

Cave diving photography

By Neil Vincent

Before attempting Cave Diving photography, divers should be trained, certified and experienced to the level of the cave being attempted.

Taking photos in cave presents a number of problems that are specific to caves. I will attempt to address some of these and explain how I have overcome or minimised their effect.

ASSISTANTS AND MODELS

Cave Diving photos benefit from having a person included in the photo to give the scene a sense of scale. Lighting large passages, again to show the size of the caves requires multiple strobes and multiple people to hold or position them.

Having other people in the water is necessary, however it may cause great complication to the dive if planning and familiarity with what is required is not discussed and understood before the dive. Each divers' role and position in relation to the photographer should be established prior to the dive. Common hand and light signals should be known and understood by all.

Using an assistant to reel out guideline, thereby leaving the photographer's hands and mind free to concentrate on photography is useful. Assistants may also carry additional remote strobes which may be used to backlight features within the cave or other divers. Ideally work with the bare minimum of other divers in the water, as confusion and silting of the water is directly proportional to numbers.

Caves are dark!! There is no light in a cave other than what we divers bring with us. In the Australian cave diving community it is common practice is to wear helmet-mounted low wattage lights as secondary lights. I have found this a good practice as it leaves my hands free for photography. It's major drawback though, is that it may blind other divers with whom you are trying to convey directions. To overcome this situation, I turn my lights off when I am giving directions and taking a photo. The model's lights remain on and are usually pointed towards me but not directly at me, now they can clearly see my hand signals without my lights in their eyes.



To photograph this area required light painting. Onto a bracket I attached two Ikelite SS200 strobes fitted with remote sensors and a Nikonos 105 strobe. The Nikonos strobe was the trigger strobe. The camera was fitted to a tripod and set up on a ledge. A guideline was placed to allow me to move between the formations without doing damage to myself or the cave. A chemical light was set behind the camera so I always could relate to it. My eyes actually became adjusted to this light and I could see around the cave, until I fired the first strobe flash. After that the image of the cave was burnt onto my retina and I closed my eyes for the rest of the dive. I fired the strobes from behind the formations so that the camera did not "see" the strobe. About thirty separate flashes were required to make the photo.

Nikonos 5 camera, 15mm lens, Velvia 50 ISO film. Ikelite SS200 strobes, Nikonos 105 strobe.



Using only the light from the torches because of the disturbed silt in this very low cave. The fossil bone is the subject and the diver is made of graphic shapes created by the reflected light. This is one of my favourite photos.

Nikonos 4, Nikkor 15mm lens, Ektachrome 100 ASA film



The water in this photo is quite dark, the dark wetsuit of the diver would have been lost if a remote strobe had not been used to back light. The diver and the formation have been lit by the strobes on the camera.

Subal Housing, Nikon F4 camera, Sigma 14mm Rectilinear lens, Kodachrome 200 ASA film, Ikelite SS200 strobes, Aquasea 140 Remote strobe.

FOCUS

My favourite lens for Cave Diving photography is a Sigma 14mm rectilinear lens. It allows me to be very close to the subject without the barrel distortion of a full fisheye lens.

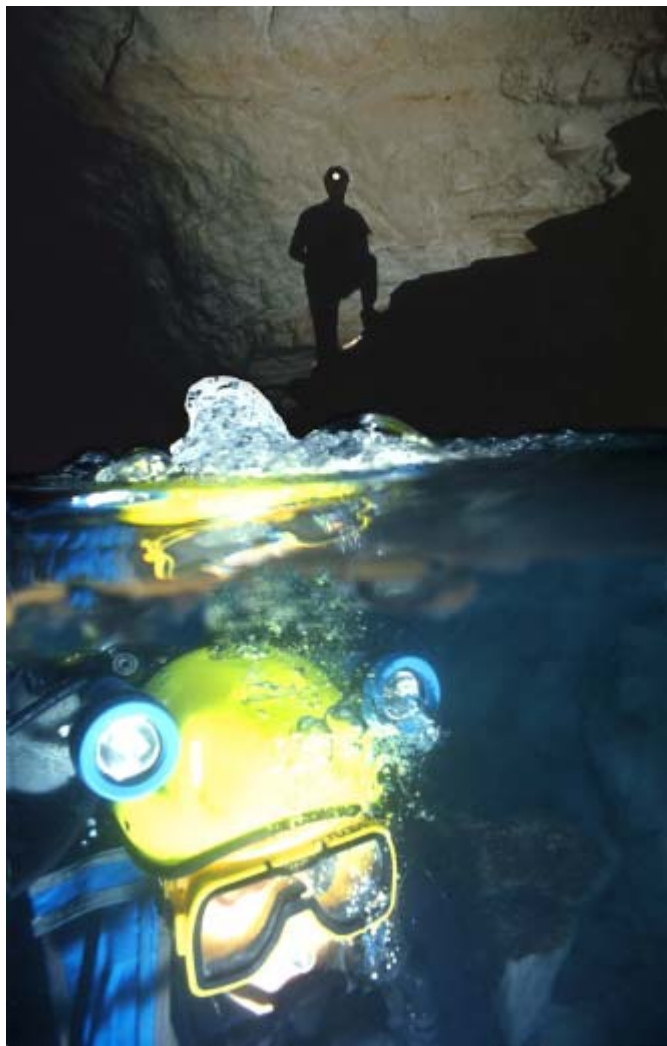
Auto focus underwater in a cave does not work and manual focus while possible, is difficult to impossible due to the extremes of lighting within the viewfinder.

