

WINTER HABITS OF THE HEPBURN ROSY FINCH AT CLARKSTON, WASHINGTON

WITH FOUR ILLUSTRATIONS

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This study of the Hepburn Rosy Finch (*Leucosticte tephrocotis littoralis*) was begun in December, 1927, when, on our first visit to the vicinity of Clarkston, Washington, we observed the birds seeking roosting places in the abandoned nests of Cliff Swallows. These nests were clustered by the hundreds against the sheer rugged surface of the basaltic "rimrock" outcrop known locally as Swallow Nest Rock or Bird Rock. This rock, situated about 300 feet from the Snake River, presents an easterly face of columnar basalt, rising perpendicularly about 200 feet, and it is approximately 650 feet long at its base. Toward the southern end is a small seep-basin with a constant supply of water dripping from the overhanging rocks. The region, which is characteristic of the Snake River cañon, lies in the arid Transition life zone. Except for a few wild cherries, willows and small poplars along the river bank, the vegetation consists almost entirely of the following plants: Russian thistle, *Salsola kali*; grasses, the most prominent being *Sporobolus cryptandrus*; two species of mustard, *Sisymbrium altissimum* and *Thelopodium laciniatum*; sunflower, *Helianthus annuus*; rabbit brush, *Chrysothamnus nauseosus*; and sage, *Artemisia dracunculus*.

Our notes represent the findings of four years' observation of the winter habits of *Leucosticte tephrocotis littoralis*. Although the other races of the species are probably similar, we have confined our investigation to the one subspecies, *littoralis*. At Clarkston members of this race far outnumber the Gray-crowned, *L. t. tephrocotis*, there being often none of the latter observed in an entire flock of several hundred birds. A conservative estimate of the proportion of Hepburn to Gray-crowned was about nineteen to one.

Dawson (1909) has described the *Leucosticte* as the "patron saint of the mountaineer," for it spends the greater portion of the year near the snow line at probably higher elevations than any other North American bird. The birds appear in the region of Clarkston early in November, doubtless driven from the breeding grounds by the severe weather, and they remain until well past the middle of March. One early arrival was observed in the vicinity of Pullman, Washington, as early as October 27, 1929, but the earliest record of arrival at Swallow Rock is November 3, 1928, and the latest recorded date of spring departure is March 18, 1928.

In the course of our work thirty-one specimens of *littoralis* were collected, which are now in the collection of the Charles R. Conner Museum, State College of Washington at Pullman. The following notes are based on this series.

Description and plumage. As with many genera, there has been some confusion in the taxonomy of the several forms. Due to the scanty knowledge of the life histories of the Rosy Finches much specific color variation was early attributed to seasonal plumage variation. Coues (*Birds of the Northwest*, 1874, p. 111) states that due to the great variability in the extent of the ash of the head it was impossible to draw a dividing line and that "it is necessary, therefore, to treat *griseinucha* as a variety of *tephrocotis*." As stated in Coues' Key (p. 352), it does not seem to be necessary to recognize more than one variety, "*campestris*" of Baird being referable to *tephrocotis* proper, and "*littoralis*" of Baird agreeing sufficiently with "*var. griseinucha*."

Molting is practically complete before the fall migration begins, though early in November a few birds were observed at Clarkston in much worn breeding plumage. Birds taken in late November, December and January were in complete winter plumage, the feathers of the breast and sides showing full white tips. As early as February 1, however, feather wear was evident, while birds taken at the end of that month had uniform chestnut brown on the breast and bright rose on the flanks.

The Hepburn Rosy Finch is similar in the general body color to *tephrocotis*, the greatest difference occurring in the head coloring. The sides of the head are partly, or wholly, gray. In some cases the entire head and throat, except for the black patch on the forehead, are light ash-gray. Our notes indicate that the greatest variability is in the extension of the gray on the chin and throat. The usual dark brown throat is often mottled with irregular groups of gray feathers. In some there is almost no brown, giving the appearance of a definite ring entirely separating the body and head coloring. The chin is usually slightly gray but in many of our specimens no gray whatsoever is evident. The brown of the throat may be merely an extension of the chocolate of the breast though it may be much darker, tending to be nearly black.

