

ON VIREO CHIVI AND ITS ALLIES.

BY W. E. CLYDE TODD.

THREE species of Vireos from North and Middle America, *Vireo calidris*, *V. olivaceus*, and *V. flavoviridis*, regularly reach the southern continent as winter residents. South America is also the permanent home of another species belonging to the same group, *V. chivi*. It was first made known from Paraguay by Azara in 1805, and formally named *Sylvia chivi* by Vieillot in 1817.¹ A few years later it was redescribed as *Lanius agilis* by Lichtenstein,² on the basis of specimens received from Bahia, Brazil. After trinomials came into vogue Lichtenstein's name was revived to apply to the form found in the northern part of South America, until it was shown by Dr. Hellmayr³ to be a pure synonym of *chivi*, and therefore inapplicable. This northern form was finally given the subspecific name *vividior* by the same author,⁴ with Trinidad as the type locality. Meanwhile Dr. Chapman had applied the name *cauca* to the race which he had found in western Colombia.⁵ *Vireo roraimæ* Chubb was based on specimens from British Guiana.⁶ In 1924 the present writer⁷ discriminated a race from French Guiana under the name *griseola*. This completes the taxonomic history of the species to date.

Typical *V. chivi* is in coloration close to *V. olivaceus*, but is smaller, with a shorter wing-tip and more rounded wing, the sixth, seventh, and eighth primaries being subequal and longest, while in *olivaceus* the sixth is always decidedly shorter than the other two. In worn plumage the under tail-coverts are as pale as in *olivaceus*, but in fresh dress they are brighter yellow, but not so bright as in *vividior*. The superciliaries and sides of the head are distinctly tinged with buffy—a character which is wanting in *vividior*, and is not noticeable in *olivaceus*. To make *olivaceus* and *chivi* conspecific,

¹ Nouveau Dictionnaire d'Histoire Naturelle, XI, 1817, 174.

² Verzeichniss Doubletten Zoölogischen Museums Berlin, 1823, 49.

³ Novitates Zoölogicae, XIII, 1906, 11.

⁴ Verhandlungen Ornithologischen Gesellschaft in Bayern, XI, 1913, 315.

⁵ Bulletin American Museum of Natural History, XXXI, 1912, 159.

⁶ Birds of British Guiana, II, 1921, 393.

⁷ Proceedings Biological Society of Washington, XXXVII, 1924, 124.

as lately proposed by Mr. Zimmer,¹ is so absolutely opposed to the conceptions of most American ornithologists with regard to species and races that I fail to see how it can be seriously entertained. If these two forms be united under a single specific head, then the process of amalgamation cannot stop there. Among the Vireos the difference between species is often slight, so far as distinctive characters are concerned. As I shall show in this very connection, the case of *Vireo chivi* constitutes a striking example of the difficulties which advocates of the "formenkreis" theory are apt to encounter in treating all representative forms as subspecies (compare my remarks in the Proceedings of the Biological Society of Washington, XXXV, 1922, 20).

