



2019 Habitat Restoration Needs Plan



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ESTERO BAY BASIN

Section 4: Results, Recommendations, and Conclusions

The Habitat Restoration Needs (HRN) Plan was developed to guide habitat preservation/conservation, connectivity, management, restoration, sustainability, and resiliency throughout the Coastal and Heartland National Estuary Partnership area.

The complete HRN report can be found online at: <https://www.chnep.org/publications>

Estero Bay Basin

The Estero Bay basin totals 230,086 acres, and contains significant areas of Florida panther primary and secondary habitat in the eastern and northern limits of this basin. These lands connect with other identified primary and secondary habitat lands within the Tidal Caloosahatchee River basin. Estero Bay within this basin is a large estuarine and tidal system. Other significant areas within this basin include Edison Farms Preserve and Estero Bay Preserve State Park. The results for this basin area are presented in the following narrative and in Figures 37 through 39.

Preservation/Conservation Opportunities (PCO)

A total of 61,863 acres was identified as PCO, of which 39 percent (23,951 acres) were categorized as non-native and 61 percent (37,912 acres) as native habitat (Table 21; Figure 37). Overall, the acreage identified constitutes 27 percent of the total lands within this basin. The dominant native habitat communities were classified as pine flatwoods (7,531 acres; 12%) and hydric pine flatwoods (6,086 acres; 10%). Cropland and pastureland (13,047 acres; 21%) was identified as the major non-native habitat classification within the overall basin. (Appendix E).

Overall, the potential PCO within this basin are associated with Edison Farms and Corkscrew Regional Ecosystem Watershed (CREW) (Figure 37). There were 22,715 acres of potential PCO located within primary and secondary panther habitat in the central and eastern limits of this basin. The panther habitat acreages presented in Figure 37 are an overlay on the other areas and that acreage is included in the overall PCO acreages.

Reservation Opportunities (RO)

A total of 537 acres was identified as potential RO (Table 21; Figure 38). Overall, the acreage identified is less than one percent of the total lands within the Estero Bay basin. The dominant habitat community was classified as exotic species (505 acres; 94%), which consists of Brazilian pepper, Australian pine, and melaleuca; which could be recommended for invasive exotic removal programs (Appendix E). Potential RO were prominent in the northwest corner of the basin (Figure 38).

The concept of reservation areas is to support potential tidal habitat migration caused by increased tidal flooding and inundation from projected sea level rise. As presented in Section 3 and Appendix B, a model was developed to project potential habitat migration in tidally influenced areas. The Estero Bay Basin HEM map (Figure 40) illustrates model Run 3 (Intermediate-High Sea Level Rise, Low Accretion) for Years 2016 and 2070. The results illustrate an expansion of open water created by sea level rise, as well as the loss of mangroves with limited migration higher in the landscape due to constraints with developed land.

Management/Enhancement Targets (MET)

A total of 42,165 acres was identified as MET and RT, of which 40,100 acres was categorized for Management (95%) (Table 21; Figure 39). Overall, the acreage identified for MET and RT constitutes 18 percent of the total lands within this basin. The dominant native habitat communities identified for MET were classified as mangrove swamp (9,481 acres; 22%) and cypress (10,594 acres; 25%) (Appendix E). MET were developed for the three major native habitat types: tidal wetlands, freshwater wetlands, and uplands, to distinguish the types of overall habitats that could be managed or enhanced (Table 21). The vast majority of MET were distributed within Edison Farms/CREW and landward of the northeaster portion of Estero Bay within this basin (Figure 39).

Restoration Targets (RT)

A total of 42,165 acres was identified as RT and MET, of which 2,065 acres (5%) was identified as RT (Table 21; Figure 39). Overall, the acreage identified for RT and MET constitutes 18 percent of the total lands within this basin. RT were developed for the three major native habitat types: tidal wetlands, freshwater wetlands, and uplands, to distinguish the types of overall habitats that could be restored (Table 21). There are several instances in which areas identified as non-native (RT) are directly adjacent to native habitats. Identifying areas for strategic restoration could result in the further expansion of restored native habitat communities.

