AVIFAUNAL CHANGES IN CENTRAL OREGON SINCE 1899

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Loye Holmes Miller, attached as a young ornithologist to a primarily fossil-collecting expedition to the John Day Basin in central Oregon in 1899, collected and recorded the birds he encountered at three sites. Two of the sites — Bridge Creek, 16 km northwest of Mitchell, Wheeler Co., and Blue Basin, 19 km north-northwest of Dayville, Grant Co.—were described in sufficient detail to allow them to be relocated. This paper compares the results of bird surveys conducted in 1983 at those two locations with the information provided in Miller's accounts, to determine what changes in the avifauna might have occurred since 1899.

METHODS

References to topographical features, vegetation, and the few place names mentioned in the texts of accounts of the expedition (Merriam 1901, Miller 1904, Miller 1950, Shotwell 1972) were used to identify as closely as possible the center of Miller's ornithological activities. The surrounding countryside within 3-4 km was explored for birds, as Miller did in 1899. I attempted in the 1983 survey to cover areas and habitats specifically mentioned in 1899, and excluded habitats Miller apparently did not visit, e.g., coniferous forest above Blue Basin. In 1983 I surveyed the Bridge Creek site from 16-20 June and Blue Basin from 21-23 June. Miller spent 12 days (1-12 June) at the Bridge Creek site and 10 days (19-28 June) at Blue Basin, though approximately half of his time was spent helping with the paleontological effort. Amount of effort and time of year were thus comparable in both years, though the spring of 1899 was phenologically later than that of 1983.

Avifaunal information contained in Miller's 1904 account was tabulated to include his statement of relative abundance when provided, whether a species was collected, or presence or absence of a species if other data were unavailable. In 1983 no systematic random sampling method was employed, but the amount of time spent in each habitat type and the number of observations of each species were recorded. More precise details on locations and effort are included in an appendix to the report on this study on file with the Oregon Department of Fish and Wildlife, La Grande, OR 97850.

RESULTS AND DISCUSSION

A comparison of the bird species and their relative abundances is presented in Table 1. The data contain obvious limitations insofar as comparability is concerned, the main one being the difficulty of surveying precisely the same areas in 1983 as in 1899 with the same amount of effort. The apparent lateness of the 1899 spring may account for small discrepancies in that some species Miller found in 1899, e.g., Evening Grosbeak, may have been migrants. Miller's not finding some species in 1899 which were present in 1983 may have been due more to methodology than to actual changes in

bird species composition, in that his preoccupation with collecting specimens is different from identifying birds with modern optical equipment and by song. In addition, Miller may not have recorded certain common species at a particular site, e.g., Western Meadowlark, perhaps because he encountered them everywhere. Finally, species may have been missed on either survey due to their low detectability or low density, e.g., accipiters, Common Poorwill and perhaps Pinyon Jay. Nevertheless, certain changes at the community level, and some even at the species level, can be detected by examining the patterns of differences and similarities in the data.

Blue Basin

The uplands at Blue Basin were primarily grassland in 1899 and were overgrazed (Merriam 1901). Western Junipers (*Juniperus occidentalis*) were relatively scarce and probably confined to draws, and Western Birch (*Betula occidentalis*), alder (*Alnus sp.*), willows (*Salix* sp.), and other deciduous growth was present near springs and along streams. In 1983 junipers were more abundant, and the grassland was in excellent condition after three years of above-average rainfall. Many of the bird species present in 1899 were also present in 1983, especially the shrub-steppe species — Brewer's, Vesper and Lark sparrows — suggesting a degree of habitat similarity. Blue and Sage grouse, however, were not found in 1983, and Rhys Humphreys, a local rancher, was of the opinion that these and the White-tailed Jackrabbit (*Lepus townsendii*), another grassland species, seemed to have disappeared. Some species not recorded in 1899 — California Quail, Ring-necked Pheasant, Chukar, Rock Dove and European Starling — were introduced. A significant difference in 1983 was the addition of a complex of woodland and woodland-edge species — Chipping Sparrow, Mountain Chickadee, Loggerhead Shrike and perhaps Red-tailed Hawk — a result of the increase of juniper that has occurred since 1899. The difference is one of degree, as certain juniper or woodland dependent species — Black-billed Magpie, Ash-throated Flycatcher, Black-throated Gray Warbler, Northern Oriole and American Robin — were present in both 1899 and 1983. Yellow Warblers were not found in 1983; the limited amount of deciduous riparian growth Miller camped beneath was present only as broken remnants in 1983, except at elevations above 1230 m. In 1983, Lewis' Woodpecker was not observed, whereas Mountain Bluebird was recorded in slightly greater numbers. The European Starling, found nesting and in foraging flocks in 1983, is known to adversely affect these cavity nesters. The absence from the 1899 record of the larger raptors — Golden Eagle, buteos, Prairie Falcon and Common Raven — all found in 1983, was probably a result of human persecution.

