

**Article IV.—THE HOUSE WRENS OF THE GENUS
*TROGLODYTES***

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INTRODUCTION

Of the families of birds common to both hemispheres, only the wrens are pronouncedly more abundant in the New World than in the Old, 289 species and subspecies being known from the former as compared with only 48 from the latter. We may perhaps, therefore, consider the family to be of American origin, and, if we judge by its present center of abundance, its birthplace is in the Tropics to which not less than 240 of the American forms are restricted.

In spite of their comparatively sedentary and, as a rule, non-migratory habits, several genera of wrens are notable for the extent of their range, while no other American passerine bird is found throughout a greater area than the house wren. Under this name we include the *Troglodytes aëdon-musculus* group and those insular forms which are obviously derived from it.

RELATIONS OF THE SOUTH AMERICAN AND NORTH AMERICAN FORMS.—Although the house wrens of South America and North America are considered by systematists as different species, it seems clear to us that, even if non-intergrading, they are nevertheless representative forms. It is true that the North American species possesses certain characters, notably barred flanks, which are not present in South American birds, but no one who encounters these birds in the field, whether in Patagonia or Canada or any intermediate locality, can doubt the fact of their essentially specific identity. From one end of this area to the other, when opportunity offers, they seek the haunts of man in the city, village, ranch, or farm house. Wide variation exists between the songs of various races, but there is a fundamental similarity in the character of their notes which betrays the singer's relationships, wherever he may be heard.

From the Straits of Magellan to southern Mexico, the house wren is distributed almost continuously and, with the exception of *Troglodytes tecellatus* of the Peruvian-Chilean border, our material shows the specific identity of all the continental forms inhabiting this region. The data from Mexico are too incomplete to enable us to determine the southern breeding limits of *Troglodytes aëdon*, and hence its distributional relations with *T. musculus*. In this region house wrens become migratory, and it is consequently impossible to say whether specimens from Mexico taken

out of a supposed breeding season are resident or migratory birds. *Troglodytes peninsularis* of the gulf coast of Yucatan partly bridges the gap between the *aëdon* and *musculus* types in Central America. The Mexican history of the group, however, can be written only when we are more familiar with its distribution in that country during the breeding season. Meanwhile we venture the prediction that the small gap between *musculus* and *aëdon* will be closed.

THE HOUSE WREN A SUCCESSFUL SPECIES.—Before we turn to a study of *Troglodytes musculus*, with which we are in this paper more especially concerned, we wish to call attention to certain facts common to both *musculus* and *aëdon* which it seems probable are in the main responsible for the wide range and abundance of these birds. Whether found in Argentina or British Columbia, house wrens are adaptable, aggressive, prolific birds. Any species which can closely associate itself with man is apt to find increase in its available food supply and a decrease in the number of its natural enemies. The readiness with which our house wren (*Troglodytes aëdon*) takes possession of boxes erected for its occupation, and the courage it displays in their defence, tempts the belief that the numbers of this species are limited only by the nesting-sites available for it. Ridgway¹ records the appearance of the western house wren in Illinois, where it was unknown prior to 1870, and its history there has doubtless been repeated at many other localities in recent years in response to favorable conditions. The bird is hardy and thrives in both tropical and temperate climates. Only the North American form is migratory and its journeys are not extended and are made overland.

The fertility of the northern species, which lays from six to eight eggs and raises two broods in the season, is well-known. The tropical forms² have smaller clutches but the number of eggs laid in the South Temperate Zone is apparently as large as that of the North Temperate Zone.

CENTER OF DISPERSAL OF HOUSE WRENS.—The almost continuous distribution of house wrens throughout the exceptionally wide area they inhabit, the comparatively small degree of differentiation exhibited by the continental forms, and, with but few exceptions, the intergradation of every form with its neighbors, all indicate that the characters and distribution of house wrens are, in the main, expressions of existing physiographic and climatic conditions. Nevertheless, we are unable to determine the region from which they have radiated. The absence of

¹Bull. U. S. Nat. Mus., L, part 3, p. 583.

²Three or four in Peru according to Taczanowski, and five to eight in Chile according to Reed.

the house wren as a breeding bird from at least the southern half of Florida, indicates the comparatively recent entrance of the species into America from Mexico. The difference between Mexican and Central American forms, even if the gap between them be closed, is evidence of a less close relation between these forms than that which exists between those of Central and South America. The entire absence of the family—and of any wren-like bird—from the Greater Antilles indicates the lack of wrens in Central America when that region had a closer connection with the Greater Antilles than now exists, as it is believed to have had.

If at that time Central America was separated from South America, as the senior author has before suggested,¹ the wrens or their ancestors were presumably confined to South America, whence they entered Central America subsequently to its connection with the southern continent.

All this, however, was doubtless long before the appearance of the *Troglodytes aëdon-musculus* group, which, comparatively speaking, is a group of today. It is, in short, the very fluidity of this group which makes it difficult to determine whence it has flowed. It defies climatic barriers, and seems equally at home on the plains of Argentina or Alberta, the forests of Brazil or of British Columbia. It occupies regions where rain rarely falls and others where it is of almost daily occurrence. It crosses the Andes where they are highest, and seems as much at home in the Puna or Páramo Zone as in the tropics. One can only say, therefore, that house wrens originated somewhere between Tierra del Fuego and Canada, and have extended their range both northward and southward.

THE SOUTH AND CENTRAL AMERICAN FORMS.—*Troglodytes musculus* has claimed our attention for some years, and all American Museum expeditions to the regions it inhabits have been instructed to secure representative series of it. Except at the extreme southern end of its range this species is apparently not migratory, and our series of some 600 specimens may therefore be accepted as representing the form found at the localities where they were secured.

While we are not in a position to determine the exact relations of *musculus* and *aëdon*, we believe that we can add somewhat to our recorded knowledge of the geographical variation and distribution of the first-named species, with which, indeed, this paper is chiefly concerned.

GEOGRAPHIC VARIATION IN *Troglodytes musculus*.—When one considers the great variety of environmental conditions encountered by

¹1917, Bulletin Amer. Mus. Nat. Hist., XXXVI, pp. 151-157.

Troglodytes musculus throughout a range which extends from southern Mexico to Cape Horn, it exhibits surprisingly little racial variation, in color or in size. It is true that the palest of the eighteen known forms (*striatulus* of Colombia) differs markedly from the most richly colored race (*puna* of the Peruvian tableland). But, generally speaking, the characters separating most of the recognized races are so slight that no two authors working independently would agree in the determination of the material which has served as the basis of this paper. In a number of cases racial characters become evident only when large series of specimens are examined, and they may be so overlapped by individual variation that the worker with but few specimens at his command may reach conclusions quite at variance with those here presented.

Throughout the enormous area occupied by the *albicans-clarus* group, for example, there is so little differentiation and that which exists is so obscured by individual variation that we recognize but one form from this region.

Again, the race living at the humid eastern base of the Peruvian Andes is barely separable from that occupying the arid Peruvian coast, while the two races occupying the southern one thousand miles of the continent differ only in the slightly shorter bill of the more southern race.

This condition indicates either a lack of plasticity on the part of these wide-ranging birds or a comparatively recent appearance in a large part of the area they now inhabit. When one considers the almost identical birds and the pronouncedly different habitats of the house wrens of eastern and western Peru, one is tempted to conclude that in this instance, at any rate, environment has not as yet expressed itself. It follows, therefore, that we have been unable anywhere to correlate color characters with cause. Of the two most richly colored forms, one occupies the Brazilian coast, the other the summit of the Peruvian Andes.

In size, altitude appears to exert more influence than latitude. The wing in specimens from the Magellan region agrees in size with that of Venezuelan birds, but the more southern birds have a longer tail and shorter bill, the shortest in fact of any race. But specimens from the tableland (Puna Zone) of Peru have the wing, tail, and bill larger than those from the lowland. Size, indeed, always increases with altitude, and the maximum is reached by these Peruvian birds which range higher (13,000 ft.) than any other forms.

Generally speaking, color variation is most pronounced in the underparts, which are soiled whitish in some individuals of the Colombian *striatulus* and cinnamon in the Brazilian *musculus* and Peruvian

puna. The range of color above is less wide than that below, but the rump, upper tail-coverts, and tail sometimes afford diagnostic characters. The prevailing tone above approaches Brussels-brown and varies from deeper shades of this color to a grayish drab. Not infrequently grayish individuals occur in races which are normally cinnamon-brown above. Usually this variation is seasonal, being exhibited by specimens in worn plumage. In other cases it is obviously individual and is sufficiently pronounced to suggest its being attributed to dichromatism. Variation in pattern of marking occurs in the lower tail-coverts and back. As a rule the former are barred or spotted, but in *magellanicus* these markings are usually absent. In no other instance, however, are these markings of diagnostic value.

Bars also appear on the back, but this marking is subject to wide variation and is constant in only one form, *tecellatus*, of the Peru-Chile boundary. The more southern races (*chilensis* and *magellanicus*) rarely, if ever, exhibit a trace of barring on the back, but in *striatulus* of Colombia this feature is often present and in *tecellatus* it is pronounced and constant.

