

THE RACES OF YELLOW WAGTAIL (*MOTACILLA FLAVA*)
WINTERING IN THE INDO-AUSTRALIAN ARCHIPELAGO

by

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INTRODUCTION

It has become a convention to identify all Yellow Wagtails wintering in the Indo-Australian Archipelago as *Motacilla flava simillima* HARTERT. This race was described in 1905 on breeding birds from Kamchatka, which were thought to resemble closely specimens obtained in the Sula Islands (Moluccas). The regular wintering of these birds in the East Indies seemed very likely. However, large parts of northeastern and eastern Asia are inhabited by other races of Yellow Wagtail, also showing a regular southward migration. It became a problem where all these races might have their winter-quarters. Yellow Wagtails are very common winter-birds in southeastern Asia, where they exhibit a striking individual variation caused by sex, age, effect of wear, and conditions of moult. Hence it was for years a not at all attractive task to ornithologists to try and unravel this complicated type of variation. Consequently the name *simillima* came in use as an obviously collective subspecific designation.

When I started the study on the subspecific status of the Yellow Wagtails wintering in Indonesia, I was fully aware of these severe difficulties. But in addition to the above mentioned causes of the variability of these birds preliminarily suggested to belong to one race, I expected to find other subspecies wintering in this region. Hence also subspecific variation had to be taken into account. From the large material available for examination, males and females were separately arranged in long series according to their date of collecting, starting with their arrival in the autumn and closing with their departure in spring. In each of the two series adults and young could be easily recognized, so that four independent series had to be studied. Owing to the relatively great number of specimens it was not a difficult task to follow the sequence of the winter-moult from the plain autumn-plumage into the bright spring-plumage. At the same time it became evident that the series contained individuals belonging to two subspecies, being almost equally represented in numbers. These races turned out to be *simillima* and *taivana*. Only very few specimens did not agree with either of these races. They appeared to be odd specimens of

other E. Asiatic races: *tschutschensis* (= *alascensis*), *zaisanensis*, and *macronyx*. In the course of this study it appeared possible to identify all adult specimens provided that they were correctly sexed and sufficiently dated. On the other hand I did not succeed in tracing racial differences throughout the series of young birds. As a result a rather large proportion of young specimens (about 65%) had to remain unidentified, although the majority must be juveniles of the race *simillima*.

The material studied comprises 28 specimens from the Amsterdam Museum, 59 from the Leiden Museum, 31 from the Museum Zoologicum Bogoriense (Buitenzorg Museum), 14 from the Raffles Museum, Singapore, 19 from the Sarawak Museum. I also studied very valuable material

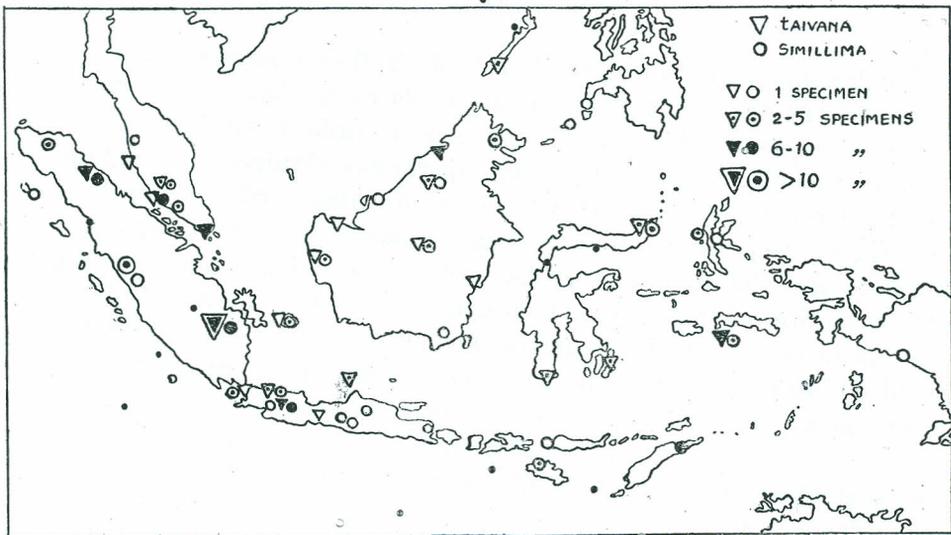


Fig. 1. — Winter range of the Kamchatkan and Green-headed Yellow Wagtails (*M. flava simillima* and *M. flava taivana*) in the Indo-Australian Archipelago, according to specimens examined.

