

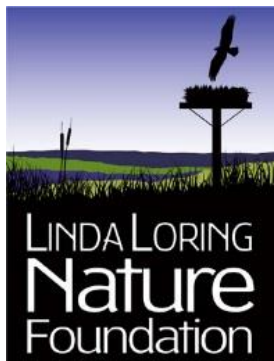
Assessing the island's coastal resilience through a conservation lens

Sarah Bois, PhD

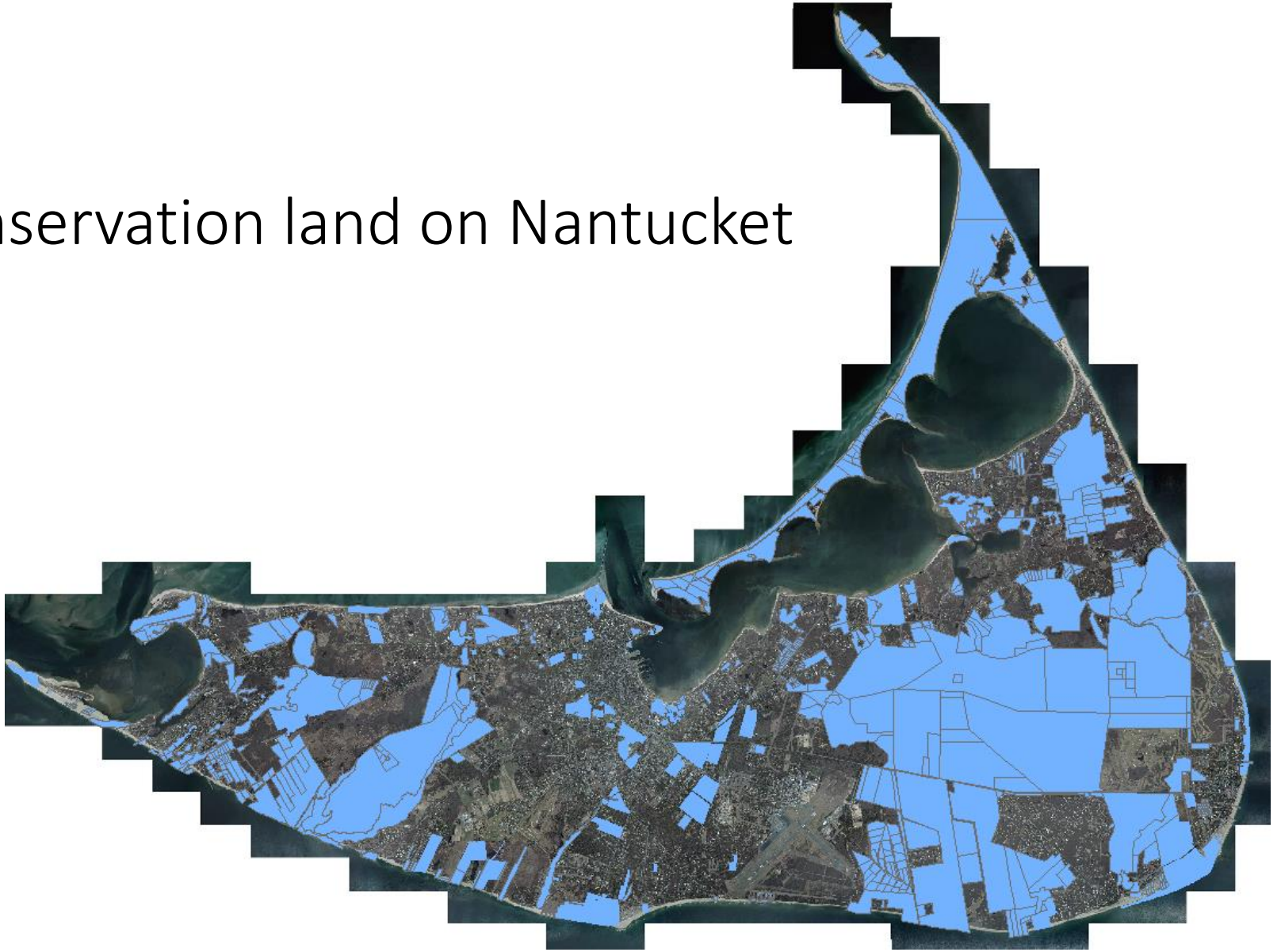
Linda Loring Nature Foundation

Jen Karberg, PhD

Nantucket Conservation Foundation



Conservation land on Nantucket



Conservation land on Nantucket

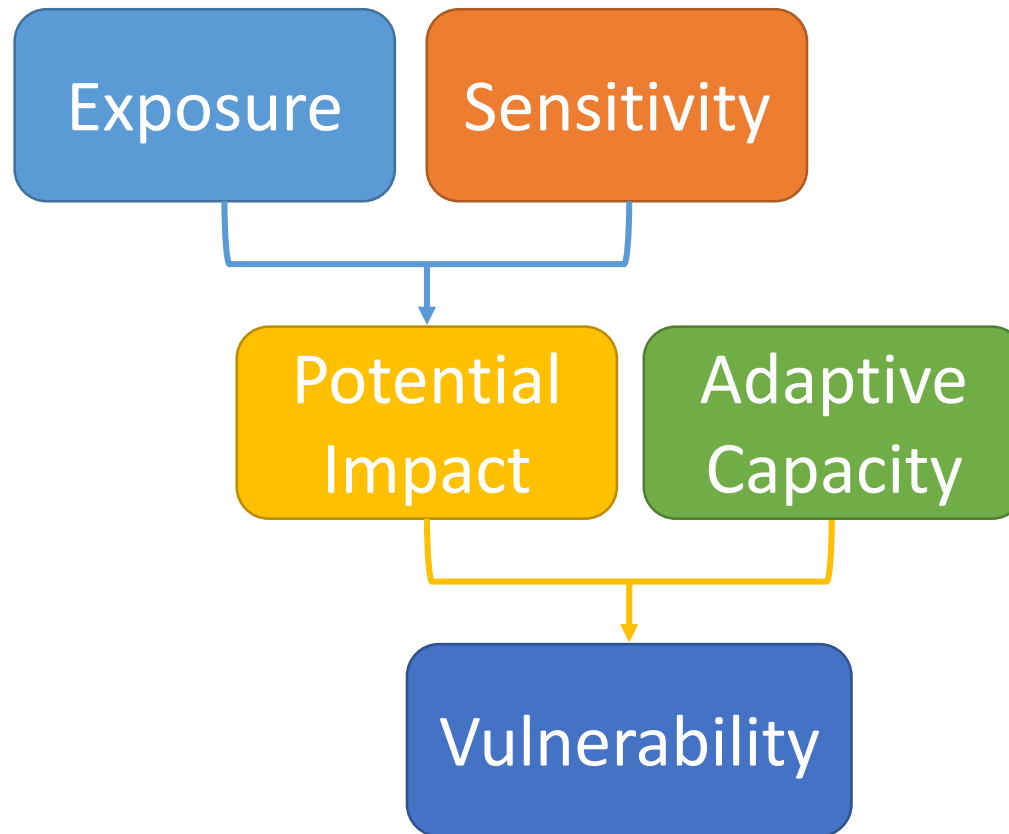


Climate-change related conservation action

Goals

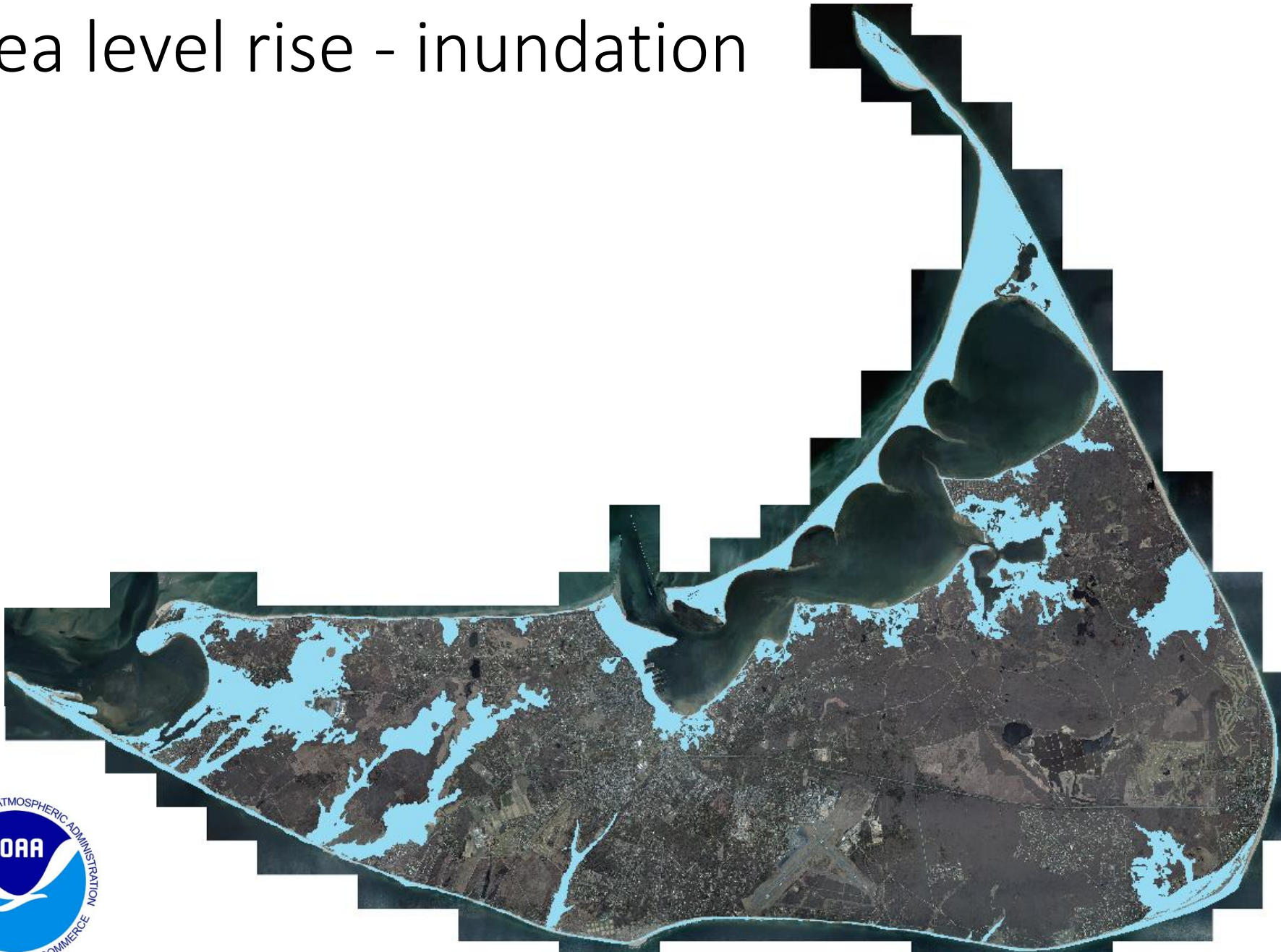
- Identify and assess risks and vulnerabilities
- Identify and protect conservation assets
- Ensure connectivity of climate refugia
- Develop management and conservation strategies for vulnerable sites
- Prioritize management and conservation action

Climate change related conservation action



(Figure adapted from Glick et al. 2011)

