technical matters

Column by
Cedric Verdier

# Rebreather

## Comfort and Efficiency

**Most of the articles one can find about rebreathers deal with potential problems and limits of these wonderful pieces of kit. They give extensive information about oxygen sensors, scrubber duration, electronics and any of the risks associated with this kind of equipment. Becoming proficient with the emergency procedures is a very important component of training and experience. But an aspect that is sometimes a little bit overlooked is how to properly dive with a rebreather.**

Text and photos by Cedric Verdier
Additional b/w photos by Peter Symes

*They swim as gracefully as a grasshopper with a portable fridge strapped on its back and a vacuum cleaner around its head.*

**Unfortunately** even some experienced rebreather divers are not comfortable and efficient with their rig. Their equipment is a mess and you hardly see their face underneath 200 hoses, straps and D-rings.

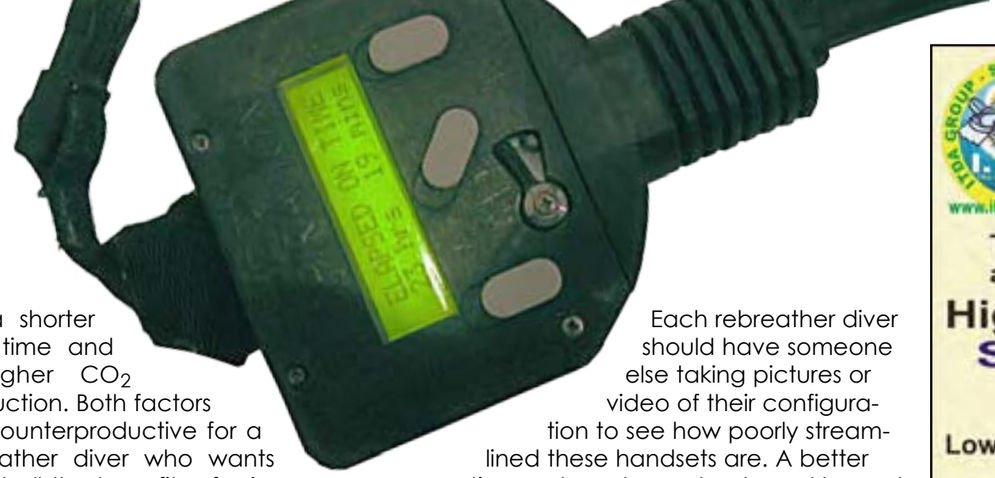
They swim as gracefully as a grasshopper with a portable fridge strapped on its back and a vacuum cleaner around its head. When asked the reason why they struggle for most of time they spent underwater, most of them finally agree that their trim sucks! Rebreather divers are most of the time so focused on how to adapt and to improve their units and how to safely deal with all these modifications that they forget the most important skills any diver with any kind of equipment should master. Words like simplicity and ease have disappeared from their vocabulary.

## Being Streamlined With a Rebreather

Very often, one can see a lot of rebreather divers who don't move in a very efficient way. They swim in a strange position, closer to the seahorse than to the manta ray. They spend a lot of energy fighting against the increased density of water, adding drag and turbulence to the necessary energy one has to spend for their propulsion.

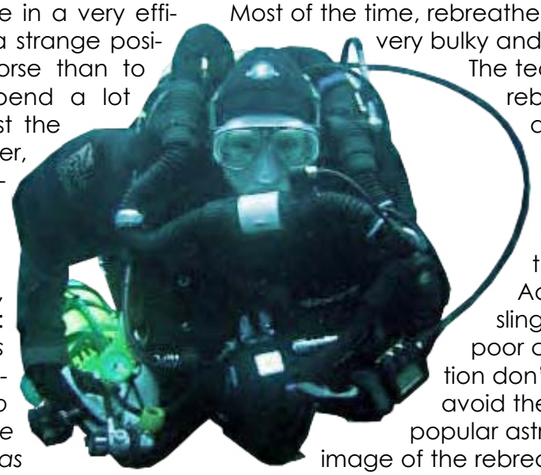
In one of his articles, Jarrod Jablonski states: "*Resistance increases as the square of velocity. The energy required to overcome this resistance increases approximately as the cube of the initial energy required. What this means is that if one doubles the surface area of something, this results in a resistance that is four times the original resistance; in turn, this requires an increase in energy nearly sixteen times as great to offset the increase in resistance.*"

It simply means that a rebreather diver (and all divers in general) should work to reduce their surface area. An article published in DIVE Magazine a few years ago shown that lots of drag were simply created by hoses and danglies not as close as they should be to the diver's body. The gas consumption of a CCR diver is directly proportional to their level of exertion. Using more $O_2$ to move underwater means having a shorter dive time and a higher $CO_2$ production. Both factors are counterproductive for a rebreather diver who wants to get all the benefits of using such a complex piece of equipment.



### Configuration and danglies

Most of the time, rebreathers look very bulky and messy. The technical rebreather diver has lots of hose and cable on their chest and their arms. Additional sling tanks and poor configuration don't help to avoid the now popular astronaut-like image of the rebreather diver. It's maybe satisfying to show that we can manage to dive with heavy and obviously very complicated equipment, but it's definitely not streamlined and efficient.



**Handsets:** most of the CCRs have one or two handsets that are attached to the diver's forearm. A highly inelegant cable is connected to the electronics, most of the time on top of the canister or the housing on the back of the rebreather.

*A rebreather diver (and all divers in general) should work to reduce their surface area*

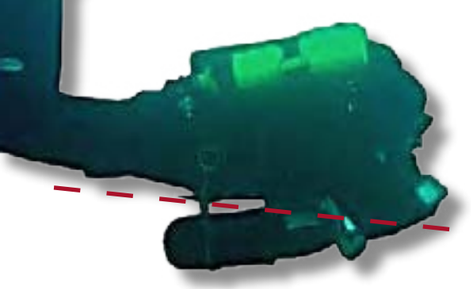
Each rebreather diver should have someone else taking pictures or video of their configuration to see how poorly streamlined these handsets are. A better routing and maybe a chock cord loop at the appropriate location should help to keep the cables close to the body in any position (not only in a vertical position in front of a mirror!).

**SPG and LP hoses:** in a similar way, a rebreather is full of hoses pointing downward or bulging out when the diver swims horizontally. Shortening the hoses is of prime importance if you want to have a better configuration. And of course, unnecessary hoses and components are like pimples on a fashion-model's face: they should be immediately removed!

**Counterlung placement:** OTS (Over-The-Shoulder) counter-lungs often look very cumbersome compared to the back-mounted counterlungs where the chest area is clear. Nevertheless, even OTS CLs rebreathers can be configured properly to diminish the cumbersomeness somehow. CLs can be adjusted very close to the body, almost under the armpits, without compromising the Work of Breathing and the diver's comfort. Quite the opposite; when the diver has nothing on their chest, they can move more easily, closer to the obstacles or the bottom, with less drag and effort.

### Balance and trim

Being able to achieve a horizontal position at all time (slightly head down, feet up) is not one the cave/wreck diver's dream. It should be the main goal for everyone, but it's definitely not the case for a vast majority of the rebreather divers. A balanced rig would avoid the so common "butt-heavy" position. The ideal horizontal position mainly helps when you don't want to silt up a place. Many divers think they are horizontal underwater; it's, most



The sling tank is clearly too low!!!

of the time, not true. They are maybe horizontal when they swim but slowly (or quickly!) come back to a more vertical position as soon as they stop swimming. With a balanced rig you can stop close to the bottom and stay horizontal even while doing a specific and difficult task (tying some knots on a guideline, adjusting some settings on a camera/dive computer, helping another diver, etc). A balanced rebreather is sometimes quite difficult to achieve because most of the units have the heavy components on the bottom (valves, regs, etc) and the buoyant components on the top (counterlungs, wings, etc).

The first step is to work on the rebreather configuration:

**Cylinder and regs:** Some rebreathers have the option to de-invert the tanks in order to shift some weight on top of the unit.

**Trim weight:** The rebreathers with a case don't have a lot of flexibility for their configuration. A trim weight can then be added on top of the unit to offset the unbalance.

**Wing and backplate:** A short wing with more lift on the bottom than on the top is clearly a useful tool for a better trim. Counterlungs: the position of the CLs is obviously important but their size is also another factor to consider. A smaller volume and less gas (optimal loop volume) help to reduce the uplift component of the vertical vector.

Then the second step is to see how the rest of the dive gear will interact with the rebreather.

**Dry or wet suit:** a dry suit generally gives a better trim as it provides the diver with some additional buoyancy on the legs. It's most of the time not the case with a wetsuit (specially at depth with the suit compression). Other equipments like pockets or heavy fins (ie JetFins) have also to be considered.

