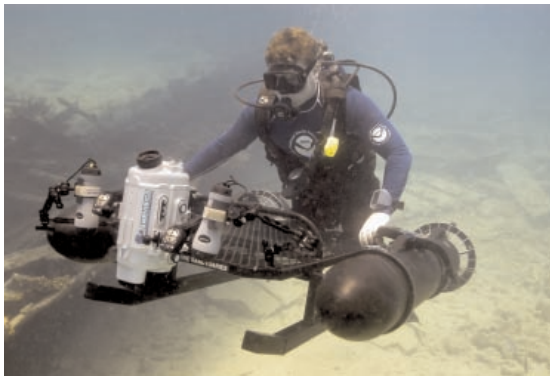
New Photo Technique Used on Keys Shipwrecks

Tane Casserly, Maritime Archaeologist

Maritime Heritage Program archaeologists deployed a newly developed propulsion sled in April to create high-resolution, photo-mosaics of five shipwrecks on the Florida Keys National Marine Sanctuary's *Shipwreck Trail*. To create the photo-mosaics, the team used a propulsion sled to "fly" over the shipwrecks. At the same time, a camera mounted on the sled captured images of the wreck below. These images were later pieced together with computer software, much like a giant jigsaw puzzle, to create a highly detailed photo-mosaic of the site.



Maritime Archaeologist Tane Casserly operated the propulsion sled to create photo-mosaics of selected Keys' wrecks. **Photo credit: Russ Green, Thunder Bay NMS**

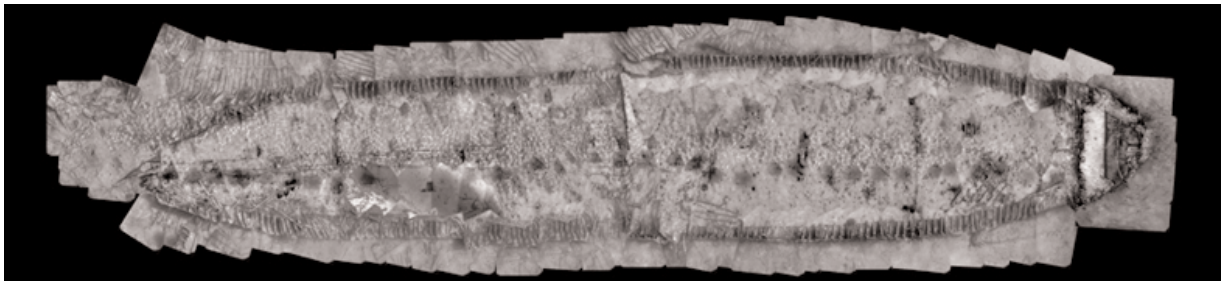
Right now, the *Shipwreck Trail* provides public information on nine different shipwrecks using sketch maps to portray the fascinating sites. Once completed, the new photo-mosaic images will allow the public to view these shipwrecks in their entirety on the seafloor for the first time in unprecedented detail. Five trail sites were photographed using this technique: the *City of Washington*, *Benwood*, *Adelaide Baker Cluster B*, *North America* and the *San Pedro*.

The mosaics also provide NOAA with supplemental archaeological data and serve as a baseline to gauge the effects of hurricanes as well as other natural and human impacts on these historic treasures. This photo-mosaic technique is continually evolving to create the most accurate product possible. It began in 2001 by towing a diver with a video camera behind a diver propulsion vehicle (DPV) using depth gauges to remain at a constant depth. This method proved problematic because shipwrecks with differing levels of relief produced images with differing focal lengths, which made it impossible to accurately piece the images together. Also, turbulence from the DPV's propeller wash caused the video camera to shake.

To alleviate these issues, a video camera and two handheld digital SONAR systems were attached to a Farallon Mk8-Twin DPV sled. The Farallon Mk8-Twin system consists of two Mk8 DPVs attached to a central platform or sled. This unit is designed to transport one or two divers and a significant neutral payload. Because of its wide rigid platform, or sled, the Mk8-Twin is an excellent camera platform for underwater filming. The SONAR aids in creating a more accurate photo-mosaic by bouncing sound waves off the bottom topography, i.e. the deck of a shipwreck, and the reflected sound waves are interpreted as a numeric readout in feet on the SONAR device. This insures that the camera remains at a consistent height over the shipwreck and produces an accuratly scaled photo-mosaic of the site below.

Once safely back on the surface, video editing software is used to pull individual still frames from the video. The images are then overlaid one by one and pieced together using computer software creating a photo-mosaic of the entire shipwreck site.

By using this process, the Maritime Heritage Program has created accurate, scaled photo-mosaics of several deep-water shipwrecks in the Thunder Bay National Marine Sanctuary and the *Queen of Nassau* in the Florida Keys National Marine Sanctuary. Photo-mosaics provide unparalleled access to our nation's underwater cultural heritage and are just another way the national marine sanctuaries is proving its leadership as the steward of America's ocean treasures.



The wreck of the *Benwood* was one of the shipwrecks on the *Shipwreck Trail* photographed using the newly developed photo-mosaic technique, which allows one to see the entire 360 foot ship in one photograph.

Note: This article appeared in the Winter 2006-Spring 2007 edition of *Sounding Line*, the newsletter of the Florida Keys National Marine Sanctuary. For more information, please visit: http://floridakeys.noaa.gov/.