

# *Deepwater Shipwrecks*

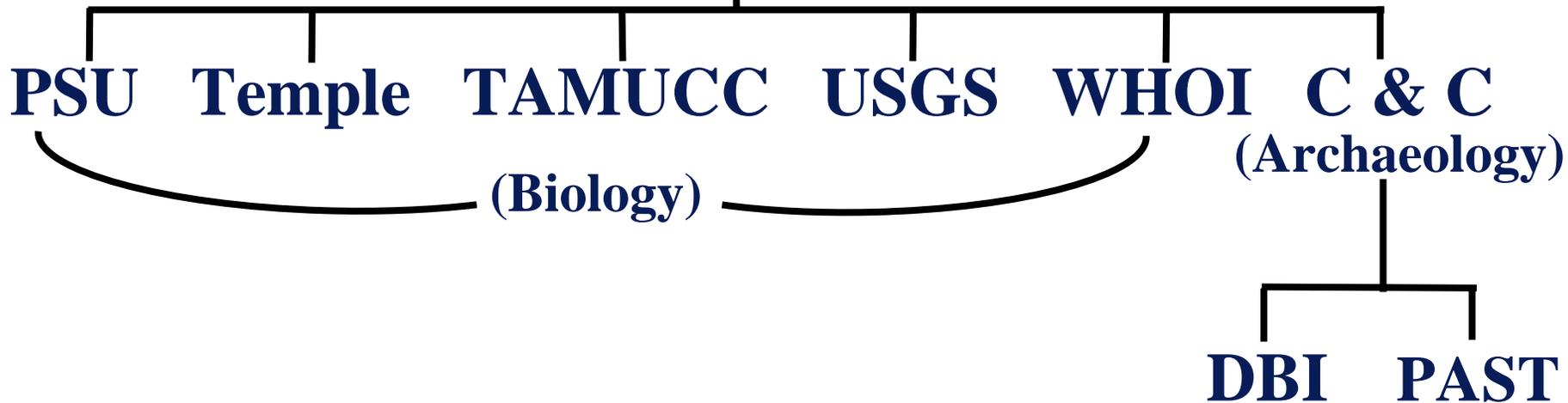
## **MMS Deepwater Study: Reefs, Rigs, and Wrecks**

**Robert A. Church  
C&C Technologies, Inc.**

# *Project Organization*

**MMS** ——— **NOAA OER**

**TBI Brooks**



# *Deepwater Shipwrecks*

## **MMS Deepwater Study: Reefs, Rigs, and Wrecks**

- **Four-year study**
- **Three field seasons**
  - First year - Cruise 1 (two Legs)**
    - Leg 1 – Shipwrecks (13 days)**

# *Deepwater Shipwrecks*

**Leg 1 – Shipwrecks (13 days)**

**NOAA R/V *Nancy Foster***

**ROV Falcon Sea eye (Sea Vision)**



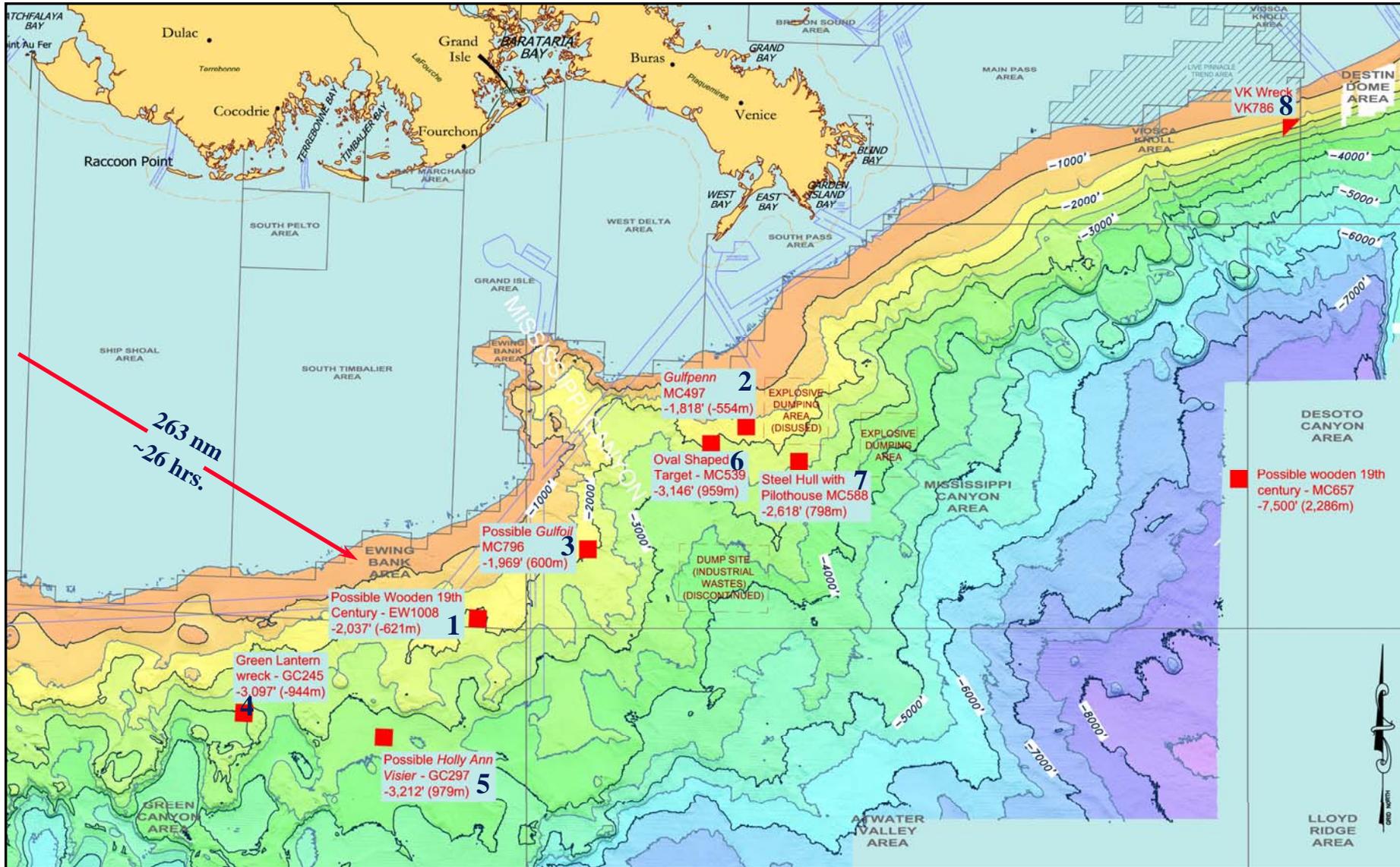
# *Deepwater Shipwrecks*

- **Investigate 8 shipwreck sites**
  - 3 previously investigated**
  - 5 exploration sites**
- **Planned 12-hour dives**
- **Collect multibeam data and transit between dives**