Scubapro's Jetfin is a classic favoured by many, but it is weighty

**Additional equipment:** Most of the time, a rebreather diver will carry other pieces of gear like sling tanks and canister lights. The buoyancy characteristics of the tanks (full or empty) and the lights have to be thoroughly checked as they can easily ruin a good trim so difficult to achieve! Ask a friend who has a camera to spend some time with you underwater. Then, back to land, have some fun discovering what you actually look like. Spot all the danglies. Check what could be more streamlined. Go back diving and repeat the process till you become frozen. To speed up this process, a friend of mine even uses a big mirror in his pool. You directly see what could be adjusted and immediately try! Like a dancer in a ballroom.

## Mastering Buoyancy Control with a Rebreather

So, let's assume that the trim is now a problem of the past. The next step is ***Buoyancy***.

Buoyancy control is an essential element of diving proficiency; it is also one of the hardest skills to master, especially with a rebreather. You have to control the gas in the wing, the dry suit, the breathing loop. You have to take into account the suit compression at depth, the buoyancy characteristics of the tanks when empty

*Spot all the danglies. Check what could be more streamlined.*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at the end of the dive, the effect of oxygen automatic injection when you're in the shallows, the gas you loose from the loop when you clear your mask or equalize your ears. So many elements! Few diving skills are so essential, and yet so underemphasized by the rebreather diving community. Buoyancy control can be divided in three different phases:

## Buoyancy control at constant depth:

**$O_2$ injection**. It might be done manually or with the help of a solenoid valve or a KISS valve. In all cases, oxygen level is kept pretty much constant in the breathing loop and that directly affects buoyancy.

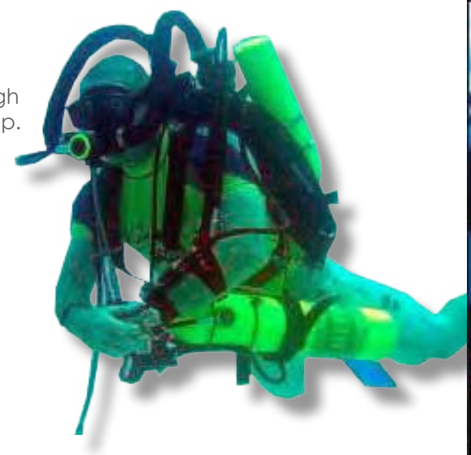
Kiss valve

**Optimal Loop Volume**. A rebreather diver should have enough gas to comfortably breathe from their loop. If more than a deep breath is possible, it means that there's too much gas in the breathing loop. And too much gas means more $O_2$ injection to maintain a constant $pO_2$, more gas expansion/compression when the depth changes, more buoyancy on the upper part of the body. So many things we should avoid at all cost.

**Dry suit inflation.** When the $pO_2$ is spot on and the diver has enough gas to fill their lungs, comfort is another important factor. That's where the dry suit comes into the equation. Some divers need a dry suit because of the water temperature or because of the duration of their rebreather dive, while others simply like the dry suit for its ability to give a better trim. Dry suit inflation is most of the time just enough to avoid suit squeeze at depth, without compromising the diver's buoyancy control, but some divers prefer to use their dry suit as their main buoyancy tool (to a certain extent). It's obviously a matter of practise, experience and personal preference.

**Wing/BCD inflation**. The wing can certainly be used to control one's buoyancy (it was designed for that!) but only when all the previous elements have been fulfilled. The more tools are used for buoyancy control, the more tools

A rebreather diver should just have enough gas to comfortably breathe from their loop. If more than a deep breath is possible, it means that there's too much gas in the breathing loop.



have to be managed during the ascent. Most of the time, when you realized you start to ascent too fast, it's already too late! Practicing some skills should help you to fine tune your buoyancy. For all of them, do not use your hands to keep your balance or to maintain your depth.
Relax and try to make as few movements as possible.

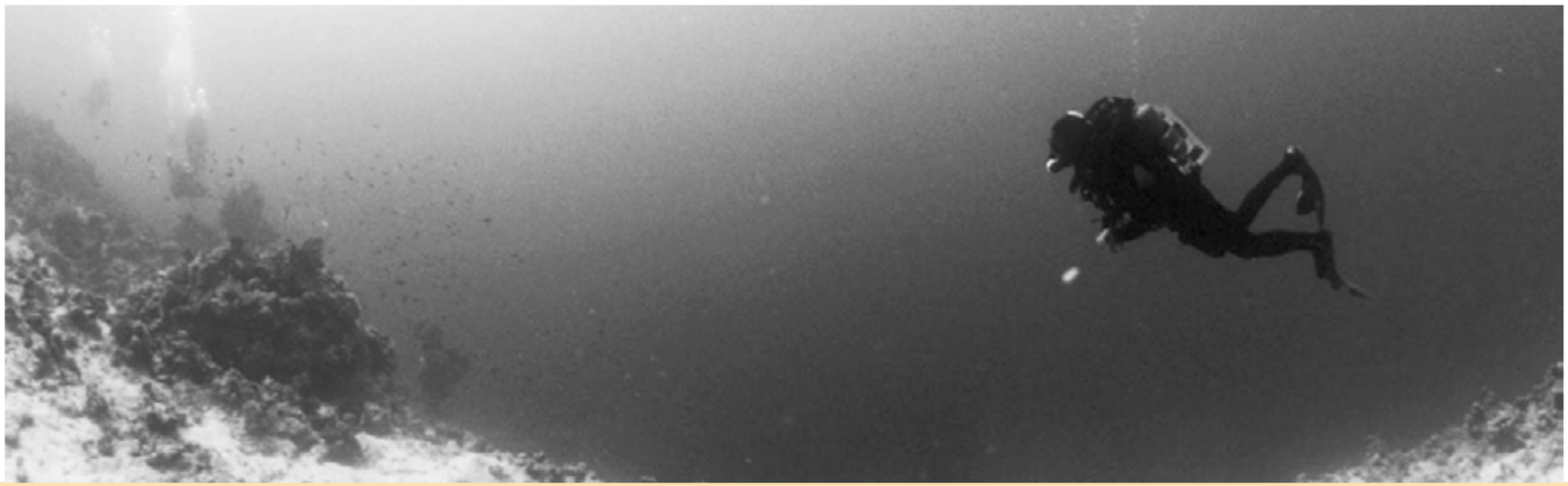
1) Float for a few minutes in a slightly head down position while remaining within 30cm off the bottom or of the starting depth if you're practising in midwater (use a point of reference like a shot-line)
2) Switch from CCR to open circuit back and forth without changing depth
3) Manually fly your rebreather without changing depth
4) Remain horizontal and stationary, hovering over a fixed point while focusing on another task (like scrolling down the menu of your computer or your handset)

## Buoyancy control during descent:

Controlling the buoyancy at a constant depth and during the descent are very similar, as long as the descent rate is slow. You have to find the right balance between:
Positive buoyancy
- Manual/ADV Diluent injection
- $O_2$ injection (KISS valve/solenoid/ manual injection)
- Wing inflation
- Dry suit Inflation

Negative buoyancy:
- Lead weights
- Gas compression
- Suit compression
- Gas lost during air space equalization and mask clearing

The idea is to go down slowly in order



to control all these components.
A few other skills might help you to achieve this goal.

1) Perform a descent in a horizontal position. Many divers have a problem to control their descent rate in this position, as they cannot use their fins to slow down.
2) In a horizontal position, slowly descend and stop within 50cm from the bottom or from any predetermined depth. ADV/manual injection can be used, along with dry suit and wing inflation.

The author Cedric Verdier prepares for a dive with a CCR rebreather

## Buoyancy control during ascent:

When it comes to buoyancy control during the ascent, rebreather divers have often more problems than their OC colleagues. So many air spaces expand during the ascent that a lot of rebreather accidents are caused by uncontrolled ascent. Starting the ascent with only a small amount of gas in the loop/dry suit/wing definitely helps this kind of ballistic event. Here are some other skills:

**Perform an ascent in a horizontal position.** The proper positioning of the rebreather OPV (Over-Pressure Valve) is quite important. The alternative is to exhale off the loop to keep the loop volume constant, despite the $O_2$ injection (manual or automatic) during the ascent. In this position, venting the wing should be done with the dump valve on the bottom of the wing, instead of the corrugated hose that requires the diver to be more vertical.

Some skills that might be helpful to practise:

1) Slow ascent with manual $O_2$ injection only
2) Same ascent but eyes closed (shallow depth)
3) Slow ascent and simulated stops on Semi-Closed Rebreather mode.
4) Slow ascent on Open Circuit (buoyancy control of an expending breathing loop)
5) Slow ascent with all the bail-out tanks nearly empty. Simulated stops with tank exchange with a team mate could also be a useful skill to practice.
6) Slow ascent and stop at any predetermined depth, using only manual $O_2$ injection to maintain your $pO_2$.

