

Non-Reflex Amphibious Cameras: Building an Effective Macro System

By Craig A. Vitter

It has often been said that Macro photography is easy. There is some truth behind this belief as beginners, with a minimal amount of equipment, can achieve acceptable macro results with little or no practice. However, if you are looking to achieve better than "acceptable" results from your macro images, a thorough knowledge of the specialized equipment and techniques available to the macro photographer will help tremendously. This article focuses specifically on the macro equipment options available to photographers using the two most popular non-reflex (rangefinder) amphibious cameras on the market today: the Nikonos V (no longer in production) and Sea & Sea's MotorMarine II-EX. While the basics of macro photography are the same whether using a rangefinder or single lens reflex (SLR) system, the equipment available differs enough to warrant a separate exploration focused strictly on rangefinder systems.

Macro Lenses and Extension Tubes

Macro photography requires getting exceptionally close to your subject matter and having the appropriate optics required to focus on objects within inches of the lens. To achieve this manufacturers have designed macro lenses and extension tubes that decrease the



All of the macro images in this article were shot using the Sea & Sea MotorMarine II-EX with either a Macro Lens 2T (1:2) or 3T (1:3) conversion lens. Illumination was provided by dual Sea & Sea YS-60TTL S strobes synchronized with a 4 Pin Dual Sync Connect, mounted using Sea & Sea's Hot Shoe Arm and Sea Arm V. A Sea Arm IV was used as a handle for carrying the system.

minimum focusing distances of standard lenses. Unlike standard lenses, macro lenses and

of subject matter size to the size of the subject as captured on film.

Since the MotorMarine II-X and the Nikonos V systems are rangefinders it is not possible to compose macro images using either cameras' built-in viewfinder. To compensate for this, macro lenses and extension tubes are usually sold with framers or probes. Framers and probes extend from the front of the camera and are used to visually identify the image area and point of sharpest focus for a particular lens or tube. This combination of minimal lens-to-subject distances and framers projecting from the



extension tubes are not identified by their reproduction ratios not focal length. The reproduction ratio is expressed as a simple fraction, where 1:3 represents 1/3 life size, and describes the ratio

camera make it very difficult to get close to highly mobile subjects.

The Sea & Sea MotorMarine II-EX is produced with a built-in 35MM primary lens. In order to shoot macro images with the II-EX system you must purchase one of two Sea & Sea conversion lenses: the Macro Lens 2T (1:2) or Macro Lens 3T (1:3). These two lenses mount directly to the built-in 35MM lens using a bayonet mount and can be mounted on land or underwater. Both macro conversion lenses come with integral framers.

The Nikonos V system uses extension tubes for macro photography. Extension tubes are metal cylinders (usually constructed of aluminum) that mount between the camera body and lens (the 28MM or 35MM lenses specifically). There are several companies currently producing extension tubes for the Nikonos systems including Sea & Sea (www.seaandsea.com), Helix (www.helixphoto.com), Ocean Optics (www.oceanoptics.co.uk), and Gates. Of these companies, all but Ocean Optics include macro framers as part of their extension tubes. The Ocean Optics extension tubes are unique in that they utilize less intrusive "probes".

Selecting Macro Lenses and Extension Tubes

The process of selecting which macro lenses or extension tubes to purchase for your system should be a fairly simple process. Since most manufactures of extension tubes sell kits including tubes and framers for several reproduction



Fast moving subjects like this Damselfish require time and patience to capture when using a macro framer. (Macro 2T Lens, 1/125th at F22)



Framers (right) show you the whole area but can limit your angle of approach. Probes (above) indicate the centre point of the frame only but give much more flexibility for composition.

ratios (1:1, 1:2, 1:3, etc.), the most economical method of getting started is to purchase one of these kits. The choice of which kit you purchase will likely be determined by price or the type of extension tubes carried by your local underwater photography vendor. The only other option that might influence your choice of extension tubes is whether you prefer to use a framer or probes (like those offered by Ocean Optics). MotorMarine users have even

fewer options than Nikonos users. Basically you can purchase the 1:2, 1:3, or both lenses from Sea & Sea.

If you are new to underwater macro photography your initial attempts to capture macro images should be made with a lens or extension tube with a low image reproduction ratio such as 1:3. 1:3 lenses/tubes are more forgiving to work with than lenses/tubes with higher magnification ratios. This is due to the fact that the lens-to-subject

distance and the image area are larger. As your macro skills increase you can move on to high reproduction ratios, like 1:2 or 1:1, to capture smaller subjects.

