

## Chapter 7.8

### Avifauna of the Maryland Coastal Bays

Carol McCollough and David Brinker

Maryland Department of Natural Resources, Tidewater Ecosystem Assessment, Annapolis, MD 21401

#### Abstract

Between 2007 and 2013, of the 447 (426 non-pelagic) bird species occurring in Maryland, over 360 (80%) (332 non-pelagic, 78%) have been recorded in Worcester County (eBird), which contains the entire Maryland Coastal Bays watershed. The juxtaposition of a variety of habitats along a major migratory flyway results in this high diversity of avian fauna. Much of the diversity is directly linked to the presence of shallow water habitats, including marshes, mudflats, seagrass beds, and islands, that do not occur in nearby inland areas. These provide food, and breeding and overwintering habitats for aquatic bird species. Additional habitat types found within the watershed include forests, essential to forest-interior-dwelling breeding species; shrub and scrub; and agricultural grassland areas.

#### Introduction

Breeding, wintering and migratory waterbirds are integral resources of the Coastal Bays. Waterbirds feed at the top of food chains, and have specialized habitat requirements for successful reproduction. Their population health is an important indicator for evaluating ecosystem conditions. Development-related habitat degradation and loss, chemical contamination, fisheries over-harvesting, and sea level rise are some of the major factors impacting waterbird population trends.

Colonial nesting waterbirds comprise both resident and migrant species which depend on the Coastal Bays watershed for critical breeding habitat and food sources. For some species, these habitats are scarce or non-existent in other Maryland regions.

Most species of shorebirds are long distance migrants, breeding in the taiga or tundra area of northern Canada and Alaska, and wintering from the southern United States through South America. In recent years the importance of migratory stop-over areas, including the Maryland Coastal Bays, has become apparent. Here is where they refuel for their energy demanding migrations. The high productivity of the ocean beaches, salt marshes, and tidal flats along Maryland's coast all provide foraging habitat for shorebirds during both the spring and fall migrations.

Migratory waterfowl breed in the northern United States and North American tundra, and overwinter in lakes, bays and rivers, including the Coastal Bays. The area supplies abundant food resources, including finfish, shellfish and vegetation, in waters that typically remain open throughout the winter.

**Datasets**

Maryland Department of Natural Resources Colonial Nesting Waterbird Census – Breeding pair counts of colonial nesters have been conducted annually since 1985. Black skimmers, royal terns, and Forster's terns were fully censused yearly. Other species were fully censused every 5 years beginning in 1998; intervening years were partial censuses.

Maryland Department of Natural Resources Mid-Winter Waterfowl Survey – The Mid-Winter Waterfowl Survey has been conducted since 1935, throughout the United States. It is not based on a statistical sampling plan and some wintering habitats are not covered, so results are best used for relative abundance and distribution on wintering habitats for most species (Eggeman & Johnson, 1989). In Maryland, it is conducted aurally during January, using observer counts from fixed-wing aircraft, and covers the Chesapeake and Coastal Bays. Flight routes are not standardized. Statewide data since 1955 are available on-line from the U.S. Fish and Wildlife Service, USFWS, and the Maryland Department of Natural Resources; however, Coastal Bays specific data were available only as hard copy from Maryland DNR Wildlife and Heritage Service (Hindman, pers. comm.)

Ocean City Christmas Bird Count - The Christmas Bird Count is a 1-day census held each December. The Ocean City count has been held since 1948, within a 7-mile radius circle centered on Berlin. It includes the Pocomoke River watershed as well as a portion of the Coastal Bays. Counts are made by volunteer birders by land and occasionally by boat. As such, differences in effort can influence count results year-to-year. Total species count data for each CBC circle are available from Cornell University; however, the Ocean City count is divided into territories that allow removal of most birds counted outside the Coastal Bays watershed. These parsed data were obtained from the Ocean City CBC compiler (Sheppard, pers. comm.).

eBird - A real-time, online checklist program, eBird has transformed how the birding community reports and accesses information. Launched in 2002 by the Cornell Lab of Ornithology and National Audubon Society, eBird provides rich data sources for basic information on bird abundance and distribution at a variety of spatial and temporal scales. eBird documents the presence or absence of species, as well as bird abundance, through personal checklist data typically submitted by the extensive community of amateur birders in the United States.

