

SUBSPECIFIC STATUS OF THE GREEN JAYS OF
NORTHEASTERN MEXICO AND SOUTHERN TEXAS

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Since my first trip to México in 1938 I have been puzzled concerning the distribution and characters of the so-called Rio Grande Green Jay, *Xanthoura yncas glaucescens*. Described by Ridgway (Auk, 17, 1900:28) as "smaller, paler, and duller" than *X. y. luxuosa*, *glaucescens* was believed at first to inhabit only the lower Rio Grande valley, but localities as far south as San Fernando, Río Martinez, and Río Cruz, Tamaulipas, were subsequently included in its range (Phillips, Auk, 28, 1911:82). Hellmayr (Birds of the Americas, part 7, 1934:36, footnote) went so far as to state that "a good many specimens" from Valles, San Luis Potosí appeared to him to be "inseparable from those of Texas." All of the Green Jays which my colleagues and I collected at various localities in Tamaulipas, Nuevo León, San Luis Potosí and Hidalgo I identified as *luxuosa*; but some of these I would probably have called *glaucescens* had I been convinced that that form was valid. The moot specimens seemed too dull, too bluish, or too small for *luxuosa* of Ridgway, but I could not seem to find any constant correlation of characters. Some individuals which were too small for *luxuosa* were obviously very brightly colored. Some which were large enough and bright enough for *luxuosa* were disturbingly blue on the back or back *and* under parts. The incidence of blueness of general tone was so high in regions well south of the border that I gave up my long-held belief that *glaucescens* might be a bluish race, as the name seemed to suggest. A suspicion that birds from the Rio Grande valley in fresh plumage were just as brightly colored as birds from San Luis Potosí and southern Tamaulipas grew stronger as additional material came to hand.

When, in 1947, Dr. Max Minor Peet purchased a large collection of bird skins obtained by H. H. Kimball, I was much interested to learn that over a hundred specimens of the Green Jay from Texas were in the lot. On examining these, I found that most of them were in adult or full first winter plumage and that all but a very few were strict topotypes of *glaucescens*. Here, then, was an opportunity to find out what the true characters of *glaucescens* were. The study promised to be the more interesting because the type locality was at the northernmost frontier of the species' range: topotypes themselves should embody the extreme development of the northernmost population's morphological characters, whatever they were.

From the Kimball series I selected 34 males and 35 females, all from Brownsville. None of these was in juvenal plumage, although some (with narrower, more pointed rectrices and some replaced remiges) were in first winter plumage. To these I added 24 Brownsville specimens (12 males and 12 females) from the University of Michigan Museum of Zoology and my own collections—a grand total of 46 male and 47 female topotypes of *glaucescens*. I do not know how many specimens Ridgway had before him when he described *glaucescens*, but he must have had very few. When he prepared his diagnosis in 1904 he apparently had a total of 14 specimens.

For convenience I now quote Ridgway's description (*loc. cit.*) of *glaucescens*, adding in brackets millimetric equivalents of lengths: "Similar to *X. luxuosa*, but smaller, paler, and duller, with less white on forehead, the back bluish green, more or less (usually extensively) tinged with pale blue; adult male averaging wing 4.46 [114 mm.], tail 4.95 [126 mm.], culmen 0.98 [25 mm.], tarsus 1.48 [37 mm.], middle toe 0.82." In the same paper he described the Tehuantepec Green Jay, *X. y. vivida*. In a brief paragraph between the descriptions of *glaucescens* and *vivida*, he had this significant comment to

make on *luxuosa*: "This, the central form of the species . . . is intermediate in characters between *X. l. glaucescens* and *X. l. vivida*, with both of which it of course completely intergrades."

Ridgway's measurements for *luxuosa* I accepted without question until, having myself measured 17 male and 12 female Green Jays from San Luis Potosí, central Nuevo León and southern Tamaulipas, I noticed that Ridgway's high extreme for the tail-length of males of *luxuosa* was *very much* greater than that of the longest-tailed bird I had handled. I wrote Dr. Herbert Friedmann about this, asking where the male of *luxuosa* with greatest tail-length (145.5 mm.) had been collected. Friedmann replied that on Ridgway's work-sheets for *luxuosa* there were measurements for "two long-tailed birds which had wrong localities on them. These have since been found to come from Michoacan and are of the race *vivida*. I think these give a clue to the problem that has been puzzling you, and I must say that we have no specimens from Texas, San Luis Potosí, Tamaulipas or Nuevo León that have tails as long as these two. I think it is safe to say that Ridgway's maximal measurements are based on specimens wrongly identified as *luxuosa*" (personal letter, August 8, 1949). Ridgway's *luxuosa* was, then, a larger, brighter, bird than true *luxuosa*, for it was actually a combination of true *luxuosa* and true *vivida*.