Sea level rise - inundation



Sea level rise - inundation



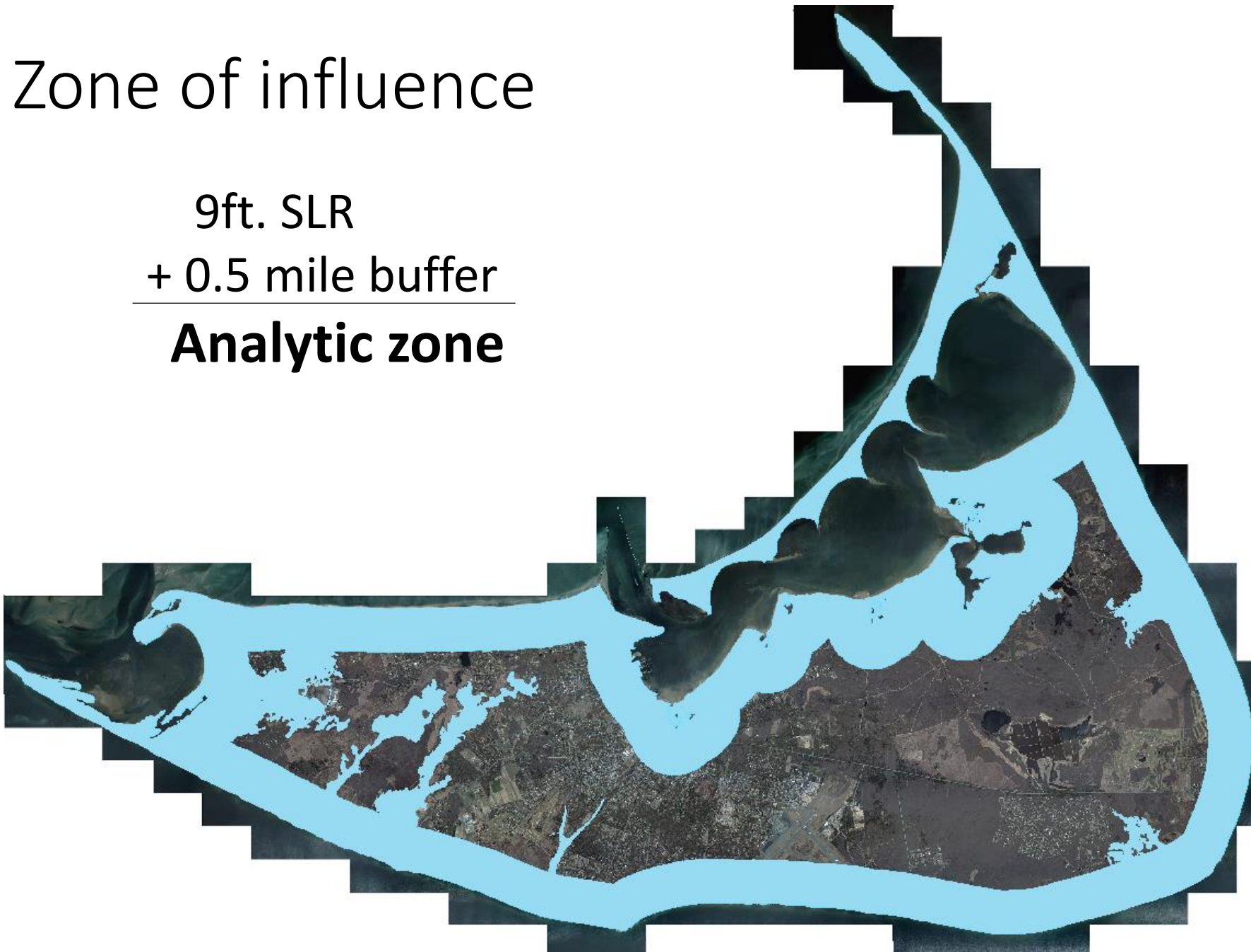
9.25ft SLR by 2100



Zone of influence

9ft. SLR
+ 0.5 mile buffer

Analytic zone



Rare Species

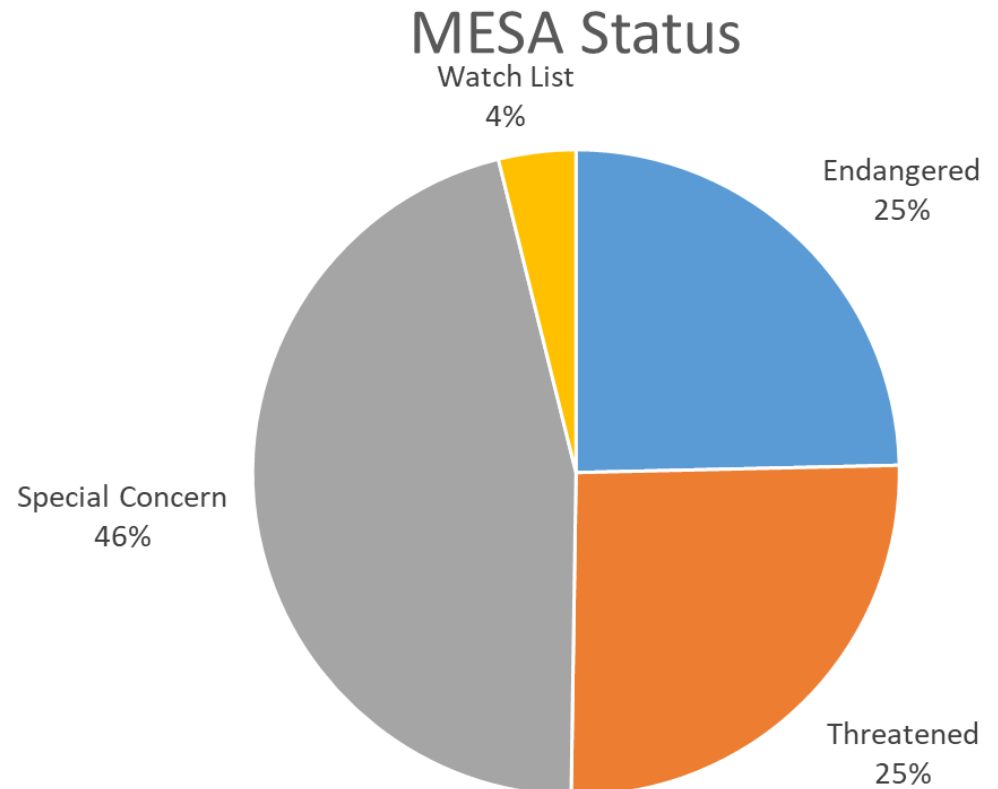
- 71 species with state or federal protection
 - 20 invertebrates
 - 37 plant species
 - 14 animals
- 207 total habitat maps



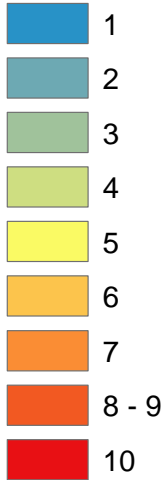
Least Tern

Rare Species

- 71 species with state or federal protection
 - 20 invertebrates
 - 37 plant species
 - 14 animals
- 207 total habitat maps



