

Dove 2, Red-shafted Flicker 2, Marsh Wren 5, Robin 6, Pipit 129+, Shrike 1, Audubon Warbler 5, English Sparrow 17+, Red-winged Blackbird 40+, Meadowlark 36+, Savannah Sparrow 2, Gambel White-crowned Sparrow 8+, Song Sparrow 3, unknown 4 [two of these flew up together from rank grass near where red-wings were going to roost—notes strange to me—I ventured to guess “bobolinks”!]. Total 15 species, 265+ individuals in one hour.

To sum up: In 1923 I listed 124 kinds of birds whose presence one or more times in the below-sea-level portion of Death Valley had been established on good evidence. E. L. Sumner, Jr. (Condor, 31, 1929, p. 127) added the Golden Eagle, an individual of which species was seen by him on December 27, 1928, “perched in a dead tree by Bennett’s Wells.” In the present batch of notes there are added to the preceding records, six kinds, namely, Anthony Green Heron, Greater Yellow-legs, Western Horned Owl, Woodhouse Jay, Arizona Verdin, and Thick-billed Red-winged Blackbird. The total list of birds now known from the floor of Death Valley thus numbers 131.

Museum of Vertebrate Zoology, Berkeley, California, November 26, 1933.

COMMENTS UPON SYSTEMATICS OF PACIFIC COAST JAYS OF THE GENUS *CYANOCITTA*

WITH ONE ILLUSTRATION

By JAMES STEVENSON

During my study of the crested jays (*Cyanocitta stelleri*) carried on through the past two years, several special problems have arisen concerning the distribution of Pacific coast races. The descriptions of new forms from Oregon by Oberholser in 1932 have, in particular, stimulated my close attention to the crested (Steller) jays of the northwestern United States. In addition, the ranges given in the latest edition of the American Ornithologists’ Union Check-List (1931) do not conform, in some cases, to the conceptions stated in other recent literature. In the present paper the author seeks to revise the concepts and ranges of the subspecies inhabiting northwestern North America. Particular emphasis is placed upon distribution in British Columbia, Washington and Oregon.

Two publications during the past thirty years have given special consideration to the systematics of Pacific coast crested jays. Walter K. Fisher (Condor, 4, 1902, pp. 41-44) discussed the ranges of subspecies occurring between Alaska and California, giving a careful analysis of coloration. Joseph Mailliard (Condor, 22, 1922, pp. 127-133) studied the jays of northwestern California and likewise discussed color in detail. A minute study of coloration as a requisite of subspecific analysis is not given in the present brief paper. Colors given here in quotation marks conform to plates in Ridgway’s Color Standards and Color Nomenclature, 1912. Wherever feasible the specimens examined were recently collected birds in fresh fall plumage. The practice of using such skins reduced to a minimum the possibility of discoloration by fading and abrasion.

The species *Cyanocitta stelleri* inhabits areas, principally mountainous, of western America from southern, coastal Alaska, south to Nicaragua. Races of the species are, for the most part, resident where found. The present paper will consider only five subspecies, as follows: *C. s. stelleri*, *C. s. carlottae*, *C. s. annectens*, *C. s. paralia*,

and *C. s. frontalis*. Definition of the limits of ranges of these subspecies must be regarded as more or less arbitrary because of the gradualness of the intergradation of the races.

Cyanocitta stelleri stelleri (Gmelin)

