



# Habitat Restoration Needs Planning

## Coastal & Heartland National Estuary Partnership (CHNEP)

### Uniting partners and resources to protect Central and Southwest Florida's Water, Wildlife & Habitat

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## Introduction

**Background:** The Coastal & Heartland National Estuary Partnership (CHNEP) area focus is over 5,670 square miles (3,628,300 acres) in Central and Southwest Florida. It consists of both coastal and inland communities, 10 counties and 25 cities, all working together to protect watersheds and estuaries. Estuaries within the region include Lemon Bay, Dona & Roberts Bays, Charlotte Harbor, Pine Island Sound, Caloosahatchee, San Carlos Bay and Estero Bay. Major rivers are the Myakka, Peace, Caloosahatchee, and Estero Rivers. Approximately 10% of the CHNEP area is open bays, 33% is within the South Florida Water Management (SFWMD) jurisdiction, and 57% is within the Southwest Florida Water Management District (SWFWMD) jurisdiction. CHNEP and other National Estuary Programs are uniquely positioned as a collaborative of governmental, non-profit, and community partners pooling resources to research, plan and implement regional or watershed-scale planning projects.

**Project Purpose:** This Habitat Restoration Needs (HRN) Plan is a comprehensive guide to habitat preservation/conservation, connectivity, management, restoration, sustainability, and resiliency throughout the CHNEP area using quantifiable objectives and maps. The Plan identifies preservation/conservation and reservation opportunities, as well as management/enhancement and restoration targets, in each basin within the CHNEP area. Full implementation will have substantial positive long-term impacts for these unique natural systems and species populations while allowing room for sustainable growth. The overarching goal is to increase the acreages of native habitats and to make *realistic* and *strategic* recommendations that will help stakeholders prioritize funding, restoration, and climate preparedness work in the region for the next 50 years- under the umbrella of the CHNEP Comprehensive Conservation and Management Plan (CCMP).

The Partnership developed the following habitat restoration Vision to guide the project outcomes:

*A diverse environment of interconnected, healthy habitats that support natural processes and viable, resilient native plant and animal communities.*

**Project Uses:** Local, regional, state and federal agencies and organizations use the HRN Plan to prioritize funding and efforts to implement habitat restoration and management, land acquisition and protection, and mitigation projects needed to effectively and efficiently achieve the agreed upon Partnership goals and vision. Considerations include but are not limited to: critical natural habitats- including wildlife corridors and dispersal areas, movement and habitat migration corridors, wetlands, flow ways, and environmentally sensitive lands. Habitat threats include construction of transportation corridors and new development, climate change and sea level rise, excessive consumptive water use, and water quality degradation.

## Methods

The HRN project approach used geospatial tools to identify habitat opportunity areas, and to develop quantitative habitat management/enhancement and restoration targets that are "place-based" and can be mapped. Analysis was focused on three distinct spatial strata—coastal, river floodplain, and upland area. The primary results of the project approach are presented as numeric opportunities and target acreages. Preservation/Conservation Opportunities (PCO) and Reservation Opportunities (RO) are identified for areas that have the potential for preservation, conservation, or reservation activities. Management/Enhancement Targets (MET) and Restoration Targets (RT) are identified for existing native and non-native habitats that may be actively managed, enhanced, or restored.

Below is an overview of the analysis used to support the HRN opportunity identification and target setting process.

**1) Assessment of available GIS land use/land cover datasets:** Conducting habitat area gains/losses and percent habitat change included merging SWFWMD with SFWMD FLUCCS data to establish baseline land use within the CHNEP area, and merging SWFWMD with SFWMD FLUCCS data to establish current land use within the CHNEP area.

**2) Categorization of FLUCCS codes and NRCS Soils:** In order to set targets for the multitude of various habitats within the CHNEP region, they were rolled up into three major habitat categories: tidal wetlands; freshwater wetlands; and uplands using by categorizing FLUCCS codes and NRCS Historical Soils distribution data.

