

# Powell Butte Grassland Bird Surveys: 2019-2022

**Dr. Tom Virzi**  
**Executive Director | Research Ecologist**  
**Conservation InSight**





# Conservation InSight

- We are a 501(c)(3) nonprofit scientific research organization focused on providing sound solutions for avian conservation issues.
- Conservation InSight was founded in 2017 with the goal of finding innovative ways to share scientific research with the public in order to foster a better connection between people and nature.
- Please visit our website for more information:

[www.conservationinsight.org](http://www.conservationinsight.org)



# Impact of Habitat Restoration on Bird Populations at Powell Butte Nature Park

- Demographic Study

- Research goals:

- Assess grassland habitat quality at PBNP by studying indicator species breeding at the site.
  - Focal species = Savannah Sparrow (SAVS) + other grassland birds.
- Determine status and distribution of SAVS and other grassland birds at PBNP.
- Study breeding populations and compare demographic rates (e.g., nest success, survivorship, etc.) over time as restoration advances at the site.

- Community Science Surveys

- Research goals:

- Assess the impact of habitat restoration on bird populations at PBNP.
- Collect data on entire bird community at PBNP (not just focal grassland species).
- Collect additional data on focal species.
- **Community participation in scientific research.**

# Impact of Habitat Restoration on Bird Populations at Powell Butte Nature Park

- Reservoir 1
  - Pre-Restoration  
(April 2021)



Grassland  
Bird Nest





# Impact of Habitat Restoration on Bird Populations at Powell Butte Nature Park

- Reservoir 1
  - Construction  
(February 2022)





# Impact of Habitat Restoration on Bird Populations at Powell Butte Nature Park

- Reservoir 1
  - Restoration  
(Goal > 2023)



# Impact of Habitat Restoration on Bird Populations at Powell Butte Nature Park

- Reservoir 1
  - Post-Restoration  
(March 2023)





# Grassland Bird Monitoring Study Design 2019

- **Demographic Monitoring**

- Plot A

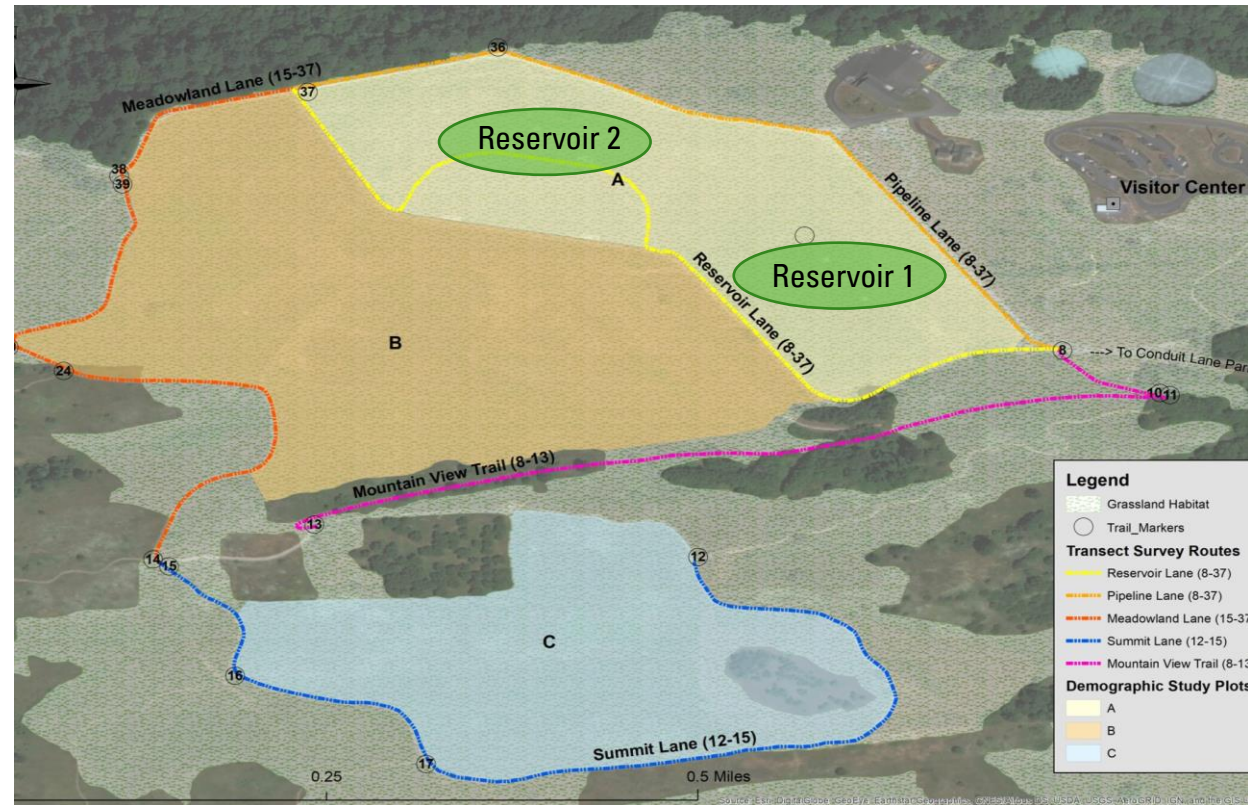
- Reservoir 1 – nonnative grasses
- Reservoir 2 – more native plants

