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## Systematic Notes on Palearctic Birds. No. 25 Motacillidae: the Genus *Motacilla*

BY CHARLES VAURIE

The following notes were made during a study of this genus for a contemplated check list of the Palearctic region. Notes on the genus *Anthus* have been published by me earlier in another paper<sup>1</sup> in the present series.

I should like to express my gratitude to Dr. E. Stresemann who very kindly made available to me his unpublished study on the evolution and polymorphism of the blue-headed wagtails.

### MOTACILLA FLAVA

The variations of the Yellow Wagtail present a very difficult problem and have been the subject of many papers.<sup>2</sup> The problem, as briefly stated as possible, is that the geographic variation is irregular, of a "checker-

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<sup>1</sup> 1954, Amer. Mus. Novitates, no. 1672.

<sup>2</sup> Among these, a selected list of the more important ones may be cited: Sushkin (1925, Proc. Boston Soc. Nat. Hist., vol. 38, pp. 30-37), Domaniewski (1925, Ann. Zool. Mus. Polinici Hist. Nat., vol. 4, pp. 85-125), Stresemann (1926, Ornith. Monatsber., vol. 34, pp. 59-61), Ivanov (1935, Doklady Akad. Nauk, new ser., vol. 3, pp. 277-280), Grote (1937, Ornith. Monatsber., vol. 45, pp. 162-166), Johansen (1946, Dansk Ornith. For. Tidsskr., vol. 40, pp. 121-142), Smith (1950, The yellow wagtail, London, Collins), Gladkov (1954, in Birds of the Soviet Union, Moscow, vol. 5, pp. 630-647), Meinertzhagen (1954, in Birds of Arabia, London, pp. 145-156), Williamson (1955, British birds, vol. 48, pp. 382-403), and Mayr (1956, British birds, vol. 49, pp. 115-119). The paper by Stresemann is a critique of the one by Domaniewski, and the one by Mayr a critique of Williamson's paper. Extensive bibliographies are given by Smith and Williamson, and maps of distribution appear in several of the papers listed.

board type" as stated by Mayr, similar populations re-occurring in very widely separated regions such as nominate *flava* in Europe and *simillima* in far eastern Siberia, or *flavissima* in England and *lutea* in the steppes of western Siberia. Individuals of those and other populations may be indistinguishable or virtually so. In addition, the range in individual variability is irregular, being very slight in some regions but exceptionally high in others which appear to be zones of secondary intergradation. The third complicating factor is that, apparently, some sharply morphologically differentiated forms overlap during the breeding season.

Stresemann and Grote have suggested that the convergence in character is caused by an exceptionally high potential of individual variability, and it has been said that the Yellow Wagtail is "genetically unstable." Williamson, however, does not share this view and advances a new theory, namely, that the convergence is due to migratory pollution, for instance, that *lutea* receives increments from *flavissima* during the spring migration. Mayr discusses this theory and shows that its validity is open to question.

The populations, the breeding ranges of which apparently overlap in part or completely, belong to all three types (the yellow-, gray-, and black-headed types), but between the latter two the zone of overlap is relatively narrow and inhabited by hybrids that are highly variable individually. The breeding ranges of the so-called "yellow-headed" forms<sup>1</sup> (*flavissima*, *lutea*, and *taivana*) overlap very slightly those of the other forms (in the case of *flavissima*) or completely, or apparently so, in the cases of *lutea* and *taivana*. In some regions, it seems that there is some degree of reproductive isolation between the three types, though our knowledge is very inadequate, and population studies dealing with the nature of this isolation are lacking. In other regions it is clear that whatever incipient reproductive isolation may have developed broke down quickly upon secondary contact.

It seems clearly established, as Mayr concludes, that the striking morphological differences which now characterize some of the populations were evolved during a period when the distribution of the Yellow Wagtail had become "compressed into many relic areas consisting of widely separated populations," but that it "is certain, however, that complete reproductive isolation was not acquired during this isolation, although perhaps partial reproductive isolation . . . [was]."

Field studies may decide whether we are dealing with one or more species. Until then, as Mayr says, museum specimens cannot add much to our knowledge, and, everything considered, it seems to me that it is

<sup>1</sup> In typical specimens the top of the head is yellow only in *lutea*; it is greenish yellow in *flavissima* and olive in *taivana*.

probably best at present to treat all the various forms as one species.