**3) Habitat status and trends analysis:** The current status of major habitats used as benchmarks of habitat acreages and spatial distributions. Trend analyses reveal habitats with significant change, which prompts further investigation or identifies the need for conservation and management actions. Important considerations for interpreting spatial temporal trend analyses are the consistencies among the various mapping and classification procedures and datasets used in the analyses. Habitat gains/losses and percent change within each basin were calculated to determine significant gain/loss trends (+/- 15%); and to identify rare/unique habitats and those experiencing the greatest decline.

**4) Identification of opportunity and target types:** Habitats categorized above were used to develop opportunities and targets within the overall CHNEP area. This also involved documenting existing preservation and conservation lands, proposed land acquisition priorities, listed species critical habitats and migratory corridors, as well as documenting all planned land use for Community Needs (economic growth, water supply, aquifer recharge, water quality treatment, flood reduction) to inform the target setting process.

**Opportunities** are lands in native condition that are not currently in preservation or conservation. These areas present an "opportunity" to work with willing land owners, both public and private, to preserve, conserve, and potentially enhance habitats within the watershed.

**Targets** are derived from both public and private lands under conservation easements or otherwise protected for preservation or conservation that have the potential to benefit from more active land management or restoration. For privately owned lands this could be accomplished with the support of willing landowners.

**5) Identification of spatial strata:** In addition to the three major native habitat types discussed above, three spatial strata were defined as focus areas for habitat opportunity and target setting —coastal, river floodplain, and upland.

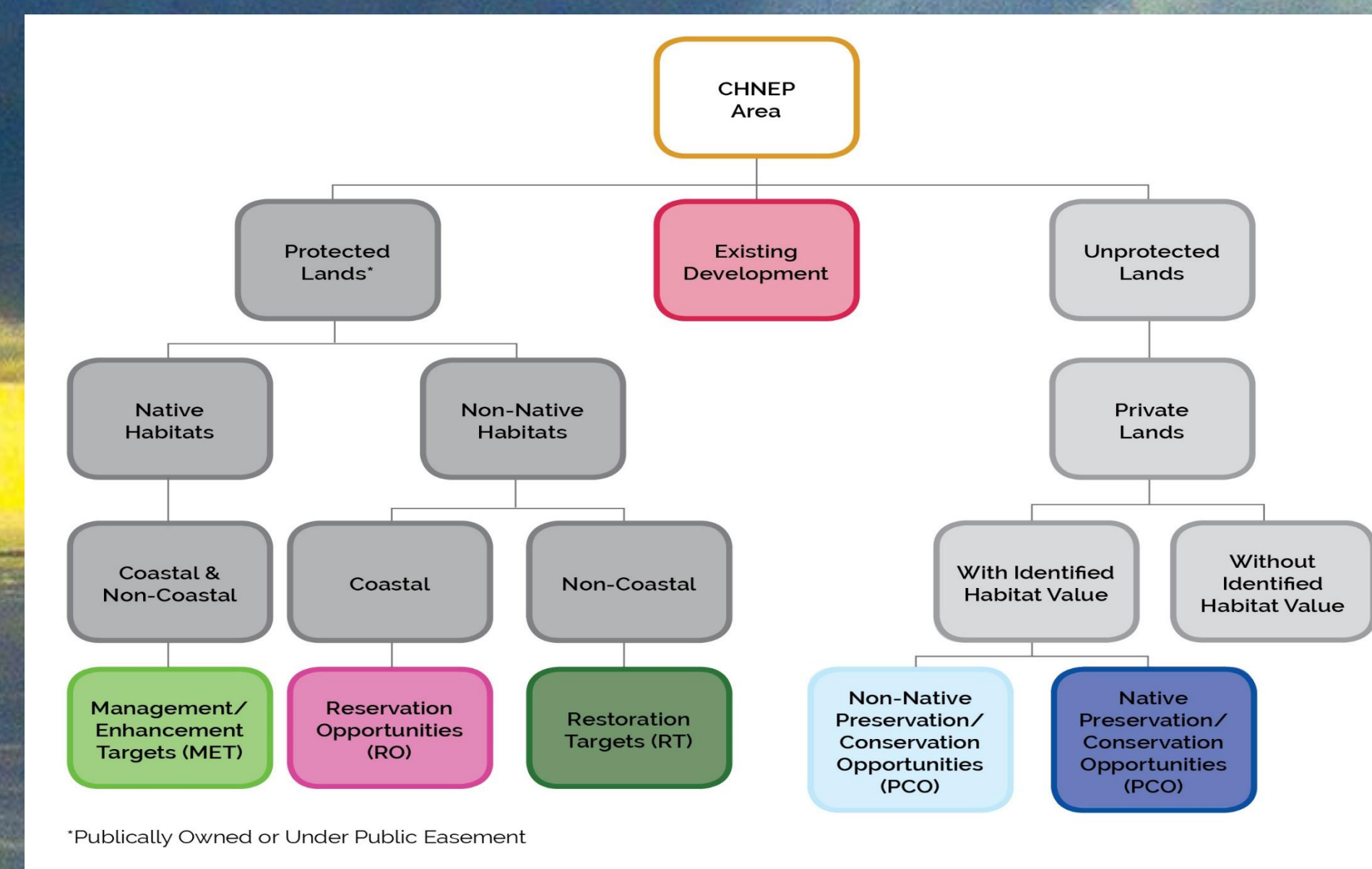
**6) GIS map series development:** GIS map series to graphically depict two opportunity types and two target types. The analysis resulted in maps depicting: Preservation/Conservation Opportunities (PCO); Reservation Opportunities (RO); and Management/Enhancement Targets (MET) and Restoration Targets (RT).

