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## RELATIONSHIPS OF THE CANADA JAYS IN THE NORTHWEST

BY JOHN W. ALDRICH

THE separation of the North American jays of the genus *Perisoreus*<sup>1</sup> into two distinct species seems to be accepted by most ornithologists. The A. O. U. Committee on Nomenclature has retained the listing of two species through the latest edition of the Check-list (1931:220-221), although other authors, including Howe (1902:105), had apparently with good reason, accepted a conspecific status for these birds. Hellmayr (1934:66-70) also treats the forms as conspecific; Miller (1943:117) argues in favor of two separate species.

There seems to be no evidence that in habits, call notes, or habitat, there is any significant difference distinguishing one population from any other. Furthermore, in size (see Table 1) and in coloration the populations seem to intergrade geographically in a manner typical of racial variation. Apparently the two characters that have been assumed to be specific, separating the *obscurus* from the *canadensis* group, are the immaculate underparts and the white shaft streaks of the dorsal plumage in *obscurus* (Ridgway, 1904:365). I have found, however, that specimens from central northern Washington in the Biological Surveys Collections<sup>2</sup> demonstrate a continuous intergradation of these characters, and a total of 42 specimens from central northern Washington and central southern British Columbia not only completely bridge the gap between the *obscurus* and *canadensis* complexes, but also represent an undescribed race, easily separable from all others, which I propose to call:

### *Perisoreus canadensis connexus*, new subspecies

COLUMBIAN JAY

TYPE.—Adult ♀, No. 271630, U. S. National Museum (Biological Surveys Collection); Bald Mountain, northwestern Okanogan County, Washington, altitude 6,800 feet; September 6, 1920; George G. Cantwell; original number 1062.

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<sup>1</sup> For use of the generic name *Perisoreus* in place of *Cractes* (Billberg, 1828:14),



*Prince Albert, Sask., April 1, 1940*

*Photographed by Fred G. Bard*

CANADA JAY

**SUBSPECIFIC CHARACTERS.**—In adult plumage, similar to *Perisoreus canadensis fumifrons*, but larger of wing, and slightly darker above, with white areas of head more extensive and less clouded with smoky brownish, entire underparts more whitish; like the neighboring *Perisoreus canadensis bicolor*, but darker above and more whitish below, with white areas of head more restricted, and dorsal white shaft streaking more pronounced; approaching *Perisoreus canadensis griseus*, but slightly larger, with more grayish dorsal coloration, and white shaft streaks reduced, white areas of head more extensive, and underparts more suffused with brownish gray; different from *Perisoreus canadensis albescens* chiefly in the darker dorsal coloration; like *Perisoreus canadensis pacificus*, of central western British Columbia, but paler above and below, with white areas of head more extensive, and more pronounced dorsal white shaft streaking.

In juvenal plumage *connexus* differs from *fumifrons* in being lighter throughout; from *bicolor*, it is distinguishable chiefly by the color of the head, which in *bicolor* exhibits considerable whitish on the occiput, and in *connexus* is entirely gray; it is somewhat lighter above than *griseus*, particularly with respect to head color; it is darker, especially on the head, than *albescens*. I have seen no juvenile specimens of *pacificus*.

**MEASUREMENTS.**—Adult male (15 specimens from Okanogan County, Washington): wing, 142.0-151.5 (146.7) mm.; tail, 136.0-152.0 (143.4); total culmen, 23.0-25.5 (24.4); tarsus, 34.0-37.8 (35.9); middle toe without claw, 16.0-18.5 (17.8). Adult female (10 specimens from Okanogan County, Washington): wing, 140.0-149.0 (144.4); tail, 135.0-152.0 (140.8); total culmen, 23.0-25.5 (24.5); tarsus, 34.0-36.5 (35.3); middle toe without claw, 15.5-18.0 (17.2).

