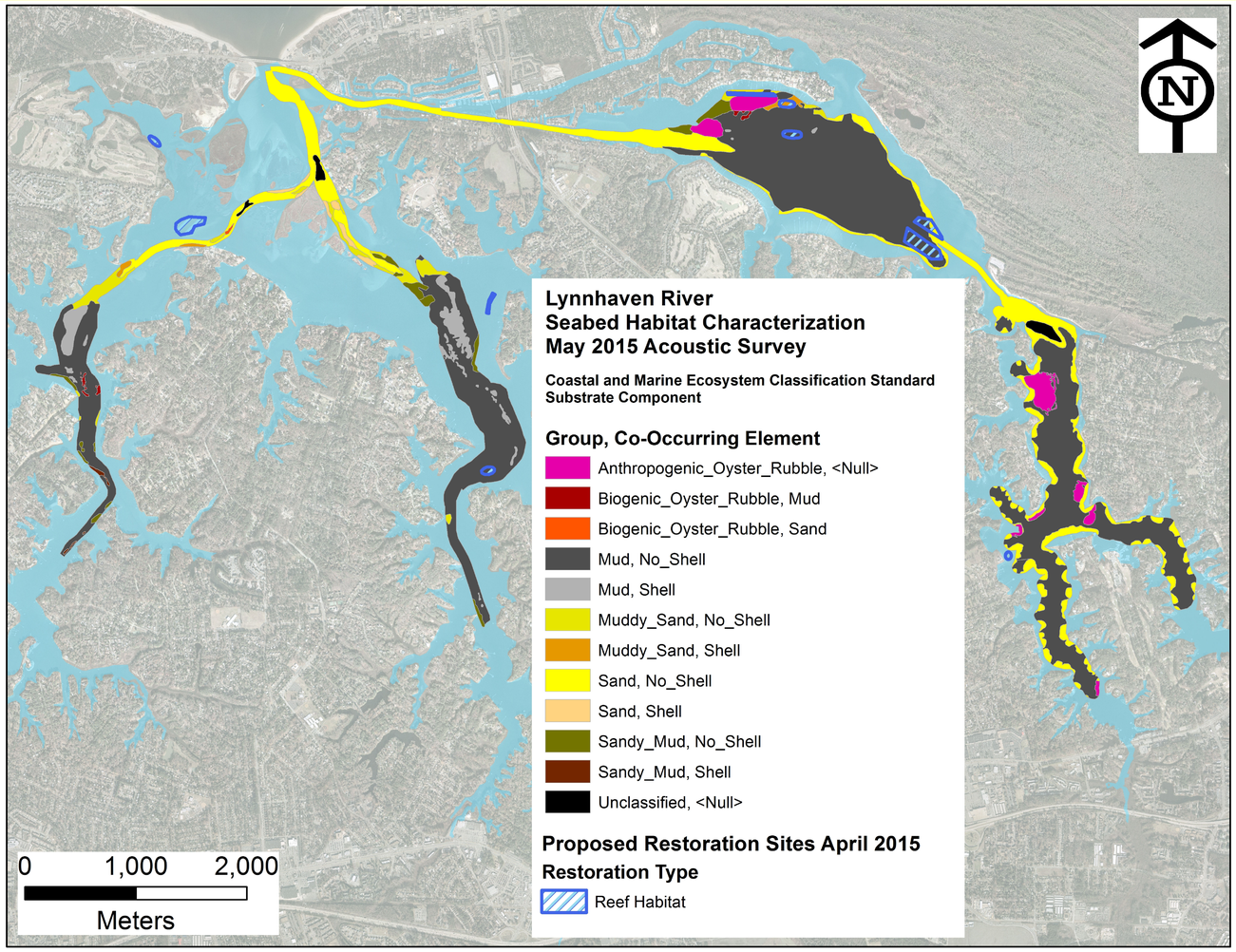
# Lynnhaven River
# Seabed Mapping and Habitat Characterization


Jay Lazar, Andrew McGowan, David Bruce
NOAA Chesapeake Bay office
May 2015


## Habitat Characterization

**Mosaiced sidescan sonar, singlebeam classification, and ground truthing data were aggreagated to create a map identifying the distribution of seabed materials and habitats.**