To overcome this problem I

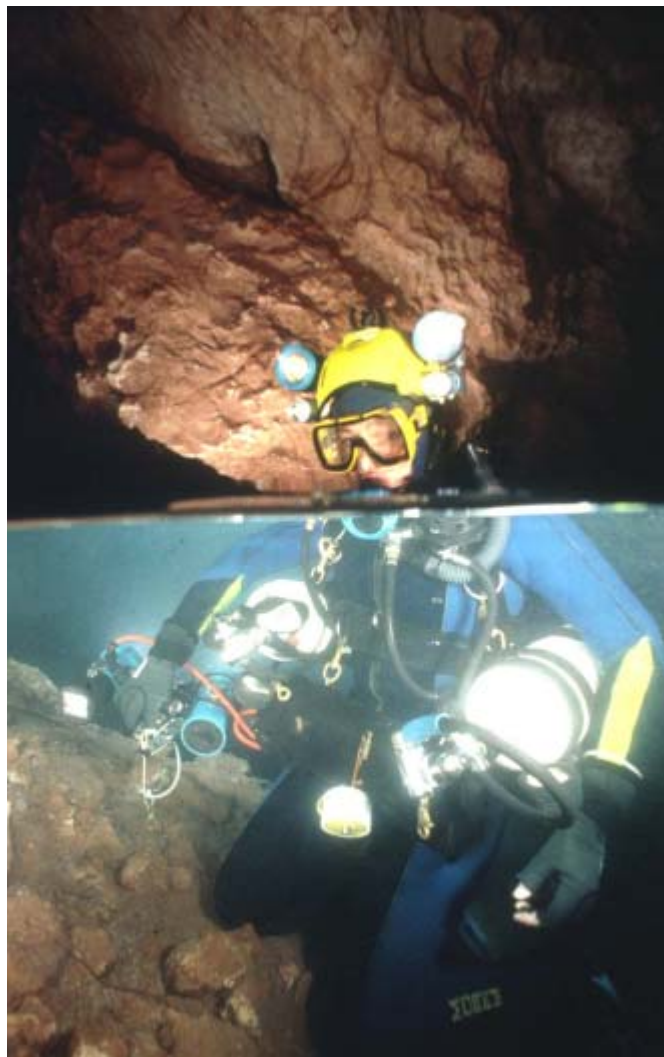
developed a simplified manual focus system with only three positions. As three quarters of a full turn on the control knob is all that is required to go from minimum to maximum focus, I marked the control knob with these two positions, MIN, MAX and another halfway between called MID. Using these positions I went into a swimming pool to establish the depth of focus for each position at every

aperture. I did this by setting the camera on the bottom with a tape measure leading away from the lens. At regular intervals I placed coloured children's blocks near the tape. I shot one roll of film at all apertures on each of the three focus positions. After studying the results, I tabulated the depth of focus for each aperture/ position as read from the tape measure.

Using a laminated copy of



The lens has a +2 diopter which has been ground in half fitted to the lower half to reduce the focus allowing both the diver and the caver to be in focus. I am standing on the bottom which makes holding the heavy housing half out of the water much easier. The caver has a remote strobe pointed at the rock wall to silhouette himself. Aquatica Housing, Nikon F3 camera, Nikkor 24mm lens, Aquasea 140 strobes, Ektachrome 100 ASA film



The depth of focus is great enough with the 14mm lens to allow focus both above and below water without a diopter. A strobe was held above the water to light the rock. Holding the weight of the strobe and half the housing was very difficult. Subal Housing, Nikon F4 camera, Sigma 14mm Rectilinear lens, Kodachrome 200 ASA film, Ikelite SS200 strobes.

this tabulation underwater allows me to set the focus using only aperture and one of three positions then to concentrate all my efforts on composing the image in the viewfinder. For example at F8 on MID I know that a range from 200mm to infinity will be in focus.

EXPOSURE

Again I keep this simple. I

know that f8 gives me good depth of focus so I use this as my prime aperture, I then adjust the speed knowing that the lights my models are using give good results at 1/15 and 1/30 second. Ikelite SS200 strobes are set on TTL and I compensate on the camera plus or minus depending on my feeling for the walls of the cave. ie if the walls are white or black.