Habitat Status and Trends Analysis

A change analysis was completed for this basin to quantify the gains/losses of habitats between 1995 and 2009/2011 (Table 22). The objectives of this change analysis were to determine: which habitats may be in actual decline, or experiencing disproportionate losses; which habitats may be increasing; and what stressors may be driving these changes. Data limitations and mapping inconsistencies between the two time periods did not always support these objectives. For example, conversions between various classes of freshwater wetlands were often found to be ambiguous and unverifiable; however, conversions from native habitats to developed urban land uses were more easily discernable through a review of the aerial imagery. Those habitats changes that could be verified through the review of the aerial imagery were used to identify priority habitats.

Within this basin, substantial acreage gains in native habitats could not be verified through a review of the aerial imagery. However, discernable habitat losses and changes are noted below:

- Upland habitats being converted to development and agriculture; and
- Salt marshes transitioning to mangroves.

Mapping inconsistencies observed in the change analysis included the following:

- FLUCCS 3000 (Upland Non-Forested) Series Level 2 (Dry Prairie, Shrub and Brushland, Mixed Rangeland) codes were often interchangeably used for the same aerial signature between 1995 and 2009/2011, so gains/losses in the 3000 Series may not all be real changes;
- Slough waters classification was not used in 2009/2011;

- Increases in intermittent pond classification occurred from development between 1995 and 2009/2011. Also, open water ponds that became shallow ponds were re-mapped to intermittent ponds classification in 2009/2011; and
- Wetland forested mixed and wetland coniferous forested habitat types showed an increase of 37% from 1995 to 2009/2011. This was mainly due to wetland forested mixed in 1995 being remapped to wetland coniferous forest, mainly within the CREW and Edison Farm lands.

Estero Bay Basin Summary

The Estero Bay basin totals 230,086 acres, of which 21 percent is developed. The Estero Bay basin contains significant areas of primary and secondary Florida panther habitat in the eastern and northern limits of this basin. Predominant native habitats within this basin include: wetland coniferous forest, upland coniferous forest, and mangrove swamps.

The habitat status and trends analysis showed losses in upland habitats, and these habitats may be a priority for restoration. Upland coniferous forest experienced the greatest loss of habitat within this basin. RO (537 acres) occur in the northwestern limits of this basin. The HEM illustrates losses of salt marsh habitat around the northwestern bay and the mouth of the Estero River. The existing MET include Estero Bay Preserve State Park, which is already in public ownership and may accommodate projected sea level rise in this basin. There are 40,100 acres of MET that largely occur within Edison Farms and CREW. The 2,065 acres of RT areas are primarily located in the Airport Mitigation Bank and Corkscrew Regional Mitigation Bank. These lands are also located within primary and secondary Florida panther habitat areas.

The HRN results reflect priorities outlined from the HRN project methodology and are based on the best available data at the time of development. There may be other habitats of importance; and current and future research and analysis may support additional opportunities and targets not currently represented here. The results presented in the tables and maps below can form the foundation for future studies.

The HRN results reflect priorities outlined from the HRN project methodology and are based on the best available data at the time of development. There may be other habitats of importance; and current and future research and analysis may support additional opportunities and targets not currently represented here. The CHNEP Management Conference noted these updates presented below:

- Portions of native habitat-salt flats within Estero Bay Preserve State Park were not mapped as habitat based on existing mapping FLUCCS codes, they appear as submerged lands based on topographical maps used and submerged lands were not part of this study; however, these areas are under the ownership of the state and are native habitat and should be mapped in future HRN studies as MET.

TABLE 21. HRN OPPORTUNITIES AND TARGETS FOR THE ESTERO BAY BASIN BY MAJOR HABITAT TYPE

Major Habitat Type	Opportunities		Targets	
	PCO	RO	MET	RT
Uplands	14,217	N/A	4,734	990
Freshwater Wetlands	21,856	N/A	24,158	1,075
Tidal Wetlands	1,839	N/A	11,208	1
Non-Native	23,951	537	N/A	N/A
Total	61,863	537	40,100	2,065

TABLE 22. HRN CHANGE ANALYSIS GAINS AND LOSSES FOR THE ESTERO BAY BASIN BY HABITAT CLASSIFICATION TYPE.

