Monitoring of vegetation

Monitoring of plant communities at the restoration project in Flagler County has begun. Monitoring takes place at three types of locations (Figure 1): 1) salt marsh with ditches to the north and south of the project (unrestored reference areas, yellow outlines), 2) salt marsh where the ditches were restored in 2011 (central and south restored areas, red outlines), and 3) salt marsh to be restored during the project, with sampling before and after restoration (project area, blue outline). All locations will be sampled in the summer of 2019 and revisited in summer of 2020.

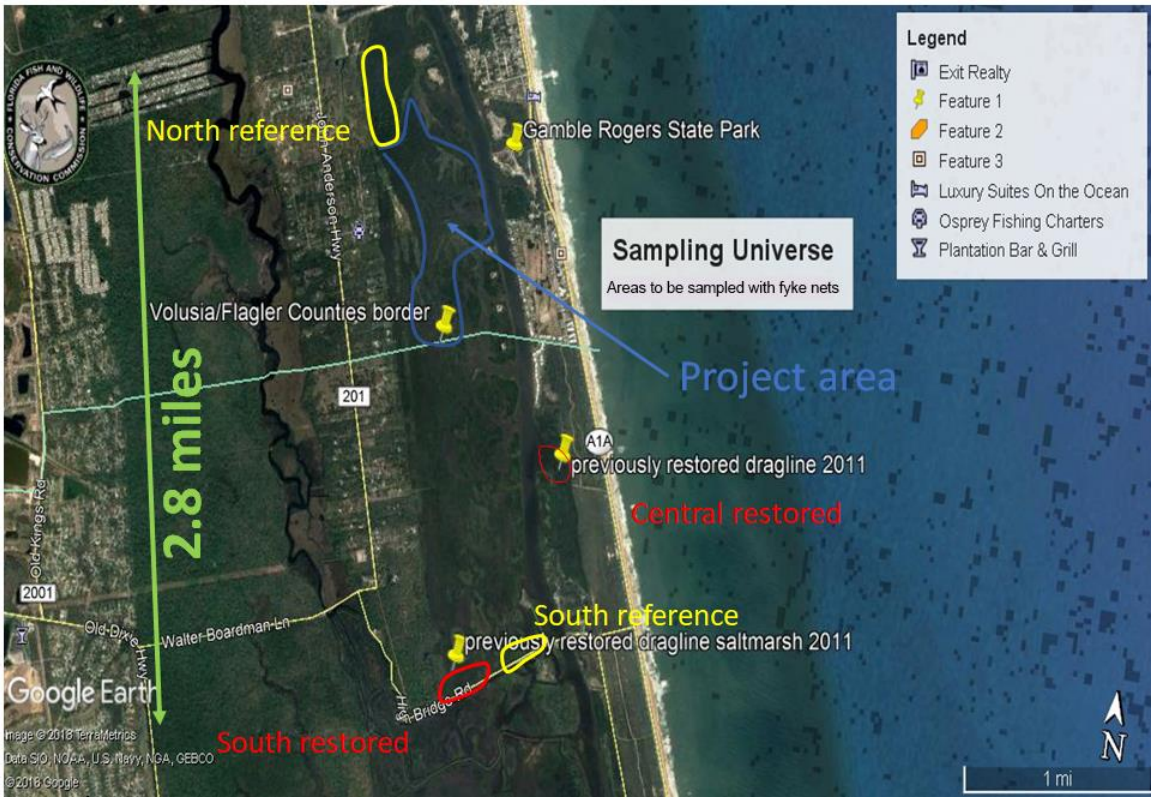

Figure 1. Locations in Flagler County where vegetation is monitored.

During sampling, linear transects (10 meters [33 feet] in length) are established parallel to the shoreline in restored salt marsh or on piles of spoil in unrestored areas (Figure 2). Eighteen transects are surveyed in the previously restored and unrestored reference areas, and 24 transects are surveyed in the project footprint. During each survey, the slope of each transect is measured using a string and level. Along each transect, data are collected in six 0.25-meter^2 quadrats (2.7-foot^2 quadrats) spaced 2 meters (6.6-feet) apart. Plants in the quadrats are identified to the lowest possible taxonomic level, and their density and total cover are recorded. The number of fiddler crab burrows in the quadrats are counted, and any live invertebrates are identified to the lowest possible taxonomic level and counted.

