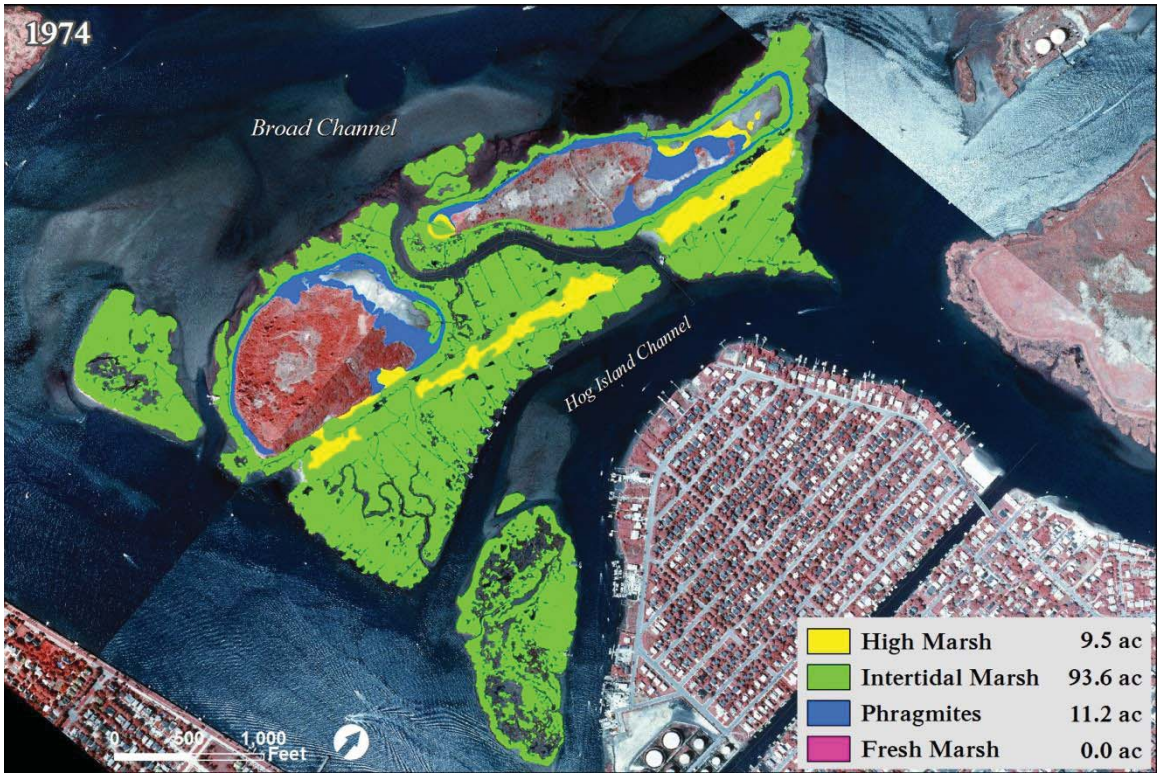
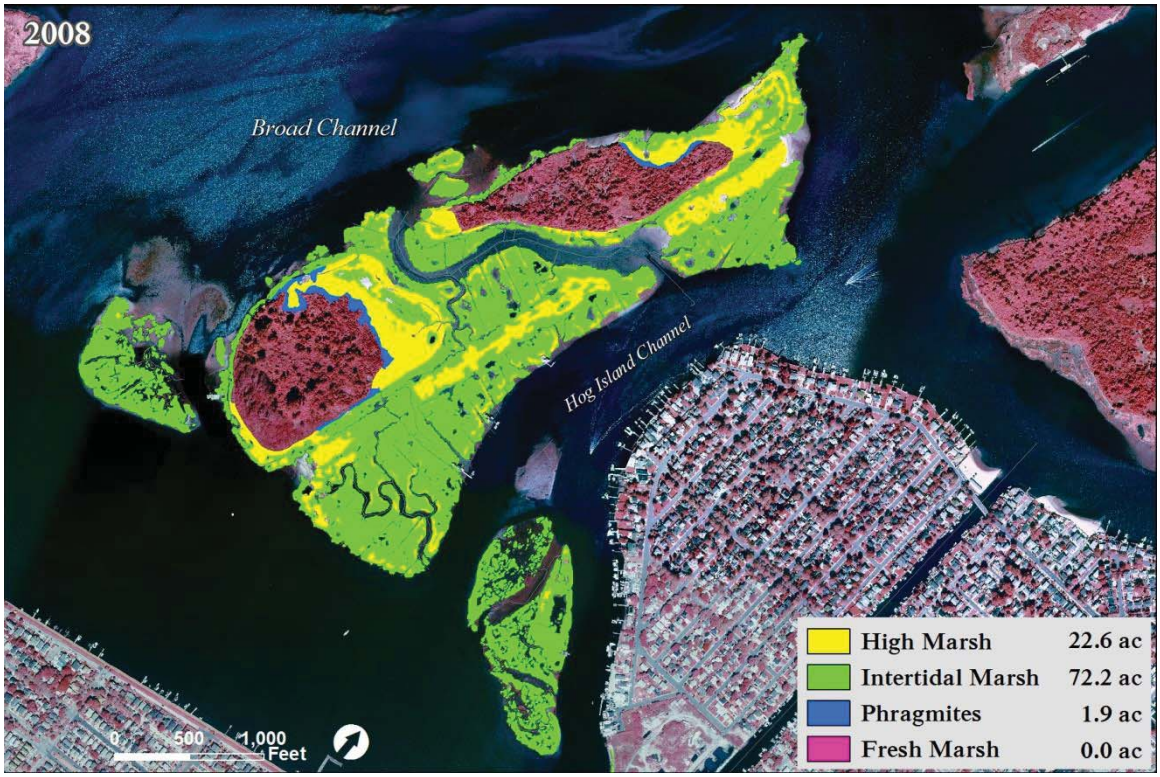
Figure 19: Blackbank Hassock (Complex ID #336) – Conversion of former *Phragmites australis* Stands to Native Marsh

[See Page F1, Appendix I for Locator Map]





South Shore Estuary Trends

The South Shore Estuary was divided into 215 wetland complexes, ranging in size from less than 1 acre to 571 acres of vegetated tidal wetlands. The estuary was divided into three reaches, East Rockaway Inlet to Fire Island Inlet, Fire Island Inlet to Smith Point County Park, and Moriches and Shinnecock Bays, to facilitate interpretation of the trends in tidal wetland area between 1974 and 2008. At the estuary level, the acreage of intertidal marsh habitats remained roughly consistent (-0.6% loss) and high marsh habitats decreased by approximately 29.7% from 1974 to 2008) (Table 13). However, as will be discussed further, these numbers mask tremendous spatial variation in the distribution and magnitude of changes in intertidal and high marsh areas within the South Shore Estuary. Areas classed as coastal fresh marsh in 1974 decreased by an estimated 42.3% by 2008. *Phragmites australis* decreased by 11.2%; as discussed previously, there were large areas of *Phragmites australis* on former dredge spoil sites that converted to high and intertidal marsh presumably due to sea level rise or restoration of tidal inundation. Overall, there was a 11.2%, or 1,627.0 acre, loss of native marsh habitats throughout the South Shore Estuary. Accounting for the modest decline in *Phragmites australis*-dominated areas, the South Shore Estuary had an overall reduction of vegetated areas of 11.2% or 1,845.8 acres.

Table 13: Tidal Wetland Area Change (1974-2008) in the South Shore Estuary by Cover Type

Wetland Type	1974 Wetland Area (acres)	2008 Wetland Area (acres)	Change (%)
Intertidal Marsh	9,404.4	9,344.5	-0.6
High Marsh	4,856.8	3,414.8	-29.7
Fresh Marsh	295.8	170.7	-42.3
Marsh Subtotal	14,557.0	12,930.0	-11.2
Phragmites australis	1,839.0	1,620.2	-11.9
Vegetated Area Total	16,525.3	14,628.4	-11.3

As shown in Table 14, the patterns in the gain and loss of marsh types varied between the three reaches of the South Shore Estuary. Intertidal marsh decreased by -7.4% between East Rockaway Inlet and Fire Island Inlet through the conversion to unvegetated pannes, ponds, or mudflats, increased by +99.4% between Fire Island Inlet and Smith Point County Park, and increased by +18.9% in Moriches and Shinnecock Bays. High marsh decreased by -33.8% within the East Rockaway Inlet to Fire Island Inlet and -35.5% within Fire Island Inlet to Smith Point County Park, and decreased by a lesser extent (-11.3%) in Moriches and Shinnecock Bays. Coastal fresh marsh habitats decreased greatly in each of the three reaches resulting in an overall loss of these habitats within the estuary of -42.3%. *Phragmites australis* decreased by -36.4%

between East Rockaway Inlet and Fire Island Inlet, increased by +20.1% between Fire Island Inlet and Smith Point County Park, and decreased by -35.0% in Moriches and Shinnecock Bays.

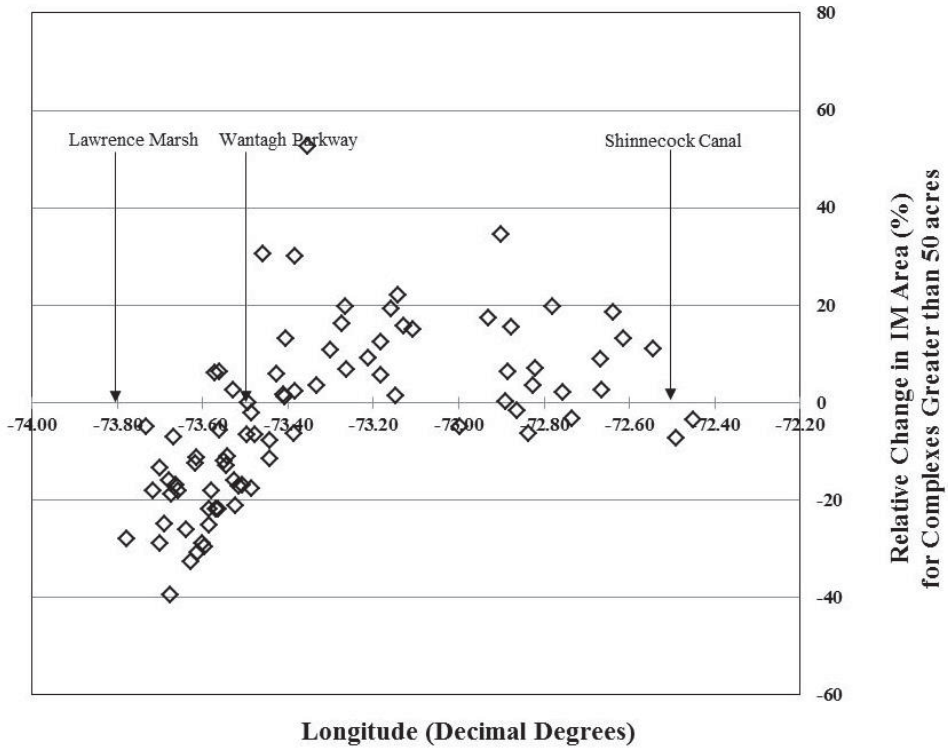
Table 14: Tidal Wetland Area Change (1974-2008) Within Each Reach of the South Shore Estuary by Class

