

2014 Shorebird Survey Report

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INTRODUCTION

This study aids in developing a synergistic ecological-coastal resiliency framework for a significant portion of the coastal habitat on Fire Island. It is envisioned that the study will provide key information on beach restoration, management and conservation actions for other beach dependent species, in addition to the federally-listed piping plover, along the entire south shore barrier island system chain.

The three major goals of this project are:

- (1) Intensive field work monitoring the piping plover population west of the new inlet in the Federal Wilderness Area, thereby greatly increasing the range of habitat conditions that can be assessed for resiliency under both natural processes and coastal stabilization.
- (2) Fine and coarse scaled collection of habitat data for expansion and scaling of the SLR modeling to Long Island; and
- (3) Data on migratory shorebird habitat use concurrent with the early part of the hurricane season (1 June-15 August 2014) and piping plover breeding season on Long Island, including analysis of an assessment of the use of piping plovers as a surrogate species for beach habitat conservation.

Piping plover monitoring data for the population west of the new inlet was presented in Virginia Tech's 2014 annual report (DeRose-Wilson et al. 2015).

Habitat data for the SLR model was provided to collaborators at the USGS at the end of the 2014 season.

Here we present data on migratory shorebird habitat use from April-September, 2014, including an assessment of the use of piping plovers as a surrogate species for beach habitat conservation.

METHODS

Study Area

We surveyed a 17.4-km stretch of barrier islands within the administrative boundaries of the National Park Service (5.8 km of Otis Pike Wilderness Area) and County of Suffolk (Cupsogue County Park and Smith Point County Park), on Fire Island and Westhampton Island. Habitat surveyed consisted of sandy beaches backed by dunes, flood shoals, mudflats, and habitats created by Hurricane Sandy in October 2012, including overwashes, a new breach at Old Inlet, and breaches or near breaches created by Sandy and subsequently filled by the USACE.

We divided the study area into units of habitat small enough that we could survey the entire unit on each visit. Each subsite consisted primarily of storm-created habitats (mudflats, flood shoals, and breaches), artificially filled breaches and stabilized overwashes, or beach (Figure 1, Table 1).

Table 1. Subsites names, relative locations and general habitat descriptions at Fire Island and Westhampton Island, 2014.

Name	Subsite Code	Description	Habitat Type
Cupsogue Mud Flats	CMF	Mud flats north of the Cupsogue parking lot, and south of the high bare Island in Moriches Bay.	Mud flat
Cupsogue Sandbar	CSB	Large low energy sandbar/shoal north of Cupsogue West Beach and narrow strip of bayside intertidal zone at east end of the Cupsogue Beach County Park. Begins at the east edge of the breach-fill and extends east the west end of the parking lot.	Sand bar
Cupsogue East	CSE	Breach-fill and Moriches Inlet area of the Cupsogue County Park. Begins at Moriches Inlet and extends east to the west edge of the breach-fill.	Beach
Cupsogue West	CSW	Begins on west side of Moriches Inlet and extends west to to Cut 3 on Burma Road.	Filled breach
Smith Point East	SPTW	Begins at Cut 3 on Burma Road and extends to Cut 2 of Burma Road.	Beach
Smith Point West	NBE	Begins at Cut 2 on Burma Road and extends west to the west end of the Hazardous Area.	Beach
Narrow Bay East	NBW	Includes the overwash and small breach-fill west of the Hazardous Area.	Overwash
Narrow Bay West	PSE	Stretch of beach with primary duneline between Narrow Bay West and Pattersquash overwashes.	Overwash and filled-breach
Pattersquash East	PSO	Overwash west of Pattersquash East.	Beach
Pattersquash Overwash	BRE	Begins where the primary duneline beings at west end of Pattersquash Overwash and extends to the Otis Pike Wilderness at NPS Visitor Center.	Overwash
Bridge East	BRO	Overwash in the Otis Pike Wilderness, just west of the NPS Visitor Center.	Beach
Bridge Overwash	BRW	Stretch of beach with primary duneline between Bridge Overwash and Old Inlet East.	Overwash
Bridge West	OIE	Begins where the primary duneline ends and extends west to Old Inlet.	Beach
Old Inlet East	OIW	Begins at west side of Old Inlet and extends to the point where large primary dunes begin.	Overwash and inlet
Old Inlet West	OIWR	Stretch of beach between the east end of Old Inlet West and extends west to Bellport Beach.	Overwash and inlet
Old Inlet West Reference	FS	Flood shoals associated with Old Inlet. Big Flood Shoal and Little Flood Shoal combined with shoals that have formed since the 2013 plover seasons.	Beach and overwash
Flood Shoals			Flood shoals



Figure 1. The study area at Fire Island and Westhampton Island, depicted from east to west, with subsites delineated in yellow. Background imagery is from June 2014. The three frames are not shown at equivalent scale.