FLUCCS Codes	Primary Classifications	Acres		Change Analysis	
		1995	2009/2011	Acres	Percent
3100	Dry Prairie	147	9,311	9,164	*
3200	Shrub and Brushlands	1,277	3,463	2,187	*
3300	Mixed Rangelands	1,225	1,448	223	18%
4100	Upland Coniferous Forest	34,885	12,505	-22,380	-64%
4200/4300	Upland Hardwood Forest	1,139	1,496	357	31%
5100	Streams and Waterways	571	841	270	47%
5200	Lakes	162	14	-148	-92%
5600	Slough Waters	390	N/A	N/A	N/A
6100	Wetland Hardwood Forest	5,405	6,237	832	15%
6120	Mangrove Swamp	11,708	11,587	-121	-1%
6200	Wetland Coniferous Forest	24,909	34,170	9,261	37%
6300	Wetland Forested Mixed	5,420	2,953	-2,467	-46%
6400	Vegetated Non-Forested Wetlands	8,326	6,948	-1,378	-17%
6420	Saltwater Marsh	2,215	2,025	-189	-9%
6530	Intermittent Ponds	N/A	N/A	N/A	N/A
6600	Salt Flats	N/A	N/A	N/A	N/A

* Differences in mapping methodologies between periods may account for some anomalies in the data.

