



DOI-NFWF Hurricane Sandy Coastal Resiliency Assessment and NFWF's Regional Analyses



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Hurricane Sandy Conservation Framework



THREE OVERARCHING GOALS:

1. Reduce the impacts of coastal storm surge, wave velocity, sea level rise and associated natural threats on coastal and inland communities.
2. Strengthen the ecological integrity and functionality of coastal/inland ecosystems to protect communities and to enhance fish and wildlife and their associated habitats.
3. Enhance our understanding of the impacts of storm events and identify cost effective, resiliency tools that help mitigate for future storms.





Socio-Economic Metrics Report: Approach

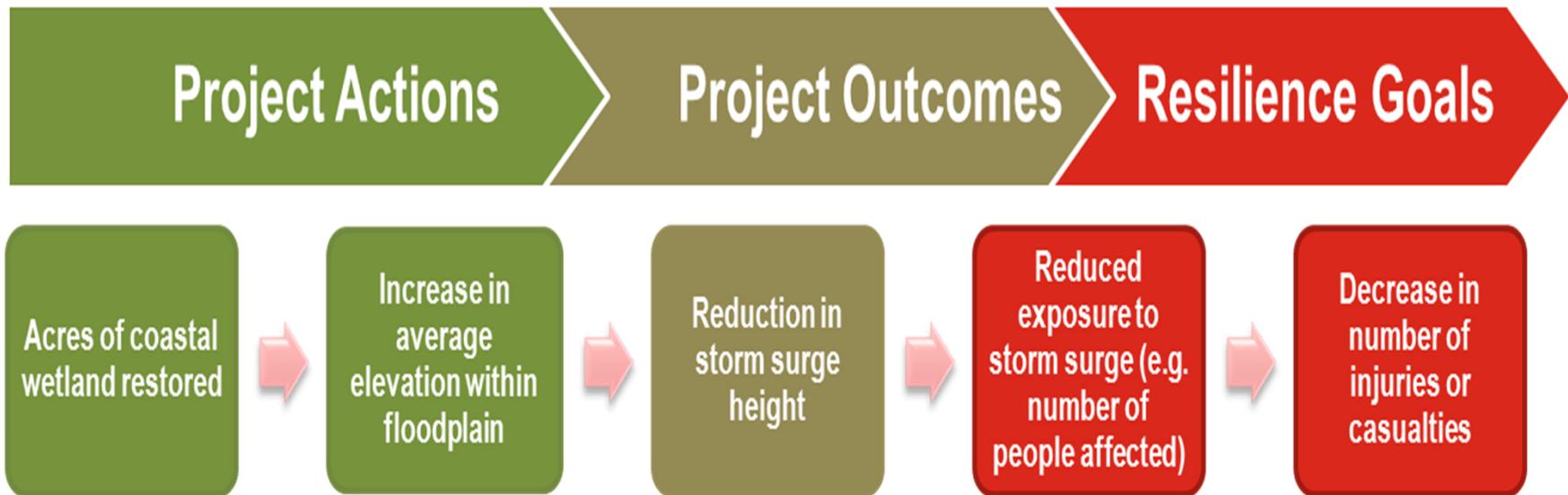


- Conducted literature review, interviews with grantees and experts
- Mapped resilience project actions to biophysical outcomes to socio-economic resilience goals
- Socio-economic metrics for each biophysical outcome
- Range of methodologies for measurement rated according to level of effort (L/M/H)
- Recommended set of metrics for each of 167 projects
(113 DOI Bureau projects + 54 DOI NFWF projects)





Causal Chain Linking Project Actions to Resilience Goal





Socio-Economic Metrics: Biophysical Outcomes



- 1) Improved avian and terrestrial species habitat and biodiversity
- 2) Improved communication plans, including emergency communication plans and communication tools for mitigation, risks, and hazards
- 3) Improved fish and shellfish habitat; increased fish and shellfish abundance and diversity
- 4) Improved hazard mitigation planning, actions, or capital expenditures
- 5) Improved amenities, including observation platforms, boardwalks, etc.
- 6) Increased quality and diversity of data acquisition, including datasets, maps, and models
- 7) Improved community comprehensive planning, mapping, and zoning efforts
- 8) Improved vegetative cover
- 9) Improved water management and fire control
- 10) Improved water quality
- 11) Reduced beach erosion; increased beach width; restored dunes
- 12) Reduced extent of damaging inundation from major storm and flood events
- 13) Reduced hazard of nuisance flooding
- 14) Reduced soil contamination
- 15) Increased quality, diversity of data analysis, including datasets, maps, and models
- 16) Increased quality, diversity of data delivery, including for datasets, maps, and models