- Plot B

- Adjacent grassland
- More woody vegetation

- Plot C

- Southern side of PBNP
- More invasive plants

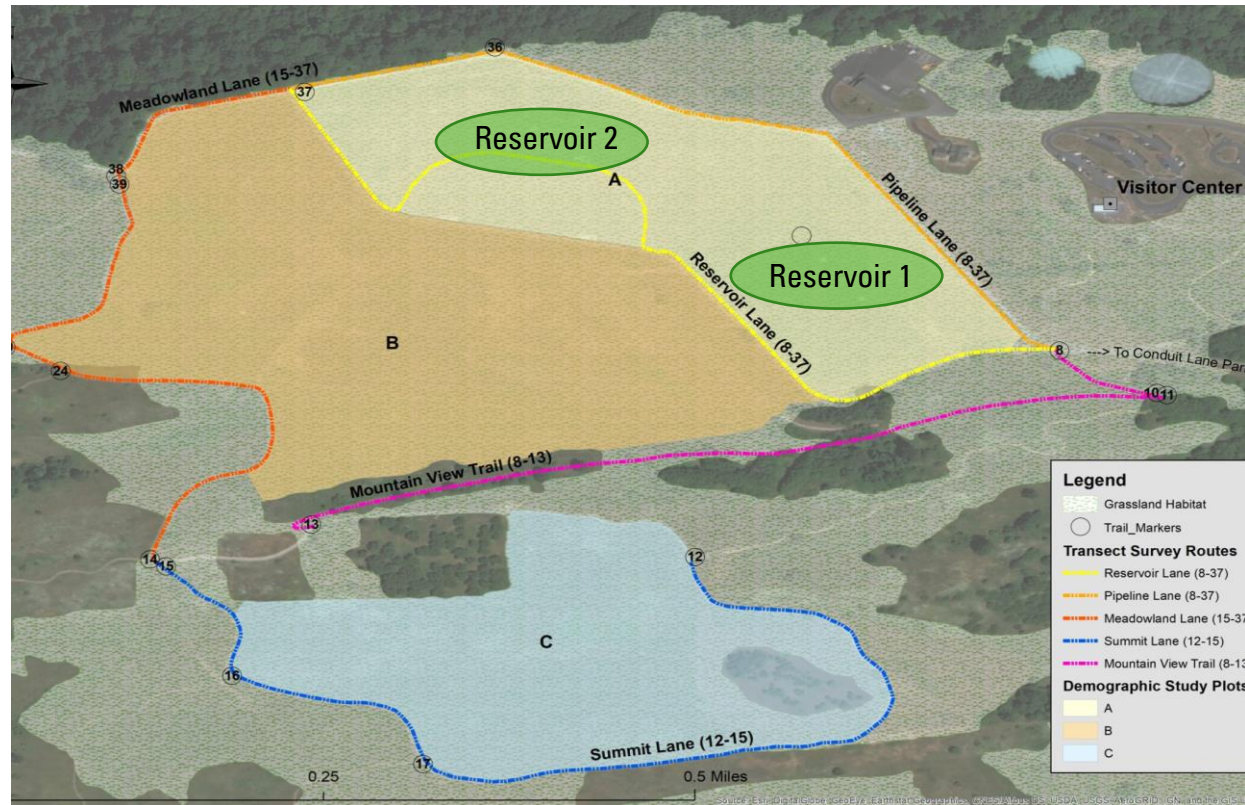




# Grassland Bird Monitoring Study Design 2019

- **Community Science Surveys**

- 5 survey routes
- Survey area coincides with demographic study plots
- Transect surveys
- Duration: 30-45 min
- Season: April-June
- Count all birds detected (eBird)

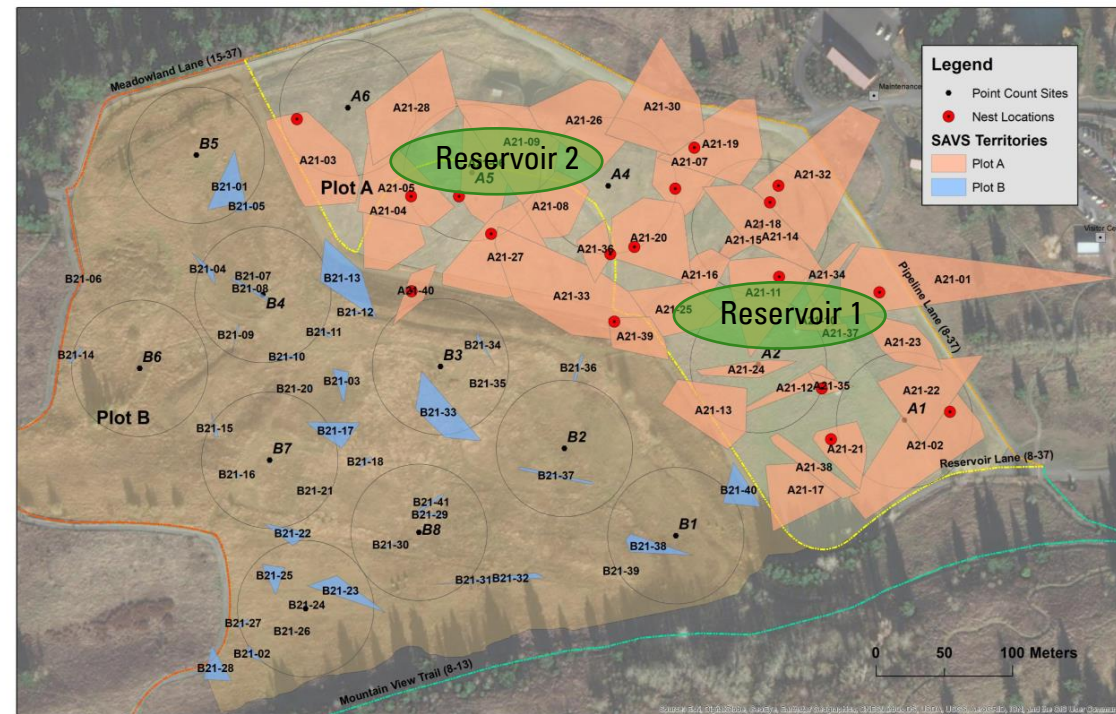


# Management Actions to Protect Birds

- **Our data informed management to take these actions:**

- Construction schedule modified by Portland Water Bureau to protect breeding birds in 2021
- Habitat management by Portland Parks and Recreation to increase suitable breeding habitat for 2022
- Breeding bird surveys by Portland BES to further inform construction activity conducted in 2022

Savannah Sparrow (SAVS) Territories 2021





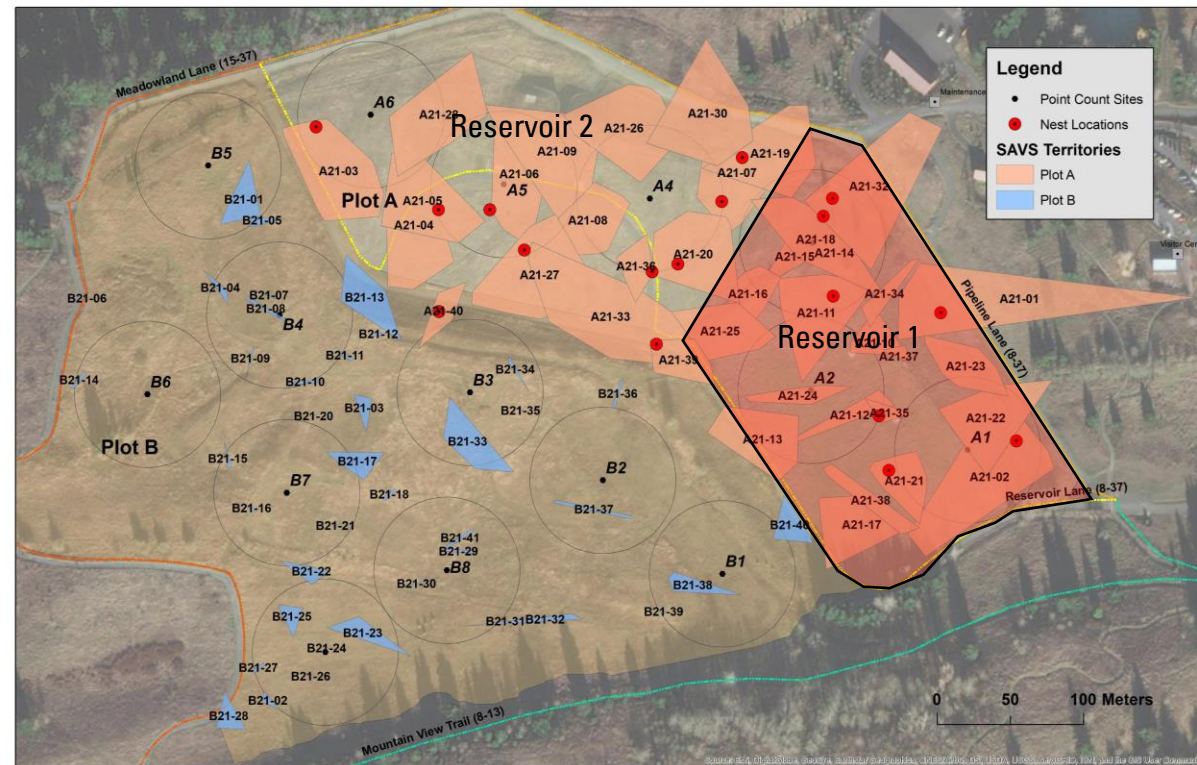
# Management Actions to Protect Birds

- **Invasive species control**
  - **Mowing**
  - **Herbicides**
  - **Biocontrols**
- **Woody vegetation removal**
- **Blackberry removal**
- **Seasonal trail closures**



# SAVS Response 2022 (?)

- **Plot A**
  - Res 1 **unavailable** in 2022
  - Res 2 likely at carrying capacity
- **Plot B**
  - Near carrying capacity in 2021
  - Habitat management potentially increased breeding habitat