Some workers have divided the Yellow Wagtail into as many as seven species, but the division usually consists in the recognition of two, the yellow-headed forms being separated from the others as a separate species (*lutea*). This is the treatment first proposed by Sushkin and followed by Ivanov, Williamson, and Gladkov. Domaniewski united *lutea* and *flavissima* but retained *taivana* as a separate species. This division into two species, the yellow-headed forms in one and the others in another, assumes that the former are very closely related. But, as Mayr states, this is far from certain, because, if one "species," its distribution is very unnatural if not unique. Furthermore, as Mayr adds, "the entire *flava* complex is replete with deceptively similar but obviously unrelated populations, such as European *flava* and east Siberian *simillima*." As Stresemann believes (MS), *taivana*, though superficially similar, is probably not related at all to *lutea*. As he states, "the long hind claw of *taivana* reveals its relationship to *macronyx*, *simillima*, and *angarensis* [all of them, as is *taivana*, being far eastern forms], while *lutea* has the shorter, more strongly curved hind claw of *flava* and *beema*."

In the short review that follows, diagnoses and ranges are omitted. These can be found in Williamson's paper. All the subspecies that I believe are valid are listed.

1. *Flavissima* Blyth, 1834, type locality, England.
2. *Flava* Linnaeus, 1758, type locality, southern Sweden.
3. *Iberiae* Hartert, 1921, type locality, southern France. Hartert proposed *iberiae* as a new name for *Budytes fasciatus* Zander, 1851, southern France, which is preoccupied by *Motacilla fasciata* Bechstein, 1795, a synonym of *Acrocephalus palustris* Bechstein. Hartert nevertheless selected a type which I have examined and which is from Miranda de Ebro in northern Spain. However, the type locality, southern France, must stand. In southern France, according to Mayaud (1952, *Alauda*, pp. 15-16), the population from the Basque country is typical *iberiae*, but along the Mediterranean coast in the Camargue the population, although still closer to *iberiae*, shows some tendency towards *cinereocapilla*.
4. *Cinereocapilla* Savi, 1831, type locality, Italy. The populations of northern Yugoslavia, and also birds that breed occasionally in Switzerland, are usually referred to this race. In these regions, however, the birds are not typical *cinereocapilla* but intermediate to a varying degree between this race and nominate *flava* in the north, and between it and *feldegg* in the south. The zone of intergradation between *cinereocapilla* and *feldegg* runs through northern Dalmatia and Hercegovina, but some individuals with intermediate characters are found occasionally as far south as northern Albania. Near Belgrade and south along the Danube

runs a zone of secondary intergradation between nominate *flava* and *feldegg*.

5. *Pygmaea* A. E. Brehm, 1854, type locality, "northeast Africa," but Egypt is clearly intended.

6. *Beema* Sykes, 1832, type locality, Deccan, India, based on winter visitors.

7. *Leucocephala* Przevalski, 1887, type locality, northern Dzungaria.

8. *Lutea* S. G. Gmelin, 1774, type locality, Astrakhan.

9. *Zaissanensis* Poliakov, 1911, type locality, Zaisan Nor. This form has been synonymized with *thunbergi* by Meinertzhagen (1954), but *zaissanensis* is connected to *thunbergi* only indirectly via *angarensis* and is, in fact, an intermediate between the latter and *beema* which belongs to a different evolutionary line than *thunbergi*. *Zaissanensis* does not seem to be very well differentiated, but I have examined only one specimen, and it is best, I believe, to accept the opinion of the Russian authors who all consider it to be valid.

10. *Thunbergi* Billberg, 1828, type locality, Lapland, with *alakulensis* Grant and Mackworth-Praed (1950, Bull. Brit. Ornith. Club, vol. 69, p. 131), type locality, Lake Ala Kul, Russian Turkestan, as a synonym. The latter is based on only two specimens—most inadequate material in such a difficult species. I follow Meinertzhagen (1954) who has synonymized *alakulensis* with *thunbergi*, saying that its type (collected on May 9) is probably a migrant of the latter, as it is identical with specimens from Lapland. The other, and only, specimen was collected on the Yangtze "in non-breeding season."

11. *Plexa* Thayer and Bangs, 1914, type locality, lower Kolyma River, northeastern Siberia. The validity of this race, as well as that of the related *angarensis* and *macronyx*, has been denied by Williamson (1955) and Meinertzhagen (*op. cit.*). The latter synonymizes *macronyx* with *thunbergi*, saying that it differs from it only by having a longer hind claw, and synonymizes *plexa* and *angarensis* with *simillima*, dismissing *angarensis* on the ground that it is "probably a passage migrant." All three races, however, are perfectly valid as recognized by all the Russian authors. They are clearly differentiated, and *angarensis*, far from being a migrant, occupies a huge breeding range in eastern and central Siberia.

