Bishop Creek Stream Assessment

Study Area

Bishop Creek is located in northern Pinellas County where it flows into Old Tampa Bay. Bishop Creek's watershed is highly urbanized having a watershed LDI value of 7.0 and is comprised of residential and commercial land uses. The creek is split into two upstream branches both of which flow through residential areas with some vegetation along the creek. The upstream portion of the creek has been altered and has steep ditch like banks. The lower portion of Bishop Creek, after the two branches converge, becomes more natural before it flows into Old Tampa Bay. The area immediately adjacent to the creek has a buffer LDI value of 5.6.

Figure 6. Bishop Creek Study Area

Vegetation Survey

The Bishop Creek vegetation assessment encompassed 5 vegetation regions from the mouth in Old Tampa Bay to upstream from Philippe Parkway as shown in Figure 7. In these regions, 65 species of vegetation were identified. Region 1 and Region 2 were dominated by mangroves (*Rhizophora mangle, Laguncularia racemosa* and *Avicennia geminans*) with few other salt tolerant species present. The most upstream mangrove was *Rhizophora mangle* in Region 5. The first occurrence of Leather Fern (*Acrostichum danaeifolium*) was in Region 2. Needle Rush (*Juncus roemerianus*) was first observed in Region 1 with the last occurrence in Region 3. Above Region 3 the vegetation communities are populated by many species indicative of dominating freshwater influence.

Figure 7. Overview of Bishop Creek Vegetation Assessment Regions

Figure 8 shows the vegetation transition zone of Bishop Creek indicating the most upstream Red Mangrove and Black Mangrove as well as the most downstream Leather Fern and *Juncus*. Based on the vegetation assessment data for Bishop Creek, regions 1 through 2 would comprise the highest salinity and tidal influence zone, Region 3 would comprise the "mixing" zone and regions 4 and 5 would comprise the freshwater dominant zone. The vegetation assessment species list is shown in Table 2.

