



# **Sustaining our Saltmarshes Strategically:**

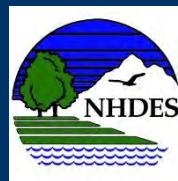
Case studies in applying the NH Salt Marsh Plan

**2022 NH Climate Summit  
September 29**



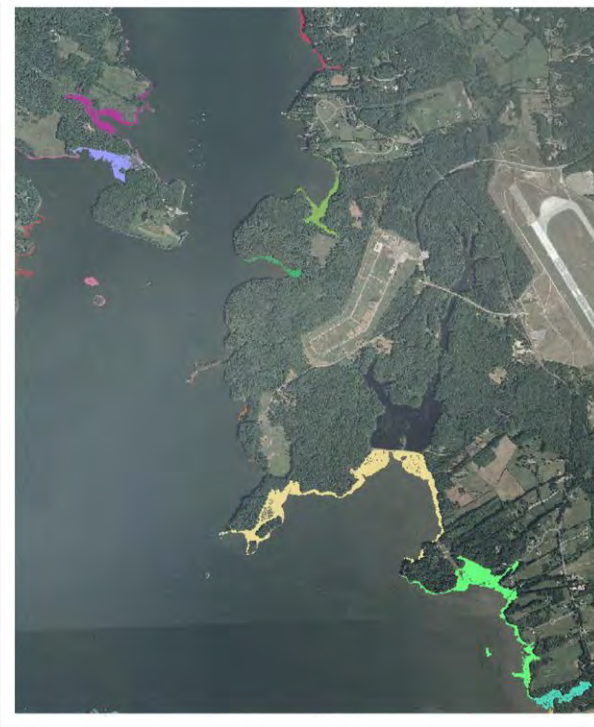
# Wait...what is the NH Saltmarsh Plan again? A geospatial planning tool.

- Land protection
- Management
- Research
- Policy





# Tool is based on Marsh Units



224  
statewide

A framework to  
systematically assess  
and compare marshes



OFFICE FOR COASTAL MANAGEMENT  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