MEASUREMENTS

Wing.—The wings of specimens used in this study I measured without attempting to press the primaries flat. I placed the nail of my left thumb hard against the bend (wrist) of the left wing; placed one point of the dividers against the thumb-nail at the bend of the wing; then brought the other point to the farthest tip of the folded primaries. When in doubt, I measured both wings. While this method did not, admittedly, give me the greatest possible wing length, it gave me very close to that; it was not hard on the specimens; and most important of all, it approximated the method followed by Ridgway himself.

Tail.—The tail I measured with one point of the dividers against the integument at the base of the middle pair of rectrices, the other at the very tip of the longest rectrix. This is a fairly absolute measurement unless the skin at the base of the middle rectrices has been broken. I made certain that the middle rectrices were fully developed—*i.e.*, wholly out of the sheath at the base—although these rectrices were not invariably the longest.

Bill.—The bill measurements recorded in table 1 are not very satisfactory. No one can take *consistently* an "exposed" culmen measurement in a species which has such heavy feathering over the nostrils and base of the bill, and finding the true base of the culmen among the forehead feathers is difficult, if not impossible, in some specimens. Since Ridgway had made such a point of describing *glaucescens* as small-billed, however, bill measurements of some sort seemed to be necessary.

Puzzled by my inability to obtain bill lengths at all comparable to Ridgway's, I consulted Dr. Friedmann, who remeasured five of the very Green Jays Ridgway himself had handled, checked his findings with Ridgway's original measurement sheets, and reported (letter of January 2, 1948) as follows: "One of the calipers was inserted at the base of the white frontal plumes and the other at the tip of the bill. In other words, the blue feathers over the nostrils were included in the culmen measurements but the measurements as published are not actually all the way to the base of the culmen but merely to the base of the white frontal feathers. This involves a difference of 3 to 5 mm. in some specimens." I proceeded to measure the bills following Ridgway's method as best I could.

Tarsus.—Tarsal measurements I made with one point of the dividers in the distinct heel-groove, the other at the distal edge of the most distal tarsal scute. This last scute usually was undivided, but in some specimens it was almost divided at one side or along both sides.

DISCUSSION OF MEASUREMENTS

Wing length.—Table 1 shows, first, that the averages for wing length of topotypical males and females of *glaucescens* are almost the same as those for birds from central and southern Tamaulipas, Nuevo León, and San Luis Potosí; and, second, that the

Table 1
Measurements of Green Jays in Millimeters

	Wing	Tail	Bill	Tarsus
MALES				
46 specimens from Brownsville, Texas and immediate vicinity	110-120 (115.2)	118-136 (129.8)	24-27.5 (25.9)	34-39 (37.2)
1 specimen from Monterrey, Nuevo León	117	128	24.5	39
8 specimens from central and southern Tamaulipas	107-119 (115.2)	120-135 (129.8)	23.5-25 (24.4)	35.5-39 (37.6)
8 specimens from San Luis Potosí	111-116 (113.2)	120-136 (128.7)	22-27 (24.6)	36-39 (37.4)
FEMALES				
47 specimens from Brownsville, Texas, and immediate vicinity	107-119 (112.3)	117-134 (125.7)	23-26.5 (24.6)	34.5-40 (36.3)
1 specimen from Monterrey, Nuevo León	115	120	24	36
8 specimens from central and southern Tamaulipas	108-114 (110.7)	120-130 (125.1)*	23.5-25.5 (24.4)	34-38 (36.5)
3 specimens from San Luis Potosí	109-111 (110.3)	123-126 (124.3)	22-23 (22.6)	34-37 (35.6)

* Tail measurements here given are for seven females only.

shortest-winged birds of all are from San Luis Potosí, although the sample (especially of females) is admittedly small.