**Management Objective:** To maintain suitable bird populations.

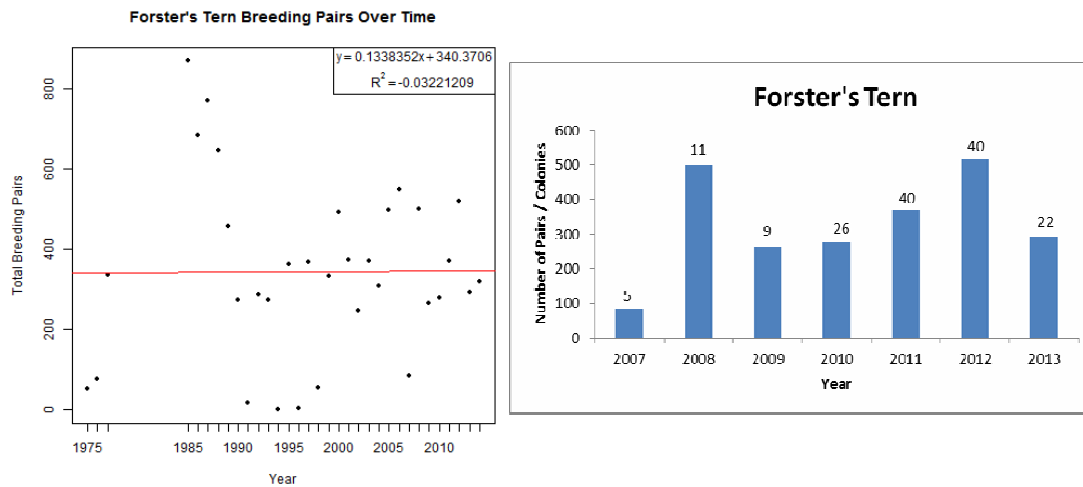
**Indicator 1:** Maintain shorebird populations

