Monitoring Avian Productivity and Survivorship (MAPS)

Annual Report 2023

Generated: 12/1/2025

Executive Summary

Overview

Total Captures: 6528

Unique Species: 100

New Bands: 5244

Recaptures: 1032

Returns: 241

Seasonal Distribution

Peak Capture Month: Sep

Active Monitoring Days: 176

Summary Analysis

During the 2023 monitoring season, a total of 6528 birds representing 100 species were captured over 176 active monitoring days. This represents a high level of avian diversity for the monitoring period.

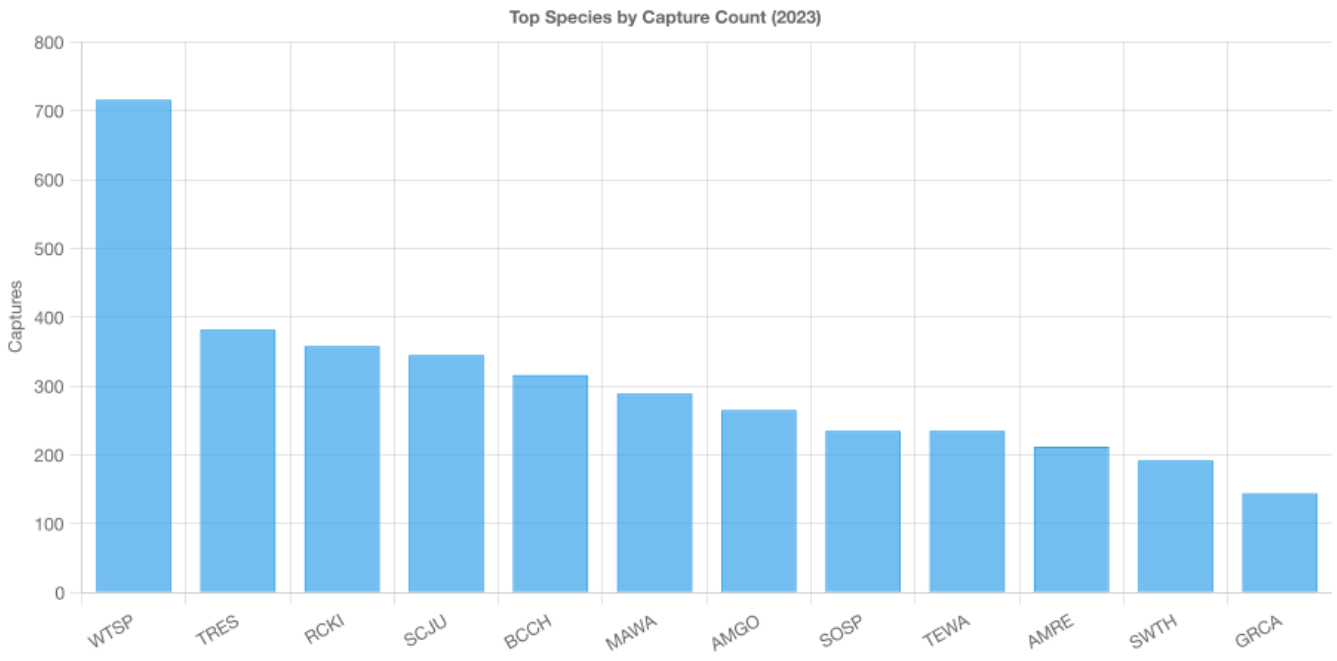
The most commonly captured species was WTSP, accounting for 11.0% of all captures. Of the total captures, 5244 were newly banded individuals, while 1032 were recaptures (birds banded earlier in the same season) and 241 were returns (birds banded in previous seasons).

Capture activity peaked during Sep, which aligns with typical migration patterns for this region. The ratio of newly banded birds to recaptures provides insights into population turnover and site fidelity among different species.

