, it's the SLR and semi pro end of the market which could really benefit from such a collaboration.

It would be no skin off the camera manufacturers nose, so to speak, as they never intended, nor have the expertise, to produce a top end housing. Why not work with our manufacturers and create a win, win situation?

New kid on the block

Having expressed my sympathy for our housing manufacturers I am now going to do what they hate the most - suggest that there is a new camera that they really ought to consider housing.

I predict that 2011 will see some major developments in the middle of the market i.e. not compact and not SLR but the 4/3rd and APS interchangeable lens style cameras. More lenses will become available from 3rd party manufacturers to increase their versatility and popularity.

There will also be a significant development in an area between this format and the SLR with the advent of the mirrorless Micro 4/3rds format. To put it technically, the Micro Four Thirds system uses the same sensor size (18 x 13.5 mm) but allows slimmer cameras by removing the mirror box and optical viewfinder.

Removing the mirror mechanism allows this shorter flange back distance, meaning lenses for the new mount can be considerably smaller than current Four Thirds designs. The format will allow framing to be carried out using Live View on either the LCD monitor or an EVF.

The other major benefit is a shutter delay almost as good as an SLR which has always, for me, been the frustrating feature of compact cameras.

In truth the new format has been around since late 2008 and like all emerging technologies it takes time to establish itself but, with the advent of the Panasonic GH2, we have, for the first time, a camera that can shoot high quality stills and full HD video in an SLR form which works extremely well ergonomically because you can view through the electronic viewfinder. This brings the camera to your eye which is a much more stable way of shooting either stills or video.

The result, as far as I can see, is a jack of all trades and master of all trades situation combined with the availability of a fisheye and wide zoom lenses with, no doubt, macro lenses on the way.

For me this makes it an excellent camera to urge the manufacturers to house and I would be more than willing to be a test pilot.

There is, finally, a feature which is of no benefit whatsoever to underwater photographers at all but I suspect will be a major clicher, especially to those who primarily shoot video.

The Panasonic GH2 has a video setting called EX Tele Conv which just records the centre 2 magapixels of the frame because, believe it or not, even full HD video is no more than 2mp.

Compared to 35mm the Micro 4/rd format has a crop factor of x2 so the 14-140 kit lens is actually a 28-280. Shoot video with the EX Tele Conv on and the total crop factor becomes 5.2x with no loss of aperture.

That makes the 14-140 become a 72-728mm. Buy the 100-300mm telezoom and this becomes 520-1560mm, again, with no loss of light!

I obviously don't want that capability underwater but what a fantastic lens to have for shooting wildlife video on land

Peter Rowlands
peter@uwpmag.com

News, Travel & Events

Dive for Earth Day April 22nd 2011

During the week of April 22nd, scuba divers worldwide will give the ocean a voice with Project AWARE Dive for Earth Day events. To date, nearly 2,000 activities and thousands of dive volunteers have focused on underwater cleanups, mooring buoy installation projects, reef surveys and more during this annual event.

"As work towards solutions grows, divers are becoming uniquely positioned and critical voices to affect change. No other group has the complete view of the issues affecting our ocean planet, as well as the motivation, skills and training to do something about it," comments Jenny Miller Garmendia, Executive Director, Project AWARE Foundation.

This year, Dive for Earth organizers will also have the unique opportunity to share and capture their love for underwater environments on video with PADI's Sea the Change online video contest.

Professional Association of Diving Instructors (PADI) and Project AWARE Foundation are inviting all divers to enter the Sea The

Change online video contest aimed at igniting a global conservation and scuba diving message.

The grand prize winner will receive US $5000 cash, plus PADI also donates $5000 to conservation through Project AWARE on behalf of the winner.

Since 2000, Project AWARE Foundation and AWARE divers worldwide have put ocean protection on April's Earth Day agenda with global Dive for Earth Day events underwater.

www.projectaware.org/diveforearthday
www.padi.com/SeaTheChange

It's time to begin assembling your digital video films and digital slide show presentations for consideration for the SCUBA Show 2011 Continuous Underwater Film Festival. Submission deadline is March 31, 2011.

We have changed some of our guidelines so please read the information below completely. Many works will be submitted but few chosen. To increase chances of being chosen, please follow the guidelines:

1) Length of the video film submission should be 5 to 25 minutes with 10 to 15 minutes being ideal.

2) Please submit all video films in DVD format (HD format, if available, may be requested later if the video is accepted).

3) Videos should not be business promotional in nature.

4) If chosen, you will be required to sign a guarantee that the contents of your film does not infringe on any rights including music, footage, voice, personal and other rights.

5) Material that has NOT been previously screened at film festivals, on the web or on television is preferred. If it has been shown elsewhere, please state as such and where.

6) On acceptance, SCUBA Show 2011 requests that no portion of the film be shown in film festivals, on the web or on television in the period of time leading up to SCUBA Show 2011. All rights revert to the owner after the screening of the video film.

7) Content of the submission should be a minimum of 1/3 underwater with 1/2 or more preferred.

www.scubashow.com

On August 2011 the whole Globe becomes one huge Underwater Festival...

The Underwater World Shoot-Out
August 1-6, 2011
Cash and prestige's prizes

During the week of the shoot-out, the whole underwater world will be performing as one huge festival, hosting professional and amateur photographers competing with each other for some Cash and very worthy prizes.
The 6 day World Shoot-Out will take place in August 1-6, 2011, in any natural water resource found around the world, including seas, oceans, lakes, rivers, under the ice and more
Yes, you can take part in the competition by diving in your familiar or favorite destination during the days of the shoot-out. This can be a wonderful opportunity for you to either take a few days off for the sake of some diving in your local area, or to finally book the holiday you've been dreaming of in an exotic dive destination, on a live aboard or in a dive resort.

Important Information

1. **Competition registration deadline: August 2nd, 2011**
2. The 6 day World Shoot out will take place during August 1-6, 2011
3. Final images can be submitted to any of the categories during August 7-10, final deadline is Wednesday, August 10th, 2011, at 23:55 pm GMT +2.
4. Images submitted to any of the categories should be uploaded through the competition website, using the username and password provided upon registration. Each image must not exceed a file size of 500KB.
5. All World Shoot-Out categories winners and nominees will be announced on the festive Epson Red Sea winning ceremony in Eilat, Israel, November 19th, 2010
6. Daily Backups - photographers taking part in the competition must do daily backups of all images taken during the days of the shoot-out.
7. Participants reaching semi-final stages during the judging process will be asked to burn their backup files on a CD/DVD (consisting of all images taken during the days of the shoot-out in both RAW and JPEG formats) and will be asked to send this CD to the production office for the purpose of legal validation.
8. The 6 categories are open to all competition participants, aside from one exception, according to which images taken with DSLR cameras cannot be submitted to the Amateurs category.
9. Participants must access their e-mail account or the competition website on July 31st, a day before the shoot-out begins, for the purpose of receiving last and essential guidelines, such as the date the camera should be set on during the shoot-out

All you have left to do now is to decide where your Underwater World Shoot-Out is going to take place!

For World Shoot-Out categories, prizes, regulations and further information please contact:

David Pilosof
info@eilatredsea.com | www.eilatredsea.com | skype: David-pilosof

INTO THE DEEP Exhibition

St Andrew Square, Edinburgh

25 February - 1 May 2011

Following on from the spectacular success of 'Spirit of the Wild' in 2010, INTO THE DEEP is a free outdoor exhibition of sixty giant photographs by ten renowned photographers. The pictures start at the surface of the ocean and travel downwards to look at sharks and coral reefs, right down to the creatures of the deep.

At once informative and entertaining, it's a unique opportunity to see one of the most beautiful collections of underwater photographs available.

The Square is open from 8am – 6pm ; Free (no tickets required)

www.sciencefestival.co.uk

Scuba Symphony Facebook U/W Photo Contest 2011

Scuba Symphony have launched their Facebook Monthly Photo Contest with prizes exceeding USD $12,000 for 2011!

To enter, simply log into Facebook, search for Scuba Symphony page and " Like" it.

Click on the contest event and share your best shot according to the monthly theme. Photos with the most " Like's" win, it's that simple! There are 10 prizes to win every month."

www.scubasymphony.com

Maldives Deaf and hard of hearing trip with Naomi Hayim

Following successes in the Philippines, Andamans and Komodo, Naomi Hayim will be hosting another trip for the deaf and hard of hearing, this year to the Maldives! The trip will be accompanied by Naomi and other British and American Sign Language interpreters and whilst geared towards those divers with hearing impairment the trip is open to all.

The 10 night trip will follow our Northern itinerary starting from Male and ending in Hanimaadhoo. This means BIG pelagics- manta rays and whale sharks at Baa Atoll along with the opportunity for spotting hammerheads, reef sharks and eagle rays.

www.worldwidediveandsail.com

2011 BSoUP British Underwater Photography Championships

Plymouth, Devon
Saturday 9th July 2011

The 2011 British Underwater Photography Championships, organised by the British Society of Underwater Photographers (BSoUP), will take place on Saturday 9th July at Mount Batten, Plymouth, Devon. All underwater photographers are invited to participate, whether they are members of BSoUP or not.

Prizes, trophies and individual awards will be presented for winning images in each category as well as a grand prize for the best overall image. All prizes except that for the Humorous category will be awarded by an independent panel of judges; the Humorous category will judged by the audience present

Viewing and judging of the images entered will take place at the Mount Batten Centre on the Saturday night. Earlier in the evening the Hotel Mount Batten will again be putting on a substantial Buffet dinner for us.

www.bsoup.org

SILVER SHARK International Underwater Art Festival is organised by Kiev Group of Companies "Silver Shark" with support of Ministry of Culture and Tourism of Ukraine, Embassy of France in Ukraine and Honourable President of the World's Festival of Underwater Image in the city of Antibes Daniel Mercier.

We want to inform you that the 11th International Underwater Art Festival will be held in Kiev, Ukraine from 14 to 17 April 2011. SILVER SHARK Festival is held in Ukraine annually, since 2001, with a view to popularising underwater art and recreation and involving wide public in solving environmental problems and investigating the World Ocean.

Every year International Underwater Art Festival increases the quantity of organized events.

This year the list of nominations and contests is following:

Best Underwater Photo - The prize for the first place is 500 Euro

Best Video Film - The prize for the first place is 1000 Euro

Best TV-Programme - The prize for the first place is 300 Euro

Best Painting/Sculpture - The prize for the first place is 300 Euro

Contest of dive-clubs' and dive-centres' stands - The prize for the first place is 200 Euro

Contest of young artists' works

Jury Award winners will be announced at the Saturday Afternoon Awards Ceremony. An Awards Diploma will be awarded to the winners, the Diploma of participant will be awarded every competitor.

www.silvershark.org.ua

The BeachFront Club

Welcome... we are building a website to show you all of the world's 'true beachfront' accommodations - those that have no roads or traffic between the rooms and the water. That means no crossing roads or dodging traffic to get to the beach - and no longer being fooled by misleading advertising that suggests hotels are beachfront, when, in fact, they aren't. We can put you right-on-the-beach every time, in a budget bungalow, boutique hotel or 5-star resort.

Thailand and Bali, both exotic and famous for their beaches, are our launch destinations, so the information and photos here are the most accurate and complete. These beach maps also show hotels in detail that you cannot find anywhere else, on or off-line. In Thailand alone we have over 1,100 establishments in an amazing array of styles and locations, including even the most remote islands.

www.thebeachfrontclub.com

New Site Helps Photographers Take Better Pictures

Newly launched, www.photosynesi.com connects aspiring photographers with professional photographers to get personalized feedback on their images. Created by Synesi, the site provides access to veteran professional photographers.

Amateur photographers can receive individualized feedback on their images from renowned photographers. An elegant and efficient interface allows customers to select a professional reviewer and have their pictures critiqued. Likewise, professionals have a single place to review images and provide critical feedback on the work of students, and a new revenue stream.

"Globally, more people are taking more pictures. Yet, regularly getting the picture you want to take is still elusive," said Synesi President, Derek Wahila. "We connect vetted, respected photographers to individuals who want to take better pictures. The Photo Synesi network of expert photographers are also skilled teachers, and bring their insight to casual and intermediate photographers around the world."

www. photosynesi.com

Mark Webster workshops 2011

The first will be on the Blue Planet 1 live aboard in the Red Sea between 14-21 October departing from Hurghada to cruise south towards Safaga sampling some sites which are less frequently dived. These will include: Siyul Lagoon; Gottaa Abu Ramada; Ras Desha; Abu El Kifan; Um Halhala and many others.

The Red Sea workshop is booked through Oonasdivers.

The second workshop will be held at the Seaventures Dive Resort on Mabul island in Malaysia between 3-10 December 2011. This location gives easy access to the three islands of Sipadan, Mabul and Kapalai which offer a unique combination of habitats and subjects for photographers. In addition to all this the location of the Seaventures dive platform is right over an excellent house reef which has a mixture of reef and corals, areas of rubble and muck critters.

The Sipadan workshop is booked directly with Mark:

www.photec.co.uk/Sipadan.htm
www.seaventuresdive.com
www.oonasdivers.com

Galapagos with Amos Nachoum

Sept 2011

Coming up this September you can travel with Amos Nachoum to the Galapagos, on a custom-built dive vessel, during prime time for encounters with Whale sharks and schooling Hammerhead. Amos has secured a special permit to spend eight to ten days at one of the world's most exciting and unique locations - the islands of Darwin and Wolf.

"I keep returning year after year, and I find something fresh and inspiring every time," Amos says.

Mr. Nachoum's photos and essays have appeared in hundreds of publications around the world, including National Geographic, Time, Life, The New York Times, Condé Nast Traveler, Le Figaro, and Der Spiegel. His work has also been included in the books The Living Ocean, The World of Nature, and Oceans. He has been profiled on television on National Geographic Explorer, Today, and Good Morning America, as well as featured in People, Esquire, and Money magazines.

www.biganimals.com

BT Paralympic World Cup

Nick Robertson-Brown, from Frogfish Photography, has taken a series of photos to launch the Channel 4 coverage of the BT Paralympic World Cup being held in Manchester at the end of May. Three of the competing athletes, Simon Munn from Wheelchair Basketball, runner Richard Whitehead and swimmer Liz Johnson took part in the underwater shoot at Manchester Aquatics Centre to promote the event.

The Frogfish team spent all day in the pool working out logistical and safety issues, such as sinking an expensive wheelchair and a basketball, as well as working out weighting and air supply for the athletes before getting them in for the shoot.

The image chosen to launch the event coverage shows all three athletes underwater, posing as if competing in their respective sports.

www.frogfishphotography.com
www.btparalympicworldcup.com

GDT European Wildlife Photographer of the Year 2011

As every year the "Gesellschaft Deutscher Tierfotografen" (GDT) invites all amateur and professional photographers from all over Europe to participate in this contest. The main object of the contest is to illustrate the high quality and the specific style of European wildlife photography by excellent pictures from Europe and all over the world and to promote general awareness for nature conservation through the means of photography.

There will be cash prizes for the winners as well as the runners-up of each category. The overall winner will receive 2 000 € in cash provided by CANON. The winning photographs of the contest will be presented to the public for the first time in an exhibition at the festival in Luenen. Photographs can be entered in 8 different categories (Birds, Mammals, Other Animals, Plants + Fungi, Landscapes, The Underwater World, Man and Nature, Nature's Studio).

www.gdtfoto.de

Australian Underwater Photographers Unite to Protect the Coral Sea.

'Our Coral Sea: An Underwater Paradise' is a 30 piece Coral Sea photo exhibition that will bring the Coral Sea to life in 2011.

The exhibition aims to raise awareness for Protect Our Coral Sea, a joint campaign to establish a very large, world-class, highly protected marine park in the Coral Sea. Protect Our Coral Sea is supported by Pew Environment Group–Australia, and their partners; Australian Conservation Foundation, Australian Marine Conservation Society, Humane Society International, Queensland Conservation Council, National Parks Association of Queensland, North Queensland Conservation Council, the Cairns and Far North Environment Centre and Project Aware.

The 5 Australian photographers involved have all dived in the Coral Sea for many years and include: Mark Spencer, Xanthe Rivett, Nicola Tempe, Jürgen Freund and Lucy Trippett – all world class photographers. The exhibition kicks off in Sydney at The Dome within the ArtHouse Hotel, 275 Pitt Street Sydney, on the 15 March to the 9 April and it will then travel to Brisbane and Cairns.

© Mark Spencer

Australia's Coral Sea is less than 1% fully protected. Without a high level of protection, the beauty and biodiversity of the Coral Sea will diminish over time. A Coral Sea Marine Park could extend east from the Great Barrier Reef Marine Park to Australia's maritime boundary with Papua New Guinea, the Solomon Islands and New Caledonia. At about one million square kilometres, this new Park would be the world's largest.

The Coral Sea is one of the last places on Earth where large marine animals can still be found in great numbers, making it a special place on a global scale.

www.protectourcoralsea.org.au

Galapagos

The art of u/w photography with Shannon Conway

11th June 24th June 2013

Shannon has chosen the infamous Galapagos Islands for his next Art of Underwater Photography expedition.

The photographic potential here is immense, however it is for the experienced diver and photographer only! Because of the nature of Galapagos diving, and the prevalence of swift currents, Shannon will not be conducting a formal workshop as he usually might. It is simply not possible to dive and shoot the way he might usually where conditions are calmer. Shannon will be available and willing to critique and evaluate your work in the evenings. He will also give talks and host discussions on some evenings.

Shannon is a professional underwater photographer creating images for the advertising, editorial and fine art market. He has an energetic passion for his photography and the patience to capture the peak of the action. You'll quickly understand how Shannon obtains such remarkable images time and again – he puts a great deal of effort, energy and research into every shot and he does not give up! Shannon is a very popular leader and his enthusiasm is infectious.

Being amongst a group of like-minded friends will make this trip enjoyable and rewarding. Shannon's Galapagos trip will not, strictly speaking, be a workshop in the traditional sense. Whilst Shannon will critique your work and give evening talks and engage in discussion about your images and photography, whilst under the water you will be encouraged to pursue your own agenda. This is mainly due to the diving conditions in Galapagos which can be very challenging and do not always lend themselves to underwater tuition on a one on one basis.

www.divequest.co.uk

Photo Services at Atlantis Dive Resorts, Philippines

Atlantis Dive Resorts in the Philippines, based in Dumaguete and Puerto Galera have been running 'on demand' Photo Workshops for some time, tailored to suit all levels of underwater photographers. Always looking to improve the services available to their guests and implement the use of innovative products, they have just invested in two sets of OTS Guardian Full Face Masks complete with Buddy Phones to allow their Photo Pro's to teach the Atlantis Underwater Photo Workshops while giving real-time verbal instructions to students. The underwater communications system consists of a 'speaker and microphone' unit for the instructor and a 'receiver only' unit for the student. The receiver unit simply attaches to the strap of a normal dive mask, so the student can use all of their own dive equipment without the need to undergo additional training; they just listen to the instructions provided. This will greatly improve the effectiveness of teaching photography and maximise time during in-water tuition, as it means there is no need to write time consuming instructions on a slate.

The Dumaguete resort has also had its facilities to Underwater Photographers improved with the opening of its spacious new Camera Room. There is over 21m² of floor space, 14m of work surface and 21 cubbyholes to store equipment. Five air-guns are positioned around the room, 16 sets of power sockets in both 220 and 110 volts, paper towel dispensers for cleaning O-rings, a battery charging shelf running the length of the work surface and eight fluorescent under-shelf lights for additional illumination for that all important O-ring check. The room is climate controlled for comfortable working conditions and also has a 42-inch HD flat-screen TV mounted on the wall with HDMI, HMDI Mini and USB connections for viewing photos and video.

www.atlantishotel.com

Photozone at LIDS London Dive Show

March 27/28th 2011

With so many divers now taking their own underwater images, we thought it was time to gather together all the photographic products and experts, so that you can seek advice, browse or buy at your leisure all in one place.

