V. Site Specific Habitat Changes 1990-2016

A more site-specific picture of habitat change can be derived from a comparison of Vegetation Types and Water Regimes as developed by Hench in 1990 for the entire Flag Ponds Nature Area (Appendix C). Given the poor correlation with the 1990 Permanent Plots, an obvious consideration is that the 2016 sites were not conducted in the same location as the 1990 Plots. No geographic coordinates were provided for the 1990 Plots. As part of the 2016 study, an effort was made to determine the accuracy of correlation between the 1990 and 2015 grids.

The 1990 survey included a map for the entire Park designating the distribution of eleven generic Vegetation/Habitat Types combined with 7 generic Water Regimes (Appendix C.). For instance Type 1 designates Deciduous Forest and covers more than half of the Park. Other Types combined with the Water Regime are more detailed, such as 4S (Scrub Swamp in Tidally Influenced Temporarily Flooded Freshwater System). For easier reference the 1990 categorization is outlined below:

VEGETATION/HABITAT TYPE	WATER REGIME
1. Deciduous Forest	A. Temporarily Flooded
2. Open Water	C. Seasonally Flooded
3. Emergent Marsh	E. Seasonally Flooded and Saturated
4. Scrub Swamp	P. Irregularly Flooded
5. Coniferous Forested Swamp	R. Tidally Influenced Seasonally Flooded Freshwater System
6. Coniferous - Deciduous Forest Swamp	S. Tidally Influenced Temporarily Flooded Freshwater System
7. Deciduous Forested Swamp	U. Tidally Influenced Permanently Flooded Freshwater System
8. Unconsolidated Sandy Beach	
9. Grass - Forb	
10. Scrub - Shrub	
11. Coniferous Deciduous Forest	

Correlation with the 1990 Permanent Plots was derived by overlaying the Plot map with the Habitat map. The following Table compares the 1990 and 2016 Sites for both the coastal areas and upland areas:

SITE	1990 Classification	2016 Classification	Plant Correlation 1990/2016	Factors Affecting Habitat Changes
A/G2	3S	2 (in Bay)	None	Coastal erosion
A/G4	7R	2	None	Pond encroachment
A/H3	3R	8	Poor	Coastal erosion; Invasives
A/H4	7R	7R	Inaccessible	Invasives
A/I5	6R	7R	None	Downed trees
A/I6	7R	7R	Unknown	Downed trees
A/I7	7R	7R	Poor	Downed trees
A/J5	6R	7R	None	Invasives, Downed trees
A/J7	7R	2	None	Pond encroachment
A/J8	7E	7	None	Pond encroachment; Downed trees
A/K6	4R	7R	None	None observed
A/K7	2U	2U	None	Pond encroachment, Invasives
A/K8	11	11	Poor	Downed trees
A/K9	11	11	Reasonable	Downed trees
A/L9	8P	11	None	Coastal deposition; Plant succession
B/B5	7A	1A	Poor	Loss of beaver pond w/ plant succession.
B/C5	1	1	Poor	Downed trees
B/C6	7C	7C	Reasonable	Loss of beaver pond; Downed trees
B/E5	1	1	Poor	Downed trees
B/E6	1	1	None	Downed trees
B/F3	1	1	Reasonable	None observed
B/F4	1	1	Reasonable	Downed trees
B/F5	1	1	Reasonable	Downed trees
B/H7	1	1	Reasonable	Downed trees
B/H8	1	1	Poor	Downed trees
B/H9	1	1	Poor	Downed trees
B/H10	1 (roadside)	1 (roadside)	None	Possible road development
B/I8	1	1	Poor	Downed trees
B/I10	1	1	Poor	Downed trees
B/J10	1	1	Reasonable	Downed trees

It should be noted in studying the site locations mapped in Appendix D that the upland area is considerably larger than the lowland area. In 1990 Flag Ponds consisted of 343 acres with approximately 206 acres (60%) being upland and 137 acres (40%) being lowland. However, the above Table shows the upland area with only 2 Habitat Types and 2 Water Regimes. In contrast the lowland area includes 8 Habitat Types and 5 Water Regimes.

In addition to the habitat changes outlined above, other causes may contribute to the disparity of plant correlation between the 1990 and 2016 surveys. These include natural succession over a period of 25 years, misidentification of plants, and 1990 field surveys not being actually conducted at the designated Permanent Plots. Natural succession is ongoing as new plants emerge and forests mature, but in and of itself is not sufficient to affect the large numbers of sites studied. Perhaps the absence of *Pinus rigida* (Pitch Pine) at K8 and K9 is the result of succession, but it more probably was misidentification as this would have been an uncommon location for *Pinus rigida*. The plants listed for several 1990 Plots had better correlations at some Alternate Sites as discussed previously in the Site Descriptions. The Alternate Sites had no consistent offset and did not comply with the systematic 500-foot grid. This indicates that the 1990 field surveys did not necessarily conform with the intended Permanent Plot sites.