It is difficult in running text to compare without confusion the sub-specific characters of the races of the *thunbergi* group. These are compared in table 1 where it will be noticed that all the races are clearly differentiated, some, such as *macronyx*, especially so.

12. *Angarensis* Sushkin, 1925, type locality, southwestern Transbaikalia.

13. *Macronyx* Stresemann, 1920, type locality, Vladivostok.

14. *Simillima* Hartert, 1905, type locality, Sulu Archipelago. Hartert, when he described this race, stated that it apparently bred only in Kamchatka, and this region has been accepted and is quoted universally as the type locality, but he did not mention a definite locality and no type. Although he failed to say so, he did nevertheless appoint a type, but this type, in the Rothschild collection, is from the Sulu Archipelago and not Kamchatka. This race is a common winter visitor in the East Indies, including the Sulus.

15. *Tschutschensis* J. F. Gmelin, 1789, type locality, coasts of the Chukotski Peninsula. Synonym: *Budytes flavus alascensis* Ridgway, 1903, type locality, St. Michael, western Alaska.

16. *Taivana* Swinhoe, 1870, type locality, Formosa. This race is always cited in standard works as of 1863 (Proc. Zool. Soc. London, p. 334), but *Budytes taivana* Swinhoe, 1863, is a *nomen nudum*, and the first valid description of *taivana* is by Swinhoe (1870, Ibis, p. 346), who states "*Budytes taiwanus* is based on '*B[udytes] flavus* (L.), var. *rayi*, Swinhoe, Ibis, 1863, [pp. 309-310]," Formosa. In the Ibis for 1863 the characters of the birds of Formosa are described accurately, though a new form is not proposed. This race (which, as stated above, has been considered a separate species) hybridizes with the races of the *thunbergi* group. One hybrid, collected on migration on May 23 in Shantung, has been examined by me.

17. *Feldegg* Michahelles, 1830, type locality, southern Dalmatia.

18. *Melanogrisea* Homeyer, 1878, type locality, India. The validity of this race has been questioned by several authors who believe it is not separable from *feldegg*. It is, however, not only valid but very well differentiated, differing from *feldegg* by being distinctly paler yellow below, slightly paler and brighter green on the mantle, by having the chin white instead of yellow, and by having the black ear coverts separated from the yellow of the throat by a distinct white line lacking in *feldegg*. It occupies a large breeding range in Russian Turkestan, extending from the Aral Sea, the Kyzyl Kum, and Transcaspia to Semirechia, north to the Tarbagatai, south to the Ili River Valley, and the Tian Shan. It winters in northwestern India, south to southern Bombay, east to Benares, and almost all the winter visitors in India that have been identified as being *feldegg* belong in fact to *melanogrisea*. A few *feldegg* (or specimens from populations intermediate between this race and *melanogrisea*) reach India, but the main winter quarters of true *feldegg* are in east Africa. The western populations of *melanogrisea* grade into *feldegg* and have been described as *aralensis* by Homeyer, 1878, type locality, Aral Sea, but in my opinion this form is not sufficiently well differentiated to warrant its being recognized.

TABLE 1  
SUBSPECIFIC CHARACTERS OF THE RACES OF THE *thunbergi* GROUP OF *Motacilla flava*  
BASED ON TYPICAL MALES IN BREEDING PLUMAGE

Race	Color of the Upper Parts	Color of the Under Parts	Eye Streak	Ear Converts	Wing Length	Average Length of Hind Claw
<i>A. thunbergi</i>	Mantle green but relatively dull, crown slaty	Yellow, tinged with olive on the sides of the breast, forming a tendency towards a pectoral band As in A	Vestigial or lacking	Blackish	80-83	9
<i>B. plexa</i>	Mantle very dull, more grayish than in A, with the gray of the crown grading into the color of the mantle	As in A	As in A, or slightly better indicated	As in A	80-83	9
<i>C. angarensis</i>	Mantle greener than in B, crown as in A but posterior border somewhat better defined and much more sharply delimited than in B	Breast purer than in A and B	Always present and sharp but less broad than in E	Black	78-83	10
<i>D. macronyx</i>	Mantle purer and brighter green than in the above, posterior of the crown well delimited	Breast pure yellow, no olive tinge	Lacking	Gray and pale	80-83	12