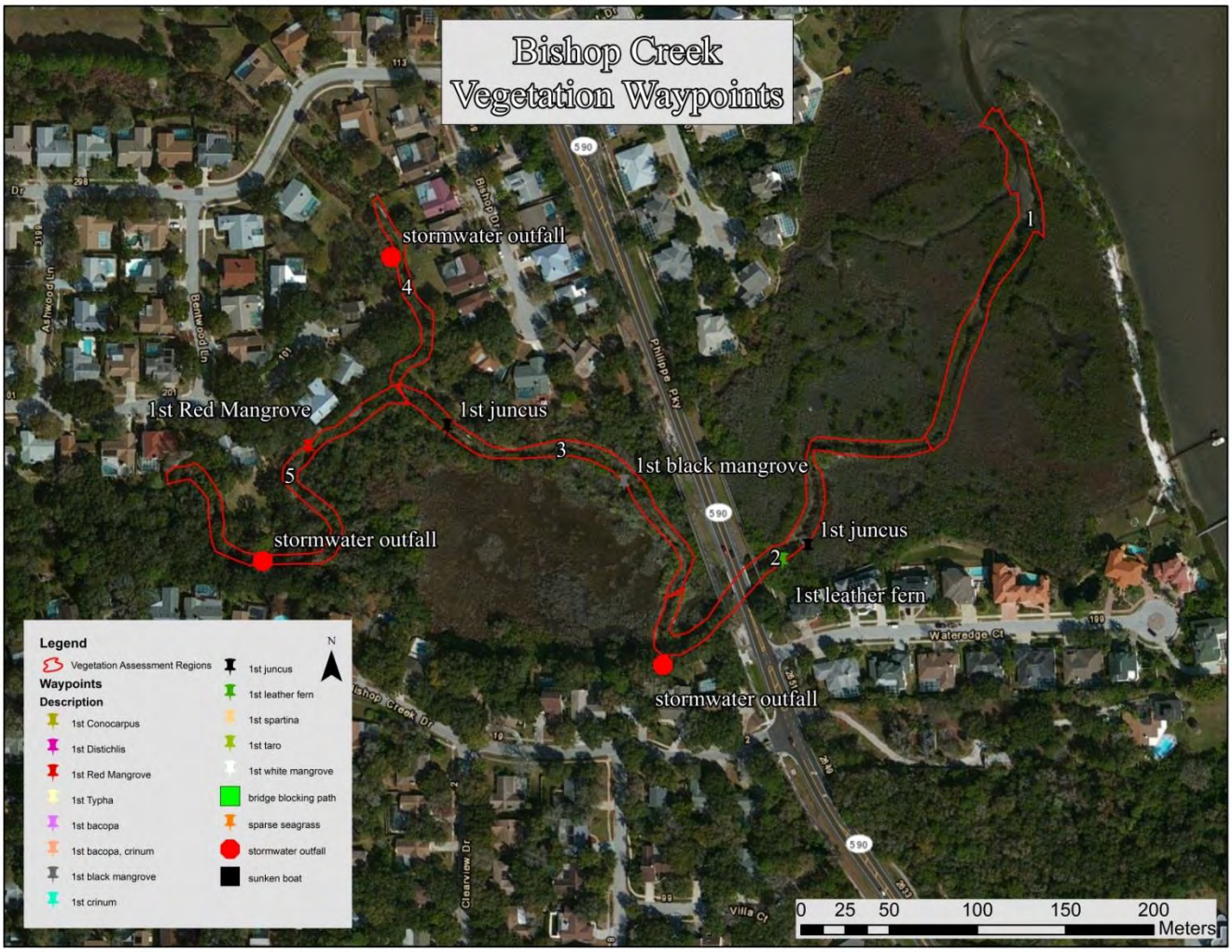

Figure 8. Bishop Creek Vegetation Waypoints

Table 2. Bishop Creek Vegetation Assessment List

Plant Species	Common Name	Sample Region					Regions Found
		1	2	3	4	5	
Laguncularia racemosa	White Mangrove	C	C	C	1	1	5
Rhizophora mangle	Red Mangrove	C	C	C	1	1	5
Acrostichum danaeifolium	Leather Fern		1	1	1	1	4
Bacopa monnieri	Common Bacopa, Herb-Of-Grace		1	1	1	1	4
Dioscorea bulbifera	Air Potato		1	1	1	1	4
Myrica cerifera	Wax Myrtle		1	1	1	1	4
Schinus terebinthifolius	Brazilian Pepper	1	1	C	1		4
Vitis rotundifolia	Muscadine Grape		1	1	1	1	4
Alternanthera philoxeroides	Alligator Weed			1	1	1	3
Ampelopsis arborea	Peppervine			1	1	1	3
Avicennia germinans	Black Mangrove	1	1	1			3
Baccharis halimifolia	Eastern False Willow, Saltbush			1	1	1	3
Hydrilla verticillata	Hydrilla, water thyme			1	1	1	3
Hydrocotyl umbellata	Manyflower Marshpennywort, Water Pennywort			1	1	1	3
Juncus roemerianus	Needle Rush, Black Rush	1	1	1			3
Lemna spp	Duckweeds		1	1	1		3
Nephrolepsis spp.	Sword Fern		1		1	1	3
Pluchea rosea	Rosy Camphorweed			1	1	1	3
Quercus laurifolia	Laurel oak			1	1	1	3
Quercus virginiana	Virginia Live Oak			1	1	1	3
Ruellia simplex	Britton's Wild Petunia			1	1	1	3
Sabal palmetto	Sabal Palm			1	1	1	3
Serenoa repens	Saw palmetto			1	1	1	3
Solidago sempervirens	Goldenrod		1	1		1	3
Sphagneticola (Wedelia) trilobata	Creeping Oxeye			1	1	1	3
Blutaparon vermiculare	Silverhead, Saltweed		1			1	2
Colocasia esculenta	Wild Taro, Dasheen, Coco Yam				1	1	2
Cyperus involucratus	Umbrella flat sedge				1	1	2
Distichlis spicata	Salt Grass		1	1			2
Erechtites hieracifolia	Fireweed				1	1	2
Iva frutescens	Marsh Elder		1	1			2
Kalamchoe pinnata	Life Plant			1		1	2
Panicum repens	Torpedo Grass			1	1		2
Rumex verticillatus	Swamp Dock			1	1		2
Sambucus canadensis	Elderberry				1	1	2
Sapium sebiferum	Popcorn Tree, Chinese Tallow Tree			1	1		2
Spartina alterniflora	Salt Marsh Grass	1		1			2
Syngonium podophyllum	Nephitis, American Evergreen				1	1	2
Taxodium distichum	Bald Cypress				1	1	2
Abrus precatorius	Rosary Pea					1	1
Acer rubrum var. trilobum	Southern Red Maple				1		1
Boehmeria cylindrica	Bog Hemp, False Nettle				1		1
Callicarpa americana	American Beauty Berry					1	1
Canna flaccida	Golden Canna, Bandana-Of-The-Everglades				1		1
Cinnamomum camphora	Camphor-tree					1	1
Crinum americanum	Swamp lily			1			1
Cupaniopsis anacardioides	Carrotwood				1		1
Dicanthelium commutatum	Variable Witch Grass					1	1
Ludwigia peruviana	Peruvian Primrosewillow					1	1
Ludwigia repens	Creeping Primrosewillow, Red Ludwigia					1	1
Lygodium japonicum	Japanese Climbing Fern					1	1
Musa spp.	Banana Tree				1		1
Osmunda regalis	Royal Fern				1		1
Parthenocissus quinquefolia	Woodbine					1	1
Paspalum spp	Paspalum					1	1
Phragmites australis	Common Reed				1		1
Polygonum hydropiperoides	Swamp Smartweed					1	1
Quercus nigra	Water Oak					1	1
Ricinus communis	Castorbean					1	1
Salix caroliniana	Carolina Willow; Coastalplain Willow					1	1
Sesbania herbacea	Danglepod Sesban	1					1
Seteria corrugata	Coastal Bristlegrass				1		1
Sesuvium portulacastrum	Shoreline Seapurslane		1				1
Thelypteris hispidula	Maiden Fern					1	1
Woodwardia areolata	Dimorphic Chain Fern					1	1

Habitat Assessment

Collected sonar data was processed through Dr. Depth software to analyze the strength of the return signal from the bottom to get an estimate of the relative bottom hardness for Bishop Creek. Figure 9 shows the bottom hardness raster for Bishop Creek. This map is meant to help identify locations of harder and softer bottoms for benthic invertebrate sampling, fish sampling and benthic chlorophyll sampling. The higher the hardness value, the harder the bottom substrate.

Figure 9. Bishop Creek Relative Bottom Hardness Map

Bathymetry Mapping

In the study area, Bishop Creek had a mean depth of 1.94 feet and a maximum depth of 4.16 feet. A total of 0.19 acres of creek was mapped during the assessment. At the time of assessment, Bishop Creek contained an estimated 597,298 gallons of water in the study area. Figure 10 details the bathymetric mapping for Bishop Creek showing the three depth stratum.

Figure 10. Bishop Creek Bathymetric Stratum Map