Developing an alternative management approach for subaqueous bottomlands on the seaside of the Eastern Shore

Presentation by Mark Luckenbach
to:
SAMP Project Team
and
Senate Joint Resolution Study Panel
Summer 2011

SJR 330

RESOLVED by the Senate, the House of Delegates concurring, That the Virginia Institute of Marine Science and the Virginia Marine Resources Commission be requested to jointly study ways the subaqueous bottomland on the seaside of Virginia's Eastern Shore might be better utilized.

The joint study shall examine how these bottomlands can be utilized to

(i) support the management and fishery of wild shellfish populations,
(ii) promote sustainable shellfish aquaculture,
(iii) enhance habitat restoration, and
(iv) protect natural resources.

VIMS and VMRC to lead a study panel with membership to include a commercial waterman, a shellfish aquaculturist, Seafood Council and The Nature Conservancy

This panel should:

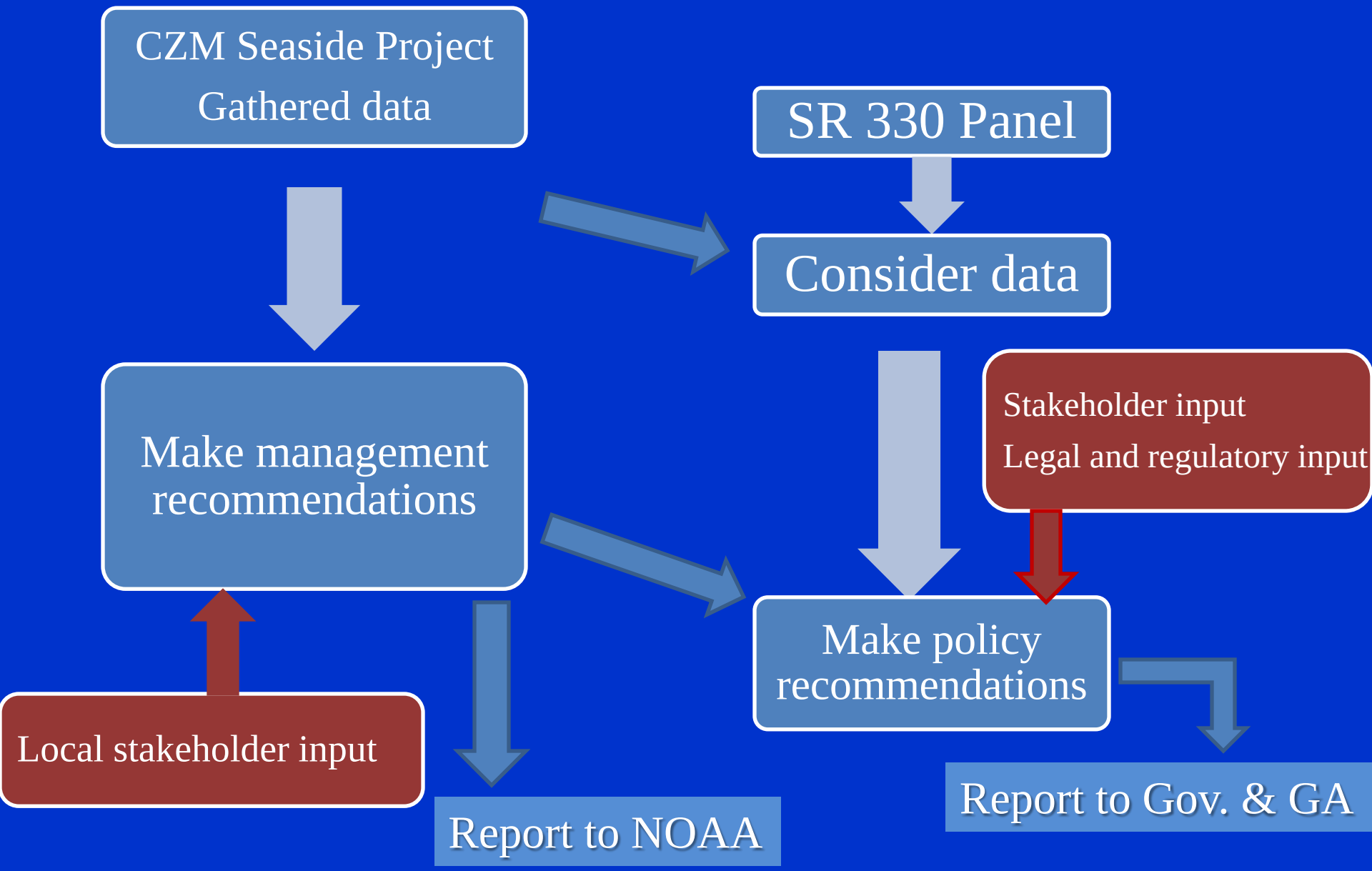
1) Consider data on use suitability and user conflicts with the current designations;

2) Identify preferred options for adjusting designation of public shellfish grounds;

3) Make recommendations for legislative and regulatory actions required to implement a more flexible and effective management approach toward managing subaqueous bottomland on the seaside of the Eastern Shore.

This panel's charge is to make policy recommendations related to a management approach, not to redraw maps.

Relationship between CZM study, stakeholder input and the Study Panel



Why is this needed?

1. The old survey is out of date.

The environment is dynamic - locations of islands, marshes, channel, flats and oyster beds change over relatively short time periods.

The old survey no longer accurately reflects where the natural shellfish beds are located.

Why is this needed?

2. Changing human use patterns.

Emergence of clam aquaculture in the last 30 years as one of regions most economically important industries.

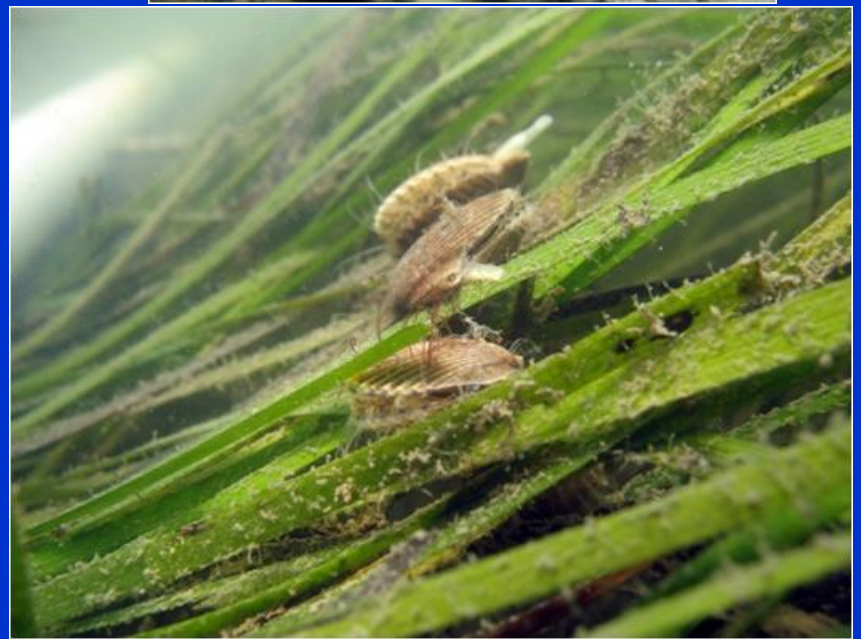
More recently the development of intensive oyster aquaculture.