# Cruise Objectives

- **1 Determine each site's significance for additional study**
- **2 Target material for potential recovery later**
- **3 Carefully image *Lophelia* (and other colonial cnidarians)**
  - Estimate growth rates**
- **4 Site Preservation. Long-term microbial experiments**
- **5 Push-cores to examine a "reef-effect" on meiofauna**
- **6 Document the cnidarian coverage on new wrecks**
- **7 Collect preliminary video mosaic data over the wreck sites**
- **8 Attempt to determine the extent of each site**
- **9 Multibeam biological sites for Leg 2**

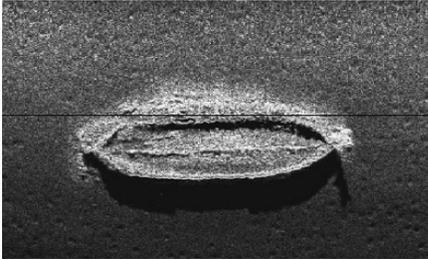
# Investigation Sites



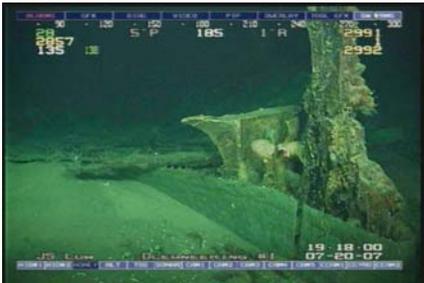
# Investigation Sites

## 19<sup>th</sup> Century

### Ewing Banks Wreck



### Green Lantern Wreck



### Viosca Knoll Wreck



## WW II

### *Gulfpenn*



### Suspected *Gulfoil*

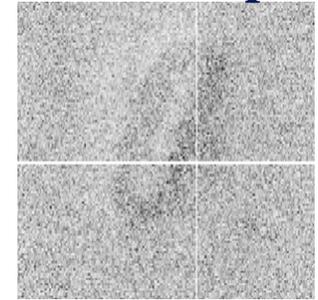


## Unknown

### Suspected *Holly Ann Viser*



### Oval Shape



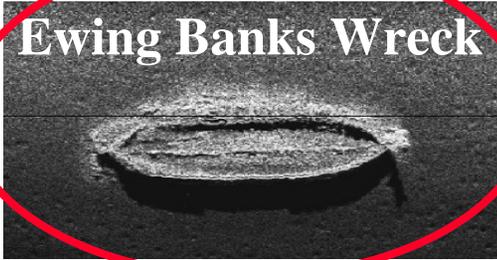
### Steel Hull



# Investigation Sites

## 19<sup>th</sup> Century

Ewing Banks Wreck



Green Lantern Wreck



Viosca Knoll Wreck



## WW II

*Gulfpenn*



Suspected *Gulfoil*

