You have bought your new digital camera, and naturally, as a scuba diver, you want to take it underwater. Yet the unique underwater environment can make this a very challenging new hobby. The Diving Photographer is an easy-to-use guide for all levels of photographers. It will help you through all aspects of underwater photography, from buying a new camera and housing, preparing it all and setting up your equipment, all the way through to technical advice, lighting techniques and editing your photographs when you are back on land.

Some of the topics covered in this book include: Understanding your Camera, Composition Techniques, Strobe Positioning, Using Ambient Light, Photographing Wrecks, Night Photography with Long Exposures, Basic Editing Skills, Equipment Maintenance and Frequently Asked Questions.

The Dive Spot
OZ DIVER
ISBN 978-0 620 50343-3
9 780620 503433

The Diving Photographer – Sea Through The Lens

THE DIVING PHOTOGRAPHER

Johan Boshoff • James Dawson • Dray van Beeck

Sea Through The Lens
An Underwater & Land Photographer's Guide

The Diving Photographer

Book by: Johan Boshoff – James Dawson – Dray van Beeck
Designer: Johan Boshoff & Annatjie Rademeyer
Copy editor: Gregg Cocking
Publisher: Johan Boshoff
TheDiveSpot-OZDiver

www.thedivespot.com.au

Contents

Contents

Introduction

How to use this book

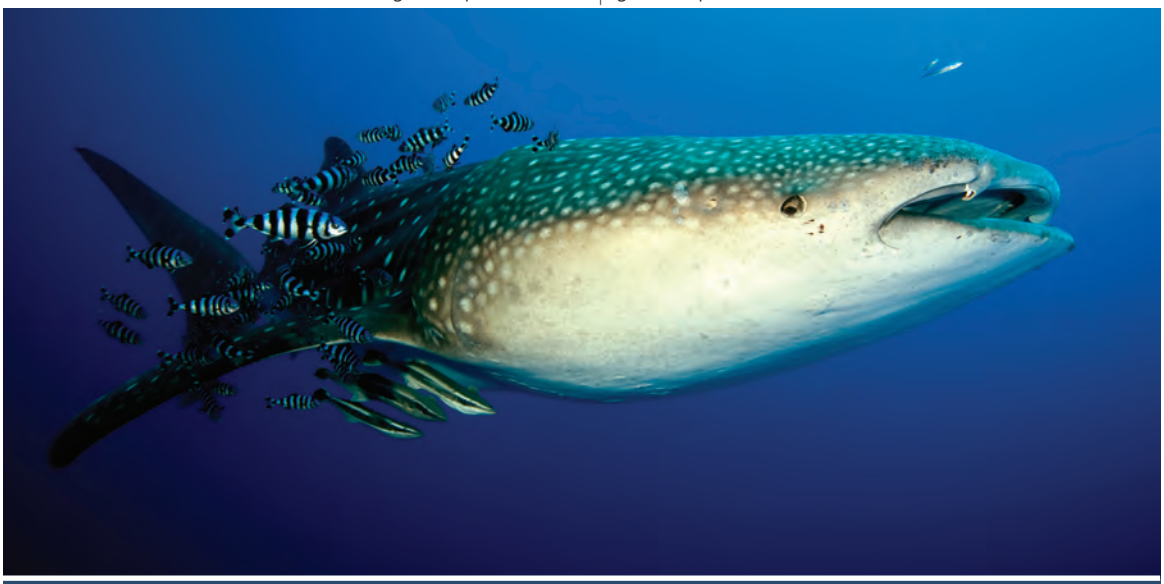
With its diversity of subjects, the vibrant colours and myriad of shapes and patterns, the underwater world is one of the best locations a photographer could wish for. You will rarely find yourself short of subjects to photograph whilst underwater.

The Diving Photographer is an easy to use guide for all levels of photography. It will help you in buying a new camera and housing, preparing your equipment, the setup of your gear, taking the photograph and then editing it to get the perfect shot.

The book covers a range of topics, from Composition Techniques, Strobe Positioning and Using Ambient Light to Wreck Photography, Night Photography, Long Exposures, Basic Editing Introduction, Equipment Maintenance, and how to photograph safely.

Two photo editing computer programmes are also covered within the book – Photoshop and a freeware programme which you can download from the internet. After the basic manipulations the guide will look at "Zen and the art of cheating."

This book will offer some new ideas for choosing the next shot and a step-by-step guide to perfect it.



This edition is published in 2015 by TheDiveSpot-OZDiver (First edition published in 2011)

OZ DIVER

The Dive Spot

Choosing a camera and underwater housing

Cameras

With the advent of digital photography, we have seen the rate of progress and development of cameras increase hugely. If you buy a camera today, it's a safe bet that within a year you will find a newer and more sophisticated version in the stores. However, this does not mean that you need the latest model or the newest technology – almost any camera on the market today is capable of taking crisp, detailed images. The talent is not in the electronics, but in the hands of the person pushing the buttons.

If you are looking to buy a new camera for underwater photography there are a few key areas to look at when making your choice from the wide range that is available. Depending upon your budget, experience and preference you may choose a compact camera or a DSLR, but they will all share some basic similarities.

The first thing to look for is ease of use. Underwater you need to feel comfortable with your camera and you don't want to spend valuable time searching through menus to find the setting you are looking for.

Many of the features that are found in modern cameras are designed with land-based photography in mind and don't take into account the different properties of the underwater world. Don't get distracted by a long list of technical tricks but think about how you want to use your camera and where you will be taking the most photographs.

If you will be using your camera on foreign dive trips, it will also be important to consider the size and weight of your equipment to keep your luggage below airline weight restrictions. If you're more likely to dive close to home, then it is less of a factor.

When you are making your choice, look for a camera with a large screen, easy to use buttons and always make sure that there is an underwater housing available for that particular model!

If you are still unsure, ask for advice. There

Choosing a camera

are many websites and forums on the internet where photographers are happy to share their experience and offer tips about what is the best option for you. Also talk to experts at camera shops or dive centres about what you are looking for.

There are three types of digital cameras to choose from for underwater photography. Most common are the compact cameras, then there are DSLR (Digital Single Lens Reflex) cameras and finally waterproof cameras that require no housing.

Compact cameras – Most divers will use a compact camera and housing to capture underwater images. They are, by definition, small and easy to carry underwater, but improvements in digital technology mean that they are still highly capable.

DSLR – The benefits of DSLRs include their range of lens choices, almost no shutter lag and greater control of exposure. They are expensive, bulky and heavy so are usually favoured by more serious underwater photographers.

Waterproof cameras – These cameras have toughened cases and are usually dust, water and shock proof. There is no underwater housing or o-ring to worry about, but check the depth rating to ensure it will work on your deeper dives.

Benefits and limitations of different camera systems

Compact camera	DSLR camera	Waterproof camera
		
+ Small and easily portable	+ Full manual control if needed	+ No housing or o-ring
+ Some with changeable lenses	+ Wide range of lens choices	+ Can withstand rough treatment
+ Some with same sensor as DSLR	+ Almost no shutter delay	+ Very compact
- Some with limited manual control	+ A variety of features	- Limited manual control
	- Expensive	- May offer lower quality than compacts
	- Large, heavy and some are very bulky	

Housings

Once you have made your choice of camera, you will then need to select a housing to keep it safe during your dives. Depending upon the exact model of camera you have bought, you may have a long or fairly short list of housings to pick from.

The important point about a housing is to ensure that it does what you want it to do. Aside from keeping your camera dry, the housing needs to have buttons that you can access easily and in comfort. Check that all the settings can be used in the housing and whether there are any that are not available.

The next major consideration is whether you are able to attach external lenses to your chosen housing and what fitting they need to be. Some housings use a screw-in system for lenses while others attach with a bayonet fitting. If you already have external lenses you will need to get the matching system so you don't have to buy a new set of lenses.

Another point to think about is how you can attach external lights or strobes to your housing. Most have a screw thread at the base where you can attach a bracket to hold the other components of your underwater set-up.

Again, if you have any doubts, ask for advice. There are many people willing to share their experience and they can help you find the right equipment for your particular needs.

Camera and housing accessories

As with any other item that you might buy today there are a variety of accessories that you can add to your camera and housing. The range includes tools to alter your field of view and different ways to light a subject as well as smaller accessories that can keep your camera safe. Most accessories have to be purchased seperately. The main thing here is to make sure that the accessory is suitable and that it fits your camera and housing.

Strobes

The greatest technical challenge created by underwater photography is the loss of light as it is absorbed by the water column. This becomes more pronounced as depth increases and the most effective way to overcome this problem is to take extra light with you. A strobe is basically an underwater flash gun which allows you to replace the light lost and regain more colour in your images. The same principle can be seen on land at dusk or on an overcast day. Colours become more muted because there is less light reflecting off the surface of a subject.

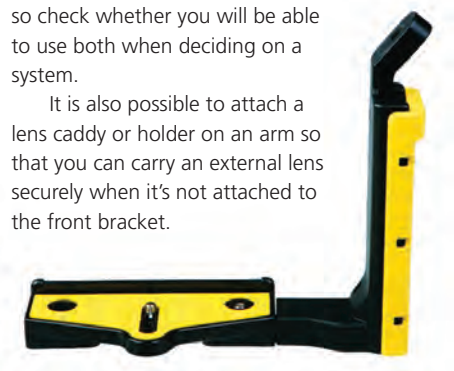
Underwater strobes are available in a variety of sizes, strengths and prices. They use the camera's flash to activate them, either through a direct connection (if the housing permits it) or more commonly through a fibre optic cable. This triggers the strobe when it senses the camera's in-built flash going off. Light is the key to photography, so a strobe is often a good investment.

Brackets/Arms

If you're using a strobe (or two), or have any wet lenses, you will need a secure way of attaching them to your camera and housing. Brackets and arms allow you to operate everything as a single unit and ensure that the lenses are fitted correctly in front of the camera's own lens.

There is a wide array to choose from, but the most important thing is that you select the accessory that fits your particular camera housing. Most trays fit housings through the screw thread in the base and arms can then be attached to the tray. Some external lens brackets also fit into the same thread so check whether you will be able to use both when deciding on a system.

It is also possible to attach a lens caddy or holder on an arm so that you can carry an external lens securely when it's not attached to the front bracket.



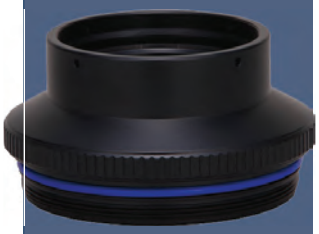
Memory cards

You need to store all your images somehow, and these days there are a number of memory cards on the market. Make sure that you buy the fastest one available and that it is the right format for your camera. The size is up to you and depends on how many photographs you want to take before downloading them.

Lenses

With a digital SLR you have almost as much lens choice as your bank account will allow. For compact cameras, your choice ultimately comes down to three types of lenses: macro, wide angle or fish eye.

Macro/Close-up lens

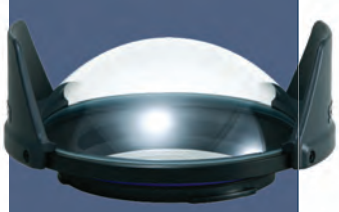


These work in the same way as holding a magnifying glass in front of the lens. They increase the size of the subject without the need to zoom in with the camera. This type of lens is designed for taking images of small subjects and allows you to capture them in greater size and more detail.

Wide angle lens

These work in almost the opposite way to a macro lens by making the subject seem farther away by broadening your field of vision. A standard wide angle lens gives around a 105° field of view which allows you to get closer to large subjects whilst still fitting them in the frame. This means that you are able to reduce the amount of water between the subject and the camera, and thus reduce the light lost in that space.

Fish eye lens



Like the wide angle lens, these expand the field of view but to a greater degree. A fish eye lens will typically offer a 160° field of view which lets you get even closer. It is most useful for very large subjects such as wrecks but can cause some curving of the lines around the edge of the frame.

Accessories

Clips/ Lanyards

When diving with an underwater camera, you don't want to find it drifting away as soon as you let go of it. The safest way to prevent this is to affix the camera to your body when you are in the water with a clip.

O-rings/Grease

No matter the housing or system you use, the integrity and water tightness all boils down to a simple piece of rubber and some grease. The only exception is waterproof cameras which do not require an o-ring as they are designed as a sealed unit.

Preparing your equipment

The only guaranteed way of never flooding a camera is to not take it in the water in the first place! However, there are some simple steps you can take to minimise, if not completely remove, the chance of this happening.

The first step is to develop a routine. The more you do something, the more adept you become at it and by sticking to your own routine you can be sure that you've covered each step and not missed anything. Try to prepare your equipment in an environment that has a similar temperature to that of the water to help reduce the likelihood of condensation due to temperature change.

Before you begin with the housing, ensure that the camera is set-up correctly. Check that the battery is fully charged and that you have sufficient space on the memory card. It's always best to find these things out before you spend time with the housing and need to start over again.

Once you have your camera ready, set it to one side and make sure that the housing is dry. Open it and carefully remove the o-ring. This can be done with the manufacturer's tool if you have one or with a credit card or guitar plectrum if you don't. Alternatively, you can squeeze the o-ring down the two longest sides so that it extends past the housing groove and use your fingers to remove it without needing a tool. Avoid using anything sharp (such as a knife or screwdriver) as this may nick the o-ring or scratch the housing.

When you have removed the o-ring, avoid

putting it down on any surface where it can collect dust or sand. The safest place is to hold it between your lips until you're ready to clean it.

Next clean the housing's groove for the o-ring with a clean towel. Tissue paper and cotton buds can leave small pieces of fluff in the groove so a micro fibre towel is the best method – this way you don't risk leaving anything in the groove that could cause a leak.

When you have cleaned the housing of any residual grease or water droplets, then turn your attention to the o-ring. It's best to rinse it in warm water with some liquid soap to ensure that you remove all of the previous grease and then, with a clean towel, dry the

o-ring and visually check it for any grit, tears or stretching.

If it looks okay, apply some silicone grease to your thumb and finger and gently ease the grease over the whole o-ring. You want there to be an even shine across the whole o-ring with no clumps or blobs of grease built up.

Again, visually inspect the o-ring for any fluff or specks of dirt and then place it in the groove of the housing. Take care not to stretch it too much and avoid any snags or kinks. Place the camera in the housing and perform a final visual check before closing the housing. Ensure that the lock is correctly closed and that the o-ring was not caught at any point.