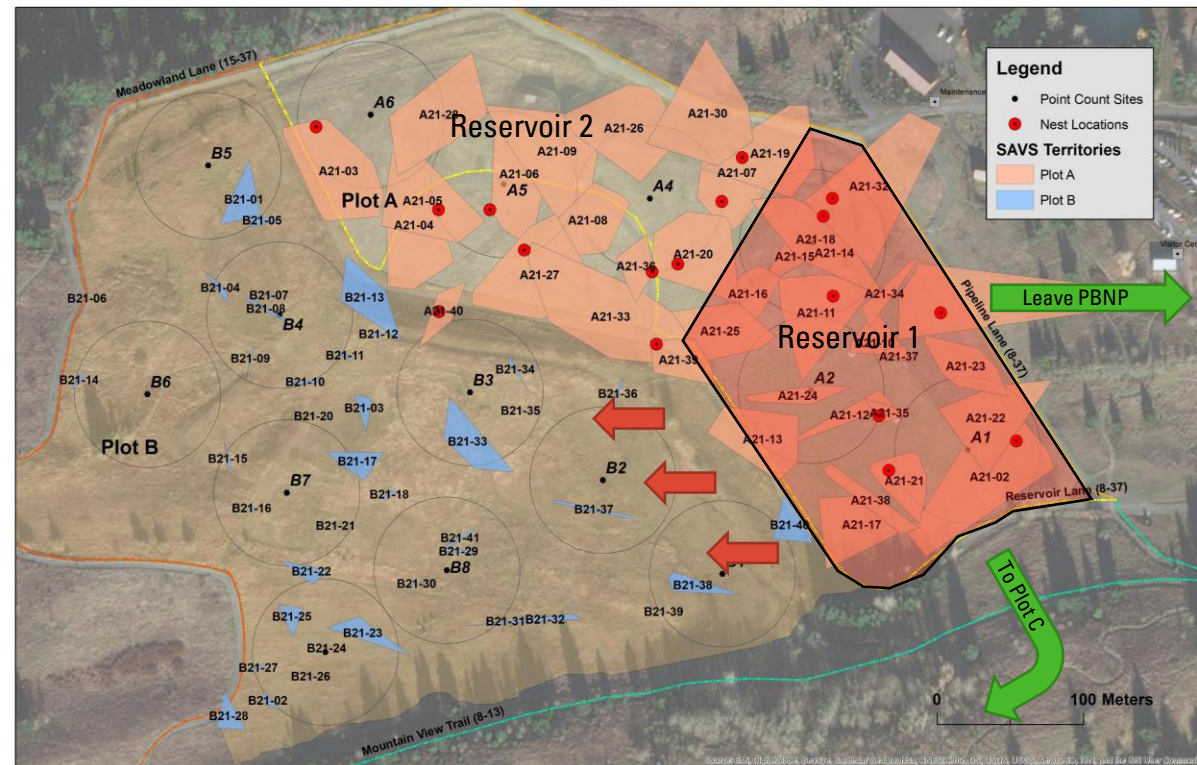




# SAVS Response 2022 (?)

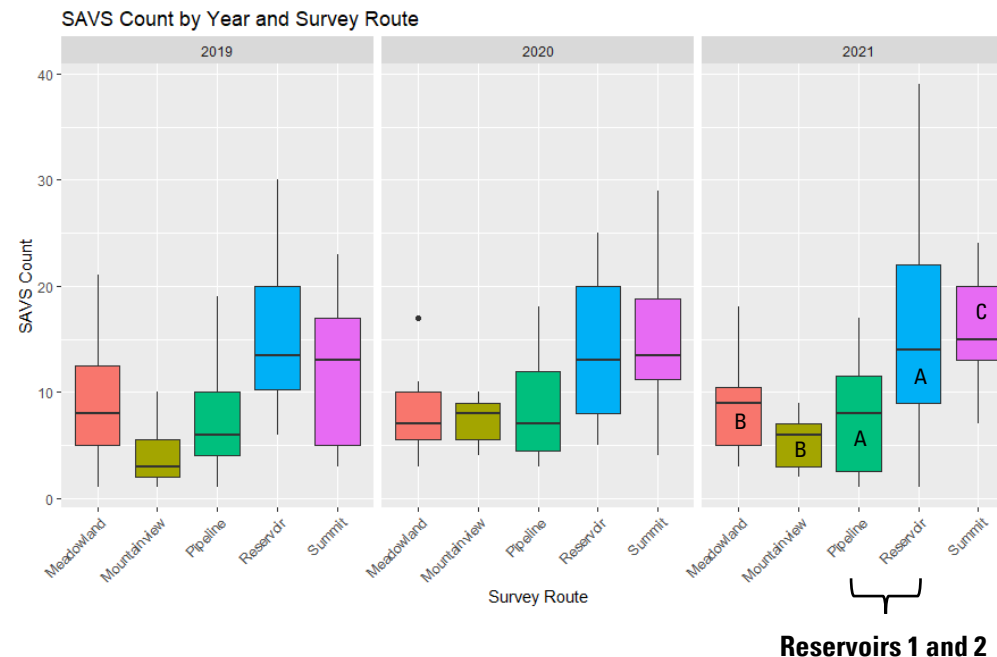
- **SAVS Response**

- Move to Plot B
  - Q – Is there enough suitable breeding habitat?
- Move to other areas on Powell Butte (e.g., Plot C)
- Leave Powell Butte entirely to breed elsewhere



# SAVS Counted on Community Science Surveys 2019-2021

- Boxplots showing average SAVS count per survey – first 3 years of study
  - Reported by year and survey route
  - Consistent results across years
- **Q – What should we expect in 2022?**





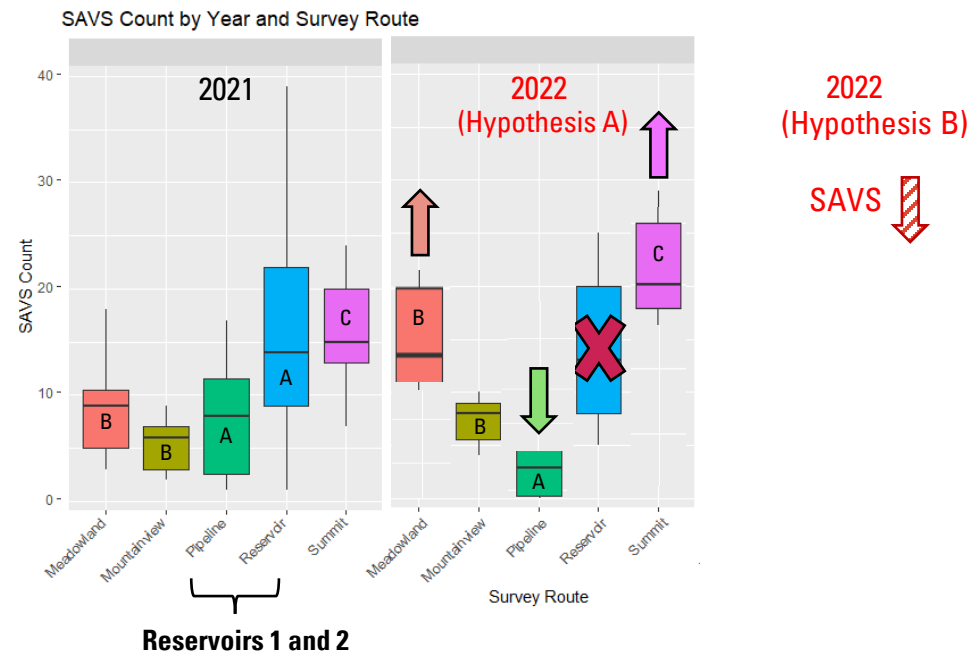
# SAVS Counts 2022 (?)