The black cap is characteristic of the species, though the size of the cap is decidedly variable. In many cases it covers only the top of the head and is well separated from the gray, which is continuous across the neck. In other specimens, however, the dark cap blends into the brown of the back, leaving the gray area more or less parted. A few birds were noted in which the whole head was ashy gray, the dark cap being entirely lacking.

The intensity and general extent of the pink on the sides and belly varies considerably in the adult birds. The under tail coverts were tipped with rosy on some birds, with dusky white on others. On February 18, the plumage was bright and clean and the pink was intense.

The immature birds are almost uniformly brownish in color and lack the rosy tints. Early in January, 1931, several birds of this plumage were seen in the flock. They were more pugnacious than the adults and were seen to perch on the swallows' nests and scold noisily. They were small, very dark, and the bills were dusky throughout. Somewhat later in the same month we noted that the gray of the head was mixed with brown and the rosy of the flanks showed indistinctly.

Measurements and weights of 30 birds were recorded; 9 females gave, as averages, length 173.4 mm., extent 302.4 mm., weight 26.5 g.; 21 males averaged, 178.2 mm., extent 306.2 mm., weight 28.5 g.

Distribution. The Hepburn Rosy Finch breeds above timberline (Alpine-Arctic zone) in the coast ranges, the Cascades and the Rocky Mountains (Brooks and Swarth, *Pac. Coast Avif.* No. 17, 1925, p. 88). Its summer range extends from the Three Sisters and Steins Mountains, Oregon, where it is thought to breed (*epis.*, *Biol. Survey*), and the Bitter Root and Cabinet mountains, Idaho (Moody, *Bird-Lore*, xii, 1910, p. 108), to Bern Creek (Williams, *Can. Field-Nat.*, xxxix, 1925, p. 71) and Seward, Alaska. It is found occasionally near the coast of British Columbia and Washington but at high elevations, as shown in figure 31. Its winter range almost duplicates the breeding range, the northernmost record being from Kodiak, Alaska. It is found at lower elevations as far east as Minneapolis (Cantwell, *Auk*, vi, 1889, p. 341), and south along the mountain ranges from Fort Keogh, Montana (Thorne, *Auk*, xii, 1895, p. 216), Douglas and Fort Fetterman, Wyoming (Knight, *Wyoming Exp. Sta. Bull.*, No. 55, 1902, p. 120), and Colorado Springs,

Colorado, to Vermejo Park, New Mexico (Bailey, Birds of New Mexico, 1928, p. 697); west to Lake Tahoe and Virginia City, Nevada (Ridgway, Birds N. and Mid. Amer., pt. 1, 1901, p. 71); northward to Lakeview and Camp Harney, Oregon (Jewett, Auk, xxvi, 1909, p. 7), and rather generally through Washington and southern British Columbia.

