

Monitoring Salt Marsh Birds in Guilford, Connecticut



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Purpose of the Project

Do you care about the environment? According to the National Ocean Service, sea level has risen over three inches since 1993, and continues to increase at an average rate of 1/8 inch per year.¹ Sea level rise threatens the biodiversity of wetland ecosystems, which affects not only plants but animal species, too.² Coastal wetlands are very important because they provide animals—many target species or species of special concern³—with habitats, food, water, a breeding ground, and protection. So, monitoring the impacts of sea level rise on these important ecosystems is critical.

Partnering with Audubon Connecticut, we established a monitoring program to monitor and observe salt marsh birds in Audubon's Guilford Salt Meadow Sanctuary (Fig. 1). Our initial goal was to monitor migratory and breeding birds to collect baseline data on the types of birds that inhabit the marshlands and how the changing environment will affect the birds.

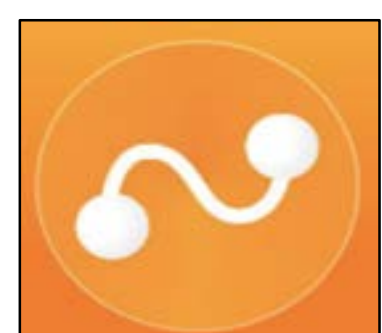
This study will help Audubon Connecticut plan for changes to the bird community in response to sea level rise and loss of saltmarsh.

Figure 1. (a) The Guilford Salt Meadow Sanctuary in winter. (b) A map pinpointing the Guilford Salt Meadow Sanctuary.



Methods

1. Use smartphone GPS TrackKit app to mark four survey points with a 50-meter radius (Fig. 2).
2. Visit site during the migratory and breeding season and conduct 5-minute surveys at each point to determine the bird community (Fig. 2). Record observations in the eBird app.



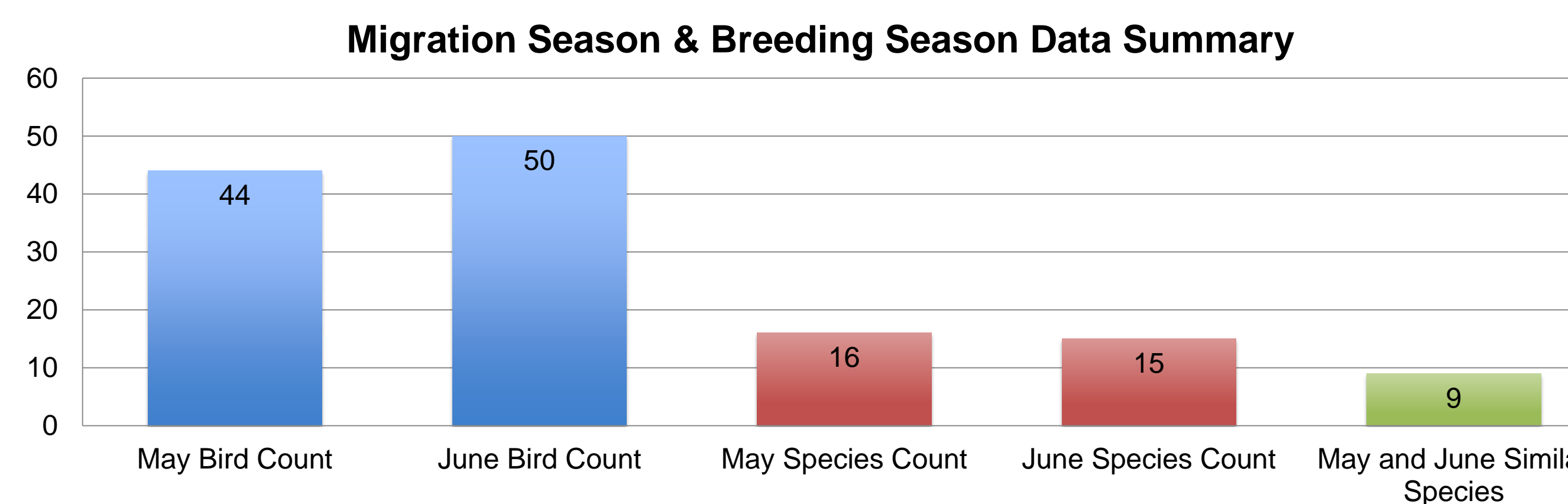
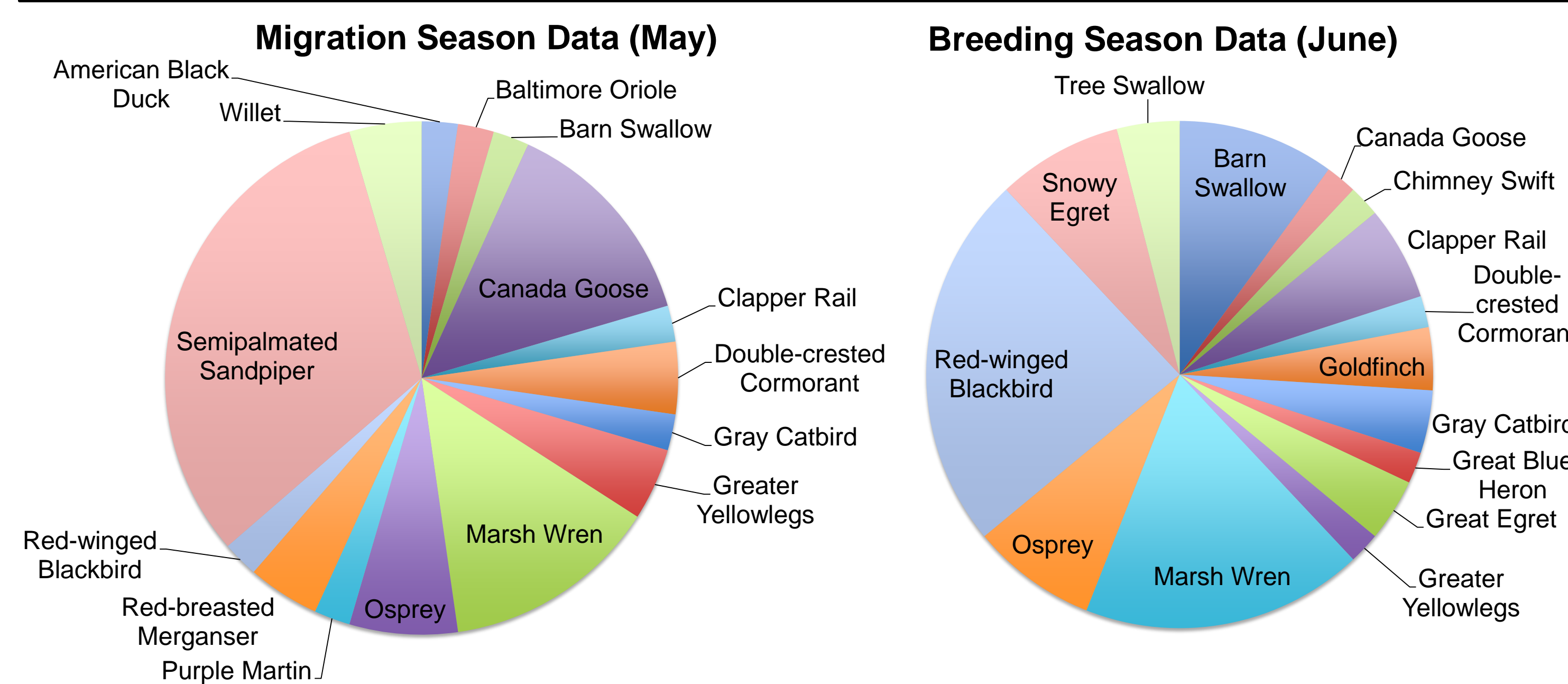
Survey Limitations