PhotoZone will incorporate the stands of leading camera and accessory suppliers alongside the experts from the British Society of Underwater Photographers. There will be interactive presentations in the form of the Digital Clinic with Saeed Rashid and Paul Duxfield – as well as free INON UK Level One Underwater Photography courses with Steve Warren and DIVER PhotoCall columnist Mark Koekemoer. All this, along with image displays and expert help on tap. It's a show within a show!

www.diveshows.co.uk

The Red Sea in focus with Cameras Underwater

18 - 25 March 2011
19 - 26 August 2011

These trips are a must for anyone wanting to improve their underwater photography at the same time as experiencing some of the most fantastic diving the Red Sea has to offer. The expertise of Cameras Underwater coupled with blue o two's experience in delivering fantastic liveaboard holidays is the perfect combination for photographic workshops that will really help you progress.

In his usual fun and informative style, Duxy will show you how to get great shots with minimum fuss and equipment. Designed for all divers, of all experience levels, Duxy will help you banish those blue, washed out photos and get you taking images you will want to show your friends and hang on the wall!

You don't even need to own a camera to get involved - you can hire all equipment from blue o two or if you are keen to continue your underwater photography after the trip Cameras Underwater have put together a very special package for purchase - please contact us for details.

The itinerary will follow a Northern Red Sea route, allowing divers the opportunity to capture a wide variety of subjects, including reefs, wrecks, corals and marine species on a macro and micro scale. The Northern region is also known for more favorable weather conditions, beneficial for successful photography.

www.camerasunderwater.co.uk

New Products

Fantasea Fujifilm 3D W3 Camera & Housing Set

Fantasea Line is proud to introduce the Fujifilm 3D W3 Camera & Housing Set, perfect for capturing stunning 3D underwater stills and videos.

Featuring a compact size, reliable design, easy operation and an affordable price, this system provides the photographer with an extraordinary, fun and creative 3D photography and videography experience.

Shoot anything you like in 3D with this simple point-and-shoot Fujifilm FinePix REAL 3D W3 Digital Camera. Equipped with 3x optical zoom lens, you can go as close as up to 38cm when shooting macro.

Photos of distant subjects like mountains and skyscrapers look amazing in enhanced 3D, while close-up subjects like flowers spring to life.

The housing is made of Acrylic Polycarbonate POM Depth rated to 40 meters / 130 feet Weight: 430 gr / 15.1 oz Size: 150 x 61 x 96 mm / 5.9 x 4 x 3.8 inch (W x D x H) Standard accessory hot-shoe for mounting lighting accessories Double tripod mounting screw holes Includes: Spare O-ring, Silicone Grease

www.fantasea.com

Ikelite SLR-DC Housing for Nikon D7000

This heavy-duty clear polycarbonate case is contoured to the camera, durable, and completely corrosion free. A clear view of the main o-ring seal, port o-ring seal and camera controls provides ease of use and confidence. The housing is fully functional to a depth rating of 200 feet (60m) and only slightly negative in salt water depending on choice of lens port (Lens port required—sold separately.)

Controls are provided through the housing for every camera function except the diopter adjustment dial and depth of field preview button. A large zoom control knob can be comfortably reached without removing your hand from the handle. Recording start/stop while in video mode is also accessed effortlessly from the handle by the thumb of your right hand.

The Super-Eye magnifier comes standard and the camera's large LCD screen can be clearly viewed through the back of the housing.

Release handles with comfortable rubber grips allow for easy attachment and removal of mounting arms at the touch of a button. Two 12-24 screws remove the handle and tray assembly for traveling.

www.ikelite.com
www.camerasunderwater.co.uk

Fantasea FP7000 Housing

Fantasea Line, manufacturer of high quality and affordable camera housings and universal underwater photo accessories, announces our latest housing, featuring a new and stylish design. The Fantasea FP7000 Housing is the ultimate waterproof home for the Nikon Coolpix P7000.

The FP7000 Housing is manufactured to the highest professional standards of function, style and durability. It is depth rated to 60m/200 feet and features fully functional, ergonomically designed and clearly labeled controls.

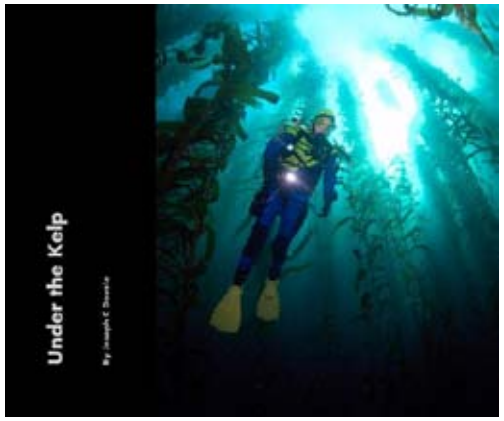
All photographers, amateur or pro, will find that the Coolpix P7000, bundled together with the FP7000 Housing, provides a pleasurable and professional water sports photography experience. This system is capable of producing stunning still photos and HD videos as no other compact digital system to date.

The FP7000 Housing was designed to be compatible with a complete accessory system, including wide angle and macro lenses, a variety of color correction filters and lighting sets, thereby enabling photographers to further enhance the quality of their still and video images.

www.fantasea.com

Under the kelp

by Joe Dovala



Joe Dovala has produced a new book called Under the Kelp. It takes the reader on a short photographic journey through a kelp forest to see some of the critters who call the algal curtain home. It is primarily geared for the landlubber who has little knowledge of the kelp forest. For a preview click on photo or visit www.blurb.com/bookstore/detail/1960448

www.jcdovala.com

GoPro LCD BacPac

The LCD BacPac is a detachable LCD screen for your 1080p HD HERO camera. As a removable accessory, the LCD BacPac keeps your camera as small and light as possible, yet provides the convenience of an LCD screen when attached.

The BacPac fits current HD HERO & HD Wrist housings when used with included LCD backdoors.

The BacPac costs US$ 79.99

www.gopro.com

Keldan LUNA 8 LA-V CRI

Our proprietary LED array technology provides a very natural white light in daylight quality with a color temperature of 5000 Kelvin and with an outstanding high color rendering of 95 (Ra). The efficency as well as the color rendering is exceeding the specifications of HID bulbs. A unique feature is the variable power with 5 settings ranging from 15-65 Watt.

The unique optical design with diffuser and dome lens results in a very soft and wide beam of 90° on land as well as in water. There are no hot spots and the edges are smooth.

The LUNA 8 LA-V uses a rechargeable Li-Ion batterypack which offers much higher power density and less weight compared to NiMH batteries.

www.keldanlights.com

Housing Sentry price reduction

UnderWater Camera Stuff has announced that a savings in manufacturing costs is allowing for a $100 reduction in the price of the Housing Sentry. The Housing Sentry continuously monitors the status of an underwater camera and video housing alerting the photographer/ videographer if there is a seal problem that could lead to a flood. The new price for the complete system is $699 USD.

Three new customized fittings have been developed so the Housing Sentry may also be installed in existing bulkhead openings. Fittings have been adapted for (1) an unused half-inch bulkhead, (2) a bulkhead with an unused Nikonos connector and (3) an unused bulkhead in a Nauticam housing.

www.uwcamerastuff.com

Ikelite PC LED Series
(2nd Generation)

Ikelite's LED lights contain sophisticated circuitry and heat sync technology to ensure that they STAY bright throughout their lifetime. Other lower cost lights run unregulated, reducing overall light output with extended use and limiting the lifespan of the LED.

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They've selected the highest quality white LEDs for maximum brightness and durability. Their highly efficient drivers yield an LED lifespan of 50 - 100 times the life of standard incandescent lamps, making replacement bulbs virtually obsolete.

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All the PC LED Series lights have the same 5 watt output. The difference is in the batteries they use and the burn time. From smallest to largest the batteries are as follows: 4 x AA, 6 x AA and 4 x C size and the burn times are at least 5 hours, 7 hour and 10 hours respectively.

They are all depth rated to 90m/300ft.

www.ikelite.com
www.camerasunderwater.co.uk

Ikelite Panasonic Lumix LX-5 housing

Dive into underwater photography with our most compact true TTL camera system. The Compact Digital housing is high quality, extremely durable, and backed by Ikelite's long-standing reputation for excellence.

Proprietary conversion circuitry allows two-way communication between the camera and Ikelite Substrobes providing true Panasonic TTL exposure. In addition to providing the most accurate automatic exposure, this ensures a faster recycling time and longer camera battery life as compared to fiber optic TTL systems. Take advantage of this powerful feature by attaching any current model Ikelite DS Substrobe.

All camera controls except the Flash Open Switch are fully functional through the housing and depth rating is 200ft (60m).

Size and Weight.

7" wide x 5" high x 5.4" deep including controls and lens port.

18cm x 13cm x 14cm.

2.8lb (1.3kg) above water.

Slightly negative buoyancy in fresh water.

www.ikelite.com

NOVUS Plastic Polish

NOVUS plastic polishes are ideal for removal of light scratches from Ikelite acrylic dome and flat ports. It is not, however, recommended for use on coated plastics.

NOVUS #1 gently cleans most types of plastics without scratching. Leaves a lustrous shine that resists fogging, repels dust and eliminates static.

NOVUS #2 removes very fine scratches, haziness and abrasions from most plastics. Not recommended for use on coated plastics.

NOVUS #3 removes heavier

scratches and abrasions from most acrylic surfaces. Not recommended for use on polycarbonates or coated plastics.

www.ikelite.com

Panasonic FT3

Waterproof to 12 metres

The FT3 features a high-quality LEICA DC VARIO ELMAR 28mm wide-angle lens with a 4.6x optical zoom.

Thanks to rubber padding and reinforced glass the FT3 features an airtight body that lets intrepid photographers operate the rugged camera underwater to a depth of up to

12 meters.

An optional marine case (DMW-MCFT3) is available for underwater photography to 40m.

www.panasonic.co.uk

ACQUAPAZZA APSG-DP1/2 housing for SIGMA DP1/2

This housing is available in no less than 14 colours and has double O-ring seals.

The camera has fixed focal length lens, so we recommend using wet type conversion lenses such as the INON UWL-100 M67 or close up lenses.

The main features are:

M67 Mount screw thread

2 tripod screws

Cap Set for INON strobe cable comes with the housing.

Rated for a diving depth of up to 50m (approx. 160ft)

Size: W164xH104xD127

Weight (on land): Approx. 35.87oz Including camera battery

Weight (underwater): Approx. 8.75oz Including camera battery.

www.acquapazza.jp

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8" dome shade for fisheyes
Neoprene cover for 8" dome port
Neoprene cover protection for 8" dome port with shade
Extension Ring For Nikon 18mm, 12-24mm, Sigma 10-20mm
Zoom ring for Sigma 10-20mm f4.5-5.6 EX
Lens – NIKON AF NIKKOR 28–80mm
1xbody O-ring
2xport O-rings

The Fuji S2s are in very good condition.Both have had the sensor replaced by Fuji (issue of sensors losing allpower). The Dome is in excellent condition, the housing has some minorpaint peelings (known problem with the Aquatica S2 Housing) and the shadehas some scratches on the outside.
Total Cost for quick sale £750 if bought before end Oct, else £1000.

Contact Brian or Paul at Aquanauts on 01752 228825
info@aquanauts.co.uk

Ref c108

For Sale

Ikelite Housing for Canon 550D
Ikelite dome port 5503.50
Ikelite flat port 5502
Ikelite housing to 2 sea &sea strobes
Ikelite stem mounts with ball for flexi arms
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Will sell for £1200.00 ono

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Tel 0754100188 Torquay area

Ref C107

For Sale

SUBAL FS2 HOUSING PLUS PORTS AND FUJI FINEPIX S2 PRO CAMERA BODY

The housing has an O-ring and is in very good condition. It has 2 flash sync outlets and a leak detector. I am including TWO Subal ports: a wide angle dome port (complete with Ken Sullivan protective cover) and a macro port.
The Fuji Finepix S2 Pro camera body is in excellent condition and everything is in good working order.
I am upgrading to a new Nikon system, hence the sale. Any inspection of the housing plus camera is most welcome. This is an excellent set up and is a very cost effective entry to DSLR underwater photography with access to a Subal housing and two genuine Subal ports at a reasonable price.
I am looking for £1500 for the package. You can phone me on 015242 76563 or contact me on e-mail : ramsaydavid@me.com

Ref C106

~~For Sale~~ SOLD

~~Ikelite System for Canon EOS 5D Mark II~~

~~6871.02 5D Mark II Housing~~
~~Just back from Ikelite maintenance and all available upgrades~~
~~5506.45 Macro Port with cover~~
~~(fits EF 100mm macro lens)~~
~~5610.45 8" Dome with #4103.51Port Body~~
~~(fits EF 17-40 or 16-35 lenses)~~
~~Includes dome shade and neoprene cover~~
~~4103.51 x 2 single DS Strobe sync cords~~
~~4103.52 dual DS Strobe sync cord~~

~~Small scratch on macro port that does not affect image quality. Otherwise,this system is in perfect condition. Less than one year old and just returned from Ikelite factory service and upgrades. US$ 2000 plus shipping from USA (was over $3000 new)~~

~~Contact hughross@mac.com~~

~~For Sale~~ SOLD

~~Original FE (Fisheye) Subal Glass Port Fits MK3 Subal Housings It is in In Mint + condition.~~

~~Not been in use for some years so make me an Offer.~~

~~Contact Paul Ives~~
~~paul@palives-photographer.com~~

For Sale

SUBAL ND2 HOUSING BODY AND NIKON D2X CAMERA BODY

The housing which comes with a O ring and a synch cord has 2 flash synch outlets and a leak detector, it also has a standard finder. It has been used on no more than 60 dives and is in excellent condition as well as a dream to use.

The D2X camera body has some minor signs of wear on the rear rubber grip but otherwise is in perfect working order. The camera has 3 spare batteries as well as a charger and the owner's manual.

Any inspection is welcome. I am upgrading to a D700, hence the reason for sale of the housing and camera.

The cost of the camera is £1000 and the housing is £1250. I am willing to sell separately.

More...

You can phone Ian on 01665 606966 or my email is: photosbyian@me.com

Ref c105

For Sale

Lightly used Canon S90 with Canon housing. Both are in like new condition. I also have two fiber optic cables with attachments to housing. They will connect to Sea and Sea strobes.

$400 for the set

contact Jon at
churchill68_2000@yahoo.com

ref c103

For Sale

Ikelite Video Housing 6039.07 and Sony HDR-HC9Ecamcorder with External UR/Pro colour filter, Internal lens shield, silicone lubricant, a Hardigg Storm case iM2400 in black with interior foam. The equipment is just over 12 months old (May 2009) and has been used on only about 10 dives. All in excellent condition.For full specifications & more photos please contact me.
£1850 for package. (Carriage extra)
Judith

Flitwick55@aol.com

ref c104

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Fisheye FIX housing for Canon Powershot S95

by Peter Rowlands

The Canon Powershot S90 caused quite a stir when it was launched combining, as it did, total automation but with full manual override capability. The only downside was the low res video but that has now been improved with the S95 and this combination is making it an extremely popular camera for underwater use.

Canon have always made their own brand of polycarbonate housings available and these are attractively priced but they are not aimed at serious underwater photography mainly because their front ports are an odd shape and don't incorporate a filter thread. Accessory lenses are what make these cameras much more versatile for wide angle and close up work and the only way to attach them to the Canon WP-DC38 S95 housing is to buy an INON port adaptor which increases the overall cost considerably.

Competing with Canon's own brand is a precarious business but that is what Fisheye FIX from Japan have done and with good reason.

The Fisheye FIX Canon S95 housing is a much more versatile housing for serious underwater photography and has several distinct advantages over Canon's own brand. First off is the aluminium construction which is much more robust and hard wearing and the snug form fitting design makes a very attractive package in terms of size and weight, something which is becoming much more important to today's traveling underwater photographer. However the biggest advantage comes from the 52mm threaded front port which allows wide angle and close up lenses to be added with ease and simplicity. Fisheye FIX make their own wide angle adaptor, the UWL-04/M52. This wet mount fisheye wide angle conversion lens offers 0.42x magnification and up to 160° field of view (dependent on camera and housing), for outstanding wide angle performance that has previously been unavailable.

The UWL-04 consists of four high quality optical glass elements coated with 5-layer anti-reflective coating, and a hard coated polycarbonate dome lens element. A custom lens hood minimizes flare and helps to protect the lens.

The combination of the Fisheye UWL-04 and the S95 housing will make wreck photography a breeze and will improve the clarity and contrast of your shots as it will allow you to get much closer to your subject yet still get it all in frame. The secret of

Fisheye FIX make their own wide angle adaptor, the UWL-04/M52.

success in underwater photography is to keep the water between you and the subject to a minimum and a wide angle lens is perfect for this.

In terms of design and construction, anyone who is familiar with Nauticam housings and especially their Sony NEX-5 version will immediately twig that this housing must have been designed and made by them. Either that or Fisheye FIX have poached their head designer! Whatever the truth matters not because the design and construction is of extremely high quality and although, at just over £600 in the UK, this is a more expensive housing than Canon's own brand, by the time you were to add an INON adaptor for a wide angle lens the prices are not too dissimilar and the quality of construction, to mind, is worth every penny extra.

The Fisheye FIX Canon S95 housing is very well designed ergonomically and all of the controls fall easily to hand making it very intuitive to shoot. The housing can be used with the camera's internal flash with the supplied diffuser or with an optional sync adapter that has two holes for YS-type fibre optic cables or Inon cables. This will provide much more versatile, creative lighting.

The rear screen has rails for attaching an optional magnifier which would also provide total light shading.

Compact digital cameras just keep on getting better and better and with housings of the quality and versatility of the Fisheye FIX, underwater photographers have never had it so good.

Depth rating: 70m
Dimensions: W140 _ D100 _ H96 mm
Weight: In Air : 592g In Water : 145g

Peter Rowlands
peter@uwpmag.com

Grateful thanks to Cameras Underwater for supplying this camera and housing to review

www.camerasunderwater.co.uk

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Field Review: FIT Close Up Lenses.

By Alex Mustard

Supermacro images are commonly defined as pictures shot at magnifications of greater than 1:1 (real life versus actual size on your sensor). Since most of the popular macro lenses will take us down to 1:1, we need an accessory to become super. There are many, many methods for achieving supermacro, indeed I have often joked that I want to write an instructional underwater photography book called “101 Ways To Supermacro”, with a century and one photos each taken with a different kit configurations.

In simple terms there are 5 types of accessories that we regularly use to transform our macro lenses to super-status underwater: teleconverters, extension tubes, internal dioptres (used inside housing), external dioptres (used outside housing) and reversed lenses. It is fair to say that each method has it’s positives and negatives. So when I want to go really small I have tended to combine two or more technologies, rather than rely on a single accessory to do all my super work for me. I have always felt that this approach will give me the magnification while minimising the drawbacks of any single accessory. Typically, I favour adding a teleconverter behind my SLR lens and dioptre to the front of it.

This article is a review of the newly released FIT dual element, achromatic dioptre lenses, sold in (out of the water) strengths of +5 and +8. External dioptres have always been popular underwater because they can be added and removed underwater. While many value this feature – it has never been that important for me because I believe that the best underwater images tend to be taken when dives are dedicated in the pursuit of a particular type of images. Swapping regularly between accessories can be a distraction. A single photographic goal allows us to optimise our gear and focus the mind on the shot.

With any dioptre there are typically three things we are interested in: magnification power, sharpness (centre to edge of frame) and optical aberrations (particularly in the corners). I believe that all of these are much better assessed on real world

(Left) The FIT +5 dioptre: achromatic, dual element and 67mm threaded. (Right) The achromatic, dual element FIT +8 dioptre, is smaller but comes with a step up ring to 67mm. There was not cut off from the filter with my 105mm lens when used singly or stacked with the +5.

