

Canon 1Dx Mark II Review

By Backscatter Staff



<https://vimeo.com/176336470>

Backscatter is fortunate to have a large customer base of professional underwater filmmakers. This year our conversations on 4K cinema have revolved around three cameras: Red Weapon/EPIC Dragon, Sony a7R Mark II, and the new Canon 1DX II. We've spent many hours underwater with each of these cameras and this article compiles our Canon 1DX II tests from four uniquely skilled underwater professionals.

Who is this camera for?

If you're both an underwater photographer and filmmaker, our test results confirm the Canon 1DX II is hands down the greatest camera we've tested to date. It's a no compromise professional photography camera capable of shooting both 20MP stills at 14fps and 4K 60p video in incredibly low light. While it doesn't offer the raw video and flexibility of a RED, it shoots broadcast quality 4K motion at a fraction of the size and cost and out performs favorites such as the Sony A7 series in low



Canon 1Dx Mark II housing system configured for wide angle. Nauticam NA-1DXII Housing, Nauticam 8.5 inch Dome Port, Keldan 8,000 Lumen Video Lights, Canon 1Dx Mark II Camera, Canon 8-15mm Fisheye Lens.

noise when tasked with the extreme requirements of underwater white balance.

High ISO Review

The high ISO and high bit rate of the Canon 1Dx II combine to make smooth blue water transitions without banding or red channel noise even at extreme underwater white balance settings of 50,000K+. This video was shot with Canon 1DX II,

Canon 8-15mm lens, and ISO settings from 320-6400. Select HD playback of 4K for full experience. Video by Backscatter staff Berkley White.



<https://vimeo.com/174126029>

Real world underwater low light performance

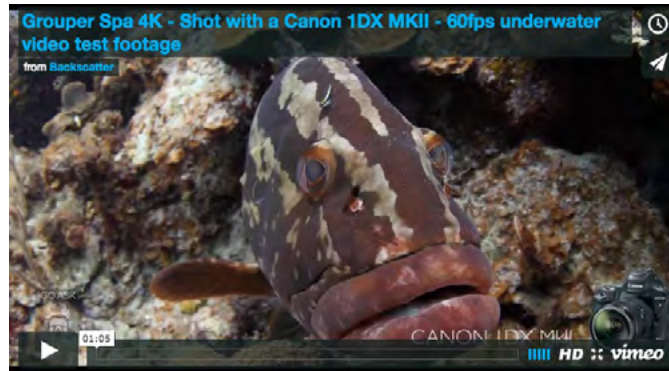
ISO performance results can vary greatly between underwater and land environments. Underwater we are forced to use extreme white balance settings of 30,000K - 50,000K or swim around with 10,000 Lumen lights just to illuminate a subject 3 feet from the camera. These underwater requirements can turn land camera test results upside down.

Our previous tests showed the Canon 1Dc was a top performer with a maximum of ISO 1250 for images in blue water and a maximum of ISO 2500 when shooting in high contrast or artificial light. The new Canon 1DX MK II now opens up blue water scenes to ISO 2500 and high contrast shots such as caves or wrecks in ambient light up to ISO 6400 even at extreme white balance settings.

White balance is less of an issue for underwater photography as raw files are easily corrected in post. For this application we do agree that cameras such as the Sony A7 series and Nikon D810 offer better low light performance, but we found the Canon 1DX II's combination of great white balance capabilities, high bit rate video, and great ISO performance make it the best performing camera for photographer / videographer professionals.

Canon 1DX MKII Video by Erin Quigley

This video was shot at 50 feet underwater with only a manual white balance and no artificial light. Canon remains king when it comes to nailing color underwater with a manual white balance. The live autofocus of the Canon 1DX II was able to stay focused on this grouper, even at lips to lens distances with thin depth of field. Shot with



<https://vimeo.com/173983428>

Canon 1DX II and Canon 8-15mm lens. Select HD playback of 4K for full experience. Video by Backscatter Pro Team member Erin Quigley.

The simplicity of underwater white balance - without filters or lights

Most underwater videographers have preferred Canon cameras for a good reason. Red light is lost within the first 10 feet underwater and you're quickly left with nothing but the blues. To make whites appear white in ambient light, you'll need an extreme white balance setting of 30,000K - 50,000K or more. Currently only Canon DSLRs offer this extreme white balance range to produce brilliant underwater color in-camera. As our previous testing shows, Sony cameras such as the entire A7 series are unable to white balance below 10 feet without a red filter on the lens as it is limited to 9,900K. Required filter use makes shooting in mixed lighting difficult or logistically impossible underwater. Our latest tests with the new Nikon D500 revealed it to be the best Nikon to date, but it often takes 10 to 20 attempts to register an underwater white balance at depth. RED cameras can white balance without a filter, but even modified with a H2O ELPF can't

match the rich blues that are so easily produced with Canon cameras.

When performed correctly underwater, a manual white balance with the Canon 1DX II will almost eliminate the need for color correction in post and not burden the underwater videographer with filter maintenance or the requirement to always keep subjects within 3 feet of even the brightest underwater lights. If you want to keep it simple underwater, nothing beats a camera that produces great underwater color with a manual white balance.