This race was described by Gmelin from a specimen collected at Nootka Sound, Vancouver Island, British Columbia. The range of this subspecies is given in the A. O. U. Check-List (1931) as: "Pacific coast from the Alaskan peninsula, Alaska, south into Washington (including Vancouver and other coastal islands except the Queen Charlotte Islands)." In examining birds in various collections, I have been unable to find that mainland birds of southern British Columbia, opposite (east of) Vancouver Island or in western Washington, conform to typical *stelleri*. The range of *Cyanocitta stelleri paralia* of Oberholzer (Scient. Publ. Cleveland Mus. Nat. Hist., 4, 1932, p. 7) is designated by him, as "western Oregon and western Washington, north to the mainland of southwestern British Columbia, exclusive of Vancouver Island; and east to the Cascade Mountains." There is no evidence, in the specimens examined, of typical *paralia* north of the latitude of Grays Harbor County, Washington. Recently collected birds from the vicinity of the city of Vancouver, in southwestern British Columbia and others west of the Cascade divide, in Canada, are intermediate between *stelleri* and *annectens*, the race of eastern British Columbia. Some superficially resemble the former race, either with backs "chaetura black" to "blackish mouse gray", or bellies "China blue" to "grayish violaceous blue." Others exhibit certain characters of *annectens* such as a white superciliary stripe, backs "deep neutral gray" to "dark neutral gray", or bellies dull "squill blue" to "chessylite blue".

There is some evidence to substantiate the belief that the range of *stelleri* is interrupted in western British Columbia in the region of the mouth of the Skeena River by the Rocky Mountain form, *annectens*. An infusion of light colored stock, of an *annectens* or intermediate type, has penetrated to the coast. A crested jay taken on Porcher Island in September was identified as *annectens* by Brooks (Auk, 40, 1923, p. 42). Another, collected a few miles north at Fort Simpson, was thought to exhibit "strong *annectens* characters" (Fisher, Condor, 4, 1902, p. 42). I have not had an opportunity to examine these skins for possible evidences of intergradation. There is some possibility that these were non-breeding birds that had straggled west from some inland area. No birds from the region immediately adjacent to the coast, northwest of Vancouver Island, have been available for examination. Birds of the coast and coastal islands, north to Porcher Island, will no doubt prove, when examined, to be *stelleri*. Twelve birds taken at Bella Coola, on an arm of Fitzhugh Sound, and fifty miles inland at Stuie, are intermediates, most of them nearer *annectens*. North of the Skeena River area, in southeastern Alaska and on the lower Stikine River, British Columbia, *stelleri* also occurs. Birds from these regions are not distinguishable from the Vancouver Island form in color or size.

The bird of the Kenai peninsula of central southern Alaska was once described as a distinct subspecies, *Cyanocitta stelleri borealis* by Chapman (Bull. Amer. Mus. Nat. Hist., 16, 1902, p. 240), but has not been recognized. The characters separating this race from *C. s. stelleri* were stated as larger size and darker coloration. A series of skins from the Kenai peninsula, including the type, and from the Prince William Sound region, east of the peninsula, has been examined. I have found no constant differences between birds of this general region and those of southeastern Alaska or Vancouver Island. The birds are very similar in color and size, although those from central southern Alaska are slightly smaller than jays from the other two regions considered.

Cyanocitta stelleri carlottae Osgood

This race, described by Osgood (North Amer. Fauna, no. 21, 1901, p. 46), is resident only on the Queen Charlotte Islands of British Columbia. It is not found on the coast east of these islands. Specimens of *stelleri* from southern Alaska, on Dall and southern Prince of Wales islands, exhibit very dark coloration but are not decidedly similar to specimens of *carlottae*. The latter possess backs ranging from "chaetura black" to "sooty black" and dark underparts ("jay blue" to "Berlin blue") showing that *carlottae* is the darkest of all races. The average measurements of this form proclaim it to be somewhat larger than *stelleri*. Minimum wing, tail and tarsus lengths of twenty-one specimens, including the type, are only slightly less than the average measurements of *stelleri*. However, average differences in the two races are slight with considerable overlapping of extreme lengths. These data lessen the value of measurements in subspecific determination. The characters that distinguish the races are not pronounced, yet the darker coloration of *carlottae* is apparent and fairly constant on birds of the Queen Charlotte Islands.