Expanding recreational fishing and eco-tourism.

Why is this needed?

3. Large-scale restoration

Eelgrass, scallop and oyster reef restoration efforts all require the designation of some sanctuaries.



Background on public shellfish beds in Virginia

Article XI, Section 3 of the Virginia Constitution requires that the state maintain the natural shellfish beds in state-owned submerged bottoms for the benefit of the citizens of the Commonwealth.

In the 1890's the VA General Assembly commissioned Lt. Baylor from the U.S. Navy to survey the productive shellfish beds in the state.

Baylor's survey (Baylor 1894) has served to define public shellfish grounds for nearly 120 years and the term *Baylor Grounds* has come to be synonymous public shellfish beds.

Those areas of state-owned submerged bottom not included in the Baylor Grounds, or otherwise protected, are available for leasing by citizens of the Commonwealth for the "purpose of planting and propagating shellfish" (VA Code §28.2-603).

“Natural” shellfish beds

We have mapped the locations of oysters along the seaside, determined density and population size.

Overlaid this on maps with Baylor survey boundaries and private leases.

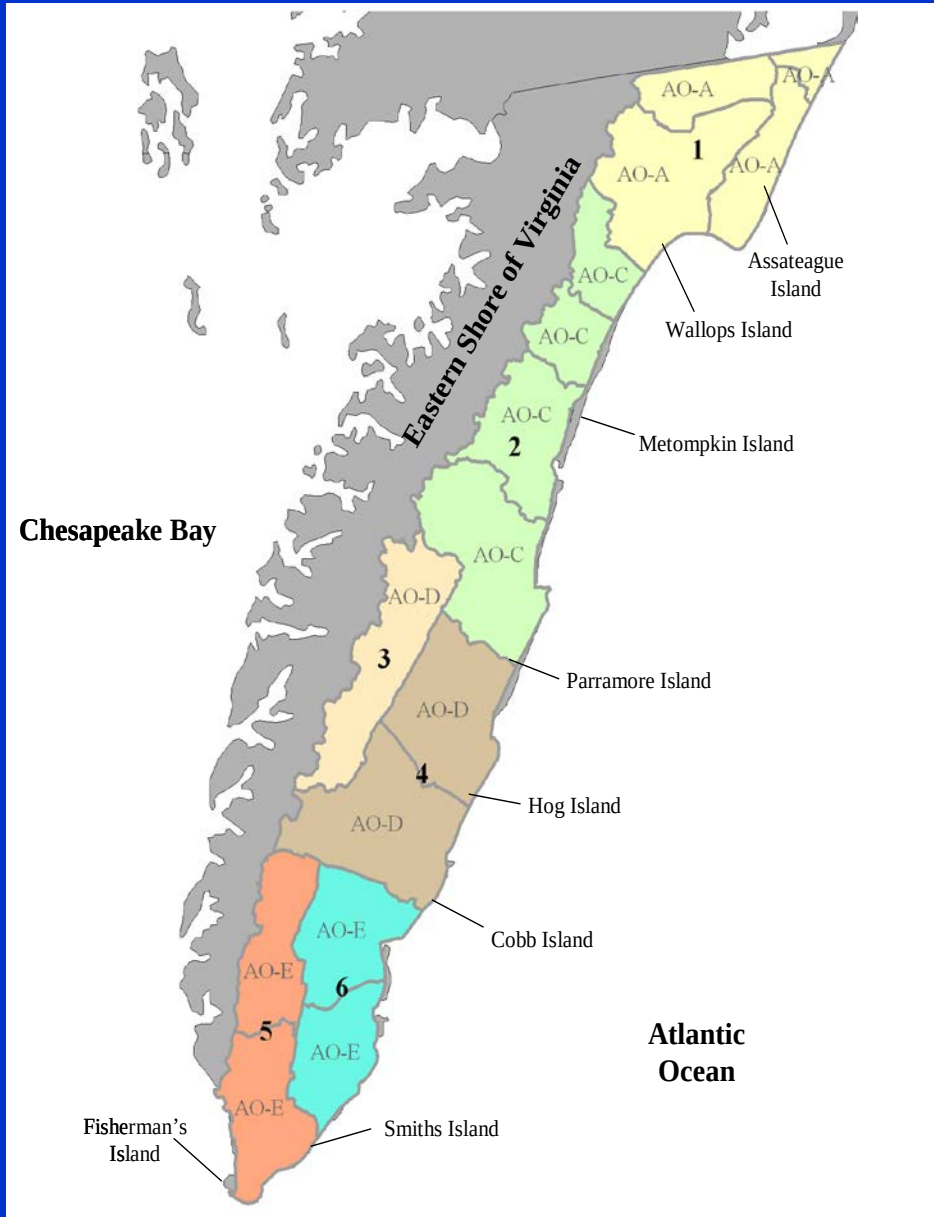
Using some of our data and input from other experts, we have developed some habitat suitability for shellfish and seagrasses.

“Natural” shellfish beds

Divided into 6 zones based on groupings from the National Watershed Boundary Dataset

National Wetlands Inventory was used as a starting point for habitat classification.

Digital 1-m resolution aerial images from the Virginia Base Mapping Program were used to redraw habitat boundaries and map the locations of oyster beds.



“Natural” shellfish beds

Polygons drawn using 2002 and 2007 1-m resolution aerial images from the Virginia Base Mapping Program.