- **Hypothesis A**

- SAVS move to other areas on Powell Butte
- SAVS counts should increase in some areas and decline in others

- **Hypothesis B**

- SAVS from Reservoir 1 leave Powell Butte
- Overall SAVS counts should decline



# RESULTS 2022

- Demographic Study



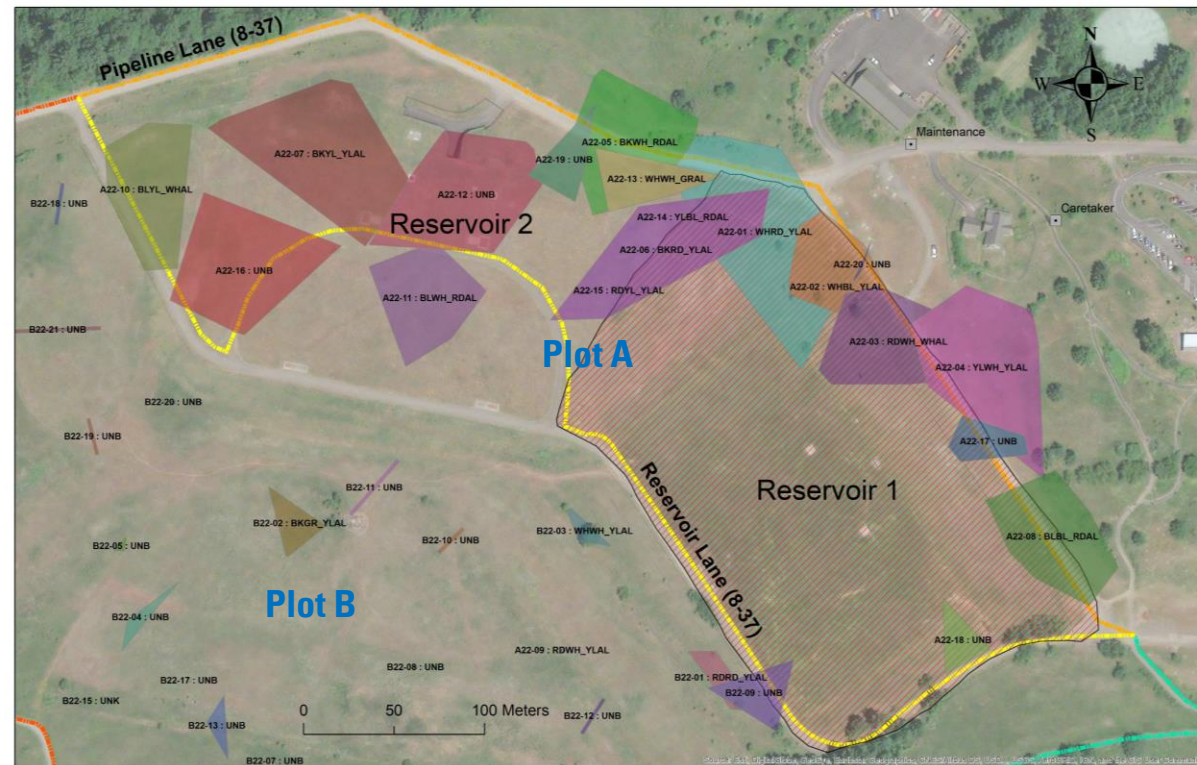
- Community Science Surveys





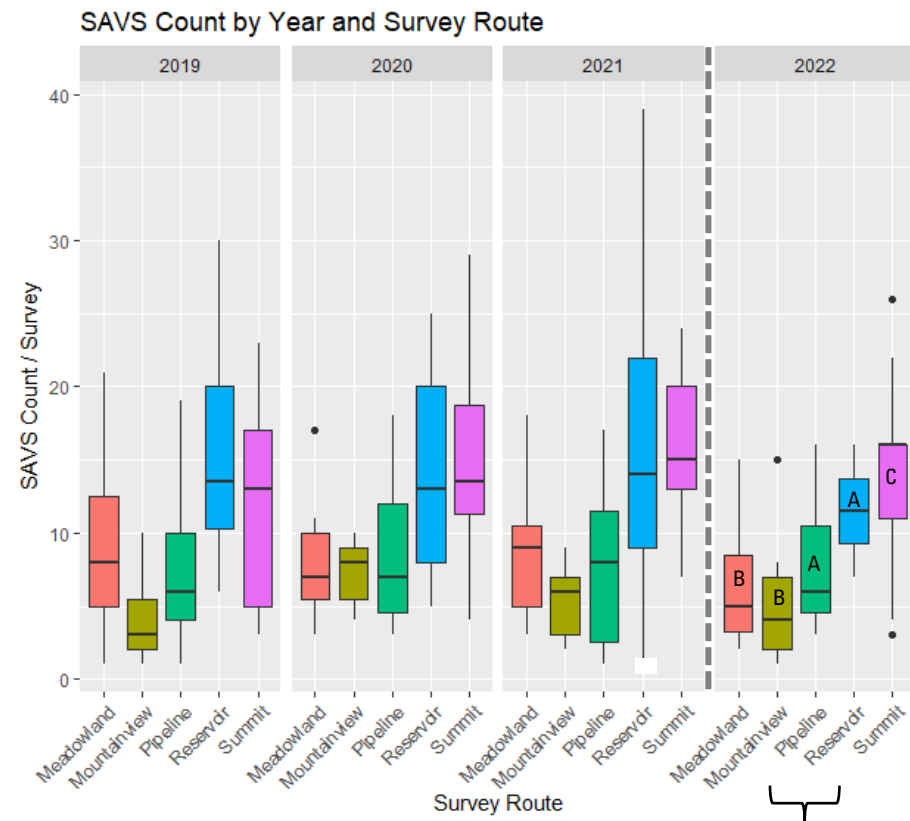
# Savannah Sparrow Breeding Territories 2022

- **SAVS Response**
- Plot A
  - 18 breeding pairs (↓49%)
    - Reservoir 1 = 9 pairs (↓50%)
    - Reservoir 2 = 9 pairs (↓47%)
- Plot B
  - 21 male territories (↓49%)
- **Overall SAVS reproductive rates much lower in 2022**



# Community Science Surveys SAVS Counts 2022

- **SAVS Response**
- **Hypothesis A**
  - SAVS move to other areas on Powell Butte
  - SAVS counts should increase in some areas and decline in others
- **Hypothesis B**
  - SAVS from Reservoir 1 leave Powell Butte
  - Overall SAVS counts should decline