**Indicator 2:** Maintain colonial nesting waterbird populations

## Analyses and Results

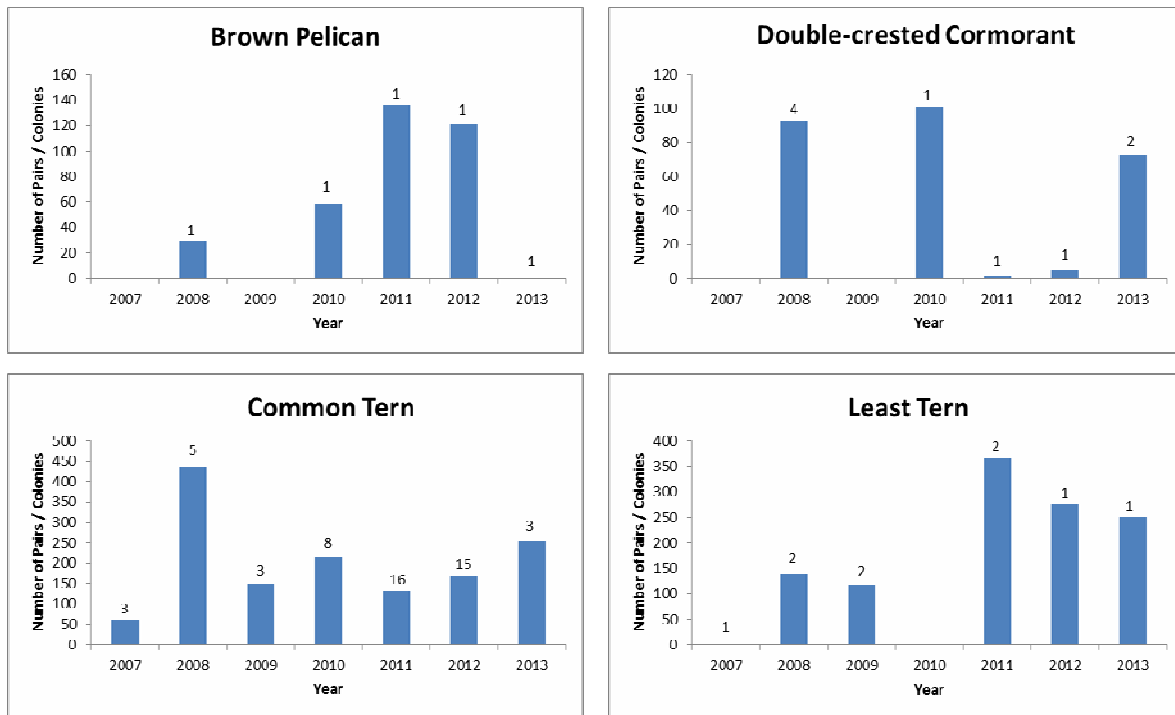
### Colonial Nesting Waterbirds

Colonial nesting waterbirds that find essential habitat in the Coastal Bays include herons, egrets, gulls, terns, skimmers, cormorants, pelicans and ibises. Nesting pairs in Maryland were counted periodically beginning in 1985. Population trends for the three species censused annually were determined and compared to baseline data from 1977. Black Skimmers have shown a precipitous decline in the number of breeding pairs over the long-term, particularly early in this century. An encouraging 4-year increase 2007-10 was not maintained, and the number of pairs has remained <30 since 2005 (Figure 7.8.1). Royal terns show a modest increasing trend long-term, but have been in steady decline since 2009 (Figure 7.8.2). No long-term trend was found for Forster's terns, with the number of pairs and the number of colonies both widely variable between 2007-13 (Figure 7.8.1).



**Figure 7.8.1** Long-term trend and recent status of Forster's tern nesting pairs in Maryland Coastal Bays.

Four additional colonial nesting species were censused periodically between 2007-13. Brown Pelicans and Double-crested Cormorants nest in trees, while the two species of tern nest in ground scrapes. Brown Pelicans nested on South Point Spoils until 1995. They did not nest in the Coastal Bays again until 2005, when they colonized Big Bay Marsh; however, that colony held no pairs during 2013. The Least Tern is federally endangered. From a total of 10 colony sites used since 1987, only three held nesting pairs between 2007-13, with most pairs found on the north end of Assateague Island. (Figure 7.8.2)



**Figure 7.8.2** Recent status of 4 species of colonial nesting waterbirds in Maryland's Coastal Bays (2007-2013).

### Migratory (wintering) Waterbirds

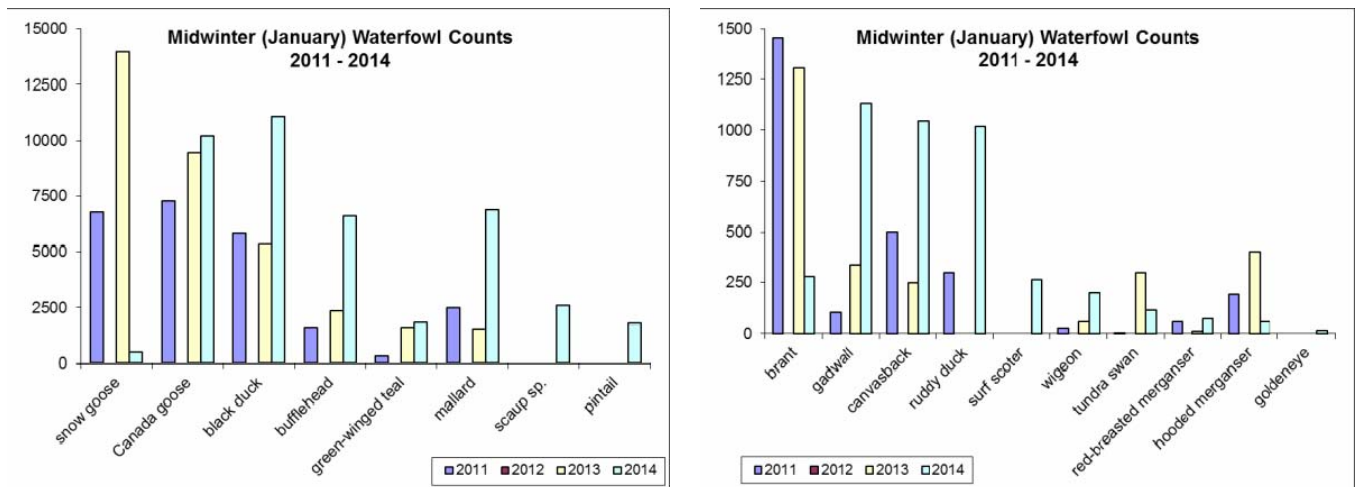
Abundance and diversity data (total counts by species) were compared across the most recent and available three years of the Mid-Winter Waterfowl Survey data (Table 7.8.1), and across the available Christmas Count data from 2008-13 (Table 7.8.2). Differences in methods result in a wider diversity of species identified by the Christmas Count; for example the Mid-Winter Waterfowl Survey does not distinguish between Snow and Ross' Goose, or between species of scaup, and typically does not find extralimital rarities such as Eurasian Wigeon.

