WINTER LIFE AND NESTING STUDIES OF HEPBURN'S ROSY FINCH IN WASHINGTON STATE.

(PART I. WINTER)

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Plates III–IV.

Introduction.—As the title of this paper would suggest, the study is divided into two parts. The first deals almost exclusively with observations made upon the bird at Pullman, Whitman County, Washington, the near-by Snake River Canyon and the Cedar or Moscow Mountains, of Latah County, Idaho. The second part[1] of the paper deals primarily with the nesting of the bird, upon and beside the glaciers, in this case, chiefly of Mount Baker, Whatcom County, Washington.

In respect to topography and floral covering, the Pullman area is a Transition Zone plateau with an elevation of about 2500 feet, consisting of volcanic ash originally covered with Bunch Grass (*Festuca*) now given over to the raising of grain with its occasional unkempt areas of weed patches and neglected, brushy fence rows. That of the River, near Lewiston, Idaho, at the junction of the Snake and Clearwater Rivers, might be described as an Upper Sonoran Zone weathered into a broad canyon with an elevation of about 650 feet, with here and there, precipitous, erosions of lava flows, forming winter shelter for the birds. The third or mountain area, Transition to Canadian merging into Hudsonian in zonal aspect, having an elevation of approximately 5000 feet, covered with Douglas Fir (*Pseudotsuga taxifolia*), White Fir (*Abies grandis*), Larch (*Larix*), Lodgepole Pine (*Pinus contorta*), and Arbor Vitae (*Thuja plikata*) with an undergrowth of Snowbrush (*Ceanothus*) and Alder (*Alnus*). This latter area seems to be used locally by the Rosy Finch, as an intermediate region in gaining altitude on its way to its nesting grounds around and above snowline on the higher mountains and conversely, in returning in the autumn, as no doubt similar elevations are used for like purposes.

My first observations upon living Rosy Finches were made at the Campus of the Washington State College, Pullman, in February 1906. Two kinds were found, the Hepburn's (*Leucosticte tephrocotis littoralis*) much the more abundant and the Gray-crowned (*Leucosticte tephrocotis tephrocotis*) which was comparatively rare. Local records bore evidence that recognition of these birds had already been made as shown by the Museum collections of the Washington State College where were found skins of both, bearing the following data.—Three skin specimens of the Hepburn's Rosy Finch

[1] To appear in 'The Auk' for April 1936.

(*Leucosticte tephrocotis littoralis*) a female, March 15, 1897, a male December 27, 1897 and a female March 15, 1899,—all collected by S. E. Piper, at Pullman, Whitman County, Washington. Of the Gray-crowned, (*Leucosticte tephrocotis tephrocotis*) one, a male was collected by S. E. Piper, February 4, 1898, at Pullman, Washington. The last named specimen stands, to the best of my knowledge as the first record of the Gray-crowned Rosy Finch for the State of Washington. In addition, the Washington State College Museum possesses, among the early dates, one mounted male *Leucosticte tephrocotis tephrocotis* collected November 25, 1908, by Clarence M. Keyes.

To my great delight and satisfaction it was soon found that the Rosy Finches would respond nicely to food placed upon the window-sills of the Museum office, while still retaining their spirited wild natures. Here they returned, year after year without interruption until 1925 at which time the writer became non-resident and the observations were more or less given over, and ended for me, in the winter of 1927. Fortunately for my studies of this most interesting life history it was now possible to devote attention quite directly to a study of the nesting of the birds in the high mountains, especially in the Mount Baker-Shuksan Region, Whatcom County, Washington, in the northeastern corner of the State, a short distance from the British Columbia Line.

Migration.—Usually the birds, being winter residents at Pullman, did not arrive at the Campus much before the first of November. On two years they came on the same date, October 28, and one year, 1922, on the 29th of that month, being seasonally, a few hours late; the main flock of about 25 birds did not appear until November 18. Three years in succession they were first seen in the community, at their feeding box on the window sill on the dates of October 29, 1922, November 15, 1923 and November 12, 1924. On November 6, 1926, one lone bird was seen flying across the summit of Moscow Mountain, chirping the call note, at a time before they had arrived at Pullman, with its lower elevation. Usually in these late autumn days their numbers were few and it was not until the snow storms of December had settled down or the sharp zero weather of January struck, that they came in numbers to accept my window-sill hospitality and that of friends about town who were interested in their welfare. When once established, however, they remained rather constantly until the sunny days of spring gradually called their flocks, to fade away towards the lands of perpetual snow and ice. The latest record for departure from Pullman was March 26, 1921, although they were twice observed near the summit of Moscow Mountain on April 14 and May 11, 1923.