TABLE 1-(Continued)

Race	Color of the Upper Parts	Color of the Under Parts	Eye Streak	Ear Converts	Wing Length	Average Length of Hind Claw
E. <i>simillima</i>	Crown gray and palest, mantle bright, crown well delimited	As in D	Always present and sharp and broadest	As in D	80-85	10
F. <i>tschutschensis</i> <sup>b</sup>	Entire upper parts very dull, no contrast be- tween the crown and mantle as in B	Slightly paler yellow than in the above but with a tendency to- wards a pectoral band as in A	As in E or slightly narrower	Gray but darker than in D and E	76-80	9.5

<sup>a</sup> *Macronyx* and *simillima* have, on an average, a slightly larger bill than the other races; they are the brightest in coloration, and in *macronyx* the wing bars are purest in color and most conspicuous.

<sup>b</sup> *Tschutschensis* differs from the others in having the chin and most of the throat white rather than yellow.

As shown above, the various races of *Motacilla flava* belong to different evolutionary lines. In addition to the *thunbergi* group, *feldegg* and the closely related *melanogrisea* form another group in which the crown is black. A third group consists of nominate *flava*, *iberiae*, *cinereocapilla*, *pygmaea*, *beema*, and *leucocephala* in which the crown varies from blue-gray to white. *Zaissanensis* is a clear intermediate between the *thunbergi* and nominate *flava* groups, while the degree of relationship of *flavissima* and *taivana* is more distant. I have no doubt that *taivana* is related to the *thunbergi* group, and it seems to me that *flavissima* is related to the nominate *flava* group. The nearest relative of *lutea* is, however, not obvious.

All the forms in each group intergrade through primary intergradation, and the three groups, as well as the more isolated forms, hybridize through secondary intergradation, and the resulting hybrids have been described under many names. These have been held to represent distinct subspecies, or even full species, but their true nature has been recognized by most authors. A few should be mentioned, however, as some authors still recognize some of these hybrids as subspecies or even full species. For instance, Grant and Mackworth-Praed (1952, Bull. Brit. Mus. Nat. Hist., vol. 1, pp. 255-268) hold that *superciliaris* A. E. Brehm (a hybrid between *feldegg* and the nominate *flava* group) and *perconfusus*, which they described, are full species. The latter is a hybrid of nominate *flava* and *flavissima*. Subspecies are recognized by Williamson (*op. cit.*) under the names of *superciliaris* and of *dombrowskii* Tschusi, and by Meinertzhagen (*op. cit.*) under the name *dombrowskii*. The latter occurs in the zone of secondary intergradation which extends in the north from Poland and the Ukraine, where the parental forms are nominate *flava* and *thunbergi*, to the lower Danube and the Dobruja, where the parents are nominate *flava* and *feldegg*. As might be expected, *dombrowskii* is not a stable form. I have examined six of the specimens on which *dombrowskii* was based, and they vary a great deal, not only in the color of the crown and the ear coverts but also in the presence or absence and relative length and width of the eye stripe. In the coloration of the under parts they run the full scale from nominate *flava* and *thunbergi* to *feldegg*. I cannot admit *dombrowskii*.

MOTACILLA CINEREA, MOTACILLA FLAVIVENTRIS,  
AND MOTACILLA CLARA

The Gray Wagtail (*M. cinerea*) winters in Africa, Arabia, India, southeast Asia, and the East Indies but breeds only within the limits



of the Palearctic region. Its status as a species, which is typical of this region, was therefore very much confused when Hartert and Steinbacher (1933, *Die Vögel der paläarktischen Fauna*, suppl. vol., p. 148), following a suggestion advanced by Kleinschmidt [1931, *Berajah*], decided that *flaviventris* of Madagascar, and the Ethiopian *clara*, were conspecific with *cinerea*.

This decision was ignored, very correctly in my opinion, by authors on African birds dealing subsequently with *flaviventris* and *clara*, but unfortunately it has been followed by some authors writing on Palearctic birds, for instance, Gladkov (1954, *in Birds of the Soviet Union*, Moscow, vol. 5), and Meinertzhagen (1954, *in Birds of Arabia*, London).