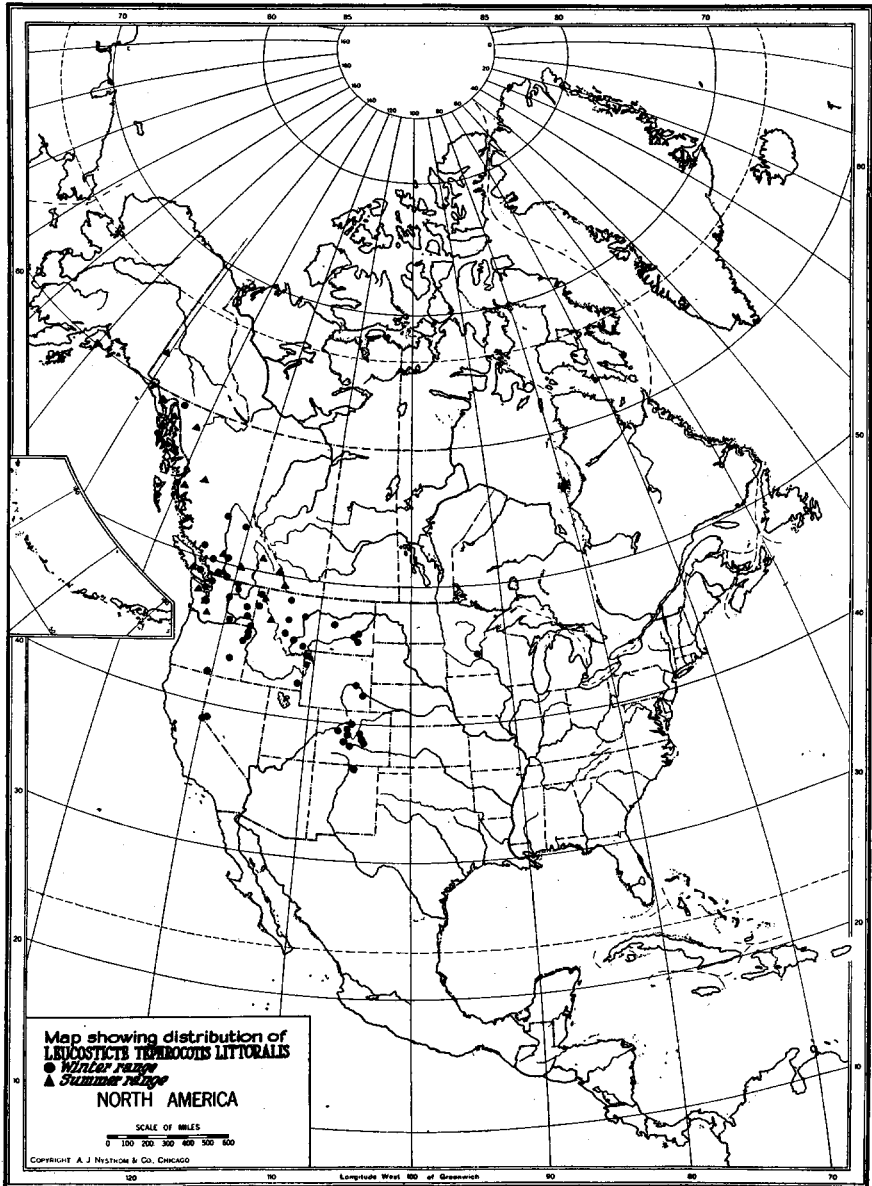


Fig. 31. MAP SHOWING DISTRIBUTION OF THE HEPBURN ROSY FINCH, INDICATING SUMMER AND WINTER STATIONS OF OCCURRENCE.

General habits. The leucostictes are decidedly gregarious; all wait till some venturesome spirit shows the way to food or starts the flight, then others follow quickly. They fly in dense masses in an undulating manner. The individual apparently keeps to no set position in the flock, which constantly whirls about, much like a group of dry leaves carried on a stiff breeze or as caught suddenly by a whirlwind and thus twisted onto another course, or set down as suddenly as it was started in flight. Upon arrival at the rock, the birds swirl in, close to the face of the upper portion, perching abruptly. They often circle several times about the rock; then alighting they dart from jagged point to jagged point, working down, amid much chatter, to the base, stopping at intervals to pick about the lichens, and finally go to the thistle and grass to feed a few moments before roosting.

On several occasions, Prairie Falcons and Pigeon Hawks appeared at the rock. Their presence did not greatly alarm the finches which often ignored the intruder

