2017

Baseline bird surveys of Plum Tree Island National Wildlife Refuge: Fall 2017

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BASELINE BIRD SURVEYS OF PLUM TREE ISLAND NATIONAL WILDLIFE REFUGE
Interim Report: Fall 2017

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Context

The Chesapeake Bay is one of the most productive aquatic ecosystems in the world and plays an important role in the life cycle of many bird species (Duerr and Watts 2012). Each year, the rich resources of the Bay attract millions of waterbirds of 140 species from throughout the western hemisphere (Erwin et al. 2007, Watts 2013). Dependency on the Bay varies from species that stopover for a few days during migration to species that live out their entire life cycle within a single tributary. Because many waterbirds are top consumers and collectively require a broad array of resources they represent sensitive, cost-effective indicators of overall ecosystem health. Many species that depend on the Bay are of high international, national or regional conservation concern (Watts 1999, 2016).

Plum Tree Island National Wildlife Refuge includes some of the most significant marsh habitat within the lower Chesapeake Bay. Established in 1972 when the site was transferred from the U. S. Department of Defense to the U. S. Department of the Interior, the site supports the largest contiguous patch of tidal salt marsh within the lower Chesapeake Bay including extensive low marsh (dominated by smooth cordgrass - *Spartina alterniflora* and black needlerush - *Juncus roemerianus*), high marsh (dominated by salt grass - *Distichlis spicata* and salt meadow hay – *S. patens*), a long marsh-upland ecotone (dominated by shrubs including saltbush - *Iva frutescens* or *Baccharis hamilifolia* and wax myrtle – *Myrica cerifera*), and scattered hummocks of maritime forest and low-profile dunes and beaches. Although the site is included within an Important Bird Area (Watts 2006) and is known to support bird species of conservation concern (e.g., Watts and Rottenborn 2002, Wilke et al. 2005, Watts and Smith 2015) there has been no attempt to survey the site in order to build a baseline dataset needed to understand the importance and role of the site within a regional context.

Objectives

Monitoring is an essential component of conservation. Within the conservation community, information on the status and distribution of species is the basis for management decisions and often the primary measure of management success. The overall objective of this effort is to collect baseline information on the status of birds using Plum Tree Island National Wildlife Refuge that may inform future management decisions.

Methods

Shoreline Surveys

We established a 100-m wide band transect positioned along the outer shoreline of Plum Tree Island to conduct surveys of birds using the shoreline and near-shore waters (Figure 1). We piloted a boat approximately 30 to 40 m offshore and parallel to the shoreline and surveyed all birds within the band transect. All birds were counted and identified to species (except on rare occasions when conditions or circumstances did not allow for identification to species). Birds detected were plotted on a GPS-enabled laptop that was loaded with a recent aerial photograph of the study area (Figure 2). Birds observed beyond the shoreline (within the marsh) were not recorded with the exception of species of conservation interest (e.g., peregrine falcon, bald eagle, northern harrier).

Figure 1. Map of the 100-m wide band transect positioned along the outer shoreline of Plum Tree Island to conduct bird surveys.

Figure 2. GPS locations of birds laid over recent aerial photograph of the study area.

Marsh Point Count Survey

We established a network of ten point-count locations within the marsh habitat of Plum Tree Island, NWR to survey for breeding marsh birds (Figure 3). Due to the ongoing unexploded ordinance problems within the site, we restricted points to locations that could reliably be accessed and surveyed by boat. These included sites that were along navigable tidal creeks. We used standardized, off-road, point-count techniques that were developed for secretive marsh-nesting birds (Conway and Nadeau 2006, Conway 2011) to survey breeding marsh birds. The approach uses distance estimation to improve effective sample area, a series of play-back calls to improve detection probabilities, and stratification of count data by time. We used a variation of this technique that was developed for the coastal area of the mid-Atlantic and southern New England (Shriver et al. 2008) and has been used by project SHARP. We used the same data collection protocol and form that has been used within the region by project SHARP (Appendix I).

Figure 3. Map of the ten point-count locations within the marsh habitat of Plum Tree Island used for the point count survey.

Statement of Progress: Fall 2017

This project is currently on schedule and all seasonal surveys have been conducted as planned.

Shoreline Surveys

Twelve shoreline surveys have been conducted from February, 2017 through September, 2017 including two in the winter, four during spring migration, two during the summer breeding season and four during fall migration (Appendix II &IV). Shorebirds and gulls/terns were the most numerous species groups by both number of species and individuals (Table 1). Dunlin was the most numerous species detected accounting for nearly 40% of the individuals detected.