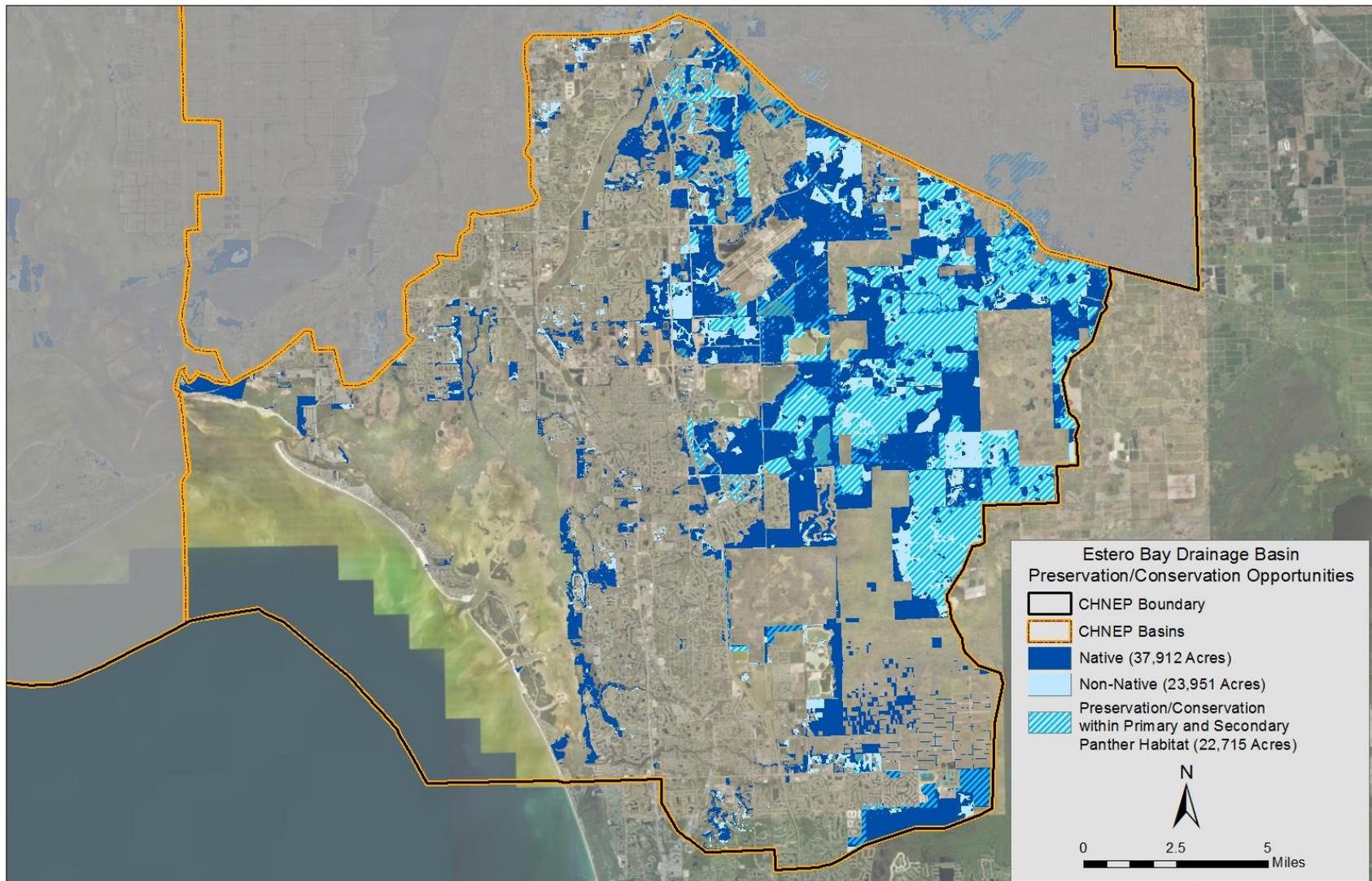


Figure 37. Estero Bay Basin PCO.