There are 44 species of waterfowl and eight species of loons and grebes have been observed overwintering in the Coastal Bays during 2007-13. Sea ducks in particular are attracted to abundant small shellfish resources for food. Dabbling and bay ducks use man-made ponds, including golf course water features, sediment retention ponds, borrow pits, and sewage ponds, in addition to naturally occurring open water habitats for feeding and resting. A large portion of the Atlantic brant population winters in Maryland's Coastal Bays. Historically, this population fed primarily on eelgrass (*Zostera marina*). Longstanding declines and interannual variability in eelgrass abundance since the 1930s have resulted in brant switching to a winter diet dominated by macroalgae and supplemented by saltmarsh cordgrass (Ladin et al., 2014). Several extra-limital species have been observed in the watershed over the years, an indication that the large area of aquatic habitat is attractive to wandering waterbirds. Irruptions, notably red-necked grebes in 2013-14, have occurred as typically northern wintering species are forced south during harsh winters when northern waters are ice-covered.

**Table 7.8.1.** Coastal Bays Mid-Winter Waterfowl Counts, January 2011-14\*

Species	2011	2012	2013	2014	
Snow Goose ( <i>Chen caerulescens</i> )	6800		14000	500	
Brant ( <i>Branta bernicla</i> )	1454		1305	280	
Canada Goose ( <i>Branta canadensis</i> )	7275		9447	10225	
Tundra Swan ( <i>Cygnus columbianus</i> )	2		300	117	
Gadwall ( <i>Anas strepera</i> )	105		335	1135	
American Wigeon ( <i>Anas americana</i> )	25		60	200	
American Black Duck ( <i>Anas rubripes</i> )	5811		5329	11038	
Mallard ( <i>Anas platyrhynchos</i> )	2474	Data Unavailable	1558	6924	
Northern Pintail ( <i>Anas acuta</i> )			1775		
Green-winged Teal ( <i>Anas crecca</i> )	320		1600	1825	
Canvasback ( <i>Aythya valisineria</i> )	500		250	1045	
Scaup sp. ( <i>Aythya affinis/marila</i> )				2605	
Surf Scoter ( <i>Melanitta perspicillata</i> )				265	
Bufflehead ( <i>Bucephala clangula</i> )	1620		2335	6615	
Common Goldeneye ( <i>Bucephala albeola</i> )				15	
Hooded Merganser ( <i>Lophodytes cucullatus</i> )	191		400	62	
Red-breasted Merganser ( <i>Mergus serrator</i> )	60		10	75	
Ruddy Duck ( <i>Oxyura jamaicensis</i> )	300			1020	
<b>Total</b>	<b>26937</b>			<b>36929</b>	<b>45721</b>

\*reflecting winter populations for 2010-13



**Figure 7.8.3** Midwinter Waterfowl Counts for the Coastal Bays portion of Worcester County (2011-2014)

**Table 7.8.2** Waterfowl counts from Ocean City Christmas Bird Counts, 2008-2013. Data exclude Pocomoke North, Pocomoke South, and Berlin territories.

