POST DEPLOYMENT SURVEY REPORT

Newest Artificial Reefsite "Hailey Glasrud" 224 foot ship in Martin County, Florida - Created April 2014

Submitted to:
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Submitted by:
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Date: May 10, 2014
To: John Burke – President MCAC Reef Fund
From: Kerry Dillon
General Hailey Glasrud Artificial Reef Location: Atlantic Ocean Waters 8 Miles Offshore Martin County, Florida @ Southeast quadrant of the Sirotkin Permitted Artificial Reef Site

The following field report documents the successful deployment of the cargo ship DM One to establish the Hailey Glasrud Artificial Reef within the MCAC Reef Fund's expanding system of artificial reefs.

Confirmed GPS coordinates:

Verified 5/7/14 by Kerry Dillon during post deployment survey dives

Hailey Glasrud Reef = 27° 12.597 N / 80° 00.287 W taken above stern end superstructure at north end

27° 12.558 N / 80° 00.283 W taken above bow end at south end

Acknowledgments:

The MCAC Reef Fund was the main administrator of the 9 month long project to locate, clean up, & purchase the vessel DM-One to create the "Hailey Glasrud Reef". Martin County Engineering Artificial Reef Department was responsible for securing US Coast Guard towing and sinking approvals and was main contact with the towing & sinking contractor McCulley Marine Services. Martin County also dealt with the US Army Corp of Engineers and Florida Fish & Wildlife Conservation Commission. Volumes of text could be written as to what all this entails but simply put it took many 100's of hours of tedious work in the field and the offices to make this whole project work as successfully as it did.

As the MCAC fund is a not for profit 503B organization specifically set up to develop artificial reefs in the deeper ocean waters of the Sirtokin Permitted Reefsite financial support is always a main challenge to each of it's reef projects. With this newest reef project, Ted Glasrud, Karl Wickstrom & Joe Lehner of the Orchid Foundation were the main financial supports of this effort. Without their support the project to create "The Hailey Glasrud Reef" would not have been possible. Although many others have donated time and funding for these and other projects we are especially grateful for their support and cooperation with this newest reef project.

It takes many government & private work groups to team together for successful artificial reef construction projects and should be acknowledged. Governmental agencies directly involved with the funding, planning, permitting, sitting, & approvals for "The Hailey Glasrud Reef" were: the Martin County Board of County Commissioners, Martin County's Engineering Department (Artificial Reef Program), US Army Corps of Engineers, Jacksonville, Florida District, the Florida Fish & Wildlife Conservation Commission, State of Florida Artificial Reef Program, and the US Coast Guard Miami, Florida Sector.

Private Entities directly involved with the planning, securing the ship, pre & post deployment surveys, cleanup of the vessel, transport and deployment of the ship included: Richard Dubin of Caribbean Ship Services, Bruce Sugart of Sugart Brothers Salvage Company, McCulley Marine Services' Captain & crew of the "Tug Elizabeth Ann", Steve Irwin of Island Marine Services and Kerry Dillon & crew from of Sea Rover Services.

Timeframe of major project events:

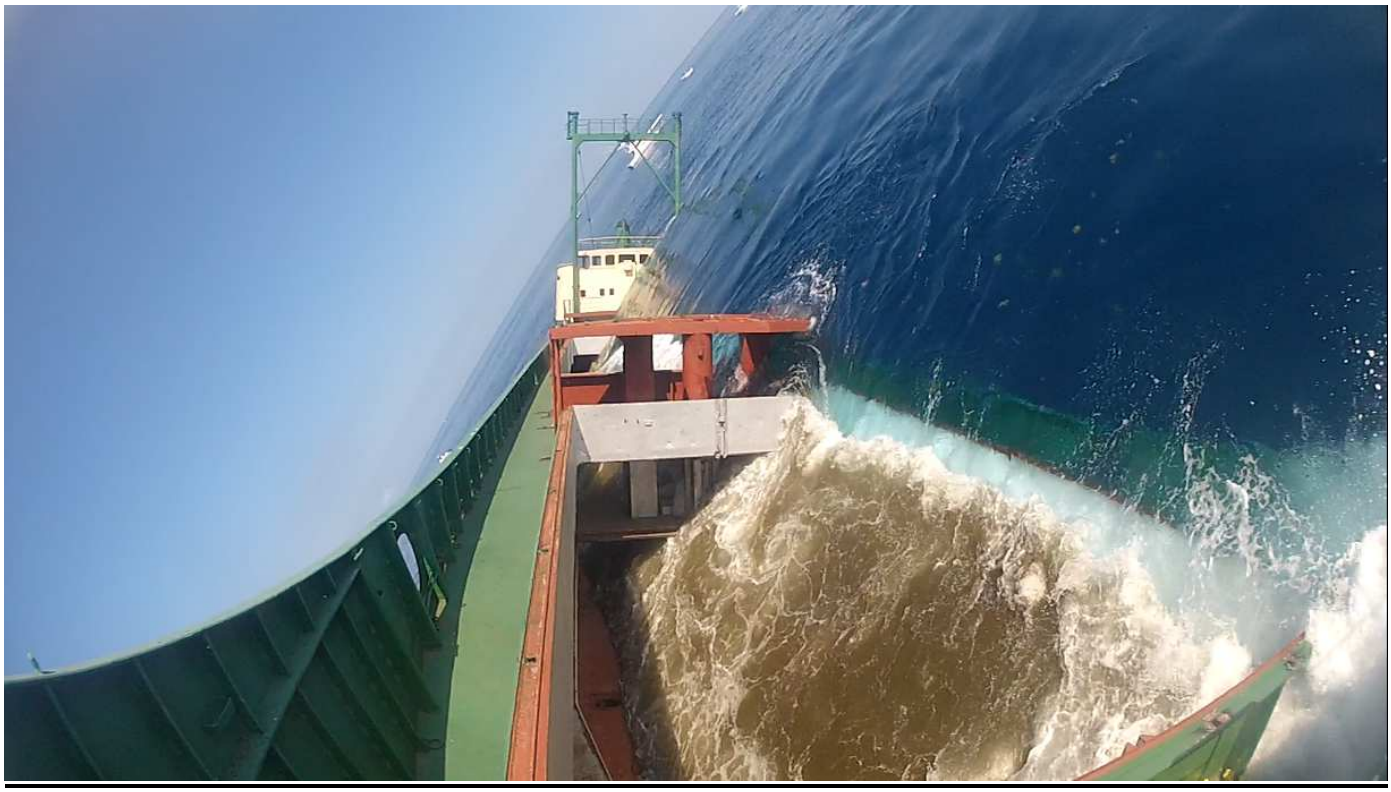
Dates & Times	Events & Comments
July 2013	Initial contact made about possible availability of the obsolete grain cargo hauler ship "DM ONE" located in the Miami River, Miami, Florida. Vessel was originally being refitted for sale and continued use as a freighter, but previous owner defaulted on the agreements with Caribbean Ship Services.
August 2013	Kerry Dillon visits ship location and gets initial tour of vessel in Miami River
October 15, 2013	Contract signed to purchase the DM One ship between MCAC and Richard Dubin current owner of ship and owner of Caribbean Ship Services
October 2013	Contract negotiations worked out and long phase of cleanup of vessel for scuttling begins, tons of hazardous & loose materials are removed and disposed of to meet local and federal guidelines for proper cleanup of vessels to be used as artificial reefs
October 2013 - March 2014	Cleanup Designing, planning, funding, proposals, Federal. State & County approvals and other administrative tasks completed prior to startup of sitting phase of the artificial reef project
Dec. 30, 2013	Sea Rover Services makes initial offshore site visit to the Sirotkin permitted area to scan intended target area (½ mile by ½ mile seafloor area searched and target area GPS coordinate derived **27° 12. 597 N 80° 00. 254 W 187** feet deep
April 2014	Final coast guard inspections, towing and sinking plan approvals, and finalizing all agency document requirements made during this time
April 2014	Notifications made by Martin County Engineering to US Coast Guard & US Army Corps of Engineers of pending offshore vessel deployment to begin
April 15, 2014	Sitting survey dives & final bathometric survey completed to verify the chosen area meets criteria parameters for artificial reef construction refer to Pre-Deployment Report submitted to MCAC Reef Fund by Sea Rover Services.
April 22, 2014	Title of ship ownership transferred from Richard Dubin of Caribbean Ship Services to MCAC Reef Fund for tugboat towing up to new target location
April 23, 2014	Ship DM One, now renamed "Hailey Glasrud Reef" departs Miami River enroute to new home in ocean waters offshore Martin County, Florida
April 24 (0600)	Tugboat Elizabeth Ann arrives with ship "Hailey Glasrud" in tow from Miami to the Sirotkin Permitted Reefsite 8 miles offshore Martin County

