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Voor de voorbereiding van bijzondere publicaties op het gebied van determinatie en/of taxonomie kan het Dutch Birding-fonds aan auteurs een financiële bijdrage leveren (zie Dutch Birding 24: 125, 2001, en www.dutchbirding.nl onder 'Tijdschrift').

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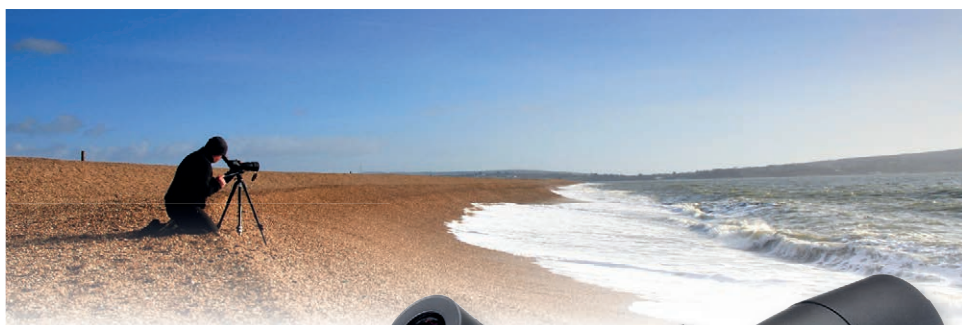
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Identification and taxonomy of northern and eastern yellow wagtails – new pieces to the puzzle

Alexander Hellquist

The taxonomy of yellow wagtails *Motacilla flava* sensu lato is notorious, as evident in the extensive literature on the validity and relationships of the numerous (sub)species (see Alström & Mild 2003 for a review). Following the recent split into two species – Western Yellow Wagtail *M flava* sensu stricto and Eastern Yellow Wagtail *M tschutschensis* – by several authorities (eg, del Hoyo & Collar 2016, Gill et al 2021), interest in the complex has increased among birders. In the last decade, birds showing features associated with Eastern Yellow have been regularly recorded in Europe, although firm identification is challenging because of uncertainty regarding variation and overlap between populations.

The purpose of this paper is to present data on variation in morphometrics, plumage and vocalisations in northern and eastern yellow wagtails, and to discuss possible taxonomical implications from the results. For practical reasons, the nomenclature follows del Hoyo & Collar (2016) ('HBW'), ie, not the taxonomy normally applied in Dutch Birding (www.dutchavifauna.nl/wpvogelnamen). In the text and captions, 'yellow wagtail *Motacilla flava* sensu lato' is used as a general term to indicate all (sub)species belonging to this complex. In terms of taxa recognised by HBW, the main focus of the paper are the Arctic subspecies *M f thunbergi* (hereafter *thunbergi*), *M t plexa* (hereafter *plexa*) and *M t tschutschensis* (hereafter *tschutschensis*), and the more southerly *M t angarensis* (hereafter *angarensis*), *M t simillima* (hereafter *simillima*), and *M t macronyx* (hereafter *macronyx*). While acknowledging that some authorities, eg 'IOC' (Gill et al 2021), include *angarensis* and *simillima* in *tschutschensis* (following Alström & Mild 2003), the more detailed division in HBW is chosen as a point of departure in order to make references to geographic areas simpler. See table 1 for distributions of these taxa as given in HBW (Badyaev et al 2020, Tyler & Christie 2020), along with the distribution of other taxa mentioned more briefly in the text. The paper also discusses the form *zaissanensis* that breeds in the Altai mountains. While not considered a valid taxon by HBW

or IOC, it is recognised by some other authors (eg, Red'kin et al 2016). A few additional yellow wagtail subspecies recognised by HBW are mentioned in the text when relevant.

Methods

Examined material

This paper is based on a review of existing literature, online field photographs and sound recordings, field studies and examination of museum specimens in the British Museum of Natural History (BMNH, Tring, England), Swedish Museum of Natural History (NRM, Stockholm, Sweden), Zoological Museum of the Zoological Institute of the Russian Academy of Sciences (ZIN, Saint Petersburg, Russia), Zoological Museum of Moscow University (ZMMU, Moscow, Russia), Finnish Museum of Natural History (ZMUH, Helsinki, Finland) and Natural History Museum of Denmark (ZMUC, Copenhagen, Denmark). In addition, photographs and, in a few cases, measurements of specimens have been obtained from the Institute of Systematics and Ecology of Animals of the Siberian Branch of the Russian Academy of Science (ISEA SB RAS, Novosibirsk, Russia), Krasnoyarsk Regional Museum of Local Lore (KKKM, Krasnoyarsk, Russia), Museum of Comparative Zoology (MCZ, Cambridge, USA), State Darwin Museum (SDM, Moscow), Staatliches Naturhistorisches Museum (SNMBG, Braunschweig, Germany), University of Washington Burke Museum (UWBM, Seattle, USA), Alexander Koenig Research Museum (ZFMK, Bonn, Germany) and Zoological Museum in Syktyvkar (Komi, Russia).

In order to assign studied birds to geographic origin with reasonable certainty, the study is limited to adults on breeding grounds in late May to August, and to birds in first-winter plumage in August to early September, with the exception of a short reflection on calls in migrating and wintering birds.

The numbers of examined specimens and live birds for each region are summarised in appendix 1.

TABLE 1 Overview of yellow wagtail *Motacilla flava* sensu lato taxa mentioned in this paper

Species according to HBW	Subspecies recognised by HBW and mentioned in text	Breeding range as given in HBW (to be compared with figure 30)
<i>Motacilla flava</i> (Western Yellow Wagtail)	<i>flava</i> Linnaeus, 1758	N & C Europe (S from S Scandinavia) E to Urals
	<i>thunbergi</i> Billberg, 1828	Scandinavia E to NW Siberia
	<i>beema</i> (Sykes, 1832)	From upper Volga river E to SW Siberia, S to N Kazakhstan and Altai Mountains
	<i>leucocephala</i> (Przevalski, 1887)	NW Mongolia, extreme NW China (N Xinjiang) and adjacent parts of former USSR
	<i>feldegg</i> Michahelles, 1830	SE Europe, S to Turkey, E Mediterranean, Arabian Peninsula, W Caspian, Iran and N Afghanistan
	<i>flavissima</i> (Blyth, 1834)	Britain and adjacent coastal Europe
	<i>iberiae</i> Hartert, 1921	Iberia, SW France and NW Africa
	<i>lutea</i> (Gmelin, 1774)	SW Russia to NW and NC Kazakhstan
<i>Motacilla tschutschensis</i> (Eastern Yellow Wagtail)	<i>tschutschensis</i> Gmelin, 1789	NE Siberia and extreme NW North America
	<i>plexa</i> (Thayer & Bangs, 1914)	N Siberia (Khatanga river E to Kolyma river)
	<i>simillima</i> Hartert, 1905	Kamchatka, N Kurils and Commander Island, and possibly Pribilofs and Aleutian Islands
	<i>angarensis</i> (Sushkin, 1925)	S Siberia and W Transbaikalia S to N Mongolia
	<i>macronyx</i> (Stresemann, 1920)	SE Transbaikalia E to Amurland and Ussuriland, S to NE Mongolia and NC and NE China
	<i>taivana</i> (Swinhoe, 1863)	SE Siberia, Amurland, Sakhalin and N Japan (N Hokkaido)
Additional form dealt with in this text (not recognised by HBW; considered by various authors either as subspecies of <i>M tschutschensis</i> , as synonymous with <i>angarensis</i> or <i>tschutschensis</i> , or as intergrade between these and <i>beema</i>)		
	<i>zaissanensis</i> (Poliakov, 1911)	According to present study at least Altai Mountains in north-easternmost Kazakhstan and northern Xinjiang; possibly also Russian and Mongolian Altai

Studied features

This paper focuses on the following morphometric and plumage features, all of which have been recognised in earlier literature as useful for identification of the taxa involved (see Alström & Mild 2003 for a review): **1** length of hind claw; **2** distance between wing tip and tip of sixth primary (p6; counted from innermost primary outwards); **3** colouration of underparts in first-winter birds; **4** colouration of underparts in adult females; **5** colouration on crown in adult females; **6** prominence of dark necklace on breast in adult males; **7** extent of white on throat in adult males; and **8** extent of a white supercilium in adult males. In addition, the paper deals with song and contact calls of the taxa involved.

Analysis of variation

The morphometrics of interest were obtained from

museum specimens. Measurements were taken to the nearest 0.1 mm with calipers, and averages and ranges for geographical regions and taxa were calculated.

