



**Rushton Woods Banding Station
Songbird Banding Annual Report
2020**



Image by Kirsten Snyder 2020.

**Willistown Conservation Trust
Bird Conservation Program
Alison Fetterman**

Rushton Woods Banding Station Songbird Report 2020

During this eventful year, the Bird Conservation Program successfully completed the tenth year of Monitoring Avian Productivity and Survivorship (MAPS), our breeding bird study at Rushton Woods, and eleven years of fall migration banding. Unfortunately, we were not able to operate the banding in the spring of 2020 due to the Covid-19 Pandemic.

After 11 years of migratory songbird banding (spring and fall) and 10 years of banding breeding birds (MAPS) at RWBS we have banded a total of **15,219** songbirds of **100** species! See Appendix A for a full list of birds captured at RWBS from 2010-2020.

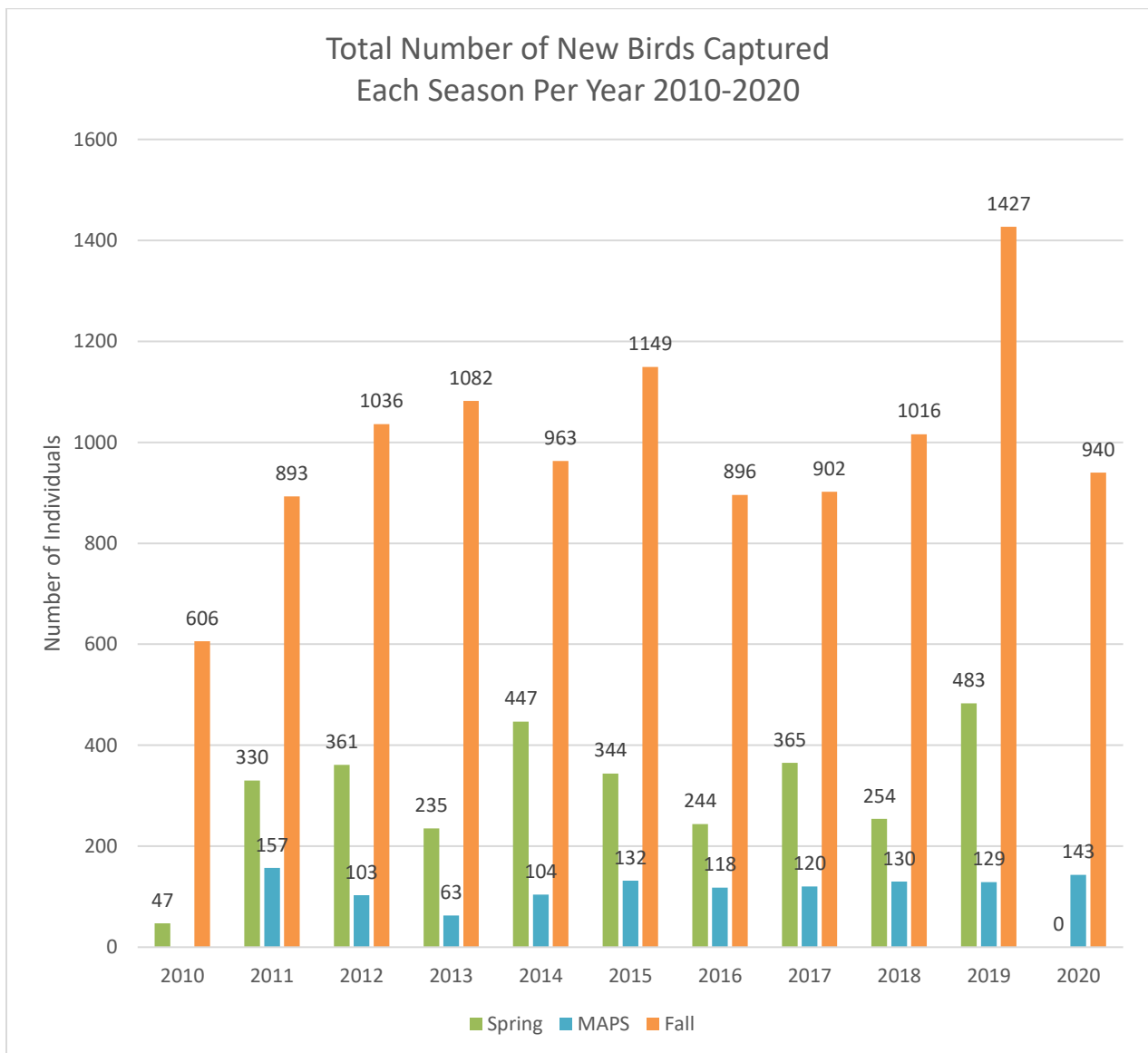


Figure 1. Total Captures Per Season 2010-2020 at RWBS.

Most birds are captured during the fall due to the abundance of newly hatched birds. However, we capture nearly the same number of species in the spring and fall migratory season.

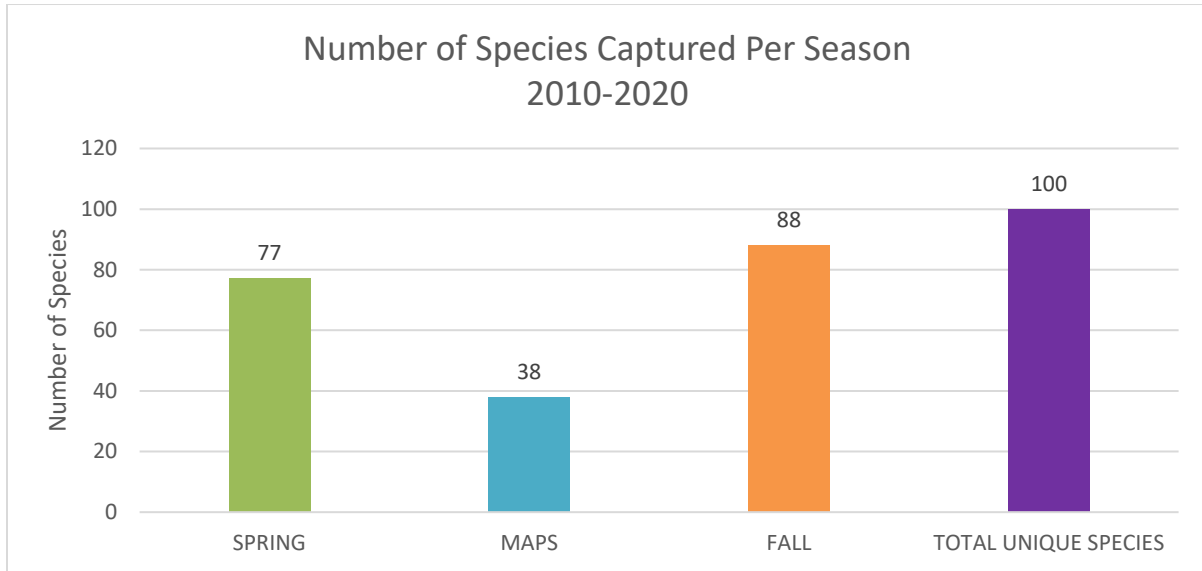


Figure 2. Total number of species captured 2010-2020 at RWBS.

In 2020, we captured the average number of species during MAPS and Fall migration.