April 24 (0715)	Large surface marker buoy set at target location in Sirotkin Area to aid tugboat "Elizabeth Anne" with site location for anchoring process. Ship to be anchored with two large ships anchors with 500 ft of anchor chain each. Buoy set in 187 ft of water with 300 ft of line, chain and danforth anchor. Anchoring of ship process begins
April 24 (0715)	Deck crew from tugboat Elizabeth Ann transferred to ship to prep and begin anchoring & scuttling process to create "Hailey Glasrud Reef"
April 24 (0830)	Tug "Elizabeth Ann" Captain & crew anchors 224 ft long ship " Hailey Glasrud Reef" with two 3500 + lb anchors. Ship confirmed set & stable @ 0845 am
April 24 (0905)	Two members of Sea Rover Services crew onboard ship installing 5 gopro underwater cameras to capture scuttling of ship as she sinks to the seafloor
April 24 (0920)	Begin scuttling efforts by McCulley Marine Crew, flooding of ship by three methods, pumping seawater from portable pumps to bilge of ship, opening seacock valves in engine room. This allows ship to settle low in water after a period of time.
April 24 (0940)	Preinstalled scuttling hole covers removed to allow fast entry of seawater once vessel settles low enough in water to allow flow of seawater into vessel
April 24 (0945)	Shipboard cameras installed, all crewmembers from Sea Rover Services transferred to tugboat then to " Irish Rover" cameras all recording at this time
April 24 (0950)	Seawater enters ship thru scuttling holes at waterline of vessel
April 24 (0955)	All McCulley Marine deck crew members transferred from ship back to tugboat, ship continues to fill with seawater, starting to sink low in water in stern
April 24 (1000)	Helicopter with aerial photographers arrives scene to photo document events
April 24 (1005)	Noticeable list to portside as ship fills with water sitting lower in stern now
April 24 (1012)	Water pouring in over portside gunwales now, stern begins to sink
April 24 (1014)	New reef "Hailey Glasrud Reef" now completely submerged, view of cameras revealed later she sank to seafloor in approximately 25 seconds once submerged
April 24 (1030)	Tugboat and crew from "Elizabeth Ann" depart area for homeport of Ft. Pierce, Florida 25 miles to the northwest
April 24 (1100)	After other vessels position over site to check GPS numbers of final resting location and bubbles dissipate with current, Sea Rover Services vessel "Irish Rover" anchors into new artificial reef for recovery dive to remove 5 underwater cameras placed throughout the ship
April 24 (1100)	"Irish Rover" Anchored in reefsite at stern, confirmed GPS coordinates are **27° 12.597 North / 80° 00.287 West**

April 24, 2014	Divers from Sea Rover Services successfully retrieve all 5 underwater cameras from "Hailey Glasrud Reef", she settled to the seafloor perfectly upright with no noticeable list. Anchor chains are splayed out across the bottom in a Southeast direction, ship lays with bow pointed SSE at an atzimus of 172 degrees.
April 24, 2014	Other divers from local dive boat Reef Runner & Stuart Dive Center's charter boat, Set up to dive to help photo document the new reefsite. All diver videos and photos were downloaded to the MCAC website within a week of the scuttling, visibility was poor as much rust and other silt comes out of a recently deployed ship for days after deployment
May 7, 2014	Dive crew from Sea Rover Services completes post-deployment survey dives at new site to collect data and photo document site, see below for results of this survey
May 10, 2014	Martin County Engineering Department completes and submits FFWCC / US Army Corps materials placement report and submits to government agencies

Aerial photo above of Hailey Glasrud Reef as she fills with seawater during scuttling to create new reefsite, and other views are given below of scuttling effort including onboard underwater GoPro cameras mounted to the ship at various locations.

