

Jack and Sue Drafahl

DIGITAL HORIZONS PG. 22

The authors of *Sport Diver's* new Digital Horizons column are a husband-and-wife team who have written more than 500 magazine articles. They also participate in film festivals and produce award presentations. Sue is a member of the Women Divers Hall of Fame, and she and Jack each have more than 30 years of diving experience. In addition to magazine articles, the couple has authored a book – *Digital Imaging for the Underwater Photographer* — that will be released this fall.



Avoiding Backscatter

■ You've finally bought a strobe for your underwater camera. Now your photos show the true colors of the reef. But where did all those little specks and white spots come from?

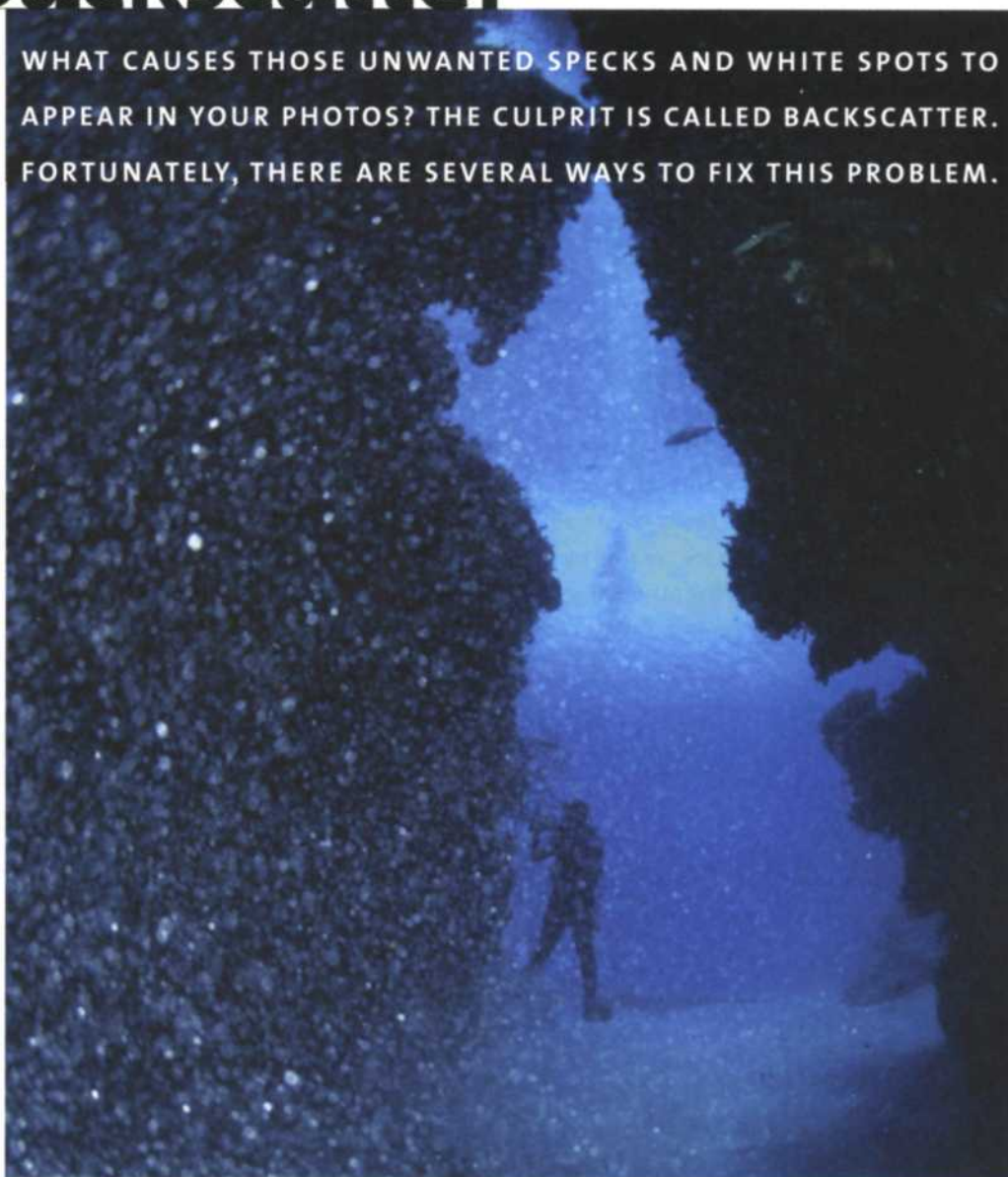
What you are experiencing is a phenomenon known as backscatter, a condition caused when the light from your strobe bounces off small objects suspended in the water. The culprits could be sand, coral, dirt, air bubbles, decomposing matter or even tiny animals. Regardless, the results are the same: spotty photos.

