

Bonderman Field Station at Rio Mesa

2020 Bird Banding Report



DEPARTMENT OF BIOLOGY
THE UNIVERSITY OF UTAH



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*Bonderman Field
Station at Rio Mesa*

Cover Photos, clockwise from top left: Williamson's Sapsucker, Sage Thrasher, MacGillivray's Warbler, Sharp-shinned Hawk, and Green-tailed Towhee. All captured and banded during fall 2020 at the Rio Mesa banding station. Pictures taken by Kyle Kittelberger and Megan Miller.

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Station Overview

Statistics

	Station Lifetime Totals
Species Observed	183
Species Caught	129
Species Banded	121
Overall Captures	17,084
Birds Banded	13,505
Banding Days	972

Our Mission

The primary purpose of our project is to understand the ecology and migratory patterns of the bird community at the Bonderman Field Station at Rio Mesa using mist-netting and bird banding. We capture and band birds to gain valuable insights into population size, community structure, the timing of migration, and how avian groups are responding to anthropogenic threats. We are also dedicated to outreach and education. Birds are an exceptional flagship group to help instill interest in conservation and the environment¹ and every year we welcome hundreds of visitors to our station where people from all walks of life can receive hands-on education about nature, ecology, ornithology and conservation.

Bonderman Field Station at Rio Mesa

Rio Mesa represents an ideal location to conduct ornithological research. Riparian zones, like Rio Mesa's Dolores River, comprise a disproportionately important habitat in the arid Intermountain West. Birds, in particular, depend heavily on this delicate environment, and riparian zones serve as critical migratory corridors for birds moving through an otherwise harsh area². Riparian zones are also under severe threat from climate change³. With the growing threat of global change we, more than ever, need a detailed understanding of the ecology of riparian habitats and the organisms that depend on them.

Our Research

Our station follows standard protocol developed by the Monitoring Avian Productivity and Survivorship program (MAPS)⁴. We operate sixteen 12 x 2.5 meter mist-nets that are opened 30 minutes before sunrise and remain open for six hours. Nets are open 10 out of every 12 days from late August to early November. Nets are checked



every 30 minutes and any birds are extracted and taken back to the banding office for processing. Each bird is fitted with a metal leg band issued by the United States Geological Survey (USGS). This allows us to track the capture history for every individual bird and perform robust mark-recapture analyses to estimate changes in demographic rates⁵. We also take a suite of morphological and demographic measurements from each bird including sex, age, fat content, breeding state, molt stage, wing length, and body mass. These data allow us to describe the bird community at Rio Mesa as well as monitor the health of individuals as they undergo their yearly migration.

2020

Due to the unprecedented global coronavirus pandemic, we did not band during the spring but resumed in the fall, banding from August 31 through November 3. This fall was our 18th banding season, representing 9 ½ years of banding data from Rio Mesa. These data make our station one of the longest-running bird banding operations in Utah and one of only two passerine (songbird) stations currently operating in the state (the other station being our bird banding station in Red Butte Canyon, near Salt Lake City). Some notable captures this fall included our first Least Flycatcher and our second ever American Kestrel and Golden-crowned Sparrow. This fall also happened to be one of our most productive in terms of diversity and number of captured birds. Also of note this fall was an historic snowstorm in early September, part of a larger storm across the Interior West. We also observed a notable number of emaciated and lethargic birds, especially around this storm.

Statistics

	<u>2020 Totals</u>
Species Caught	68
Species Banded	61
Total Captures	1,190
Birds Banded	918
Banding Days	55

Participants

In the fall, our banding team consisted of lead bander Megan Miller (who is returning to band for us in spring 2021) and volunteers Jenna Breckel and Amanda Tveite. Nikolas Orton and Brandy Bowmaster also assisted at times during the season. Our volunteers come to Rio Mesa from across the country with varying degrees of experience working with birds. Our station is dedicated to providing educational opportunities to volunteers of all skill levels and by the end, they are highly competent banders.

Due to the ongoing coronavirus pandemic, our station did not host any group visitors this season.



Future Directions

The next few years promise to be an exciting time for our ornithological research at Rio Mesa. First, with additional years of data, our ability to accurately monitor the changes in bird populations and community composition will improve greatly and we will soon be able to estimate migratory arrival and departure dates. These data are especially important now given the accelerating pace of climate change and the ramifications for riparian ecosystems⁹. Second, we are now beginning to analyze our data, so the next several years will hopefully see multiple papers based on our banding efforts.