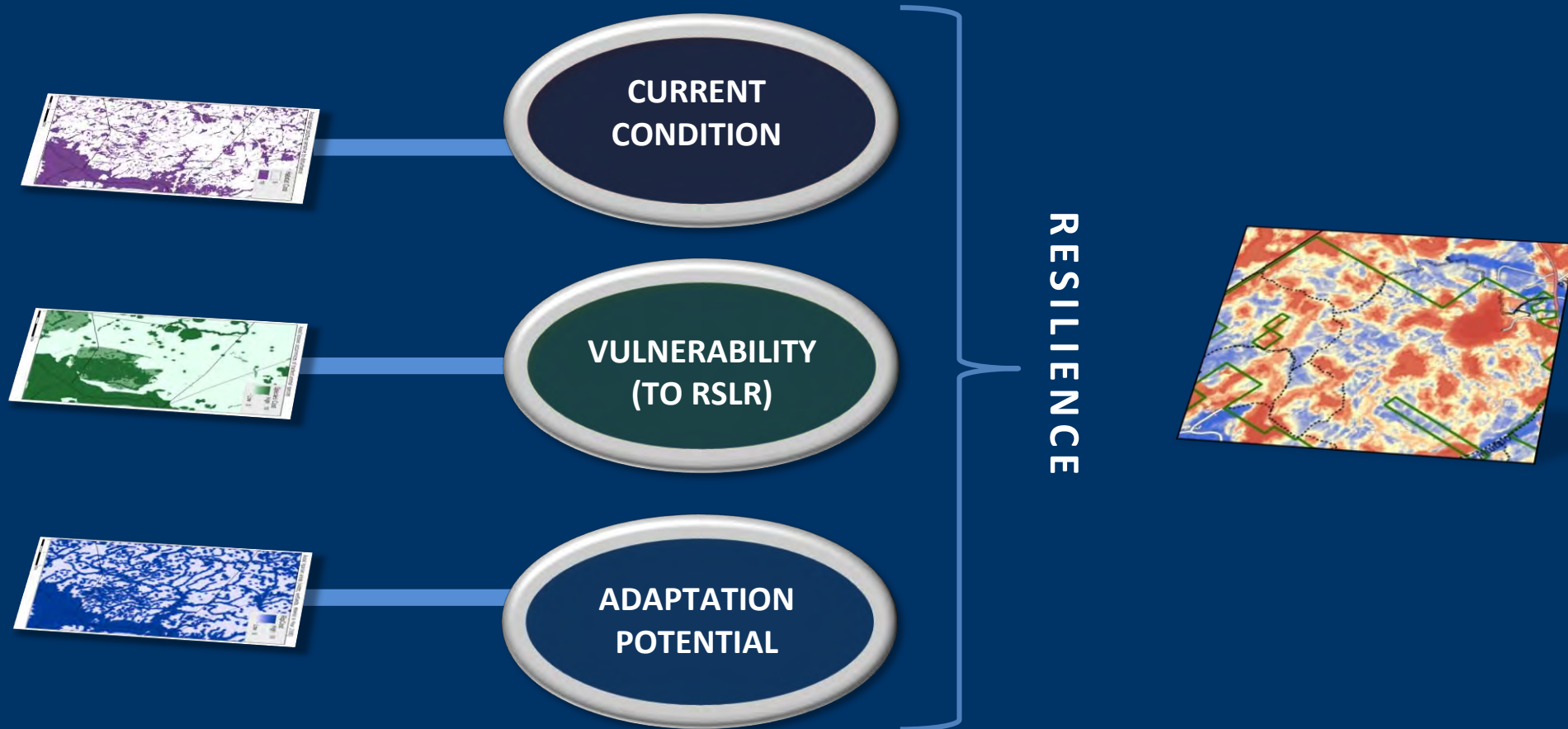
GREAT BAY  
NATIONAL  
ESTUARINE  
RESEARCH  
RESERVE



New Hampshire  
Coastal Program

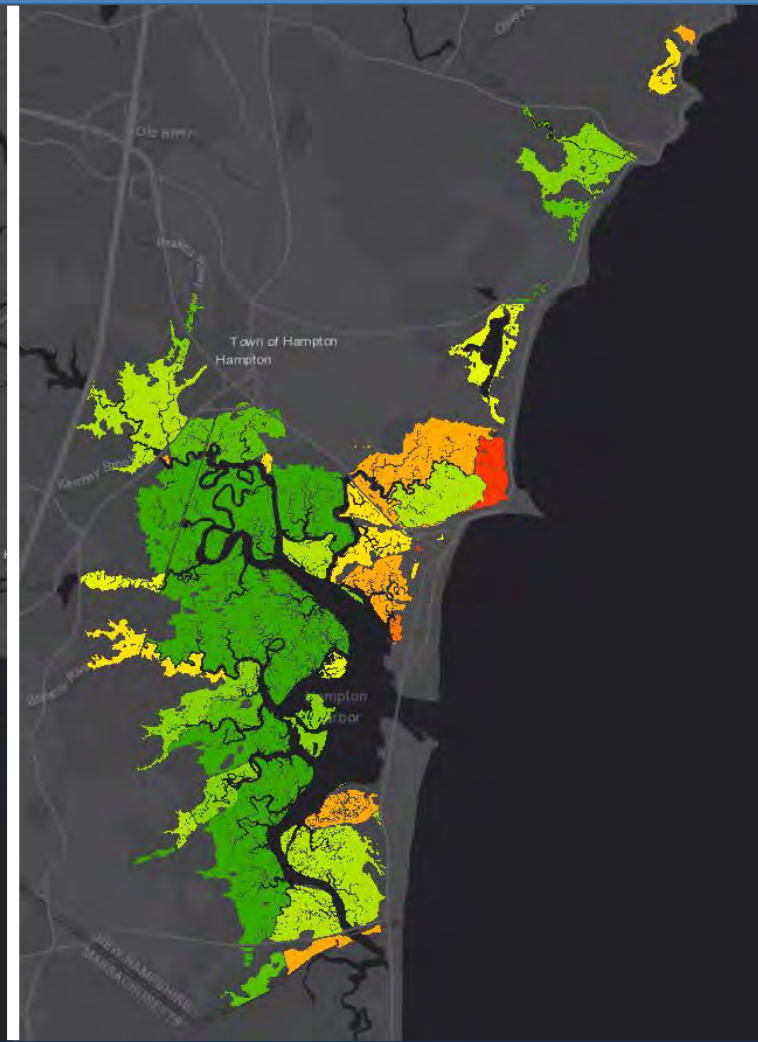
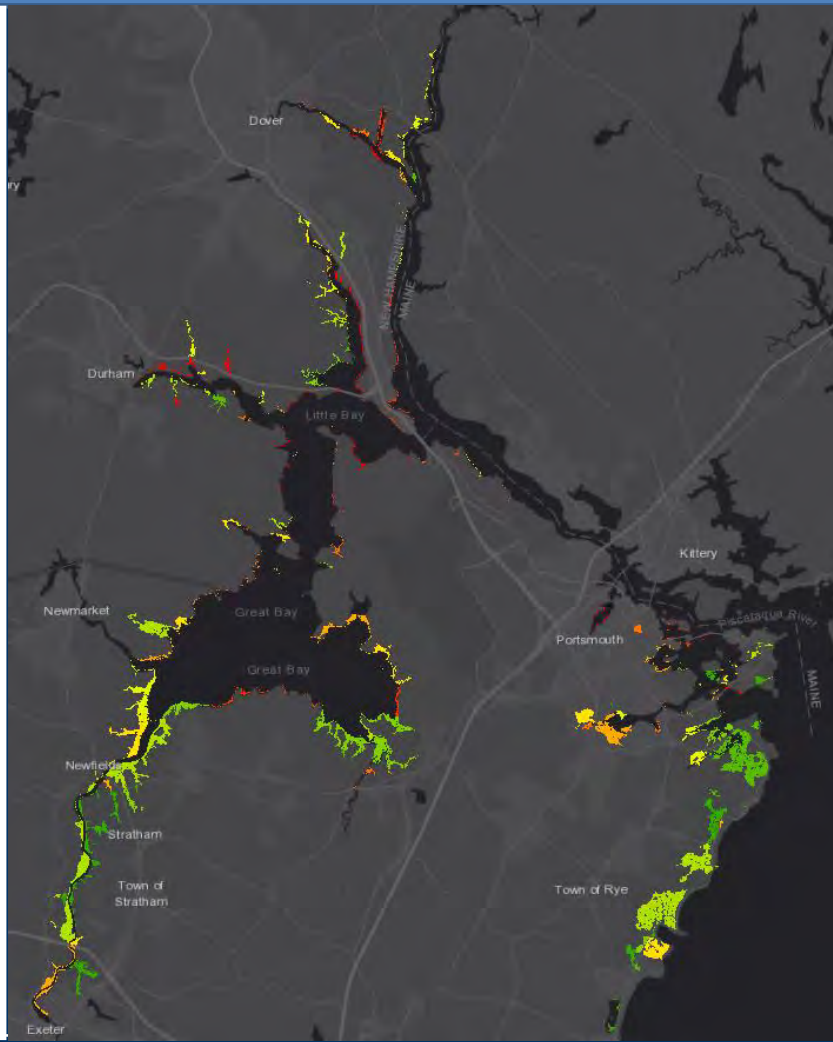
The Nature  
Conservancy 

# Marsh Units are given Resilience Score





# Statewide Marsh Resilience



# You can use and interpret data in many ways



**OVERALL RESILIENCY**



**RESILIENCY CATEGORY**



- Current condition
- Vulnerability
- Adaptation potential

CURRENT  
CONDITION

VULNERABILITY  
(TO RSLR)

ADAPTATION  
POTENTIAL



**SINGLE OR SUBSET OF METRICS**

E.g. Migration space or vegetated to unvegetated ratio

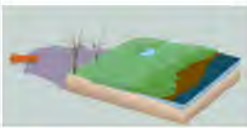
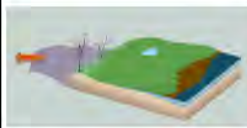

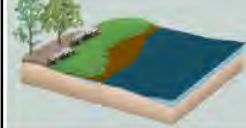
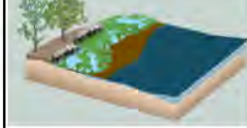
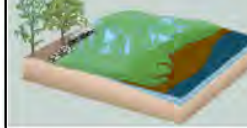
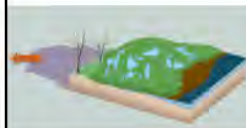

# Marsh Resiliency Categories

Current condition, **high is positive**

Vulnerability to sea level rise, **high is negative**

Adaptation potential, **high is positive**

CURRENT CONDITION  
VULNERABILITY  
ADAPTATION POTENTIAL

High	High	High	High	Low	Low	Low	Low
Low	High	Low	High	High	Low	High	Low
High	High	Low	Low	Low	Low	High	High
Good condition marsh that is likely to migrate inland naturally for the long-term. It's in good shape, don't mess with it!	Marsh is in good shape for now but try to make less vulnerable (e.g., living shoreline or thin layer placement) so it has a chance to adapt in the future.	Its in good shape for now. Focus on upland modifications that enhance adaptation potential.	Cannot maintain current footprint without active management. Address upland options <i>only if</i> vulnerability is mitigated first. Exception is if essential function is present so protect all current high marsh.	Low condition marsh that is unlikely to persist in the future. Makes this a good place to test experimental restoration approaches.	There is a need to restore current conditions <i>but prioritize only if</i> barriers to adaption in upland are mitigated.	Focus established restoration techniques that improve current condition <b>and</b> decrease vulnerability to RSLR here. Need to address both aspects to make a project sustainable.	Prioritize established restoration projects here. This marsh is likely to self-sustain in the long term so projects will be cost effective.
							