For each plumage feature, variation was categorised into four (for the extent of supercilium in males) or three (for all other features) classes (see figure 3, 5, 6, 8, 9 and 11). Then, specimens and birds in field photographs were scored according to these classes, and averages and score frequencies for regions were calculated and compared. The categorisation attempts to capture underlying continuous variation by defining classes that represent the distal ends of variation in each plumage feature as well as intermediate appearances. When scoring individual birds, this inevitably means that a few border cases have to be handled. Also, assessment of colour hues in field photographs can be challenging. Admittedly, the chosen method is

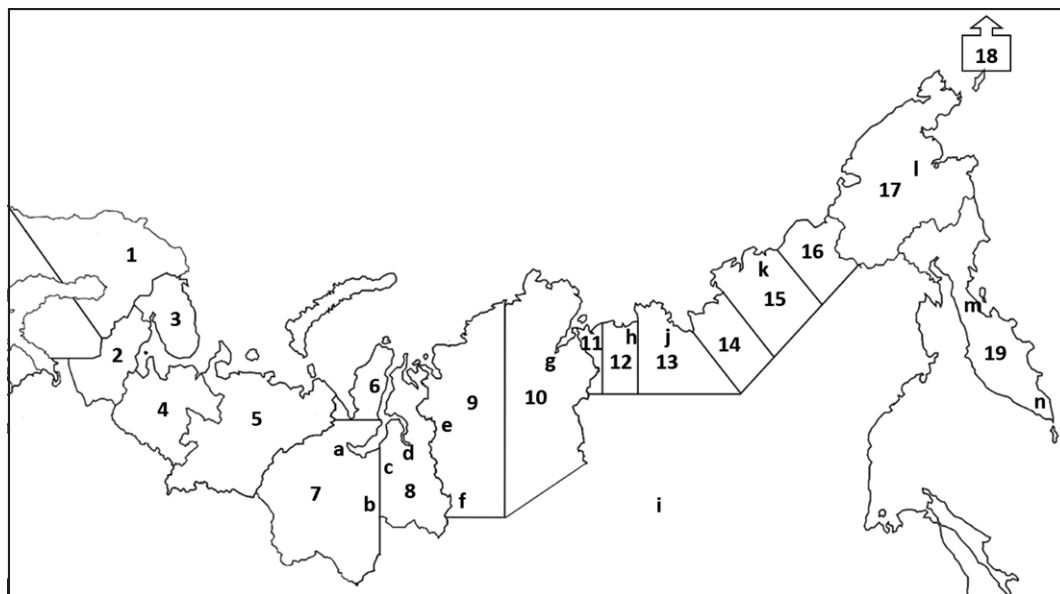


FIGURE 1 Arctic regions referred to in text and figures. Some regions correspond to administrative geographical entities while others have been defined subjectively for purpose of illustrating variation in studied features. **1** Northern Scandinavia; **2** Karelia; **3** Murmansk; **4** Arkhangelsk; **5** Komi & NAO (Nenets Autonomous Okrug); **6** Yamal; **7** Ob river basin; **8** Lower Yenisey and Taz; **9** Western Taimyr; **10** Eastern Taimyr; **11** Lower Anabar; **12** Lower Olenyok; **13** Lower Lena; **14** Lower Yana; **15** Lower Indigirka; **16** Lower Kolyma; **17** Chukotka; **18** Alaska (not shown in map); **19** Kamchatka. Lower case letters denote some specific locations mentioned in text. **a** Labytnangi and Salekhard; **b** Nyabrsk; **c** Novy Urengoy; **d** Tazovsky; **e** Norilsk; **f** Baklanikha river; **g** Khatanga; **h** Taimylyr; **i** Suntarsky district; **j** Tiksi; **k** Chokurdakh; **l** Anadyr; **m** Ossora; **n** Petropavlovsk-Kamchatsky.

thus less precise compared to quantitative tools for plumage analysis that are available when working solely with museum specimens. However, given that the categorisation was applied consistently across the studied sample, it was deemed sufficient for the purpose of identifying large scale patterns of average differences between geographical regions. When estimating significance of average differences between geographical regions and the correlation between plumage features within regions, the Chi-squared (χ^2) and Goodman & Kruskal's gamma statistics were applied, respectively, acknowledging that the classes are better regarded as categorical rather than continuous variables.

In order to detect changes in hind claw length and plumage features over time in Arctic population, averages for old specimens were compared with recently collected specimens and field photographs.

After the moult into adult plumage during the first winter, ageing yellow wagtails is challenging, not least in field photographs and abraded specimens, and after the first complete moult in the first

summer the plumage of second calendar-year birds is identical to older birds. Consequently, only a rather small proportion of sampled individuals showing typical characteristics of either second calendar-year birds or older were aged with reasonable certainty, based on assessment of wear to wing coverts and wear and shape of primaries and tail feathers. Possibilities to control for effects of age on the studied features were thus limited but in sample from Northern Scandinavia, differences between age groups are small and not statistically significant.

For vocalisations, qualitative assessments of differences between regions and taxa were made based on sound recordings by the author and others (Veprintsev & Veprintseva 2007, Zöckler 2007; www.hbw.com/ibc, www.macaulaylibrary.org, www.xeno-canto.org), and on sonagrams of these recordings. Differences in songs were quantified using the software packages Audacity 2.4.2 (Audacity Team) and Raven Lite 2.0 (Cornell Lab of Ornithology), by identifying maximum and minimum frequencies of song notes in sonagrams and estimating average number of notes per second.

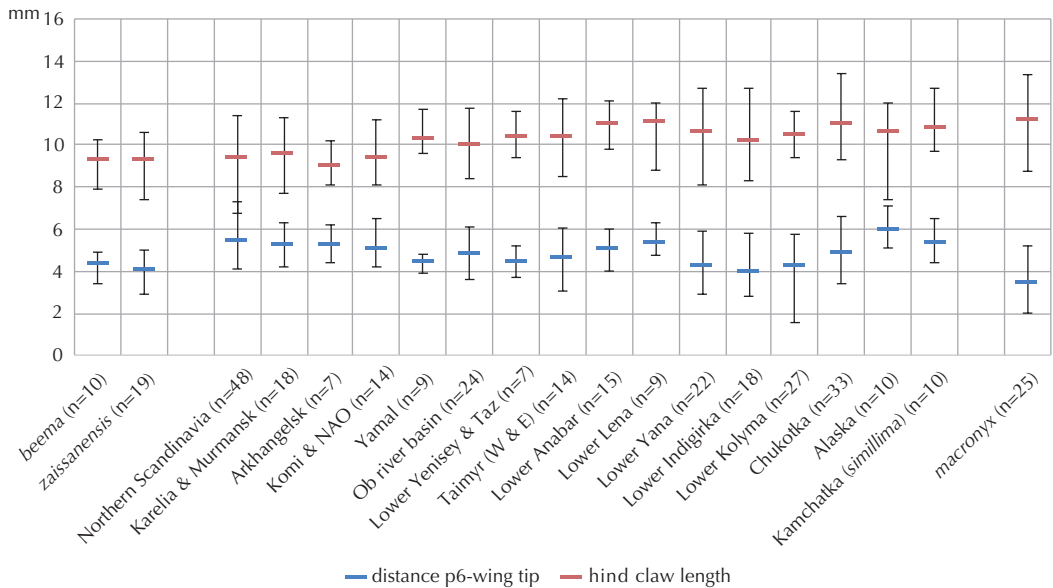


FIGURE 2 Variation in hind claw length and distance between wing tip and p6 in yellow wagtail *Motacilla flava* sensu lato. Bars show sample averages for each region and whiskers show maximum and minimum values. As no significant differences between females and males were found, sexes are pooled. Juvenile and first-winter birds are not included.

Presentation of results

For Arctic yellow wagtail populations, variation in the studied features is presented according to regions defined in figure 1. In cases where a feature was examined in only a small number of specimens/live birds from one region, samples were pooled across regions, as denoted in the figures in the Results section. For morphometrics and plumage, variation in features is presented for Arctic regions, including *simillima* on Kamchatka, Russia, as well as for *beema*, *zaissanensis* and *macronyx*. The three southern taxa are of interest because of plumage similarity to Arctic populations without a supercilium (*macronyx*) and with a supercilium (*beema* and *zaissanensis*). In addition, a comparison between *beema* and *zaissanensis* is of interest as they are similar and breed in close proximity. The initial ambition was to present separate data for *angarensis* as well. However, most examined specimens labelled as *angarensis* could be assigned to Arctic regions or to suspected spring migrants. The *angarensis* type specimen and one paratype collected in the Baikal area, Russia, in June as well as one specimen collected in the Suntarsky district, Russia, in July constitute the only exceptions. They are dealt with under Discussion.

Results

Morphometrics

Variation in hind claw length is slight across the studied range, with longer average measurements from Yamal and the Ob river basin and eastwards in Siberia, Russia, than further west (figure 2). The measurements of *beema* and *zaissanensis* align with Arctic birds west from Yamal, whereas those of *macronyx* align with eastern birds (the same is true for *M t taivana* (hereafter *taivana*); see measurements in Alström & Mild 2003). Comparison of hind claw length between old and recent specimens revealed only small differences in most regions, and no geographical patterns indicating changes in the composition of birds with long versus short hind claws over time were found.