**Don't cheat** If your rebreather has an ADV, don't shut it off and don't turn the diluent tank valve off. You have to learn how much gas you have to vent without completely emptying the loop.

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ADVENTURES FOR THINKING DIVERS

## Mastering Propulsion Techniques

Now you're not only horizontal underwater, perfectly balanced at all time, but you're also motionless exactly at the depth you want to stay. Just add various efficient kicking techniques, and you'll be able to move in any direction with the least amount of energy (a.k.a. oxygen consumption). You'll be comfortable and efficient (less stress and drag). There are a variety of propulsion techniques available to divers. The experienced diver alternates between different types of kicks to reduce muscle cramping and to meet the demands of various diving environments.

### Alternate kicks

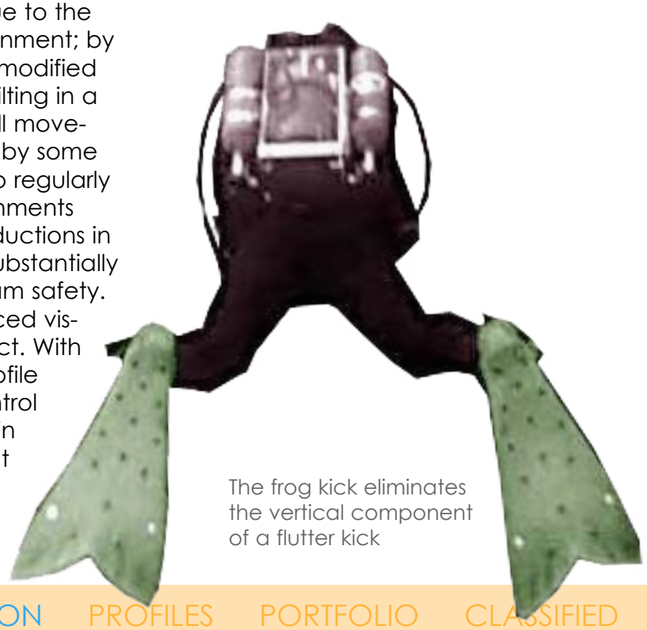
First, by alternating between kicking styles they allow themselves to rest certain muscles by using others. Second, by varying a kicking style, an experienced diver can adjust their propulsion technique to the demands of a particular environment; by switching from a frog kick to a modified flutter, the diver can minimize silting in a low and silty area where the full movement of a frog kick is restricted by some walls or rocks. Those of you who regularly dive in silty or overhead environments might be concerned about reductions in visibility. A loss of visibility can substantially impact both individual and team safety. To avoid the likelihood of reduced visibility, trim has the utmost impact. With a proper, feet-up swimming profile and reasonable buoyancy control a good diver can safely travel in wrecks and cave passages that are particularly susceptible to diver movement. As exhaust bubbles and percolation are normally not a concern with rebreather divers, the main culprits of reduced visibility are errant fin kicks, erratic hand movements and poor trim.

### Modified Flutter kick

Instead of the strong flutter kick used by recreational divers (great deal of power but also significant downward turbulence), the modified flutter kick is based on bent knees and kicks from the knee, directing the water upward. In extremely silted areas, the modified flutter kick can also be done only with their ankles.

### Frog Kick

Commonly used by cave and technical divers, the frog kick eliminates the vertical component of a flutter kick. As the modified flutter kick is not really powerful, it cannot be used in high flow conditions or for very long periods of time. Therefore, as the frog kick directs the water up and back rather than down, some divers use it most of the time.



The frog kick eliminates the vertical component of a flutter kick

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Some skills to fine-tune your propulsion techniques:

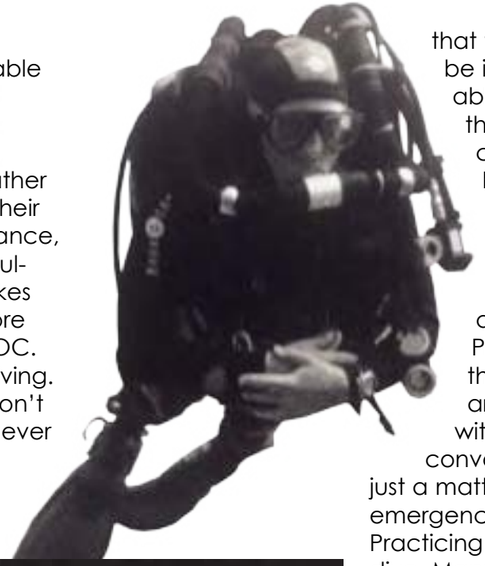
- Alternate between frog kick and modified flutter kick.
- Swim within 50cm from the bottom in a silty area.
- While hovering horizontally, turn your body 360 degrees in each direction using only your legs (no hand movement).
- While floating horizontally, back up slowly while using only your legs (no hand movement).

## So, it's all about comfort!

When rebreather divers discuss with open circuit divers, they always talk about the benefits of diving their favourite unit. Some speak about silence, lack of bubbles, low gas consumption, warmth of the inhaled gas, etc. However, one of the main benefits of open circuit SCUBA is obviously its simplicity, especially when it comes to buoyancy control and trim. Compared to a rebreather diver, an experienced OC diver will more easily be comfortable with their rig.

### Why?

Because most of the rebreather divers don't really work on their comfort, their trim, their balance, their streamliness, their propulsion or their buoyancy. It takes more time and it's often more difficult to achieve than in OC. But it's like many things in diving. It's worth the extra work. I don't know any rebreather who never had the feeling that their unit was cumbersome and that their trim didn't need to be improved. Being comfortable is a way to better enjoy the dive, but it's also a critical component of safety! By practicing all the skills (and more) described in this article, one should achieve the Trinity of the comfortable rebreather diver: Trim, Buoyancy and Propulsion (or TBP). These three essential elements are more difficult to master with a rebreather than with a conventional scuba unit. But it's just a matter of practise. Practising emergency skills can save your life. Practicing your TBP will only save your dive. Many people think they are efficient and look great underwater. A short video session quickly changes their opinion and their self-esteem.



**Rebreather diving is all about time spent underwater... ■**

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## Finally, a GOOD reason for scuba tanks to be heavy

In April 2004, Charles Everett Coma of Olympia, Washington, robbed a bank. Wearing a wetsuit under his clothes, Coma's getaway plan involved rushing to the local pier, diving into Puget Sound and swimming away. However, Coma must've forgotten how cumbersome scuba tanks were, because police tackled him before he was able to enter the water.

After recovering $6000 and a rifle from the scene, last month, a federal court sentenced Coma to 16 years in prison. Wow. That's one looooooong surface interval.

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# Photo & Videography

Edited by
Daniel Beecham
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# Why Shoot Video?

**In the past we've focused on teaching you about underwater still photography, including (amongst other topics) equipment, locations and techniques. In the next few issues, we're going to be diversifying a little, with a series of articles about underwater video.**

As with any topic, there are various degrees of understanding to underwater video. For now, we're going to be concentrating on helping you get to grips with the basics, and we'll be breaking it down into small digestible topics, which will include:

- Equipment (camera's and housings, planning a trip or shoot)
- Lighting and Colour (underwater lights, white balancing, using filters)
- Technique (diving for underwater video, camera movements)
- Post processing (capturing, editing, colour correction, sharing)

In this first article, we're going to look at some general video theory, including:

- Why shoot video?
- Formats
- Frame rates
- Progressive or interlaced?
- Aspect ratios

## Why Shoot Video?

People have different reasons for first taking a video camera underwater. Some divers turn to video in an effort to generally rejuvenate their interests in diving. Once you have a camera in your hands, the quietest of dive sites can become a haven, you can spend an entire dive waiting to capture a certain fish species, or rare behaviour.

An HDV camera housing

For others, it can be out of necessity. Many resort or liveaboard dive guides shoot holiday videos for guests to supplement income. Commercial divers regularly use video camera cameras for inspection work, to show a client a progress or damage to an underwater construction.

There's also the obvious application of professional filming work for documentaries and feature films. A select few individuals specialize in high definition and large format film work, creating 'bluechip' documentaries for broadcast and theatre release. The majority of divers however simply shoot for fun, and to share their underwater experiences. Thanks to technological advances, it's now easier than ever to successfully shoot, edit and share your videos.

Cameras are simultaneously getting cheaper and better, and the technology surrounding underwater housings and lighting systems is also helping us to achieve consistently better results. Many computers now come with video editing software such as iMovie, which allow you to easily put together basic movies. You can also buy consumer version's of professional software packages such as Final Cut Pro, these provide an end to end software solution, allowing you to capture footage from your video tape, edit and output to a variety of different formats.

Sharing your videos is now also easier than ever. With the advent of websites such as youtube, you can share your videos with friends and family, or create podcasts for people to subscribe to and regularly download. After taking all this into account, there really seems that there's never been a better time to get into underwater video.