Socio-Economic Resilience Goal Categories



- Restoration Projects
- Community Planning

- Human Health and Safety
- Physical Infrastructures
- Economic Resilience
- Community Competence and Empowerment





Metrics at the Intersection of Project Outcomes and Resilience Goals



 Resilience Category	 Biophysical/ Ecological Outcome	Resilience Goal 
		Reduction in number of people at risk for injury, casualty, or other health effects from a particular flood event
Human Health and Safety	Reduced extent of damaging inundation from major storm and flood events	 <p>Metric at Intersection:</p> <ol style="list-style-type: none">1) Number of households in the area potentially affected by a project2) Reduction in number of households exposed to risk



Metrics for Human Health and Safety		Resilience Goals	
		Reduction in number of people at risk for injury, casualty, or other health effects from a particular flood event	Reduction in number of people at risk for negative effects from contaminated water, soil, mosquito-borne disease, and wildfire
		Metrics ^a	
Biophysical and Ecological Outcomes	Reduced extent of damaging inundation from major storm and flood events ^b	1. Number of households in the area potentially affected by a project 2. Reduction in number of households exposed with the project as compared to without	
	Reduced hazard of nuisance flooding ^c		1. Number of households in the area potentially affected by a project 2. Reduction in number of households exposed with the project as compared to without
	Improved water quality		1. Reduction in number of households exposed to water-borne disease with the project as compared to without
	Improved water management and fire control		1. Reduction in number of households exposed to smoke and particulate matter with the project as compared to without
	Reduced soil contamination		1. Reduction in number of households exposed to a toxic pollutant with the project as compared to without
	Increased % native vegetation		1. Increase in number of households benefiting from reduced likelihood of West Nile Virus transmission
	Improved fish and shellfish habitat, increased fish and shellfish abundance and diversity		1. Increase in number of households with improved access to seafood



Monitoring and Evaluation: Next Steps



- **April 15** – Contract will be executed for evaluation (performance period will be May 1, 2016 – April 30, 2018)
- **Summer 2016**
 - Contractor will provide recommendations for enhanced data collection to support evaluation using MEG and Abt core metrics as guide
 - NFWF will make awards to grantees, bureaus and/or contractors to acquire or collect additional data to support evaluation
 - With remaining funds, NFWF will run a competitive grant process to fill science gaps in understanding resilience, esp. to inform resilience policy and on-the-ground restoration