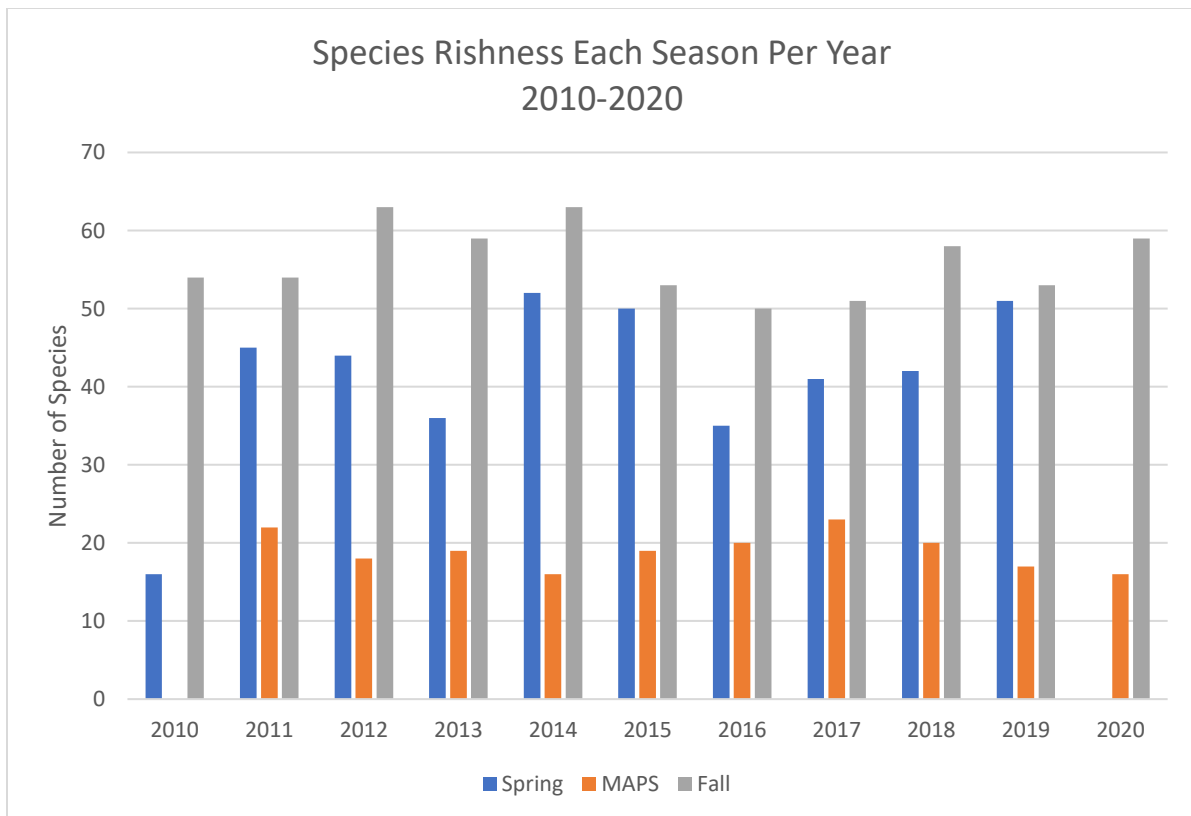


Figure 3. Total Species Richness (number of species) captured each season per year at RWBS 2010-2020.

Notable Captures in 2020

During this fall migratory season we captured a record number of **30** Indigo Buntings where most individual were young of the year (HY). Nets remain in the same place and the habitat remains relatively stable, however small changes or ideal weather conditions may have made 2020 a productive year for Indigo Buntings. The two year increase in numbers may indicate a habitat change locally.

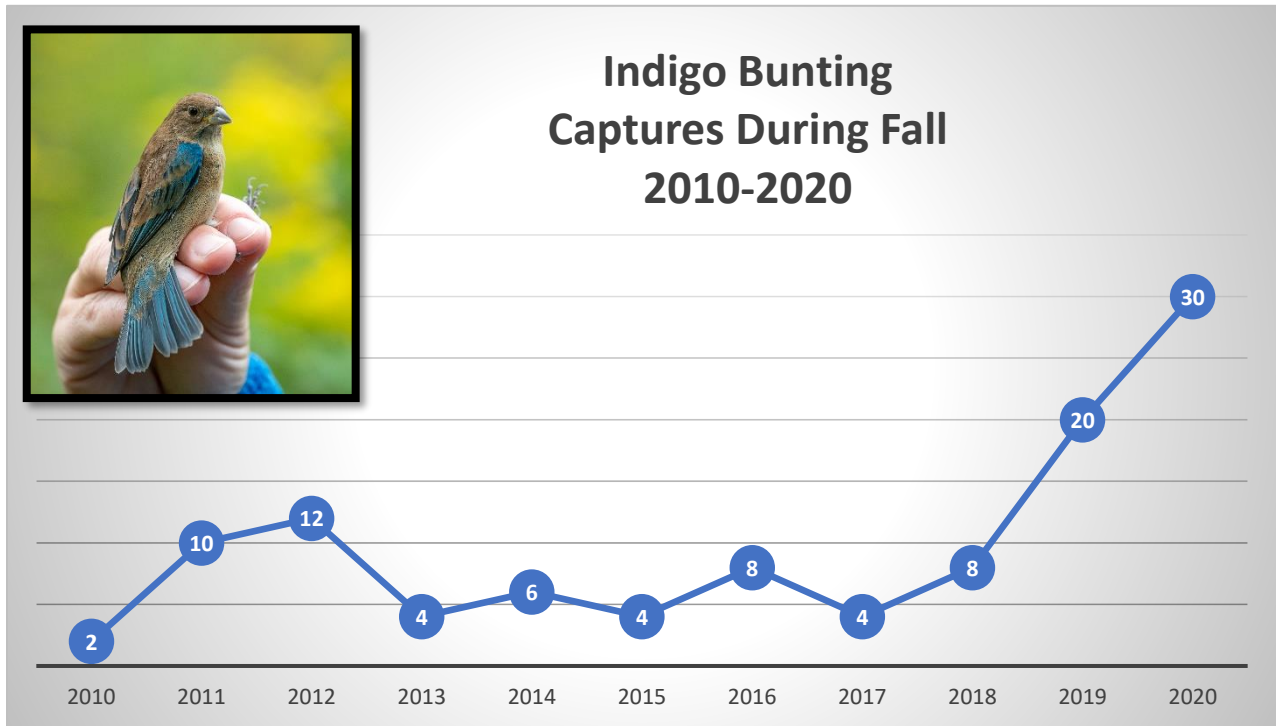


Figure 4. Number of Indigo Buntings captured during the fall migration period 2010-2020.

Longevity Records

As we completed our 10th year of MAPS banding, we discovered a few very old birds in our woods! Both long distance migrants and ground nesting birds, the Veery and Ovenbird are two species expected to have an average five year life span. However, in the summer of 2020, we captured one of each species that was originally banding at the same site in 2010.



Veery – At least **11** years old! This male Veery was first captured on June 30, 2011, aged ASY, meaning it was at least in its second year. We have since encountered this bird breeding at Rushton in 2012, 2014, 2015, 2018, 2019 and 2020! We may have not seen the last of this Veery! The BBL record for Veery is 13 years old.



Ovenbird – At least **11** years old! This female Ovenbird was first captured on May 27, 2011, aged ASY, meaning it was at least in its second year. We have since encountered this bird breeding at Rushton in 2014, 2015, 2017 and 2020. The BBL record for Ovenbird is 11 years old.

100th Species Captured!

On September 3, among the drove of Indigo Buntings of blue and brown, banders happened on a very unfamiliar looking blue bird. This diamond in the rough was immediately identified as our first ever capture of Blue Grosbeak! This beautiful second year male also marked our 100th species captured at the Rushton Woods Banding Station.



Figure 5. Second year Blue Grosbeak. Photo by Blake Goll.

Top Five Species

Each year as conditions vary slightly, we record the top five species captured per season. During the breeding season at our MAPS station, the most abundant species in all ten years has been the Gray Catbird, followed by Wood Thrush. Most years Ovenbird and Veery are among the most abundant, however, in 2020 the top five captures were Gray Catbird, Wood Thrush, American Robin, Carolina Wren and Northern Cardinal.

Table 1. Top five species captured per year during MAPS 2011-2020.