**7) Quantitative opportunity and target setting:** Using the maps developed in Task 6, tables with quantitative targets (in acres) for the areas to be managed/enhanced or restored, and opportunities for that areas that have the potential to be preserved/conserved or reserved were developed.

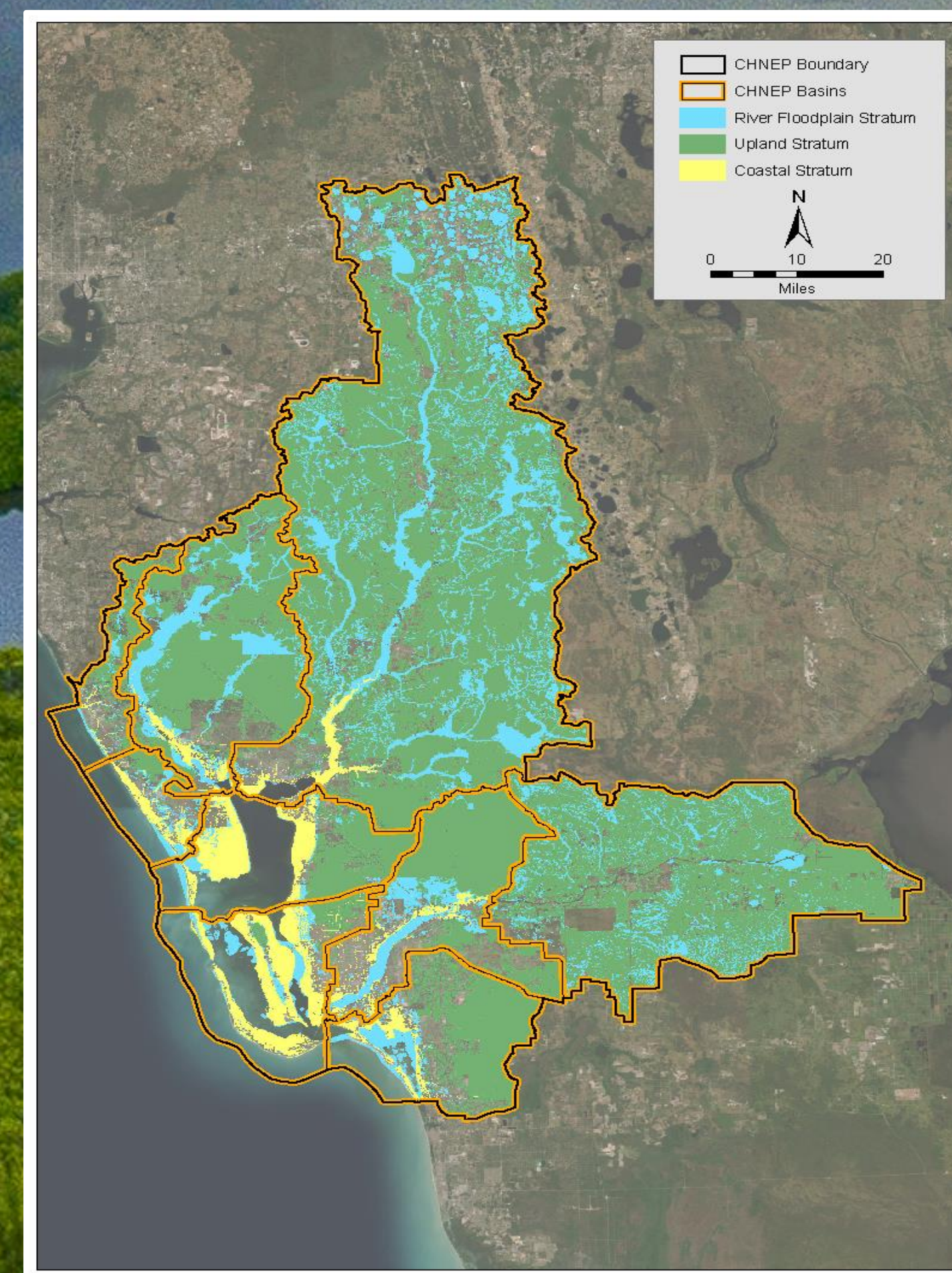
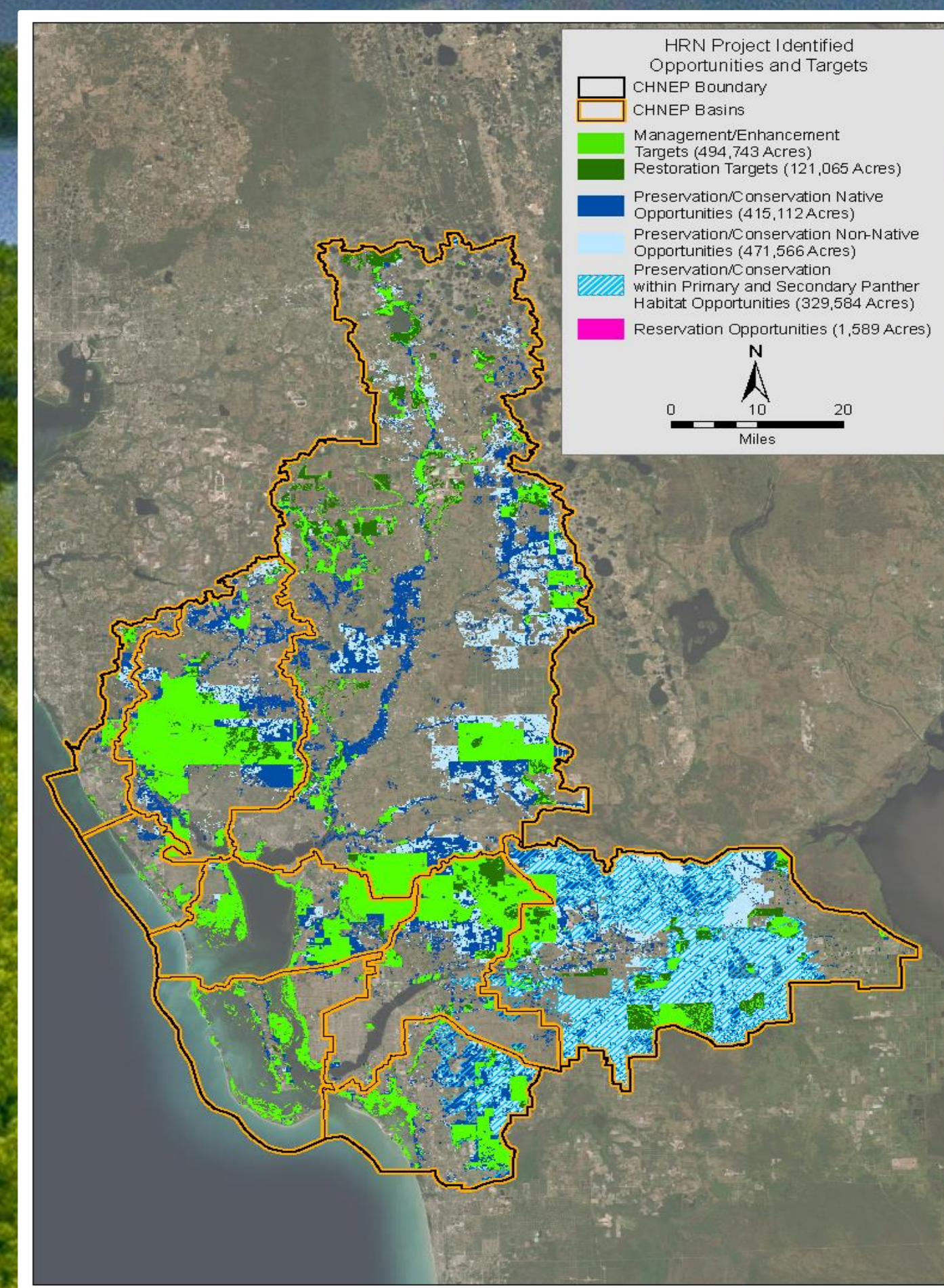
**8) Consideration of other HRN work products:** Other studies and work products were incorporated into the HRN project to inform the habitat opportunity and target setting process described above. These included: Habitat Evolution Model (HEM) Report (mapping habitat migration in response to sea level rise), existing literature on habitat migration due to climate impacts (sea level rise, changes in hydrology, evapotranspiration, etc.), Headwater Streams Technical Memorandum, Mining Areas Technical Memorandum, all documented local and regional plans and existing data on preservation/conservation and management/enhancement/restoration in the area.