Ridgway's wing length average (Bull. U. S. Nat. Mus. No. 50, part 3, 1904:308) for males of *glaucescens* was 113 mm., for females, 112. Averaging a large number of *glaucescens* raises Ridgway's average for both males and females. The seven female *luxuosa* measured by Ridgway—"112.5-118 (114.5)"—had a wing length wholly within the extremes of the topotypical female *glaucescens* which I measured.

Not revealed by the table are these facts: Of the 46 male topotypical *glaucescens* recently measured by me, 11 had a wing length equal to or greater than the longest-winged *glaucescens* reported by Ridgway in 1904 (117.5); and five had a wing length greater than the average for eight *luxuosa* reported by Ridgway in 1904 (118.5).

Tail length.—Table 1 reveals that specimens from Brownsville, Texas, actually average longer-tailed than birds from central and southern Tamaulipas, Nuevo León and San Luis Potosí, although not at all strikingly so. The seven females of *glaucescens* reported by Ridgway in 1904—"122-131.5 (127.5)"—actually averaged longer-tailed than his seven males of *glaucescens*—"118-131 (126)." My own averages give a much truer picture, I believe, for surely the female Green Jay is not ordinarily longer-tailed than the male. Measurement of many topotypical *glaucescens* raises Ridgway's tail length for males considerably (about 4 mm.), but almost imperceptibly for females.

Not revealed in the table are these facts: First, of the 46 males from Brownsville, Texas, which I measured, 21 (almost half) had a tail length equal to, or greater than, that of the longest-tailed *glaucescens* reported by Ridgway (131 mm.). Second, of the 47 females which I measured, nine had a tail length equal to or shorter than that of the shortest-tailed female measured by Ridgway (122 mm.). Third, the seven female *luxuosa* measured by Ridgway—"121.5-136.5 (127.5)"—come very close to lying completely within the extremes of the 47 topotypical female *glaucescens* which I measured.

Bill length.—Ridgway's statement that "the bill especially" is shorter in *glaucescens* than in *luxuosa* certainly is not confirmed by table 1. The shortest-billed individuals I have handled have been from San Luis Potosí, and the average bill length of specimens

from Brownsville, Texas, is slightly *greater* than that of birds from central and southern Tamaulipas, central Nuevo León, and San Luis Potosí. On the whole I feel that data for bill length in table 1 are not very satisfactory. A suspicion lingers that birds in first winter plumage may be a trifle shorter-billed than fully adult birds.

COLOR COMPARISONS

Choosing good bright days for this part of the work, I studied the coloration of the 93 topotypical specimens of *glaucescens*, ascertaining (1) that I could not distinguish males from females on the basis of color, and (2) that most individuals (both males and females) which had more or less concealed dull green feathers scattered through the blue crown plumage also had somewhat pointed and narrow outer rectrices. Since birds in full juvenal feather are decidedly greenish on the crown and usually (perhaps always) have narrow outer rectrices, I concluded that birds with touches of green in the crown and with narrow tail feathers were in the final stages of the postjuvenal molt. I could not, admittedly, be sure about certain specimens which seemed to have a little green in the crown, yet had broad outer tail feathers, and about others which had wholly blue crown but narrow outer rectrices; but birds which I felt quite sure were in first winter feather certainly were not, as a group, obviously different in general color from the rest.

Next I separated the bluish birds from those which were plain green. Some "blue" birds would be picked out at once; but others (those which appeared more bluish in certain lights than in others) were difficult to select. I decided that 28 of the 93 birds were bluish enough to form a separate category, although there was no abrupt break between them and the "green" birds. These 28 "blue" birds were not all males, or all females, or all fully adult, or all in first winter plumage; they were a mixed lot. Of them five (two adult males, two adult females, one male in first winter plumage) were further separable because their blueness resulted not from a general bluish tinge to the otherwise greenish feathers, but rather from the presence of wholly blue feathers among the green. The best example of this blue-spotted type was a female, probably an adult. In this individual, which was in excellent feather and very brightly colored, many back, scapular, chest, side and flank feathers, most of the greater and middle coverts, and several upper and under tail coverts were light, clear blue of a color wholly different from the "normal" green feathers. The blueness of the under parts was especially noticeable when the bird was placed in a series; but full comprehension of the pure blueness of the feathers required careful lifting and separating of the plumage. The feathers were not green, tinged with blue; they were blue feathers among the green.

