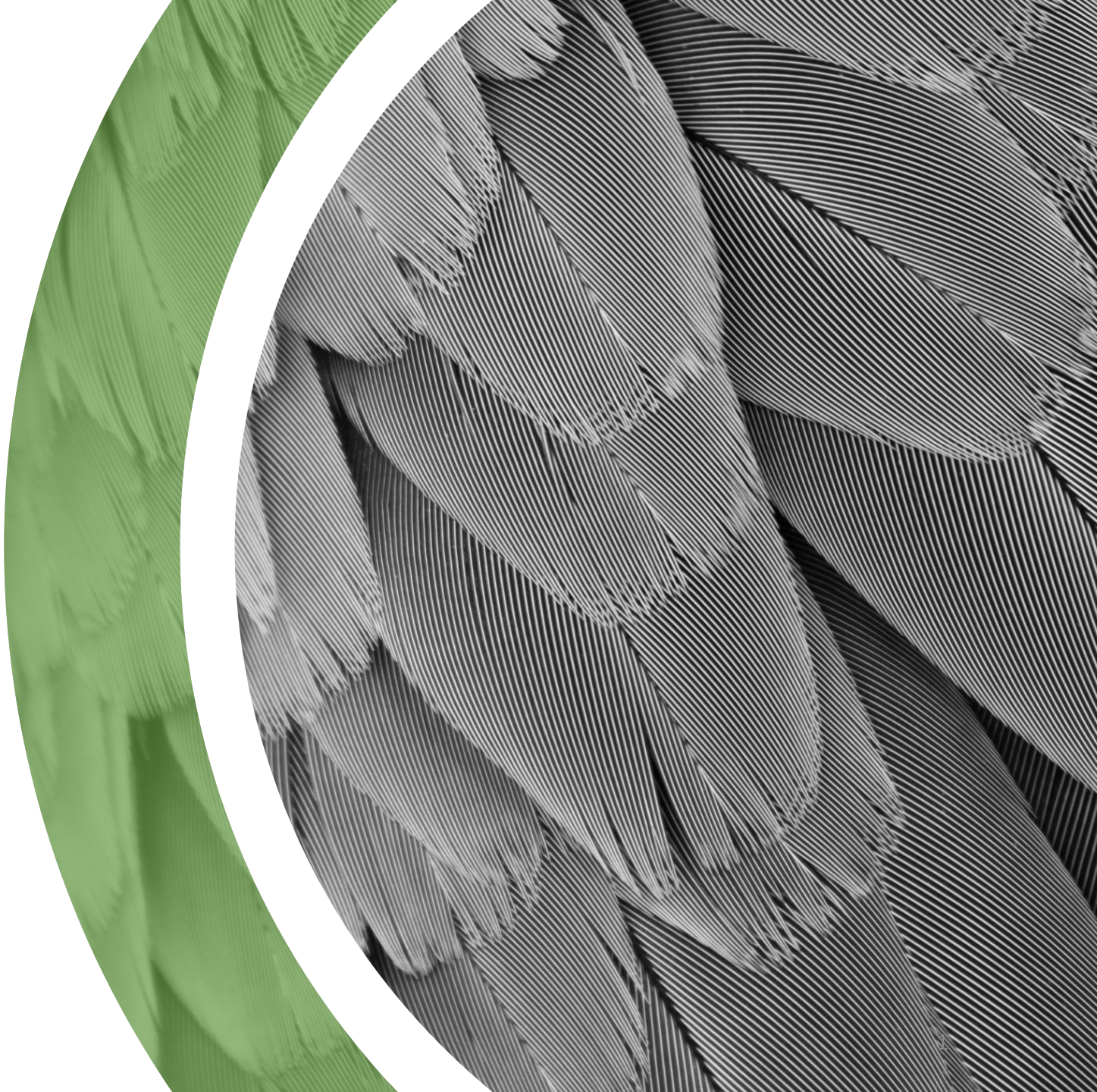
Rushton Woods Banding Station (RWBS) Annual Songbird Banding Report

2021

WCT Bird Conservation Program
Alison Fetterman

WILLISTOWN CONSERVATION TRUST | Rushton Woods Banding Station



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Total New Birds 2021

Spring 493 → MAPS 129 → Fall 1,372 → Year Total 1,994

Introduction

The Willistown Conservation Trust's (WCT) Bird Conservation Program team remained hard at work this year. During 2021, we successfully completed the eleventh year of Monitoring Avian Productivity and Survivorship (MAPS), our breeding bird study at Rushton Woods, and twelve years of spring and fall migration banding.

We banded almost 2,000 birds this year during spring and fall migration and the breeding birds (MAPS) at RWBS. And after twelve years we are still catching new species! In the spring of 2021, a new species to us was a Brewster's Warbler (*Vermivora ieucobronchialis)*, which is a hybrid between a Golden-winged Warbler (*Vermivora chrysoptera)* and Blue-winged Warbler (*Vermivora cyanoptera)*! Additionally, we caught our first ever Cooper's Hawk (*Accipiter cooper)* on September 30! This large, winged predator now has a shiny new bracelet to identify her!

The People

Bird banding occurs under the supervision of four WCT staff that are federally licensed by the Bird Banding Laboratory. We regularly train volunteers that are essential to the successful operation of the banding station. In 2021, we were grateful for all our volunteers, but especially our regular helpers, Jess Shahan, Edwin Shafer, Kirsten Snyder, Victoria Sindlinger, Katie Hogue, Kaitlin Muchio, Kelly Johnson, Molly Love, and Claudia Winter. We were also lucky to host two guest banders this year, Holly Garrod and Scott Weidensaul. Holly joined us a migratory bander, stopping over for the fall to assist with her expert banding skills (Fig. 1). Scott joined us for one day in September, when a first ever Cooper's Hawk was caught, evidently to meet the celebrity guest (Fig. 2)!

Other guests to RWBS included staff from the Pennsylvania Game Commission and BirdsCaribbean, as we collaborate together for a greater conservation impact with these amazing partner organizations.

Figure 1. Holly Garrod. Photo by Jennifer Mathes.

Figure 2. Scott Weidensaul with Copper's Hawk. Photo by Jennifer Mathes

Figure 3. Staff from BirdsCaribbean, PA Game Commission and WCT. Photos by Jennifer Mathes and WCT Staff.

Grand Totals

Since we opened our nets in 2010, we have banded a total of **17,213** songbirds of **102** species! See Appendix A for a full list of birds captured at RWBS from 2010-2021.

Most birds are captured during the fall due to the abundance of newly hatched birds and the length of the season as the birds take more time to travel to their wintering grounds, having to molt fresh feathers and many having to navigate the journey for the first time. Spring migration is shorter because the birds are driven to reach the breeding territories as fast as possible (Fig. 4). However, we capture nearly the same number of species in the spring and fall migratory season (Fig. 5).