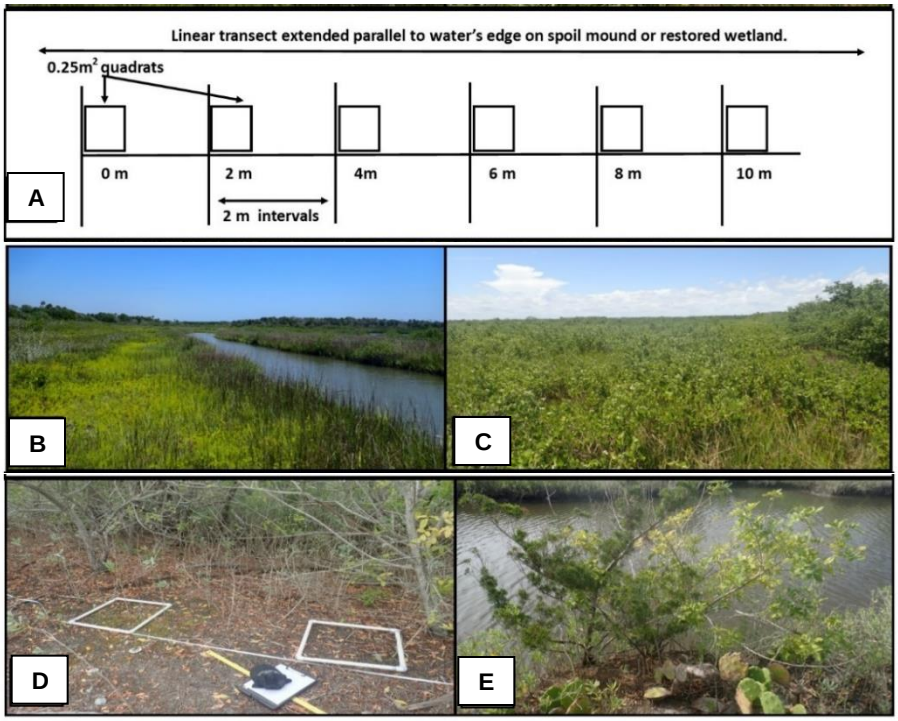

Figure 2. Plant communities are evaluated in quadrats placed along linear transects (A), with transects established in restored marsh (B, C), unrestored reference areas (D), and areas within the project footprint to be monitored before (E) and after restoration.

Plant communities on piles of spoil differed from those in previously restored areas. The community in restored salt marsh consisted of native wetland plants, with *Avicennia germinans* (black mangrove), *Sarcocornia perennis* (perennial glasswort), *Batis maritima* (saltwort), and *Spartina alterniflora* (smooth cordgrass) found at all locations (Figure 2B, C; Table 1). In comparison, vegetation on mounds of spoil was dominated by non-native species, such as *Schinus terrebinthifolius* (Brazilian pepper); native, terrestrial trees, including cedars and oaks; and cacti (Figure 2D, E; Table 1).

Table 1. Plants documented at different locations.

Location	**Plants documented**
Restored reference areas (restored in 2011)	*Avicennia germinans* (black mangrove)
	Sarcocornia perennis (perennial glasswort)
	Batis maritima (saltwort)
	Spartina alterniflora (smooth cordgrass)
Unrestored reference areas	*Schinus terrebinthifolius* (Brazilian pepper)
	Juniperus silicicola (southern red cedar)
	Quercus geminata (sand-live oak)
	Opuntia sp. (cactus)
Unrestored areas in the project (before samples)	*Schinus terrebinthifolius* (Brazilian pepper)
	Juniperus silicicola (southern red cedar)
	Opuntia sp. (cactus)