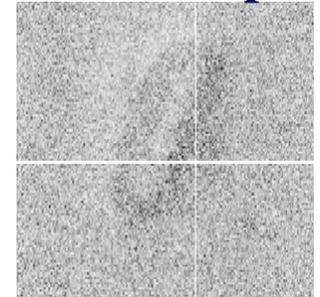


## Unknown

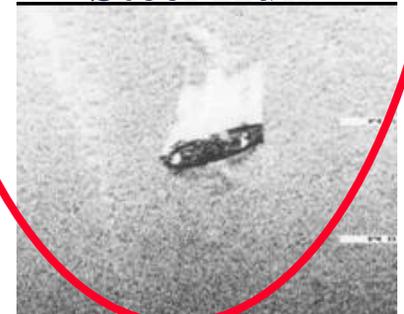
Suspected  
*Holly Ann Viser*



Oval Shape



Steel Hull

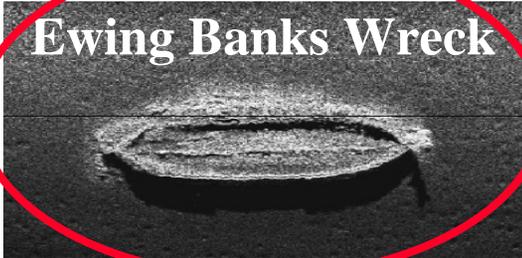


# Investigation Sites

## 19<sup>th</sup> Century

## WW II

Ewing Banks Wreck



*Gulfpenn*



Green Lantern Wreck



Suspected *Gulfoil*



# Investigation Sites

## 19<sup>th</sup> Century

Ewing Banks Wreck



## WW II

*Gulpenn*

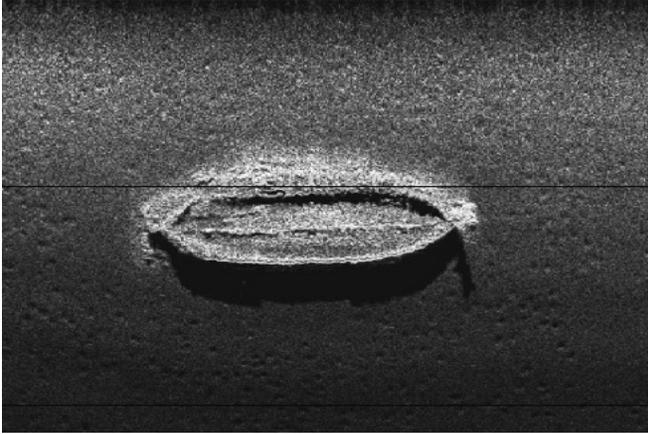


Suspected *Gulfoil*



# Investigation Sites

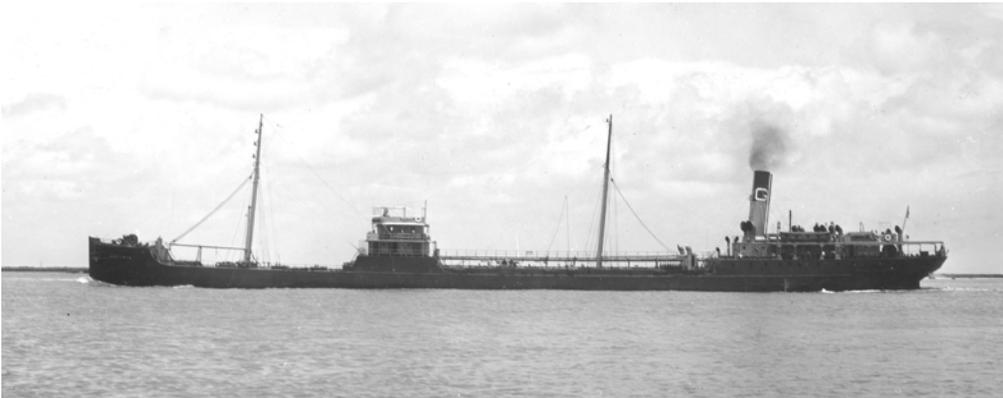
**Ewing Banks Wreck**



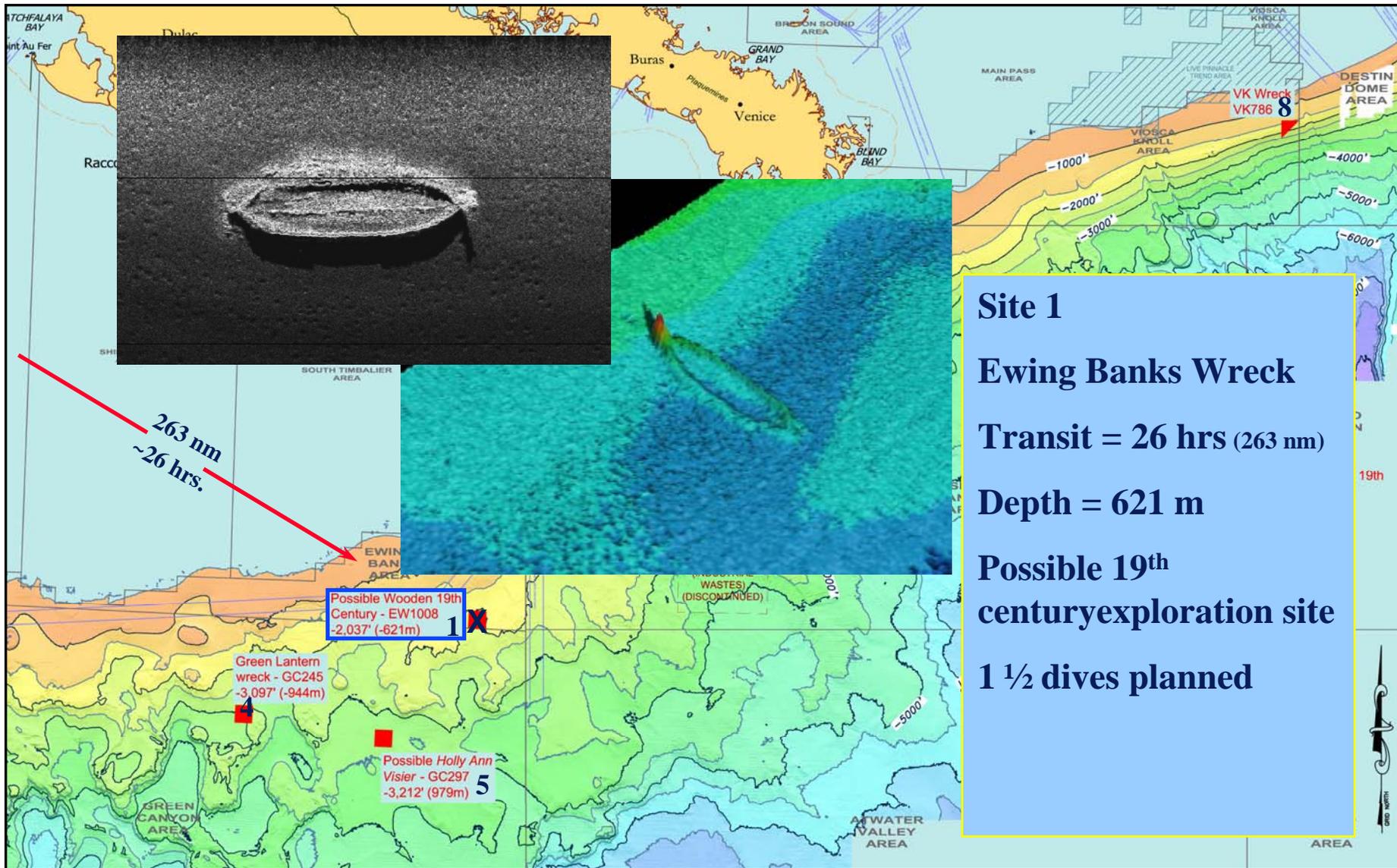
*Gulfpenn*



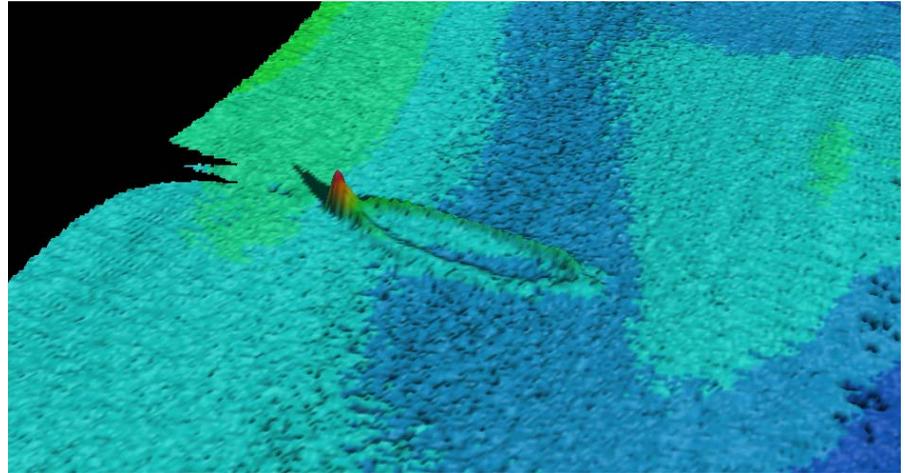
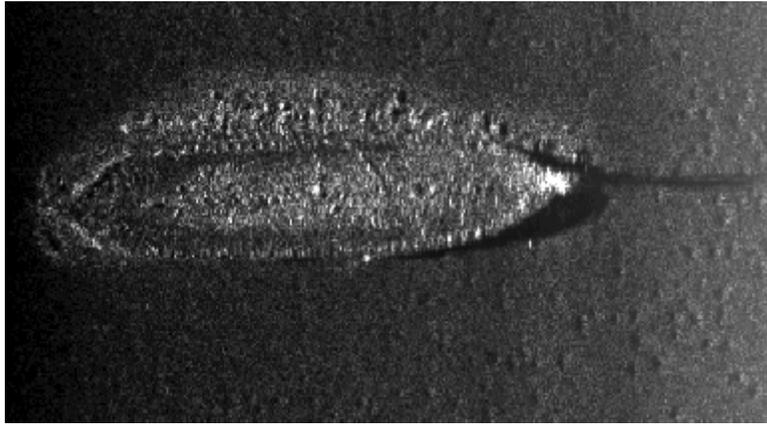
**Suspected *Gulfoil***



# Ewing Banks Wreck

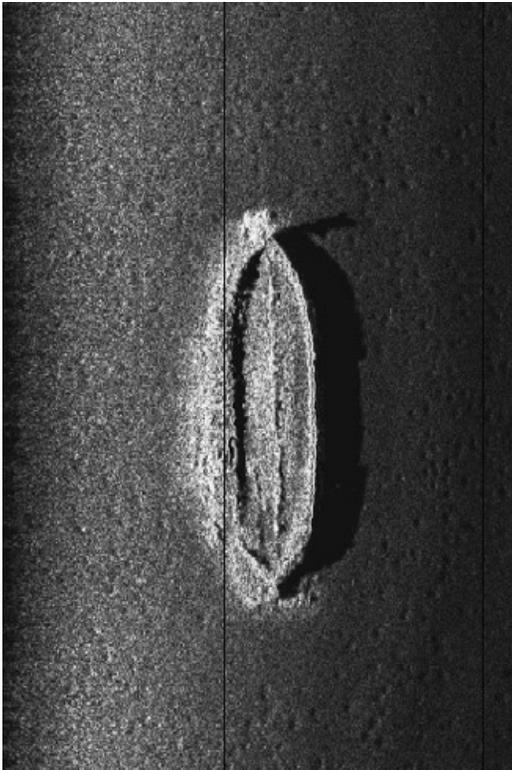


# 19th Century Wooden Sailing Vessels

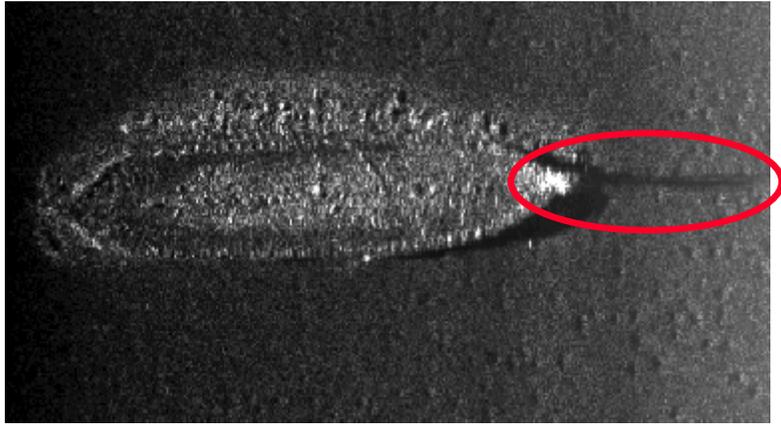


## Vessel 15401 - EW 1008

- **Discovered in 2006 during an AUV Survey**
- **No ROV prior investigations**
- **150 feet long, 49 feet wide, 8 feet of relief**
- **Water Depth = 2,037 feet (621 m)**
- **Copper-clad wooden sailing vessel**
- **Shape suggests early 19th Century or before**