**Due to restrictive depths, we were able to map approximately 29.5 % of the river bottom. Mud, sand, sandy mud, and muddy sand (with no shell) comprised 92% of the area characterized.**

| Group | Co-Occurring Element | Number Habitat Polygons | Min. Acres | Max. Acres | Sum Acres | Percent Area |
|---|---|---|---|---|---|---|
| Anthropogenic_Oyster_Rubble | <Null> | 8 | 1.1 | 17.0 | 48.1 | 3.4 |
| Biogenic_Oyster_Rubble | Mud | 6 | 0.0 | 1.4 | 3.2 | 0.2 |
| Biogenic_Oyster_Rubble | Sand | 1 | 0.6 | 0.6 | 0.6 | 0.0 |
| Mud | No_Shell | 21 | 0.0 | 369.8 | 928.8 | 64.9 |
| Mud | Shell | 19 | 0.1 | 17.1 | 38.9 | 2.7 |
| Muddy_Sand | No_Shell | 21 | 0.0 | 13.1 | 42.7 | 3.0 |
| Muddy_Sand | Shell | 3 | 1.4 | 5.5 | 8.8 | 0.6 |
| Sand | No_Shell | 60 | 0.0 | 141.6 | 308.8 | 21.6 |
| Sand | Shell | 7 | 0.6 | 2.3 | 9.1 | 0.6 |
| Sandy_Mud | No_Shell | 14 | 0.3 | 6.8 | 28.2 | 2.0 |
| Sandy_Mud | Shell | 4 | 0.1 | 1.3 | 1.9 | 0.1 |
| Unclassified | <Null> | 3 | 1.4 | 7.1 | 12.0 | 0.8 |
| | | | | | Total Acres = | 1431.0 |

## Objectives

**We used several acoustic techniques to map areas of the Lynnhaven that were accessible with a 30 foot survey vessel.**

**The information collected will provide baseline spatial data to be used for oyster restoration planning**

## Methods

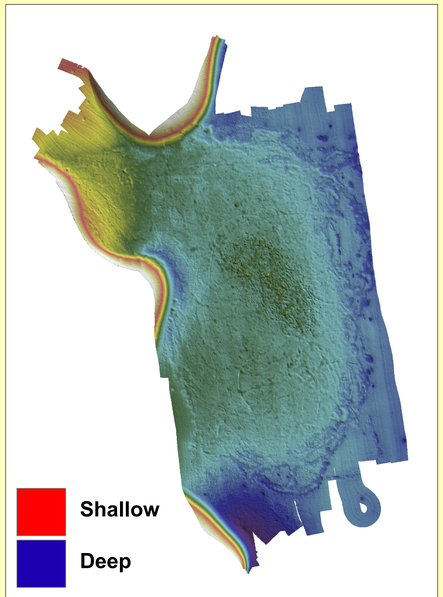
**SIDESCAN SONAR:**
**Provides full coverage imagery of hard (shell) and soft (mud) seabed features.**

**MULTIBEAM SONAR:**
**Creates a full coverage grid of seabed depth.**

**SINGLEBEAM CLASSIFICATION:**
**Identifies acoustically similar seabed based on hardness and roughness metrics from singlebeam echoes.**

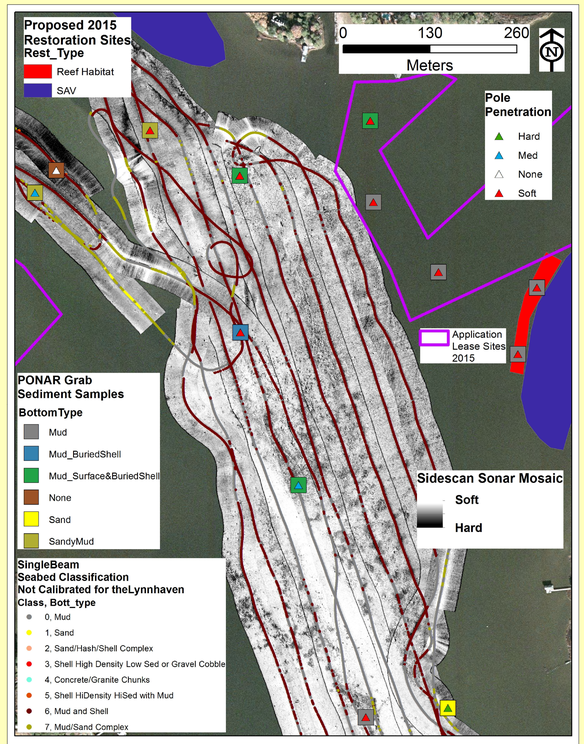
**SUB-BOTTOM PROFILING SONAR:**
**Identifies hard sub-surface sediments suitable for oyster reef construction.**

**GROUND TRUTHING:**
**Sediment grabs and sounding poles provide validation of sonar survey data**

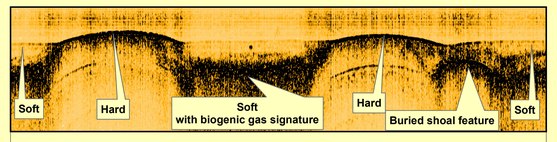



**Multibeam Sonar Imagery**
**Linkhorn Bay**
**Oyster Restoration Site**

**NOAA Survey Vessel**
**RV Potawaugh**




**Sidescan Sonar Mosaic and Other Survey Products in East Bay**




**Sub-Bottom Profile in Linkhorn Bay**
**Identification of hard sub-surface sediments suitable for oyster restoration**

**Ground Truthing**
**with Sediment Grab**