Hurricane Sandy Links

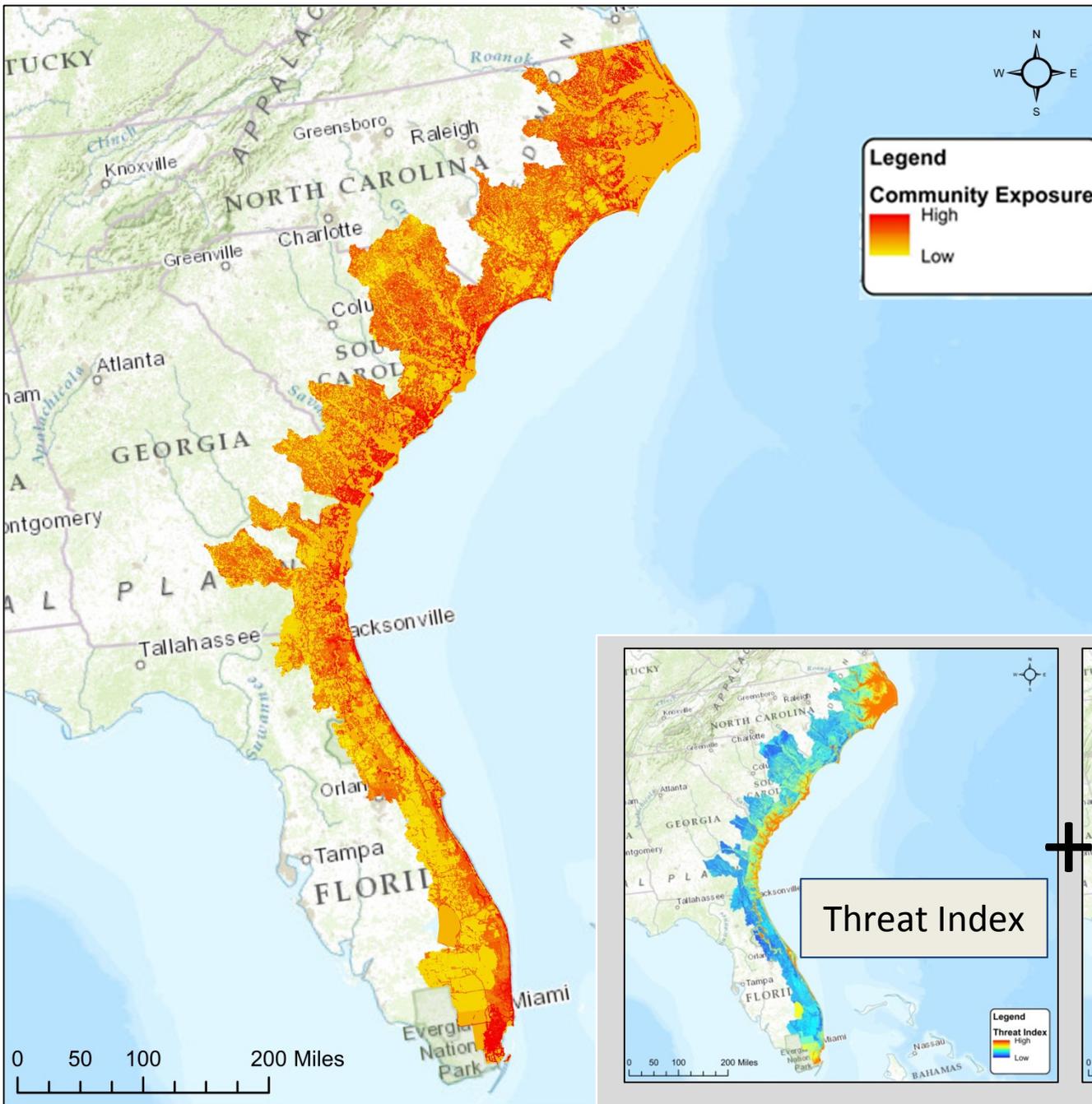


- **NFWF Hurricane Sandy web page**
<http://www.nfwf.org/hurricanesandy/Pages/home.aspx>
- **DOI Hurricane Sandy web page**
<https://www.doi.gov/hurricanesandy>
- **DOI Hurricane Sandy Socio-Economic Metrics Report**
<https://www.doi.gov/hurricanesandy/doi-news-socio-economic-metrics-report-0>
- **DOI Hurricane Sandy Ecological Metrics Report**
<https://www.doi.gov/hurricanesandy/news/hurricane-sandy-project-metrics-report>
- **DOI Agency Response to Hurricane Sandy Map**
<http://fws.maps.arcgis.com/apps/MapSeries/index.html?appid=17a3ad1b05884d369c0b24fbcd57b6b9>