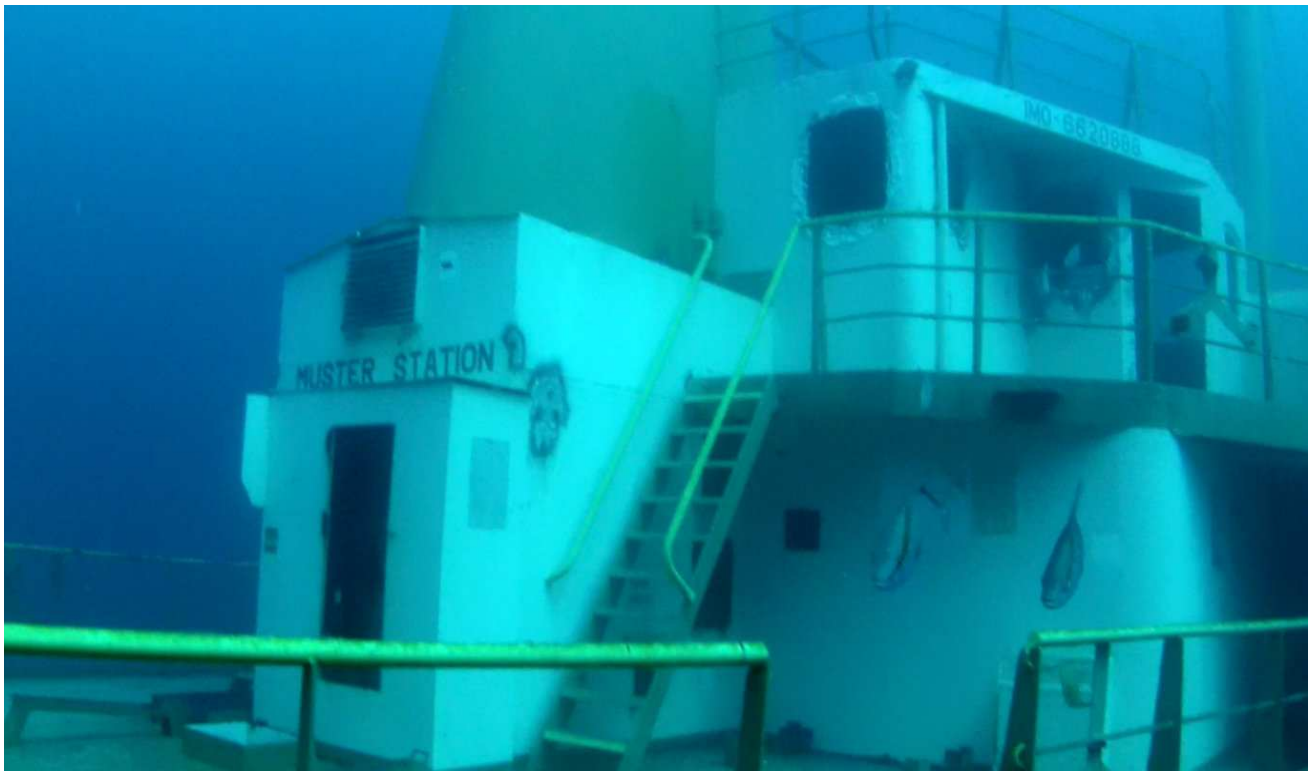
View looking through bridge windows as seawater rushes into ship during final minute of scuttling.



View looking aft from camera mounted to bow during scuttling effort

Diver Kerry Dillon removing one of five GoPro underwater cameras from Hailey Glasrud Reef that recorded scuttling effort from above and below the surface. Videos can be seen at **mcacreefs.org** website and show unique views of the ship as she fills with water and sinks the 190 feet to the seafloor.

Above photos all taken day of scuttling April 24, 2014, photos below taken during post deployment survey dives on May 7, 2014.



View looking forward at starboard stern superstructure, notice two large amberjacks approaching diver.


Majestic bow that faces SSE into the prevailing Gulf Stream Current welcoming marine life new arrivals.

Bow deck, notice algae slime on all surfaces after only 2 weeks submerged, this is the critically important start of the food chain that will allow colonization of many marine life species to thrive over time.