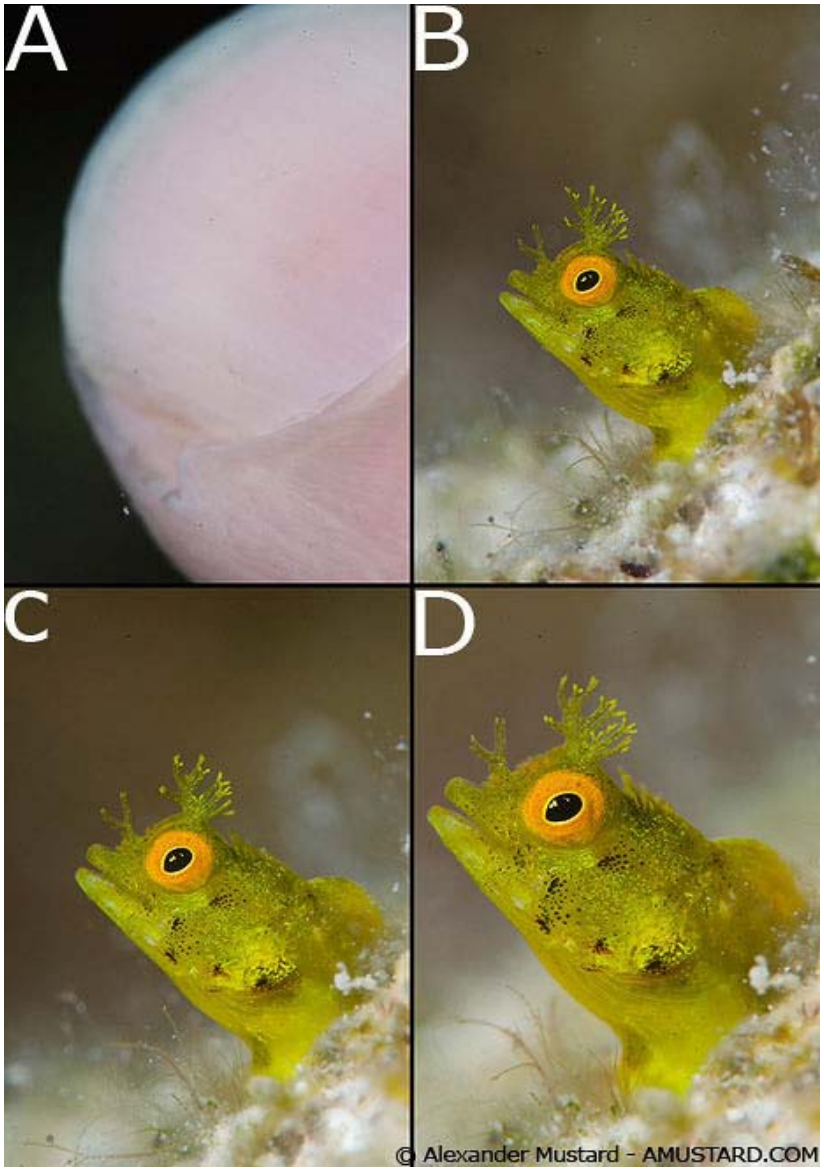
The dioptres provide a good route into supermacro (these rough head blennies are much smaller than people think). Nikon D7000 + 105mm VR + 1.4x Kenko Pro teleconverter + stacked FIT +5 and +8 dioptres. Nauticam housing, 2x Inon Z240 strobes on TTL. 1/320th @ f/29.

The sharpness is impressive, even away from the centre of the frame. This eye stalk of a Pederson cleaner shrimp was towards the edge of the frame, but detail is still recorded sharply. Nikon D7000 + 105mm VR + 1.4x Kenko Pro teleconverter + stacked FIT +5 and +8 dioptres. Nauticam housing, 2x Inon Z240 strobes on TTL. 1/320th @ f/29.

subjects underwater than on dry tests, especially because some external dioptres loose much of their power when immersed.

Before we get onto the findings, I should state that I performed these tests with the new Nikon D7000 in a Nauticam housing. I have reviewed a couple of Nauticam systems and on both occasions forgotten to praise their macro ports, which I think are amongst the best around. First, they are tapered, so that they are little wider than the lens at their business end. This is an important benefit, because lighting macro photographs at close working distances benefits from having the strobes tight in to the lens. Some macro ports are much wider than the lenses they house, which can impose a frustrating restriction on how close we can position our strobes. Second, Nauticam have thoughtfully ended their macro ports with a 67mm screw filter, ideal for adding accessory lenses, like the SubSea range, Inon lenses and the FIT dioptres. There are an increasing number of companies (such as Saga) now producing attachments that allow 67mm filters to be attached to other manufacturer's ports. I hope this becomes a more widely adopted standard on underwater housings.

The two FIT dioptres I tested are achromatic and dual element. These features typically improve edge sharpness and reduce chromatic aberrations. In both respects the FIT dioptres performed very well. They produced impressive sharpness wherever I focused in the frame and details towards the corners were



A comparison of magnification achievable, all images taken with Nikon D7000 + 105mm VR + 1.7x Nikon AFS teleconverter, all at minimum focus. A & B are at the same magnification. A shows part of my fingernail to provide a scale for the other shots. C is with the addition of the FIT +5 dioptre and D is with the addition of the stacked +5 and +8 dioptres.

Overall image quality is very pleasing, with detail recorded crisply and out of focus areas producing a smooth bokeh. Detail in corners shows no sign of fringing. Nikon D7000 + 105mm VR + 1.7x Nikon AFS teleconverter & +5 FIT dioptres. Nauticam housing, 2x Inon Z240 strobes on TTL. 1/250th @ f/22.

also pleasingly free from the colour fringing that some dioptres suffer badly from. This was true when they were used singly or stacked together. They also produce a relatively flat plane of focus, so that subjects which were parallel to the sensor were recorded in focus across the whole frame.

Dioptre strength is always a tricky one because not all quote the values or the values are rounded up and not all dioptres behave the same when immersed in water. Many dioptres have a curved front element that acts as a negative lens underwater, just as a dome port does. This negative lens effect will significantly reduce the positive magnification power of a dioptre underwater. This also means that if we mount the dioptre inside out housing we will get more power than if we use it outside. Therefore, it is always best to search out real images to judge the strength of a dioptre, rather than simply relying on the quoted power. For this reason, the images in this article were taken with the FIT dioptres mounted outside the housing, and all are shown uncropped so you can judge from the shots whether this is the level of magnification you require.

In my estimation the FIT dioptres only have about half their quoted strength when used outside the housing, rather than inside. This still offers considerable power for SLR supermacro, especially when used in conjunction with a lower powered (1.4-1.7x) teleconverter. Personally, I was happy with the level of magnification I was achieving with the 1.7x TC, 105mm and the two FIT dioptres stacked together. It would be very rare I would want more, because the depth of field would be so thin as to be almost unworkable with any interesting (moving) subject. Ultimately, supermacro is about shooting memorable images, not chasing ever more magnification. However, photographers looking for even more magnification should look consider a stronger dioptre like the SubSea +10.

In summary the FIT dioptres are well-made and easy to fit to ports or holders with 67mm threads. Their price (in the order of $150-200 USD) is comparable to most other options, (e.g. SubSea, Inon) and is considerably cheaper than the Macromate ($600 USD). Image quality is impressive, with excellent sharpness both in the centre of the frame and towards the edges. Chromatic aberration is also well controlled. They can be used singly, or stacked together. If used outside the housing, they should be considered medium strength dioptres, but if we choose to mount them inside the housing the same dioptre will give more magnification. Having two power options from the same dioptre (inside or outside the housing) is a useful feature for the travelling photographer.

Alex Mustard
www.amustard.com

FIT Close Up lenses are available from
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Acquapazza APSO

Sony NEX-5 housing

by Peter Rowlands

The Sony NEX-5 camera was one of the first interchangeable lens compacts to have an APS size CMOS sensor and represented a real breakthrough in terms of image quality from a compact camera.

Sometimes, however, quality alone is not enough if ergonomics are compromised and, to my mind, the NEX-5 is far from perfect in this department. What would really make a huge difference is if Sony would make an electronic viewfinder as this would transform the handling. That aside, you have to forgive (well I have) the NEX-5 its shortcomings because it produces such high quality images from such a small package. Throw in interchangeable lenses from fisheye (adaptor) to long telephoto via a wide zoom and you have a system which will fit in a big pocket and weigh very little.

Underwater photographers were quick to recognise such attractions and the first manufacturer to market was Nauticam in the autumn of 2010 and as a result they hoovered up a lot of the initial demand for this camera. Phil Rudin wrote a review for us in UwP57 which was most favourable but I expressed my concerns in the Editorial of the same issue regarding the NEX-5's ability to tilt the LCD screen to 45 degrees in that if manufacturers didn't incorporate this facility they would be compromising the performance considerably.

Now it's easy for me to say that but it's another thing entirely to make such a design

The Sony NEX-5 with the 16mm lens and fisheye adaptor behind an INON 115 dome port in an Acquapazza housing makes a very neat and easy to handle package.

The design allows the LCD screen to be tilted up to 45 degrees which makes viewing and handling underwater much more pleasurable and productive.

work. Controlling a tiltable screen is simple enough but designing a housing to accommodate the swing is more complicated. The Nauticam design (and Aquatica's too for that matter, allows for a 15 degree tilt which is a good and practical compromise which should and does please most people.

However it was whilst ambling along the aisles at DEMA in 2010 that I stumbled upon the Acquapazza stand, away from the main photo section and I couldn't believe what I saw. A small aluminium housing with a bulge at the back which allowed the screen to be tilted to 45 degrees. I

All of the controls fall neatly to hand.

The optional UN 3" image magnifier

18-55mm flat port with MRS (magnet rotary system) patented by INON.

rubbed my eyes to make sure it wasn't a mirage and then asked the Japanese assistant "Is that what I think it is?". She smiled shyly and her next word filled me with anorak excitement. "Yes' she said. It was like that moment when I saw UwP on an iPad. I had no chance. I buckled.

I must have spent a good five minutes operating the lever as I'm sure Homer Simpson would have done "screen goes up, screen goes down, screen goes up, screen goes down". I apologise for going on so about one single feature but to me it is the one which sets it apart and transforms the handling of the camera, especially underwater.

Acquapazza have not achieved the impossible in terms of design compared to the other manufacturers. The others could have done it too but Toshiki Yamamoto realised what an important feature it was right from the start and produced 2 designs of rear housing – one for LCD line of sight and the other for a tilt of up to 45 degrees. It would be very interesting to know which has sold the best.

Once I was convinced that this was not some cruel conjuring trick I started to look at the rest of the housing and became more and more impressed with what I saw. Picking it up, there was a natural position for my right hand with the index finger perfectly positioned on the stills shutter release lever while my thumb settled to the left of the video stop/start button, just above the main control wheel and the usual button array on the right hand side. In the meantime my left hand supported the underside of the housing making it feel just like an SLR to handle. The stills shutter release lever is sensitive enough feel the first and second pressures of autofocus and then trigger.

Shooting video underwater, with the fisheye adaptor and recommended INON 115 glass dome port (Acquapazza work closely with them) the handling was excellent and the 45 degree viewing angle produced steady footage. Adding an Ultralight TRSBLD baseplate, two handles and arms topped out by Fisheye FIX1000 LED lights just made the handling even smoother as it widens the centre of balance and makes shooting steady video footage a pleasure. I know this isn't really relevant to stills shooters but, if a rig is easy to hold and handle, it makes everything much more comfortable.

Another spin off from their collaboration with INON is the patented MRS (magnetic rotary system) control for the 18-55mm kit lens. Magnetic rings are attached to zoom and focus barrels which are controlled through the housing by rotating external magnetic rings. The design works very well indeed and, again, makes it handle rather like an SLR on land. The inner magnetic rings need to be positioned precisely and time needs to be taken to make sure they exactly right. I have yet to use this lens and system underwater but suspect it would handle best without a baseplate and handle on the left hand side. I think the vast majority now shoot

The built in flash can trigger external strobes via the INON fibre optic bulkhead. The top lever on the right raises and lowers the flash while the other controls the screen tilt.

A very positive locking latch and a double O ring seal are very reassuring.

The standard of machining is extremely high.

using autofocus which has become so quick and accurate so there would only be one magnetic ring to position which would be much easier.

The Sony NEX-5 accessory flashgun can be raised and lowered with a simple lever on the left hand side which in effect turns it on and off. This flash can be used on its own with a supplied diffuser or my preferred set up was a cover for the flash which accepts 2 INON fibre optic cables.

The ports are screw thread design which is not my favourite method. I prefer the bayonet design personally but it could be argued that the screw thread is much more secure but is a little more time consuming to change ports. Additional ports are available for the Sony Alpha 50mm and 100mm macro lenses.

The main securing latch has a good locking mechanism which closes automatically with a very positive and audible click. To open the housing you just squeeze the 2 locking buttons and the housing pops open to reveal a reassuring double O ring seal. There is a small baseplate which needs to be fitted to the tripod screw socket and this then slots into the housing and is secured by a locking lever. Loading the camera is very easy but removing it is a bit more fiddly as there are no obvious lifting points. I end up having to use the LCD screen to extract the camera which is no big deal except that I inevitable get finger marks on the screen. Much more annoying though is the tendency for the fully open rear door to push the screen tilting lever back into the housing. This lever has to be pulled out to allow the camera to be removed so in order to stop it getting pushed back in you have to hold the rear door with your left hand and pull the camera out with the other. I'm probably making this sound worse than it is and, in truth, practice made perfect but it would have been nice to have a better designed way to take the camera out especially as it needs to be removed to change the battery and SD card.

The rear Perspex LCD cover has slots top and bottom to accommodate an optional external UN 3" image magnifier which as the name implies, provides a larger image of the LCD screen for improved composition and focus.

Overall the Acquapazza is a very clever design and the standard of machining is extremely high. The controls are very positive and accurate and the handling is excellent. If you have one or are thinking of getting a Sony NEX-5 for underwater use I would strongly recommend that you put the Acquapazza on your list of housings to evaluate.

Peter Rowlands
peter@uwpmag.com

Creative Lighting with Seahorn Snoot!



















Flexible fiber optic attachment coming soon!

Many thanks to Kay-Burn Lim, David Baxter and Jeffrey de Guzman for the wonderful photos above!

Seahorn Snoots are available from:

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Fotosub, Italy: http://www.fotosub-shop.it
Onderwaterhuis, Netherlands: http://www.onderwaterhuis.nl
Scuba Supply Sweden: http://www.scubasupply.se
Digital Dive, Germany: http://www.digital-dive.de
Underwater Visions,UK: http://www.uwvisions.com
Cameras Underwater, UK: http://www.camerasunderwater.co.uk
Splash Underwater Imaging, Philippines: http://www.splashuwimaging.com
Oceanic Focus, Singapore: http://www.oceanicfocus.com
Diver Channel, China: http://www.diverchannel.com

Olympus XZ-1 and EPL-2 bodies with PT-050 and PT-EP03 housings

by Rob Spray

Like teenagers camera companies spend lots of time worrying about what's on the surface. Divers, like parents, have to pick up the pieces and for a long while as electronic technology was the focus compact divers didn't get the rub of the green. I go all misty eyed thinking back to when capable compacts were the weapons of choice for amateur photographers. You could jump in with one in an OEM case with a couple of wet lenses and the world was your mollusc. Then cheap SLRs killed off the bridge camera and box ported cases and fiddly bodies spoiled the fun.

Now I feel I have an friend back, the PT-050 for the XZ-1 carries that most obvious and useful feature – a big threaded port. They seem to have been absent from capable compacts for ages. Those who weren't ready stretch to third party housings have had to make do with a strange selection of clip on cookware. At the same time mirrorless large sensor cameras like the Olympus Pens are providing an alternative to SLRs for those who aren't in love with hefty baggage.

So what do we have here?

With the XZ-1 Olympus return to a market Panasonic revitalised with the LX3 a couple of years ago – enthusiast compacts or bridge cameras. Like the latest crop of rivals it's a 10 Megapixel camera with a less is more mindset. The key feature is a super bright f/1.8-2.5, 28-112mm (equivalent lens). The housing is in Olympus' now familiar black and red house style with a single large camlock catch. The big fixed port looks generous on the slim case thread opens up so many opportunities. The plague of box fronted ports on small housings may be over!

Apart from that admirable port the case and the camera have a few more diver friendly tricks. The XZ-1 will run Olympus RC flashes and fire low power trigger pulses as well as lighting its own subjects. The fibre port is built in as is a cold shoe but the lever shutter isn't the only cool control. The body has a dial round the lens which takes on the primary parameter depending on mode – most importantly aperture in A and M

PT-EP03 left and the PT-050 right and below.

PT-050 rear.

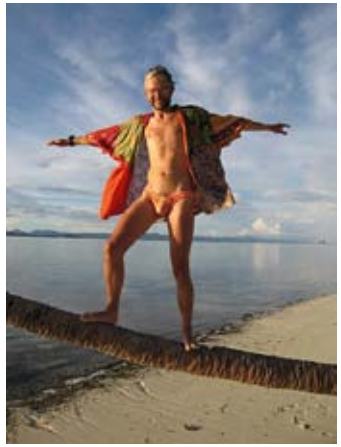
PT-EP03 housing for the Olympus EPL-2

PT-EP03 rear.

modes – and the matching knob on the case gives you menu free direct control of that lens which gives you more creative control of subject isolation than any other compact right now.

Next to this the upstart the new E-PL2 and its E-PE03 case look mature and evolutionary. Both are upgrades on the E-PL1 I adopted last year and build on the strong points of that package. The camera has had a light makeover and looks more like the classic Pen P1 than the angular E-PL1. In most other respects it's quite similar but this year's picture processing lets it shoot up to ISO 6400. By my reckoning the new, smaller video friendly 14-42mm kit lens is more than twice as fast as its predecessor. Last year when the first Pen housing launched the standard port was Hobson's choice but now there's a range available so the system really has grown up very fast. Panasonic have done some great lens work and when you grow out of the kit lens you can dive some great small stuff from the 7-14mm, 8mm Fisheye and 9-18mm to 45mm macro. That's the beauty of the Four Third system, it's a team effort now.

The housing is very much like the that for the E-PL1 aside from the absence of the power bulge for the EVF-2 electronic viewfinder which the E-PL2 eschews underwater. If anything I'd suggest you choose between the E-PL1 and 2 depending on whether you like the idea of the EVF or not. My year with the E-PL1 was fine without it, but I always wanted to try it!



Once last bit of bait for fanciers of the XZ-1 and E-PL2 is the addition of a Dramatic Tone art filter which seems completely irrelevant at first but having seen it in action on land I wonder whether it might be just the thing for misty wreck shots – both can shoot RAW files at the same time without breaking sweat you've got nothing to lose.

Rob Spray
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Aquatica AD7000 Review

by Keri Wilk

Aquatica phoned me here at ReefNet at the end of December 2010, and asked me if I'd be willing to field test and publicly review a prototype of their AD7000 housing for the newly-released Nikon D7000. The review was to be honest, candid, and to include all positive and negative aspects of the system. It was clear to me that Aquatica was more interested in honest user feedback and constructive criticism than an overly positive advertorial.

I accepted their offer and booked a trip to Dominica to put the system through its paces. Aquatica generously covered my trip expenses, and I (reluctantly) sent back the prototype upon my return.