Table 1. Summary of shoreline surveys by species group.

Species Group	Species No.	Individuals
Seabirds	7	186
Gulls and Terns	8	1,713
Waterfowl	6	234
Herons and Egrets	5	121
Shorebirds	14	6,344
Raptors	6	158
Passerines and Others	7	314
Total	**54**	**9,671**

Marsh Point Count Survey

We completed three rounds of point counts during the breeding season (Appendix III & IV). The most common birds detected were passerines and associates (Table 2) with seaside sparrows and clapper rails accounting for more than 30% of all detections. Shorebirds returning from the Arctic were also common by mid-summer.

Table 2. Summary of point-count surveys by species group.

Species Group	Species No.	Individuals
Seabirds	1	3
Gulls and Terns	3	107
Waterfowl	2	2
Herons and Egrets	4	117
Shorebirds	8	112
Raptors	2	32
Passerines and Others	8	272
Total	**28**	**645**

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Appendix I. SHARP point-count/callback data form used for the 2017 Plum Tree Island National Wildlife Refuge avian survey (next page).

SHARP Point-Count/Callback Survey Data Sheet

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Date *(e.g. 10-May-12)* **:** ______________ **Region:** 9 Western Chesapeake Bay **Hexagon/Unit :** ________________________

Main Observer: __________________ **Add'l Observer(s):** __________________ **Survey Point ID(s) :** ____________________

Tide (circle one): (High) (High/Rising) (High/Falling) **State (circle one):** MD VA **Survey method (if by boat, include type):** ____________________

(Low) (Low/Rising) (Low/Falling) **Visit Number (circle one) :** 1 2 3 **Survey Window (circle one) :** 1 (April 15 - May 31) 2 (June 1 - June 25) 3 (June 26 - July 15)

							Distance Band			Responded During															
Point ID	Start Time (military)	Temp (F)	Sky	Wind (Beaufort)	Background noise	Species	0 - 50m	51 - 100m	>100m	Min 1	Min 2	Min 3	Min 4	Min 5	Min 6 (BLRA)	Min 7 (LEBI)	Min 8 (VIRA)	Min 9 (KIRA)	Min 10 (CLRA)	Min 11 (COMO)	Outside survey period	Call Type(s)	Distance (meters)	Location Notes	Comments
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Sky: 0 clear or a few clouds, 1 partly cloud or variable sky, 2 cloudy or overcast, 4 fog or smoke, 5 drizzle, 7 snow, 8 showers

Wind - Beaufort scale: 0 smoke rises vertically, 1 wind direction shown by smoke drift, 2 wind felt on face; leaves rustle 3 leaves, small twigs in constant motion; light flag extended, 4 raises dust and loose paper; small branches are moved, 5 small trees with leaves sway; crested wavelets on inland waters

Background noise: 0 no noise, 1 faint noise, 2 moderate noise (probably can't hear some birds beyond 100m), 3 loud noise (probably can't hear some birds beyond 50m), 4 intense noise (probably can't hear some birds beyond 25m)

Appendix II. Avian shoreline survey totals by 2017 survey date at Plum Tree Island National Wildlife Refuge in Poquoson, Virginia.

		Date											
Species Code	Total	2/1	2/14	4/26	5/10	5/16	5/30	6/12	6/29	8/22	9/8	9/15	9/29
ABDU	2	2											
AMOY	93		3	8	15	12	15	12	24	3		1	
AMWI	6	4	2										
ATBR	17	13	4										
BAEA	36	7	1	2	3	2	3	1		7	9	1	
BARS	19				6	5	2		6				
BBPL	303	15	49	46	68	43	2			15	20	20	25
BEKI	3			1								2	
BLSK	61					11	22		28				
BRPE	73	1	1	6			12	1	1		8	26	17
BTGR	218	2	9	8	18	8	19	10	2	5	37	14	86
BUFF	134	78	52		2	2							
CANG	72	6	7	53	4	1	1						
CLRA	1			1									
COLO	5	1		4									
COTE	38				12	10	15	1					
DCCO	600			192	6	40	53	55	32	49	85	8	80
DUNL	3842	863	632	697	1045	583	22						
FOTE	9			2		5				2			
GBBG	299	36	5	6	7		18	9	7	70	32	24	85
GBHE	46		2		7	6	1	6	13	2	2	4	3
GREG	52			9	21	4		5	6	1	2	2	2
GRHE	1								1				
GRYE	7											6	1
HERG	753	179	189	60	16	15	21	61	7	58	51	60	36
HOGR	4		2	2									
LAGU	63			4	3	3		8	2	13	2	17	11
LBHE	1			1									
LESA	8					6				2			
LETE	169			9	8	3	41	46	12	50			
MALL	3				3								
NOHA	5		4									1	