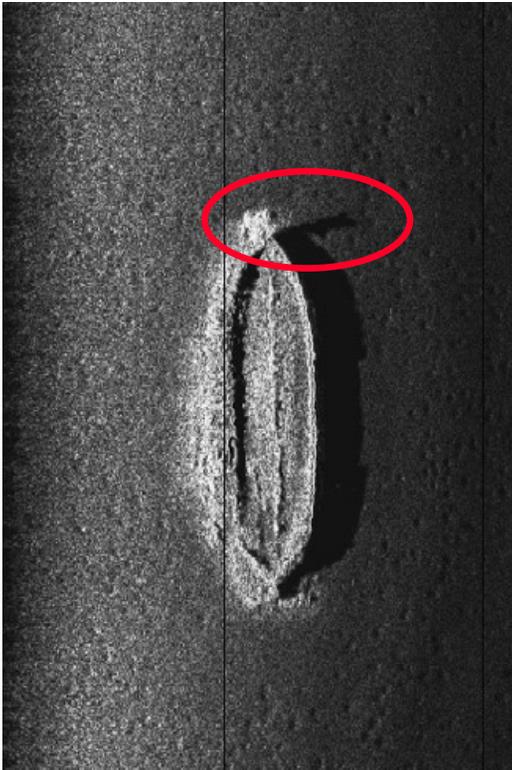


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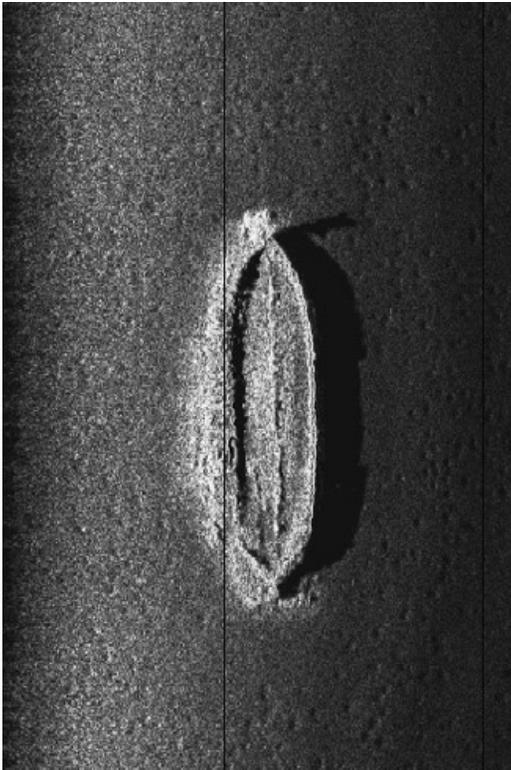
# 19th Century Wooden Sailing Vessels