Surveys

We counted shorebirds throughout the entire study area 1–2 times per week April–September, 2014. We surveyed subsites on foot and by ATV. Subsites that did not have bay side habitat and consisted of only narrow ocean beach were surveyed by driving an ATV slowly along the ocean intertidal zone and then along the backshore habitat. When conducting foot surveys, observers walked regular routes through each subsite, usually along the east-west axis and used spotting scopes to identify and count shorebirds. The route width varied depending on topography and vegetation, and weather conditions that affected visibility, as we adjusted the distance between routes in order to be able to see half the area between adjacent routes. We usually surveyed beach subsites in two passes, one pass along the ocean intertidal zone and one in the backshore area. One–four observers made each pass walking parallel 50–100 m apart, depending on the size of the subsite. We attempted to avoid double counting shorebirds by keeping track of all previously seen birds. We surveyed the flood shoals near the new inlet in the Otis Pike Wilderness, by scanning the shoals with a spotting scope from the either side of the inlet. Logistically, we could not survey the entire study area on the same day each week, but we usually surveyed all habitat within each management unit (Cupsogue County Park, Smith Point County Park, and Otis Pike Wilderness) on the same day, to avoid recounting birds that moved.

RESULTS

We counted over 35 thousand shorebirds using the study area in April–September, 2014 (Table 2). We split shorebird counts into three categories, abundant species which accounted for over 90% of all shorebirds seen (Figure 2), common shorebirds which accounted for an additional 9.5% of species seen (Figure 3), and rare shorebirds which accounted for less than 1% of birds seen (Figure 4).

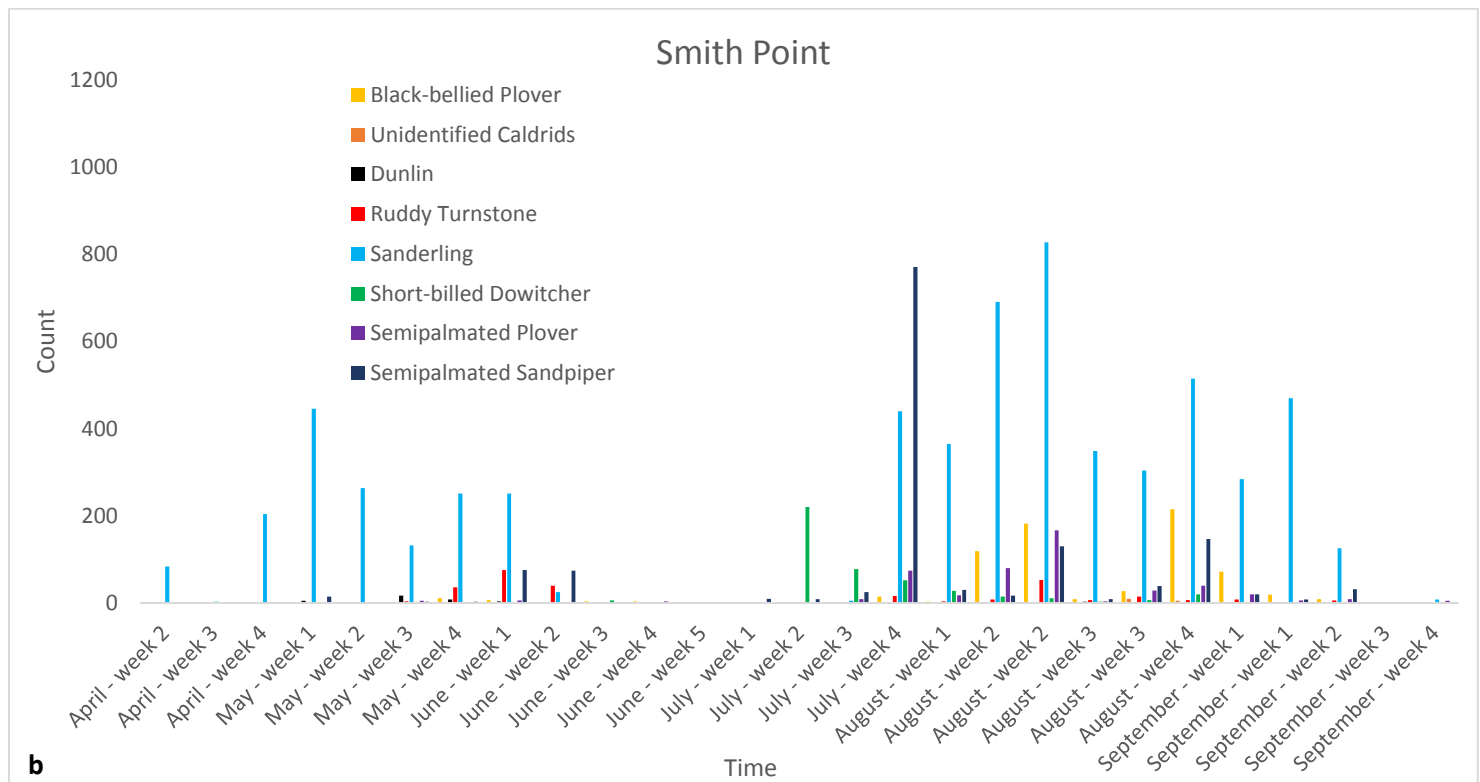
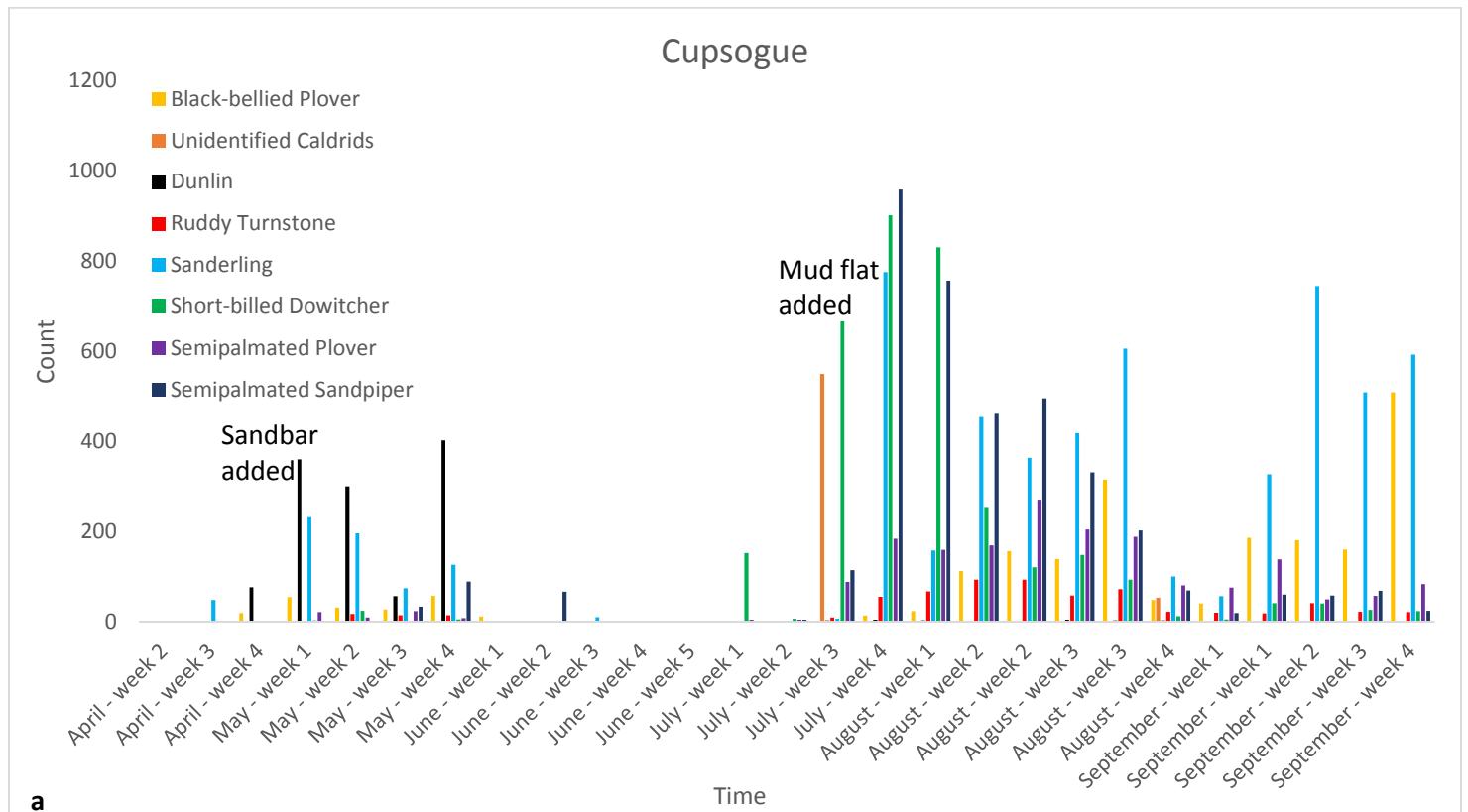
We did not begin surveying the sandbar at Cupsogue until the last week of April, and we added the mud flats at Cupsogue to our survey route in the third week of July. Most of the shorebirds seen at Cupsogue were on either the sandbar or mudflat, thus migratory phenology is conflated with the increase in survey area. Despite this, we decided to include all survey data because the sandbar and mudflat had more shorebirds than any other part of the study area.