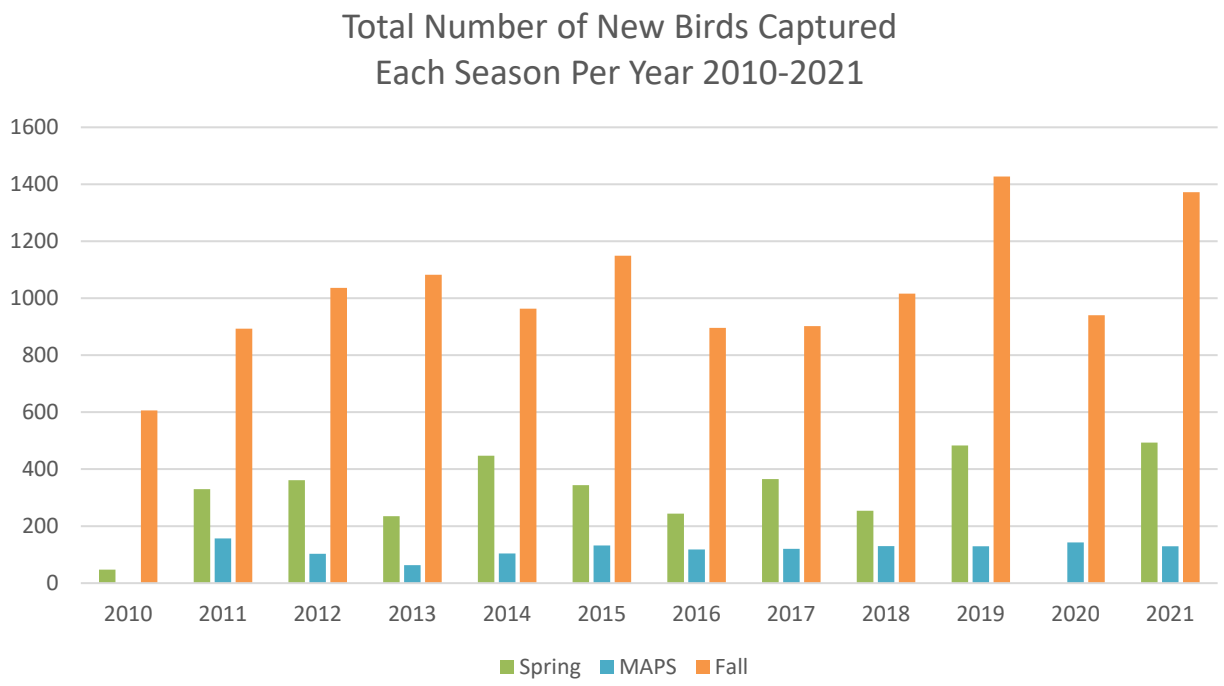

Figure 4. Total Captures Per Season 2010-2021 at RWBS.

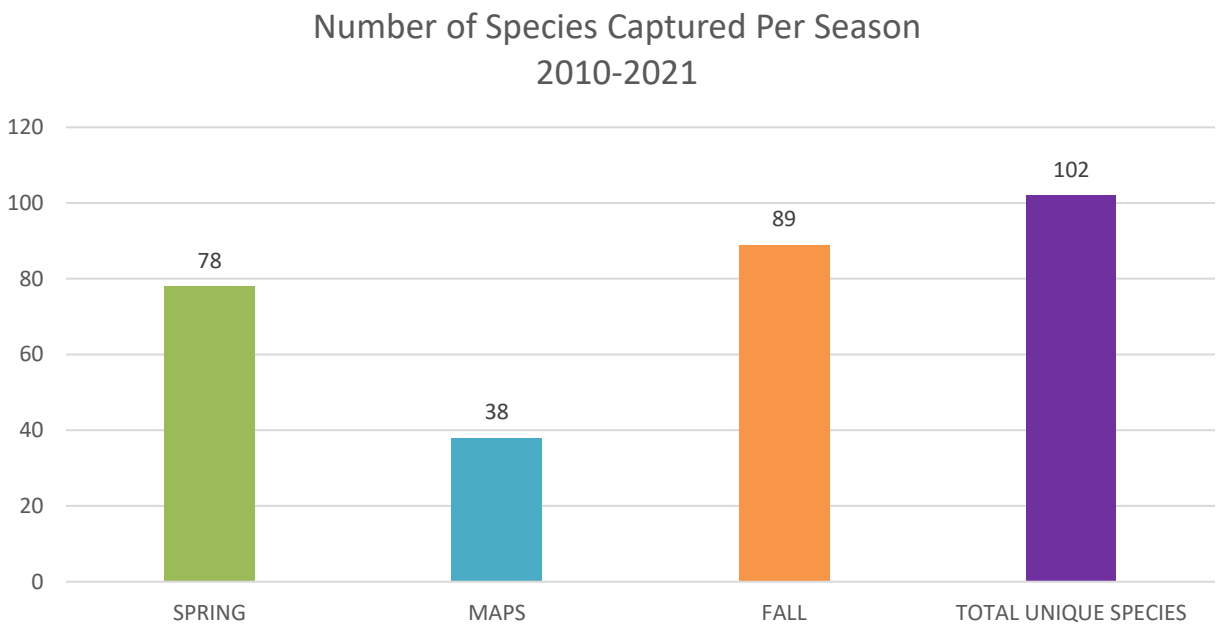

Figure 5. Total number of species captured 2010-2021 at RWBS.

2021 Highlights

Fall Out!

On May 4th, 2021, banders arrived at Rushton in a heavy fog. While we were tucked in our beds the night before, light rain and heavy fog started settling in around midnight. Also being the peak of spring migration movement of songbirds traveling to their breeding grounds (Fig. 6), this weather made it impossible for birds to keep flying and caused a “fall out”. Birds settled, unable to disperse and we ended up capturing more than six times the average number of birds caught on a normal spring day (Fig. 7). The morning also yielded the most species in one spring morning with twenty-six, including thrushes, sparrows, wrens, finches, swallows and warblers, and a first time ever Brewster’s Warbler!