## Assess Management Options for each type

### Best Management Options for Enhancing Tidal Marsh Resiliency

The table summarizes recommended management options to enhance tidal marsh resiliency based on the current condition of each marsh and its predicted adaptive capacity to relative sea level rise. Management options are considered from an ecological, rather than relative sea level rise. Management options are considered from an ecological, rather than socioeconomic, perspective. For example, "managed relocation" refers to marsh relocation, rather than relocation of residents.

[illegible]

## LAND USE / POLICY

## RESTORATION / ADAPTATION



## Best Management Options for Each Marsh Unit

### Best Management Options for Enhancing Tidal Marsh Resiliency

The table summarizes recommended management options to enhance tidal marsh resiliency based on the current condition of each marsh and its predicted adaptive capacity to relative sea level rise. Management options are considered from an ecological, rather than a socioeconomic, perspective. For example, "managed relocation" will be discussed in terms of how to move marshes, rather than how to compensate for lost marsh.

[illegible]

# LAND USE / POLICY

## RESTORATION / ADAPTATION

# Inform decisions based on the type of marsh you have....

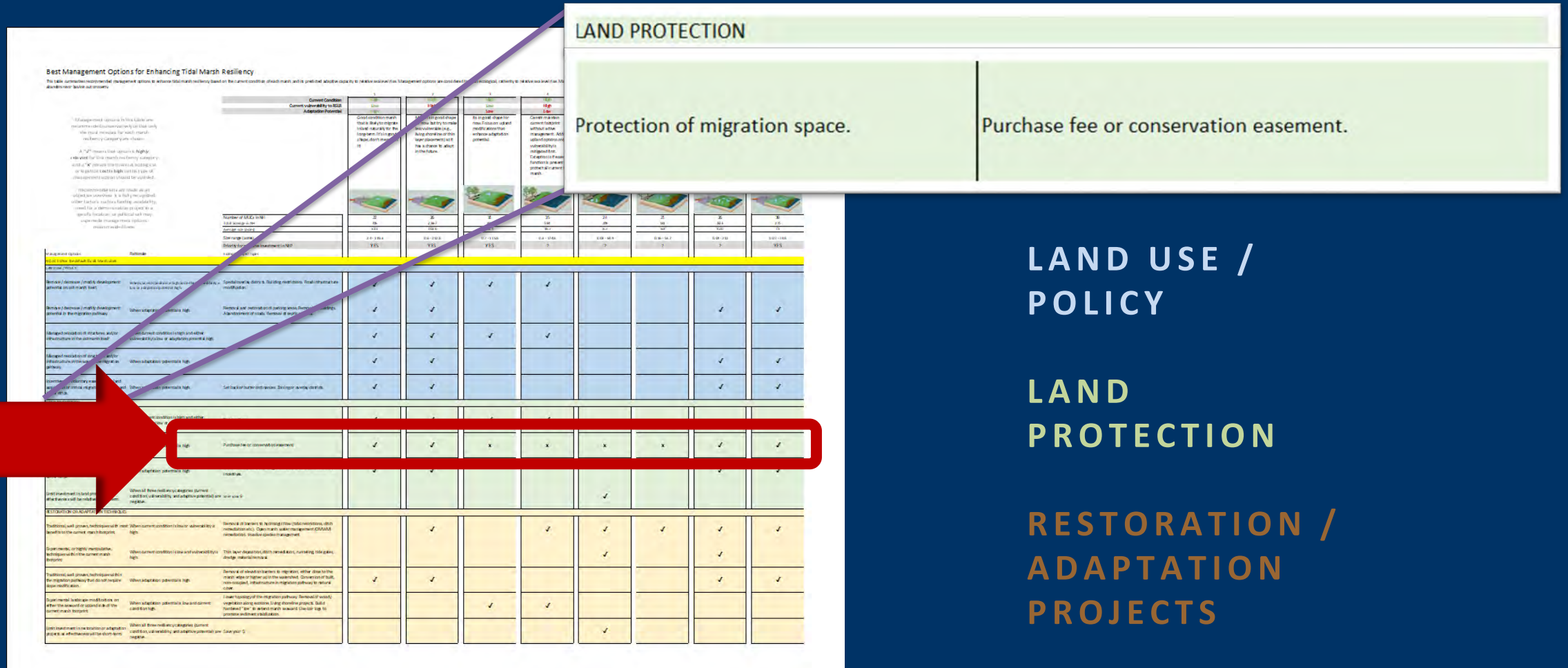
Current Condition	High
Vulnerability to RSLR	Low
Adaptation Potential	High
<p><i>Management Rationale</i> : Good condition marsh that is likely to migrate inland naturally for the long-term. It's in good shape, don't mess with it!</p>	
<p><i>Description</i>: A marsh that is currently in good condition with a wide high marsh plateau and high vegetated to unvegetated ratio, has low vulnerability (e.g. wide tidal range), can migrate inland and may already be showing signs of inland migration.</p>	

- High marsh
- Low Marsh
- Mudflat
- Open Water
- Panne or Pool
- Migration Space

