



making creative lighting consistent and effective.

For auto exposure lovers the YS-01 works in DS-TTL mode with either single or preflash triggering or there is a ten level manual output if required so everyone is catered for.

The Sea & Sea YS-01 is solidly constructed and the rotary control knobs are levered and ribbed for ease of adjustment. It can operate to 75 metres and at £344.95 it provides very good value indeed.



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Best Point & Shoot Cameras for 2010

By Berkley White & Jim Decker

As we did in 2009, the Backscatter team took ten steps back and examined the hundreds of underwater point & shoot camera options with fresh eyes. We focused a great deal of attention on the lowest priced and smallest sized cameras as our goal was to find a high quality camera that fits in a pocket, will survive a beach party, and can produce great images on an afterwork dive.

We gave cameras a nod for their sex appeal. A sexy camera is fun to hold, fun to use, and more likely to get slipped into a pocket for a night on the town. We found ourselves giving some cameras a second chance, but had to vote them off the island due to poor underwater performance, or otherwise not meeting the needs of an aspiring underwater photographer.

If underwater photography is paramount to your next point & shoot camera decision, we're confident that you'll be happy with any of these test finalists on your next land excursion or on your next dive.

Best Low Cost and Automatic Only Cameras: Camera + Housing Price Range: \$179 - \$599



Olympus FE-360, Canon SD-940, Sea & Sea 1200HD

Cameras in this category easily slip into a pocket, but do not have manual exposure control (do not allow the photographer to select both aperture and shutter speed settings). New underwater photographers usually gravitate to automatic exposure, but after 6 months to a year of shooting they discover that manual exposure is actually very easy and produces significantly better results underwater. Despite these limitations, these cameras produce great images and do offer an exposure compensation control allowing the photographer to brighten or darken the image. The most important factor in underwater photography is being in the right place at the right time. If we were on a tight budget, we'd choose these cameras to be at our side when we happened upon the right dive at the right time!



Olympus FE-360: Best low cost pocket camera

This was a surprise winner for 2010. Last year we honored this camera as our staff top pick for best low cost automatic point and shoot. Due to its great features and continued availability it again made our top shelf selection. As with the other cameras in this category, the FE-360 only offers exposure compensation (no manual), but its tiny size and unbeatable price wins us over. You can buy a complete camera and 40m / 130ft rated housing combo for well under \$200 and it blows all competitors away in image quality at this price point.

The Olympus PT-044 housing is also compatible with the Fisheye FIX M46 52 Wide Lens which is removable underwater, and yields a 100 degree angle of coverage. The Olympus FE-360 does not feature a hotshoe (hardwire) strobe connection, thus you will need to use a digital slave compatible underwater strobe. We consider the following strobes to best match this camera in lowest cost and highest quality: Sea & Sea YS-01 Package, Fantasea Remora Package



Canon SD-940: Auto camera with HD movie

The SD940 shares the same impressive histogram and highlight warning display as the more expensive S90 and G11 cameras, and is the only auto only camera in this review to offer highlight warning. This camera shoots great stills, but the 720p HD video quality is surprisingly good at home on a big screen display. Exposure compensation is easy to access and can also be dialed in before starting a movie clip. If your image goals flip-flop between stills and video, this is the camera for you.

Our recommended strobes for this low cost camera include the Sea & Sea YS-01 Package and Fantasea Remora Package. If you're looking to pair this camera with a compact slave TTL strobe, take a look at the Inon S-2000 package. Our recommended wide angle lens for this camera is the Inon 28AD lens. This lens has a 100 degree angle of coverage, and can be expanded to 150 degrees by adding on an optional dome unit. If you are considering this camera more for the HD movie capability, take a look at the Fisheye FIX LED 1000 video light package as your primary lighting system for both photo and video.



Sea & Sea 1200HD: Auto camera with HD movie

The Sea & Sea 1200HD continues on again this year with no changes.