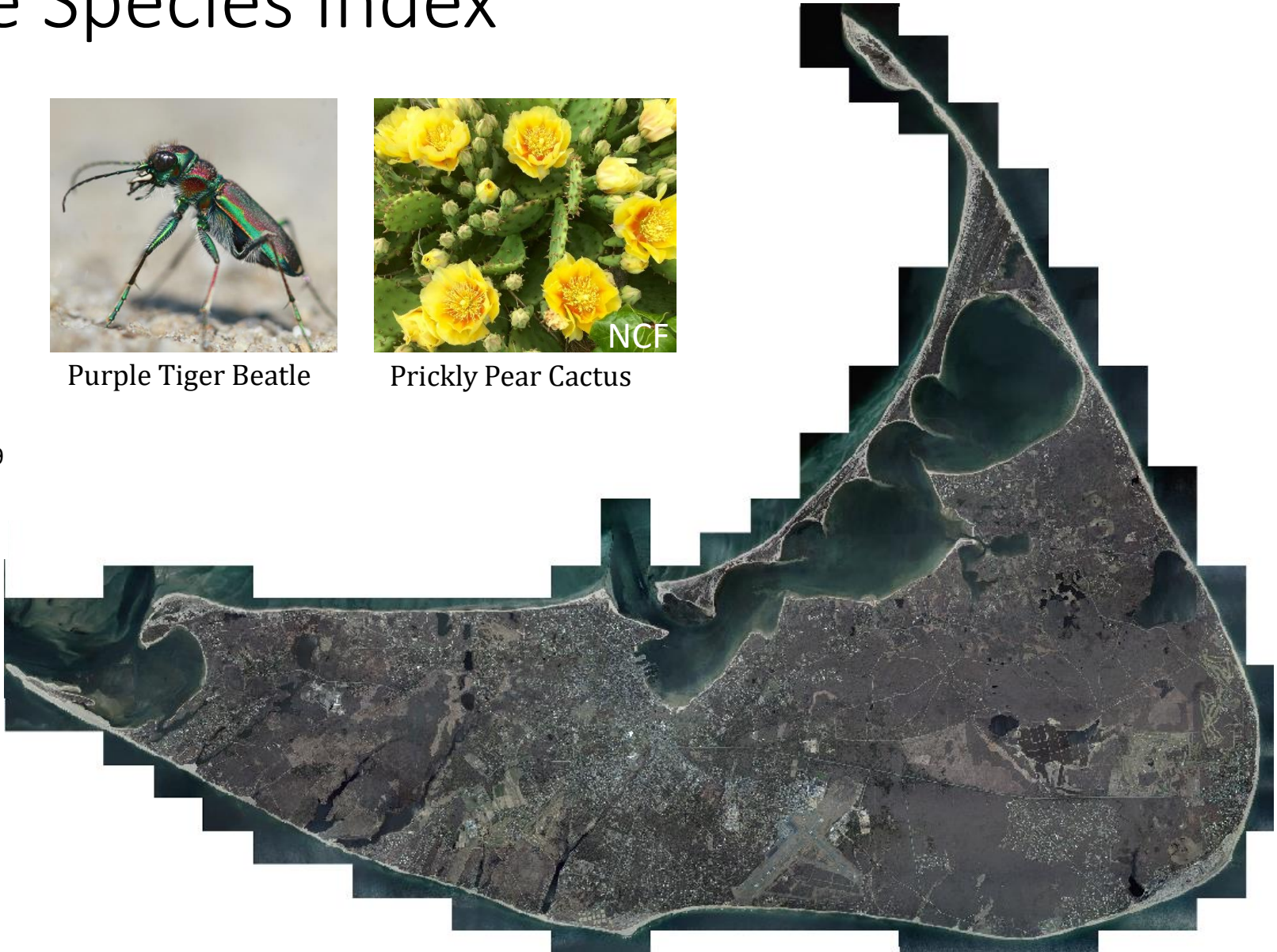
Rare Species Index



Purple Tiger Beetle

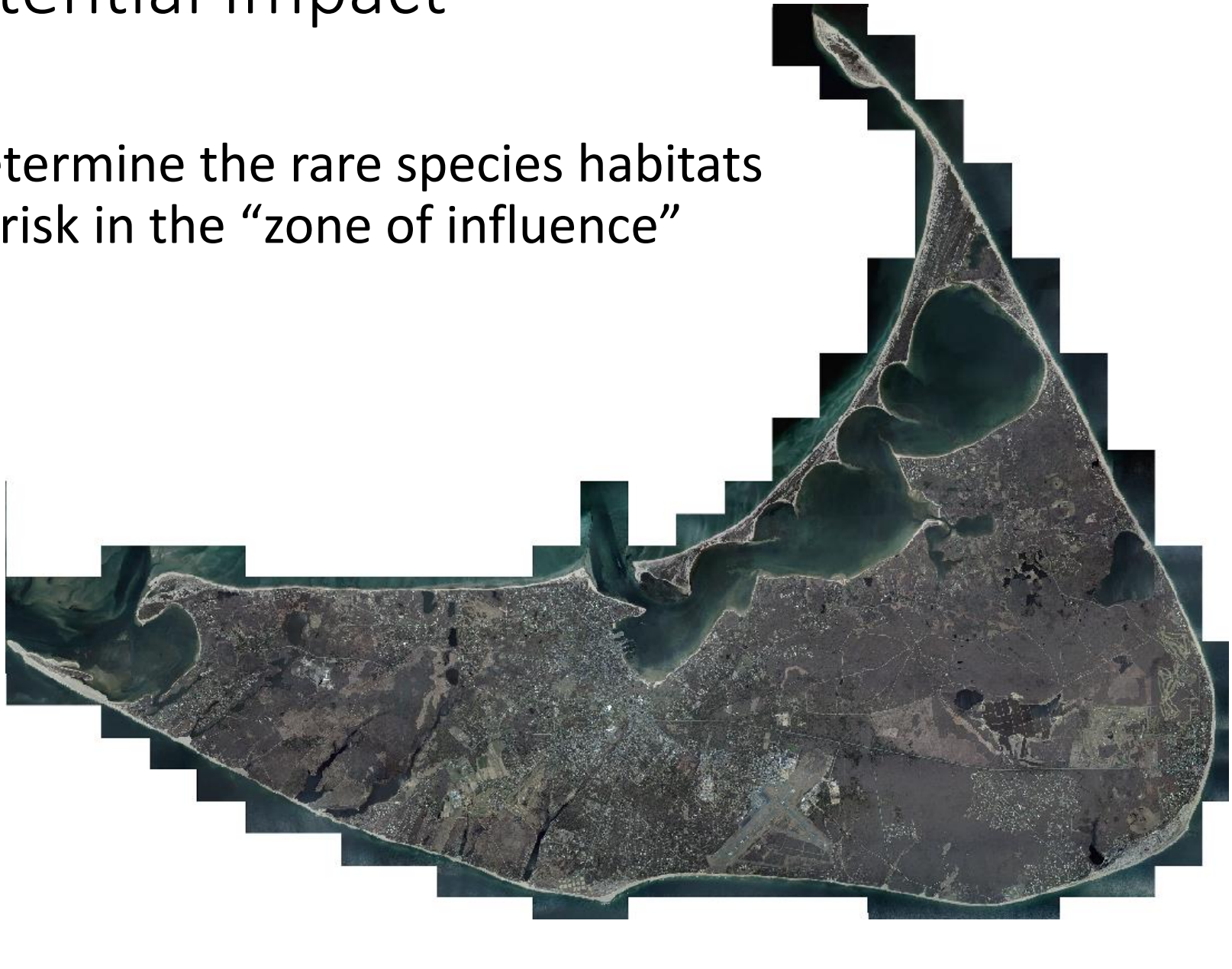


Prickly Pear Cactus

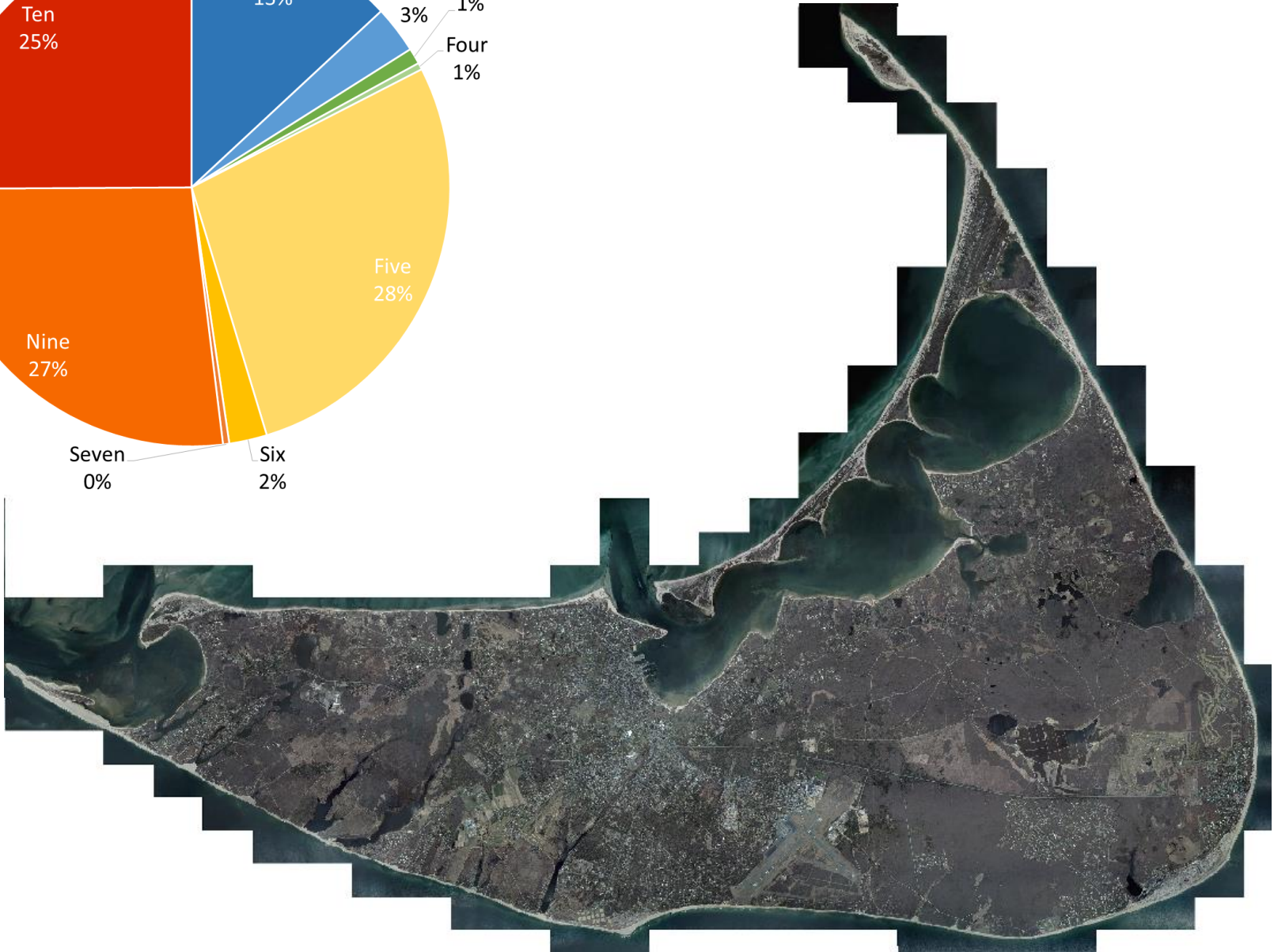
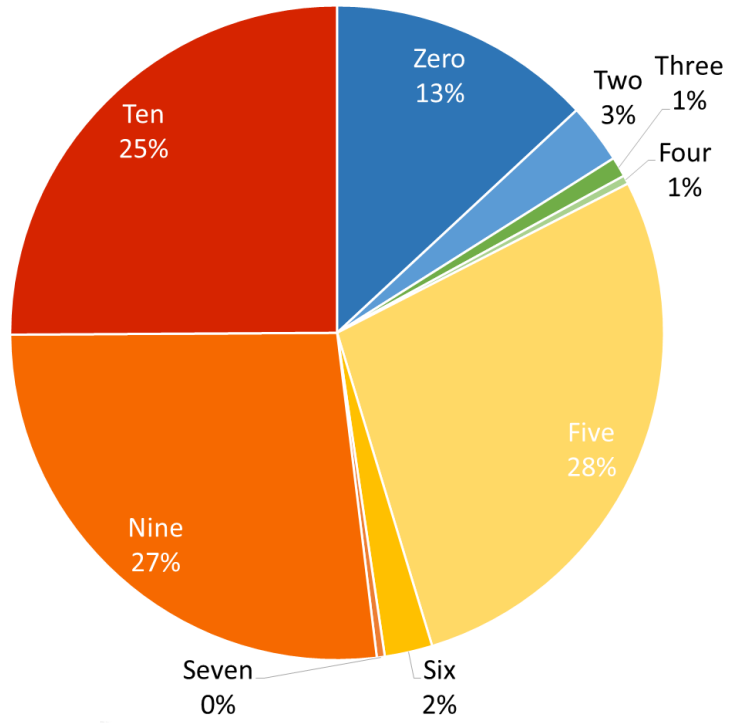


Potential Impact

- Determine the rare species habitats at risk in the “zone of influence”