at the British Museum, London, and at the Royal Museum of Natural History, Stockholm, where the rich material of breeding specimens of E. Asiatic Yellow Wagtails made me still better acquainted with the characteristic of the respective races. In addition I could study 2 specimens from the collection COOMANS DE RUITER, 13 from the collection HENS, 6 from the collection VAN HEURN, 1 from the collection TEN KATE, and 17 from the collection SILLEM - VAN MARLE.

My sincere thanks are due to all museum-officials who assisted me by putting the material under their charge to my disposal; in addition to all those who helped me in one way or another. Hence I am indebted to Messrs A. C. V. VAN BEMMEL (Bogor), L. COOMANS DE RUITER (Hilversum), Dr H. FRIEDMANN (Washington), C. A. GIBSON-HILL (Singapore), Capt. C. H. B. GRANT (London), Count Dr N. GYLDENSTOLPE (Stock-

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A recent systematic review of the Yellow Wagtails by Prof. HANS JOHANSEN [De gule vipstjerters (*Motacilla flava* L.) systematik og udbredelse. Dansk Orn. For. Tidsskr. 40, p.121-142. 1946] has proved of much assistance in preparing of this work.

DESCRIPTION

1. *Motacilla flava taivana* SWINHOE, Green-headed Yellow Wagtail.

Males distinguished in autumn- (winter-) plumage by strong greenish yellow tinge of underparts, which is very conspicuous in the series when compared with the pale light yellow underparts of *simillima* in comparable plumage. Head uniform with back, or only slightly greyer, becoming greyish brown in abraded plumage and then contrasting with new green feathers on back and mantle where moult starts earlier than on head. Upperparts darker brown and less grey than in *simillima*. Eye-stripe wide, often tinged buffy; during moult mixed with yellow feathers. Ear-coverts dark; after moult with greenish feather-edges. In spring-plumage upperparts and head are uniform green and eye-stripe yellow. Underparts less bright yellow than in *simillima*, besides, showing olive-green breast-flanks of variable extent.

Females in autumn- (winter-) plumage are pale greyish brown above with yellowish buff underparts and broad white or buffish eye-stripe. Ear-coverts paler than in males. Breeding plumage like males, but much paler and browner. At once distinguishable from females of other East Asiatic races by conspicuous paleness, yellow eye-stripe and head being uniform with back.

Juveniles are characterized by buffy tinge of sides and center of breast. Flanks light earthy brown. Eye-stripe sometimes tinged buffish. Females above generally paler and browner than males.

Breeding range: eastern Siberia, generally north of Amur River; Yakutia; north to about 65° North; Sachalin Island.

Breeding specimens (18), as well as 1 adult and 3 juvenile females in autumn dress from Sachalin Island were examined in the Stockholm Museum.

Indo-Australian Archipelago: 77 adult and juvenile specimens examined originated from the following localities: Malaya: Klang, Kuala Lumpur, Singapore, Pulau Lallang (Sembilan Islands); Sumatra: Medan, Tuntungan (Deli), Palembang; Borneo: Kuching, Sadong River, Baram River, Balawit, Bairio (Kelabit Plateau, Sarawak), Brooketon, Awat Awat (Brunei), Long Petah (Upper Mahakkam River), neighbourhood of Pontianak, neighbourhood of Samarinda; Billiton; Krakatau I.; Karimondjawa Is.; Java: Djakarta (Batavia), Tandjong Priok, Tjibarusa, Bandung, Purwokerto; Palawan: Porto Princesa; Celebes: Amurang, Mapanget, Makassar, Buton I.; Moluccas: Ambon I.