SSE Reach	Wetland Type	1974 Area (acres)	2008 Area (acres)	Change (%)
East Rockaway Inlet to Fire Island Inlet	Intertidal Marsh	8,098.7	7,500.8	-7.4
	High Marsh	2,306.1	1,526.8	-33.8
	Fresh Marsh	2.4	0.0	-100.0
	Marsh Subtotal	10,407.1	9,027.6	-13.3
	Phragmites australis	582.3	370.4	-36.4
	Vegetated Area Total	10,989.4	9,398.0	-14.5
Fire Island Inlet to Smith Point County Park	Intertidal Marsh	361.6	721.2	+99.4
	High Marsh	1,547.7	998.3	-35.5
	Fresh Marsh	284.3	165.9	-41.6
	Marsh Subtotal	2,193.7	1,885.3	-14.1
	Phragmites australis	786.1	944.0	+20.1
	Vegetated Area Total	2,979.8	2,829.3	-5.1
Moriches and Shinnecock Bays	Intertidal Marsh	944.1	1,122.5	+18.9
	High Marsh	1,003.0	889.7	-11.3
	Fresh Marsh	9.0	4.8	-46.6
	Marsh Subtotal	1,956.1	2,017.1	+3.1
	Phragmites australis	470.7	305.8	-35.0
	Vegetated Area Total	2,426.8	2,322.9	-4.3
TOTAL	Intertidal Marsh	9,404.4	9,344.5	-0.6
	High Marsh	4,856.8	3,414.8	-29.7
	Fresh Marsh	295.8	170.7	-42.3
	Marsh Subtotal	14,557.0	12,930.0	-11.2
	Phragmites australis	1,839.0	1,620.2	-11.9
	Vegetated Area Total	16,396.0	14,550.2	-11.3

These patterns are also observed at the individual complex level with nearly all marshes located west of the Wantagh Parkway (for wetland complexes greater than 50 acres in area in 1974)

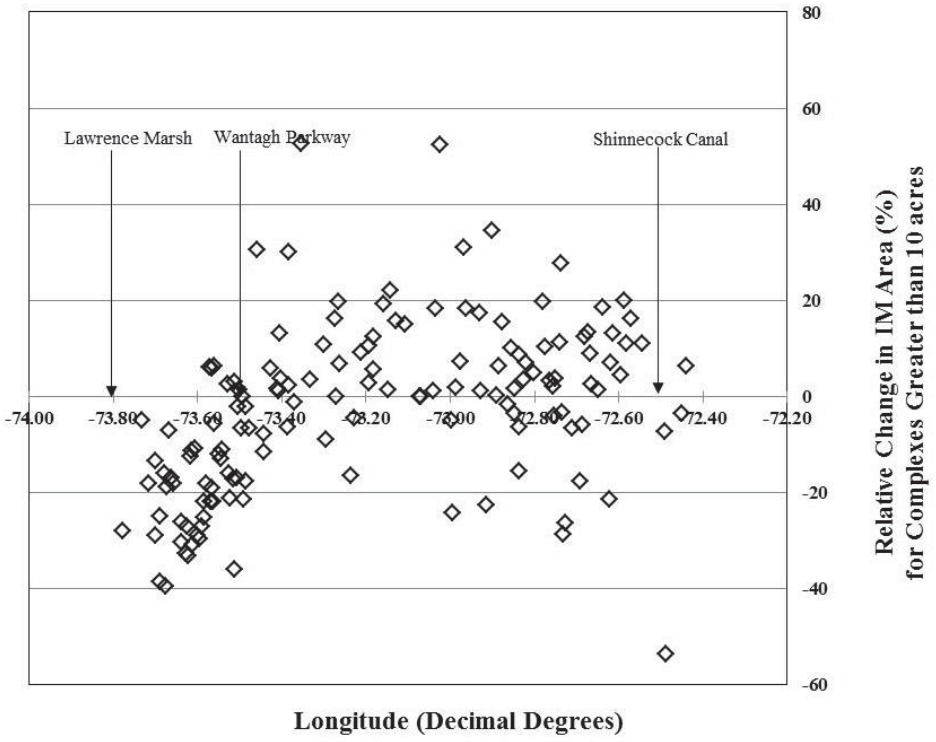
showing decreases in the intertidal marsh area through conversion to unvegetated pannes, ponds, and mudflat between 1974 and 2008 (Figure 20). Decreased intertidal marsh area is shown in Figure 20 by a less than 0 value for the change in intertidal marsh between 1974 to 2008 relative to (i.e. as a proportion of) the 1974 total vegetated complex area (IM + HM + FM + *Phragmites australis*). In contrast, complexes in the central and eastern portion of the estuary tended to show gains in intertidal marsh (Figure 20) or a positive value for the change in intertidal marsh area relative to 1974 total vegetated complex area. The increase in intertidal marsh area in the central and eastern reaches of the estuary is due largely to the subsidence of high marsh habitats. This general relationship holds when the analysis is expanded to all wetland complexes greater than 10 acres in size (Figure 21). However, smaller wetland complexes are more likely to be susceptible to large gains or losses in marsh area due to the influence of local variability in sediment supply, erosional conditions, and other environmental factors. Accordingly, there is greater variability in the intertidal marsh loss rates in Figure 21 compared to Figure 20, particularly in the central and eastern portions of the South Shore Estuary.

Figure 20: Relative change in intertidal marsh area compared to longitude in the South Shore Estuary for complexes greater than 50 acres in 1974 area



Note: Change in intertidal marsh (Δ IM from 1974 to 2008) is relative to (i.e. as a proportion of) 1974 total vegetated complex area (IM + HM + FM + *Phragmites australis*). Longitude selected at the polygon centroid for each wetland complex.

Figure 21: Relative change in intertidal marsh area compared to longitude in the South Shore Estuary for complexes greater than 10 acres in 1974 area



Note: Change in intertidal marsh (Δ IM from 1974 to 2008) is relative to (i.e. as a proportion of) 1974 total vegetated complex area (IM + HM + FM + *Phragmites australis*). Longitude selected at the polygon centroid for each wetland complex.

As described in previously, wetland complexes with the greatest areas of high marsh in 1974 were predominantly located in the central and eastern portion of the South Shore Estuary and the Peconic Estuary (Table 5 and Table 6). In these central and eastern South Shore complexes, high marsh also comprised a greater proportion of total vegetated area in 1974 (Table 15). The greater relative abundance of high marsh compared to total marsh area in the central and eastern South Shore estuary in 1974 could be due to 1) greater historical filling of high marsh habitats in the western South Shore estuary, 2) greater historical abundance of high marshes in the central and eastern South Shore estuary resulting from increased sediment supply from larger river and stream systems (i.e. the Connetquot and Carmans Rivers) or other environmental factors, 3) inconsistent differentiation of high marsh and intertidal marsh areas in the 1974 mapping effort, or 4) a combination of these factors.

Table 15: High Marsh Proportion of Vegetated Marsh Area in 1974 in Long Island's South Shore Estuary

Estuary	1974 HM Area (acres)	1974 Vegetated Area (acres)	HM : Total 1974 Area
South Shore Estuary	4,856.8	16,396.0	0.30
East Rockaway to Fire Island Inlet	2,306.1	10,989.4	0.21
Fire Inlet to Smith Point	1,547.7	2,979.8	0.53
Moriches and Shinnecock Bays	1,003.0	2,426.8	0.41

In the central and eastern South Shore Estuary, the subsidence or drowning of the abundant high marsh habitats resulted in increases in intertidal marsh (Figure 8) or panne and pond areas (Figure 9). However, due to the reduced relative abundance of high marshes in the western South Shore Estuary, similar environmental stressors (sea level rise, erosion from vessel wakes, and nutrient loading) result in internal panne formation in intertidal marshes and the erosion/retreat of marsh edges and creek/ditch banks, and, therefore, a decrease in total marsh area.

This mechanism (i.e. lower relative abundance of high marsh in the western South Shore Estuary in 1974) contributes to the general trend of decreasing magnitude of marsh loss moving eastward in the South Shore Estuary, as shown in the variation in marsh loss between the South Shore Estuary Towns (Table 16). However, it is not clear from this study of this mechanism results from natural factors (e.g. increased sediment supply or other environmental factors), anthropogenic impacts (e.g. greater historical filling of high marsh habitats in the western South Shore estuary), or a combination of natural and anthropogenic causes. Furthermore, development density in the western Towns and many other environmental variables with potential impacts on wetland health are also likely to have west-to-east gradients within the estuary.

Marsh loss trends are summarized by Town to provide usable information for land managers and regulators in local municipalities and because these municipal boundaries integrate general patterns in land use and development. As shown in Table 16, rates of marsh loss between 1974 and 2008 tended to decrease from Hempstead (-15.5%) to Southampton, which exhibited a gain in marsh area of 5.9%. The Town of Hempstead comprises approximately 45% of the marsh area in the South Shore Estuary (based on 2008 mapping), yet the loss of 1,060.4 acres of marsh in Hempstead accounted for approximately 66% of the South Shore Estuary"s change in marsh area. The Towns of Oyster Bay, Babylon, Islip, and Brookhaven had roughly equivalent percentages of marsh loss ranging from 6.6% to 13.7% and totaling 598.8 acres.

Table 16: Tidal Wetland Area Change in the South Shore Estuary by Town

Municipality	1974 IM+HM+FM (acres)	2008 IM+HM+FM (acres)	Δ IM+HM+FM (acres)	Δ IM+HM+FM (%)
Hempstead	6,824.9	5,764.5	-1,060.4	-15.5
Oyster Bay	910.8	790.5	-120.3	-13.2
Babylon	2,250.3	2,102.5	-147.8	-6.6
Islip	1,044.2	901.3	-142.9	-13.7
Brookhaven	2,312.0	2,124.1	-187.8	-8.1
Southampton	1,051.9	1,114.5	+62.6	+5.9
Total	14,394.1	12,797.4	-1,596.6	-11.1

As stated previously, the patterns of marsh gain and loss varied between the three reaches of the South Shore Estuary. The following sections provide wetland complex examples of the patterns of marsh change in observed in each of the three South Shore reaches and identify complexes with the greatest changes in marsh area.

East Rockaway Inlet to Fire Island Inlet

Wetland complexes in this reach consist mainly of large intertidal marsh islands that have been extensively modified through the dredging of navigational channels and mosquito ditching, and placement of dredge spoils. Table 17 and Table 18 list the marsh complexes that have sustained the largest reductions in marsh habitat from 1974 through 2008 in both acreage and percent loss, respectively. Lawrence Marsh (ID # 322), which lost 72.3 acres of marsh (11.8% of its 1974 area), and Hewlett Hassock & Nums Marsh (ID # 328), which lost 26.6 acres of its 1974 marsh area (34.9%) are shown in Figure 22 and Figure 23, respectively. Captree Island & Seaganus Thatch (ID # 410) lost 56.8 acres of marsh (9.5% of its 1974 area) with high marsh area decreasing by 65.1% (276.9 to 96.6 acres) and intertidal marsh increasing by 38.9% (317.6 acres to 441.6 acres) (Figure 24). Other East Rockaway to Fire Island Inlet marshes with large reductions in marsh acreage or percentage of 1974 marsh area are shown in Figure 8 (Cedar & Nezaras Islands, ID # 401), Figure 11 (Pine Marsh, ID # 356), Figure 12 (Tobay Sanctuary & Marsh Island North of State Boat Channel, ID # 385 and 386), and Figure 14 (Cuba, Middle, and East Islands, ID # 367). These marsh complexes show typical indications of intertidal marsh loss including panne formation, creek and channel widening, edge retreat, thinning of peninsulas, scalloping of the marsh edge, and loss of small marsh islands.

