McGill Bird Observatory

Annual Report

2023

Migration Monitoring & MAPS Banding Station

Ste-Anne-de-Bellevue, Quebec, Canada

A project of The Migration Research Foundation Inc.

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2023 Season Overview

The 2023 banding season at McGill Bird Observatory was conducted from April through November, encompassing spring migration, the MAPS breeding bird monitoring program, and fall migration monitoring. This report summarizes the results of our standardized monitoring efforts.

6,528
Total Captures

100
Species Recorded

5,244
New Bands

176
Active Days

Capture Summary

Capture Type	Count	Percentage
New Bands	5,244	80.3%
Recaptures (same season)	1,032	15.8%
Returns (previous years)	241	3.7%

Seasonal Distribution

Season	Captures	Species	Days
Spring Migration (Apr–May)	1,352	70	43
MAPS Season (Jun–Jul)	1,264	57	29
Fall Migration (Aug–Nov)	3,583	86	97

Key Highlights

- Peak capture day: Sep with the highest daily totals
- Most abundant species: WTSP (716 captures)
- Species diversity: 100 species recorded across all seasons
- Return rate: 3.7% of captures were returning birds

Spring Migration (April–May)

Spring migration monitoring captured the northward movement of neotropical migrants and short-distance migrants returning to breeding grounds. The spring season recorded1,352 captures of 70 species over 43 monitoring days.

1,352
Spring Captures

70
Species

1,024
New Bands

Top Spring Migrants

Species	Count	% Total	New	Recap
TEWA	208	15.4%	200	8
RCKI	136	10.1%	124	12
YEWA	75	5.5%	43	26
WTSP	72	5.3%	66	6
RWBL	62	4.6%	38	15
MAWA	61	4.5%	49	12
BAOR	49	3.6%	15	27
NOWA	42	3.1%	27	15
AMRO	36	2.7%	29	6
SOSP	36	2.7%	17	10
AMGO	30	2.2%	21	3
CEDW	29	2.1%	29	0
MYWA	29	2.1%	28	1
AMRE	28	2.1%	17	8
COYE	26	1.9%	16	7

MAPS Breeding Season (June–July)

The Monitoring Avian Productivity and Survivorship (MAPS) program operates during the breeding season to assess local breeding bird populations, productivity (young:adult ratios), and survivorship through standardized mist-netting protocols.

1,264
MAPS Captures

57
Species

1,107
New Bands

Age Distribution (Breeding Season)

Age Class	Count	Percentage
0	1	0.1%
1	99	7.8%
2	300	23.7%
4	529	41.9%
5	176	13.9%
6	146	11.6%
7	6	0.5%
8	3	0.2%
Unknown	4	0.3%

Top Breeding Species

Species	Count	New	Returns
TRES	371	371	0
AMKE	106	106	0
SOSP	79	59	6
GRCA	68	55	4
CSWA	45	36	2

YEWA	44	37	3
BCCH	42	33	4
OVEN	41	34	5
EABL	40	40	0
SWSP	32	23	2
COYE	32	21	7
DOWO	27	19	1

Fall Migration (August–November)

Fall migration monitoring tracked the southward passage of breeding adults and hatching-year birds. The fall season is typically the busiest period, with larger numbers of young birds captured as they make their first migratory journey.