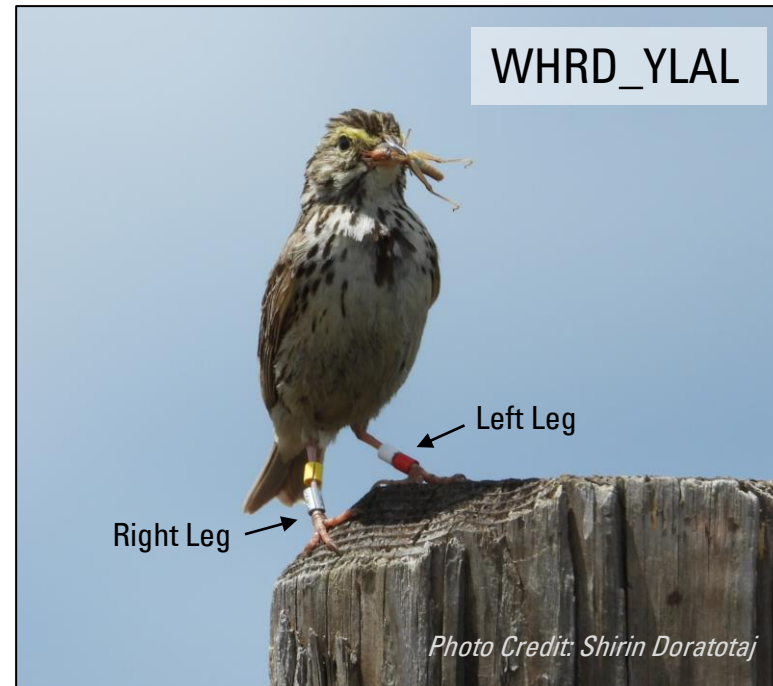


Reservoirs 1 and 2



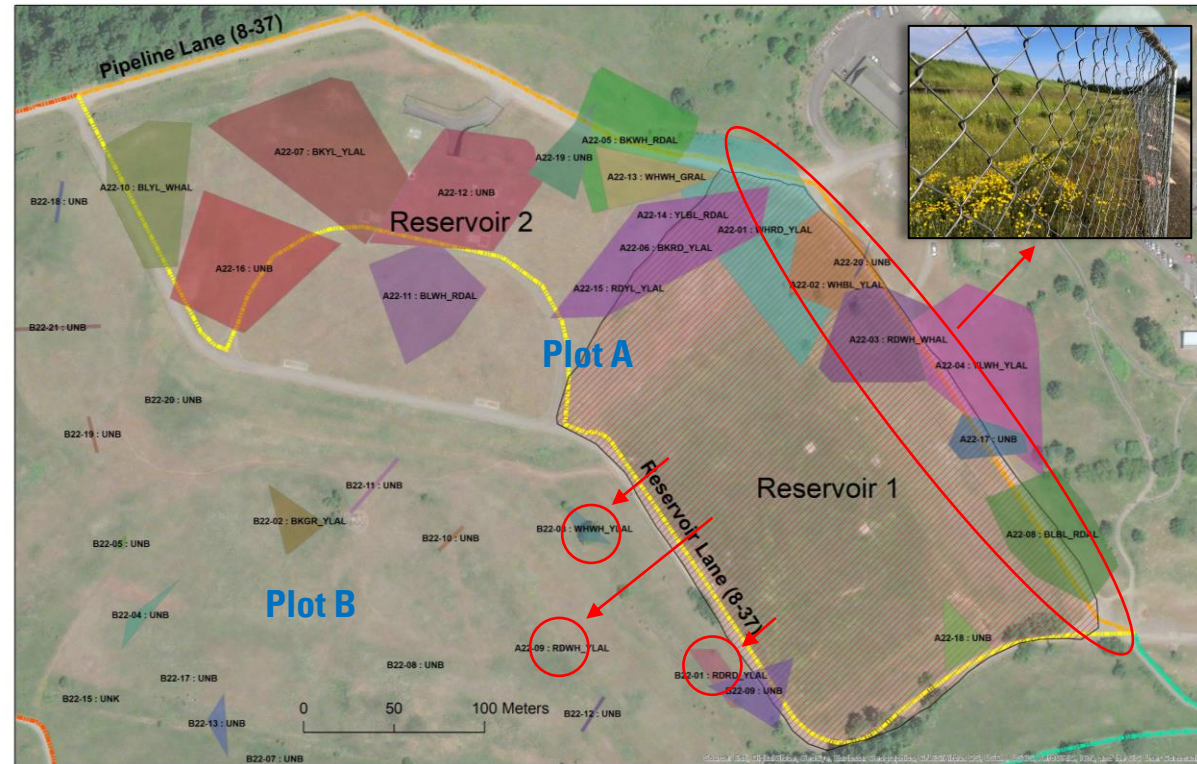
# Tracking Individual Sparrows

- Color-banding allows us to track the response of individual birds
  - Estimate survivorship
  - Measure lifetime fecundity
  - Monitor dispersal and habitat selection
- 101 previously color-banded SAVS
  - 15 previously color-banded adult males on Reservoir 1 (in 2021)



# Savannah Sparrow Breeding Territories 2022

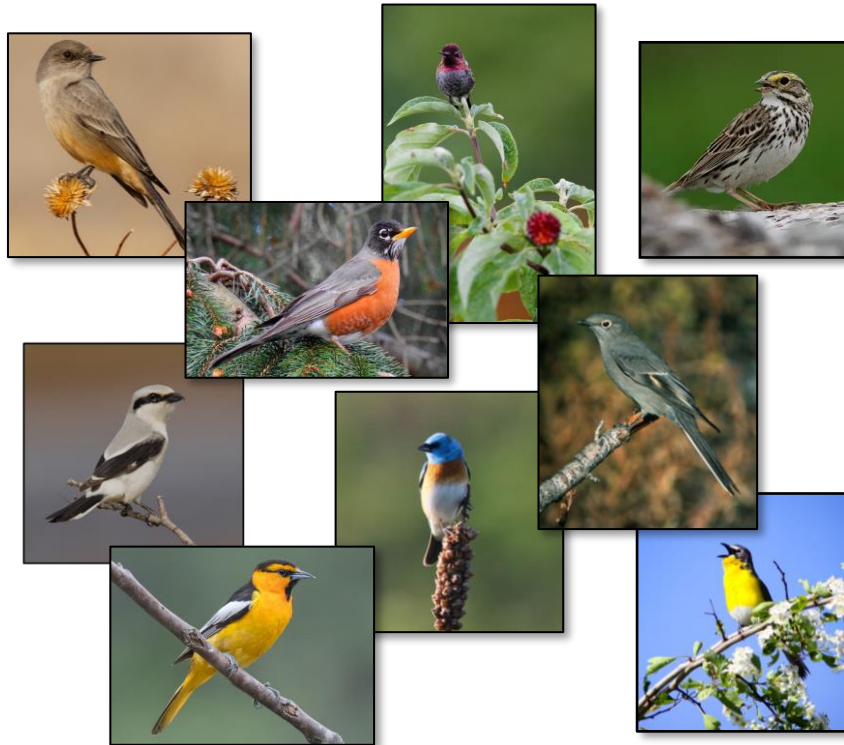
- **Individual SAVS Response**
  - 9 previously color-banded male sparrows returned in 2022 (60%)
  - 6 sparrows stayed on periphery of Reservoir 1 (67%)
  - 3 sparrows moved to Plot B (33%)
  - None moved to Plots A or C (or other areas on Powell Butte)





# Powell Butte Grassland Bird Surveys Results (2019-2022)

- Survey Effort
  - 39 Volunteers – **THANK YOU!**
  - 192 Hours of Surveys
  - 160 Miles of Trails Surveyed
  - 4 consecutive years of surveys (so far...)