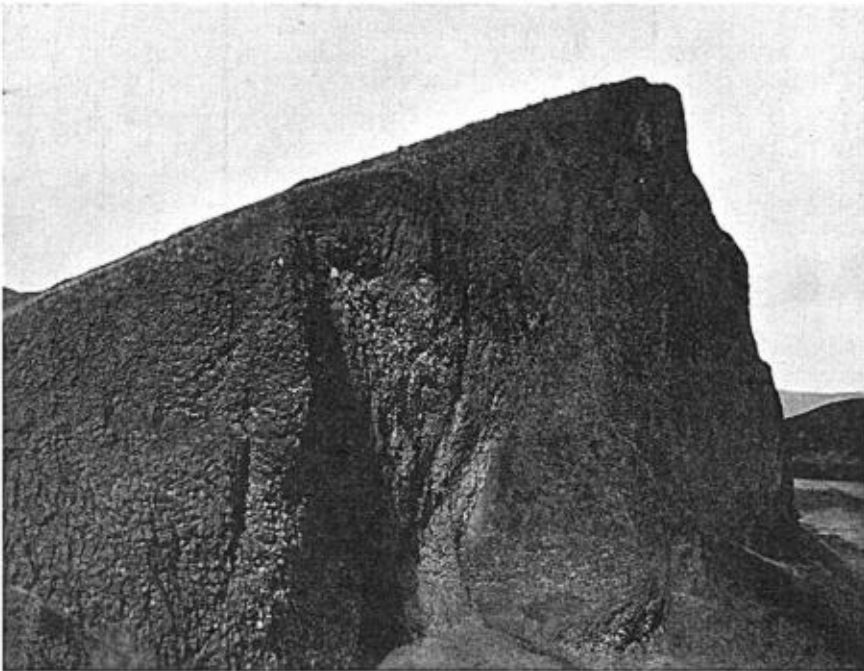


Fig. 32. SWALLOW ROCK, ON THE SNAKE RIVER NEAR CLARKSTON, WASHINGTON. THE GREATER NUMBER OF OLD CLIFF SWALLOWS' NESTS, WHERE THE ROSY FINCHES ROOSTED, IS AT THE POINT MARKED X, AT THE RIGHT-HAND BOTTOM OF THE PICTURE.

entirely or gave chase in flocks of fifteen or twenty individuals. Never did they seem very enthusiastic about mobbing the enemy.

Rosy Finches are perpetually in action, never perching longer than a few seconds at a time. It was of interest to note that, while feeding upon Russian thistle and Jim Hill mustard, which protruded through several inches of snow, they walked with a staggering motion rather than hopping as is characteristic of most sparrows. After feeding here for a few moments they swirled off to a ledge of rimrock to perch and chatter and then came back to the food again.

The birds begin preparation for the night long before sunset, the flock usually appearing at the roosting site between two and three o'clock. A bird enters a swallow's nest and usually turns at once, and thrusts its head from the opening, uttering a loud cry as though challenging all others. It may remain here a few seconds or it may come out at once and repeat the same performance in another nest. Often a single bird will inspect as many as a dozen nests before finally settling in one. Usually by four o'clock the entire flock is at roost and no sound can be heard, nor can the birds be frightened from the nests.

Song and calls. The song and call notes of the Rosy Finches have been variously described. According to the several records, the notes of all members of the genus are similar. In their monumental work, Dawson and Bowles (*Birds of Washington*, I, 1909, p. 76) state that a sole note does duty for every mood and describe it as the sound of the "slap of the ratlines on a flagpole in a high wind." Silloway (*loc. cit.*) has stated that the alarm note is *quir* or *quie-quie*, early in the season, but after the middle of January the male was noted to perch and utter a note like *tree-ree-ree-ree-ree*, and still a bit later they utter "wheezy-chants". Trippe (see Coues, 1874) in a summer record states "the only note I have heard it utter is a kind of 'churr' like the call of the Scarlet Tanager"; and in a letter, Bendire (*Bull. Nuttall Ornith. Club*, III, 1878, p. 189) wrote of the Hepburn *Leucosticte* that "its song was quite varied, low and sweet, but feeble and without much volume. It was still quite a fair and very pleasant song."

In our notes the call has been repeatedly mentioned and interpreted. While the birds are in flight there is constant chattering, and on a dull day, when they are flying at a distance their presence can be detected first by the thin, clear notes uttered in rapid succession. The flock note is similar to that of the Evening Grosbeak though not so forceful and we have interpreted it variously as *terrip* or *terrp*; also as a half whisper as *peep*, *peep* and *cheep*, *cheep*. The alarm note is a short, guttural, monosyllabic *cheep*, *peep*, *peep*. At other times it is very curt, being *cha cha*.

