



# 2019 Habitat Restoration Needs Plan



## PINE ISLAND/MATLATCHA PASS 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>



## Pine Island/Matlacha Pass Basin

The Pine Island/Matlacha Pass basin totals 239,923 acres, and is primarily estuary and tidal areas including Pine Island Sound and Matlacha Pass. This basin also contains the southern limits of the Charlotte Harbor Preserve State Park (i.e. East Wall), Ding Darling Wildlife Management Area, Pine Island Mitigation Bank, Pine Island Flatwood Preserve, and Cayo Costa State Park. The results for this basin area are presented in the following narrative and in Figures 33 through 35.

### Preservation/Conservation Opportunities (PCO)

A total of 5,326 acres was identified for potential PCO within this basin. Twelve percent (634 acres) were categorized as non-native and 88 percent (4,691 acres) as native habitat (Table 19; Figure 33). Overall, the acreages identified constitute 2 percent of the total lands within the Pine Island/Matlacha Pass basin. The dominant native habitat community was classified as mangrove swamp which comprised 46 percent (2,435 acres) of all potential PCO acreages. Exotic species (285 acres; 5%) was identified as the major non-native habitat classification within the overall basin (Appendix E). Overall, the potential PCO were distributed around Pine Island for this basin (Figure 33).

### Reservation Opportunities (RO)

A total of 530 acres was identified for potential RO (Table 19; Figure 34) within this basin. Overall, the acreages identified constitute less than one percent of the total lands within this basin. The dominant habitat community was classified as exotic species (416 acres; 79%) which consists of Brazilian pepper, Australian pine, and melaleuca; which could be recommended for invasive exotic removal programs (Appendix E). Potential RO were identified on Pine and Sanibel Islands (Figure 34).

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 Pine Island/Matlacha Pass basin HEM map (Figure 36) 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 and their migration higher in the landscape. Additionally, nearly all freshwater marsh predicted to be lost by 2070.

### Management/Enhancement Targets (MET)

A total of 29,720 acres was identified as MET and RT within the Pine Island/Matlacha Pass basin. This includes 29,414 acres categorized for MET (99%) (Table 19; Figure 35). Overall, the acreages identified for MET and RT constitutes 12 percent of the total lands within the Pine Island/Matlacha Pass basin (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 19). The vast majority of MET within this basin are associated

with the Charlotte Harbor Preserve State Park and Ding Darling Wildlife Management Area (Figure 35).

## Restoration Targets (RT)

A total of 29,720 acres was identified as RT and MET within the Pine Island/Matlacha Pass basin. This includes 306 acres (1%) identified as RT (Table 19; Figure 35). Overall, the acreages identified for RT and MET constitutes 12 percent of the total lands within the Pine Island/Matlacha Pass basin (Appendix E). 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 19). There are areas on Pine Island identified as non-native (RT) that 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 20). 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
- Freshwater marsh transitioning to mangrove on Little Pine Island.

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;
- Slight decreases in both mangrove swamp and saltwater marsh were also noted in the tidal portion of the lower Myakka River. The latter observation contradicts the findings of the HEM utilized as part of this project, but mapping inconsistencies were evident in a review of the aerial imagery; and
- 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.

## Pine Island/Matlacha Basin Summary

The Pine Island/Matlacha Pass basin totals 239,923 acres, of which only 10% is developed. Mangrove Swamps are the predominant native habitat within this basin. Native habitats that experienced the largest disproportionate losses include upland coniferous forests and all freshwater wetland habitats, excluding wetland hardwood forest. Upland habitats may be considered priority habitats for restoration. The gains shown for wetland hardwood forest within this basin appear to largely be a remapping of the forested habitats, including mangrove swamps and other freshwater forested wetlands between 1995 and 2009/2011. Stakeholder identified corridors include the southern limits of Charlotte Harbor Preserve State Park within this basin. These lands connect to areas north to the Caloosahatchee River, and south to Estero Bay.