The distance between the wing tip and p6 indicates pointedness of the wing, which is typically associated with migration distance in passerines. Accordingly, measurements of the southern *macronyx*, *beema* and *zaissanensis* are shorter than in Arctic birds (figure 2). The variation across Arctic regions is slight but it does not appear to be random; instead, it might reflect a shorter migration distance in birds breeding between Yamal and Taimyr (probably, these populations migrate at least partly to the Indian subcontinent, see below

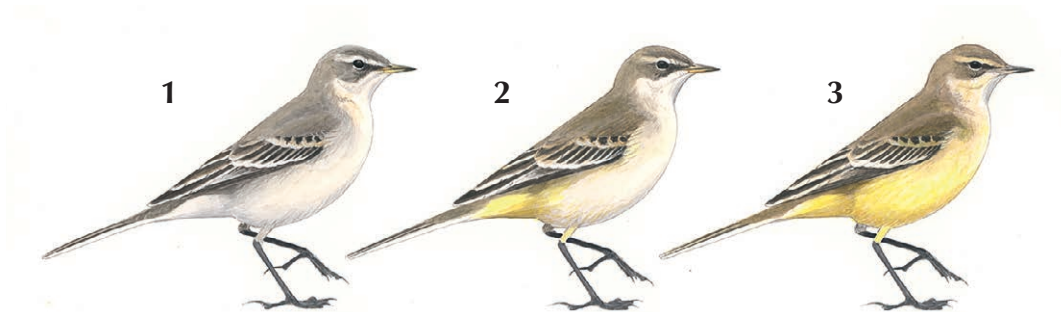


FIGURE 3 Categorisation of amount of yellow in underparts of first-winter birds in yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato (Hans Larsson). **1** No or very little yellow, if present hardly discernible and confined to vent. **2** Limited amount of yellow readily visible but confined to vent and lower belly and flank. **3** At least lower half of belly with strong yellow wash.

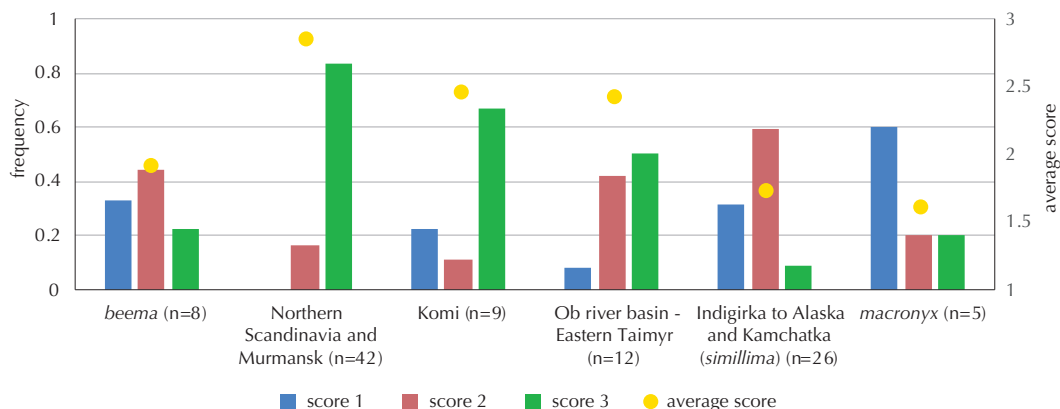


FIGURE 4 Frequency distributions of scores for colouration on underparts in first-winter yellow wagtail *Motacilla flava* sensu lato (bars; left vertical axis) and average scores (yellow dots; right vertical axis).

under Contact calls) and between Lower Yana and Lower Kolyma, respectively. The largest measurements were found in birds from Alaska, USA, presumably reflecting a long migration distance to south-eastern Asia (or even Australia, where some Eastern Yellow Wagtails winter).

Plumage

Figure 4, 7, 10, 12 and 13 show scores for studied plumage features across Arctic regions and in *beema*, *zaissanensis* and *macronyx*, based on the categorisation into classes illustrated in figure 3, 5, 6, 8, 9 and 11. Except for underpart colouration in first-winter birds and extent of supercilium in adult males, the range of variation within regions is not shown, as overlap is complete: all feature classes can be found in all regions, albeit with varying frequency.

Colouration of underparts in first-winter birds

The number of examined first-winter birds that can be attributed to geographical origin with reasonable certainty, ie, collected in August or early September at or close to breeding grounds after having completed post-juvenile moult of underparts, is low for most Arctic regions. Therefore, aggregate average scores and score frequencies for four larger areas are given in figure 4. On average, yellow hues to the underparts decrease eastwards but, in all Arctic regions, it is possible to encounter individuals showing rather extensive yellow. In the sample from Northern Scandinavia and Murmansk, Russia, there is no bird with score 1, ie, with no or only very faint yellow on vent. However, such birds are rare but regular during early autumn migration in southern Sweden and it is reasonable to believe that most of them are *flava* or *thunbergi*

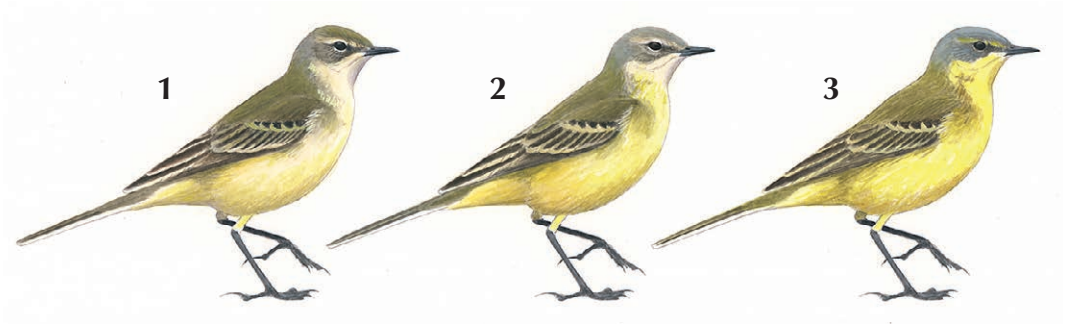


FIGURE 5 Categorisation of colouration of underparts in adult female yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato (Hans Larsson). **1** Prominent yellow confined mainly to belly and lower breast, with upper breast and throat whitish or buffish with only weak yellow cast. **2** Underparts mostly yellow except for throat that is mostly whitish or buffish. **3** Entire underparts including throat yellow.



FIGURE 6 Categorisation of colouration on crown in adult female yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato (Hans Larsson). **1** Crown with obvious green or brown cast, similar to mantle colour (nape is usually greyer). **2** Crown greyer than mantle, with weak or no green, brown or blue cast. **3** Crown bluish grey, clearly contrasting with mantle, similar to colour in many males.

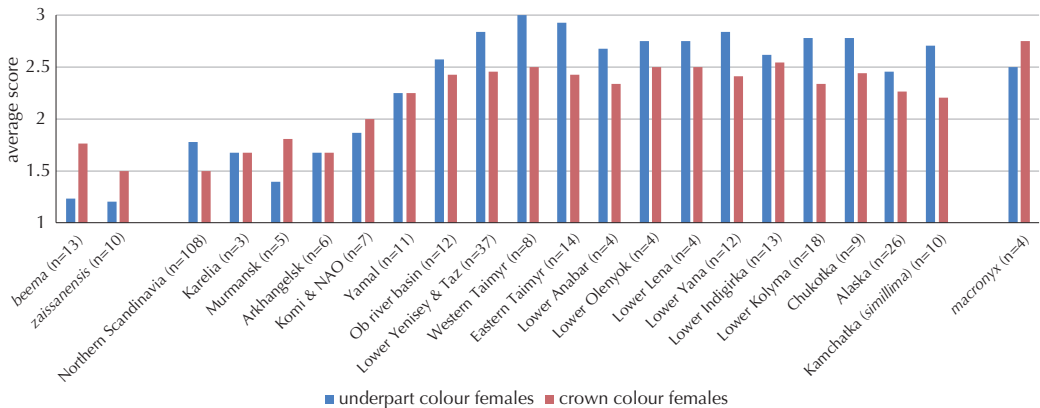


FIGURE 7 Average scores for colouration below and on crown in female yellow wagtail *Motacilla flava* sensu lato

rather than eastern vagrants. *Beema* and *macronyx* are similar in colouration to Arctic birds in eastern Siberia. Only one first-winter *zaissanensis* has been examined (score 2). It seems that yellow hues become fainter in late autumn and winter due to bleaching and abrasion. The amount of yellow be-

low appears to co-vary with mantle colouration in first-winter birds, as birds with no or little yellow below tend to have a greyer mantle without brownish cast. Differences in mantle colour are however subtle and difficult to categorise into classes, and this feature is not considered here.



FIGURE 8 Categorisation of prominence of necklace in adult male yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato (Hans Larsson). **1** No or only very few and weak spots on upper breast. **2** Spots on upper breast evident but small and isolated, not forming large patches or complete necklace. **3** Prominent spots forming large patches or complete necklace.



FIGURE 9 Categorisation of extent of white on throat in adult male yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato (Hans Larsson). **1** Throat yellow with at most a few white feathers below bill base. **2** Prominent white below bill and ear coverts but white covering less than half of throat. **3** White covering more than half of throat.