Species	2008	2009	2010	2011	2012	2013	
Snow Goose ( <i>Chen caerulescens</i> )	53331		12055	5628	14191	18651	
Ross Goose ( <i>Chen rossii</i> )	0		1	0	1	2	
Brant ( <i>Branta bernicla</i> )	8319		682	2861	5229	438	
Canada Goose ( <i>Branta canadensis</i> )	5626		14193	7572	8269	13510	
Tundra Swan ( <i>Cygnus columbianus</i> )	504		432	250	217	106	
Wood Duck ( <i>Aix sponsa</i> )	5		14	11	4	7	
Gadwall ( <i>Anas strepera</i> )	145		182	315	187	254	
Eurasian Wigeon ( <i>Anas penelope</i> )	0		0	0	0	3	
American Wigeon ( <i>Anas americana</i> )	267		199	489	166	531	
American Black Duck ( <i>Anas rubripes</i> )	822		725	1296	2458	837	
Mallard ( <i>Anas platyrhynchos</i> )	3862		5713	2519	3510	3989	
Blue-winged Teal ( <i>Anas discors</i> )	0		0	0	1	0	
Northern Shoveler ( <i>Anas clypeata</i> )	97		127	51	92	168	
Northern Pintail ( <i>Anas acuta</i> )	85		149	366	55	52	
Green-winged Teal ( <i>Anas crecca</i> )	112	Data Unavailable	263	1173	362	215	
Canvasback ( <i>Aythya valisineria</i> )	1048		331	28	34	467	
Redhead ( <i>Aythya americana</i> )	37		20	10	3	27	
Ring-necked Duck ( <i>Aythya collaris</i> )	133		116	475	243	1048	
Greater Scaup ( <i>Aythya marila</i> )	420		24	7	13	0	
Lesser Scaup ( <i>Aythya affinis</i> )	497		300	15	107	116	
King Eider ( <i>Somateria spectabilis</i> )	2		0	0	0	0	
Common Eider ( <i>Somateria mollissima</i> )	1		34	72	3	11	
Harlequin Duck ( <i>Histrionicus histrionicus</i> )	2		2	4	3	3	
scoter spp. ( <i>Melanitta spp.</i> )	172			747	483	270	2857
Long-tailed Duck ( <i>Clangula hyemalis</i> )	33			36	25	57	39
Bufflehead ( <i>Bucephala albeola</i> )	2268			2512	3153	2367	2231
Common Goldeneye ( <i>Bucephala clangula</i> )	1			55	3	1	0
Hooded Merganser ( <i>Lophodytes cucullatus</i> )	313		134	219	339	163	
Common Merganser ( <i>Mergus merganser</i> )	2		0	0	0	0	
Red-breasted Merganser ( <i>Mergus serrator</i> )	169		144	195	203	139	
<b>Total</b>	<b>78273</b>		<b>39190</b>	<b>27220</b>	<b>38385</b>	<b>45864</b>	

Migratory Shorebirds

Because of a dearth of scientific survey data for shorebirds in Maryland's Coastal Bays, eBird data were mined for checklists submitted during spring and fall migration (May – October) (Table 7.8.3). Peak counts were identified by date and location for each species. Shorebirds use

the Coastal Bays during migration and overwintering, and 38 species have been identified within the watershed between 2007 and 2013. Critical habitats include beaches, tidal flats, salt marshes, and grasslands. The large numbers of sightings and counts of these birds during migration demonstrate the importance of the Coastal Bays habitats.

**Table 7.8.3** High counts of migratory shorebirds at sites within the Coastal Bays watershed submitted to eBird, 2007-2013.