# Powell Butte Grassland Bird Surveys Results (2019-2022)

- Survey Data – by Year

	2019	2020	2021	2022	Pooled
Species Detected	77	69	65	84	105
Birds Counted	4,221	2,491	2,951	3,988	13,651
# Surveys	92	58	65	66	281

For complete survey data visit:  
[www.conservationinsight.org](http://www.conservationinsight.org)

Species	AOU Code	2019	2020	2021	2022	Pooled
American Crow	AMCR	137	45	42	244	468
American Goldfinch	AMGO	47	18	26	21	112
American Kestrel	AMKE	35	19	18	27	99
American Pipit	AMPI				2	2
American Robin	AMRO	519	290	355	553	1,717
Anna's Hummingbird	ANHU	137	68	88	169	462
Bald Eagle	BAEA	2	3		2	7
Barn Swallow	BARS	170	107	88	77	442
Black-capped Chickadee	BCCH	79	23	68	42	212
Bewick's Wren	BEWR	15	8	16	7	46
Brown-headed Cowbird	BHCO	20	7	4	3	34
Black-headed Grosbeak	BHGR	32	6	17	16	71
Brewer's Blackbird	BRBL	4		1		5
Brown Creeper	BRCR	1	1		5	7
Band-tailed Pigeon	BTPI	28	5	4	9	46
Black-throated Gray Warbler	BTYW	9	3		5	17
Bullock's Oriole	BUOR	1				1
Bushtit	BUSH	10	8	1	6	25
Cackling Goose	CACG				20	20
Canada Goose	CAGO	8	2	2	33	45
California Scrub-Jay	CASJ	27	12	10	7	56
Chestnut-backed Chickadee	CBCH	24	8	7	27	66
Cedar Waxwing	CEDW	78	37	108	81	304
Chipping Sparrow	CHSP				7	7
Cliff Swallow	CLSW	1		5		6
Cooper's Hawk	COHA	1	2	2		5
Common Raven	CORA				2	2
Common Yellowthroat	COYE	165	162	139	173	639
Double-crested Cormorant	DCCO		1			1
Dark-eyed Junco	DEJU	196	99	107	192	594
Downy Woodpecker	DOWO	5	2	6	6	19
Dusky Flycatcher	DUFL				1	1



# Powell Butte Grassland Bird Surveys Results (2019-2022)

- Survey Data – by Route

	ML	MV	PL	RL	SL
Species Detected	73	71	86	69	73
Birds Counted	2,498	2,914	3,282	2,356	2,601
# Surveys	55	55	71	48	52

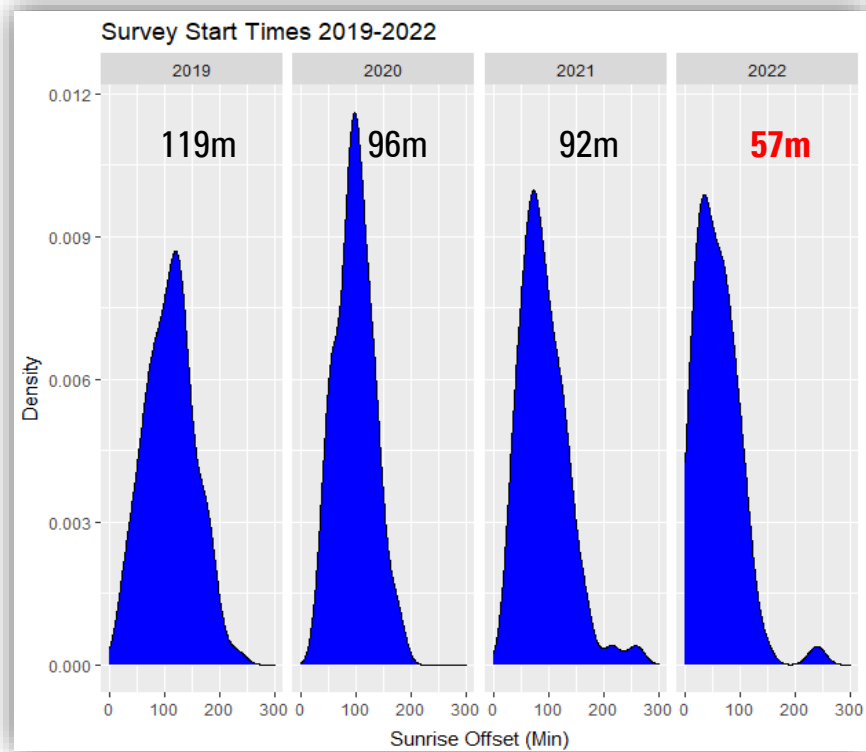
ML = Meadowland Lane  
 MV = Mountain View Trail  
 PL = Pipeline Lane

RL = Reservoir Lane  
 SL = Summit Lane

Species	AOU Code	Meadowland	Mountainview	Pipeline	Reservoir	Summit	Pooled
American Crow	AMCR	118	19	173	38	120	468
American Goldfinch	AMGO	10	47	8	37	10	112
American Kestrel	AMKE	10	9	25	13	42	99
American Pipit	AMPI	1				1	2
American Robin	AMRO	318	370	433	240	356	1,717
Anna's Hummingbird	ANHU	108	161	119	41	33	462
Bald Eagle	BAEA	1		4	2		7
Barn Swallow	BARS	33	18	256	101	34	442
Black-capped Chickadee	BCCH	29	83	61	24	15	212
Bewick's Wren	BEWR	17	7	12	8	2	46
Brown-headed Cowbird	BHCO	19	7	2	4	2	34
Black-headed Grosbeak	BHGR	31	13	13	7	7	71
Brewer's Blackbird	BRBL			1	1	3	5
Brown Creeper	BRCR	2	1	2	2		7
Band-tailed Pigeon	BTPI	31	5	8	2		46
Black-throated Gray Warbler	BTYW	4	5	5	2	1	17
Bullock's Oriole	BUOR		1				1
Bushtit	BUSH		15	5	3	2	25

# Powell Butte Grassland Bird Surveys Results (2019-2022)

- Survey Start Times
  - Protocol
    - Complete surveys < 3 hrs after sunrise (start last survey < 2 hrs after sunrise)
  - Average start time
    - 105 min (1.75 hrs) post-sunrise (2019-2021)
    - **57 min (< 1 hr) post-sunrise in 2022!**