Species Analysis

Top 10 Species by Capture Frequency

Species	Count	Percentage	New	Recap
WTSP	716	11.0%	609	103
TRES	382	5.9%	382	0
RCKI	358	5.5%	320	38
SCJU	345	5.3%	290	49
BCCH	316	4.8%	81	194
MAWA	289	4.4%	247	42
AMGO	265	4.1%	219	25
SOSP	235	3.6%	175	42
TEWA	235	3.6%	226	9
AMRE	212	3.2%	182	25



Analysis

Species composition analysis reveals important patterns in the local avian community. The three most abundant species were WTSP (716 captures, 11.0%), TRES (382 captures, 5.9%), and RCKI (358 captures, 5.5%). 1 species represented more than 10% of total captures, indicating high species dominance.

The overall recapture rate of 15.8% provides insights into site fidelity and local movement patterns. Species with higher recapture rates may indicate stronger site attachment or more localized movements during the monitoring period.

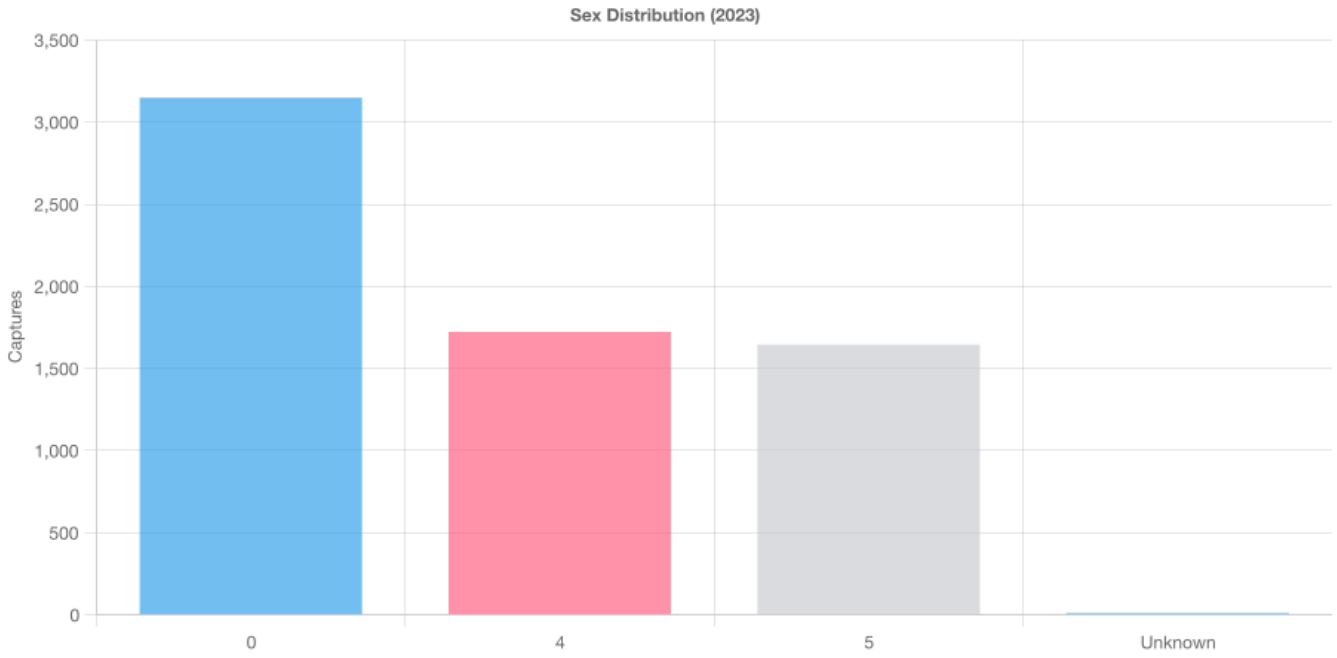
Age and Sex Demographics

Age Distribution

Age Class	Count	Percentage
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	Percentage
0	3149	48.2%
4	1723	26.4%
5	1645	25.2%
Unknown	11	0.2%



Analysis

Age and sex demographic data provide critical insights into breeding productivity and population structure. 0.2% of captures could not be definitively sexed, which is typical for many species where plumage characteristics overlap between sexes.