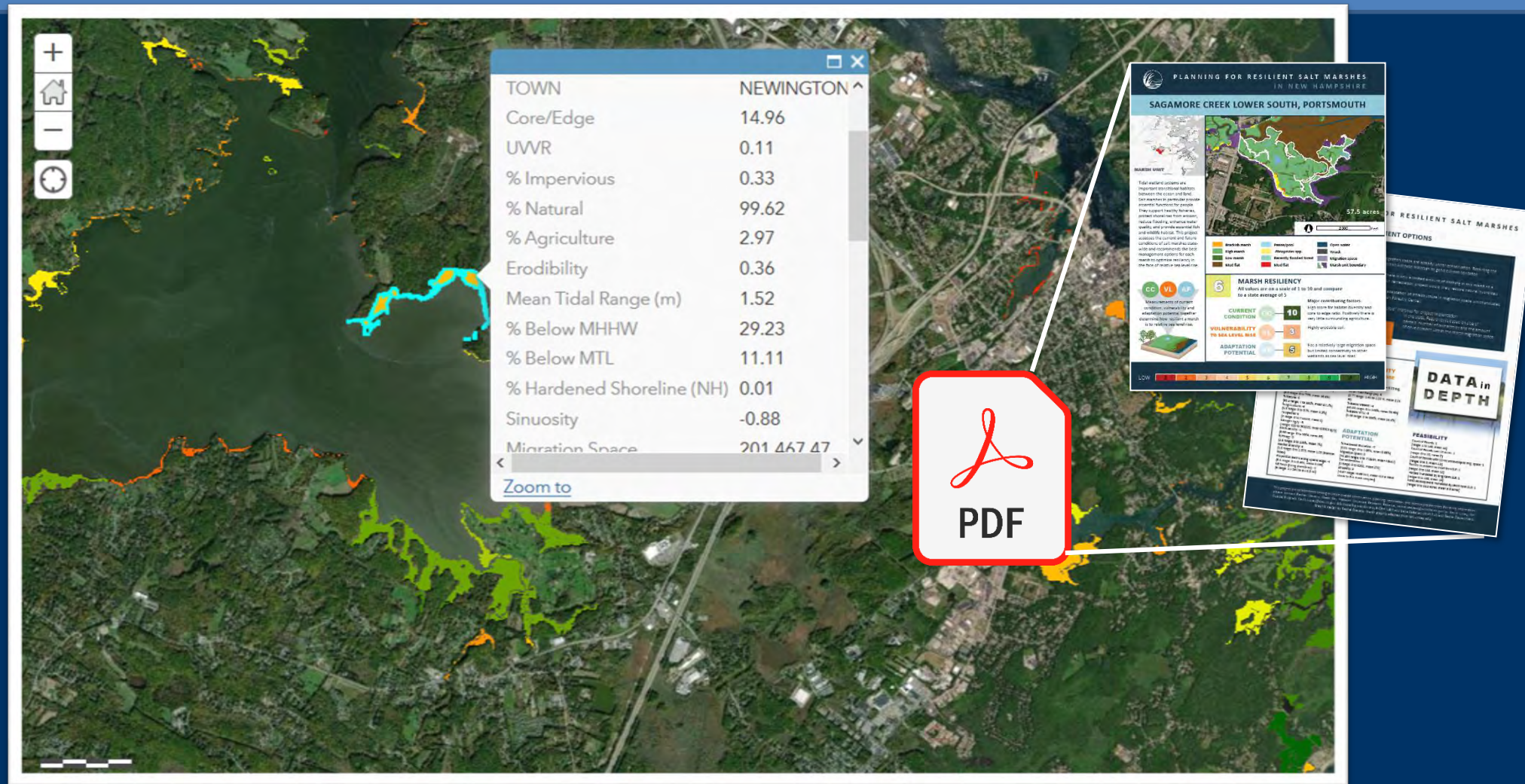




# Or Identify Best Locations for Specific Management Actions



# Marsh Profiles Online (Dashboard or Web App)





# Case Study 1: Prioritizing Potential Conservation Lands

## KEY PARCELS

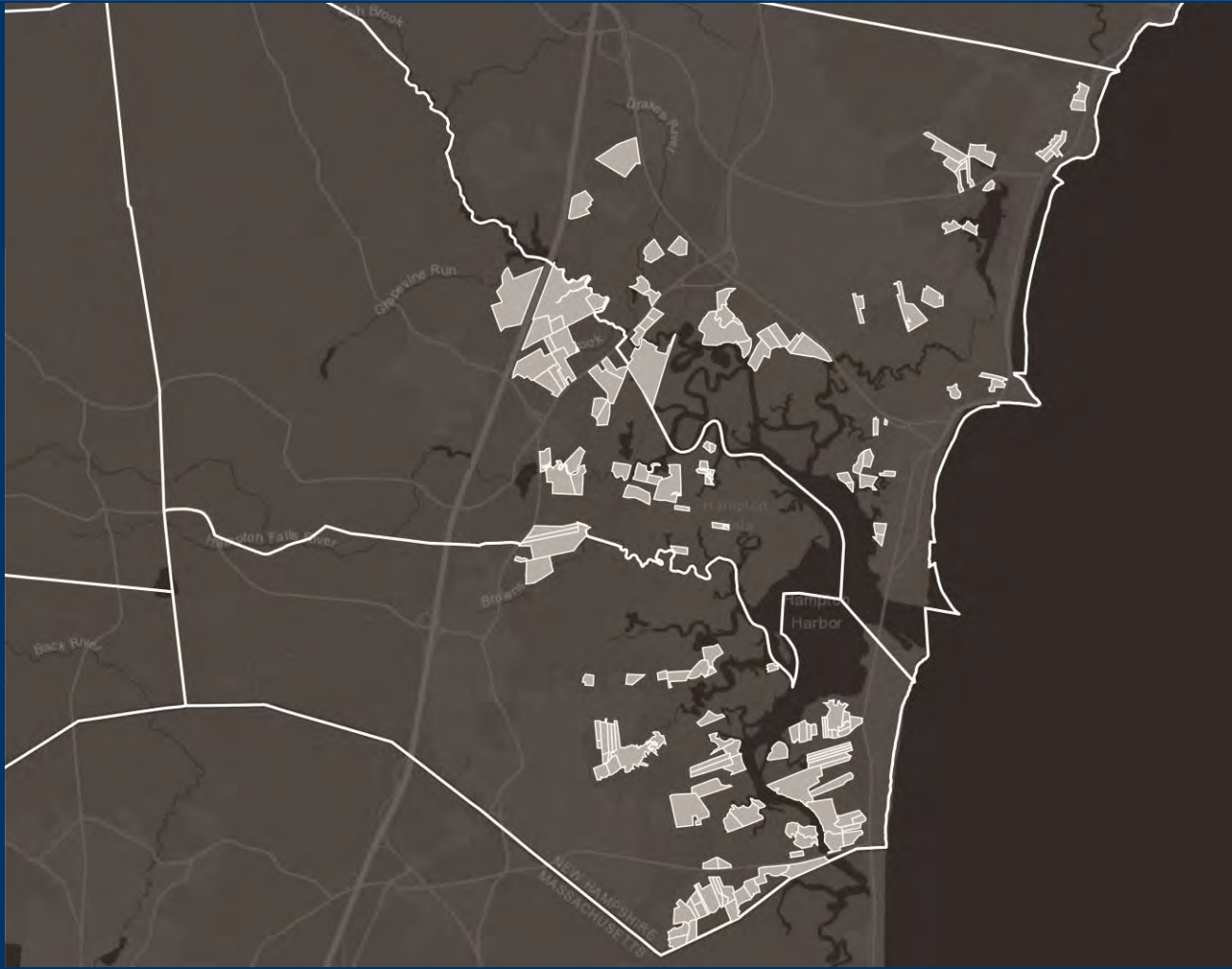


## MARSH RESILIENCE











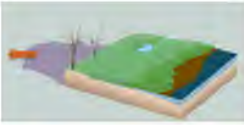
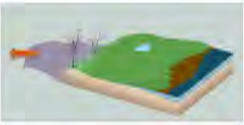