Before closing the housing, it is also possible to include silica gel packets around the camera if there is enough space. These will not interfere with its operation yet will absorb small amounts of moisture within the housing such as condensation.

Once the housing preparation is completed, take a test shot to ensure that the camera is operating correctly and check that the buttons are all functioning. Finally, dip the camera in freshwater and look for any leaks or bubbles. If all is okay, remove the camera from the rinse tank and leave it somewhere safe until it's time to dive.

It's important to give yourself time to prepare your equipment correctly. If you need to rush the set-up there's a greater chance of missing a step or making a mistake. If you are in any doubt about whether the housing is watertight, it's safer to leave the camera behind until you can be sure.

A flooded camera can be costly and annoying, but it can also cause stress and anxiety underwater, which may lead to dangerous situations. If in doubt, wait until the next dive and ensure that you can dive safely.

Basic photography

Photography, in its simplest terms, is the recording of light on a subject. With film, the lighter areas would expose more of the coating on the film and, therefore, appear lighter on the print. The opposite would happen in the shaded areas. Digital cameras perform the same task but use a sensor instead of film to capture an image.

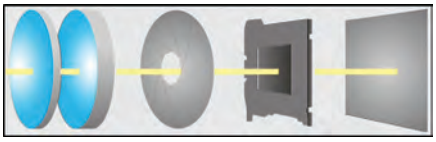
The way to adjust a photograph when you take it is to control the amount of light being recorded. This can be done in one of four ways – aperture, shutter speed, ISO ('film' speed) and exposure compensation.

The mechanics of photography and camera setup:

How a camera works

All cameras operate by recording the available light on a recording medium. With film cameras, the light is registered on the film negative while digital cameras save the information through a light sensitive sensor.

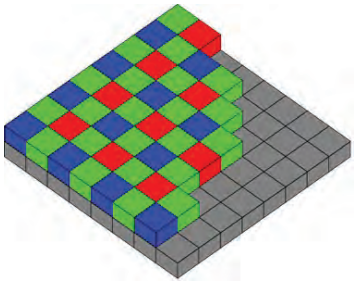
The light follows the path shown in the illustration below. The lens is the first section and this allows you to focus the image to record a crisp photograph. Light then passes through the aperture, which can be widened or closed to restrict the amount that enters. The shutter remains open for a certain period of time, again controlling the light and thus exposing the sensor to record the image.



More details are given about each of these components later in this chapter.But first you need to understand the terms – what is a pixel, mega pixel and resolution?

Digital cameras record the image that you take using a light sensitive sensor. This sensor is made up of a varying number of dots – or pixels. One thousand individual pixels are called a mega pixel. The greater the number of pixels, the higher the resolution the camera can achieve.

Each pixel records a colour and when these are combined they create the overall image. The more dots you can use, the higher the level of detail and the larger you can print your image. If you zoom in on an image you will start to see the pixelation represented by a zigzag effect on the screen.



Pixels of a photograph.

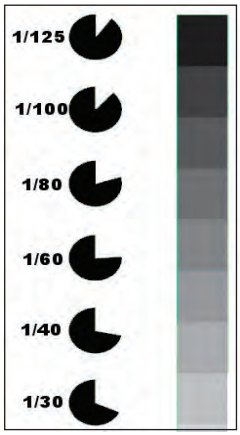
One way to compare the resolution is to think of the original computer games that used square blocks to render the image of the game. As technology improved and the resolution increased, it became possible to create smoother lines and edges in the graphics.

Shutter speed

This is simply the term used for how long the aperture ('hole') is kept open for. The longer the aperture is open (slow shutter speed) the more light that is allowed to reach the sensor.

Underwater photography often demands a relatively fast shutter speed to ensure that a subject is not blurred. This may be due to the speed of the subject (i.e. a fast moving fish) or the movement of the camera caused by water movement (i.e. current or surge).

As a general rule, it is better to use a faster shutter speed to ensure sharp images.

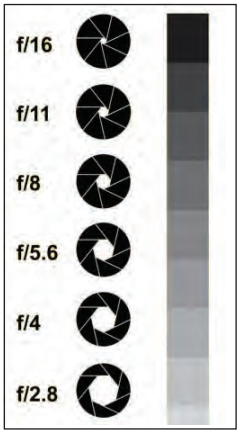


Shutter speed examples.

Aperture

When a camera records an image, the light is allowed through a hole (or aperture) to reach the sensor. By controlling the size of the hole you control how much light is allowed through. If your camera allows you to control the aperture setting, you are able to determine the depth of field (how much of an image is in focus) and the amount of detail in the background.

A large aperture will offer a short depth of field but give a lighter background with blurred detail. A small aperture gives a broader depth of field but darkens the background. This can help draw attention to the subject.

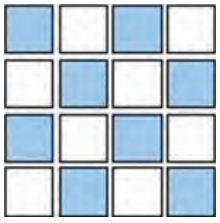


Aperture examples.

ISO ('film speed')

With film, this reflected the speed of the chemical process. The higher the ISO number (or faster film speed), the quicker it was able to record the light.

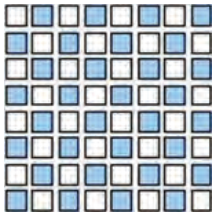
Digital cameras use the same principle but it varies the sensitivity of the sensor instead. As with the shutter speed, a faster ISO number often gives more margin of error to capture sharp images of moving subjects.



High ISO.

On an overcast day, or at depth, you may need to use a fast film speed (such as ISO 400), whereas in shallow water on a bright sunny day, a slower speed (such as ISO 100) may be sufficient.

Your camera should allow you to control the film speed and it is a good idea to start with the slowest (such as 100) and move up if you find the results too dark or the shutter speed too slow, as this will reduce the 'noise' level.



Low ISO.

Noise is represented as visible pixels in digital photography and can cause the image to look uneven or give a patchwork effect when viewed in closer detail.

	AUTO
SLOW	80
	100
	200
MED	400
	800
	1600
FAST	3200/HI

Common ISO settings.

Exposure compensation

Digital cameras allow you to intentionally make an image lighter or darker by controlling the exposure compensation. This instructs the camera to deliberately under or overexpose a photograph to the desired amount.

Due to the way light is spread underwater, you may find that many of your shots are too light (overexposed) and that by setting the controls to underexpose by 2/3 to one stop, you achieve more balanced results.

To increase the amount of light that reaches your camera's sensor you can, therefore, adjust any of these four factors:

Aperture – Wider aperture allows more light through the hole.

Shutter speed – Slower shutter speed keeps the hole open for longer.

ISO – Faster film speed registers the light quicker.

Exposure compensation– Deliberately overexpose an image.

However, there is always a trade off to allow for the extra light:

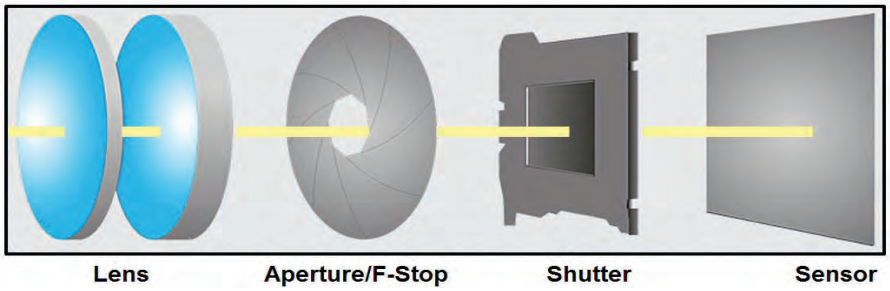
Wider aperture – Shorter depth of field.

Slower shutter speed – Greater risk of motion blur due to camera or subject movement.

Faster film speed – Increased noise/ graining in the image.

Over exposure – Highlights may appear too bright or 'washed out'.

It is helpful (if not essential) to understand these fundamentals as it allows you to take more control from your camera and modify your technique for specific effects.



Light metering

Digital cameras have a choice of methods to measure the light in an image to ensure a correct exposure. The three most common metering systems are as follows:

Average metering

This will take an average measure of the entire frame and set the exposure accordingly. Gives best results on evenly lit subjects without high contrast or bright spots in the frame.

Centre weighted average

Similar to average metering, but this will place more emphasis on the centre area of the image. This is useful when there are bright spots around the edge of the image frame.

Spot metering

Measures the light in a specific spot (usually at the centre of the image) and exposes for that area only. This allows you to control the exposure for scenes with high contrast (such as a subject that is backlit by a strong light source) and meter for a key point in the frame.

Manual white balance

White balance is a setting that is becoming standard on many of the latest cameras. It allows you to set the colour temperature for the environment and the light source that is present.

Manual white balance takes these preset levels one step further by allowing you to manually set the camera for what is 'white'. To see how to do this, check your camera's instruction manual for the specific method for your particular make and model.

Follow the details in the manual and simply hold a white object in front of the lens when setting the manual white balance. A white slate works well but it is also possible to achieve good results with a grey slate or even the palm of your hand. Your hand has the added benefit of not floating out of easy reach when underwater!

Manual white balance.

Auto white balance.

Whilst diving, the first colour lost is red due to the water absorbing the shorter wave lengths of light. By setting the manual white balance you are effectively telling the camera to compensate for the loss of red by digitally replacing it.

As your depth changes so will the level of red that is lost. You, therefore, need to reset the manual white balance whenever your depth changes. The deeper you go, the more red colour the manual white balance replaces.

Another important thing to remember is to point the camera in the same direction as your intended photograph.

This ensures that the light and colour loss, which are compensated for, are the same

when you set the manual white balance as when you take your photograph.

It's usual to turn off the flash when using manual white balance as this will replace light (and therefore colour) which will lead to uneven colour balance across the image.

Manual white balance.

Auto white balance.

The areas that the flash illuminates will be too red, whilst those that the light doesn't reach will be too blue.

Common white balance settings

Practise setting the manual white balance on your camera before diving so that you are familiar with the process and the buttons.

This will allow you to set up your equipment safely and quickly before a shot and make your diving more comfortable.

Different file formats

When working with digital cameras, there are generally two formats you can use to save your images – RAW and jpeg. They each have their own merits but which is right for you?

RAW files save the image data without any compression, and as such you don't lose any information from the original image. This gives you more flexibility when it comes to editing your photographs on the computer. You are able to change factors such as white balance or the colour temperature and not lose any quality.

The downside to RAW format is the file size is much larger and this will fill a memory card faster and can also slow the camera down. Between shots the camera needs to save the data to the memory card, and if the file is larger, this will increase the time between shots.

Editing RAW files will also require more computing power and may need specialist software (although this is usually provided by the camera manufacturer).

The jpeg format is much smaller and allows for faster frames per second as well as taking up less space on a memory card. If you want to take a number of shots in quick succession (such as sports or fast moving subjects), then you may be better off choosing the jpeg file format. Not all cameras will offer the choice of RAW format but it is becoming more common as the technology improves.

If you can, always shoot RAW.

Compositions and techniques

Photography, like any medium of art, is highly subjective. Two people may look at the same image and have very different opinions. There are a number of ways to improve your photographs and increase their impact.

Subject

The first and most important way to increase your photographs "wow" factor is to have an interesting subject to shoot. A picture can be technically perfect, but if it lacks a subject for the viewer to focus upon, there can be no connection for them. The beauty of underwater photography is that you're never short of subject matter. Even if you're diving where there is little marine life, you still have your buddy.

A hawksbill turtle posing for the camera.

Getting below the subject stops it merging into the background.

Where possible it is also best to shoot a subject from either the same level or slightly below. This allows you to create a clearer background and remove clutter which will help the subject to be more prominent in the frame.

Shooting upwards also allows more light through to the sensor which will help give brighter colours and offer the chance for faster shutter speeds (sharper images).

Fill the frame

Once you have your subject, the next thing to do is get close enough to ensure that it fills the frame.

A great subject that is a mere speck in the distance is no good. You need to get as close as you can to allow the subject to be large enough in the shot and, therefore, capture the viewer's attention.

Not filling the frame.

The beauty of digital photography is that you can shoot an almost unlimited number of photographs.

This means that you are able to take many shots of the same subject.

With marine life it is often difficult to get very close without your 'model' simply swimming away. Digital allows you to take several shots as you move closer and gives you 'one in the bank'.

Then as you edge closer, you can take more photographs before your subject moves. By getting as close as possible you reduce the amount of water and scatter between the camera and your subject. This has the double benefit of reducing the light and colour lost to the water and also increasing the effectiveness of your camera flash or external strobe.

The golden rule is simple:
"When you think you're close enough – get closer!"

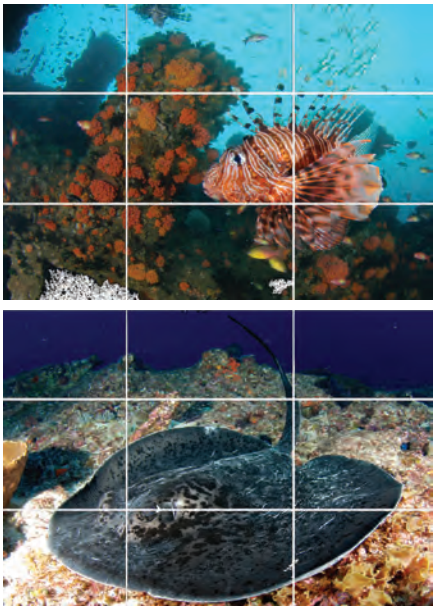
Rule of thirds

For centuries, artists have been employing the rule of thirds. This technique divides a picture into vertical and horizontal thirds. The points where these lines intersect are subconsciously important to the viewer.

By positioning a subject's eye or a diver in one of these areas, you can increase the aesthetic appeal of an image without the viewer being necessarily aware of why. This is something that can be seen in art, cinema, design and even advertising. It is a very easy technique to employ and many cameras even display a grid on the screen to help you compose a shot.

To increase the impact further you may want to position a subject diagonally through the frame and utilise two of the intersect points. Diagonal lines also appear more dynamic and convey movement to the viewer.

Whether you're looking through a magazine or watching television, you will be able to find examples of the rule of thirds.



Examples of the 'rule of thirds' composition technique.

Change the angle of the shot

When taking photographs under water, don't take just one image of a subject – trying a few different techniques and changing the angle of the shot can give some surprising results.

A side view is great as an identification shot, whilst a frontal shot can add character. The three quarter shot, however, gives you the most detail of the subject.