Cyanocitta stelleri annectens (Baird)

This race was described by Baird (Baird, Brewer and Ridgway, Hist. North Amer. Birds, II, 1874, p. 281) from a specimen taken at "Hell Gate", Missoula County, Montana. The subspecies ranges from southern Wyoming and eastern Oregon north into British Columbia. In British Columbia it occurs east of the Cascade divide, north, at least to Indianpoint Lake, near Barkerville (McCabe collection). The Black-headed Jay is one of several eastern American or Rocky Mountain forms of birds that range west, in central British Columbia to, or almost to, the coast. There is a broad area in the province inhabited by jays intermediate between this subspecies and *stelleri*. Sixteen specimens collected in the Hazelton region of the north-central part of the province are near *annectens*, but darker, with more brownish on the backs, thus grading into *stelleri*. The white superciliary stripe is a good diagnostic character of *annectens*, at least in the southern part of its range, but is not always present in birds of eastern British Columbia. This white marking is variable in Hazelton birds, being present in some, less prominent or absent in others.

In southern British Columbia *annectens* occurs east of the Cascade divide. Throughout much of its range this race inhabits forests of lodge-pole pine (*Pinus contorta*). West of the summit of the Cascade Mountains there are few, if any, typical examples of this subspecies. Recently collected specimens from southwestern British Columbia, that I have examined, have ranged about a mean, which is actually an intermediate form, with variations toward each of two races, *stelleri* and *annectens*. A number of specimens in the American Museum of Natural History were collected in 1889, at New Westminster, in the southwest corner of the province. These resemble *stelleri* but are slightly lighter in color, tending towards *paralia*. None of these shows evidence of intergradation with *annectens*. Allan Brooks tells me that "white-striped" jays were not found in southwestern British Columbia forty or more years ago. He is inclined to believe that there has been an invasion of *annectens* stock into this region within recent years. Such an invasion might account for the production of an intermediate population possessing superciliary stripes of varying prominence. One must conclude that there is a broad area of intergradation in British Columbia, and that this area is occupied by jays that are not typical of any one race.

Cyanocitta stelleri paralia Oberholser

The Evergreen Jay was named by Oberholser (1932, *loc. cit.*) from a specimen collected January 14, 1930, at Pleasant Valley, near Tillamook, Tillamook County, Oregon. In a large series including the type, available from Tillamook County, I have found much variation. The form is intermediate between *stelleri* and *frontalis* (not between *stelleri* and *carbonacea* as stated in the original description). Unfortunately Oberholser and the A. O. U. Check-List have disregarded the work of Mailliard (1922, *loc. cit.*) which showed that *C. s. carbonacea* is not found in western Oregon or northern California. *C. s. carbonacea* is confined to west-central California, principally in the San Francisco Bay region. The characters of *paralia* are best brought out in birds from the humid coast belt of western Oregon and southwestern Washington. The color of the back ranges from "deep mouse gray" to "dark mouse gray"; the color of the belly from "pale methyl blue" to "Chapman's blue". The range of this subspecies extends south at least to Lane County, Oregon, north, approximately to Grays Harbor County, Washington, and east, probably to the Cascade Mountains. Specimens from Beaverton, Salem and Corvallis, Oregon, are referable to this race. Birds of the Puget Sound region, Washington, show considerable variation in size and color. Those that I have seen from Tacoma, Seattle, or Puyallup are neither typical *stelleri* nor *paralia*, but show all degrees of intergradation. According to Edson (Murrelet, 13, 1932, p. 44), birds of the eastern base of the Cascade Range in Washington, along the Yakima River, exhibit intergradations with *annectens*.

The crested jay of eastern Oregon, in the Blue Mountains, is *C. s. annectens*. This race is found west to Crook County, intergrading there, and along the eastern base of the Cascade Range, with *paralia*. Average measurements of eastern Oregon birds are very similar to those of birds from the Rocky Mountains of Idaho and Montana. The former, however, show a tendency toward lighter coloration of the upper parts.