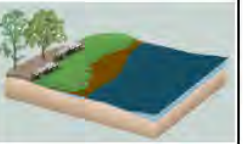

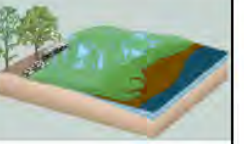
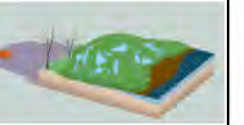
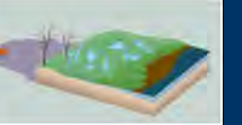
**Ecological**  
prioritization of  
potential  
conservation  
lands

# Conservation Prioritization: Hampton-Seabrook Estuary

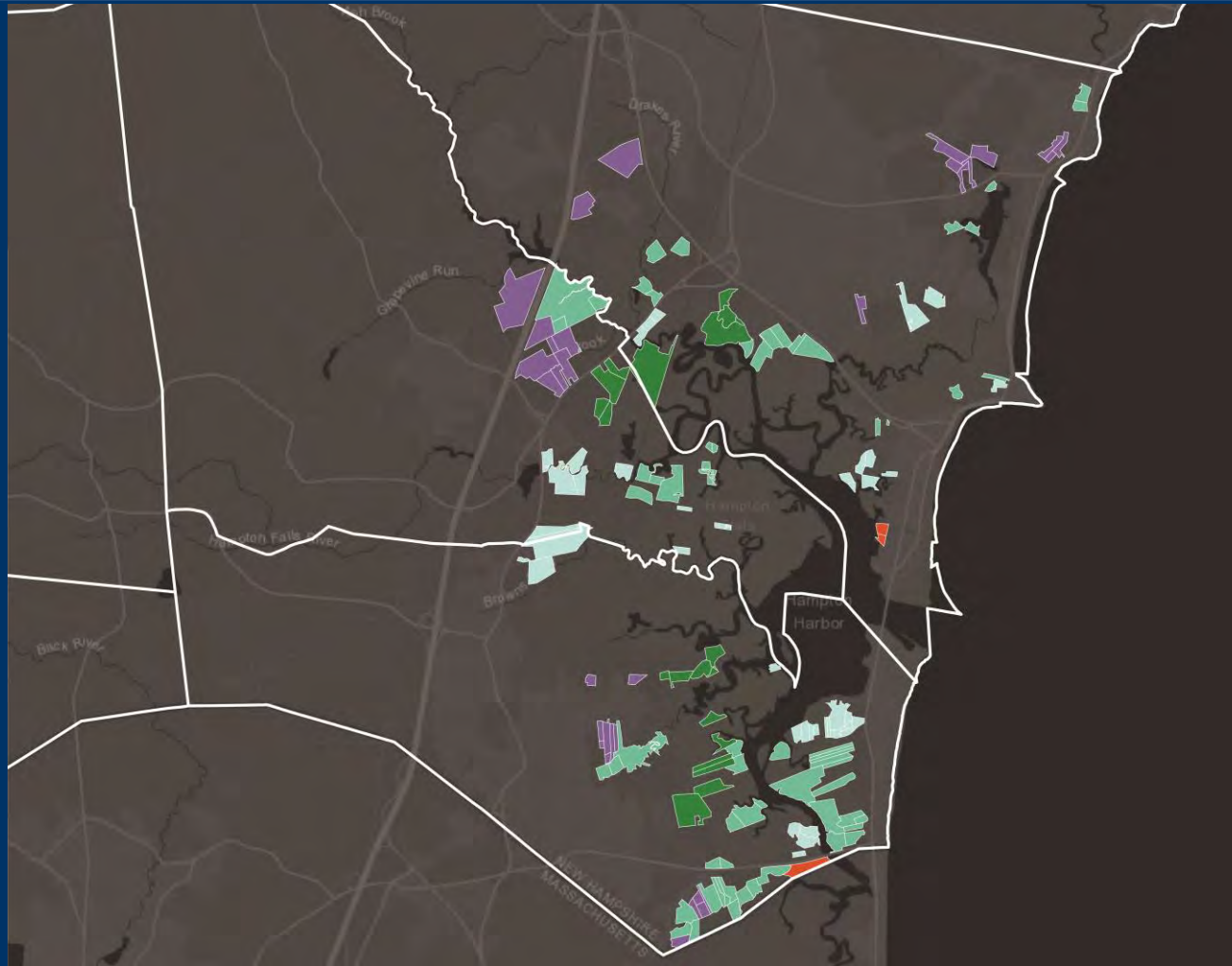




# Case Study 1: Prioritizing Potential Conservation Lands

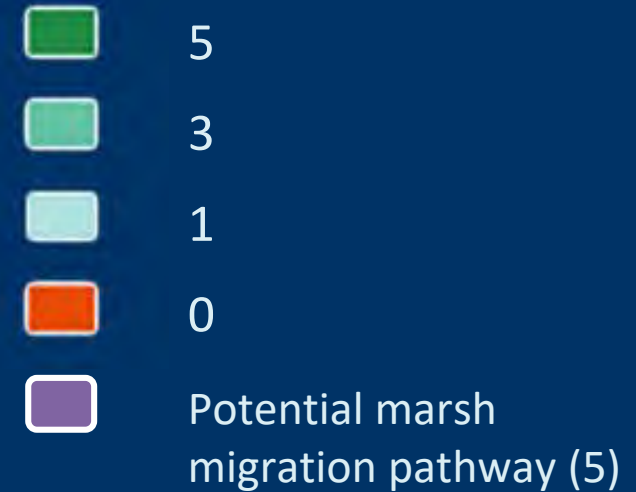
SHEA CONSERVATION SCORE	5	3	1	1	0	0	1	3
								
CURRENT CONDITION VULNERABILITY ADAPTATION POTENTIAL	High Low High	High High High	High Low Low	High High Low	Low High Low	Low Low Low	Low High High	Low Low High
	Good condition marsh that is likely to migrate inland naturally for the long-term. It's in good shape, don't mess with it!	Marsh is in good shape for now but try to make less vulnerable (e.g., living shoreline or thin layer placement) so it has a chance to adapt in the future.	Its in good shape for now. Focus on upland modifications that enhance adaptation potential.	Cannot maintain current footprint without active management. Address upland options <i>only if</i> vulnerability is mitigated first. Exception is if essential function is present so protect all current high marsh.	Low condition marsh that is unlikely to persist in the future. Makes this a good place to test experimental restoration approaches.	There is a need to restore current conditions <i>but prioritize only if</i> barriers to adaption in upland are mitigated.	Focus established restoration techniques that improve current condition <b>and</b> decrease vulnerability to RSLR here. Need to address both aspects to make a project sustainable.	Prioritize established restoration projects here. This marsh is likely to self-sustain in the long term so projects will be cost effective.
								