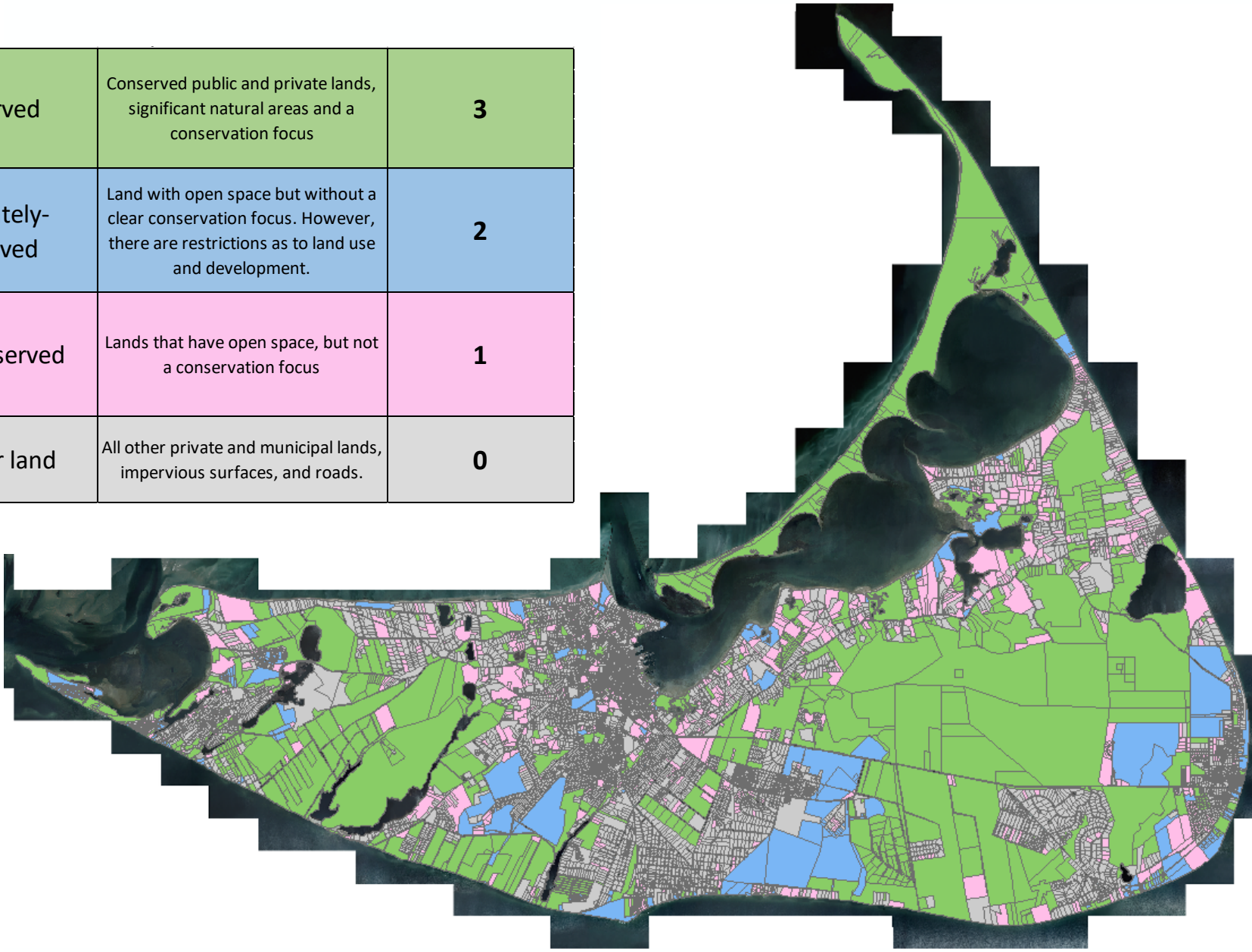


Impacted Rare Species Habitats

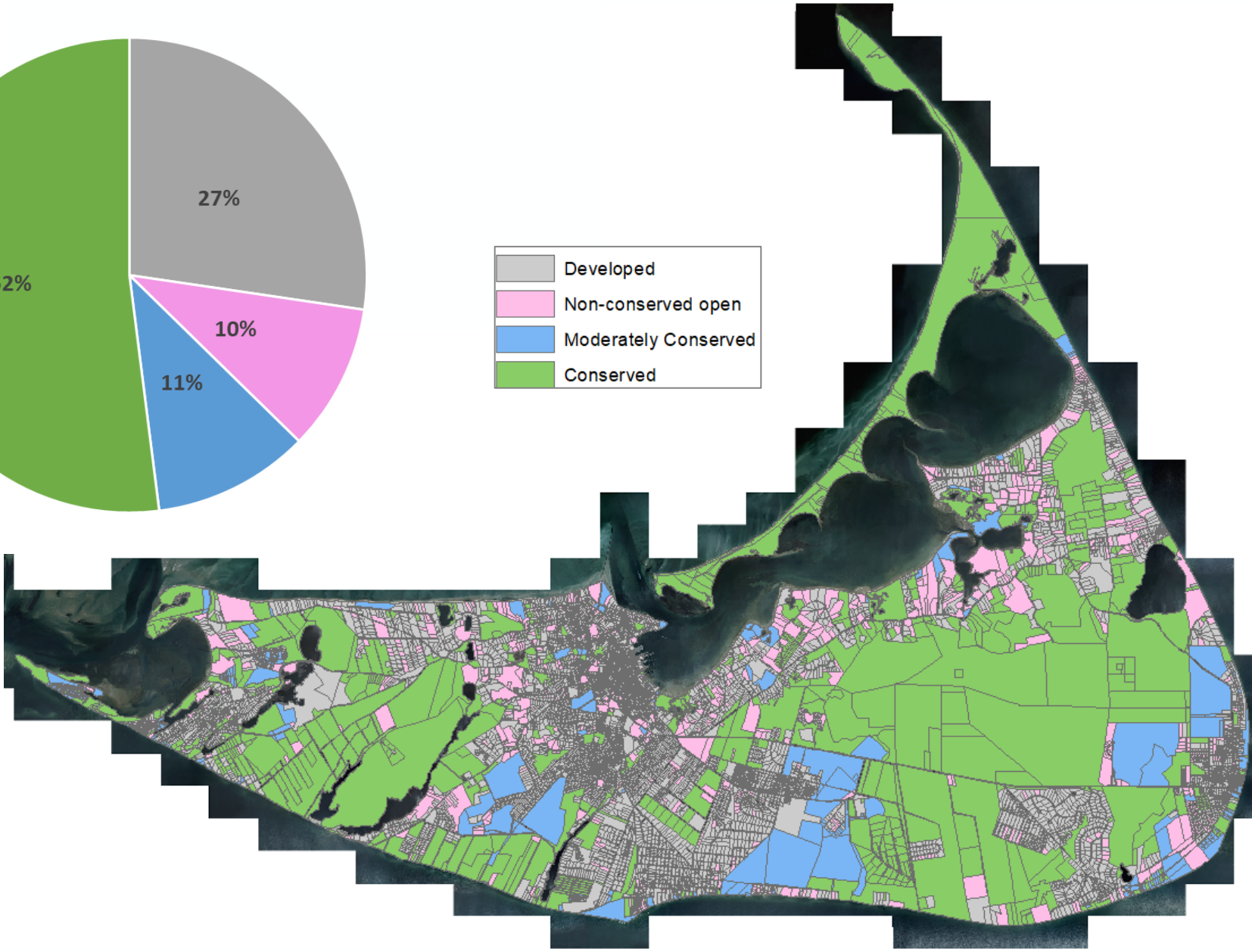
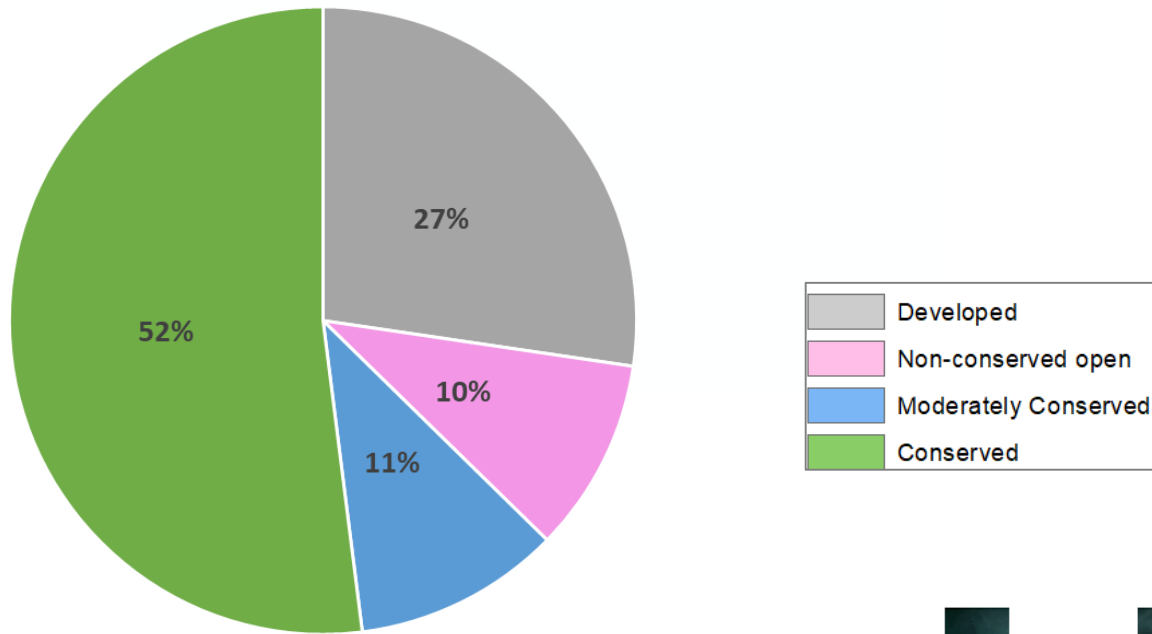


Conservation Status

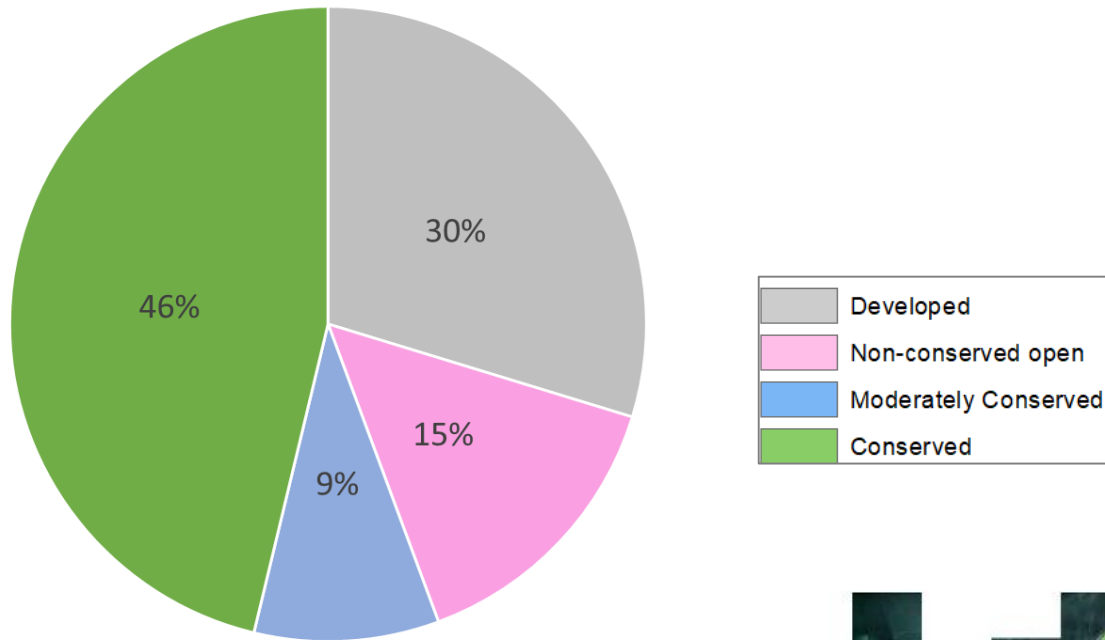
Conserved	Conserved public and private lands, significant natural areas and a conservation focus	3
Moderately-conserved	Land with open space but without a clear conservation focus. However, there are restrictions as to land use and development.	2
Non-conserved	Lands that have open space, but not a conservation focus	1
All other land	All other private and municipal lands, impervious surfaces, and roads.	0