Aerial surveys – 300 ft, 30 hrs

Groundtruthed our maps using sub-meter accuracy GPS

Quantitative surveys to determine oyster abundance and size on the reefs

Overlaid these data on maps that included the Baylor grounds and private leases

“Natural” shellfish beds

Entire region is 216,619 acres

132 individual Baylor grounds with a total area of 51,623 acres

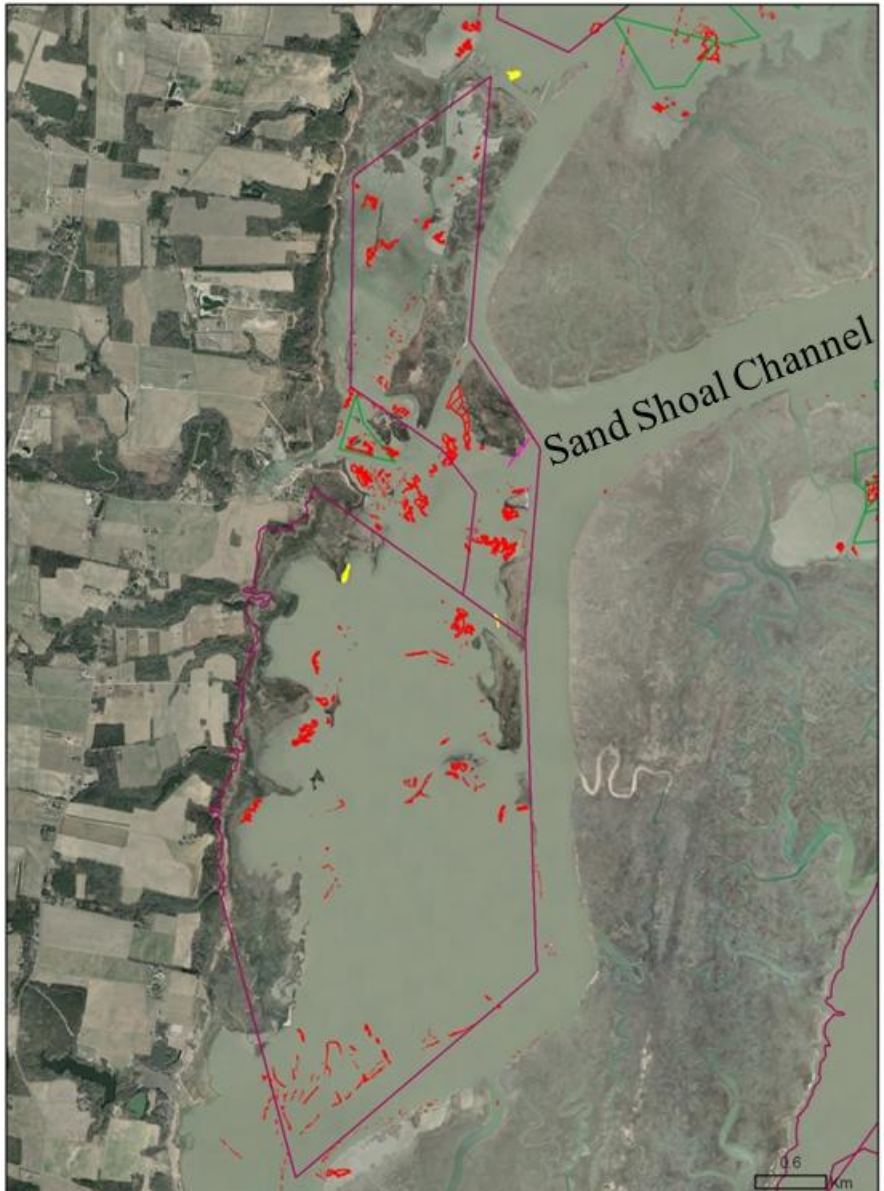
760 leases with a total area of 17,999 acres