THE CASE OF *Troglodytes tecellatus*.—Under the influence of the isolation afforded by the river valleys of the Peru-Chile boundary, a form of house wren has developed characters which we believe to be of specific value. While evidently the representative of *audax* at the north and of *chilensis* at the south, it apparently does not intergrade with either. Segregated in the oases of the Tarapaca desert, where its range is separated from that of the forms to the north and south by wide stretches of lifeless sand, the bird is as effectively isolated as though it occupied an island. This condition has evidently been favorable for the development of the variable, nascent back-barring, exhibited irregularly by some races, as a fixed, permanent, and conspicuous character.

This case is so exceptional and of such unusual interest in the study by environment, that we trust our interpretation of it may be tested by further field-work in the region between the known ranges of *audax* and *chilensis*. (See p. 298, footnote.)

INTERGRADATION OF RACES.—With the exception of *Troglodytes tecellatus*, we believe that every continental race of *T. musculus* intergrades with the nearest geographical ally or allies. In most cases we have specimens to prove the truth of this belief.

In only one region have we found more than one form at the same locality, the Buenos Aires region furnishing a problem through the pres-

ence there of the Patagonian, Chilean, and Uruguayan races. This case is discussed beyond.

THE ISLAND FORMS.—In spite of its non-migratory, comparatively sedentary habits, the house wren is present on some of the islands contiguous to the coast from the Falklands northward. The form on the island of Tobago (*T. musculus tobagensis*) differs from the wren of the adjacent mainland only in slightly larger size. On the Falkland Islands long isolation has produced a distinct species of house wren (*T. cobbi*), a little-known bird, which is discussed beyond. On Clarion Island of the Revillagigedo group, off western Mexico, another typical house wren (*T. tanneri*) is found, which possesses no very trenchant specific characters. While quite different in both size and color from Central American wrens of the *musculus-aëdon* group, it differs constantly from *Troglodytes musculus striatulus* only in its longer tail, a resemblance probably due to parallel development. It is of great interest, however, that it should occur on only one island in a group, many of which are in sight of one another, and that the wren of the neighboring island of Socorro is a *Thryomanes*, judged by its structural characters. This fact, taken in connection with the absence of house wrens from the Galápagos and other islands, such as Cocos and the Pearl Islands, affords further evidence of the comparatively modern origin of the group and indicates their fortuitous arrival on the islands where they occur. The case of *Thryomanes insularis* is of corollary interest. If one forgets for the moment the minute structural differences which distinguish it from *Troglodytes*, it is obviously a house wren, differing from *tanneri* only in smaller size and somewhat paler coloration below, while it could scarcely be distinguished, even subspecifically, from certain races of *musculus* such as *striatulus* and *inquietus*. One cannot help wondering whether in this, as in many other cases, the artificial classification of the scientist does not obscure either the origin of a given form or biological relationships of great interest. In the New World wrens of the genus *Troglodytes* and related genera, study of the ever increasing material combined with field experience shows that, no matter how carefully defined the genus, one or more species assigned to it strongly suggest another group in one or more respects. Differences of structure or of proportions, ordinarily regarded as generic characters, in these wrens often appear to be of specific or only subspecific value, and are accompanied by a marked absence of color characters. We are inclined to believe that these two island wrens are biologically more closely related to each other and to the *musculus-aëdon* group than the latter is to the Lesser Antillean mem-

bers of the genus *Troglodytes*, or the *ochraceus-solstitialis* group of the same genus. A classification which refers them to two different genera, which even as now defined are far from homogeneous, is surely unfortunate in obscuring relationships which may be just as important as the discoverable differences.

The present paper is based chiefly upon our own collections, but for substantial reinforcements we are greatly indebted to several other institutions. The U. S. National Museum, the Museum of Comparative Zoölogy, and the Field Museum have loaned all their types of house wrens and such other specimens as we desired to examine. The Bureau of Biological Survey forwarded all specimens in their collections from southern South America. Dr. C. E. Hellmayr very kindly sent us the type of *Troglodytes musculus bonariæ* from Munich. Both he and Dr. Alexander Wetmore of Washington have made suggestions of interest and value.

All measurements are in millimeters, and color terms are from Ridgway's 'Color Standards and Nomenclature.'

***Troglodytes ædon ædon* Vieillot**

***Troglodytes ædon parkmanii* Audubon**

We have nothing to add to the published information on the North American house wren and its western subspecies, but fully indorse the conclusion that *aztecus* is untenable, and all specimens so labelled seen by us should be referred to *parkmanii*. The range of individual variation is so great in both races that casual records of the western house wren on the Atlantic Coast scarcely seem of any value. While we have examined no such specimen, extreme examples of eastern house wrens are quite indistinguishable from average examples of *parkmanii*. It is greatly to be hoped that the southern breeding limits of the house wren in Mexico will be definitely determined.

***Troglodytes musculus peninsularis* Nelson**

Troglodytes peninsularis NELSON, 1901, Proc. Biol. Soc. Wash., XIV, p. 174, September 25 (Progreso, Yucatan; coll. U. S. Nat. Mus.); RIDGWAY, 1904, 'Birds of North and Middle America,' III, p. 574.

SPECIMENS EXAMINED.—MEXICO: Yucatan, Progreso, 4 ♂ (including type); Tamaulipas, Rio Pilon, 1 ♂; Manuel, 1 ♂.

RANGE.—Tropical Coastal Zone of Mexico from southern Tamaulipas to Yucatan.

SUBSPECIFIC CHARACTERS.—Differing markedly from *T. musculus intermedius*, its nearest geographical relative, in being much paler below, the center of the under-

parts being almost pure white; the flanks and sides not so richly or deeply colored; tail averaging much longer. With the small series available, indistinguishable in color from certain variations of both *T. musculus striatulus* and *albicans*, but wing and culmen shorter than in the former, and tail longer than in the latter.

The systematic treatment of this wren is a matter of considerable interest. With a far better understanding of the variation in *musculus* than was available twenty years ago, when it was described, it cannot be regarded as a distinct species, as it possesses no character which one or more races of *musculus* does not have. The fact, therefore, that it differs very markedly from its nearest geographical relative, and that direct intergradation remains to be proven, cannot be used as an argument for its specific distinctness. No one regards the very different Newfoundland hairy woodpecker, for instance, as specifically distinct from typical *villosus* of the northeast, with which it does not intergrade, even though other subspecies in other parts of the continent completely connect the obvious differences between them.

Of equal interest is the fact that *peninsularis* partly closes the gap between *musculus intermedius* and *aëdon*. The only specific differences between the two groups are the proportionately longer tail of *aëdon*; the grayer, less ochraceous brown of the flanks and sides; and the heavier barring on the flanks. The Yucatan wren is exactly intermediate in the proportions of the tail and wing, but otherwise is nearest to the *musculus* type. Its color characters are also partly intermediate between *musculus intermedius* and *aëdon*. As we are able to extend its range northward to southern Tamaulipas, it is apparent that the remaining gap between *musculus* and *aëdon* is a purely zonal one and that *aëdon* is the Temperate Zone representative northwards of *musculus* of the Tropical Zone. The absence of any wren of the *aëdon* type as a breeding bird in temperate Mexico is due either to lack of field work at the proper season, or perhaps to unfavorable competition there with a related species, *T. brunneicollis*.

***Troglodytes musculus intermedius* Cabanis**

Troglodytes intermedius CABANIS, 1860, Journ. f. Orn., 1860, p. 407 (San José, Costa Rica; coll. Berlin Mus.).

Troglodytes musculus intermedius OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 205 (crit.); RIDGWAY, 1904, 'Birds of North and Middle America,' III, p. 576.

Troglodytes hypaëdon SCLATER, 1861, Proc. Zoöl. Soc. Lond., p. 128 (S. Mexico and Guatemala).

Troglodytes musculus hypaëdon OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 204 (crit.); RIDGWAY, 1904, 'Birds of North and Middle America,' III, p. 578.

Troglodytes irrequies BANGS, 1908, Proc. Biol. Soc. Wash., XXI, p. 45, February 29 (Sittee River, Brit. Honduras).

SPECIMENS EXAMINED.—"Mexico" (Sallé), 1 ♂. YUCATAN: Mérida, 1 ♂; "Yucatan," 5 ? GUATEMALA: Quetzaltenango (8500 ft.), 3 ♂; Lake Amatitlan (4000 ft.), 3 ♂; "Guatemala," 1 ? BRIT. HONDURAS: Sittée River, 2 ♂, 1 ♀. NICARAGUA: Los Sabalos, 2 ♂. COSTA RICA: San José, 1 ♂, 1 ♀; Barranca, 1 ?; Santa Maria de Dota, 1 ♂, 1 ♀; Bonilla (2000 ft.), 1 ♀; Aquinares (3800–4500 ft.), 3 ♂; Vol. Irazu (8000 and 10,500 ft.) 1 ♂, 1 ♀; Vol. Turrialba (9000 ft.), 1 ♀.