Cyanocitta stelleri frontalis (Ridgway)

This subspecies was named by Ridgway (Amer. Jour. Sci., ser. 3, 5, 1873, p. 41), from a bird collected in the Sierra Nevada near Carson City, Nevada. *C. s. frontalis* is found in the Sierra from southern Shasta County, California, south to San Diego County; also, in the northern inner Coast Ranges from Shasta County south to Sonoma County, and west, in Sonoma County, nearly to the coast. The race also occurs in the Sierra of extreme west-central Nevada. Birds of northwestern California and southwestern Oregon are intermediate between *frontalis* and *paralia*. Coastal birds of California, from Mendocino County northward, are similar to *frontalis* but slightly darker, being darkest in Del Norte County. Birds of Siskiyou and northwestern Trinity counties also resemble *frontalis* but are larger and darker. The color of the back in typical *frontalis* varies from "neutral gray" to "deep neutral gray"; that of the belly from "light cerulean blue" to "ethyl blue".

A supposed race of crested jay, *Cyanocitta stelleri syncolla*, was described by Oberholser (1932, *op. cit.*, p. 8) from a bird taken July 12, 1930, in the "Warner Mountains, 14 miles southwest of Adel, Oregon." This was considered "similar to *Cyanocitta stelleri frontalis* but decidedly larger; and somewhat darker, both above and below." The range of this race is limited to: "central southern Oregon and northeastern California", that is, the Warner Mountains and immediate vicinity. The type series, consisted of four females, one of which was the type, and two males.

I have examined a series of twenty-one Warner Mountains jays in the collections of the Museum of Vertebrate Zoology and the California Academy of Sciences. Comparison with the type series shows that the latter birds are extremely large individuals. This is unfortunate because it is misleading. In some cases minimum measurements of this small series exceed the maximum size of birds examined in the two western museums. Measurements of both series, together with averages for the two groups taken collectively, are presented at the end of this paper. Averages

of this greater number of specimens show that birds of the Warner Mountains are not as large as was previously supposed.

The Warner Mountains birds were compared with a large series from the central Sierra (Butte to Kern county) and with birds of the northern Sierra, since "*syncolla*" was described as "apparently the extreme development in a northeastern direction" of *C. s. frontalis* of the Sierra Nevada. The northern Sierran specimens which I used came from localities south and west of the Warner Mountains, in Lassen, Tehama, eastern Shasta and eastern Siskiyou counties, California. Since the type of *syncolla* was collected on July 12, it was thought advisable to compare specimens from the three areas, taken in the summer months, as well as in fresh fall plumage.

May and June Warner Mountains birds average slightly darker in color than birds of the northern Sierra, which, in turn, are slightly darker than birds of the central Sierra. The upper parts and wings of the Warner Mountains birds can be matched, however, by selected examples from the central Sierra. Summer or early fall specimens of the northern Sierran series are not quite as dark as Warner Mountains birds but are closely similar in size. Although fresh fall skins of the latter average slightly darker above than central Sierran birds, coloration does fall within the range of variation of the central Sierran form. Topotypes of *frontalis* are avail-

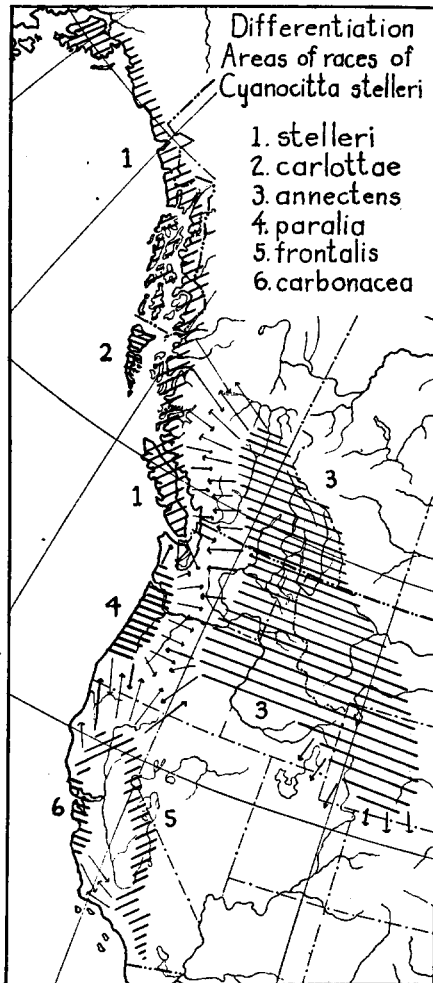


Fig. 15.