Comparison of the three forms shows that they are most distinct morphologically. The differences in pattern are numerous and very clear cut. In *cinerea*, in breeding plumage, the throat is black in the male, and white (in some subspecies) or tinged with blackish in the females, and the rest of the under parts from the throat down are yellow. In *clara*, the whole of the under parts is white, with a sharp pectoral band of black, and there are no yellow pigments anywhere in its plumage. In *flaviventris*, the throat and upper breast are white, separated, as in the case of *clara*, by a sharp black pectoral band, and from the lower breast down the rest of the under parts is yellow. There are also some other pattern differences. In *clara* the whole of the upper parts, including the upper tail coverts, is blue-gray, not slaty gray as in *cinerea*, or dull gray tinged with olive from the middle of the back down to the rump as in *flaviventris*. In the latter, the upper tail coverts are black; they are yellow in *cinerea* and, as stated, are blue-gray in *clara*. The amount of white on the margins of the tertials differs a great deal in all three species, and the tail pattern, or rather the extent of the white area, differs sharply. In *flaviventris*, only the two outer pairs of rectrices are white, in *cinerea* the three outer pairs, and in *clara* the four outer pairs, with white tips on the fifth. *Clara* is a small species and slight in build; *flaviventris* and *cinerea* are considerably larger, *flaviventris* being somewhat larger than *cinerea* and more robust and with much heavier feet than either of the other two.

In short, I believe that it was most misleading to push "lumping" so far just to uphold another of Kleinschmidt's questionable theses. In this case, zoogeographical and morphological reasons refute this treatment, and I believe the three are separate species. It is likely that *flaviventris* and *clara* are distantly related, but, as shown above, they have diverged a great deal morphologically and are probably not conspecific.

*Motacilla cinerea*

The geographical variation of the Gray Wagtail is slight or relatively so. With the exception of the insular subspecies of the Azores, Madeira, and the Canaries discussed below and which are fairly well differentiated, the remaining populations are very similar and differ virtually only in the length of their tail. Those from the eastern end of the range have a shorter tail than those of Europe, but, as shown below, there is some overlap in measurements and the eastern populations are also somewhat darker, but the difference is very trivial and not constant. In view of the fact that the eastern populations differ from those of the west only in average characters, it would perhaps be best to recognize only the insular subspecies and nominate *cinerea* Tunstall, 1771, the type locality of which was fixed as Yorkshire, England, by the List Committee of the British Ornithologists' Union (1948, Ibis, p. 320). The consensus seems, however, to favor the recognition of an eastern race, the correct name of which should be, I believe, *robusta* C. L. Brehm, 1858, type locality, Japan. If this race is recognized, its breeding range should be restricted to Kamchatka, Okhotsk Sea region, Kuriles, Sakhalin, eastern Amurland, Manchuria, Ussuriland, northern Korea, and Japan. It occurs on the Commander Islands where, however, it may not breed.

The decrease in the length of the tail is more or less clinal from west to east, and a third intermediate race is recognized by some authors, but there is no agreement on whether it should be called *caspica* S. G. Gmelin, 1774, type locality, Enzeli [= Pahlevi], northern Iran, or *melanope* Pallas, 1776, type locality, Transbaicalia. Some authors do not recognize an intermediate race, rejecting *caspica* and calling the eastern race *melanope*. However, as shown below, the measurements of the population of Transbaicalia overlap too much those of nominate *cinerea*, and it seems best to call the eastern race by the name *robusta*. The overlap between the measurements of nominate *cinerea* and those of topotypical *caspica* is virtually complete.

In addition to these forms, Clancey (1948, Ibis, p. 597) has proposed that the population of the British Isles should be separated from that of continental Europe, claiming that the former is darker gray above, has darker ear coverts, and is paler yellow below. For the continental birds he would revive the name *boarula* Linnaeus, 1771. Clancey's proposal cannot be entertained, because in the series that I have compared from the British Isles and western Europe virtually all the specimens are identical. Any difference that exists in an occasional specimen is extremely slight.

The tail measurements below are those of males, except in the case of some given by Bates, and were taken from various authors, or by myself for this study. It is to be regretted that individual measurements, averages, or the number of specimens measured were not given in many instances. Nevertheless the trend is shown. The authors are Bates (1934, Bull. Brit. Ornith. Club, vol. 55, pp. 47-48), Dementiev (1936, Sbornik Trud. Gosud. Zool. Muz., vol. 3, p. 194), Johansen (1952, Jour. Ornith., vol. 92, p. 163), Meise (1934, Abhandl. Ber. Mus. Dresden, vol. 18, no. 2, p. 28), Portenko (1937, Fauna Ptitsy . . . Severnogo Urals, Moscow, Akad. Nauk, pp. 115-116), and Stresemann (1928, Jour. Ornith., vol. 76, p. 363).

