

2019 Habitat Restoration Needs Plan

TIDAL CALOOSAHATCHEE RIVER BASIN

Section 4: Results, Recommendations, and Conclusions Note: Freshwater Caloosahatchee Basin maps are currently in development.

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: <u>https://www.chnep.org/publications</u>

Tidal Caloosahatchee River Basin

The Tidal Caloosahatchee River basin totals 271,995 acres, and contains the tidal portion of the Caloosahatchee River and significant portions of Babcock/Webb Wildlife Management Area. The southeastern limits of this basin contain secondary Florida panther habitat. The lower reaches of this basin are largely residential development. The results for this basin area are presented in the following narrative and in Figures 29 through 31.

Preservation/Conservation Opportunities (PCO)

A total of 41,869 acres was identified as potential PCO, of which 66 percent (27,810 acres) was categorized as native habitat and 34 percent (14,059 acres) as non-native and (Table 17; Figure 29). Overall, the acreage identified constitutes 15 percent of the total lands within the Tidal Caloosahatchee River Basin. The dominant native habitat community was classified as pine flatwoods which comprised 25 percent (10,402 acres) of all potential PCO acreages within this basin. Cropland and pastureland (9,991 acres; 24%) was identified as the major non-native (RT) habitat classification within this basin with (Appendix E).

Overall, the potential PCO were concentrated in the eastern limits of the basin, north of the Tidal Caloosahatchee River, and some areas to the south of the river (Figure 29). There were 3,819 acres of potential PCO located within secondary panther habitat located in the southeast portion of this basin. The panther habitat acreages presented in Figure 29 are an overlay on the other areas and that acreage is included in the overall PCO acreages.

Reservation Opportunities (RO)

A total of 115 acres was identified as potential RO within this basin (Table 17; Figure 30). Overall, the acreages identified constitute less than one percent of the total lands within the overall basin. The dominant habitat community was classified as exotic species (101 acres; 88%), which consists of Brazilian pepper, Australian pine, and melaleuca; which could be recommended for invasive exotic removal programs. The potential RO are prominent near the estuarine areas of the Tidal Caloosahatchee River (Figure 30).

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 Tidal Caloosahatchee River basin HEM map (Figure 32) illustrates model Run 3 (Intermediate-High Sea Level Rise Low Accretion) for Years 2016 and 2070. The results illustrate an expansion of open water near the riverine mouth created by projected sea level rise, as well as the loss of mangrove swamp and its migration higher in the landscape.

Management/Enhancement Targets (MET)

A total of 75,018 acres was identified as MET and RT, of which 60,321 acres was categorized for MET (80 percent) (Table 17; Figure 31). Overall, the acreages identified for MET and RT constitutes 28 percent of the total lands within the overall Tidal Caloosahatchee River basin. The dominant native habitat community identified for MET was classified as pine flatwoods which comprised 32 percent (23,985 acres) of all MET and RT acreages (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 restored or managed (Table 17). The majority of MET occur at the northern limits of this basin (Figure 31). A large portion of Cecil B. Webb and Babcock Ranch Wildlife Management Areas occur within this basin.

Restoration Targets (RT)

A total of 75,018 acres was identified as RT and MET, of which 14,697 acres (20 percent) was categorized for RT (Table 17; Figure 31). Overall, the acreages identified for RT and MET constitutes 28 percent of the total lands within the overall Tidal Caloosahatchee River basin. The dominant native habitat community identified for MET was classified as pine flatwoods, which comprised 32 percent (23,985 acres) of all RT and MET acreages (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 17). 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 18). 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.
- 1995 Existing Development lands were re-mapped as Dry Prairie for Cape Coral and Lehigh Acres in 2009/2011;
- Slough Waters classification was not used in 2009/2011; and
- Increases in Intermittent Pond occurred from development between 1995 and 2009/2011. Also, Open Water Ponds that became Shallow Ponds were re-mapped to Intermittent Ponds in 2009/2011.

Tidal Caloosahatchee Basin Summary

The Tidal Caloosahatchee River basin totals 271,995 acres, of which 25% is developed. This basin is significantly altered by the Franklin Lock at the eastern limits of the basin, which has restricted the normal tidal intermixing of salt and fresh waters within a typical riverine system. This basin is comprised of the tidal portion of the Caloosahatchee River up to the Franklin Lock, native freshwater wetlands and uplands within Babcock/Webb Wildlife Management Area, and dense development including Cape Coral and Lehigh Acres. Upland coniferous forests are the prominent upland habitat type, and vegetated non-forested wetlands are the predominant wetland habitat type. Disproportionate losses mapped within this basin area include wetland hardwood forest and wetland forested mixed, both are freshwater wetlands. However, changes in these, and other upland and freshwater wetland habitats were difficult to discern due to mapping inconsistencies; and therefore priority habitats for restoration could not be identified. Future studies may verify habitat changes and the specific assemblage of habitats for restoration. Mixed rangelands showed losses, however, since the FLUCCS Level 2 of the 3000 series codes were frequently mapped interchangeably these could not be verified.