Our first paper based on Rio Mesa data is looking at the past five years of banding to assess the potential effects of wildfires in the western United States on fall bird migration, specifically the total number of captures and bird body condition. This is the first paper of its kind to look at this relationship and one of the few studies to utilize bird banding data to evaluate effects of fires on birds. We hope to have this paper accepted for publication before the start of the next fall season. We are also going to be introducing an emaciation scale during 2021 and test this scale across the fall and spring seasons. We will likely write a paper on this emaciation scale after the next fall season.

Our work at Rio Mesa will continue to be the only location in Utah producing this kind of valuable data and will be integral in developing conservation approaches for migratory birds in the near future. We also plan to restart our outreach program in the near future, perhaps in the fall, bringing several groups to the station. These efforts will help more people understand the necessity of conservation biology, ecology and ornithology research and the importance of ensuring healthy ecosystems.

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Appendix: Capture rates for all species caught at Rio Mesa from 2011 to 2019. Species with no capture records have only been observed

Species Name	Totals		
	Number Banded	Number Recaught	Number Unbanded
<u>Waterfowl</u>			
Canada Goose			
Mallard			
Blue-winged Teal			
Cinnamon Teal			
Northern Shoveler			
Green-winged Teal			
Common Merganser			
Duck spp.			
<u>Grouse, Quails, and Allies</u>			
Chukar			
Wild Turkey			4
<u>Grebes</u>			
Pied-billed Grebe			
<u>Hérons, Ibis, and Allies</u>			
Great Blue Heron			
Great Egret			
Snowy Egret			
White-faced Ibis			
<u>Vultures, Hawks, and Allies</u>			
Turkey Vulture			
Osprey			
Golden Eagle			
Northern Harrier			
Sharp-shinned Hawk	8		
Cooper's Hawk	1		
Northern Goshawk			
Bald Eagle			
Swainson's Hawk			
Red-tailed Hawk			
Rough-legged Hawk			
<u>Rails, Gallinules, and Allies</u>			
Sora	1		



Sandhill Crane			
<u>Shorebirds</u>			
Killdeer			
Wilson's Snipe			
Spotted Sandpiper	1		
<u>Pigeons and Doves</u>			
Rock Pigeon			
Band-tailed Pigeon			
Eurasian-collared Dove			
White-winged Dove			
Inca Dove	1		
Mourning Dove	20		6
<u>Owls</u>			
Western Screech-Owl	2		
Great Horned Owl			
Northern Saw-whet Owl	2		
<u>Nightjars</u>			
Common Nighthawk			
Common Poorwill	2		
<u>Swifts</u>			
Vaux's Swift			
White-throated Swift	4		4
<u>Hummingbirds</u>			
Costa's Hummingbird			1
Black-chinned Hummingbird			186
Broad-tailed Hummingbird			29
Calliope Hummingbird			11
Rufous Hummingbird			64
Hummingbird spp.			6
<u>Kingfishers</u>			
Belted Kingfisher			
<u>Woodpeckers</u>			
Williamson's Sapsucker	4	2	
Yellow-bellied Sapsucker			
Red-naped Sapsucker	44	2	
Downy Woodpecker	4		1
Hairy Woodpecker	2		
Lewis's Woodpecker			
Red-shafted Flicker	27	3	2



<u>Falcons and Caracaras</u>			
American Kestrel	2		
Merlin			
Peregrine Falcon			
Prairie Falcon			
<u>Flycatchers and Allies</u>			
Olive-sided Flycatcher	3		
Western Wood-pewee	118	4	2
Willow Flycatcher	212	12	
Western Flycatcher	5		
Pacific-slope Flycatcher	6	2	
Cordilleran Flycatcher	4		
Yellow-bellied Flycatcher	1		
Hammond's Flycatcher	24	4	
Dusky Flycatcher	230	33	1
Gray Flycatcher	62	6	
Black Phoebe	3		1
Say's Phoebe	11	2	
Ash-throated Flycatcher	68	12	
Eastern Kingbird	3		
Cassin's Kingbird			
Western Kingbird	12	3	
Least Flycatcher	1		
Flycatcher spp.	50	4	5
<u>Shrikes</u>			
Loggerhead Shrike	8		
Northern Shrike			
<u>Vireos</u>			
Bell's Vireo		1	
Plumbeous Vireo	19	3	
Cassin's Vireo	19	1	
Warbling Vireo	277	31	
Gray Vireo	41	10	
Red-eyed Vireo	1		
<u>Crows and Jays</u>			
Pinyon Jay			
Woodhouse's Scrub-jay	29	1	1
Black-billed Magpie			
American Crow			
Common Raven			