3.2 billion oysters

Examples

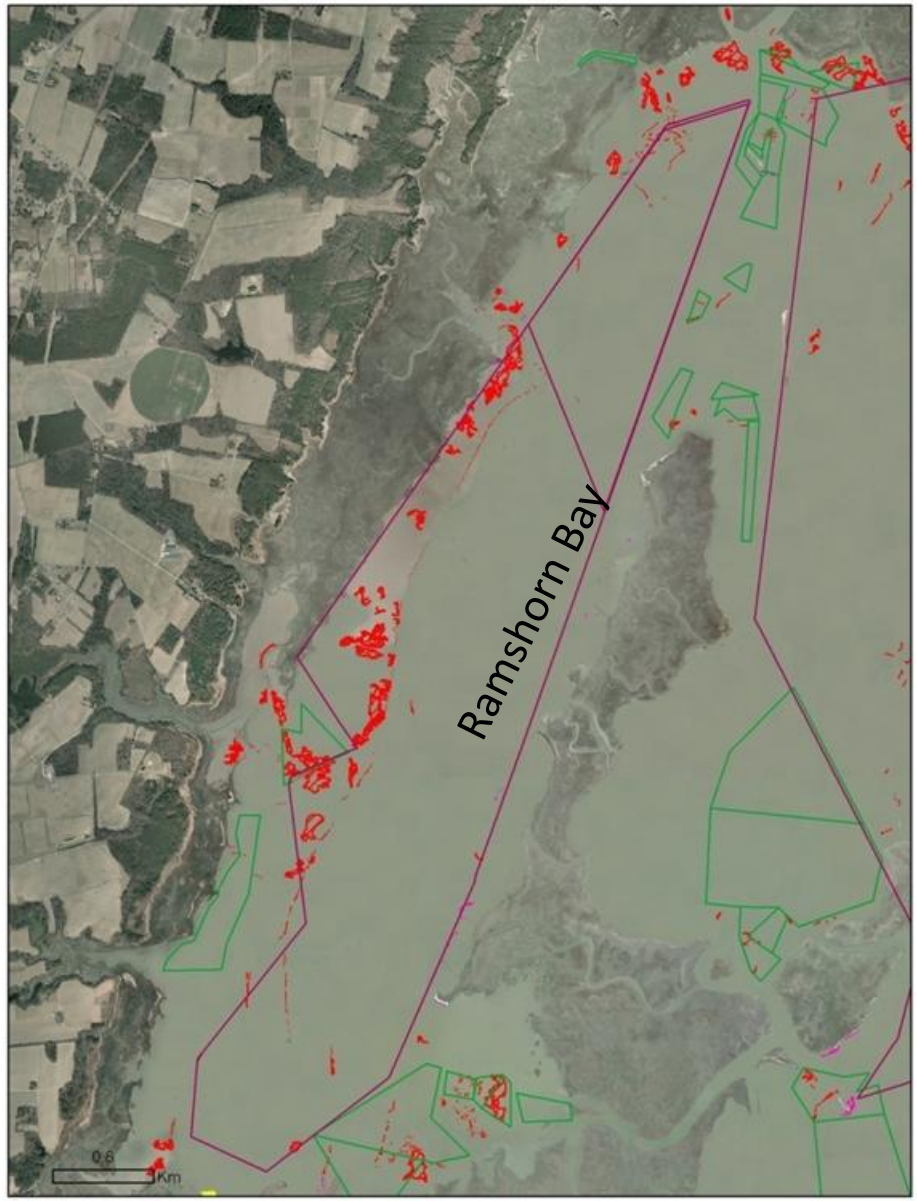
Hog Island Bay

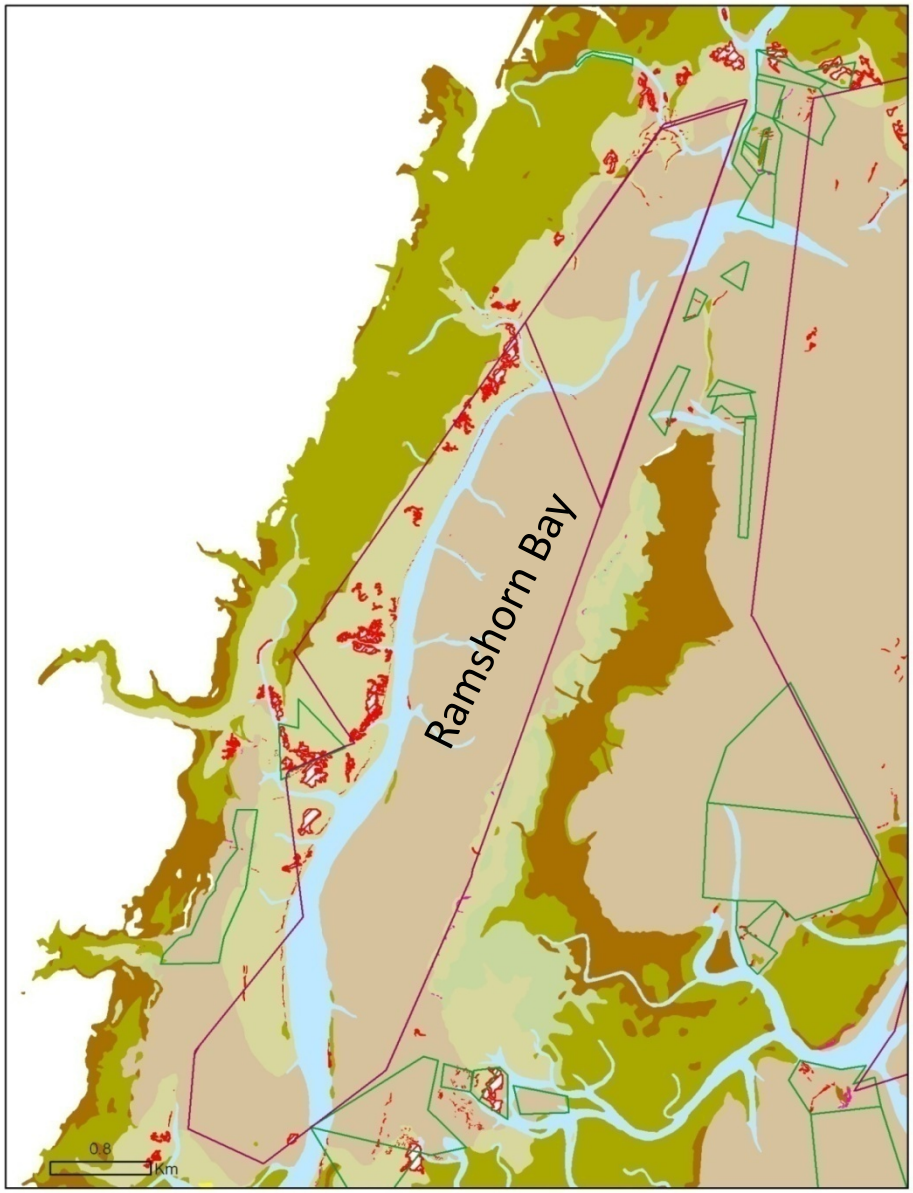
Sand Shoal Channel



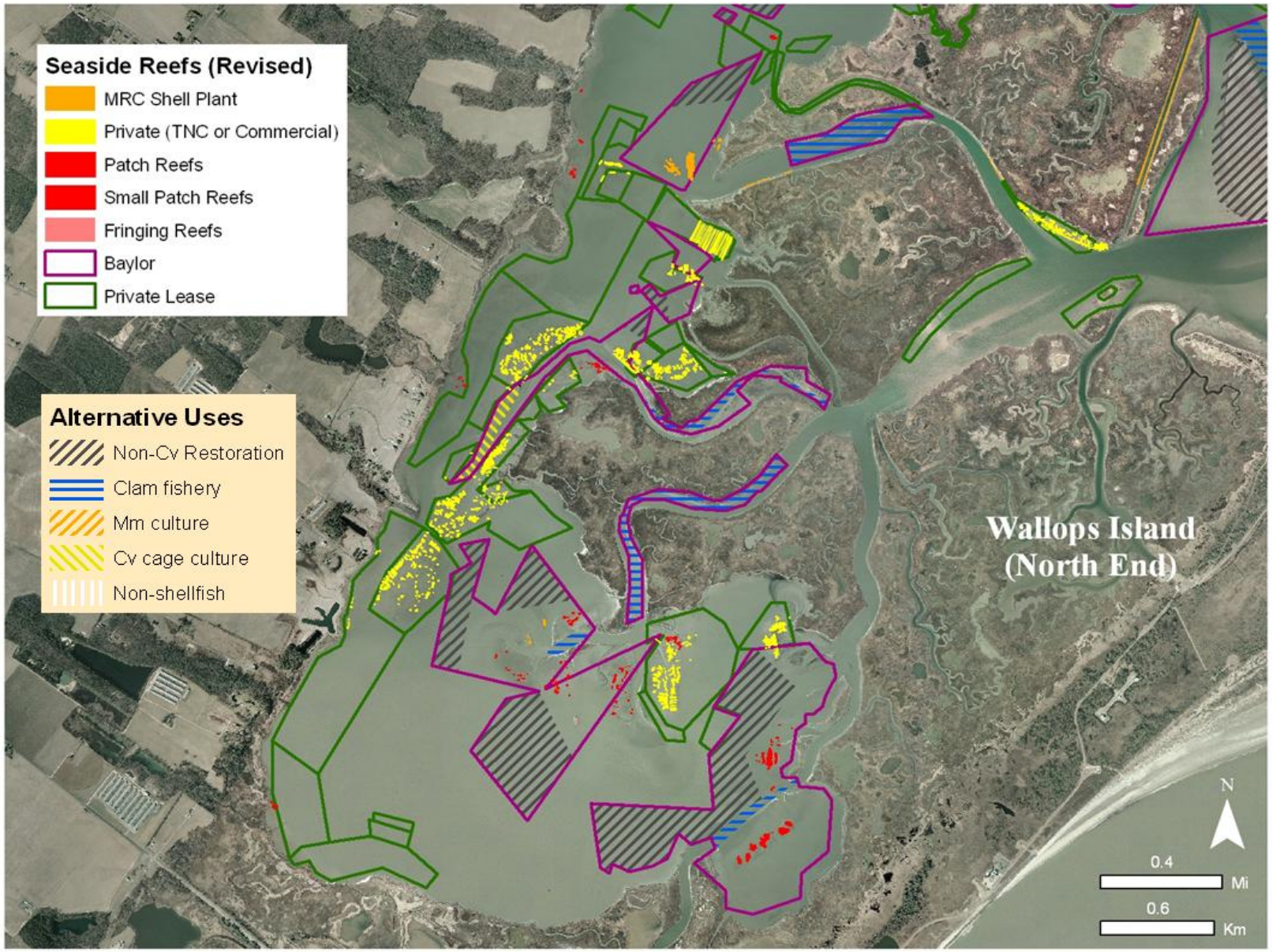
Examples