3,583
Fall Captures

86
Species

2,956
New Bands

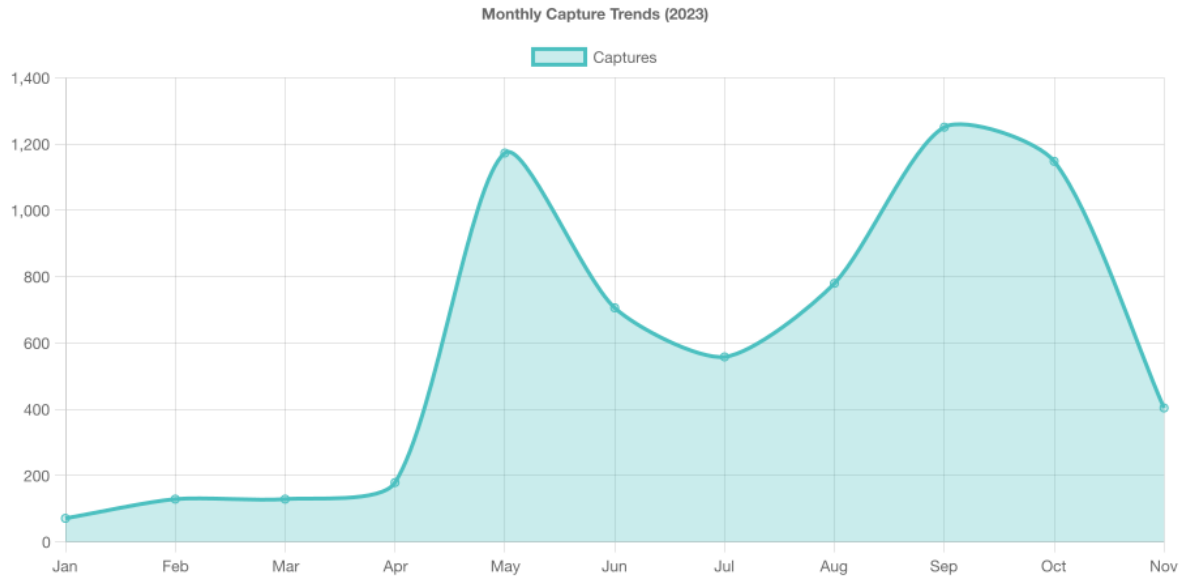


Figure 1. Monthly capture totals for 2023

Top Fall Migrants

Species	Count	% Total	New
WTSP	625	17.4%	529
SCJU	296	8.3%	261
MAWA	226	6.3%	196
RCKI	222	6.2%	196
SWTH	179	5.0%	143
AMRE	158	4.4%	139
AMGO	144	4.0%	128

BCCH	136	3.8%	21
NSWO	128	3.6%	121
SOSP	120	3.3%	99
REVI	102	2.8%	78
GCKI	89	2.5%	88

Notable Species Accounts

The following accounts highlight species of particular interest based on capture numbers, population trends, or conservation significance.

WTSP

Total: 716 | New bands: 609 | Recaptures: 103 | 11.0% of total

WTSP was the most abundant species during the 2023 season, representing 11.0% of all captures. The recapture rate of 14.4% indicates site fidelity during the monitoring period.

TRES

Total: 382 | New bands: 382 | Recaptures: 0 | 5.9% of total

TRES was the #2 most captured species during the 2023 season, representing 5.9% of all captures.

RCKI

Total: 358 | New bands: 320 | Recaptures: 38 | 5.5% of total

RCKI was the #3 most captured species during the 2023 season, representing 5.5% of all captures. The recapture rate of 10.6% indicates site fidelity during the monitoring period.

SCJU

Total: 345 | New bands: 290 | Recaptures: 49 | 5.3% of total

SCJU was the #4 most captured species during the 2023 season, representing 5.3% of all captures. The recapture rate of 14.2% indicates site fidelity during the monitoring period.

BCCH

Total: 316 | New bands: 81 | Recaptures: 194 | 4.8% of total

BCCH was the #5 most captured species during the 2023 season, representing 4.8% of all captures. The recapture rate of 61.4% indicates site fidelity during the monitoring period.

MAWA

Total: 289 | New bands: 247 | Recaptures: 42 | 4.4% of total

MAWA was the #6 most captured species during the 2023 season, representing 4.4% of all captures. The recapture rate of 14.5% indicates site fidelity during the monitoring period.