RANGE.—Southern Mexico (Oaxaca, Yucatan, Chiapas); Guatemala; eastern Nicaragua (Rio Coco, Rio Escondido, Los Sabalos), and Costa Rica (except extreme southwest portion).

SUBSPECIFIC CHARACTERS.—Sufficient will be said under *inquietus* to characterize this well-marked race, making repetition unnecessary.

We are unable to recognize *hypoëdon* from southern Mexico and Guatemala. It has commonly been considered identical with *intermedius*, but was revived by Oberholser. Ridgway recognizes this race in the text, but has a footnote to the effect that "difference in coloration between specimens from southern Mexico and those from Costa Rica is exceedingly slight and may prove inconstant." Dr. J. Dwight has just received fresh series collected by Austin Paul Smith in Guatemala and Costa Rica in 1919 and 1920, which are indistinguishable, when due allowance for seasonal differences is made. There are no differences in size. There seems, therefore, no ground for the recognition of two races. However, birds from the mountains of north central Nicaragua and certain volcanoes of the Pacific slope of that country prove to differ constantly from *intermedius* and are described below.

We have also examined the type of *Troglodytes irrequies* Bangs and two other specimens from British Honduras. These prove to be indistinguishable from *T. musculus intermedius*. The differences in color and size, while distinct from *T. m. peninsularis* with which it was compared, are now known to fall well within the known range of variation of the present subspecies, facts with which Mr. Bangs concurs.

***Troglodytes musculus oreopolus*, new subspecies**

SUBSPECIFIC CHARACTERS.—Most closely related to *T. m. intermedius*, but upperparts deeper and more reddish brown, underparts deeper cinnamon-buff, especially on the flanks.

TYPE.—No. 102,943, Amer. Mus. Nat. Hist.; ♀ ad.; Ocotal, Nicaragua (alt. about 4000 ft.); May 7, 1908; Wm. B. Richardson.

SPECIMENS EXAMINED.—NICARAGUA: Ocotal, 1 ♀ (type); San Rafael del Norte (4000 ft.), 3 ♂; Arenal District, 10 miles northwest of Matagalpa (4100 ft.), 1 ♂; Matagalpa (2200 ft.), 4 ♂, 1 ♀, 1 ?; Volcan Viejo (5000 ft.), 2 ♂, 1 ♀, 2 ?; Volcan Mombacho, (2400 ft.), 1 ♂; Chontales (about 1000 ft.), 1 ♂ (approaching *intermedius*).

RANGE.—Mountains of north central Nicaragua, chiefly in the Pine Forests Region, also the town of Matagalpa (2000 ft.); summit of Volcan Viejo above Chi-

nandegá (5000 ft.) and summit of Volcan Mombacho above Granada (2400 ft.) on the Pacific slope. A male taken at Chontales (alt. about 1000 ft.) in south central Nicaragua on the boundary line between the Pacific and Caribbean slopes shows a marked approach to *intermedius*.

The distribution and variations of the house wren in Nicaragua in relation to adjacent territory create a problem of exceptional interest. Briefly, the known facts are as follows. In Costa Rica *intermedius*, according to Carriker, is "a common bird throughout the highlands, wherever cultivated lands are found, and extends down into the edge of the lowlands of both the Atlantic and Pacific in small numbers." It is rare below 2000 ft., and extends up to 10,500 ft., without exhibiting any variation. In eastern Nicaragua it is only known from clearings in the forest north to the Honduras boundary. From here to Guatemala there is an apparent gap in the range, which will unquestionably be filled by exploration. In Guatemala the same condition of affairs exists as in Costa Rica. Salvin, writing from extensive field experience, states in the 'Biologia' that it is found throughout the country from sea-level to 8000 feet, affecting the haunts of man and being particularly partial to tile roofs in towns.

It was quite surprising to us, therefore, to find that the house wren was absent from the whole of Nicaragua with the exceptions noted above. We had supposed that its absence from Richardson's collections was due, as in so many other cases, to its being such a common bird. With the single exception of Matagalpa, *oreopolus* is found in localities which could scarcely be farther removed from the haunts of man, and the denseness of the vegetation and the humidity of its haunts might well account for its richer coloring. Finally, we know of no record for the house wren in Salvador, western or central Honduras, though the lack of exploration makes this fact of little significance.

Nicaragua has long been known as a "break" in the ranges of many species or genera which occur both north and south of its boundaries, due without reasonable doubt to the fact that much of it has been submerged, exterminating the original avifauna or driving it to the north and south, the resulting gap never having been filled by subsequent expansion. This subsidence may have exterminated the original house wrens except for colonies on isolated mountain summits on the Pacific side and the northern highlands, which were not affected. The presence of *intermedius* in clearings of the Atlantic forest is a case of expansion from Costa Rica, just as its comparative scarcity at low altitudes in that country is also evidence of expansion from an ancestral highland home.

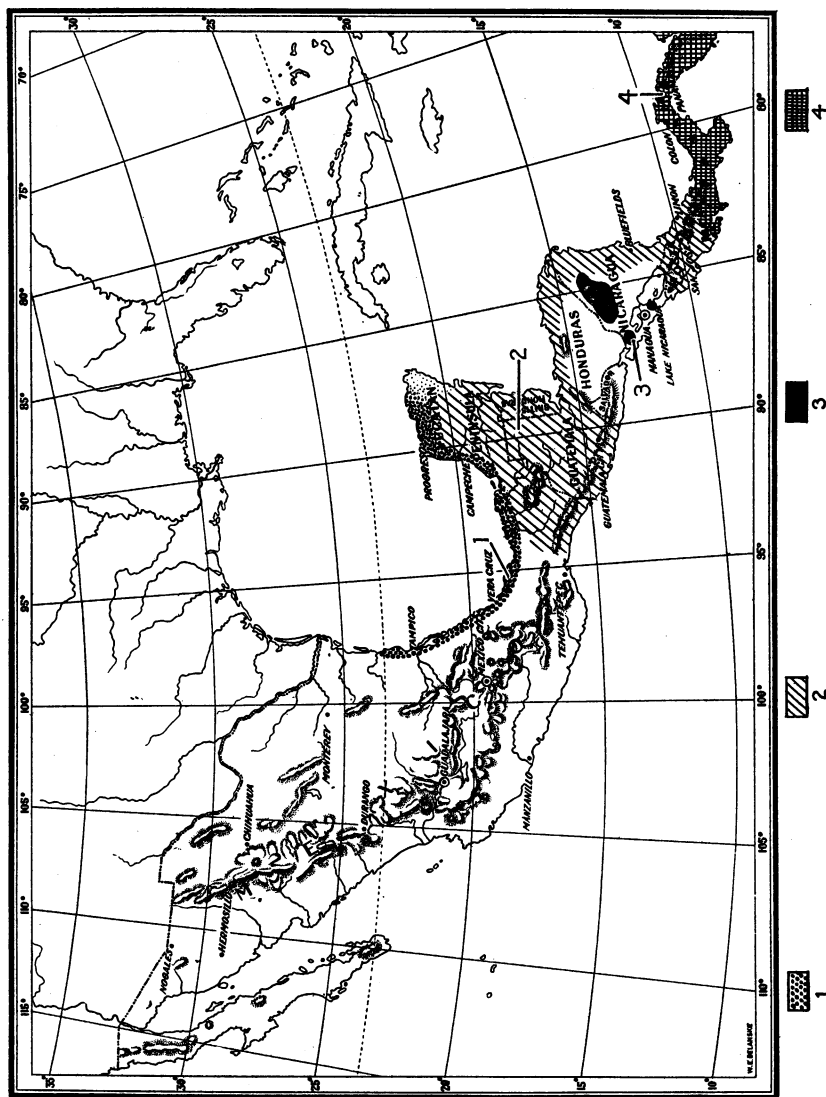


Fig. 1. 1, *Troglodytes musculus peninsularis*; 2, *T. m. intermedius*; 3, *T. m. oreopolus*; 4, *T. m. inquietus*.

The factor, therefore, in the evolution of *oreopolus* may well have been isolation due to continental submergence. Certainly, its distribution cannot be reconciled with life zones or climatic conditions, and it is significant that its probable ancestor, *intermedius*, is not the least affected by such factors, which are all-important with so many other birds.

Troglodytes musculus inquietus Baird

Troglodytes inquietus BAIRD, 1864, 'Review Amer. Birds,' p. 143 (Panama R.R., coll. Amer. Mus. Nat. Hist., "ex Lawrence, MSS.").

Troglodytes musculus inquietus OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 205 (crit.); RIDGWAY, 1904, 'Birds of North and Middle America,' III, p. 575.

SPECIMENS EXAMINED.—PANAMA: Boquete, Chiriqui, 3 ♂, 1 ♀; Canal Zone, 2 ♂ (inc. type), 2 ♀, 1 ?; Chepigana, Darien, 1 ♀; Capeti, Darien, 1 ♂; Rio Tuyra, Darien, 2 ♂, 1 ♀; Cupe River, Darien, 1 ♂.