Strobes

The limited depth-of-field inherent in macro lenses and extension tubes require the photographer to use small apertures (i.e. F22 or F16) and strobes to achieve the best results. While this may seem like a limitation, in reality it is an advantage providing the photographer with complete control of their lighting.

Additionally, since most macro photographs are shot with a lens-to-subject distance not exceeding seven inches, the absorption of light by the surrounding water is negligible making the colors recorded on film richer.

The following is a list of factors to consider when purchasing strobes for macro photography:

- * TTL - Does the strobe sync properly with the cameras TTL functionality?

- * Manual Power Settings - Ideally the strobe/s you purchase will offer at least some limited manual control over power output (i.e. Full, 1/2, 1/4, etc.).

- * Guide Number - The rated output (on full power) of the strobe.

- * Slave Capability - Strobes that slave can be used in dual-strobe applications to provide fill lighting in response to a master strobe's light output.

First, the majority of strobes offered today will work correctly with your camera's TTL



Goldetail eels make excellent macro subjects. Colorful and curious, eels often allow close approaches with macro framers. (Macro 2T Lens, 1/125th at F22)

(commonly referred to as Through The Lens) exposure system. This allows your camera to monitor the strobe output and quench, or turn off, the strobe when the proper exposure has been achieved. While TTL is effective for most macro photography there will be times when it will come in handy to be able to manually control the light output of your strobe. At a minimum, your strobe should provide the ability to manually set output to full or 1/2 power.

A strobe's Guide Number (GN) is important because it will help you to determine whether or not you have enough light to illuminate your subject.

Manufacturers rate a strobe's Guide Number by determining the maximum distance (on land) that a subject can be effectively illuminated by the strobe.

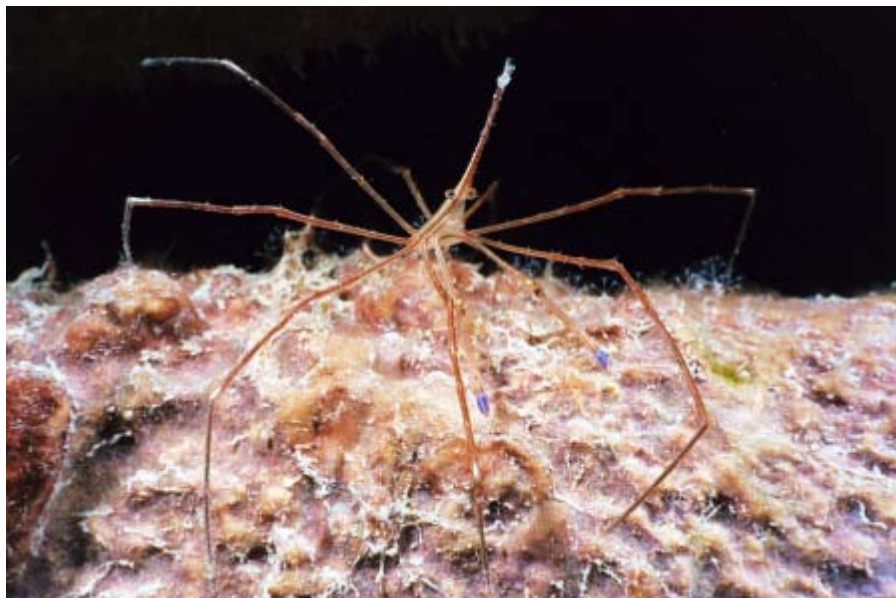
Because light is more rapidly absorbed by water, the actual GN for a strobe underwater will be lower than what is reported by the manufacturer, typical half the

rated GN when used in clear tropical waters.

Finally, if you plan to use a dual strobe setup it is important to select your strobes with this in mind. Dual strobe photography is typically handled by using a primary strobe, referred to as the "master", and a secondary strobe or "slave". The master strobe is used as the primary source of illumination for the image while the slave "fills" the image and softens shadows that are created by the master strobe. One method of slaving involves connecting both strobes to the camera's bulkhead using a dual-sync cord. A second method involves the use of a light-sensor on the slave strobe that notifies the slave to fire and quench when it senses the master strobe's illumination.