Complete Banding Totals by Species

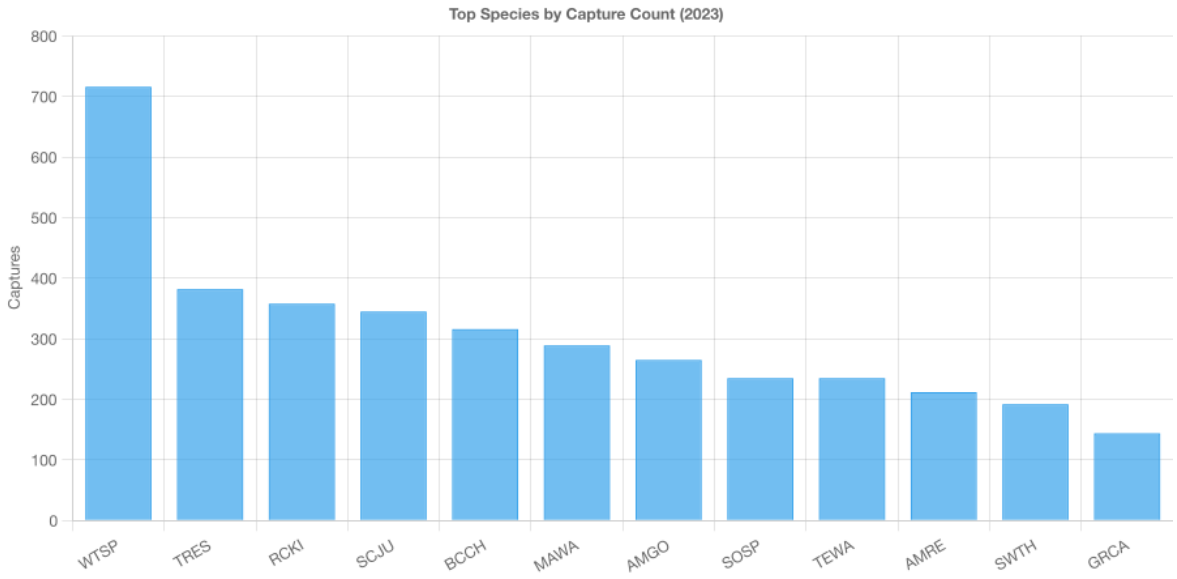


Figure 2. Top species by capture count in 2023

Species	Total	New	Recap	Return
WTSP	**716**	609	103	4
TRES	**382**	382	0	0
RCKI	**358**	320	38	0
SCJU	**345**	290	49	6
BCCH	**316**	81	194	41
MAWA	**289**	247	42	0
AMGO	**265**	219	25	21
SOSP	**235**	175	42	18
TEWA	**235**	226	9	0
AMRE	**212**	182	25	5
SWTH	**192**	154	38	0
GRCA	**144**	109	29	6
YEWA	**133**	89	35	9
REVI	**132**	104	18	10
NSWO	**128**	121	7	0

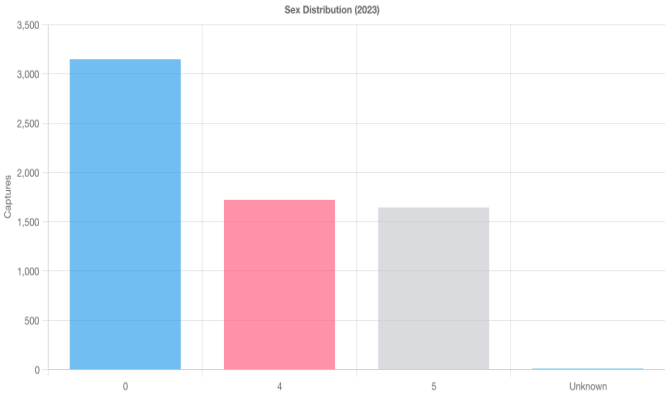
AMRO	**117**	108	8	1
AMKE	**106**	106	0	0
NOCA	**101**	74	17	10
COYE	**100**	69	21	10
OVEN	**96**	76	15	5
CSWA	**95**	68	18	9
NOWA	**91**	65	26	0
GCKI	**91**	90	1	0
HETH	**88**	64	24	0
DOWO	**87**	34	36	17