## Formats

There's a number different video formats available these days. We only really need to look at a couple, DV and HDV. Other formats

An underwater white-balance chart

# Photo & Videography

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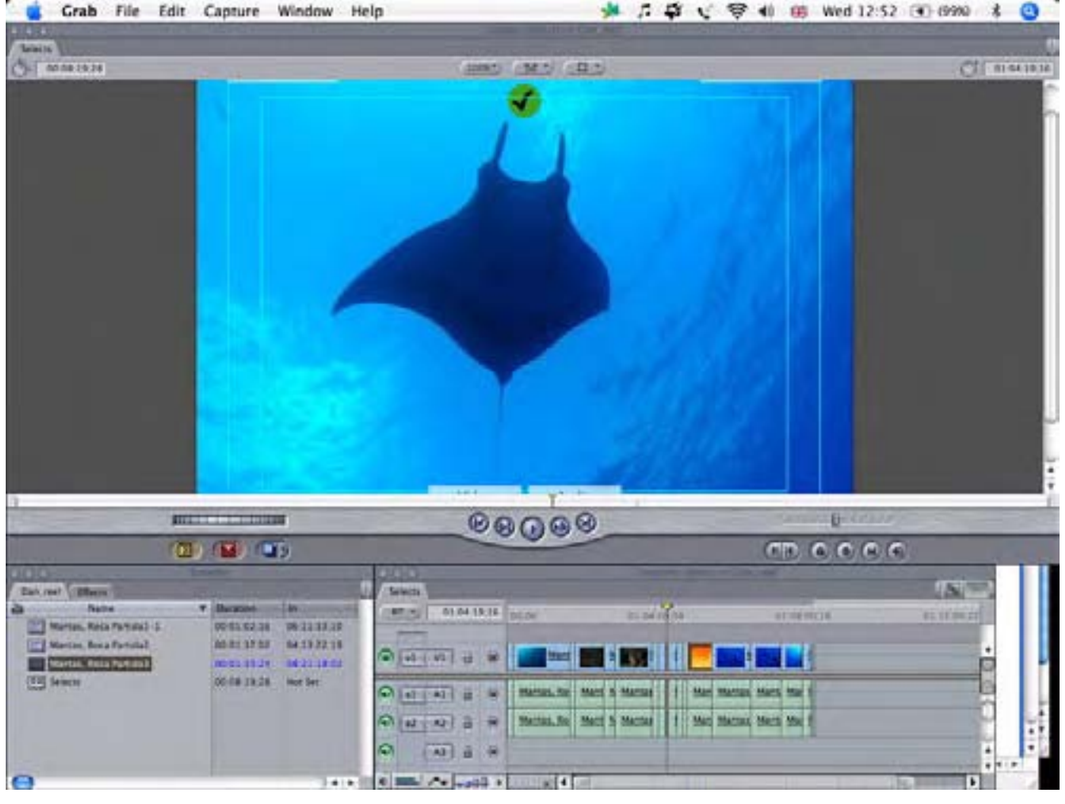
A camera housing with an underwater lighting system

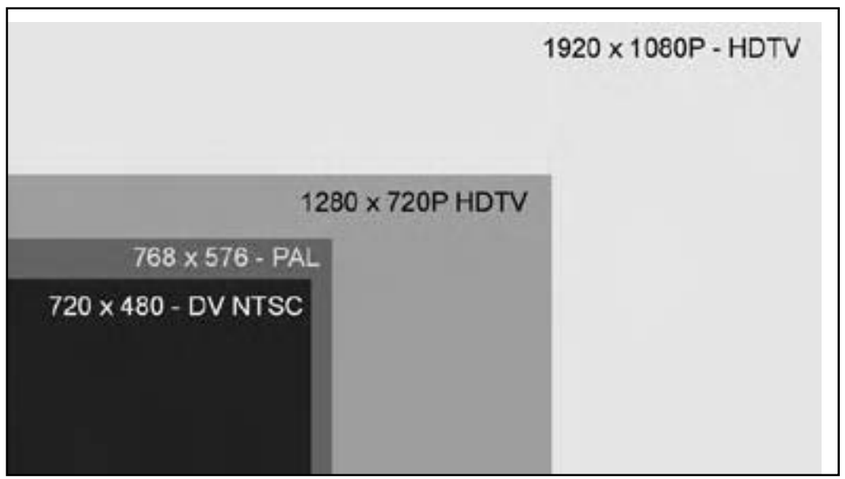
generally remain solely the territory of professional cinematographers, and are not suitable for recreational divers for a number of reasons, including the costs involved, as well as the logistical issues relating to transportation of large numbers of support equipment that professional systems demand.

Software packages such as Final Cut Pro (FCP) allow you to edit your movie, and output to a variety of different formats.




DV has been a popular format for a long time now, and is still very popular today. The cameras are still available to buy, as are the housings and other support equipment, but the advent of a newer, better format has taken DV's place as the most common video format in use.

Roughly three years ago, Sony released their first HDV camera. Since this time, the HDV format—which was created by a consortium of manufacturers including Sony, Canon, Sharp and JVC—has gained tremendous popularity. Many production companies and networks have adopted the format for a variety of uses. Often times, to save costs, a production may consist of a mixture of true **High Def** material alongside HDV material, the picture quality is that good. Even though its been adopted by major industry players, don't think that HDV is for professionals only. Many different manufacturers produce HDV cameras, and there are models available for as little as $1000, which produce stunning results. More and more cameras become available, some of which even have switchable frame rates, or can be switched between progressive or interlaced modes. Both DV and HDV use the same storage medium—mini-DV videocassette tapes.




There are numerous different video formats, here you can see a comparison between a few.

## FPS, Frames per Second

The number of images that a video camera records in a second is known as the 'frame rate'. In order to trick the eye into seeing movement rather than a series of still images, a minimum number of frames per second must be seen. Old mechanical cameras used to shoot frame rates as slow as six or eight fps, but modern, professional level cameras can shoot as much as 120fps, which can be used to show fast action in slow motion.

Different geographical regions use different frame rates, for example Europe, Asia and Australasia use 25fps, which is known as PAL. USA, Canada and Japan, etc., use NTSC or 29.97fps. Generally, you'll only ever shoot the frame rate that is used in your country of residence.

## Progressive or Interlaced?

Video cameras can record in either interlaced or progressive formats. Interlacing was created as a means to provide visual quality inside the limitations of narrow bandwidth for broadcast. When material is interlaced, every frame is divided into odd and even horizontal lines, and the two are scanned separately.

Progressive, as it sounds, progressively scans each individual frame, in the same way that a film camera does. Many professional level video cameras can be set to record either progressive or interlaced. Oftentimes, people choose to shoot progressive

When material is interlaced, every frame is divided into odd and even horizontal lines, and the two are scanned separately. If progressive, each individual frame is scanned individually, like a film camera.

16 x 9 and 4 x 3 are both popular aspect ratios. Here, you can see how the two differ, and how your frame can be used in different ways to compose your subject

as it gives a more filmic, cinematic look, as well as ensuring the maximum compatibility with old film stock. The ability to switch cameras inbetween interlaced and progressive formats is now filtering down into smaller, consumer level cameras.

Video format abbreviations often include an 'i' or 'p' to indicate interlaced or progressive recording: 50i, 60i, 24p etc.

For some applications, including underwater and wildlife video work, interlaced formats can be more popular. Fast moving subjects, like the subjects we often encounter underwater are preserved better when using an interlaced format, but ultimately what you shoot is down to personal preference.

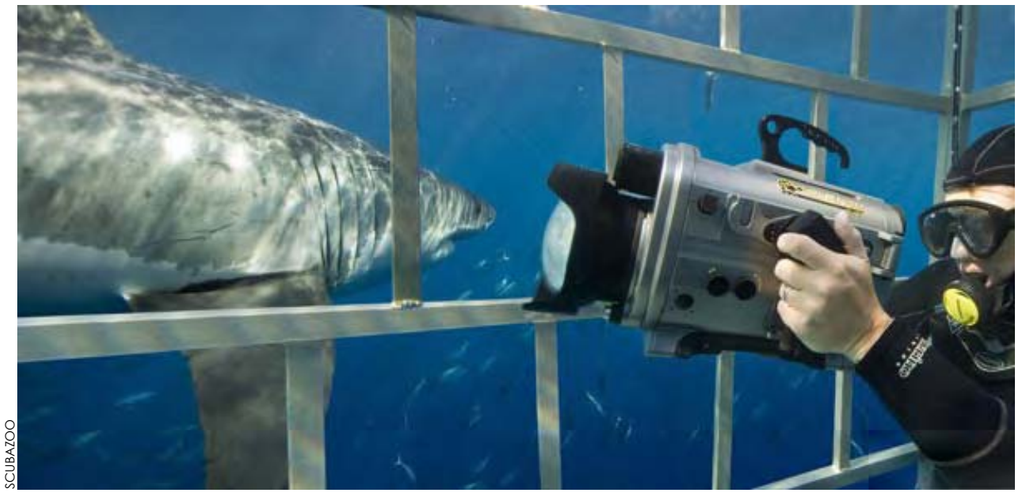
It's important to look into the various frame rates and formats before you make decisions on purchasing equipment, make sure that the camera you're looking at shoot's the right format for the kind of work you plan to do.