Dual Strobes

While it is possible to shoot excellent macro photographs with only one strobe, the



Arrow crabs are a common macro subject although they can be difficult to photograph well as they blend easily into their background. (Macro 2T Lens, 1/125th at F22)



Ultralight balljoint arms allow almost unlimited control over both strobes positioning

addition of a second strobe to your kit will open up a variety of new and interesting lighting techniques not available with a single strobe. There are some technical reasons for the addition of the second strobe to be considered. For example, aiming two strobes at the same point will have the effect of nearly doubling the amount of light striking that point during an exposure. The real benefit of

using a second strobe is the added lighting flexibility offered. For example, by positioning the second strobe further away from the subject, and at a different, the second strobe can be used to "fill" in shadows and enhance the image's color.

There are some issues to consider when pondering whether using one or two strobes for macro photography is ideal for you. Cost, as always, is an

issue. The addition of a second strobe can be an expensive proposition requiring you to purchase additional sync cables and strobe arms, as-well-as the second strobe. The second strobe, strobe arms, and cables will also add to the system's overall size and bulk, both on land and while swimming underwater. It is easier to start with a single strobe and purchase a second strobe when, and if, you decide it is necessary.

Strobe Arms

One of the common mistakes that I see among macro photographers is the mounting of a single strobe on rigid arms like the Sea Arm IV (Sea & Sea), or the standard Nikonos SB-105 arm. These strobe arms are not designed for macro photography and create long strobe-to-subject distances and lighting angles that lead to poorly exposed images with harsh shadows. The key to lighting macro photographs is to get your strobes close to the subject. One method of accomplishing this is to use an arm like Sea & Sea's Mini Shoe Arm, or the larger Hot Shoe Arm, that mounts your primary strobe to the camera's accessory shoe. This positions the strobe directly in front and above the subject, ideal for lighting macro subjects. Accessory shoe arms are also easy to remove from the camera should you decided to handhold your strobe.

When using two strobes your mounting options become a bit more complex. If your system is going to be used primarily for macro shooting the best setup is to have your primary strobe mounted to the camera's accessory show and the slave



This portrait of a seahorse was shot using dual strobes. The primary strobe was set to TTL mode while the second strobe was set to Full Power to help illuminate the relatively dark background. (Macro 2T Lens, 1/125th at F22)

mounted on a strobe arm using ball joints (also referred to as "ball arms"). There are three basic types of strobe arms currently on the market, ball arms, "tube arms", and a type of arm that some people refer to as "bendy arms". Of the three types of, the ball arms provide the best combination of holding power and flexibility in positioning your strobes. All three types of arms can be added to your camera using strobe tray that mounts below the camera body. Adding a handle to the camera's strobe arm tray can go a long way towards making your overall system easier to handle. Several manufacturers produce excellent strobe arms including Sea & Sea, Ultralight Control Systems (www.ulcs.com), Aquatica TLC (www.aquatica.ca), and Ikelite.

Reflectors

There are some ideas that are so simple, yet ingenious, that they often go overlooked. The

use of reflectors in underwater macro photography seems to be one of these ideas. Simply stated, a reflector is a panel of "reflective" material that is used to bounce light from a strobe towards the subject. Unfortunately, at the present time there are no manufacturers producing reflectors specifically for underwater use.

As a firm believer in the idea of not reinventing the wheel, my recommendation would be to look at Aquatica's Framer Enhancers product (<http://www.aquatica.ca/> - listed under Nikonos Accessories). Although Aquatica is no longer making this product, the Enhancers were cleverly designed to attach to framers and provide bounce illumination originating from beneath the subject. If you are looking for more flexibility in the positioning of your reflector you may want to consider using a "bendy" arm, like the Ocean Optics Multi Arm, as a mounting point.

Target Lights

Target lights are small dive lights that can be easily mounted on your camera system to simplify the process of composing pictures during night dives. The ideal light will be compact and take two AA or AAA batteries. Larger, brighter target lights can often have the unintended side effect of scaring off more mobile subjects. It is also worth noting briefly that there are several models of strobes on the market today that come with built-in target lights like Sea & Sea's YS-350TTL/Pro, Subtronic's Alpha and Mega series of strobe, and Ikelite's Substrobe 200 and 400 models.

There are a number of ways to mount a target light on your camera system. One method that I have used with acceptable results is to attach the light to a strobe using the old rubber legs strap off of a dive knife. If you prefer something a little fancier, most strobe arm manufacturers make accessory adaptors for their arms that allow you to attach target lights in style.

Final Thoughts

The process of assembling any photographic system is a highly personal one based on each photographer's personal preferences and experiences. Once you have the basic knowledge of the type of gear on the market you should take some time to study what other photographers are using. Ultimately it will take some time and experimentation on your part to settle on your ideal macro system.

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