

Bonderman Field Station at Rio Mesa 2019 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: Sagebrush Sparrow, Red-naped Sapsucker, and American Kestrel. All captured and banded during 2019 at the Rio Mesa banding station.

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Station Overview

Statistics

	Station Lifetime Totals
Species Observed	187
Species Caught	127
Species Banded	119
Overall Captures	15,817
Birds Banded	12,501
Banding Days	917

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 April-June and August-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.

2019

This fall was our 17th banding season, representing 8 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). Though the station has been operating for close to a decade, we continue to detect new species for the area. This year we banded three new species: Yellow-headed Blackbird, American Kestrel and Inca Dove. The latter is particularly interesting as, within Utah, it is a species largely confined to the St George area. Its presence in Grand County could indicate a northward shift in their distribution.

Statistics

	2019 Totals
Species Caught	72
Species Banded	68
Total Captures	1,480
Birds Banded	1,290
Banding Days	108

Participants

In the spring, our banding team consisted of veteran lead bander Mike Ford (who has banded for us in Turkey, Ethiopia and Rio Mesa over many years) and volunteers Sean Carter and Tessa Parker. In the fall, our banding team consisted of lead bander Alicia Bachman and volunteers Chris Buff and Emily Ford. 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.

Aside from the regular banding teams, our station also hosted many individual or group visitors including:

- High school students from the Salt Lake Center for Science and Math Education
- Multiple classes from the University of Utah
- Natural education workshops for Utah educators
- Local school groups
- Several University of Utah graduate students



– Many local citizens interested in getting hands-on experience bird-banding
While many groups were not counted completely, we estimate that over 600 people have been exposed to avian conservation and ecology research at our station.

Future Directions

The next few years promise to be an exciting time for our ornithological research at Rio Mesa. 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.

We now have a prospective graduate student and an undergraduate working on the data from Rio Mesa. The former is analyzing how age and sex affect the arrival dates of migrants while the latter is investigating how rainfall affects capture rates. We hope that we will be able to take on a new graduate student in 2020 who can focus on the data gathered at Rio Mesa as part of their thesis.

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 regulations in the near future. We also plan to continue our outreach program, 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	7		
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			187
Broad-tailed Hummingbird			28
Calliope Hummingbird			10
Rufous Hummingbird			63
Hummingbird spp.			6
<u>Kingfishers</u>			
Belted Kingfisher			
<u>Woodpeckers</u>			
Williamson's Sapsucker	3	2	
Yellow-bellied Sapsucker			
Red-naped Sapsucker	41	1	
Downy Woodpecker	3		
Hairy Woodpecker	2		
Lewis's Woodpecker			
Red-shafted Flicker	25	3	2



<u>Falcons and Caracaras</u>			
American Kestrel	1		
Merlin			
Peregrine Falcon			
Prairie Falcon			
<u>Flycatchers and Allies</u>			
Olive-sided Flycatcher	3		
Western Wood-pewee	114	4	2
Willow Flycatcher	212	12	
Western Flycatcher	5		
Pacific-slope Flycatcher	2	2	
Cordilleran Flycatcher	4		
Yellow-bellied Flycatcher	1		
Hammond's Flycatcher	22		
Dusky Flycatcher	223	29	1
Gray Flycatcher	59	6	
Black Phoebe	2		1
Say's Phoebe	11	2	
Ash-throated Flycatcher	68	12	
Eastern Kingbird	3		
Cassin's Kingbird			
Western Kingbird	12	3	
Flycatcher spp.			
<u>Shrikes</u>			
Loggerhead Shrike	8		
Northern Shrike			
<u>Vireos</u>			
Bell's Vireo		1	
Plumbeous Vireo	19	3	
Cassin's Vireo	14		
Warbling Vireo	259	23	
Gray Vireo	35	9	
Red-eyed Vireo	1		
Vireo spp.			
<u>Crows and Jays</u>			
Pinyon Jay			
Woodhouse's Scrub-jay	27	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		
Swallow spp.			
<u>Chickadees and Allies</u>			
Black-capped Chickadee	29	9	
Mountain Chickadee	14	2	
Juniper Titmouse	7	1	
Bushtit	231	64	17
<u>Nuthatches and Creepers</u>			
Brown Creeper	3		
Red-breasted Nuthatch	1		
White-breasted Nuthatch			
<u>Wrens</u>			
Bewick's Wren	208	75	13
Rock Wren	20	11	
Canyon Wren	12	9	1
House Wren	81	18	1
Winter Wren	1		
Marsh Wren	40		2
<u>Gnatcatchers and Kinglets</u>			
Blue-gray Gnatcatcher	679	140	19
Golden-crowned Kinglet	2		
Ruby-crowned Kinglet	548	90	30
<u>Thrushes</u>			
Mountain Bluebird	2		
Western Bluebird			
Townsend's Solitaire	12	2	
Swainson's Thrush	22	3	1
Hermit Thrush	233	57	3
American Robin	37	19	2
<u>Mockingbirds and Thrashers</u>			
Gray Catbird	45	3	



Northern Mockingbird	9	1	
Brown Thrasher	1		
Sage Thrasher	41	14	1
<u>Starlings and Mynas</u>			
European Starling			
<u>Wagtails and Pipits</u>			
American Pipit			
<u>Waxwings and Dippers</u>			
Cedar Waxwing	2		
American Dipper			
<u>Wood Warblers</u>			
Northern Waterthrush	28		
Orange-crowned Warbler	299	37	1
Nashville Warbler	34	2	
Virginia's Warbler	97	11	
Lucy's Warbler	60	70	1
MacGillivray's Warbler	431	43	6
Common Yellowthroat	173	3	2
American Redstart	2	1	
Northern Parula	2		
Magnolia Warbler	1	1	
Yellow Warbler	611	105	2
Black-throated Blue Warbler	1	1	
Palm Warbler	1		
Yellow-rumped Warbler	21		1
Yellow-rumped Warbler (Audubon's)	496	29	5
Yellow-rumped Warbler (Myrtle)	23	6	
Yellow-rumped Warbler (MxA)	7		
Black-throated Gray Warbler	13		
Townsend's Warbler			
Wilson's Warbler	1092	86	16
Yellow-breasted Chat	625	465	15
Warbler spp.			1
<u>Sparrows</u>			
Green-tailed Towhee	96	38	
Spotted Towhee	345	159	20
Vesper Sparrow	25		2
American Tree Sparrow	2		
Chipping Sparrow	76	22	
Clay-colored Sparrow	12	6	



Brewer's Sparrow	561	100	14
Lark Sparrow	28	3	
Lark Bunting			
Black-throated Sparrow	44		
Sagebrush Sparrow	55	2	
Savannah Sparrow	2		
Song Sparrow	658	205	15
Lincoln's Sparrow	393	71	12
Grasshopper Sparrow	6		
Fox Sparrow	4		
Dark-eyed Junco	13		2
Dark-eyed Junco (Gray-headed)	8		1
Dark-eyed Junco (Oregon)	325	121	10
Dark-eyed Junco (Pink-sided)	81	33	4
Dark-eyed Junco (Slate-colored)	8	4	
White-throated Sparrow	21	5	1
White-crowned Sparrow (Mountain)	254	16	5
White-crowned Sparrow (Gambel's)	542	227	34
Golden-crowned Sparrow	1		
House Sparrow			
Sparrow spp.	3		2
<u>Cardinals</u>			
Summer Tanager	1		
Western Tanager			
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	202	26	11
Pine Siskin	56	1	1
Lesser Goldfinch	61	1	
American Goldfinch	13		
Evening Grosbeak			