**RANGE.**—Resident in the Lodgepole Pine-Engelmann Spruce Association, Canadian Life Zone, in the mountains of central northern Washington, central southern, central, and central eastern British Columbia, and central western Alberta.

**DISCUSSION.**—Specimens from Glacier, Whatcom County, Washington, are somewhat intermediate, having slightly more dusky

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used by Ridgway (1904:750) and by Hartert and Steinbacher (1932:22), I am guided by the opinion of the A. O. U. Committee on Nomenclature (1908:394).

<sup>2</sup> The 12 critical specimens in this collection were taken by Walter P. Taylor and George G. Cantwell, in their "Boundary Expedition" across northern Washington in the summer and early autumn of 1920.

For the loan of additional specimens I am indebted to: Josselyn Van Tyne, of the Museum of Zoology, University of Michigan, for an excellent series of birds collected by Leonard Wing in the summer of 1940 at Conconully, in Okanogan County, Washington; Stanley G. Jewett, who kindly sent me specimens which he took in northern Washington; Major Allan Brooks, who lent important specimens from British Columbia; and Alden H. Miller, of the Museum of Vertebrate Zoology, University of California, for topotypes of *P. c. pacificus*.

TABLE 1  
MEASUREMENTS (IN MM.) OF PERISOREUS

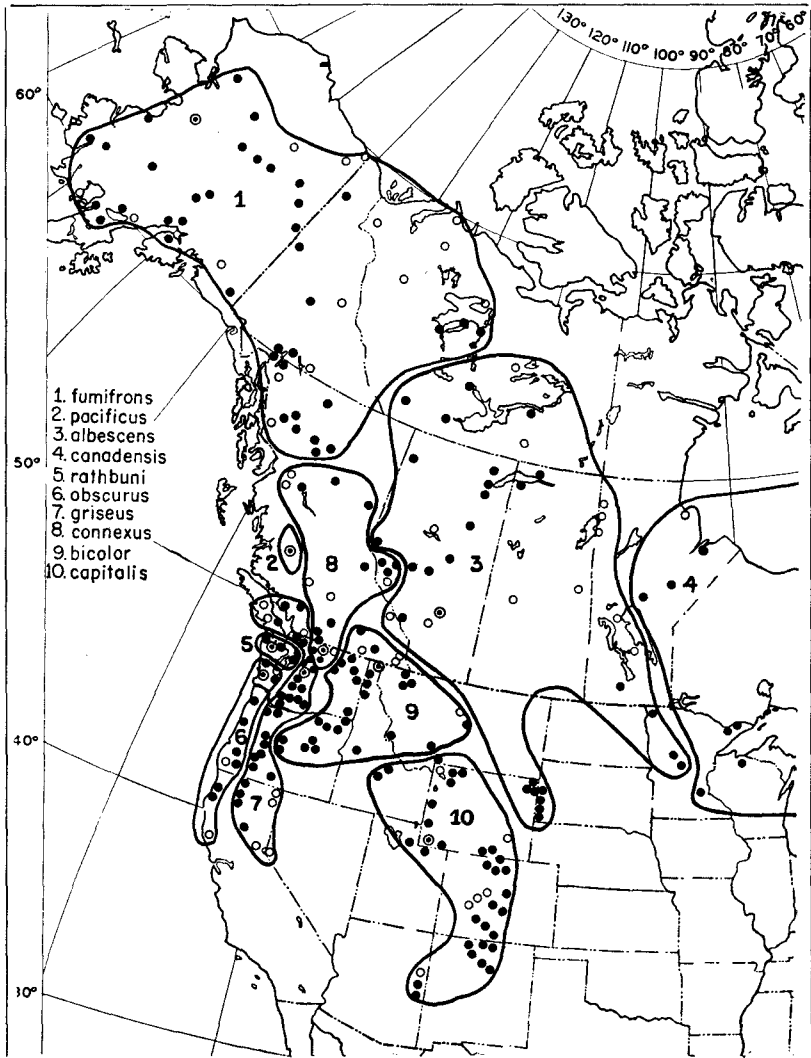
Subspecies	Wing	Tail	Total Culmen	Tarsus	Middle toe without claw
♂					
<i>obscurus</i> (5)	142.5-147.0 (144.9)	138.5-143.0 (141.4)	23.5-25.5 (24.4)	34.5-36.0 (35.3)	17.0-17.8 (17.4)
<i>griseus</i> (31)	137.5-149.5 (143.0)	130.0-142.5 (136.7)	22.0-25.5 (23.7)	33.0-37.5 (35.3)	16.0-18.0 (16.9)
<i>connexus</i> (15)	142.0-151.5 (146.7)	136.0-152.0 (143.4)	23.0-25.5 (24.4)	34.0-37.8 (35.9)	16.0-18.5 (17.8)