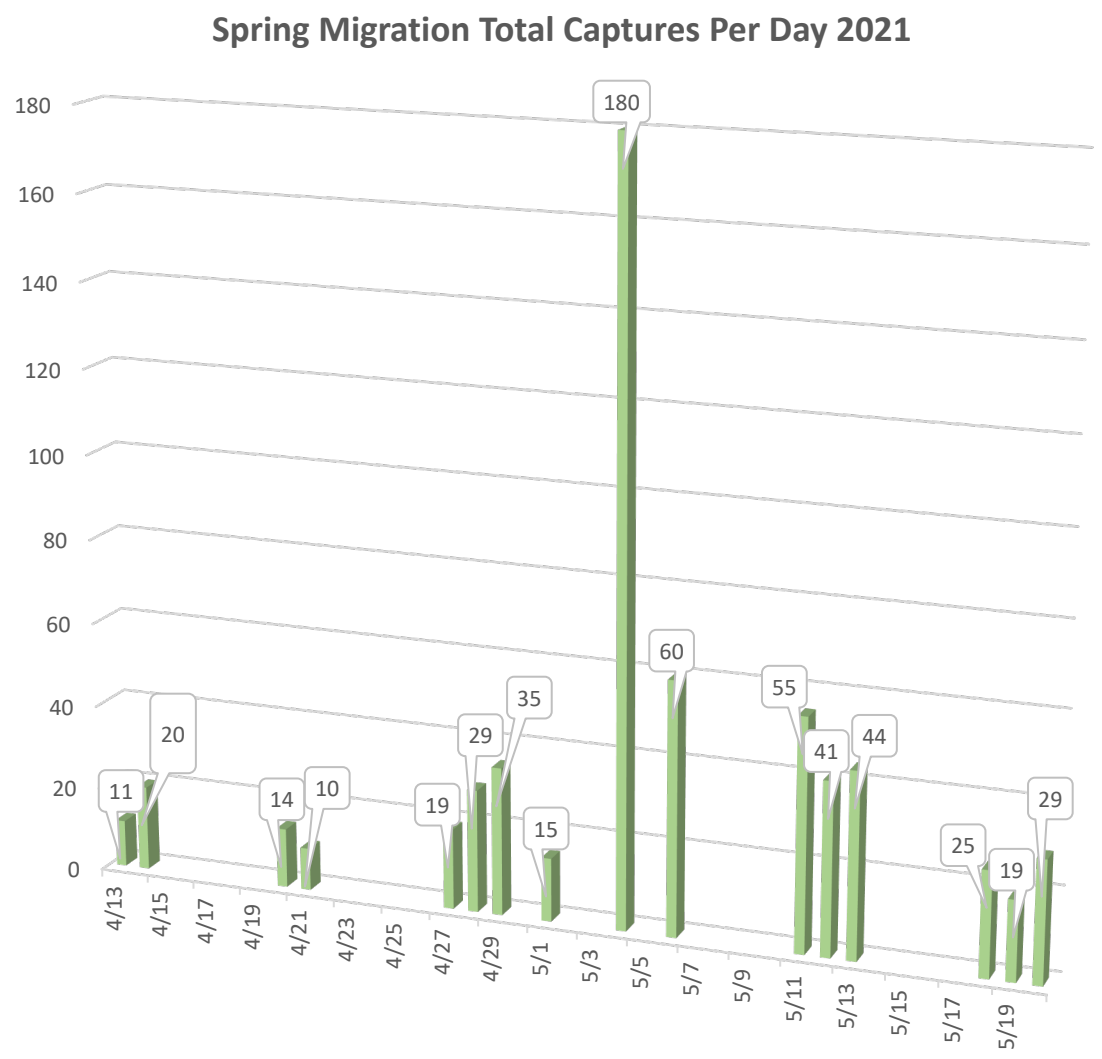

Figure 7. Total number of birds captured per day at RWBS during spring migration 2021.

Brewster’s Warbler

Among the masses on the morning of the fallout was an uncommon bird, a Brewster’s Warbler. This bird is the result of a hybridization between a Blue-winged Warbler (BWWA) and Golden-winged Warbler (GWWA) where their species ranges overlap. Recent research has shown that BWWA and GWWA are very closely related and main differences are in coloration (Towes et al. 2016). Catching this hybrid was a rare and exciting event!

Brewster's Warbler, Photo by Blake Goll

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Blue-winged Warbler, Photo by Blake Goll

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Golden-winged Warbler, Photo from allaboutbirds.org

Gaining Fuel for the Flight

Rushton continues to show us how valuable a stopover it can be for songbirds to fuel up! Songbirds can spend up to 30% of their year on migration, but 70% of that time is not spent flying, it's spent stopping over at sites to fuel up for longer flights (Alerstam & Lindstrom 1990). Birds need to gain fat to make a long flight, and through our recaptures, we can see some of that. In the fall of 2021, we noticed we were catching a lot of American Redstarts with a lot of visible fat. While we don't recapture many birds, we did have one American Redstart that was caught three times in September. This hatch year female bird gained 27% of its body weight in just 10 days!

We look forward to the results of a study underway from graduate student, Katie Hogue, at the University of Pennsylvania to analyze songbird weight-gain data at RWBS for all of our species.

Figure 8. A female American Redstart captured and released at RWBS.

Species Groups

It is often useful to examine the species we catch by their taxonomic group (Fig. 9). Breaking the species into groups can give us some insight into general habitat use for species that have similar dietary needs and foraging techniques. For example, we may only catch five Black and White Warblers and ten Magnolia Warblers in the fall, but we capture over 200 warbler species each year. So, since most warblers are tree top dwelling, insect gleaners, if we group them together, we may gain a better understanding of their habitat needs. The areas where we catch birds on Rushton Woods Preserve are dominated by dense understory with berry producing species, and tall black walnut trees, surrounded by large patches of open areas. This is reflected in our large numbers of Catbirds and other mimics (Northern Mockingbirds and Brown Thrashers); Thrushes, including Wood Thrush, Veery, Grey-cheeked Thrush, Hermit Thrush, Swainson's Thrush, American Robin and Eastern Bluebird; and Sparrows which include Song Sparrow, Field Sparrow and White-throated Sparrows. Our migration nets are set within a hedgerow which supports the dense understory as well as tall mature trees that provide essential food and foraging habitat for many Warbler species.