Sex Ratios by Species

Sex ratio analysis for species with adequate sample sizes (ne10) reveals demographic patterns that may indicate breeding strategies, differential migration timing, or habitat preferences.

Species	M	F	M:F	M%	n
WTSP	0	0	N/A	0.0%	716
TRES	0	0	N/A	0.0%	382
RCKI	0	0	N/A	0.0%	358
SCJU	0	0	N/A	0.0%	345
BCCH	0	0	N/A	0.0%	316
MAWA	0	0	N/A	0.0%	289
AMGO	0	0	N/A	0.0%	265
SOSP	0	0	N/A	0.0%	235
TEWA	0	0	N/A	0.0%	235
AMRE	0	0	N/A	0.0%	212
SWTH	0	0	N/A	0.0%	192
GRCA	0	0	N/A	0.0%	144
YEWA	0	0	N/A	0.0%	133
REVI	0	0	N/A	0.0%	132
NSWO	0	0	N/A	0.0%	128
AMRO	0	0	N/A	0.0%	117
AMKE	0	0	N/A	0.0%	106
NOCA	0	0	N/A	0.0%	101
COYE	0	0	N/A	0.0%	100
OVEN	0	0	N/A	0.0%	96

Age Ratios and Productivity by Species

Young-to-adult ratios indicate breeding success and productivity. Higher ratios suggest successful local reproduction, while lower ratios may indicate predominantly non-breeding populations or poor breeding conditions.