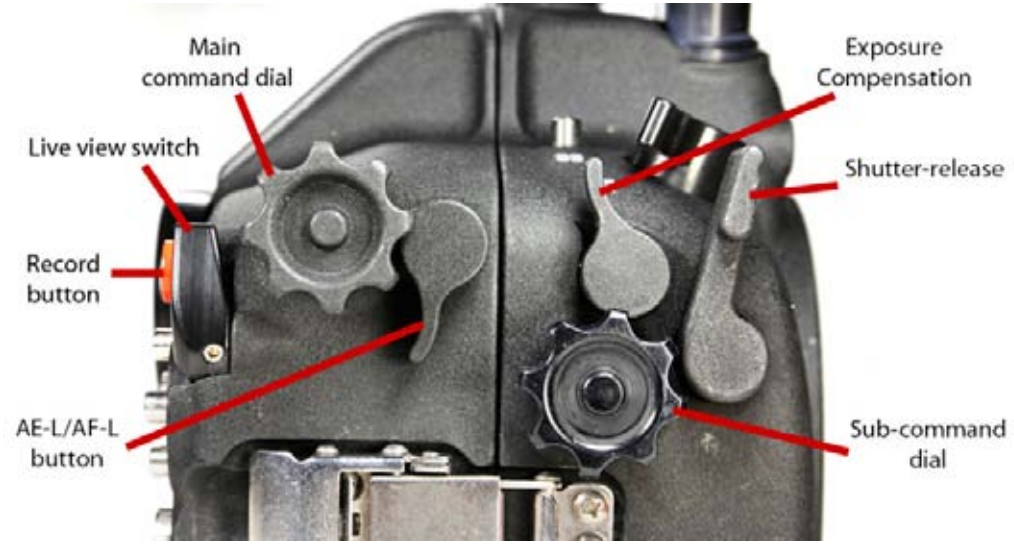
Aquatica uses an in-house state-of-the-art 5-axis CNC milling machine that can produce very smoothly-contoured surfaces, overhanging internal features, and can eliminate more excess material than ever before, creating lighter housings without compromising strength. The machined-aluminum bodies are anodized black, and then have a hard powder-coating baked on for increased durability, scratch-resistance, and corrosion prevention.

The redesigned camera saddle slides along two guide-rods into the housing, and locks firmly in place. Memory cards are easily accessible with the backplate of the housing removed, but the battery compartment is partially blocked, so the camera needs to be slid out a few inches to access it. Although the backplate o-ring can be sufficiently cleaned while in its groove, I recommend that more care be given to the port o-rings. The handles have Aquatica's standard exaggerated finger contours to allow a firm grip.

In the following, I will discuss all of the AD7000's controls, pointing out their strengths and weaknesses.

Shutter release lever

Some would classify the shutter-release as a hair-trigger. When in "Ch" mode (continuous high-speed, 6 FPS), I would occasionally squeeze out an extra couple of exposures accidentally. Switching to "Cl" (continuous low-speed) set to 3FPS, eliminated this problem.



Right side view of the AD7000, with all major control positions indicated.

Both my middle and index fingers could access this vital lever while solidly gripping the right handle.

Main command and sub-command dial knobs

Deep ridges, knurled edges, and textured powder-coating combine to give these knobs enough grip for single-finger control. Their large diameter heads require very little torque to rotate, but this sometimes made it difficult to feel the characteristic "snaps" associated with the changing of camera settings.

With my index finger on the shutter release, my thumb and middle finger had no difficulty reaching and rotating these knobs, allowing me to quickly adjust exposure settings when shooting moving subjects.

+/- EV control lever

This spring-loaded lever is positioned just behind the shutter-release, and can be held down with either the middle or index finger. While it's depressed, your thumb can easily rotate the main command dial knob to set the EV compensation.

AE-L/AF-L button lever

Located just in front of the main command dial knob, this customizable button can be triggered with your right thumb to lock focus and exposure settings. I usually kept it assigned as an AF-ON button (which simultaneously de-activates the shutter-release's AF function) for shooting supermacro.

On this prototype, nothing prevented this lever from being rotated indefinitely, so there was no physical indication of when my thumb had pressed it far enough. Within days of hearing about this, Aquatica sent CAD drawings of a solution to restrict rotation to a 30 degree arc. This revised design is being incorporated into production models.

On/Off lever

Situated on the top surface of the housing, its two-pronged internal mechanism must be properly oriented before installing the camera. Otherwise, the ON/OFF switch might not engage enough to function.

Record button and Live View lever

They have been moved a significant distance from their locations on the camera body, making them more accessible than if they had been directly transposed from the body to the housing.

The record button was further from the handle than I would've preferred.

A missing return-spring on the live view lever forced me to manually swing it back and forth to switch between modes - production models will not have this issue. I could easily switch in and out of live view without releasing my grip on the handle.

The record button was further from the handle than I would've preferred. To reach it, I had to slightly uncurl my grip, adding some wobble to the end of videos. Pressing this button to stop recording also added a little shake, since it's relatively stiff. A lever would've been preferable. However, this corner of the housing is so tightly packed that adding another lever may have required a complete re-design.

The record button occasionally wouldn't spring back up after being depressed. Aquatica pinpointed this problem to the button-hole walls not being masked properly before painting. This narrowed and textured the hole, producing sticking from frictional resistance. New masking plugs have been designed to prevent this from occurring in production models.

D-Pad/OK buttons

At the extreme right of the backplate there is a circle of 5 buttons corresponding to the camera's UP, DOWN, LEFT, RIGHT, and OK buttons.

Reaching the leftmost button without uncurling my fingers from the handle required a bit of a stretch. The other two functions of these buttons (reviewing images and accessing menu items) are used exclusively before or after shooting, when taking your hand away from the shutter release lever and command dial knobs

is not an issue.

This prototype had a slight clearance issue with the live view lever. When at rest, it prevented the UP button from being depressed, and partially restricted the LEFT button. Aquatica already had this problem solved before this prototype hit the water.

INFO button

Just under the D-pad is the INFO button which displays shooting information and gives access to numerous shooting options. Although also a bit of a stretch to reach, it's not an issue since you'd never need to press it while shooting. This button became stuck occasionally, so Aquatica implemented the same solution as for the record button.

Metering method button

This is on top of the housing, just behind the ON/OFF button. A little dexterity is needed for this one, since the main command dial has to be rotated while the button is held down. You can either remove your right hand from the grip to perform both tasks at once, or you can reach over to press the button with your left hand, while rotating the command dial with your right. A little awkward, but I wouldn't have complained if this button wasn't even included in the housing.

UPDATE: This useful piece of information was brought to my attention by Jean Bruneau (Aquatica's technical advisor) when I sent him my list of issues with the housing. Normally, the WB, ISO, +/- EV, QUAL, AF servo, and metering method buttons must be held down while adjustments are made with the main or sub-command dials. However, "hidden" in the custom settings menu is a function that changes how these buttons operate (Custom Settings Menu>Controls>Release button to use dial). When this menu item is in its ON state, these buttons no longer need to be held down to be adjusted. Instead, if you remove your finger from them once they've been pressed, the command dials can be used separately. This way, all of these buttons can essentially be operated with one hand (at a time).

Zoom/focus knob

I could easily reach and rotate the zoom/focus knob with my index finger alone, but I preferred a two-finger approach, using my thumb to pinch it. It rotates very smoothly, and is large and textured enough to enable a secure grip.

It consists of two parts – a knurled section connected to the internal gears, and a smooth section that, when rotated, disengages the internal gearing assembly from the lens' zoom/focus gear. This is a helpful feature for safely installing geared lenses, since it eliminates the possibility of gear interference.

Mode dial knob and release mode dial knob

The mode dial knob is the same as the main and sub-command dial knobs – deep-ridged with a knurled perimeter. There isn't a viewing window on the housing to see which mode you're in, but pressing the INFO button displays this information in the top-left corner of the rear LCD. I could reach and rotate it with my left thumb with my hand still on the handle.

The release mode dial knob is slightly smaller and requires two hands to operate – one to hold down the lock release, another to rotate the knob.

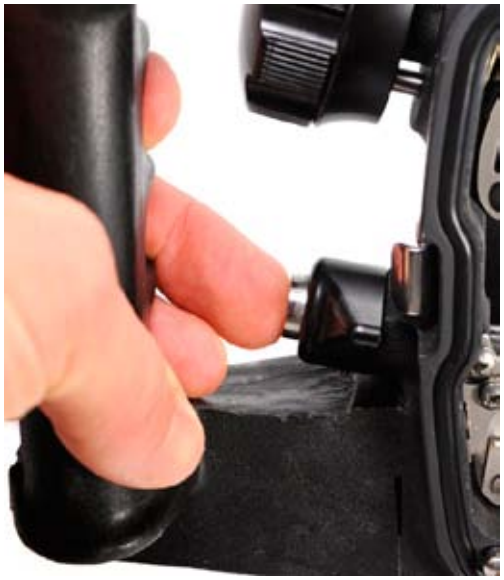
There's no easy way of doing this accurately with one hand but, fortunately, this is a dial that is rarely used (at least for me).

Pop-up flash opener/closer

This is a two-way lever located on the top-left corner of the housing, well within reach of your left thumb. Pressing it down or up will open or close the camera's pop-up flash, respectively. Useless when shooting with electronic sync cords, it can be very useful when using fiber optics to trigger strobes. Instead of manually turning off your strobes to shoot solely with ambient light, the pop-up flash can be closed instead.

M/AF switch lever and AF-servo/focus area button

The M/AF switch lever and concentric AF-servo/focus-area button are cleverly combined into a



single unit, just below the zoom knob. The M/AF lever rotates smoothly and easily, but it always took me a few moments to blindly locate the camera's switch with its 2-prong mechanism. Once in place, I had no problems, and could switch back and forth freely.

Trying to press the AF-servo/focus area button was a little awkward. With my hand on the grip, it is directly in line with my ring finger, but was too stiff for me to press down comfortably with it. To use my (stronger) middle finger required bending it somewhat unnaturally. I found that removing my hand from the handle and depressing it with my thumb was the best option.

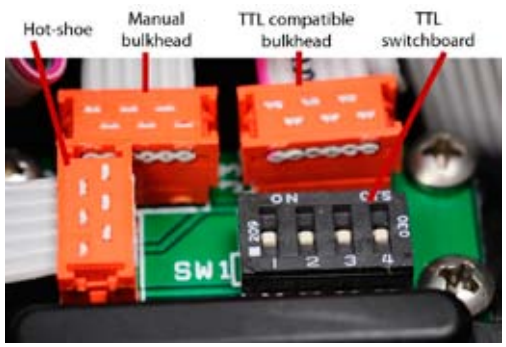
Menu, WB, ISO/ZOOM IN, QUAL/ZOOM OUT, Playback, Delete

Located just left of the LCD screen in a vertical line, these buttons are all within reach of my thumb (the delete button took a little stretching though). I never had to fiddle around to adjust WB or ISO settings - I was able to easily locate and use them with my eye to the viewfinder.

Bulkhead

A pair of TTL-enabling optical bulkheads is standard, but, if you prefer, you can opt for a pair of traditional electrical bulkheads (Ikelite, Nikonos, or a combination). In the latter case, one is strictly manual, while the other can be switched between manual and TTL (if you have compatible strobes).

Excess soldering flux on my hot-shoe made my strobes go haywire near the beginning of my trip. Wiping the contacts clean and letting them dry



overnight fixed the problem. Aquatica informed me that they're now using a mechanical crimping process instead of solder to connect wires together in the hot-shoe, thereby eliminating short circuits due to flux.

Port lock and lens-release mechanism

Internally, Aquatica's port lock is elaborate and complicated, but all of the gears, springs, shafts, and cams are controlled by a single external lever, left of the port. Rotated far enough away from the lens, it unlocks. Then, you install a port, press the lever like you would a button, and the lock springs into place.

With the mechanism in its "locked" state, pressing the lever like a button depresses the camera's lens-release button. The camera body does not have to be removed from the housing to change lenses.

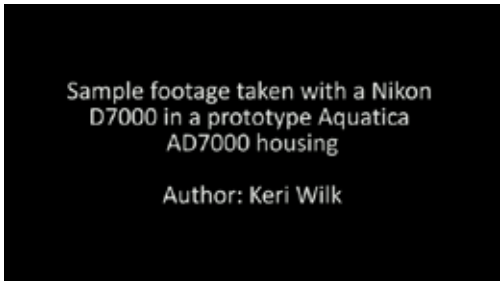
Moisture alarm

Consisting primarily of a battery, an LED, a speaker, and wires, Aquatica's moisture alarm is a very simple and effective tool that, in my opinion, is essential to any underwater camera system. Apparently, Aquatica feels the same way, since they've included one as a standard housing feature.

Hydrophone

Aquatica is the only DSLR housing manufacturer that provides a hydrophone as a housing option – let alone as a standard feature on the AD7000. The cable coming from it has a stereo microphone jack (despite providing only mono audio recording) and connects to the camera through an access panel on its left side. When the access panel is open, it interferes with the housing's main o-ring, so extra care must be taken when closing the housing.

Audio captured with and without the hydrophone is very different – but not in the way that I expected.



When the hydrophone is connected, the sensitivity level remains constant, and a broad range of underwater sounds is recorded without any abrupt spikes in volume. The sound of exhaled bubbles is recorded as a faint gurgle, inhalations as whispers, and the autofocus motor is almost inaudible, but the crackling sounds of the reef can still be heard. It was even sensitive enough to pick up the hiss of my leaky first-stage. Although sound levels are much more balanced and smooth with the hydrophone than with the camera's microphone, they are also slightly less intense.

Missing controls

Three housing buttons that have been excluded: the bracketing button, the programmable function button ("Fn"), and the programmable preview button ("Pv"). I didn't miss any of these.

Conclusion

There is only so much that 3D modeling programs can simulate and predict, so prototypes are never perfect. That's why it is so important to thoroughly test a prototype before production begins, especially for an expensive piece of equipment like an underwater camera housing.

The design problems that I encountered with the prototype AD7000 were immediately addressed and rectified by Aquatica's design team, which demonstrated the kind of dedication to quality that is essential for a company's survival in this highly competitive industry. Of the few minor inconveniences that I mentioned, related to button placement, stiffness, and type, they were all based on my personal preferences, and were rather insignificant. Overall, I was very happy with the AD7000's performance.

Including a moisture alarm and a hydrophone as standard housing features was a very generous gesture, which I'm sure users will appreciate. And if the multifunctional port-lock/lens-release is any indication of the capability of Aquatica's engineering team, they have a bright and innovative future ahead of them.

Acknowledgements

A big thanks to the accommodating and professional staff at Dominica's Castle Comfort Lodge and Dive Dominica. Special thanks to Arienne and Daniel Perryman. For more information about Castle Comfort and Dive Dominica, visit: www.castlecomfortdivelodge.com

Keri Wilk
www.reefnet.ca

Although only 26 years old, Keri has already accumulated close to 16 years of underwater photography experience. Educated as a mechanical engineer, he currently designs and develops products for ReefNet and is part of DivePhotoGuide.com's editorial team. Over the years, his work has appeared in countless magazines, scientific journals, field guides, books, and museums, and he's won over 70 awards in major international underwater photography competitions.

Making an Aquatica

by Jean Bruneau, Aquatica Technical Adviser

(Originally published on DivePhotoGuide.com)

Every once in a while people ask me how housings are made, so to dispel any myths I have decided to take you on a tour of our company and show you the process from the ground up. No folks, it's nothing like the machinery seen in Charlie Chaplin movies. Underwater housings do not come out of an oven and we certainly don't have a large steam whistle calling the breaks like in the cartoons. In order for you to have fun creating images underwater, we need to be serious about our work (that does not mean we are unpleasant people, we love our fun as much as any of you)!

The first step in creating a housing is not really taken by us, but by the camera manufacturer. The camera that they decide to create obviously has a major influence on whether or not it will catch on with underwater photographers. As a specialized community, underwater photographers are looking for things in a camera that are quite often over-looked by topside photographers. Therefore, not all cameras are suitable for underwater use. When we decide to make housings for a camera, we look for a model that will match the specific needs of underwater photographers.

Once a candidate is selected, the next step is getting the camera. The large camera companies do not give housing manufacturers any special treatment and the best way to get a model ahead of time is by keeping a good relationship with the local Canon or Nikon rep. Usually we can get access to their sample model quite a bit ahead of the official

camera launch. We can then take this opportunity to set it up on a laser scan bench and grab a 3D virtual model of the camera that we can load up on the computer and get going on the design work in earnest.

The 3D model is then integrated in the Computer Aided Design software (CAD). The rather complex software allows placement of the housing component in a virtual environment, which allows the engineers to then rotate the virtually created housing around and look at it from every conceivable angle.

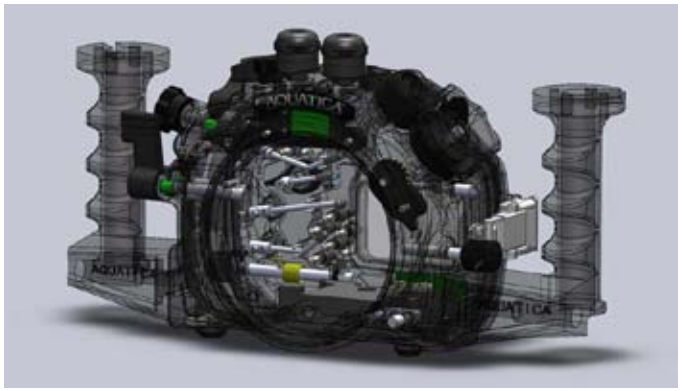
Once satisfied with the design, it's time to layout where the controls and buttons will be spread out and how they will access the camera's controls. This part is critical and quite a few factors need to be considered:

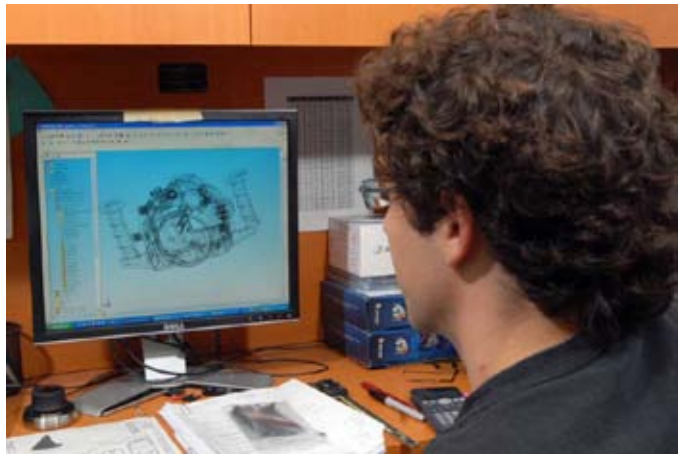
How vital is this control's location?

How complex is the mechanism to locate when placed in the housing?

Is this going to conflict with other controls, and if yes, which one is the priority?

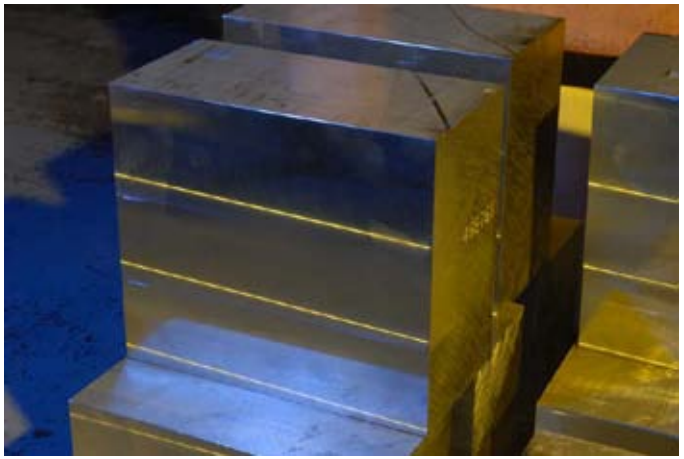
Are there any specific needs to address such as space for the built in flash to pop up.





At this point, the design will gradually go from a simple wire frame shape to a photo realistic rendering, such those you see from time to time from the various manufacturers when they announce future projects.

The final price of the housing is also a consideration. Complex mechanisms tend to be more expensive to manufacture and this needs to be accounted for at some point. Entry-level housings do not benefit from the same in-depth complexity as high-end housings at a substantially higher price bracket. Still, it is understood that every innovation that can be possibly implemented in a new housing



design will be included. The next step is to enter the data of the preproduction prototype into the Computer Numerical Control (CNC) program. The information being entered is really nothing more than a set of directions, sort of like numerical instructions, that tell the machines computer what work needs to be done. Once the programmer has uploaded the data, it will instruct the CNC machine, in this case a sophisticated one working on 5-axes, where and how deep to shave and drill out excess material from the provided block of aluminum.