Table 17: Complexes with Largest Tidal Wetland Loss between East Rockaway Inlet and Fire Island Inlet

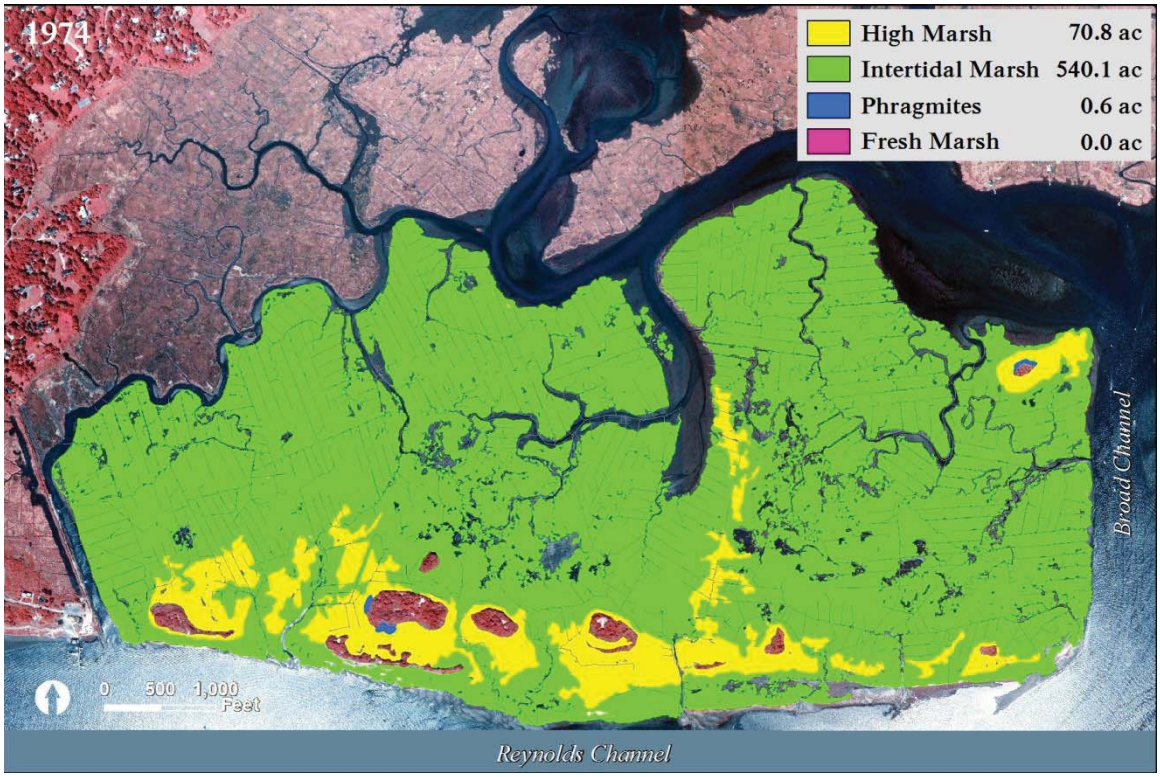
Complex (ID #)	1974 IM + HM + FM (acres)	2008 IM + HM + FM (acres)	Δ IM + HM +FM (acres)	Δ IM + HM +FM (%)
Marsh Islands North of State Boat Channel (386)	607.9	504.6	-103.3	-17.0%
Lawrence Marsh (322)	610.8	538.5	-72.3	-11.8%
Cuba, Middle & East Islands (367)	238.5	176.2	-62.3	-26.1%
Captree Island & Seaganus Thatch (410)	594.4	537.6	-56.8	-9.6%
Jones, Middle & West Cow Islands (364)	374.0	318.8	-55.2	-14.8%
Big Cow Island (363)	308.4	253.4	-55.0	-17.8%
South Line Island (382)	362.4	312.3	-50.2	-13.8%
Cedar & Nezeras Islands (401)	583.5	541.4	-42.1	-7.2%
Pine Marsh (356)	204.2	163.7	-40.5	-19.8%
Deep Creek Meadow & Snipe Island (366)	194.7	157.2	-37.6	-19.3%

Table 18: Complexes with Largest Tidal Wetland Loss by Percentage between East Rockaway Inlet and Fire Island Inlet

Complex (ID #)	1974 IM + HM +FM (acres)	2008 IM + HM + FM (acres)	Δ IM + HM +FM (%)	Δ IM + HM +FM (acres)
Hewlett Hassock & Nums Marsh (328)	76.1	49.5	-34.9	-26.6
Olivers Island (373)	39.4	25.8	-34.5	-13.6
West Meadow Island (334)	19.2	13.2	-31.5	-6.1
Jones Beach West Tip (371)	29.9	20.5	-31.3	-9.4
Long Meadow & Middle Islands (346)	72.4	50.3	-30.6	-22.1
Ingraham Hassock (345)	41.8	30.0	-28.2	-11.8
East Channel Islands (341)	130.4	93.8	-28.1	-36.6
Seadog Island (351)	136.3	99.2	-27.2	-37.1
Cinder & North Cinder Islands (344)	139.0	101.4	-27.0	-37.6
Cuba, Middle & East Islands (367)	238.5	176.2	-26.1	-62.3

Figure 22: Lawrence Marsh (Complex ID #322) – 2nd Largest Tidal Wetland Area Loss (East Rockaway to Fire Island Inlet)

[See Page F1, Appendix I for Locator Map]



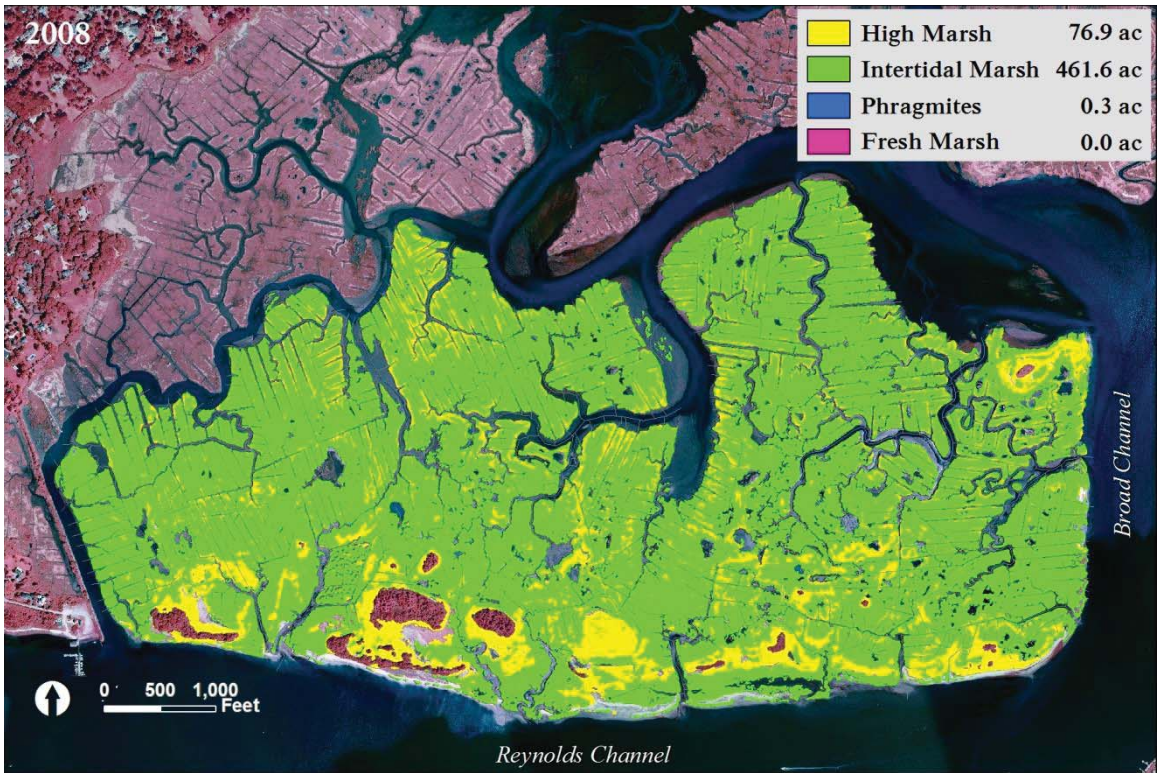
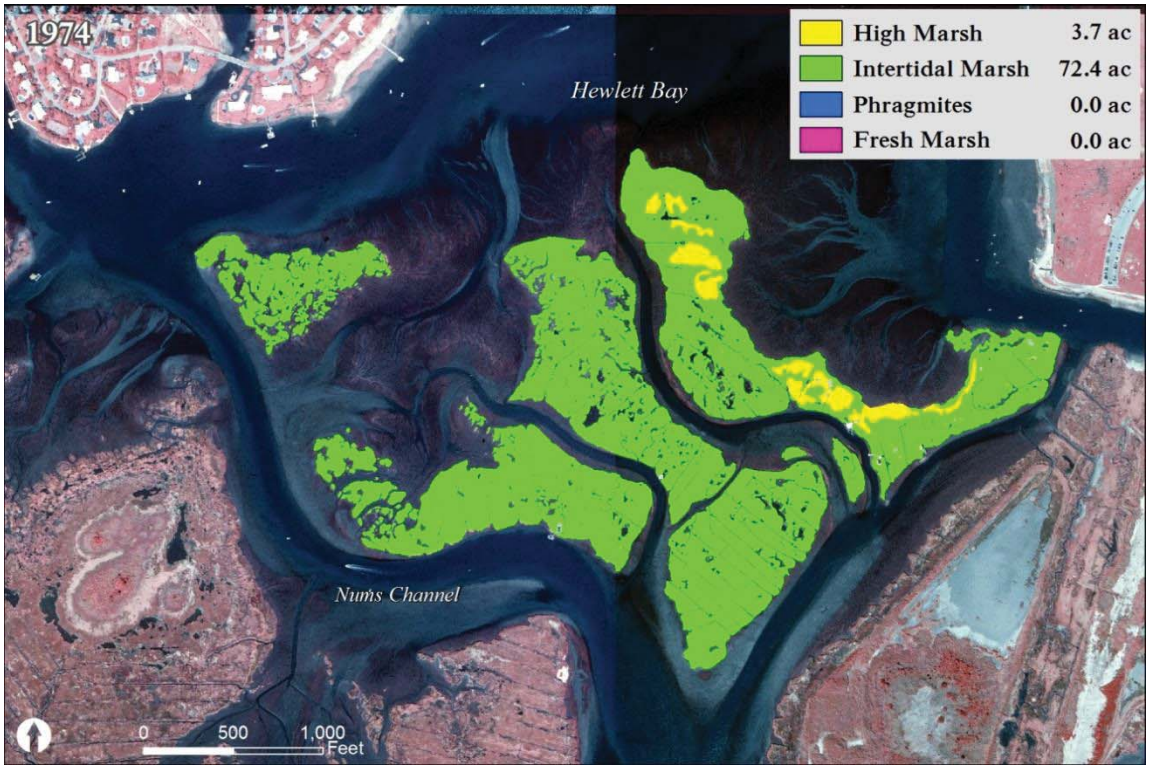


Figure 23: Hewlett Hassock & Nums Marsh (Complex ID #328) – Largest Tidal Wetland Percentage Loss (East Rockaway to Fire Island Inlet)

[See Page F1, Appendix I for Locator Map]