# Powell Butte Grassland Bird Surveys Results (2019-2022)

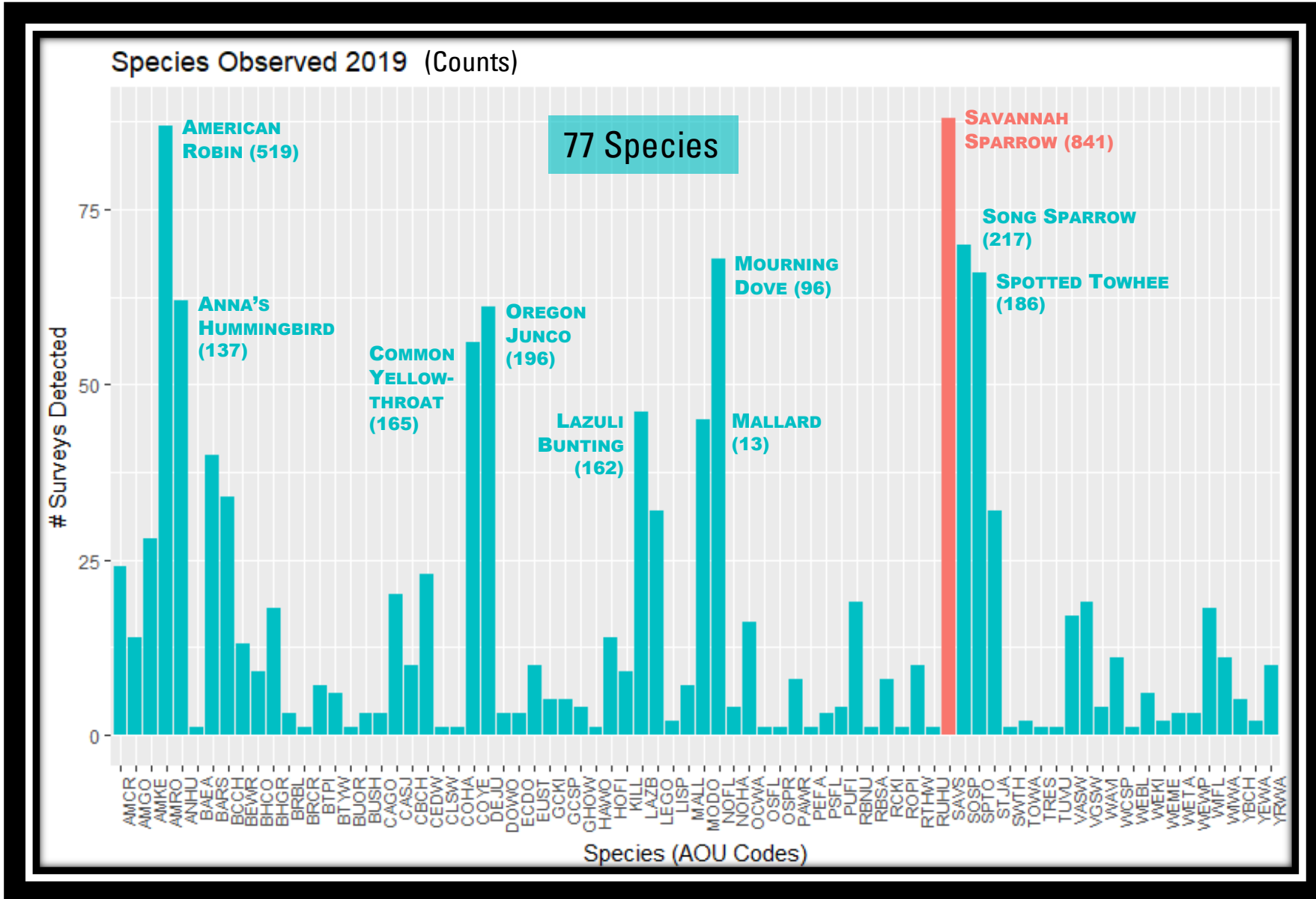
- Some Highlights from 2022

- American Pipit
- Evening Grosbeak
- Northern Pygmy-owl
- Chipping Sparrow
- Sagebrush Sparrow
- Gray Flycatcher
- Dusky Flycatcher

} Eastern OR  
Birds

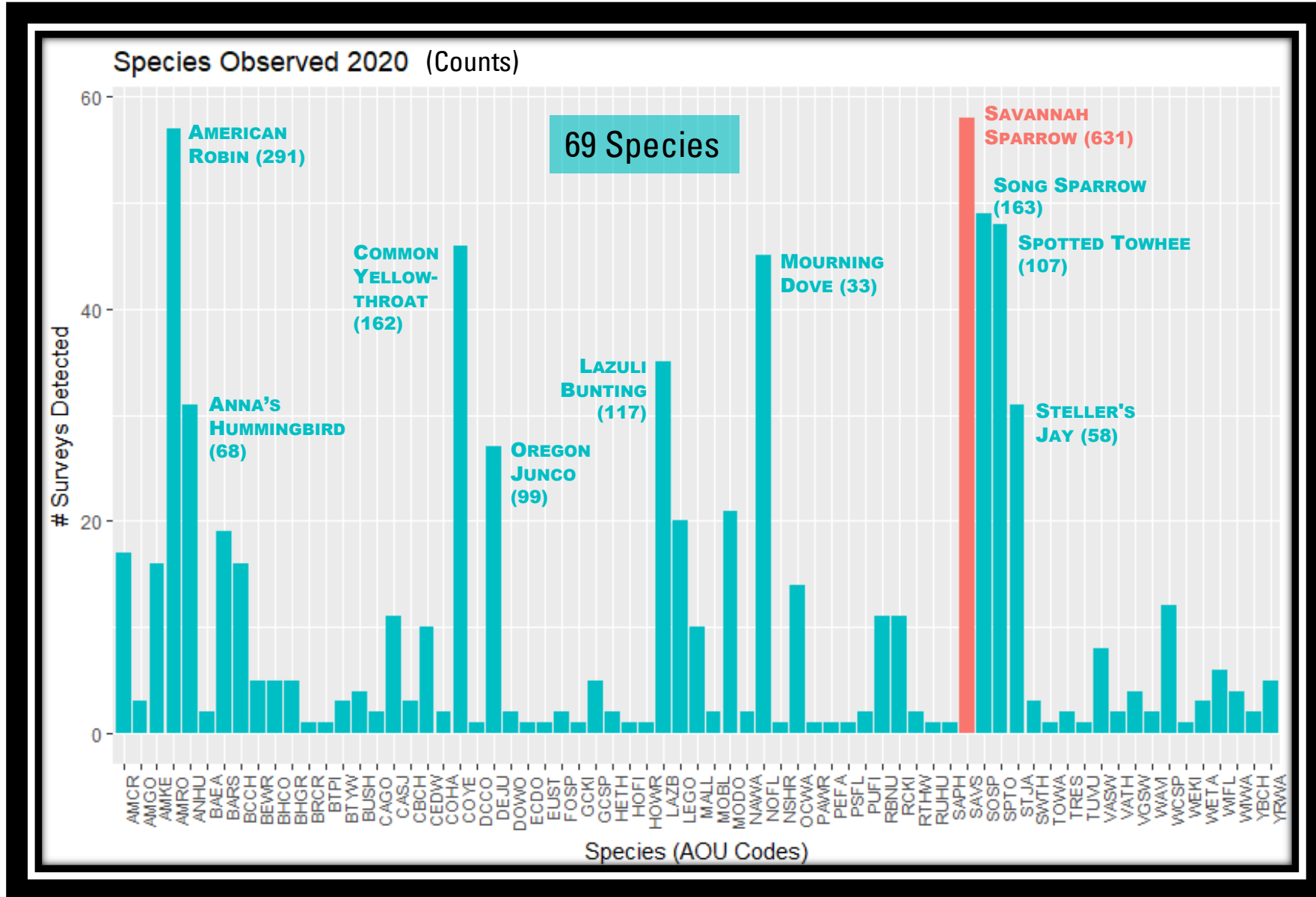


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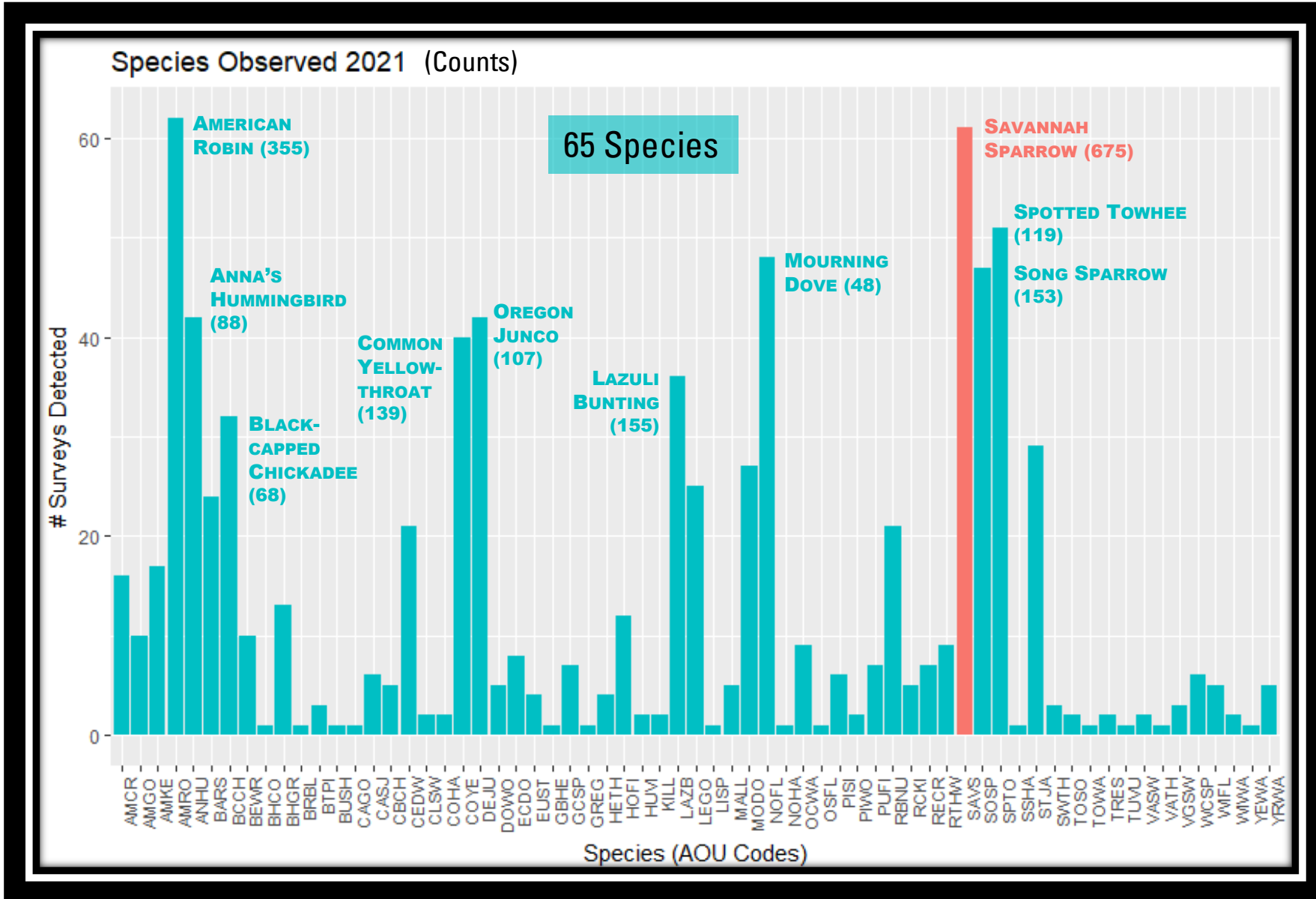