Ramshorn Bay

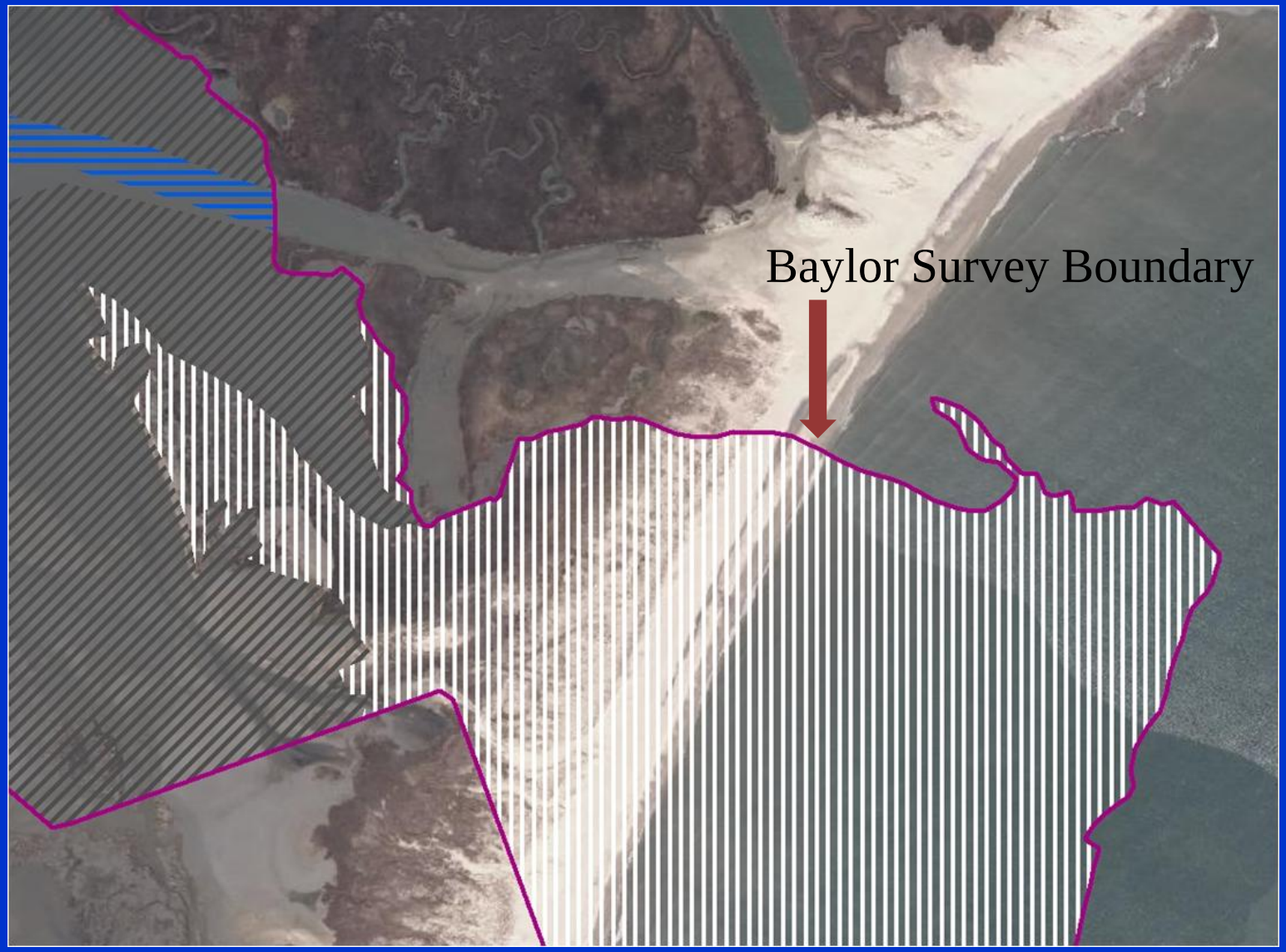




Habitat Suitability Analyses
North Wallops vicinity example



Habitat Suitability Analyses
South Metompkin Island example