2. *Motacilla flava simillima* HARTERT, Kamchatkan Yellow Wagtail.

Males in autumn- (winter-) plumage are much lighter and paler yellow underneath than *taivana* in corresponding plumage. Breast-feathers with brownish bases, usually forming ill-defined spots arranged in an interrupted breast-band. Head always greyer than mantle and back, which are greyish brown. Rump dark greenish. Eye-stripe broad and pure white. Ear-coverts blackish or brownish, sometimes lighter than in *taivana*. In spring-plumage the head is grey with a white eye-stripe and sooty black ear-coverts. Upperparts dark green, the underparts deep canary yellow. White area on chin very small or absent. Sometimes with a few dark breast-spots. Differs from *tshutschensis* (= *alascensis*) by purer green, less brown, upperparts, brighter yellow underparts, and less pronounced pectoral band of brown spots.

Females in autumn- (winter-) plumage are slightly duller than males; upper-parts browner and less pure grey. Underparts slightly paler and with less of the yellowish tinge. In spring plumage upperparts are browner than in males and head is brownish grey. Underparts hardly duller than in males.

Juveniles of this race could not be identified with certainty, but breast seems to be purer white than in *taivana* and flanks less tinged with brown.

Breeding range: Kamchatka and perhaps part of Yakutia.

Breeding specimens from Petropawlofsk and Cape Pinatkof, Kamchatka, were examined in the London and Stockholm Museums.

Indo-Australian Archipelago: 100 adult specimens examined originated from the following localities: Malaya: Temerloh (Perak), Klang, Kuala Lumpur, Malacca; Sumatra: Takengon (Atjeh), Medan, Tuntungan (Deli), Fort de Kock, Tilatang (Padang Highlands), Palembang; Simalur I.; Borneo: Oya, Baram River, Bairio (Kelabit Plateau, Sarawak), Lamag (N. Borneo), Tepai (Upper Mahakkam River), neighbourhood of Pontianak, Rantau (S. E. Borneo); Billiton; Krakatau I.; Java: Djakarta (Batavia), Tandjong Priok,

Bandung, Mt Gedeh, Magelang, Rawa Andong (Klaten), Randublatung (Rembang), Badjalmati (E. Java); western Flores; western Sumba; eastern Timor; Philippines: Zamboanga I., Jolo (Sulu Is.); Celebes: Tomohon; Moluccas: Ternate, central Halmahera, Ambon; South New Guinea: Mimika River.

3. *Motacilla flava tschutschensis* GMELIN = *alascensis* (RIDGWAY); (see STRESEMANN, Ibis 91, 1949, p. 251), Alaskan Yellow Wagtail.

One adult male and one juvenile male collected in one shot by G. F. MEES on October 17, 1948 from a flock at Gobang near Bogor, West Java (Museum Bogor), did not fit into the series of adult and juvenile males of *taivana* and *simillima*, but were much darker above. They are tentatively referred to the Kamohatkan race because a juvenile bird from St. Michaels, Alaska (Amsterdam Museum), which is in its first plumage before the summer-moult, is also strikingly dark olive brown above and has blackish brown ear-coverts.

Adult male: upperparts very dark greyish brown with slight olive tinge. Ear-coverts blackish. Eye-stripe broad and white. Underparts duller yellow than in *simillima* and with a conspicuous breast-band of dark brown spots.

Juvenile male: upperparts dark brownish grey. Ear-coverts blackish. Eye-stripe broad and white. Underparts white with dark breast-spots. Flanks dark olive-grey.

Breeding range: Chukchen Peninsula and Alaska.

Breeding specimens were examined in the museums at Amsterdam, London, and Stockholm.

4. *Motacilla flava zaissanensis* POLJAKOV, Zaissan Yellow Wagtail.