Age and Sex Demographics

Age Distribution

Age	Count	%
0	30	0.5%
1	873	13.4%
2	3129	47.9%
4	537	8.2%
5	1249	19.1%
6	648	9.9%
7	23	0.4%
8	28	0.4%
Unknown	11	0.2%

Sex Distribution



Sex	Count	%
0	3149	48.2%
4	1723	26.4%
5	1645	25.2%
Unknown	11	0.2%

Age Ratios by Species (ne10)

Species	Young	Adult	Y:A Ratio	n

Recaptures and Returns

Recapture data provides valuable information on site fidelity, local movements, and minimum longevity. Returns represent birds banded in previous years and recaptured in 2023.

Longevity Records

Species	Recaps	Avg Days	Max Years
BCCH	4501	266	9.26
SOSP	1888	238	7.70
WTSP	1668	16	2.07
GRCA	1284	132	7.21
SNBU	1202	140	5.98
RCKI	1068	3	0.12
YEWA	920	426	7.84
COYE	840	293	8.92
HETH	702	8	1.00
SCJU	702	115	6.93
MYWA	683	7	1.97
AMGO	661	248	7.61
MAWA	590	7	2.97
DOWO	543	327	8.36
BAOR	522	383	8.90

Net Location Efficiency

Net	Captures	Species	New	Recap Rate
E2	430	52	377	10.9%
C1	398	56	326	15.1%
H2	394	50	336	13.7%
E1	393	52	331	13.0%

B3	366	50	279	19.9%
H1	339	49	287	13.3%
C2	335	54	263	17.0%
N1	316	51	238	21.5%
A2	316	49	258	15.8%
B2	314	49	230	23.9%
N3	246	45	208	12.6%
V4	209	12	111	35.9%

Returns – Spring Migration

List of returns captured during the 2023 spring migration monitoring, sorted by time elapsed since original banding. Returns are birds banded in previous years and recaptured during the current season.

Band #	Species	Banding Date	Return Date	Time Elapsed
2501-10272	HAWO	8 Aug 2014	24 May	8 years 9 months 1 day
2650-45645	BCCH	11 Jul 2015	17 Apr	7 years 9 months 17 days
1253-62933	PIWO	4 Nov 2015	30 May	7 years 6 months 4 days
2641-17954	RWBL	1 May 2016	11 May	7 years 16 days
2741-62949	SOSP	18 Sept 2016	2 May	6 years 7 months 17 days
1803-09942	COGR	28 Apr 2017	8 May	6 years 11 days
2740-77820	AMGO	23 Nov 2017	13 Nov	5 years 11 months 21 days
2810-34506	WAVI	3 Jul 2017	19 May	5 years 10 months 16 days
2471-50080	DOWO	12 Aug 2018	28 Oct	5 years 2 months 13 days
2820-67702	WAVI	11 May 2018	11 May	5 years 26 days
2810-34538	COYE	24 Jun 2018	14 May	4 years 10 months 15 days
2880-02396	COYE	2 May 2019	8 May	4 years 27 days
2651-88099	RWBL	12 May 2019	12 May	4 years 21 days
2880-02870	YEWA	26 May 2019	18 May	3 years 11 months 13 days
2880-02657	YEWA	23 May 2019	13 May	3 years 11 months 11 days
1513-23535	COGR	6 Jun 2019	26 May	3 years 11 months 10 days
2651-91319	RWBL	21 May 2019	29 Apr	3 years 11 months 29 days
2830-86233	AMRE	31 Jul 2019	18 May	3 years 9 months 7 days
2781-53403	REVI	25 Aug 2019	26 May	3 years 9 months 20 days
2731-16820	RBGR	22 Aug 2019	16 May	3 years 8 months 13 days
2920-05079	HOWR	6 Sept 2019	28 May	3 years 8 months 10 days

2920-05113	COYE	11 Sept 2019	16 May	3 years 8 months 23 days
2791-60958	SOSP	18 Jun 2020	6 May	2 years 10 months 2 days
2830-86348	CSWA	12 Jul 2020	22 May	2 years 10 months 24 days
2920-66075	EAPH	24 Aug 2020	14 May	2 years 8 months 3 days

Total spring returns: 84 birds. Longest return: 8 years 9 months 1 day

Returns – MAPS/Breeding Season

List of returns captured during the 2023 MAPS (Monitoring Avian Productivity and Survivorship) breeding season, sorted by time elapsed since original banding.