Taking the shot from the front, side, below or above creates depth and gives you a selection of photographs for a subject.

Change the angle – taking a photograph from an elevated vantage point.

Change the angle – taking a photograph from ground level.

Not only changing the angle of your photograph but also tilting the camera to portrait view can give the end result a completely different feel.

Orientation

Whether you hold the camera in a vertical or horizontal position when composing an image will usually be determined by the subject matter.

Don't be afraid to try both methods for the same subject though. It is quite common for new underwater photographers to just shoot in a landscape style (longest edge along the top and bottom) because this is what feels most comfortable.

It is well worth experimenting with portrait (longest edge down each side) layouts though, as it may completely transform the subject.

Portrait style composition.

If you are unsure, simply shoot in both styles and then decide which you prefer. The immediate feedback of digital cameras makes it easy to review an image and you can then decide which is best suited to the subject or the effect you wish to achieve.

Landscape style composition.

Layers

This is a term used to talk about the foreground, mid-ground and background areas of an image. This is a composition style more suited to wider shots such as reefscapes or wrecks.

Foreground subject with background detail of wreck.

A diver in a canyon with anemone in the foreground.

By utilising layers in an image, you encourage a viewer to 'walk through the layers' as they look at it. Having a strong subject in the foreground (such as a colourful fish or soft coral) acts as the main focal point, but the layers help the viewer to explore more areas of a photograph.

The rule of thirds can be used with layers as well to offer an even balance throughout the photograph. In this case the lowest third would be filled primarily by the foreground, the middle third by the mid-ground and the top third by the background.

Silhouettes

The way sunlight is dispersed in water can offer great opportunities for silhouettes. By placing the sun directly behind a subject you will lose any colour detail but can achieve some highly striking images.

Example of a silhouette – trevallies swimming in front of the sun.

When taking shots into bright light ensure that your flash is turned off to maximise the contrast level. The flash may illuminate the subject and would give more detail and colour in areas you want to keep dark.

Any subject that is above you and in front of the sun will give a silhouette, so it is ideal for the end of a dive as you near the boat's ladders or if you have divers above you on an ascent line.

Different types of photography

Macro

Modern cameras have a macro mode available which allows them to focus on subjects at closer distances. Many macro modes require you to be within around 30-50cm for them to function properly.

This is particularly useful when shooting small (preferably slow moving) subjects. Macro photography can be seen as a separate field in its own right and offers countless opportunities for underwater photographers.

The important thing to remember when shooting in macro is to hold the camera as still as possible. The depth of field in macro mode is greatly reduced and if the camera is moved towards or away from the subject then this will cause the focal point of the image to be in front or behind the intended area.

A close up view of triggerfish teeth.

The vibrant and colourful patterns of a nudibranch come to life in a macro photograph.

The greatest advantage to macro photography is the small amount of water between the camera and the subject. This reduces the colour loss and, by being close, it also allows the flash to bring out all those vivid colours that are available.

The reduced distance means that you are closer to the fragile environment though and extra care should be taken to avoid any contact and potential damage.

As with any other approach, if you can't be sure of taking a photograph without risk of damage to yourself or the environment, then simply don't take it. Hopefully the next subject will be in a more accessible position.

Wide angle

To achieve true wide angle images, most compact cameras require an additional lens that widens the field of view. These are discussed in more detail in the equipment chapter.

When compared to the camera's standard lens, a wide angle lens allows you to be both closer to a subject and still fit it in the frame, or fit more of a scene into the shot from the same position.

By enabling you to get closer to your subject (such as a wreck, manta ray or diver), you can reduce the water between you and it to achieve sharper results.

Wide angle image of a jetty structure.

The area that is included in the scene has widened so you will get better results if you turn off your flash and use manual white balance instead. The flash will not be able to illuminate the whole subject so you are often better off using available light.

The wider field of view also offers a perfect opportunity to utilise layers whilst including a specific focal point. Although wide angle shots are more commonly shot in a landscape orientation, it doesn't mean that they have to be. Try experimenting with vertical compositions to capture a sense of depth or scale.

Finally, always make sure that when attaching an external wet lens that there are no air bubbles trapped between the lens and the camera mount.

Wide angle photography is ideal for wrecks.

Landscape

Possibly the most important piece of equipment for good landscape photography on land is an alarm clock. To capture that early morning light you need to be up early and it will add so much to your photographs. The hours after dawn and before sunset are the best to capture the colours and textures of landscapes without the sun being too strong and increasing contrast. Having the sun behind you will also allow you to get more light on your subject and reduce contrast.

A tripod is also an invaluable tool for landscape photography. Ensure that it is sturdy enough to remain still, and if there is wind you may want to weigh the tripod down to ensure a steady shot. To have enough depth of field to

keep the whole scene in focus, you will need to use a small aperture (high f-number) and that will require longer shutter times meaning that the tripod will be essential.

Another important technique for landscapes is to bracket your exposures since the camera's light meter can be fooled by the varying levels of light in an image.

Wide angle – mountains.

This means that you take a shot with the settings selected by the camera's meter reading and then take another two – one overexposed and one underexposed – to give you a margin of error in your exposure. It's common to bracket by one f-stop but you can always bracket by a smaller margin and take more shots to select from.

Wide angle – beach and sea.

Wildlife

Wildlife photography on land presents as many challenges as it does underwater. The first thing is to know your subject – learn about the wildlife you want to photograph so you can understand its behaviour, habits and the best way to approach them. Read up on your subject and speak to people who know them well, such as park rangers or field guides.

Many animals are easily scared away so you may not be able to get very close. To allow for this you will need to use a telephoto lens.

When using a long lens, it is important to use a faster shutter speed to prevent any camera shake. A good rule of thumb is to use a shutter speed that is at least equal to the focal length of the lens.

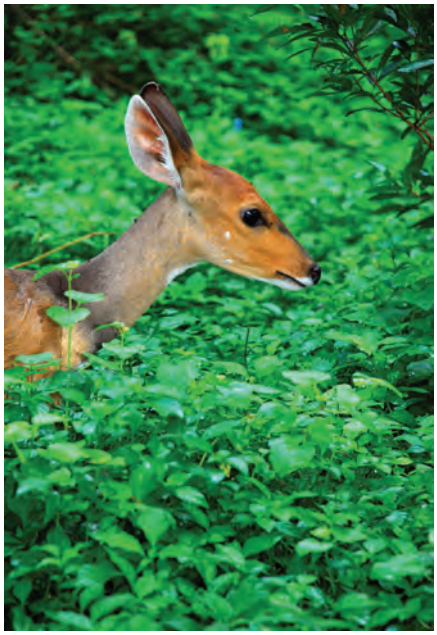
Close up with zoom lens.

For example, if you are using a 300mm lens, you will need to use a shutter speed of at least 1/300th second or faster to prevent blurred images.

If you want to shoot birds in flight you will need to use even faster speeds to freeze their movement. You may need to go as fast as 1/1000th second, so ensure that you have enough light for these speeds.

Don't be afraid to increase your ISO to give you more light in your image as modern cameras can create ever better results with fast film speeds.

To keep your lens stable you can use a tripod, but many photographers find this restricts their movement when shooting wildlife.



Close up with zoom lens.

Another option is to use a beanbag to rest the lens on when shooting from a vehicle (make sure the engine is switched off first otherwise the vibration will ruin your shots).

Alternatively, place a piece of pipe insulation over the edge of an open window and rest the lens on that.

The final pieces of advice for wildlife photography are patience and perseverance.

You may need to wait for a long time before you have your subject in the position you desire and the right light.

You will also need to persevere before you get the exact shot you were looking for, so don't be afraid to fill up your memory cards, they are readily available and do not take much space to store.

Black and white

It may seem strange talking about black and white with all the vibrant colours that are on display underwater, but black and white shots can be very effective when used with the right subject.

The most obvious occasion to use black and white is with wrecks as it will add an extra feeling of 'history' or even 'decay' that suits wrecks well. It can also be used with living and breathing underwater subjects though. The key thing to getting striking black and white images is to ensure that you have high contrast

Black and white photographs can create a different atmosphere.

in the shot. This will help the image stand out as a black and white photograph rather than a collection of greys.

To achieve the effect you can set your camera to black and white or sepia, but it is very simple to remove the colour on the computer later. Whichever software package you use, it is likely to have a black and white or 'desaturate' option which will remove the colour and leave you with a monochrome image.

Lighting techniques

The greatest technical challenge created by underwater photography is the loss of light as it is absorbed by the water column.

This becomes more pronounced as depth increases and the most effective way to overcome this problem is to take extra light with you.

A strobe is basically an underwater flashgun which allows you to replace the light lost and regain more colour in your images.

The same principle can be seen on land at dusk or on an overcast day – colours become more muted because there is less light reflecting off the surface of a subject. Putting the light back, with a torch or when the sun breaks through the cloud, for example, restores the colour.

Most people start with a simple set-up including a compact camera with a housing. The first thing that you notice though is that the built-in flash is not very powerful, and in some cases, this flash will even be blocked by the housing. Buying external strobes will help you overcome this problem.

"Taking photographs is all about capturing light"

Strobes and flashes

Built-in flash

Almost every camera nowadays has an inbuilt flash. Be it a compact or a DSLR camera, these flashes can work great on land. However, when it comes to underwater photography and housings, the flash might be blocked by the dome port on the housing, which will either cast a shadow over part of the photograph or block the flash completely.

The solution is either to take photographs with manual white balance or use external strobes. With compact camera housings the flash can still be used but its range is limited, and thus is only really useful for close-up scenes. For anything further away than 3-4m it will not light the subject and can cause backscatter from the particles in the water that reflect from it.

A compact camera flash may be blocked by lens brackets or the lens hood, while the flash of an SLR may not function in a housing.

Strobe positioning

Using a single strobe is possible, however, if positioned wrong it will create contrasting shadows. The best way of using a single strobe is to position it on top of the housing at an approximate angle of 45°. This, however, is not a rule but it works in most cases. Be a little more creative and alter the strobe position to let the shadows work with your composition.

With the strobe positioned directly above the camera, you get even lighting with few shadows, and the 45° angle will help to reduce the amount of backscatter.

With the strobe positioned to one side you can create a sense of texture and depth by creating shadows on your subject.

Strobes and flashes

It is often easier to work with more than one strobe. You can light the subject in the best way for the effect without any concessions. When lighting an object it can help to imagine an egg.

Putting the strobes evenly on each side with the same out-put, will give the 'egg' a flat appearance.

With two strobes pointing at the same angle with the same strength, you achieve an even distribution of light on the subject.

This can be used when you want to display colour patterns evenly or to light the subject so that it stands out from the background.

If you use the same strobe positioning but vary the power output of each, you are able to create a subtle difference in the lighting from either side. This will give a more natural appearance and stop the 'egg' appearing flat and uninteresting.

There may be some trial and error to find the best power settings to get the desired effect.

By varying the strength of each strobe, you can light both sides of a subject but still create some texture and depth. This prevents the image from looking a little flat and makes the subject look more lifelike.

By adjusting the position of the strobes, such as one from the side and another from above or below, you create small shadows that give the 'egg' a three-dimensional feel.

By alternating the strobe's power output you can let the 'egg' become 'real.'

Setting up two strobes to light from different angles allows you to create more shadows and achieve a three dimensional effect that makes the subject come to life.

By adjusting the power of each strobe you can capture variation between the light and dark areas to emphasise contrast.

Single strobe aimed from above.

Single strobe aimed from one side.

Two strobes from either side with the same angle and power.

Two strobes from either side with the same angle and different power.

Two strobes from either side with different angles and power.

Enough about eggs, now try it on some corals. They also don't move.

Torches and snoots

Selective lighting:

Torches and snoots

Selective lighting can give a great new atmosphere to your photographs. The easiest way to do this is to use your torch to light a subject. This will give the subject light while the rest stays darker and has less colour.

The help of your buddy could make the photography easier. If your buddy holds the torch and shines on the subject, you can position the camera and have a more hands-free approach.

Sometimes it's possible to position your torch behind a subject and light it this way from the back. Fan corals or feather stars are quite suitable for these kinds of photographs.

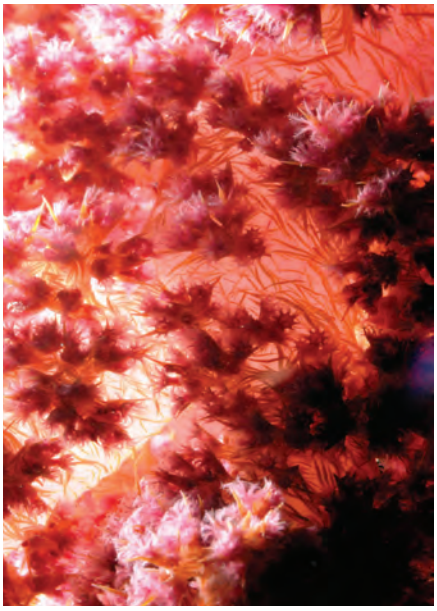
Another possibility is using one of your strobes to backlight a subject. Either you use the strobe in slave mode or attach it to your camera. Experiment with the right angle, right position and amount of strobe light.

The latest new rage in photography has been the reinvention of a studio technique which was used more than 50 years ago – the 'snoot'. Portrait photographers in the forties and fifties used a cone shaped appendage

Experiment with the intensity of your strobes and torch lights to get the best effect.

over the lamp/strobe to create a darker area around the face.

This technique can be used underwater to highlight a subject without the area around it – of course you can also do this afterwards in editing software such as Adobe Photoshop.



A soft coral that has been illuminated by a strobe positioned behind the subject to bring out the detail of this fragile coral.

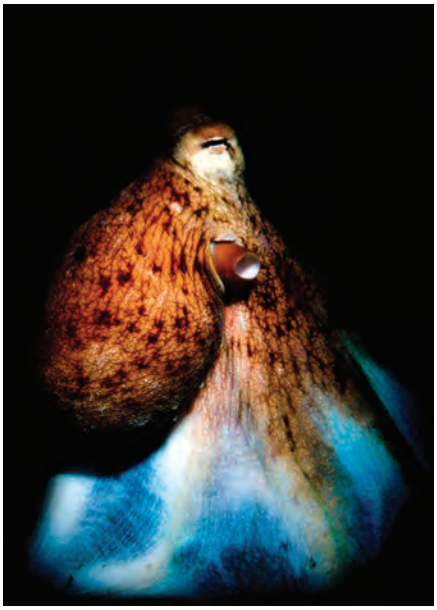
A snoot, a cone you attach to your strobe, can be bought or self-made. The size of the opening dictates how much of your photograph is illuminated.