Total Shorebirds

Table 2. Total shorebirds counted by management unit at Fire Island and Westhampton Island, NY, April–September, 2014. The same individuals were almost certainly recounted on multiple surveys.

Management Unit	Abundant Shorebird	Common Shorebirds	Rare Shorebirds	Shorebird Count
Cupsogue County Park	19324	2234	18	21576
Smith Point County Park	9424	659	27	10110
Otis Pike Wilderness Area	2945	511	7	3463
Total	31693	3404	52	35149

Abundant Shorebirds



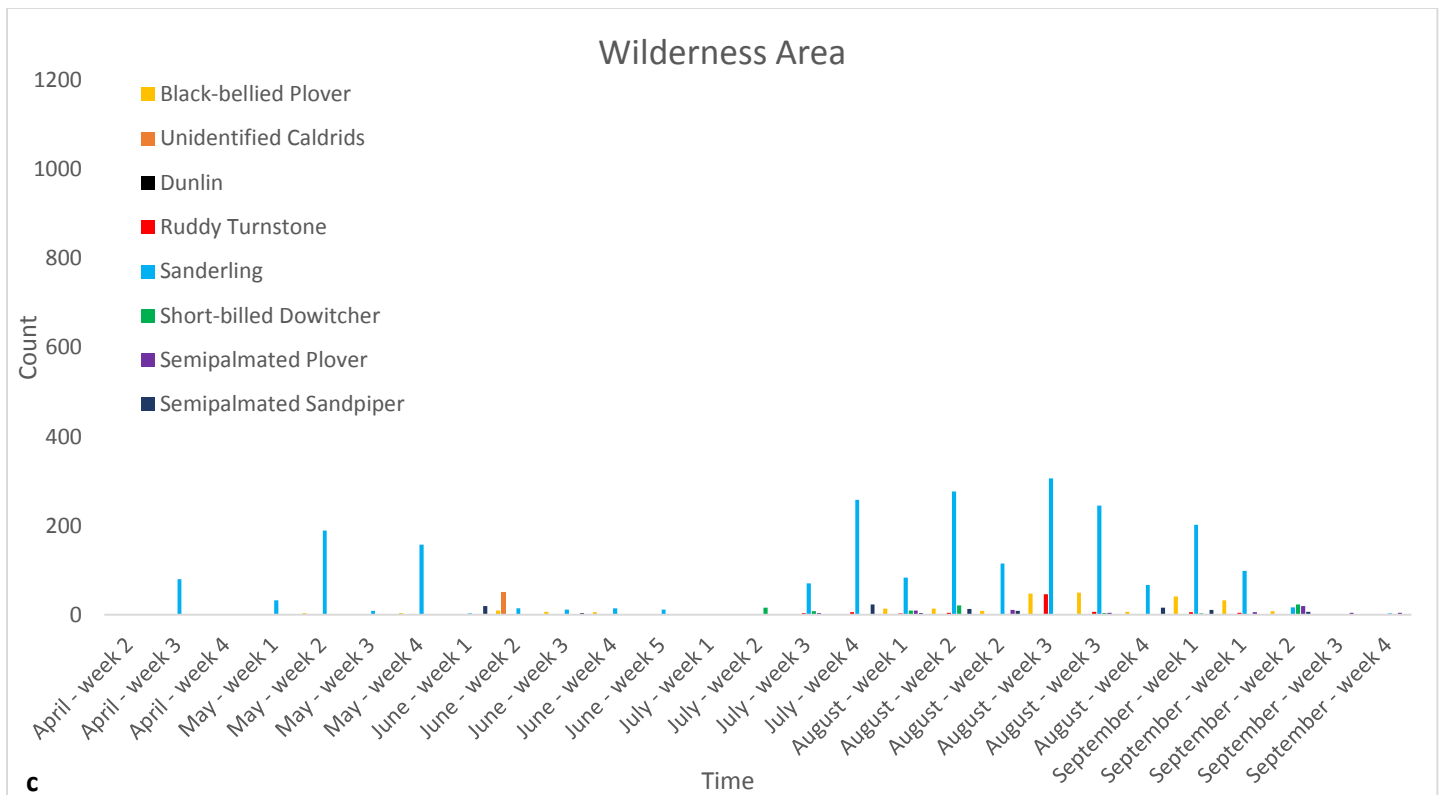
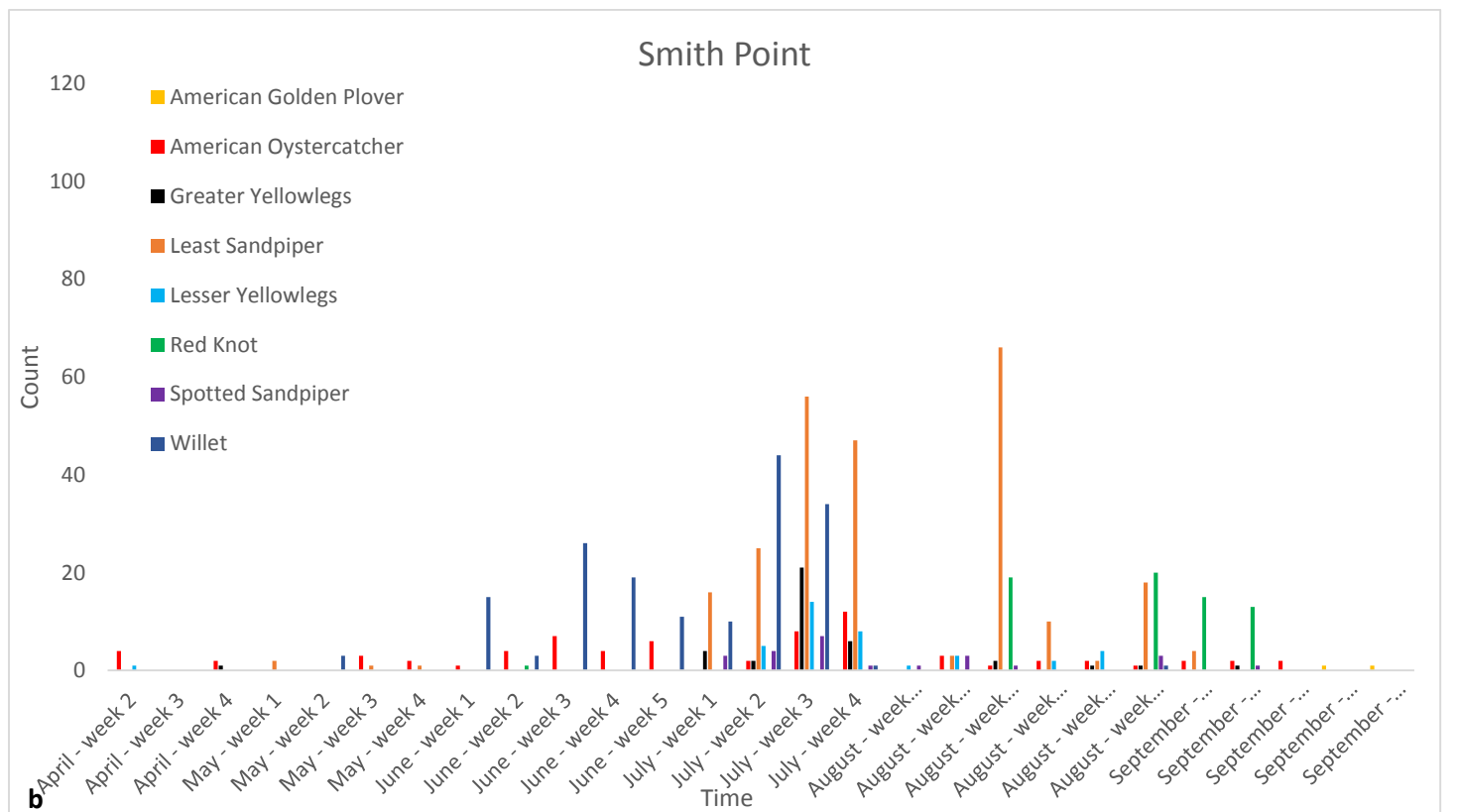
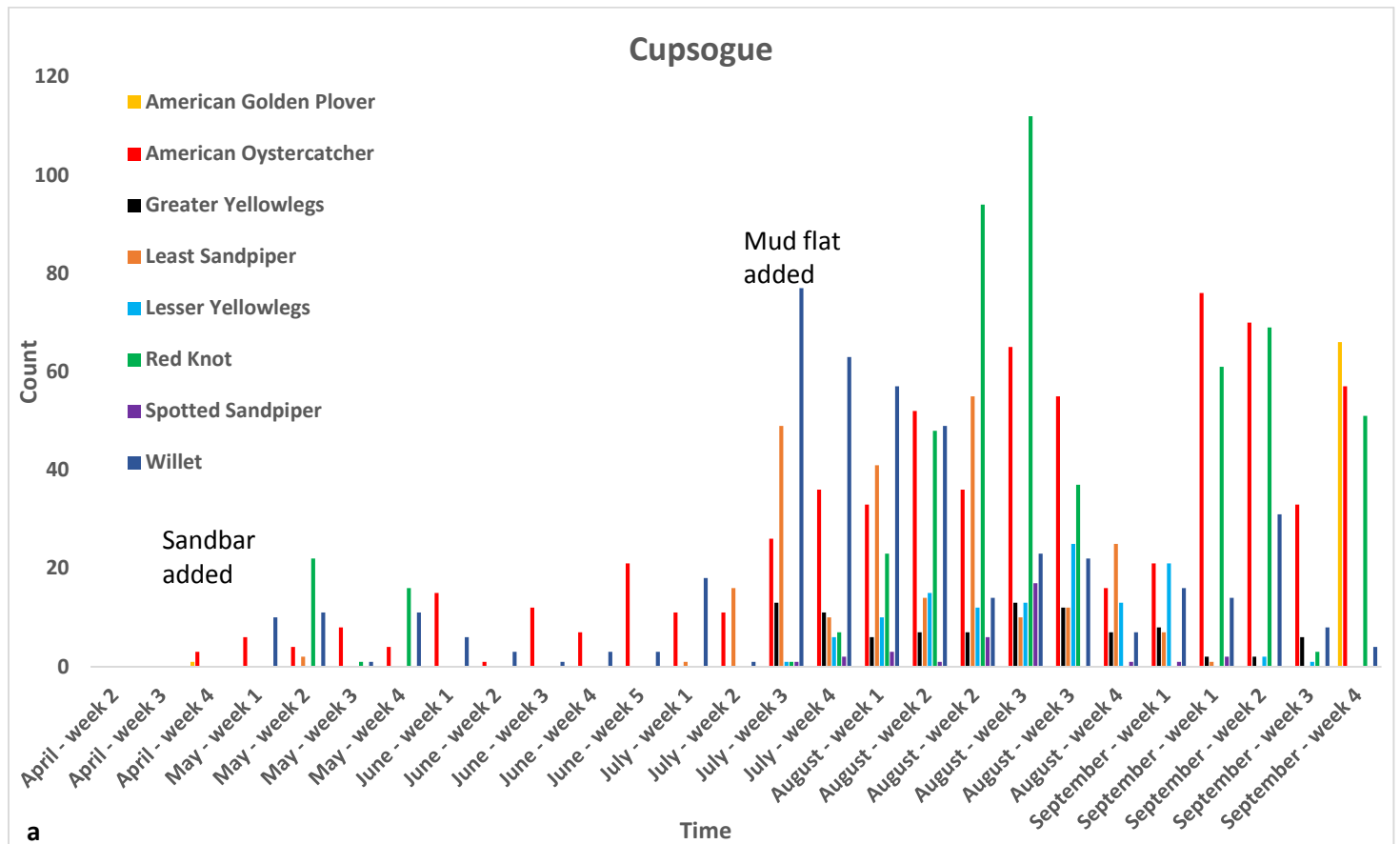