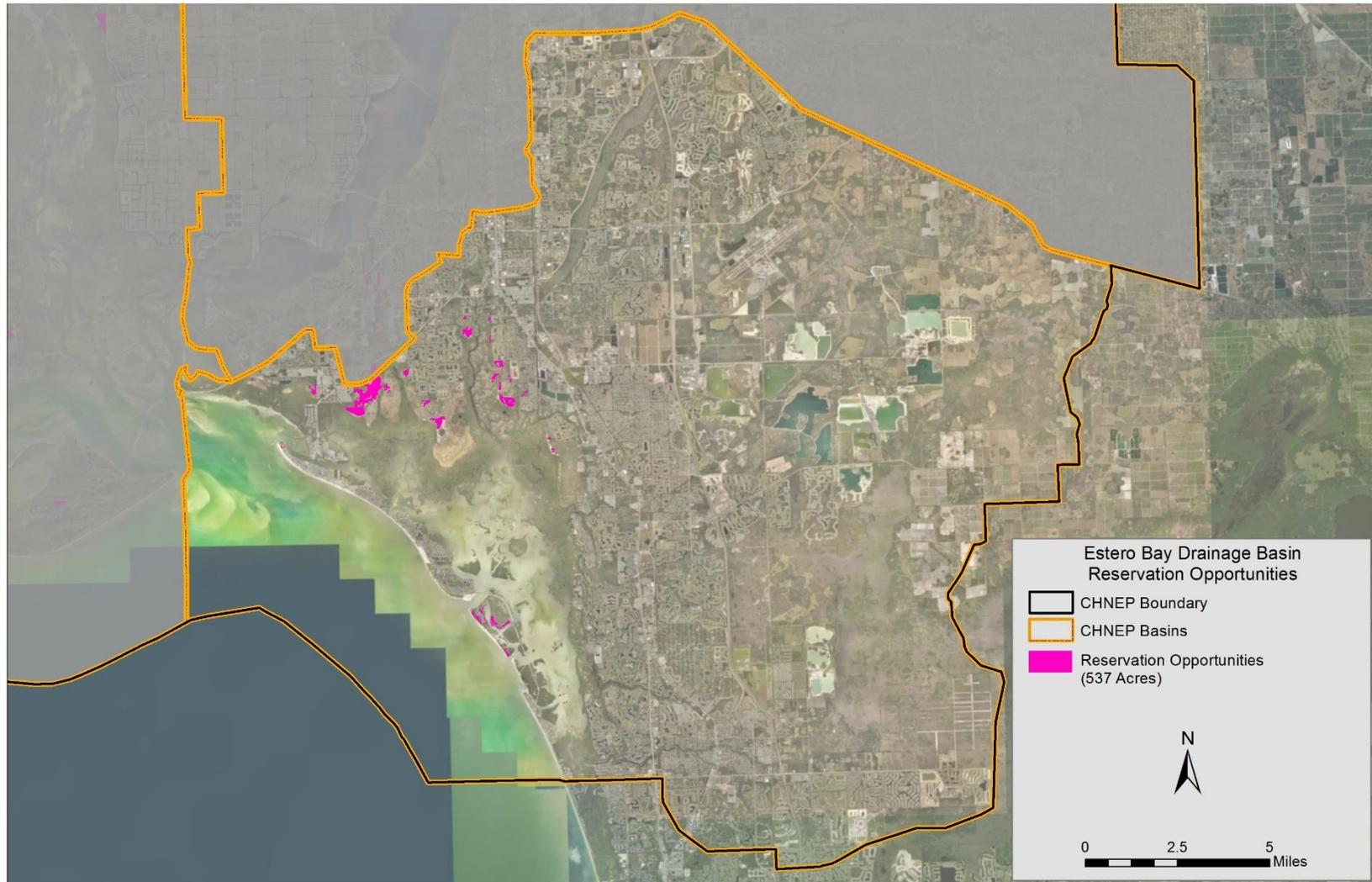
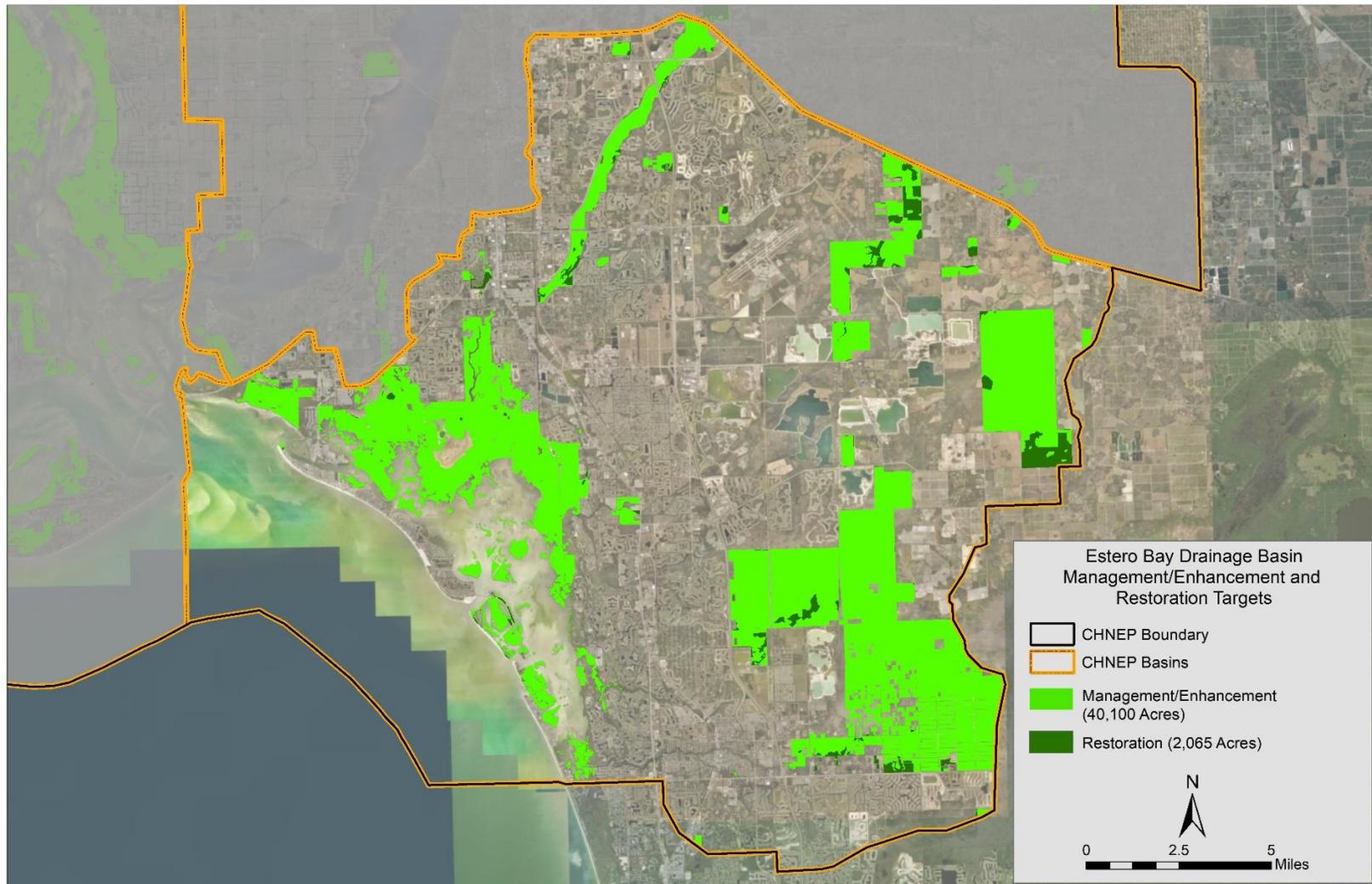


Figure 38. Estero Bay Basin RO.