Band #	Species	Banding Date	Return Date	Time Elapsed
2641-17716	RBGR	2 Jul 2016	29 Jun	6 years 12 months 3 days
2771-73243	VEER	7 Jun 2019	24 Jul	4 years 1 month 8 days
2651-82519	GRCA	16 Jun 2019	18 Jul	4 years 1 month 23 days
2771-73244	SOSP	7 Jun 2019	8 Jun	4 years 22 days
2880-03113	TRFL	7 Jun 2019	8 Jun	4 years 22 days
2771-73257	VEER	16 Jun 2019	8 Jun	3 years 11 months 13 days
2791-43108	VEER	31 Jul 2019	19 Jul	3 years 11 months 9 days
2920-04906	AMGO	11 Jun 2020	29 Jul	3 years 1 month 3 days
2920-04983	COYE	3 Jul 2020	18 Jul	3 years
2920-04921	COYE	12 Jun 2020	24 Jun	3 years 27 days
2920-62918	COYE	14 Jul 2020	18 Jul	3 years 19 days
2791-60949	SOSP	16 Jun 2020	8 Jun	2 years 11 months 7 days
2920-04977	YEWA	3 Jul 2020	24 Jun	2 years 11 months 6 days
2791-60967	SOSP	25 Jun 2020	8 Jun	2 years 11 months 28 days
2920-62915	BCCH	14 Jul 2020	24 Jun	2 years 11 months 25 days
2781-53765	OVEN	7 Aug 2020	13 Jul	2 years 11 months 20 days
2791-60996	VEER	14 Jul 2020	8 Jun	2 years 10 months 9 days
1462-00680	BLJA	12 Aug 2021	2 Nov	2 years 2 months 2 days
2781-53650	SWSP	15 Jun 2021	24 Jul	2 years 1 month 19 days
7100-77140	RTHU	16 May 2021	13 Jun	2 years 8 days
2920-62995	COYE	5 Jun 2021	18 Jun	2 years 23 days
				2 years 20 days

2991-02906	RWBL	26 May 2021	5 Jun	
2981-51324	VEER	11 Jul 2021	18 Jul	2 years 17 days
2651-91470	GRCA	3 Jul 2021	7 Jul	2 years 14 days
2920-67116	TRFL	22 Jun 2021	24 Jun	2 years 12 days

Total MAPS returns: 55 birds. Longest return: 6 years 12 months 3 days

Returns – Fall Migration

List of returns captured during the 2023 fall migration monitoring, sorted by time elapsed since original banding.

Band #	Species	Banding Date	Return Date	Time Elapsed
2691-45623	DOWO	3 Jul 2015	9 Nov	8 years 4 months 21 days
2521-95297	REVI	15 Aug 2016	19 Aug	7 years 10 days
2561-09493	BAOR	1 Aug 2016	5 Aug	7 years 10 days
2521-74073	REVI	3 Jul 2017	6 Aug	6 years 1 month 5 days
2810-34609	BCCH	8 Aug 2017	19 Aug	6 years 12 days
2740-77820	AMGO	23 Nov 2017	13 Nov	5 years 11 months 21 days
2471-50080	DOWO	12 Aug 2018	28 Oct	5 years 2 months 13 days
2471-50082	VEER	12 Aug 2018	2 Sept	5 years 17 days
2830-68086	CSWA	16 Aug 2018	5 Sept	5 years 16 days
2930-10060	AMRE	17 Aug 2019	19 Sept	4 years 1 month 24 days
2631-76182	REVI	2 Aug 2019	2 Aug	4 years 21 days
2920-62802	AMGO	22 Nov 2019	14 Nov	3 years 11 months 13 days
2781-53371	REVI	19 Aug 2019	10 Aug	3 years 11 months 12 days
2281-72792	DOWO	25 Nov 2019	13 Nov	3 years 11 months 9 days
2281-72792	DOWO	25 Nov 2019	13 Nov	3 years 11 months 9 days
2920-55046	BCCH	2 Nov 2019	18 Oct	3 years 11 months 6 days
1372-81847	BLJA	4 Sept 2020	18 Oct	3 years 1 month 29 days
2781-53628	REVI	21 Jul 2020	7 Aug	3 years 2 days
2920-66387	SCJU	24 Oct 2020	9 Nov	3 years 1 day
2920-66636	BCCH	22 Feb 2021	11 Nov	2 years 8 months 2 days
2920-66703	AMGO	17 Apr 2021	9 Nov	2 years 6 months 6 days
2981-26448	SOSP	17 Apr 2021	11 Oct	2 years 5 months 7 days

