

WEIGHTS AND PLUMAGES OF THE HORNED LARKS
OF CENTRAL NEW YORK

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THIS study was made mostly from birds taken near Ithaca, Tompkins County, New York. Here well drained, windswept fields offer an ideal wintering, as well as nesting, environment for Horned Larks, *Otocoris alpestris*. The three races of this well-known species, *alpestris*, *hoyti* and the most abundant and nesting *praticola*, have been found here in some numbers. Gayle Pickwell (1931) made rather exhaustive studies of *O. a. praticola* in the environs of Ithaca but the recent observations of the author deal with things little touched by him. This study is divided into two parts: weight and plumage variations.

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WEIGHT

This study was carried out during the years of 1938, 1939, 1940, and the spring of 1941. Data were collected from birds taken as museum specimens, and birds trapped for banding. Thus I have been able to gather interesting notes on the weights of *O. a. praticola* as well as a few of *O. a. alpestris*. The weights of *O. a. hoyti* are few and so much like those of *alpestris* that I need not record them. Although the weights of these races are extremely variable and occasionally overlap, the average for *alpestris* is in all cases higher than that of *praticola*. Data collected are perhaps too few to enable one to draw definite conclusions, but may prove interesting.

Thus we have not only an average of the weights of *O. a. praticola* compared with those of *O. a. alpestris*, but an analysis of the weight variations, especially of *praticola*, throughout the year. These observations are so much like those made by Nice (1937) on the Song Sparrow (*Melospiza melodia*) and by other workers, that they require but little explanation. In gathering these weights no distinction was made between live birds and freshly killed ones. Doubtless, there must have been a slight loss of weight in the dead specimens, but it was not tabulated. Also, no effort was made to weigh the birds beyond tenths of a gram. Since this study was not made to show daily fluctuations of weight, no notice was taken of the time of the day in

TABLE 1.
WEIGHTS IN GRAMS OF *O. a. praticola*

Males			Females	
month	number	weight	number	weight
January	10	36.7-49 (43.4)	1	34.7
February	33	30.6-45 (38.3)	6	31.1-38.5 (35.4)
March	76	33.2-44.5 (37.2)	71	31 -38.8 (34.3)
April	9	35 -36 (36)	5	37 -39 (38.2)
May	2	34.5-36.4 (2	36 -39 (
June	5	30 -30.9 (30.3)	2	30.3-30.9
July	4	29 -31 (30.8)		
August	5	33 -36 (35.2)		
October	2	35 -35.8		
December	18	36.3-43.5 (40.4)		

TABLE 2
WEIGHTS IN GRAMS OF *O. a. alpestris*

Males			Females	
month	number	weight	number	weight
January	3	45.2-49 (46.6)		
February	14	42.7-55 (48.2)	1	49.4
March	48	41 -59.5 (49.2)	18	39 -41 (40.8)
November			1	37.8
December	1	43	1	45

which birds were weighed. On the whole, the study is a gross seasonal one, rather than one showing minor daily fluctuations.

The maximum weight was attained by *praticola* in late December, January and February. This weight gradually decreased from March until July when the lowest weights were obtained. Occasionally, among the birds weighed, there were individuals that were atypical; for instance, one male, taken in February, weighed only 30.6 grams, almost as low as the lowest spring weight. One female taken in March, 1939, weighed 25 grams. This was so low that I did not include it in my calculations. Three very heavy January males, weighing 47, 48 and 49 grams, do not seem typical for *praticola* but more what one would expect in *alpestris*. The lightest male *praticola* was a July bird which weighed only 29 grams. This is 66.5% of the average weight of the three very heavy January birds.

I could find no positive correlation between the weights of the individual birds and their measurements. Two of the January males with wing measurements of 102 and 103 mm., respectively, weighed 48 and 49 grams. The very small female which weighed 25 grams had a wing which measured 96 mm.; this is perfectly normal. Other females banded in March, 1940, measured as low as 93 mm. while their weight was never lower than 31.3 grams. March males weighing only 36 grams had wing measurements of 108 and 109 mm. It was evident that the birds' weight depends somewhat on the amount of stored fat, rather than entirely on structural differences. June and July birds, which are nearly free of fat, are very light. I have taken as much as six grams of fat from the skin, alone, of specimens taken in January. Winter larks are completely enveloped by a thick layer of fat, particularly on the abdomen, base of the neck, and sides of the breast.

It is difficult to account for such an abundance of fat when food seems so scarce; yet the birds seem to be very well fed. Baldwin and Kendeigh (1938) have shown that there is "an inverse correlation between body weight and air temperature. The bird's weight increases with drop in temperature, and vice versa."

PLUMAGE VARIATIONS

Dwight (1890), in his review of *Otocoris alpestris*, says of *praticola*: ". . . with a pale yellow chin, which is seldom bright, and is often white." Oberholser (1909), says: "Individuals vary much in the shade and intensity of the color of the nape, rump and bend of wing, these differences also conspicuous on all the light areas of the upper parts. The eyebrow usually white, though occasionally tinged with yellow; the throat, on the other hand, is rarely without at least a trace of this color." As one may see from these statements, the general colors of these birds are rather variable and such parts as the throat and superciliary line exhibit extremely plastic quality. The color of the back may vary so that no two individuals are *really* alike. They may range from definitely pinkish gray with no apparent streaking to dark brown and heavily streaked.