<u>Larks</u>			
Horned Lark			
<u>Martins and Swallows</u>			
Northern Rough-winged Swallow			
Tree Swallow			
Violet-green Swallow	18		
Bank Swallow			
Barn Swallow	1		
Cliff Swallow	2		
<u>Chickadees and Allies</u>			
Black-capped Chickadee	52	23	
Mountain Chickadee	36	8	
Mountain x Black-capped Chickadee	3	1	
Juniper Titmouse	7	1	
Bushtit	269	81	18
<u>Nuthatches and Creepers</u>			
Brown Creeper	3		
Red-breasted Nuthatch	3		
White-breasted Nuthatch			
<u>Wrens</u>			
Bewick's Wren	227	82	14
Rock Wren	21	11	
Canyon Wren	14	10	1
House Wren	95	22	1
Winter Wren	1		
Marsh Wren	44		2
<u>Gnatcatchers and Kinglets</u>			
Blue-gray Gnatcatcher	745	152	21
Golden-crowned Kinglet	2		
Ruby-crowned Kinglet	581	97	30
<u>Thrushes</u>			
Mountain Bluebird	2		
Western Bluebird			
Townsend's Solitaire	12	2	
Swainson's Thrush	22	3	1
Hermit Thrush	251	60	3
American Robin	37	19	2
<u>Mockingbirds and Thrashers</u>			
Gray Catbird	46	3	



Northern Mockingbird	13	3	3
Brown Thrasher	1		
Sage Thrasher	61	23	1
<u>Starlings and Mynas</u>			
European Starling			
<u>Wagtails and Pipits</u>			
American Pipit			
<u>Waxwings and Dippers</u>			
Cedar Waxwing	3		
American Dipper			
<u>Wood Warblers</u>			
Northern Waterthrush	29		
Orange-crowned Warbler	322	41	1
Nashville Warbler	41	4	
Virginia's Warbler	98	12	
Lucy's Warbler	60	70	1
MacGillivray's Warbler	448	48	6
Common Yellowthroat	179	3	2
American Redstart	2	1	
Northern Parula	2		
Magnolia Warbler	1	1	
Yellow Warbler	617	105	3
Black-throated Blue Warbler	1	1	
Palm Warbler	1		
Yellow-rumped Warbler	28		1
Yellow-rumped Warbler (Audubon's)	534	29	5
Yellow-rumped Warbler (Myrtle)	30	6	
Yellow-rumped Warbler (MxA)	7		
Black-throated Gray Warbler	13		
Townsend's Warbler	4		
Wilson's Warbler	1129	92	17
Yellow-breasted Chat	647	473	17
Warbler spp.			1
<u>Sparrows</u>			
Green-tailed Towhee	100	42	
Spotted Towhee	356	160	20
Vesper Sparrow	27		2
American Tree Sparrow	2		
Chipping Sparrow	77	22	
Clay-colored Sparrow	12	6	



Brewer's Sparrow	603	120	14
Lark Sparrow	29	3	
Lark Bunting			
Black-throated Sparrow	45		
Sagebrush Sparrow	65	2	
Savannah Sparrow	2		
Song Sparrow	812	245	16
Lincoln's Sparrow	458	74	12
Grasshopper Sparrow	6		
Fox Sparrow	5		
Dark-eyed Junco	13		2
Dark-eyed Junco (Gray-headed)	8		1
Dark-eyed Junco (Oregon)	339	122	10
Dark-eyed Junco (Pink-sided)	99	34	4
Dark-eyed Junco (Slate-colored)	10	4	
White-throated Sparrow	21	5	1
White-crowned Sparrow (Mountain)	271	17	5
White-crowned Sparrow (Gambel's)	679	263	39
White-crowned Sparrow	317	77	15
Golden-crowned Sparrow	2		
Sparrow spp.	3		2
<u>Cardinals</u>			
Summer Tanager	1		
Western Tanager	274	14	2
Rose-breasted Grosbeak	1		
Black-headed Grosbeak	91	4	2
Blue Grosbeak	69	12	2
Lazuli Bunting	130	27	
Indigo Bunting	6	1	
Painted Bunting			1
<u>Orioles and Blackbirds</u>			
Red-winged Blackbird	1		
Western Meadowlark	3		
Yellow-headed Blackbird	1		
Brewer's Blackbird			
Common Grackle			
Brown-headed Cowbird	29	5	1
Hooded Oriole	2		
Scott's Oriole			
Bullock's Oriole	72	15	1



<u>Finches and Allies</u>			
Cassin's Finch	3		1
House Finch	226	29	13
Pine Siskin	74	2	1
Lesser Goldfinch	61	1	
American Goldfinch	14		
Evening Grosbeak			