PCO are generally limited in this basin due to existing development, the extent of MET and RT lands, and the extent of open water within this basin. The bulk of the identified PCO occur on Pine Island, and are predominantly tidal wetlands. RO are largely focused around Pine Island. The HEM shows dramatic migration and losses resulting from projected sea level rise including the loss of freshwater marsh areas within Ding Darling Wildlife Management Area, and open water areas expanded throughout Pine Island Sounds and Matlacha Pass. This basin supports relative large Restoration/Management lands relative to its size. The MET and RT include Little Pine Island, the southern limits of Charlotte Harbor Preserve State Park, and Ding Darling Wildlife Management Area. In total, there is 29,414 acres of MET, and a relatively small 305 acres of RT that are predominantly uplands.

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 the updates presented below:

- Some pre-platted lands were mapped as 3100 Dry Prairie FLUCSS codes for 2009/2011; however, these lands may be developable and future HRN studies should look at updating these classifications; and
- Some parcels were identified for inclusion on the Restoration/Management map by Lee County and should be added in future HRN studies:
  - Heron Pond (Conservation Lands adjacent to Buttonwood Preserve);
  - Southern portion of Galt Preserve adjacent to borrow pond;
  - Middle of Pine Island Flatwoods Bayside;
  - Western portion of the northern Smokehouse parcel;
  - Charlotte Harbor nomination 262 and 280;
  - Area abutting Ding Darling National Wildlife Refuge (nomination parcel 551 and 503); and

- Buttonwood preserve nomination 276 is included on the maps, but total area is not shaded.

The results presented in the tables and maps below can form the foundation for future studies.

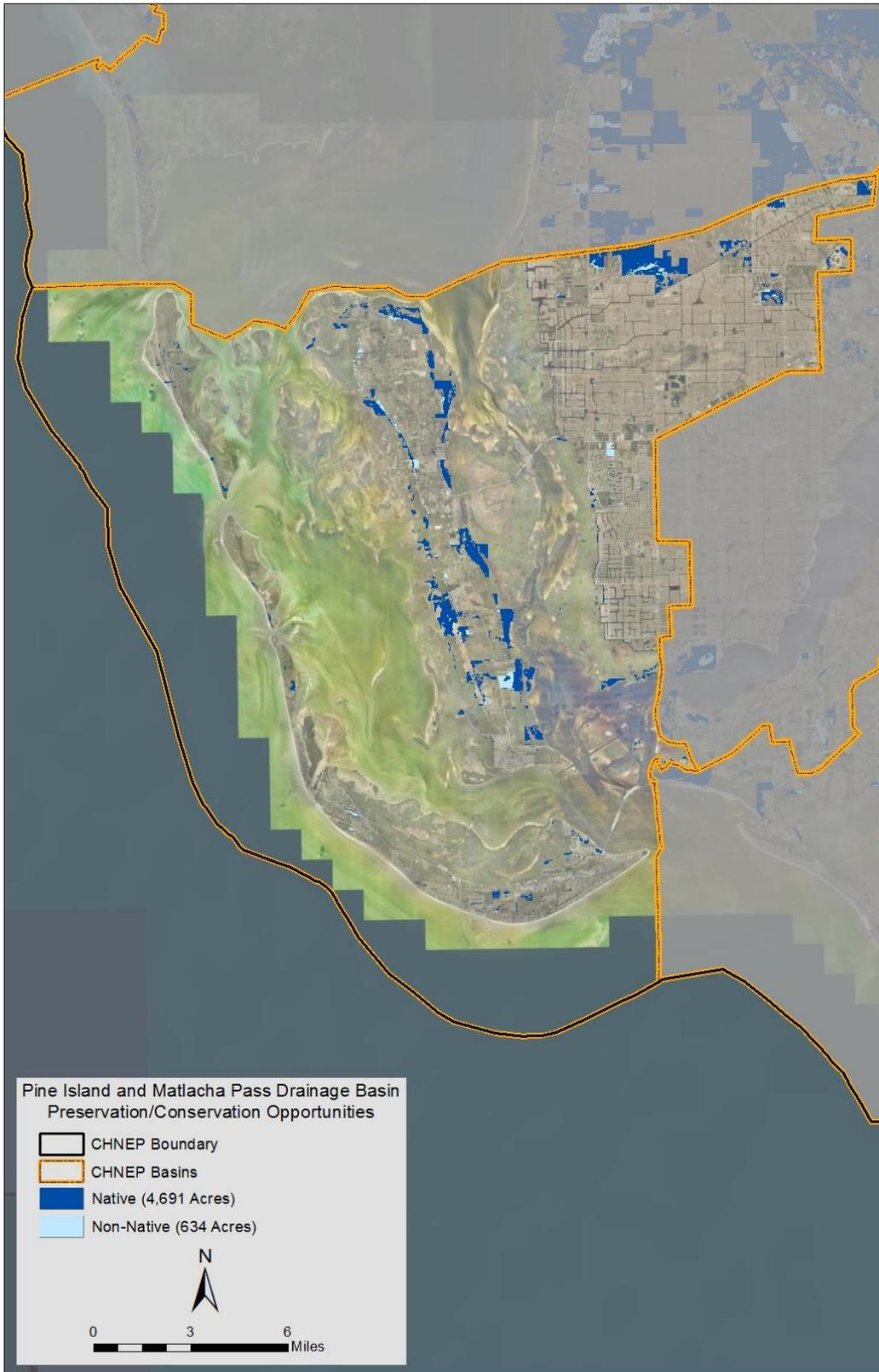
**TABLE 19. HRN OPPORTUNITIES AND TARGETS FOR THE PINE ISLAND/MATLACHA PASS BASIN BY MAJOR HABITAT TYPE**