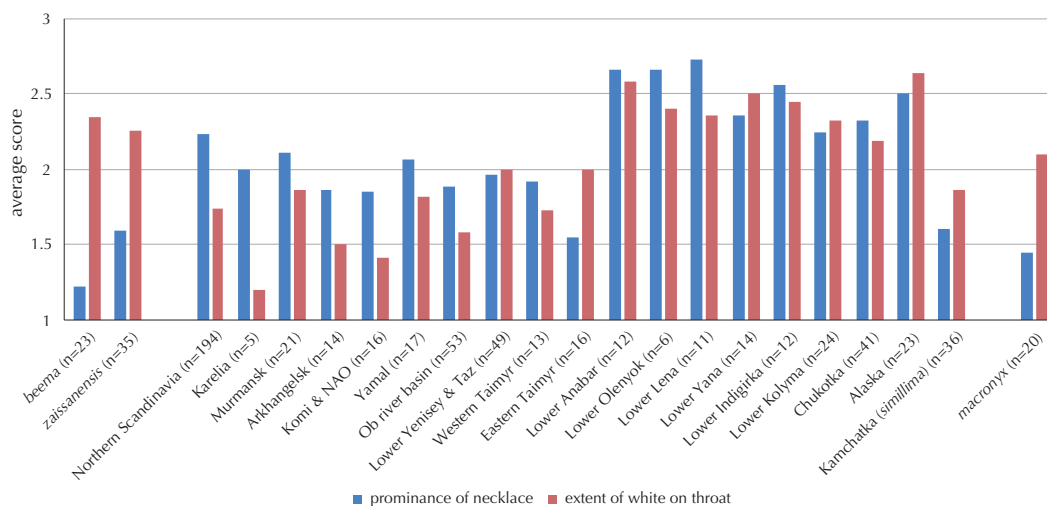


FIGURE 10 Average score for prominence of necklace and extent of white on throat in adult male yellow wagtail *Motacilla flava* sensu lato. Increase in extent of white on throat between Eastern Taimyr and Lower Anabar aligns with results in Sammalisto (1961), who reported more extensive white throats in Yakutia (ie, area between Lower Anabar and Kolyma) compared with Arctic breeders further west in Russia and Scandinavia.



FIGURE 11 Categorisation of extent of supercilium in adult male yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato (Hans Larsson). **1** No supercilium. **2** Very faint and restricted supercilium, often only few white feathers. **3** Thin and/or short supercilium, either only behind or in front of eye or both – in latter case short behind eye. **4** Prominent complete white supercilium both behind and in front of eye.

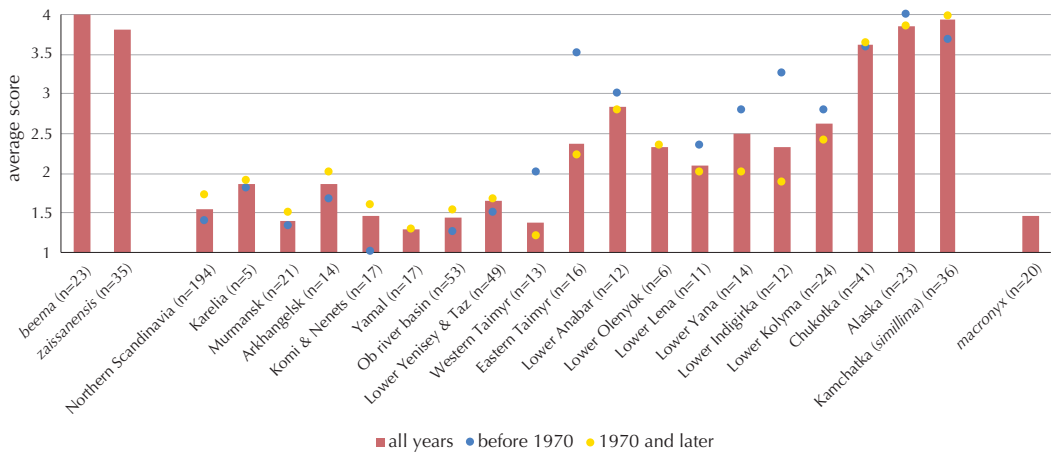


FIGURE 12 Extent of white supercilium in adult male yellow wagtail *Motacilla flava* sensu lato. Bars show average score for total samples from each region. Blue dots show average for specimens collected before 1970, while yellow dots show average for specimens/field photographs collected/taken in 1970 or later.

Colouration of underparts and on crown in adult females

In sampled Scandinavian females that were possible to age, no significant difference in the colouration of underparts was identified between second calendar-year birds (n=10) and older birds (n=13) (χ^2 test; $p=0.38$). In other regions, the number of birds that are aged with certainty was too low to assess possible differences, and age classes are pooled in figure 7. Average scores for colouration of underparts and crown in adult females increase gradually between Arkhangelsk and the Ob river basin. Here and eastwards, most females show a rather male-like plumage (eg. plate 465), although exceptions occur. *Macronyx* females are generally male-like, whereas *beema* and *zaissanensis* females are duller than males and often greyer above and whiter below than Arctic females (including Northern Scandinavian birds).

Prominence of necklace and extent of white on throat in adult males

In Scandinavian males that could be aged, no significant differences between second calendar-year birds (n=22) and older birds (n=27) were found in terms of prominence of necklace and extent of white on throat (χ^2 test; $p=0.23$ for prominence of necklace and $p=0.63$ for extent of white on throat). In most other regions, the number of birds aged with certainty was too low to assess possible differences, and age classes are pooled in figure 10.

In the Arctic regions, birds east of Taymyr show on average more prominent dark necklaces and more extensive white throats than birds in Taymyr and westwards, although average prominence of necklace in Scandinavia, Karelia and Murmansk is similar to that in some regions in eastern Siberia. For both features, differences are statistically significant when comparing the area between Scandinavia and Taymyr with the area between Lower

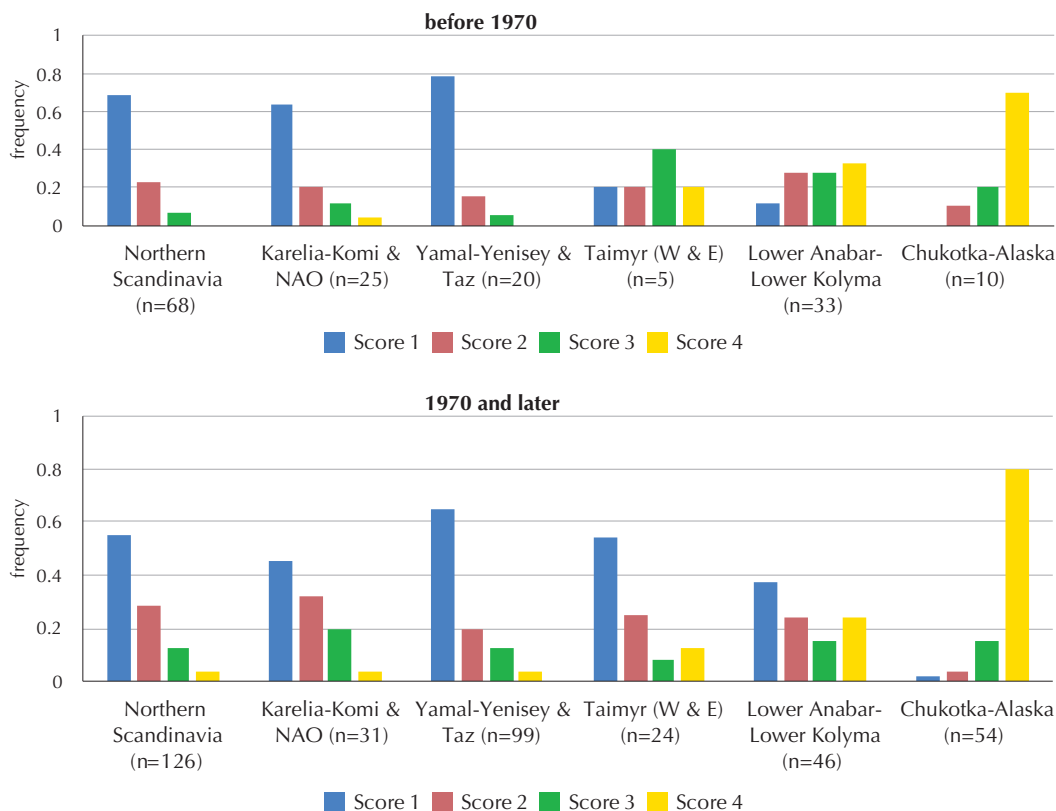


FIGURE 13 Frequency distributions of scores for extent of supercilium in adult male yellow wagtail *Motacilla flava* sensu lato. Upper figure shows old specimens (collected before 1970) and lower figure shows recent specimens/birds in field photographs (collected/taken in 1970 or later). Difference between the two periods suggests increasing share of birds with a short supercilium (score 2-3 in figure 11) over time between Northern Scandinavia and Lower Yenisey and Taz, and increasing share of dark-headed birds (score 1 in figure 11) from Taimyr to Lower Kolyma.