## ROV Footage

7 hrs total dive time on site  
3 dives

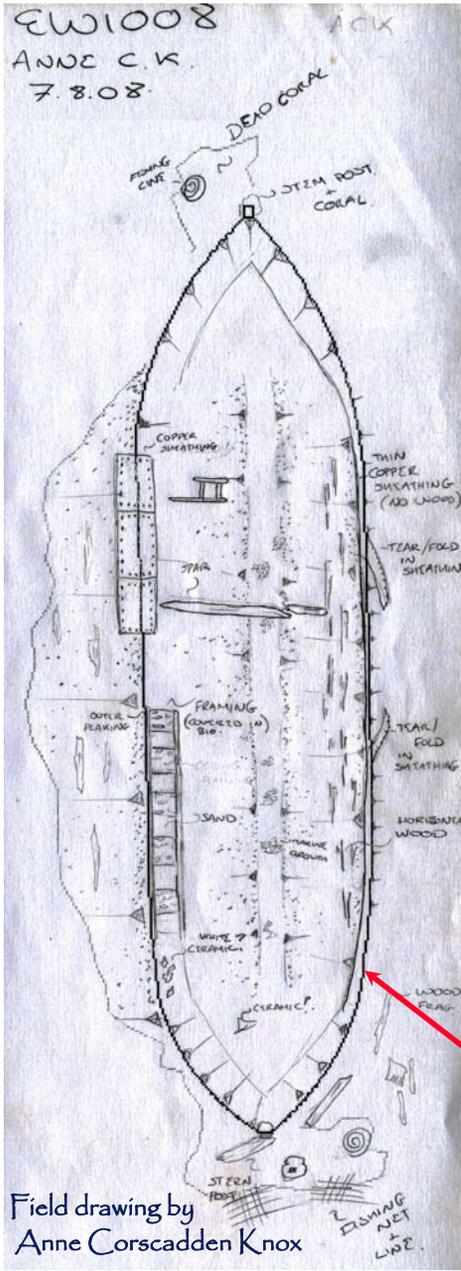
## ROV Footage

From the Falcon Sea Eye

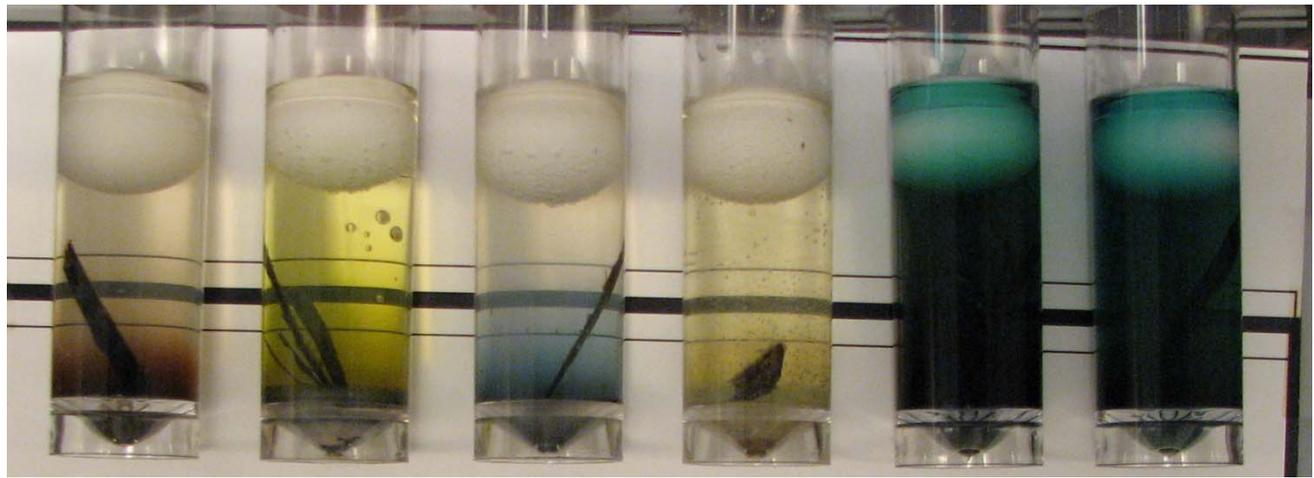


Video 2 to 3 x normal speed

# 19th Century Wooden Sailing Vessels



## BART TESTER



**SLYM    IRB    DN    SRB    HAB    HAB**

**SLYM (Slime forming bacteria) tester**

**IRB (iron bacteria) tester**

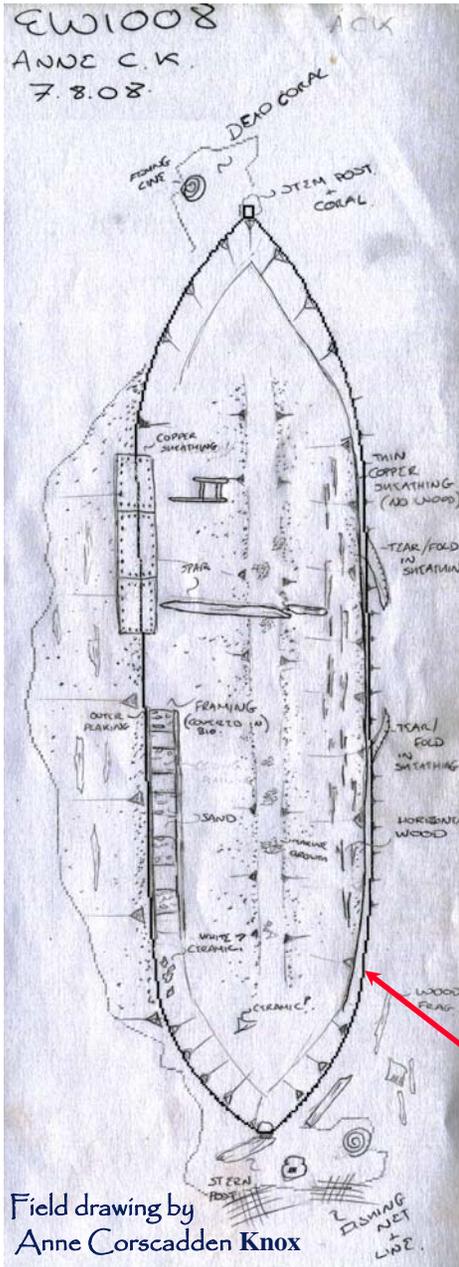