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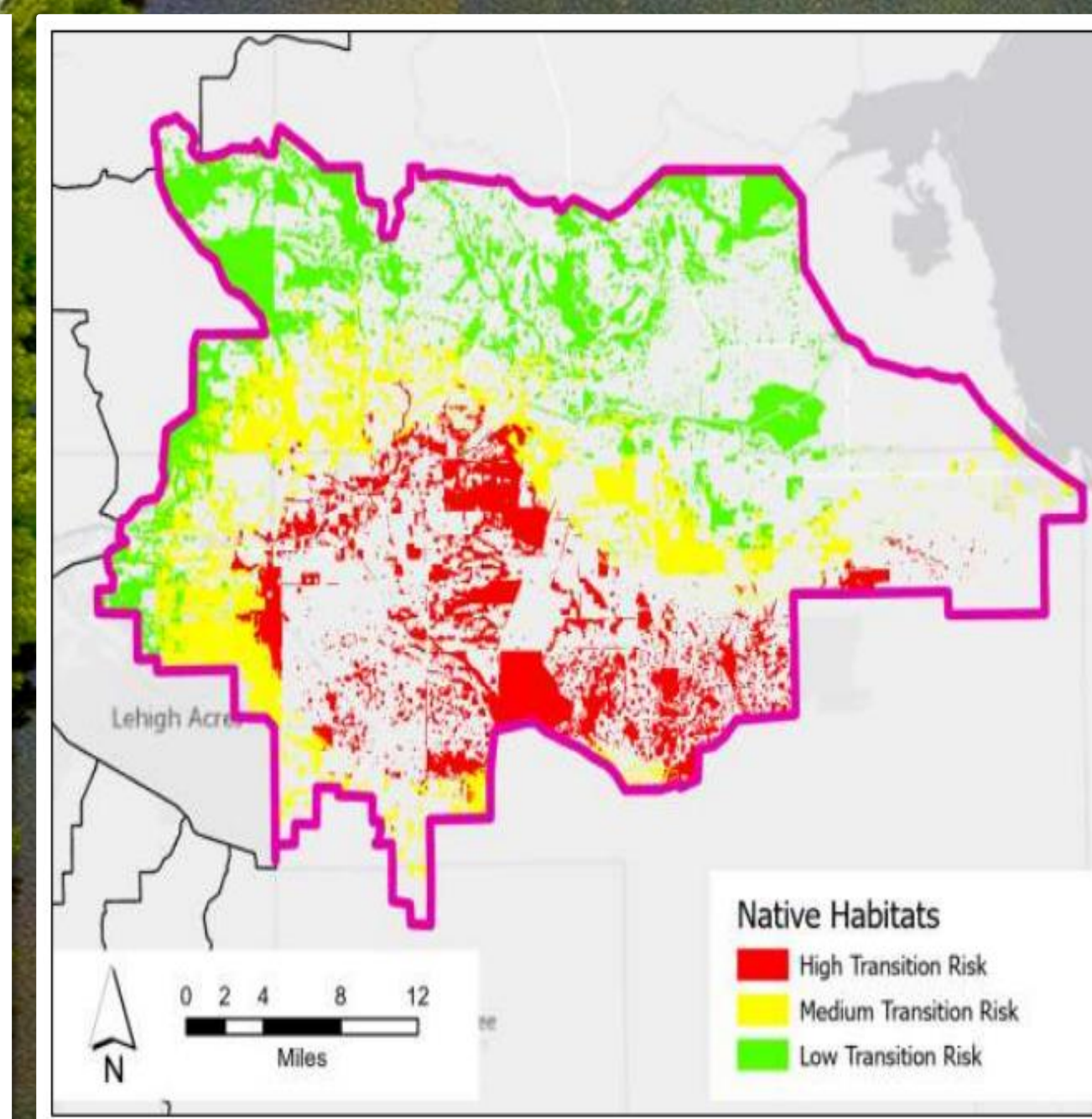