One adult male from April 28, 1924, Tjibarusa, W. Java (Amsterdam Museum), has the upper parts lighter green than *simillima*. Head light grey, eye-stripe white, but very narrow. Underparts pale sulphur yellow with an interrupted breast-band of dark spots. The specimen shows some tendencies towards the Mongolian form *angarensis* by having rather dark blackish ear-coverts, dark breast-spots, and a rather long hind-claw. In fact its plumage appears to be intermediate between that of *angarensis* and the light central Asiatic form *beema*.

I am much indebted to Capt. C. H. B. GRANT (London) and Prof. HANS JOHANSEN (Copenhagen) for kind and most useful help with the identification of this specimen.

Breeding range: Zaissan Lake Region in N.W. Outer Mongolia.

Breeding specimens (3♂) were examined in the collection JOHANSEN (Copenhagen Museum), originating from Semipalatinsk. These birds seemed to show very slight tendencies towards *beema*.

5. *Motacilla flava macronyx* (STRESEMANN), Manchurian Yellow Wagtail.

Only one adult male from Deli, N.E. Sumatra, collected by Dr L. P. DE BUSSY between 1910 and 1920 (Amsterdam Museum; see JUNGE, Zool. Meded. 29 1948, p. 326). Head almost black. Ear-coverts black. No white eye-stripe, but only a few white feathers behind the eye. Upperparts dark brownish green. The bird could be compared with two wintering adults from Bangkok, Siam (Raffles Museum) of the same race.

Breeding range: Manchuria and part of Transbaikalia.

Breeding specimens were examined in the British Museum, London.

PLUMAGE AND MOULT OF ADULT BIRDS

The Yellow Wagtails which arrive in the Indo-Australian Archipelago early in the autumn are in pale winter-dress. This plumage is gradually replaced by the bright spring-plumage through a winter-moult of all body-feathers, the longer innermost secondaries and the central tail-feathers. Both inner secondaries and rectrices become very strongly worn during the course of the season. Most Yellow Wagtails show strongly abraded feather-tips already at the end of their autumn journey and their arrival in S.E. Asia. Perhaps as a consequence of the slightly longer migration route of the race *simillima* (coming from Kamchatka), and the consequent stronger abrasion of flight- and tail-feathers, birds of this race start moulting generally earlier than those of *taivana* (coming from Siberia along the sea of Ochotsk). In *taivana* moult of small body-feathers was found to start as early as on September 27 (in *simillima*: Sept. 23), but as a rule it was not found as early as Oct. 15 (in *simillima*: end of Sept.); an unmoulted autumn plumage was found in specimens from as late as Oct. 31 (in *simillima*: Oct. 14); tail-feathers and inner secondaries remained unrenewed in some specimens up to March 24 (in *simillima*: Feb. 21) but the first sign of moult of the tail-quills was observed in birds from March 14 (in *simillima*: Jan. 19), and of the secondaries on Jan. 16 (in *simillima*: Dec. 8). Hence the conclusion cannot be escaped that the winter moult of adult *taivana* starts generally one month later than that of *simillima*. It follows from the above statements that in some specimens moult from autumn plumage into future breeding plumage starts within one month after close of summer moult and much less than one month after the arrival in S.E. Asia. In two *simillima* males collected at Medan, N.E. Sumatra, on Sept. 3 (Amsterdam Museum) even one or two old yellow feathers from the previous breeding plumage had remained in the autumn plumage! It is also clear that the autumn-plumage is obtained after a very rapid moult of about one month or less, but moult into the breeding plumage lasts 4-5 months or even more.

PLUMAGE AND MOULT OF JUVENILE BIRDS

Birds in their first autumn plumage can be identified by white underparts; the lower tail-coverts being almost pure white without any yellow tinge. Upperparts are generally conspicuously uniform greyish brown or brown.

