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Wide angle photography

by Peter Rowlands

Advantages

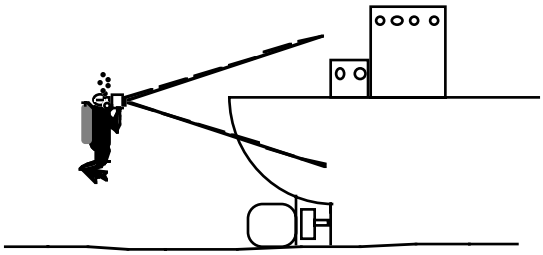
Using a wide angle lens enables you to get large subjects in the frame without having to move further back . For smaller subjects you can move closer so that the camera to subject distance is kept to a minimum. By comparison to land photography our visibility is much reduced and this make using a wide angle lens much more important.

Another major benefit is an effective increased depth of field (the amount of subject which is in focus0. This makes focusing much less critical and this is especially beneficial with the non reflex Nikonos V and MotorMarine II style cameras. For example, a Nikonos 15mm lens focused at 1 metre will be in focus from 0.5m to infinity at F8. This almost eliminates the need to focus with a non reflex camera.

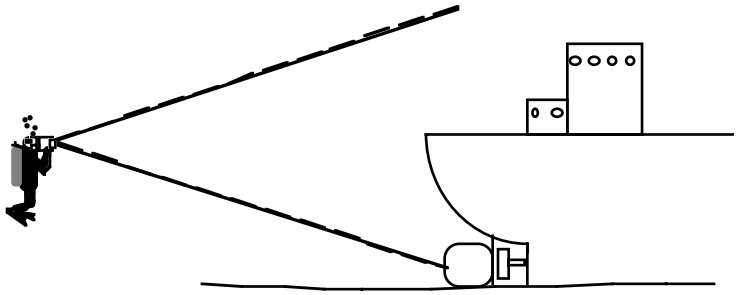
A steep change in perspective makes foreground subjects look much larger than they really are in relation to the background resulting in a more dramatic picture which is often used to great effect.

Disadvantages

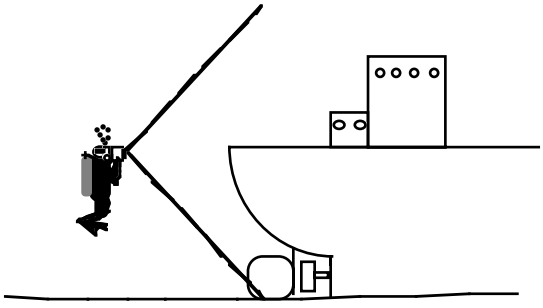
The picture area covered may include a tonal range too wide for the film to record i.e. surface down to seabed coverage but this can sometimes be counteracted by using flash to a



The diver in this frame using a standard angle lens won't be able to get all of the wreck in the frame



If you want the whole wreck you'll have to move further back but this increases the water between camera and subject and will result in a loss of contrast and clarity



The solution is to use a wide angle lens which will enable you to stay where you are and lose no contrast or clarity.

certain extent.

Geometric distortion with rectilinear wide angles will reproduce the same object as different sizes depending where they are in the frame.

Wide angle lenses cost more than normal ones and, when they are designed for underwater use only, they cost even more.

Prime wide angle lenses for non reflex cameras

Nikon produce three prime Nikonos lenses for underwater use- 15mm, 20mm and 28mm with angles of coverage of 94°, 78° and 59° respectively underwater. The equivalent focal length for the same angle of coverage on land would be 20, 28 and 35mm respectively.

No one seems able to give an adequate explanation why Nikon give their focal lengths as seemingly wider than they are but the angle of coverage is the most important factor in evaluating lens performance.

Sea and Sea produce two prime Nikonos lenses for underwater use - 15mm and 20mm with angles of 96° and 80° respectively.

Supplementary lenses for non reflex cameras

Supplementary lenses fit onto the front of the prime lens and increase its angle of coverage. The Sea and Sea SWL 16 increases the angle of coverage of the 35mm lens from 43° to 91°.