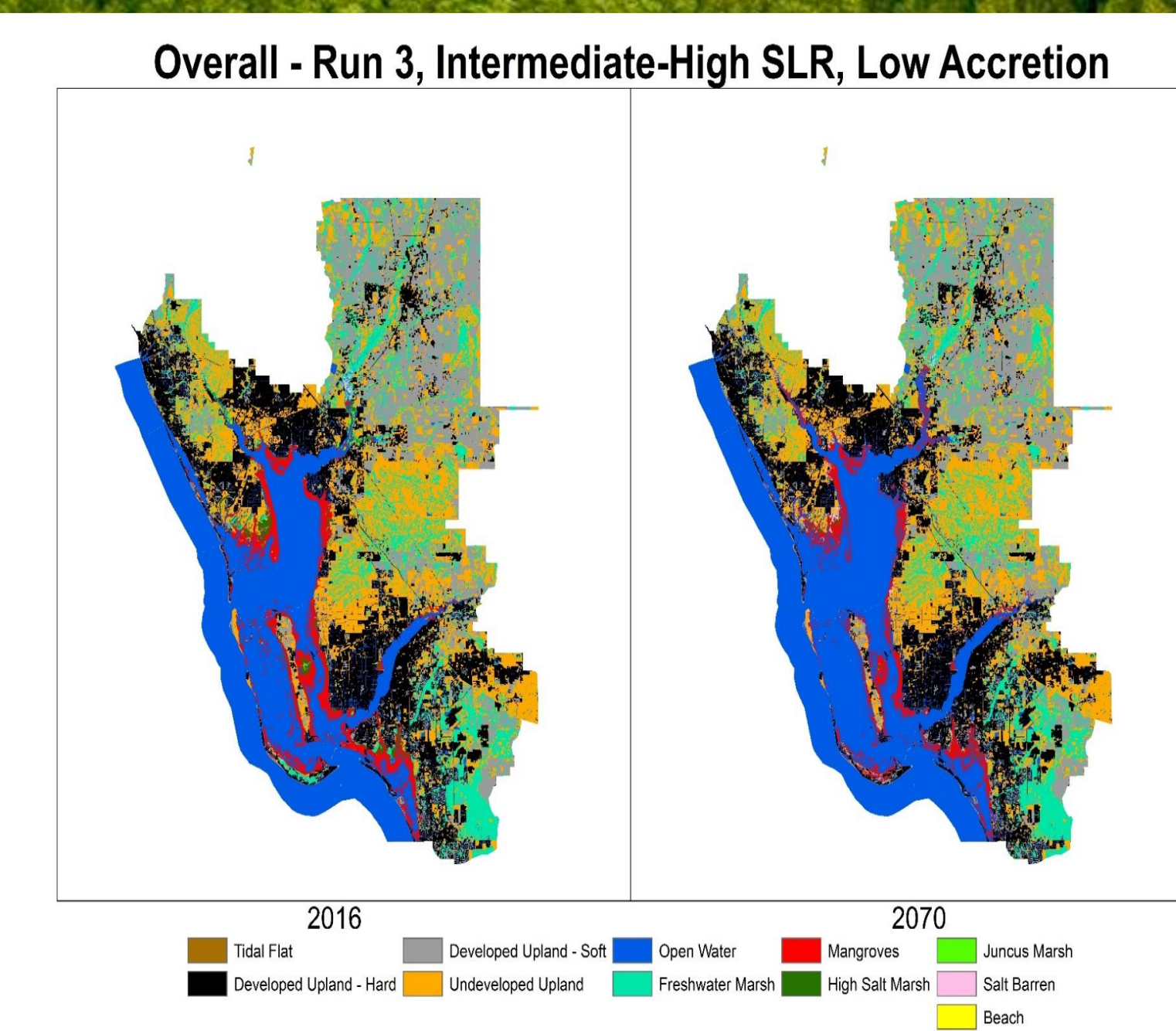
## Target and Opportunity Setting Flow Chart