RANGE.—From extreme southwestern Costa Rica (Boruca) to Eastern Panama.

SUBSPECIFIC CHARACTERS.—Most closely resembling *T. musculus striatulus* but very slightly browner, less grayish-brown above, distinctly more buffy brownish below, and averaging distinctly smaller. From *T. m. intermedius* it differs in being grayer above, less buffy brown below, and is decidedly larger. Worn specimens closely resemble fresh specimens of *albicans* in color but average larger with longer tails.

The Panama house wren has had a somewhat chequered career, systematically. All the Central American forms were first made races of *musculus* by Oberholser, a treatment of their relationships with which we fully agree. Nevertheless, Ridgway in a footnote (*loc. cit.*, p. 571) suggests that a better arrangement would be to consider *inquietus* a race of *T. striatulus*, and *T. intermedius* as specifically distinct, as he had found no intermediates.

While we also have seen no intermediates, *inquietus* is obviously an intermediate between *striatulus* and *intermedius*, and field experience strongly emphasizes the fact that in habits, characteristics, and song, all three are unmistakably house wrens, and are thoroughly representative in their respective areas. Finally, *T. ochraceus* is an excellent illustration of what are really trenchant specific differences in the genus, and its two races occur with both *intermedius* and *inquietus*. There seems no good reason, therefore, for regarding these two latter forms as species on differences which are quantitatively less marked than in many South American races of *musculus*.

Troglodytes musculus atopus Oberholser

Troglodytes musculus atopus OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 207 (Cacagualito, Santa Marta, Colombia).

SPECIMENS EXAMINED.—COLOMBIA: Santa Marta region, Cacagualito, type, 1 ♂, 1 ♀, 1 ?; Bonda, 1 ♂, 1 ♀; Don Amo, 1 ?; Cienaga, 1 ?; Minca, 1 ♀.

RANGE.—Confined to the Tropical Zone of the Santa Marta region of Colombia.

SUBSPECIFIC CHARACTERS.—Differing markedly from any other Colombian race in the deeper ochraceous tone of the underparts. Closest to *intermedius* of Central America, but averaging slightly larger, the bill noticeably longer, and the color of the flanks not so noticeably deeper than the rest of the underparts. The statement that this race is smaller than *clarus* is not supported by the measurements of our large series of the latter race.

***Troglodytes musculus striatulus* (Lafresnaye)**

T[hriothorus] striatulus LAFRESNAYE, Rev. Zool., 1845, p. 338 ("Bogotá," Colombia; by subseq. desig., Honda).

Troglodytes musculus striatulus OBERHOLSER (part), 1904, Proc. U. S. Nat. Mus., XXVII, p. 205; CHAPMAN, 1917, Bull. Amer. Mus. Nat. Hist., XXXVI, p. 518 (crit.).

SPECIMENS EXAMINED.—COLOMBIA: Alto Bonito, Antioquia, 1 ♂; Dabeiba, Antioquia, 3 ♂; Bagado, Chocó, 1 ♂; Puerto Valdivia, Antioquia, 1 ♀; La Frijolera, Antioquia, 1 ♂; Caldas, Cauca, 2 ♂, 1 ♀, 1 ?; Las Lomitas, Cauca, 2 ♂, 1 ♀, 1 ?; San Antonio, Cauca, 3 ♂, 2 ?; Cali, Cauca, 1 ♂, 2 ♀, 2 ?, Rio Frio, Cauca, 1 ♂; Salento, Cauca, 1 ♀; Santa Elena, Antioquia, 1 ♀; Rio Toché, Tolima, 2 ♂, 1 ♀; La Sierra, Cauca, 1 ?; Chicoral, Tolima, 1 ♂; Honda, Tolima, 1 ♂, 1 ?; Anolaima, 2 ?; Choachi, Bogota, 1 ?; Miraflores, Cauca, 4 ♂; "Cauca," 1 ♂, 1 ?; "Bogota," 3 ?

RANGE.—Tropical and Subtropical zones of Colombia from the western slope of the Eastern Andes westward, exclusive of Santa Marta and extreme southwestern Colombia. One of the Anolaima specimens is an intergrade with *T. m. columbæ*.

SUBSPECIFIC CHARACTERS.—This race is the palest of all the races of *musculus*, the most grayish brown above and the whitest below. In its large size it is exceeded only by *puna* of the high Peruvian Andes. Specimens from extreme southwestern Colombia, formerly referred to this race, prove to be *albicans*. The faint indications of barring on the back, which so often appear as an individual variation in various races of the house wren, in this race are more constant than in any other, and are a sub-specific character.

***Troglodytes musculus columbæ* Stone**

Troglodytes columbæ STONE, 1899, Proc. Acad. N. S., Phila., p. 308 (vicinity Bogotá).

Troglodytes musculus striatulus OBERHOLSER (part), 1904, Proc. U. S. Nat. Mus., XXVII, p. 205.

Troglodytes musculus columbæ CHAPMAN, 1917, Bull. Amer. Mus. Nat. Hist., XXXVI, p. 520 (crit.).

SPECIMENS EXAMINED.—COLOMBIA: El Roble, 1 ♀; El Piñon, 1 ♂, 1 ♀; Chiquaque, 3 ♂, 2 ♀; Fomeque, 1; Quetame, 1 ?; La Holanda, 2 ♂; Tocaimito, above Bogotá, 1 ♂; Choachi, 2; Puento Andalucia, 1 ♀; Bogota Region, 1.

RANGE.—Temperate Zone of both slopes of the Eastern Andes of Colombia.

SUBSPECIFIC CHARACTERS.—Distinguished from all other races of *musculus* by the uniform vinaceous-buff of the underparts from bill to vent, with no white areas.

Upperparts darker than in *striatulus*, its closest relative, but distinctly gray-brown. Every one of our specimens is finely barred above, perhaps here a diagnostic character, rather than individual variation. Size large, exceeded only by *striatulus* and *puna*. Compared with the latter, the only other Temperate Zone Andean house wren, it is much less richly colored. A specimen from Quetame approaches *T. m. albicans*.

***Troglodytes musculus albicans* Berlepsch and Taczanowski**

Troglodytes furvus albicans BERLEPSCH AND TACZANOWSKI, 1883, Proc. Zool. Soc. Lond., p. 540 (Guayaquil, Ecuador).

Troglodytes musculus albicans OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 207.

Troglodytes musculus clarus BERLEPSCH AND HARTERT, 1902, Novit. Zool., IX, p. 8 (Bartica Grove, Brit. Guiana); OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 206 (crit.).

Troglodytes musculus neglectus CHAPMAN, 1917, Bull. Amer. Mus. Nat. Hist., XXXVI, p. 520 (Buena Vista, alt. 4500 ft., Eastern Andes, Colombia).

Troglodytes musculus paramaribensis BANGS AND PENARD, 1918, Bull. Mus. Comp. Zool., LXII, No. 2, p. 81 (vicinity of Paramaribo, Surinam).

Troglodytes musculus chapmani STONE, 1918, Auk, p. 244.

SPECIMENS EXAMINED.—COLOMBIA: Barbacoas, 2 ♂; Tumaco, 3 ♂, 2 ♀; Buena Vista, eastern base of Eastern Andes, alt. 4500 ft., 5 ♂, 1 ♀ (including type of *neglectus* Chapman = *chapmani* Stone). ECUADOR: Esmeraldas, 3 ♂; Rio de Oro, Manaví, 4 ♂, 2 ♀; Zaruma, Prov. del Oro (alt. 6000 ft.), 1 ♂ ?; Isla de Puna, 1 ♂, 3 ♀; Isla La Plata, 1 ♂, 4 ♀, 1 ?; Daule, Prov. of Guayas, 1 ♂; Duran, Prov. of Guayas, 1 ♂, 1 ♀, 1 ?; Rio Pindo, Prov. del Oro (1850 ft.), 1 ♂; Portovelo, Prov. del Oro (2000 ft.), 1 ?; El Chiral, Prov. del Oro (alt. 5350 ft.), 1 ♀; Celica, Prov. de Loja (alt. 6900 ft.), 1 ♀; Alamor, Prov. de Loja (alt. 4550 ft.), 1 ♂; Casanga, Prov. de Loja (alt. 2900 ft.), 1 ♂, 1 ♀, 1 ? PERU: Lamor, Prov. Piura, 1 ♂; Paletillas, Prov. Piura, 2 ?; Samate, Prov. Piura, 2 ♂, 1 ♀; Bellavista, 1 ♀; Huancabamba, 3 ♂; Palambla (3900–6500 ft.), 6 ♂, 2 ♀, 1 ? VENEZUELA: El Cuji, Estado Lara, 2 ♂; Barquisimeto, Estado Lara, 1 ♂; Cotiza, Caracas, 1 ♂, 2 ♀; Las Trincheras, Estado Carabobo, 4 ♂, 1 ♀; San Antonio, Bermudez, 1 ♂, 1 ♀; Cumanacoa, Bermudez, 2 ♂, 1 ♀; Cristobal Colon, Paria Peninsula, 1 ♂, 1 ♀; Maripa, 3 ♂; La Union, Caura, 3 ♂; Suapure, 2 ♂; "Venezuela," 2 ? TRINIDAD: Princetown, 3 ♂, 2 ♀. BRITISH GUIANA: Wismar, Demerara River, 1 ♂; Essequibo River, 1 ♀. Surinam: vicinity of Paramaribo (including type of *paramaribensis* Bangs and Penard), 1 ♂, 4 juv. BRAZIL: Utinga, near Pará, 1 ♂; Monte Alegre, 1 ♂; Faro, Rio Jamundá, 1 ♂; Porto Velho, Rio Madeira, 2 ♂, 2 ♀; Calama, Rio Madeira, 1 ♀ ?; Solimoes, Amazonas, 1 ♀; Tres Buritys, Matto Grosso, 1 ♀