## Aspect Ratio's

The term aspect ratio is used to describe the width and height of your video picture. The most common aspect ratios are 16 x 9 and 4 x 3. Traditional television screens are 4 x 3, but new high definition and 'widescreen' displays are 16 x 9. This is the same aspect as traditional 35mm film, and so has a more cinematic look and feel. 16 x 9, as a general rule is a more popular aspect ratio these days, one reason being that the human eye view's a widescreen image more comfortably than a traditional 4 x 3 one. On a personal note, I find working in the 16 x 9 aspect ratio much more enjoyable.

It's worth bearing in mind the final use of whatever footage you're shooting. If you want to view it on your home TV system, then you'll may be best going for 16 x 9, but if you exclusively want to view it on a personal device, such as an iPod, the screen would be 4 x 3, if you shoot 16 x 9 then you'd either need to 'letterbox' your final movie, or adjust it in some other way when you edit it.

Hopefully now some of the jargon behind video cameras is a little clearer. In the next issue we'll be looking closely at what cameras are available on the market today, what their advantages and disadvantages are. We'll also look at some different types of housings, and what other equipment considerations you should undertake before you decide to get wet! ■



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Scubazoo at work (see article in previouls issue) with a digital video

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# Under the Blue 2007

**International Underwater Photo and Video Competition**

## Over $20,000 in Prizes!

Next in the series of Underwater-Competition.com underwater photo and video competitions, and on the heels of the popular Our World Underwater and DEEP Indonesia competitions, popular underwater imagery websites Wetpixel and DivePhotoGuide have teamed up with the 2007 SCUBA Show to develop a competition for amateurs and hobbyists entitled "UNDER THE BLUE". Winners will be announced online and exhibited at the 2007 SCUBA Show in Long Beach, California, June 2nd – 3rd. **Deadline May 12, 2007.**

Photographers will compete in four still image categories, including a category for images that focus on California's unique and beautiful underwater environment, and one video category. Winners will share in more than $20,000 in prizes, including premium dive travel, and underwater photo and video equipment! Travel prizes include trips to some of the top photo destinations in the world including Fiji, Indonesia, Papua New Guinea, South Africa and Australia. 15% of entry proceeds will be donated to marine conservation efforts.

2007 CATEGORIES
1. Majesty of the Oceans
2. The Macro World
3. Man & the Sea
4. California Underwater
5. Video

**www.UnderwaterCompetition.com**

underwater competition.com

## Sealux ultrawide for Sony HC1

The new fisheye port for Sealux' HD1 Housing for Sony's HC1 boast a 145° shooting angle and permits for a 6x zoom. It weighs in at 1500 gram, is rated at 90m and comes with a 2-year warranty. **www.sealux.de**

## Canon Releases the EOS-1d Mark III Digital SLR

EOS-1D Mark III is the world's fastest digital SLR camera. At 10 frames per second, the 10.1 megapixel EOS-1D Mark III digital SLR can fire huge motor-driven bursts of 110 Large JPEGs or 30 RAW files. The all-new 10.1 megapixel, APS-H size CMOS sensor which is designed and manufactured by Canon, is the most light-sensitive and innovative sensor that Canon has developed to date. A new microlens array and a more efficient pixel structure for ultra-low noise, resulting in exceptional image quality and an amazing ISO range of 100 to 3200 with extensions to ISO 50 and a highly usable ISO 6400.

## WM 3.6 Colour monitor.

The high-resolution Colour TFT-LCD monitor offers a sharp picture of 3.6" in 16:9 format that is rich in contrast. The housing is made from aluminium, hard anodised and specially coated for highest seawater resistance. Brightness: 250 cd/m² Contrast: 350:1 Video Input: PAL or NTSC Operation time: 4 hours Testing depth: 90 m. Guarantee: 2 years **www.sealux.de**

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UNDERWATER IMAGING HEADQUARTERS H2OPHOTOPROS.COM

**Light & Motion** has announced the Bluefin HC7, an underwater housing for the compact Sony HDR-HC7 HDV camcorder. The Bluefin HC7 will allow manipulation of the camcorder's touch screen menu to provide access to one-touch manual white balance, independent aperture and shutter speed control (a great feature of the HC7 camcorder), Tele Macro mode, and Smooth Slow Motion. Also standard on the Bluefin HC7 is Light & Motion's signature Smart Grip Handles, an underwater microphone, flip-down color correction filter, and an all glass zoom through lens. Pricing has not yet been announced, but will likely be $3,099 USD.

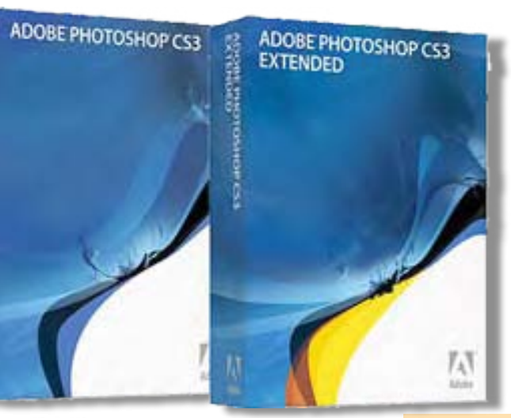
VIA WETPIXEL.COM

**www.uwimaging.com**

## FD-40X Housing will be *Available Soon*

Fantasea must be the first with a housing for the new Nikon D-40 and D-40X Cameras. Housings come with standard 18-55mm Zoom Port included. Fully functional, allowing access to all essential control options. Depth rated to 60m/200 feet. The Housing includes a one-year free D.E.P.P flood insurance policy.

**www.fantasea.com**




## Photoshop CS3 is out

Adobe announced Adobe Photoshop CS3 and Photoshop CS3 Extended, two editions of the professional industry standard for digital imaging. Photoshop CS3 software is a major upgrade, offering new innovations in editing power and productivity for designers and photographers.

**www.adobe.com**

OCEAN GEOGRAPHIC
Almanac of Our Seas

SEACAM

Call for entries

# ADEX Photographer of the Year Competition 2007

The categories for the ADEX Photographer of the Year Competition are Seascapes, Macro and Animal Behaviour. The final round of the competition will be judged "live" at ADEX 2007, where the judges, made up of distinguished underwater photographers, will give their scores and critiques. There will also be a Q&A session for participants to learn the finer points of successful underwater photography. For the top honour of "ADEX Photographer of The Year" the audience will cast their votes on the finalists selected from the three categories. Winners of any of the three categories stand a chance to win a SEACAM Nikon DSLR housing!

15. Entry fees:
One category is AUD $10
Two categories is AUD $15
Three categories is AUD $18

## How to Enter and Regulations

1. The ADEX PHOTOGRAPHER OF THE YEAR COMPETITION is owned by Suntec Integrated Media and managed by the Ocean Geographic team. The contest is open to all participants worldwide.

2. Participants must first register to compete with the competition application form (download) and submitted to APOYC@-underwaterartists.com; deadline for registration is 18 April 2997 – 1600 hrs GMT +.

3. We will acknowledge your application via email within 24 hours, and we will advise you of your Competitor ID / entry number. We will also forward instructions on how to submit your images.

4. Submission by email only; Images must reach us by email: 20 April 2007 - 1600 hrs GMT +7. We recommend you send registrations as soon as possible.

5. Images must have been taken in the wild, underwater, with a digital camera. Aquarium photos will not be judged. Over-under shots are permitted, but digital composites or montage are not.

6. Images may not have been winners in any competitions.

7. The categories for submission are Seascapes, Macro and Animal Behaviour. You may present up to three images in each category.

## Definition of Categories:

**Seascapes (WA):**
Any image taken with a wide-angle lens showing reefs scenery with or without animals as main subject. Model permitted.

**Macro (MA):**
Any image taken with a macro lens showing part of or entire a subject that is smaller than 20cm (8").

**Animal Behaviour (AB)**
Any image showing natural behavoir of marine animals.

8. The final round will be judged 'live' during ADEX 2007 – 28 and 29th April 2007; sessions time to be announce on site. Two sessions with live audience and live video broadcast over show floor.

9. Participants will be invited to attend the judging sessions.

10. Subject to space availability, all entries will be presented on the show floor but only the finalists will be presented for the final 'live' round judging during ADEX 2007. Though the juries will present their scores, critiques and summary of their competition.