MAPS Top Five Species Captured Per Year										
Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GRCA	49	39	17	34	39	32	40	51	50	49
WOTH	9	16	15	27	22	23	26	15	33	31
OVEN	24		5	8	12	6	8	16	13	
VEER	15	10	5	6	12	10		7	6	
COYE		7		5			10	9		
CARW			4				4			12
DOWO					11	9				
NOCA						6			3	6
AMRO	17									15
CACH		5								

During fall migration we start to see the dispersal of young reared nearby as well as species stopping over during the southbound journey as well as those that stay just for the winter! Year round, the most abundant bird is the Gray Catbird, in fall, their numbers are closely matched by the White-throated Sparrow that spend the winter. In fall of 2020, the next most frequently captured birds were American Robin, Song Sparrow and Common Yellowthroat.

Table 2. Top five species captured during fall migration 2010-2020.

Fall Migration Top Five Species Captured Per Year											
Species	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GRCA	118	119	254	176	285	422	185	245	136	409	166
WTSP	113	202	131	165	127	125	138	83	145	111	80
SOSP		50	67	89	52	101	75	79	99	105	63
RCKI		44	70	89	55	53		58	106		
COYE					59		49	61	66	83	56
AMRO	48	42	71				47				74
AMGO										119	
HETH	32					35					
NOCA	30										

Throughout the year, a few species dominate the landscape, below is a list of the top ten species captured across all seasons at the Rushton Woods Banding Station.

Table 3. Top ten species captured across all stations and season at RWBS 2010-2020.

Species	Spring	MAPS	Fall	All Seasons Total 2010-2020
Gray Catbird	812	400	2515	3727
White-throated Sparrow	429		1420	1849
Common Yellowthroat	306	61	596	963
Song Sparrow			803	849
Ruby-crowned Kinglet			570	612
Wood Thrush		217		502
Northern Cardinal	95			383
American Goldfinch	95			376
Ovenbird		101		330
Veery		79		288

Capture Rates

The nets used for capture remain in the same location year to year. In addition, we try to operate the banding station as consistently as possible, however weather, staff availability and other factors can affect the time available to operate the banding station. In order to standardize the number of birds captured in the time spent operating the nets and to enable comparisons between years and other banding stations, we calculate capture rates. Capture rates are the number of birds captured per net hour.

Table 4. Summary of number of days spent banding, total number of birds, total amount of hours nets were operated and the capture rates (birds per 100 net hours) each season per year at RWBS.

Season/Year	# Days Banding	# New Birds	Total Net Hours	Capture Rate (b/100nh)
Spring 2010	4	47	NA	NA
Spring 2011	16	330	808.0	40.8
Spring 2012	20	361	1044.0	34.6
Spring 2013	14	235	889.8	26.4
Spring 2014	14	447	723.0	61.8
Spring 2015	14	344	740.0	46.5
Spring 2016	15	244	857.0	28.5
Spring 2017	16	365	1111.8	32.8
Spring 2018	14	254	887.3	28.6
Spring 2019	16	483	1276.8	37.8
Spring 2020	na	na	na	na
Season/Year	# Days Banding	# new birds	Total net hours	capture rate (b/100nh)
MAPS 2011	8	157	478.7	32.8
MAPS 2012	8	103	480.0	21.5
MAPS 2013	8	63	428.7	14.7
MAPS 2014	8	104	479.3	21.7
MAPS 2015	8	132	452.7	29.2
MAPS 2016	8	118	480.0	24.6
MAPS 2017	8	120	480.0	25.0
MAPS 2018	8	130	471.3	27.6
MAPS 2019	8	129	445.3	29.0
MAPS 2020	8	143	480.0	29.8
Season/Year	# Days Banding	# new birds	Total net hours	capture rate (b/100nh)
Fall 2010	25	606	NA	NA
Fall 2011	23	893	1097.6	81.4
Fall 2012	24	1036	1214.8	85.3
Fall 2013	20	1082	1030.3	105.0
Fall 2014	28	963	1333.0	72.2
Fall 2015	28	1149	1505.0	76.3
Fall 2016	24	896	1487.0	60.3
Fall 2017	23	902	1397.4	64.5
Fall 2018	24	1016	1578.1	64.4
Fall 2019	26	1427	1792.5	79.6
Fall 2020	16	940	1055.0	89.1

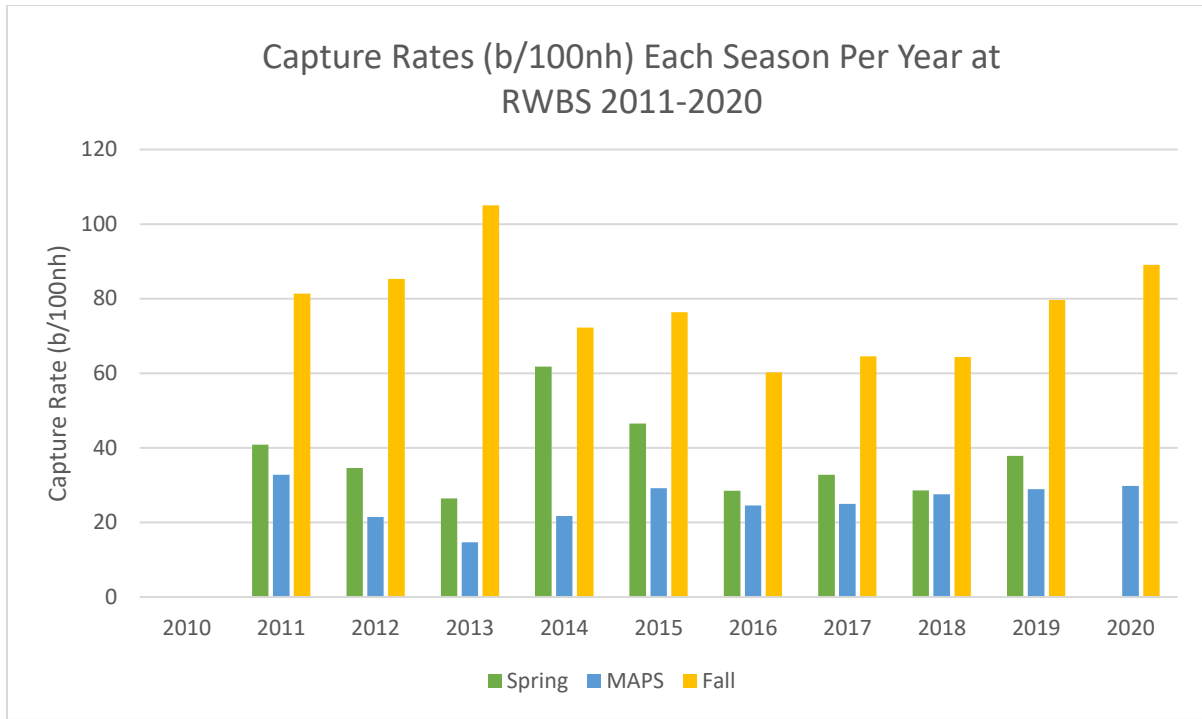


Figure 6. Capture rates (birds per 100 net hours) captured each season per year at RWBS 2010-2020.

Capture Rates (Birds per 100 net hours) also allows us to look at species trends overtime. We can see some species decreasing, some increasing and some remaining steady at both of our banding sites since 2011. Net hour data is unavailable for 2010. Below are analyses for Gray Catbird, White-throated Sparrow, Common Yellowthroat, Wood Thrush (breeding only), Ovenbird (breeding only), and Song Sparrow (Fall only). Further analysis of weather and habitat is needed for indications of change.