Anabar and Alaska (χ^2 test; $p < 0.001$ for both features). Differences are also significant when comparing only the sample from Eastern Taimyr with the sample from Lower Anabar (χ^2 test; $p < 0.001$ for both features). Compared with eastern Arctic populations between Lower Anabar and Alaska, both *simillima* and *macronyx* show a significantly cleaner yellow breast on average (χ^2 test; $p < 0.001$).

Extent of white supercilium in adult males

Roughly, average scores for extent of white supercilium in males take on three levels across the Arctic: low scores between Scandinavia and Western Taimyr, intermediate scores between Eastern Taimyr and Lower Kolyma, and high scores in Chukotka, Kamchatka and Alaska (figure 12). Across most of the Arctic, dark-headed birds as well as birds with a short or long supercilium can

be encountered, although there are no completely dark-headed birds in the samples from Alaska and Kamchatka (*simillima*).

Changes in extent of supercilium in adult males over time

For all examined plumage features except the extent of supercilium in males, comparisons between old specimens and recent specimens and photographs revealed only small differences over time, without clear geographical patterns. For supercilium in males, specimens collected before 1970 have lower average scores (less extensive supercilium) than more recent specimens and birds on photographs between Scandinavia and the Ob river basin, whereas the opposite is true in most regions between Lower Yenisey and Taz and Lower Kolyma, as illustrated with blue and yellow dots in figure 12.



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456 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, first-winter *thunbergi*, Tynderö, central Sweden, 22 August 2017 (*Håkan Sundin*). Locality situated north of range of *flava*. Individual with extensive yellow below; most common plumage in Scandinavian first-winter birds. Weak supercilium indicates *thunbergi*. **457** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, first-winter *thunbergi*, Öjgården, northern Sweden, 12 August 2017 (*Dirk van Gansberghe*). Example of bird with yellow mainly confined to vent. **458** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, first-winter, Selenga, lake Baikal, Russia, 4 September 2009 (*Alexander Hellquist*). Location, sharp calls and short supercilium suggest eastern dark-headed Arctic bird. Grey and white plumage with only weak yellow suffusion confined to vent is frequent in eastern birds. **459** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, first-winter *tschutschensis*, Saint Paul Island, Alaska, USA, 16 August 2018 (*Sulli Gibson*). Typical grey and white plumage and prominent supercilium often shown in this subspecies.

In most Arctic regions, samples are too small to allow for firm conclusions regarding changes in average scores over time, and also for a meaningful analysis of changes in score frequency distributions over time. Therefore, score frequency distributions across larger areas of combined regions were compiled for old specimens (collected before 1970) and more recent specimens and birds on photographs (figure 13). These distributions suggest an increasing share of birds with a short

supercilium (scores 2 and 3 in figure 11) over time between Northern Scandinavia and Lower Yenisey and Taz, and an increasing share of dark-headed birds (score 1 in figure 11) from Taimyr to Lower Kolyma. This might indicate ongoing introgression between dark-headed populations and populations with a supercilium. However, also for these larger areas sample sizes are too small for firm conclusions and more study is required to establish the significance of any trends.



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460 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, first-winter *tshutschensis*, onboard ship outside North Slope, Alaska, USA, 17 August 2015 (Bill Schmoker/PolarTREC 2015; courtesy of ARCUS). Some first-winter birds may show strong buffish suffusion to underparts as well as brownish cast to upperparts. **461** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, first-winter presumed *beema*, Malikent, southern Kazakhstan, 5 October 2012 (Alexander Hellquist). Grey and white plumage is common in *beema*, similar to that in *tshutschensis*. This bird gave soft calls typical of north-western taxa including *beema*. **462** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female *thunbergi*, Luvenga, Murmansk oblast, Russia, 24 June 2011 (Yuri Bykov). Typical female plumage in Scandinavia and westernmost Russia, with weak yellow on throat and upper breast and drab-grey crown colour. **463** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female *thunbergi*, Alvik, northern Sweden, 20 May 2015 (Peter Nilsson). Occasionally, female plumage resembles that of males also in western populations.

Vocalisations

Song

The main element of the song in Western Yellow Wagtail is a rasping note that falls in pitch, often transcribed as *tsrie* or *zrie*. The song often consists of single notes given at a slow pace but sometimes they are repeated in fast sequences forming phrases, and sometimes they are combined with twittering or squeaky calls. The same individual can alter between these variants. The single-note song type

consisting of isolated notes given at a slow pace occurs in all Western Yellow Wagtail subspecies including *zaissanensis* and also in *M f leucocephala* (hereafter *leucocephala*), of which hardly any recordings are available (one is published at www.youtube.com/watch?v=DgXH3HEEqf8). In contrast, none of c 25 singing *tshutschensis*, *similima* and *macronyx* in examined recordings have used the single-note song type, and it has not been heard among c 30 singing males during field studies in Chukotka, Kamchatka and Alaska. Occasion-



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464 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female, Salekhard, Russia, 8 June 2018 (Alexander Hellquist). Drab females like this bird occur throughout Arctic, although they become less frequent from Lower Ob and eastwards. **465** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female, Norilsk, Russia, 8 July 2015 (Alexander Hellquist). In eastern populations, females are regularly very male-like and certain birds are difficult to sex with certainty. This bird was paired with typical dark-headed male. **466** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female, Khatanga, Russia, 10 July 2015 (Alexander Hellquist). Male-like bird with prominent supercilium. **467** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female, Taimylyr, Russia, 6 July 2016 (Alexander Hellquist)

ally, notes reminiscent of the single-note song type are given by eastern birds but the contexts of the examined cases indicate that they function as alarm calls (one example from Alaska is available at <https://macaulaylibrary.org/asset/131298>).

In sound-recorded birds from Chukotka, Kamchatka and Alaska (*tschutschensis* and *simillima*), as well as in *macronyx* and *taivana*, the song consists of rapid sequences of two to 17 ringing high-pitched notes repeated at a pace of 5.6 to 7.9 notes per second: *zri-zri-zri-zri...* The number of notes varies between phrases in the same individual. This fast song type has also been recorded in

the Lower Indigirka (Zöckler 2007). Few songs have been examined from north-central Siberia but shorter variants of the fast song type with only two or three notes repeated at a fast pace have been recorded in two birds in Lower Lena, two birds in Lower Olenyok, and one bird in Eastern Taimyr, all in early July. The lower number of notes could reflect geographical variation, but it is also possible that the phrases become shorter as song intensity goes down in summer.

Out of 26 recorded singing Scandinavian *thunbergi* males, seven included phrases consisting of repeated notes. Compared with phrases in eastern



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468 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female, north of Chokurdakh, Russia, 26 June 2019 (Chris van Rijswijk). Paired with male in plate 488. **469** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female, Anapka bay, northern Kamchatka, Russia, 29 June 2009 (Alexander Hellquist). Photograph taken in area where *simillima* and *tshutschensis* meet. **470** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female *zaissanensis*, Kalawu Tekele lake, northern Xinjiang, China, 19 May 2011 (Alexander Hellquist). Limited yellow below and greyish above, similar to many *beema* and *feldegg* females. **471** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female *zaissanensis*, Kalawu Tekele lake, northern Xinjiang, China, 19 May 2011 (Peter Schmidt)

birds, these differed in having only two to four notes per phrase, a slower pace of 2.8 to 5.1 notes per second, and a lower minimum frequency of each note (often between 3 and 4 kHz as opposed to 4 and 5 kHz in eastern birds) with a less ringing voice (figure 14 and table 2). In these aspects, they align with the fast-paced song given by a larger studied sample of other Western Yellow Wagtail subspecies including *M f flava* (hereafter *flava*), *M f flavissima* (hereafter *flavissima*), *M f iberiae* (hereafter *iberiae*) and *M f feldegg* (hereafter *feldegg*). In this larger sample, there were birds giving up to six notes per phrase, and in a few the voice was rather high-pitched with a ringing qual-

ity. The pace was still lower than in eastern birds, with a maximum of 5.2 notes per second, but in some cases, the overall impression was nonetheless very similar.