RANGE.—From extreme southwestern Colombia (Tumaco, Barbacoas) through the Tropical and Subtropical zones of western Ecuador to northern Peru; also the whole of northeastern South America from Pará and the Rio Madeira region of Brazil north to the coast of Venezuela, the Guianas, and Trinidad, and east to the base of the eastern Andes of Colombia. No house wren is recorded from the Temperate Zone in Ecuador.

SUBSPECIFIC CHARACTERS.—This race is most closely related to typical *musculus*, but differs in being much lighter in tone below. While the flanks in fresh specimens

are as richly colored as in *musculus*, the median portion of the lower surface is white or whitish, giving a strongly contrasted color effect. In size it is small like *musculus*, but the tail is shorter in proportion than in any other race.

No other house wren illustrates better the remarkable extent of individual variation in this group. Wear will turn a rich brown back to grayish-brown, and eliminate almost all the rich color on the flanks. Large series are consequently essential in determining what characters are individual and what are subspecific. With fifty-one specimens of *albicans* and fifty-seven of "*clarus*" before us, representing every part of the known range of these two races, it has been impossible to discover even one constant character by which they can be separated. There is no difference whatever in color or size. Oberholser distinguished "*clarus*" on the basis of only its plain under tail-coverts. We, however, find twenty-seven specimens of "*clarus*" from all parts of its range, with distinctly barred under tail-coverts, and similarly we have seventeen specimens of *albicans* with immaculate under tail-coverts. Barring of the back is a purely individual variation in this race, but it is interesting to note that in specimens from eastern and southwestern Colombia, where its range approaches most closely that of *striatulus*, this barring increases in constancy.

Failure to appreciate this extraordinary amount of individual variation has led to the description of two other races within the range of *albicans*. *T. m. paramaribensis* from Surinam, based on an adult male and four juvenal specimens, is not, in our opinion, separable. These specimens Mr. Bangs had kindly forwarded for examination. The type can be matched in color of both upper and underparts by specimens from Trinidad and the whole of northern Venezuela; it is larger than the average "*clarus*," and has the upperparts more distinctly barred with black, but the latter character is individual rather than racial, and is well known to occur in other races of house wrens. Similarly the characters on which *neglectus* Chapman (= *chapmani* Stone) was described prove to be individual and not racial.

In view of the presence of the house wren in the Temperate Zone of the eastern Andes of Colombia and of Peru, it is surprising to find that no form of this bird has been recorded from this zone in Ecuador, nor have our expeditions found it there. All the more surprising is it, therefore, to discover that *albicans* evidently crosses the Andes west of Huancabamba, in northern Peru. The pass in the range on the route between Huancabamba and Payta here attains an altitude of only about 7500 feet, well within the altitudinal limits of the Subtropical Zone. House

wrens from Huancabamba (alt. 6500 ft.), and Bellavista, Peru, THE LATTER LOCALITY ON THE MARAÑON, have already been referred to *albicans* by Bangs and Noble (Auk, 1918, p. 457) and we have since received specimens from this region. The Bellavista specimen was thought by these authors to approach *tecellatus*, but it seems evident that this opinion was based on material wrongly identified as *tecellatus*, for the Bellavista bird does not resemble that form, and, except for its longer tail, can be matched by west Ecuador examples. Whether or not it may be considered desirable to recognize both *clarus* and *albicans*, it seems clear that we have in these north Peruvian specimens evidence that the house wren has here reached the Pacific Coast.

Troglodytes musculus tobagensis Lawrence

Troglodytes tobagensis LAWRENCE, 1888, Auk, V, p. 404 (Tobago, West Indies; type in Amer. Mus. Nat. Hist.).

Troglodytes musculus tobagensis OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 206.

SPECIMENS EXAMINED.—TOBAGO: 2 ♂ (including type).

RANGE.—Island of Tobago.

SUBSPECIFIC CHARACTERS.—Exactly similar to *albicans* in color, but very much larger in size, equalling *striatulus*.

This race is apparently worthy of recognition, as specimens from Trinidad and the Paria Peninsula of Venezuela only slightly approach Tobago birds in dimensions.

Troglodytes musculus musculus Naumann

Troglodytes musculus NAUMANN, 1823, 'Vögel Deutschl.,' III, p. 724, table (Lichtenstein manuscript). Bahia.

Troglodytes musculus musculus OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 202.

Thryothorus wiedi BERLEPSCH, 1873, Journ. für Orn., XXI, p. 221. New name for *T. platensis* Wied (nec Latham). Type locality by subseq. design. Rio de Janeiro; see Hellmayr, 1919, Verhandl. Orn. Gesell. Bayern, XIV, Heft 1, p. 129, footnote.

Troglodytes musculus wiedi OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 202.

Troglodytes guariza PUCHERAN (nec Des Murs, 1847), 1855, Arch. Mus. Paris, VII, p. 338; see Hellmayr, 1908, Novit. Zool., XV, p. 18.

Troglodytes musculus beckeri CORY, 1916, Field Mus. Nat. Hist. Publ., I, p. 244 (Serra Baturité, Ceará, Brazil).

SPECIMENS EXAMINED.—BRAZIL: Macaco Secco, 1 ♀; Serra Baturité, Ceará, 1 ♂ (type of *T. m. beckeri*); Bahia, 4 ♂, 2 ♀; near Rio de Janeiro, 2 ♀ (types of *T. platensis* Wied); Rio de Janeiro, 2 ♀; La Raiz, Organ Mts., 1 ♂, 1 ♀; Therezopolis, Organ Mts., 1 ♂, 1 ♀; Piquette (near São Paulo), 1 ♀; Victoria, São Paulo, 1 ♀; Chapada, Matto Grosso, 8 ♂, 1 ♀, 1 ♀; Urucum, near Corumbá, Matto Grosso, 3

♂, 1 ♀, 1 ?; Tapirapoan, Matto Grosso, 1 ♂. PARAGUAY: Trinidad 1 ♀; Puerto Pinasco, 1 ♂, 1 ♀; Fort Wheeler, Paraguayan Chaco, 1 ♂, 1 ♀. ARGENTINA: Iguazú, Misiones, 1 ♂.

RANGE.—Brazil, from the Province of Ceará to São Paulo, west to Goyaz, Minas Geraes and Matto Grosso, and south to Paraguay. It does not occur typically in Argentina. In Misiones it intergrades with *bonariæ*.

SUBSPECIFIC CHARACTERS.—This race is the deepest and most richly colored of all with the exception of *puna*, which is one of the smallest. It is very variable in color, and many specimens are comparatively pale in tone below, a fact which has led to the description of other races from the range we ascribe to *musculus*.

For many years *musculus* was restricted to Bahia, all other specimens from its range being called *guarixa*. We concur in Hellmayr's recently expressed views that this latter race is untenable. Specimens from Bahia, the type locality, are as different from each other as "*guarixa*" is from *musculus*, while Paraguayan specimens are inseparable from others from Bahia. *T. m. beckeri*, described from one specimen, and with only one specimen of *musculus* for comparison, is but slightly paler than the most richly colored skins from Bahia and is typical *musculus* in every respect. According to Hellmayr, a specimen from Goyaz is scarcely distinguishable from *clarus* (= *albicans*). Birds from extreme northern Matto Grosso are also plainly referable to the latter race, but a series from Chapada, while noticeably paler below than our specimens of *musculus*, obviously belongs here, though approaching *clarus*. Their characters, in any event, are not sufficiently well defined for subspecific characterization.

It should be noted that in *musculus* the barring of the back and under tail-coverts is a matter of individual variation.

***Troglodytes musculus rex* Berlepsch and Leverkühn**

Troglodytes fuscus rex BERLEPSCH AND LEVERKÜHN, 1890, Ornith., p. 6 (Samaipata, Bolivia).

Troglodytes musculus rex OBERHOLSER (part), 1904, Proc. U. S. Nat. Mus., XXVII, p. 202.