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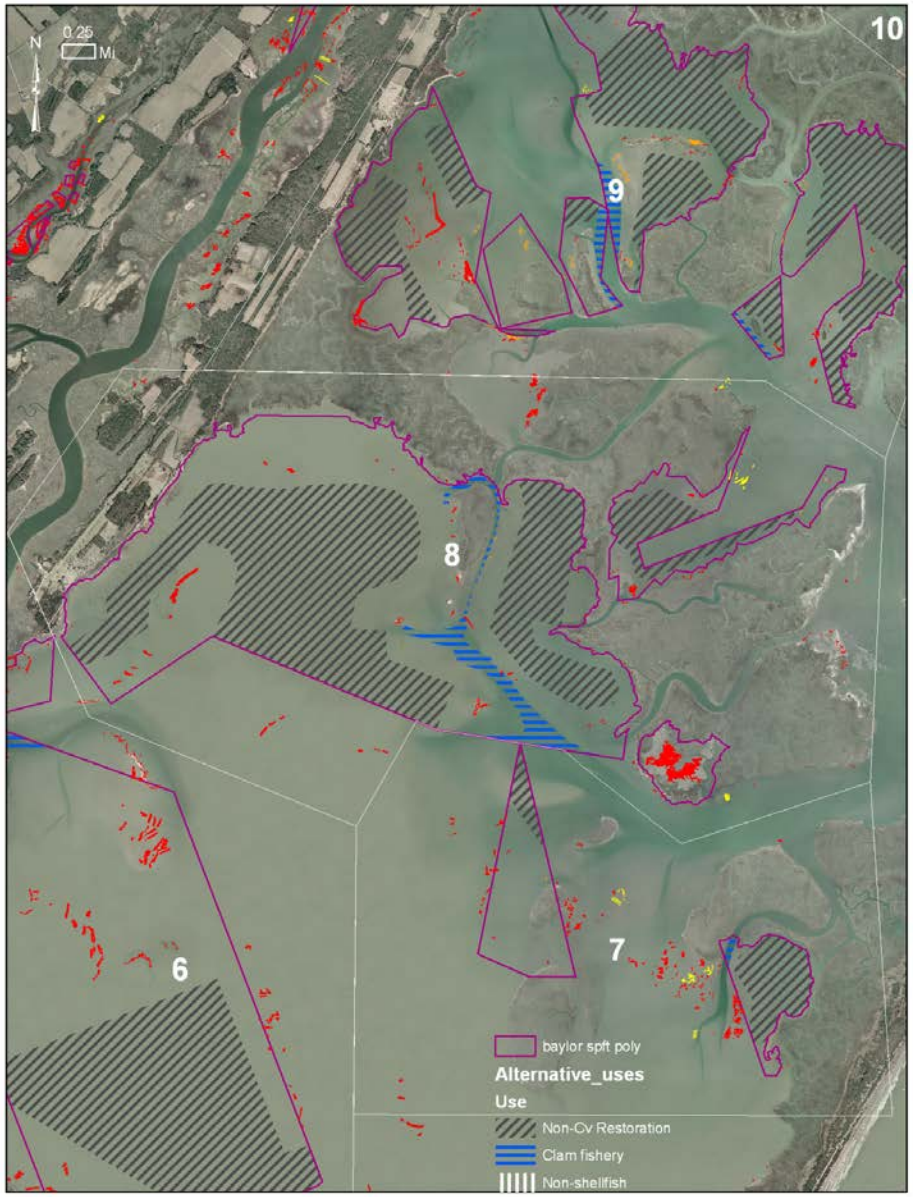
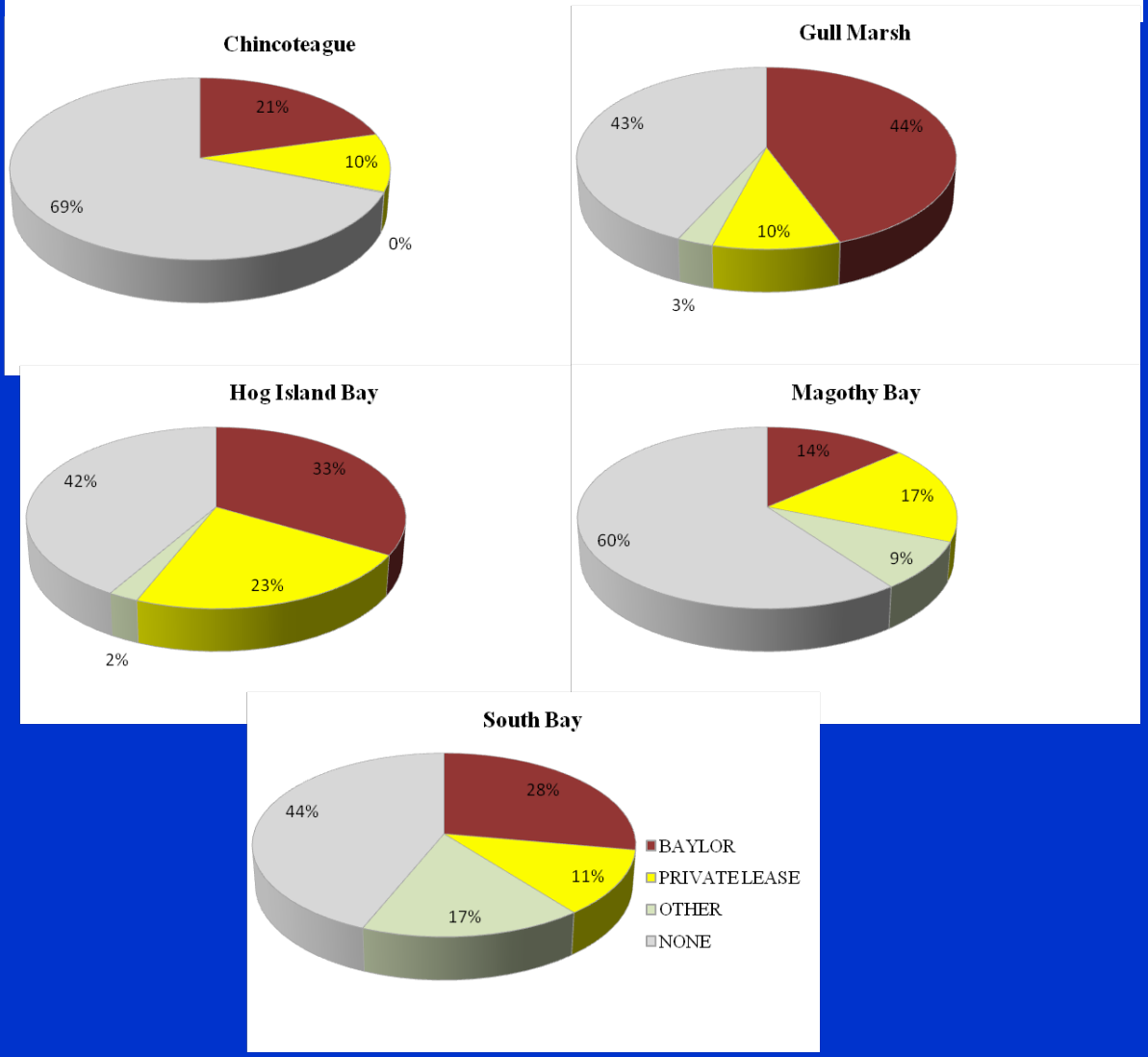
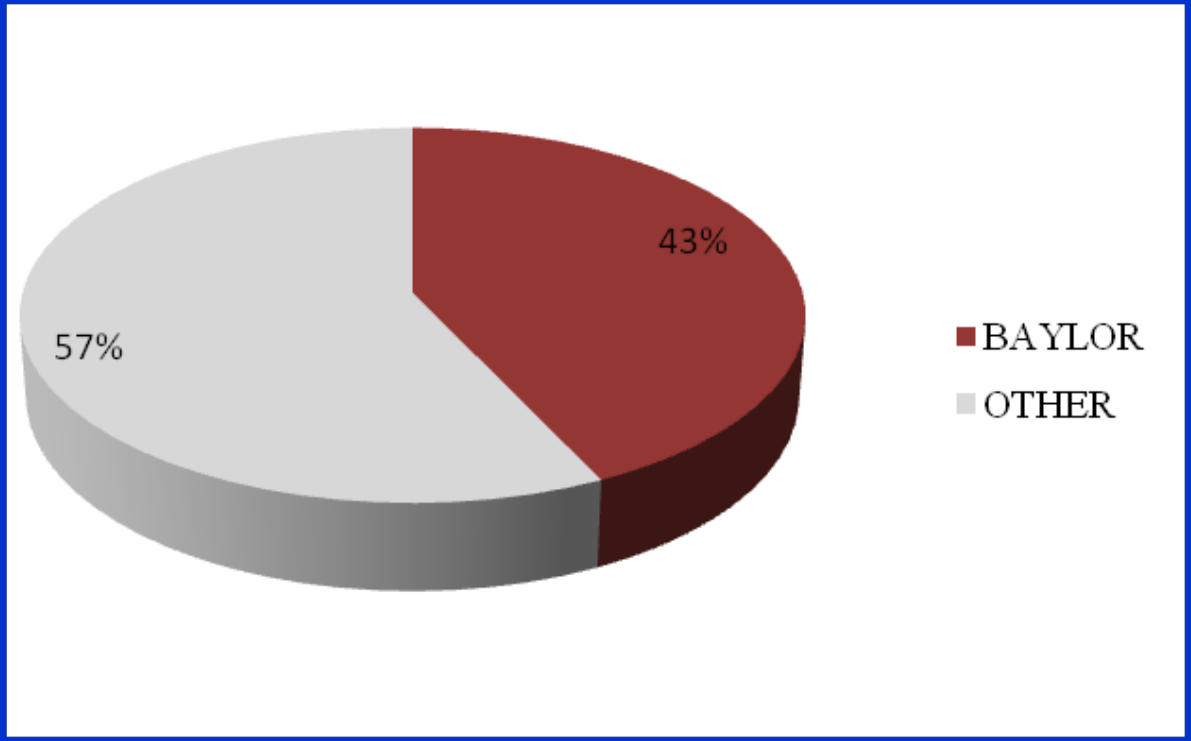
Habitat Suitability Analyses
Northern Hog Island Bay example