Backscatter is completely unique to underwater photography and it's one of the most difficult problems to control as you can even encounter it in the clearest of waters. Here are a few tips that will help.

MOVE THE STROBE AWAY FROM THE CAMERA By moving the strobe away from the camera lens, you light fewer particles directly in front of the lens. Moving the strobe also reduces the ratio of light hitting the particles, as compared to the light falling on the background.

BALANCE FLASH AND SUNLIGHT When in really dirty water with lots of particles, set your strobe so that it matches the sunlight. This usually requires that you use a wider lens opening and reduce the flash output so it will match the natural sunlight in the scene. If you use TTL metering, you will have to open the lens until

WHAT CAUSES THOSE UNWANTED SPECKS AND WHITE SPOTS TO APPEAR IN YOUR PHOTOS? THE CULPRIT IS CALLED BACKSCATTER. FORTUNATELY, THERE ARE SEVERAL WAYS TO FIX THIS PROBLEM.



JACK & SUE DRAFAHL

the correct exposure is near flash sync. If you use a manual flash, take a meter reading of the sunlight, and then use that f/stop setting for your strobe.

USE A TWIN STROBE SYSTEM Twin strobe systems can reduce the effect of backscatter by evenly lighting the entire scene, including the background. Both strobes should be positioned out at 45-degree angles, so that the flash coverage is even and no hot spots are created.

You can also point one strobe directly at the subject at medium or low flash output, and a second strobe toward the background at high output. The higher output on the second strobe is needed because more light is required to reach the background.

USE A WIDE-ANGLE FLASH Using a wide-angle flash reduces the concentration of light striking the backscatter particles and bet-

Strobe Turn Offs

■ One of the simplest ways to reduce or eliminate backscatter is move the light source away from the lens. Cameras such as the Motor Marine IIfEX from Sea & Sea allow you to turn off the internal flash so that particles close to the lens are not illuminated. You then have the choice of adding a single strobe that can be held off camera, or adding an additional slaved flash for even lighting. Otherwise, you can use a higher ISO film to utilize available light for your exposures and virtually erase backscatter. *Photo tip Courtesy of Sea & Sea Underwater Photography: 760-929-1909 or on the Web at www.seaandsea.com.*

ter illuminates the background. If the particles in the water become dense, just move the strobe farther from the camera. When you move the strobe, make sure that your re-adjust its direction to keep aimed in the same direction as the lens.

USE A WIDER-ANGLE LENS When you use a wide-angle lens, it allows you to move in closer. Less distance means fewer particles between the camera lens and your subject, and less backscatter. This technique works with both wide-angle and macro photography, assuming your subjects will allow you to get close.

BACKLIGHT THE SUBJECT If you find the backscatter so concentrated that all other solutions do not work, you can place a strobe behind your subject. This only works if the light will pass through the subject, or wrap around it enough to give it shape, color and dimension. We often use this technique with large cold water sea anemones when

the visibility drops to about two feet.

TURN OFF THE STROBE Sunlight provides even lighting that results in minimal contrast between particles and subject. If backscatter is very heavy, you may want to turn off your strobe and expose your film using only available light.

WHAT IF? So, what happens if you try everything and you still end up with backscatter? You can make a photographic print, retouch the backscatter and then make

a new copy. The problem is that you lose quite a bit of image quality and most photographers don't consider this acceptable.

Thanks to computers, film scanners, photo CDs and retouching software, all is not lost. You can scan in the problem image, retouch the backscatter and output a new print. You can even generate a new slide or negative via a film recorder.

For information on taking an underwater photo course, contact your local PADI Resort or Dive Operator or go online and visit www.padi.com.

Cameras in Classes

Sealife, the manufacturer of ReefMaster underwater cameras, has introduced a new program to expose students in entry-level scuba certification courses to the world of underwater photography.

The program is conducted at the discretion of the instructor as an add-in to the regular materials covered in Open Water courses. The materials are covered during the confined-water portions of the course.

The program is designed to teach four basic steps: carrying and holding the camera; approaching reefs and sea creatures; buoyancy control with a camera; and distance judgement and diver position. It is not designed to teach photo skills.

Students are allowed to handle and use the instructor's camera during the course, but do not get their own unit.

A 12-month test program run by Sealife showed that after participating in this course, twice as many students enrolled in full-fledged underwater photo courses during their first year of diving as compared to students who did not take the course.

While this instruction is added at no charge, students can purchase a 24-page course booklet, which includes \$33 in coupons for cameras and accessories, for \$12.95.

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