# Case Study 1: Prioritizing Potential Conservation Lands



CONSERVATION SCORE	5	3	1	1	0	0	1	3
	✓	✓	✓	✓	✗	✗	✓	✓
CURRENT CONDITION	Good	Good	Good	Good	Low	Low	Good	Good
VULNERABILITY	Low	High	Low	High	Low	High	Low	High
ADAPTATION POTENTIAL	Good condition marsh is likely to migrate land naturally for the long term. It's in good shape, don't worry with it.	Marsh is in good shape for now but has to make less vulnerable (e.g., being drier or less open) to have a chance to adapt in the future.	It is in good shape for now, there are natural modifications that enhance adaptation potential.	Current marsh is in good shape but has to make less vulnerable (e.g., being drier or less open) to have a chance to adapt in the future.	Low condition marsh that is unlikely to persist in the future. Make this a great place to test experimental restoration approaches.	There is a need to restore current conditions but prioritize only if barriers to adaptation are mitigated.	For an established restoration project, this marsh is likely to self-repair in the long term as projects will be cost effective.	For an established restoration project, this marsh is likely to self-repair in the long term as projects will be cost effective.

## Conservation lands score



# Case Study 1: Prioritizing Potential Conservation Lands



CONSERVATION SCORE	5	3	1	1	0	0	1	3
	✓	✓	✓	✓	✗	✗	✓	✓
CURRENT CONDITION	High	High	High	High	Low	Low	High	High
VULNERABILITY	Low	Low	Low	Low	High	High	Low	Low
ADAPTATION POTENTIAL	Good condition marshes are likely to migrate seaward naturally for the long term. It's in good shape, don't worry with it.	Marsh is in good shape for now but has the potential to be vulnerable (e.g., being adjacent to other large developments) so it has a chance to adapt in the future.	It is in good shape for now, there are natural modifications that enhance adaptation potential.	Current marshes cannot maintain current conditions without active management. Address natural factors only if vulnerability is mitigated. Note: In certain cases, if essential function is present or present all current high marsh.	Low condition marshes are unlikely to persist in the future. Make this a great place to test experimental restoration approaches.	There is a need to restore current conditions but potential only if barriers to adaptation is reduced and mitigated.	For an established restoration project that improves current conditions and increases vulnerability to RSL. Here, there is a natural built aspects to make a project sustainable.	For an established restoration project that improves current conditions and increases vulnerability to RSL. Here, there is a natural built aspects to make a project sustainable.

Conservation lands score

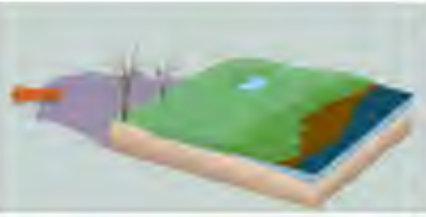
- 5
- 3
- 1
- 0
- Potential marsh migration pathway



# “Best of the Best” Land Protection: Hampton

High
Low
High

Good condition marsh that is likely to migrate inland naturally for the long-term. It's in good shape, don't mess with it!

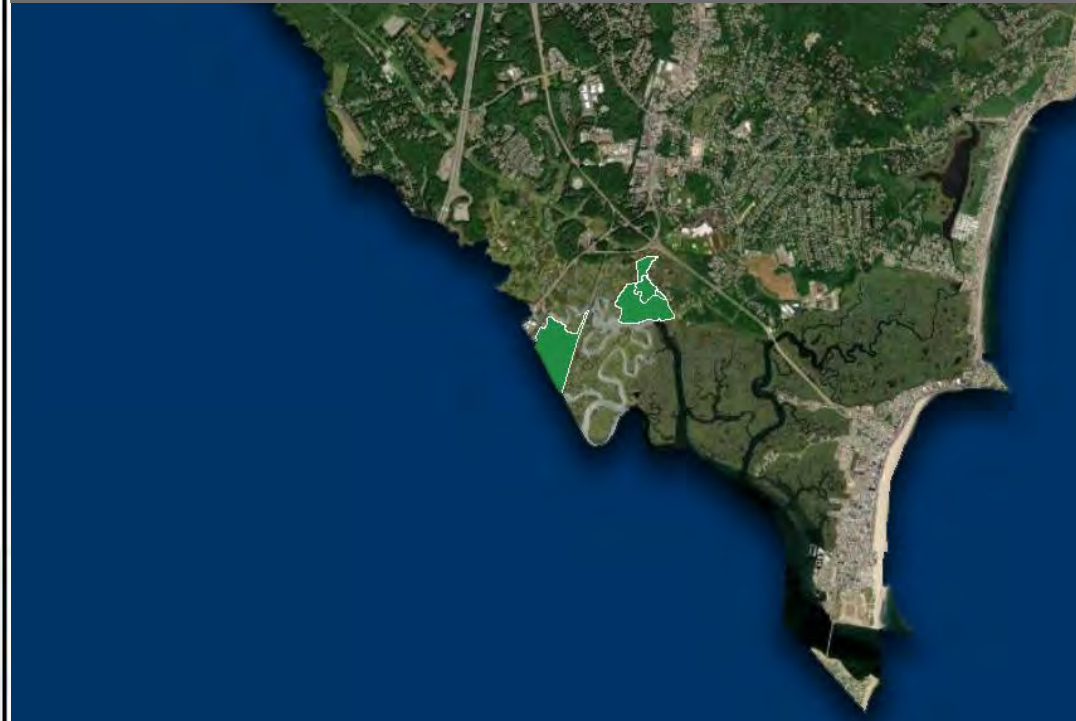
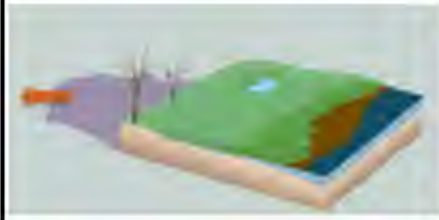



CONSERVATION SCORE	5	3	1	1	0	0	1	3
	✓	✓	✓	✓	✗	✗	✓	✓
CURRENT CONDITION	Good	Good	Good	Good	Low	Low	Good	Good
VULNERABILITY	Low	Low	Low	Low	High	High	Low	Low
MIGRATION POTENTIAL	High	High	High	High	Low	Low	High	High
	Good condition marsh that is likely to migrate inland naturally for the long-term. It's in good shape. Each owner will be able to adapt to the future.	Marsh is in good shape and is likely to migrate inland naturally for the long-term. It's in good shape. Each owner will be able to adapt to the future.	Marsh is in good shape for now. There are potential modifications that enhance adaptive potential.	Marsh is in good shape for now. There are potential modifications that enhance adaptive potential.	Low condition marsh that is unlikely to persist in the future. Needs this as a goal to meet.	Low condition marsh that is unlikely to persist in the future. Needs this as a goal to meet.	Marsh is in good shape for now. There are potential modifications that enhance adaptive potential.	Marsh is in good shape for now. There are potential modifications that enhance adaptive potential.