Machining

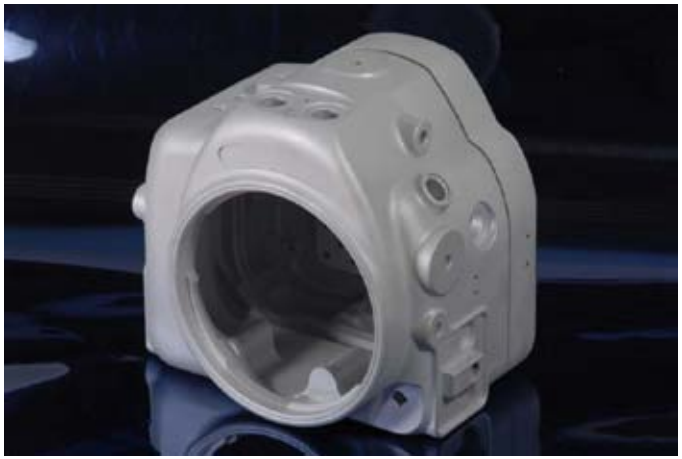
A modern machine shop will have various machining tools at hand to fulfill the multiple tasks associated with such complex shapes. The top of the line machine has got to be the 5-axis CNC machine. While the more traditional 3-axis machine will work on only (you guessed it) 3 axes (up/down, left/right and front/back) the 5 axes one can actually pivot its mechanical head to follow much more sophisticated shapes and contours. That allows us to have a much smoother looking housing in the end, and very importantly, to shave of as much excess material in order to lighten up the final housing shell. This whole machining process is so visually intriguing that I am sometimes caught gawking at the window for minutes, just like some poor sap staring at a washing machine at the local Laundromat. But hey, bite me, I like my job!

In order to have a complete housing we will need two aluminum blocks—one for the front portion, and the other for the back. To start off, the machinist will insert a block of raw aluminum of a specific alloy into the machine.

Then cutting tools will be loaded on to the dispenser and the process will begin. From this first procedure will emerge the internal hollowed side of the housing. The block will then be flipped over, the proper program will be loaded, and the necessary cutting tools will be installed. From there, it's a just simple "press enter" and the exterior details will be fashioned out. The housing now starts to resemble what it will look like when completed.

From this process comes a shiny, and in my opinion, stunningly beautiful piece that captures and reflects light in a way only a grease monkey like me can appreciate. Alas, this piece of art also

has razor sharp edges that will rival some of those sharp objects found underwater. This sharpness will need to be addressed and this brings us to the next chapter, the treatment stage, in which the housing shells are prepared for painting and assembling.



Treating

When the machining is finished we get to the less fun part of the job – the part I like to call "deburring." This is where we use fine-gritted sand paper to go over the sharp edges and dull them into civilized ones. Various types of fine gritted sand paper are used for this chore, which aside from making the housing friendlier to handle, ensures that O-rings will not get cut on sharp edges.

This is a manual process that requires one's full concentration. Forgetting one small edge will most likely mean scrapping the housing shell down the line, so attention to detail at this stage is of the utmost importance. Pity the individual who does not pay attention to their work, as a bloodied knuckle in a bandage is the likely consequence After manual deburring there are still some external sharp edges that need to be addressed, so the shell is put in a tumbler. The tumbler is a donut shaped machine loaded with pellets of different sizes. In the machine, the shell will be subjected to a lengthy period of vibration, which will cause the pellets to rub against it and dull out all sharp edges. This machine is horrendously noisy and any conversation between people is put to a standstill during this process.

Once out of the tumbler, the shell is off to the sandblasting where it is bombarded with a silica particle until it gets a dull and smooth finish. This process will give it a pleasant sculptural look, and it is almost as if the housing is shedding its hard metallic look for a softer organic one.

A good cleaning is then done and the shells are packed and off to be dunked into anodizing chemicals. Anodizing is a process where the shell is dunked in a chemical solution so that it is protected from salt water corrosion.

This complex and multi-stage operation requires the shells to be immersed in several vats of chemicals, which follows military specifications to ensure that this vital step in the protection of the housing is successful. Poor quality anodizing would leave the housing open to salt water corosion, something that is unacceptable for both the manufacturer and the end user.

Once this anodizing process is complete, the housing will come in the front assembly room for the first time to be prepared for the paint process.

Painting and Labeling

It's now time to prepare the housing for powder coating. The first step is to mask all areas that are to remain free of paint. Of particular importance are the surfaces that will be in contact with an O-ring and need to remain smooth and free of any textured paint or chips, which could let water leak in. Custom made reusable masks are used for the standard holes such as push buttons, bulkhead connectors and control shafts. For surfaces such as the various window ports and the rear main sealing surface, which are different on every housing, a

specialized masking tape is used and precisely trimmed with a sharp blade. The masking material is a unique material made to resist the brutal heat that it will be confronted later on in the painting oven.

Masking requires patience and the attention to detail that is beyond the scope of yours truly and it is one part of the job I am gladly exempt from. Since we are a small company, every staff member is called upon to lend a hand in most tasks, whether it's for deburring, assembling or packing and shipping—that is unless one sucks at a specific task, and I unfortunately do at masking.

Once prepped up the housings are transferred to the paint shop. For a layer of protection we use a powder-coated treatment. This coating is a highly resistant finish that is applied through an electrostatic process and then baked.

Essentially, this method uses a powder that does not require a solvent, as standard paint does, to keep the binder and filler working together. Instead it is applied by spraying on the parts to be treated, which are charged with electrical current and then cured in a high temperature oven that creates a tough resilient skin.

This skin has a much harder finish than the conventional method of painting and is exactly what the salt water environment requires. Ok, so now you got me, in the beginning I stated that housings did not come out of an oven; well they do at some point!

Once the housings have cooled down, they are brought back to the assembly room. The masking material is removed in preparation for the attaching and painting of the different logos and operational labels. Aside from the company logo that is attached with a waterproof bonding material, all other symbols or text on the housing are pad printed with a highly resistant paint. It was found that applying stick-on labels just did not last long enough in the harsh underwater environment.

We are now down to the wire. While all the previous steps were being taken care of, the multiple shafts, lever and miscellaneous parts involved were machined and finally migrated to the assembly room.

Up to this point, everything else could be done with the virtual 3D camera rendering, but for the next stage, the fine-tuning, an actual camera body needs to be installed in the housing.

Assembly and Testing

The painting and labeling process completed, assembly is now ready to start and all shafts buttons and levers are set in place. This is also when the housing will become personalized to the eventual owner's requirement. If they requested a depth rating upgrade to 130m/ 425ft, it would be installed at this point. Same goes for the strobe connectors which are configured to the preferred configuration – wired bulkheads or fiber optics.

Every single control is tested, adjusted and re-tested. Wired bulkhead strobe connectors are tested for continuity prior to installation with a multi meter and again with actual strobes after they are installed on the housing.

Once every o-ring is in place, every fastener screwed down, every eyepiece element secured, it's time to pressure test the housing. The pressure test tank actually looks like some low-tech giant pressure cooker. In our case, since Aquatica is not in the culinary business, we will built up the hydraulic

pressure to the equivalent of 90m /300ft to make sure the housing can stand up to the ruthless rigors of diving.

Needless to say, a close and thorough inspection of all the internal parts is done afterward in order to detect any signs of water entry. If even so much as one small drop or residual humidity is found, the housing will be torn apart and closely inspected. Once the source of entry is determined, it will be either rebuilt from the ground up if it was a minor issue or sent to the recycling bin if the source could not be pin pointed accurately.

Once the housing has successfully completed the hydrostatic test, the strobe connectors are again subjected to yet another continuity test. Finally the preproduction prototype, and eventually the productions models, will be ready to enter the real world. There are still a few steps before green lighting the final production of housings. The inhouse technical staff and some trusted outside field advisers will evaluate the completed preproduction prototype housing underwater to determine if any minor changes need to be done to the final production models. When I say "trusted field advisers," it means we trust them to be straight to the point and not be afraid to express their opinions. Once out there and put through the tests, it might be that minor changes or modifications need to be made, for example, a control placement might be shifted for better access.

Once a consensus is attained on what the final production version ought to be like, we go back to reprogramming the updated data instruction (if required) into the CNC machine and the cycle starts again, but this time instead of an individual unit, the machine shop will allocate a time window in order to process batches of this new housing.

Only after all of these operations are repeated again, and the owner manual printed, is the packaging procedure finalized, making it available for purchase.

So there you go—that's my work environment. I certainly hope you enjoyed the visit and that the next time you see an underwater housing, no matter who made it, you'll see more than just a fancy camera container.

Jean Bruneau
www.aquatica.ca

Jean is the Technical Adviser for Aquatica and has been associated with them as far back as 1990. Aside from being an active underwater photographer, Jean as been writing technical and nautical articles on the subject of photography since the mid 80's.

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Reflections on Domes

by Pete Atkinson

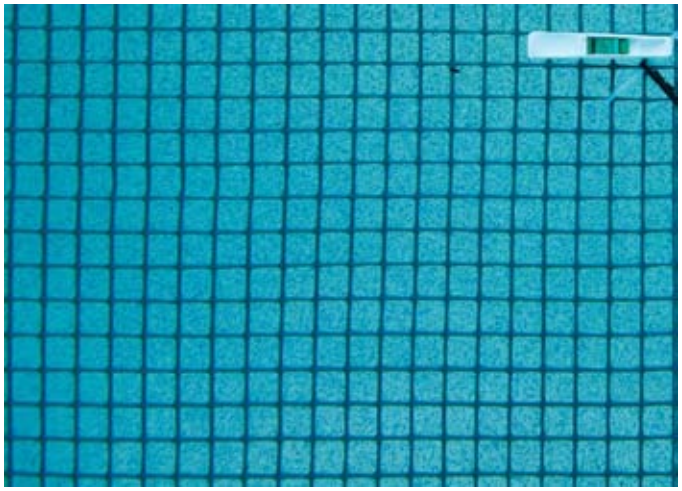
I must be an anachronism. It's a danger with increasing age; the world shifts and your world-view gets out of kilter with reality.

Thirty years ago I was struggling with domes for home made-housings; where to source them, where to place them in relation to the lens, how to get the best results. I ended up with hemispherical cast acrylic compass domes, with coated, custom- made plano-convex dioptres in obscure strengths, +2.4 for the 8" dome, + 3.3 for the 6" dome. On film, viewed with a loupe, this looked pretty good. Not as good as the Nikonos 15mm lens which, at that time, was the benchmark all dome systems were measured against.

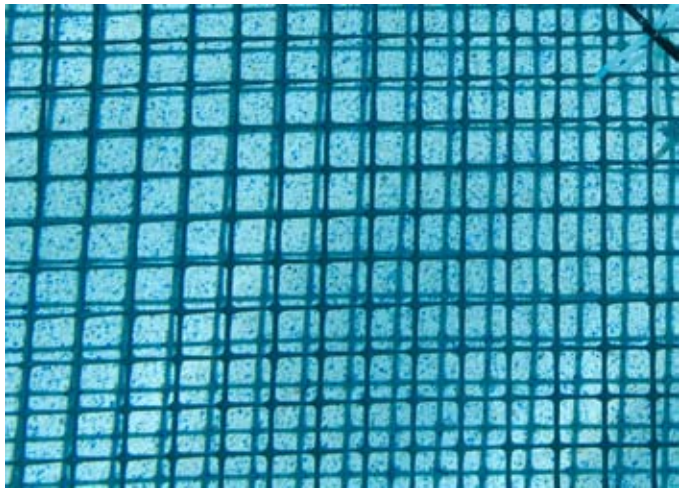
And then along came digital. 100% on a good monitor is very unforgiving. So I can't say for sure whether modern domes are better, or only that they don't feel better when examined with brutal clarity on a monitor.

Here's a plea to all retailers of domes: put a full size section drawing of the dome on your websites. A photo of a dome tells you about as much as a photo of a pane of glass. Most photos are not clear enough to tell how much of a complete hemisphere the dome is. A section drawing will clear this up. It's not like we are spending $50, so the least you can do is give us sufficient information to make sensible buying decisions. From the drawing we can measure the internal radius which is critical to determining the port extension. And while you are about it, tell us what testing you have done to justify your recommendations for different extensions. One major manufacturer suggests a shorter extension for the Sigma 8-16 than the Nikon 12-24, even though the apparent front entrance pupil of the latter is closer to the lens mount. That's fine; maybe they have a reason (like it vignettes the mount with a longer extension) but I want to know what it is. They might think that we

(Top) A large dome makes controlling the meniscus easier for half and half shots and also makes it easier to encompass both above and below portions of the image within the depth of focus.
(Right) Pete Atkinson and Doug Seifert compare domes; size isn't everything... (Darin Limsuansub)



Sigma 8-16 rectilinear at 8mm, f11 and 1/125th. Seacam Superdome and 35mm extension. This shows the bottom left quarter of the frame (the peg is in the middle) illustrating the loss of sharpness into the corner even at f11. However, this extension is too small for this lens, 60mm would be better.



Nikon 12-24 at 12mm, f8, 1/250th with a B&W +3 dioptre, 20mm extension with the Seacam fisheye dome, showing a quarter crop. The cable ties to aid focusing are in the middle of the frame. The +3 dioptre reduces the field of view but improves corner sharpness with this lens.

Nikon F4, Sigma 15mm fisheye, home-made housing with hemispherical 8" cast acrylic compass dome. F11, 1/250th, Velvia 100. (I think)

just need to trust their measurements and accept their extension recommendations, but I would prefer to check.

The elegance and sophistication of modern engineering should enable a variable port extension to be made, that can be set and locked at a range of lengths. A coarse screw thread could provide the axial movement.

Many modern domes are not hemispheres, but part hemispheres. In theory, a 180 degree fisheye needs a hemispherical dome, so that the light rays coming in at 180 degrees pass through the dome perpendicular to the glass. But as you may have noticed, fisheye lenses are very forgiving, producing excellent corner sharpness even when the apparent front entrance pupil is far closer to the dome than the centre of curvature.

(If you want a refresher on apparent front entrance pupils, centre of curvature and measuring domes, see my dome article in issue 36 of UWP.)

The difficulties arise with rectilinear wide lenses like the Sigma 8-16 and the Nikon 12-24. Some section domes that are too small a section can be unusable, because with the centre of curvature of the dome placed at the apparent front entrance pupil of the lens, the lens is wide enough, and far enough behind the dome mount, that it sees aluminium dome mount around the edges, not just glass.

The Nikon 12-24 behind one 9" glass dome was very soft in the corners. In water, the camera needs to focus on an apparent image about three times the radius of the dome in front of the dome, but this image is curved. The degree of curvature is related to the dome radius; small domes have a tighter curvature of field. So at wide apertures, the corners simply fall outside the depth of focus if you focus in the middle of the picture. Adding a dioptre (a close-up lens) can fix this. However, you lose angle of view. So how much improvement is due to just not seeing the corners anymore, and

how much is due to optical effects, I don't know. I use Schneider B&W dioptres (a +2 or a + 3) which seem excellent and give a sharp image well into the corners with a 9" glass dome. The plano-convex dioptres I had made, in theory, reduced the curvature of field so that it was easier to include the corners in the depth of focus. In reality, the B&W dioptres were optically better.

With the Sigma 8-16, you can't use a dioptre on the front. So far, I haven't found a solution which gives good corner sharpness except by stopping down to f11 or smaller. With modern cameras which can shoot at high ISO, this isn't such a drawback.

You may well ask... What's the difference really, between a picture shot with a perfect system, and one shot with a system that gives soft corners. Not that much really... Except that some domes are almost unuseable without a dioptre. There are very beautiful books shot by great photographers 20 years ago that were full of pictures soft in the corners. Call it the "underwater vignette"! Non-divers may be guided to the centre of the picture by the soft vignette. Photographers only think, "Jeez! That 14mm doesn't like that dome..."

Mini domes have their uses. They work ok with fisheye lenses but the curvature of field is tight so corner sharpness can be an issue. They are cheap and light and easy to travel with. You can bring your strobes close in beside the dome for softer lighting on close-up shots. But they are very difficult to use for half and half pictures because the meniscus is hard to control. (I made up a 14" dome for these shots, and even that was hard to manage sometimes.) The best minidomes are probably those in front of the Nikonos 15mm lens and the Nikonos RS 13mm fisheye lens, but then the lens behind them is perfectly designed to work with them.

Acrylic domes are light and inexpensive but don't have anti-reflective coatings applied. Optically, they suffer from the image that they are less sharp than glass. Scratches however, can be polished out easily. Which is fortunate really, as they are easier to scratch. I use increasing grades of wet & dry abrasive paper used wet, up to 1200 grit, then Solvol Autosol metal polish. Brasso works too.

Glass has the best reputation. I don't know if it's deserved. Great optical coatings can be applied at some expense, but I have never seen a coated dome tested against an uncoated one. It's not hard to find examples of people with the most expensive glass domes who are still unhappy with corner sharpness.

One of the great things about glass, is that you can polish it with Rain-X (I can't guarantee it won't damage the coating!) so that water beads and runs off almost completely when shooting half and half pictures. You can use the marine version, which is alcohol free, on acrylic. RVR Rain Repellant is also free of alcohol and used for aviation. (Alcohol will cause acrylic, especially extruded acrylic, to craze.) I find a beading agent easier to use than a wetting agent like detergent or spit. With the latter, you are forever applying it, dipping the dome before every exposure and hoping you take the shot while the water is still adhering in a perfect monolayer. However, surf photographers use spit and even recommend letting the smeared spit dry! Also they dispense with dome shades, which prevents the shade dripping on the dome. Perhaps the shade is better off inside the dome! Lemon Pledge is another beading agent favoured by David Doubilet at one time.

Most people don't mind spending money on quality, but they need reassurance that they are actually buying value. A standard test target shot in a pool a metre away at various apertures with the different lenses we use can't be asking too much, and would allow consumers to make realistic comparisons between domes. I used that stiff plastic garden netting with 18mm squares stretched over a PVC pipe frame for my tests. A universal target would make comparisons between different manufacturers easier.

Imagine if all available domes were tested with the camera on a motorised rail independent of the dome so that it can shoot video while moving the lens apparent front entrance pupil from behind the centre of curvature, through it, to in front of it, to determine the optimal placement for maximising the corner sharpness... Any volunteers?

Pete Atkinson

Don't settle for 2nd best

Film - No Filter
No White Balance

Digital - No Filter
Manual WB

Magic Filter
Manual WB

Digital cameras have opened up new possibilities to underwater photographers. For available light photography manual white balance is an invaluable tool for restoring colours. But when you use it without a filter you are not making the most of the technique. You're doing all the hard work without reaping the full rewards.

These three photos are all taken of the same wreck in the Red Sea. The left hand image was taken on slide film, which rendered the scene completely blue. The middle image is taken with a digital SLR without a filter, using manual white balance. The white balance has brought out some of the colour of the wreck, but it has also sucked all the blue out of the water behind the wreck, making it almost grey. The right hand image is taken with the same digital camera and lens, but this time using an original Magic Filter. The filter attenuates blue light meaning that the colours of the wreck are brought out and it stands out from the background water, which is recorded as an accurate blue.

www.magic-filters.com

Heavy Metal

by Alexander Mustard

My background is as a marine biologist, so you might be surprised to hear that I am a lover of wreck photography. In my early days, I viewed wreck dives as simply another location to shoot marine life. The hard surfaces were always great places to find egg laying spawners! But down the years I have learned to appreciate the diverse challenges and opportunities that metal offers for underwater photography. I really feel that photographers who shun wrecks deprive themselves not only of wreck images for their portfolios, but also some of the most valuable lessons in controlling light underwater.

Few subjects teach us as much about underwater light as wrecks: their size and immobility mean that we have to read and wait for ambient light to shoot different features of a wreck and to produce images with different atmospheres, whether in colour or black and white. You can never take all the shots of a wreck on one dive at one time of day. Their dark interiors demand precise strobe control to illuminate features, or when relying on ambient light to pick out a subject, we must be masters of controlling dynamic range with our compositions and managing low light exposures. We can raise the stakes further by including divers in our shots or photographing marine life within the wreck environment. Or as I wrote about recently in UWP 57, they can be excellent locations to work with off-camera strobes.