Stakeholder identified corridors include areas that parallel the Caloosahatchee River connecting to Pine Island/Matlacha Pass and Estero Bay basins to the west, and to Babcock/Webb corridors to the east and north. Areas to the south of the river corridor contain lands identified as primary and secondary Florida panther habitats through Lehigh Acres connecting to preservation and conservation lands to the south and east.

PCO within the Tidal Caloosahatchee River basin were identified as lands abutting the southern limits of Babcock/Webb, small areas at the mouth of the Caloosahatchee River, and parcels within Lehigh Acres that are primary and secondary Florida panther habitats. Areas where primary and secondary Florida panther habitats occur should be a priority in the 19,333 acres of upland PCO. Because of the heavy development along the Caloosahatchee River, particularly towards the mouth, there has been a loss of mangroves. The mangrove loss is consistent with the HEM results, where mangroves are pinched out in locations where the waterfront is armored. The RO total 115 acres, and are located at the southern shoreline of the river mouth.

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 parcels were identified for inclusion on the Restoration/Management map by Lee County and should be added in future HRN studies:
 - Area adjacent to Calusa Creeks Preserve (Morse Shores Preserve);
 - Deep Lagoon, southern parcels/portions of nomination 116 and western portion of nomination 78; and
 - Olga Shores area on map only shows some areas of southern boundary.
- SFWMD and Lee Conservation 20/20 worked with landowners to identify the Stolle ranch property (2,064 acres in Charlotte County and 691 acres in Lee County) as important for preservation and eventually hydrological restoration as part of the Charlotte Harbor Flatwoods Initiative, a multi-phased regional hydrologic restoration effort coordinated by the SFWMD, CHNEP, and Florida Fish and Wildlife Conservation Commission (FWC). Portions of this area are included as PCO (Figure 29), and as additional lands are acquired these may be included in future HRN studies.

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

Major Habitat Trma	Opportunities		Targets		
Major Habitat Type	РСО	RO	MET	RT	
Uplands	19,333	N/A	39,018	10,117	
Freshwater Wetlands	7,630	N/A	19,633	4,578	
Tidal Wetlands	846	N/A	1,670	2	
Non-Native	14,059	115	N/A	N/A	
Total	41,869	115	60,321	14,697	

TABLE 17. HRN OPPORTUNITIES AND TARGETS FOR THE TIDAL CALOOSAHATCHEE RIVER BASIN BY MAJOR HABITAT TYPE

FLUCCS	Drimowy Classifications	A	Acres	Change Analysis	
Codes	Primary Classifications	1995	2009/2011	Acres	Percent
3100	Dry Prairie	1,018	15,694	14,676	*
3200	Shrub and Brushlands	12,337	23,584	11,247	91%
3300	Mixed Rangelands	5,085	2,047	-3,038	-60%
4100	Upland Coniferous Forest	47,873	46,263	-1,610	-3%
4200/4300	Upland Hardwood Forest	1,775	8,402	6,627	*
5100	Streams and Waterways	16,323	16,536	213	1%
5200	Lakes	26	33	7	25%
5600	Slough Waters	96	N/A	N/A	N/A
6100	Wetland Hardwood Forest	10,078	7,081	-2,997	-30%
6120	Mangrove Swamp	3,602	3,467	-135	-4%
6200	Wetland Coniferous Forest	9,061	9,267	206	2%
6300	Wetland Forested Mixed	1,456	560	-896	-62%
6400	Vegetated Non-Forested Wetlands	14,247	14,409	162	1%
6420	Saltwater Marsh	338	395	57	17%
6530	Intermittent Ponds	N/A	N/A	N/A	N/A
6600	Salt Flats	N/A	N/A	N/A	N/A

TABLE 18. HRN CHANGE ANALYSIS GAINS/LOSSES FOR THE TIDAL CALOOSAHATCHEE RIVER BASIN BY HABITAT CLASSIFICATION TYPE.

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



*See narrative for note on mapping classifications. Figure 29. Tidal Caloosahatchee Basin PCO.



Figure 30. Tidal Caloosahatchee River Basin RO.



*See narrative for note on mapping classifications. Figure 31. Tidal Caloosahatchee Basin MET and RT.

Caloosahatchee River - Run 3, Intermediate-High SLR, Low Accretion



Figure 32. HEM Model Results for the Tidal Caloosahatchee River basin.