- Weather played a big part in being able to collect data. If it was too cold or it was thundering we were not be able to collect data.
- We had to keep a close observation on the tide. Low tide would be the best time for us to monitor the marsh. The team had a narrow timeframe to monitor, so our timing had to be accurate.



Figure 2. (a) Reviewing the data sheet. (b) Measuring radius of observation zone. (c) Recording data on the eBird app.

Survey Results



May 18, 2019 (Migration Season)

The weather was cold (58°F), with clear conditions and few clouds. Wind could be felt on face and strong enough to rustle marsh plants.

June 25, 2019 (Breeding Season)

Cool with a drizzle (69°F). The marsh was green and lush with many tide pools which are good for the birds to find and access easy food. Very active day for wildlife including Diamondback Terrapin (10) and Fiddler Crab (1).

Species	May Survey Points				June Survey Points				Total
	1	2	3	4	1	2	3	4	
American Black Duck	1								1
Baltimore Oriole			1						1
Barn Swallow		1			2		2	1	6
Canada Goose	6						1		7
Chimney Swift							1		1
Clapper Rail			1				3		4
Double-crested Cormorant		1		1				1	3
Goldfinch								2	2
Gray Catbird				1			2		3
Great Blue Heron								1	1
Great Egret					1	1			2
Greater Yellowlegs	2					1			3
Marsh Wren	2	3	1		2		5	2	15
Osprey		1		2	2	1		1	7
Purple Martin			1						1
Red-breasted Merganser			1	1					2
Red-winged Blackbird		1			7	1	1	3	13
Semipalmated Sandpiper	14								14
Snowy Egret							4		4
Tree Swallow							2		2
Willet	1	1							2
Total	26	8	5	5	14	4	21	11	94

Results

Some key findings:

- During the breeding season (June), the marsh was a lot more active, but there was similar diversity in the bird species compared to the May surveys. Interestingly, the greater diversity was in the different species observed during migration season (May) vs. breeding season (June).
- The breeding season also had a lot more options for food due to the tidepools and other prey species being active.
- Some of the more dominant species that were recurring were Marsh Wrens (Fig. 3), Ospreys, Red-winged Blackbirds, and Barn Swallows.



Figure 3. (a) Marsh Wren nest woven into the marsh vegetation and (b) Marsh Wren adult near the same nest, protecting it.

Next Steps

Our observations show that the marsh is most active during the breeding season.

Our next steps are the following:

- Conduct additional surveys to look for the difference between seasons. Surveying of Audubon's Guilford Salt Meadow Sanctuary will be ongoing.
- Determine the presence of other species and types of plants.
- Observe the community of other species, such as Diamondback Terrapin or Fiddler Crabs in the marsh.
- Continue studying the marsh in response to sea level rise and report findings to community for planning purpose.
- Share results with stakeholders of the East River Marsh Sanctuary and participate in meetings about marsh migration.

Acknowledgements

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References

1. <https://oceanservice.noaa.gov/facts/sealevel.html>. October 13, 2019.
2. <http://www.actforlibraries.org/the-impact-of-rising-sea-levels-on-animal-life/>. October 13, 2019.
3. <https://water.usgs.gov/nwsum/WSP2425/functions.html>. October 13, 2019.