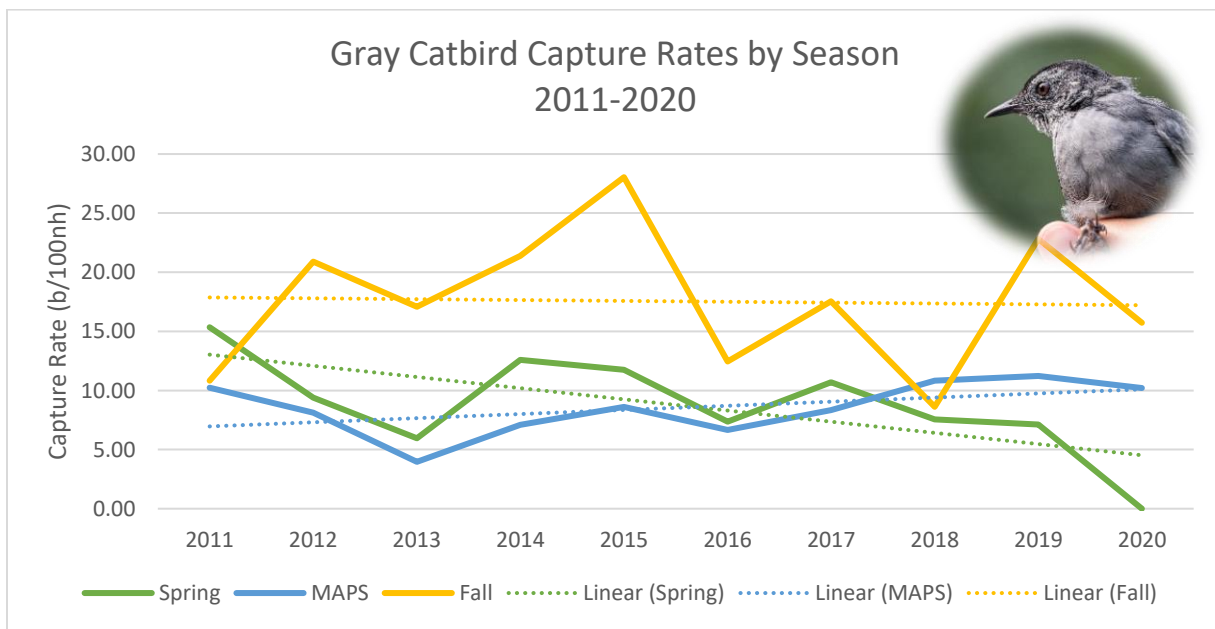


Figure 7. Capture Rates (b/100nh) of Gray Catbird each season. The linear line represents the long-term trend over time.

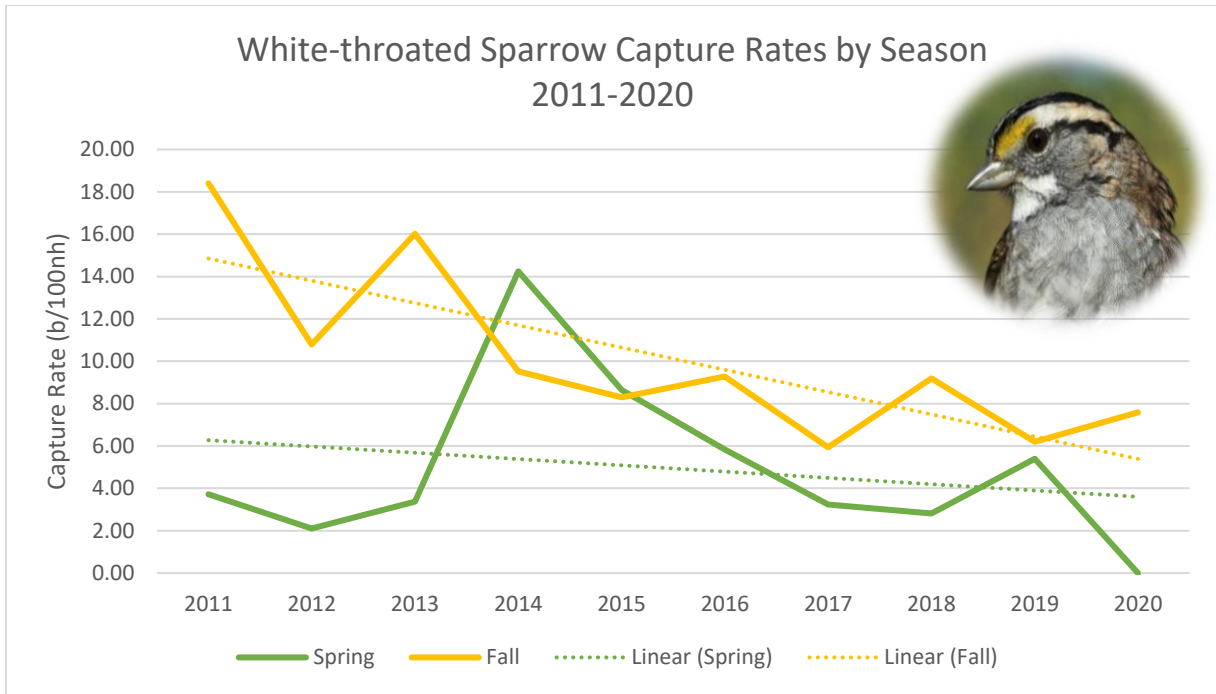


Figure 8. Capture Rates (b/100nh) of White-throated Sparrow during the spring and fall migratory seasons. The linear line represents the long-term trend over time.

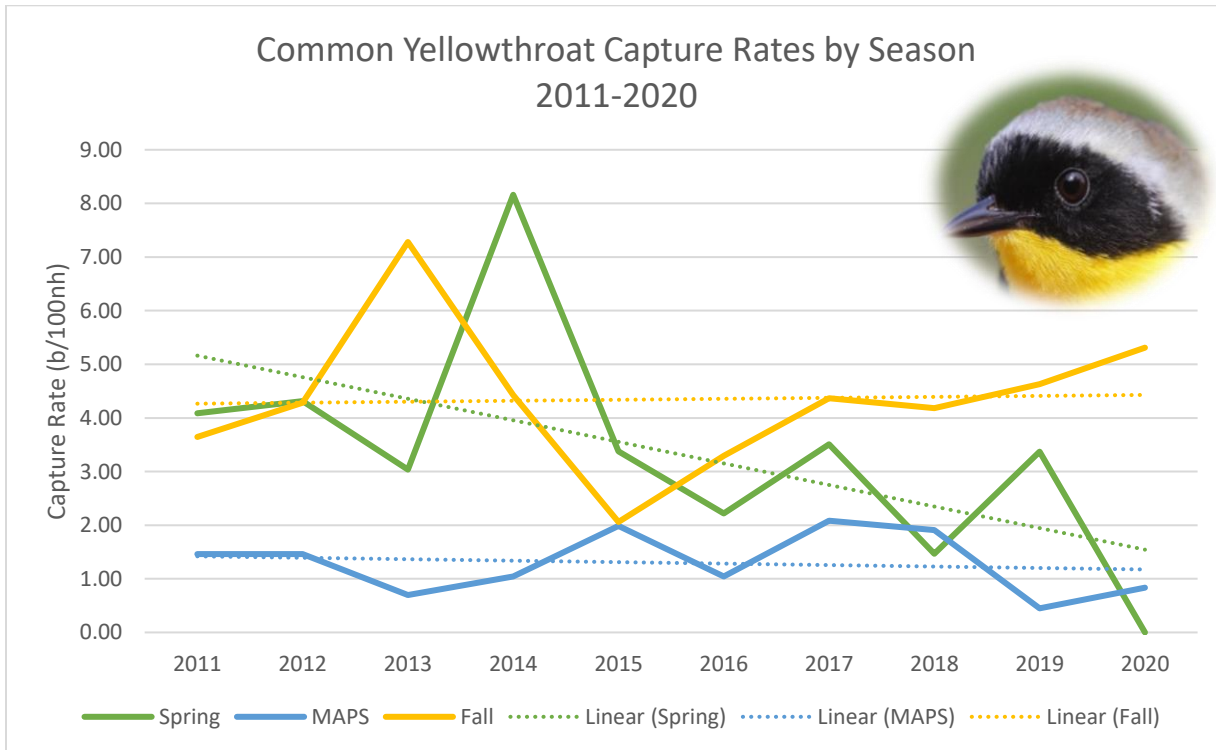


Figure 9. Capture Rates (b/100nh) of Common Yellowthroat each season. The linear line represents the long-term trend over time.