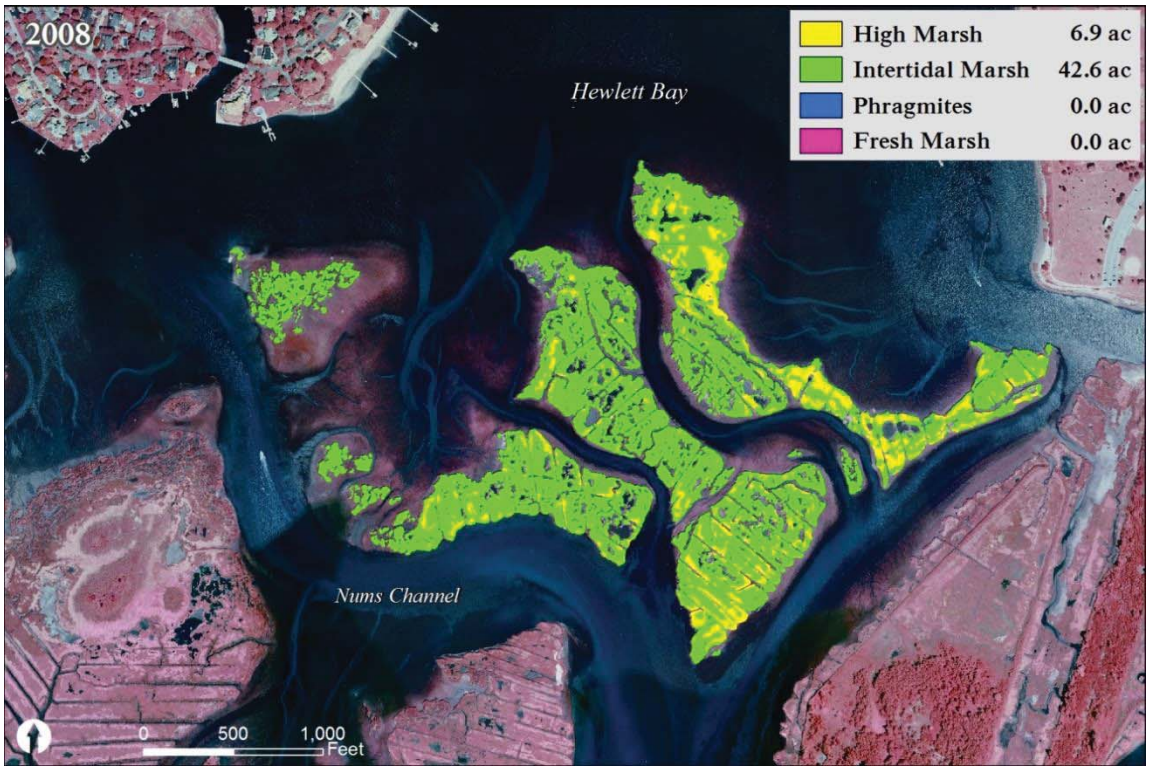
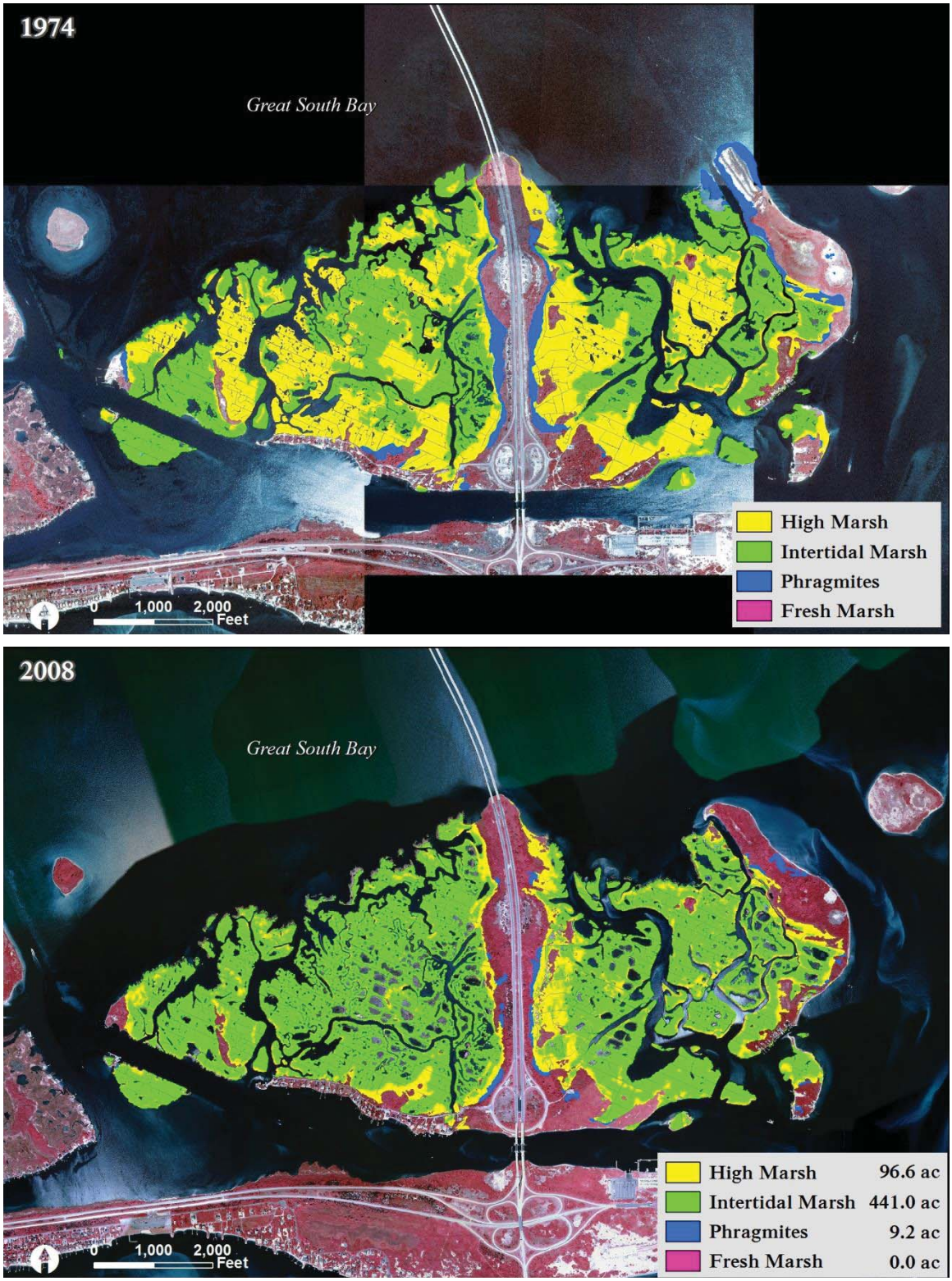


Figure 24: Captree Island & Seaganus Thatch (Complex ID #410)
[See Page F4, Appendix I for Locator Map]



Fire Island Inlet to Smith Point County Park

Dominant patterns in the gain and loss of marsh types between Fire Island Inlet and Smith Point County Park included 1) drowning or waterlogging of this reach's extensive high marsh areas and conversion to either panne or intertidal marsh, 2) increases in intertidal marsh area at the expense of former high marsh areas, 3) expansion of *Phragmites australis* leading to large reductions in coastal fresh marsh habitats and encroachment on high marsh areas proximal to groundwater or fresh surface water inflows, and 4) some expansion of high and intertidal marsh habitats into former *Phragmite australis* areas located on previously disturbed sites. Table 19 and Table 20 list the marsh complexes that have sustained the largest reductions in marsh habitat from 1974 through 2008 in both acreage and percent loss, respectively. The marshes presented in Table 19 account for 223.6 acres of lost intertidal, high, and coastal fresh marsh.

The conversion of native high marsh to intertidal marsh and pannes is clearly shown at Fireplace Neck (ID # 461, Figure 25, -127.06 acres of high marsh and +106.4 acres of intertidal marsh), Gardiners County Park (ID # 418, Figure 26, -7.5 acres of high marsh and +11.6 acres of intertidal marsh), Pepperidge State Tidal Wetlands (ID # 434, Figure 27, -37.9 acres of high marsh and +19.2 acres of intertidal marsh), Lymans Marsh (ID # 457, Figure 28, -3.9 acres of high marsh and +3.8 acres of intertidal marsh), and Smith Point County Marina (ID #465, Figure 29, -1.5 acres of high marsh and +9.9 acres of intertidal marsh). Phragmites australis expansion has overtaken high marsh areas at Robert Moses State Park (ID # 421, Figure 30, +10.9 acres of Phragmites australis and -21.6 acres of intertidal and high marsh) and coastal fresh marsh habitats at Fireplace Neck (ID # 461, Figure 25), Pepperidge State Tidal Wetlands (ID # 434, Figure 27), and Swan River (ID # 453, Figure 31, +4.4 acres of *Phragmites australis*, -7.8 acres of coastal fresh marsh and -7.4 acres of intertidal and high marsh).

Table 21 lists the marsh complexes that have exhibited the largest increases in marsh habitat from 1974 through 2008. Interestingly, two of the marsh complexes described above, Gardiners County Park (ID # 418, Figure 26) and Smith Point County Marina (ID # 465, Figure 29), exhibit apparent gains in total intertidal, high, and coastal fresh marshes as it appears that native marsh or mixed Iva frutescens or *Phragmites australis* stands have expanded into some former *Phragmites australis* areas. However, these marsh complexes clearly show deterioration of the high marsh in the interior of these complexes and conversion to intertidal marsh (Gardiners County Park) or panne and intertidal marsh (Smith Point County Park Marina). Heckscher State Park (ID # 430) provides another example of intertidal and high marsh expansion into *Phragmites australis* stands, as 13.2 acres of native marsh are now present within this wetland (Figure 32).

Table 19: Complexes with Largest Tidal Wetland Loss between Fire Island Inlet and Smith Point County Park

Complex (ID#)	1974 IM + HM + FM (acres)	2008 IM + HM + FM (acres)	Δ IM + HM +FM (acres)	Δ IM + HM +FM (%)
Carmans River East (462)	303.1	251.9	-51.2	-16.9
Fireplace Neck & Carmans River West (461)	279.5	235.6	-43.9	-15.7
Carmans River Upstream FM (463)	97.1	61.6	-35.5	-36.6
East Fire Island (424)	130.3	101.5	-28.8	-22.1
Pepperidge State Tidal Wetlands (434)	96.4	76.0	-20.4	-21.2
Fire Island National Seashore (445)	481.7	459.4	-22.2	-4.6
Robert Moses State Park (421)	23.2	1.6	-21.6	-93.1

Table 20: Complexes with Largest Tidal Wetland Loss (%) between Fire Island Inlet and Smith Point County Park

Complex (ID #)	1974 IM + HM +FM (acres)	2008 IM + HM +FM (acres)	Δ IM + HM +FM (%)	Δ IM + HM +FM (acres)
Robert Moses State Park (421)	23.2	1.6	-93.1	-21.6
Browns River North (438)	14.8	5.0	-66.1	-9.8
Swan River (453)	29.2	14.0	-52.1	-15.2
Mud Creek (454)	35.6	18.5	-48.0	-17.1
Carmans River Upstream FM (463)	97.1	61.6	-36.6	-35.5
Grand Canal & Pickman Wetlands (432)	29.7	19.9	-32.8	-9.7
Hedges Creek (456)	19.7	14.3	-27.4	-5.4