Post Construction - Divers Observations and Measurements:

Hailey Glasrud Reef

This reef is located in 188 of seawater on Martin County's Sirotkin permitted area. During the dives made here during the post construction survey it is evident several marine life species have already taken up residence. As the weeks and months go by many more fish species will arrive and take up residence. It is not uncommon on an artificial reefsite in this area off the east central coast of Florida to have up to 25 different finfish species within a year's time. Many of them are in the grouper/snapper complex and considered desirable sport fish species, including black, gag, & warsaw grouper. In the snapper family past artificial reefs projects in the same permitted area have included red, mutton, grey, yellowtail, and cuberra. Other species that may utilize the new reef in the future include; black sea bass, greater amberjack, wahoo, dolphin, sailfish and other pelagics. Numerous baitfish species will cruise through the uppermost portions of the ship, this can include, round scad, silversides, sardines, within 1.5 hours after the deployment a small school of very small unidentified fish were seen and photographed at the uppermost area of the aft gantry catwalk. In addition to finfish species many benthic organisms attached and unattached will colonize the reefsite at varying rates.

Depth measurement locations (diver confirmed)	Depth in Ft.
Seafloor 25 ft. south of bow	187
Bow deck	152
Midship deck (port)	164
Midship deck (starboard)	164
Inside bridge on floor centerline	150
Seafloor 25 ft. north of stern	188
Shallowest spot @ aft gantry catwalk	110

Species identified already observed on this site during the dives on May 7, 2014 two weeks after deployment included:

- Gag Grouper — Mycteroperca *microlepis*
- Black seabass — *Centropristis striata*
- Several unidentified species of crabs
- Greater Amberjack (over 50) — Seriola dumerili
- Patches of attached algae slime on upper portions of ship

On August 13 & 23, 2014 Kerry Dillon & Chris Ellert dove the Hailey Glasrud again for further photo documentation of the new reef. Below are several photos taken on those days.

Greater Amberjack swimming around uppermost sections of the reef above the bridge

Large gag grouper on seafloor near bow as diver-approached bow

Diver videodocumeting schools of large amberjack around superstructure

Species identified during the follow-up dives on August 13 & 23, 2014 approx 3 months after deployment included:

- Gag Grouper *Mycteroperca microlepis*
- Black seabass *Centropristis striata*
- Several unidentified species of crabs
- Greater Amberjack (over 200) *Seriola dumerili*
- Red Snapper *Lutjanus campechanus*
- Yellowtail Reefish *Chromis enchrysura*
- Either a Sailfish or Marlin that approached divers during ascent at 70 feet depth above stern of ship, we got a few still photos as the fish departed area quickly
- Little Tunny (Bonita) feeding on schools of baitfish *Euthynnus alletteratus*
- Round scad in large schools *Decapterus punctatus*
- Spotfin Hogfish *Bodianus pulchellus*
- Unidentified subfamily Anthininae most likely *Panranthias because of forked tails*
- Sheepshead Porgy *Calamus penna*
- Three other species of small fish on superstructure shallower decks can be seen in video but too small to identify without collection and lab analysis
- Much more coverage of attached algae on all portions of ship

Conclusions of findings:

Since 2003 the MCAC Reef fund has successfully created 16 artificial reefs from obsolete ships, barges, three tugboats, concrete rubble, and US Navy steel towers from water depths of 60 feet in the South County Reef permitted area to 190 Feet of water on the offshore Sirotkin Permitted Reefsite. It is recommended that the reader refer to both the MCAC website at **mcacreefs.org** and the Martin County website at **martinreefs.com** for more information including locations, reports, fish species censuses, videos, and still photographs of all the artificial reefs in the Martin County nearshore and offshore permitted reef sites.

These reefs are being utilized by recreational anglers, charter fishing boats, and commercial fishers year round whenever conditions allow. To a lesser degree a small number of advanced scuba divers occasional visit the reefs, as many of the reefs are deeper than the recreational limit of 130 ft and lie near the western edge of the strong Gulf Stream current.

The Hailey Glasrud Artificial Reef project was an extremely well planned, funded, and successfully deployed reefsite. Many groups all worked together to achieve the goals of this aggressive project. All the hard work has paid off and the Hailey Glasrud Reef is now the second largest artificial reef offshore Martin County and the highest profile at 80 feet above the seafloor of any reef built here.

Now that the construction phase & post construction survey dives are complete, a comprehensive annual monitoring will occur including fish species identification and census, reef components stability analysis, benthic species identification, mapping, and a complete digital photo documentation survey. This should be completed in the spring of 2015 as part of the annual monitoring requirement of the US Army Corps of Engineers permit for artificial reef sites.