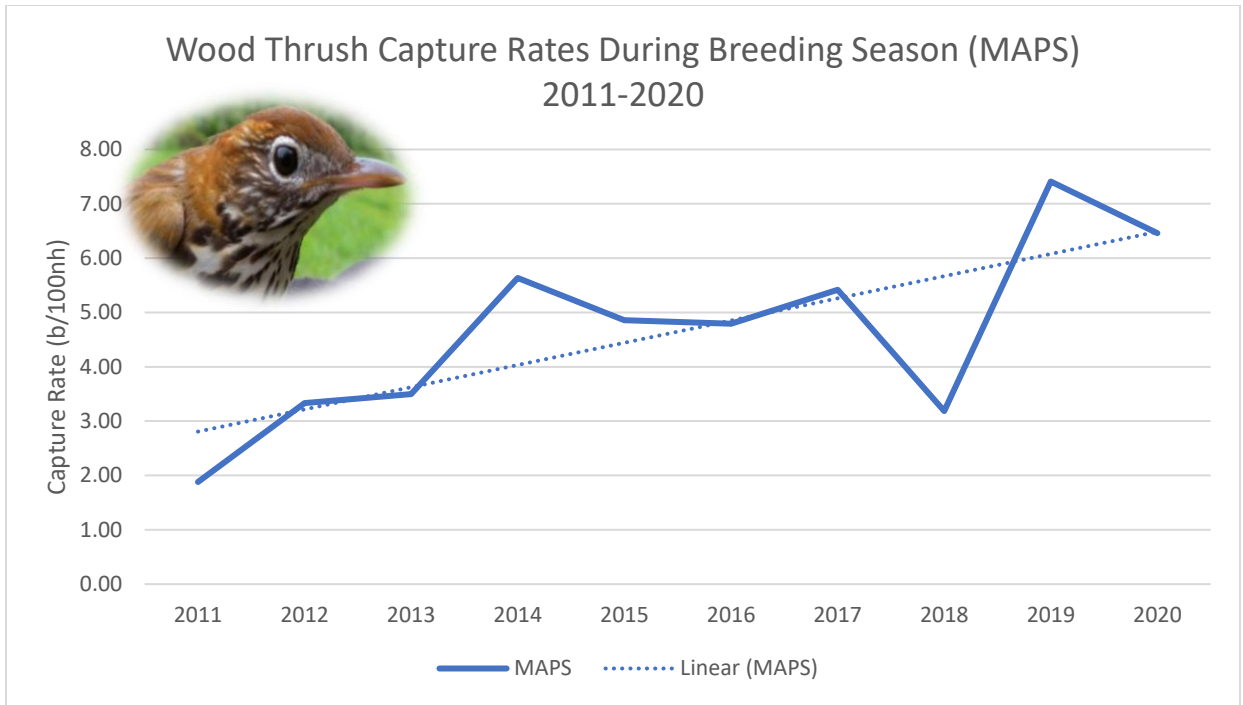


Figure 10. Capture rates (b/100nh) of Wood Thrush during the breeding season (MAPS). The linear trend represents the long-term trend over time.

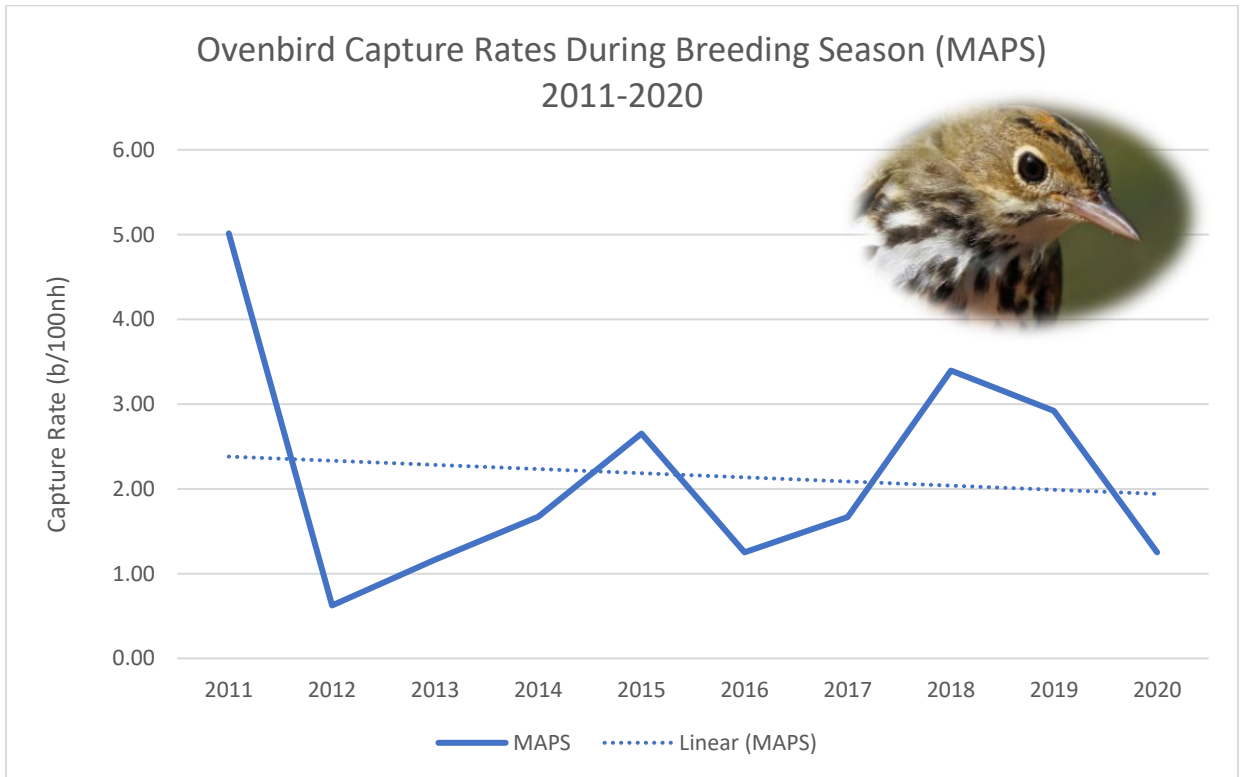


Figure 11. Capture rates (b/100nh) of Ovenbird during the breeding season (MAPS). The linear line represents the long-term trend over time.