Species	Count	Location	Date
American Avocet ( <i>Recurvirostra americana</i> )	9	Truitts Landing	8-Aug-11
American Golden-Plover ( <i>Pluvialis dominica</i> )	16	Murray Sod Farm	8-Sep-11
Baird's Sandpiper ( <i>Calidris bairdii</i> )	1	E.A. Vaughn WMA--North	13-Aug-11
Black-bellied Plover ( <i>Pluvialis squatarola</i> )	450	Truitts Landing	27-May-13
Black-necked Stilt ( <i>Himantopus mexicanus</i> )	10	Truitts Landing	16-Apr-11
Buff-breasted Sandpiper ( <i>Tryngites subruficollis</i> )	10	Murray Sod Farm	6-Sep-12
Greater Yellowlegs ( <i>Tringa melanoleuca</i> )	106	Truitts Landing	16-Apr-12
Hudsonian Godwit ( <i>Limosa haemastica</i> )	2	Ocean City--Skimmer Island	1-Sep-12
Least Sandpiper ( <i>Calidris minutilla</i> )	600	Truitts Landing	8-May-10
Lesser Yellowlegs ( <i>Tringa flavipes</i> )	230	Truitts Landing	1-May-11
Marbled Godwit ( <i>Limosa fedoa</i> )	19	Ocean City--Skimmer Island	18-Oct-13
Pectoral Sandpiper ( <i>Calidris melanotos</i> )	47	Murray Sod Farm	5-Aug-12
Red Knot ( <i>Calidris canutus</i> )	129	Ocean City--Skimmer Island	1-Jun-12
Red Phalarope ( <i>Phalaropus fulicarius</i> )	1	Assateague KM 3-4	30-Oct-11
Red-necked Phalarope ( <i>Phalaropus lobatus</i> )	1	Ocean City Inlet	9-May-13
Sanderling ( <i>Calidris alba</i> )	8750	Assateague I. NS--OSV Zone	31-Jul-12
Semipalmated Plover ( <i>Charadrius semipalmatus</i> )	550	Truitts Landing	8-May-10
Semipalmated Sandpiper ( <i>Calidris pusilla</i> )	3000	Truitts Landing	27-May-07
Short-billed Dowitcher ( <i>Limnodromus griseus</i> )	615	Truitts Landing	6-May-13
Solitary Sandpiper ( <i>Tringa solitaria</i> )	13	Griffin Rd. Ponds	5-May-11
Spotted Sandpiper ( <i>Actitis macularia</i> )	12	Truitts Landing	23-Jul-11
Stilt Sandpiper ( <i>Calidris himantopus</i> )	38	Assateague KM 7.5	7-Aug-11
Upland Sandpiper ( <i>Bartramia longicauda</i> )	3	Murray Sod Farm	7-Aug-12
Whimbrel ( <i>Numenius phaeopus</i> )	113	Assateague I. NS--OSV Zone	5-Aug-09
White-rumped Sandpiper ( <i>Calidris fuscicollis</i> )	30	Truitts Landing	26-May-13
Willet ( <i>Catoptrophorus semipalmatus</i> )	326	Assateague I. NS--OSV Zone	18-Apr-12
Wilson's Phalarope ( <i>Phalaropus tricolor</i> )	3	Truitts Landing	17-May-13

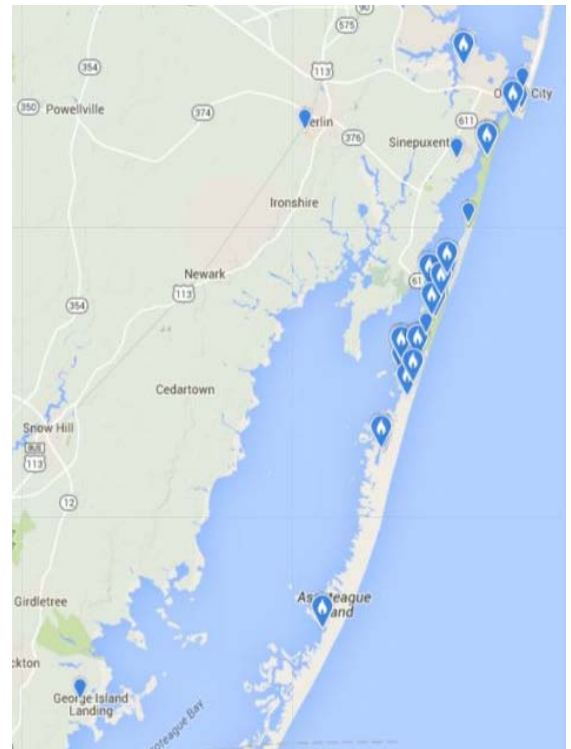
Breeding Shorebirds

A portion of the Atlantic Coast population of the federally threatened Piping Plover breeds on Assateague Island, particularly at the northern end where island overwash results in increased forage habitat. (See Chapter 7.7 of this report)

A large portion of the American Oystercatcher population in Maryland depends on the Coastal Bays for breeding habitat. The habitats currently occupied by breeding and wintering American Oystercatchers in Maryland are relatively protected from loss to development and excessive human disturbance. Most oystercatcher pairs breeding on the barrier island of Assateague in Maryland are located on the northern portion of the island that is closed to visitors during the breeding season (Wilke et al., 2007).