In the area between the Ob river basin and Western Taimyr, 10 of 29 singing males recorded in June and July included phrases consisting of repeated notes, while recordings of the remaining 19 birds only included the single-note song type. Birds using the fast song type gave two to six notes per phrase with a pace of 3.1 to 6 notes per second, on average faster than in Scandinavian *thunbergi* but slower than in *tshutschensis* and *simillima*. In most birds, the minimum frequency of each

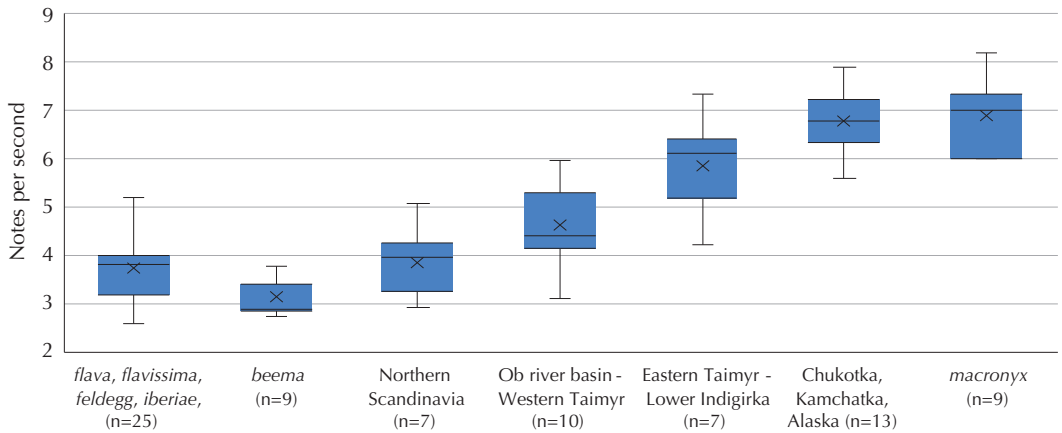


FIGURE 14 Box plot showing variation in pace (number of notes per second) of 'fast song type' in yellow wagtail *Motacilla flava sensu lato*, ie, song phrases consisting of two or more notes. For recordings containing multiple phrases from one individual, averages from three phrases are used. Details of just two examined *zaissanensis* not shown here but detailed in table 2. Boxes outline first to third quartiles, with middle line denoting median value and cross mark denoting average value. Whiskers denote maximum and minimum value.

TABLE 2 Pace, minimum frequency and maximum number of notes per phrase in the 'fast song type' in yellow wagtail *Motacilla flava sensu lato*, ie, song phrases consisting of two or more notes. For recordings containing multiple phrases from one individual, pace and minimum frequency are calculated as average of three phrases.

	Number of notes per second (average and range across recorded individuals)	Minimum frequency (kHz) (average and range across recorded individuals)	Maximum number of notes per phrase (average and range across recorded individuals)	Number of recorded phrases/ individuals
<i>flava, flavissima, feldegg and iberiae</i>	3.8 (2.6-5.2)	3.8 (2.8-5.0)	4.0 (2-6)	191/25
<i>beema</i>	3.1 (2.7-3.7)	3.8 (2.8-5.5)	2.2 (2-3)	39/9
<i>zaissanensis</i>	4.5 (3.8-5.2)	4.1 (3.7-4.5)	3.0 (2-4)	20/2
Northern Scandinavia	3.9 (2.9-5.1)	3.3 (2.7-4.0)	2.7 (2-4)	41/7
Ob river basin – Western Taimyr	4.6 (3.1-6.0)	4.4 (3.0-5.0)	4.4 (2-9)	112/10
Eastern Taimyr – Lower Indigirka	5.8 (4.2-7.4)	4.9 (4.2-5.5)	3.4 (2-8)	30/7
Chukotka, Kamchatka, Alaska	6.8 (5.6-7.9)	4.6 (3.5-5.6)	9.0 (3-17)	180/13
<i>macronyx</i>	6.9 (6.0-8.2)	4.9 (3.5-6.2)	6.0 (3-16)	79/9

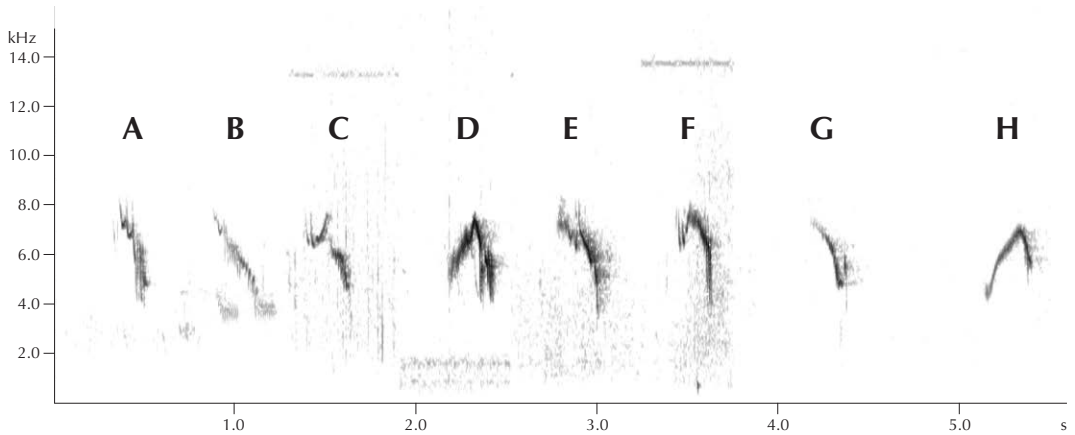


FIGURE 15 Song of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of single-note song type. **A** migrating *thunbergi*, Gotland, southern Sweden, 10 May 2014 (Alexander Hellquist). **B** migrating *thunbergi*, Gotland, southern Sweden, 8 May 2016 (Alexander Hellquist). **C** dark-headed male, Salekhard, Russia, 8 June 2018 (Alexander Hellquist). **D** dark-headed male, Salekhard, Russia, 7 June 2018 (Alexander Hellquist). **E** dark-headed male (plate 481), Tazovsky, Russia, 6 July 2017 (Alexander Hellquist). **F-H** dark-headed male, Norilsk, Russia, 12 June 2018 (Alexander Hellquist).

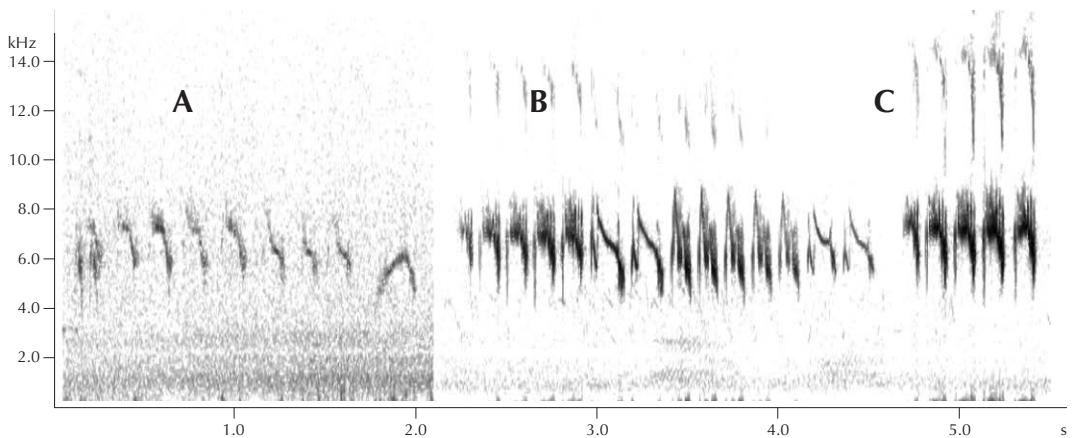


FIGURE 16 Song of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of fast song type from eastern Siberia, Russia. **A** male, Ossora (area where *simillima* and *tschutschensis* meet), 14 June 2009 (Alexander Hellquist). **B-C** two phrases from *simillima*, Petropavlovsk-Kamchatsky, 12 June 2009 (Alexander Hellquist). As evident in A and B, there are often alterations in appearance of notes within phrases.

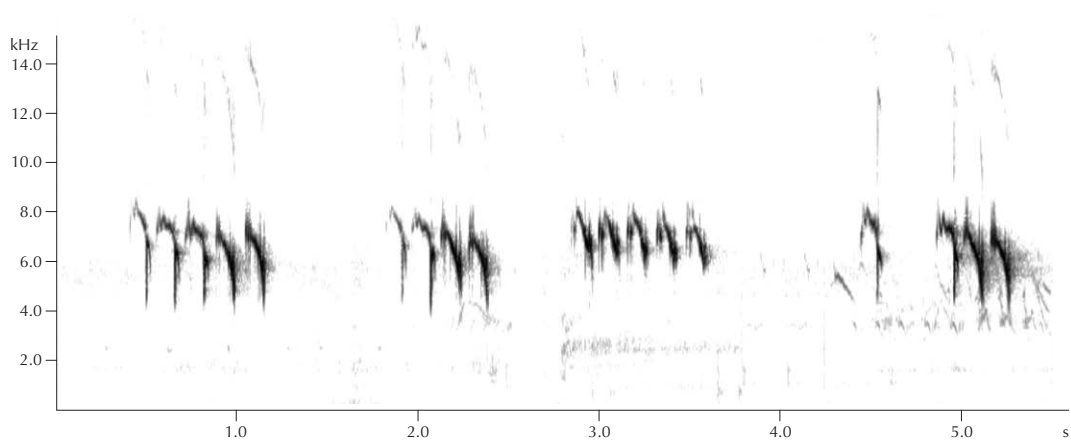


FIGURE 17 Song of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Four fast song type phrases from male, Nome, Alaska, USA, 26 June 2015 (Bob McGuire).