11. Competitors agree to reproduction of their pictures for the ADEX PHOTOGRAPHER OF THE YEAR COMPETITION archives.

12. Competitors agree to the use of their works by the ADEX for the promotion of future competitions. Winning images may be shown to the public at future event. At each use of the works the name of the author will be mentioned but no payment for use of the copyright or no retribution of any kind will be possible. No commercial use of the image will be made by the organizers of the competition. Individuals wishing to purchase any of the works will be put in contact with the photographers.

13. The Ocean Geographic Organizing Committee will consider that, according to law, all works presented are free and clear of copyright and that the images are the exclusive property of the authors. By their participation in the competition, the authors undertake to guarantee the organizers against any claims that might be made against them. Ocean Geographic may in no way whatsoever be held responsible in cases of dispute or litigation.

14. The decisions of the jury are final. Participation in this contest entails acceptance of the above regulations.

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## Dive Operators AMERICAS

**At the Water's Edge, MA, USA**
*When you just gotta dive!*
***www.lovetodive.com***
**Captain Slate's Atlantis Dive Center**
*For the very best diving in the Florida Keys* ***www.captianslate.com***
**Tiedeman's Diving Center, NY, USA**
*Long Island's Premier Scuba Ed Facility*
***www.tdconline.com***
**Tuneffe Island Lodge**
*A private Caribbean Island*
***www.tuneffelodge.com***
**Utila Dive Center, Honduras**
*Welcome to the Whaleshark experts*
***www.utiladivecenter.com***
**Utopia Village** *—Coming 2007: Dive, Fish, Relax in Utila, Honduras. Opening specials sign up* ***www.utopiautila.com***

## Dive Operators EUROPE

**Dive Academy Gran Canary Island**
*Europe's most southern dive center*
***www.diveacademy-grancanaria.com***
**Diving World, Netherlands**
*Dive travel specialists*
***www.divingworld.nl***
**Dykkercenter Langeland, Denmark**
*Cabins & Wreck diving in Denmark*
***www.dykkercenterlangeland.dk***
**Eden Roc Amigos Del Mar**
*Costa Brava Irish owned, reef, wrecks, caves, Clubs & individuals welcome*
***www.eden-roc-dive.com***
**Media-Sub, Erstein, France** *—Underwater video and photography equipment and service* ***www.mediasub.com***
**Profondo Blu, Ustica**
*An underwater paradise in the Med*
***www.ustica-diving.it***
**Scuba.Lu, Luxemburg** *—Diving Luxemburg-Worldwide expeditions*
***www.scuba.lu***
**Timuna Sea, London, UK**
*Premier diving specialist in East London*
***www.timunasea.com***
**West Wales Diving Center, UK**
*Longest serving dive center in Wales*
***www.westwalesdivers.co.uk***
**Zapp Divers, Denmark**
*Dive tours around Jutland*
***www.zappdivers.dk***

## Dive Operators RED SEA

**Emperor Divers, Sharm El Sheikh, Egypt**
*Your Red Sea dive specialists*
***www.emperordivers.com***
**Nemo Divers, Eliat, Israel**
*Red Sea's best little dive center*
***www.nemodivers.co.il***

## Dive Operators AFRICA

**Dive Solutions, South Africa** *—Diving Mozambique, tech & rec dive educ*
***www.divesolutions.co.za***

## Dive Operators ASIA

**Bali International Diving Professionals**
*Specialists in Macro to Pelagic Sights*
***bidp-balidiving.com***
**Big Bubble Center, Singapore**
*Taking the mystery out of scuba diving*
***www.bigbubble.com***
**Delphis Diving, Maldives**
*Since 1982. Safe, personal & organised*
***www.delphis.com.mv***
**Lumbalumba Diving - Manado**
*Small, cosy and personalized dive resort in Bunaken Marine Park*
***www.lumbalumbadiving.com***
**Sipadan Water Village Resort, Sabah**
*Luxurious diving resort in Borneo*
***www.swvresort.com***
**Tioman Scuba** *—Finest diving at the best price in Peninsula Malaysia*
***www.tiomanscuba.com***
**Ocean Adventures** *—Philippines*
*Welcome to the world of wonder*
***www.oceanadventure.com.ph***
**Swanido, Biak, Indonesia** *Discover the Hidden Treasures in Cenderawasih Bay*
***www.swanido.com***

## Dive Operators AUSTRALIA

**Abyss Scuba Diving, Sydney Australia**
*Scuba diving in Australia is worldclass*
***www.abyss.com.au***
**Aquapro Dive Services Australia**
*Your first choice for instructor training*
***www.aquaprodive.com***
**Deep Sea Divers Den, Australia**
*Diving Great Barrier Reef & Queensland* ***www.diversden.com.au***
**Eagle Hawk Dive Center, Tasmania**
*Tazmanian Peninsula dive specialists*
***www.eaglehawkdive.com.au***
**New Zealand Dive Experiences**
*Expand your diving and underwater photography horizons in Kiwi country*
***www.nzdivexperiences.com***
**Ningaloo Reef Dive, Western Australia**
*Preferred operators on the West Coast*
***www.ningalooreefdive.com.au***
**Perth Diving, Australia** *—Western Australia's premier diving organisation*
***www.perthdiving.com.au***

## Liveaboards

**Eagle Bay Liveaboard, Maldives**
*Maldives Oceanic Dreams—where your ulitmate diving experience begins*
***www.maldivesdivingadventure.com***
**Nautilus Explorer Liveaboard, USA**
*Diving Mantas to Icebergs*
***www.nautilusexplorer.com***
**Ocean Rover** *—Cruises in Thailand, Myanmar, Indonesia and Malaysia*
***www.oceanrover.com***
**SMY Ondina** *—Dive Indonesia*
***www.smyondina.com***
***www.thebestdivingintheworld.co***

## SCUBA & UWP Clubs

**Aalesunds Sportsdykkerclub, Norway**
*På Voldsdalsberga ved Borgundfjorden*
***www.aasdk.no***
**Ajax Scuba Club, Ontario, Canada**
*Serving Durham Ontario since 1975*
***www.ajaxscubaclub.on.ca***
**Alberta Underwater Council, Canada**
*Underwater sports & eco-awareness*
***ws.albertaunderwatercouncil.com***
**Barnacle Busters Scuba Club, USA**
*Los Angeles/Long Beach (Gay/Lesbian)*
***www.barnaclebusters.org***
**Bottom Bunch Dive Club, San Diego, US**
*Promoting safe diving and having fun*
***www.bottombunchdiveclub.com***
**British Sub Aqua Club (BSAC), UK**
*Where sport diving began...*
***www.bsac.co.uk***
**Dansk Sportsdykker Forbund, Denmark**
*7500 members in 152 clubs in Denmark*
***www.sportsdykning.dk***
**Los Angeles Underwater Photographic Society, USA** ***www.laups.org***
**Northumbria Sub Aqua Club, UK**
*Dive training and trips*
***www.divenorthumbria.co.uk***
**Saddleworth Sub-Aqua Club, UK**
*Based in the Pannine hills of Lancashire*
***www.saddleworth-subaqua.co.uk***
**Southern Division Diving Club**
*Netherlands: Dive with us, you can't sink lower!* ***www.sd-diving.nl***
**Tufts University Scuba Club, MA, USA**
*New adventures, new buddies*
***www.ase.tufts.edu/scuba***

## Dive Shops

**Carlsens Dykkercenter, Denmark**
*Education, Equipment & Service*
***www.cdcdyk.dk***
**Deep Six Underwater Systems, USA**
*New Paltz, NY —We ship worldwide*
***www.deep-six.com***
**Divers Supply, USA** *—Shop us for the best prices, equipment and service!*
***www.diverssupplyusa.com***
**Dykkercentret, Denmark**
*Danish dive shop & online store*
***www.dykcen.dk***
**Diveshoppen, Denmark**
*In the heart of Copenhagen*
***www.diveshoppen.dk***
**LondonDivingNet** *—The best place in London to learn to dive*
***www.londondiving.net***
**Ocean Dive Explorers, Denmark**
*TDI/SDI Scandinavia*
***www.oceandive.dk***
**SuperDive.dk** *—Copenhagen dive center, tours and trips PADI, NAUI and NAUI Tech*
***www.superdive.dk***
**Simply Scuba, UK & International**
*One-stop online dive shop*
***www.simplyscuba.com***
**Thyges Dykkercenter, Denmark** *—IAHD 5 star PADI instructor development ctr*
***www.thygedive.dk***

## Dive Travel Agents

**AquaTours UK**
*Aquatours specialise in Scuba Diving holidays world-wide. A****quatours.com***
**Blue o Two** *Operating since 2001, blue o two offers tailor-made diving holiday packages to THAILAND, RED SEA, USVI and MALTA.* ***www.blueotwo.com***
**Dive Discovery, Houston, TX, USA**
*Complete dive & adventure travel*
***www.divediscovery.com***
**US Dive Travel Network, USA**
*Not just a vacation, an adventure!*
***www.usdivetravel.com***

# Woman's class ring returned after 20 years

Twenty years ago, Clare Lopez, diving on Mauritius' La Cathédrale, accidentally lost her class ring. Admitting, "Wearing jewelry to go scuba diving was just dumb altogether," the ring simply slipped off her finger and plummeted to the depths. Resigned to the fact that she lost her keepsake, Lopez went on with life.