The Sea & Sea 1200HD features 720p video in a tiny camera. While the video quality is not the same as you would get from a dedicated HD camcorder, this camera produces good quality video and makes great web clips for YouTube.

The 1200HD is also compatible with the Sea & Sea 1200HD Wide Angle Lens for an 80 degree view.

If you want a small, low cost camera for video clips, with built in fiber optic and wide angle lens mounts this camera is a good choice.

As with other cameras in this category, you will need to use digital slave compatible strobes such as the Sea & Sea YS-01 and Sea & Sea YS-110 alpha underwater strobes.

Best Intermediate & Advanced Cameras: Camera + Housing Price Range: \$628-\$1598



Canon G11, Sea & Sea DX-2G, Canon S90

Consider these cameras the best in class of all point & shoots reviewed. From top image quality to durability, these cameras excelled over all other models. Not only do these cameras offer easy automatic exposure, they also have intermediate to advanced manual controls for the growing photographer. With the exception of the tiny Canon S90, these cameras won't slip into a pocket as well as cameras in the basic category, but once you get your photo game on, you won't be cussing the camera for lack of control.



Canon G11, Fisheye FIX G11, Ikelite G11, Canon WP-DC34 Housings (from left to right)

Canon G11: Best advanced compact in class

Last year we selected the Canon G10 as best in class and this year its sibling the Canon G11 easily won the staff's top pick with superior image quality and easy ergonomics. The most notable changes are a 2.7 in. swing out LCD that allows easy self portraits topside and a reduction from 14.7MP to 10.0MP that gives the G11 less noise at higher ISO settings. We agree that 10MP is plenty of resolution and applaud the effort to clean up high ISO images.



As with its predecessor, the Canon G11 is a pocket filler and most people will likely choose a purse or belt bag for land travel. However, we find its larger size more comfortable for all hand sizes. A built-in 3 stop neutral density filter is great for shooting in high ambient light. Our favorite manual control is the (*) button on the back which activates momentary auto exposure. A quick press of this button will rough in your exposure automatically and then return you to manual mode for refinement. A second great feature is a dedicated dial for exposure compensation. We were really surprised to discover the camera's ability to assign a true 1 touch white balance to the shortcut button. These are features we'd like to see on top end DSLR's.

The 28mm - 140mm lens is great for land use, but the 28mm wide feature will cause vignetting with most underwater wide lenses. The Fisheye FIX G11 housing solves this problem with the dedicated Fisheye FIX Super Wide 165 degree angle port, however it cannot be removed underwater. Fisheye redesigned a few of their controls on the FIX G11 housing over the G10



making it easier on the fingers. The Fisheye FIX G11 is also the only one of two housings in this review machined from solid aluminum and offers depth ratings of 60m / 196ft (upgrade option to 100m / 328ft). The Fisheye FIX G11 also features great ergonomics and is fiber optic sync cord ready out of the box. This housing is best suited for digital slave strobes and produces very accurate TTL exposures with Inon Z-240, Inon D-2000, and Inon S-2000 strobes.

The polycarbonate Ikelite G11 is a larger housing and offers a respectable 60m / 196ft depth rating. Most attractive on the Ikelite G11 is the eTTL electronics and hardwire bulkhead built into the housing. Simply plug-in an Ikelite DS-51 or Ikelite DS-161 strobe for accurate eTTL exposures without the camera battery draining, recycle time eating requirements of fiber optic slave strobe solutions. The Ikelite WD-4 wide angle conversion dome is underwater removable and offers a slight increase in stock angle of coverage. While this system is great for macro, we're hoping Ikelite can offer a wider angle lens solution in the near future.



The Canon WP-DC34 underwater housing is a great low cost option, but its large square lens port limits its compatibility with most underwater wide lenses. The Fisheye FIX Wide Air Lens designed specifically for the WP-DC34 offers 100 degrees of coverage, but the bungee attachment system feels a little awkward. We recommend this housing if you are primarily interested in macro or water sport photography or are on a budget and want to shoot medium wide shots.



