

pace. While excessively fond of the wilds, he enjoys a boon companion and dislikes absolute solitude, especially that of the lonely bivouac.

A keen sportsman and a crack shot, Brooks knows guns as a pianist knows his keyboard. He has killed every kind of big game in British Columbia save Cougars, which have curiously enough eluded him, and the walls of his lodge on the shores of Okanagan Lake are covered with trophies. He is also "leftenant" in the Canadian Militia and instructor in rifle shooting. One shudders to think how our artist might have been a mere globe-trotting game-killer, or even a dapper officer in the English army, a cock among guinea-fowls, if the scientific instincts had been less carefully schooled, or if the seeds of the ornithophilic passion had not found early lodgment in prepared soil. Artist, bird-lover, scientist, sportsman, explorer, genial host, and loyal friend—this is a very pleasant combination: and that it is embodied in a single unassuming personality, and a highly efficient one, is a matter of sincerest congratulation to those who know Allan Brooks. It is to him we look with confidence for a series of bird paintings, the most elaborate and beautiful which have ever been produced in America.

### *LEUCOSTICTE TEPHROCOTIS DAWSONI*—A NEW RACE OF ROSY FINCH FROM THE SIERRA NEVADA

By JOSEPH GRINNELL

(Contribution from the Museum of Vertebrate Zoology of the University of California)

WHEN judiciously employed, "geographical reasoning" proves of positive help in guiding the student towards the ascertainment of the results of speciation. Experience has taught us to expect that geographic differences of great or less degree are to be found in any animal of wide range, particularly if this range includes two or more areas each of which has marked faunal peculiarities. In other words, we are often able to anticipate the existence of a distinct new race of animal in a given region, on the basis of our knowledge of other animals in the same region, without ever having seen a specimen.

In spite of frequent aspersive comment directed towards those who have employed it, this is a perfectly good application of inferential reasoning. Needless to say, however, only the establishment of the concrete facts in the case, based upon conscientious study of actual specimens, can be regarded as adequate grounds for publishing a new name.

For many years students of North American birds have known that a certain species of Rosy Finch (*Leucosticte tephrocotis*) existed both on the high mountains of east-central California and on the northern Rocky Mountains of British America, even to eastern Alaska. But, notwithstanding critical attention from several keen systematists, no differences deemed worthy of separate naming have been published. In fact, this species of *Leucosticte* has been remarked upon as a Fringillid of relatively great range, and yet one in which geographic variation is notably lacking.

The present writer believes these conclusions to have been faulty, due in major part to lack of sufficient series of specimens in the various seasonal and age plumages. For he is now so fortunate as to have at his disposal for study the practically ideal material indicated beyond, and this study leads to an opposite view.

As giving foundation for suspecting the true state of affairs, even before this material was available for examination, the writer had assured himself that, as far as known, in not one single Boreal mammal or resident bird (other than the Rosy Finch) was the subspecies (or species) identical on the Sierra Nevada and on the northern Rocky Mountains. If the Rosy Finch should prove absolutely the same in the two areas, it would constitute the only known exception, and would for this very reason merit particular comment. The writer was prompted to see if the Rosy Finch had really defied the forces causing geographic variation in the other animals. Frankly, he would have been astonished to find the behavior of the Rosy Finch out of harmony with that of mammals and other birds of similar ecologic relationships.

But—critical study leads straight to the thesis that as with the other animals isolation of habitat by long distance (and under differing conditions) has resulted in subspecific divergence.

***Leucosticte tephrocotis dawsoni*, new subspecies**  
Sierra Nevada Rosy Finch

TYPE.—Male juvenal; no. 20217, Univ. Calif. Mus. Vert. Zool.; Whitney Meadows, 9800 feet altitude, Sierra Nevada, Tulare County, California; August 7, 1911; collected by J. Grinnell.

DIAGNOSTIC CHARACTERS.—As compared with its nearest relative, *Leucosticte tephrocotis tephrocotis* Swainson, of the northern Rocky Mountain region, in British America and western Alaska: general coloration in all plumages grayer toned, less intensely brown, size slightly less, the bill being distinctly less in bulk, and wing averaging more rounded; juvenal plumage much grayer especially anteriorly both above and below; breeding females less different; breeding males least different, but still perceptibly less vivid in the chestnut about the head.

MATERIAL.—Of true *tephrocotis* there is available a series of twenty-three fresh skins loaned for the use of the writer by the authorities of the United States National Museum. These are beautifully-prepared specimens collected in the summer of 1911 by Messrs. Joseph H. Riley and Ned Hollister. The localities of capture are Moose Pass, and Moose Branch of the Smoky River, both in the Canadian Rockies and near to one another, the former in British Columbia the latter in Alberta. Since these localities are not on any map at hand, the writer was furnished information as to their whereabouts from Mr. Riley, to whom he is also indebted for the courtesy of offering him the material for systematic use.

Of *dawsoni* the material at hand consists of fifty-six specimens contained in the Museum of Vertebrate Zoology, chiefly of 1911 and 1912 collecting, in the Sierra Nevada of Tulare, Inyo and Eldorado counties, California. In detail the material at hand is made up of plumage-stages as follows:

*Leucosticte t. tephrocotis*

- 7 adult males (July, August), in more or less worn breeding and post-breeding plumage.
- 8 adult females (July, August), same condition.
- 8 juvenals (July, August), wing and tail feathers not fully unsheathed.