Wrecks offer so many opportunities for images, but this was really brought home to me recently with the new USS Kittiwake wreck in the Cayman Islands. Each January, I run my annual photo workshop in Grand Cayman (I am up to 10 instalments now), but the addition of this new dive site has been a revelation. I was simply amazed by the sheer diversity of images produced by the group of photographers over the course of just a couple of dives on the Kittiwake, and the unique challenges that the wreck provided, which is ideal for the learning experience on a workshop.

In this article I want to review some of the classic types of wreck photos and the techniques needed to shoot them, illustrating the article with shots taken by the photographers during the workshop (note these images are just from a couple

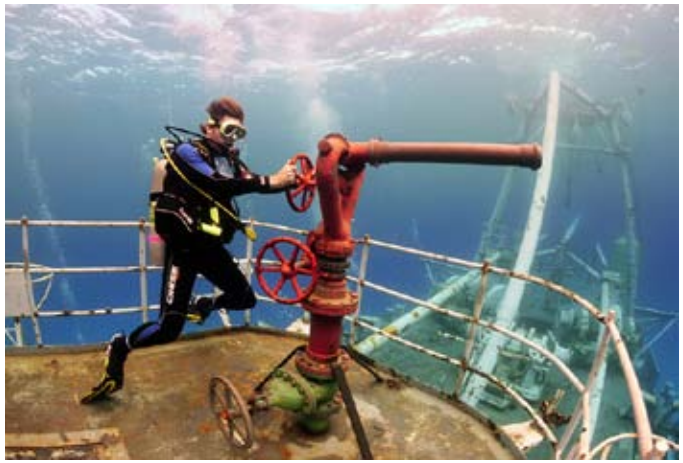
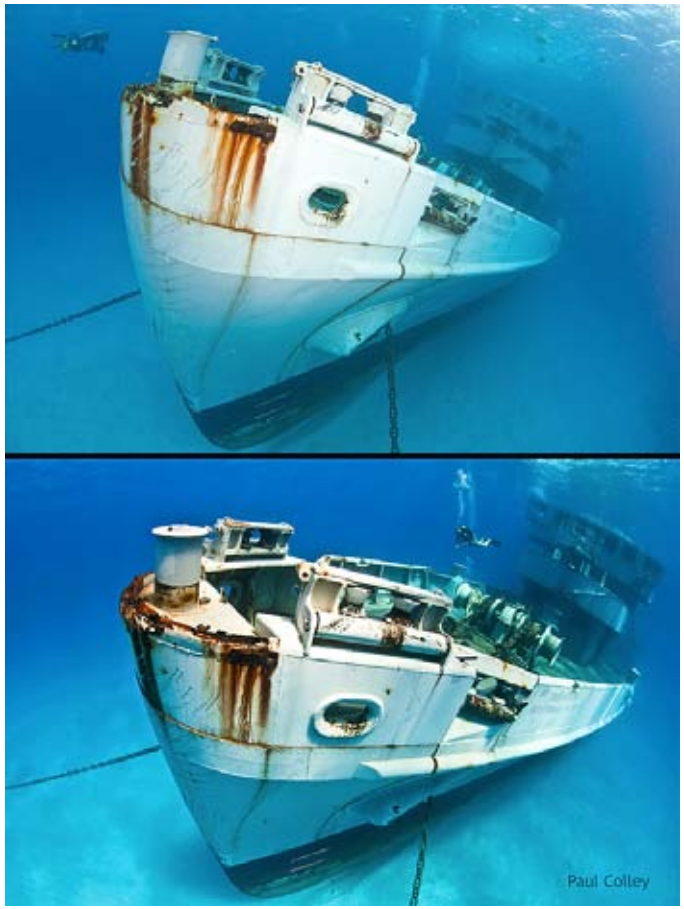


Photo by Pam Murph. Nikon D90 + 10-17mm @ 10mm, Magic filter, no flash. Adding people to wreck shots often greatly benefits images. Models don't always have to be precision posed. Divers enjoy diving and we don't need to be afraid of showing it in our images. Ocean Frontiers staff member Nick Giles took very little persuasion to strike this pose.



Flash or filter? The top image (taken by Alex Mustard) uses flash, which lights the bow, but quickly falls away with distance, Nikon D700 + 16mm. 2 x Subtronic Alpha Pro flashes. 1/160th @ f/8. To my eye the filter shot (taken by Paul Colley) is more pleasing with colour penetrating further onto the wreck and with a strong blue water colour, Nikon D300 + 10-17mm @ 10mm, Magic filter, no flash. 1/60th @ f/8.

of the dives we did during the workshop and there are many more I don't have space to show).

First up, size matters when it comes to wreck photography, which means strapping on our widest lens and going for the big shot, showing as much recognisable ship as the visibility allows. Artists always paint wrecks as a whole ship sitting on the seabed amidst the blue. And this is how non-divers tend to imagine wrecks too, so photos that are consistent with these expectations are naturally appealing. If the wreck is shorter than the vis we can shoot the whole thing, but for bigger ships we must focus our efforts on large recognisable features, such as the bow, the stern, the bridge, the props, etc.

Shooting such expanses of superstructure means that our subject will usually be too large to illuminate with strobes so we must turn them off and work with the ambient light. We have three choices: either leave the images with a blue or green cast for the maximum atmosphere, convert them to black and white for the most contrast, or use manual white balance and filters to bring out the colours of the wreckage. The Magic Filter was originally developed to shoot a wreck image, after I was disappointed with what manual white balance alone could achieve (leaving me with a washed out blue background). So it is often a perfect tool for getting colour on the wreck and keeping an atmospheric water colour.

In low visibility, we can inject the most impact by shooting across the light, boosting the contrast and showing the wreckage mainly in silhouette. Working these angles, against the sun, tends to also work well for black and white images, allowing us to base the image around strong shape and form. The best example of this is David Doubilet's

Photo by Suzy Walker. Nikon D300 + 10-17mm @ 10mm. Magic Filter, no flash. 1/50th @ f/11. One of the best ways to shoot a wreck is the classic big shot – showing a large recognisable view of the ship on the seafloor. Here the chain provides an excellent visual link between foreground and the stern of the Kittiwake in the background.

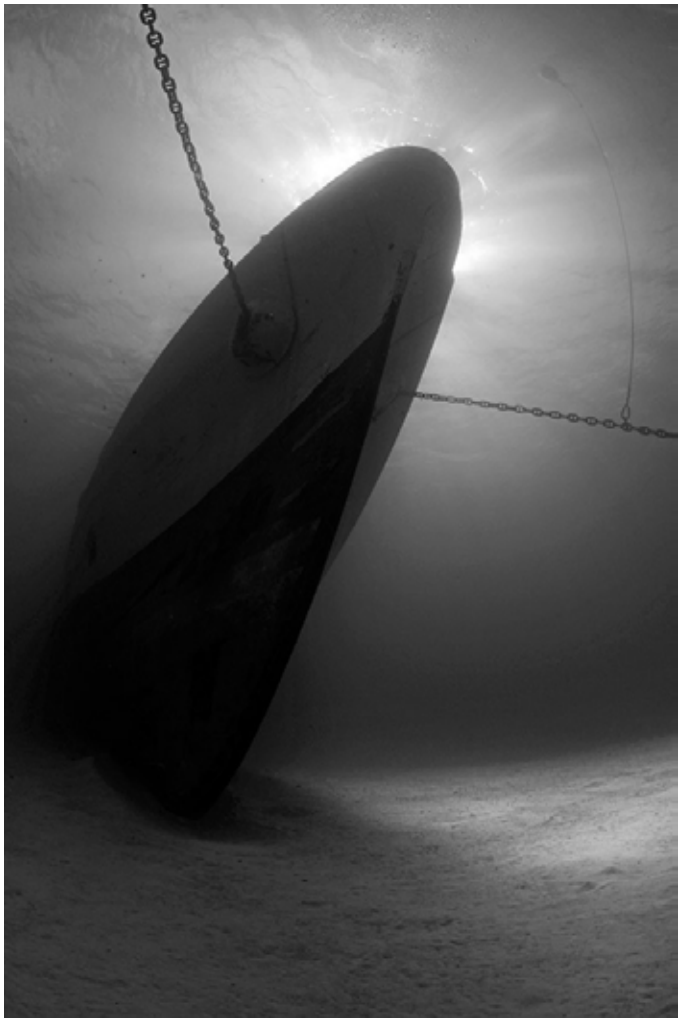


Photo by Victor Zucker. Nikon D300 + 10-17mm @ 10mm. No filter, no flash. 1/50th @ f/11. Black and white shots often work well shot against the light, creating strong shapes in shadow and light. The strong visual shape of the silhouetted bow makes a very strong composition on the diagonal.

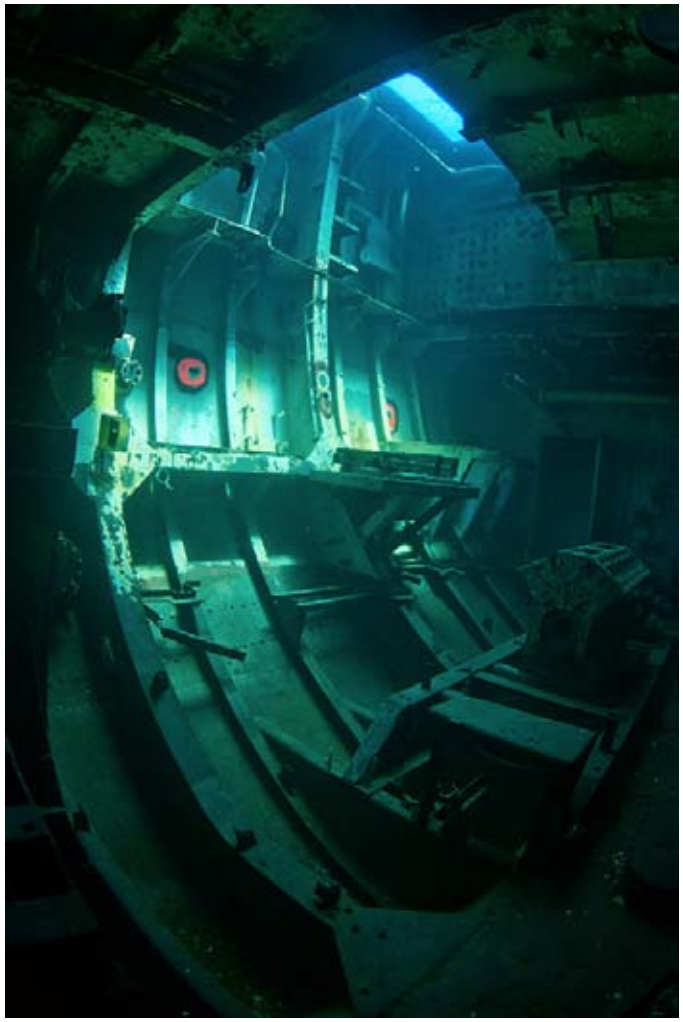
fabulous photo of the Keith Tibbetts wreck in Cayman Brac, where the silhouetted hull of the wreck contrasts beautifully with the details on the deck.

Alternatively, if we want to maximise the detail visible in a wreck photo, we need to shoot with the light coming over our shoulder, so the sun can illuminate all the details for us. These angles work best for colour shots with filters and can be very powerful. The classic Giannis D photos from the Red Sea that we use in the Magic Filters advert are taken like this.

I know it is stating the obvious, but unlike strobes, the sun doesn't move when we move the camera, so on any wreck we have to dive at different times during the day to have the sun illuminate or silhouette the features we are interested in. On the Kittiwake, for example, morning dives provide excellent illumination on the stern, while afternoon dives are better for the bow, which is lit when shot from the port side and silhouette from starboard at this time of day.

In deeper, darker, murkier conditions the direction of light is less important as it becomes more diffuse, giving us more freedom to shoot more angles at any given time. However, as light levels drop, we may require a tripod to get sharp images at the extended exposure times. Leigh Bishop's excellent deep-water wreck shots are great examples of this technique. In intermediate conditions, an alternative to a tripod is it to place or brace the camera on a flat surface of the wreck to allow us to prolong those exposures.

Of course a portfolio of only big exterior shots would soon bore, so on the right wrecks we should also work the interiors. But working below deck throws up a whole new set of challenges. The main choice is strobe or no strobe. Strobes will light up all the features, but when used on camera do not provide as much atmosphere as available light only images. However, only certain interior features are naturally illuminated by ambient light beams entering the wreck and only at certain times of day. So both techniques have their place.



(Above) Photo by Kathryn Arant. Nikon D200 + 10-17mm @ 10mm, Magic filter, no flash. 1/160th @ f/5.6. As filters provide us with colour without the need for flash, we can produce shots with dark foregrounds, framing a colourful view of the subject. The classic frame within a frame is always a powerful image.
(Left) Photo by Kay Hartley-Mills. Nikon D300 + 10-17mm @ 10mm, Magic filter, no flash. 1/45th @ f/4. We can create the best atmosphere inside wrecks (and caverns for that matter) by shooting without flash. Position yourself in the shadows and shoot out towards the light, framing the lit features with a darker foreground.

Starting with strobes, one of the big differences when shooting wide angle inside a wreck compared with the reef is our foreground illumination is entirely reliant on our strobes. If we don't light it, it will be black. Getting our strobe lighting quality right makes the difference between average and standout shots. The common mistake is to position

Photo by Alex Mustard. Nikon D700 + 16-35mm @ 16mm, 2 x Subtronic Alpha Pros. 1/25th @ f/16. I selected a rectilinear lens to avoid getting bendy walls in this interior shot of Ocean Frontiers staff member Debbie Wragg and Mr Rix (the compressor). The long exposure allowed the light entering the wreck to add depth to the image.

Photo by Ellary Wray. Nikon D7000 + 10-17mm @ 10mm, Magic filter, no flash. Deeper inside the wreck we need to use long exposures and this means we need to brace the camera against the structure. We may need to take a number of frames to be sure of a sharp one. Look for beams of light penetrating and try to find a subject that they are illuminating.

our strobes in the same way we use them on the reef. Much better is to push them up into rabbit ears, so that they create a pool of light in front of the lens, which will evenly illuminate the subject from close to the camera to deeper into the frame. Check out Julian Cohen's article on this technique in UWP 57.

Next, to give the image more depth, we have to lengthen the exposure to burn in some ambient light in the background. Tucked away deep in the bowels of the ship this can mean a long exposure, but since there is no ambient light on the subject you will be surprised how long you can push the exposure and still get a sharp image courtesy of the flash.

Another problem in the darkness is focusing and if we use a focus light to help, the beam will show up in the image because of the long exposure (or high ISO). When I shoot interiors on a dark wreck, I focus once at the start of the dive and lock the focus in manual. It is important to set the focus in the water otherwise it will not account for the optical effect of the dome port.

Strobes are very valuable, but we often get the best atmosphere in wreck images when we use available light only. These photos are easy to take, but hard to get right. The key is usually to make sure that your subject, whatever is lit up by the light entering the wreck, is the brightest object in the frame. The trick to achieving this is very careful framing. The best approach is to position yourself in the dark and shoot towards the light, while avoiding getting any highlights into your frame, from the openings that are letting the light in. If we get a bright highlight that is not the subject it will distract the viewer's eye and also spoil the atmosphere of the shot.

Off camera strobe shots work in a similar way to create atmosphere by having the strobe light source illuminating (or backlighting) the subject, with a dark foreground (as I covered in UWP 57). They can work particularly well in wrecks and strobes are much easier to position and hide in a manmade environment, than on the reef.

Including people in wreck images can greatly improve many shots. A model provides scale, human interest and a sense of exploration. On popular wrecks we can often exploit models of opportunity (waiting for other dives to swim into the right part of the frame), and unusually, divers swimming away from the camera can work well visually as long as they are swimming towards an interesting feature of the wreck.

Giving the model a torch is a classic way of helping them stand out from dark water. When working on wreck interiors, we can use a model up close, as a visual reinforcement of an interesting subject, with them "discovering" a feature or artefact in the photo. Such shots can be a technical challenge in terms of lighting (of both the model and wreck interior), model positioning (hand signals can be hard to see in the dark) and space (in tighter sections of passageways), but these shots can have strong commercial value, even if they are often not the most exciting artistically.

There are many options and many ways to shoot wrecks, and I haven't even mentioned all the marine life that finds wrecks an irresistible attraction. I hope this article has persuaded a few more of you to get stuck into wreck photography.

Alexander Mustard
www.amustard.com

(Left) Photo by Tamsin Eyles. Canon 5D + 8mm circular fisheye. Magic filter, no flash. 1/20th @ f/3.5. In addition to the classic shots, the types of images we can produce on wrecks is often only limited by our imagination. Without a model to shoot, Tamsin Eyles found a mirror inside the wreck and took this photo of herself, reflected both in the mirror and her port.

(Left) Photo by Tom Wicks. Nikon D200 + 10-17mm, Magic filter, no flash. Tom's inspiration for this fun shot of his grand daughter and model Emilee looking out of a porthole, was to recreate a portrait of a secretary blenny peering out of its hole, which Tom jokes are too small for him to find!

Alex is running a workshop at the end of May spending 3 days photographing the Thistlegorm and 3 days photographing Red Sea reefs. Because of cancellations there are now spaces on this trip. And his workshop will be back in Cayman next January too. Contact him through his website for more details.

Egg-cellent shot!

by Alex Tyrell

As I work for a dive resort in the Philippines I am diving more or less on a daily basis, so I get to witness the breeding cycles of the marine creatures on our dive sites throughout the month. This (sometimes) lets me plan my photo dives to coincide for when fish have eggs, or if I find a creature with eggs whilst I am guiding, I am then able to return later with my camera. I appreciate that not everyone is in this position, but a bit of research into your potential subjects spawning habits and some planning ahead of time can improve your chances of getting shots of eggs in the marine environment.

Spawning:

The majority of fish species mate in a method known as broadcast spawning (or pelagic spawning), meaning that they release free floating gametes (sperm and eggs) into the water column to be taken away by the current. This normally involves a male and female of a particular species (but can sometimes involve aggregations of fish) participating in a 'spawning rise' that are typically very quick and culminate in the release of gametes at its peak. This usually occurs around dusk, a time that the majority of divers are out of the water as they have finished their day dives and have not yet started their night dive. This behavior is therefore not regularly photographed. An exception would be Mandarinfish in the tropical Indo-Pacific region where numerous dive operations run daily sunset dives to witness this mating ritual. Broadcast spawning in most species normally occurs when there is the biggest tidal movement, so around full and new moon. This ensures that the fertilized eggs are dispersed far and wide by the current. The eggs are very small and virtually transparent, so photographers would concentrate on capturing the

(Top) Saddleback Anemonefish (/ Amphiprion polymus/) - Nikon D200 in Subal ND20 with Inon Z240 strobes, Micro Nikkor 60mm + Kenko x Teleconverter, f/36 1/250th ISO 100, taken at Giant Clams, Puerto Galera, Philippines
(Right) Flamboyant Cuttlefish Eggs (/ Metasepia pfefferi/)- Olympus C60z with Inon UCL 165 AD lens and Inon D2000 Strobe, f/8 1/40th Exp. Comp -1 ISO 64 taken at Hairball, Lembeh Straights, Sulawesi

mating sequence rather than the eggs themselves.

Another spawning method rarely witnessed by divers is internal fertilization, which can then lead to either the bearing of live young or the laying of eggs. With a few exceptions Elasmobranches (sharks and rays) are the only fish species that practice this spawning method. Divers in the tropics do not commonly see elasmobranch eggs.

The spawning methods that probably interest photographers most, as this allows us to photograph the eggs themselves, are benthic egg laying and those creatures that perform parental duties by looking after the eggs in their mouths or attaching them to their body. Different creatures will have eggs at different times of the month based on the lunar cycle, which dictates the tidal movement. It is therefore important to know your subjects mating habits, as if you time it wrong there will not be any eggs to photograph! Normally the eggs will hatch when there are stronger currents, so around the time of the full and new moon, which disperse the oceanic larvae many miles away. Knowing the moon phase and tidal state is important so you can capture images of the eggs when they are a silvery colour, meaning the yolk has been consumed and the egg is at an advanced stage, sometimes letting us see the developed embryo's inside the casing.