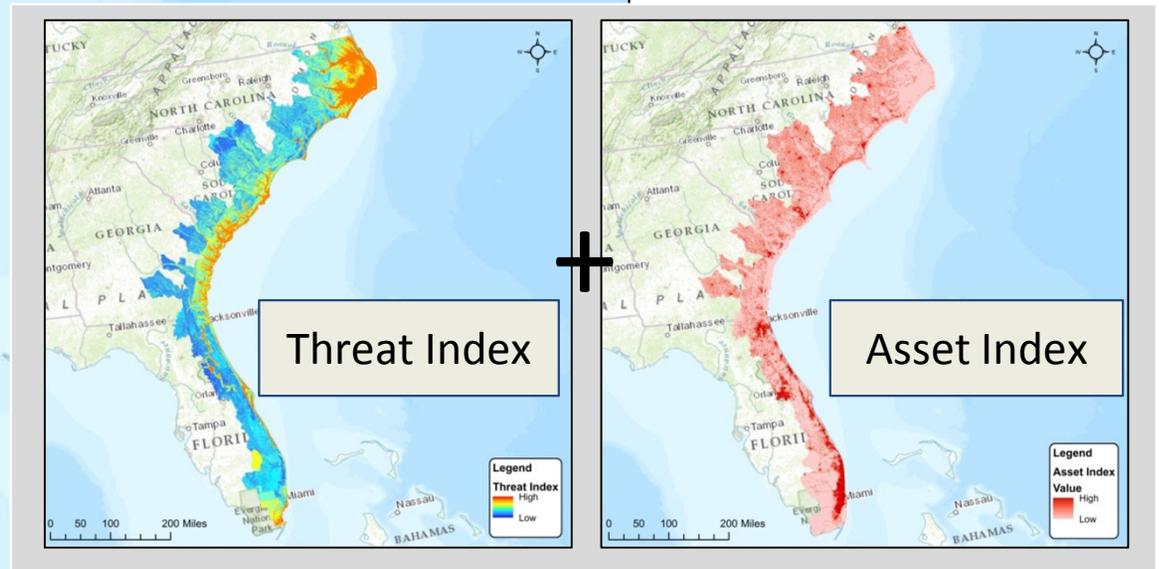
NFWF Resilience Analyses

- Coastal areas along the East Coast of the United States
- Community Exposure
- Resiliency Hubs
- Maximizing Investments for Community Resilience and Fish and Wildlife Conservation



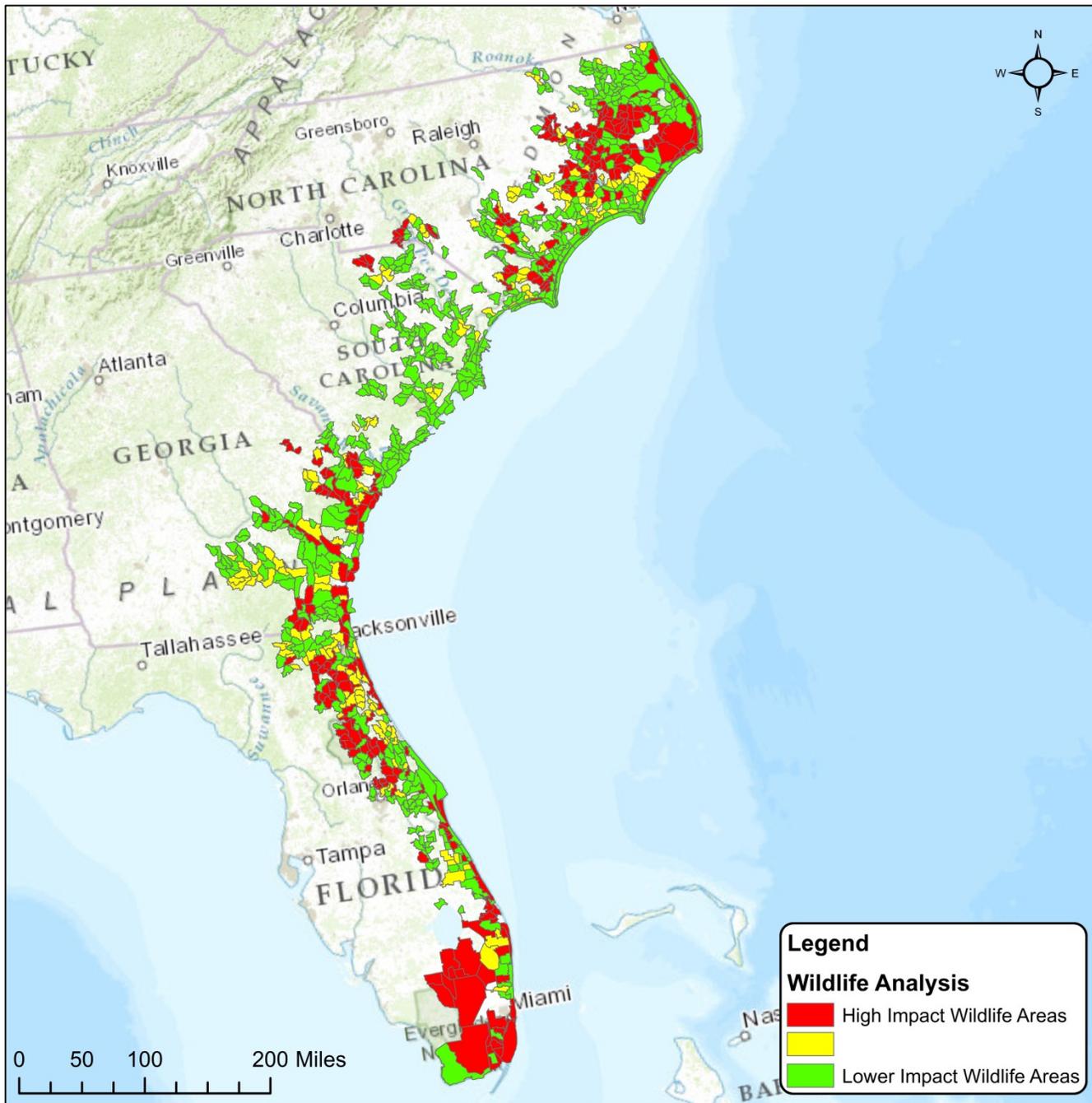
Community Exposure Index

This map identifies areas where community assets (population & infrastructure) are exposed to a flood hazard



