Underwater with the RX-100

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Last month I finally got a chance to go scuba diving with my RX-100. I emailed my results to Gary. He suggested that I write a guest blog article on my experiences.

;First, a little background. I got into scuba diving 20 years ago and started underwater photography soon thereafter. My first camera was a Nikonos 5 which was a completely manual film camera, no autofocus, no nothing. You had to guess what the lighting would be like, and what distance you were likely to shoot at. You then set the aperture, shutter speed and range, took 36 photos and waited a week to see what you had shot. You could adjust the settings underwater, but you'd probably miss your shot while you were doing so. I soon gave up on underwater photography.

I started again in 2001 when underwater digital cameras became viable. I started with the Olympus C4040 and then the C5050 (I upgraded because a dive shop owner in Vietnam really wanted to buy my C4040 and housing from me). In 2009 I upgraded to the Canon S90 and a Ikelite Housing, and in 2012 I got the RX-100 and a PDCH-RX100 Patima housing. (http://www.divervision.com/catalog/rx100-housing-for-sony-cy

ber-shot-rx100b-cameras-p-1873.html?osCsid=ue6e0li7h8lv3bdaputdn7jt75) I mention all of this to bring up one point, when you get a new camera and a housing for it, you are making a multi-year investment (at least I am).

The other major addition I made to my setup was adding an INON S2000 underwater strobe in 2007, which I'm still using. When you add a strobe you will also need to add a tray and an arm, I went with a simple tray and flexible arm costing around $60.

When talking about cameras for underwater photography, a simple way to think of things is to divide cameras into four categories. The first is cheap waterproof cameras, the second would be a digital camera with an inexpensive housing, third

would be an advanced small format camera like the RX100, and fourth to be a DSLR and housing.

The cheap waterproof camera is not suitable for scuba diving. They are usually limited to 10 foot depth, but they are good for snorkeling (I have great video and shots of spotted rays in 4 feet of water). I prefer the Fuji XP line (cheap and good waterproofing) and the Lumix TS-25 (better photos and videos, but the waterproofing is not as good, I add a little grease around the O-Ring to compensate). I usually suggest getting the bottom of the line, after a year or two you will want to upgrade so I don't think it makes sense to spend a lot (I also assume this will not be your only camera).

In the second category, Olympus and Canon both make inexpensive housing for their cameras and are a good choice for beginners on a budget. You can see what cameras are supported at http://www.olympusamerica.com/cpg_section/cpg_underwater.asp and

http://usa.canon.com/cusa/consumer/standard_display/underwater_photo

Talking about DSLR housing is outside of my experience (and price range). I'm just not prepared to spend $5000+ on a hobby (exclusive of camera). I guess Micro Four Thirds cameras will become a 5th category, but so far I have not heard about a lot of people using them.

Now let's talk about the RX100. When choosing a housing for it, the factors are price, size and controls. In my case Patima met my needs, but someone with bigger hands or doing cold water diving with gloves might choose Nauticam, while someone price conscious would go for the Ikelite.

When using an underwater strobe with these housings you need to synchronize it via fiber optic cables so that the camera flash triggers the UW strobe (the Ikelite has a clear case, so you don't have to have cables, but it's still much more reliable if you do). Many cases have connectors for the cables, some inexpensive cases do not and you have to jury rig something (getting a flash diffuser and then attaching one end of the cable to it is a popular method).

In using the RX-100 underwater, I first tried setting the Camera to P, A, or S mode, RAW, leave the flash compensation at 0, and set the strobe to STTL. My results from using automatic mode were so-so. I often didn't get the aperture or shutter speed I would have liked, the flash level wasn't always 100% correct and flash recharge was long. The problem might be related to the interaction between the camera flash and the external strobe. In

full automatic mode the camera flash works as normal and the external strobe is set to STTL mode, what then happens is the camera emits a pre-flash (which you can't see) and then measures the light returned and sets the camera flash strength. The external strobe also sets its strength from the pre-flash. What I saw was two problems, first the flash strength wasn't always correct and second the camera flash took a long time to recharge. Setting the camera flash to -2.0 didn't help since that caused the external strobe to also reduce its flash strength (and I could not compensate for this).