<i>rathbuni</i> (6)	136.0-143.0 (139.9)	129.0-134.0 (131.3)	22.8-25.0 (23.7)	33.5-37.0 (35.4)	16.5-17.5 (17.0)
<i>albescens</i> (14)	143.0-148.5 (145.6)	141.5-148.0 (144.0)	22.0-27.0 (24.8)	35.5-38.0 (36.7)	16.0-18.0 (17.0)
<i>bicolor</i> (22)	138.5-157.0 (146.5)	137.0-152.0 (143.6)	23.0-27.5 (25.1)	35.0-38.5 (37.0)	16.0-18.5 (17.1)
<i>fumifrons</i> (40)	138.5-148.0 (142.4)	138.0-149.5 (144.5)	23.5-27.5 (25.6)	34.0-40.0 (37.1)	15.5-18.5 (16.9)
<i>capitalis</i> (18)	146.5-159.5 (152.1)	137.0-153.0 (144.0)	25.5-27.5 (26.2)	36.0-37.5 (36.8)	16.0-18.5 (17.6)
♀					
<i>obscurus</i> (12)	132.5-139.5 (136.6)	126.5-136.5 (130.8)	22.0-25.0 (23.2)	33.0-36.0 (34.5)	15.5-17.5 (16.7)
<i>griseus</i> (24)	135.0-143.5 (140.0)	130.0-140.5 (135.0)	22.0-25.0 (23.5)	33.0-36.0 (34.4)	15.0-18.0 (16.0)
<i>connexus</i> (10)	140.0-149.0 (144.4)	135.0-152.0 (140.8)	23.0-25.5 (24.5)	34.0-36.5 (35.3)	15.5-18.0 (17.2)
<i>rathbuni</i> (6)	133.0-140.0 (136.4)	128.5-131.0 (129.8)	22.5-24.5 (23.5)	34.5-35.0 (34.8)	15.5-17.5 (16.5)
<i>albescens</i> (15)	137.0-143.0 (140.5)	133.0-145.0 (138.3)	23.0-27.0 (24.6)	34.5-37.0 (35.7)	14.5-17.5 (16.1)
<i>bicolor</i> (25)	140.0-149.0 (143.9)	136.0-150.0 (142.1)	22.8-25.5 (24.3)	34.5-38.5 (36.2)	15.5-18.0 (16.4)
<i>fumifrons</i> (39)	132.0-142.0 (136.9)	132.5-145.5 (138.9)	23.0-27.0 (24.5)	33.5-37.5 (35.7)	15.0-18.0 (16.3)
<i>capitalis</i> (12)	143.0-157.0 (149.5)	137.0-148.0 (142.0)	25.0-27.5 (26.6)	35.0-38.0 (36.9)	16.0-19.0 (17.0)

Figures in parentheses under the subspecies name indicate the number of specimens measured.

wash below, and white shaft streaks less pronounced than typical *griseus*. However, in these characters, as well as in the reduction in amount of white on the head, they are closer to *griseus* than to *connexus*.