Whilst these lenses do not perform as well as prime lenses, especially at wider apertures, they offer an economic solution which, when used at apertures of F8 and smaller, will give perfectly good results.

They are designed to work with water between them and the prime lens and care should be taken to make sure no air bubbles are on either of the lens surfaces.

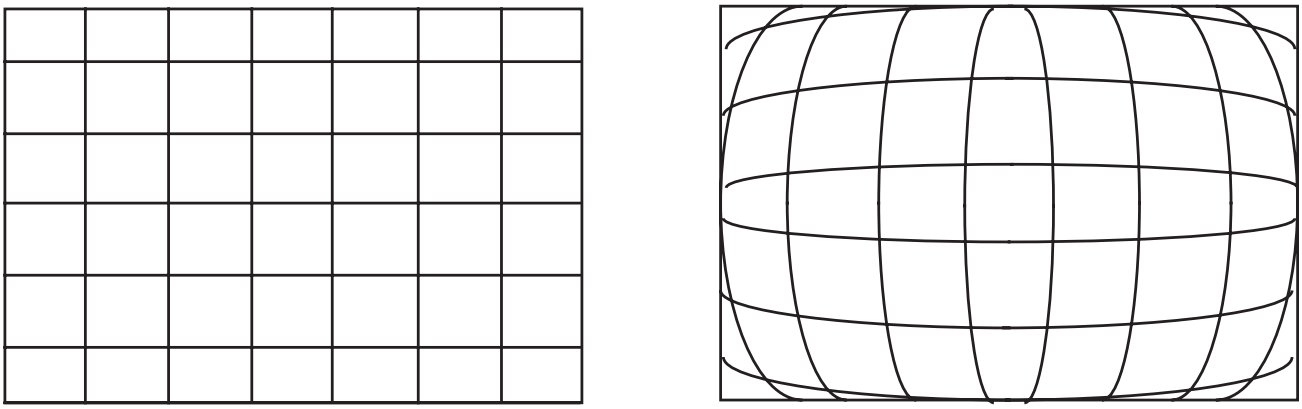
Wide angle lenses for reflex cameras

Land cameras in housings have a much wider choice of wide angle lenses i.e 28mm, 24mm, 20mm, 18mm and 16mm. Some manufacturers description of focal length varies but the angles of coverage will be approximately 60°, 80°, 90°, 110° and 180° respectively. With the exception of the 16mm, all wide agle lenses are rectilinear (they record straight lines as they are) but suffer from image size differences towards the edge of the frame.

16mm lenses are known as "full frame fisheye" and make no attempt to correct geometric distortions and so straight lines are bent towards the edge of the frame but the subject does not vary in size throughout the frame. Underwater, where there are very few straight lines, this type of lens works very well and helps to reduce camera to subject distances considerably.

Wide angle lenses must be corrected for underwater use and this is normally done by placing them behind a dome port.

A rectilinear wide angle lens will reproduce swimming pool tiles as straight lines whereas a full frame fisheye gives a distorted image.

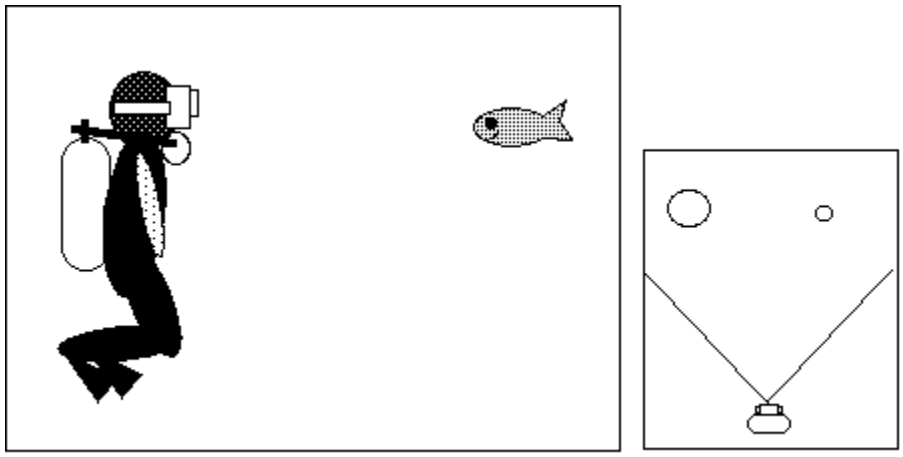


A rectilinear wide angle lens will reproduce swimming pool tiles as straight lines whereas a full frame fisheye will give distorted geometry but a wider angle of coverage.