Winter activities.—The Rosy Finch although spirited and more nervous of temperament than the Purple Finch (*Carpodacus*) is very tame and con-

fiding and in the winter range will respond well to help provided for them in tiding over periods of storm. They are attracted by the shelter of old buildings, especially if food exists in the neighborhood. A winter walk into the country on February 4, 1923, revealed a large flock congregated in and about the barns and houses of an unoccupied ranch. They seemed as much at home around these old buildings, which were largely window- and door-less, as they were outside upon the roof,—perhaps more so, for here on the day before, a small Hawk was seen in the trees of the dooryard. A Finch was noticed going into a knothole with perfect ease, as if it had gone into like small openings before. They were even Wren-like in their manner of investigating small crevices. In the old house, they were observed fluttering about upon some wheat grain samples suspended from the ceiling, and upon my entering, seemed to prefer to remain where they were, to dashing outside to take chances. So much were they at home in the buildings on this occasion that two seen perched on the branches of a tree outside looked odd. In fact, so much are they ground- and rock-inhabitors that it seems strange to see them alight upon trees and this action appears to be chiefly for purposes of reconnoiter. Usually they select the dead tops of trees or the living crowns of growing conifers for observation points seldom entering the lower branches as a Junco would. Twice were they noted specifically perched on dead tree tips on the summit of Moscow Mountains and likewise, almost daily, on the moraines bordering their nesting grounds on Mount Baker.

Continuing my rambles on this same occasion, farther into the country beyond, signs of the Rosy Finches were found in abundance. An extensive wheat stubble field, showed here and there through the light snow covering, heads which had sprouted and which had been picked to pieces by some animal. Great networks of tracks were found in the snow and these were probably due to Rosy Finches. The tracks were also very numerous about the neglected fence rows, where wind-driven mustard had lodged. Beyond, at an occupied ranch, the situation was much the same, with birds everywhere—in and out of the buildings. The rancher, William Jarron, a friend of birds, called them "gray-headed birds" and said they had been more abundant this year, about his buildings, than he had ever seen any other bird in the country before. They were indeed very numerous, the snow-free spaces beneath the header boxes being quite covered with them and at times they extended all over the barn yards.

Yet with all this friendly association with man, they are more commonly found in remotely-isolated places even in winter, and in summer say a long good-by to ordinary human relationships. Rather remotely distant from Pullman, they have been observed on our trips into the Moscow Mountains at various times during the winter and late spring as above mentioned.

Yet on these occasions they were never noted in the denser wooded areas, but where recorded were seen in the grain-bordered foothills or in the more open areas of the summit. In their Snake River winter habitat they are becoming celebrated for the interest of their roosting grounds along the basalt cliffs.