REMOTE LIGHTING

Caves can be big and quite often strobes mounted on cameras don't provide enough light to illuminate the whole scene, this is where remote strobes can assist. These strobes may be connected to the camera with long cable or triggered by light sensors attached to the remote strobe.

Using two, twenty metre



A “standard” photo with some additional light being provided by hand held remote strobe being held by the diver.

Subal Housing, Nikon F4 camera, Sigma 14mm Rectilinear lens, Kodachrome 200 ASA film, Ikelite SS200 strobes, Aquasea 140 remote strobe



This photo may feel odd and it was meant to. I wanted to use the air pocket to reflect but from the bottom. This photo is upside down to how it was taken. It took a great deal of control by the diver to swim upside down for several minutes. I had to wait until all of the bubbles had cleared before pressing the shutter.

Subal Housing, Nikon F4 camera, Sigma 14mm Rectilinear lens, Kodachrome 200 ASA film, Ikelite SS200 strobes.



Using only the available light. I chose to do this because there was lots of beautiful light streaming through the entrance and I had disturbed the silt from the bottom. This would have ruined the photos if I had used flash but the silt has actually enhanced the light from the torch.

Nikonos 4, 15mm lens, Ektachrome 100 ASA film

Photos to complete the story are always a good idea. This one shows how easy it is for a diver to enter McCavity Cave. In order to allow the light from the torches to show the strobe was set to rear curtain sync and the camera speed to 1/15 second. This means the shutter opened for 1/15 second before the strobe fired as the shutter closed. Nikon F4, Tokina 28 - 70mm lens, Nikon SB24 strobe



A “strobe on camera” photo but one which tells a story about getting into the cave. This is also the way my camera had to come in so think about protecting your equipment for lowering and travel into the cave. Subal Housing, Nikon F4 camera, Sigma 14mm Rectilinear lens, Kodachrome 200 ASA film, Ikelite SS200 strobes.



long cables in a cave once resulted in a massive tangle, a cave full of black spaghetti, of which we were part. Following this interesting learning curve, I have rarely use hard wired remote strobes since.

Good quality remote sensors, such as those made by Ikelite, are a very good alternative to cables. The sensor plugs into the strobe where the cable from the camera would normally be. A pulse of light from another strobe triggers the remote strobe, this allows greater lighting freedom and the ability

to light larger sections of cave.

If assistants are positioned along a passage, each with a remote strobe pointing away from the camera toward the next diver, when the camera strobe fires, it in turn fires each of the remote strobes like a daisy chain, lighting the whole passage and each of the divers.

I was shown a photo of a diver with a black mask, black BC, black drysuit, black tanks and black fins in a black cave, he blended in well but it made a poor photo. Have your model where suitably colored

equipment to enhance the photo. Another method to separate the diver from the darkness is to use a remote strobe pointed towards the camera but behind the model to rim light the model. This can also be done with features within the cave. It is a very effective technique.

LIGHT PAINTING

Remote strobes can also be used for “light painting” inside large passages or rooms. The camera must be held still, usually on a tripod, as a long time



A remote strobe with a sensor was positioned behind the formation to back light it. The strobes lighting the foreground and the diver were angled to avoid lighting the front of the formation. Subal Housing, Nikon F4 camera, Sigma 14mm Rectilinear lens, Kodachrome 200 ASA film, Ikelite SS200 strobes, Aquasea 140 Remote strobe.



This is my most published slide. The camera was set to "B" on a tripod and held open with an elastic band. I swam along the wall firing both strobes so that my body was silhouetted. The streak of light was from my helmet light which I thought the camera would not see. Nikonos 4, Nikkor 15mm lens, Aquasea 140 strobes, Ektachrome 100 ASA

exposure is used. The camera shutter is locked open using the "B" setting. My aim is to evenly "paint" the inside of the cave with flashes of light. Some strobes have a test switch built in, unfortunately these usually fire at 1/16 power. To harness the maximum amount of light I have combined three strobes onto a bracket, two have remote sensors while the third has a test switch. It fires the other two at full power.

During set up I place a chemical light just behind the

camera on the tripod, this enables me to always know where the camera is when I am painting. By looking through the viewfinder I establish where the edges of my photo are going to be. I then run a guideline along the path I am going to take to make the photo. All lights must be turned off or they will register on the film. Tape the ready light on the strobe as it will leave a red streak across the photo. Locate positions in the cave where the strobe may be "hidden" from the camera,

behind a formation or a rock. Never point the strobe at the camera. Methodically move around the area to be lit ensuring that it is all evenly painted.

Use a guide line. Not using a guideline once resulted in me swimming into a passage which I didn't know existed. By the time I realized I could not see the camera light, it was too late. My assistant at the camera didn't turn on the lights for quite some time for fear of ruining the shot.