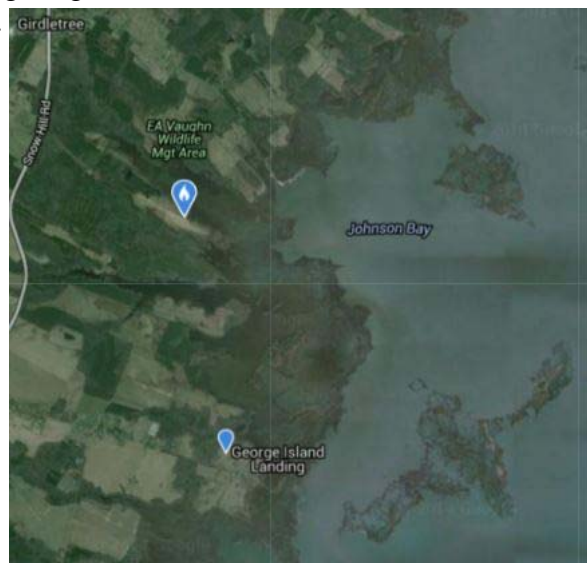
Wintering Owls

Northern Saw-whet Owls are regular winter visitors to the Coastal Bays. They migrate from breeding areas in forests of southern Canada, northern US, and Appalachian mountains, as their food resources become scarce during the fall and winter. A banding station has been operated by Project OwlNet on Assateague Island since 1991, and banded >300 Saw-whets between 2007-13. eBird data provide a glimpse of habitat use in the Coastal Bays by these tiny owls (Figure 7.8.4).



**Figure 7.8.4** Coastal eBird sightings of Northern Saw-whet Owl in Maryland Bays

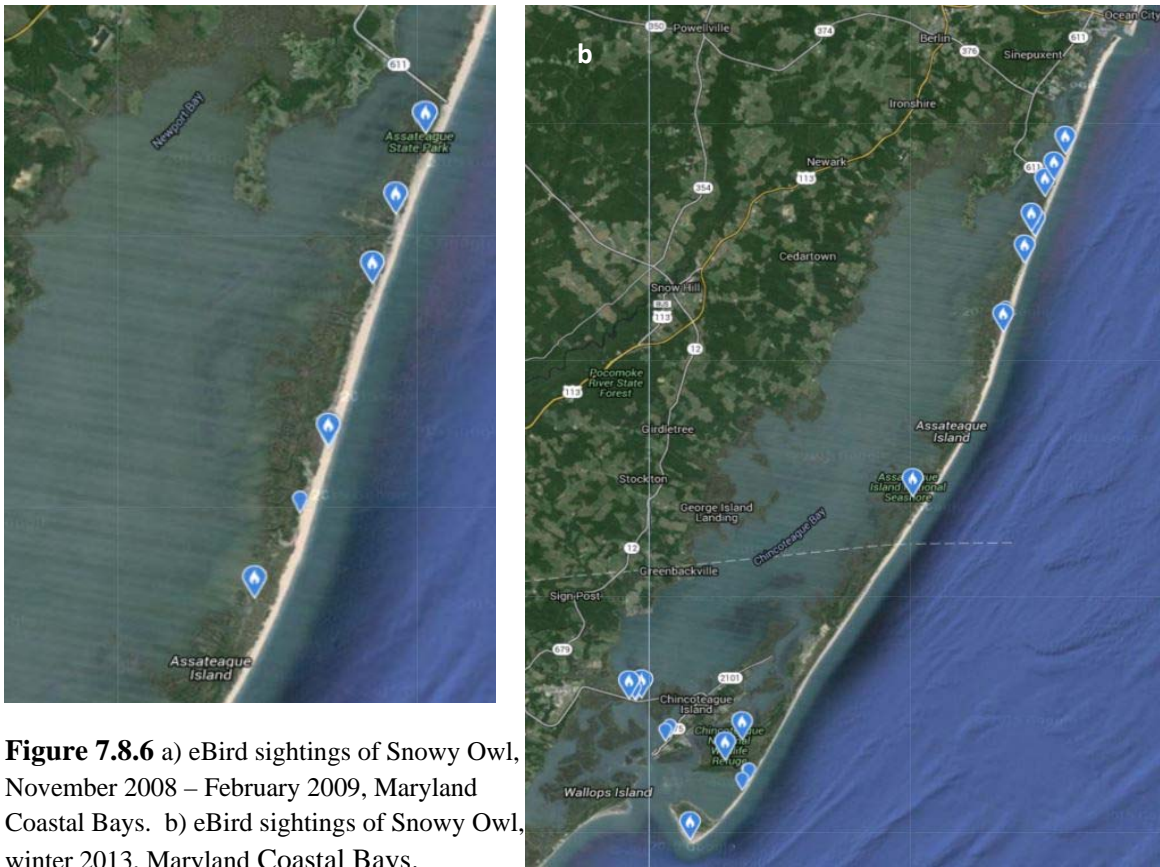
Long-eared Owls are rare winter visitors to Maryland. They typically require dense forest habitat undisturbed by human activity. This makes them difficult to detect. During 2008 and 2013, wintering long-eared owls were found in two areas of the southern Coastal Bays watershed (Figure 7.8.5).



