

Underwater Photography

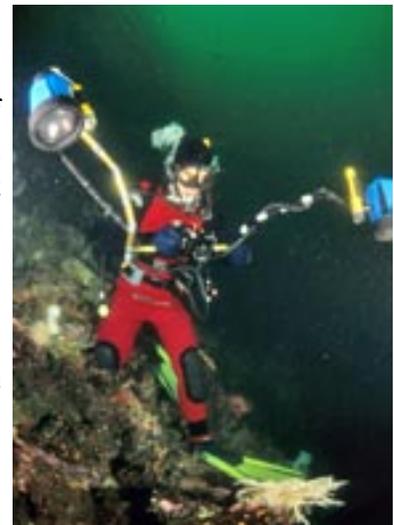
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Whether you are already a scuba diver or a photographer seeking new horizons, the urge to photographically document the undersea world may strike you. You will need new equipment to withstand a harsh marine environment and new knowledge of some basic principles of underwater photography.

However the primary concern should be learning to scuba dive efficiently. Snorkeling doesn't allow time enough to adequately concentrate on photo necessities, especially in colder waters, so we'll disregard this element.

Of course safety is our main concern and experience underwater creates confidence and equipment familiarity. A methodical relaxed breathing provides for better photo results in the form of composition, lighting and better concentration on your camera's technical settings (f-stops, shutter speed and focus). Also opportunities created by wildlife are enhanced. When you are breathing comfortably the animals sense it and become more approachable.

Proper buoyancy is another factor. Crashing into the bottom scares critters, damages the environment and really destroys visibility downstream – if you're lucky enough to have some current! Familiarity with your personal scuba equipment should become second nature. Know where your exhaust hose is. Gauges need to be tucked up into your body so as not to be dragging across the bottom, snagging coral or just stirring up the muck. Know instinctively where your console is located to monitor your dive (depth, tank pressure and compass direction). When these basic diving elements are instinctive, then the addition of camera equipment can begin safely and effectively.



When determining which type of submersible photo gear to purchase I would ask myself – What is the ultimate use of my pictures? Do I want to show snapshots to others or to go as far as possible in quality and exhibit my work or get published. If you choose the latter then start with an underwater camera system that is capable of producing quality images. The Nikonos system is the most recognized for its versatility, ease of use and is certainly capable of producing publishable quality images. It has been around the longest with the possible exception of the SLR's with their specifically designed housing.

One method to determine the type of system you like is to rent the equipment from a well equipped photo store, dive shop or dive resort. Ask for and thoroughly study the instructions for the system available or at least get some tips on how to set the knobs on camera and flash for the particular subjects you wish to photograph.

Do not expect much image quality from small instamatics that incorporate a flash on the camera body. The on-camera flash produces a flat featureless light on a subject. Even worse this head-on flash amplifies back-scatter (the suspended particles floating in the water column, many unseen by the naked eye) which is the underwater photographer's #1 problem. I have often heard newer underwater photographers complain that their new camera must have dirt spots or a bubble on the lens because the pictures contained annoying circles or bubbly bright spots. Subsequently they clean their lens but the result is still the same even in the clearest of waters.

How do the pros overcome this malady to produce back-scatter-free shots? They place their strobe 'off' camera by the use of tray mounted or hand held strobes above the camera. This creates some shadow definition of the subject and the light that strikes the suspended particles is less. Similar to the sun lighting the moon the greater the angle the less light on the particles (crescent moon vs full moon). The Nikonos outfit has a separate flash with a sync cord to the camera body.

The Nikonos system's interchangeable lenses are considered superior to those of housed cameras simply because of the water to glass contact vs a housing which has another glass or plexiglass 'port' barrier outside – enclosing the camera and atmospheric air within. Subsequently the Nikonos lenses (except for the 35 and 80 mm) are optically calibrated for water contact and will not focus out of the water.



Nikonos and non-SLR cameras have a tiny viewfinder built into the top of the camera body that is difficult to see through. Don't mistake this separate viewfinder as showing what the lens sees! This basic aiming device shows an always sharp but distant image no matter what is set on your camera lens. With a dive mask on it is wise to use a larger auxiliary viewfinder placed in the camera's hot shoe – especially for wide-angle photos. Optical finders matched to the chosen lens are excellent for composing the picture. However you must still adjust your lens depth of field (DOF) indicators to correspond with the subject

to get sharpness where it is indicated.

The water density is 800 times that of air. The absorption of the color spectrum causes loss of warm colors (yellows and reds) at depth and increases the blue/greens. To compensate for this physical problem the addition of artificial strobe light is needed for images with color impact.

Get close to the primary subject material by using close focusing lenses or adapters to help overcome two basic problems. By diminishing the amount of water between the camera and subject you lessen the amount of back-scatter and you'll improve color and contrast. Because the strobe light travel distance is shorter there is less absorption of the color spectrum.

Another concern is focusing the lens accurately in this water medium because everything is magnified by about 25%. Distance judgement may be different than it really is so setting the manual distance on the lens may be in error. Wide angle lenses offer closer focusing capability as well as greater depth of field and thus are more forgiving to mis-judgments of distance which can really take some getting used to. Guestimating distance is tricky. An object that appears 3 feet away is actually 4 feet away because of this magnification effect. When a very close object is the desired subject as in macro or close-ups, accurate focusing is a must.

In an SLR camera system this is not a problem. However it is a problem with instamatics and/or Nikonos cameras where distance is externally dialed in on the lens by estimating how far the subject is from your camera in feet or meters while peering from above the camera.

Manufacturers have designed accessories to help eliminate this guesswork in the form of extension tubes and framers. A tube can be mounted between the camera body and lens to allow a lens to focus much closer than it normally would and you may attach a framer to indicate the exact area that is in optimal

focus. The close-up lens attachment mounts outside of a 28 or 35 mm underwater lens and has a wand (for exact distance to the in focus area) and a detachable framer that sits barely outside the perimeter of the picture area. Optically this Nikonos close-up outfit is very good and the easiest to use, especially when starting out. The disadvantages are the intrusion of the wand and framer into an animal's territory may scare them away and bumping the subject or surrounding habitat will cause a cloud of suspended back-scatter particles in your water column. Also the framer may cast a nasty shadow on the intended subject if there is careless aiming of the strobe.

Two strobes are better than one especially when there is no ambient sunlight such as in the nighttime. I have found that the shadows created with only one strobe are usually disturbingly harsh and contrasty. Therefore I often strive to light subjects from 45 degrees up and to the left as well as to the right. To avoid a flat light I may vary the power intensity of one strobe over the other.



The angle of light beam coverage for certain strobes is of greatest concern while using wide-angle lenses. With two normal or smaller strobes I can usually cover the entire picture angle by using diffusers, or with one big wide-angle strobe aimed carefully. Use care not to strike the camera lens with the strobe beam or flare will occur. For close-ups and macro normally one small strobe will suffice but two strobes adds insurance of full coverage and fills in shadows as previously stated.

Variable power on the strobe certainly adds to the versatility of light ratios needed for manual (vs Auto or TTL) exposures. Another nice option to look for on strobes is a slave setting. If an assistant were to hold the independent slave light below and behind an object while you initiate a flash picture with another camera mounted strobe, the additional slave strobe light beyond may enhance the picture interest and creativity.

Choosing your film: If starting out on a dive vacation and new to underwater photography, I would suggest using a low to medium speed negative film (ISO 200 or less) for some usable results. With slide film you would need to be right on the money with your exposures and your successful results may be drastically reduced.

In subsequent editions I'll discuss exposure meters, composition and other technical tips.