**DN (copper) tester**

**SRB (Sulphate) tester**

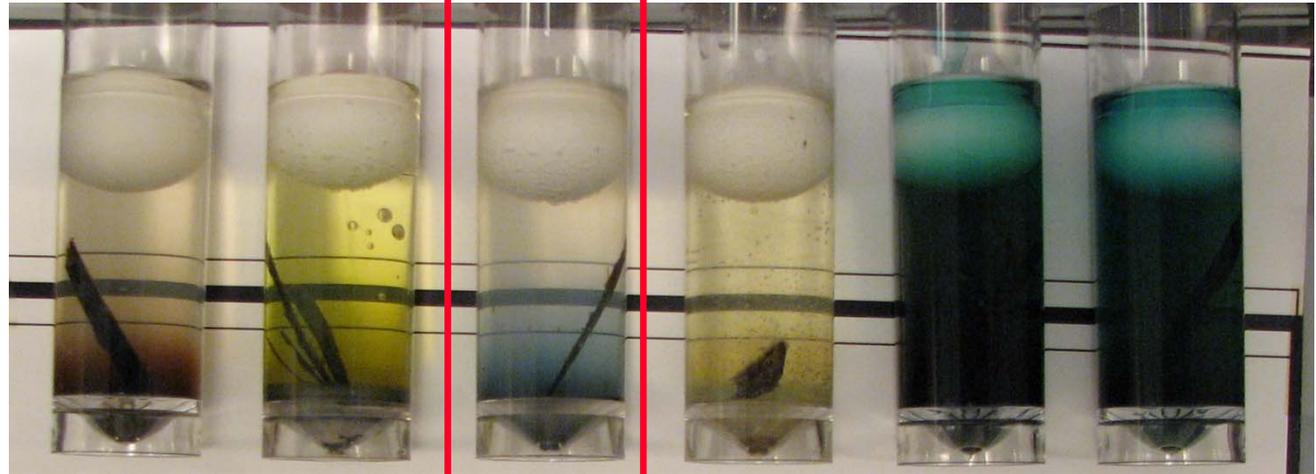
**HAB (Heterotrophic) tester**

**Wood sample**

# 19th Century Wooden Sailing Vessels



## BART TESTER



**SLYM**

**IRB**

**DN**

**SRB**

**HAB**

**HAB**

**SLYM (Slime forming bacteria) Tester**

**IRB (iron bacteria) tester**

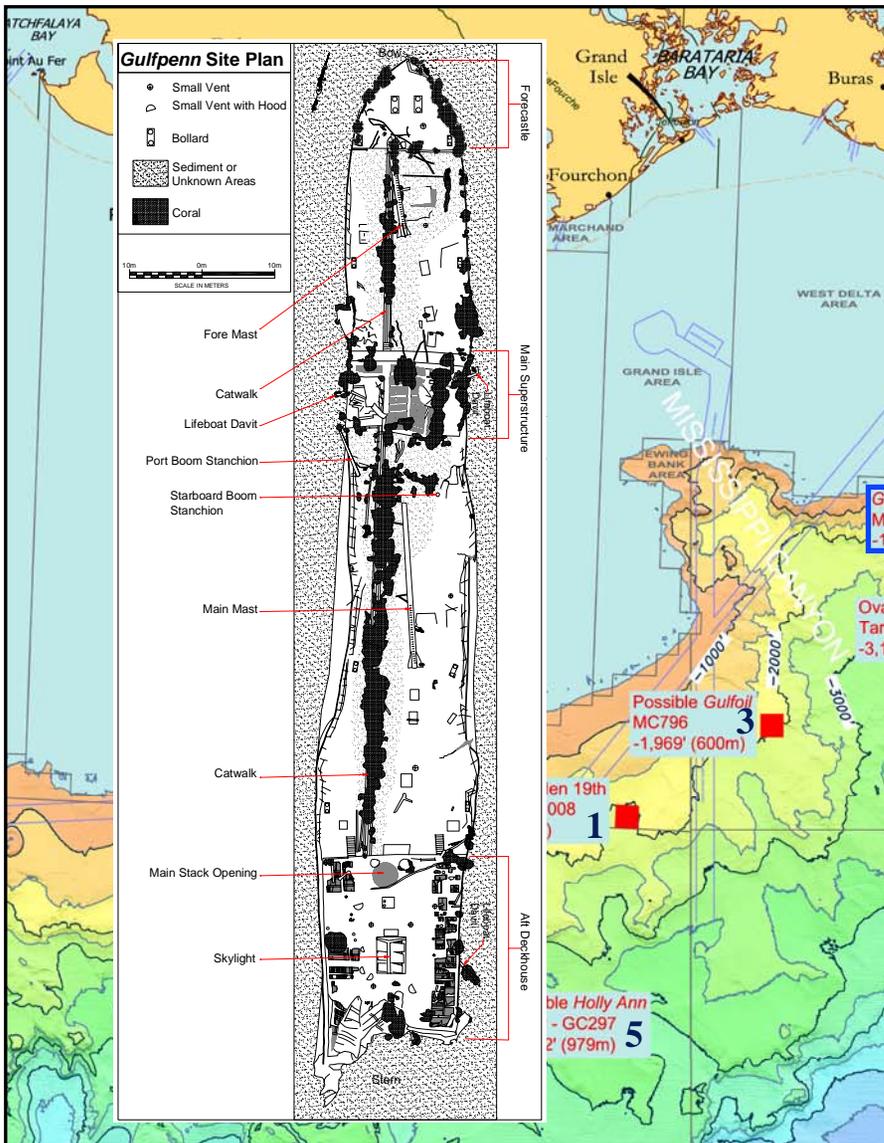
**DN (copper) tester**

**SRB (Sulphate) tester**

**HAB (Heterotrophic) tester**

**Wood  
sample**