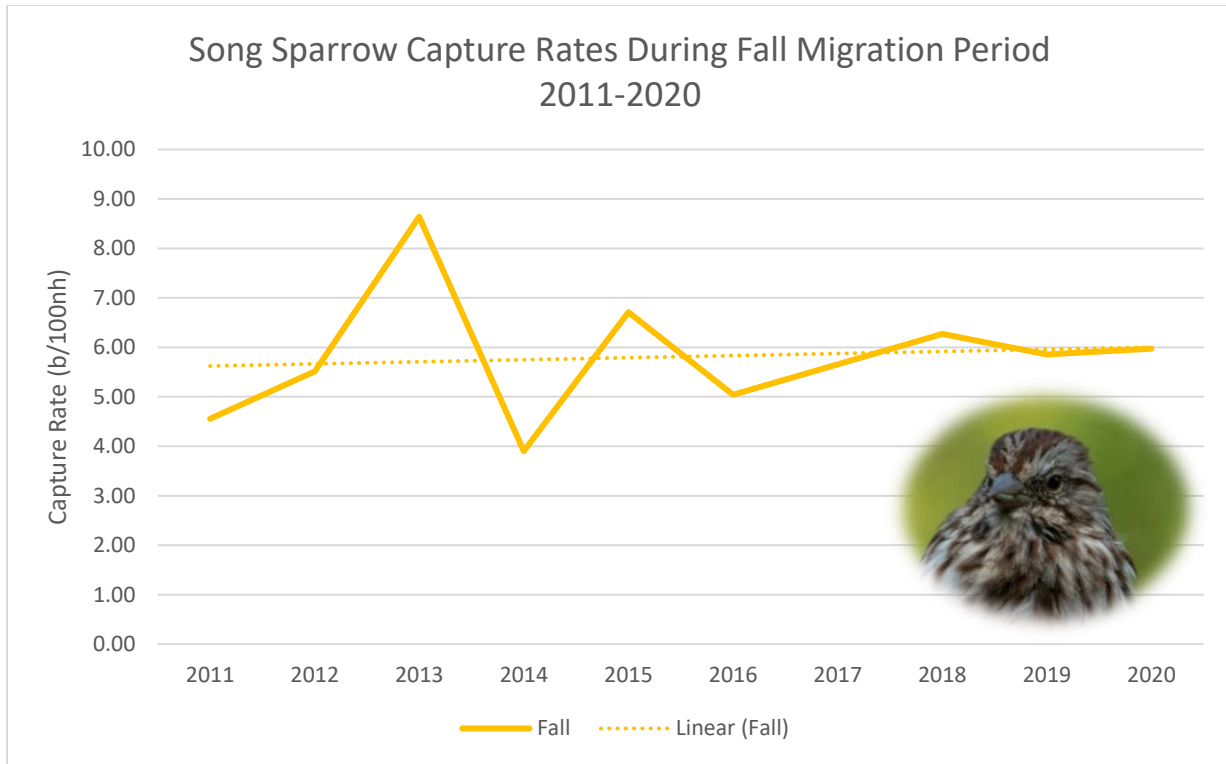


Figure 12. Capture rates (b/100nh) of Song Sparrow during the fall migratory season. The linear line represents the long-term trend over time.

Age and Sex Ratios

Most songbirds follow a regular, annual molt pattern, where each fall they switch out their feathers for a fresh wardrobe. Generally speaking, young of year birds (HY) replace only body feathers and one tract or a portion of one tract of covert feathers. Each year, on January first, all birds have a birthday, so if they hatched the previous summer they are named second year (SY) birds. In a bird's second fall and every one after, they replace all body and flight feathers and we can call them, after hatch year (AHY). Occasionally with birds like woodpeckers, molt patterns are evident through their third year (TY) and we are further able to precisely age these birds. So, with a bird in hand, we can look at feather quality to determine a bird's age.

During the 2020 breeding season and fall migration, age classes remained similar to previous years. During the MAPS season young birds remain the majority of captures and among adult birds we continued to see a trend of slightly more second year birds than after-second year birds. Similarly, during fall migration, the majority of the captures in 2020 were young, hatch year birds.

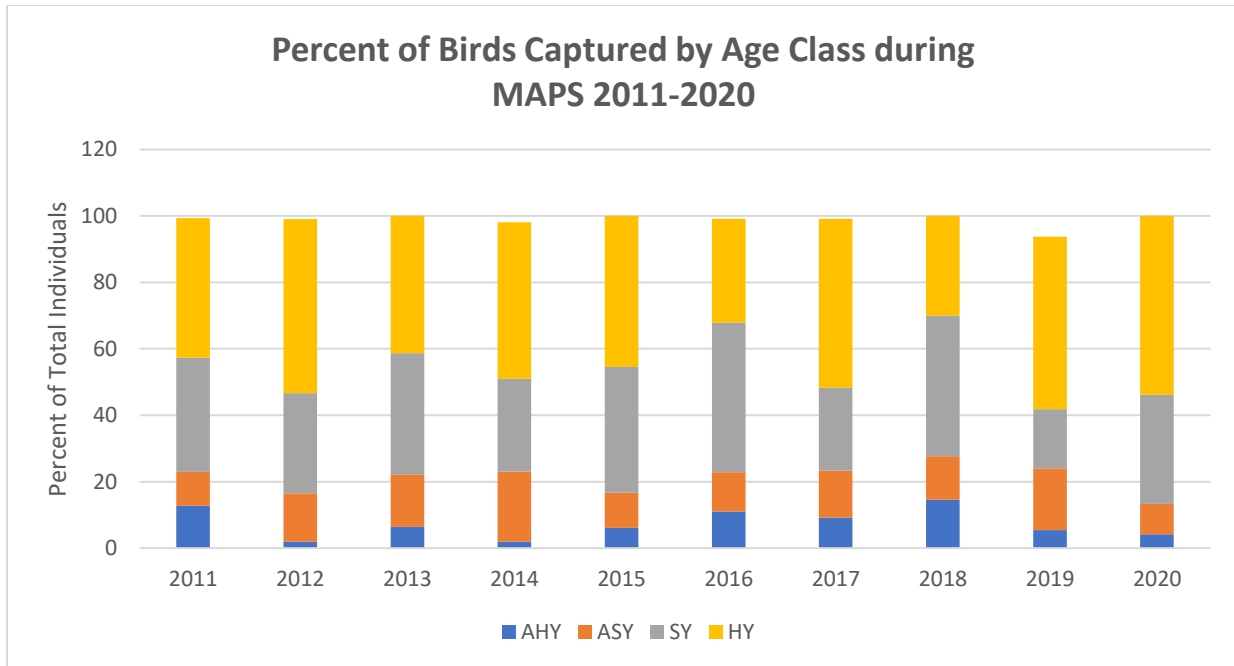


Figure 13. Percent of birds captured by age class during MAPS each year; AHY (After Hatch Year), ASY (After Second Year), SY (Second Year), HY (Hatch Year)

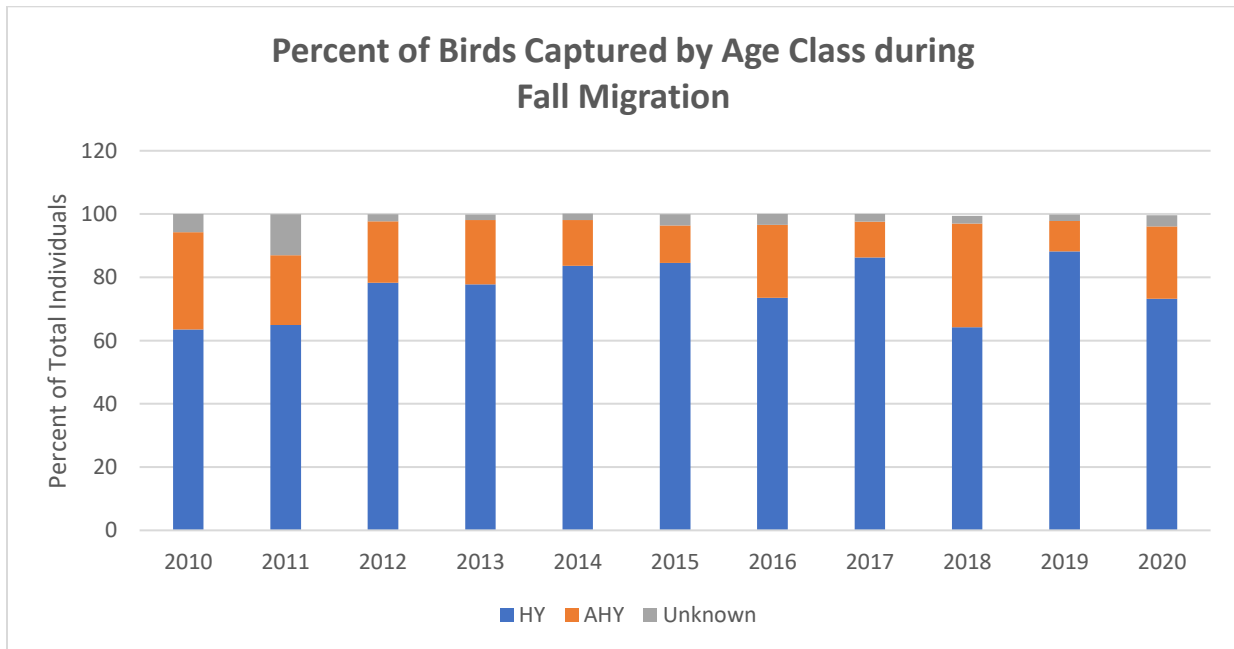


Figure 14. Percent of birds captured by age class during fall migration; HY (Hatch Year), AHY (After Hatch Year).