Species	Young	Adult	Y:A	Young%	n

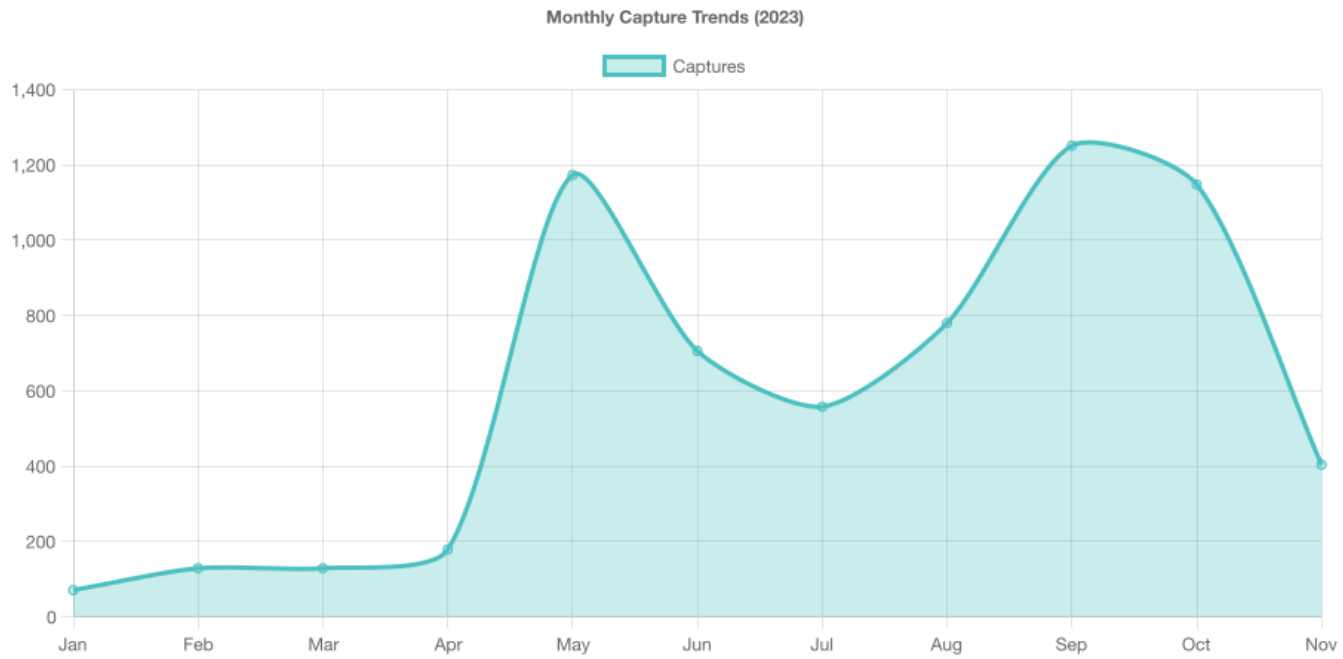
Morphometric Analysis with Variation

Morphological measurements with standard deviations reveal population variation and can indicate sexual dimorphism, age classes, or geographic subspecies. Ranges show measurement extremes captured.

Species	Weight (g)	SD	Wing (mm)	SD	n
WTSP	25.8	±2.3	70.4	±2.7	711
RCKI	6.5	±0.5	56.5	±2.0	357
SCJU	19.1	±1.8	73.7	±2.5	343
BCCH	11.2	±0.9	64.1	±2.1	311
MAWA	8.4	±0.6	57.3	±1.9	288
AMGO	13.3	±1.3	70.2	±2.0	261
TEWA	10.4	±1.1	61.4	±4.6	234
SOSP	20.2	±1.6	63.2	±2.3	227
AMRE	7.9	±0.4	60.3	±2.0	211
SWTH	31.1	±1.9	95.3	±3.2	191
GRCA	36.8	±2.8	87.8	±2.6	142
REVI	17.1	±1.3	77.1	±2.8	131
YEWA	9.5	±0.6	60.2	±2.4	131
NSWO	94.2	±8.3	136.3	±4.3	128
AMRO	82.2	±7.1	124.9	±4.0	117

Temporal Analysis

Monthly Capture Trends



Temporal analysis of capture data reveals important phenological patterns throughout the 2023 monitoring season. Monitoring efforts spanned 176 days across 11 months, with Sep showing peak capture activity (1251 captures). Species diversity was highest in May with 66 species recorded.

Capture activity increased during the latter portion of the season, typical of post-breeding dispersal and fall migration. The average capture rate of 37.1 birds per active day reflects consistent monitoring effort and local habitat quality.

Monthly Summary

Month	Captures	Species	Days Active
Jan	71	8	1
Feb	129	11	3
Mar	129	10	3
Apr	179	22	12
May	1173	66	31
Jun	706	47	18
Jul	558	46	11
Aug	780	54	29

Sep	1251	65	28
Oct	1148	43	28
Nov	404	20	12

Biometric Data Summary

Average Measurements by Top Species

Species	Avg Weight (g)	Avg Wing (mm)	Avg Fat	n
WTSP	25.8	70.4	2.0	716
TRES	21.1	115.1	0.0	382
RCKI	6.5	56.5	2.6	358
SCJU	19.1	73.7	1.6	345
BCCH	11.2	64.1	0.8	316
MAWA	8.4	57.3	1.5	289
AMGO	13.3	70.2	1.6	265
SOSP	20.2	63.2	0.5	235
TEWA	10.4	61.4	3.1	235
AMRE	7.9	60.3	0.3	212
SWTH	31.1	95.3	1.1	192
GRCA	36.8	87.8	0.5	144
YEWA	9.5	60.2	0.4	133
REVI	17.1	77.1	0.7	132
NSWO	94.2	136.3	1.3	128

Analysis

Biometric measurements provide important insights into body condition and population health. Among species with adequate sample sizes (n>5), morphological measurements fell within expected ranges for the region and season.

Average fat scores across species (1.05) indicate lean condition, suggesting recent migration or high energetic demands. Wing chord and weight measurements are consistent with published literature values and provide valuable baseline data for long-term population monitoring. These morphological data contribute to our understanding of geographic variation and can reveal temporal changes in body size potentially related to environmental factors.