Bridge Creek

At Bridge Creek, the presence of a perennial stream and its associated floodplain creates a greater diversity of habitat types than occurs in the uplands of Blue Basin. The differences reflected in the data noticeably outweigh the degree of overlap, and numerous changes have occurred involving whole avian communities.

In the upland habitats at Bridge Creek, the results were similar to those obtained at Blue Basin. Various grassland species were present in both surveys,

and species dependent on an increased amount of juniper woodland habitat were added in 1983. Pinyon Jays were not found in 1983.

An obvious difference at Bridge Creek in 1983 was the occurrence of waterfowl and other water-associated species such as Bank Swallow, Spotted Sandpiper, Red-winged and Yellow-headed blackbirds, and perhaps Vaux' Swift, which were not recorded in 1899. The addition of these species is the result of new waterbird habitat created by a dam and approximately 30 ha irrigation reservoir on a tributary of Bridge Creek near the site of the 1899 camp.

The most significant change at Bridge Creek has occurred in the bird community of the riparian zone. A whole complex of riparian species found by Miller in 1899 — Black-headed Grosbeak, Warbling Vireo, American Goldfinch, Rufous-sided Towhee, Common Yellowthroat, Wilson's Warbler and Western Wood-Pewee — were absent in 1983, and two other species characteristic of the riparian zone, Yellow-breasted Chat and Lazuli Bunting, were found in lower numbers in 1983. Similar reductions in species diversity and abundance have been found recently in Nevada (Oakleaf and Klebenow 1975) and California (Gaines 1974). A loss of riparian habitat or its structural deterioration at the Bridge Creek site is implied by these data. However, populations of riparian bird species may have been reduced by a loss of habitat in the general area and thus be absent from the isolated patches of riparian habitat present at the site in 1983. A possible increase in the population of cowbirds and associated parasitism may have been a contributing factor. Riparian woodland species are still well represented along Bridge Creek at the nearby town of Mitchell, where the town and/or fragmented landownership patterns protect the riparian zone from agricultural impacts.

Table 1. Comparison of bird species, occurrence and relative abundances in the vicinity of Bridge Creek (T10S, R20E, Sec 25), Wheeler Co., and Blue Basin (T11S, R26E, Sec 21), Grant Co., Oregon, 1899 and 1983.

SPECIES	BRIDGE CREEK 1899	BRIDGE CREEK 1983	BLUE BASIN 1899	BLUE BASIN 1983
Mallard *Anas platyrhynchos*	—	5		
Gadwall *Anas strepera*	—	6		
Cinnamon Teal *Anas cyanoptera*	—	2		
American Wigeon *Anas americana*	—	2		
Accipiter sp.			—	1
Red-tailed Hawk *Buteo jamaicensis*	—	5	—	4

Table 1 (Cont.)

SPECIES	BRIDGE CREEK 1899	BRIDGE CREEK 1983	BLUE BASIN 1899	BLUE BASIN 1983
Golden Eagle *Aquila chrysaetos*	—	2		
Prairie Falcon *Falco mexicanus*	—	1		
American Kestrel *Falco sparverius*	present	10	—	9
Blue Grouse *Dendragapus obscurus*			common	—
Sage Grouse *Centrocercus urophasianus*			common	—
California Quail *Callipepla californica*	—	4	—	9
Ring-necked Pheasant *Phasianus colchicus*	—	2		
Chukar *Alectoris chukar*	—	3	—	4
American Coot *Fulica americana*	—	20		
Killdeer *Charadrius vociferus*	—	16	—	2
Spotted Sandpiper *Actitis macularia*	—	3		
Rock Dove *Columba livia*	—	2		
Mourning Dove *Zenaida macroura*	present	6	common	5
Western Screech-Owl *Otus kennicottii*	—	2		
Great Horned Owl *Bubo virginianus*	present	2	—	3
Common Poorwill *Phalaenoptilus nuttallii*	common	—	—	1
Common Nighthawk *Chordeiles minor*	—	24	present	7
Vaux's Swift *Chaetura vauxi*			—	4
Black-chinned Hummingbird *Archilochus alexandri*			—	5
Northern Flicker *Colaptes auratus*	—	11	nesting	8
Lewis' Woodpecker *Melanerpes lewis*	abundant	—	nesting	—
Western Kingbird *Tyrannus verticalis*			present	9
Ash-throated Flycatcher *Myiarchus cinerascens*	—	4	present	1
Say's Phoebe *Sayornis saya*	—	14	—	1
Willow Flycatcher *Empidonax traillii*	—	1		

Table 1 (Cont.)