Daily activities.—The Rosy Finch during the winter months is quite decidedly diurnal. On December 31, 1922, they were heard distinctly, and many times shortly after daylight, at our winter camp on Moscow Mountain at an elevation of 4000 feet. They appeared to be associated with the tall, scattered, fog-obscured fir trees and may have been refugees from storm, though they might have been attracted by the chaff scattered about the feeding boxes of our horses. This habit of stirring about early in the morning hours was also noted at the office window feeding tables. They were correspondingly early in congregating for the night. This habit was observed about the buildings and also at one of the cliffs on the Snake River, known locally as Swallow's Nest Rock, near Asotin, Washington. On January 29, 1927, the writer conducted a party from Washington State College, consisting of Drs. Webster and Leffingwell, Messrs. Putnam and Gibson on a visit to these rocks. It was about three in the afternoon and the birds were coming together in preparation for their nightly assemblage. They were in greater numbers than I had even seen them around the rock before, and were an object of unusual admiration to the members of the party. Perhaps the size of the flock was due to the time of day and their homecoming for the night—for here were their nightly retreats all ready for use—the old forsaken last summer nests of the Cliff Swallow (*Petrochelidon lunifrons lunifrons*) now far away in the southland. They were fluttering all over the cliff face at times, again diving off into spirited undulating flight, wheeling in the air, on wings suggestive of muscular power, to fly directly back at the perpendicular face of the rock like wind-driven snowflakes, and like them avoiding sudden contact and destruction by shooting skyward over the brow as if sucked up by unseen currents of air. Again they would settle on the sandy tallus-like slope in an eager effort to feed, against the coming of night. Nearly all were Hepburn's and only two Gray-crowned were seen, out of a flock conservatively estimated at 200 birds. An occasional bunch of Finch feathers among the Russian Thistle and tufts of grass at the rock base, together with a feather of Macfarlane's Screech Owl (*Otus asio macfarlanei*) suggested a possible tragedy. Finch feathers were also noted once near their nightly shelters at Pullman where Screech Owls were known to be dwelling. Other birds of prey may have been interested, although only once was a diurnal raptor seen, a Prairie Falcon (*Falco mexicanus*) which soared out from the cliff crest. Perhaps winged enemies are, for them, the most common and the most to be feared. The main flock, on

Photographs by W. T. Shaw.

HEPBURN'S ROSY FINCH.

LEUCOSTICTE TEPHROCOTIS LITTORALIS.

UPPER: ROOSTING IN OLD CLIFF SWALLOW NESTS.

LOWER: FEEDING AT BASE OF SWALLOW NEST ROCK, WASHINGTON.

returning to Science Hall, November 18, 1922, seemed to show mistrust for the flapping awnings which had been added above the windows since their departure in the spring. On February 5, 1927, I returned to Swallow's Nest Rock for a camp of seven days. The birds seemed a trifle less abundant than they had been on January 29. Again the old unused nests of the Cliff Swallows were the chief center of attraction, and the cliff face was a scene of animation, as the great wall was thrown into shadow by the receding sun. Photographic exposures were made of the birds in and about the nests and on February 12 an exposure was made on a spot where some wheat tailings had been scattered by the roadside, a space about four by six feet. Upon the resulting negative about 60 birds were included. This wintering at a comparatively low elevation of 650 feet would seem to us unusual, but probably their chief interest in coming here was to spend the night warmly, as they were not common in the morning, probably having gone to the upper stubble to feed during the day.

Numbers and relative abundance of species.—In regard to the abundance of the birds and the relative numbers of each species occurring in this part of the state, the opportunity offered for close-up counts at the feeding box was exceptional. On five occasions, November 18, 29 and 30, 1922 and January 27 and February 11, 1923, flocks of 25, 20, 39, 46 and 33 respectively were counted upon the window-sill. Of these, the Hepburn's was by far the more abundant. Three close window-sill observations aside from those cited above at the Swallow's Nest Rocks, January 29, 1927, gave 1, 1 and 2, individuals of the Gray-crowned to 20, 45 and 31, of the Hepburn's. In 1921, *tephrocotis* was not seen at Pullman at all. In contrast to the large flocks of 1922–1923, no Finches were seen at Pullman, during the winter of 1926–1927 and it was also said that they did not appear at all during the winter of 1925–1926, at which time the writer was absent. These, to my knowledge are the only years between 1906 and 1927 inclusive in which they did not appear on the Campus. This break in their regularity of appearance was probably due to the fact that their old feeding box had been discontinued during these years, although it may have been influenced by a waning cycle, from their abundance in the years of 1922–1923.

Feeding Activities.—Rosy Finches are primarily ground-feeders, and I cannot recall having seen them show any signs of feeding upon buds or fruits of trees as some of the House Finches (*Carpodacus*) are apt to do although one might expect them to do this at certain times of the year. That they reach for ripe seeds from low growing plants is probable. Nor have I seen them use the feet in scratching, as some of the ground-feeding Sparrows (*Passerella*) are wont to do in turning over dead leaves and other debris. On the other hand, the Rosy Finches have a dexterous side sweep of the beak which is very effective in securing food from both soil and snow. At Snake

River they were observed February 5–12, 1927, gleaning among the weeds, Russian Thistles (*Salsola*) and low-growing Cactus, presenting a pleasant sight, and showing their dexterity and method of looking for seeds. They also practice a trick, which consists of a sudden side-sweep of the sand with the beak, and which they also employed in sweeping away the snow from their feeding box.