Looking over a large series of thoroughly clean, locally collected, late winter birds, one finds skins with throats ranging from almost pure white to bright yellow. Notes taken on over three hundred male *praticola* reveal the following results: 2% of the specimens have the throat almost pure white; 20% have the white throat washed with a faint yellow tinge; in 48% it is light straw colored; and in the remaining 30% it is bright yellow. One hundred and twenty females,

on the other hand, show 14% with a pure white throat; in 48.2% it is whitish with a faint yellow wash of varying degrees; and in the remaining 37.2% the throat is yellow, from light to bright.

The foreheads of 75.6% of the males are white, and yellowish on the remaining 24.4%. The females show a predominance of white on the forehead, although some of them have a yellow wash.

The superciliary line of male *praticola* is, for the most part, white (88.4%). However, the yellow of the forehead of many individuals extends over the eye, and at times covers the entire line; 12% have either half or the entire line of this color. The superciliary line of the females is in nearly all cases white. The portion directly over the eye may, at times, be yellow, but in no case is the hinder portion of this color. This portion, however, may often be washed with buff. It is possible that some of the individuals collected are intergrades between *alpestris* and *praticola*, but to me it appears rather that the yellow of the eye-stripe is extremely variable.

It seems also worthy of note that the streaking of the breast and flanks of *praticola* is not, so far as I can tell, due to age, but rather to the fact that this, too, is a variable character. Birds with naturally streaked breasts and flanks, such as Song Sparrows (*Melospiza melodia*) and Sharp-tailed Sparrows (*Ammospiza caudacuta*) regularly exhibit similar variability in the amount of streaking, so I am inclined to consider this an individual variation. Assuming that old birds have longer halluces than young ones, I tried to correlate the amount of streaking with the length of hallux, but obtained indecisive results. There appeared to be little correlation.

In order to find out if the variability of color of feathers occurs within the individuals as well as within the race, I carried out several experiments with captured examples of *praticola*. For the first experiment I used twenty birds. These I placed in four cages, five birds in each cage. In one cage I placed birds with very yellow eye-stripes and throats, so as to approach *alpestris* in this character; in another cage were placed individuals with yellow throats and white eye-stripes; in the third cage were birds with faintly yellow throats; and for the fourth cage I selected five birds with white throats. For the first experiment, on March 16, I plucked the right superciliary line and right half of the throat of all of the birds.

Within two weeks the feather-sheaths of the plucked portions were evident on all of the birds and within one more week the tips of the sheaths were beginning to burst. At the end of 35 days the feathers seemed to be completely grown out. During the experiment the birds

were kept on a well-balanced diet of timothy seeds, millet, cracked grain, gravel, cod-liver oil, etc.

The results of this first observation were uniform. The new feathers could hardly be distinguished from the old ones. The white-throated birds acquired white feathers; the yellow ones, yellow feathers. The fact that only after close observation could I tell the difference between old, worn feathers and those just grown in, shows that wearing of these feathers does not affect to a great extent the color of these parts. The new feathers of the white-throated birds revealed, on close inspection, a very faint wash of yellow which was lacking on the old feathers. Also, in the yellow birds the tips of the new feathers had a minute brownish tuft.

Once more I plucked the birds. On one-half of them I replucked the right side with the newly grown feathers and on the remaining ones, the left side with the old feathers. The period of growth was of more or less the same duration as in the previous experiment. Within one month the feathers grew out almost completely.

The results were as in the first observation. On those birds which had new feathers on both sides of the throat and eye-stripe I could not find any difference between the feathers which were two months old and those which had just grown. Once more I plucked ten birds. This time I chose the intermediate birds, five of these with white throats with scattered yellow blotches. I made a diagram of each bird's throat to indicate the position of the yellow spots. The results were as I expected; the yellow spots came out in their proper places.

With five of the birds I had plucked the right side of the breast and the right flank. The newly grown feathers here, however, showed a marked difference. The new feathers displayed a delicate brownish wash of different intensity, which was lacking in the old feathers. Even the streaking was more copious for the most part. Two of my five males, however, showed little brownish wash and streaking on the breast and flank. I plucked the old feathers of the left side, but they grew out as on the right side.

In the light of these pluckings one may surmise that the character of the yellow parts, although variable within the race, is deep-seated in the individuals.

Since the race *praticola* is, by all means, the most abundant in Ithaca I had to limit my experimentation to it. However, the following notes taken on *alpestris* may be worthy of record. Generally speaking, specimens of *alpestris* should not offer difficulty in identification. Indeed, bright individuals are readily recognizable even in the field,

with their rich yellow throats and eye-stripes. Such birds, I understand, are typical, but it has been my experience to find richly colored birds as commonly as dull or almost white-throated ones; so, perhaps they are not the typical ones. Among specimens collected here in Ithaca, as well as those in the American Museum of Natural History (collected for the greater part on Long Island), the National Museum, Carnegie Museum (collected mostly in Labrador), and the Baffin Island birds collected by J. Dewey Soper, I find such a variety of coloration of yellow parts that I am often puzzled as to whether the birds are *alpestris* or *hoyti*. It is no wonder that Soper (1928) had such difficulty with the identification of his Baffin Island material. Many of the birds observed have not only the yellow of the throat blotched with white, but the superciliary line, which in all cases should be bright yellow, white.

Often field identification of these birds is nearly impossible. Even the keenest observer would fail to distinguish a white-throated Manitoba or Labrador bird from the white-throated *hoyti*. So, I rather disagree with Walker and Trautman (1936) that *hoyti* is "not difficult to identify in the field." Careful examination of more than two hundred specimens shows that *alpestris* is not only difficult but at times impossible to tell from *hoyti*. Indeed, only too often, the individual variations of these two races are greater than their subspecific characters.

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