ENGLAND: (Bates), 94, 97, 99, 99, 100, 100, 102, 103, 103; (Vaurie), 92, 94, 95, 95, 97, 97, 98, 99, 100, 102.

WESTERN CONTINENTAL EUROPE: (Vaurie): 90, 93, 95, 95, 97, 97, 98, 98, 100, 100, 101.

IRAN: (Portenko), 93.2-100; (Dementiev), 90-99; (Stresemann), 94; (Vaurie), 91, 92, 97, 100

"PERSIA AND TURKESTAN": (Bates, both sexes), 90, 91, 92, 93, 93, 94, 95, 96, 97, 97, 98, 100.

TRANSBAICALIA: (Johansen), 88-98; (Dementiev), 87-90.8; (Portenko), 87-95.6; (Bates, not sexed), 90, 94.

KAMCHATKA: (Portenko), 87.6-89.7; (Dementiev), 89-93.

OKHOTSK SEA: (Portenko), 83.2-94.1; (Dementiev), 86-94.1.

SAKHALIN: (Portenko), 89.6-91.1.

MANCHURIA: (Meise), 85, 87, 92, 92; (Bates, both sexes), 85, 87, 87, 87, 88, 89, 90, 93, 93, 94.

USSURILAND: (Dementiev), 79-96.5; (Portenko), 85-94.5; (Vaurie), 87, 87, 90, 92.

"USSURILAND AND JAPAN": (Johansen), 84-91.

KOREA: (Vaurie), 87, 92.

JAPAN: (Vaurie), 83, 83.

TANEGASHIMA: (Vaurie), 89, 89, 92, 93, 97, 97.

The species is only a winter visitor to Tanegashima, and it is possible that the specimens with the longer tails (97) were visitors from populations other than from the Far East.

#### INSULAR SUBSPECIES OF *Motacilla cinerea*

The Gray Wagtail is resident in the Canaries (where it breeds on the islands of the central and western group with the possible exception of Hierro), Madeira, and all the islands of the Azores, where it is abundant. The populations from these three archipelagoes are clearly distinct from one another and from nominate *cinerea*, though this has not been reflected hitherto in their systematic treatment, the population of the Canaries being referred to nominate *cinerea*, and the populations

of the Azores and Madeira combined under the name *schmitzi* Tschusi, 1900, type locality, Madeira. I propose to separate the population of the Azores as follows:

***Motacilla cinerea patriciae* Vaurie, new subspecies**

TYPE: A.M.N.H. No. 570078, Rothschild collection; adult male; Furnas, São Miguel Island, eastern Azores; March 16, 1903; Ogilvie Grant, collector.

DIAGNOSIS: Similar to *schmitzi* of Madeira in having dark, slaty upper parts and ear coverts, and with the white streaks on the sides of the head reduced, but differing from it in having a longer bill; somewhat paler yellow under parts, more sulphur and cooler in shade, the difference being most distinct on the under tail coverts; and by having the third rectrix more broadly bordered with black on the outer edge of the inner web; a black border, lacking in *schmitzi*, being present also on the outer edge of the second rectrix in *patriciae*.

RANGE: Restricted to the Azores.

DISCUSSION: Hartert's systematic treatment of the three insular populations was hesitant. He was uncertain whether or not the population of the Azores should be called nominate *cinerea* or *schmitzi*, or whether the population of the Canaries was a distinct form. In 1901, he had described the latter as *canariensis* but in 1905 (*Die Vögel der paläarktischen Fauna*, p. 299) he retracted this form, placing the name *canariensis*, with a query, in the synonymy of nominate *boarula* [= nominate *cinerea*]. In the same work he referred the population of the Azores to *schmitzi*, because, as he had said in another paper (1905, *Novitates Zool.*, vol. 12, pp. 120-121), the birds of the Azores were similar to those of Madeira, both populations being darker than nominate *cinerea* on the upper part and ear coverts and showing the same degree in reduction of the white streaks on the sides of the head.