Few attempts at song were noted until the first of February and then the first song was somewhat sketchy. A notation for February 4, 1928, states that the birds were trying to sing, for some were giving softly a few connected notes. Most dominant at this time was a soft *cheek-ah*, a soft song like that of the Purple Finch. Again on February 12, one Hepburn sat on a tree and sang a buzzy Purple Finch song. This may be the song of the birds. After this date attempts at song are common, and on February 25 a note states definitely that the males were singing. The song, a long warble, was much like that of the Goldfinch.

The morning call proved interesting as it was somewhat different from the usual flock note. The instant a bird appeared at the opening of the nest it gave a loud, clear *peerp* followed by a lower softer *churr*, *churr*. Except for the fact that the notes are more intense, there is, contrary to expectation, no general clamor among the birds at this time, for, after a moment or two of preening and stretching, they fly off singly or in groups of two's or three's in search of food. They leave the nests shortly after dawn and long before sunrise. Even on dark cloudy mornings in the latter part of November they were about a little after 6:30 a. m.

Breeding habits. Very little is known of the breeding habits of the Hepburn *Leucosticte* due, perhaps in a large measure, to its natural preference for localities of high elevation and of precipitous nature. The approach of sexual maturity is indicated by several factors chief among which are the changing color of the bill and plumage, the development of song, and the increasing quarrelsomeness among

the males. The changing coloration of the bill is probably the best index of the beginning of the breeding season. In birds of late autumn and early winter the bill is yellowish with dusky tip. In some in early January the bill was almost entirely yellow. However, even as early as February 1, the bills of a few were turning darker. A bird taken March 3 showed "a darker bill than the majority



Fig. 33. GRAY-CROWNED ROSY FINCH (*Leucosticte tephrocotis tephrocotis*).



Fig. 34. HEPBURN ROSY FINCH (*Leucosticte tephrocotis littoralis*).

thus far," while a week later, just before migration, we noted that "the bills were much darker than earlier," being almost as dark as specimens taken at the height of the breeding season.

The first attempts at song are, as described elsewhere, merely a few disconnected notes; but as the spring advances, the males sing a well connected, sustained song.

With the exception of active competition for roosting places, there is little quarreling among the birds early in the winter. After the latter part of January, however, the birds become more quarrelsome. This continues with increasing vigor until shortly before the departure of the flock, when the birds seem to be paired. On March 3, 1928, we observed that at the spring there was constant fighting which consisted largely of the aggressor opening his bill as though to intimidate, and making a hissing noise. He then rushed toward the opponent, caught at its bill and the two fell, fluttering and whirling, to the ground in a circular motion.

Toward the end of the winter, shortly before the migration begins, the flock breaks up somewhat. It is probable that the birds mate about this time, before migration to the nesting locality begins. On March 10, 1928, it was evident that the birds had paired. This date, incidentally, was the latest record for the birds for that season.

Banded birds. In an effort to determine, if possible, whether the birds returned year after year to the same winter locality we established a feeding and banding station at the base of Swallow Rock. Fortunately for our purposes the Rosy Finches came well to our food, which consisted largely of cracked wheat and corn. They clustered in large numbers about the food much as do English Sparrows, though they made few sounds while feeding, except for an occasional chirp.

The banding trap was fourteen by sixteen inches, constructed as a shallow box some six inches deep. The top was of coarse cotton net which cut off very little light and allowed the birds to go under without much concern. The first banding was done on February 4, 1928, when the birds came to the rock at two p. m., feeding on the upper slopes, then working down to the food at the base in the characteristic manner. At 2:55 the first Hepburn, apparently a female, was banded. Only one other Hepburn and one Gray-crown were banded that day. On February 8 two more *littoralis* were banded. We observed a banded Gray-crown and felt that it was in all probability the one we had liberated a few days previously. Seventeen more *littoralis* and one *tephrocotis* were banded on February 11, making our total of Hepburns twenty-two. Two of these were later collected, one by mistake, on March 1, 1928, the other, November 10, 1929. This last proved of much interest as it showed that at least one of the previous year's birds had returned. No other banded birds were observed, however, either in this or the following year.