2501-44983	HAWO	6 May 2021	24 Oct	2 years 5 months 1 day
1462-00680	BLJA	12 Aug 2021	2 Nov	2 years 2 months 2 days
2871-19294	REVI	31 May 2021	18 Aug	2 years 2 months 29 days

Total fall returns: 53 birds. Longest return: 8 years 4 months 21 days

Net Usage and Capture Rates

Analysis of net efficiency and capture rates. This data helps optimize net placement and understand habitat use patterns. Capture rates are expressed per 100 net-hours.

Net	Hrs Open	New	Ret/Rep	Total	B/100h (New)	B/100h (Tot)
01	42.0	81	25	106	192.9	252.4
02	42.0	55	8	63	131.0	150.0
03	42.0	28	9	37	66.7	88.1
04	42.0	18	6	24	42.9	57.1
05	36.0	28	9	37	77.8	102.8
06	30.0	5	5	10	16.7	33.3
07	42.0	28	7	35	66.7	83.3
08	36.0	9	4	13	25.0	36.1
09	42.0	11	3	14	26.2	33.3
1	24.0	11	0	11	45.8	45.8
10	42.0	25	4	29	59.5	69.0
11	30.0	47	1	48	156.7	160.0
12	18.0	2	1	3	11.1	16.7
2	24.0	9	0	9	37.5	37.5
3	6.0	1	0	1	16.7	16.7
4	6.0	1	0	1	16.7	16.7
5	12.0	2	0	2	16.7	16.7
6	6.0	1	0	1	16.7	16.7
7	12.0	2	0	2	16.7	16.7
8	12.0	3	0	3	25.0	25.0
GRAND TOTAL	**10608.0**	**4647**	**1273**	**5920**	**43.8**	**55.8**

Note: "B/100h" = Birds per 100 net-hours. "Ret/Rep" = Returns and Repeats combined. Net hours estimated at 6 hours per active day.

Long-term Population Trends

Multi-year data allows assessment of population trends and changes in species composition over time. The following tables summarize key metrics across recent years of monitoring.

Annual Summary (Last 10 Years)

Year	Total	Species	New	Returns	Y:A
2016	9,268	109	7,541	264	0.00
2017	7,945	94	6,613	206	0.00
2018	8,417	112	6,850	266	0.00
2019	9,203	117	7,696	222	0.00
2020	7,262	100	6,101	188	0.00
2021	10,521	105	8,848	252	0.00
2022	9,070	106	7,703	277	0.00
2023	6,528	100	5,244	241	0.00
2024	2,088	77	1,553	128	0.00
NaN	91	2	0	0	0.00

Capture Effort Analysis

Year	Days	Total	Per Day	Spp/Day
2016	238	9,268	38.94	0.46
2017	210	7,945	37.83	0.45
2018	226	8,417	37.24	0.5
2019	228	9,203	40.36	0.51
2020	197	7,262	36.86	0.51
2021	254	10,521	41.42	0.41
2022	242	9,070	37.48	0.44
2023	176	6,528	37.09	0.57
2024	63	2,088	33.14	1.22

NaN	1	91	91	2

Species Diversity Analysis

Species diversity indices provide quantitative measures of community structure. The Shannon diversity index (H') accounts for both species richness and evenness, with higher values indicating more diverse and stable communities.