SPECIMENS EXAMINED.—BOLIVIA: Dept. of Santa Cruz, Vermejo (3500 ft.), 3 ♂; Chilon (5600 ft.), 1 ♂; California (6600 ft.), 1 ♂; Dept. of Sucre, Pulque (9400 ft.), 3 ♂, 2 ♀; Rio Cachimayo (8700 ft.), 4 ♂, 2 ♀; Rio Pilcomayo (8000 ft.), 2 ♂; Dept. of Cochabamba, Parotani (8800 ft.), 6 ♂, 1 ♀, 1 ?; Vinto (8600 ft.), 1 ♂, 3 ♀; Tujma (8200 ft.), 1 ♂, 1 ♀. ARGENTINA: Prov. de Jujuy, Tilcara (8000 ft.), 1 ♂; Volcan (7000 ft.), 1 ♂; Prov. de Tucuman, Tafi del Valle (7000 ft.), 3 ♂, 4 ♀; Tafi Trail (2000 ft.), 1 ♂, 2 ♀; above San Pablo (4000 ft.), 2 ♂; Sarmiento (1700 ft.), 4 ♂, 1 ♀; Prov. de Salta, Rosario de Lerma (4800 ft.), 2 ♂; Embarcacion (1700 ft.), 1 ♂; Lavalle, Santiago del Estero (1800 ft.), 1 ♂; Suncho Corral, Santiago del Estero (1800 ft.), 3 ♂; Gob. de Chaco, General Pinedo, 1 ♀; Avia Terai, 3 ♂, 4 ♀; Resistencia, 1 ♀; Las Palmas, 2 ♂, 2 ♀; Kilometro 182, Formosa, 1 ?

RANGE.—Eastern and central Bolivia to northwestern Argentina.

SUBSPECIFIC CHARACTERS.—Distinguishable from any other race of *musculus* by having the entire underparts strongly tinged or suffused with isabelline, giving them a pinkish rather than an ochraceous tone.

A very few specimens have faint bars on the back, while the presence or absence of barring or spotting on the under tail-coverts is purely a matter of individual variation. In size this race averages distinctly larger than typical *musculus*, and, as might be expected, birds from the higher altitudes average larger than those from lower levels, but this difference is not sufficiently great for subspecific separation.

Few house wrens have had a more chequered career than *rex*, and its range has not been heretofore known. Count Berlepsch, in describing *puna*, overlooked his previous description of *rex*, and, when he remembered it, supposed he had redescribed it. Thus the range of *rex* was erroneously extended to eastern and central Peru by recent authors. Specimens from Vermejo and Chillon, Bolivia, are essentially topotypical and they are certainly not separable from our large series from the localities in Bolivia and northwestern Argentina listed above. All are distinguished by the strong isabelline color of the underparts, a character to which attention was called in the original description.

To the east this form intergrades with *musculus*, specimens from the Argentine Chaco showing a decided approach to that race. To the south it merges into *chilensis*, but we have no evidence of its intergradation with *puna*.

***Troglodytes musculus carabayæ*, new subspecies**

Troglodytes musculus audax CHAPMAN (not of Tschudi), 1921, Bull. U. S. Nat. Mus., No. 117, p. 103 (Santa Ana specimens).

SUBSPECIFIC CHARACTERS.—Very closely resembling *T. m. audax*, differing only in having the back finely but distinctly barred with blackish.

TYPE.—No. 146, 338, Amer. Mus. Nat. Hist.; ♀ ad.; Santo Domingo, S. E. Peru, alt. 6000 ft.; September 4, 1916; H. Watkins.

RANGE.—So far as known the Tropical Zone of central to southeastern Peru.

SPECIMENS EXAMINED.—PERU: Utcuyaçu, 1 ♂; Tulumayo, 3 ♂, 1 ♀; La Merced, 3 ♂, 2 ♀; Santa Ana, 4 ♂, 1 ♀, 1 ?; Rio Inambari, 1 ♂, 1 ♀; Santo Domingo, 1 ♂, 1 ♀.

This race so nearly resembles *audax* that the senior author has referred Santa Ana specimens of it to that race, and it is possible that still further material will show it to be based on individual rather than racial variation, just as we believe is the case with *clarus*. Considering, however, the different climatic conditions prevailing in the ranges of these two forms, and the fact that these regions are separated by a

mountain range reaching to the Puna Zone, it seems advisable to maintain these two races as distinct for the present. An old and very dirty skin from Mapiri, northeastern Bolivia, probably belongs here.

***Troglodytes musculus puna* Berlepsch and Stolzmann**

Troglodytes musculus puna BERLEPSCH AND STOLZMANN, 1896, Proc. Zoöl. Soc., p. 329 (Ingapirca); CHAPMAN, 1921, Bull. U. S. Nat. Mus., No. 117, p. 102.

Troglodytes musculus tecellatus OBERHOLSER (part), 1904, Proc. U. S. Nat. Mus., XXVII, p. 203.

SPECIMENS EXAMINED.—PERU: Dept. of Junin, Chipa (12,400–14,000 ft.), 6 ♂, 4 ♀; Rumicruz (8700 ft.), 3 ♂, 2 ♀; Tirapata, Titicaca Basin (12,700 ft.), 1 ♂, 1 ♀; Puno, Lake Titicaca (12,500 ft.) 1 ♂, 1 ♀; Ttica-Ttica (11,500 ft.), 2 ♂, 1 ♀, 1 ?; Cuzco (11,000 ft.), 2 ♀, 2 ♀; Huaracundo Cañon (10,000 ft.), 1 ♂, 1 ?; Chospiyoc (10,000 ft.) 1 ♀, 1 ?; Ollantaytambo (9700 ft.), 1 ♂, 2 ♀; La Raya, 3 ♀; Pisac, 2 ♂; Calca, 1 ♀, 1 ?; Oroya, Rio Mantaro, 1 ♂; Limbani (10,000 ft.), 1 ♀; Acobamba, 1 ♂; Occabamba Pass (13,000 ft.), 1 ♂. BOLIVIA: Guaqui (12,000 ft.), 2 ♀.

RANGE.—Arid Temperate and Puna Zones of central and southern Peru and extreme northern Bolivia.

SUBSPECIFIC CHARACTERS.—This is the best-marked race of *musculus*. It is as richly and deeply colored below as typical *musculus* and is the largest of all the races.

It has no close affinities with *rex* or *tecellatus*, with both of which it has been synonymized. On the eastern slope of the Andes, this race intergrades with *carabayæ* of the Tropical Zone, specimens from Machu Picchu and Torontoy being almost exactly intermediate. Even specimens from Ollantaytambo show an approach to *carabayæ* in the paler color of the underparts.

***Troglodytes musculus audax* Tschudi**

Troglodytes audax TSCHUDI, 1845–46, 'Fauna Peruana,' p. 185 (coast of Peru; see Berlepsch and Hellmayr, Journ. für Ornith., 1905, p. 6).

Troglodytes musculus enochrus OBERHOLSER, 1904, Proc. U. S. Nat. Mus., XXVII, p. 207 (coast region of Peru, near Lima).

SPECIMENS EXAMINED.—WESTERN PERU: Trujillo, Prov. La Libertad, 2 ♂, 1 ♀; Sayan, Prov. Lima, 2 ♂; Vitarte, Prov. Lima, 10 ♂; Huacho, Prov. Lima, 5 ♂, 1 ♀; Huaral, Prov. Lima, 11 ♂, 6 ♀; Lima, 3 ♀ (including type of *enochrus*); Callao, 1 ♀ ?; Pisco, 4 ♂, 1 ♀; Ica, 1 ♂.

RANGE.—The arid west coast region of Peru, from Trujillo south at least to Ica and Pisco.

SUBSPECIFIC CHARACTERS.—Most closely related to *T. m. albicans*, but the underparts more uniformly ochraceous; lacking any distinct median whitish portion. It is thus almost exactly intermediate in color between *musculus* and *albicans*. It is much smaller and less richly colored than *puna*. Certain specimens from Pisco and Ica show very faint barring on the back. With this exception our large series has uniform upperparts.

Although the ranges of *audax* and *chilensis* are separated by that of *tecellatus* which, in our opinion, is specifically distinct from both, *audax*,

is closely related to the Chilean bird. It has the same tawny-ochraceous tail and rump, but its underparts are more deeply colored, and the back in some specimens shows traces of bars, a character practically absent in *chilensis*. The under tail-coverts are never heavily barred and often are unmarked.

***Troglodytes tecellatus* Lafresnaye and d'Orbigny**

Troglodytes tecellatus LAFRESNAYE AND D'ORBIGNY, 1837, Mag. de Zool., CL., 2, p. 25 (Tacna, Peru [=Chile]).

Troglodytes musculus tecellatus OBERHOLSER (part), 1904, Proc. U. S. Nat. Mus., XXVII, p. 203.

SPECIMENS EXAMINED.—SOUTHWESTERN PERU: Lomas (near Vitor), 4 ♂; Ilo, 2 ♂; Cocachacra, 6 ♂, 1 ♀; Moquegua, 2 ♂, 3 ♀.