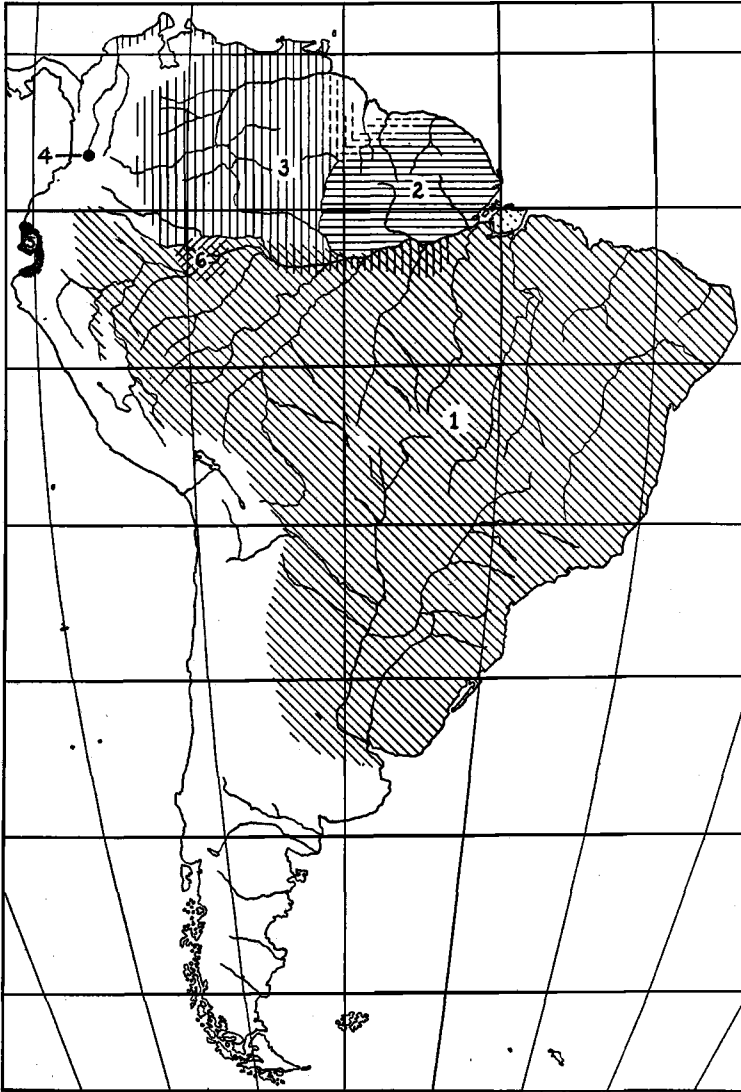
The species in question has a wide range, from the Amazon River and eastern Ecuador on the north to Uruguay and the Province of Buenos Aires on the south, and from the eastern foothills of the Andes to the Atlantic coast in Brazil. It is subject to considerable variation in size, as indicated by Ridgway,² and more recently by Dr. Hellmayr.³ But whereas the smallest specimens examined by the former author came from the southern part of the range of the species, our largest specimen (53,192, Embarcación, Argentina) comes from the same part, (wing, 75; tail, 55). There is so much variation in size, indeed, in specimens from the same geographic area that I fail to see how any subdivision of the species can be made on that ground. Our series of 42 skins (mainly from Bolivia and Brazil) certainly cannot be divided into two on any ground whatever. But now comes Dr. Hellmayr,⁴ who believes that after all *agilis* can be maintained in a subspecific sense for the bird of eastern Brazil, on the basis of a difference in color. In the collection of the American Museum of Natural History there are a series of six freshly collected skins of this Vireo from Bahia, the type locality of *agilis*. These are not satisfactorily distinguishable from Bolivian skins, so far as I can see. Nor am I able to distinguish the east Brazilian specimens on which Dr. Hellmayr's remarks were based from our Bolivian series by any constant characters. Con-

¹ Field Museum Natural History Zoölogical Series, XVII, 1930, 413.

² Bulletin United States National Museum, No. 50, III, 1904, 132-3.

³ Field Museum of Natural History Zoölogical Series, XII, 1929, 261.

⁴ l. c., p. 260.



DISTRIBUTION OF VIREO CHIVI AND ITS ALLIES.

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| 1. <i>Vireo chivi</i> | 4. <i>Vireo caucæ caucæ</i> |
| 2. <i>Vireo caucæ griseolus</i> | 5. <i>Vireo caucæ</i> , subsp. |
| 3. <i>Vireo caucæ vividior</i> | 6. <i>Vireo caucæ solimoënsis</i> |

sequently I am still of the opinion that a good case for the recognition of *agilis* has not been made out.

Coming now to the northern representative of the group, *vividior* we find it easily told from *chivi* by its obviously brighter coloration. The upper parts, including the wings and tail externally, are clearer, purer green (warbler green); the pileum is clearer gray, more strongly contrasted with the back; the superciliaries are whitish, not buffy, nor are the chin, auriculars, and throat buffy-tinged; and the under tail-coverts and inner margins of the rectrices are brighter yellow (barium yellow to Martius yellow). Ten males (from Trinidad, northern Venezuela, and the Santa Marta region of Colombia) average: wing, 73; tail, 51; bill, 14; tarsus, 17. Ten females: wing, 68.5; tail, 47; bill, 13.5; tarsus, 17. The differences between this form and *chivi*, although slight, are constant, and usually obvious even in worn plumage.

The range of this form, which has been supposed to be confined to Trinidad (and Tobago), Venezuela, and northern Colombia, is really much more extensive. It reaches and even passes the Amazon River, where it meets and overlaps the range of *V. chivi* itself, both forms having actually been taken together at Manacapurú and localities on the Rio Tapajóz, as shown by specimens in the collection of the Carnegie Museum. The possibility that such might be winter migrants from farther north at once suggested itself, but the dates of collection lend no support to such a view, any more than in the case of *V. chivi*. Hence there can be no further question as to *chivi* and *vividior* being two distinct species, since they occur together without mixing wherever their respective ranges overlap.

