SEAGRASS INJURY RECOVERY

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Photo 1. Typical back reef mixed seagrass meadow composed of turtle grass (*Thalassia testudinum*) and manatee grass (*Syringodium filiforme*) in Florida Keys National Marine Sanctuary. This bed is located in the back reef region of Molasses Reef. Photo by Amy V. Uhrin.

Photo 2. Oblique photo of an actual vessel grounding injury on a shallow seagrass bank in Florida Keys National Marine Sanctuary. Twin propeller scars, numerous berms, and two distinct blowhole injury features are visible. For scale, the rectangular object resting on the left-hand berm is a cement block, ~39.5 cm in length. The divots in that same berm are footprints made by the assessment team. NOAA FKNMS stock photo.

Photo 3. NOAA staff map the dimensions of vessel grounding injury features by walking the perimeter of each feature using Differential GPS. Photo by Amy V. Uhrin.

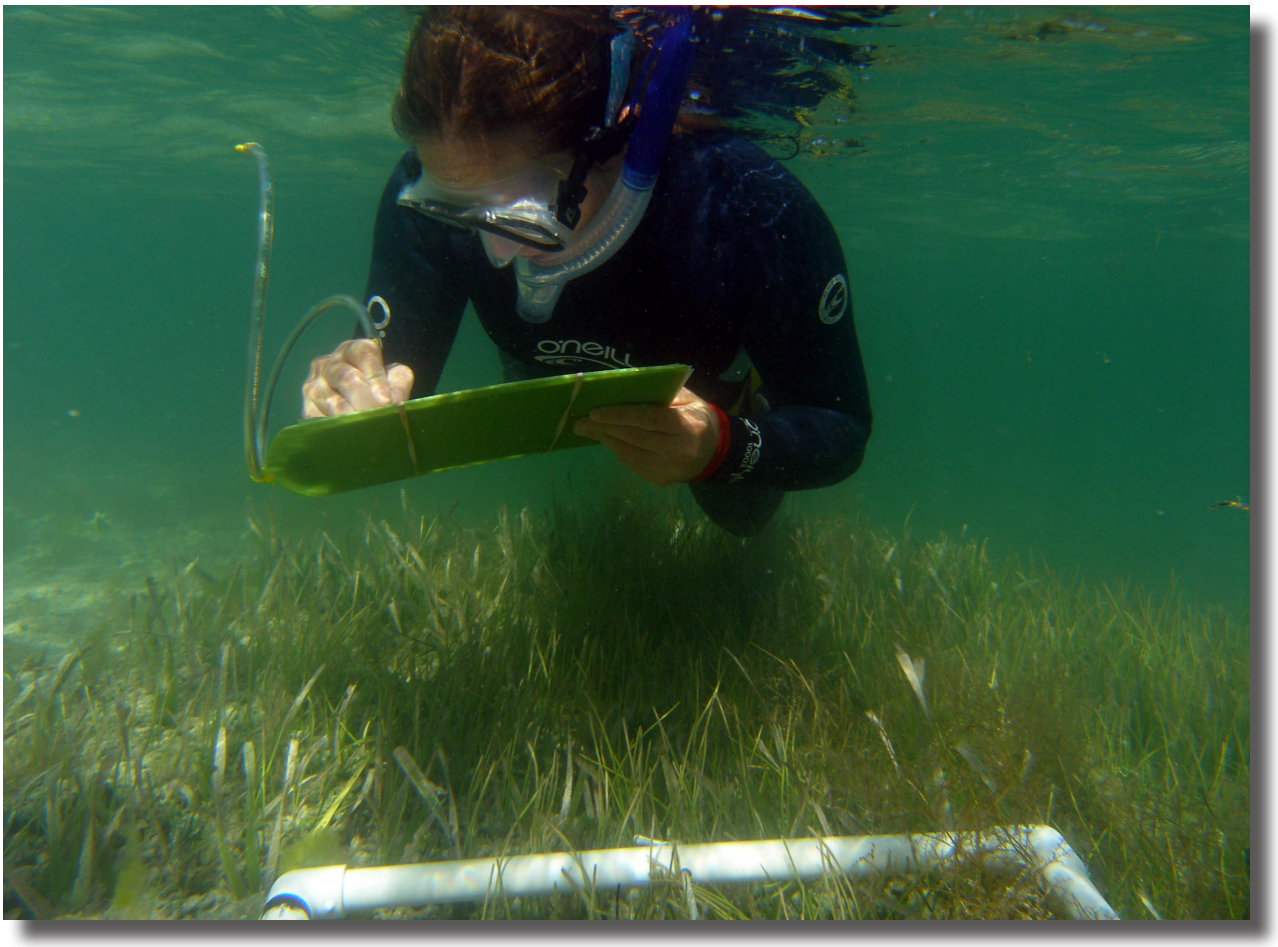

Photo 4. NOAA staff estimate seagrass species composition and percent cover in the surrounding undisturbed seagrass bed (reference) and within the injury features (not pictured). Photo by Amy V. Uhrin.

Vessel groundings cause severe, persistent gaps in seagrass beds. Varying degrees of natural recovery have been observed for grounding injuries, limiting recovery prediction capabilities, and therefore, management's ability to focus restoration efforts where natural recovery is unlikely. We used an information-theoretic approach to evaluate the relative contribution of specific injury attributes to the natural recovery of vessel groundings in Florida Keys National Marine Sanctuary. Our findings confirm that these injuries naturally initiate seagrass colonization with the potential to recover to preinjury conditions, but likely on a decadal scale. Our analysis supports current perceptions that sediment in-filling is critical to the recovery process.

Photo 5. NOAA staff use a Lowrance LCX-15MT depth sounder integrated with the Differential GPS (mounted on the stern of an inflatable boat) to collect geo-referenced depth soundings (0.1 m vertical accuracy) within blowhole features. The boat is slowly guided back and forth across the injury on foot or via snorkel. The resulting bathymetry file is used to create a bathymetric grid layer enabling the calculation of blowhole volume (cubic meters). Photo by W. Judson Kenworthy.

These photographs illustrate the article "Understanding uncertainty in seagrass injury recovery: an information-theoretic approach," by Amy V. Uhrin, W. Judson Kenworthy, and Mark S. Fonseca, tentatively scheduled to appear in *Ecological Applications* 21(4), June 2011.