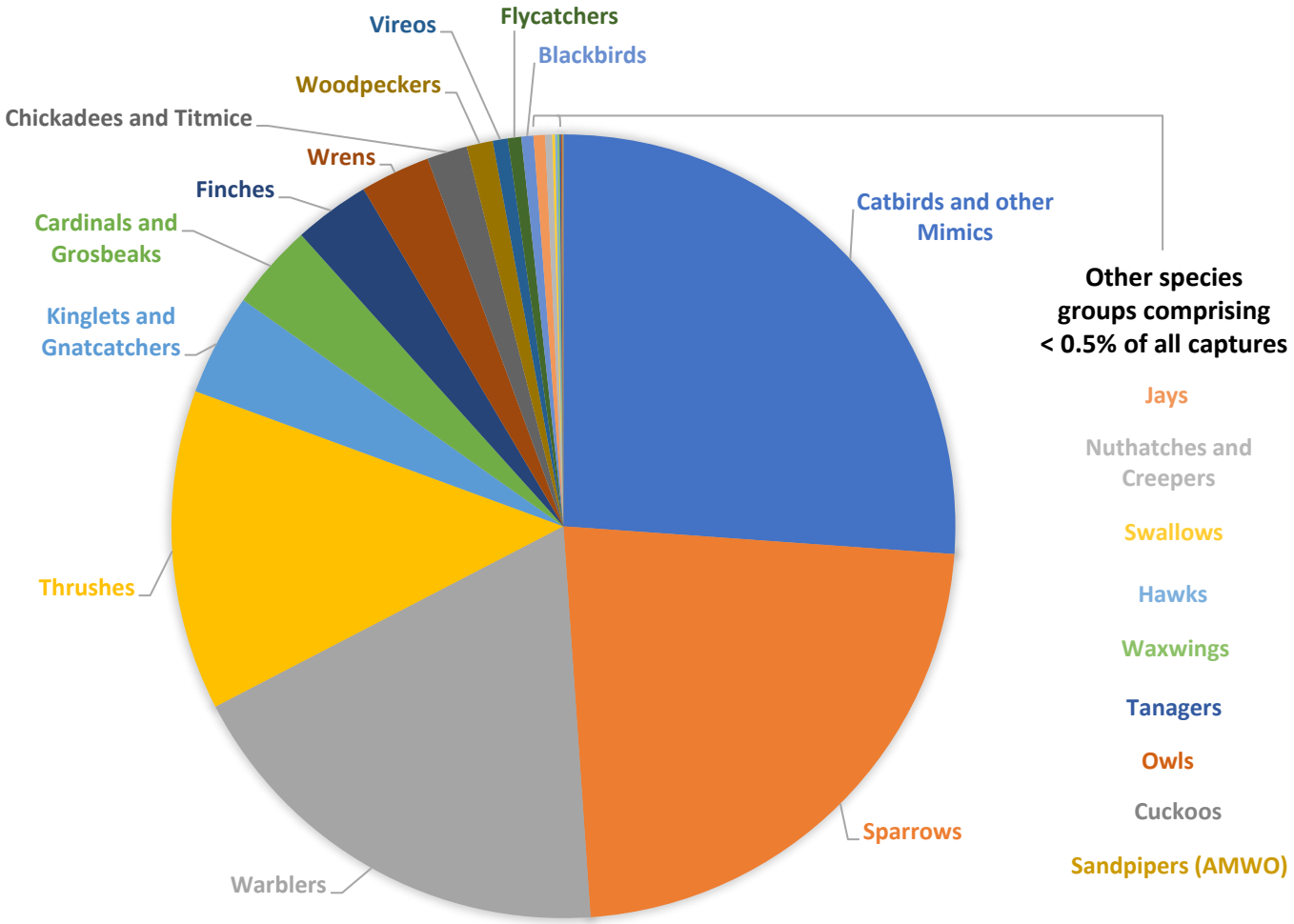


Figure 9. Percent of birds captured by taxonomic group at RWBS 2010-2021.

Species Groups Capture Rates

Furthermore, we can assess the changes in the abundance of the species group over time. You can see in Fig. 10, where the dashed line represents the linear tend line over time, that Catbirds, Warblers and Thrushes captures are increasing, while Sparrows are decreasing. We know that our hedgerow started as early successional shrub scrub and over the twelve years has not been maintained, allowing the tree species to grow taller and some larger, berry producing subcanopy species such as Spice Bush and Autumn Olive to grow taller and denser. These species will benefit the three groups that are increase, especially during fall migration, while it decreases the habitat quality for sparrow species.

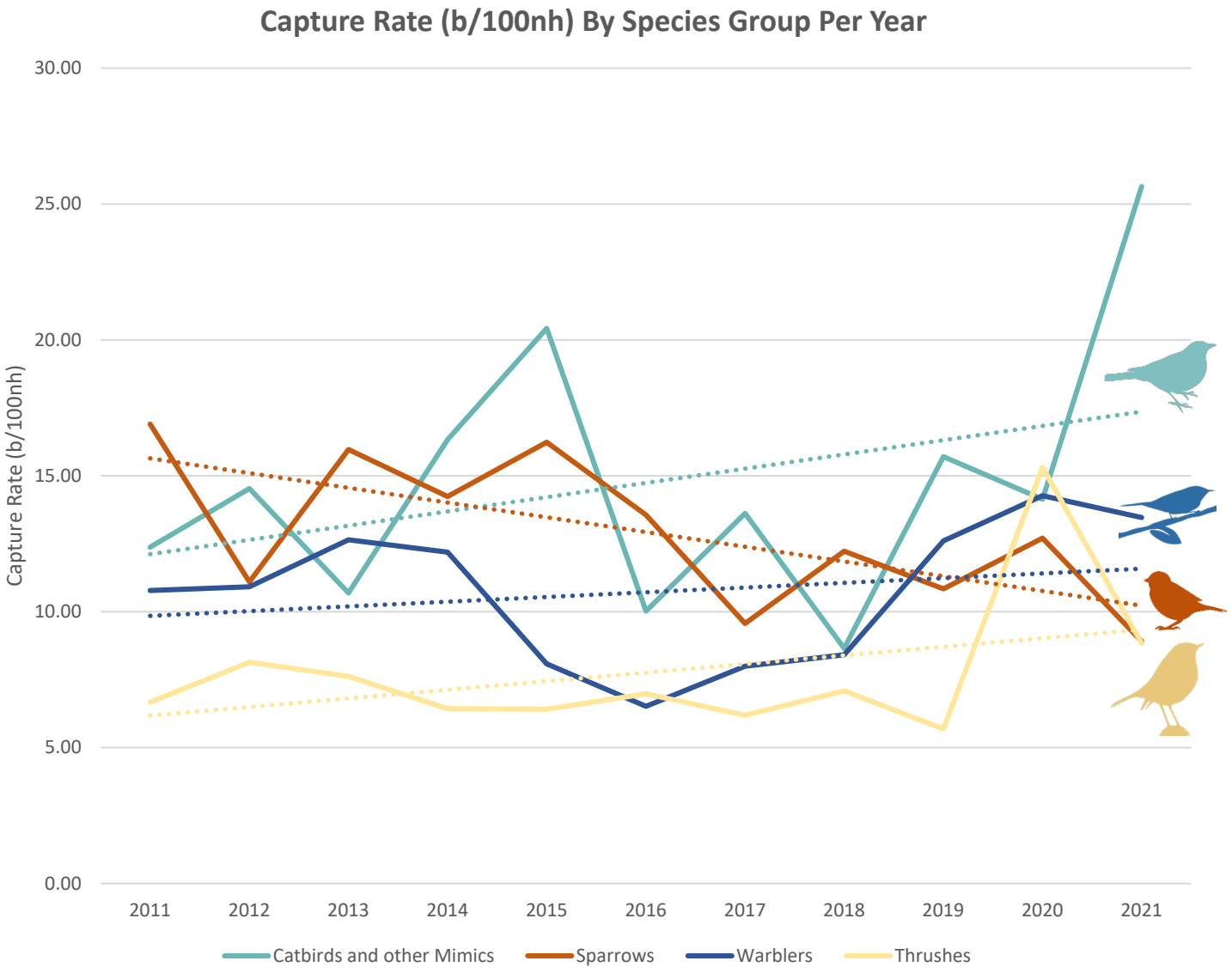


Figure 10. Capture Rates (Birds per 100 net hours) for the four most abundantly captured birds by taxonomic group at RWBS 2010-2021.