Sex Ratios

Many birds we captured at RWBS are sexually monomorphic, meaning the males and females look identical. The only way to determine the sex these monomorphic birds is when the bird is in breeding condition, where the females develop a brood patch on their belly and males show an enlarged cloacal protuberance. In addition, young (HY) birds, even in some sexually dimorphic species often display plumages similar to the female, in which case we would not be able to reliably determine the sex. These reasons account for a large number of unknown sex birds at RWBS.

During the 2020 seasons, we saw similar captures among the sex of birds captured throughout the years.

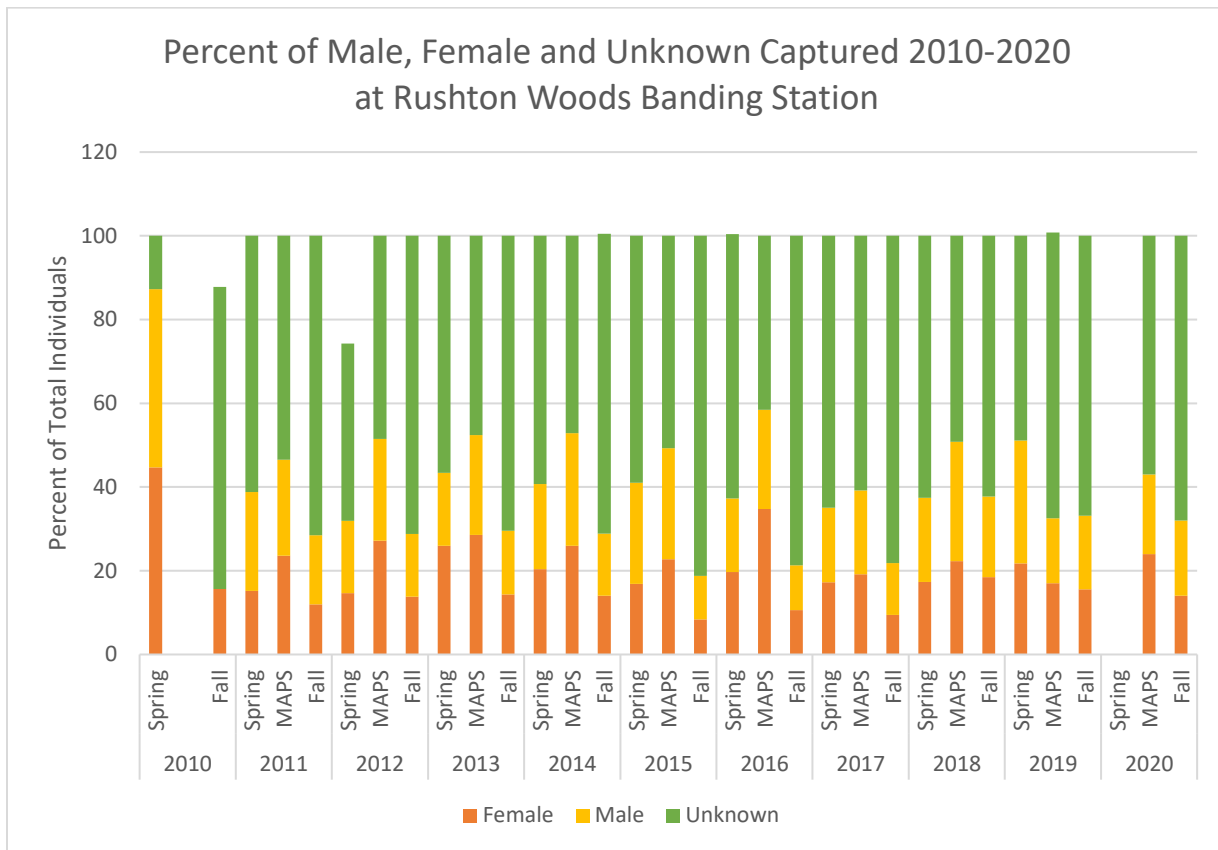


Figure 15. Percent of female, male and unknown birds captured each season per year at RWBS.

Grand Totals

Total Number of New Birds Captured Each Season Per Year

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Spring	47	330	361	235	447	344	244	365	254	483	NA	3110
MAPS	NA	157	103	63	104	132	118	120	130	129	143	1199
Fall	606	893	1036	1082	963	1149	896	902	1016	1427	940	10910
Grand Total of Individuals Captured												15219

Rushton Woods Banding Station (RWBS) Totals 2010-2020

	SPRING	FALL	MAPS	GRAND TOTAL
New Birds Captured	3110	1199	10910	15,219
Species Richness	77	88	38	100

History of the Rushton Woods Banding Station

In May 2009, Willistown Conservation Trust (WCT) received a Conservation Grant from the Delaware Valley Ornithological Club (DVOC) and opened the Rushton Woods Bird Banding Station. Limited banding effort in 2009 ignited a successful program connecting science and education through bird conservation. What started as migratory bird banding in 2009 has grown to a full life-cycle study of birds using Rushton Woods Preserve (RWPR) during the spring and fall migratory seasons, a breeding bird program following MAPS protocol, and catching glimpses of overwintering birds through banding records. Banding operations take place in the shrub-scrub hedgerows during each migratory season. Starting with seven fixed net locations in 2010, we have expanded to running fifteen fixed nets in 2019. Breeding bird banding is operated within Rushton woods where ten fixed net locations have remained consistent since 2011.

Why Band Birds?

Bird banding provides valuable information that helps us study dispersal, migration, behavior, social structure, life span, survival rate, reproductive success, and population growth. At Rushton Woods Preserve, we band to study the seasonal and long term population patterns of migratory, wintering and year-round resident birds. Banding allows us to track individuals, which is important in factoring survival, migratory turnover rates, and longevity.

Species	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		Grand Total								
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M		S	M	S					
BGGN Blue-gray Gnatcatcher									1			4					1			1						7					
BHCO Brown-headed Cowbird				1	3			1				1		1	2		2	1		2						15					
BHVI Blue-headed Vireo														1			1			3						5					
BLGR Blue Grosbeak																									1	1					
BLJA Blue Jay	2		6	4	9	1	1	2	1	1	3	1	2		4	2	5	1		1	8	2	2		1	1	3	3	4	72	
BLPW Blackpoll Warbler					3			1			2						2					3					2	15			
BRCR Brown Creeper		1			3					1			1			2					2							10			
BRTH Brown Thrasher		1		1		3		1			2	1		3	1		1			3	1	1	1			1		1	1	23	
BTBW Black-throated Blue Warbler		6	1		27	6		24	10		31	8		21	1		18			21	2		8	2		24	2		39	20	271
BTNW Black-throated Green Warbler										1			2																3	6	
BWWA Blue-winged Warbler			1									1		4							2				2				1	11	

Species	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		Grand Total									
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M		S								
CACH Carolina Chickadee		9	11	2	20	5	5	7	4	1	9	5	2	7	5	1	6	4	1	16	6	1	9	5		2	3		4	1	7	158
CARW Carolina Wren	1	5	1	3	5	2	4	11	4	4	13	1	1	5		5	5			8	1	4	8	1	1	9	2	3	13	12	8	140
CAWA Canada Warbler		1	3		1	4		2	2		4	6		5	5		1	3		2			4		1		1	2		1	48	
CCSP Clay- colored Sparrow														1																	1	
CEDW Cedar Waxwing		4						8						1					1			1									15	
CHSP Chipping Sparrow		1			15			1			17	2		2	8		17	3		22	4		10	3			2		12		6	125
CMWA Cape May Warbler																									1						1	
COGR Common Grackle																	2														2	
CONW Connecticu t Warbler		4			2			3			8			3			6			3			1			4			2		2	38
COYE Common Yellowthro at	3	24	33	7	40	45	7	52	27	3	75	59	5	59	25	9	31	19	5	49	39	10	61	13	9	66	43	2	83	4	56	963
CSWA Chestnut- sided Warbler		1				1		1			2	2		5	1		1								2			9		2	27	