Snoots allow you to be highly specific about where you would like the light from your strobe to fall on a subject. You can isolate an area of the image or enhance ambient light in a particular spot.

Making a snoot is easy. Take a plastic bottle, cut away the bottom half and paint it black. Find a way to attach it to your strobe

An example of a homemade snoot using just a plastic water bottle and a device designed to measure spaghetti servings for the aperture control.

and you are ready to go. Keep the cap and make a small hole in it. For macro photography this can give a neat, small light area.



This octopus has been lit by the snoot and strobe but no light fell on the surrounding area. This allows you to draw attention to your subject.

Torches and snoots

Modern snoots that are available from good camera retailers come with all the accessories you need.

Examples of different sized snoots,

Snoots work very well if you use the spotting light of your strobe. This way you can see where it focuses and where the snoot will aim the light.

The easiest 'snooting' is with wide-angle photography as macro requires a lot of patience and positioning. It can be a good idea to use a tripod to offer even greater control.

Set-up for macro photography with a narrow snoot fixture.

A wide angle set-up uses a wider snoot for more coverage.

In this image, the tube sponge has been top-lit by the snoot to bring out the detail of the interior while the rest was lit by ambient light.

A focussing light will work well for highlighting the subject when using a snoot.

A lionfish isolated by the strobe appears to be performing beneath the spot light.

Ambient light:

Inside caves and wrecks

Using ambient light is almost the same as using the manual white balance. Sometimes, for example in caves or inside wrecks, not much of the natural light enters inside.
In this case manual white balance might not be ideal. By using the natural light, and adding a warmer tone by putting the white balance on cloudy, you can get some great atmospheric shots. Using a faster film speed (increasing the ISO to a higher number) gives you a faster shutter time. By taking some test shots without a strobe you can get the blue colours in the background (if available) and the available light for your exposure right. After the settings are done you can position your strobes on subjects in the foreground if desired.

A strobe was used here to bring out the foreground detail.

Ambient light

Only ambient light was used with a slow shutter speed to capture the rays of sunlight coming through cracks in the cave ceiling.

A combination of ambient light, strobe and torchlight are all used to give a balance of atmosphere and detail.

Other lighting techniques

Using flash on land during the day

When shooting outside during daylight hours, many people will turn off their flash and just use ambient light.

Depending upon the subject or the angle of the light, this can give the results you are looking for, but there are several times when the use of flash during the day can improve an image.

Shooting outdoors will often create high levels of contrast in a photograph (the difference between the lightest and darkest areas), and the use of a flash can reduce the contrast and give a softer look to the photograph.

Flash can also add highlights to portrait photography and give more definition to the face.

If you have a strong light source behind your subject (backlit) you can use the flash to highlight the subject against the background. Without the flash it will be underexposed and very dark due to the high level of contrast – this is known as fill-in flash, and controlling the strength of the flash will allow you to keep detail and texture in the subject.

Flash can also be used to freeze action if you are shooting a fast moving subject. In this case you can capture the action when the flash fires and use a faster shutter speed.

Many cameras have a range of modes for using the flash but it is important to experiment with the settings and strength to ensure a correctly exposed image.

Wreck photography

Wreck photography comes with some problems... The strobes are mostly not powerful enough to light the complete wreck. Using the strobes on a colourful part of the wreck with a blue background works quite well, however, to shoot a complete wreck is a tricky task.

The only way to overcome this is to shoot using manual white balance. This, however, does not work at deeper depths. Ideally you don't take photographs deeper than 15m so that you can use the sunlight.

Even better is to use a filter. The magic filter works miracles in shallow water. Cut out the right size from the filter and place it over your lens – (behind the lens on an SLR, in front on a compact camera). For best results shoot around midday when the sun is strong. Use a fisheye lens or a wide-angle lens, go as close to the wreck as possible and position yourself so that you can shoot down on the wreck with the sun at your back.

With poor light conditions you could do the same as with night dives – stabilise your camera and use the rear curtain flash function. The long shutter time will give the camera time to gain the ambient light while the strobe creates colour in the foreground detail.

However, you need to be very careful since there is often a lot of sediment on and near wrecks. This could cause a lot of backscatter if you use strobes so it is important to position them carefully.

Experiment with flash settings and strengths.

This image of the Giannis D at Abu Nuhas was taken with manual white balance and a magic filter. With large subjects, such as wrecks, you will not be able to light the whole frame with strobes so manual white balance usually gives the best results.

Other lighting techniques

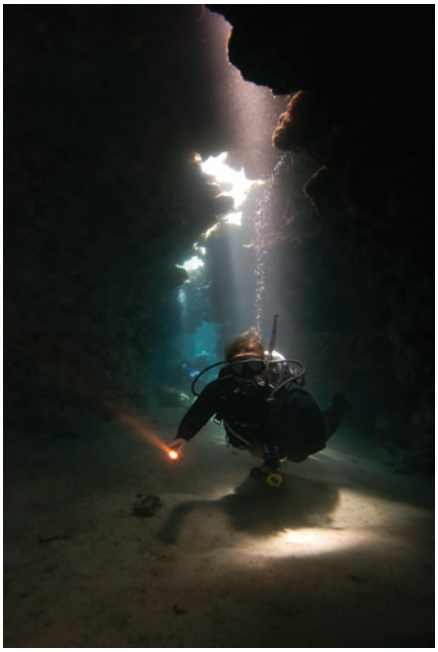
Cave photography

Caves will present similar problems to wrecks and night dives. The light is not optimal and there may be light beams from the sun through cracks in the ceiling which will give a very uneven metering.

For best results, meter the darker areas and set the exposure accordingly. In post editing you can dim the white light slightly in shadows and highlights. However, if you have the time, why not try a couple of exposure settings? If you use a tripod you can take different exposures and still merge the photographs afterwards in your editing.

As with night dives, it can work well to place a torch behind some rocks to create a surreal atmosphere. Strobes don't normally work well in caves because of the suspended sand particles in the water.

It can be hard to capture colour inside caves, as the image above shows. Setting the camera up for the darker areas and experimenting will help.



Silhouettes

There is no need for flash or strobes if you want to take silhouette photographs. You will need to position your subject, a fish or a diver, between yourself and the sun.

If your camera allows you to adjust the aperture, than try to close it as much as possible (high number). This will reduce the light to prevent a washed out image and create a small sun with a nicely silhouetted subject before it.

Rear curtain flash

The rear curtain flash mode is an easily forgotten feature. In most cases you will not need it, however, it creates some artistic opportunities.

By using a long shutter time with the rear curtain you get a blurry photograph with sharp details in it.

Try a one second shutter time while swimming along a wall – the rear curtain will fire the flash at the very last moment to capture detail.

Long exposure – night dives

Long exposure photography without a tripod is mainly a pot-shot with a lot of trial and error.

You would need a high ISO to allow a faster shutter speed, but most cameras will give a poor quality photograph with high ISO settings. This means that you will need to support your camera to shoot with an acceptable ISO and still achieve a sharp photograph.

Sitting on your knees on a sandy bottom gives you some stability but you have to hold the camera very steady. Another option is to look around for a rock and support the camera on this. However, the best solution is to use a tripod and timer.

By delaying the exposure with the timer the camera has time to steady itself from the small movement of your hand.

The exposure time will vary so it is best to usually start with a 10 second shutter time and work from there. Review your photographs and adjust the settings accordingly.

The use of torches and strobes can also help in creating an atmosphere. If you have one strobe attached to your camera and another on slave function you can lay the slave strobe any distance away so that you can light the surrounding area.

The same can be done with torches. Hidden behind a rock, shining up, gives a great effect of off-camera lighting.

Using strobes with a long exposure, you can use rear curtain flash (if this is available on your camera).

This means that the flash goes off at the last moment before the shutter closes. This gives the camera the chance to collect the ambient light and also allows you the opportunity for some nice self-portraits.

This image of the SS Thistlegorm used a 30 second shutter speed – a tripod was essential to achieve a sharp image.

Using a model with a torch as well as some off camera slave strobes, this image has a lot of detail for such a long exposure.

Basic photo editing

Introduction

As an underwater photographer you will experience more challenging situations than you would with shooting land photography.

For instance, the density of the water has a negative effect on the amount of light and the suspended particles will reflect in your strobe. Furthermore, you are 'free' in the water with the water movement and your own instability creates difficulties for shooting sharp pictures.

Photoshop

Luckily editing programmes have a lot of features that will improve the quality of your photographs – as long as there is some information to work with.

We will give some basic guidelines in this book, but remember that as each photograph is unique, they are not the rule. We will use Adobe Photoshop and Gimp (freeware) as the two editing programmes.

After the basic manipulations we will guide you through "Zen and the art of cheating". Here we go a couple of steps further, but please remember that if you want to enter photographic contests with your images then this is where you stop your editing. Go any further and you're entering the realm of 'art'.

Gimp

Always leave your original untouched and save the edited version under another name.

Levels

Manual Levels

> Go to Image > Adjustments > Levels.

Selecting Levels will open the Levels pop-up window.

RGB must be selected in Channel drop-down menu.

> Click on the Black dripper and move with your mouse to an area in the photograph that should be black.

You can try different spots because it changes colour and brightness with a single click.

> When you are happy with the results, click OK or Apply.

White and grey drippers are also available.

You can also change the separate colour levels.

> Click on the Channel drop-down menu in the Layers pop-up screen and select the color you want to change – Red, Green or Blue.

> Either change value manually or use the slide bar below the graph.

Photo editing

Since you can work in the different levels of colour and brightness you can give your photographs more depth and detail.

Auto Levels

Auto Levels does all the previous work with one click. However, sometimes it does not work because of a lack of information or too much blue in the image.

> Go to Image > Adjustments > Auto Levels.

Auto Levels shows what the computer thinks of the photograph – this should not limit you.

Brightness and contrast will be adjusted automatically.

You are the final judge of your photograph, not the computer.

Levels

Manual Levels

> Go to Colors > Levels.

Selecting Levels will open the Levels pop-up window.

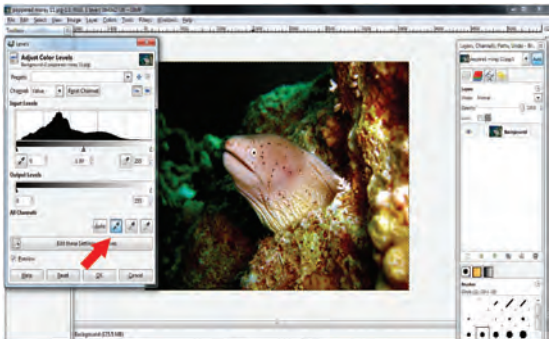
Value must be selected in the Channel drop-down menu.

> Click on the Black pick and move your mouse to an area in the photograph that should be black.

You can try different spots because it changes colour and brightness with a single click.

> When you are happy with the results, click OK or Apply.

White and grey picks are also available.

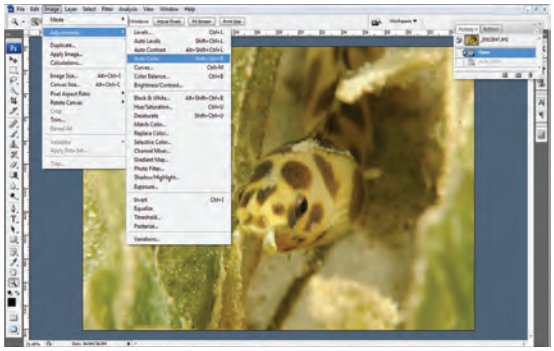


Auto Levels

> Click on the Auto button next to the black pick on the Levels pop-up menu.

Brightness and contrast will be adjusted automatically.

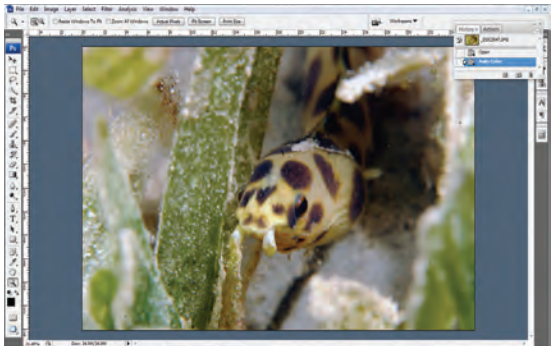
Auto Color/Color Balance



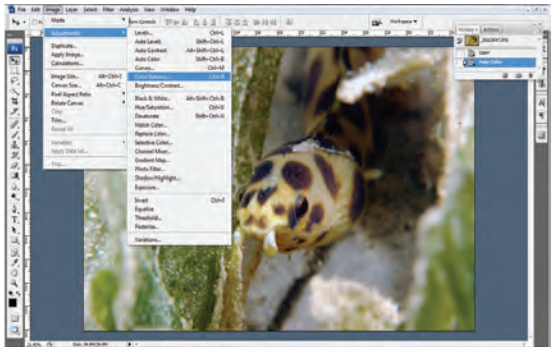
Auto Color

Sometimes using Auto Levels, the computer gives (by lack of information in the photograph) too much red. In that case you can go back and choose Auto Color.

> Go to Image > Adjustments > Auto Color.



This will just affect your colours and leave brightness and contrast as it was.



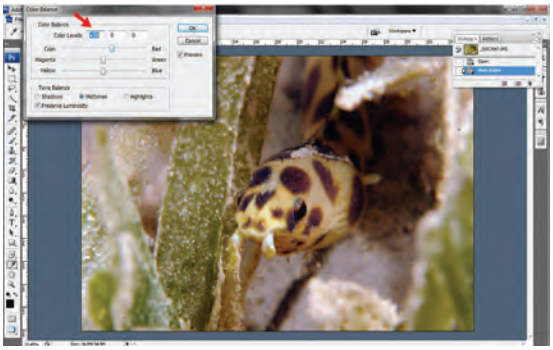
Color Balance

It is better to change each colour separately – balancing them.

> Go to Image > Adjustments > Color Balance.

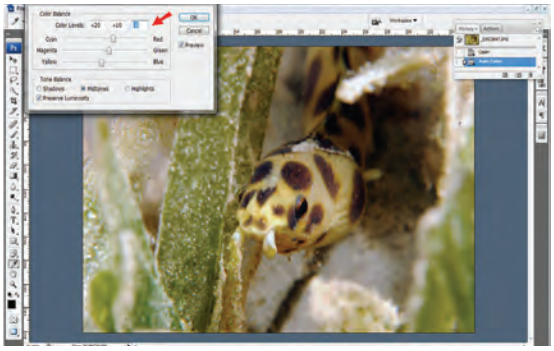
> Change value manually or use the slide bar.