This remark of Hartert is correct as far as it goes but, as stated above in the diagnosis, the population of the Azores differs from that of Madeira through other characters that were not noticed or were confused by Hartert. The difference in the length of the bill needs no discussion. The difference in the shade of the yellow of the under parts is slight but constant. The width of the black borders on the rectrices, however, varies a great deal individually in the birds of the Azores, though it is almost invariably very much broader than in the birds of Madeira. Hartert noticed this variation, but his remarks concerning it are not very clear. For instance, he speaks of some specimens from Madeira in which the black border is so broad that the white area

is reduced only to "a white patch near the tip," but although he may have examined other material, this character is not shown at all in the 18 specimens from Madeira in the Rothschild collection examined by Hartert. On the other hand, in six of 25 males and four of 14 females from the Azores, the white on the third rectrix is in fact reduced to a small patch at the apex (fig. 1B), varying from about 15 to 30 mm. in length. It is difficult to measure the width of the black border as it varies throughout the length of the feathers; the difference is illustrated in figure 1. It will be noticed in the figure that a black border appears also on the edge of the second rectrix in the population of the Azores but not in that of Madeira. In 18 specimens from Madeira this border on the second rectrix is faintly indicated as a vague shadow in only two specimens, but in the 39 from the Azores it is sharply indicated in 38, and vague in only one.

Chavigny and Mayaud (1932, *Alauda*, p. 334) had already men-

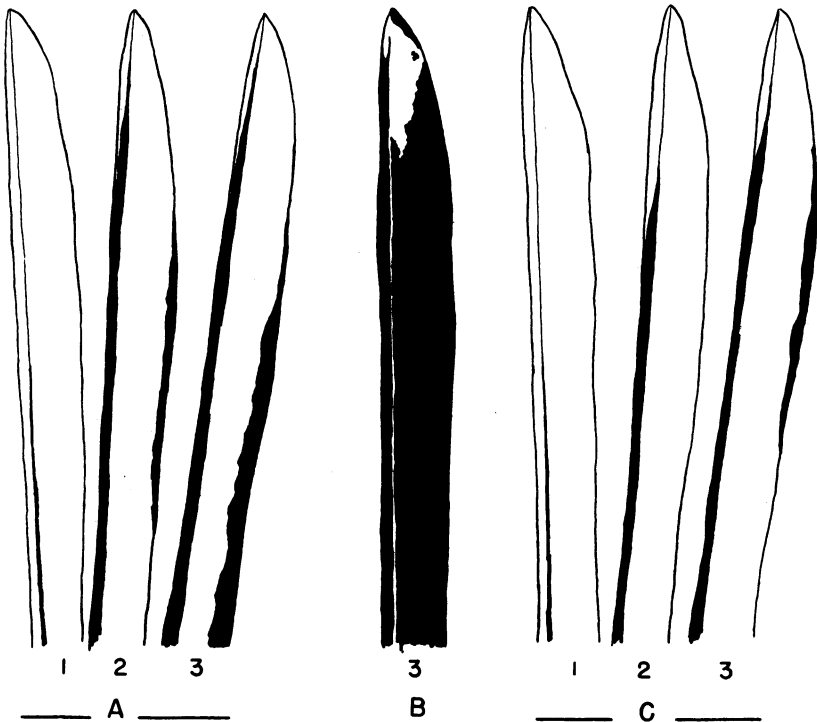


FIG. 1. Pattern of the first, second, and third outer rectrices of *Motacilla cinerea patriciae* (A and B) and of *M. c. schmitzi* (C). In *patriciae*, A represents the usual pattern and B the pattern of the third rectrix in 10 of 39 specimens.

tioned that the birds they had examined from the Azores had a long bill, and that on the third rectrix the inner web was broadly bordered with black, the black "occasionally reaching the shaft with the result that the feather is three quarters black" (translation mine). They called these specimens by the name *schmitzi* but apparently compared them directly only to nominate *cinerea* and not to specimens from Madeira. At any rate they do not mention comparative specimens from Madeira. Had they measured specimens from this island, they would no doubt have found that, as shown in table 2, the length of the bill is short and virtually identical with that of nominate *cinerea*.

Volsøe (1951, Vidensk. Meddel. Dansk Naturhist. For., vol. 113, pp. 111-113) has discussed the population of the Canaries and remarks that all six specimens he collected in 1947 "have a much brighter yellow underside than European specimens from the same season." He nevertheless did not recognize *canariensis*, because two additional skins from Tenerife collected by Thanner (in 1903) that he examined were identical with specimens from Europe. The richer yellow coloration was mentioned by Hartert as a possible subspecific character, and I believe it is a valid one because all my 24 specimens from the Canaries differ very clearly from comparative specimens from Europe by having a much richer, warmer yellow. These 24 specimens are very uniform and include specimens collected also by Thanner in 1903. This series from the Canaries differs also in having slightly darker gray ear coverts, and, as shown in table 2, birds from the Canaries show a tendency to have a shorter tail and a very slightly longer bill. All these other differences are slight and not constant, but in my opinion the constant and very distinct difference in the color of the under parts warrants the recognition of *canariensis*. The population of Madeira is intermediate in the shade of the yellow between that of the Canaries and that of the Azores.