RANGE.—River valleys in the coast district of southwestern Peru and northwestern Chile.

SPECIFIC CHARACTERS.—Resembling *Troglodytes musculus audax*, but upperparts grayer brown, broadly and conspicuously barred with black; rump not so strongly rufescent, strongly barred; tail very slightly rufescent, broadly and heavily barred with black, some specimens having more black than rusty-brown; beneath slightly paler; the under tail-coverts heavily barred, and in some specimens even the flanks are barred, a character not found in any race of *musculus* but present in *aëdon*.

In the majority of the South American house wrens barring on the back is a matter of individual variation, *albicans* affording the extreme illustration. In two races, *striatulus* and *carabayæ*, it is sufficiently constant to be an average subspecific character, but in *tecellatus* it is so developed and stable a character that we regard it of specific value in the absence of all proof of intergradation. It is of particular significance to note that the two adjoining races of *musculus*, *audax* on the north and *chilensis* on the south, have as little barring on the back as any form of the group.

Our specimens from Moquegua differ from the rest of the series in being less barred on the upperparts. More material is essential to determine whether this difference is subspecific or individual. In any event, they cannot be regarded as intergrades with any race of *musculus*.¹

¹As this paper is about to go to press, we have received a description (Field Museum Pub. No. 219, p. 74) by Dr. C. E. Hellmayr of a new form of house wren from the Rio Loa, east of Antofagasta, Chile. We have seen no specimens of this form which, under the name *Troglodytes musculus atacamenensis*, is described as follows:

"Similar to *Troglodytes musculus chilensis* Lesson, from central Chile, but with decidedly slenderer, also somewhat longer bill, and of much paler coloration; pileum and back pale grayish brown (sometimes with a slight rufescent tinge), instead of dark smoke-brown; rump and upper tail coverts lighter rufous; wings less rufescent, tail paler; under parts paler isabelline with throat and middle of abdomen more whitish, flanks and under tail coverts lighter ochraceous. Similar also to *Troglodytes musculus tecellatus* Lafr. & d'Orb. from province of Tacna, particularly above, but easily distinguished by brighter rufous rump, pale rufescent instead of grayish brown tail, more isabelline, less whitish under parts with deeper ochraceous flanks and crissum, and by lacking all trace of blackish bars on either back or upper tail coverts. Wing (male), 51–54, (female) 50; tail, 43–47; bill, 13¼–14½ mm."

While Dr. Hellmayr considers this race to be a "connecting link" between *chilensis* and *tecellatus* it is clear, even without examining specimens, that in its unbarred back and rufescent tail it is far from actually bridging the wide gap between the forms to the north and south of it. The intergradation of *tecellatus* remains therefore to be proved.

Troglodytes musculus chilensis Lesson

Troglodytes chilensis LESSON, 1830, 'Voy. Coq., Zool.,' I, p. 665 (Concepcion, Chile); see Hellmayr, Nov. Zool., 1921, pp. 273-275 (contains a valuable discussion of all the races of southern South America in addition).

Thriothorus rosaceus LESSON, 1840, Rev. Zool., p. 262 (La Plata and Chile); see Hellmayr, 1919, Verh. Orn. Ges. Bay., XIV, No. 1, p. 128, footnote.

Troglodytes musculus hornensis OBERHOLSER (*nec* Lesson) (part), 1904, Proc. U. S. Nat. Mus., XXVII, p. 203.

Troglodytes musculus acosmus OBERHOLSER, *idem*, p. 204 (central Chile).

SPECIMENS EXAMINED.—CHILE: Corral, 2 ♂, 1 ♀; Temuco, Cautin, 1 ♂; near Santiago, 2 ♂, 2 ♀, 1 ? (type of *acosmus*); Valparaiso, 1 ♂, 1 ♀; Tofo, 60 miles north of Coquimbo, 2 ♂, 1 ?; "Chile," 1 ♂, 2 ? ARGENTINA: La Plata, Prov. Buenos Aires, 1 ♂; Conchitas, Buenos Aires, 4 ♂, 1 ♀; Angaco Sud. Prov. de San Juan, 1 ♂, 1 ♀; Victorica, Pampa, 1 ♂, 1 ♀; Mendoza, 1 ♂; Tunyán, Prov. de Mendoza, 1 ♂, 1 ♀; Potrerillos, Prov. de Mendoza (alt. 5000 ft.), 2 ♂, 5 ♀.

RANGE.—Chile, from Corral (probably Canal de Chacao) north at least to Tofo, 60 miles north of Coquimbo, altitudinal range unknown; Argentina from the Rio Negro region north at least to Mendoza, and in winter to the La Plata district.

SUBSPECIFIC CHARACTERS.—Resembling *T. m. audax*, the rump, upper tail-coverts and tail ochraceous-tawny, much as in that race; the back averaging darker; underparts decidedly paler than in *audax*, the breast washed with pale wood-brown (avellaneous) rather than light pinkish cinnamon; back without trace of bars, the under tail-coverts usually with a few black marks. Similar to *T. m. bonariæ* but upperparts brighter brown; rump, upper tail-coverts and tail ochraceous-tawny rather than cinnamon-brown, bars on under tail-coverts less frequent and when present usually smaller.

So far as Chile is concerned, *T. m. chilensis* appears to be a southern representative of *T. m. audax*, which, from at least Tofo to Ancud (and probably the Chacao Canal) is uniform in size and color. From Ancud, on the island of Chiloé, just south of Chacao Canal, we have fairly typical specimens of *magellanicus*, to be distinguished from *chilensis* chiefly by their smaller bill.

The range of *chilensis* in the Andes is unknown to us, but both Peters and Wetmore secured wholly typical examples in March at Potrerillos, alt. 5000 ft., on the Argentine slope above Mendoza. Chapman secured it in August at Mendoza, whence it ranges entirely across Argentina to the Buenos Aires region WHERE IT IS FOUND ASSOCIATED WITH THE URUGUAYAN FORM. The status of the two forms in this region is discussed beyond.

Specimens from Angaco Sud, Province of San Juan, northeast of Mendoza appear to be intermediate between *chilensis* and *rex*.

Troglodytes musculus bonariæ Hellmayr

Troglodytes musculus bonariæ HELLMAYR, 1919, Anz. Orn. Ges. Bay., No. 1, February, p. 2 (La Plata, Prov. Buenos Aires, Argentina); 1919, Verh. Orn. Gells. Bayern, XIV, I, p. 128.

Troglodytes musculus hornensis OBERHOLSER (*nec* Lesson) (part), 1904, Proc. U. S. Nat. Mus., XXVII, p. 203.

SPECIMENS EXAMINED.—ARGENTINA: Buenos Aires, 2 ♂; Lavalle, Buenos Aires, 4 ♂; Barazetegui, Buenos Aires, 1 ♀. URUGUAY: Montivideo, 1 ♂, 1 ♀; Concepcion del Uruguay, 1 ♂, 1 ♀; Rio Negro, 4 ♂; Lazcano, Rocha, 1 ♂, 1 ♀; San Vicente, Rocha, 1 ♂. BRAZIL: Blumenau, Santa Catharina, 1 (cotype of *T. wiedi* Berlepsch).

RANGE.—From extreme southeastern Brazil through Uruguay to the Province of Buenos Aires, Argentina.

SUBSPECIFIC CHARACTERS.—Similar to *T. m. musculus*, but upperparts much darker and grayer brown; rump and tail less markedly rufescent; underparts much paler and less richly colored. Faint barring on the back is occasional in our specimens, most of which have the under tail-coverts barred. In size it is like *musculus*. The specimen from Santa Catharina is barely separable from *musculus*, indicating the area of intergradation. Similar to *T. m. chilensis* but upperparts, particularly the rump, upper tail-coverts and tail cinnamon-brown rather than ochraceous-tawny, the back usually with at least traces of bars, the under tail-coverts usually barred, the bars larger.

This appears to be the only form of house wren inhabiting Uruguay, whence we have an adequate series. It is also found in the adjoining Argentine province of Entre Rios and on the west shores of La Plata to La Valle at Punta del Morte. We have eight specimens from this part of Argentine which agree closely with the Uruguay series, as follows: Concepcion del Uruguay, June 23, 1880, 1 ♀; Hurlingham, 14 m. west of Buenos Aires, September 10, 1916, 1 ♀; La Plata, May 15, 1904, 1 ♀; La Valle, October 23, 1920, 1 ♂; May 6, 1921, 1 ♂, May 16, 1921, 2 ♂.

From essentially the same region we have eight specimens which are obviously to be referred to *chilensis* rather than to the Uruguayan form, as follows: Concepcion del Uruguay, June 23, 1880, 1 ♂; Conchitas (between Buenos Aires and La Plata), April 1868, 1 ♂, 1 ♀; July, 2 ♂; August, 1 ♂; La Plata, March 1896, 1 ♂; April 1906, 1 ♂.