Puzzled by the blueness of body plumage and extreme paleness of the under tail coverts and outer rectrices in two specimens in the University of Michigan Museum of Zoology collection, I examined them critically, finding that they had faded badly. One was a bird collected by Couch at Matamoros, Tamaulipas, in about 1858; the other was a specimen from Cameron County, Texas, collected in 1896. Evidently the yellow pigmentary element had faded, while the blueness, which probably is not pigmentary at all, had remained. In any event, faded specimens should not be used when basing decisions concerning validity of race on color-comparisons.

When I arranged in green-to-blue series all available Tamaulipas, Nuevo León, and San Luis Potosí birds, I found exactly the same sort of mixture I had found in the topotypes of *glaucescens*. A decidedly bluish individual (UMMZ no. 114949), which in 1947 I had identified provisionally as *glaucescens*, was from Jaumave, Tamaulipas. A very blue-backed individual (sex ?, Louisiana State University Museum of Zoology

no. 11740) was from Valles, San Luis Potosí. A very blue female (LSUMZ no. 11743) was from Huichihuayan, San Luis Potosí.

Thus I proceeded, with Ridgway's description of *glaucescens* in hand, to try to pick out northern Mexican birds on the basis of (1) paleness, (2) dullness, and (3) reduced amount of white on the forehead. In every attempt I failed. A female specimen from Xilitla, San Luis Potosí (LSUMZ no. 11746), was virtually without any white on the forehead; not one of the 93 topotypes of *glaucescens* was so extensively blue over the whole top of the head. Several birds from the Río Sabinas, in southern Tamaulipas, had very little white on the forehead.

EYE COLOR

There was no comment as to eye color on the small original labels of the Kimball specimens handled in this study. My co-workers and I have thus far failed to observe or collect a single yellow-eyed bird anywhere in Texas, Tamaulipas, Nuevo León, or San Luis Potosí, however, and Dr. George H. Lowery, Jr., who courteously lent me most of the San Luis Potosí specimens reported on above, informs me that neither he nor Robert J. Newman has ever seen or collected a yellow-eyed bird in San Luis Potosí.

Specimens of *Xanthoura yncas vivida* from Chiapas and Veracruz in my collection have label comments to the effect that the eyes were yellow (Sutton, Condor, 49, 1947:196-198). The northernmost yellow-eyed birds which I have handled were from the general vicinity of Córdoba, Veracruz. A male collected by Ernest P. Edwards four miles north of Potrero, Veracruz, was small (wing 114 mm., tail 135) for *vivida*, but its plumage characters were those of that race. Its eyes were "bright yellow." A male and female taken near Fortín, Veracruz (recently lent me by Dr. Lowery), also were somewhat small for *vivida*, though yellow-eyed. The wing of the male measured 125 mm. (the middle rectrices were missing). The wing of the female measured 115 mm., the tail 133. The under tail coverts of the male were clear bright yellow, with only a slight tinge of green; those of the female were strongly tinged with green; but both birds were far too bright in general for *luxuosa*. F. A. Pitelka informs me that the labels of certain Guerrero specimens of *Xanthoura yncas* handled by him bore comment to the effect that eyes had been brown. Labels of specimens of *X. y. maya* and *X. y. centralis* in the University of Michigan Museum of Zoology clearly indicate that those races are yellow-eyed.

SUMMARY

1. *Xanthoura yncas glaucescens* Ridgway is a synonym of *Xanthoura yncas luxuosa* (Lesson), for specimens from southern Texas are not distinguishable either on the basis of size or of color from those of San Luis Potosí, Tamaulipas, and Nuevo León.

2. *Xanthoura yncas luxuosa* is puzzlingly variable in color of body plumage in all parts of its range, some individuals being strongly bluish, especially on the back. In some of these bluish individuals the green feathers are tinged with blue; in others wholly blue feathers are mixed with the green.

3. *Xanthoura yncas luxuosa* (i.e., all Green Jays inhabiting eastern México north of the range of *X. y. vivida*) is brown-eyed. The shade is dark brown, not yellowish brown or grayish brown. Presumably there is an area in which intermediates between *luxuosa* and *vivida* have yellowish-brown eyes, but this area of intermediacy has not yet been discovered. Three Veracruz specimens which were intermediate in size between *vivida* and *luxuosa* had the plumage coloration of *vivida* and bright yellow eyes.

University of Michigan Museum of Zoology, Ann Arbor, Michigan, July 25, 1949.