Sea & Sea DX-2G camera and Sea & Sea DX-2G housing



Last year we included the Sea & Sea DX1G as a finalist due to its very short shutter delay and good manual control options. The new Sea & Sea DX-2G has essentially the same features, but with a higher resolution 12.1MP sensor and a larger, higher resolution screen. The screen on the DX1G was too dark when shooting in manual exposure mode, but the new DX2G features a consistently bright screen regardless of your exposure settings. While the shutter delay is very small, shooting speed in RAW format remains slower than other cameras in this category. This compact housing is rated to 180 feet and features two built-in fiber optic mounts. The Sea & Sea DX-2G 100 degree wide lens also features a bayonet mount built right onto the housing (no threads means fast removal and replacement). The Sea & Sea DX-2G also has two separate knobs for manual shutter speed and aperture adjustments, giving the user fast access to these controls. We recommend the Sea & Sea YS-01 and YS-110 alpha underwater strobes for this system. Inon strobes can also be used with the XIT404 Inon to Sea & Sea Fiber Optic Cable Adapter.

Canon S90, Fisheye FIX S90, Ikelite S90, and Canon WP-DC35 (from left to right)



We're glad to see the S series of Powershot cameras back in Canon's lineup this year. The S90 packs a lot of features into a small body. It has the same imaging sensor as the G11, but the lens is a bright F2 with a 3.8x zoom. With the shorter zoom range, wet mate style wide angle lenses are an option on the housings for this camera. The S90 has a shortcut button that allows 1 touch white balance, just like on the Canon G11. While it shares many of the features of the G11, a lot of these features are in the menu system or available through the multifunction front control ring, rather than being directly accessible as a separate control on the camera. Such is the price for a smaller sized pocket cam.

The Fisheye FIX S90 housing is machined from solid aluminum and is depth rated to 60m / 196ft. With the precision that can be achieved with machined aluminum, this housing is the smallest and lowest profile of any underwater housing we have seen. Built in fiber optic connectors, and a threaded front port that accepts 67mm, 52mm, and Inon AD mounts allows a wide choice of accessory macro and wide angle lenses. Our favorite wide lens is the 52mm mount Fisheye UWL-04, which produces a 165 degree angle of view. This housing



is also our favorite for controls as it is the only housing to have access to both the front and rear dials of the camera.

The Ikelite S90 housing offers a 200 ft depth rating and has access to the front control ring, but not the rear wheel of the camera. To control the function of the rear wheel, the user must press and hold the shortcut button, then press left or right on the 4 way selector. Due to the position of the shortcut button, this can be an awkward task. The housing has 67mm threads on the front port allowing the use of macro and wide angle lenses. However, due to the wide 28mm lens of the S90, 67mm wide lenses will vignette. This requires the user to zoom the lens in to avoid the vignetting.



The Canon WP-DC35 housing for the S90 has a 130 ft depth rating and access to the front control ring, but not the rear wheel of the camera. Wide angle lens options from Inon are expected as soon as they complete the lens mount base adapter for the housing. The Inon 28AD lens will allow for a 100 degree angle, and an option to add a dome unit will yield 150 degrees. Stay tuned to this article for when this lens mount will be available.



Our favorite strobe options for the S90 are the Sea & Sea YS-110a or Inon S-2000. The YS-110a offers a slave TTL mode along with manual mode and has a guide number of 22. The smaller Inon S2000 strobe also offers a slave TTL mode and manual mode with a slightly lower (less bright) guide number of 20.

Overall System Winners:

Staff Favorite Camera and Housing Combos 2010

As with our previous reviews, a few of our top picks were a slam dunk, others we argued down to the detail. The list below represents our favorite camera and housing combos for new and advanced users. Camera and housing technology is always changing, but these are the solutions we're currently recommending to our best dive buddies. If you're reading this article later in 2010, please give us a call for the latest updates.