Figure 2. The six most abundant species of shorebirds accounted for over 90% of all shorebirds seen on surveys at (a) Cupsogue County Park, (b) Smith Point County Park, and (c) Otis Pike Wilderness Area. Surveys were conducted weekly or biweekly from April to September, 2014. At Cupsogue, additional habitat was added to the surveyed area during the last week of April (Cupsogue Sandbar) and again at the third week of July (Cupsogue Mudflats). Most of the shorebirds seen at Cupsogue were seen on either the sandbar or mud flats.

Common Shorebirds



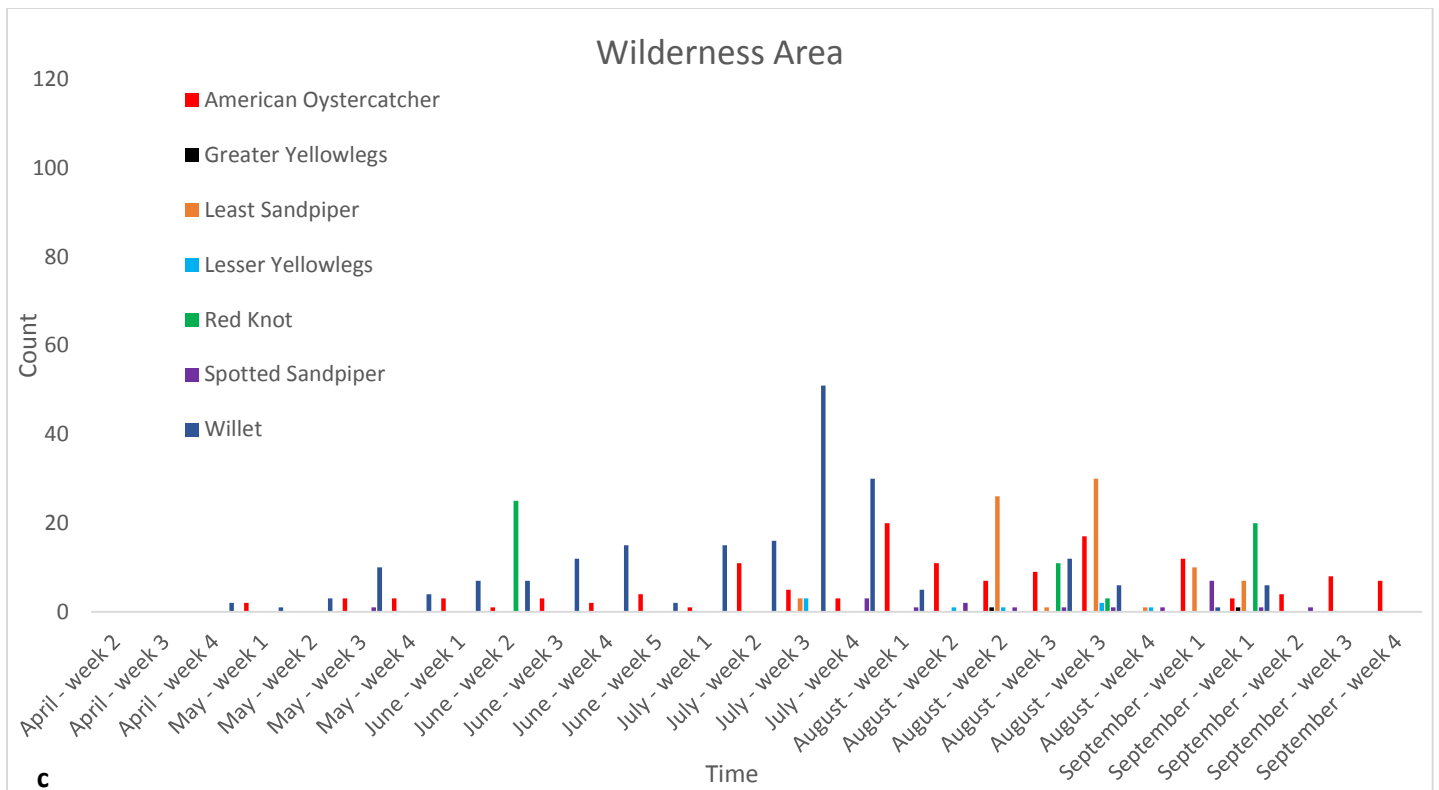
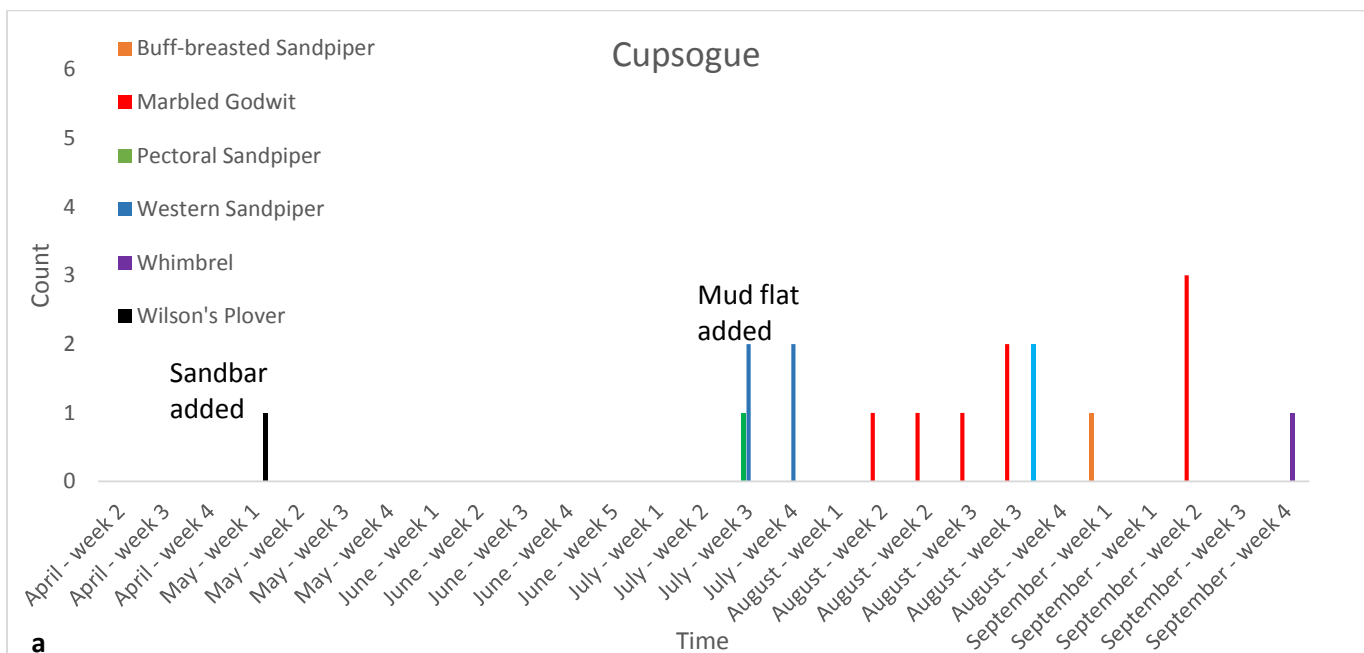