Diversity Indices Over Time

Year	Richness	Shannon H'	Evenness	Captures
2016	109	3.407	0.726	9,268
2017	94	3.259	0.717	7,945
2018	112	3.637	0.771	8,417
2019	117	3.626	0.761	9,203
2020	100	3.326	0.722	7,262
2021	105	3.419	0.735	10,521
2022	106	3.325	0.713	9,070
2023	100	3.731	0.81	6,528
2024	77	3.062	0.705	2,088
NaN	2	0.641	0.925	91

Top Species Trends

1. SNBU

2018	2019	2020	2021	2022	2023	2024	NaN
1417	1876	1766	2620	2452	0	0	0

2. WTSP

2018	2019	2020	2021	2022	2023	2024	NaN
491	461	356	706	700	716	150	0

3. RCKI

2018	2019	2020	2021	2022	2023	2024	NaN
422	423	339	602	392	358	600	0

Complete Species List (2023)

A total of 100 species were recorded during the 2023 monitoring season. The following table lists all species in order of abundance.

Species	n	Species	n
WTSP	716	LISP	20
TRES	382	CHSP	19
RCKI	358	COGR	18
SCJU	345	HAWO	18
BCCH	316	WIWA	18
MAWA	289	ATSP	18
AMGO	265	BLPW	18
SOSP	235	CAWA	18
TEWA	235	WOTH	17
AMRE	212	RTHU	17
SWTH	192	EAPH	16
GRCA	144	BTBW	13
YEWA	133	YBSA	11
REVI	132	CHSW	11
NSWO	128	BHVI	10
AMRO	117	EWCS	10
AMKE	106	YSFL	9
NOCA	101	MOWA	8
COYE	100	INBU	7
OVEN	96	GCFL	7
CSWA	95	BALO	6
NOWA	91	SSHA	5
GCKI	91	BADE	5
HETH	88	WIWR	5
DOWO	87	RUBL	4
SWSP	86	BRTH	4

BAWW	72	PISI	4
RWBL	69	EAKI	4
BAOR	67	BITH	4
CEDW	64	MODO	3
VEER	61	CLSW	3
RBGR	58	FISP	3
MYWA	53	BTNW	3
EABL	51	BHCO	3
NAWA	45	SCTA	3
CMWA	43	CONI	2
YBFL	43	BLBW	2
HOWR	40	YPWA	2
WAVI	38	EATO	2
FOSP	38	BDOW	1
TRFL	37	PIWO	1
LEFL	33	RBWO	1
HOFI	33	EUST	1
BLJA	32	KILL	1
BBWA	29	BBCU	1
PUMA	26	NOPA	1
WBNU	26	GWWA	1
BRCR	25	CORE	1
GCTH	23	BANS	1
PUFI	21	PHVI	1

Acknowledgements

The McGill Bird Observatory's 2023 banding operations were made possible through the dedication of our staff, volunteers, and supporters. We extend our sincere gratitude to everyone who contributed to this season's success.

Banding Staff

Bander	Captures	Days	Species
SLS	3300	122	87
CIB	692	27	67
LAT	564	35	58
SID	365	15	58
KML	322	19	46
PAB	257	17	3
ACM	248	19	21
LNA	201	18	43
ALH	130	10	42
MPB	94	10	31

About the Observatory

The McGill Bird Observatory is a project of The Migration Research Foundation Inc., a registered charitable organization dedicated to the study and conservation of migratory birds. Located at the western tip of the Island of Montreal, the observatory has been conducting standardized migration monitoring since 2004.

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Registered Charity: 899163505RR0001

Permits and Protocols

Bird banding activities were conducted under federal and provincial scientific collection permits. All operations followed standardized protocols established by the Canadian Wildlife Service and The Institute for Bird Populations (MAPS program).

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