Canon 1DX MKII Video by Rusty Sanoian



<https://vimeo.com/170235390>

While Canon's new autofocus system stunned us in wide angle and on-land tracking tests, it's still not quite there for real world underwater macro without further experimentation. Stay tuned for our new tests. Video by Backscatter staff Rusty Sanoian.

Autofocus with underwater cinema? - Almost!

Canon's new Dual Pixel Autofocus performed incredibly well on land and we were excited to put it to the test underwater. This new Movie Servo AF system includes Flexizone Mode which offers a

manually positioned zone at any point on the screen while the new AF Tracking Mode allows the focus zone to follow a moving subject across the frame. Experienced underwater videographers know that autofocus has only spelled certain death with all large sensor cameras to date. Thus, we were stunned to discover that Flexizone AF Mode was not only fast but extremely accurate in underwater wide angle scenes.

For example, Erin Quigley's video of the grouper was shot in Movie Servo AF even at close focus and low depth of field. Rusty Sanoian's Monterey video includes a tuna crab clip where Movie Servo AF performs flawlessly as the camera pushes forward and almost touches the crab. The Flexizone AF option for Movie Servo AF was the most accurate and responsive system we've seen for underwater wide angle.

We hoped AF Tracking Mode would shine with the razor thin depth of field in underwater macro scenes. This mode worked surprisingly well on land, but was not a slam dunk underwater. First, underwater housings don't yet offer the ability to use the touchscreen to select focus points and require the user to position the focus zone with the joystick and activate with the set button. Secondly, water motion and passing particles seemed to cause the focus to hunt enough that we preferred to set and lock focus for most macro subjects. While some of Rusty Sanoian's Monterey macro video used AF Tracking Mode, the majority was captured by locking focus before each shot. We are currently testing lowering the secondary menu options that Canon has cryptically named "When Active" and "AF Speed" to see if we can make AF Tracking a reliable function for underwater macro.

Experienced underwater videographers should



Canon 1Dx Mark II underwater housing configured for macro.

Nauticam NA-1DXII Underwater Housing, Nauticam Flat Port, Nauticam SMC Macro Lens, Dive & See 5 inch Monitor, Light & Motion Sola Video 2500 Lumen Lights, XIT404 Tripod Plate, XIT404 Tripod Legs, Canon 1Dx Mark II Camera, Canon 100 IS Macro Lens.

also note that the Canon 1Dx Mark II default setting is for Movie Servo AF to be enabled and thus the camera will AF continuously even when not recording. We recommend modifying the custom controls menu to reprogram the Set or the front Function button to Pause Movie Servo AF and always monitor the LCD to verify AF is paused during low contrast pans. Further, it's important to note that Pause Movie Servo AF will sometimes turn off after the camera goes to sleep or is cycled on and off causing unwanted AF activation. Underwater camera operators might find it best to

turn Movie Servo AF off when shooting a full dive in very low contrast conditions.

Canon 1DX MKII Video by Dustin Adamson



<https://vimeo.com/169020213>

Videos shot at 60p then slowed down to 30p has the effect of adding more drama to the image. More importantly, underwater shooters can't always set up a tripod on a pristine reef and slow motion helps us eliminate camera shake for hand held sequences. Video by Backscatter Pro Team member Dustin Adamson.

Why is 4k 60fps amazing for underwater video? - Stability!

We've all fallen in love with slow motion videos and the hidden world that is exposed when we slow down real time. The Canon 1DX II would not be considered a slow motion camera on land, but 60fps and 120fps video is about all we need in the fluid underwater environment. On land it may be easy to mount a camera to a tripod for rock steady footage, but we can't always drop a tripod on a pristine reef. Slowing down reality helps us add stability to our shots. Maybe that clip of the mother humpback with her calf caught you unexpectedly and you had some camera shake? Slowing your

<https://vimeo.com/178632898>

NAUTICAM NA-1DXII HOUSING



First Look & Details



60fps video to 30fps will double your clip length and smooth out your camera wobbles. Maybe you were fighting your tripod when a tiny jaw fish was aerating his eggs? Playback your video at 30fps to get 2x the time on a great macro behavior shot with less camera shake. You'll pay a price on hard drives when shooting higher frame rates, but you'll double your chances to get the shot.

Lexar Vs. Delkin CFast Cards

The Canon 1DX II is outfitted with (1) CF and (1) CFast card slot. All 4K 60P recording longer than 10 seconds must be recorded to the new CFast card. At a blistering 6GB per minute, you'll need to buy 256GB CFast cards to get roughly 40 minutes of recording time per dive. New

comers to low compression 4K will also need to upgrade their portable and home hard disks in a major way. Hard drives are inexpensive these days, but CFast cards are bleeding edge and still demand a premium price.

Canon recently issued a firmware update to fix issues with Sandisk CFast cards. Our test pilots didn't experience any of these Sandisk issues, but one had a catastrophic issue with a Lexar 256GB card that was unrecoverable. Currently Backscatter is only recommending Delkin 256GB CFast cards as they have been the only cards without reported issues. Stay tuned for more feedback from the field.

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