A curious thing about these trans-Amazonian representatives of *vividior* is that while they are absolutely identical with examples from the north coast of Venezuela, the birds from the opposite (north) bank (Obidos) belong to a different race, *griseolus*, characterized by the well-marked grayish suffusion of the under parts. This is the race that inhabits French Guiana, and probably ranges west to the Rio Negro. A series from Manacapurú, on the north bank of the Amazon, just west of the mouth of the Rio Negro, are *vividior*, but show some grayish suffusion below, and evidently tend toward *griseolus*. The birds from the upper Amazon, on the other hand, are different again, and are discussed beyond.

In western Colombia lives still another form, *cauca*, characterized by its generally darker and duller coloration as compared with *vividior*. It is known at present only from the Cauca Valley, where it is isolated from any other form of this particular group. Its relationships are clearly with *vividior* rather than with *chivi*, and since the publication of its name antedates that of the former this whole group of conspecies will take *cauca* for their specific appellation.

I have been able to examine a number of specimens of this Vireo from western Ecuador in the collection of the American Museum of Natural History. They come from the series placed by Dr. Chapman¹ under *griseobarbatus* von Berlepsch and Taczanowski, described from Chimbo, Ecuador. They may possibly average a little bit whiter, less grayish-tinged below, than our series of *vividior*, but the difference is certainly slight. Aside from this, I can find no characters whatever wherewith to separate them from *vividior*. Dr. Chapman, it is true, speaks of the greater extent of the greenish yellow below, and the smaller bill, but I cannot verify either of these characters. The main difficulty in such a reference lies in the discontinuous distribution thereby involved, since *cauca* intervenes between the range of the Ecuador bird and that occupied by *vividior* in northern Colombia, while the Andes of course cut it off on the east.

It will be observed that Messrs. Lönnberg and Rendahl² have also identified their specimens from Gualea, Ecuador, as *vividior*. Dr. Chapman seems to have referred his series to *griseobarbatus* on geographical grounds. A careful reading of the original description of the latter leaves one with the impression that it must be a very different bird, since it is compared with *V. calidris* as well as with *V. chivi*. Unfortunately no measurements are given, but Dr. Hellmayr writes that it has in fact nothing to do with the *chivi* group. It is just possible that with a good series of first-class skins from western Ecuador available they might be discriminated from *vividior*.

There remain to be considered a series of thirteen specimens from the upper Amazon of Brazil, São Paulo de Olivença and Tonantins.

¹ Bulletin American Museum of Natural History, LV, 1926, 587.

² Arkiv för Zoologi, XIV, No. 25, 1922, 77.

(From the latter locality, by the way, we have also a perfectly typical example of *V. chivi*.) These do not differ from *V. caucæ vividior* in color, but only in their smaller size. While on general principles I am averse to admitting subspecies to recognition when such are based solely on *slight* average differences in size, here is a case which seems to come within the requirements. Seven males of the new form measure as follows: wing, 62–67 (average, 64.5); tail, 41–45 (44); bill, 11.5–12 (12); tarsus, 15.5–17 (16.5). Five females: wing, 60–65 (62.5); tail, 41–45 (42); bill, 11–12 (11.7); tarsus, 14.5–16.5 (16). These birds are so much and so uniformly smaller than typical *vividior* (see measurements, *antea*) that they surely deserve subspecific separation, and I propose to call them

***Vireo caucæ solimoënsis*, subsp. nov.**

Type, No. 96,399, Collection Carnegie Museum, adult male; São Paulo de Olivença, Rio Solimoës, Brazil, April 12, 1923; Samuel M. Klages.

Characters.—Similar in coloration to *Vireo caucæ vividior*, but uniformly smaller (See measurements above).

The forms treated in the present paper should thus be arranged as follows:

Vireo chivi (Vieillot). Brazil, from the Amazon Valley to Argentina and Uruguay, and west to the Andes.

Vireo caucæ griseolus (Todd). French Guiana to the Rio Negro, Brazil.

Vireo caucæ vividior Hellmayr. Colombia and Venezuela, south to the Amazon Valley.

Vireo caucæ caucæ (Chapman). Western Colombia (Cauca Valley).

Vireo caucæ subsp. Western Ecuador.

Vireo caucæ solimoënsis Todd. Upper Amazon, Brazil.

The present paper is based on the series of specimens of these forms in the Carnegie Museum, consisting of 179 skins, supplemented by material supplied through the courtesy of the American and Field Museums, to the authorities of which thanks are again returned.

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