At the Campus, much of the winter day was spent at the feeding box. On bright days only a few birds might appear, feeding and gleaning leisurely through the sunny hours. At such times of plenty they would indulge in mild combats,—the one in possession of the window-sill defending its territory valiantly. With mouth wide open and all body feathers on end, wings and tail strutting, it would go through threatening attitudes, hopping stiff-leggedly and rapidly back and forth over its territory, as a last resort dashing into the air to repel an oncoming adversary. This dog-in-the-manger attitude was also shown in the defense of their right to possess one entire abandoned Swallow nest. But let the wild seeds of the earth be hidden by a light skift of snow, or a wintry gale from the southwest blow up, driving sleet and rain before it, then all animosity expressed in these mild duals was forgotten, and they came piling in until the sills would hold no more, and it was a sight to see the attention concentrated upon their food. Yet they are a brave resistant winter bird. They seem not greatly to mind severe protracted storm and one sometimes sees them swept clear off their feet by a terrific blast of snow-ladened wind. Occasionally on days of half rain and half snow the Rosy Finches looked quite bedraggled, and the feathers about the head became quite water-matted toward evening. After the storm, when sunny days came again, one learned much of their methods of retrieving food. For now, they proceed leisurely to gather that which was hidden by the snow. Persistently they work down through the frozen sleet, side sweeping with their efficient beaks sending the crystals flying out latterally for eight or ten inches. In this way they sometimes open up small pits in the snow as much as two inches in diameter by one inch deep. During such operations, one sometimes sees them pause to eat a few crystals of snow, manipulating the flakes for a few moments in the beak until they melt and pass back as water into the throat to be swallowed.

At all times they were attracted by bird seed such as is used for the tame Canary. Not all of this seemed to their liking, but the discus-like Hemp seed appealed especially to their taste. Seizing one of these, they would manipulate it rapidly until its sharp edges were caught between the upper and lower mandibles and alternately pinch and roll with the tongue until the seed hull snapped and flew into pieces. That their economy as destroyers of wild weed seeds is beyond question has been carefully shown by the Leffingwell studies (Condor, 1931).

Seasonal Color Changes.—As the generic name *Leucosticte,* which means "varying white" (Coues, 1903) would imply, the bird is subject to slight variation in color of plumage as shown at different seasons. Upon their arrival in October and November their plumage was rather typical of the species. The mature males wore the characteristic deep cinnamon brown, with black forehead and chin, gray head and upper neck except for *tephrocotis* where the cheek was brown. A varying amount of white suffused the otherwise blackish wings. The tail and feet were blackish. The rose was found chiefly on the rump and flanks. Here, especially on the distal ends of the feathers of the flanks, is shown, in response to intense cold or again to the warmth of sunny spring days, a lovely display of individual rose-pinkish spots, produced by the elevation of each separate feather. Such flaunting on sunny spring days is often accompanied by an animated strut and exuberance of spirit leading towards a twittering, modest nuptial song of unusual pleasantness. The female is similar in color but duller. Young of the season, in early winter, are still duller in plumage, though much clearer in tone than the plumage worn at the time of leaving the nest. A point of special interest is the color of the beak. In winter it is typically bone color, in summer ebony in strong contrast to the light gray nasal tufts. That this change of color is gradual is quite noticeable.

On November 15, 1923, a bird just arrived had the beak ebony or nearly so but by December 11 it was quite typical bone color of winter. On March 26, 1921, on the day of their last appearance at Pullman, the beak of *L. littoralis* was decidedly grayish black. One *L. littoralis* wearing a distinct brown patch on one cheek appeared at the window in the autumns of both 1922 and 1923. It remained all fall in 1923 and seemed not to be pure *L. littoralis,* as it had this brown patch coming up on the side of the cheek in a ragged line.