In the future I will try mixing auto (P, A or S) mode on the camera, with manual mode on the strobe, but for the rest of my dives I found it more reliable to go full manual. For example on one dive, I set the camera to M, f/5.6, 1/80, iso 400 and flash exposure compensation to -2.0. I then set the strobe to manual mode and varied it per shot, but usually around -2.0 (The INON goes from full power to -5.5, in 0.5 increments).

The results were much better, flash recharge also improved dramatically and I could usually get off 2 shots immediately with a slight delay for the 3rd shot (the UW strobe recharges much faster than the camera flash).

Next time I dive I plan on trying ISO 200 and 1/100, I'll then have to tweak my aperture and strobe power.

Most underwater housings can take some form of 'wet lens' (which are usually filters or diopters, not lenses). The filters are designed for UW use and are high quality. It is important to match the filter with your camera housing, in my case the Patima comes

with a threaded 67mm, but there are other sizes and mounting types.

Or, you can do what I do and get some inexpensive diopters that are not designed for underwater use, with the understanding that they might eventually corrode. But after 4 years mine still work fine.
http://www.amazon.com/Hoya-HMC-67mm-Close-up-lens/dp/B0000AI1J9

During one dive, I had an opportunity to shoot some very small shrimp so I added a +2 and +4 diopter. I keep these in a zip lock bag in my BC (buoyance compensator), I just took them out and screwed them in. The trick to using them is to be aware that your focus zone is very narrow when using the diopters, you basically have to be a foot away from your subject for the camera to focus. Luckily I had practiced on land and in a pool so I knew where I had to be to focus.

One other issue with the Patima (and others), is buoyancy. The Patima is heavy aluminum and small, the end result is a lot of negative buoyancy, or to put it simply it sinks like a stone. There are three options to deal with this. One, do nothing - you may find that this is not an issue for you and doesn't affect the handling of the camera underwater. Second is to buy commercial floats or float arms. The third option, which is what I did, is to make your own floats. I followed this website, http://www.scuba007.com/camera-floats/index.html. But the short version is buy a sheet of Divinycell and cut it up into pieces and attach them to your rig. In my case I did not achieve neutral buoyancy, but I added enough positive buoyancy that the camera

sinks very slowly and if I did drop it I would have plenty of time to catch it.

I should mention that not all cameras make for good underwater cameras, some have problems autofocusing underwater, have flash systems that don't work well, and others have lenses that make it difficult to design housings for, etc… Some just aren't popular and no one makes housings for them. Given all that, overall I found the RX100 to be a great camera for diving and a worthy successor to my old S90.

After the dive I import my photos into Adobe Lightroom and do my color corrections and editing. Lightroom is great in that you can adjust one photo and then apply the same settings to then next 20, something not easily achieved in Photoshop. The first adjustment to make is white balance. I try and find something white or grey, but one trick I keep meaning to try is to take a photo of your hand and then use that as your 'grey mark'.

I still consider myself an amateur and look forward to more dives with the RX100, but if you want a book by a pro check out http://www.amazon.com/The-Underwater-Photographer-Martin-Edge/dp/0240521641/ref=ntt_at_ep_dpt_1

Also this article about using the RX-100 underwater:

http://www.uwphotographyguide.com/underwater-settings-using-rx100

(The only part I disagree with is that they suggest not changing flash compensation. I suggest changing it to -2.0, if you are using

a strobe in manual mode (i.e. not STTL mode). You get much faster flash recharge time with -2.0.)

Forums are another good resource:
http://www.scubaboard.com/forums/sony-snappers
http://wetpixel.com/forums

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