Fish & Wildlife Habitat Assessment

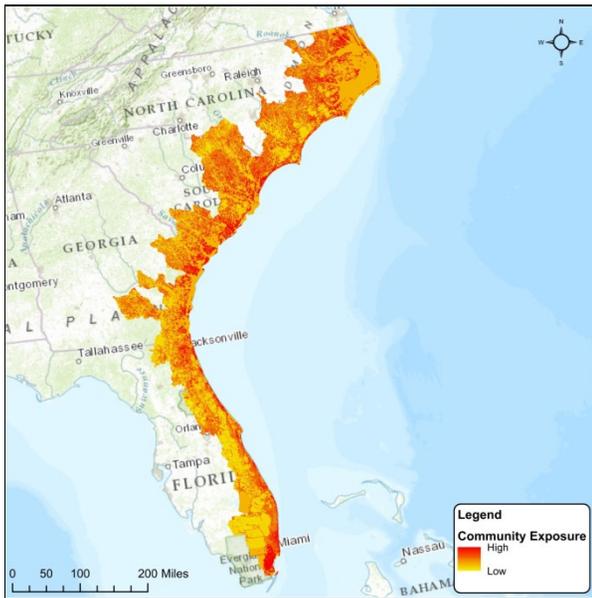
This map identifies critical areas of fish and wildlife habitat. Prioritized by priority species density based on data from the South Atlantic Conservation Blueprint (South Atlantic Landscape Conservation Cooperative).