		Date											
Species Code	Total	2/1	2/14	4/26	5/10	5/16	5/30	6/12	6/29	8/22	9/8	9/15	9/29
OSPR	109			5	6	13	6	7	18	25	16	7	6
PEEP	712			13		354	75			230	40		
PEFA	1	1											
RBGU	124	52	5	14	1		6	15	13	16	1		1
RBME	34		30		2	2							
ROYT	248			13		52	21	14	17	35	40	6	50
RTHA	1												1
RUTU	35	11	2	1	3	5	7			5			1
RWBL	48				1	1	6	23	5	11		1	
SAND	14	9					1				4		
SATE	19			1		7	7		1			3	
SBDO	107			20	24	31	15			17			
SEPL	740			3	89	148	23			376	60	31	10
SESA	46				10		4			32			
SESP	1									1			
SNEG	21			9	1		2				2	7	
SPSA	70			1	1	52	6			8	1	1	
TUVU	6												6
WESA	315			15	117	80	55	3			5	40	
WILL	52	1		8	2	3	26	5	1	3	1	1	1
Total	9646	1281	999	1214	1501	1507	507	282	196	1036	418	283	422

Appendix III. Rail callback survey totals for 2017 at Plum Tree Island National Wildlife Refuge in Poquoson, Virginia.

		Date		
Species Code	Total	5/30/2017	6/27/2017	7/12/2017
AMAV	4			4
AMOY	2		1	1
BAEA	2		2	
BARS	10	4	6	
BLSK	3	1	1	1
BTGR	16	7	3	6
CANG	1	1		
CLRA	102	51	26	25
COTE	1		1	
EAME	1		1	
GBHE	18	3	7	8
GREG	93	43	33	17
LAGU	91	2	11	78
LBHE	1		1	
LETE	15	2	13	
LEYE	7			7
MALL	1	1		
NESP	1	1		
OSPR	30	2	25	3
PEEP	2	1		1
RUTU	1			1
RWBL	28	5	13	10
SBDO	35			35
SESA	1	1		
SESP	113	27	59	27
SNEG	5		2	3
SOSP	1		1	
WILL	60	27	26	7
Total	645	179	232	234

Appendix IV. American Ornithologist Union four-letter avian species codes and common names included in the 2017 survey.

AOU Code	Species Name
ABDU	American Black Duck
AMAV	American Avocet
AMOY	American Oystercatcher
AMWI	American Wigeon
ATBR	Atlantic Brant
BAEA	Bald Eagle
BARS	Barn Swallow
BBPL	Black-bellied Plover
BEKI	Belted Kingfisher
BLSK	Black Skimmer
BRPE	Brown Pelican
BTGR	Boat-tailed Grackle
BUFF	Bufflehead
CANG	Canada Goose
CLRA	Clapper Rail
COLO	Common Loon
COTE	Common Tern
DCCO	Double-crested Cormorant
DUNL	Dunlin
EAME	Eastern Meadowlark
FOTE	Forster's Tern
GBBG	Great Black-backed Gull
GBHE	Great Blue Heron
GREG	Great Egret
GRHE	Green Heron
GRYE	Greater Yellowlegs
HERG	Herring Gull
HOGR	Horned Grebe
LAGU	Laughing Gull
LBHE	Little Blue Heron
LESA	Least Sandpiper
LETE	Least Tern
LEYE	Lesser Yellowlegs
MALL	Mallard
NESP	Nelson's Sparrow
NOHA	Northern Harrier
OSPR	Osprey
PEEP	unidentified small shorebird

AOU Code	Species Name
PEFA	Peregrine Falcon
RBGU	Ring-billed Gull
RBME	Red-breasted Merganser
ROYT	Royal Tern
RTHA	Red-tailed Hawk
RUTU	Ruddy Turnstone
RWBL	Red-winged Blackbird
SAND	Sanderling
SATE	Sandwich Tern
SBDO	Short-billed Dowitcher
SEPL	Semipalmated Plover
SESA	Semipalmated Sandpiper
SESP	Seaside Sparrow
SNEG	Snowy Egret
SOSP	Song Sparrow
SPSA	Spotted Sandpiper
TUVU	Turkey Vulture
WESA	Western Sandpiper
WILL	Willet