- 5 properties
- 96 acres total
- Largest 48 acres

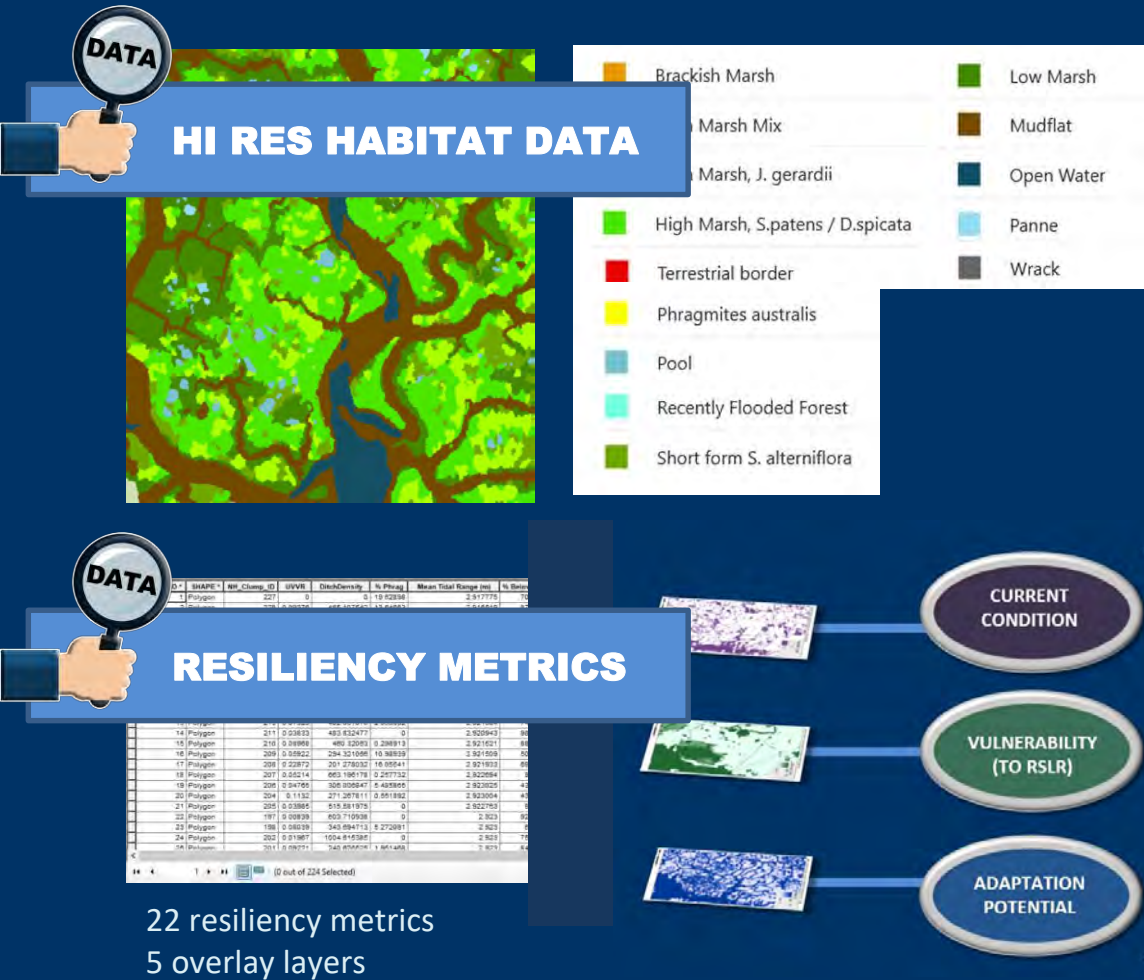
# “Best of the Best” Land Protection: Hampton

High	TOWN	OwnerName	StreetAddr	StructureT	GISAcres
Low	HAMPTON	ROYAL, SHERRY M	HOBBS MARSH	Vacant lot	6.247428
High	HAMPTON	HAGEN, ROBERT JR	PERKINS MARSH	Vacant lot	8.158515
Good condition marsh that is likely to migrate inland naturally for the long-term. It's in good shape, don't mess with it!	HAMPTON	PRATT, CLIFTON J JR	LANDING RD	Vacant lot	1.072789
	HAMPTON	HAMPTON RIVER BOAT CLUB	115 LANDING RD	Clubs/Lodges	33
	HAMPTON	MARSHALL, JOHN M HEIRS	MARSH	Vacant lot	48



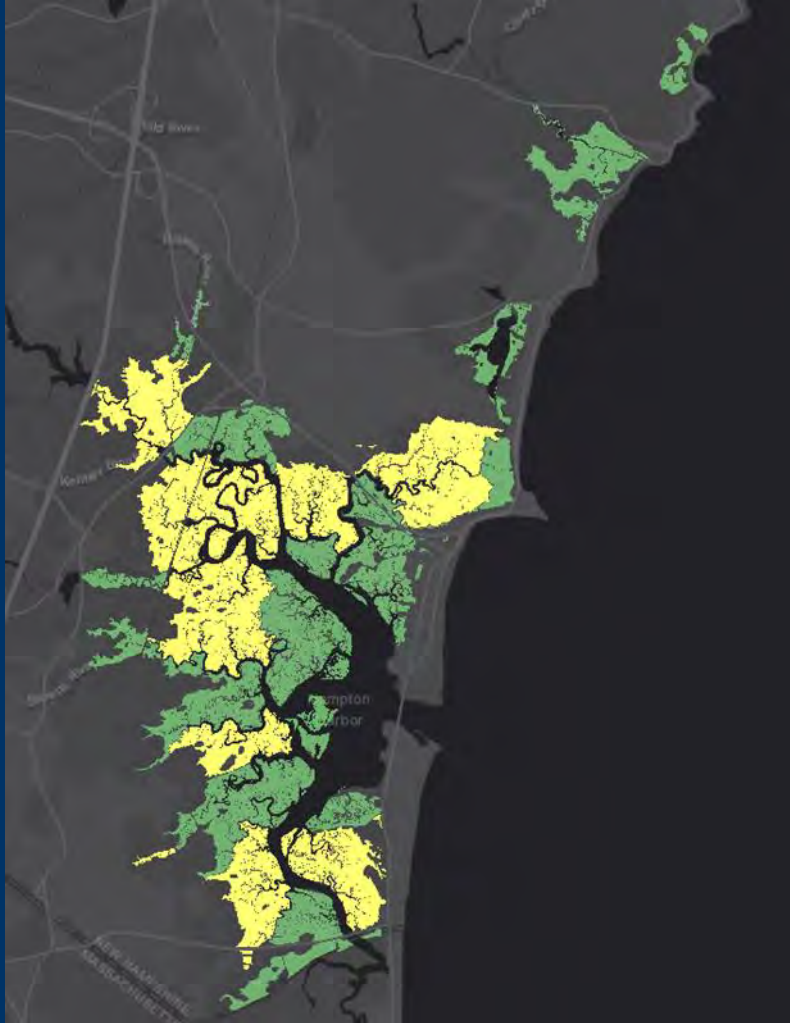
- All but one are vacant lots

# Case Study 2: Saltmarsh Sparrow





# Informing a regional plan



## SALS presence

Compared to other parts of the state, saltmarsh sparrows are relatively sparse in this area. Traditionally, the most northeast section of marsh labeled "A" on the aerial photo has supported the highest densities of saltmarsh sparrow. There has also been a good population off Drakeside Road in Hampton. More SHARP surveys are needed to get a better understanding of species presence and population dynamics in this focus area.