*Leucosticte t. dawsoni*

- 18 adult males (May to August), in more or less worn breeding and post-breeding plumage.
- 12 adult females (May to August), same condition.
- 11 adult males (September), molting to full winter plumage.
- 4 adult females (September), molting to full winter plumage.

11 juvenals (August), full-grown; new feathers, of first winter plumage, showing in some.

MEASUREMENTS—The accompanying table of measurements is self-explanatory. It takes account of adults only, and in these care was taken to exclude examples obviously mutilated in respect to wing or tail feathers, or bill. A skin might have a perfect bill but quills too badly worn to warrant even an approximate dimension, and vice versa. Such a specimen is of course taken account of in the respect in which it does afford fairly reliable data. A percentage of error must occur, but it is the writer's belief that in taking the measurements he has erred as much on one side of the mean as on the other so that the relative size of the two subspecies in each respect, as far as shown by the material in hand, is approximately correct.

TABLE OF MEASUREMENTS (IN MILLIMETERS)

Figure in parenthesis in each column opposite "average", is the number of individuals measured in each case.

			Wing	Tail	Culmen	Bill from Nostril	Depth of Bill
<i>L. t. tephrocotis</i>	Males	Average	106.0 (7)	69.9 (7)	11.5 (7)	9.0 (7)	7.8 (7)
		Maximum	107.3	72.0	12.3	9.5	8.4
		Minimum	104.8	67.9	11.1	8.6	7.5
	Females	Average	100.9 (7)	66.2 (8)	11.4 (8)	8.8 (8)	7.8 (8)
		Maximum	104.2	69.8	12.0	9.4	8.4
		Minimum	97.6	64.4	10.8	8.3	7.4
<i>L. t. dawsoni</i>	Males	Average	104.6 (17)	70.4 (16)	11.1 (18)	8.6 (18)	7.0 (18)
		Maximum	107.6	74.1	11.7	9.3	7.2
		Minimum	101.3	67.7	10.6	8.3	6.7
	Females	Average	99.8 (8)	65.8 (10)	11.0 (11)	8.6 (11)	7.1 (10)
		Maximum	101.7	68.1	11.6	9.1	7.3
		Minimum	98.1	62.1	10.6	8.3	6.9

It is to be observed that in wing and tail length whatever difference exists is very slight, while in size of bill there is a notable difference amounting to from four to nine percent in favor of the northern race. Similar differences are shown in Ridgway's table of measurements of *Leucosticte tephrocotis* (*Birds N. and Mid. Amer.*, part 1, 1901, p. 69). It would appear that as in many other birds of like distribution there is a tendency towards large size in the north.

The interesting fact is here brought out that there is a pronounced greater frequency of a rounded type of wing in the Sierra Nevadan bird than with the northern bird (see accompanying table). True, the actual differences involved are slight, but they are, never-the-less, significant, the correlation being with the different amounts of migration undertaken in the two races annually.

The outermost or ninth primary is longest in the majority of specimens of *L. t. tephrocotis*, the penult or eighth is next in length, the anti-penult or seventh is next in order; there being no variation in the succession of lengths of the rest of the primaries. In a plurality of specimens of *L. t. dawsoni*, the penult is longest, the anti-penult second in length, the outermost third in length. The formula "9-8-7" indicates the sharpest wing, "7-8-9" the most rounded; "8-9-7" and "8-7-9" are intermediate conditions, the former nearest the sharp extreme, the latter nearest the rounded extreme.

TABLE SHOWING FREQUENCY OF WING FORMULA

T—*L. t. tephrocotis*, 14 specimens.  
 D—*L. t. dawsoni*, 23 specimens

		D	
		D	
T		D	
T	D	D	
T	D	D	
T	D	D	
T	TD	D	
TD	TD	D	D
TD	TD	TD	D
TD	TD	TD	D
9-8-7	8-9-7	8-7-9	7-8-9
Sharp-pointed	Wing		Rounded

As far as known, the Sierra Nevada Rosy Finch does not leave its breeding grounds during winter farther than the near-lying mountain ranges immediately to the eastward. The British American race, however, is believed to furnish the individuals which occur in winter in the northwestern United States south to eastern Oregon, Utah and Colorado. At least a winter specimen at hand from Camp Harney, Harney County, Oregon, is distinctly *L. t. tephrocotis* as here restricted.

REMARKS—There is no spring molt in the rosy finches, but marked color changes are brought about through wear. By this process, the extensively pink superficial portions of much of the plumage in its fresh fall condition is lost by the time the breeding season is at hand, the underlying brown coloration being thereby rendered much more conspicuous. It is thus necessary in diagnosing specimens on the basis of color characters, as well as of wing formula, to take into account the stage of wear reached. The tone of coloration in fresh juvenal plumage would appear to be more determinant than that in worn breeding adults. And lacking perfectly comparable specimens, in fresh fall plumage, of the two races here distinguished, a juvenal is selected as the type of the newly named form.

The subspecific name given to the Sierra Nevada Rosy Finch is selected in recognition of the services to ornithology of William Leon Dawson. It has been the custom of systematists to signalize in like manner the work of fellow-systematists, of collectors, of benefactors to scientific institutions. In the present instance it seems to the writer quite in accord with this happy custom to recognize an eminent service to the literary and artistic sides of bird study. Mr. Dawson has contributed in this wise with marked success.