Top Five Species Spring

Table 1. Top five species captured per year during spring migration 2010-2021.

Spring Migration Top Five Species Captured per Year												
Species	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
GRCA	19	124	98	53	91	87	63	119	67	91		115
WTSP		30	22	30	103	64	50	36	25	69		54
COYE	3	33	45	27	59	25	19	39	13	43		49
OVEN		11	13		15		11					41
NOCA							10		14			
AMRO				12					11			
MAWA						14						
HOWR	3			13	12	10						
NOWA			26									
CACH		11										
BAOR	5											
BLJA	2											
AMGO								16		60		21
BAWW								14		33		

Each year as conditions vary slightly, we record the top five species captured per season. During all seasons, the most abundant species in all ten years has been the Gray Catbird (GRCA).

In spring migration, with the exception of 2010, which was still a pilot year, the most commonly captured species following GRCA are, White-throated Sparrow (WTSP) and Common Yellowthroat (COYE). In 2021, Ovenbird (OVEN) and American Goldfinch (AMGO) made the top five list (Table 1).

Top Five Species MAPS

Table 2. Top five species captured per year during MAPS 2011-2021.

MAPS Top Five Species Captured Per Year											
Species	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
GRCA	49	39	17	34	39	32	40	51	50	49	40
WOTH	9	16	15	27	22	23	26	15	33	31	22
OVEN	24		5	8	12	6	8	16	13		13
VEER	15	10	5	6	12	10		7	6		15
COYE		7		5			10	9			8
CARW			4				4			12	
DOWO					11	9					
NOCA						6			3	6	
AMRO	17									15	
CACH		5									

At our MAPS station GRCA's have always been followed by Wood Thrush (WOTH). Most years ground nesting Ovenbird (OVEN) and Veery (VEER) are among the most abundant, 2021 being no exception. And finally, Common Yellowthroat (COYE) also made the top five in 2021 (Table 2).

Top Five Species Fall

Table 3. Top five species captured during fall migration 2010-2021.

Fall Migration Top Five Species Captured Per Year												
Species	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
GRCA	118	119	254	176	285	422	185	245	136	409	166	576
WTSP	113	202	131	165	127	125	138	83	145	111	80	84
SOSP		50	67	89	52	101	75	79	99	105	63	46
RCKI		44	70	89	55	53		58	106			
COYE					59		49	61	66	83	56	49
AMRO	48	42	71				47				74	
AMGO										119		65
HETH	32					35						
NOCA	30											

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! Each year, the top three species captured have the GRCA, the WTSP that spend the winter and Song Sparrows (SOSP). In fall of 2021, these species were followed by Common Yellowthroat (COYE) and American Goldfinch (AMGO). It's worth noting, that fall of 2021 marked the most GRCA captures ever, with 576 birds, that's almost 200 more than the last highest in 2019! At RWBS, we are just in the beginning of our long-term monitoring efforts, which are essential to determining trends and causes of these local fluctuations of bird populations. It's possible that Rushton Woods Preserve is a critical island habitat surrounded by increasing human development. However, more information is needed to make deductions.

Top Ten Species

SPECIES	SPRING	MAPS	FALL	ALL SEASONS TOTAL 2010-2021
Gray Catbird	927	440	3091	4458
White-throated Sparrow	483		1540	1987
Common Yellowthroat	355	69	645	1069
Song Sparrow			849	898
Ruby-crowned Kinglet			599	643
Wood Thrush		239		577
Northern Cardinal	95			429
American Goldfinch	116			462
Ovenbird	134	114		406
Veery		94		346

When we total our captures throughout the year, a few species dominate the landscape. Table 4 is a list of the top ten species captured across all seasons at the Rushton Woods Banding Station. These top ten species account for 67% of all captures!

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. 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 5).

Table 5. 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
Spring 2021	16	493	1095.7	45.0
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
MAPS 2021	8	129	446.8	28.9
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
Fall 2021	23	1372	1331.7	103.0

Plotting the capture rates over time (Fig. 11), we can see a decrease in capture rates during spring migration, and increase during the breeding season (MAPS) and a relatively stable rate during fall migration.