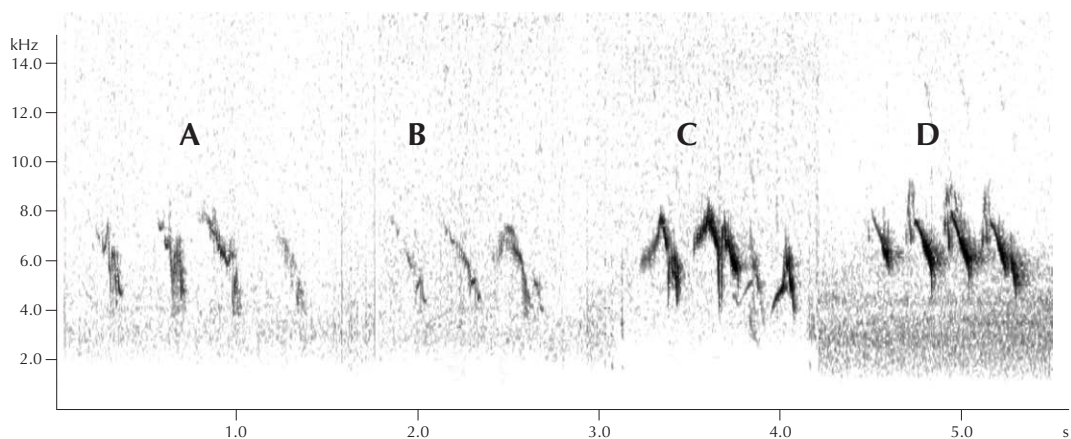


FIGURE 18 Song of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of fast song type in Scandinavia and western Siberia, Russia. **A** migrating *thunbergi*, Gotland, southern Sweden, 10 May 2014 (Alexander Hellquist). **B** migrating *thunbergi*, Gotland, southern Sweden, 8 May 2016 (Alexander Hellquist). **C** male with weak supercilium (plate 480), Salekhard, Russia, 7 June 2018 (Alexander Hellquist). **D** dark-headed male, Norilsk, Russia, 12 June 2018 (plate 484) (Alexander Hellquist). On average, pace of fast song type is higher in western Siberia than in Scandinavia.

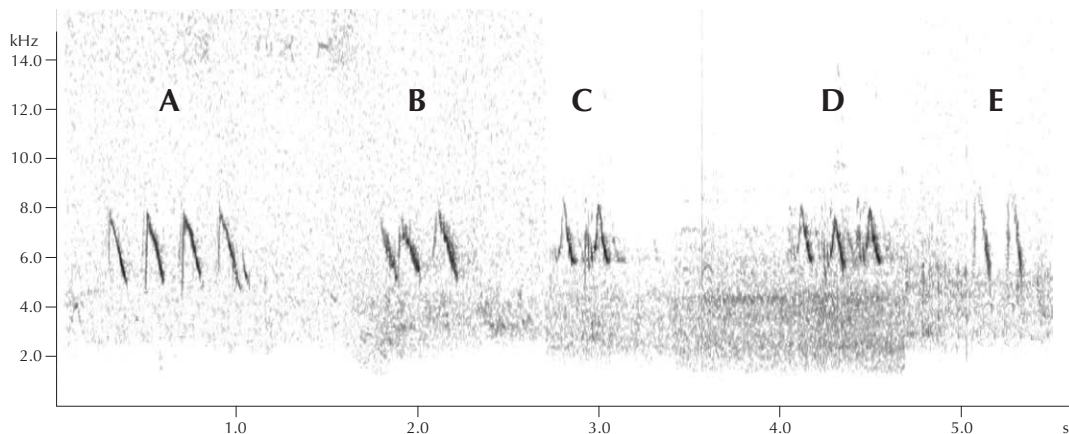


FIGURE 19 Song of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of simple variants of presumed fast song type, consisting of rapid sequences of call-like notes. **A** migrating *thunbergi*, Gotland, southern Sweden, 8 May 2016 (Alexander Hellquist). **B** dark-headed male, Salekhard, Russia, 7 June 2018 (Alexander Hellquist). **C-D** two phrases from dark-headed male, Khatanga, Russia, 9 July 2015 (Alexander Hellquist). **E** male with short supercilium, Taimylyr, Russia, 13 July 2016 (Alexander Hellquist). Similar song has also been recorded in Lower Indigirka (Zöckler 2007).

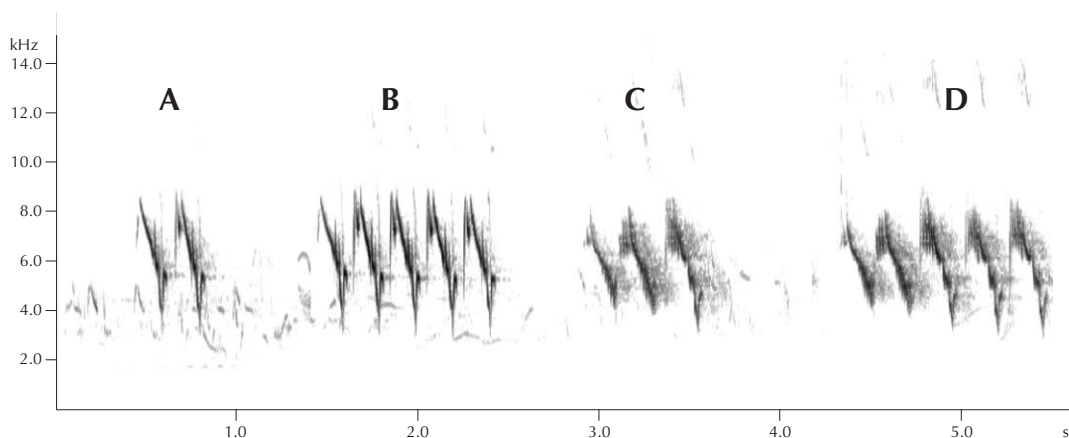


FIGURE 20 Song of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of fast song type in western birds that approach pace of song in eastern birds. **A-B** two phrases from bird not labelled to subspecies (based on location either *thunbergi* or *flava*), Dvities Paliene, southern Latvia, 16 June 2012 (Edmunds Racinskis). **C-D** two phrases from nominate *flava*, gmina Szreńsk, central Poland, 14 June 2016 (Piotr Szczypinski). With c 5 notes per second, these phrases match pace of many examined recordings from central Siberia east to Lower Indigirka but they are still slower than sampled *tschutschensis* and *simillima*. Minimum frequency of notes is around 3 kHz, which is lower than sampled birds east of Taimyr.



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472 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, female *zaissanensis*, Kalawu Tekele lake, northern Xinjiang, China, 17 May 2011 (Petter Haldén). Bird with olive cast above and slightly stronger yellow cast below.
473 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *thunbergi*, Stordalen, northern Sweden, 17 June 2016 (Daniel Pettersson). Typical bird. **474** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *thunbergi*, Karigasniemi, northern Finland, 3 June 2017 (Daniel Pettersson). Example of Scandinavian male with short supercilium. **475** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *thunbergi*, Stordalen, northern Sweden, 17 June 2017 (Benny Modig). Example of male with blackish crown. C 5% of Arctic birds are as dark as this or even darker, occasionally approaching appearance of *feldegg*, in particular when worn. Easternmost examined bird with blackish crown was collected in Lower Indigirka.

note was similar to that in eastern birds (between 4 and 5 kHz). Among the 10 birds giving the fast song type, six also gave the single-note song type interchangeably.

Contact calls

As pointed out in Alström & Mild (2003) and Bot et al (2014), there are differences in the typical contact calls between Western Yellow Wagtail and the Eastern Yellow Wagtail subspecies *tshutschensis*, *simillima*, *macronyx* and *taivana*. The Western

Yellow subspecies *flava*, *flavissima*, *thunbergi*, *beema*, *leucocephala* and *M f lutea* (hereafter *lutea*) typically give soft calls without prominent *r*-sound: *pslie*, *sliu* or similar. The other Western Yellow subspecies also use these soft calls but also harsher variants with an obvious *r*-sound. In contrast, the typical call in *tshutschensis*, *simillima*, *macronyx* and *taivana* is a sharp rasping *srie*, with a prominent *r*-sound, very similar to calls of Citrine Wagtail *M citreola*. Along the Arctic regions between Scandinavian *thunbergi* and *tshutschensis*, shifts in the



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476 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *thunbergi*, Alvik, northern Sweden, 11 May 2010 (Peter Nilsson). Example of male with prominent supercilium. Such birds occur occasionally in Northern Scandinavia; it is possible that they indicate influence from *flava*. **477** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, south-eastern Komi Republic, Russia, 10 July 2014 (Nikolay Neufeld) **478** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, south-eastern Komi Republic, Russia, 14 June 2015 (Nikolay Neufeld). Example of bird with prominent supercilium. Population in Komi may be under influence from *flava* or westernmost *beema* but introgression from eastern Arctic forms is also conceivable. **479** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Salekhard, Russia, 7 June 2018 (Alexander Hellquist). Bird with weak supercilium that gave both single-note song and phrases consisting of two and three notes repeated at fast pace (sonagram figure 18C).

typical call types are apparent. The pattern formed by these shifts is somewhat intricate, and further studies are needed to establish the geographic variation of the involved calls in more detail.