# Gulfpenn



**Site 2**

**Gulfpenn**

**Transit = 5 hrs (50 nm)**

**Depth = 554 m**

**WW II tanker**

**Extensive Lophelia**

**Known site**

**1 dive planned**

19th

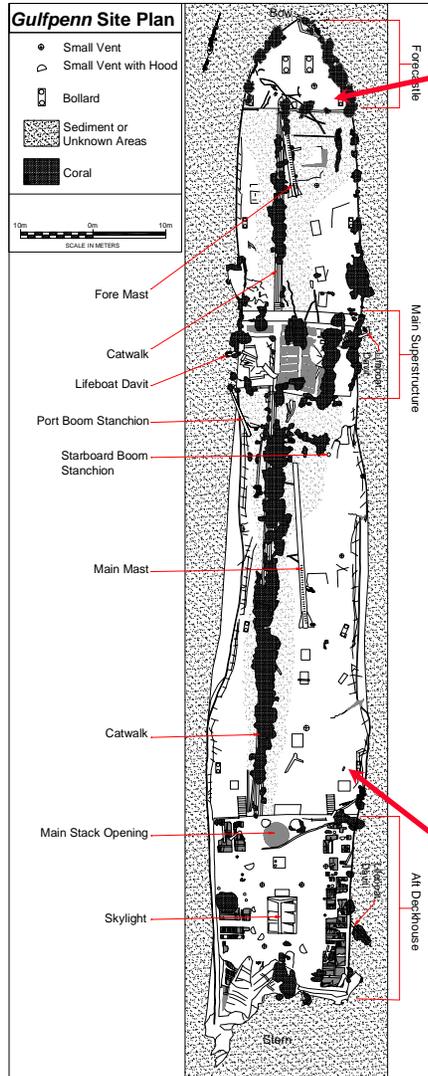


# Gulfpenn – WWII Tanker

Temperature  
Logger

ROV Footage

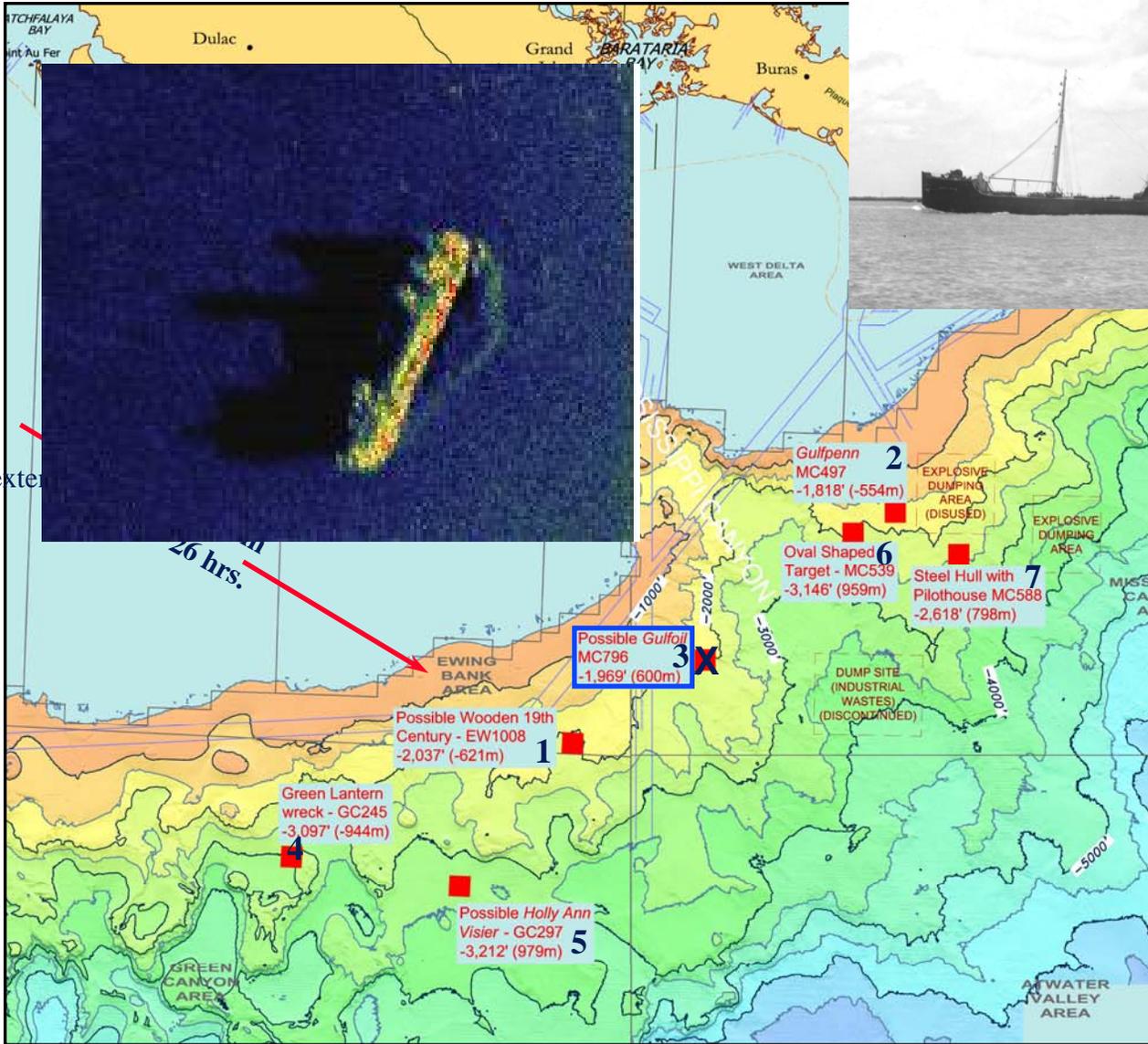
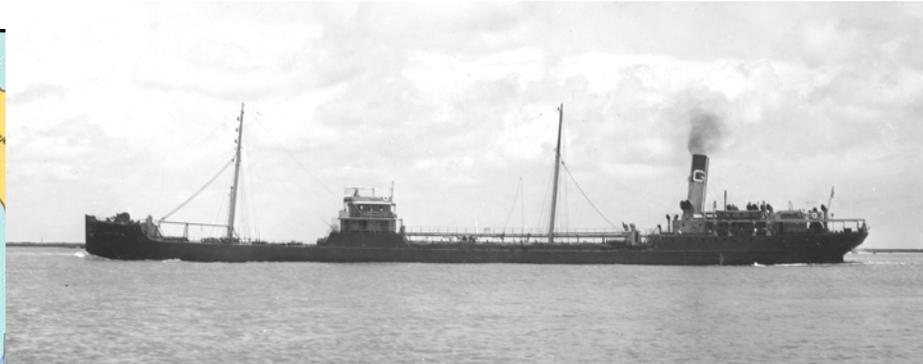
3 hrs 30 min. dive time on site