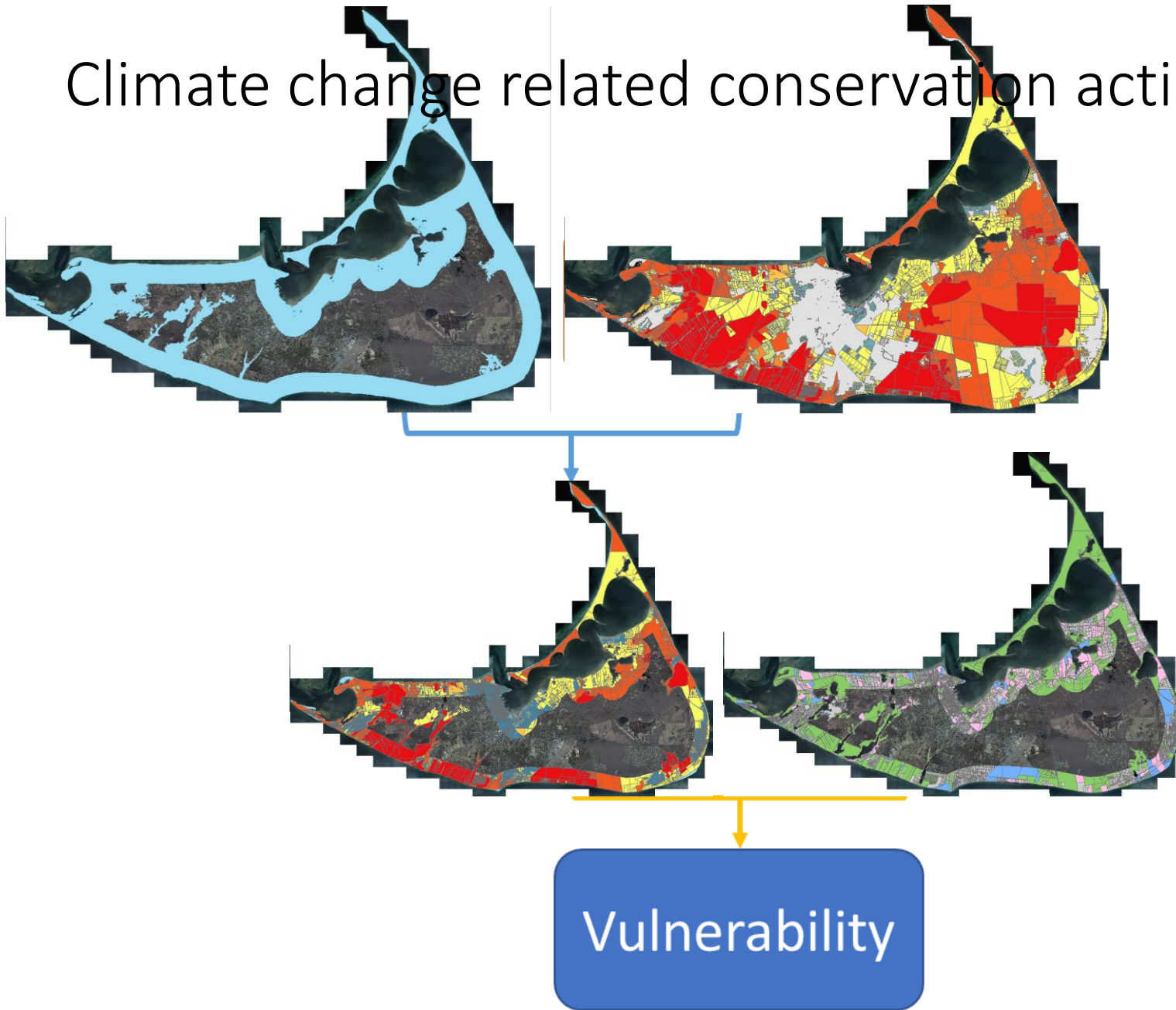
Conservation Status



Conservation Status in the ZOI

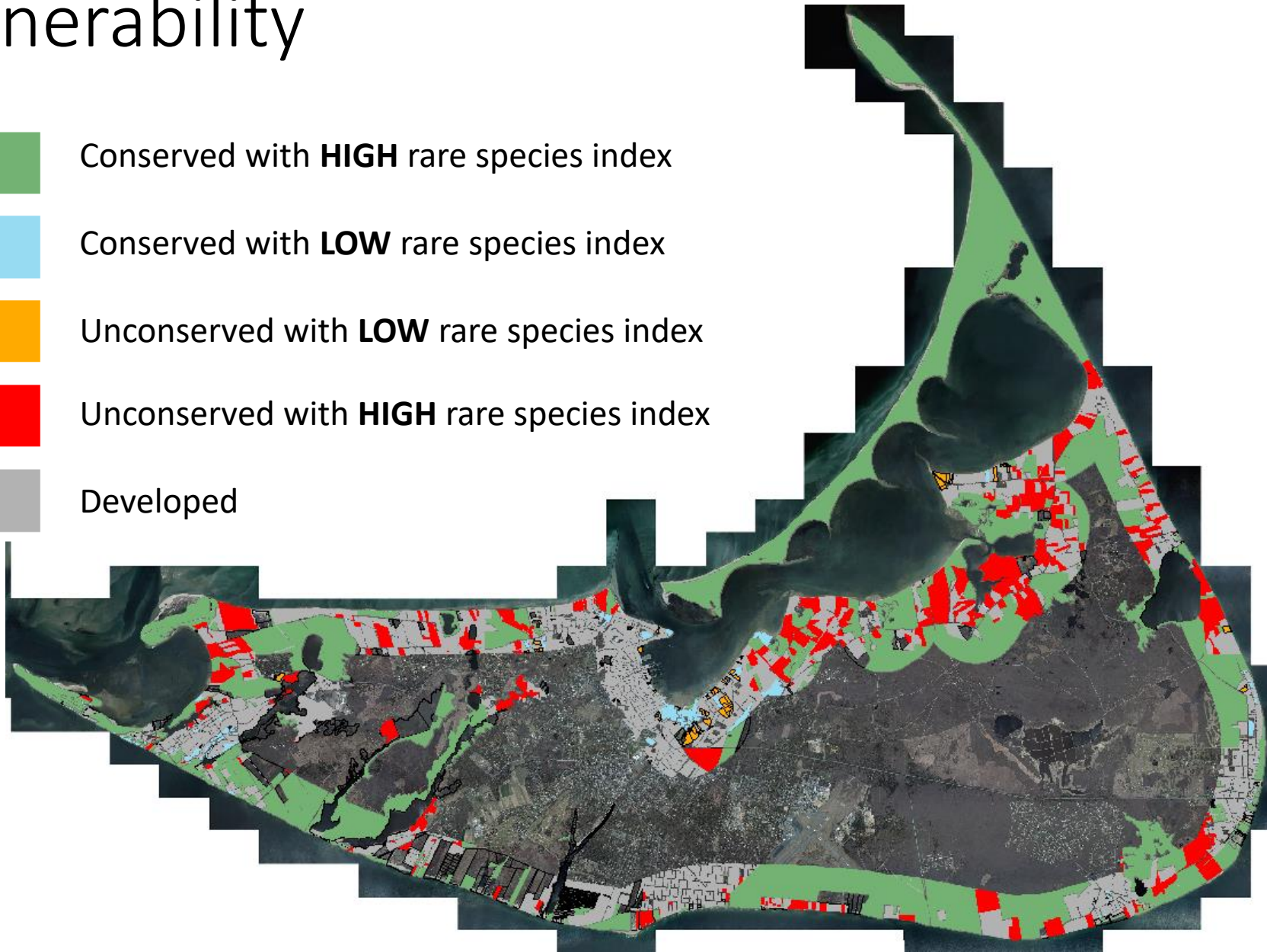
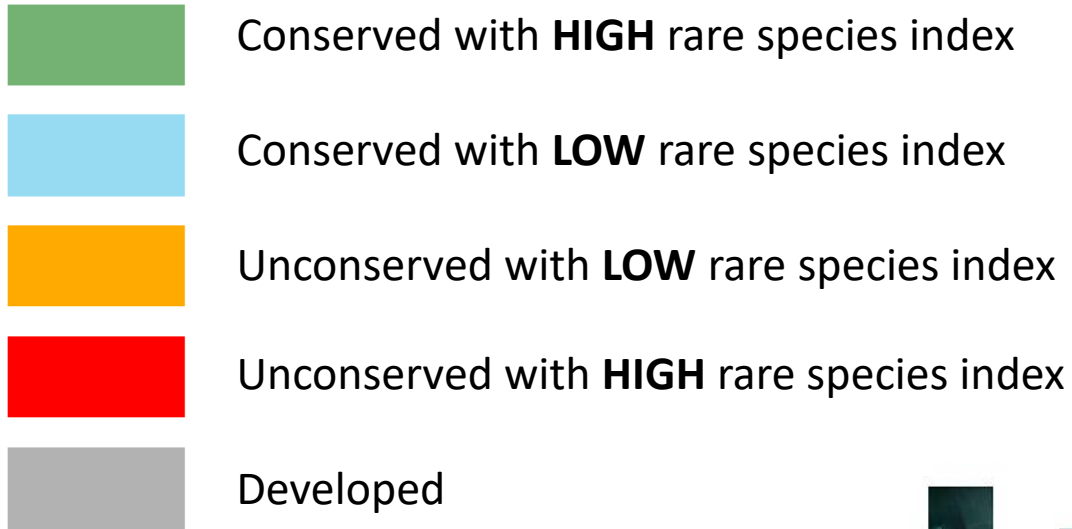


Climate change related conservation action

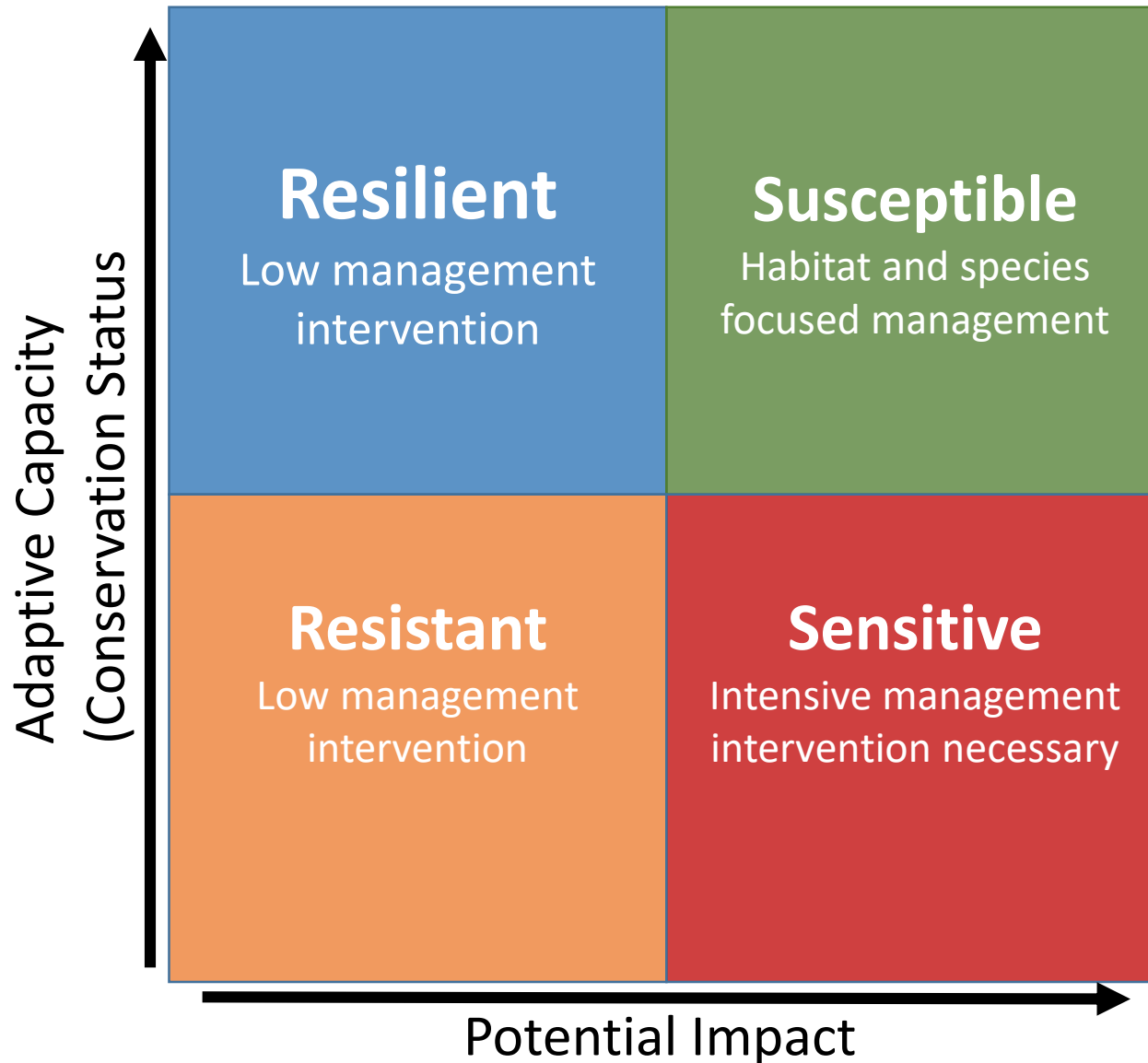


(Figure adapted from Glick et al. 2011)