Multi-Variable Demographic Analysis

This section combines age and sex information to highlight population structure within each species. Only species with adequate sample sizes (ne10) are shown.

Species	M Ad	M Yng	F Ad	F Yng	Unk	n
WTSP	0	0	0	0	716	716
TRES	0	0	0	0	382	382
RCKI	0	0	0	0	358	358
SCJU	0	0	0	0	345	345
BCCH	0	0	0	0	316	316
MAWA	0	0	0	0	289	289
AMGO	0	0	0	0	265	265
SOSP	0	0	0	0	235	235
TEWA	0	0	0	0	235	235
AMRE	0	0	0	0	212	212
SWTH	0	0	0	0	192	192
GRCA	0	0	0	0	144	144
YEWA	0	0	0	0	133	133
REVI	0	0	0	0	132	132
NSWO	0	0	0	0	128	128
AMRO	0	0	0	0	117	117
AMKE	0	0	0	0	106	106
NOCA	0	0	0	0	101	101

Body Condition (Fat Scores)

Species	Overall	M Ad	F Ad	M Yng	F Yng	n
WTSP	2.04	N/A	N/A	N/A	N/A	716

TRES	0.03	N/A	N/A	N/A	N/A	382
RCKI	2.57	N/A	N/A	N/A	N/A	358
SCJU	1.61	N/A	N/A	N/A	N/A	345
BCCH	0.80	N/A	N/A	N/A	N/A	316
MAWA	1.49	N/A	N/A	N/A	N/A	289
AMGO	1.55	N/A	N/A	N/A	N/A	265
SOSP	0.49	N/A	N/A	N/A	N/A	235
TEWA	3.08	N/A	N/A	N/A	N/A	235
AMRE	0.34	N/A	N/A	N/A	N/A	212
SWTH	1.06	N/A	N/A	N/A	N/A	192
GRCA	0.54	N/A	N/A	N/A	N/A	144

Body Condition and Weight Patterns

Weight patterns by age, sex, and season provide a multi-dimensional view of body condition and energy reserves through the monitoring period.

Species	M	F	Young	Adult	Early	Late
WTSP	N/A	N/A	N/A	N/A	27.0	25.7
RCKI	N/A	N/A	N/A	N/A	6.7	6.4
SCJU	N/A	N/A	N/A	N/A	21.0	18.7
BCCH	N/A	N/A	N/A	N/A	11.2	11.1
MAWA	N/A	N/A	N/A	N/A	8.9	8.3
AMGO	N/A	N/A	N/A	N/A	13.2	13.4
TEWA	N/A	N/A	N/A	N/A	10.5	9.3
SOSP	N/A	N/A	N/A	N/A	20.8	19.9
AMRE	N/A	N/A	N/A	N/A	8.1	7.8
SWTH	N/A	N/A	N/A	N/A	32.1	31.0
GRCA	N/A	N/A	N/A	N/A	36.3	37.0
YEWA	N/A	N/A	N/A	N/A	9.5	9.5
REVI	N/A	N/A	N/A	N/A	17.2	17.1
NSWO	N/A	N/A	N/A	N/A	N/A	94.2
AMRO	N/A	N/A	N/A	N/A	82.8	81.9

Body Condition Index

Species	Index	CV%	Wt	Wing	n
WTSP	36.70	7.9	25.8	70.4	711
RCKI	11.57	7.4	6.5	56.5	357
SCJU	25.85	8.5	19.1	73.7	343
BCCH	17.41	7.3	11.2	64.1	311

MAWA	14.70	6.8	8.4	57.3	288
AMGO	18.97	9.4	13.3	70.2	261
TEWA	20.89	294.6	10.4	61.4	234
SOSP	31.88	7.1	20.2	63.2	227
AMRE	13.07	5.3	7.9	60.3	211
SWTH	32.60	5.8	31.1	95.3	191
GRCA	41.99	7.7	36.8	87.8	142
REVI	22.22	7.4	17.1	77.1	131

Weekly Capture Patterns

Weekly capture patterns reveal phenological timing of migration peaks, breeding periods, and seasonal movements. Peaks coincide with optimal conditions for capturing migrants and local breeding populations.