Now you can manually change the levels of red, green and blue in three different areas – highlights, midtones and shadows.



When using a warm strobe or torchlight during a night dive, photographs tend to be to yellow or red.

Colour Balance gives you the opportunity to adjust them as you like.

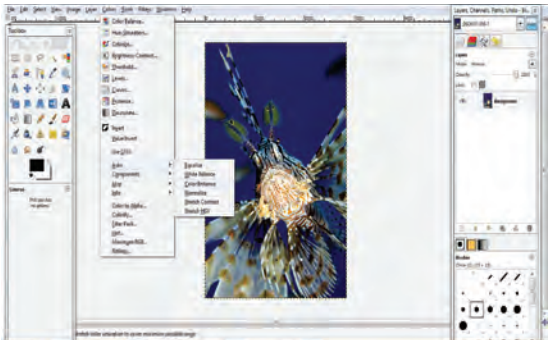


Color Enhance/Color Balance

Color Enhance

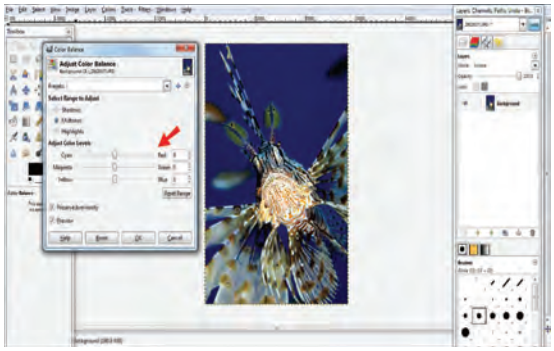
> Go to Colors > Auto> Color Enhance.

It's the same as Auto Color in Photoshop.



Color Balance

This is a great tool in case you forgot to reset your manual white balance on your camera as well as any other colour enhancements.

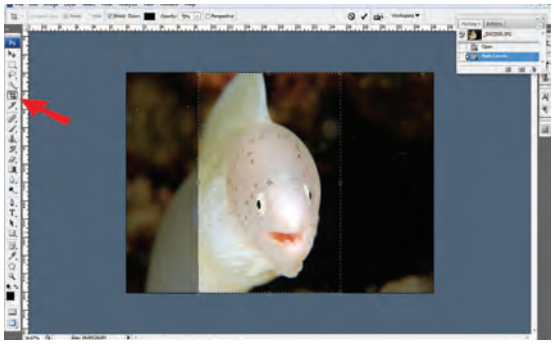


> Go to Colors > Color Balance.

> Change value manually or use the slide bar.

This is the same as Color Balance in Photoshop.

Cropping



Most of the time it's hard to compose your photographs under the water. To adjust your composition after the photograph is taken you can crop.

> Go to Crop on the shortcut menu.

> Click and drag the mouse over the selected area.
> Double click in selected area to crop.

> By clicking in the selected area, you can move the crop area around to get the best look.

Don't crop too much – allow space around the subject, with more space to the front. By cropping, you can create a more attractive composition and reduce the amount of negative space.

When you are taking your photograph, try to get the composition as close as possible to how you want the final image to look. If you can't get the shot you want in the camera, think about how you could edit the image on your computer when you take the shot.

Cropping

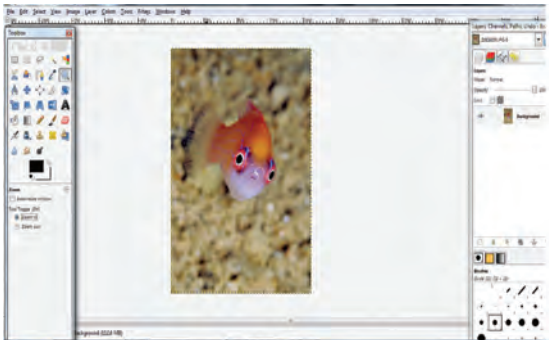
> Go to the Cropping tool on the Toolbox menu.

> Click and drag the mouse over the selected area.

> Double click in the selected area to crop.

> By clicking in the selected area, you can move the crop area around to get the best look.

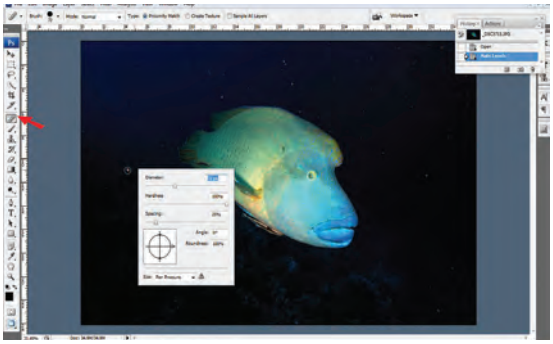
Don't crop too much – allow space around the subject, with more space to the front. By cropping, you can create a more attractive composition and reduce the amount of negative space.



Spot Healing Brush tool

This is our favourite tool. This tool gives you the chance to get rid of backscatter (suspended particles in the water that reflect because of the torch or flash/strobes) and any kind of objects that you want to remove from the photograph.

With one click the programme will heal the spot by blending it with the surrounding information. It's a great tool to get specks out of the photograph, however, if there is a spot that covers more than one colour, rather use the Cloning tool.

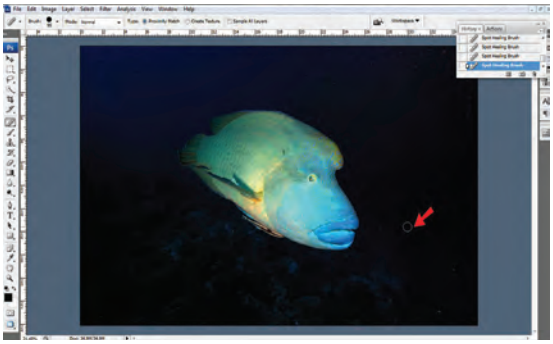


> Click on the Plaster icon in the shortcut menu.

> Right click on the image to bring up the Spot Healing Brush settings.

> Set the diameter to be slightly larger than the spot you want to clean.

Make sure that the surrounding area is of the same colour.



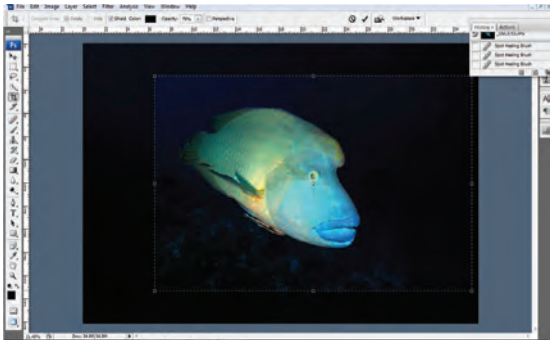
> Click on the spot you want to heal.

The more accurate you are with your clicks, the better your photograph will look after you have cleaned it up. Take care when you are close to another colour.

It can take a little patience to get the best results.

Zooming in makes it easier to work on the smaller areas.

If you want to enlarge the view of your image, press Ctrl- + to increase the zoom. If you want to see the whole image again, press Ctrl- 0 to fit it again.

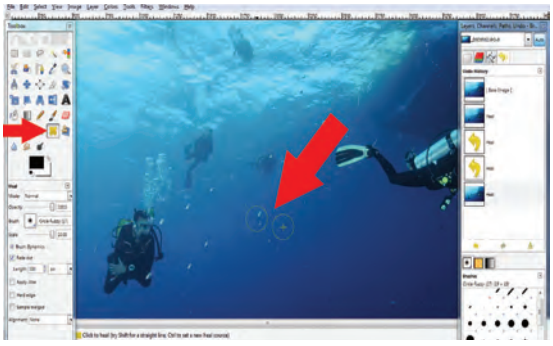


Spot Healing Brush tool

> Click on the Plaster icon in the shortcut menu.

At the bottom of this toolbox are the Spot Healing Brush settings.

> Select a clean area that will be the example for the healing by holding Ctrl and click.

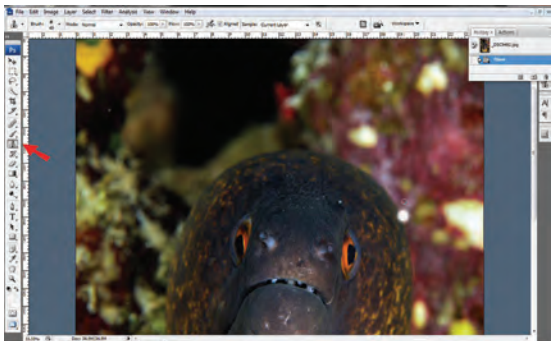


Make sure that the surrounding area is of the same colour.

> Set the diameter to be slightly larger than the spot you want to clean.

> Click on the spot you want to heal.

Cloning tool

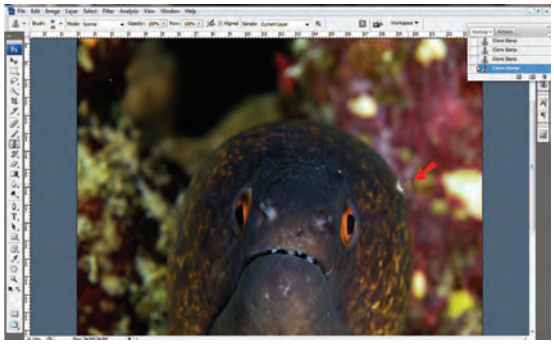


This tool can be used when the Spot Healing Brush can't handle it. The clone stamp copies one section of the photograph to another area.

> Click on the Stamp icon in the shortcut menu.

> Right click on the image to bring up the Stamp tool settings.

> Set the diameter to be slightly larger than the spot you want to clone.



> Select the area you want to use as the starting position for cloning, by holding down the ALT button and click on the position.

If you hold down the mouse button as you move the cursor, the clone point will move in the same direction.

To get the best results, make short movements with the mouse and regularly update the section you want to clone to ensure that you get a balanced set of colours.

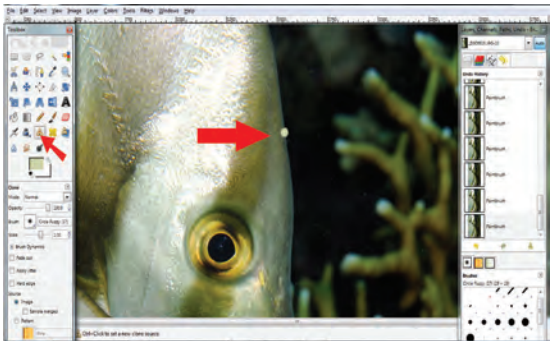
If you overdo it, you will get a patchwork effect that looks unnatural and can easily be seen by the viewer.

Cloning tool

> Click on the Stamp icon in the shortcut menu.

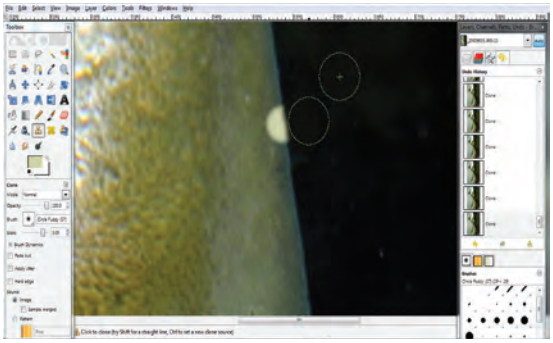
At the bottom of this toolbox are the Clone settings.

> Set the diameter to be slightly larger than the spot you want to clone.



> Select a clean area that will be the example for the Cloning by holding Ctrl and clicking.

If you hold down the mouse button as you move the cursor, the clone point will move in the same direction.



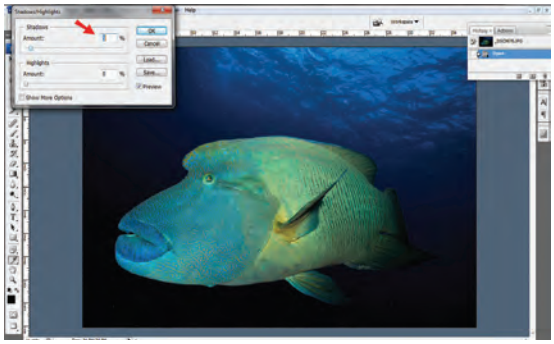
Shadows and Highlights

Sometimes, especially when using strobes, some subjects might be slightly overexposed. To reduce the burn-out of these areas you can use the Shadows and Highlights tool.

Shadows

> Go to Image > Adjustments > Shadows/Highlights.

Photo editing

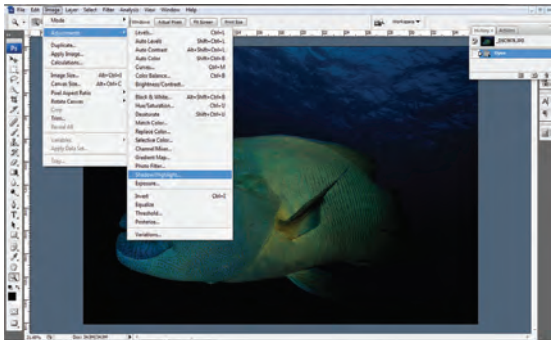


It starts immediately with giving 50% in the shadows.

> Bring this back to 0% and start from there.

> Change value manually or use the slide bar to change the Shadow.

If some parts of your photograph are too dark, then Shadows will lighten them.



Highlights

You can also use Highlights to correct photographs.

> Go to Image > Adjustments > Shadows/Highlights.

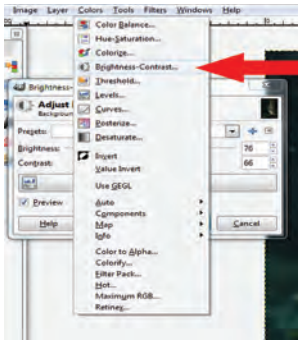
> Change value manually or use the slide bar to change the Highlights.

You can click the preview on and off to review the effect.

Be careful not to alter the image too much as this will look unnatural.