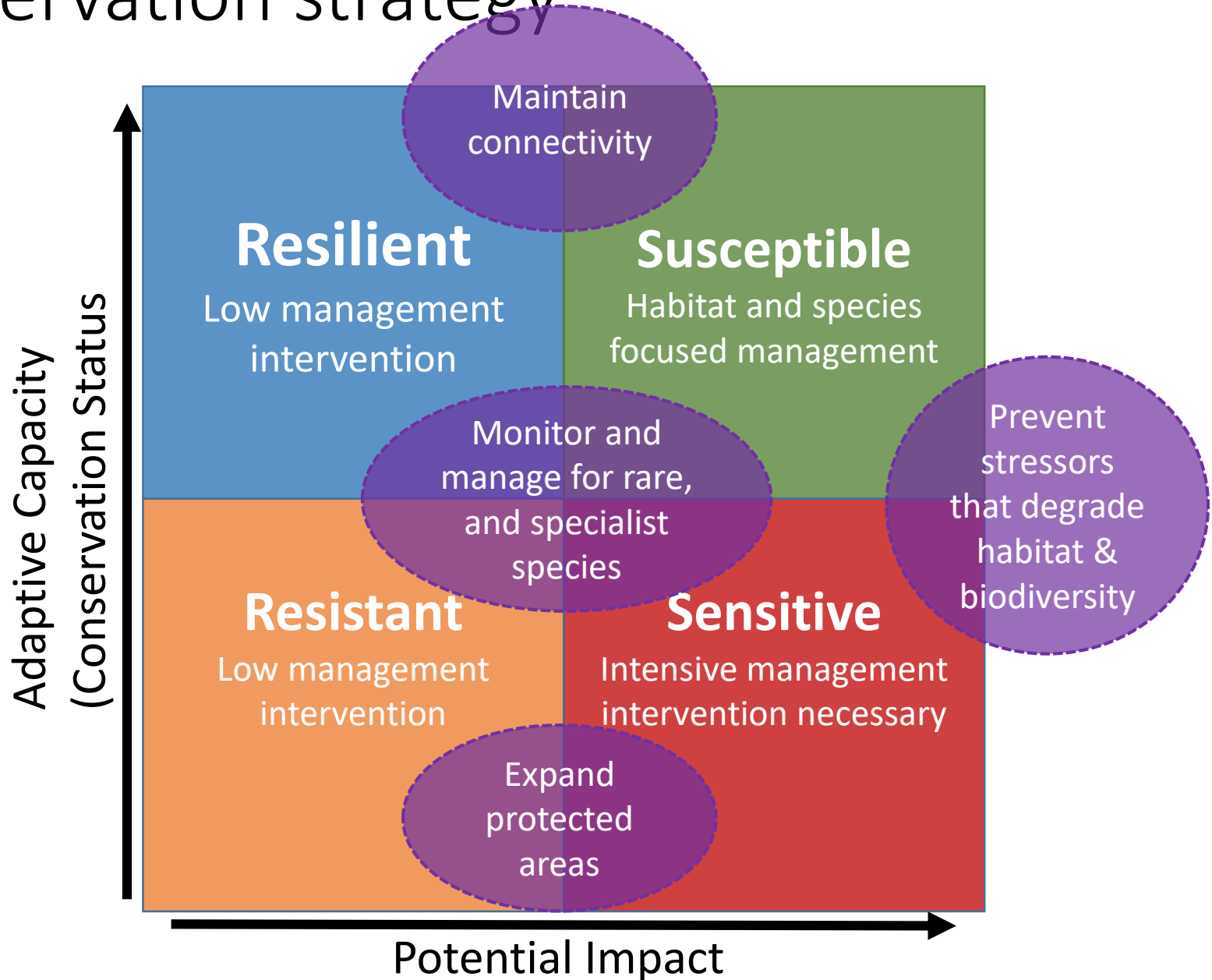
Vulnerability



Conservation strategy



Conservation strategy



Vulnerability



Conserved with **HIGH** rare species index



Conserved with **LOW** rare species index



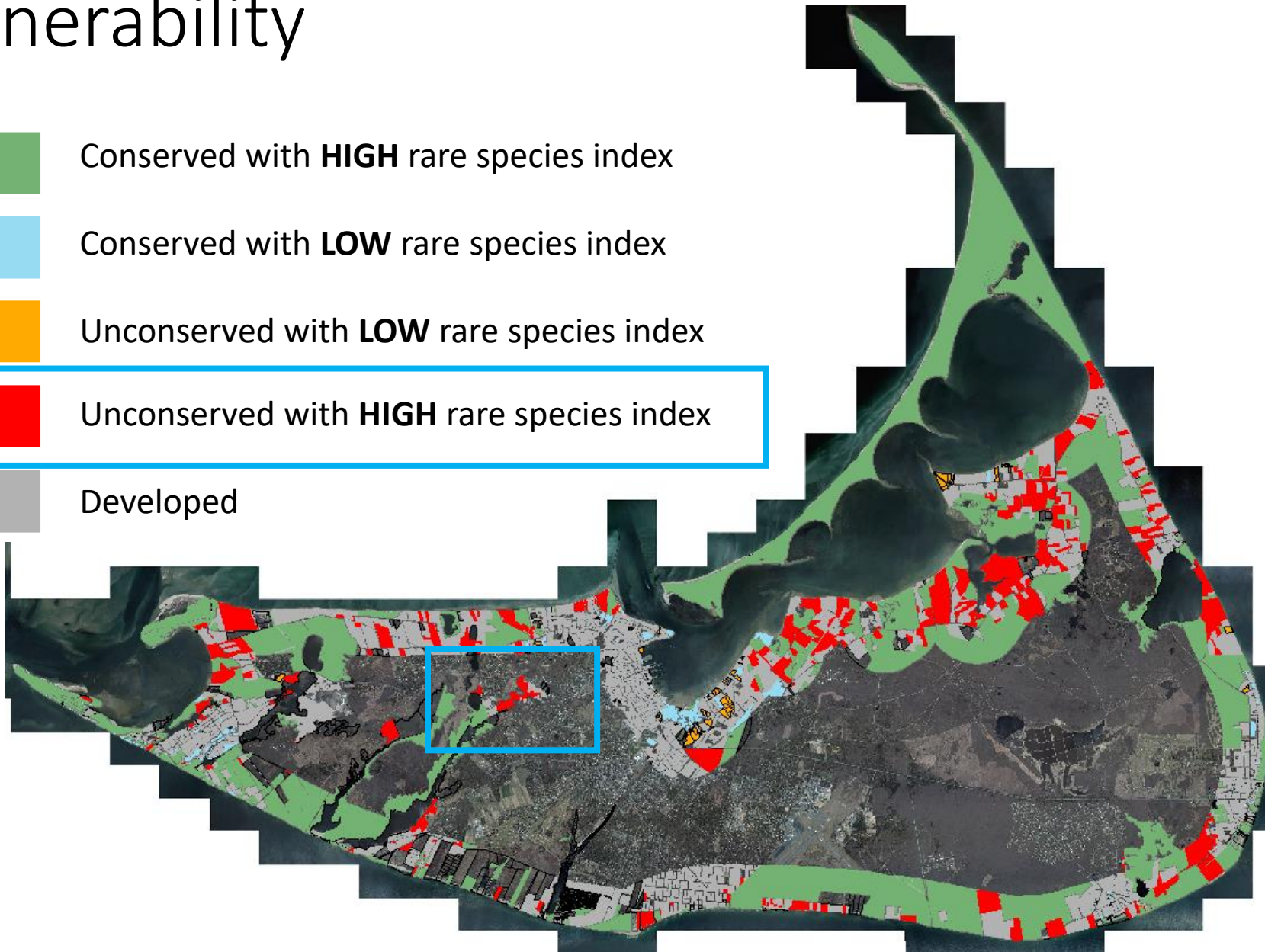
Unconserved with **LOW** rare species index



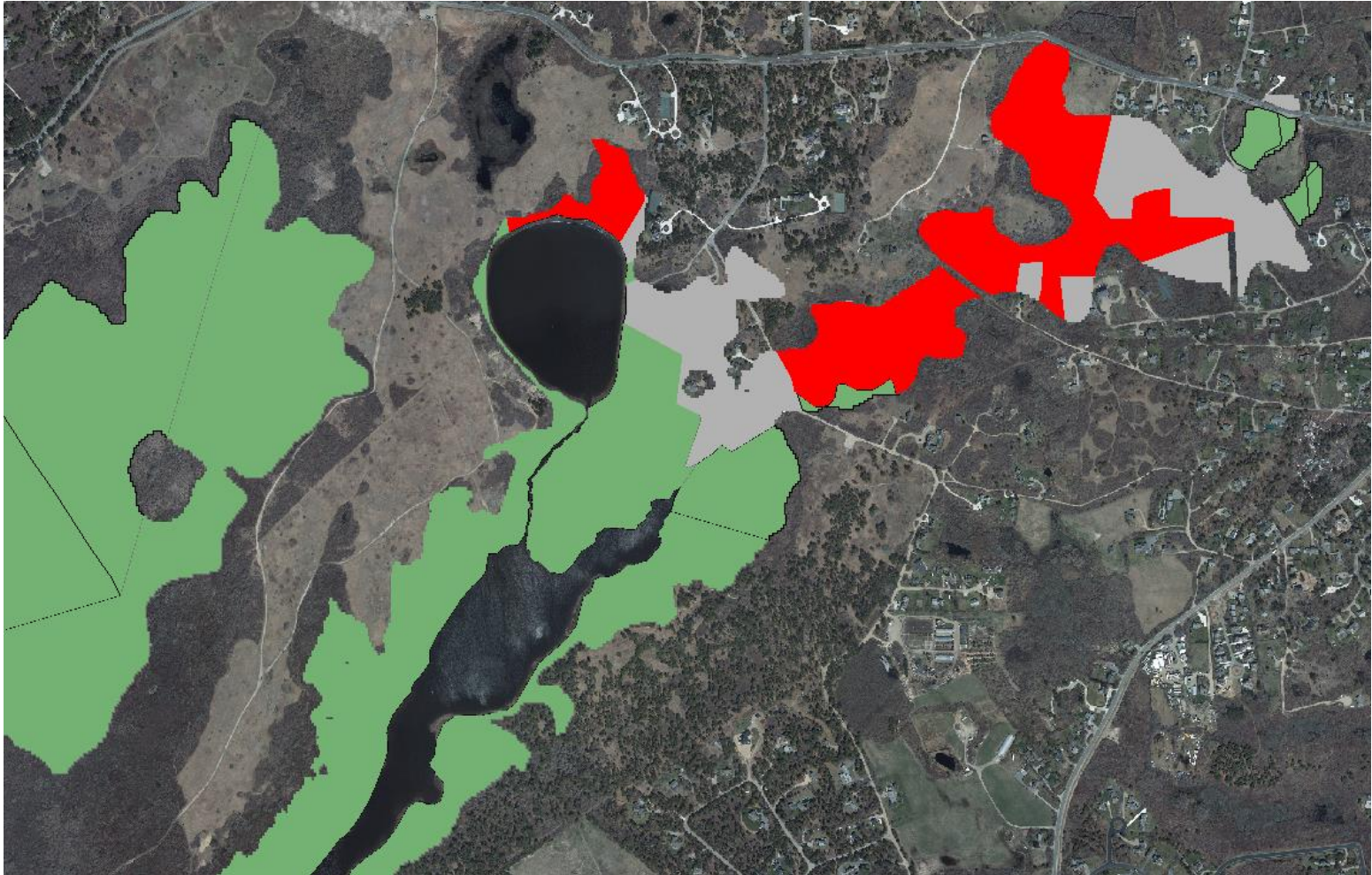
Unconserved with **HIGH** rare species index



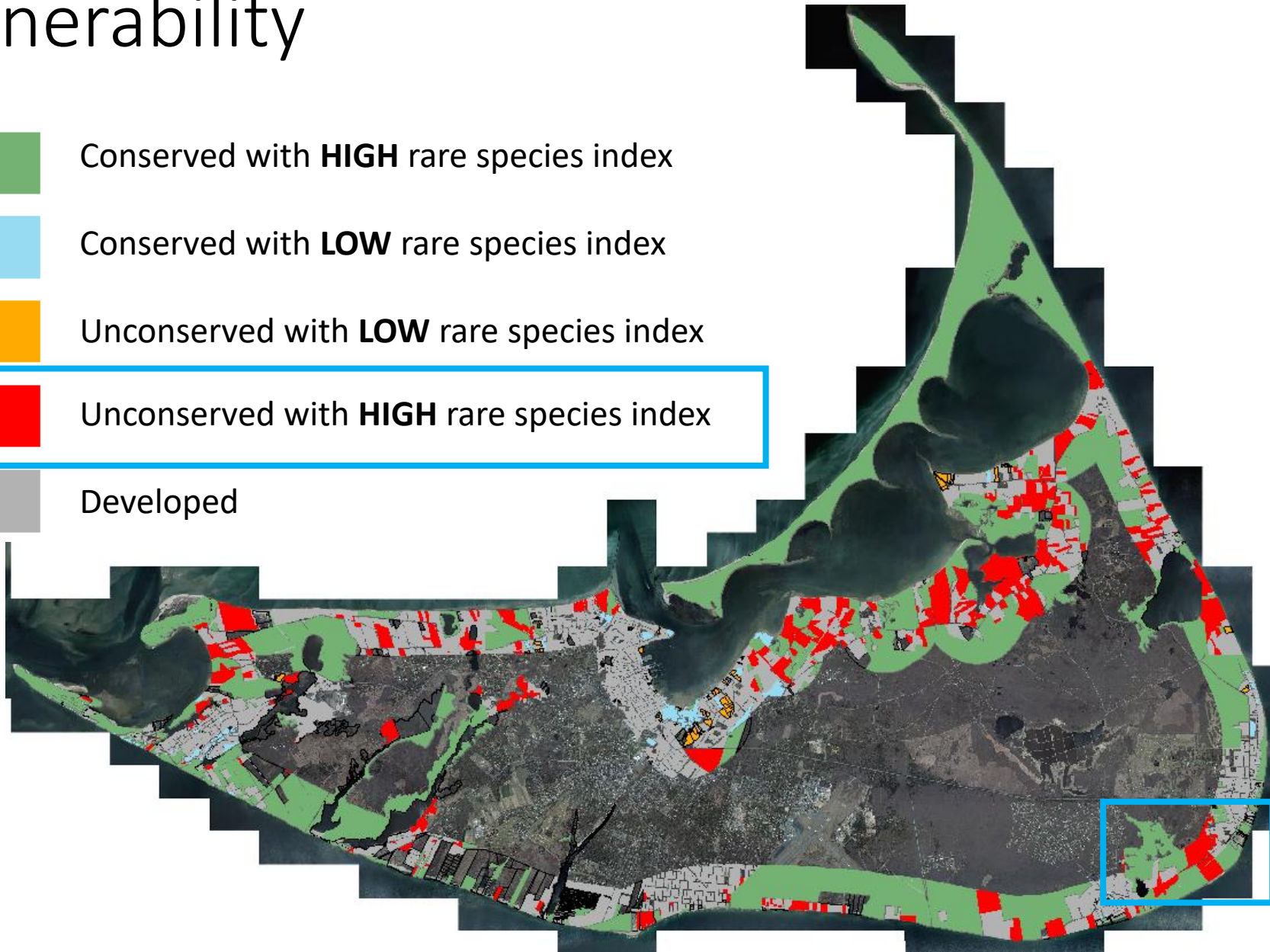
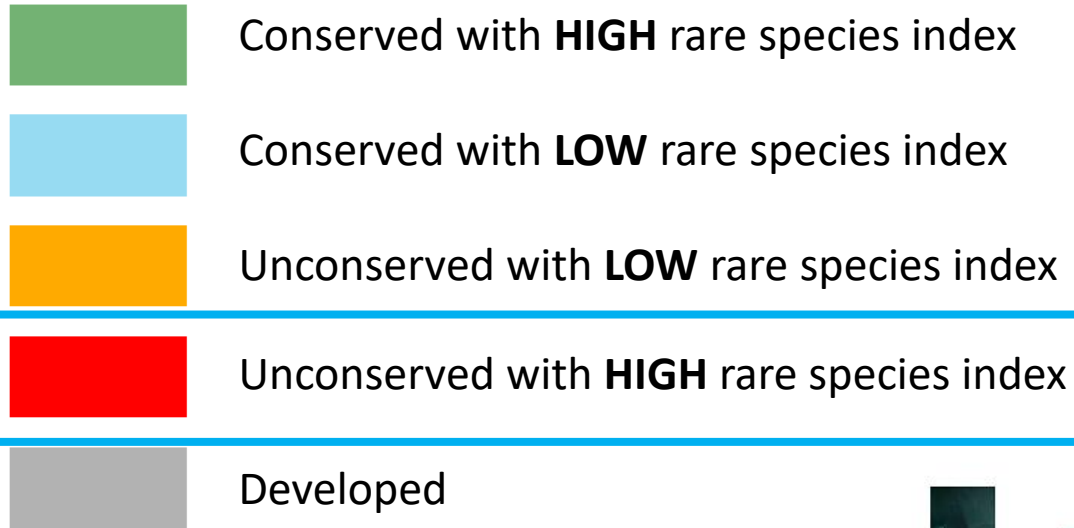
Developed