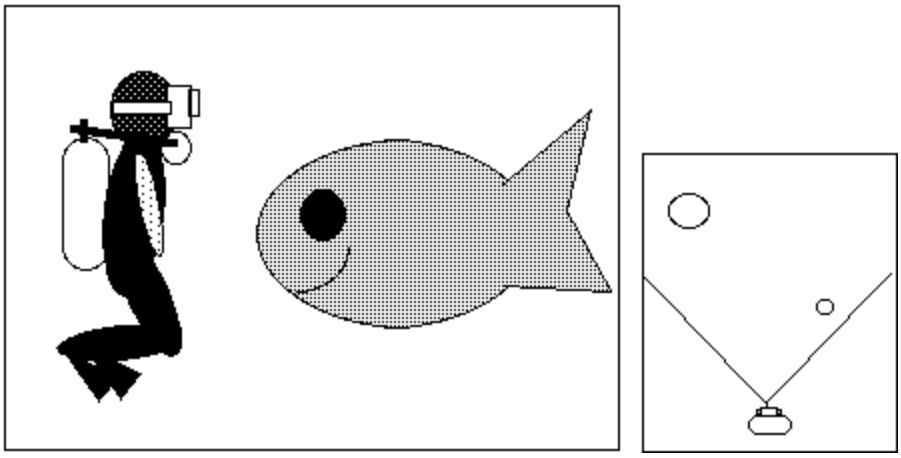
Forced perspective

One of the best techniques with a wide angle lens is to place part of the subject closer to the lens than the main subject or background. For example have a head of coral (or kelp) in the foreground and arrange your diver model further away but looking at the foreground. The end result will draw the viewers eye from the diver to the foreground and give it much more impact.

The increased depth of field should render both foreground and background as sharp images.



With the diver and fish the same distance from the camera, they are correctly sized in relation to eachother.

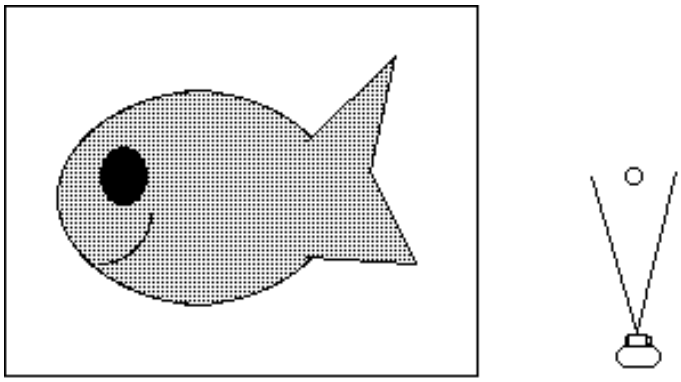


If the same fish is closer to the lens than the diver it will appear to be much bigger than it really is.

Close focus wide angle

Most wide angles will focus closer than standard lenses and, together with the increased depth of field, will allow you to take shots of subjects just a few centimetres from the lens and still have the background in frame.

Although it will focus close, a wide angle lens is still covering the same wide angle and small subjects, even though they are very close to the lens, will appear very small in the final results. If you do want to shoot this close, choose subjects which are larger so they fill the frame more.