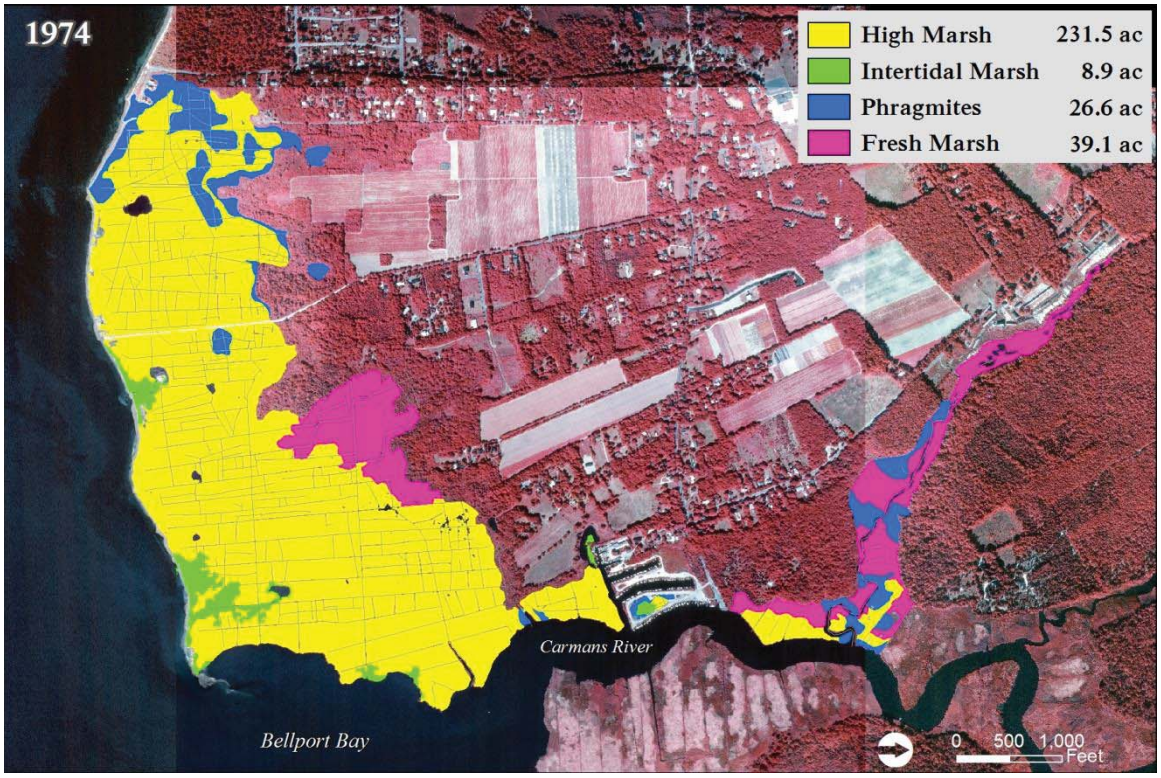
Table 21: Complexes with Largest Phragmites Increase between Fire Island Inlet and Smith Point County Park

Complex (ID #)	1974 Phragmites (acres)	2008 Phragmites (acres)	Δ Phragmites (acres)
Carmans River East (462)	34.8	96.4	61.6
Fireplace Neck & Carmans River West (461)	26.6	60.3	33.6
Carmans River Upstream FM (463)	46.1	61.8	15.7
Pepperidge State Tidal Wetlands (434)	21.8	36.2	14.4
Indian Creek (435)	21.3	35.6	14.3

Table 22: Complexes with Largest Tidal Wetland Increase between Fire Island Inlet and Smith Point County Park

Complex (ID #)	1974 IM + HM +FM (acres)	2008 IM + HM +FM (acres)	Δ IM + HM +FM (acres)
Heckscher State Park FC Wetland (430)	43.3	56.5	13.2
Smith Point County Marina (465)	48.5	57.0	8.5
Stillman Creek (449)	13.1	19.2	6.1
Democrat Point (420)	0.0	6.1	6.1
Gardiners County Park (418)	53.7	57.8	4.1
Abetts Creek (455)	1.8	5.9	4.1

Figure 25: Fireplace Neck and Carmans River West (Complex ID #461)
[See Page E6, Appendix I for Locator Map]



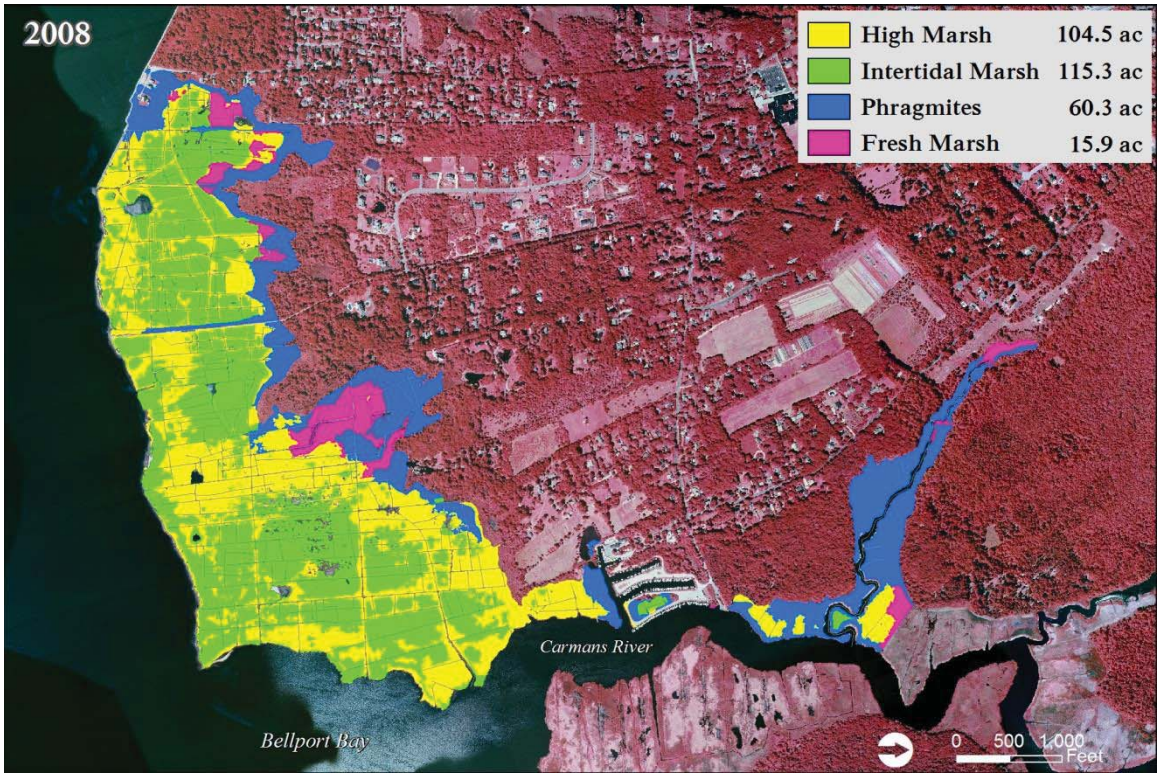
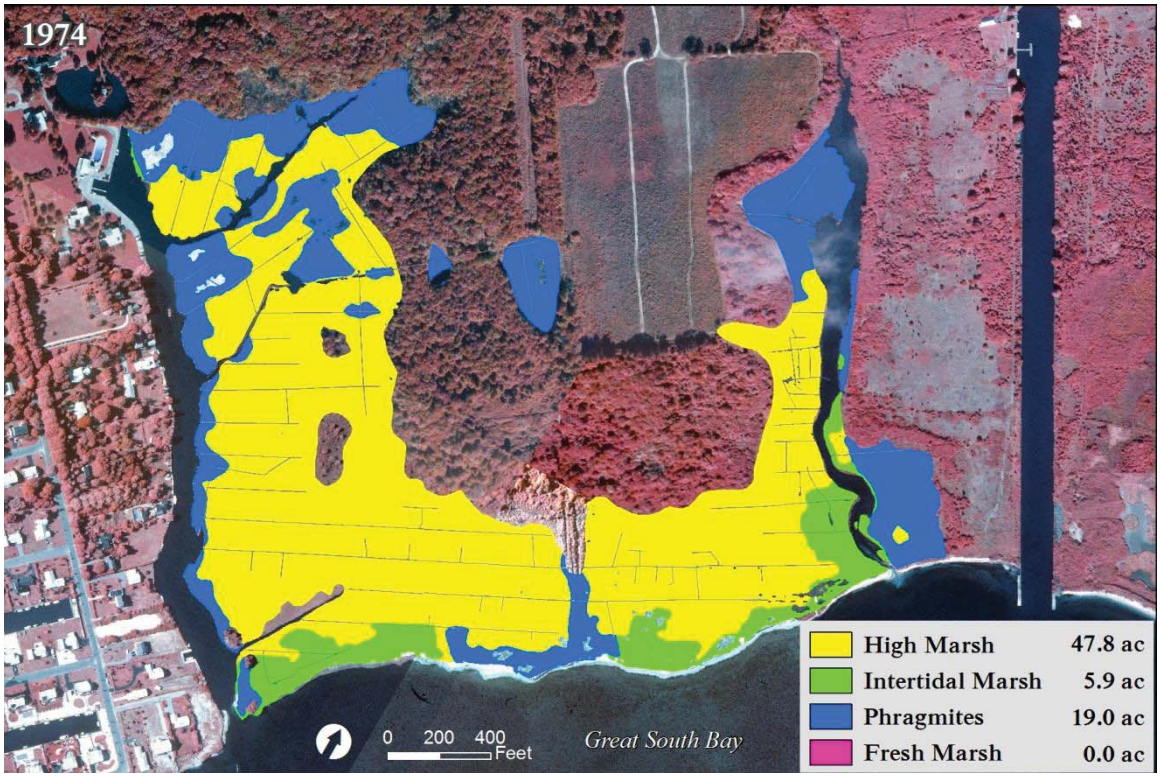


Figure 26: Gardiners County Park (Complex ID #418)
[See Page E4, Appendix I for Locator Map]



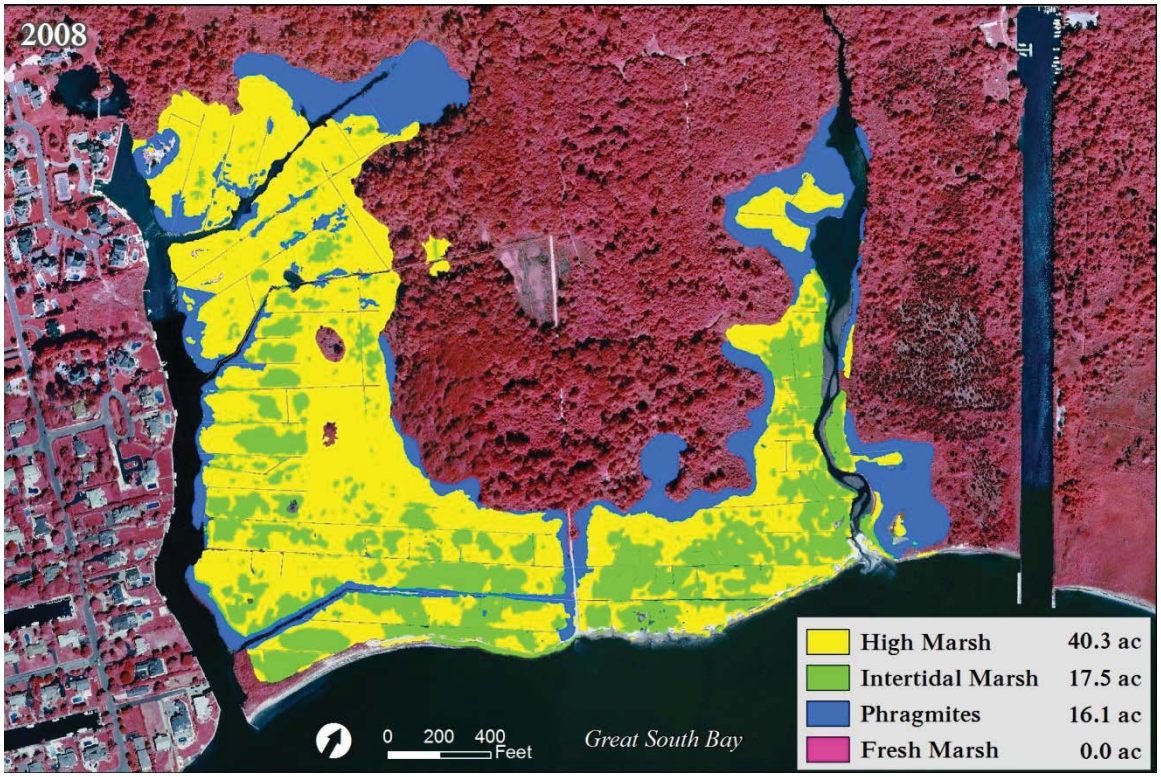
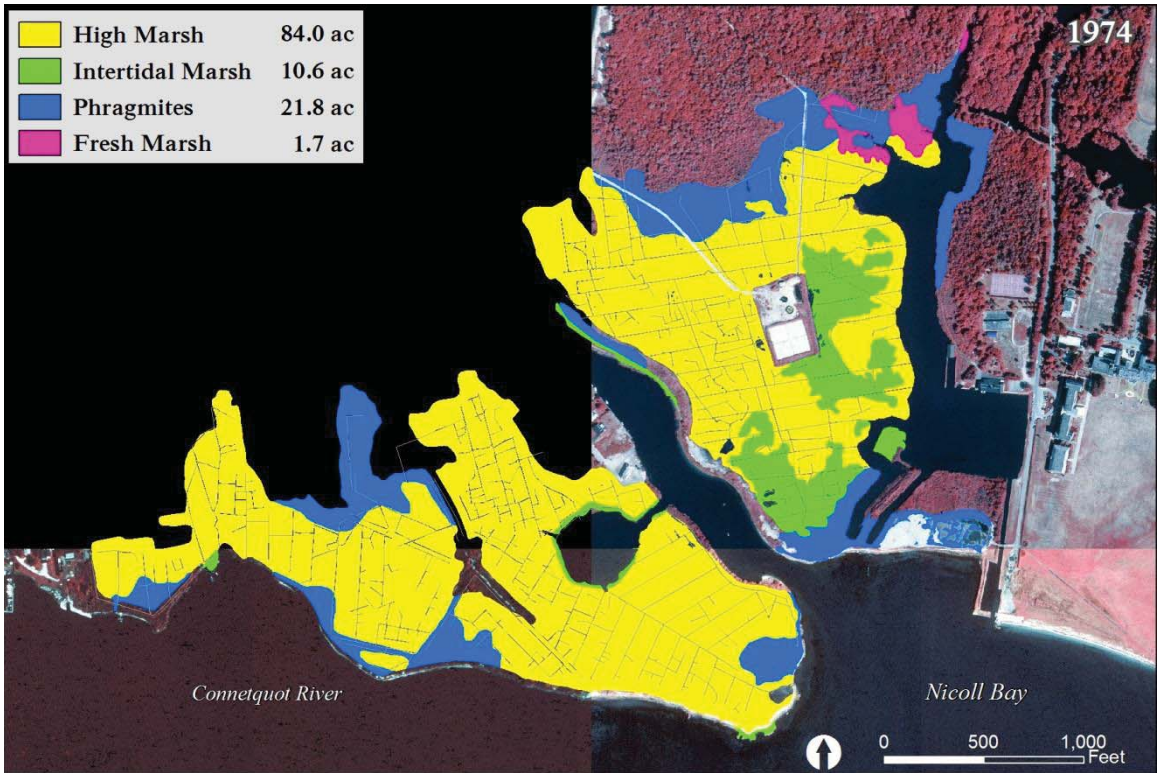