Major Habitat Type	Opportunities		Targets	
	PCO	RO	MET	RT
Uplands	1,636	N/A	4,258	264
Freshwater Wetlands	551	N/A	2,595	39
Tidal Wetlands	2,505	N/A	22,562	2
Non-Native	634	530	N/A	N/A
<b>Total</b>	<b>5,326</b>	<b>530</b>	<b>29,414</b>	<b>305</b>

**TABLE 20. HRN CHANGE ANALYSIS GAINS AND LOSSES FOR THE PINE ISLAND / MATLACHA PASS BASIN BY HABITAT CLASSIFICATION TYPE.**

FLUCCS Codes	Primary Classifications	Acres		Change Analysis	
		1995	2009/2011	Acres	Percent
3100	Dry Prairie	N/A	15,861	15,861	*
3200	Shrub and Brushlands	1,838	2,821	983	53%
3300	Mixed Rangelands	746	480	-266	-36%
4100	Upland Coniferous Forest	8,996	4,708	-4,288	-48%
4200/4300	Upland Hardwood Forest	556	2,414	1,858	*
5100	Streams and Waterways	85	548	463	*
5200	Lakes	291	2	-289	-99%
5600	Slough Waters	111	N/A	N/A	N/A
6100	Wetland Hardwood Forest	1,107	2,927	1,821	*
6120	Mangrove Swamp	26,371	25,577	-794	-3%
6200	Wetland Coniferous Forest	1,079	161	-918	-85%
6300	Wetland Forested Mixed	235	5	-230	-98%
6400	Vegetated Non-Forested Wetlands	1,205	618	-587	-49%
6420	Saltwater Marsh	1,277	2,152	875	69%
6500	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.