## Marsh resilience

The majority of marshes in this area are in relatively good current condition but are vulnerable to sea level rise and present day flooding.

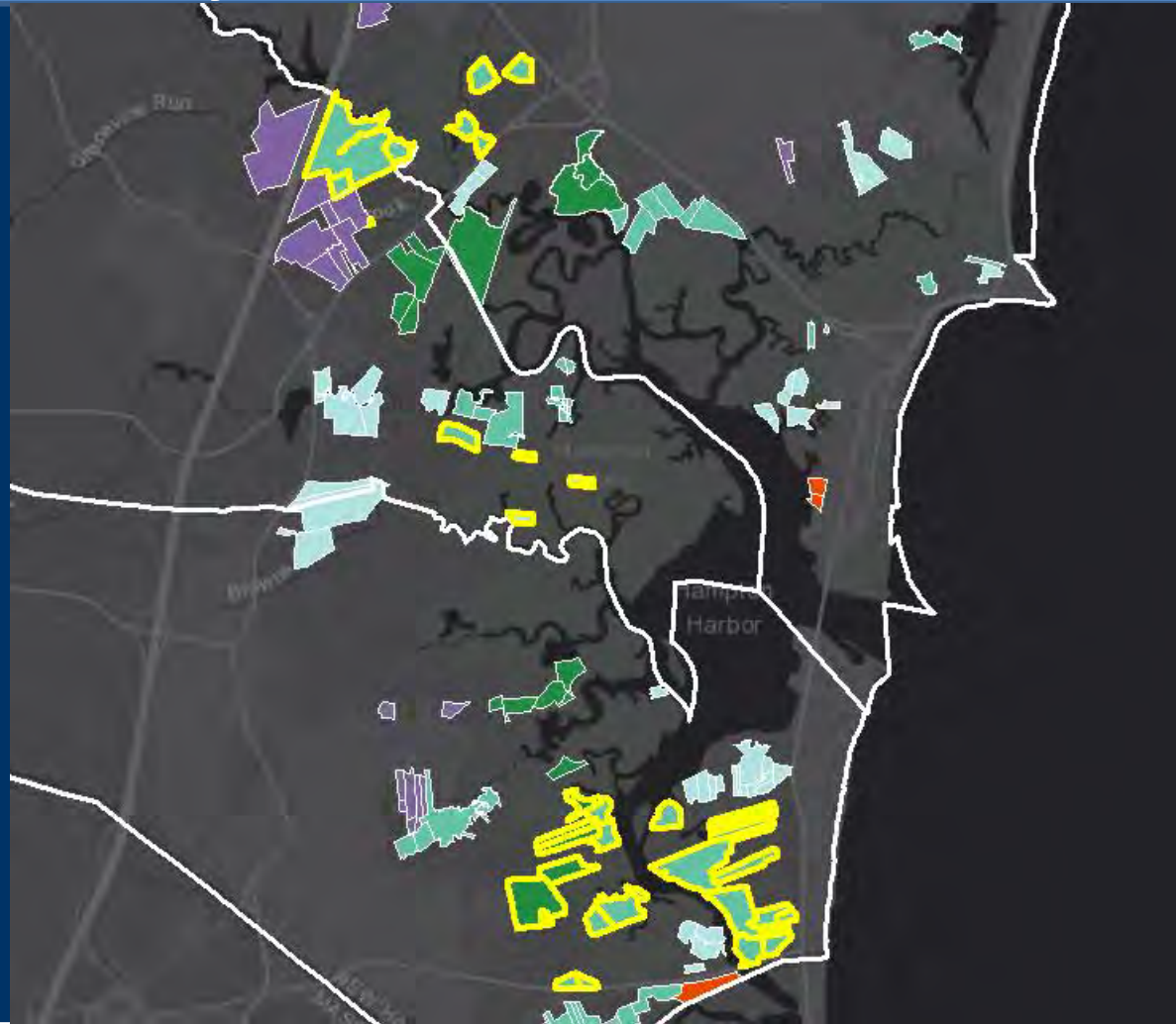
## Short-term restoration recommendations

- Create micro topography to provide nesting opportunities above the marsh plateau.
- Pilot island creation projects to mitigate this area being a potential population sink due to flooding.
- Perennial Pepperweed (*Lepidium latifolium*) and *Phragmites* control.

## Long-term restoration recommendations

- Focus on ditch remediation to mitigate subsidence and reduce vulnerability of marshes to sea level rise. Focus on upstream areas and expand restoration projects from there.
- There is a very large berm from an abandoned railroad in area "B". It is currently being considered for conversion to rail trail. This process could involve raising the former rail bed to accommodate sea level rise and/or enhancing permeability by creating, replacing or renovating multiple tidal crossings.
- There are opportunities for *Phragmites* control in the Taylor River area.

# Pulling it together: Saltmarsh Sparrow Priority Areas: Hampton-Seabrook Estuary



Conservation  
lands score



5



3



1



0



Potential marsh migration pathway



Parcel in a saltmarsh  
sparrow priority area







**SUPPORT  
HEALTHY  
FISHERIES**



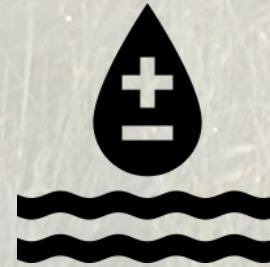
**PROVIDE  
ESSENTIAL  
FISH &  
WILDLIFE  
HABITAT**



**REDUCE  
COASTAL  
FLOODING**



**PROTECT  
SHORELINES  
FROM EROSION**



**ENHANCE  
WATER  
QUALITY**



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HABITAT**

**PROTECT  
SHORELINES  
FROM EROSION**

**ENHANCE  
WATER  
QUALITY**



# Take away messages

1. This tool is being finalized this winter and will be available in an online viewer.
  2. We suspect each group will think up ways to use it or use the data behind it, and we invite that conversation.
  3. If we are going to be strategic and forward thinking about sustaining our marshes, this can help us be on the same page and use the same data.
-



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