Equipment & Techniques:

Techniques and lens selection for shooting fish eggs will vary dependent on the species. But in all cases a good measure of patience is required to enable you to get good images. Lighting is not too technical for most egg shots, so straightforward front lighting works well. A single strobe is sufficient, however in some cases, especially when using diopters and close up lenses, you will probably need to select a small aperture to get the required depth of field so this is where additional light from a second strobe is preferable. Also, if you are shooting a shy subject from distance the extra strobe power in beneficial.

A macro set-up is the norm for capturing images of marine creatures eggs, as the subject is generally quite small. On an SLR, a 50mm/60mm macro lens will work, but a 100mm/105mm macro lens enables 1:1 reproduction ratio with a decent working distance, letting you light the scene more easily. With the 50mm/60mm macro lens the subject needs to be very close to the front of the port to get the required magnification, which can make lighting more challenging. The subject will obviously dictate the lens selection you are shooting and whether you can get very close to them or not.

In some cases you will need even more magnification to record the detail of the eggs, like the eyes inside, so the addition of a diopter/close-up lens can really help. These attach to the front of your lens and reduce the minimum focusing distance enabling you to get closer to your subject providing greater magnification. Use these with the 100mm/105mm lens, as the 50mm/60mm lens focuses very close already, so it does not really benefit from having a diopter attached. Another option is a wet-lens like the MacroMate from Backscatter or the Subsee Diopter from Reefnet. Both of these let you get twice life-size magnification or more in the case of the +10 version of the Subsee, but will reduce the depth of field dramatically so small apertures are required - I regularly use f32 or f36 with my MacroMate. This set up will work for eggs that are on the substrate, like with Anemonefish, but for more shy subjects the like Jawfish (that are a mouth-brooder) you cannot normally approach that close, so it is hard to

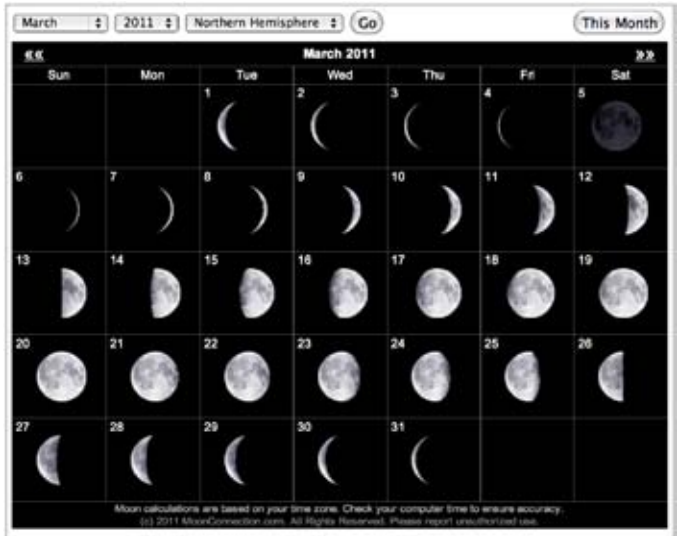
Ringtailed Cardinlfish (/Apogen aureus/)- Nikon D200 in Subal ND20 with Inon Z240 strobes, Micro Nikkor 105mm + Kenko 1.4x Teleconverter, f/11 1/250th ISO 100 taken at Sabang Wrecks, Puerto Galera, Philippines

get a tight facial shot with this set up. This is where a longer macro lens like a 200mm would work well, but this is a lens that not too many underwater photographers own, myself included. An alternative (and cheaper) option is to use a Teleconverter like the Kenko Pro series, which fit between the camera and lens. They come in different magnification strengths, the most popular being the 1.4x, 1.5x and 2x which simply magnifying your lens by the relevant ratio. So a 60mm lens with a 2x T/C turns the lens into a 120mm on a FX format sensor (or approx. 135mm on a DX format sensor) but still retains the same minimum focal distance. A 105mm lens with a 1.4x T/C will become approximately 150mm on an FX sensor or 240mm on a DX sensor. A word of warning for those that own the new Nikon 60mm AF f/2.8 ED lens – it does not autofocus with a Teleconverter!

Timing:

In a lot of instances timing is crucial to catch your subject whilst they have eggs. You therefore need to know the phase of the tidal cycle so you can coincide your dive for when the fish are spawning or have produced eggs. Some species spawn at various times through the tide cycle, so timing is not so important. And for some divers they are simply unable to time their dives with the moon phase, so it can be an element of luck whether eggs are found during the dive.

For those not familiar with moon phases, the table below explains the different stages of the cycle:



www.moonconnection.com

New (also called the Dark Moon) - not visible
Waxing Crescent
First Quarter - commonly called a "half moon"
Waxing Gibbous
Full - we can see the entire illuminated portion of the moon
Waning Gibbous
Third Quarter - another "half moon", but the illuminated part is opposite of the First Quarter
Waning Crescent
New - back to the beginning

Local tide tables can be obtained from many places and you can even get iPhone Apps that will let you know the tidal state in many locations worldwide.

Subjects:

I nearly exclusively dive in the Indo-Pacific region having been based here for a number of years working as a Dive Instructor/Divemaster/Photo Pro. The following subjects are, therefore, from the aforementioned area. If you dive elsewhere, like many of you will, you will need to do a bit of research into the local marine life to get an idea of the potential subjects you may encounter. Below are some of my more recent encounters with marine creatures with eggs. There are obviously many more options for egg photo's and still quite a few on my list of shots that I want!

Mandarinfish (/Synchiropus splendidus/)- Nikon D200 in Subal ND20 with Inon Z240 strobes, Micro Nikkor 105mm, f/22 1/125th ISO 200 taken at Beach Cafe Jetty, Derawan, Kalimantan

Mandarinfish

These are probably the most commonly photographed species of spawning fish, as they are found in the same area day after day and do not move around much. Locating them is not therefore a problem once you know where they are, which

is usually amongst Staghorn Coral, Lettuce Coral or similar. They mate most evenings at sunset and can spawn a number of times in the short time period before the sun disappears over the horizon and it turns to night. The larger male will have numerous females in the area that they live and will perform a courtship ritual enticing them to mate with him. When the female accepts the invitation, they position themselves side by side and begin a slow spawning rise, which culminates in the release of eggs and sperm before they quickly dart back down into the coral. Occasionally a male with mate with two females at the same time! The shot that we are after is the pair together with the eggs in focus, but that is easier said than done, as split second timing is required. A bit of luck and trail and error is the norm to get this! I have found that the 105mm lens to be most effective in continuous servo AF mode, which enables the camera to track the moving subject and the shutter release to fire without you having to lock the focus on the subject. You may get a few out of focus shots, but I have found that this is outweighed by the ability to shoot at the exact moment that the gametes are released. Also setting the camera to continuous shooting mode can be advantageous as you can normally get 2-3 exposures in succession, increasing the chances of getting the eggs as they release. You should note that bright lights seem to distract Mandarinfish from mating, so use a red filter over your focus light or flick your Sola 600 into the red LED mode.

Anemonefish

These are one of the easier fish to photograph with eggs, as they live in their host Anemone and do not stray far from it. They are a benthic egg laying species, normally depositing their eggs on a flat rock or similar directly next to the Anemone that they live in. I have found this to occur on the Waxing Gibbous and they develop ready to hatch around the Full Moon. Anemonefish are at their most aggressive when they are protecting eggs and they have bitten me on numerous occasions. Fortunately their mouths are only about a centimeter wide and do not inflict much damage, leaving a semi-circular row of teeth marks and maybe a small trickle of blood at the worst! If you are patient and let them get used to you, you will find that they tend for the eggs regularly, blowing oxygen rich water over them from their mouths and brushing them with their fins to remove any algae build-up. With either the 60mm or 100mm lens you can get shots of the dutiful parent tending to the eggs, but for real detail in the eggs additional magnification is required. As the eggs will not move and the Anemonefish have to return to where they were laid to tend to them, you can approach quite close so can use either Diopters or Teleconverters to get the desired magnification ratio.

Saddleback Anemonefish (/Amphiprion polymus/) - Nikon D200 in Subal ND20 with Inon Z240 strobes, Micro Nikkor 60mm + Kenko 2x Teleconverter, f/36 1/250th ISO 100 taken at Giant Clams, Puerto Galera, Philippines

Ringtailed Cardinlfish (/Apogen aureus/)- Nikon D200 in Subal ND20 with Inon Z240 strobes, Micro Nikkor 60mm + Kenko 2x Teleconverter, f/8 1/250th ISO 100 taken at Sabang Wrecks, Puerto Galera, Philippines

Cardinalfish

Some species of Cardinalfish are mouth brooders, meaning the male will incubate the fertilized eggs inside its mouth, therefore protecting them from predators. When the eggs are first deposited in the mouth around

Yellowbarred Jawfish (/Opistognathus randalli/)- Nikon D200 in Subal ND20 with Inon Z240 strobes, Micro Nikkor 105mm, f/32 1/125th ISO 100 taken at Beach Cafe Jetty, Derawan, Kalimantan

Peacock Mantis Shrimp (/ Odontodactylus scyllarus/) - Nikon D200 in Subal ND20 with Inon Z240 strobes,Sigma 20-70mm @ 70mm, f/13 1/60th ISO 100, taken at Atlantis House Reef, Dumaguete, Philippines

the New Moon they are a milky white colour and they develop through the Waxing Crescent to a point when you can clearly see the eyes of the embryo inside the egg casing close to Full Moon. The tell tale sign that an individual has a mouth full of eggs is an extended jaw cavity. If you look closely you can see the eggs inside the mouth, but they do not open their mouth that far so you cannot easily get a clear shot. However, if you observe them you will notice that every few minutes they will spit the eggs partially out of their mouth, rotate them around and then suck them back in. This is known as 'churning' which aerates the eggs, removes waste and allows the embryos to mix so they develop equally. This is the moment that you need to shoot, so once again patience is the key. A close approach is not normally possible, as they will simply turn away, so a longer lens like the 105mm or 200mm is favorable. I normally use the 105mm together with a 2x Teleconverters to get a nice tight shot of the face with detail in the eggs. The continuous servo AF and continuous shooting mode can help here as well, as again you have about a second or so to bag the shot.

Jawfish

Jawfish are another species that mouth brood their eggs to provide protection from predation. The eggs are stored safely in the male's mouth for around 5 to 7 days before they are ready to hatch. The eggs will develop quickly through this period; starting off a milky white/yellow colour and changing to silver as the juvenile grow inside the egg casing. When I worked on a live-aboard visiting the island of Derawan in Kalimantan (Borneo) we used to dive to watch the eggs hatch at sunrise around 5 -7 days after the Full Moon (so in the Waning Gibbous). I seem to recall that in the Caribbean they hatch at sunset (I may be wrong!). The male Jawfish that is brooding eggs is normally very cautious and will retreat into its burrow as you approach. Not to sound like a broken record, but once again patience is the key to getting the shot. A slow approach is required and then you need to spend some time letting the Jawfish become accustomed to your presence. Similar to Cardinalfish, the eggs are churned periodically and this is the moment when you can get a good shot. A 105mm lens is ideal for these shy fish, letting you get the required magnification without encroaching on their personal space.

Other Subjects

There are various other marine creatures whose eggs can make interesting subjects. In the critter diving destinations of Asia you can find Flamboyant Cuttlefish eggs in discarded Coconut shells, various Crabs and Shrimps will have eggs at certain times of the month, Nudibranch's can be seen laying egg ribbons and, if you're really lucky, you may even find a Blue Ringed Octopus or Wonderpus with eggs attached to the underside (something I'm still waiting to see myself).

So to summarize, get to know your subject and it's spawning cycle, plan your dives to coincide with when eggs are present and have the right lens on to maximize your chances of getting a great 'egg image'. Be patient when you find your subject and a bit of luck always helps!

References: Reef Fish Identification: Tropical Pacific by Gerald Allen, Roger Steene, Paul Humann and Ned DeLoach. Reef Fish Behavior Florida, Caribbean, Bahamas by Ned DeLoach and Paul Humann. Available form www.fishid.com.

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Back to Bali - USAT Liberty

By Mark Webster

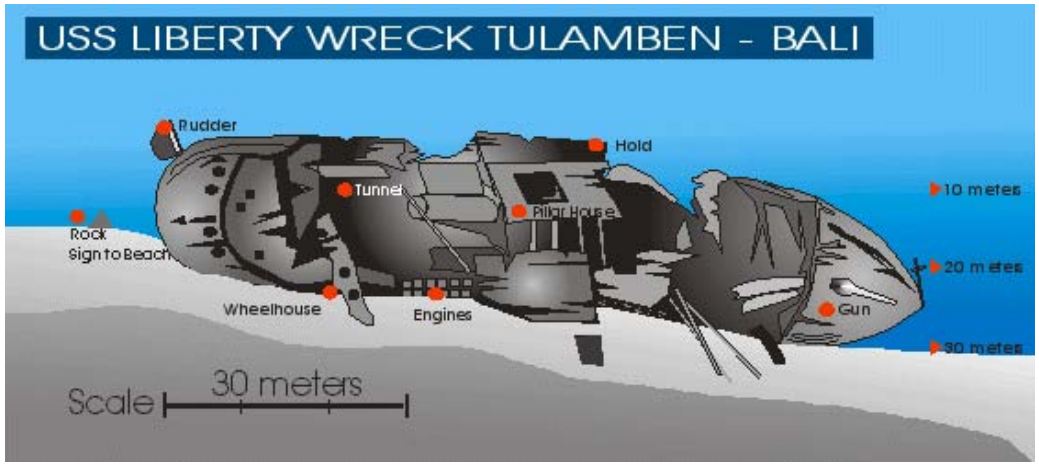
Those of you who read UWP regularly will know that I have written about Bali before. It is a destination that I have visited quite frequently, only beaten by my very numerous visits to the Red Sea. Bali is often seen predominantly as a starting point for live aboard trips to perhaps more exotic destinations in Indonesia, but it does have tremendous diving in its own right.

There are numerous dive sites, onshore and offshore, spread around the island which can replicate almost all the reef fauna and weird critters that you will encounter at remote locations. Sometimes the reefs are on a smaller scale and you may need to move around the island a little to experience the best muck sites, but in general it would be hard to be disappointed with Bali as a photographer.

The other added benefit of the island is its natural beauty and the various cultural distractions and other excursions that can keep your spouse amused if she/he is not totally obsessed with underwater photography (difficult to imagine I know, but these creatures do exist…).

So we have been back to Bali again only this time included stays in three locations (one for the culture) to dive the best sites without having to make long daily transits by road to reach the more northern sites on the island. There are a lot of dive centres in the south of the island that will offer daily trips to the sites in the north west and north east of the island, but the disadvantage is the long drives of 2-3 hours to reach the dive sites. It is far better to stay on location which also allows you to maximise an unlimited dive package. So the purpose of this piece is to offer

(Right) Beach diving at Tulamben could not be easier. Select your dive site and one of the local porters will take your scuba kit to the entry point and collect it after the dive. Effortless! Nikon D200, 18-200mm zoom, ISO100, programme mode.
(Far right) The central part of the wreck is partly collapsed but there are still substantial areas that allow easy access and also some natural light to penetrate. Nikon D300, Subal ND20, 10-17mm FE, Subtronic Mini flash guns, ISO200, f11 1/60.



The USAT Liberty is a big ship wreck and will take several dives to familiarise yourself with all the major features. This is worthwhile as it will allow you to plan subsequent dives and imaging opportunities more easily.

There are many opportunities to use the shape of the wreckage to frame a diver and include a blue water background. Nikon D300, Subal ND20, 10-17mm FE, Subtronic Mini flash guns, ISO200, f11 1/60.

There are numerous species of colourful fish on the wreck like this oriental sweetlips. Most are co-operative so it is worth being a little patient and looking for suitable negative space behind your subject. Nikon D300, Subal ND20, 10-17mm FE, Subtronic Mini flash guns, ISO200, f11 1/60.

The famous school of jacks are normally resident on the wreck but will only begin to spiral when there is a little current running. If the current is strong then you will generally find them turning gently above the stern of the wreck. Nikon D300, Subal ND20, 10-17mm FE, Subtronic Mini flash guns, ISO200, f11 1/60.

a few musings and an insight of what to expect if you are planning a similar trip.

Our trip was split between the Pemuteran area in the north west, which put us close to Menangjan island with its colourful coral walls and coastal dives and also within 30-40 minutes drive to both Secret Bay and Puri Jati which have become known as the must do sites for muck diving enthusiasts. We stayed at the Mimpi resort close to the village of Pejarakan which I can thoroughly recommend as having exotic landscaping, nicely appointed accommodation and a well managed dive centre.

From Pemuteran we transferred to perhaps the best known area of Tulamben on the north east coast to our favourite Tauch Terminal resort which is situated right in the middle of Tulamben bay in front of the coral garden and a short walk from the famous USAT Liberty wreck. Tulamben offers a happy mix of almost everything whilst the wreck itself is stunning and deserves many dives to get the best from it photographically. The remainder of the bay has coral gardens, muck, a wall dive and a number of artificial structures to keep your wide and macro needs fulfilled. A short hop out of the bay by Jukung (small out rigger fishing boats which must be tried) are numerous other sites with a mix of topography and the well known site of Seraya Secrets if you want pure muck again. We also include in our itinerary a trip just down the coast to Amed for Jemeluk bay and Lipah bay which is home to the Japanese wreck and perhaps the prettiest and richest shallow water reef that I have seen in Bali.

Even with all this variety we chose to spend the majority of our dives on the USSAT Liberty wreck and the purpose of this short article is really

to describe what makes it so unique and attractive to a photographer. But first of all a bit of history to tell you how this wreck comes to be in such an unusual location.

The USAT Liberty was launched on 19 June 1918 by the Federal Shipbuilding Company in Kearny, New Jersey, USA and was quickly commissioned for military service during the First World War during which time she operated between the USA and France carrying cargoes of war materials, horses and munitions whilst successfully avoiding an attack by U boats. Between the wars the Liberty sailed as a packet ship on numerous routes but was commandeered once again in 1940 soon after the Second World War began.

The ship began operations in the Pacific region and in January 1942 was en route from Australia to the Philippines with a cargo of railway parts and rubber. On 11 January, she was torpedoed by Japanese submarine I-166 some 10 nautical miles (19 km) southwest of the Lombok Strait. Although the ship was taking in water there was hope she could be saved, so she was taken in tow by the US destroyer Paul Jones and Dutch destroyer Van Ghent in an attempt to tow her to the port of Singaraja on Bali for repairs. However the ship began to sink more quickly and was eventually beached at Tulamben in order to salvage as much as possible. Once the US forces had finished with her the ship was left to the locals who made good use of the materials and fittings on the ship over the years until 1963 when nearby the volcano mount Angung erupted spectacularly during February and March and the combination of huge tremors and lava flows pushed the ship from the shoreline to where she now lies on a gently sloping seabed. The eruption was a disaster locally with many lives lost but the legacy today is a wonderful wreck dive which has spawned a successful tourist industry in Tulamben which benefits the whole area.

This has to rank as one of the best shore dives worldwide and the only downside for some are the boulders and pebbles that make up the beach which can make the entry a little interesting especially if you do not have stout diving boots. They can be slippery and awkward when you are also toting a heavy camera rig, so you should also take extra care not to take a tumble. However, after the first couple of entries it is a lot easier and once you are 5m or so from the shore the stones give way to dark sand. From here it is a short fin of 30m or so before you see the stern looming up at you which rises to between 6-8m.

Your first dive on this wreck will provide a few surprises. It is a big ship and although she is somewhat broken in the centre, the stern and bow are very recognisable and largely intact. If your first dive here is early in the morning then you will enjoy the best visibility and you will immediately appreciate the intensity of the coral and invertebrate life covering the stern as you approach it. There is virtually no bare steel to be seen and every reef species that you can imagine is represented here and the scene is alive with the movement of fish over this enormous artificial reef.

One of several leaf scorpion fish on the wreck which moved about quite a bit each day. A subject like this perched on the top of wreckage gives you the opportunity to get in very close with a fish eye zoom. . Nikon D300, Subal ND20, 10-17mm FE, Subtronic Mini flash guns, ISO200, f11 1/25.