Figure 27: Pepperidge State Tidal Wetlands (Complex ID #434)
[See Page E4, Appendix I for Locator Map]



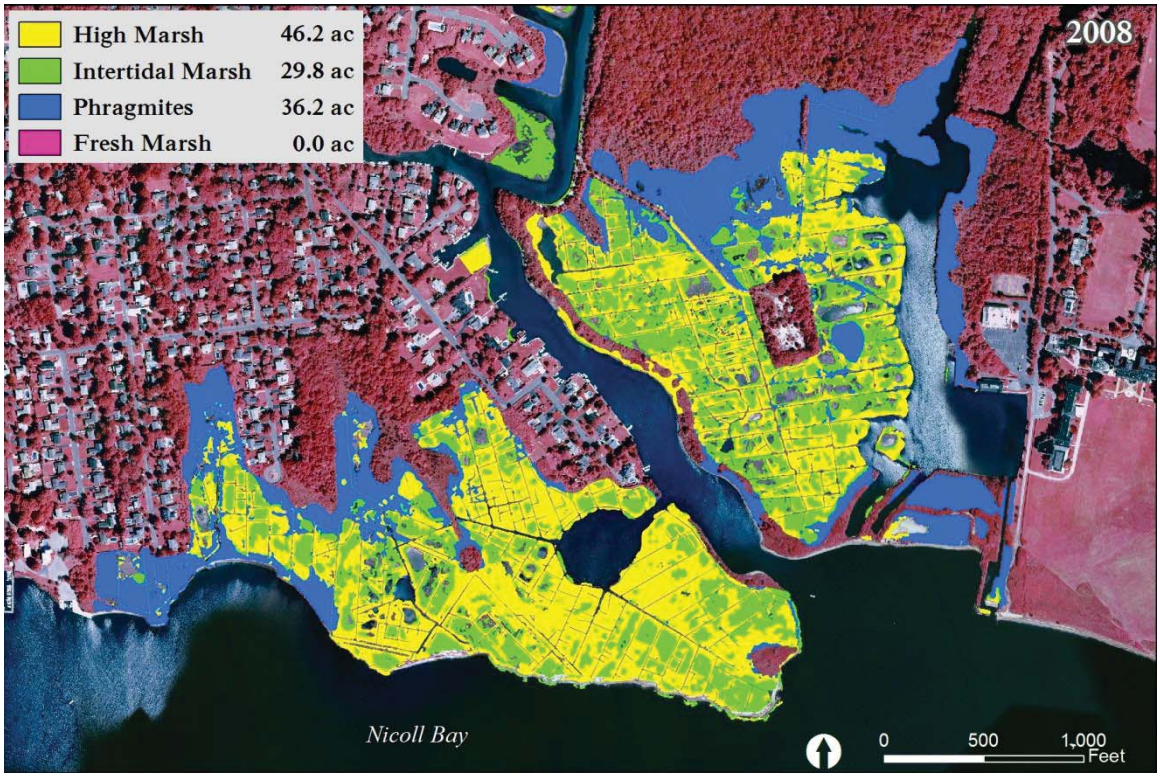


Figure 28: Lymans Marsh (Complex ID #457)
[See Page E5, Appendix I for Locator Map]

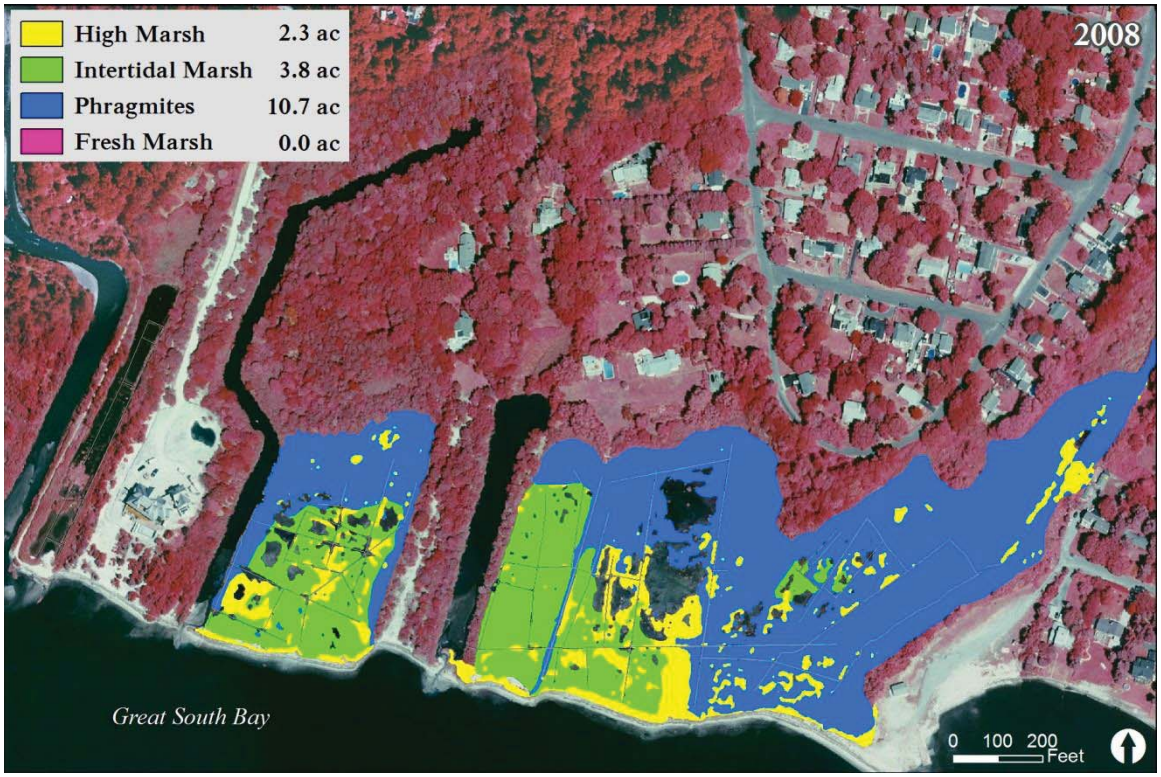
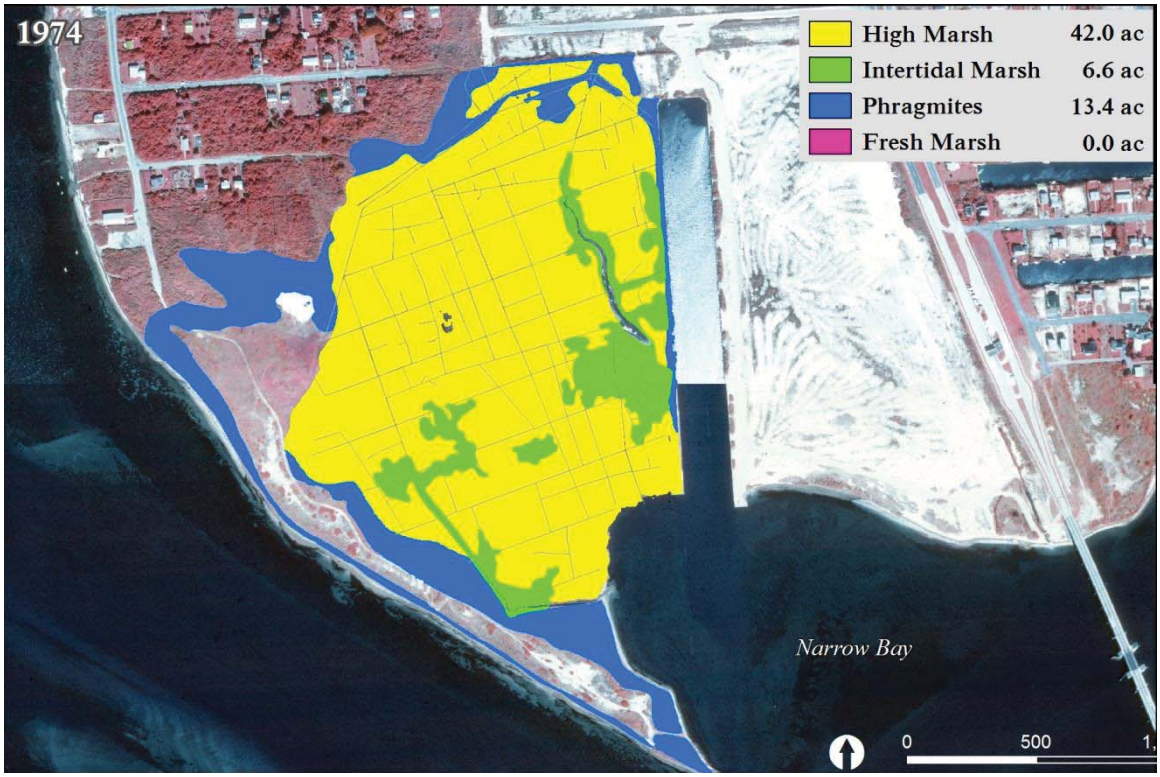


Figure 29: Smith Point County Park Marina (Complex ID #465)
[See Page E6, Appendix I for Locator Map]