(The distribution of the various races in Western North America is shown on Map 1. The distribution of the eastern races seems to have been adequately worked out by Austin, 1932:157.)

*P. c. bicolor* (Miller, 1933:289) extends into northeastern Washington and southeastern British Columbia, from northern Idaho; and specimens referable to that race have been taken as far west as eastern Okanogan County (Tunk Mountain), Washington, and Okanogan Lake,



Map 1. Distribution of western races of *Perisoreus canadensis*. Solid dots indicate localities of one or more specimens examined in the present study; circles represent other records of occurrence; and dots enclosed by circles are type localities.

British Columbia, where this race evidently intergrades rather abruptly with *connexus*. Southwestward in the Cascades the transition from *connexus* to *griseus* apparently also is rather abrupt. The type specimen of *griseus* came from Keechelus Lake in Kittitas County, Washington, and birds from Mount Stewart seem to be perfectly typical of that

race. A single specimen from the head of Big Creek near Lake Chelan is as dusky below as *connexus*, but with respect to dorsal and head coloration is perfectly typical of *griseus*, and probably on the whole is closer to that race, as is also a juvenile specimen from Lucerne on Lake Chelan. The surprising thing is, as Miller (1943:117) has pointed out, that there is not complete intergradation between *griseus* and *bicolor* in Oregon, though their ranges approach one another there rather closely. It is worthy of note, however, that specimens from the Maury Mountains and Howard in central Oregon, although definitely referable to *bicolor*, are lighter on the underparts than typical birds of that race and suggest a partial intergradation with *griseus* at that point. The amazing plasticity of this species in the northwestern United States is indicated by the occurrence of no less than five races in the state of Washington. The type localities of four of these are within the state.

Specimens from the Canadian Rockies in British Columbia and western Alberta are perplexing in that they are geographically situated within a circle formed by the five races—*fumifrons*, *albescens*, *bicolor*, *connexus*, and *pacificus*, and, therefore exhibit combined characters which have induced some investigators, including Miller (1943:118), to refer them to *canadensis*. Such a course, however, postulates a discontinuous range for *canadensis*, since present investigations show that *albescens* intervenes. Not that this in itself militates against considering them the same as *canadensis*, but the birds are not like typical *canadensis* of southeastern Canada and northeastern United States, being distinctly more grayish above and below than that race. They are much too dark to be called *albescens*, averaging even slightly darker than *fumifrons*, from which race they differ also in having a more whitish forehead. They are distinctly paler than typical *pacificus* (Miller, 1943:117) from the Rainbow Mountains of British Columbia. Although not typical of *connexus*, averaging somewhat darker below, they seem to be closer to that race than to any other, and have been so placed.

Specimens from northwestern British Columbia, as far south as Thutade Lake, seem to be referable to *fumifrons*, although Swarth (1922:229) thought specimens from Telegraph Creek differed from *fumifrons*, and referred them to *canadensis*. The area of intergradation between *fumifrons* and *connexus* is apparently broad in that region, and pronounced interdigitation of characters undoubtedly occurs. This is also the case in western Mackenzie, between *fumifrons* and *albescens*.

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September 27, 1943

To the Editor of The Wilson Bulletin:

I have received so many inquiries as to when the next volume of my series of Bulletins on the Life Histories of North American Birds will appear, that I am reporting, for the benefit of the readers of The Wilson Bulletin, that no more volumes need be expected to appear until after the war. There are, however, two completed volumes in Washington, awaiting publication; and another, the 17th, is nearing completion here. These three include all the birds on the 1931 Check-list from the jays to the vireos, inclusive.

I am now starting to gather information for the 18th volume, which is to contain the wood warblers, and am appealing to my friends, who have so kindly sent me photographs and notes for the previous volumes, to send me similar material now for the warblers. I am very grateful for what help I have had in the past in this cooperative work, and would greatly appreciate further contributions.

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