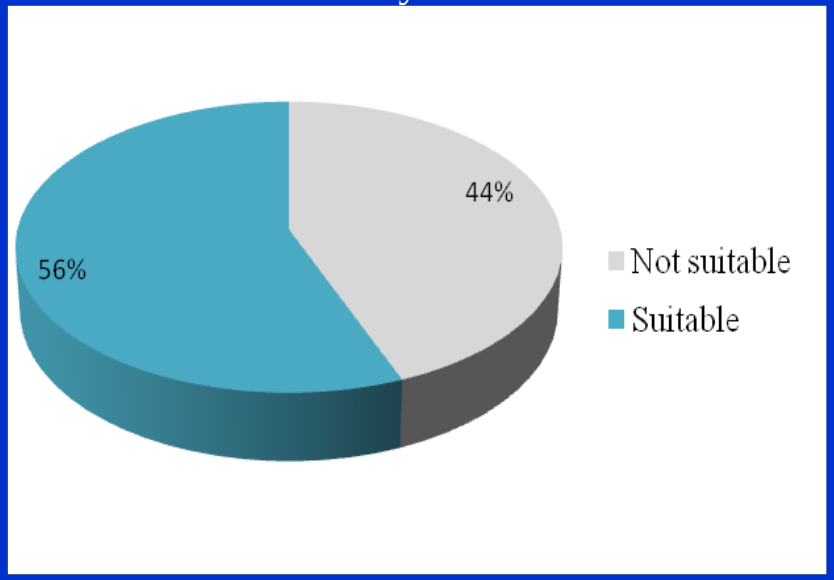
Relative abundance of various types classifications for each study area: Baylor Ground (red), Private Leases (yellow), Other (light green) and None (gray). "Other" denotes either areas of reefs or SAV outside of Baylor and Private Leases, while "None" refers to either "Unassigned Bottom" or emergent marsh/uplands.



Percentage of “natural” reefs area in Baylor Ground vs. Other bottom designations.



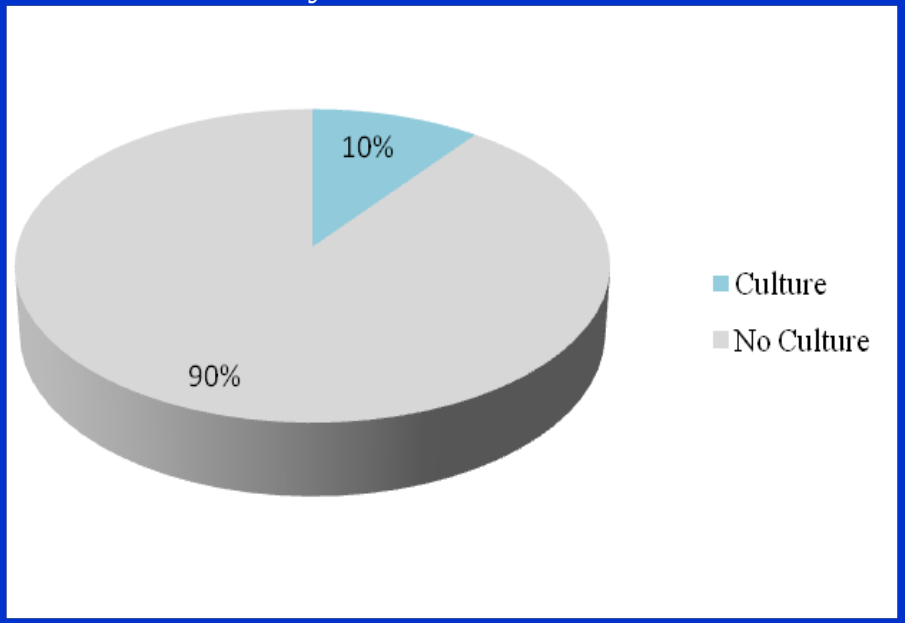
Percent of Baylor Ground with oysters or suitable for oyster restoration



The Bottom Line: The Baylor Survey still captures some of the natural oyster beds on the seaside (and places appropriate for restoring them), but not all of them.

The majority of the remaining area is not necessarily desirable for shellfish aquaculture.