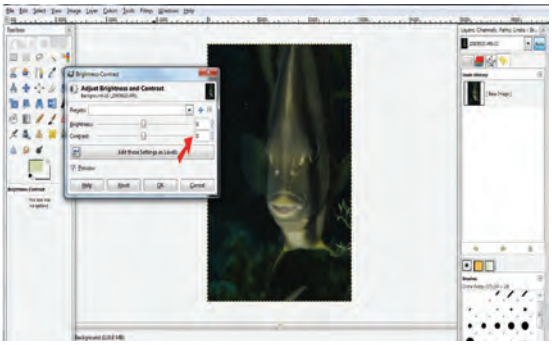
Brightness and Contrast (Shadows and Highligts)

Gimp does not have a tool like Photoshop's Shadows & Highlights, however, you can do quite a lot by adjusting the brightness and contrast.



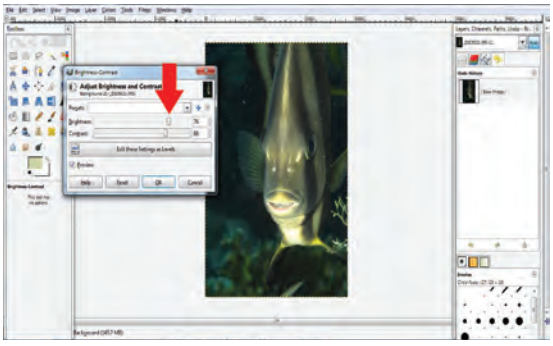
> Open Colors > Brightness and Contrast.

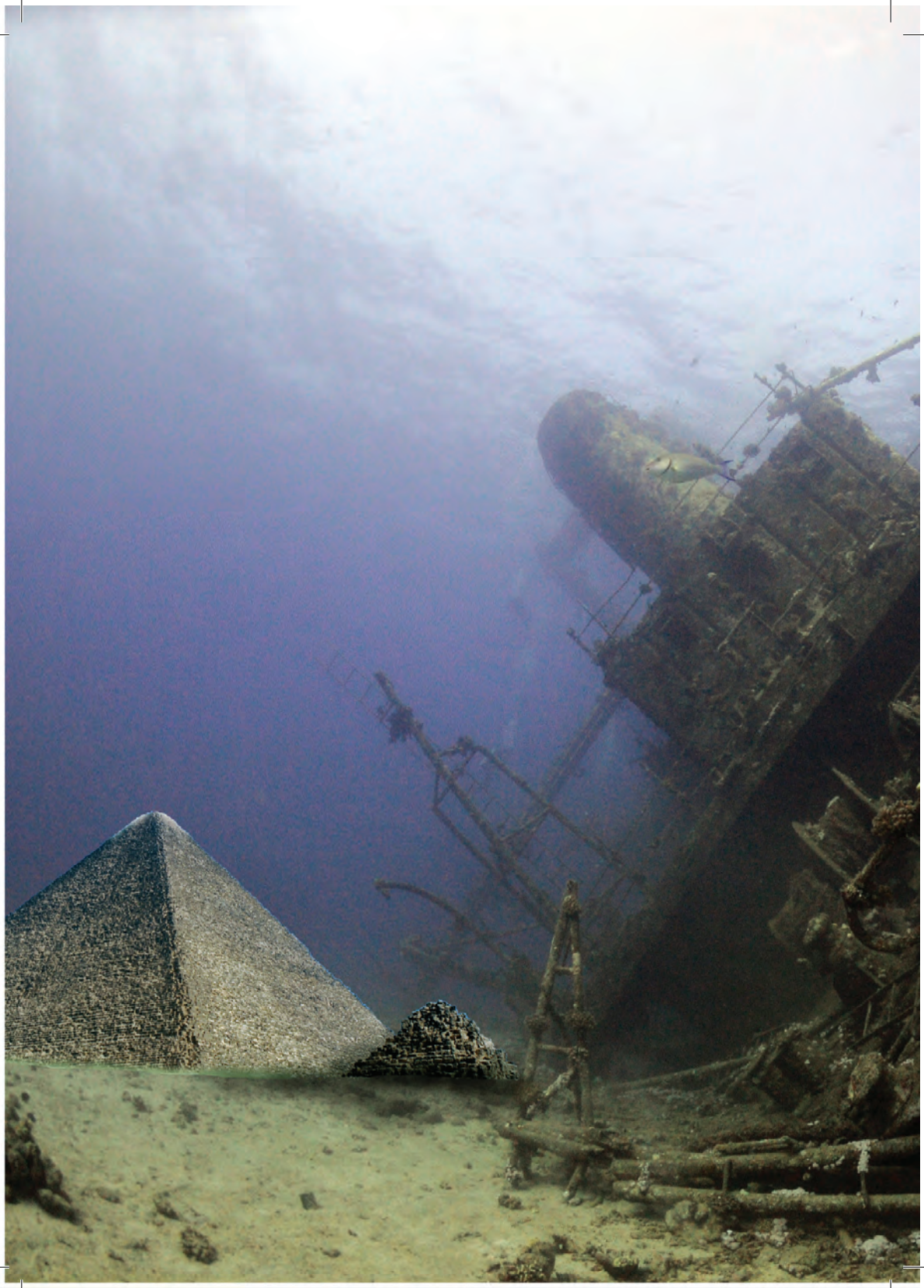
> Change value manually or use the slide bar.

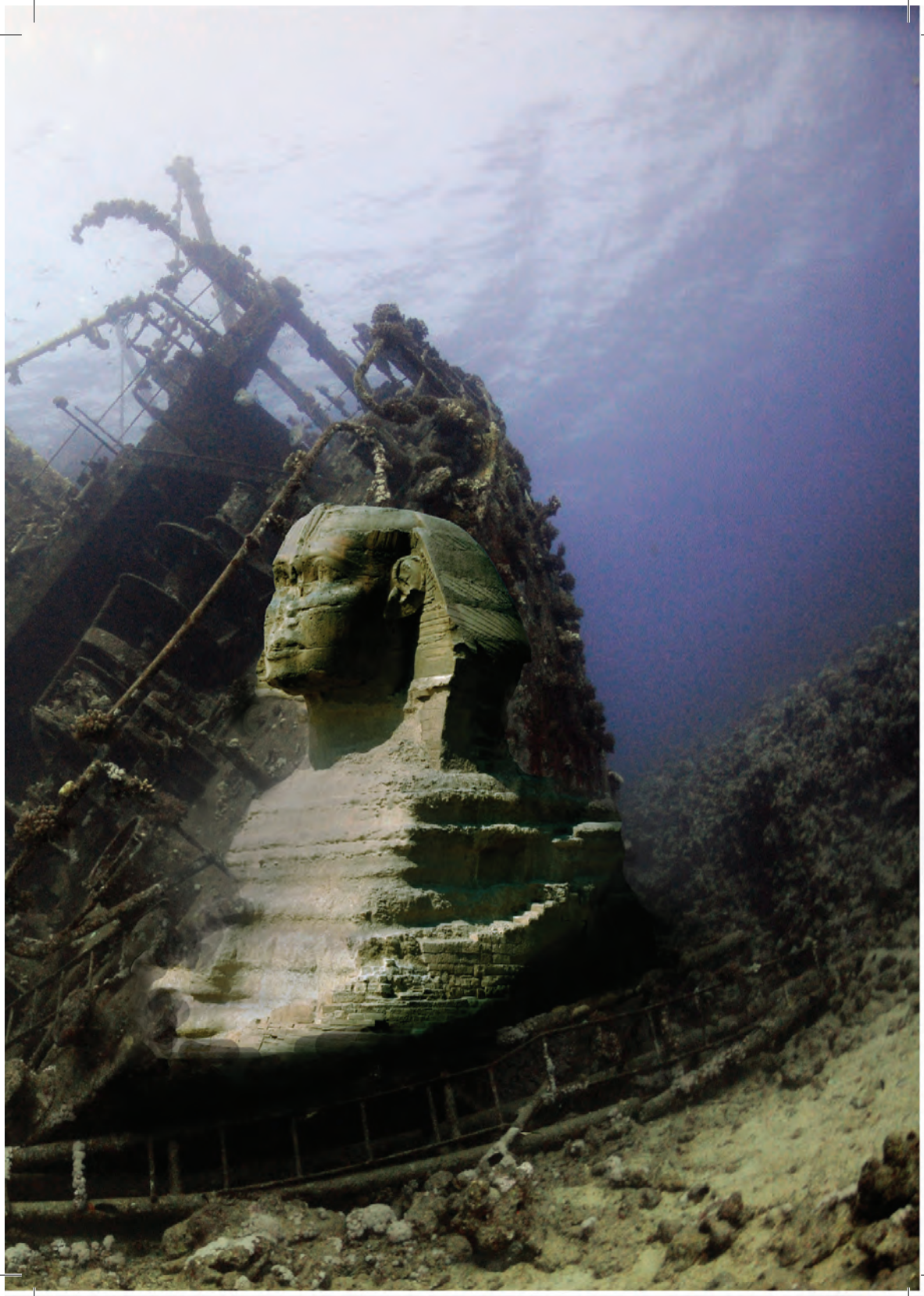


This way you can darken a photograph which is too bright or brighten a photograph which is too dark.

When brightening a photograph it's always a good idea to also adjust the contrast – the amount is your personal choice.







Zen and the art of cheating

Creative Photoshop

Are there still possibilities to improve your images after you've taken your photographs?

The answer is a definitive yes – there are many different things you can do with them, however, if you plan on entering competitions, then here it stops.

Go any further and you enter the realm of manipulation and 'art' (which some people call cheating). There are no limits or boundaries to what you can do with your photographs – for example, try a simple inverse of colours (Ctrl-i), change your photographs to black and white, etc.

In the next section we will give you some ideas of what to do with your time when there is nothing to watch on TV.

Spherize

Spherize is a very simple tool which allows you to create warp-speed in your photograph or other weird effects.

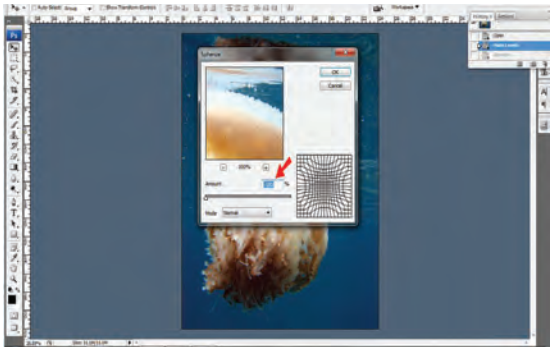
> First select a photograph that will give you a strong sense of movement and distortion when Spherize is applied.

> Go to Filter > Distort > Spherize.

> Change value manually or use the slide bar.

With -100 % you create depth in your photograph. +100 % gives a magnification of the centre of the photograph.

Decide whether you want the object to be magnified towards the viewer or away from them and move the slider to achieve your desired effect.

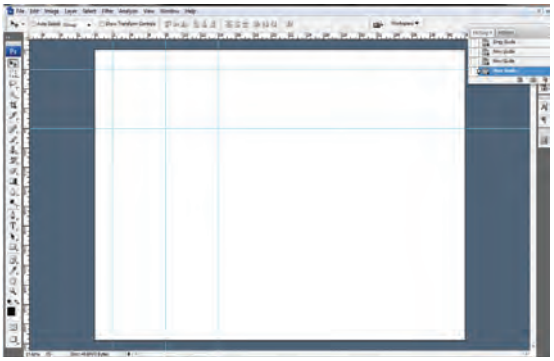


The best photographs to use with this tool are those with a lot of detail or backscatter since these will create lines.

You will often get a more dramatic effect if you repeat the process.

There is a quick way to do this is – > click on Filter, and at the top you will find the last filter you applied. Just click on Spherize and it will apply the same settings again.

Cropping and pasting

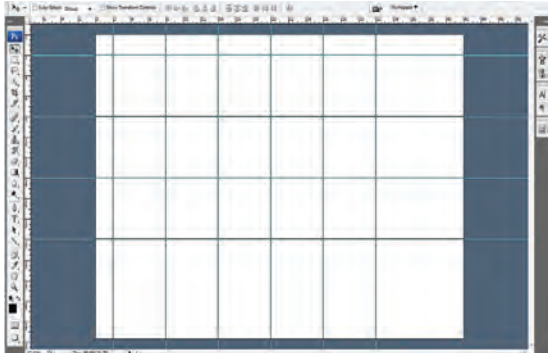


A very simple feature lets you take details out of your photographs and paste them in squares next to each other.

Start with a blank page.

> Go to File > New > Adjust size (as required) > Click OK.

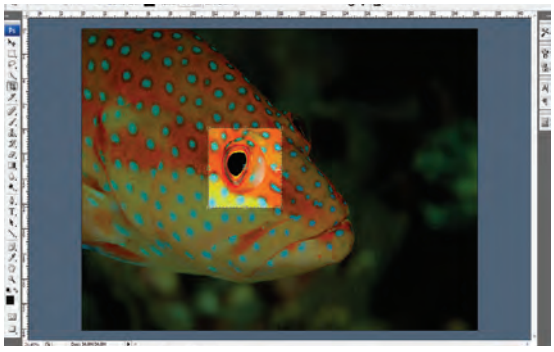
> Go to View > Rulers.



> Place your mouse on the ruler and drag guide lines to your paper.

You can move your guidlines with the Move Tool in the shortcut menu.

These lines will not be visible if you save or print your work.



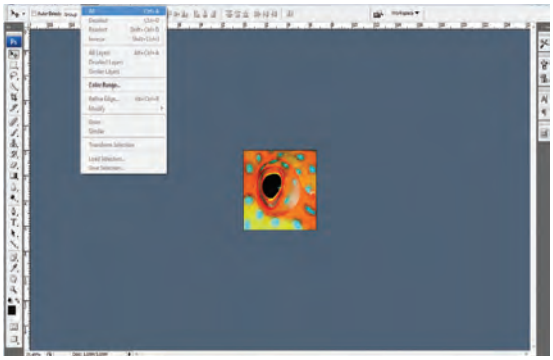
Now go to your photographs and select some that have nice eyes or patterns.

With the Crop tool, crop a square around the eye.

> After cropping > Go to Select > All.

> Go to Edit > Copy.