## Targets and Opportunities Map/ Stratum Map



## Mapping Climate Impacts: Habitat Migration



## Results

Goals for Management/Enhancement Areas:

- Maintain or enhance the currently protected coastal and inland habitats to increase ecosystem functionality.
- Manage or enhance native habitats within 100-year floodplains to allow for habitat migration.

Goals for Restoration Areas:

- Restore publically-owned or private lands under conservation easement that contain nonnative habitats, including those within 100-year floodplains to increase native habitat areas.

Goals for Preservation/Conservation Areas:

- Increase preservation/conservation lands and conservation easements wherever feasible.
- Identify opportunities in the 100-year floodplains and other identified wildlife corridors for facilitating habitat migration.
- Focus HRN opportunities to be contiguous and adjacent to other existing conservation lands.
- Work with willing landowners to increase or enhance preservation/conservation lands.

Results from the report are rolled up into major habitat categories and presented as either 'Targets' for Restoration or 'Opportunities' for preservation.

Major Habitat Type	Opportunities		Targets	
	PCO	RO	MET	RT
Uplands	151,080	N/A	207,767	56,092
Freshwater Wetlands	148,781	N/A	181,214	31,952
Tidal Wetlands	9,134	N/A	58,702	86
Non-Native	208,781	1,590	N/A	N/A
<b>Total</b>	<b>517,776</b>	<b>1,590</b>	<b>447,683</b>	<b>88,130</b>

The HRN Plan also identified recommendations for both inland and coastal areas:

- Analysis identified that native upland habitats are already experiencing disproportionate losses, many strategies will need to be employed for their protection- greater preservation/ conservation and regulatory efforts are needed.
- Modeling demonstrated that due to sea level rise coastal habitats will experience a 'Pinch-out' between open water and Hardened Development- it will be important to 'reserve' previous upland areas to accommodate landward habitat migration and increased coastal flooding to prevent further 'Hardening' (ex: not further development of Public Parks and Ballfields)
- Areas threatened by increased 'drying' should be managed considering which habitat are likely to move in based on altered ground water availability and timing, rather than using limited funding and resources to return to past conditions that can no longer be replicated.
- There are identified opportunities for headwater stream and wetland restoration on non-mandatory reclaimed mined lands.
- Protection of adequate freshwater flows in the tidal rivers is needed in order to sustain shrinking salt marsh habitat.

## Discussion

The significance of creating this plan was to coordinate all efforts in the region and focus on landscape level protection. Local management activities can be more powerful when they are part of a larger Plan, coordinated by multiple stakeholders working together toward one vision. In order for the Plan to be balanced and to increase the impact of stakeholders working toward implementation – major efforts were undertaken throughout the course of the project to account for and balance the needs of both the natural resources and those of local communities in all stages of the planning process. Community needs include: land for development and economic growth, agriculture, water supply, and flood reduction. A strategic and opportunistic approach will minimize the impacts of threats in this area such as construction of transportation corridors, new development, and climate change. During the process, stakeholders from a variety of perspectives were involved in implementation, from municipal land use and transportation planners to ecologists and environmental land managers.

Planning for the future also needs to account for habitat shifts that may occur due to climate change. The project modeled habitat migration in response to sea level rise and evaluated how climate will be impactful in other ways for non-tidal inland areas. Looking at habitat migration by examining effects on evapotranspiration, rainfall, and future hydrological conditions will be a helpful tool for managing and preserving strategic natural areas in upper reaches of the watershed, especially as municipalities continue to build to accommodate growth. This new forward-thinking analysis includes identification of areas resilient to the anticipated changed conditions. While many are focused on sea level rise, National Estuary Programs work regionally and could step in to fill research gaps, taking the lead on examining climate impacts throughout the watershed, and helping partners to make strategic decisions for the future to meet increased needs across the spectrum.

In order to make effective progress, the following recommendations are presented: CHNEP maps and report are easily accessible on CHNEP Water Atlas as Interactive map application for both Habitat Restoration Needs and Habitat Evolution Model. The CHNEP continues to share goals, opportunities, targets, and restoration recommendations developed in the project with resource managers throughout the area. THE CHNEP will continue to reach out to partner agencies to periodically update the HRN Plan and maps. All entities in the CHNEP area are invited to join in on implementation of the plan. Elements of the HRN Plan and methodologies can and have already been replicated elsewhere for regional climate change and habitat planning.

## Acknowledgement

The CHNEP would like to acknowledge all of its partners who have contributed to the HRN Project, including: the Habitat Conservation Subcommittee of the CHNEP Technical Advisory Committee, CHNEP Management Conference Members, the U.S. Environmental Protection Agency, both the South and Southwest Florida Water Management Districts. Thank you to the ESA, Wood Environmental, and Coshow Environmental for their role in the creation of this Plan. For Full Report visit: [CHNEP.org](http://CHNEP.org). Interactive mapper for both Habitat Restoration Needs and Habitat Evolution Model at: [chnep.waterratlas.usf.edu](http://chnep.waterratlas.usf.edu)



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