Moult from this dress into the first breeding plumage starts rather early: freshly renewed green feathers on the back or yellow feathers on the underparts were found in specimens dating from as early as Oct. 14, being barely one month after arrival of the birds in their winter quarters. The renewal of the central tail-feathers, however, seemed to take place not before January-February, but growth of innermost secondaries was established already in December. From January onwards juvenile birds are in a remarkably mixed plumage of strongly faded old and fresh new feathers. By that time most characteristics of the future adult breeding plumage have become visible, so that identification in most cases is not very difficult. On the other hand birds in the plain brown-and-white juvenile dress are very hard to identify. Only 14 of the most typical specimens of *taivana* could be picked out of a series of 37 juveniles in this dress (September - December inclusive). For the greater part the remaining birds must be young of *simillima*, but I could not reach any degree of certainty in this instance. In the *taivana*-series moult of small body-feathers did not start before November 30 — with one exception on Sept. 23 — but up to that date also young in a still unmoulted autumn-plumage occurred. On the other hand the *simillima*-like juveniles started moult of body-plumage as early as Oct. 14 and specimens in an unmoulted autumn-plumage were found as late as Oct. 30. In *taivana* unrenewed central tail-feathers and innermost secondaries were found in specimens from January and the middle of February, but in the *simillima*-like birds moult of these large feathers had started as early as the middle of December. Consequently it seems clear that the winter moult in young *taivana* starts at least one month later than that in young *simillima* (and related races).

DATES OF ARRIVAL AND DEPARTURE

The first Yellow Wagtails appear to arrive at their winter quarters in the first half of September, becoming much more numerous during the second half of that month. *M. f. taivana* and *simillima* seem to arrive at approximately the same time.

The latest spring records of *taivana* are on April 10 at Purwokerto, Central Java, on April 18 and June 15 at Klang, Selangor, Malay States, and on May 8 at Brooketon, Brunei, N. Borneo. In general *simillima* seems to stay longer; it is still numerous in the second half of April and has been collected in May in Billiton Island and at the Upper Mahakkam

River, Borneo, on June 15 at Klang, Selangor, Malay States, and on July 4 in Billiton Island. As a consequence Indonesian and Malayan specimens of *taivana* in full breeding plumage are rare (2 males, 5 females examined); these of *simillima* on the other hand are rather common (15 males and 14 females examined).

MEASUREMENTS

In E. Asiatic Yellow Wagtails racial differences in measurements hardly exist. Several authors have suggested that *tshutschensis* (= *alascensis*) might be slightly smaller than the other races. In general this seems true, but measurements are largely overlapping. The following measurements are taken by myself (in mm).

- taivana* (S. E. Asia), wing of 33 ♂: 78 - 86 (82.0).
- taivana* (Sachalin), wing of 17 ♂: 80 - 86.5 (83.2).
- simillima* (S. E. Asia), wing of 38 ♂: 78.5 - 84 (81.2).
- tshutschensis* (Java), wing of 2 ♂: 78 - 79 (78.5).
- zaissanensis* (Semipalatinsk), wing of 3 ♂: 80 - 80.5 (80.3).
- zaissanensis* (Java), wing of 1 ♂: 81.
- macronyx* (Sumatra), wing of 1 ♂: 84.
- taivana* (S. E. Asia), wing of 29 ♀: 75 - 84.5 (79.6).
- taivana* (Sachalin), wing of 5 ♀: 77 - 82 (79.6).
- simillima* (S. E. Asia), wing of 30 ♀: 73 - 86 (78.8).
- taivana* (S. E. Asia), hind-claw of 33 ♂: 9.5 - 13 (11.3).
- taivana* (Sachalin), hind-claw of 17 ♂: 9 - 13 (10.9).
- simillima* (S. E. Asia), hind-claw of 38 ♂: 9.5 - 13 (11.3).
- tshutschensis* (Java), hind-claw of 2 ♂: 10 - 10 (10.0).
- zaissanensis* (Semipalatinsk), hind-claw of 2 ♂: 8.5 - 9 (8.7).
- zaissanensis* (Java), hind-claw of 1 ♂: 11.
- macronyx* (Sumatra), hind-claw of 1 ♂: 11.5.
- taivana* (S. E. Asia), hind-claw of 29 ♀: 10 - 14 (11.3).
- taivana* (Sachalin), hind-claw of 5 ♀: 10 - 12.5 (10.9).
- simillima* (S. E. Asia), hind-claw of 29 ♀: 9.5 - 13 (11.3).