Figure 3. After abundant species were accounted for, eight common species made up another 9.5% of shorebirds seen on surveys at (a) Cupsogue County Park, (b) Smith Point County Park, and (c) Otis Pike Wilderness Area. Surveys were conducted weekly or biweekly from April to September, 2014. At Cupsogue, additional habitat was added to the surveyed area during the last week of April (Cupsogue Sandbar) and again at the third week of July (Cupsogue Mudflats). Most of the shorebirds seen at Cupsogue were seen on either the sandbar or mud flats.

Rare Shorebirds



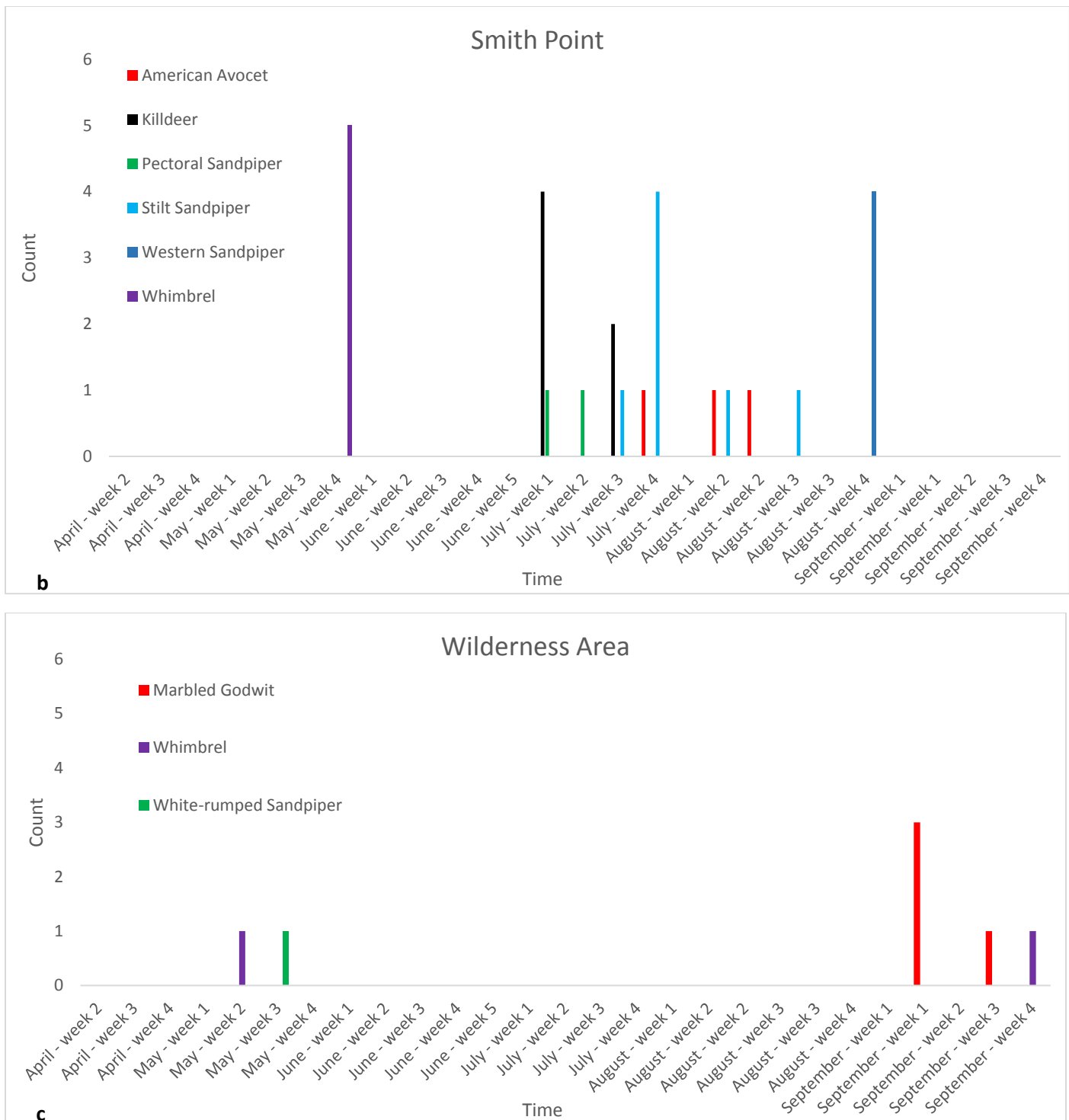


Figure 4. Ten rare species made up less than 1% of shorebirds seen on surveys at (a) Cupisogue County Park, (b) Smith Point County Park, and (c) Otis Pike Wilderness Area. Surveys were conducted weekly or biweekly from April to September, 2014. At Cupisogue, additional habitat was added to the surveyed area during the last week of April (Cupisogue Sandbar) and again at the third week of July (Cupisogue Mudflats). Most of the shorebirds seen at Cupisogue were seen on either the sandbar or mud flats.