Microbe  
Experiment

Video 2 to 3 x normal speed

# Suspected *Gulfoil*

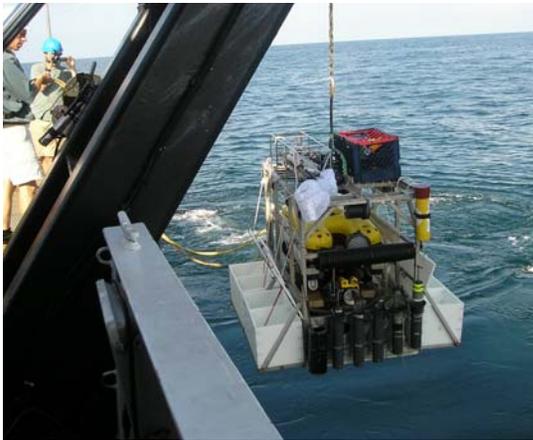
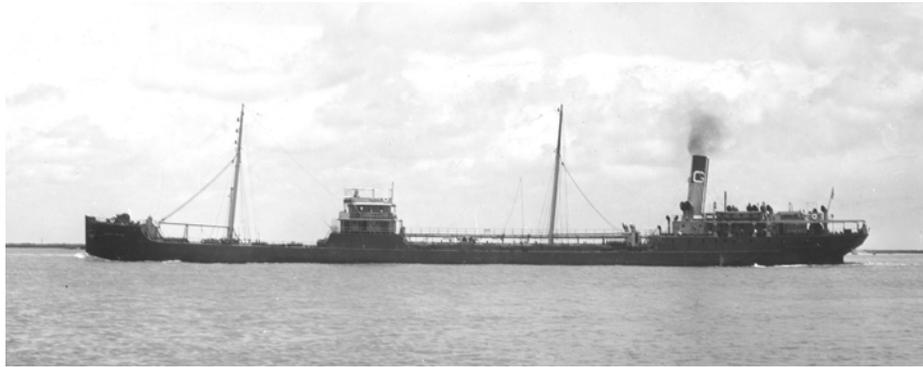


**Site 3**  
**Potential *Gulfoil***  
**Transit = 3 hrs (29 nm)**  
**Depth = 600 m**  
**WW II tanker**  
**Potential *Lophelia* site**  
**Exploration site**  
**1or 2 dives planned**

# *Gulfoil* – WWII Tanker

## ROV Footage

**2 hrs 20 min. dive time on site**  
**Approx. 25% investigated**  
**starboard side**



**Video 2 to 3 x normal speed**

# Cruise Objectives Summary

- 👍 1 Determine each site's significance for additional study.  
Four sites visited are historic and biologically significant.
- 👍👎 2 Target material for potential recovery later  
At the Ewing Banks Wreck
- 👍👎 3 Carefully image *Lophelia* – At the Ewing Banks Wreck  
👎 Estimate growth rates
- 👍👎 4 Site preservation. Long-term microbial experiments  
One re-examined but no new platforms placed
- 👎 5 Push-cores – only one collected
- 👎 6 Document the cnidarian coverage on new wrecks
- 👎 7 Collect preliminary video mosaic data at the sites
- 👎 8 Attempt to determine the extent of each site
- 👍👍 9 Multibeam biological sites for Leg 2

# Cruise Summary

- **13 days of field time**
- **13 hours of total bottom time on the wreck sites**
- **The ROV was in the water for a total of only 29.5 hours**
- **12 hour dives planned, but longest dive was 6 hrs. (4 hrs. on site)**



# Cruise Summary

- **Weather downtime – 5 days**
- **Equipment downtime – over 28 hours**
- **Extremely poor conditions on bottom**



# Cruise Accomplishments

- Confirmed that 2 of the unidentified wrecks are historic and both have *Lophelia* colonies (Ewing Banks Wreck & *Gulfoil*)
- Good recon investigation of the Ewing Banks Wreck
- Confirmed the identification of *Gulfoil*
- Confirmed the location of *Gulfpenn*'s stern section
- Re-examined the long-term microbe experiment at *Gulfpenn*
- Placed a temperature logger on the *Gulfpenn* site

# Future Field Work

- **Concentrate efforts historically and biologically significant sites**  
*Gulfoil, (Gulfpenn), Ewing Banks, Viosca Knoll, & Green Lantern*
- **Investigate unidentified sites**  
Steel hull & the 7,000-foot wreck
- **Material recovery at select sites**  
To be determined
- **Map the site boundaries at select sites**  
*Gulfoil*
- **Place microbial test platforms**  
(Deterioration rate & copper testers)