Period	Captures	Species	Avg/Day
M1W3	71	8	10.1
M2W2	34	8	4.9
M2W3	95	10	13.6
M3W1	28	7	4.0
M3W3	65	8	9.3
M3W4	36	9	5.1
M4W3	74	16	10.6
M4W4	94	18	13.4
M4W5	11	4	1.6
M5W1	81	16	11.6
M5W2	212	41	30.3
M5W3	520	52	74.3
M5W4	282	47	40.3
M5W5	78	28	11.1
M6W1	29	15	4.1
M6W2	286	40	40.9
M6W3	259	26	37.0
M6W4	78	21	11.1
M6W5	54	18	7.7
M7W1	113	25	16.1
M7W2	80	23	11.4
M7W3	124	31	17.7
M7W4	109	20	15.6

M7W5	132	29	18.9
M8W1	167	31	23.9

Daily and Hourly Capture Rates

Combining daily totals with hourly patterns highlights when capture effort and bird activity peak during the monitoring season.

Daily Capture Summary

Avg/day: 37.1, Max: 132, Min: 1, SD: 22.5 (n=176days)

Date	Captures	Species	New
2023-01-22	71	8	45
2023-02-12	34	8	10
2023-02-16	44	9	19
2023-02-19	51	8	29
2023-03-05	28	7	6
2023-03-18	65	8	39
2023-03-24	36	9	9
2023-04-18	15	6	11
2023-04-19	11	9	6
2023-04-20	8	6	7
2023-04-21	12	6	10
2023-04-22	28	8	26
2023-04-24	25	9	22
2023-04-25	19	7	17
2023-04-26	17	10	12
2023-04-27	16	10	13
2023-04-28	6	3	4
2023-04-29	11	4	8

Hourly Capture Patterns

Hour	Captures	Species	New	Recaps
10:00-11:00	6528	100	5244	1284

Recapture Intervals and Longevity

Recapture intervals provide minimum longevity estimates and insights into site fidelity. Maximum intervals represent the longest time between first capture and any subsequent recapture for each species.

Species	Recaps	Min Days	Avg Days	Max Years
BCCH	4501	1	266	9.26
SOSP	1888	1	238	7.70
WTSP	1668	1	16	2.07
GRCA	1284	1	132	7.21
SNBU	1202	1	140	5.98
RCKI	1068	1	3	0.12
YEWA	920	1	426	7.84
COYE	840	1	293	8.92
HETH	702	1	8	1.00
SCJU	702	1	115	6.93
MYWA	683	1	7	1.97
AMGO	661	1	248	7.61
MAWA	590	1	7	2.97
DOWO	543	1	327	8.36
BAOR	522	1	383	8.90

Net Location Analysis

Net-specific data reveals habitat microsite preferences and capture efficiency across locations. Recapture rates indicate site fidelity and local movement patterns within the study area.

Net	Captures	Species	New	Recaps	Rate%
E2	430	52	377	47	10.9%
C1	398	56	326	60	15.1%
H2	394	50	336	54	13.7%
E1	393	52	331	51	13.0%
B3	366	50	279	73	19.9%
H1	339	49	287	45	13.3%
C2	335	54	263	57	17.0%
N1	316	51	238	68	21.5%
A2	316	49	258	50	15.8%
B2	314	49	230	75	23.9%
N3	246	45	208	31	12.6%
V4	209	12	111	75	35.9%
D1	195	40	155	34	17.4%
V5	178	11	91	68	38.2%
V3	176	14	98	58	33.0%

Net Performance by Month and Species

This page combines capture totals, species richness, and recapture rates by net and month to highlight microsite productivity and habitat use.