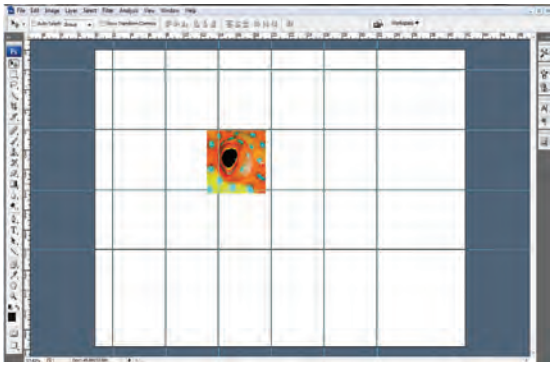
You can also use the shortcut keys Ctrl-a to select all and Ctrl-c to copy.



> Open the page with the squares.

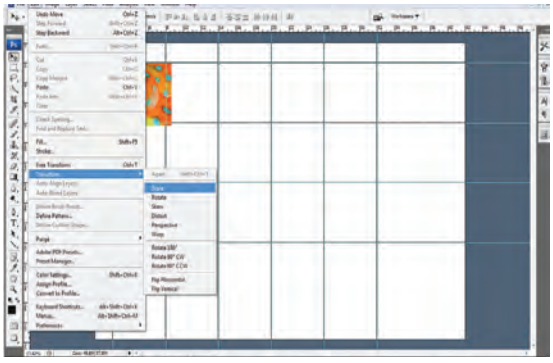
> Go to Edit > Paste.

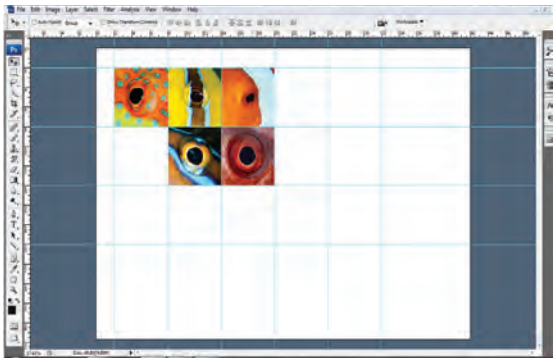
You can also use the shortcut key Ctrl-v to paste.



> Go to Edit > Transform > Scale.

> Now drag the photograph to one of the squares and fit it in the square by 'pulling' the corners.





> When it fits, click any of the buttons on the left tool bar.

> Click Apply.

Do the same with some other photographs and create a patchwork such as the examples.

Adding an object

After the first edit of your photographs you may find that the photograph is a bit boring, as if there is something missing.

The corals or the landscapes are nice but perhaps feel a little empty. Why not add a fish to boost the image?

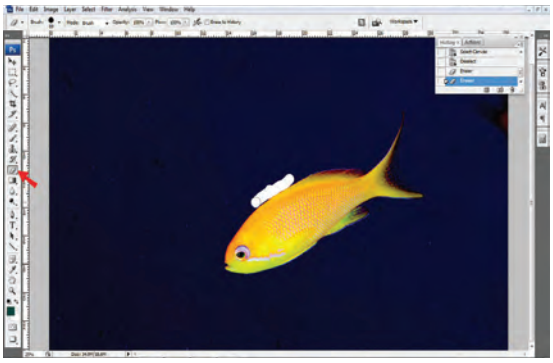
Look for a nice example in another photograph and cut it out either with the Eraser or the Lasso tool.

Eraser tool

We are going to cut out the fish and place it in the reef scene to add some foreground interest.

> Click on the Eraser tool on the Shortcut menu.

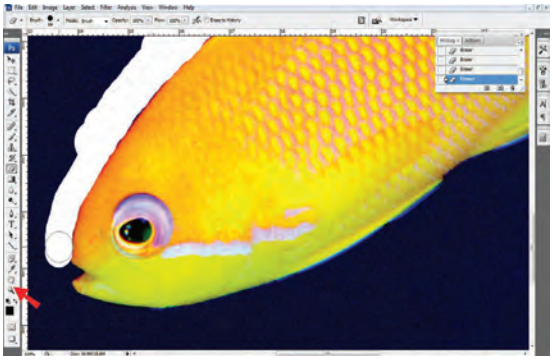
> Right click on the image to bring up the Eraser tool settings.



> Go around the border of the fish to remove the background.

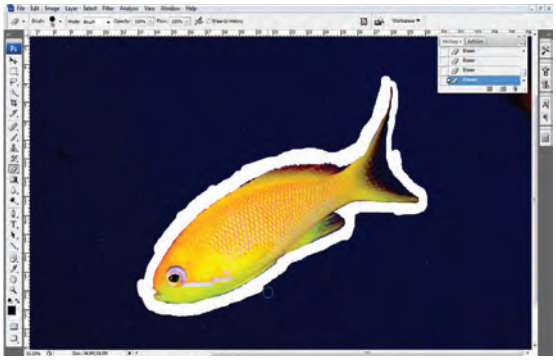
> Zoom in to erase around the borders more accurately.

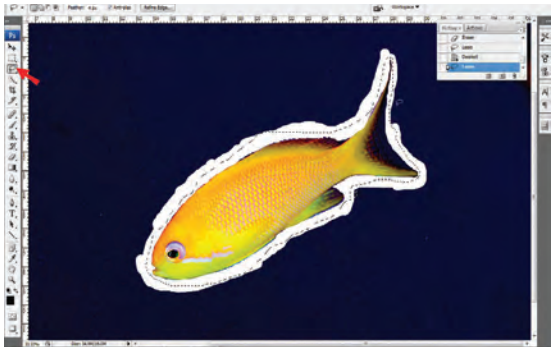
Click frequently so that if you make a mistake you can still go back a step or two in the history.



Once you've made the first outline, zoom out and use a bigger eraser to enhance the empty area around your subject.

Right click on your mouse and you can make the eraser smaller or bigger.





Lasso tool

At this point you can also use the Lasso tool to select the subject by dragging around the fish.

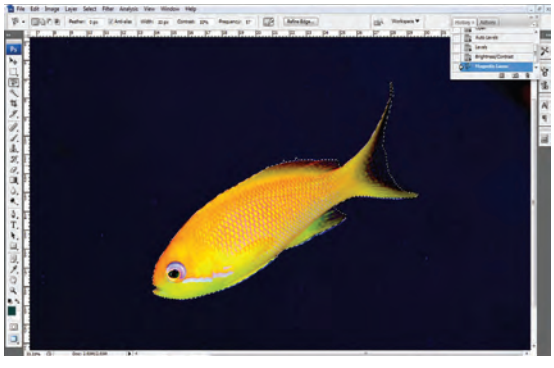
> Click on the Lasso tool in the Shortcut menu.

> Drag around the edges of the fish.

Make sure that you stay within the white border you have created with the eraser.

> Copy and paste the subject to a new sheet so that you can save the cut-out object as a separate file.

You can then use it again in the future.



Alternatively, you can use the Magnetic Lasso tool if the subject is well defined like this one. This will easily select the whole area.

> Go to Lasso on the Shortcut menu
> Right click on the tool and choose Magnetic Lasso.

> Click around the subject and the Magnetic Lasso will attach itself to the border of the fish.

> Tidy up the edges and remove any extra background colours.

> Copy and paste the subject to a new sheet.

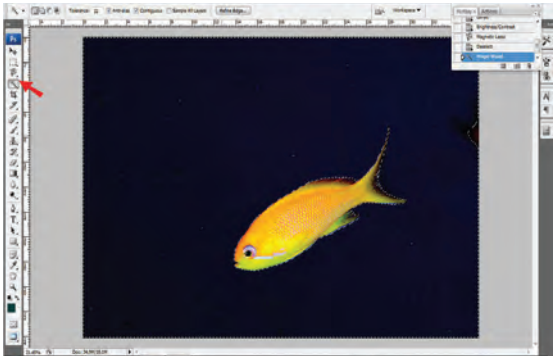
Magic Wand

If the background is one colour, then the Magic Wand can be a good solution as well.

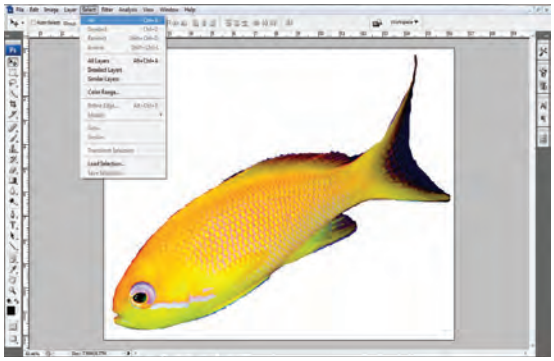
> Click on the Magic Wand tool in the Shortcut menu.

> Click with the wand on the background to select the same colour.

> Cut the selection.



> As with the Lasso tool, tidy up the edges and remove any extra background colours before saving it as a new file.



You now have your rough version of the fish.

> Select all > Copy.

Pasting

> Open the original photograph of the reef scene.

> Paste the cut-out on top of the reef scene.

> Select the white borders around the fish with the Magic Wand and cut them out.

> Click on the Blur tool in the Shortcut menu.

> Right click on the image to bring up the Blur settings.

> Click around the edges of the fish to soften it.

This way the top photograph does not have such hard edges and looks more natural.

Transformations

You can make the size of the fish smaller to fit in your composition or change the position and orientation.

> Go to Edit > Transform > Scale.

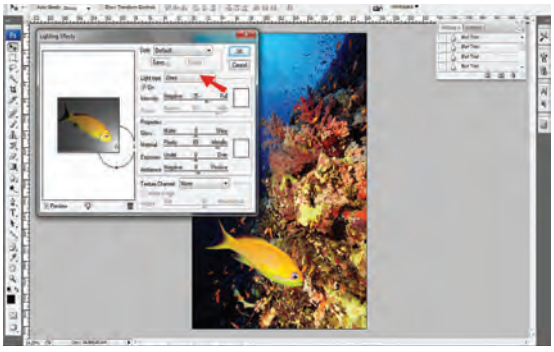
> Drag the corners to adjust the image.

OR

> Go to Edit > Transform > Rotate (choose the setting you want).

However, sometimes the light can come from a different angle or the colours don't really match.

> Go to Filter > Render > Lighting Effects > Choose Omni in Light Type drop down menu.



This will correct the sun or strobe light to come from the correct position and correct the angle of the light accordingly.

You can move the light source to suit your photograph.

You can also change the colours of the fish slightly so that it fits more naturally into the surrounding area.

> Go to Image > Adjustments > Color Balance.

> Change value manually or use the slide bar.

This will balance the colours of the added subject and allow you to get a more natural appearance to help it blend with the background.

Brightness and contrast can also be adjusted to help the overall appearance of the image.

> Go to Image > Adjustments > Brightness/Contrast.

> Change value manually or use the slide bar.

When you are happy with the addition, you then merge the layers in Layers.

> Go to Layers > Merge visible.

Remember to save your creation under a different name from the original photograph.

And there you are. The reef looks much more interesting now. You can add whatever you like to the photograph and these techniques can be used to create more elaborate, creative works.

A little further

Go on… the possibilities are now endless. With the use of the last chapter and a couple of extra tips you can create whatever you want without being an expert in Photoshop.

Create for yourself a folder with all kinds of cut-outs. This does not solely have to be underwater photographs – people, buildings, flowers, etc., can all be used. The hard part is the cutting of the different objects, but thereafter it will be fast and fun.

If you use layers you can work on the background layer to create shadows without touching the foreground.

Maintaining equipment

Maintaining equipment after a dive

Immediately after a dive (or as soon as is possible after leaving the water), rinse your camera housing in fresh water.

If you can, it is also a good idea to let the housing soak for five to ten minutes to ensure that all the salt is washed away. However, don't leave your housing in a rinse tank for long periods of time – many cameras have flooded in rinse tanks because there is no longer the water pressure pushing the housing shut. There may also be other cameras placed on top of yours or the housing could bounce around the tank once the boat is underway.

After rinsing, make sure that the housing is dry before removing the camera. Take care when opening the housing as drops of water may still be between the o-ring and the groove of the housing.

Once you have removed the camera, back-up your images and charge the battery.

Remember to replace the memory card and you may then wish to prepare your equipment for the next dive.

As mentioned in the set-up chapter, never rush the preparation process.

If you won't be using your housing for an extended period it's best to remove the o-rings. Dry the o-rings and then add a small amount of grease to keep them supple.

Store them in a clean plastic bag (such as the one it was supplied in) and place them inside the dry housing.

It is also a good idea to include some silica gel packets to help remove any excess moisture whilst not in use. Then close the housing and store according to the manufacturer's guidelines.

A well maintained housing should function properly for a number of years but you should also have it serviced by an accredited technician as recommended by the manufacturer.

Photography and safety

Diving requires training from a recognised agency and comes with an inherent degree of risk. The training you receive enables you to identify and cope with (or avoid) situations that could become dangerous.

When diving with a camera it is all too easy to become distracted and focus too much of your attention on taking pictures. It is vital that diving safely is always your first priority and that the camera is a secondary focus.

Ensure that you always have enough air to exit safely.

A camera is not going to save you in an emergency so always dive safely and never forget the fundamental skills you were originally taught. Maintain good buddy contact throughout the dive, regularly check your air supply and be aware of your depth. It is very easy to descend deeper than intended if you follow a fish or focus your attention solely on your camera. Never put yourself at risk for a photograph and always dive safely.

This applies to the marine environment as well. Many of the corals and marine life are very delicate and easily damaged by careless divers. Before you take any photograph, check that you can take it without risk to yourself, your buddy or the aquatic life.

Maintain good buoyancy control at all times, be aware of where your fins are and avoid contact with fragile and potentially hazardous marine organisms.

No photograph is worth damaging the environment. We are pleased to say that this is a broadly held view in the underwater photography community and most photographers dive with care and respect.

Never put yourself at risk just to get a decent photograph.

Troubleshooting

Frequently asked questions

These are some of the common problems encountered in underwater photography and editing, along with some possible solutions.

My photographs are blurred
Try using a faster shutter speed or faster (ISO) film speed. Also ensure that the camera is steady when taking a photograph.

My photographs are too blue/green
Ensure that the flash is firing and that the subject is close enough for the light from your flash to reach it. Alternatively, use manual white balance to reduce the blue/green hue in the image.

I have a lot of backscatter
Take care not to stir up the sand or silt before taking a photograph, but if there are a large amount of particles in the water, this may be unavoidable. Try to move the strobe further away from the camera to increase the angle and reduce backscatter. Alternatively, if you have enough natural light, you could switch off your strobe and use manual white balance instead.

My camera won't focus on a subject
Check that the focus mode is correct for the distance between the camera and the subject and switch to either macro or normal if not. If there is a large amount of detritus in the water, the camera may struggle to focus on your intended subject.