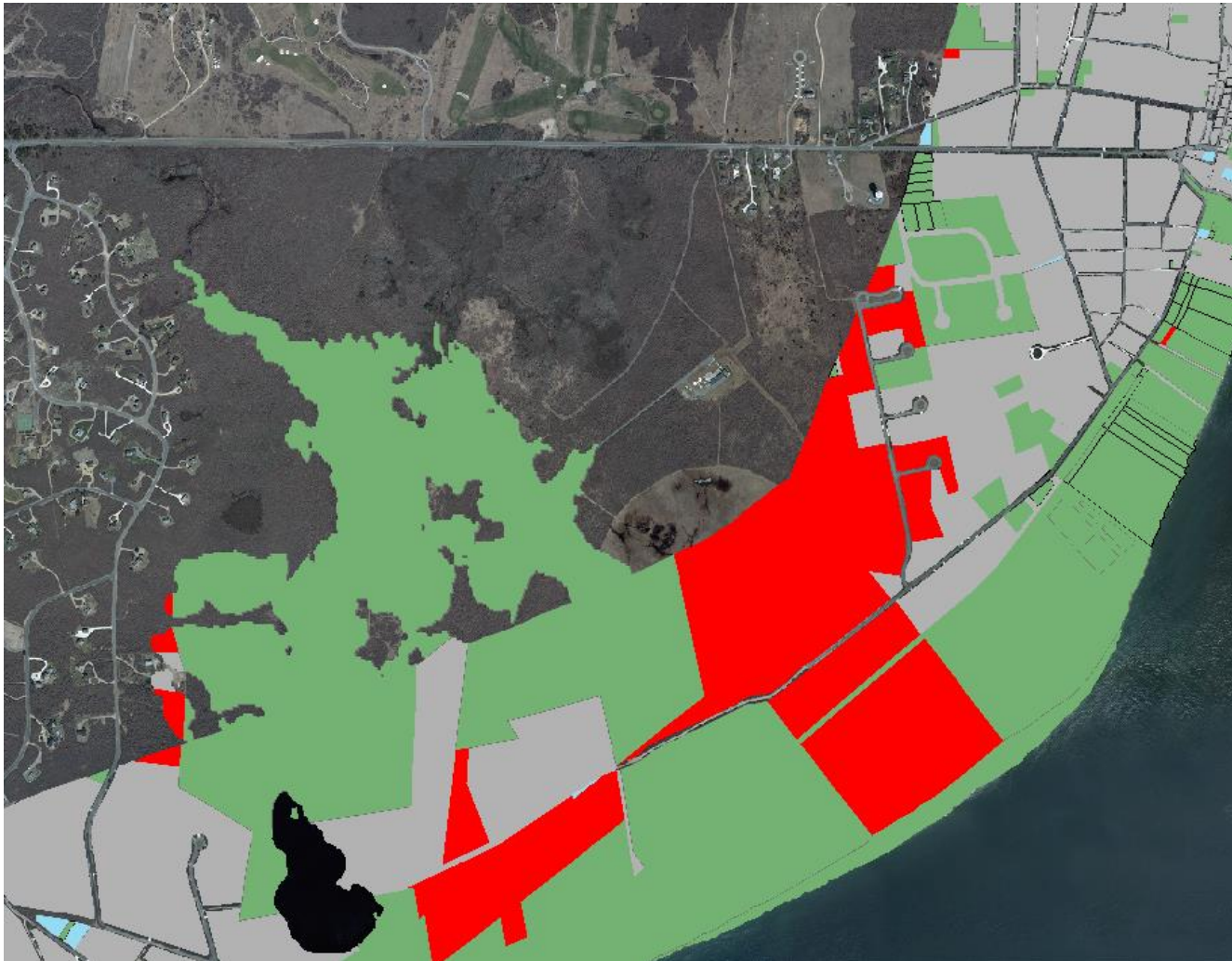
Privately owned land that isn't protected but has high conservation value and in a vulnerable area



Vulnerability

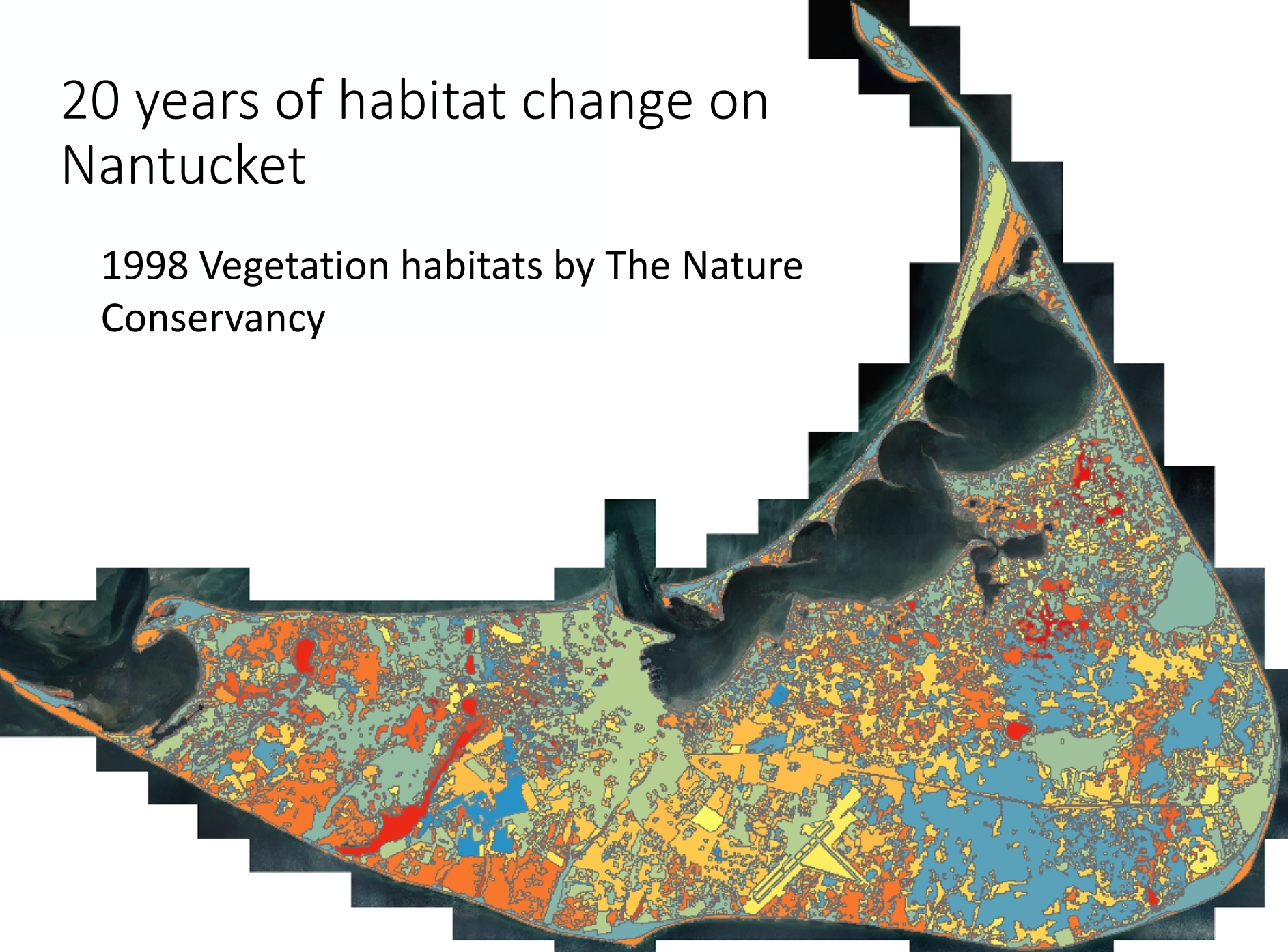


Privately owned land that isn't protected but has high conservation value and in a vulnerable area