As this method is so slow it may be necessary to install the

This surface shot shows another perspective. The camera was on a tripod and the shutter on "B". The caver used a strobe to silhouette himself while another floated around the lake on a Lilo firing underwater strobes. The Lilo flasher moved from one lake to another so I covered the lens to let him to use a torch to see his way. Nikon F3 camera, 24mm lens, Aquasea 140 strobes, Ektachrome 100



camera, take the photos and remove the camera over a series of dives. Bracketing a lot helps. Start with an aperture of f8.

SAFETY

Cave photography has a high level of risk. Know your limits. Make safety of yourself and your dive buddies at the head of you list of priorities and the safety of the cave as second, only

then can you consider your photo. Take even more care when a cave has formations, decorations or virgin passage where even the silt floor is undisturbed. These have taken hundreds perhaps thousands of years to form and you can destroy them with one lapse in buoyancy.

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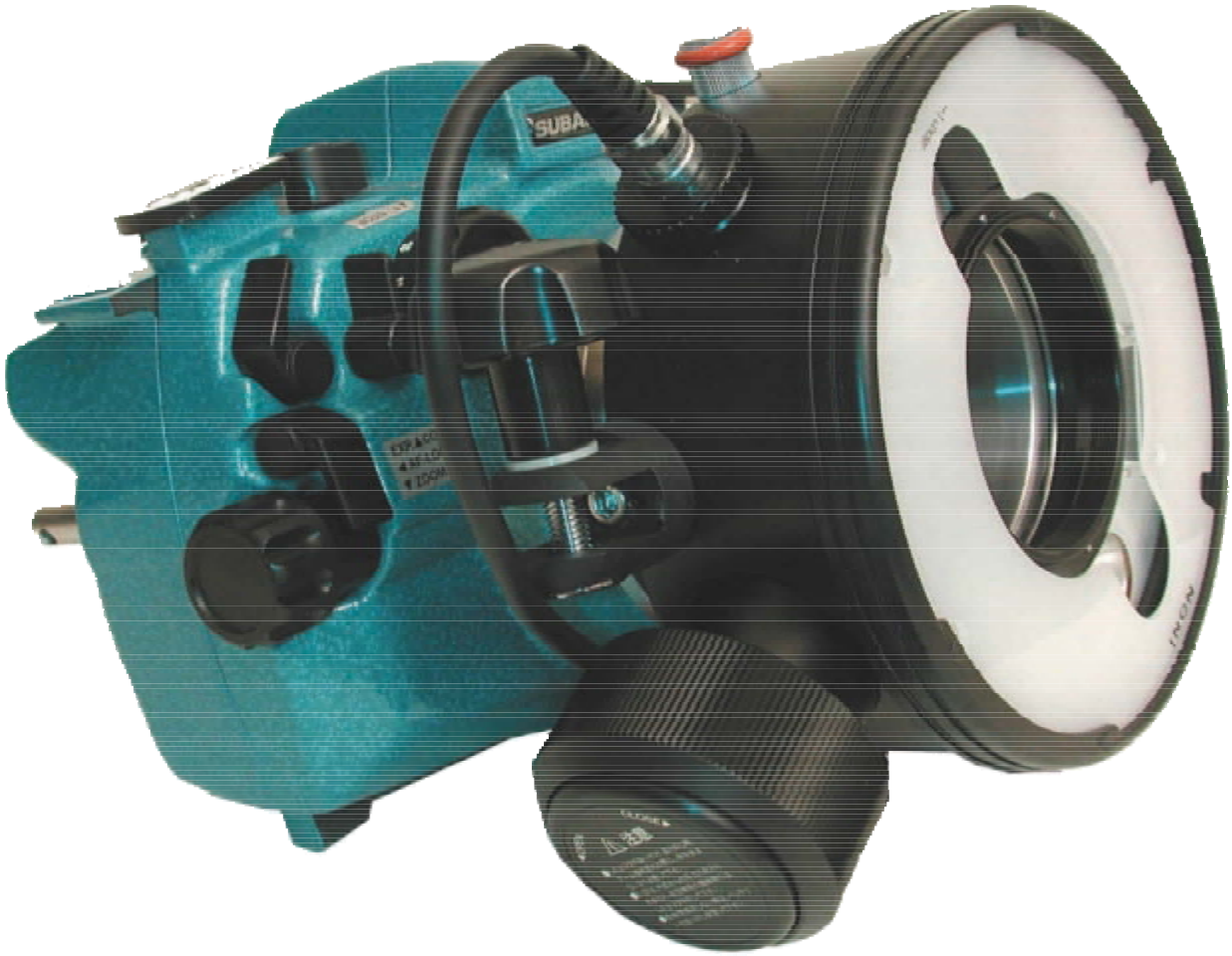
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