

tus (= *halophilus*), which appear to be chiefly represented so far in collections by *breeding* specimens, represent the worn summer plumage of *rostratus*, also presents itself. The effects of abrasion in fading colors, in restricting and intensifying shaft-streaks, and in modifying measurements, are well known. The many experienced workers who have studied the large series of specimens in eastern museums must have given these factors due consideration, so that we may be wasting space in suggesting this possibility. In either case, what a remarkable exception there would be to the rule of southward migration in the northern hemisphere!

Finally, let me ask the question again — Where does the Large-billed Sparrow spend the summer?

THE STATUS OF *HELMINTHOPHILA LEUCOBRON-*
CHIALIS AND *HELMINTHOPHILA LAW-*
RENCEI.¹

BY LOUIS B. BISHOP.

IN the way of theory as to the status of the puzzling specimens labelled with these names I have nothing new to offer, but wish simply to bring to your attention a few facts that seem to go far to establish an old theory, first advanced, I believe, by Mr. Chapman.

In southern Connecticut there are three distinct forms of the Blue-winged Warbler (*H. pinus*), taking males alone into consideration — the ordinary form with rich gamboge-yellow lower parts, white wing-bars and bright olive-green back; a second form, like the last but with gamboge-yellow wing-patch, resembling the Golden-winged (*H. chrysoptera*), which is much the rarest; and, third, a form with pale yellow lower parts, much paler back, and

¹ Read at the Twenty-second Congress of the American Ornithologists' Union, Cambridge, Mass., Nov. 29, 1904.

with usually yellow wing-bars; and between the three occur all sorts of intermediates. From this last pale form a series that I have collected near New Haven stretches without a break to typical specimens of Brewster's Warbler (*H. leucobronchialis*) with pure white lower parts and bluish gray back, the yellow last showing in the center of the breast. All three forms seem, to an extent at least, to breed true; although all the evidence tends to show that they mate together indiscriminately, and their song is indistinguishable. I took in the same piece of woodland August 9, 1904, an adult male and young each of the bright yellow form with yellow wing-bars. Two young taken with a female Brewster's Warbler near New Haven on July 4, 1893, prove on further comparison to have the yellow of the breast paler than in young Blue-winged Warblers of the same age; about half a dozen males showing in varying degree the character of Brewster's Warbler have been taken in one small piece of land within a few years; and on May 12, 1898, I collected two males within a few hundred yards of where I knew one was breeding the year before, and where I had taken one on May 8, 1896.

If *H. leucobronchialis* were a species and the intermediates hybrids between it and *H. pinus* it would certainly be true that in the majority of instances it would mate within the species, and such an occurrence seems never to have been observed, and as its white throat is not found in either *H. chrysoptera* or *H. pinus* it can hardly be a hybrid between them. That it is merely a phase of *H. pinus* is the only alternative left us.

Before discussing the plumage of the bird called Lawrence's Warbler (*H. lawrencei*), let us spend a few minutes in seeing what may be learned from the localities in Connecticut where it has been taken, and the distribution of the Blue-winged and Golden-winged Warblers in this State. *Helminthophila pinus* is an abundant summer resident of the coast, becoming rapidly rare farther north, but breeding at Bethel on the west, and Warren, and rarely at Portland, on the north: *H. chrysoptera*, however, is rare throughout the State, and is apparently absent along the coast east of New Haven. It occurs rather commonly at Portland, but breeds also at Bethel, and doubtless also at Bridgeport, Seymour, and New Haven, where it has been taken at the begin-

ning of the breeding season ; while both species are reported very rare, if they ever occur, at East Hartford — a few miles north of Portland. Specimens of *H. lawrencei* have been taken at Stamford, Bridgeport, New Haven, Seymour, and Portland — places where both species occur, but one or the other is extremely rare. Practically all the Golden-winged Warblers collected near New Haven have been found in a narrow strip of country radiating from the northwestern part of the city, and here also about all the Lawrence's have been taken. A male Golden-winged was taken there by myself May 12, 1894, and on May 15 and 20, 1896, two male Lawrence's were collected within half a mile of this bird by Mr. A. H. Verrill and myself ; and from this same stretch of territory Mr. Verrill brought me on May 23, 1898, a laying female of the Golden-winged and with her a male Blue-winged which he stated was nesting with this bird. The Blue-winged is abundant in this region, thus establishing an ideal condition for the production of hybrids.

The song of Lawrence's Warbler may resemble that of either of the above species, but has no characteristic of its own. These birds associate freely with both species, and have been found mated with the Blue-winged, but never with each other.

Typical specimens of *H. lawrencei* have, as is well known, no character of plumage peculiar to themselves, but only a combination of characters found in *H. chrysoptera* and *H. pinus* ; yet the majority of specimens recorded closely resemble the type, and to prove it a hybrid under these circumstances intermediates between it and the above species should be forthcoming. Such specimens it gives me pleasure to show you to-day. The type, you will remember, may be considered either a Golden-winged with the yellow chin, breast, abdomen, postocular and malar stripe and bright olive-green back of the Blue-winged, or the latter with the black auriculars and throat of the former ; the wing-bars being either yellow or white. In the majority of specimens I have seen the black of the throat extends over the chin, and this form is, I believe, the true hybrid between the two species, if it is a hybrid, as I trust these specimens will convince you. Birds like the type of *H. lawrencei*, with yellow chin, seem to be rarer, and are, I believe, the result of crossing the black-chinned birds

with *H. pinus*; at any rate such a male, that I took near New Haven May 10, 1904, has the wing-bars chiefly white, and was quarrelling with a Blue-winged Warbler in the manner that males of the same species do at this season. Two specimens similar to this were taken by Mr. Verrill a few years ago.

Between this form and *H. pinus* stands a bird taken in New Jersey, and described by Mr. Brewster in 'The Auk' for July, 1886. In this bird the solid black throat has become merely a black spotting about one-quarter of an inch wide, while the auriculars are still largely black. Bridging the last gap stands a male collected by Mr. Verrill and myself May 23, 1902, which differs from the ordinary Blue-winged only by having a little black on the auriculars and the black loreal stripe extending slightly below the eye, and a black spot on the outer vane of one or two feathers on the throat.

Midway between *H. chrysoptera* and *H. lawrencei* is a male collected by me at New Haven, May 11, 1900, which has the white postocular and malar stripe and white abdomen of the former, and the back chiefly bluish gray, but resembles in the rest of its plumage the yellow-chinned form of the latter. Nearer still to the Golden-winged is a female which Mr. Verrill brought me in the flesh May 21, 1902, with a male Blue-winged which he stated was its mate, which differs from typical specimens only in having much bright olive-green on the back, and yellow on the breast and abdomen. Lastly stands the fact that the majority of Golden-winged Warblers taken near New Haven have at least a trace of yellow on the back or breast.

From this evidence the conclusion seems to me to be irresistible that *Helminthophila leucobronchialis* is merely a leucochroic phase of *H. pinus*, which, from its appearing frequently only within a very limited area, may in time become a species; and that *H. lawrencei* is a hybrid between *H. chrysoptera* and *H. pinus*.