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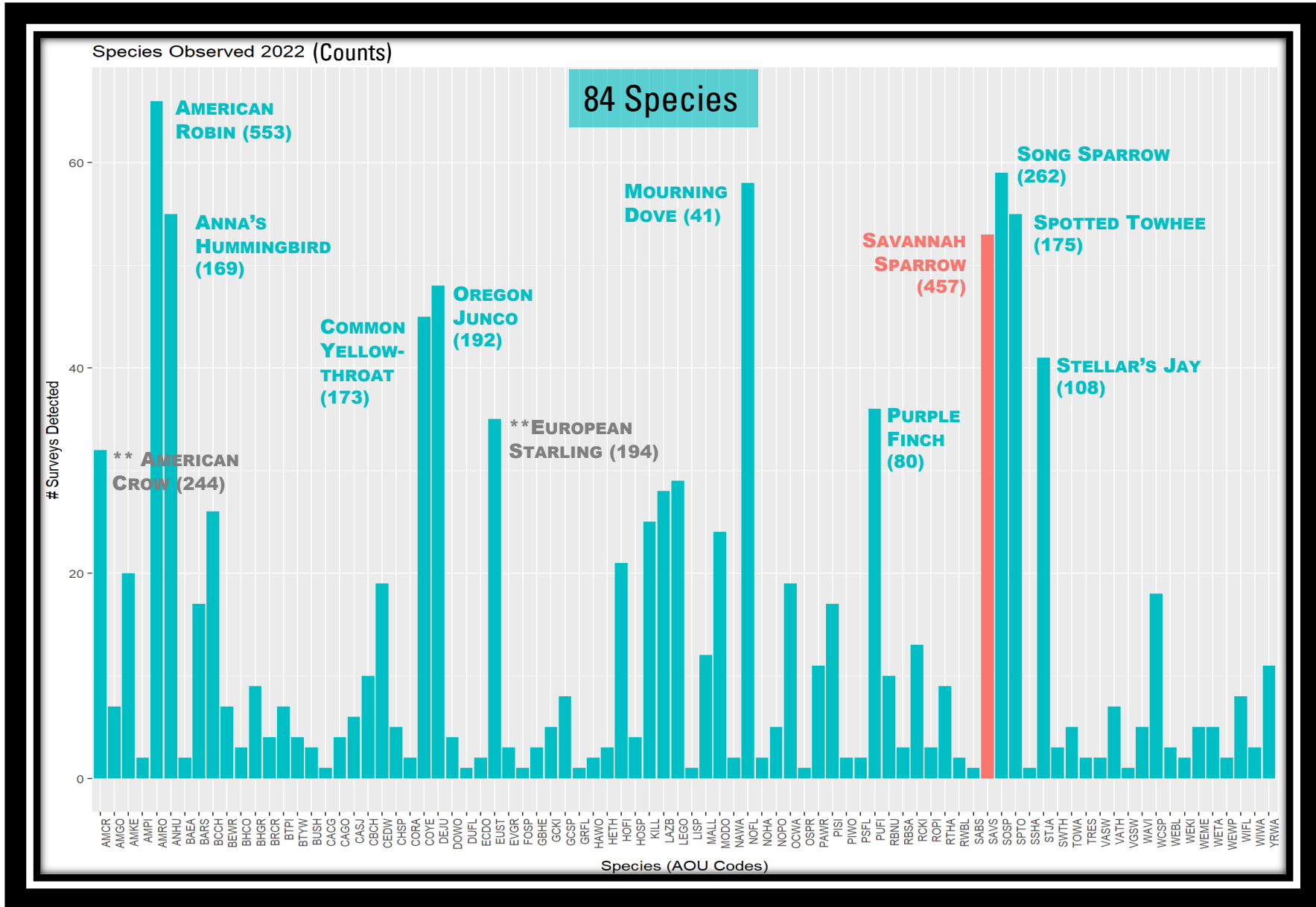


# Powell Butte Grassland Bird Surveys Results (2019-2022)





# Powell Butte Grassland Bird Surveys Results (2019-2022)



# Powell Butte Grassland Bird Surveys Results (2019-2022)

Species	2020	2021	2022
Savannah Sparrow	631	675	457
American Robin	291	355	553
Song Sparrow	163	153	262
Spotted Towhee	107	119	175
Mourning Dove	33	48	41
Anna's Hummingbird	68	88	169

Species	2020	2021	2022
Oregon Junco	99	107	192
Common Yellowthroat	162	139	173
Lazuli Bunting	117	155	130
Stellar's Jay	58	61	108
Black-capped Chickadee	23	68	42
Killdeer	0	2	39

Commonly-Encountered Birds (Total Counts 2020-2022)

# Powell Butte Grassland Bird Surveys Results (2019-2022)

- Potential SAVS Nest Predators
  - More commonly encountered in 2022
  - Abundance of both species much higher at Powell Butte in 2022
  - **May have contributed to lower SAVS reproductive success**

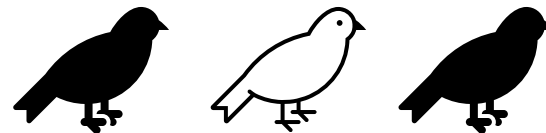
	# Surveys Detected		Total Count	
<u>Species</u>	<u>2021</u>	<u>2022</u>	<u>2021</u>	<u>2022</u>
European Starling	4	35	22	194
American Crow	16	32	42	244
<i>Number of Surveys</i>	<i>65</i>	<i>66</i>		



# Powell Butte Grassland Bird Surveys 2023 (Year 5!)

- Surveys planned again for 2023
  - Data from these surveys will help us understand the impacts of habitat restoration on bird populations at Powell Butte Nature Park
- Visit [www.jcwc.org](http://www.jcwc.org) for information about signups and trainings

**We need  
your help!**



Please visit our website to make a donation:  
[www.conservationinsight.org](http://www.conservationinsight.org)

# Acknowledgements



## • Our Volunteers!

- Daniel Newberry
- Marlee Eckman
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