Species	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		Grand Total									
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M		S								
DOWO Downy Woodpecker		2		1	3	2	2	2	1	1		3	3	2	2	11	3	3	9	1		4	2		2	2		5	5	4	3	78
EABL Eastern Bluebird			1																		4						1			1	7	
EAKI Eastern Kingbird											1																				1	
EAPH Eastern Phoebe					3							1			1			2										4		2	13	
EASO Eastern Screech Owl		1			4	1		3																							9	
EATO Eastern Towhee		7	1	5	29	5	2	6	1	1	18	4	3	11	4	1	24	2	1	4		3	9	3		17	2		7	4	4	178
EAWP Eastern Woodpeewee				2							2			1					1	1	2				1			4		5	19	
FISP Field Sparrow		2	1		14			14	4		7	3		14	5		33	1		21	4		13	5		13	4		20		6	184
FOSP Fox Sparrow		3			5			2			2			1			2					2									17	
GCKI Golden-crowned Kinglet		11			11			9			1			1								4			16			1			54	
GCTH Gray-cheeked Thrush		3	2		6			8	2		28	3		10	3	1	5	1	1	8	5	2	4		1	7	2	1	9		7	119
GRCA Gray Catbird	1 9	11 8	12 4	49	11 9	98	39	254	53	1 7	176	91	34	28 5	87	39	422	63	32	18 5	11 9	40	24 5	67	51	136	91	50	409	49	16 6	3727

Species	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		Grand Total									
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M		S	M	S						
HAWO Hairy Woodpecker	1	2		1				1		1		1	1				2	1			3			2	1	1	1		1			21
HETH Hermit Thrush		32			23	6		31	3		37	4		7	2		35	1		23			21	3		25	2		19		2	276
HOFI House Finch		1			1	1		3						6				13	1			1		2	4					33		
HOWA Hooded Warbler																		1												1		
HOWR House Wren	3	18	8		18	10		20	13		20	12		27	10	1	16			19	9	1	23	8		13	5		24		18	296
INBU Indigo Bunting	2	2	4	1	10	5		12	4		4	2		6	2		4			8	3		4	5		8	7		20		30	143
KEWA Kentucky Warbler							1																							1		
LEFL Least Flycatcher											2						1						1			1				2		7
LISP Lincoln's Sparrow		2	1		2	1		1			3	1		7	2		3	1		5	4		2			5	1		2		4	47
LOWA Louisiana Waterthrush				1																											1	
MAWA Magnolia Warbler	2	12	9		13	8		30	9		28	11		19	14		9	2			1		7	2		7	10	1	13		14	221

Species	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		Grand Total									
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M		S								
MOWA Mourning Warbler		1							1			1												4								
MYWA Myrtle's Yellow-rumped Warbler		4	2		16	1		9	4		14	1		2	2		4	4		5	4		10	1		11		26		1	121	
NAWA Nashville Warbler			2		3			4			1			3								1			1		1		3	19		
NOCA Northern Cardinal	2	30	10	7	15	12	4	17	8	2	30	8	4	22	7	2	24	10	6	12	9	1	15	14	6	16	15	3	33	6	33	383
NOMO Northern Mockingbird		1	2			1		2	2		1			1															1	11		
NOPA Northern Parula		1			1			1			4	2										3				1		4		8	25	
NOWA Northern Waterthrush	1	3	3		3	26		3	3		1	2		1	5		1	2		1	2	1	2	1		12	7		1	5	86	
NSWO Northern Saw-whet Owl														1																	1	
OROR Orchard Oriole												5			1											3					9	

Species	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		Grand Total									
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M		S								
OVEN Ovenbird	1	2	11	24	12	13	3	16	3	5	19	15	8	13	5	12	13	11	6	8	8	8	4	10	16	14	16	13	20	6	15	330
PRAW Prairie Warbler			2						1																						3	
PUFI Purple Finch		14												2																9	46	
RBGR Rose-breasted Grosbeak					2						1	1		2			1								2			1		3	13	
RBWO Red-bellied Woodpecker				1	4			2		1	1			4		1	2	4		1		2	2	3	1		2	2			33	
RCKI Ruby-crowned Kinglet		15	3		44	3		70	2		89	5		55	2		53	1			3		58	5		106	18		49	31	612	
REVI Red-eyed Vireo					1		1	3	1		1	1		7		2	5			3				1	6		4	7		1	44	
RWBL Red-winged Blackbird												2												2							4	
SAVS Savannah Sparrow		1				1		1			1			1							2								1		8	
SCJU Slate-colored Junco		21	1		10			13			5			3	1		20			7			2	5		2				2	92	
SCTA Scarlet Tanager			1			1				1															1		1	1		1	7	
SOSP Song Sparrow	1	23	3		50	6	1	67	4		89	3	1	52	3	2	101	5		75	5	1	79	7	1	99	3		105	63	849	

Species	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		Grand Total									
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M		S								
SSHA Sharp-shinned Hawk		5			1			2			3		1	1							1			2			16					
SWSP Swamp Sparrow		2	4		30	10		17	6		21	11		12	7		14	5		42	9		16	4		21	13		29		25	298
SWTH Swainson's Thrush		3	3		13	5		29	1		19	6		15	8		19	4	2	18	5	2	16	4	4	31	1		14		33	255
TEWA Tennessee Warbler					1			2			8											2			3			3		11	30	
TRES Tree Swallow			1						1								4				9										15	
TRFL Traill's Flycatcher			1			1					5		1	3								2		1	1			7		1	23	
TUTI Tufted Titmouse		5	4	3	8	7	1	5	6		8	1		7	3	5	11		4	8	3	2	12	4		2			3	3	115	
VEER Veery	2	5	4	15	4	7	10	9	6	5	12	5	6	11	4	12	28	6	10	13	5	4	23	4	7	12	9	6	20	4	20	288
WBNU White-breasted Nuthatch		3	2	2				1	2		3	3	1	1	1	2	1		1	5	1		1		2	2	1		1		1	37
WCSP White-crowned Sparrow		1						3			1						1			1		2	1		3					1	14	
WEVI White-eyed Vireo			3			1		3	1	1	2	1					1	3	1		2		1		1	1					22	
WEWA Worm-eating Warbler			1		1							1		3				1	1	2	2		1	1		2		2	2	1		21

Species	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		Grand Total									
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M		S	M	S						
WIWA Wilson's Warbler			1					1			1	1														4						
WIWR Winter Wren					1	1		3			9		1			1				4			1			3	24					
WOTH Wood Thrush	1	5	5	9	9	6	16	14	1	1	20	10	27	12	4	22	14	7	23	24	4	26	25	3	15	22	3	33	48	31	48	502
WPWA Western Palm Warbler								1			7			1					1			3		1						14		
WTSP White- throated Sparrow		11 3	30		20 2	22		131	30		165	10 3		12 7	64		125	50		13 8	36		83	25		145	69		111		80	1849
YBCH Yellow- breasted Chat																			1					1	1		3			6		
YBCU Yellow- billed Cuckoo																				1	1									2		
YBFL Yellow- bellied Flycatcher								1			2			2									1							6		
YBSA Yellow- bellied Sapsucker																							1							1		
YEWA Yellow Warbler						1																			1				2			
YPWA Yellow Palm Warbler		3	2		6			5			7	1		2	2		15			11	9		14			5	2		4		1	89

Species	2010		2011		2012			2013			2014			2015			2016			2017			2018			2019			2020			Grand Total	
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	Fal	S	M	F	S	M	F	S	M	S	M	S		
YSFL Yellow-shafted Flicker	1	2		1	2	1	2	4		1	3		2	2		1	2		3	2	1		2		2	1				1			36
YTVI Yellow-throated Vireo														1																		1	
Grand Total	4 7	60 6	33 0	15 7	89 3	36 1	10 3	103 6	23 5	6 3	108 2	44 7	10 4	96 3	34 4	13 2	114 9	24 4	11 8	89 6	36 5	12 0	90 2	25 4	13 0	101 6	48 3	12 9	142 7	14 3	94 0	15219	