There came a time in early February when the colors of the birds began to brighten. On February 4, 1924, it was noted, that quite suddenly during the two or three sunny days around this date, the gray heads of *L. littoralis* became noticeably lighter. During the next four or five weeks they became more daintily tinted with pinkish and white than I have seen them at any other season, for in their nesting ground, at least from the 15th of June on for a month, the plumage has dulled considerably. With this brightening of color is associated the employment of a gentle twittering of song and a tendency to strut, especially on bright warm days; such inclinations of song and actions in February are forerunners of the same in the nesting grounds.

Voice and Song.—The most pronounced characteristic of the voice of the Rosy Finch is a distinct, fairly loud call note "*weep-weep,*" very suggestive of the English Sparrow (*Passer domesticus*). This is uttered when the bird is slightly alarmed or it may be given a moment or two before departure,—

a sort of rally for the flock. It would seem to be used in this way as it is more frepuent in the winter than in the summer. Another call note of less alarm is a deep, "*pit-pit,*" uttered once or twice. While both of these may be given when on the wing there is a third twittering song employed more commonly during flight. These twittering notes are usually heard in both winter and summer ranges and are likewise used when the bird is perched on the rocks just prior to beginning the food search, or before leaving the same employment, at which time it is often accompanied with a flashy twitching of the wings. There are however, some characteristics in which the bird's summer voice differs from the utterances in its winter habitat. In its nesting grounds, almost always just before it alights upon the moraines from an extended flight, it utters a harsh "*t-z-z-z-t,*" while still in the air, and when taking flight, in the nesting grounds after a long spell of gleaning, it utters on dull days, a well-spaced "*didt-didt,*" staccato, harsh and lonely, with a pleasant "*twit-twit,*" on sunny mornings. With their long, undulating flight over the snow fields of their nesting grounds they frequently utter "*tid-bid-tid-tid-bid.*" All in all, however, the Hepburn Rosy Finch is not very vociferous, when compared with a Purple Finch (*Carpodacus*). Occasionally one will give a few pleasant, spirited notes, as of a song, even in mid-July momentarily varying the sharpness of their call notes.

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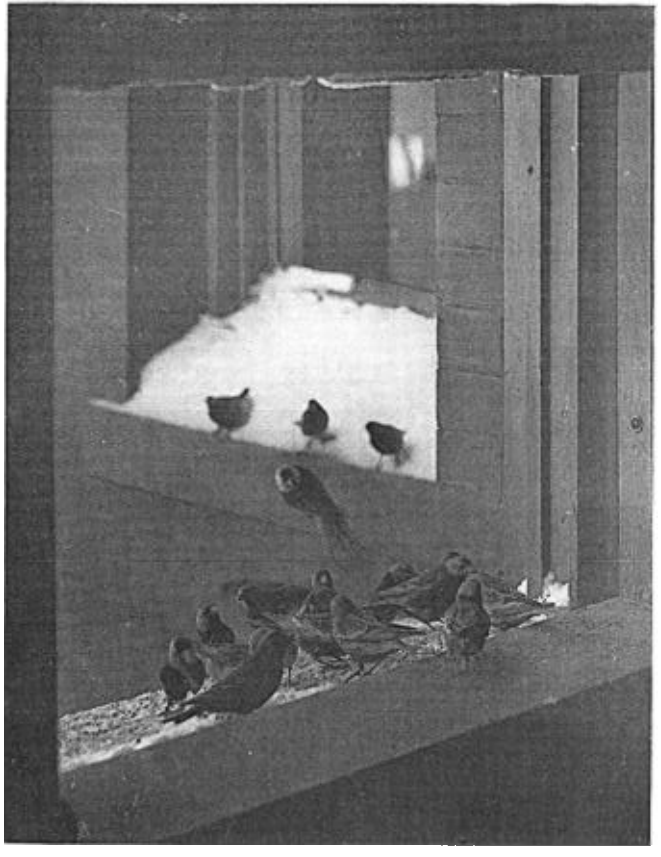

Photographs by W. T. Shaw.

LEFT: SWALLOW-NEST ROCK, ON SNAKE RIVER, NEAR ASOTIN, WASHINGTON—A VERTICAL BASALT CLIFF.
RIGHT: HEPBURN'S ROSY FINCHES FEEDING AT WINDOW OF WASHINGTON STATE COLLEGE.