Net × Month Summary

Net	Month	Captures	Species	New
E2	May	143	36	124
H2	Sep	129	27	109
E1	May	128	28	95
H2	Oct	128	14	115
H1	Oct	127	18	113
B3	Sep	121	30	94
B2	Sep	116	26	93
E2	Oct	106	15	92
E2	Sep	106	30	95
C2	May	104	28	68
A2	May	104	26	78
C1	Sep	103	34	88
C1	May	100	28	79
E1	Oct	95	14	82
C1	Oct	94	21	74
E1	Sep	91	26	83
C2	Sep	90	26	77
N3	Sep	89	24	80
V4	Nov	88	9	52
B3	Aug	84	25	64

Recapture Rates by Net and Species

Net	Species	Total	Recaps	Rate%
H2	WTSP	98	11	11.2
H1	WTSP	90	7	7.8
B2	WTSP	84	20	23.8
V4	AMGO	74	10	13.5
E2	WTSP	67	8	11.9
V4	BCCH	64	43	67.2
A2	WTSP	64	7	10.9
N1	WTSP	63	15	23.8
V3	AMGO	56	2	3.6
C1	RCKI	55	3	5.5
E1	WTSP	54	3	5.6
V5	BCCH	51	35	68.6
E2	RCKI	51	7	13.7
E2	TEWA	51	2	3.9
V3	BCCH	49	35	71.4
H1	SCJU	48	7	14.6
V5	AMGO	44	5	11.4
A2	TEWA	38	0	0.0

Bander Performance and Productivity

Bander-specific metrics document individual contributions and experience levels. Captures per day reflect efficiency and consistency across monitoring sessions.

Bander	Captures	Species	New	Days	Per Day
SLS	3300	87	2640	122	27.0
CIB	692	67	576	27	25.6
LAT	564	58	362	35	16.1
SID	365	58	293	15	24.3
KML	322	46	282	19	16.9
PAB	257	3	257	17	15.1
ACM	248	21	205	19	13.1
LNA	201	43	161	18	11.2
ALH	130	42	83	10	13.0
MPB	94	31	81	10	9.4
KLL	87	4	81	18	4.8
ROC	51	5	51	4	12.8
PBM	50	16	44	1	50.0
HPT	36	18	33	7	5.1
LGC	32	2	32	3	10.7

Bander Specialization and Diversity

Multi-variable bander metrics combine total captures, species diversity, and species composition to characterize individual contributions and specializations.

Bander	Captures	Species	Diversity	Top Species
SLS	3300	87	3.66	WTSP (426), RCKI (220), MAWA (181)
CIB	692	67	3.44	WTSP (121), MAWA (52), RCKI (50)
LAT	564	58	3.13	BCCH (115), AMGO (74), SCJU (44)
SID	365	58	3.41	WTSP (51), RCKI (42), SCJU (34)
KML	322	46	3.24	TRES (45), SOSP (29), WTSP (29)
PAB	257	3	0.87	TRES (152), AMKE (86), EABL (19)
ACM	248	21	2.20	AMGO (62), TRES (61), EABL (24)
LNA	201	43	3.29	NSWO (31), WTSP (16), MAWA (12)
ALH	130	42	3.39	BCCH (14), WTSP (12), AMGO (11)
MPB	94	31	3.00	MAWA (17), SCJU (10), AMRE (9)
KLL	87	4	0.23	NSWO (83), SCJU (2), BDOW (1)
ROC	51	5	0.64	TRES (42), EABL (6), WTSP (1)
PBM	50	16	2.47	YEWA (11), CSWA (7), BCCH (6)
HPT	36	18	2.46	AMGO (11), SWTH (5), WTSP (3)
LGC	32	2	0.64	TRES (21), PUMA (11)

Long-Term Population Trends

Historical analysis comparing 2023 to previous monitoring seasons reveals important population trends. Total captures in 2023 (6528) declined by 26.6% compared to the 5-year average of 8895, warranting further investigation into potential causes. Species richness of 100 represents a 7.4% decrease from the 5-year average, potentially indicating habitat changes or regional population shifts.