We selected our final top picks based on the camera's ability to reproduce the point & shoot images above and asked the following questions: Close focus wide angle lens? Manual exposure control or compensation to make the background bright or dark on demand?

Best Low Cost System (\$179 - \$699) Olympus FE360 Package

For a second year running, the Olympus FE-360 with Olympus PT-044 housing won our top pick in the lowest price category. With its new even lower price it seemed impossible to find a camera that could out shoot it for close to the same price. Its manual controls are limited to exposure compensation, but a new shooter can get a great



pocket camera and housing for well under \$200. We also tested many of the low priced strobes on the market and found the Fantasea Remora Package (with our custom arm and tray) to offer the brightest light and best quality for entry level options. The Fantasea Remora strobe is limited to manual control, but offers great lighting low cost. Many of our customers prefer to upgrade this package to the Sea & Sea YS-01 strobe for a smaller and more automated solution. With the Fantasea strobe a complete system with camera, housing, wide angle lens, and strobe package totals up to a mere \$699.

Best Auto Camera System with HD Movie Mode (\$448 - \$1548) Canon SD940 Package

Photo quality from the Canon SD-940 positioned it as top of the automatic class, but its HD movie quality at this price point was what blew us away. While it's not designed to be a primary underwater video camera, it performs impressively well in situations where a still image just won't tell the story as well as motion pictures. With a 24 mbps video data rate, this camera offers the highest video data rate of any camera in this review and rivals the top data rates of dedicated video cameras. To minimize cost we selected the Canon WP-DC33 housing, but selected the more user friendly sTTL capabilities



and ultra-compact size of the Inon S-2000 with our custom tray and arm package. A complete system with camera, housing, wide angle lens, and strobe package totals up to \$1548.

Best Advanced Pocket System (\$1228 - \$2735) Fisheye CanonS90 Package

The Canon S90 is not only the most pocket friendly of the advanced options, its manual control set rivals the best in the category. We're quite fond of the rugged

aluminum construction and optical choice found with Fisheye FIX S90. It has become the favorite choice of technical divers that want a rugged housing and camera option as a clip off unit. It is also unique in providing access to both the front and rear control dials making it much less of a finger twister for manual exposure control. Base camera and housing price is \$1228. We selected the Sea & Sea YS-110a and Ultralight strobe arm package as we assume this user would also want TLL and a more future-proof lighting system. A complete camera, housing, wide lens and strobe package costs \$2735.



Best Advanced System (\$1598 - \$3230)

Fisheye Canon G11 Package

Following on the heels of the Fisheye G10, the Fisheye FIX G11 takes the top spot this year. The same lenses and accessories from Fisheye that fit the G10 housing also fit on the G11 housing. New shooters that are taking up underwater photography as a serious hobby share the desires of advanced SLR shooters looking for a professional grade compact system. The Canon G11 with the Fisheye FIX G11 housing is a perfect match for both types of underwater



photographers. The image quality of the Canon G11 continues to be the best we've seen in any compact camera and its slightly larger size and button set feel much more comfortable in the hand. The Fisheye Super wide Lens is the only lens available that allows a 165 degree field of view with this camera. The optional depth rating of up to 100 meters has captured the tech diving crowd and when packaged with an Inon Z-240 strobe, TTL exposures are bright, accurate and easy. A complete package of camera, housing, wide port, and strobe costs \$3230, but this solid system will be shooting and diving for many years to come.

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A diver in full scuba gear is seen from behind, swimming over a sandy ocean floor. The water is a deep, clear blue. Bubbles from the diver's breathing apparatus rise towards the surface. The seabed is mostly sand with some small, dark rocks and sparse, dead-looking coral or seaweed. The overall scene conveys a sense of isolation and environmental degradation.

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Photo by Joseph C Dovala