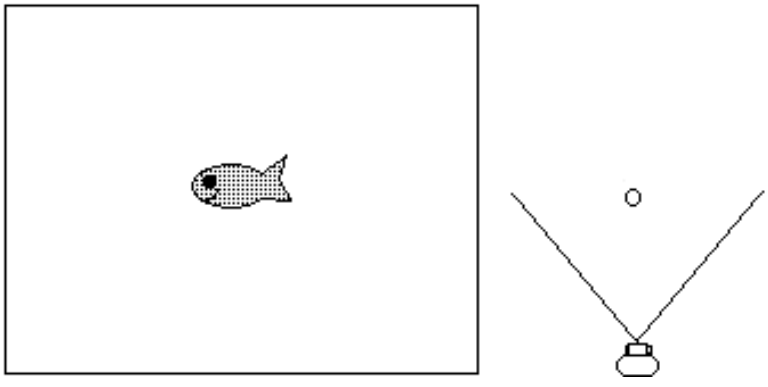


With a standard angle lens the fish fills the frame

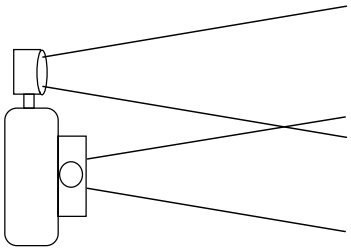
Parallax

Framing becomes difficult with non reflex cameras and parallax must be taken into account by tilting the camera up to compensate for the different viewing position.

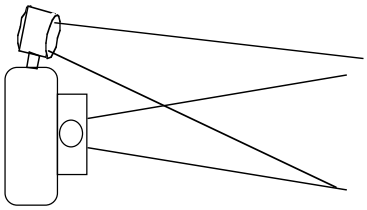
With non reflex cameras you and the lens are looking from slightly different positions



Using a wide angle lens from the same position will result in the fish being very small in the frame.



The viewfinder is looking at a different area to the lens and will result in misframing. This effect increases the closer the camera to subject distance.



The solution is to have a viewfinder which tilts and so show the correct framing.

and, at camera to subject distances closer than 2 metres, this can be a problem.

Some viewfinders incorporate parallax correcting devices which, when set to the camera to subject distance, give the same framing as the lens is seeing. Others have extra frame marks in the viewfinder to indicate framing for closer distances.

In the next issue we'll look at why underwater photography is different to its land counterpart.

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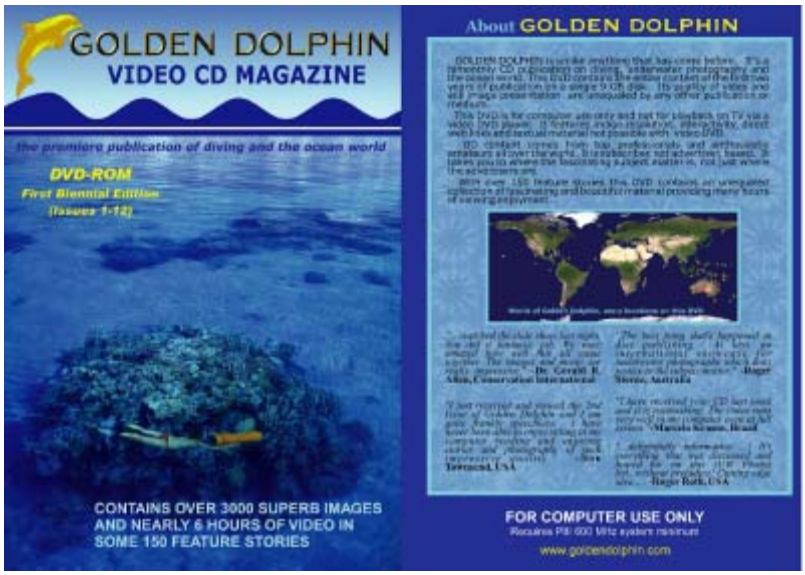
Golden Dolphin have recently released the first DVD edition of Golden Dolphin.

It's a double sided DVD-ROM that contains issues 1-12 of Golden Dolphin plus an overall interface and indexing. All up, it contains over 3000 full screen pictures plus some six hours of video in 150 feature stories.

With worldwide coverage and extensive work from people like Gerald Allen, Michael AW, Douglas Faulkner, Tim Rock, Roger Steene, and Mark Webster plus an RRP of $19.95 (+$5 shipping worldwide) it must be the best buy in dive publishing.



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