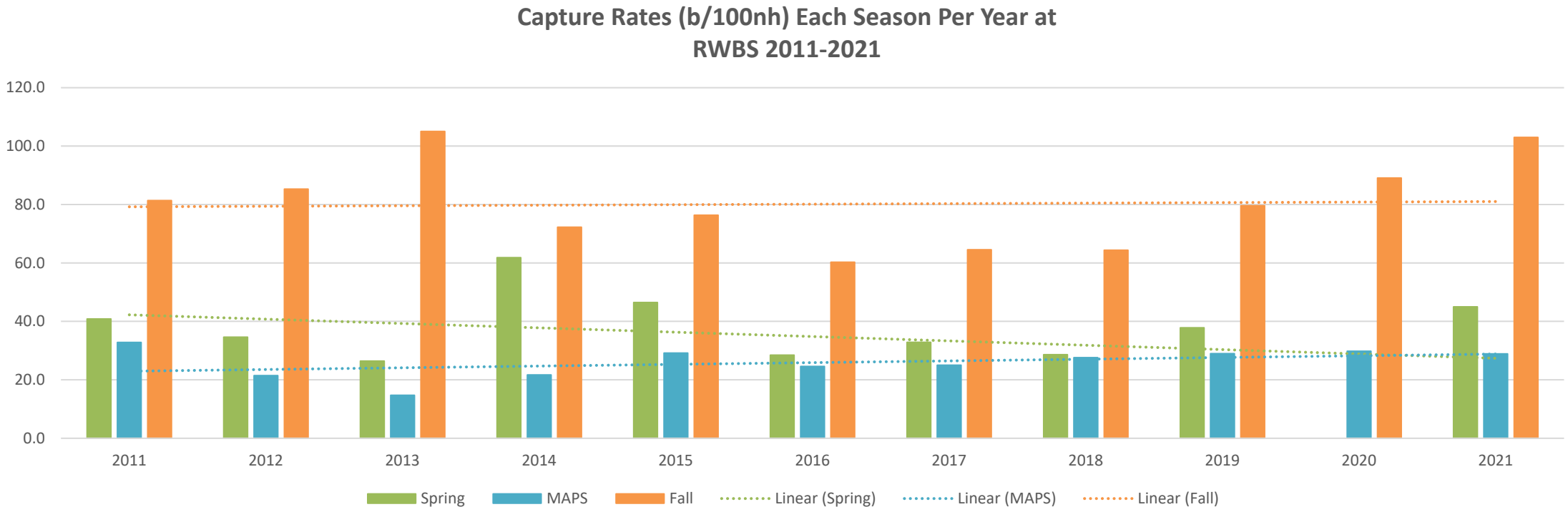


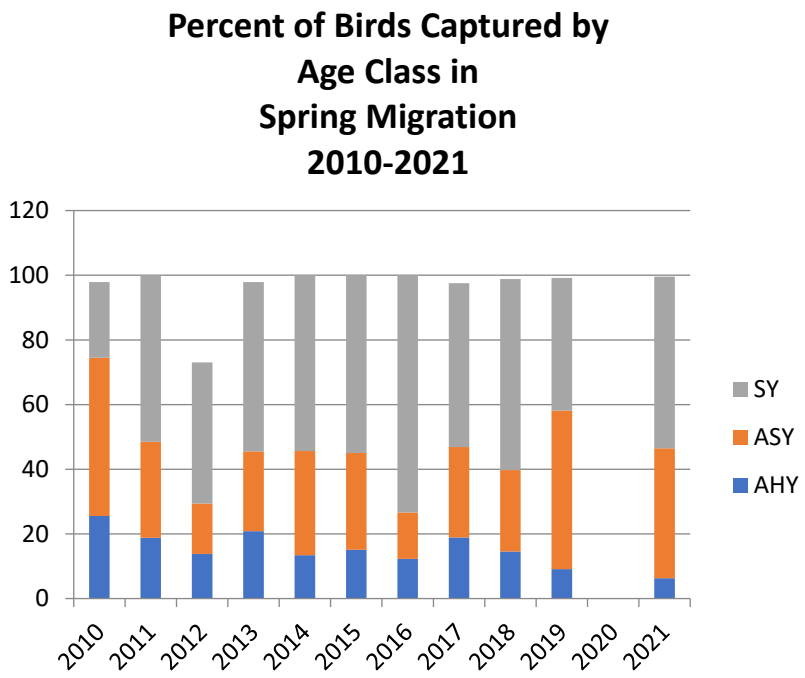
Figure 11. Capture rates (birds per 100 net hours) captured each season per year at RWBS 2010-2021.

Age and Sex Ratios

Most songbirds follow a regular, annual molt pattern, where each fall they switch out their feathers for a fresh wardrobe. Typically, birds in their first or “hatching” year (HY) replace only body feathers and one tract or a portion of one tract of covert feathers in the fall. Each year in the temperate zone, we use January first to delineate an arbitrary “birthday”, so if a bird hatched the previous summer they are named second year (SY) birds. In a bird’s second fall and everyone after, they replace all body and flight feathers and we can only 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 spring migration at RWBS we capture mostly second year (SY) birds on their first northward migration and many after second year (ASY) birds racing north to secure the best breeding territory (Figure 12).

Spring



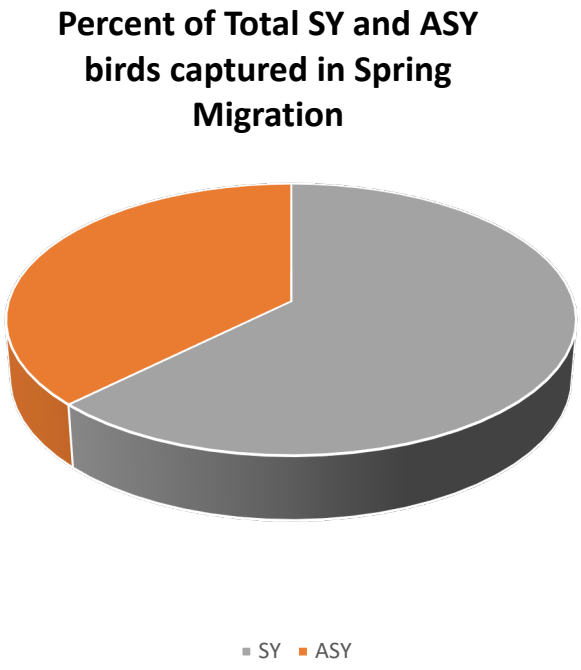
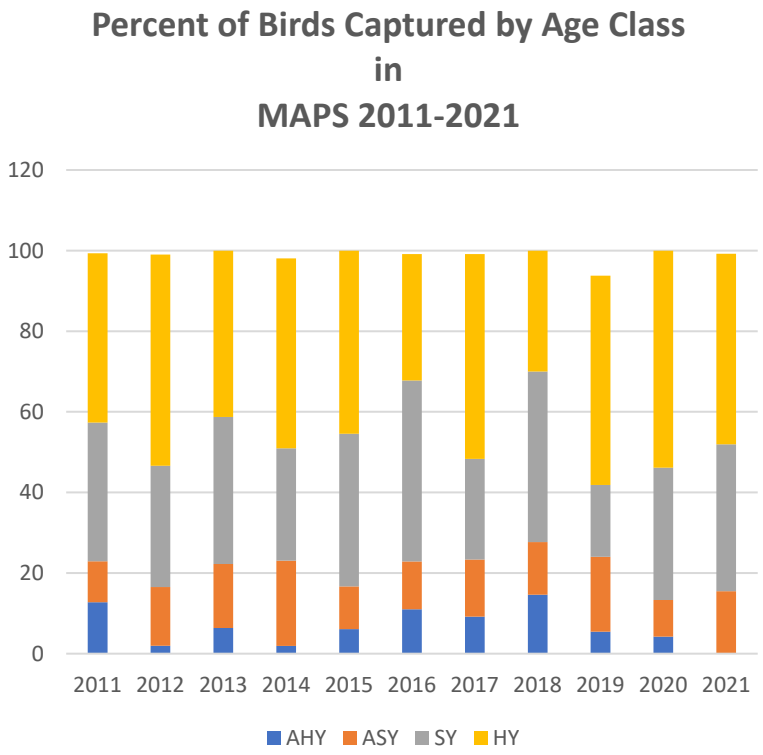


Figure 12. Left; Percent of birds captured by age class during spring migration each year at RWBS; AHY (After Hatch Year), ASY (After Second Year), SY (Second Year). Right; Percent of total SY and ASY birds captured during spring migration at RWBS 2010-2021.

Age and Sex Ratios

Once the birds have established breeding territories, we start our breeding season monitoring, banding birds only once every ten days following the Monitoring Avian Populations and Survivorship (MAPS) protocol. At RWBS, during MAPS banding, we typically see second year (SY) and after second year (ASY) birds early in the summer as they pair up and start to nest. Then, in July, will start the "super baby period", when the majority of the birds we catch are fresh of the nest young wandering around the forest (Figure 13).