Percent of Baylor Ground suitable for hard clam and oyster cultivation

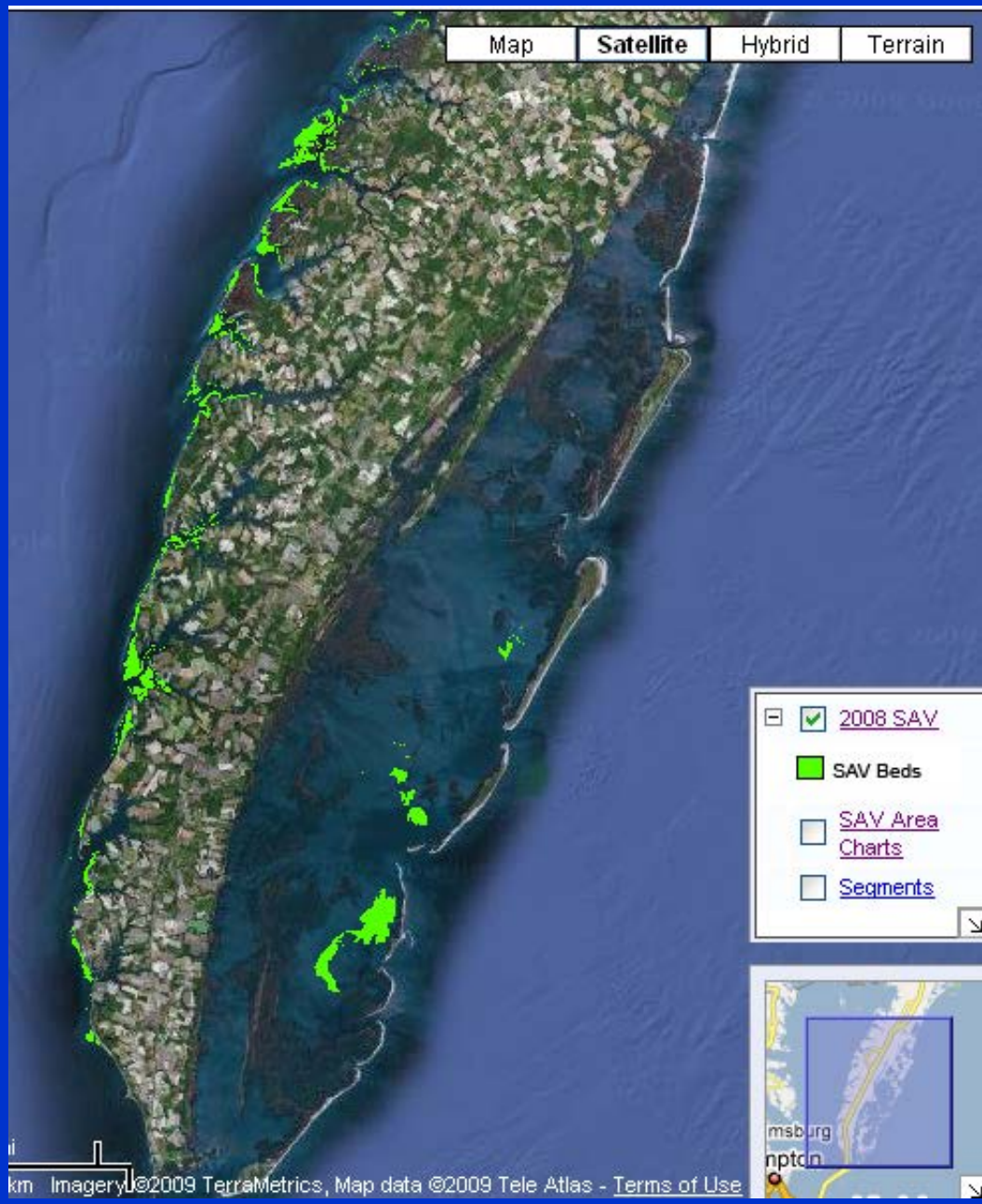


Seagrass Restoration

Prior to 1933 eelgrass beds provided habitat for bay scallops, which supported a robust fishery on the seaside.

Significant portions of Baylor's survey were almost certainly designating eelgrass beds.

Restoration efforts over the past 12 years have been very successful.

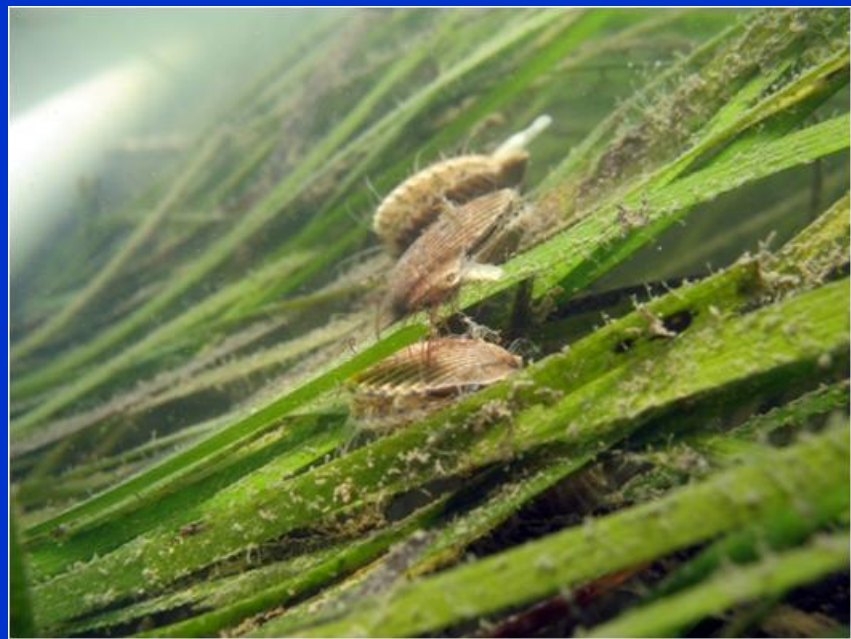


Scallop Restoration

Over the past three years we have been working to restore bay scallops to these seagrass beds.

Early results are promising, but it will likely be several years before we can establish a self-sustaining population.

In the meantime, there is the need to designate sanctuaries as this population becomes established.



Other natural resources

Our charge also includes that we consider the protection of other natural resources in our recommendations.

Our charge: To make recommendations for a more flexible and effective management approach.

Model 1: Redo a comprehensive survey to redefine the boundaries of natural shellfish beds. Recommend repeating the survey at intervals more frequent than 120 years.

Model 2: Recommend percentages of the area within a region to be designated for particular uses. For instance, the % public ground would stay the same, but could be moved by VMRC.

Model 3: Empower the VMRC (perhaps with some local advisory committee input) to refine the boundaries of natural shellfish beds on a case by case basis through an approach that requires public notice and public hearings. Re-affirm the constitutional requirement to maintain the natural beds for the public good.