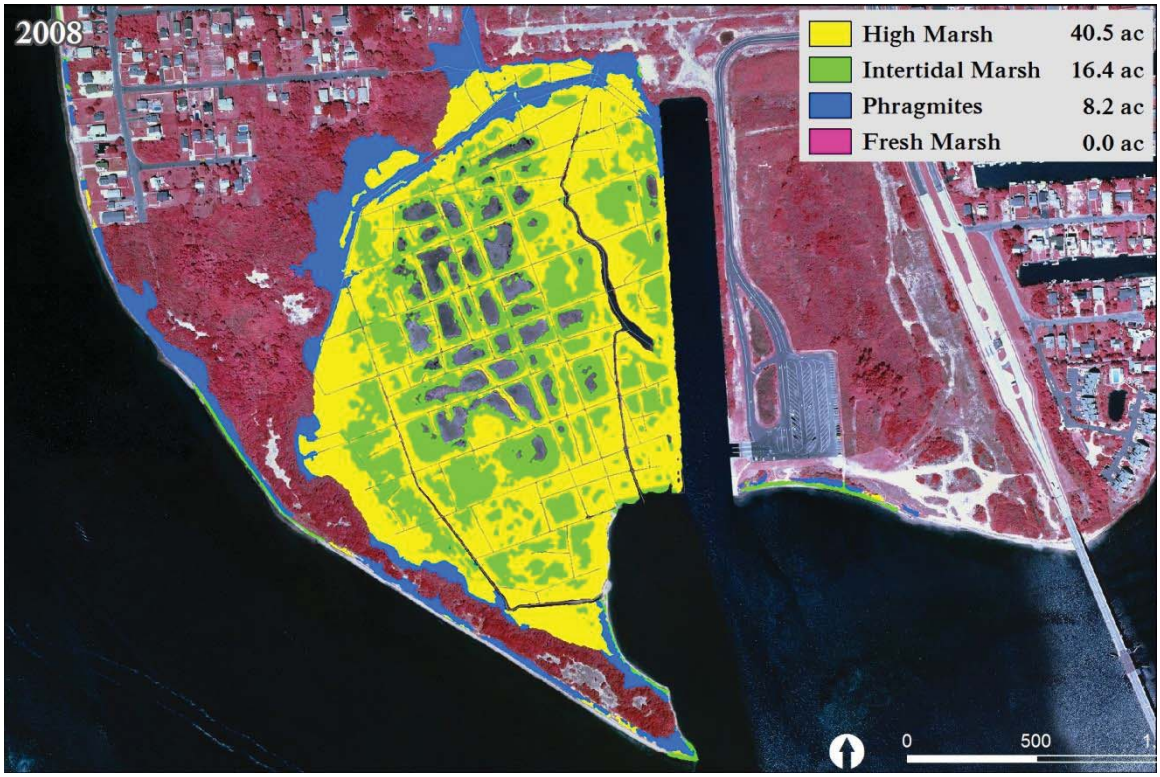
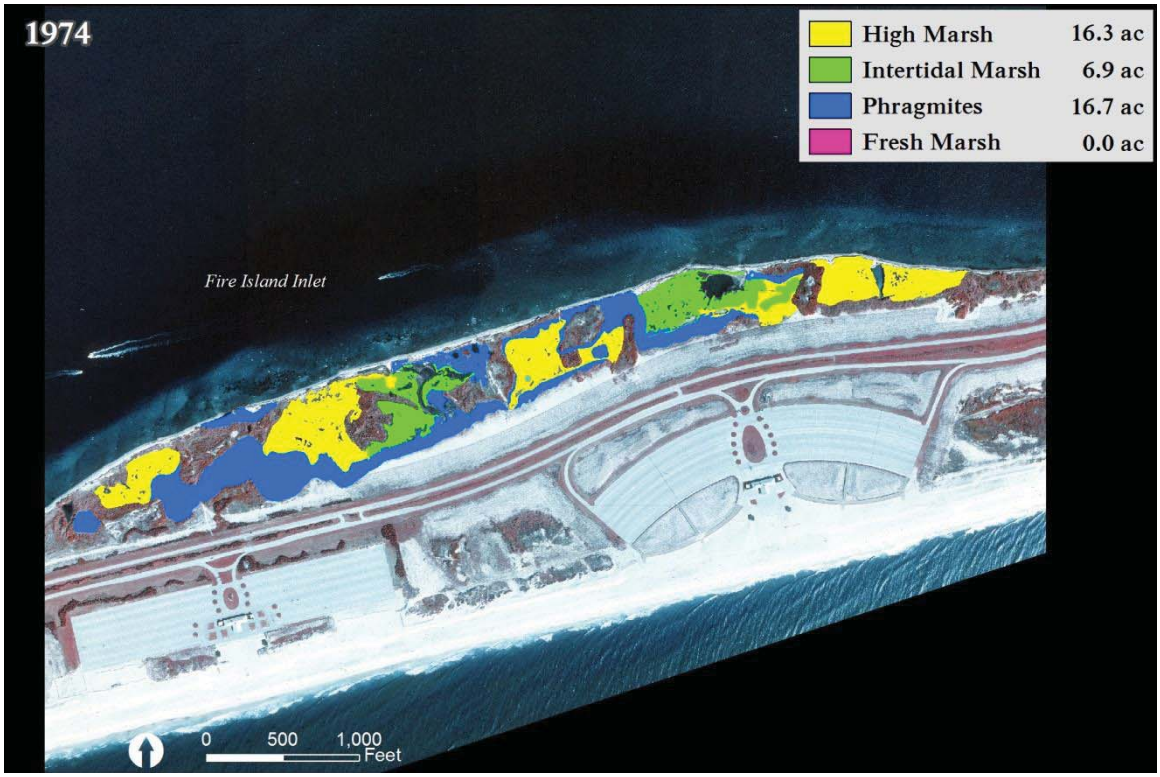


Figure 30: Robert Moses State Park (Complex ID #421)
[See Page F4, Appendix I for Locator Map]



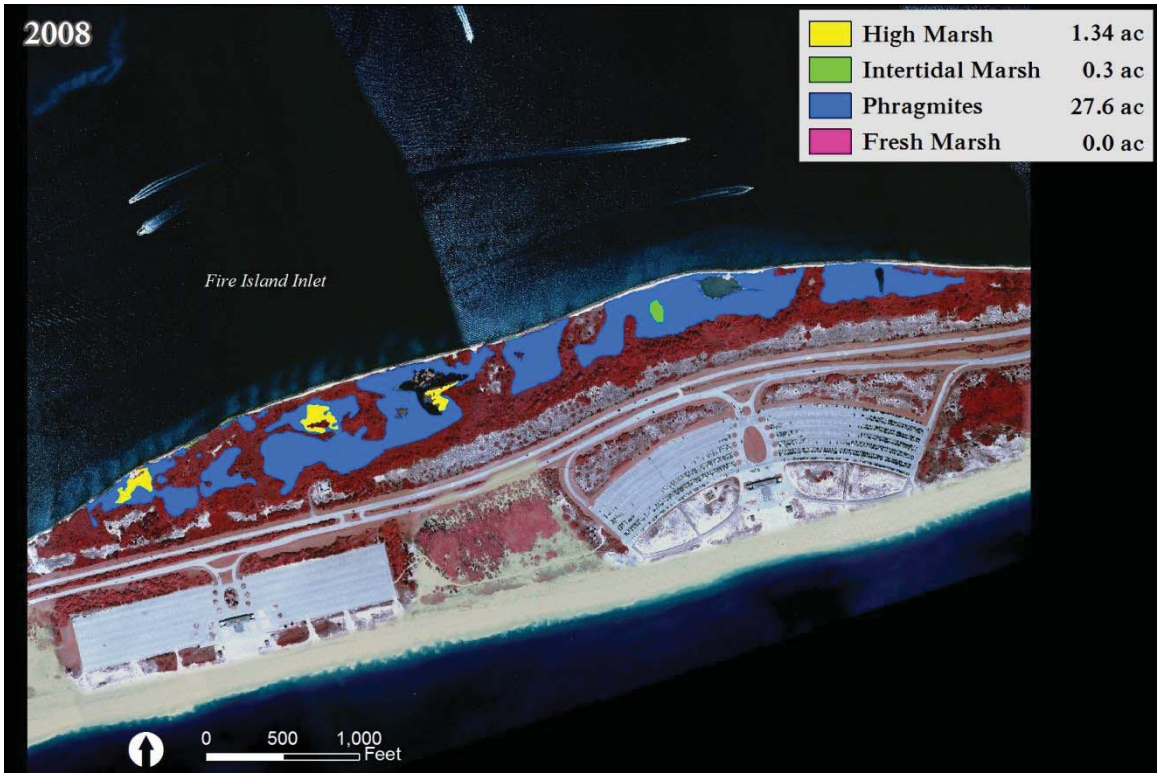
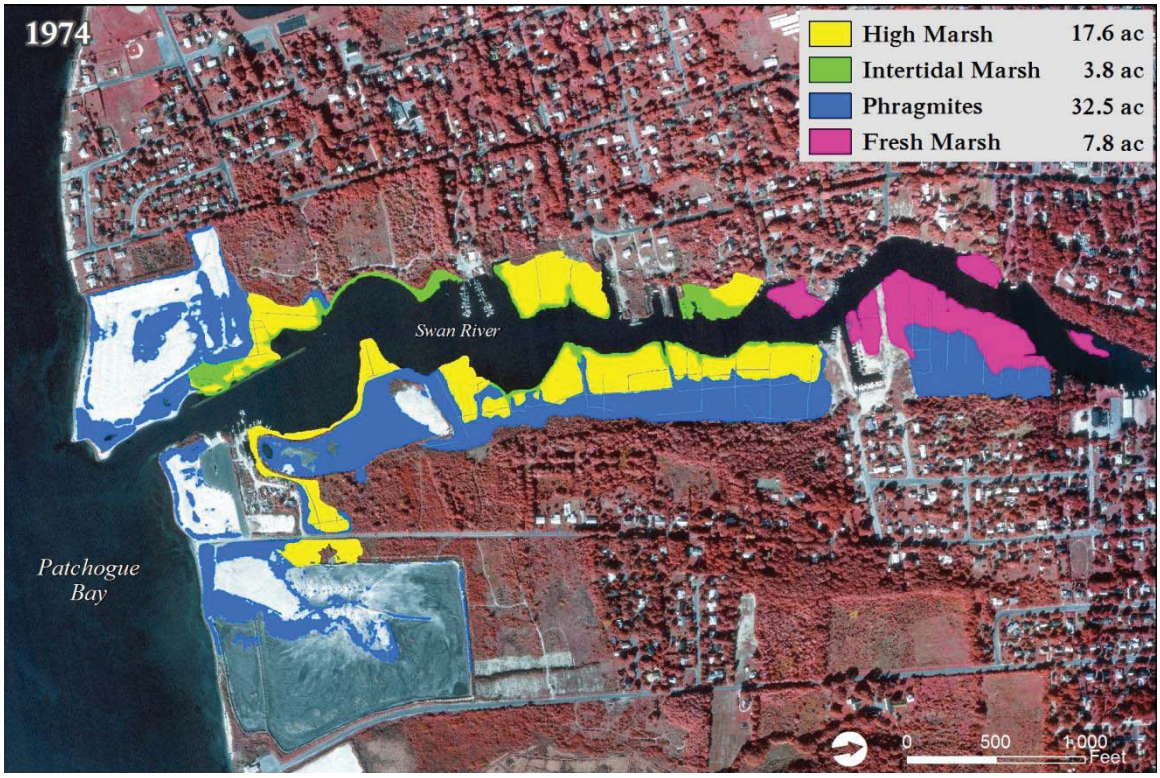


Figure 31: Swan River (Complex ID #453)
[See Page E5, Appendix I for Locator Map]