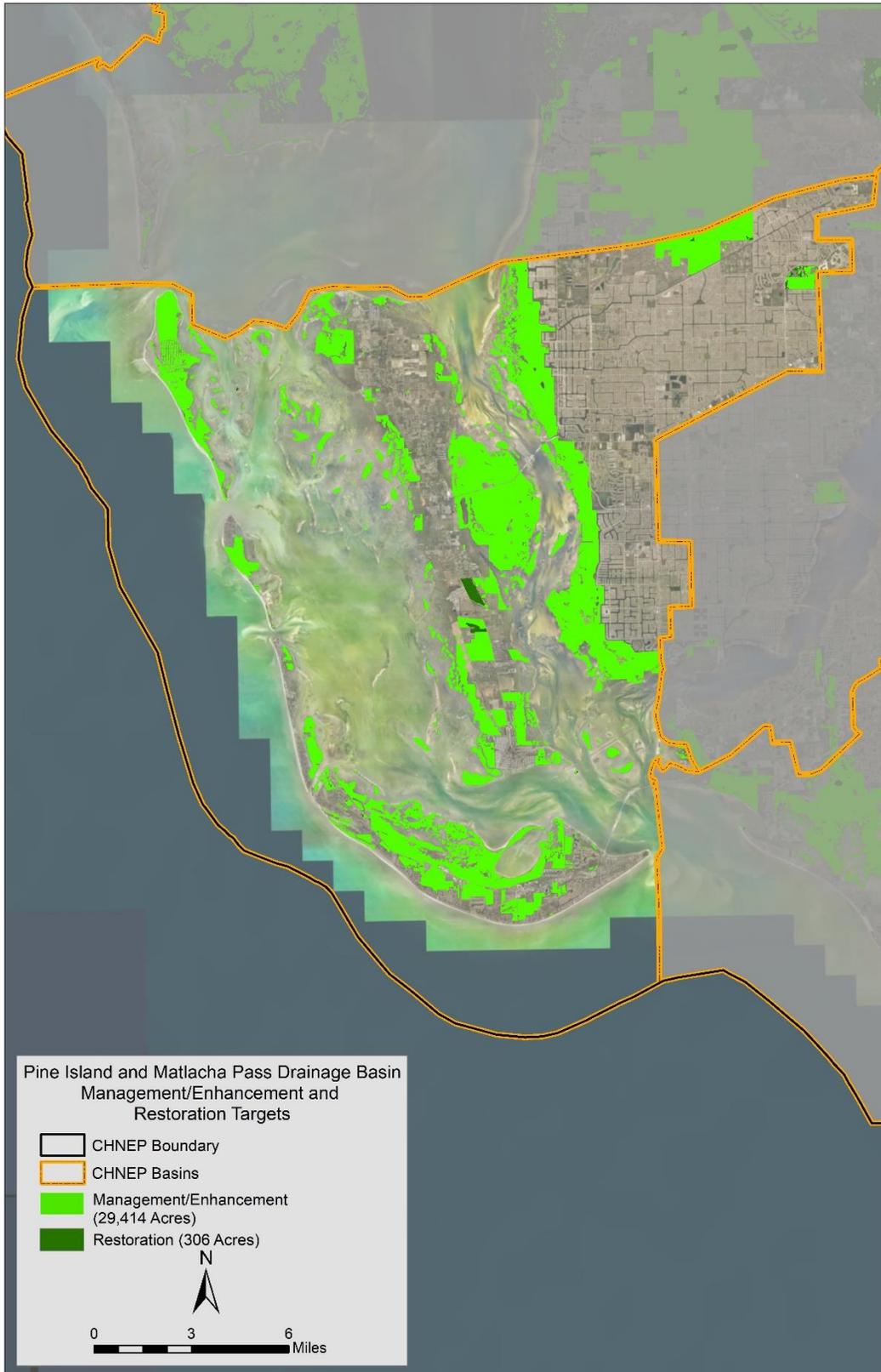


\*See narrative for note on mapping classifications.

Figure 33. Pine Island/Matlacha Pass Basin PCO.



Figure 34. Pine Island/Matlacha Pass Basin RO.