Banded Shorebirds

We saw 31 banded shorebirds other than piping plovers during our surveys (Table 3). We reported all band combinations to the Bird Banding Lab, but have not received information on the banding locations yet.

Table 3. Banded shorebirds seen at Westhampton Island, April–September, 2014.

Date	Subsite	Time In	Species	ULL	LLL	URL	LRL	Comments
6/6/2014	Cupsogue Beach County Park	14:48	RUTU	Mint Green Flag (5JA)	-	-	Metal	DECEASED BIRD WASHED UP ON SHORE. USGS METAL BAND 1332-23735
9/22/2014	Cupsogue Beach County Park	11:47	SAND	Gray	Orange	Light Blue	Orange	ROCKY HABITAT
8/4/2014	Moriches Bay and Inlet	8:30	REKN	Mint Green Flag(51A)	-	White	-	
8/7/2014	Moriches Bay and Inlet	11:25	AMOY	Orange (HJ)	-	Orange (HJ)	-	BLACK LETTERS ON ORANGE BAND
8/7/2014	Cupsogue Beach County Park - Mud Flat	13:24	REKN	Orange Flag (LYM)	-	Metal	-	
8/7/2014	Cupsogue Beach County Park - Mud Flat	13:10	REKN	Mint Green Flag (659)	-	-	-	
8/15/2014	Cupsogue Beach County Park - Mud Flat	7:08	REKN	Orange Flag (LMY)	-	Metal	-	
8/15/2014	Moriches Bay and Inlet	8:10	REKN	Mint Green Flag (95P)	-	-	-	
8/15/2014	Moriches Bay and Inlet	8:09	SESA	Yellow Flag (AA6)	-	-	-	
8/15/2014	Moriches Bay and Inlet	8:30	RUTU	Mint Green Flag (U)	-	Mint Green	Metal	COULD NOT READ BAND LETTERS LIGHT COLOR
8/15/2014	Moriches Bay and Inlet	8:38	RUTU	Mint Green Flag (1CM)	-	-	Metal	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Green Flag (AAP)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Mint Green Flag (95P)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Mint Green Flag (4NL)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Mint Green Flag (6E8)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Mint Green Flag (4PT)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Mint Green Flag (659)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Mint Green Flag (Y40)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Mint Green Flag (J76)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Mint Green Flag (9N1)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:50	REKN	Mint Green Flag (P49)	-	-	-	
8/20/2014	Moriches Bay and Inlet	10:40	SAND	Mint Green Flag (HKK)	-	-	-	
9/3/2014	Moriches Bay and Inlet	8:50	REKN	Orange Flag (V9Y)	-	Metal	-	
9/3/2014	Moriches Bay and Inlet	8:50	REKN	Mint Green Flag (L3M)	-	Metal	-	
8/25/2014	Moriches Bay and Inlet	15:20	RUTU	Mint Green Flag (9XE)	-	-	-	
8/25/2014	Moriches Bay and Inlet	15:45	REKN	Mint Green Flag (4NL)	-	-	Metal	
8/25/2014	Moriches Bay and Inlet	15:45	REKN	Mint Green Flag Y08)	-	-	Metal	
8/25/2014	Moriches Bay and Inlet	15:45	REKN	Mint Green Flag (M7E)	-	Mint Green	Metal	
8/25/2014	Moriches Bay and Inlet	15:45	REKN	Mint Green Flag (475)	-	-		RESIGHT QUESTIONABLE
8/25/2014	Moriches Bay and Inlet	15:33	SAND	Mint Green Flag (H8K)	-	-	Metal	
8/25/2014	Cupsogue Beach County Park - Mud Flat	17:15	REKN	Mint Green Flag (Y08)	-	-	Metal	

DISCUSSION

Piping Plover as a Surrogate for Beach Habitat Conservation

Piping plovers at our study site are not an ideal surrogate species for habitat use in other shorebirds. This is partly because the majority of piping plovers seen during monitoring activities and surveys were in the reproductive stage of their lifecycle and thus were engaging in parental activities rather than foraging or resting. Piping plovers do use the same rich foraging habitats as other shorebirds, and we frequently saw piping plovers foraging in habitat where other shorebirds were abundant. However, piping plovers tended to forage in sandy substrate, while other shorebirds foraged in shallow water, biofilm, or mud.

Red Knots

We counted a total of 721 red knots, including 22 banded individuals, during our surveys. Some of these were certainly the same individuals counted on multiple surveys. Most of the red knots, were seen on the Cupsogue Sandbar, but we saw flocks of 30-60 red knots at Smith Point and on the flood shoals near the new inlet in the Otis Pike Wilderness. Red knots were historically abundant on Long Island during the spring and fall migrations (Eaton 1910, Hallock 1877).

LITERATURE CITED

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