able from the vicinity of Carson City, Nevada, that match perfectly the colors of Warner Mountains birds of the same season (October). The latter birds are perhaps most closely related to the intermediate form of western Siskiyou and Trinity counties, California, birds that exhibit tendencies toward the darker and larger *paralia* of Oregon. The great length of the flight feathers of Warner Mountains birds may indicate an intermediate condition between *frontalis* and *annectens*, which possesses

the longest flight feathers of the races in the United States (average, 47 males: wing, 152.9 mm.; tail, 148.0 mm.; 24 females: wing, 148.6 mm.; tail, 143.9 mm.). The average measurements of "*syncolla*" fall within the maximum of *frontalis* and the minimum measurements of "*syncolla*" fall below the average for *frontalis*.

There is no good barrier to isolate jays upon the Warner Mountains. They nest in scattered coniferous areas across Lassen and Modoc counties between the Sierra and the Warner Mountains, and west of the latter range, in Lake County, Oregon. *Cyanocitta stelleri syncolla* appears to be based upon rather nebulous characters which do not justify its recognition.

In this study the material in the Museum of Vertebrate Zoology has been placed at my disposal. I am also indebted to Mr. A. J. van Rossem, Mr. Stanley G. Jewett, Mr. Kenneth Racey, Mr. T. T. McCabe, and the authorities at the American Museum of Natural History, Cleveland Museum of Natural History, United States National Museum, and California Academy of Sciences for the use of specimens under their charge or owned by them.

A distributional synopsis of the races of *Cyanocitta stelleri* in northwestern America follows:

Cyanocitta stelleri stelleri (Gmelin): Coastal central-southern Alaska south to Vancouver Island, British Columbia, including coastal islands of Alaska and British Columbia, except the Queen Charlotte Islands.

Cyanocitta stelleri carlottae Osgood: Queen Charlotte Islands, British Columbia.

Cyanocitta stelleri annectens (Baird): Eastern British Columbia south to eastern Oregon, southern Idaho and southern Wyoming.

Cyanocitta stelleri paralia Oberholser: Southwestern Washington and northwestern Oregon.

Cyanocitta stelleri frontalis (Ridgway): Sierra Nevada of California and west-central Nevada south to the Mexican line and west to include the northern inner Coast Ranges.

Cyanocitta stelleri carbonacea Grinnell: West-central California.

MEASUREMENTS IN MILLIMETERS OF CERTAIN GEOGRAPHICAL
GROUPS OF *CYANOCITTA STELLERI*

	Wing	Tail	Bill (length from nostril)	Bill (depth at base)	Tarsus
<i>Males, stelleri</i>					
Prince William Sound and Kenai Peninsula, Alaska (12)	149.5	138.7	22.0	12.2	42.4
Southeastern Alaska (35).....	150.3	139.0	21.9	12.4	45.8
Vancouver Island, B. C. (27).....	149.3	140.5	21.7	12.0	46.2
<i>Females, stelleri</i>					
Prince William Sound and Kenai Peninsula, Alaska (7)....	144.3	130.7	20.6	11.8	41.7
Southeastern Alaska (12).....	145.3	133.8	20.7	11.9	44.7
Vancouver Island, B. C. (14).....	144.6	133.2	21.1	11.4	45.0
<i>frontalis</i>					
Nevada, California (inner Coast Range and Sierra Nevada) males (87).....	143.0	131.2	20.9	11.4	42.2
females (51).....	137.4	126.6	20.1	11.1	41.2
<i>Males, Warner Mountains</i>					
Cleveland Mus. Nat. Hist. (2)....	152.3	142.3	21.5	12.7	43.5
Mus. Vert. Zool., Calif. Acad. Sci. (15).....	147.4	135.9	20.6	11.3	42.7
Average of 17 males.....	147.8	136.7	20.7	11.4	42.8
<i>Females, Warner Mountains</i>					
Cleveland Mus. Nat. Hist. (4)	144.6	132.7	18.7(3)	10.8(3)	41.1
Mus. Vert. Zool., Calif. Acad. Sci. (6).....	138.6	126.7	20.3	11.0	41.7
Average of 10 females.....	141.1	129.1	19.8(9)	10.9(9)	41.5