Fast-forward 20 years. Last month, German diver Wilfried Thiesen spotted something glittering in the sand off La Cathédrale. Approaching it, he noticed it was a ring and pocketed it. Later, on the surface, he noted the name of the college on the ring (Notre Dame of Ohio) and contacted the school, asking if they knew anyone who had lost a ring in Mauritius. Somehow, word got around, and shortly thereafter, Thiesen sent Clare her ring. Evidently, the ring was just as shiny as the day she lost it.

Amusingly, when asked if she had ever found anything while diving, Clare responded, "I brought back shells." Not quite the same, is it?

SOURCE: WWW.WASHINGTONPOST.COM ■

**Wet & Weird**

News edited by Willy Volk

X-ray mag

# Business Directory

## Publishers

**Best Publishing Co, Flagstaff, AZ, USA**
*Scuba diving & hyperbaric medicine*
***www.bestpub.com***
**Oceans Enterprises**
*Diving and Underwater Books*
***www.oceans.com.au***
**Pine Belt Publishing**
*Onlline Book Distributors*
***www.pinebeltpublishing.com***

## Dive Manufacturers

**Cochran**
*Undersea Technology*
***www.divecochran.com***
**Dive Junkie, Singapore** *—Fun, fashionable and expressive scuba dive t-shirts*
***www.divejunkie.com.sg***
**Diving Unlimited International, USA**
*Unlimited comfort, performance, quality*
***dui-online.com***
**Fourth Element, UK** *—High tech, high quality dive clothing and design*
***www.fourthelement.com***
**Nocturnal Lights, CA, USA** *—Advanced lighting systems for diving, UWP, video*
***www.nocturnallights.com***
**Reefling Clothing**
*Divewear that inspires diving*
***www.reefling.com***
**Silent Diving Systems, USA**
*Closed circuit rebreather distribution*
***www.silentdiving.com***

## Non-Profit Organisations

**International Association of Handicapped Divers (IAHD Foundation)**
***www.iahd.org***
**Coral Reef Alliance** *—Working together to keep coral reefs dive*
***www.coralreef.org***
**The Manta Network**
*Help Save the Mantas*
***www.save-the-mantas.org***

## Online Dive Resources

**Cairns Scuba Diving Australia**
*Dive training & travel holidays*
***www.divedirectory.com.au***
**DiveGuru, Deerfield, FL, USA**
*When you want answers...*
***www.diveguru.net***
**DiveIndex.com** *—All links diving related Newest, top-rated, most popular*
***www.diveindex.com***
**DivePhotoGuide** *—The essential resource for UWPs & Videographers*
***www.divephotoguide.com***
**Diverlink** *—A comprehensive resource for divers and dive businesses*
***www.diverlink.com***
**Divester**
*Weblong's premier diveblog*
***www.divester.com***
**Dykcentralen, Sweden**
*Swedish divelink index*
***www.dykcentralen.se***
**Lines & Shadows** *—Home of the best source of UWP, travel & adventure*
***www.linesandshadows.com***
**NauticFriend.com** *—The Ultimate Worldwide Watersports Directory*
***www.nauticfriend.com***
**Onderwaterfoto, Netherlands**
*Digital UWP Forum*
***www.onderwaterfoto.net***
**One Ocean** *—Earn frequent diver points toward equipment & travel*
***www.oneocean.com***
**Patrick Musimu, Freediving Champion**
*Accept No Limits*
***www.patrickmusimu.com***
**Scuba Duba** *—Online diving resource for news, equipment, buddies & travel*
***www.scubaduba.com***
**Scuba Spots** *—The World's Oldest, Largest Scuba Directory*
***www.scubaspots.com***
**Scuba.start4all.com** *—Diving directory in cooperation with Diving World*
***www.scuba.start4all.com***
**ScubaDiveSites.com, Australia**
*Listing Dive Sites Worldwide*
***www.scubadivesites.com***
**UK Diving** *—UK Scuba Diving Resource & Network*
***www.ukdivers.com***
**Underwater Australasia** *—Australia & Asia Pacific's most popular dive portal*
***www.underwater.com.au***
**UnderwaterTimes** *—A daily journal of life in and around water*
***www.underwatertimes.com***
**University of Michigan, OSEH**
*Dive links by Larry "Harris" Taylor, PhD*
***www-personal.umich.edu***
**WetPixel, USA**
*Digital imaging for divers*
***www.wetpixel.com***
**World-Newspapers.com**
*Scuba Diving Magazines Online*
***www.world-newspapers.com/scuba***

## UWP Competitions

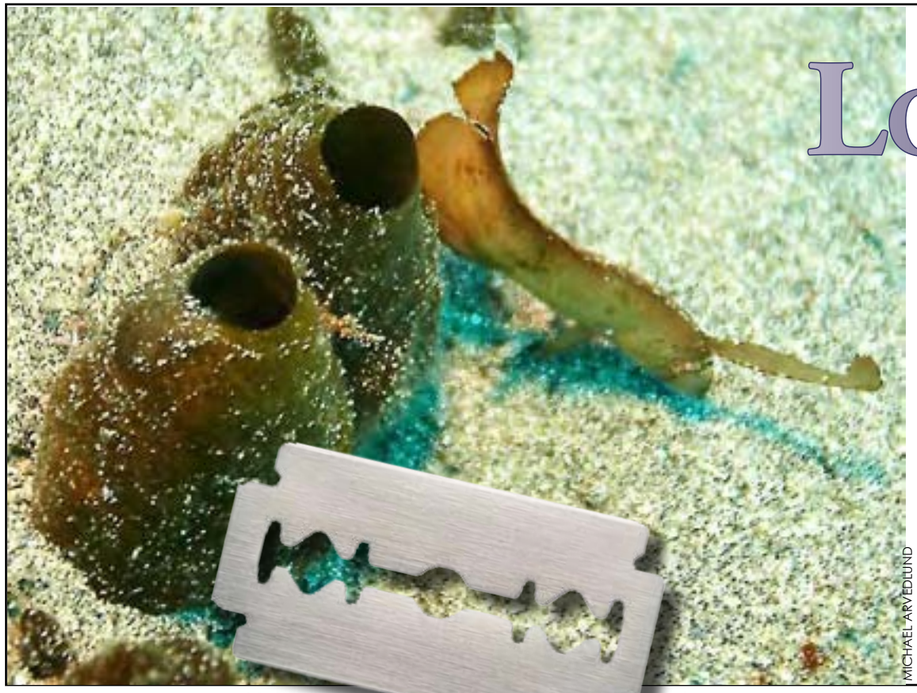
**National Wildlife Photography Awards**
*Deadline: July 15th, 2006*
***www.nwf.org***
**Santa Barbara Ocean Film Festival**
*Deadline: August 30, 2006*
***www.ocean.com***
**XARIFA Unterwasser Foto & Film Festival**
*14-15 October 2006, Germany*
***www.uwfv.de/xarifa***
**World Festival of Underwater Pictures**
*25-29 October 2006, Antibes, France*
***www.underwater-festival.com***

## UW Photo, Video, Film

**Alex Mustard, PhD, UK**
*UWP and Marine Biologist*
***www.amustard.com***
**Amos Nachoum Big Animals**
*Worldwide expeditions & adventure*
***www.biganimals.com***
**Bill Becher Outdoor & Adventure**
*Writing & Photography —CA, USA*
***www.becher.com***
**Cathy Church, Cayman Islands**
*UWP Center, Classes, Trips, Services*
***www.cathychurch.com***
**City Seahorse, Dallas, TX, USA**
*UWP & Raja Ampat stock & tours*
***www.cityseahorse.com***
**Edwin Marcow, UK**
*Marine & Wildlife Photographer*
***www.edwinmarcow.com***
**Jack Connick, WA, USA**
*UWP & Graphic Design*
***www.opticalocean.com***
**John Collins Photography, Kinsale, UK**
*Cool Waters-Emeral Seas*
***www.johncollinskinsale.com***
**Jon Gross & Keith Clements, WA, USA**
*Marine Life Index*
***www.seaotter.com***
**Michael Portelly, UK**
*Director and Cinematographer*
***www.portelly.com***
**Nonoy Tan, Metro Manila, Philippines**
*Underwater images of the Philippines*
***nonoytan@yahoo.com***
**Poppe Images, Philippines**
*Marine Iconography of the Philippines*
***www.poppe-images.com***
**Thomas Peschak, South Africa**
*Africa's Oceans and Coasts*
***www.currentsofcontrast.com***
**Tony White, UK**
*Underwater imagery at its best!*
***www.seaofdreams.co.uk***
**UV Foto, Norway**
*Underwater photos of Stein Johnsen*
***www.uvfoto.no***
**Water Ventures**
*Travel, diving and culinary images*
***www.waterventures.no***

## Wet & Weird

News edited by Gunild Symes



© MICHAEL ARVEDLUND

# Razorfish
# LOOKING SHARP

From John E. Randall1, and Andrew S. Cornish (2000)

Labrid fishes of the genus *Xyrichtys Cuvier*, popularly known as razorfishes, are aptly named, not only because razorfish is the direct English translation of the Greek derivation of the generic name, but because it appropriately refers to the highly compressed body, and in particular to the sharp ridge at the front of the head.