MAPS



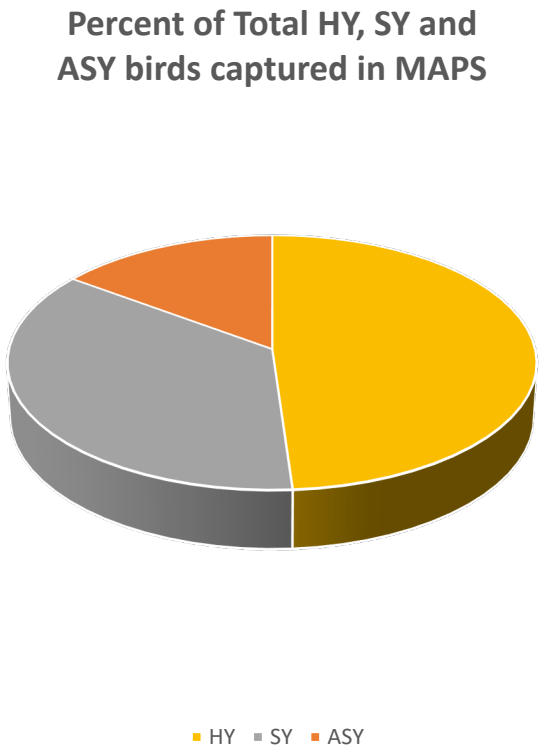
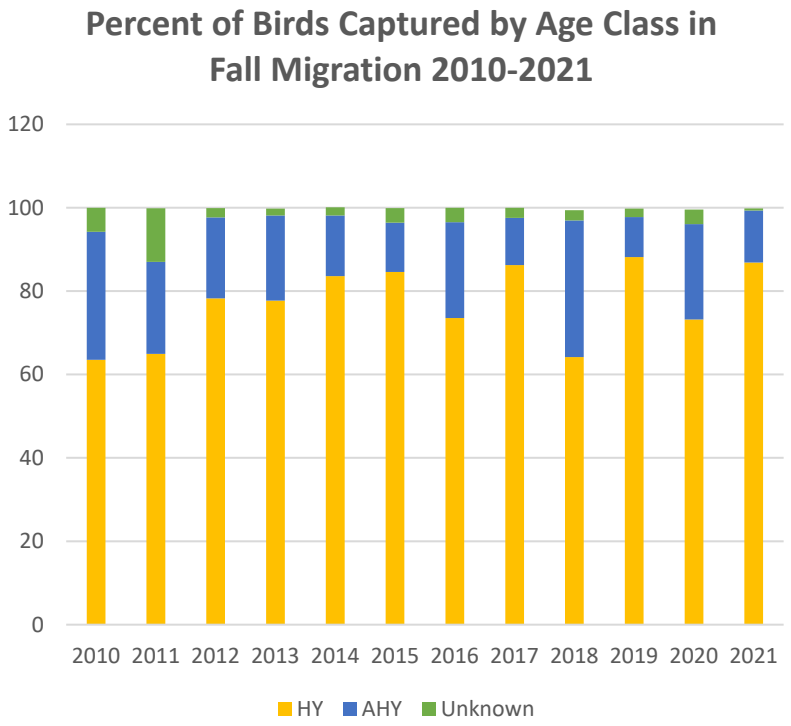


Figure 13. Left; Percent of birds captured by age class during MAPS each year at RWBS; AHY (After Hatch Year), ASY (After Second Year), SY (Second Year), HY (Hatch Year). Right; Percent of total HY, SY and ASY birds captured MAPS at RWBS 2010-2021.

Age and Sex Ratios

Finally, fall migration is bursting with young (HY) birds just weeks to months out of the nest starting their first journey south! The older, AHY birds may take a more coastal migration route and miss our inland station (Figure 14).

Fall



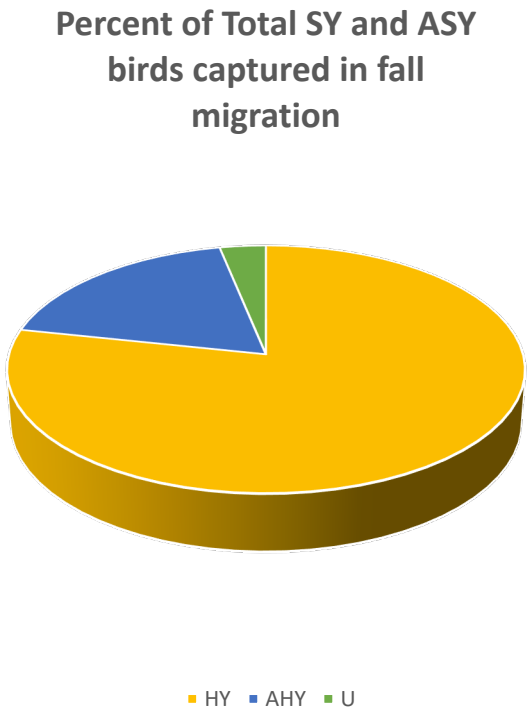


Figure 14. Percent of birds captured by age class during fall migration each year at RWBS; HY (Hatch Year), AHY (After Hatch Year) and Unknown Age (U). Right; Percent of total HY and AHY and U birds captured during fall migration at RWBS 2010-2021.

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, breeding, over-wintering and year-round resident songbirds. Banding allows us to track individuals, which is important in factoring survival, migratory turnover rates, and longevity.

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Appendix A. Master table of all individuals captured at Rushton Woods Banding Station 2010-2021. S=Spring migration, M=MAPS, F=Fall migration.

SPECIES	2010		2011			2012			2013			2014			2015			2016			2017			2018			2019			2020		2021			TOTAL
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	M	F	S	M	F	
ACFL Acadian Flycatcher		3						1	1	1							1					1		1			3		1						13
AMGO American Goldfinch		4	2		4	1		6			8	1		21	2		14	4		35	16		26	9		22	60		119		22	21		65	462
AMRE American Redstart		4	2		12	12		2			8	6		17	3		9				3		7			14	13		53		34	9		36	244
AMRO American Robin		48	6	17	42	9	2	71	12	1	17	8	4	35	6	3	7	6	3	47	5	2	32	11	6	53	4	2	26	15	74	4	2	30	610
AMWO American Woodcock								1							1																			1	3
BAOR Baltimore Oriole	5		8			2						2			6			1						3			7			1		10			45
BARS Barn Swallow						2									2																				4
BAWW Black-and-white Warbler		11	4		7	5		8	2		8	12		8	9		10	7		15	14		11	4		14	33		27		29	17		14	269
BBWA Bay-breasted Warbler														1																					1
BGGN Blue-gray Gnatcatcher												1			4									1			1								7
BHCO Brown-headed Cowbird				1	3					1					1			1		1	2			2	1		2					1	3	6	25
BHVI Blue-headed Vireo																	1						1				3							1	6
BLGR Blue Grosbeak																															1				1
BLJA Blue Jay	2		6	4	9	1	1	2	1	1	3	1	2		2		4	2	5	1		1	8	2	2		1	1	3	3	4	1	1	8	82
BLPW Blackpoll Warbler					3			1			2			2						2						3					2			5	20
BRCR Brown Creeper		1			3						1			1			2									2								1	11
BRTH Brown Thrasher		1		1		3		1			2	1		3	1		1			3	1	1	1				1		1		1	2		3	28
BRWA Brewster's Warbler																																1			
BTBW Black-throated Blue Warbler		6	1		27	6		24	10		31	8		21	1		18			21	2		8	2		24	2		39		20	9		34	314
BTNW Black-throated Green Warbler											1			2																	3			2	8
BWWA Blue-winged Warbler			1									1			4								2				2				1	2		1	14
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	5		4	167
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	1	3	9	153
CAWA Canada Warbler		1	3		1	4		2	2		4	6		5	5		1	3		2				4		1		1	2		1	3		3	54
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	4		7	136
CMWA Cape May Warbler																										1									1
COGR Common Grackle																			2																2
COHA Cooper's Hawk																																		1	1
CONW Connecticut Warbler		4			2			3			8			3			6			3			1			4			2		2			5	43