None of the buttons on the housing work
Ensure that the camera is charged and inserted correctly and also that the housing is closed properly. If this occurs at depth then it may be due to water pressure pushing on the buttons. In this case, speak to your retailer and request a service.

My photographs have red spots/circles in them
These are caused by the flash illuminating spots in the water when manual white balance is being used. Ensure the flash is switched off if using manual white balance or set the camera to auto white balance if you use the flash.

I keep cutting off the fish's tail
Try to move the camera with the subject and allow for both its movement and the shutter delay of the camera.

Troubleshooting

I have areas that are too bright
If this occurs when using a flash you may have 'hotspots' caused by the flash hitting nearby surfaces. Try to reduce the flash power or move it further away from the subject. If you are not using the flash, try adjusting the exposure compensation to reduce the bright areas.

My photographs have a pink/red hue to them
You need to set the manual white balance at each depth. This occurs because the manual white balance is still calibrated for a deeper depth and is adding too much red to your image.

I can't set my manual white balance
Refer to your instruction manual for details. Ensure that you have enough light for the camera to evaluate the white balance.

I have black corners when using a wide angle lens
This is called 'vignetting' and can be caused by either mechanical or optical factors.

Mechanical vignetting may be due to the external lens not being fitted correctly meaning that parts of the lens itself are being recorded in the image. Optical vignetting is caused by a reduction in light intensity towards the edges of an image and can be overcome by reducing the aperture (increasing the f-number).

Half of my photograph is in shadow
The flash from the camera may be obscured by an external lens or the housing itself. Try moving further back to allow the light to spread to all areas of the image. If using an external strobe, it may be blocked by part of the reef or wreck, in which case reposition the strobe to avoid the obstruction.

The colours look unnatural in my edited photographs
Don't over edit your photographs. If there is very little red in the original image, then the software won't be able to put it back in a

natural way. Try to get as much colour in your original photograph so that you can simply fine-tune the colours in your editing software.

I have a blotchy look in my photograph after I remove backscatter
If you are using the spot-healing tool, try to use as small a brush as possible to create a natural look. If the backscatter is too big, use the clone stamp instead and clone a section of the photograph without backscatter.

The auto levels function gives me an unnatural look
If the software doesn't give you a satisfactory look, adjust the levels manually by selecting the black dropper and clicking on a section of the image that is black. Alternatively, you can move the sliders until you achieve a result that you are happy with.

The auto colours function gives me an unnatural look
As with the auto levels, try adjusting the colour balance manually until you are satisfied with the result.

When I use the clone tool, it copies parts of my subject
Remember to keep moving your clone segment to ensure that you don't replicate parts of the subject. Reset the clone segment regularly to give a more natural look to your editing.

Taking the perfect shot

Underwater photography is not an easy skill to master, but there are some simple tips to follow that will ensure you get the best results from your dives.

First of all, understand your camera and how you can alter the settings as this will allow you to have more control over the final image. Use shutter priority or the manual setting to control the shutter speed and ensure that you capture crisp images by using a faster shutter speed.

Use the lowest ISO that the light allows to remove noise in your images. It's even better if you take your own light with you, so invest in a strobe and use the flash to replace the colours that are absorbed by the water. Remember to position your flash to minimise backscatter and try different angles to create more textures and shadow.

If your housing allows you to use the TTL (through the lens) setting, then this will give you more consistent results. If you can't use the strobe's TTL mode then practise to become familiar with the settings and what strength you need for different situations.

Finally, remember to respect the marine environment and ensure that you maintain good buoyancy control at all times to prevent any damage to the reef.

The Sunny Side Rule – Land

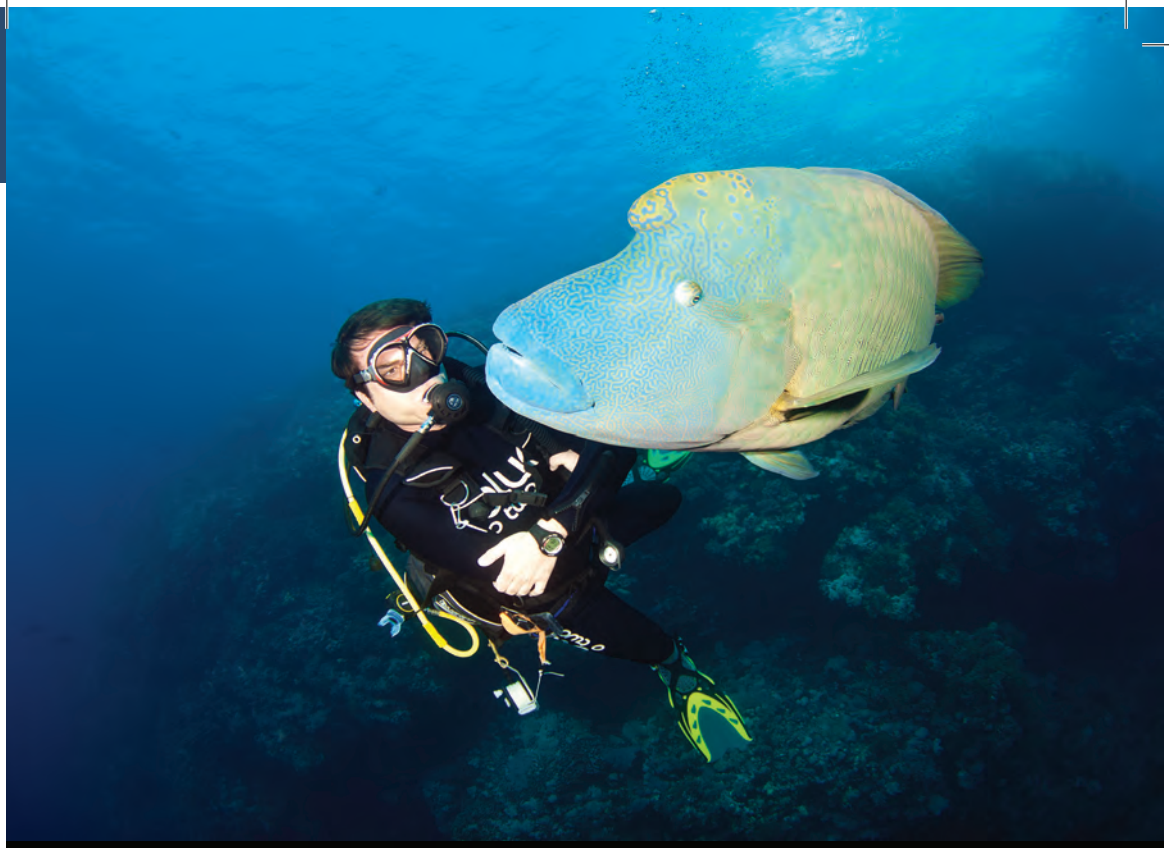
When the sun is shining on land, there is a standard rule of thumb used by photographers to achieve a correct exposure. This is based on the amount of light reflected from the subject to the camera and is a good starting point when manually controlling your exposure.

- 1/125 second shutter speed
- f16 aperture (SLR camera) – f8 (compact camera)
- ISO 100

The Sunny Side Rule – Water

When diving the same principle applies, but the settings need to be adjusted to compensate for the lower levels of available light.

- 1/125 second shutter speed
- f16 aperture (SLR camera) – f8 (compact camera)
- ISO 400



About the authors

James Dawson

James had always wanted to dive and got his first opportunity during a holiday to Kenya in 1999. After those first few breaths underwater, he knew it wouldn't be a once-off experience.

Over the years he worked his way up the ladder until he became a diving professional and could get paid to do what he loved. He has lived in Egypt since 2005 and has worked as a guide and instructor in most areas of the Egyptian Red Sea. He has been fortunate enough to see some amazing sights and experience many wonderful dives.

James took up underwater photography in 2008 and found that it added a whole new dimension to his diving. While he is not quite at the stage where he feels naked diving without a camera, he certainly does miss it.

James' work has been published in both diving and photography magazines in the UK and he also edits an online magazine called 'The Equalizer' that covers all things to do with the Red Sea.

You can see more of James' latest photgraphs at www.silentworldimages.co.uk where he hosts galleries of both underwater and land-based photography.

Dray van Beeck

Dray was born in the Netherlands and studied Arts and Photography before teaching Art at high school. In 1997 he did his first dive course and liked it so much that he left Holland to start working professionally in the dive business in 1998. He has since worked and lived in Malaysia, Thailand the Philippines and Egypt.

In 2000 he picked up his first underwater camera and progressed to a DSLR in 2005. Ever since then he has been taking photographs almost every day.

Dray has been published in a number of books and has had articles printed in a variety of dive magazines. He has also won a number of international photographic contests.

Dray has published six applications for iTunes about underwater photography and marine life.

At the moment he is currently working as a liveaboard guide on the Red Sea in Egypt. A selection of his latest photographs can be viewed on his website www.drayvanbeeck.com.

About the authors

Johan Boshoff

Johan Boshoff has dedicated his life to scuba diving and marine life education around all of the world's oceans, and he is always eager to see what the big blue has to offer.

After Johan learned to dive and had seen God's wonders under the water, he decided to quit his job and make scuba diving his full-time career. He started diving in the late 1990s and today holds diving qualifications as a Technical Course Director and a commercial diver.

In 2000 he started a diving company called The Dive Spot in South Africa and has been doing business in all things related to diving ever since, including training, travel, commercial, photography, dive apparel and books. There is little that Johan and The Dive Spot have not yet attempted.

He entered the magazine publishing world when he started freelance writing for Divestyle magazine, and after being approached to become the face of the magazine Johan published his first dive magazine as editor in September 2005.

In October 2013, after eight years as editor and publisher, it was time for his final issue and new frontiers. Back in 2008 he personally dived all the dive spots in Southern Africa and publish his first book, The Dive Spots of Southern Africa. While he was on these trips, he also developed an App which hosts more than 3 000 photographs of marine life and today it is also a Smart App for divers. This programme and app helps marine lovers and scuba divers to learn more about the spectacular marine life in and around the ocean.

The publishing didn't stop there; in 2009 Johan brought out an underwater 'Marine Species Guide' in book and slate form. With the slate, divers can identify what different species they see underwater and then use the book as a reference guide to learn more about them.

In 2011 he decided to publish a photographic book, 'The Diving Photographer – Sea through a lens.' This book helps all levels of underwater photographers to improve their photographic skills, choose the right camera, set up their lights as well as offering easy ways to tweak the almost perfect shot.

Today Johan is still active in the diving industry, providing dive training and operating as a dive specialist. He is currently living in Perth, Western Australia where he hopes to explore all the possibilities which scuba diving and its related activities have to offer and started OZDiver.com.au, an exciting new portal and dive magazine for the Australian diving community. This site and magazine, dedicated to all things scuba, will keep divers up to date with the latest scuba diving news.

OZ DIVER

The Dive Spot

Glossary

Glossary

A

Aperture - the measurement for the size of hole that allows light through to the sensor.

Arm - connection between the camera housing and an external strobe or lens.

B

Backscatter - light from a flash or strobe reflecting back from particles in the lens's field of view causing specks of light to appear in the photograph.

Balance (colour) - is the global adjustment of the intensities of the colours (typically red, green and blue primary colours).

Black & White - monochrome image style without colour.

Bracket - mounting point for external wet lenses.

Brightness - amount of light in the photograph.

Buoyancy - fundamental diving skill that allows you to hover motionless when composing or taking a photograph.

C

Capture format - pixel count, digital file type (RAW, TIFF, JPEG), film format.

CCD - charged coupled device - type of camera sensor.

Compact - small camera with built-in lens.

Composition - how an image has been put together using position, angles and lighting.

D

Diagonal - composition technique which has a subject positioned between opposite corners of the frame.

Distortion - by a lens – deviation from the normal linear view or by image noise.

DSLR (Digital Single Lens Reflex) - camera that has interchangeable lenses and more manual control.

E

Exposure Compensation - digital cameras allow you to intentionally lighten or darken an image by changing the amount of light the camera allows through to the sensor.

F

Film Speed - determines the sensitivity of camera film to light. The term is used in digital photography to refer to the sensitivity of the camera's sensor rather than a roll of film.

Fish Eye Lens - lens that offers a particularly wide field of view to allow you to get closer to large subjects whilst still fitting them in the frame.

Flash - either a built-in or external method of adding extra light to an Image.

H

Housing - a watertight case that the camera is placed in for underwater use.

I

Image noise - an undesirable by-product of image capture because it causes distortions present in the image that can obscure the subject of the photograph.

Glossary

Instruction Manual - the book that explains how to use your particular equipment.

ISO - another term for Film Speed (see above).

L

Layers - foreground, mid-ground and background areas within a photograph.

Lens - the camera's 'eye.' Lenses can be either fixed or interchangeable depending on the type of camera (see also Fish Eye, Macro, Wet Lens and Wide Angle).

M

Macro - a lens that acts like a magnifying glass allowing small subjects to appear larger.

Magic Wand - this tool lets you select a consistently coloured area (for example, a blue sky) without having to trace its outline manually.

O

O-ring - a soft, round rubber ring that fits between two hard plastic/metal areas and is a vital component within a camera housing that prevents the water from entering.

P

Patience - an essential talent for taking pictures of wildlife in their natural environment.

Practise - the best way to improve your underwater photography.

R

RAW - minimally processed data from a camera image sensor – not yet processed. Also called digital negatives.

RGB - Red, green, blue colour channels.

Rinse Tank - a bucket of fresh water used to clean a camera housing after a dive.

Rule of Thirds - technique for dividing an image into horizontal and vertical thirds to help in composition.

S

Sepia - similar to black & white but with a brown hue across the image.

Shutter Speed - the period for which the shutter is open, allowing light through.

Silhouette - technique with a strong light source behind a subject to achieve a dark outline rather than colours or detail.

Silica Gel Packets - packs of water absorbing crystals that can prevent moisture building within the camera housing.

Silicone Grease - used to lubricate the o-ring and ensure a watertight seal.

Strobe - another term for flash, but usually refers to a higher strength external light source controlled by the photographer.

Subject - the main focus within a photograph.

W

Wet Lens - external lenses that can be attached or removed whilst underwater. Connected to the housing through a specific size bracket.

White Balance - method of recalibrating the colours recorded by the camera.

Wide Angle - lens that offers a wider field of view than standard, but not as wide as a Fish Eye Lens.