Long-term monitoring across 24 years provides valuable context for understanding these patterns and their ecological significance.

Annual Capture Summary (All Years)

Year	Total	Species	New Bands	Returns	Y:A Ratio
2016	9268	109	7541	264	0.00
2017	7945	94	6613	206	0.00
2018	8417	112	6850	266	0.00
2019	9203	117	7696	222	0.00
2020	7262	100	6101	188	0.00
2021	10521	105	8848	252	0.00
2022	9070	106	7703	277	0.00
2023	6528	100	5244	241	0.00
2024	2088	77	1553	128	0.00
NaN	91	2	0	0	0.00

Species Diversity Trends

Diversity Indices Over Time

Year	Richness	Shannon H'	Evenness	Captures
2016	109	3.407	0.726	9268
2017	94	3.259	0.717	7945
2018	112	3.637	0.771	8417
2019	117	3.626	0.761	9203
2020	100	3.326	0.722	7262
2021	105	3.419	0.735	10521
2022	106	3.325	0.713	9070
2023	100	3.731	0.81	6528
2024	77	3.062	0.705	2088
NaN	2	0.641	0.925	91

Species diversity indices provide quantitative measures of community structure. Richness represents the number of species, Shannon index (H') measures both abundance and evenness, and Evenness indicates how equally distributed species are. Higher values generally indicate more diverse and stable communities.

Capture Effort Analysis

Monitoring Effort and Efficiency

Year	Days	Total	Per Day	Species	Spp/Day
2016	238	9268	38.94	109	0.46
2017	210	7945	37.83	94	0.45
2018	226	8417	37.24	112	0.5
2019	228	9203	40.36	117	0.51
2020	197	7262	36.86	100	0.51
2021	254	10521	41.42	105	0.41
2022	242	9070	37.48	106	0.44
2023	176	6528	37.09	100	0.57
2024	63	2088	33.14	77	1.22
NaN	1	91	91	2	2

Capture efficiency metrics help standardize comparisons across years by accounting for sampling effort. Captures per day reflects both bird abundance and site quality, while species per day indicates diversity relative to effort. Consistent effort across years improves trend reliability.

Top Species Population Trends

1. SNBU

2018	2019	2020	2021	2022	2023	2024	NaN
1417	1876	1766	2620	2452	0	0	0
16.83%	20.38%	24.32%	24.9%	27.03%	0%	0%	0%

2. WTSP

2018	2019	2020	2021	2022	2023	2024	NaN
491	461	356	706	700	716	150	0
5.83%	5.01%	4.9%	6.71%	7.72%	10.97%	7.18%	0%

3. RCKI

2018	2019	2020	2021	2022	2023	2024	NaN
422	423	339	602	392	358	600	0
5.01%	4.6%	4.67%	5.72%	4.32%	5.48%	28.74%	0%

4. MYWA

2018	2019	2020	2021	2022	2023	2024	NaN
155	237	22	107	80	53	108	0
1.84%	2.58%	0.3%	1.02%	0.88%	0.81%	5.17%	0%

5. BCCH

2018	2019	2020	2021	2022	2023	2024	NaN
401	266	342	279	414	316	146	0
4.76%	2.89%	4.71%	2.65%	4.56%	4.84%	6.99%	0%

Individual species trends reveal population dynamics and potential conservation concerns. Stable or increasing trends suggest healthy populations, while declining trends may warrant further investigation into habitat changes, climate effects, or regional population shifts.

Notes and Methodology

This report was automatically generated from capture data collected during the 2023 monitoring season. Data follows MAPS (Monitoring Avian Productivity and Survivorship) protocols established by The Institute for Bird Populations.

Bird banding activities were conducted under federal and state permits. All measurements and observations were recorded by trained and certified bird banders.

For questions or more information about this report, please contact your local monitoring station.