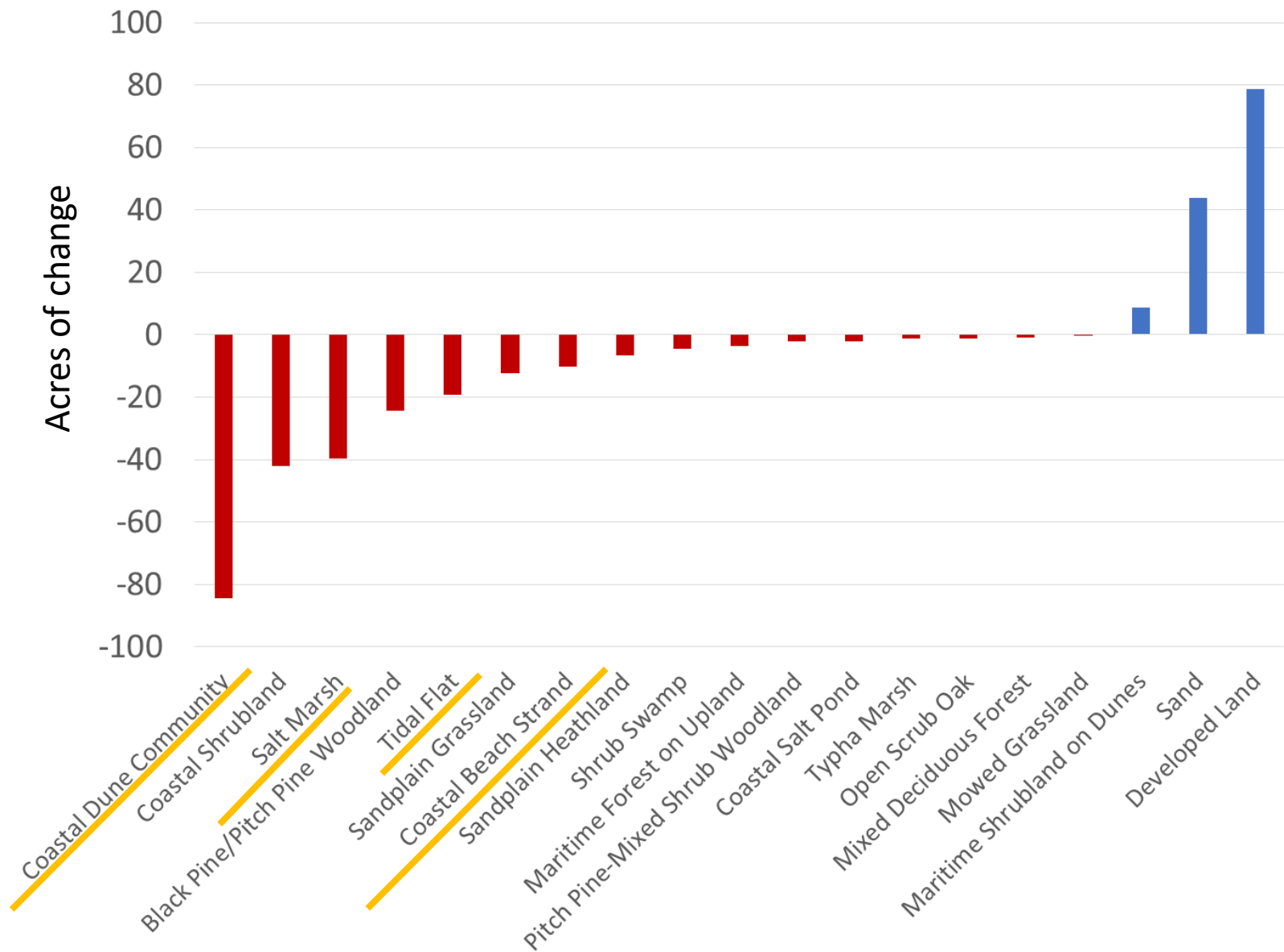


20 years of habitat change on Nantucket

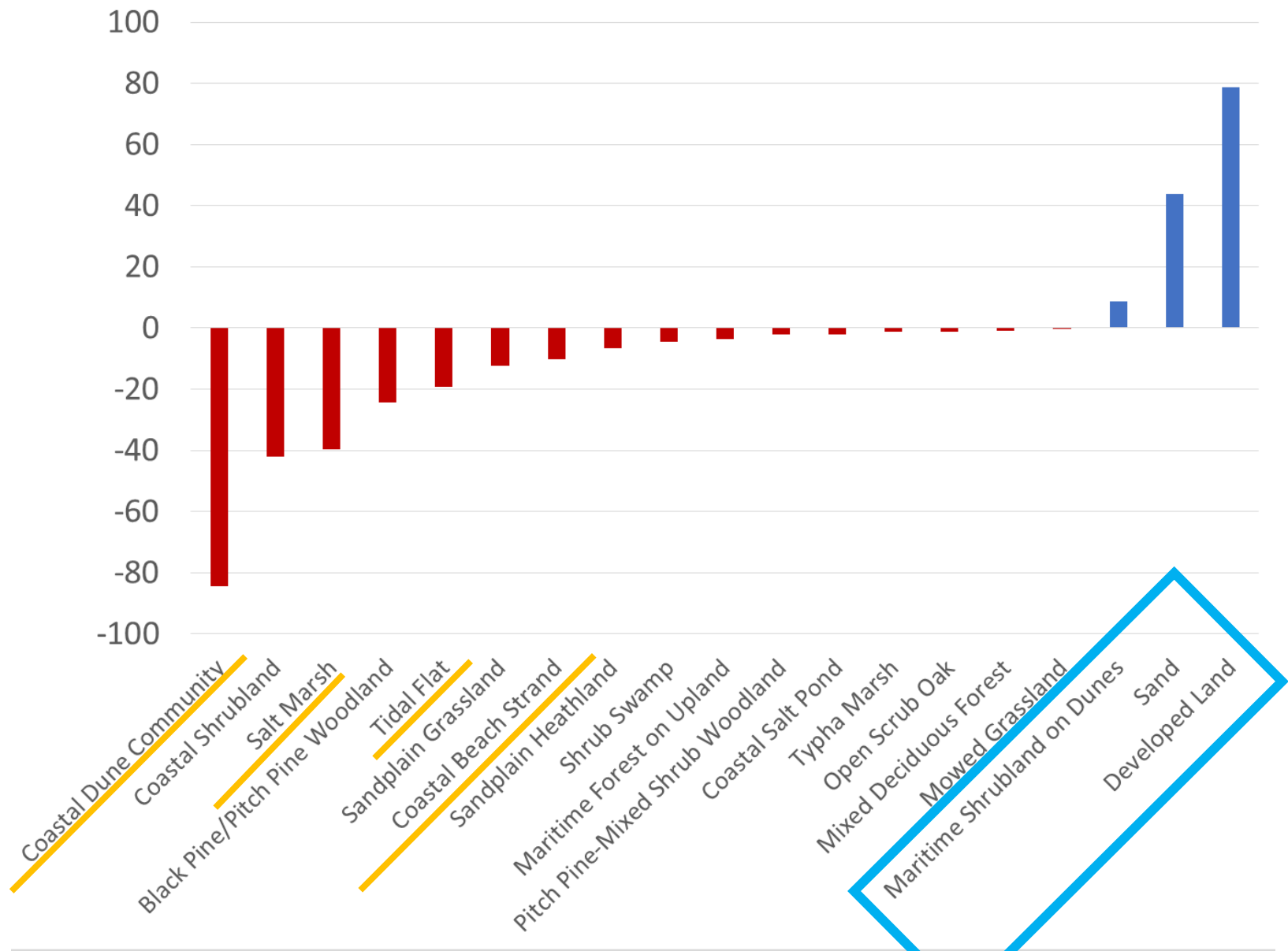
1998 Vegetation habitats by The Nature Conservancy



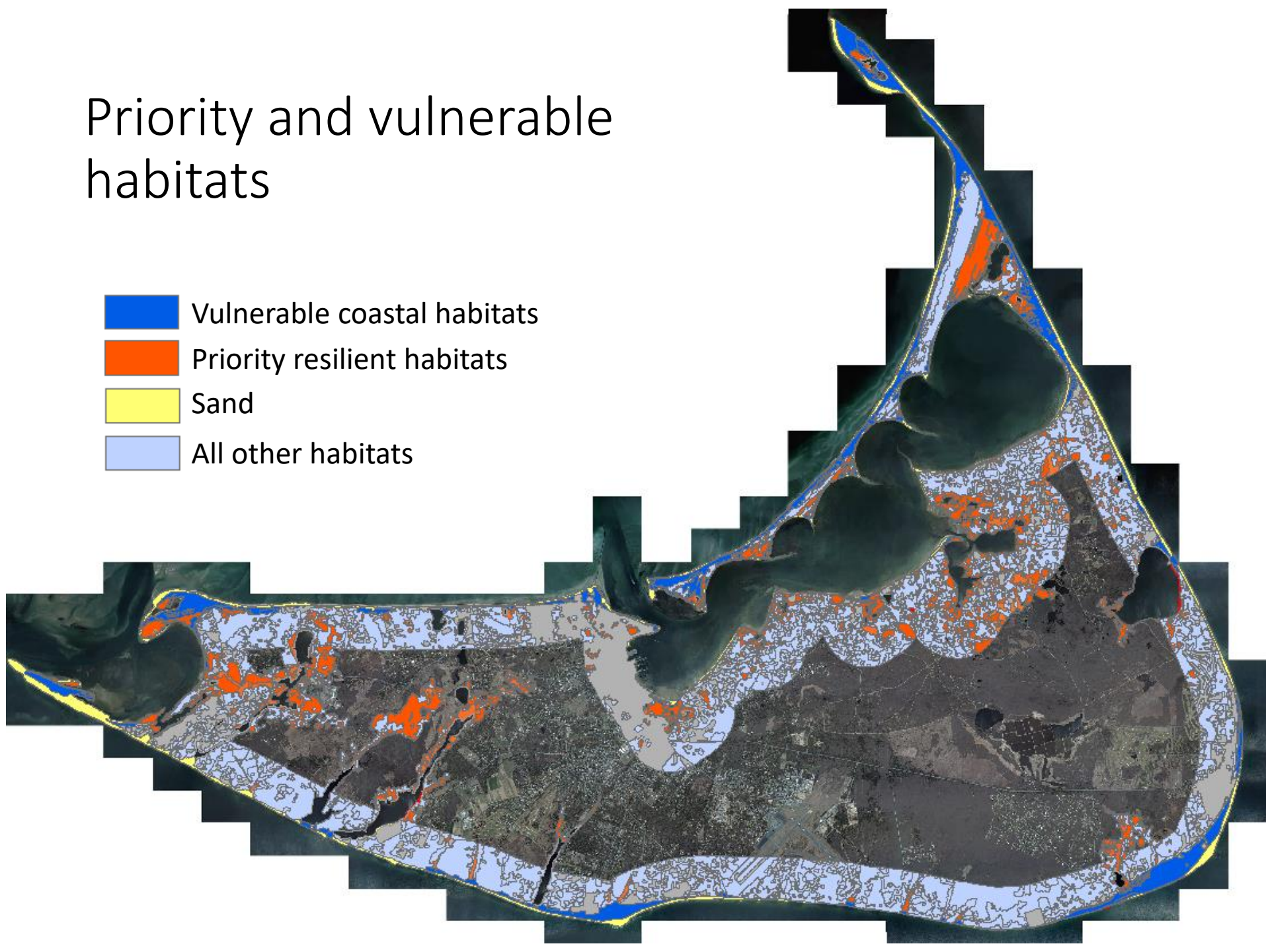
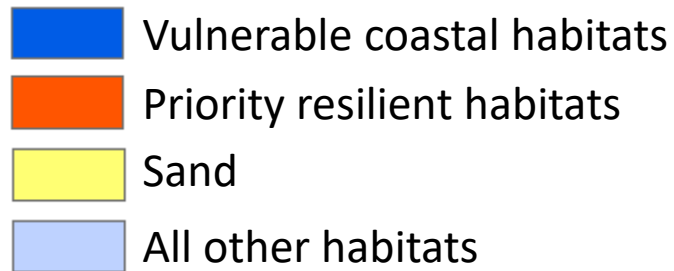
Habitat Change on Nantucket since 1998



Habitat Change on Nantucket since 1998

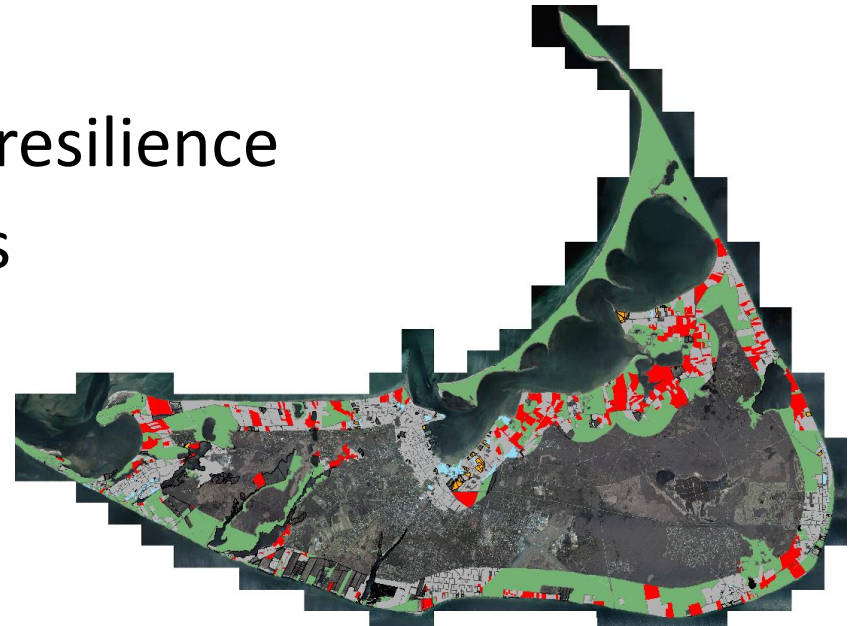


Priority and vulnerable habitats



Conservation Management Recommendations

- Ensure “moderately” conserved properties remain or improve
- Move as many parcels as possible from non-conserved open space to conserved or moderately conserved
- Prioritize parcels of known resilience
- Prevent additional stressors
 - Non-native invasive species
 - Over-use
- Maintain connectivity

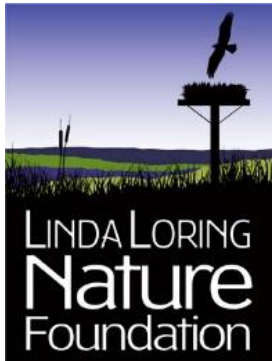


Future Work

- Include conservation easement data
- Refine maps
- Include multiple SLR scenarios
- Add in SLAMM model



Thank you



Sarah Bois, Linda Loring Nature Foundation

stbois@llnf.org



Jen Karberg, Nantucket Conservation Foundation

jkarberg@nantucketconservation.org