SPECIES	BRIDGE CREEK 1899	BRIDGE CREEK 1983	BLUE BASIN 1899	BLUE BASIN 1983
Gray Flycatcher *Empidonax wrightii*			—	2
Western Wood-Pewee *Contopus sordidulus*	present	—	—	1
Violet-green Swallow *Tachycineta thalassina*	present	2	—	4
Bank Swallow *Riparia riparia*	—	8		
Northern Rough-winged Swallow *Stelgidopteryx serripennis*	present	4		
Barn Swallow *Hirundo rustica*	present	2		
Cliff Swallow *Hirundo pyrrhonota*	—	2		
Black-billed Magpie *Pica pica*	present	17	common	6
Common Raven *Corvus corax*	—	4	—	5
American Crow *Corvus brachyrhynchos*	—	4	nesting	—
Pinyon Jay *Gymnorhinus cyanocephalus*	present	—		
Mountain Chickadee *Parus gambeli*	—	1	—	7
Bushtit *Psaltriparus minimus*	—	1	—	1
Canyon Wren *Catherpes mexicanus*	present	—	present	1
Rock Wren *Salpinctes obsoletus*	common	16	—	11
American Robin *Turdus migratorius*	common	14	present	31
Mountain Bluebird *Sialia currucoides*	1	4	—	6
Loggerhead Shrike *Lanius ludovicianus*	—	6	—	1
European Starling *Sturnus vulgaris*	—	79	—	49
Warbling Vireo *Vireo gilvus*	collected	—		
Orange-crowned Warbler *Vermivora celata*			—	1
Yellow Warbler *Dendroica petechia*	present	6	abundant	—
Black-throated Gray Warbler *Dendroica nigrescens*	common	2	—	3
MacGillivray's Warbler *Oporornis tolmiei*			collected	1
Common Yellowthroat *Geothlypis trichas*	abundant	—		

Table 1 (Cont.)

SPECIES	BRIDGE CREEK 1899	BRIDGE CREEK 1983	BLUE BASIN 1899	BLUE BASIN 1983
Yellow-breasted Chat *Icteria virens*	common	1		
Wilson's Warbler *Wilsonia pusilla*	collected	—		
Western Meadowlark *Sturnella neglecta*	present	85	—	55
Yellow-headed Blackbird *Xanthocephalus xanthocephalus*	—	1		
Red-winged Blackbird *Agelaius phoeniceus*	—	27		
Northern Oriole *Icterus galbula*	abundant	23	present	4
Brewer's Blackbird *Euphagus cyanocephalus*	present	80	—	26
Brown-headed Cowbird *Molothrus ater*	present	12	—	7
Western Tanager *Piranga ludoviciana*	common	—	occasional	1
Black-headed Grosbeak *Pheucticus melanocephalus*	collected	—	present	—
Lazuli Bunting *Passerina amoena*	abundant	1	—	3
Evening Grosbeak *Coccothraustes vespertinus*	collected	—		
Cassin's Finch *Carpodacus cassinii*			1	2
House Finch *Carpodacus mexicanus*	—	3	common	2
American Goldfinch *Carduelis tristis*	collected	—	—	1
Green-tailed Towhee *Pipilo chlorurus*			—	3
Rufous-sided Towhee *Pipilo erythrophthalmus*	collected	—	collected	10
Savannah Sparrow *Passerculus sandwichensis*	—	2		
Vesper Sparrow *Pooecetes gramineus*			present	11
Lark Sparrow *Chondestes grammacus*	—	9	present	15
Black-throated Sparrow *Amphispiza bilineata*	—	3		
Dark-eyed Junco *Junco hyemalis*	—	3	collected	6
Chipping Sparrow *Spizella passerina*	—	12	—	39
Brewer's Sparrow *Spizella breweri*	common	—	present	17
Song Sparrow *Melospiza melodia*	common	4		

Another major change at Bridge Creek has occurred in the climax tall shrub community of the flat alluvial bottomland (Youtie and Winward 1977). In 1899 the Greasewood (*Sarcobatus vermiculatus*) and Big Sagebrush (*Artemisia tridentata*) that occupied this bottomland provided nesting habitat for Brewer's Sparrow and Lazuli Bunting, and foraging habitat for other species, e.g., American Robin and Western Wood-Pewee. Extensive stands of this plant community are now virtually absent along Bridge Creek, having been converted to cultivated fields (hayfields and fallow land), which provide habitat for nesting Killdeer and Savannah Sparrows and for foraging flocks of blackbirds and starlings. By chance, 63 acres of bottomland were acquired by the National Park Service as a buffer to the Painted Hills National Monument. Three singing male Black-throated Sparrows, a species rarely encountered at this latitude, were found here in 1983.

Insofar as single species are concerned, the most disturbing change was the absence in 1983 of the Lewis' Woodpecker, which Miller found "quite abundant" at Bridge Creek in 1899. Although this species may nest opportunistically in response to local food abundance (Bock 1970), and food may have been locally abundant in 1899, the Lewis' Woodpecker is also apparently a secondary cavity nester, and competition for nest sites from starlings may have contributed to its local extirpation at both Bridge Creek and Blue Basin. In recent years, Lewis' Woodpecker populations have been declining at the rate of 5.5% per year west of the Rocky Mountains (Robbins et al., unpub. rep.), and the species is considered "sensitive" or declining and of concern (U.S. Fish and Wildlife Service 1982).

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Lewis' Woodpecker *Sketch by Narca Moore-Craig*