As shown above in the discussion, the three insular populations are clearly separable from one another and from nominate *cinerea*. To combine the population of the Azores and that of Madeira under one name and that of the Canaries and the continent under another confuses the geographical variation of this species. Admittedly, this variation is slight when compared to that of *M. flava*, but if subspecies are to be recognized at all in *M. cinerea*, I believe its geographical variation is best expressed nomenclaturally by the division proposed in the present paper.

The new subspecies from the Azores is named for my wife, Patricia, who took such delight in these charming birds during the many happy days we spent in the Azores.

TABLE 2  
MEASUREMENTS OF 10 ADULT MALES IN SOME POPULATIONS OF  
*Motacilla cinerea*

Race and Population	Wing Length	Tail Length <sup>a</sup>	Bill Length <sup>a</sup>	Wing/Tail Index <sup>b</sup>
Nominate <i>cinerea</i>				
England	81-87 (83)	92-102 (97)	16-17.5 (16.8)	86
<i>canariensis</i> <sup>c</sup>				
Canaries	80-86 (83)	84-100 (92)	16.5-18 (17.2)	90
<i>schmitzi</i>				
Madeira	80-86 (83.2)	90-100 (95)	16.5-17.5 (17.0)	88
<i>patriciae</i> <sup>d</sup>				
Azores	82-87 (84.3)	87-98 (92.5)	18-20 (18.5) <sup>e</sup>	87

<sup>a</sup> Measured from the skull.

<sup>b</sup> Proportion of the wing length to that of the tail.

<sup>c</sup> Type of *canariensis*, adult male, wing, 84, tail, 98, bill, 17.

<sup>d</sup> Type of *patriciae*, adult male, wing, 85, tail, 87, bill, 19.

<sup>e</sup> Individual bill lengths of 23 adult males: 17.2, 17.5, 17.5, 17.5, 18, 18.2, 18.2, 18.2, 18.2, 18.5, 18.5, 18.5, 19, 19, 19, 19, 19, 19, 19, 19.5, 19.8, 20 (18.54); statistical mean, 18.5.

ECOLOGY: Lack and Southern (1949, Ibis, p. 613) are of the opinion that the Gray Wagtail has widened its ecological preferences in the Canaries. They state: "There is also a niche in towns and villages for a hole-nesting insectivorous species. In Western Europe this niche is filled partly by the White Wagtail *Motacilla alba* and partly by the Black Redstart *Phoenicurus ochrurus*. Neither of these species occurs in Tenerife, and here the niche is filled by the Grey Wagtail *Motacilla cinerea*. This bird was even present in a big town like Santa Cruz. It is also a town bird in Madeira (Meinertzhagen 1925), but this habitat preference has not been reported from the Azores (Hartert and Ogilvie-Grant 1905)."

Volsøe (*loc. cit.*) questions this, however, and states: "I do not agree . . . it is true that the Grey Wagtail is common in towns and villages, but this is in my opinion due to the fact that practically all towns are traversed by one or more open river beds and have numerous water tanks around the houses. It is these natural habitats which bring the birds to the towns, not the houses and habitations."

I cannot comment on the situation in the Canaries, but during a stay of about three months in the Azores spent almost entirely hiking through the various islands, Mrs. Vaurie and I met this wagtail very commonly

not only along streams but also on paths very far from water, as well as in villages, many of which are built on cliffs and have no streams. We met it also in cultivated fields and pastures associating with cattle. When we were on trips through moors and mountain heath by mule or donkey, it would follow our beasts, probably feeding on the insects they disturbed. We found it also on beaches, notably on the rocky ones of Pico and other islands where whalers bring up their prey to be cut up and "tried." These sites are coated with decaying blood and scraps of flesh and blubber and swarm with flies upon which the wagtails fed. On the island of Pico Marler and Boatman (1951, Ibis, p. 92) found that "the characteristic habitat is the rocky shore [and that] some occupy the 'town niche' . . . which corresponds with the situation on Tenerife." The observations of Marler and Boatman and our own certainly confirm that, at any rate in the Azores, the habitat of this species is very much wider than it is on the continent where it must meet the competition from species that are missing in these islands.