In no other instance have we found two forms of *musculus* associated. In explanation it may be suggested (1) that the specimens referred to *chilensis* having been taken many years ago have faded; (2) that the differences observed are due to individual variation; (3) that *chilensis* as the more southern form occurs only as a migrant in the region occupied by the Uruguayan bird. To which it may be replied as follows: (1.) The specimens examined give no indication of having faded, and the fact that of two birds taken by Barrows at Concepcion del Uruguay on the same day one represents the Chilean the other the Uruguayan form indicates that there has been no postmortem change in the color of either. (2.) The constancy in color shown by both Chilean and Uruguayan birds precludes the probability of either one exhibiting the wide range of

variation' noted in the Buenos Aires region. (3.) It is possible that *chilensis* may occur only as a winter visitant in the Buenos Aires region. Our specimens of it from this area are all taken between March and August 1, and therefore furnish only negative evidence in this connection.

Meanwhile, we have to consider the inevitable question of names on which Hellmayr has already thrown so much light. This author has shown that *rosaceus* Lesson, described from "La Plata and Chile," is based on the Chilean form, though it is by no means unlikely it was described from a La Plata specimen. After restricting the name *rosaceus* to the Chilean bird (for which he subsequently discovered the name *chilensis*) Hellmayr described the Uruguayan form as *bonariæ*, assigning to it the range of the provinces of Buenos Aires, Entre Rios, Corrientes in Argentina, Uruguay, and southeastern Brazil, and taking for his type a specimen from La Plata. This specimen, thanks to Dr. Hellmayr, we have examined. While not wholly typical of the Uruguay race, it is possibly nearer that form than to *chilensis* and hence, in our opinion, the name *bonariæ* should be accepted for the resident form of the La Plata region.

Dr. Alexander Wetmore, however, calls our attention to a record by J. B. Daguerre in 'El Hornero' (II, 1922, p. 270) who states that "*Troglodytes musculus magellanicus*" is in some winters very common at Rosas in the Buenos Aires region from May to September. True *magellanicus* is known to occur near Buenos Aires in winter but, since this species probably does not breed north of the Rio Negro, those wrens from north of that river which migrated to the Buenos Aires region for the winter would doubtless be referred to *chilensis* rather than to *magellanicus*. Hence, under that name Daguerre has doubtless included both forms, when we should have a wholly satisfactory explanation of the occurrence of *chilensis* in the La Plata district.

***Troglodytes musculus magellanicus* Gould**

Troglodytes magellanicus GOULD, 1836, Proc. Zool. Soc. London, p. 88 ("in Fretu Magellanico").

Troglodytes musculus hornensis OBERHOLSER (nec Lesson), 1904, Proc. U. S. Nat. Mus., XXVII, p. 203.

Troglodytes musculus magellanicus HELLMAYR, 1919, Verh. Orn. Ges. Bay., XIV, No. 1, p. 128, footnote.

SPECIMENS EXAMINED.—CHILE: Ancud, 3 ♂, 1 ?; Punta Arenas, 2 ♂, 1 ♀ ?; Cape Horn, 1 ♂, 1 ♀; False Cape Horn, 3 ♂, 1 ?; Londonderry Island, 1 ♂. ARGENTINA: Terr. Rio Negro, near Maquinchao, 1 ♀; Bariloche, 2 ♂, 1 ♀; Huanulvan, 7 ♂, 1 ?

RANGE.—From Cape Horn north to Ancud, Chile, and to the Rio Negro region, Argentina; migrating northward as far as the Buenos Aires region in winter.

SUBSPECIFIC CHARACTERS.—Similar to *T. m. chilensis*, but bill shorter (10–11 mm.) and more slender, the under tail-coverts usually unbarred.

This race has the ochraceous-tawny rump, upper tail-coverts and tail of *chilensis*, from which it differs in coloration only in having the lower tail-coverts usually without instead of usually with bars. In size the bill is noticeably shorter and more slender, but the wing averages longer.

Dr. Hellmayr writes that he has an "extreme" example of this race taken at Rosas, F. C. S. Buenos Aires, June 20, 1920, thus wholly confirming Daguerre's record quoted under the preceding species.

***Troglodytes cobbi* Chubb**

Troglodytes cobbi CHUBB, 1909, Bull. Brit. Ornith. Club, XXV, p. 15 (Falkland Islands).

SPECIMENS EXAMINED.—FALKLAND ISLANDS: Sea Lion Island, 1 ♂, 1 ♀; Kidney Island, 5 ♂, 2 ♀.

RANGE.—Falkland Islands.

SPECIFIC CHARACTERS.—Forehead and top of head ashy brown, turning to a warmer brown on lower back, rump and tail, the rump with a very slight rufescent tinge. Throat ashy brown turning to a warmer ochraceous brown on the flanks and belly with a very slight rufescent tinge on the under tail-coverts. Size very large, the wing and bill measurements similar to *T. musculus puna*, but tail averaging shorter.

While obviously a representative house wren, this bird is sharply distinct from any other in the very slight color contrast between the upper and underparts. It is almost as dark below as above. This fact in connection with its large size and insular habitat entitle it, in our opinion, to specific rank. It is rather surprising that it should have remained undescribed so long. Mr. Rollo H. Beck, who collected our series, writes that it lives in the dense tussock grass and has disappeared from all areas where sheep have been allowed to pasture.

MEASUREMENTS

			WING	TAIL	CULMEN
<i>Troglodytes aëdon parkmanii</i>	6 ♂		49. -54.5	40. -47.	11. -13.
	2 ♀		47. -50.5	42. -43.	13.
" <i>musculus peninsularis</i>	5 ♂		49.5-53.	37. -41.	12. -14.
" " <i>intermedius</i>	15 ♂		48. -52.	32. -38.5	12. -13.5
	3 ♀		48. -50.	35.5-36.	11. -12.5
" " <i>oreopolus</i>	11 ♂		48. -51.	32. -37.	11. -13.
	3 ♀		48. -48.5	33. -34.5	11.5-13.
" " <i>inquietus</i>	9 ♂		51. -54.	36. -38.	12.5-14.
	4 ♀		52.	36. -38.	13. -14.5
" " <i>atopus</i>	3 ♂		51. -52.	34. -37.	14. -14.5
	3 ♀		50. -51.	32. -37.	13. -14.
" " <i>striatulus</i>	20 ♂		52. -60.	38. -44.	13. -15.
	8 ♀		51. -56.5	38.5-42.5	13. -15.
" " <i>columbæ</i>	7 ♂		51. -56.	40. -43.	13.5-14.5
	4 ♀		52. -56.	39. -41.	14.
" " <i>albicans</i>	50 ♂		47.5-54.	30.5-40.5	12. -15.
	30 ♀		48. -53.	30.5-37.	12. -14.
" " <i>tobagensis</i>	2 ♂		58. -60.	39. -42.	14.5-15.5
" " <i>musculus</i>	21 ♂		49. -53.	37. -42.	13. -14.5
	8 ♀		49. -51.	38. -42.	13. -15.
" " <i>rex</i>	46 ♂		51. -57.	41. -49.5	12. -13.5
	24 ♀		49. -57.	40. -48.	12. -13.
" " <i>carabayæ</i>	13 ♂		47. -56.	38. -44.	12. -14.
	6 ♀		47.5-52.5	38. -44.5	12.5-14.
" " <i>puna</i>	13 ♂		53. -61.	43. -52.	13. -15.
	14 ♀		51. -59.5	42. -50.	13. -14.
" " <i>audax</i>	35 ♂		48. -54.5	36. -42.5	12. -14.
	12 ♀		48.5-54.	36.5-41.	12.5-14.
" <i>tecellatus</i>	14 ♂		50. -55.	36. -41.	12. -14.5
	4 ♀		50.5-54.	38. -42.	14.
" <i>musculus chilensis</i>	17 ♂		48.5-54.5	42. -47.	12. -13.5
	12 ♀		48.5-53.	40. -45.5	12. -13.
" " <i>bonariæ</i>	11 ♂		49. -53.5	39. -45.	12. -13.
	4 ♀		49.5-50.	39. -44.	12. -13.
" " <i>magellanicus</i>	10 ♂		50. -53.5	41.5-45.5	10. -11.5
	2 ♀		50. -51.	44.	11.
" <i>cobbi</i>	7 ♂		55. -60.	39. -43.	15. -16.
	3 ♀		55. -58.	40. -41.	14.5-16.



Fig. 2. 5, *Troglodytes m. atopus*; 6, *T. m. striatulus*; 7, *T. m. columbæ*; 8, *T. m. albicans*; 9, *T. m. tobagensis*; 10, *T. m. musculus*; 11, *T. m. rex*; 12, *T. m. carabayæ*; 13, *T. m. puna*; 14, *T. m. audax*; 15, *T. m. tecellatus*; 16, *T. m. chilensis* and, from the valley of Copiapo northward, *T. m. atacamensis*. 17, *T. m. magellanicus*; 18, *T. m. bonariæ*; 19, *T. cobbi*.