These fishes live over open stretches of sand substratum and are well known for their ability to quickly dive head-first into the sand with the approach of danger.

If a scuba diver swims toward a razorfish, it may retreat, perceiving that the diver does not move with the speed of a large predaceous fish such as a species of *Caranx*. If the diver persists in pursuit, the razorfish may move to anotherlocation where the sand is without obstruction and provides easy entry. It will hover over the site with its head oriented slightly downward.

At this moment, any sharp movement or continued approach by the diver will result in an amazingly rapid dive by the fish into the sand.

If one digs into the sand at this site, one usually fails to encounter the fish. If the digging is swift, one may touch the fish, only to find it moving away faster than one can dig by hand. ■

# Jeroen Verhoeff

## P O R T F O L I O

Atlantic Mackerel search of food under the surface of the North Sea. It is a common fish, but still very beautiful. At market, consumers buy mackerel as a blue fish, but alive in the sea, they are a vivid iridescent green. *Scomber scombrus* by Jeroen Verhoeff. 160 X 82 cm. Acrylic on panel. 2006 commission: sold. Available as a signed, numbered limited edition giclée print of 100 with certificate of authencity. Unframed 80 x 41cm, €200 / US$270

# portfolio

Jeroen Verhoeff

A manta ray swims slowly under the surface of the Indian Ocean. Her mouth wide open, she feeds on plankton, accompanied by Striped Remoras and Giant Trevallies who catch a ride while hiding under her belly. *Manta birostris, Echeneis naucrates and Caranx ignobilis*, by Jeroen Verhoeff. 120 X 80 cm. Acrylic on panel, 2006 commission: sold. LEFT: Common dolphins and Cory's shearwater, *Delphinus delphis and Calonectris diomedea* by Jeroen Verhoeff. 55 x 80 cm. Acrylic on panel, 2006. Original sold

**Wildlife artist, Jeroen Verhoeff of the Netherlands, loves the underwater world. It is his favourite playground. While Verhoeff is not yet a certified diver, he does snorkel quite a lot and explores many rivers, streams, ditches, mangroves, reefs and areas of open ocean around the world as often as he can.**

Text by Gunild Symes
All images courtesy of Jeroen Verhoeff

"The underwater world is simply more special to me then the land," he said. "The light, the murkiness, the silence, the way a snorkeler is almost equal to the surrounding animals, the feel of flying, the excitement of being in another element, the feel of gliding through weeds like an eel, the excitement of being tossed about like a leaf in the surf on a reef... I could go on forever," he said. "Water moves me."

From these enthusiastic treks into the underwater realm, comes Verhoeff's inspiration to create the

Jeroen Verhoeff

Not well known due to its small and northerly distrbution, Atlantic white-sided dolphins are some of the most beautiful dolphins in the world according to the artist who tried to capture them hunting in the North Sea in this image. By isolating and herding a school of Herring against the surface of the sea into a so-called "bait ball" the dolphin are able to snatch fishes out of it. *Lagenorhynchus acutus* by Jeroen Verhoeff. 160 X 82 cm. Acrylic on panel. 1999 commission: sold.

Jeroen Verhoeff

*Harbour Seal and Plaice*, by Jeroen Verhoeff
36 x 60 cm. Acrylics on panel, 2003. Original sold

Great Cormorants, *Phalacrocorax carbo sinensis,* by Jeroen Verhoeff. 90 X 60 cm. Acrylic on panel, 2003. Original sold

dynamic, vivid and awesome images he paints of underwater scenes and the behaviour of various species of marine life.

Verhoeff is a man of many hats. He is a writer, illustrator, designer, travel guide and cartoonist. His love for nature started at an early age when he began to sketch and paint. Since then, Verhoeff has developed his talents into a career. Verhoeff is a realist and enjoys rendering images as realistically and originally as possible.

Throughout his career in painting, Verhoeff has tested various creative processes to get the results that he desired in his paintings. While painting from photographs was a common method in naturalist art, Verhoeff grew bored quickly with it and tried instead to work from field experiences and memories aided by reference images. He found this method too imperfect. So, he finally developed a third method, which was the most time-consuming

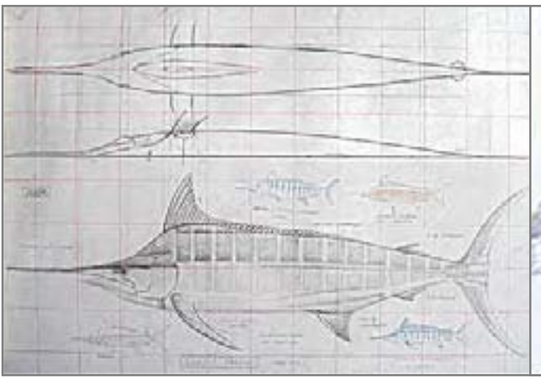
one of all. He worked from research and field studies to develop a model and a model table to finally render a finished painting.

## The method

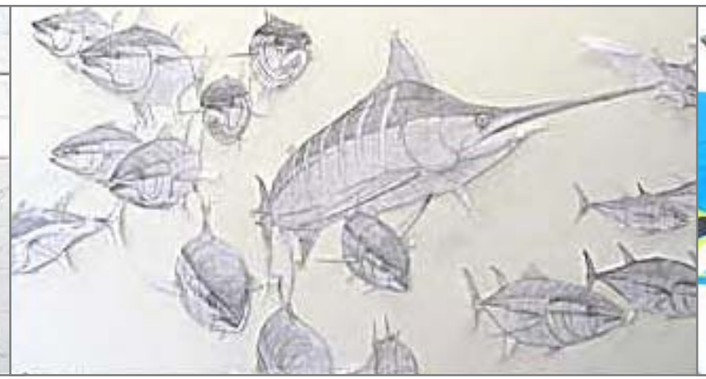
Here is how it works. To design scenes of wild animals and their behaviour as they really are in nature, Verhoeff goes beyond what the general public gets to see. He does research in the field. With photography, film and video footage, wildlife literature and museum specimens, Verhoeff studies a specific animal until he feels that he understands it well enough to sketch several views of it—from the front, side, back, above and below.

These sketches become a plan for a three-dimensional scaled or life-sized model in clay, wood, metal, foam or plastic depending on how much flexibility the model needs to possess. Flexible models are more easily manipulated to find every pos-

*Blue Marlin and Yellow Fin Tuna* by Jeroen Verhoeff. 160 x 82cm. Acrylic on panel, 2005. Original for sale. Also available as a giclée print in a limited edition of only 60 copies. Signed and numbered, with certificate of authencity. Unframed 80 x 41cm, US$300



Blueprint for model



Sketch

Underpainting

Painting in progress

# portfolio

## Jeroen Verhoeff

CLOCKWISE FROM LEFT:
Common Tern, *Sterna hinduro*, by Jeroen Verhoff. 45 x 164 cm. Acrylic on panel, 2003. Original sold; Verhoeff snorkeling the mangroves; measuring a model; adjusting a model tableau

sible pose of the animal under study. Once the details of the model are in place, it is painted to life and put into a miniature set called a model table or tableau. This allows control of lighting, or how the light falls on the object, as well as control of the composition and surroundings of the animal.

Through this process, Verhoeff gets acquainted with the anatomy of the animal and the various poses it is capable of making. He can also play with the composition and the light and the action to get a high level of realism in the final image. A final sketch of the total scene is made with finer detail than prior sketches. The next step is the actual painting of the image on board.

Verhoeff employs the technique of painting many layers of paint, one over another, to create a sense of depth and atmosphere in his artwork. He paints with acrylics on wooden panels to create original works depicting scenes in nature and the behaviors of wildlife in a highly realistic manner.

### Being out there

Verhoeff says that the most important part of the creative process is being out there in the natural world. He loves the aquatic world and the life that he finds there. Crocodiles and sharks don't stop him; rather, they encourage him to jump in and get wet. Verhoeff says all he needs is at least a half a meter of visibility, and he's in.

*For more information or to order prints, please visit:* ***www.jeroenverhoeff.com*** ■

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