*See narrative for note on mapping classifications.

Figure 39. Estero Bay Basin MET and RT.

Estero Bay - Run 3, Intermediate-High SLR, Low Accretion

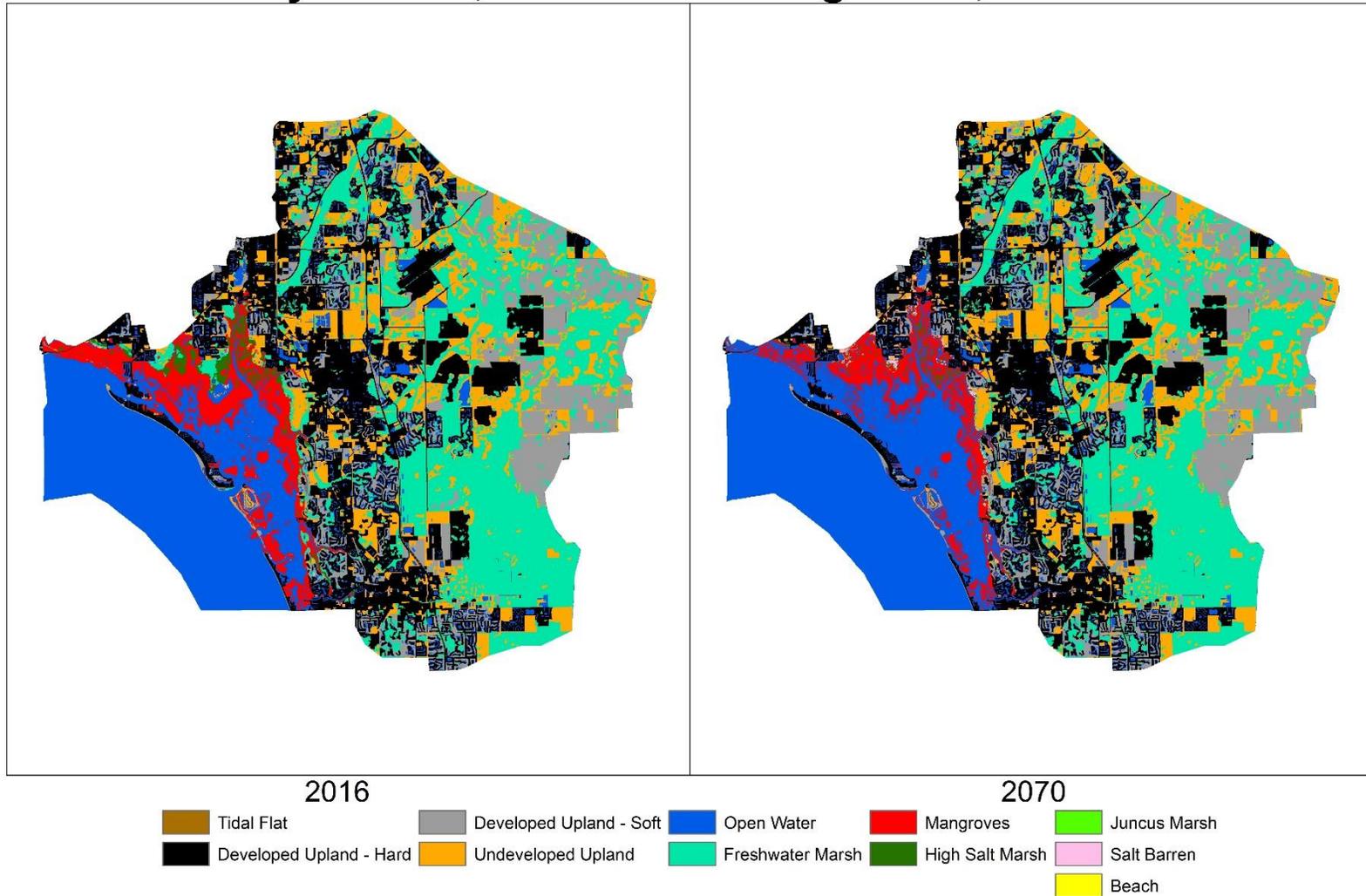


Figure 40. HEM Model Results for the Estero Bay basin.