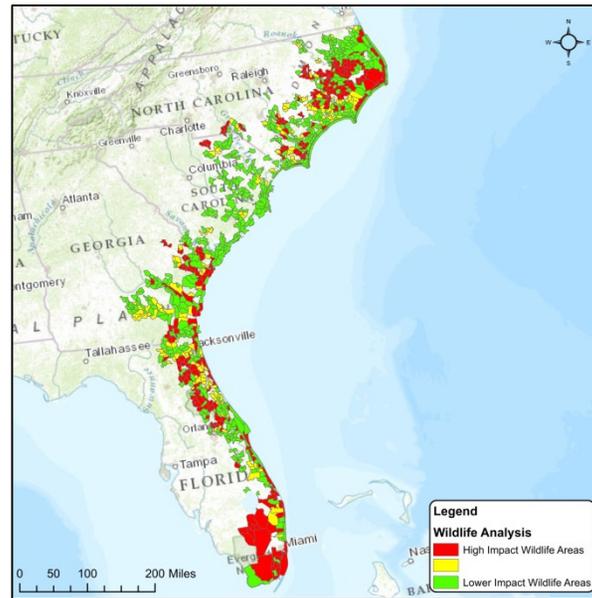
Identifying Resiliency Hubs

Input



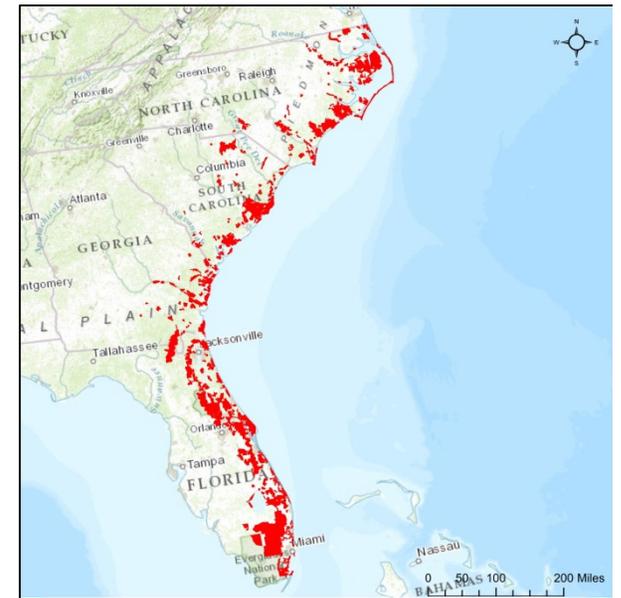
Community Exposure Index

Input



Fish & Wildlife Habitat Assessment

Input



Protected Areas Database



Resiliency Hubs

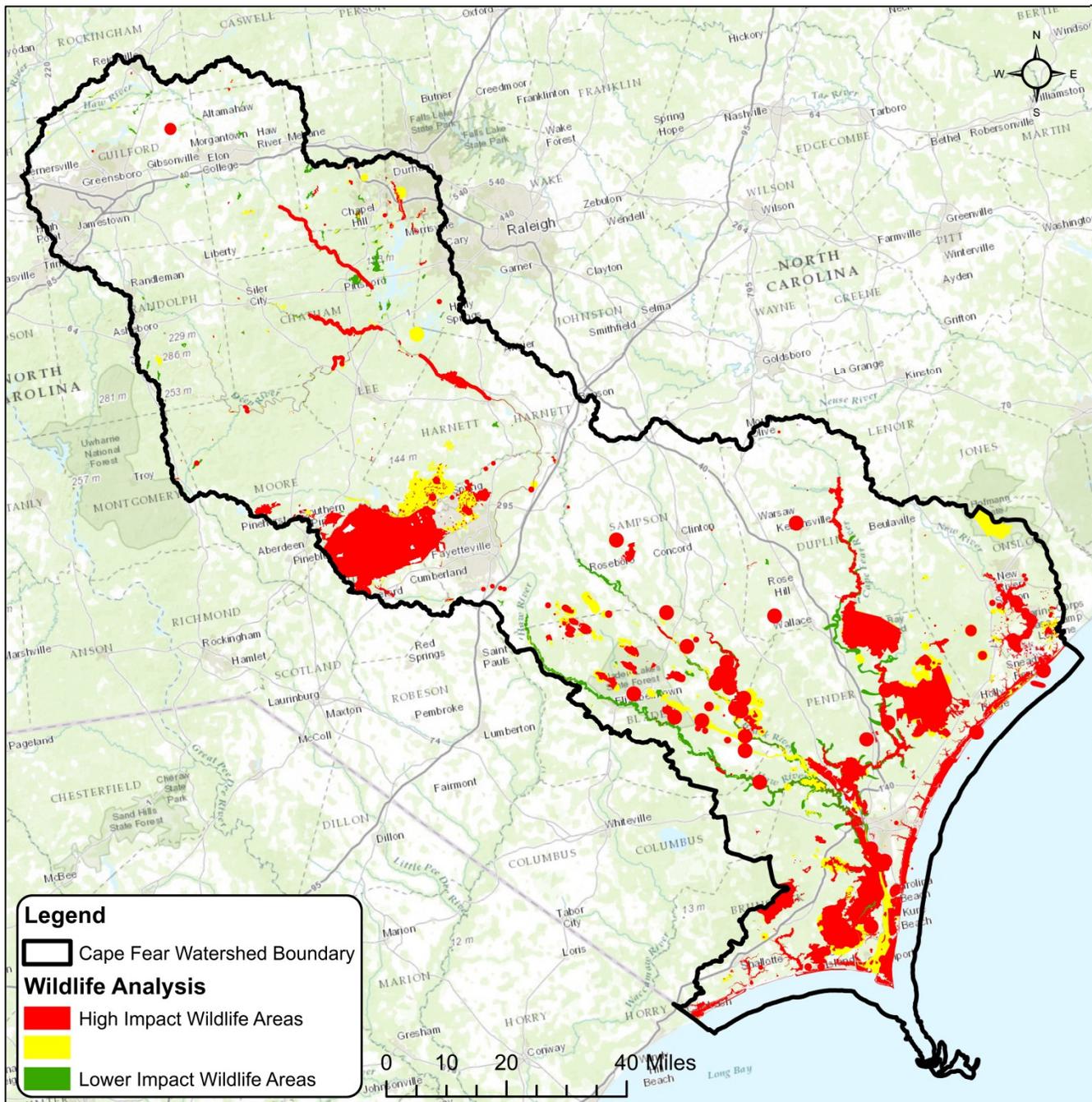
This map identifies large areas of protected lands and habitat that provide protection and resiliency to the communities in and around them as well as to critical populations of fish and wildlife.

This map is ideal for identifying where habitat restoration or creation could be sited.

DEEP DIVE ASSESSMENTS:

Critical Fish & Wildlife Habitat

Uses numerous,
detailed and local
datasets





Questions?

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- For NFWF Regional Analyses questions, contact:
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