SUMMARY

Among the Yellow Wagtails regularly wintering in the Indo-Australian Archipelago two races dominate in numbers, viz., the Kamchatkan Yellow Wagtail (*simillima*) represented by approximately 61% of the total of specimens examined, and the Green-headed Yellow Wagtail (*taivana*) represented by approximately 37% (fig. 1). In addition stray specimens of other East Asiatic races have been found wintering in this region, viz., *tshutschensis* (= *alascensis*) (1%), *zaissanensis* (0.5%), *macronyx* (0.5%).

Yellow Wagtails of any race arrive in Malaya and Indonesia during the first days of September. They are then in plain autumn-plumage, showing distinct differences between birds in adult and first-year plumage, but only in adult birds very slight differences exist between males and females. In spite of the fact that the newly arrived birds have just got their autumn-dress after a summer moult in their northern breeding homes they show unmistakable signs of feather wear, especially at the tips of tail-feathers and longer innermost secondaries. This remarkable early abration must be the result of the long migration journey from the N.E. Asiatic breeding grounds to the southern winter-home. During this journey of at the average about 7000 km these birds fly hopping and dancing through the air and the conspicuous abration of the long tail and elongated innermost wing-feathers must be the direct result of aerodynamic effects. Consequently most of the birds start renewal of this plumage barely one month after arrival in their winter-home. In contrast to the summer-moult, which — in accordance with the short northern summer — must be finished within 4 - 6 weeks, winter-moult lasts several months, for not before the end of March and the beginning of April Yellow Wagtails have ultimately reached the full breeding plumage. Primaries, primary-coverts, most of the secondaries and all but the central tail-feathers are as a rule excluded from winter-moult, but some exceptions occur in which part of the primary-coverts, outer secondaries, and outer tail-feathers are also renewed. It has probably a functional meaning that the birds belonging to the northernmost of the two commonly wintering races (*simillima*) start moulting generally one month earlier than the southern race (*taivana*), the difference in length of migration route being roughly 500-1000 km. Hence *taivana* arrives in a relatively less abraded plumage than *simillima*. First-year birds start moulting in their winter haunts generally one month later than adults. The result is that especially in January and February young birds in mixed old and new plumage show extremely strongly abraded and conspicuously faded old feathers, giving these birds a remarkably pied appearance.

In accordance with a general rule among migrating birds the southernmost breeding race (*taivana*) starts spring-migration earlier than the northernmost one (*simillima*), the latest spring dates of *taivana* being approximately May-June, those of *simillima* being about June-July. The result is that specimens of *taivana* in breeding dress recorded from Malaya and Indonesia are rarer than those of the race *simillima*. In spite of the very late summer dates of several Kamchatkan Yellow Wagtails (*simillima*, July 4) nothing is known about oversummering in Indonesia.

An exceptional specimen (male ad.) of the Zaissan Yellow Wagtail (*zaissanensis*) has been collected on April 28 in West Java. This bird had to undertake its spring migration very soon, for, if it had not met with its fate of being collected, it had to be one month later in its

breeding place in central Asia (Zaissan Lake Region, Outer Mongolia), which would have been a voyage of approximately 7000 km.

One ad. male of the Manchurian Yellow Wagtail (*macronyx*) was collected in Deli, N.E. Sumatra; additional wintering birds of this race have been examined from Bangkok, Siam (Nov. 18 and 22, Raffles Museum, Singapore). JUNGE (l. c.) mentions a series of wintering birds from Ceylon. Hence it seems that Indonesia is situated beyond the limits of the winter range of this subspecies.

The only two Indonesian specimens of the Alaskan Yellow Wagtail (*tschutschensis*) were collected in one shot near Bogor, W. Java, and thus belonged to the same flock. The main winter range of these birds certainly lays outside the western half of Indonesia. Other authors have sought the winter range of the Alaskan Wagtail in the Philippines, northern Moluccas, and New Guinea and adjacent islands, but a renewed investigation seems necessary. The appearance of these birds in Java must be considered as exceptional.