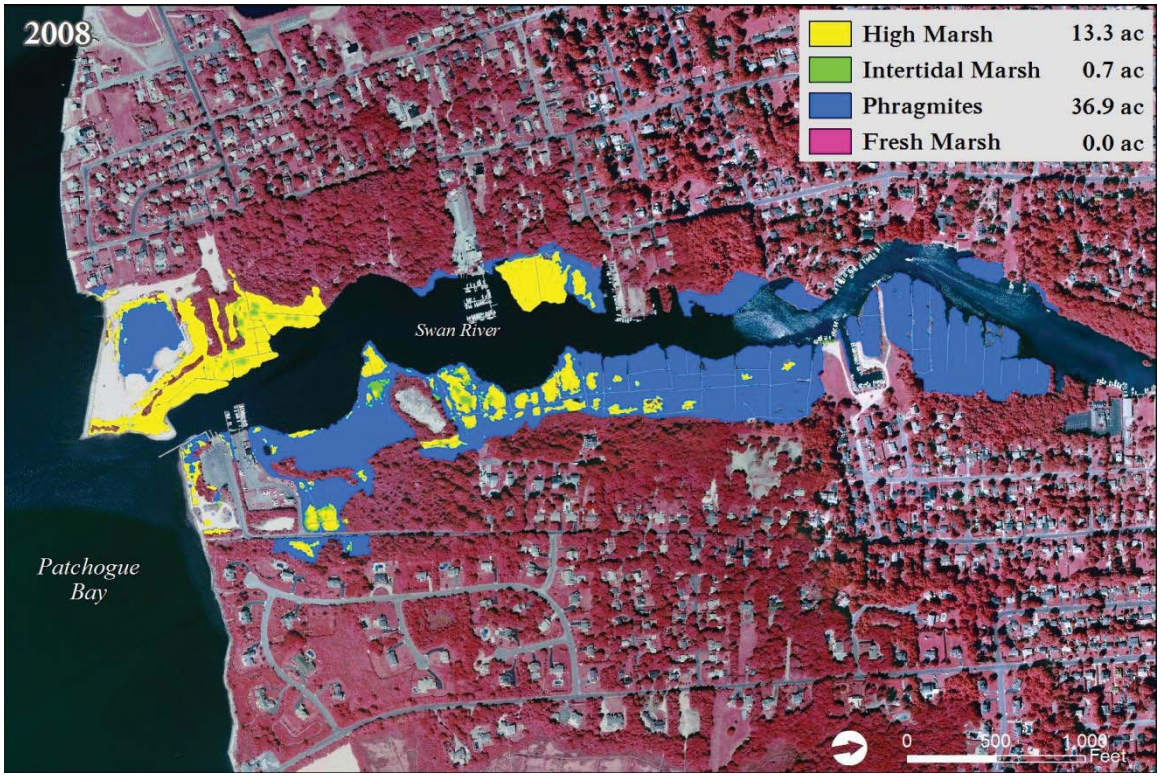
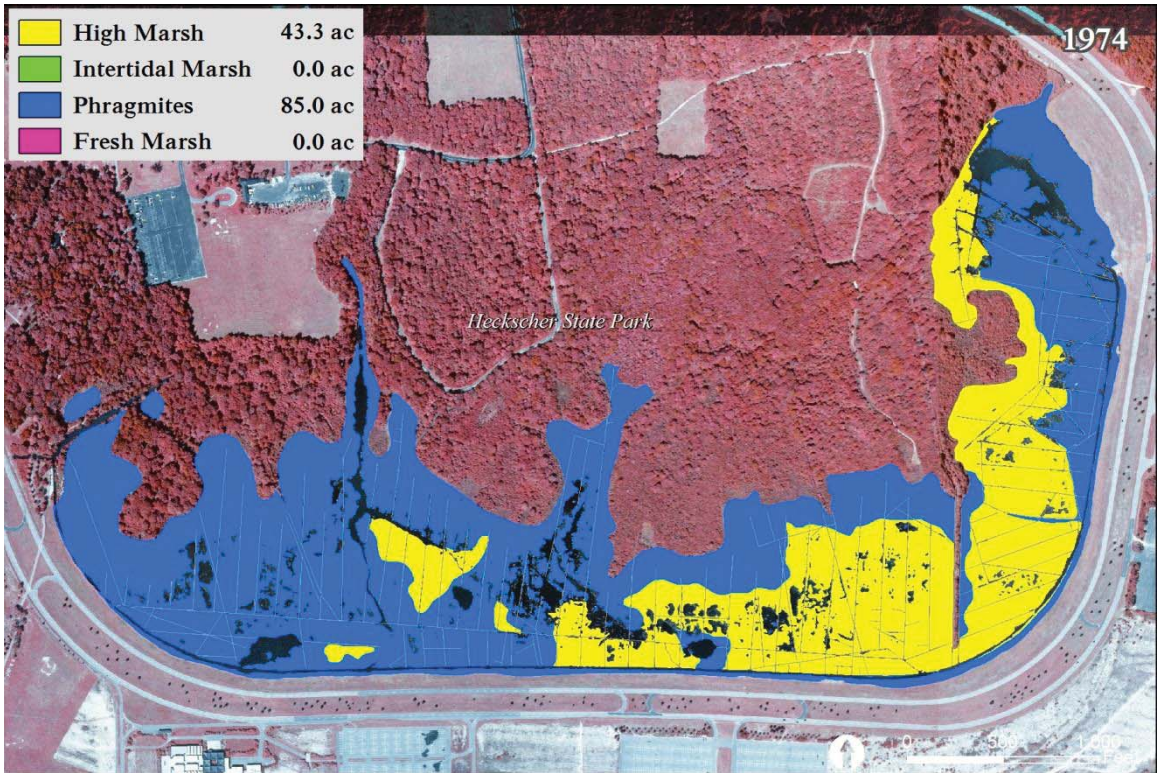
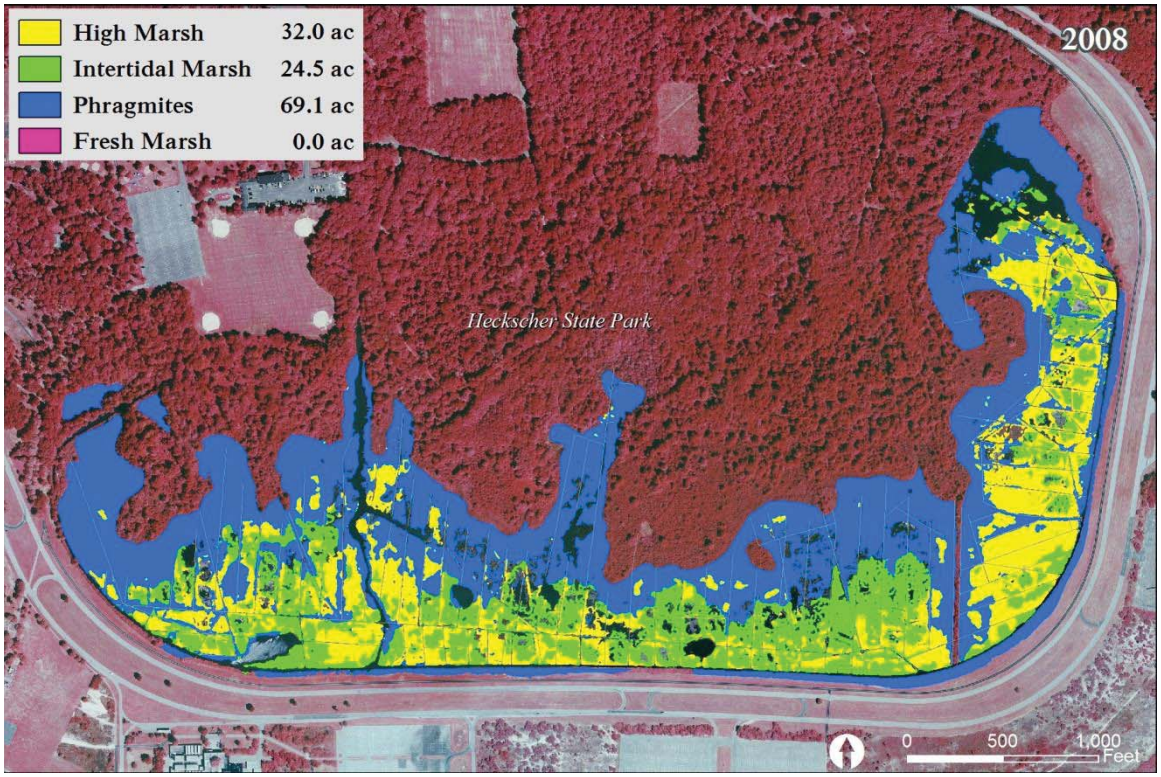


Figure 32: Heckscher State Park FC Wetland (Complex ID #430)
[See Page E4, Appendix I for Locator Map]





Moriches and Shinnecock Bays

The reduced magnitude of tidal wetlands loss in Moriches and Shinnecock Bays appears to result from 1) conversion of high marsh to intertidal marsh and less extensive internal panne formation than the East Rockaway Inlet to Fire Island Inlet and Fire Island Inlet to Smith Point reaches; 2) reduced loss of intertidal marsh through retreat of the seaward edge; and 3) conversion of *Phragmites australis* or low-lying upland habitats to tidal wetland due to increased tidal inundation caused by either improved tidal exchange between the wetland and the bays or sea level rise. It should be noted that there are locations in Moriches and Shinnecock Bays where the current year mapping identified tidal wetlands that were present, but unmapped, for Year 1974. As a result of more accurate mapping (through computer-automated techniques) for the current year imagery, the increase in vegetated wetlands between 1974 and 2008 observed for Moriches and Shinnecock Bay may be overestimated.

Table 23 and Table 24 list the marsh complexes in Moriches and Shinnecock Bays that have sustained the largest reductions in marsh habitat from 1974 through 2008 in both acreage and percent loss, respectively. The magnitude of the lost wetlands area (Table 23) for these complexes, -7.9 acres to -11.3 acres, is much smaller than that for the complexes with the largest wetland losses in the East Rockaway Inlet to Fire Island Inlet and Fire Island Inlet to Smith Point reaches (Table 17 and Table 19). Moriches Bay and Shinnecock Bay contain complexes with rates of wetland loss comparable to the western reaches (Table 24 compared to Table 18 and Table 20); however, the Moriches Bay and Shinnecock Bay have fewer complexes with loss rates greater than -10%.

Complexes in Moriches Bay and Shinnecock Bay with the greatest acreages of marsh loss, such as Dune Road Marsh East (ID #529, Figure 33), William Floyd Estate (ID # 471, Figure 35), and Ponquogue Islands (ID # 528, Figure 36) exhibit many of the same characteristics of marsh loss observed elsewhere in the South Shore Estuary. The Dune Road Marsh lost 5.7 acres of high marsh (22.5 to 16.9 acres) and 4.0 acres of intertidal marsh (22.1 acres to 18.2 acres) between 1974 and 2008. This complex shows formation of a large panne within the intertidal marsh, retreat of the seaward edge of the marsh, conversion of high marsh to intertidal marsh, as well as apparent landward migration of the tidal wetlands in the southwestern potion of the complex. The William Floyd Estate marsh loss trends are similar to high marsh-dominated complexes between Fire Island Island Inlet and Smith Point County Park, as 21.7 acres of high marsh were lost (81.9 to 60.2 acres) and converted to several large panne areas, *Phragmites australis* (9.5 acres to 22.8 acres) and intertidal marsh (85.0 to 97.4 acres). The complex with the largest percentage of tidal wetlands loss in Moriches and Shinnecock Bays, Ponquogue Islands (Figure 36), lost 9.9 acres of the 11.0 acres of intertidal marsh present in 1974 and emphasizes both the importance of local patterns of sediment supply and erosion for maintaining marsh area and the susceptibility of small, intertidal marsh-dominated islands to navigation impacts.