SPECIES	2010		2011			2012			2013			2014			2015			2016			2017			2018			2019			2020		2021			TOTAL
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	M	F	S	M	F	
COYE Common Yellowthroat	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	49	8	49	1069
CSWA Chestnut-sided Warbler		1				1		1			2	2		5	1		1									2			9		2			5	32
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		2	3	83
EABL Eastern Bluebird			1																		4						1				1	2			9
EAKI Eastern Kingbird												1																							1
EAPH Eastern Phoebe					3									1			1			2									4		2			1	14
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	2	2	10	192
EAWP Eastern Wood-pewee				2							2				1					1	1	2				1			4		5	2		6	27
FISP Field Sparrow		2	1		14			14	4		7	3		14	5		33	1		21	4		13	5		13	4		20		6	5		5	194
FOSP Fox Sparrow		3			5			2			2			1			2						2												17
GCKI Golden-crowned Kinglet		11			11			9			1			1									4			16			1					18	72
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	1	1	6	127
GRCA Gray Catbird	19	118	124	49	119	98	39	254	53	17	176	91	34	285	87	39	422	63	32	185	119	40	245	67	51	136	91	50	409	49	166	115	40	576	4458
HAWO Hairy Woodpecker	1	2		1				1		1		1	1					2	1		3			2	1	1	1	1		1		3			24
HETH Hermit Thrush		32			23	6		31	3		37	4		7	2		35	1		23			21	3		25	2		19		2	5		19	300
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	11	1	11	319
INBU Indigo Bunting	2	2	4	1	10	5		12	4		4	2		6	2		4			8	3		4	5		8	7		20		30	9		14	166
KEWA Kentucky Warbler							1																												1
LEFL Least Flycatcher												2						1						1			1				2	1			8
LISP Lincoln's Sparrow		2	1		2	1		1			3	1		7	2		3	1		5	4		2			5	1		2		4			1	48
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	9		11	241
MOWA Mourning Warbler		1						1				1			1																				4
MYWA Mytrle's Yellow-rumped Warbler		4	2		16	1		9	4		14	1		2	2		4	4		5	4		10	1		11			26		1	1			122
NAWA Nashville Warbler			2		3			4			1			3									1				1		1		3			2	21
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	17	3	26	429
NOMO Northern Mockingbird		1	2			1		2	2		1				1																1			1	12

SPECIES	2010		2011			2012			2013			2014			2015			2016			2017			2018			2019			2020		2021			TOTAL
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	M	F	S	M	F	
NOPA Northern Parula		1			1			1			4	2											3				1		4		8	2			27
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	15		4	105
NSWO Northern Saw-whet Owl														1																					1
OROR Orchard Oriole												5			1												3								9
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	41	13	22	406
PRAW Prairie Warbler			2						1																										3
PUFI Purple Finch		14												2												21					9				46
RBGR Rose-breasted Grosbeak					2						1	1		2			1									2			1		3			1	14
RBWO Red-bellied Woodpecker				1	4		2			1	1			4		1	2	4		1		2	2	3	1		2	2				1	1	2	37
RCKI Ruby-crowned Kinglet		15	3		44	3		70	2		89	5		55	2		53	1			3		58	5		106	18		49		31	2		29	643
REVI Red-eyed Vireo					1		1	3	1		1	1		7		2	5			3					1	6		4	7		1		3	27	74
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			7	99
SCTA Scarlet Tanager			1			1				1																1		1	1		1	1	1	2	11
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	2	1	46	898
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	8		15	321
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	12		39	306
TEWA Tennessee Warbler					1			2			8												2			3			3		11			4	34
TRES Tree Swallow			1						1									4			9											1			16
TRFL Traill's Flycatcher			1			1						5		1	3								2		1	1			7		1			2	25
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	1	1	2	119
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	15	15	28	346
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	1	1		39
WCSP White-crowned Sparrow		1						3			1						1			1			2	1		3					1	2		1	17
WEVI White-eyed Vireo			3			1		3	1	1	2	1					1	3	1		2			1		1	1					3			25
WEWA Worm-eating Warbler			1		1							1		3			1	1	2	2		1	1		2		2		2	1		2		1	24
WIWA Wilson's Warbler			1					1						1	1																	1			5
WIWR Winter Wren					1	1		3			9			1			1						4			1					3			1	25
WOTH Wood Thrush	1	5	5	9	9	6	16	14	1	15	20	10	27	12	4	22	14	7	23	24	4	26	25	3	15	22	3	33	48	31	48	7	22	46	577

SPECIES	2010		2011			2012			2013			2014			2015			2016			2017			2018			2019			2020		2021			TOTAL
	S	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	S	M	F	M	F	S	M	F	
WPWA Western Palm Warbler								1			7			1						1			3			1									14
WTSP White-throated Sparrow		113	30		202	22		131	30		165	103		127	64		125	50		138	36		83	25		145	69		111		80	54		84	1987
YBCH Yellow-breasted Chat																				1						1	1		3						6
YBCU Yellow-billed Cuckoo																				1	1													1	3
YBFL Yellow-bellied Flycatcher								1			2			2												1								1	7
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			7	96
YSFL Yellow-shafted Flicker	1	2		1	2	1	2	4		1	3		2	2		1	2		3	2	1			2		2	1			1			5		41
YTVI Yellow-throated Vireo														1																					1
GRAND TOTAL	**47**	**606**	**330**	**157**	**893**	**361**	**103**	**1036**	**235**	**63**	**1082**	**447**	**104**	**963**	**344**	**132**	**1149**	**244**	**118**	**896**	**365**	**120**	**902**	**254**	**130**	**1016**	**483**	**129**	**1427**	**143**	**940**	**493**	**129**	**1372**	**17212**