Food habits. The food habits of the birds were studied with as much detail as possible, the crops and gizzards of all the birds collected being preserved for this purpose. It was found that 99 per cent of the food consists of the seeds of weeds found abundantly on the steep slopes of the cañon walls or in the wheat fields on the tops of the bluffs, while but one per cent was insect material. The seeds most commonly taken are Russian thistle, *Salsola kali*; wild grass, *Sporobolus cryptandrus*; Jim Hill mustard, *Sisymbrium altissimum*; and sunflower, *Helianthus annuus*. (See accompanying table.)

The feeding activities vary with the time of day, though it is evident that the birds feed almost constantly, ranging over wide areas. On several occasions large flocks of finches were seen feeding on the slopes of the opposite side of the Snake River Cañon, several miles away from the roosting site. They start feeding almost immediately after leaving the nests in the morning and do not return to

the rock until after mid-day. Once the birds circled over at twelve o'clock but did not alight. A bit later they lit and fed on the cliff west of the rock and came to the food at the feeding station. We observed that they obtained water from the seep basin at the base of the rock. Some suspended themselves momentarily by rapid fluttering of the wings while they caught the water as it dripped from the overhanging rocks, while others lit and drank from the small pool.

Swarth (Univ. Calif. Publ. Zool., 24, 1922, p. 235) took twenty-two specimens of *Leucosticte tephrocotis littoralis* on July 23, at Doch-da-on Creek in the Stikine River region of British Columbia. The gullets and stomachs were preserved, of sixteen of these birds, all that contained any food. From these it is evident that insects form a large part of the diet of both old and young during the summer months. Their averages (determined by the United States Biological Survey) were, as might be expected, in decided contrast to our winter averages. Insect material was found to be 59 percent and vegetable matter 41 percent of the total.

For the four months from November to March, inclusive, the food may be summarized as follows:

Month	Number of stomachs	Animal matter	Vegetable matter
November	5	1.80%	98.20%
December	3	1.17	98.83
January	7	.43	99.57
February	11	.41	99.59
March	5	2.20	97.80

Record of stomachs showing the occurrence of seeds most commonly used as food by *Leucosticte tephrocotis littoralis*, all taken near Clarkston, Washington:

Common name	Scientific name	Times occurred	Number of seeds
Russian thistle	<i>Salsola kali</i>	21	2220
Wild grass	<i>Sporobolus cryptandrus</i>	20	4307
Jim Hill mustard	<i>Sisymbrium altissimum</i>	22	5584
Tumbleweed	<i>Amaranthus graecizans</i>	15	492
Sunflower	<i>Helianthus annuus</i>	6	338
Filaree	<i>Erodium cicutarium</i>	7	91
Spring Beauty	<i>Claytonia linearis</i>	3	35
Buckwheat	<i>Eriogonum</i> sp.	2	29
Willow herb	<i>Epilobium paniculatum</i>	3	37
Spurge	<i>Euphorbia serpyllifolia</i>	2	7
	Total	110	13,167

Acknowledgment. Many of the facts used in compiling the statements of distribution of the Hepburn Rosy Finch have been obtained from lists of specimens in the collections of the various museums of the United States and Canada, and from the United States Biological Survey. To the directors of these institutions and to all others who have so kindly supplied data we wish to express our sincere appreciation. Thanks are due especially to Dr. J. Grinnell of the Museum of Vertebrate Zoology, for the loan of that museum's complete collection of *Leucosticte* skins, and to Dr. Herbert Friedmann of the United States National Museum, for the loan of the type specimen of *L. t. littoralis*, and for a careful reading of the manuscript.

Pullman, Washington, April 4, 1931.