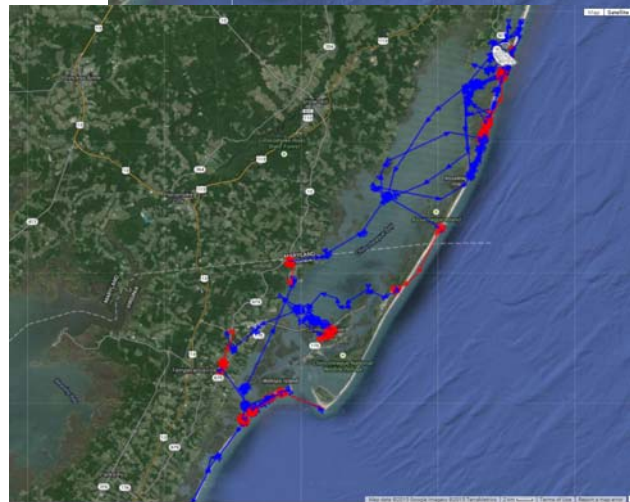
**Figure 7.8.5** eBird sightings of Long-eared Owl in Maryland Coastal Bays 2007-13.



Snowy Owls wandering from their normal range during the winter find familiar tundra-like landscapes in the Coastal Bays, particularly on Assateague Island. Beginning in November 2008, eBird checklists located an immature female on Assateague for at least 68 days (Figure 7.8.6a). Extraordinary breeding success during 2013 led to many juvenile Snowy Owls expanding their range into coastal Maryland to find suitable overwintering habitat (Figure 7.8.6b). Scientists and managers scrambled to capture and tag a significant number of these birds with GPS-GSM transmitters, including two released on Assateague Island. Tracking data provided by Project Snowstorm shows the extensive use of the southern Coastal Bays for foraging and resting by one owl over the course of 20 days (Figure 7.8.7). (<http://www.projectsnowstorm.org/maps-2014-15/delaware/>)



**Figure 7.8.6** a) eBird sightings of Snowy Owl, November 2008 – February 2009, Maryland Coastal Bays. b) eBird sightings of Snowy Owl, winter 2013, Maryland Coastal Bays.



**Figure 7.8.7** GPS track of Snowy Owl Delaware, December 11-31 2014

### Summary

The Coastal Bays provide critical foraging resources and habitats for breeding, wintering, and migration resting areas for birds. The confluence of land and water, plus the diversity of habitats within Maryland's Coastal Bays results in a wide diversity of bird species found within the watershed. Worcester County has the highest diversity of birds among all counties of Maryland.

### References

eBird. [ebird.org/content/ebird/](http://ebird.org/content/ebird/) Accessed 10/13/15.

Eggeman , DR, and FA Johnson . 1989. Variation in Effort and Methodology for the Midwinter Waterfowl Inventory in the Atlantic Flyway. *Wildl. Soc. Bull.* 17(3):227-233

Hindman personal Communication. 2016

Ladin, ZS, CK Williams, PM Castelli, KJ Winiarski, J Ostonkowski, SR McWilliams. 2014. Regional and intraseasonal variation in diet of wintering and staging Atlantic brant. *J. Wildl. Manage.* 78(7):1206-1215.

Project Snowstorm. <http://www.projectsnowstorm.org/maps-2014-15/delaware/> Accessed 1/21/15.

Sheppard personal. communication. 2015

Wilke, AL, DF Brinker, BD Watts, AH Traut, R Boettcher, J M McCann, BR. Truitt, and PP Denmon. 2007. American Oystercatchers in Maryland and Virginia, USA: Status and Distribution. *Waterbirds*, 30(1):152-162.