The problem for a photographer is that you will immediately want to stop and begin shooting images no matter what lens you are using. It is difficult, but if you can resist this temptation it is worth dedicating a dive to a tour of the wreck, particularly with a good guide, to get a feel for the layout and variety of habitats. Despite its size, a wreck tour is a reasonably relaxed dive

(Far left) Diver and gorgonian. Even if you do not have a dedicated buddy capturing a diver in the frame is often easy on the wreck as many are being led by guides overhead. Some are very co-operative and can be persuaded to swim around again with a quick hand signal! . Nikon D300, Subal ND20, 10-17mm FE, Subtronic Mini flash guns, ISO200, f11 1/60.

(Left) Most of the morays you encounter have either cleaner wrasse or these candy striped shrimp in attendance. Take your time and wait for the moray to settle and the cleaner to start work to capture the moment. Nikon D300, Subal ND20, 10-17mm FE, Subtronic Mini flash guns, ISO200, f11 1/60.

with opportunity for some shots as you progress and it will help you plan subsequent dives to target certain areas for particular subjects, compositions and techniques. The opportunities for wide angle and macro are seemingly endless.

Swimming the length of the wreck brings you to the deepest point at the bow between 25-30m. The bow itself is intact and has a deck gun which is hard to discern at first due to the spectacular covering of corals sponges and invertebrates. If the visibility is reasonable it is worth swimming off the wreck a little and increasing your ISO to capture a natural light shot here which will give you a much better impression of the wreck.

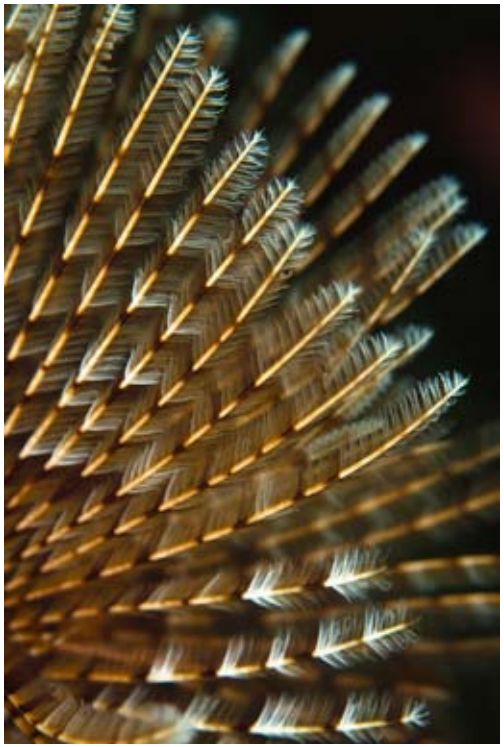
There are hundreds of wide angle compositions on the wreck ranging from classic diver and wreck shots, ship features decorated with marine life, isolating some of the vivid fan gorgonian and hard corals, fish and fish schools and a host of close focus opportunities.

The best visibility seems always to be first thing in the morning for a number of reasons. You will also find it the quietest time on the wreck before the divers on day trips from the south of the island begin to arrive around 10am. If you can pull yourself out of bed really early, say 6:30 or 7am then you will also have the opportunity of seeing the resident school of bumphead parrot fish queuing up to be cleaned around the stern before they move off across the bay to feed on the reefs. The bumpheads will return at dusk, but are less co-operative then as it is obviously time for bed and they are heading for areas inside the wreck.

Another resident feature is the huge school of jack fish that are normally around the stern area but do move up and down the wreck during the day. When there is a little current running they will begin to spiral which can make a powerful composition with the sun on the surface, although get the correct exposure with these reflective fish is often a challenge. Occasionally the jack school will move across Tulamben bay and can be found at the opposite end close the wall dive known as the drop off. But I am told that they never leave the bay completely.

There are many subjects suitable for close focus wide angle compositions and if you have the correct equipment you can find plenty of subjects suitable for wide angle macro. Scorpion fish, frog fish, ghost pipefish and numerous species of nudibranch can be found conveniently perched on angled surfaces which allows you to make a low approach and include some background or open water. I spent several happy dives pursuing colourful nudibranchs and a leaf scorpion fish with a 10-17mm zoom and 2X teleconverter which allows a very close approach.

If you like macro photography then you are likely to be overwhelmed with the positive cornucopia of vivid subjects. Getting close to the wreck reveals that almost every surface is covered with hydroids, sea squirts,



A simple subject like a plume worm can make an attractive abstract macro composition. Try to see beyond the whole critter when looking for suitable subjects. Nikon D300, Subal ND20, 105mm micro, Inon Quad flash, ISO 100, f18 1/125.

sponges and small corals. These make great subjects on their own, but they also provide succour to dozens of nudibranchs in various hues, shelter for small fish and crustaceans and an ideal environment for the camouflage species to exploit as they lie in wait to strike.

If you have never seen a pygmy seahorse, or don't have a picture of one, then there is a resident group of Barbiganti on a gorgonian at the bow of the wreck. This is in around 28m depth, so it is worth planning to dedicate the beginning of a dive here to maximise your bottom time although it may be a gamble to find another photographer in place! Again, dive early to avoid the crowds and also discuss the aims of your fellow photographers in the resort to avoid a clash of interests. There are also other pygmy seahorse locations nearby if you are not successful on the wreck.

You will find many different species of nudibranch feeding amongst the hydroids and sea squirts. You can capture the feeding behaviour and also frequently mating and laying of their delicate spirals of eggs. If you find an egg mass then examine the immediate area carefully as the parents will not be far away and if you are lucky will be laying another clutch of eggs.

Larger subjects are also hosts to smaller subjects so make sure to examine gorgonians, sea whips, clams, anemones, crinoids etc. for gobies, shrimps, squat lobsters and small fish either dwelling symbiotically or seeking protection. You will need life size reproduction for many of these subjects and some may require additional magnification with a wet lens or teleconverter.

You can also use your macro lens to capture behavioural shots. The wreck is just like any other reef in that there are predators and prey everywhere and something is always on the receiving end of a hunt. Some static hunters, like lizard fish or sand perch are more approachable when they are struggling to consume their prey which can make an interesting image if somewhat macabre if you are a fish lover!

After a couple of days diving the wreck and reviewing your results you can begin to focus on the subjects and techniques that need improvement and also begin to know the location and best time of day to capture a particular subject. It is difficult to get bored with this dive site and even though we injected variety into our own itinerary there was always the urge to make yet another dive here!

So if you yearn for a little variety with your diving then Bali and Tulamben in particular is a good choice. A week or two here is also a more economic proposition than one of the live aboards departing for more exotic locations in Indonesia and you still offer the opportunity to capture most species with your camera.

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Pearls Of Borneo

by Chris Mitchell

Indonesia has a “Big 5” list when it comes to choosing a region to dive - Raja Ampat, Komodo, Lembeh and Bunaken, the Banda Sea and Indonesian Borneo. While the first four are all justifiably famous as some of the best places to dive in the world for their various specialities, Indonesian Borneo has largely remained off the diving map over the last few years. Territorially divided between Brunei, Malaysia and Indonesia, Borneo is the third largest island in the world. Sipadan and Lankayan are the most celebrated of Malaysian Borneo’s dive destinations but just a little further along Borneo’s coastline, across the border within Indonesia, lie four islands looping out from the mainland like a pearl necklace that also deserve a lot more attention. These islands are Nabucco, Kakaban, Sangalaki and Derawan, and they are the draw for a couple of intrepid liveaboards recently entering the region to explore further.

In recent years there have been resorts located on several of the islands, and for good reason – each area has four to five days worth of interesting diving in a peaceful, solitary setting. A big advantage of Indonesian Borneo is that it has flat calm waters during April to June and huge blue skies, with barely another soul around. Beneath the surface at Nabucco island, however, is a real adrenaline dive in the form of Maratua Channel, also aptly named Big Fish Country. Head down to 25 metres and a truly massive battery of barracuda, hundreds strong, appears out of the blue. Reef hooks are definitely a good idea, as beneath the barracuda sizeable whitetip sharks patrol. Once divers unhook, there’s an exhilarating drift dive through the channel itself, where the distinct spotted markings of eagle rays occasionally flash by.

The big advantage of sailing through this region is not only being able to easily dive at all of the island locations, but also to make exploratory forays into new areas unreachable by the resorts. Armed with GPS marks from local guides and advice from fishermen, we spent a couple of days exploring a submerged atoll which sits just off the island of Palau Sambit. The atoll is so big it doesn’t have its own name – instead it has three names for different sections of its horseshoe shaped reef. Its undisturbed tranquility makes it a haven for turtles, which are a common sight on virtually all of Borneo’s sites. Some of the atoll dives were spectacular – our first, at Lintang reef, felt like dropping off the edge of the planet as the dark blue of the early morning ocean contrasted against the bright white rim of sand that suddenly fell away

vertically into nothing. Other dives were not so great, which is to be expected as part of exploratory dives but still means the dive guides can be continually teased about it.

One nearby island, Palau Balembangan, had the sort of reef you dream about diving on - spectacular hard corals so abundant they're growing on top of each other, not an inch of the slope to be seen anywhere, lots of plate corals and sponge corals, with years of growth evident in their massive sizes, interspersed with lots of feather stars and fans too. The reef on its own would be enough, but making this aquatic landscape come alive were huge clouds of fish too – butterfly fish, fusiliers, zebra fish – all skittering about and chasing through each other. It gave an electric feel to the reef, a sense of real energy in the water. With the afternoon sunrays filtering through the clear visibility, it was a magically lit up kaliedoscope of movement and colour.

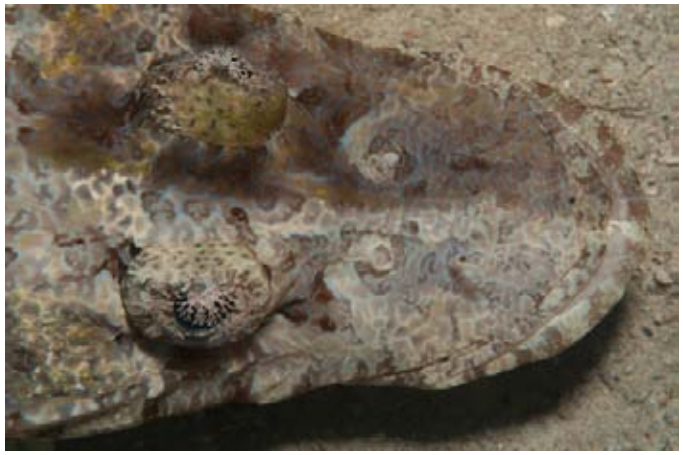
Movement of an even more rapid kind characterises Kakaban's signature dive site, Barracuda Point. A lip at 30 metres that requires reef hooks as standard, the ripping current of this dive site brings in big barracuda – each over a metre long - which slice through the blue whilst divers are hanging on for dear life. Whitetips and grey reef sharks are also known to make regular appearances here. Up in the shallows there are a lot of beautiful top side hard corals, which are definitely worth a couple of dives to explore at a more sedate pace. Kakaban itself is actually a large crater of an island, with a non-stinging jellyfish lake located in its centre.

Sangalaki is famed for its resident manta

ray population, although it's not guaranteed they will put in an appearance. Apparently best spotted between 10 am and 2pm, we had two dives with tantalising glimpses of mantas at the surface and a brief encounter below before our third dive hit the jackpot before we even got in the water. Besides wheeling around cleaning stations, Sangalaki's mantas like to skim just under the water's surface to feed on plankton. Hurriedly getting out of our bulky BCDs and grabbing snorkels, we gently eased into the water and were greeted with the sight of two mantas, both three to four metres wide, looping around each other and around us. The sunlight rippled off their jet black bodies as they passed a hand touch away beneath us and disappeared into the greenish gloom before suddenly reappearing a few minutes later on another feeding run. It was an unforgettable encounter which more than made up for seeing little of the mantas whilst down below. Once regarded as one of Borneo's best dive destinations, it has to be said that Sangalaki's corals are currently in a poor state and it's to be hoped that a new resort can be established and full government

support given to the operators to enforce and restore the island's no take zone and allow its reefs to flourish again.

While most of our Indonesian Borneo liveaboard had been about big underwater vistas and big creatures – mantas, sharks, barracudas and more - our final few days at Derawan island were a macro enthusiast's delight. In contrast to the corals of Sambit or Nabucco, Derawan's coral is quite scrubby and the viz murky on most occasions. However, patience and a magnifying glass yield a



lot of surprises, especially with dive guides who know the territory. One particular site, Shipwreck, is so rich in small stuff like nudibranches, flatworms and squat lobsters that there is rarely a quiet moment. However, the stars of the show at Derawan are undoubtedly the resident jawfish population, who every month release new eggs into the water. The jawfish incubate the eggs within their own mouths which cannot fully shut, presenting divers with what looks like a mouthful of eyeballs as the eggs reach the point where they're ready to be released. The jawfish release the eggs at full moon each month, and if you do a very early morning dive at 5am you might just get lucky enough to be there when it happens. The jawfish belches the eggs out in a couple of clouds (what a way to be born!) and so begins a new cycle of life on the reef – a tremendous way of ending our Indonesian Borneo trip.

This part of Borneo is perhaps more subtle in its diving charms than its counterparts elsewhere in Indonesia, but for underwater serenity away from the crowds and the excitement of exploring somewhere that still has yet to give up many of its underwater secrets, it's a great choice. Here's hoping the pearls of Borneo get more recognition and protection in the future.

Many thanks to Tambora liveaboard (www.tamboradive.com) for their help with this feature.

Chris Mitchell
www.divehappy.com

Getting there:
Liveaboards currently depart from and return to Tarakan. Tarakan is a one hour flight from Balikpapan which itself is a two hour flight from Singapore or Jakarta. Silk Air and Mandala Air fly from Singapore to Balikpapan, and Mandala flies from Balikpapan to Tarakan. Booking domestic Indonesian flights from outside the country is near-impossible - ask your liveaboard to arrange flights for you.
Entry/ Visa Requirements:
Most nationalities can get a 30 day visa on arrival at Balikpapan Airport. The visa costs $25 US Dollars, which is payable in Rupiah, Dollars or by credit card. You cannot currently get a visa on arrival at Tarakan Airport.
Language:
Bahasa Indonesia is the official language of Indonesia. English is spoken widely, especially on liveaboard boats.
Best time to dive:
Conditions for liveaboards are best from April to June when seas are calm and there is little rain
Currency:
Indonesian Rupiah. US Dollars and credit cards are widely accepted, although check ahead with your dive operator to ensure you take acceptable payment.
Water temperature can be 27 to 30 degrees – a three millimetre suit should be fine, but a additional vest, hood and gloves are worthwhile items to bring too if you feel the cold

www.tamboradive.com

www.dive-damai.com

Guidelines for contributors

The response to UwP has been nothing short of fantastic. We are looking for interesting, well illustrated articles about underwater photography. We are looking for work from existing names but would also like to discover some of the new talent out there and that could be you! UwP is the perfect pubication for you to increase your profile in the underwater photography community.

The type of articles we're looking for fall into five main categories:

Uw photo techniques - Balanced light, composition, etc
Locations - Photo friendly dive sites, countries or liveaboards
Subjects - Anything from whale sharks to nudibranchs in full detail
Equipment reviews - Detailed appraisals of the latest equipment
Personalities - Interviews/features about leading underwater photographers

If you have an idea for an article,
contact me first before putting pen to paper.
E mail peter@uwpmag.com

How to submit articles

To keep UwP simple and financially viable, we can only accept submissions by e mail and they need to be done in the following way:

1. The text should be saved as a TEXT file and attached to the e mail
2. Images must be attached to the e mail and they need to be 144dpi

Size - Maximum length 15cm i.e. horizontal pictures would be 15 cm wide and verticals would be 15cm.
File type - Save your image as a JPG file and set the compression to "Medium" quality. This should result in images no larger than about 120k which can be transmitted quickly. If we want larger sizes we will contact you.

3. Captions - **Each and every image MUST have full photographic details** including camera, housing, lens, lighting, film, aperture, shutter speed and exposure mode. These must also be copied and pasted into the body of the e mail.

Parting Shot 1

In issue 57 of this fabulous magazine there was an article about the Nauticam housing for the Sony NEX-5 compact system camera. Both the camera and housing look superb and plainly are very capable of producing top-notch images. For me the most interesting part of the article was the adaptor which allowed the use of old Nikonos lenses - this was exciting news.

Exciting that was, until I saw the price of used Nikonos lenses on ebay! Ah, somewhat less excited now but the idea of using 'old' lenses got me thinking.

Being in the market for an upgrade from compact cameras, I plumped for the Olympus E-PL1 PEN camera & Olympus housing combo supplied by my friends at Cameras Underwater. This rig's compact size and lightness of the housing suits my style perfectly and a plus point was the Olympus adaptor with a 67mm thread which fits over the top of the port and allows the use of 'wet' lenses.

And here's where the 'old' lens link comes in; Since I've been shooting underwater, my most favoured macro lenses have been the Sea & Sea 3T (1:3) and 2T (1:2) for the Motor Marine II which work perfectly with compact digicams and (in my humble opinion) have better edge sharpenss than any other supplementary macro lens on the market. Sadly I had given up on being able to use these lenses when I switched to a larger camera and was resigned to buying a dedicated land-based macro lens for my close-up work, but it's got to be worth a go hasn't it?

So some glue, a 67-62mm stepping ring and a trip to my local rockpool later I have fallen in love with these MMII lenses all over again. Screwed onto the front of the Olympus flat port, to my amazement, they work a treat. The 3T gives a working distance of about 7cm from the port when the kit lens is zoomed to 42mm & gives outstanding results. The 2T gets me even closer so I'm eagerly awaiting this years Nudibranch season with renewed vigour!

Hermit Crab (Pagurus bernhardus) (approx 20mm tall) Olympus E-PL1 F/16, 1/160th ISO100, YS110a strobe

Dan Bolt
www.underwaterpics.co.uk

Parting Shot 2

Save one's ass is an expression in the English language for the occasion when someone has been got out of trouble. Sometimes it needs to be taken literally.

When the summer diving season ends in Estonia and the water temperature drops to 4 degrees, the wish for warmer waters raises its head. My own exploration program's Southeast Asian chapter got its new page in the Philippines last autumn. To organize my dives I chose Sea-Explorers Philippines. They run several dive centers on different islands in the Visayas and they have a very comfortable island hopping system between these destinations.

My first stop was in their center in Dauin, which is located on the South-Eastern coast of the Negros island. There are many very interesting dive spots around Dauin but one of the highlights is definately the Island of Apo. My second dive in the waters of this paradisiacal island was almost ending when I noticed quite a big green sea turtle (Chelonia mydas) who was scraching his back against the corals. To get a better picture, I tried to sneak as close to him as possible. To my surprise, he completely ignored me and let me take photos of him in peace. After a couple of minutes he decided to go to the surface for a bit of air (usually green sea turtles can stay underwater up to four or five minutes with just one breath). However, for some reason, a crocodile fish who had been lying on the sand closeby bolted after him. The reason appeared when the turtle returned to his former spot between the corals - some kind of fishing line had got stuck in his tail and there was a bundle in the end of it. The crocodile fish had probably thought it to be a potentially catchable fish. My guide Rico Alaban came closer as well and we decided to have a closer look at it. The turtle didn't even blink. First, Rico tried to detangle the line but then it came clear that it wasn't around the tail, but inside… For a moment we were both baffled, but then decided to carry on. A little bit of kneading and careful tugging and Rico had the tangle of line in his hands. The turtle seemed to be completely unbothered by our actions. We left him scratching himself against his favourite piece of coral and finished our dive.

Every year thousands of sea turtles die from eating non-degradable debris. So it is always worth cleaning the corals from plastic and fishing lines when noticed, not only in AWARE Cleanup Day.

Kaido Haagen
www.kaidohaagen.com

Do you have an interesting shot with a short story behind it?
If so e mail us and yours could be the next "Parting shot".
peter@uwpmag.com