Northern Sierra Nevada

Lassen, Tehama, eastern Siskiyou and Shasta counties, California, males (13).....

145.9 133.6 20.8 11.5 43.2

females (9).....

141.1 134.5 19.7 11.0 42.3

Museum of Vertebrate Zoology, Berkeley, California, November 27, 1933.

THE ARIZONA STATE LIST SINCE 1914

By ANDERS H. ANDERSON

It is now nearly twenty years since H. S. Swarth published his "Distributional List of the Birds of Arizona" (Pacific Coast Avifauna, 10, 1914). This was the first comprehensive summary of Arizona ornithology since 1866. It has been the standard reference work in all studies of Arizona birds. From 1914 to the present date, however, numerous additions to the avifauna have been reported, and still more numerous changes in the nomenclature and status of the subspecies have been adopted by the new A. O. U. Check-list. Because many of the changes are widely scattered in the literature, it has been thought best to bring them together, in an effort to show the present status of the state list. The additional information, published since 1914, on the species listed by Swarth, is of such extensive character that there is no room for it in this paper. Only additions and changes are listed.

The A. O. U. Check-list of 1931 has been used as a starting point. Changes in spelling, generic splitting and lumpings, and priority changes have been omitted, except where they occur along with other changes that are listed. Alterations in names as adopted by the 1931 Check-list that are not the result of changed concepts of distribution in Arizona are also omitted. Proposed and controversial forms are, however, listed. Since it has not been possible to examine any specimens no attempt is made to judge the validity of the proposed changes.

I wish to express my thanks to Dr. W. P. Taylor of the United States Biological Survey at Tucson for his generous cooperation, not only in allowing me the full use of his library, but also for much helpful criticism, encouragement, and assistance. I am greatly indebted to Mr. H. S. Swarth of the California Academy of Sciences for valuable criticism and suggestions as to the form and content of this paper.

Appreciation is expressed to Dr. Alden H. Miller and Dr. J. Grinnell of the Museum of Vertebrate Zoology, Berkeley, Dr. H. C. Oberholser and Mr. E. A. Goldman of the United States Biological Survey, Washington, D. C., Mr. Edwin D. McKee, Park Naturalist, Grand Canyon, Arizona, and Dr. Witmer Stone of the Academy of Natural Sciences, Philadelphia, for suggestions and help in furnishing material which could not otherwise have been obtained.

GROUP I

SPECIES AND SUBSPECIES NEW TO THE STATE SINCE THE 1914 LIST

Gavia arctica pacifica. Pacific Loon. One taken September 20, 1886, at Fort Verde, by Dr. Mearns (Cooke, Auk, 31, 1914, p. 403).

Colymbus auritus. Horned Grebe. An adult male taken October 16, 1932, at Stoneman Lake, south of Flagstaff, by Hargrave (Condor, 35, 1933, p. 75).

Pelecanus occidentalis californicus. California Brown Pelican. One shot by Mrs. J. L. Moore at Dos Cabezos, Cochise County, in the fall of 1914 or 1915 (Law, Condor, 26, 1924, p. 153). A flock of nine seen, March 23, 1925, above Otero Canyon, Babo-