**\*See narrative for note on mapping classifications.**

**Figure 35. Pine Island/Matlacha Pass Basin MET and RT.**

### Pine Island/Matlacha Pass - Run 3, Intermediate-High SLR, Low Accretion

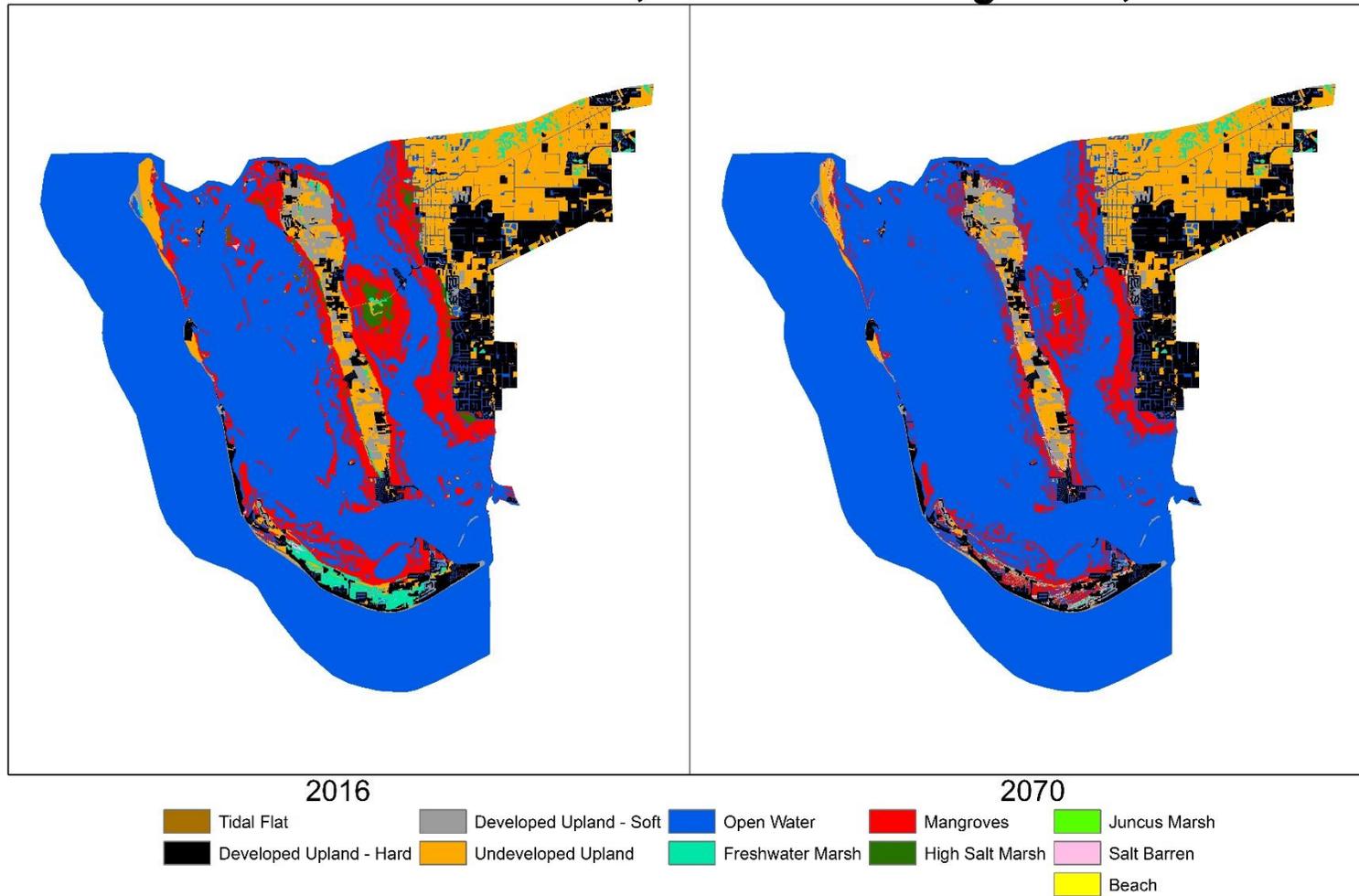


Figure 36. HEM Model Results for the Pine Island/Matlacha Pass basin.