Starting from *tschutschensis* in the Bering Strait region and moving westwards to Lower Olenyok, all studied birds predominantly used sharp calls, seemingly without geographical variation. In most calls, but not all, the *r*-sound was prominent. It was often most conspicuous at the end of the call, with the last descending part in sonagrams becoming wider towards the end as modulations become

stronger (figure 22). In Khatanga in Eastern Taimyr, c 500 km west from Lower Olenyok, a first shift in calls is apparent. From here and westwards, calls are not as sharp as typical calls further east, lacking an obvious *r*-sound. Between Khatanga and westwards to at least the Taz peninsula and Novy Urengoy, most calls are still noticeably sharper than typical calls given by Scandinavian *thunbergi*, and representations in sonagrams are similar to those from further east, with a steep ascending onset connected at the top with a longer descending part (figure 23). Compared with calls further east,



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480 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Tazovsky, Russia, 4 July 2017 (Alexander Hellquist). Note prominent dark necklace. This bird gave calls with weak frequency dip in middle (sonagram figure 26D). **481** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Tazovsky, Russia, 6 July 2017 (Alexander Hellquist). This bird gave a single note song (sonagram figure 15E). When not singing, birds with this appearance in central and eastern Siberia can be very difficult to sex with certainty, as females are frequently male-like and often show faint supercilium. Many males show blackish loreal area but not all. **482** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Tazovsky, Russia, 6 July 2017 (Alexander Hellquist). This bird gave calls that were similar to those in dark-headed birds in same area, with weak frequency dip in middle (sonagram figure 26E). **483** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Norilsk, Russia, 12 June 2018 (Alexander Hellquist). This bird gave fast song type at moderate pace typical of recorded birds between Ob river basin and Western Taimyr (sonagram figure 18D).

the descending part is often thinner with less pronounced modulations, reflecting the lack of *r*-sound, and in many calls, the second descending part does not widen towards the end. However, some sonagrams are nearly identical to those from eastern birds, even though the difference in terms of *r*-sound can be readily discerned when listening to the recording. Between Khatanga and Lower Olenyok, yellow wagtails occur at least along Lower Anabar but no recordings have been found from that region.

Moving further west, in the Ob river basin and on Yamal, many recorded calls start approaching those of Scandinavian *thunbergi*, although sharper calls similar to those in Taimyr were also given. Only four recordings of calls have been studied from the area between the Ob river basin and Scandinavia: one from the northern Urals (Veprintsev & Veprintseva 2007), one from the Lower Pechora River (www.xeno-canto.org/377981) and two from Karelia (www.xenocanto.org/513495 and www.xeno-canto.org/513497). They all included soft calls.



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484 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Khatanga, Russia, 10 July 2015 (Alexander Hellquist). Bird with prominent supercilium carrying food for nestlings. It gave calls that were similar to those of dark-headed birds in same area, with pronounced frequency dip in middle (sonagram figure 25E). **485** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Khatanga, Russia, 10 July 2015 (Alexander Hellquist). Example of bird with green cast to crown and yellow feathers above eye. This occurs regularly in many yellow wagtail taxa but normally it is more conspicuous when plumage fresh in autumn and early spring. In this case, influence from *taivana* can perhaps not be ruled out, although it would be surprising, given distance between Khatanga and nearest known breeding areas of *taivana* north of lake Baikal. **486** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Taimylyr, Russia, 6 July 2016 (Alexander Hellquist). East of Taimyr, prominent dark necklaces, as in this bird, become more frequent. **487** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Taimylyr, Russia, 13 July 2016 (Alexander Hellquist). This bird gave sharp calls, typical of birds east of Taimyr (sonagram figure 22B).

In *thunbergi* in Scandinavia and Karelia, typical calls are soft and often, but not always, slightly disyllabic, with the ascending and descending parts separated in sonagrams (figure 24). Sharper calls similar to those in Taimyr are occasionally given, just as in other western subspecies including *beema* but they are seemingly never as Citrine Wagtail-like as further east. Conversely, it seems that soft disyllabic calls are rare or absent in Arctic populations east of Taimyr. Soft calls that are similar to typical Scandinavian calls have however

been found in one recording of *taivana* (www.xeno-canto.org/489792) and two recordings of *macronyx* (www.xeno-canto.org/144522 and www.xeno-canto.org/144524).

To complicate matters, an additional call type that is distinct from those described above occurs in recordings from the area between Eastern Taimyr (Khatanga) and the Ob river basin (Salekhard) and Yamal. It is characterised by a more complex variation in pitch, with a frequency dip in the middle (figure 25). As in the other calls given in this area,

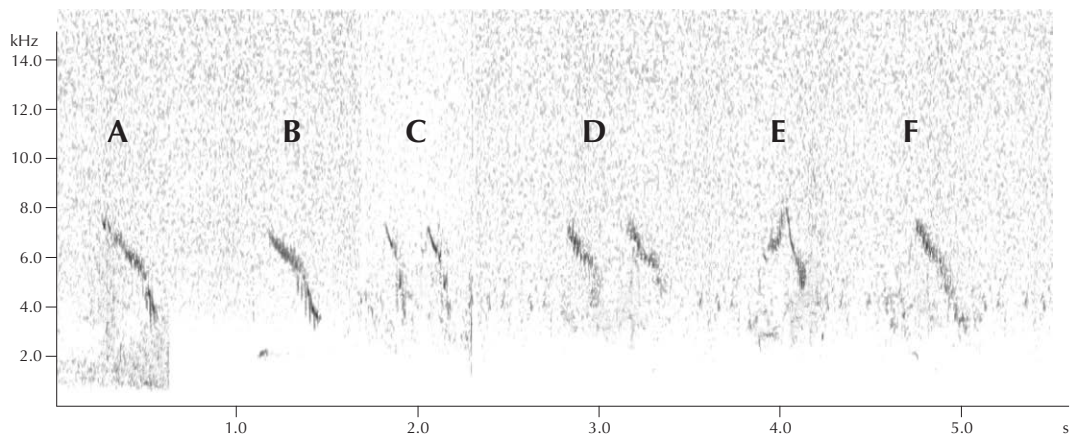


FIGURE 21 Song of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of phrases from the only three sampled singing *zaissanensis*, all recorded at Kalawu Tekele lake (47°01'N 89°45'E), northern Xinjiang, China. **A-B** single-note phrases, 18 May 2011 (time between notes is compressed) (Alexander Hellquist). **C** two-note phrase, 19 May 2011 (Alexander Hellquist). **D-F** one two-note phrase and two single-note phrases (time between phrases compressed), 19 May 2011 (Alexander Hellquist). Songs align with those of Western Yellow Wagtails *M. flava*, with pace of two two-note phrases C and D being around 5.2 and 3.8 notes per second, respectively.

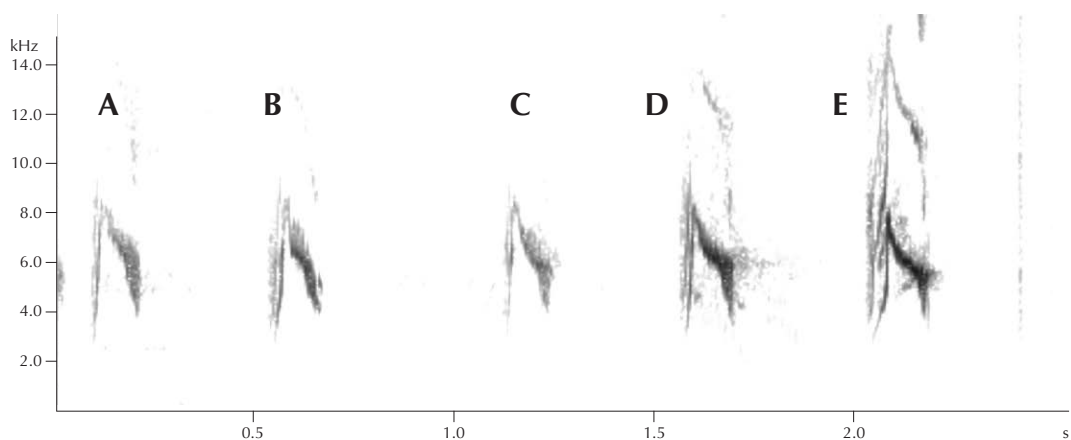


FIGURE 22 Calls of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of typical calls with readily discernable *r*-sound from Lower Olenyok eastwards to Bering Strait. **A** dark-headed male, Taimylyr, Russia, 6 July 2016 (Alexander Hellquist). **B** male with supercilium (plate 487), Taimylyr, Russia, 13 July 2016 (Alexander Hellquist). **C** dark-headed male, Tiksi, Russia, 4 July 2016 (Alexander Hellquist). **D** male *simillima* (plate 491), Petropavlovsk-Kamchatsky, Russia, 11 June 2009 (Alexander Hellquist). **E** female *simillima*, Petropavlovsk-Kamchatsky, Russia, 12 June 2009 (Alexander Hellquist). Note how descending part of sonagram widens towards end (not evident in call B).

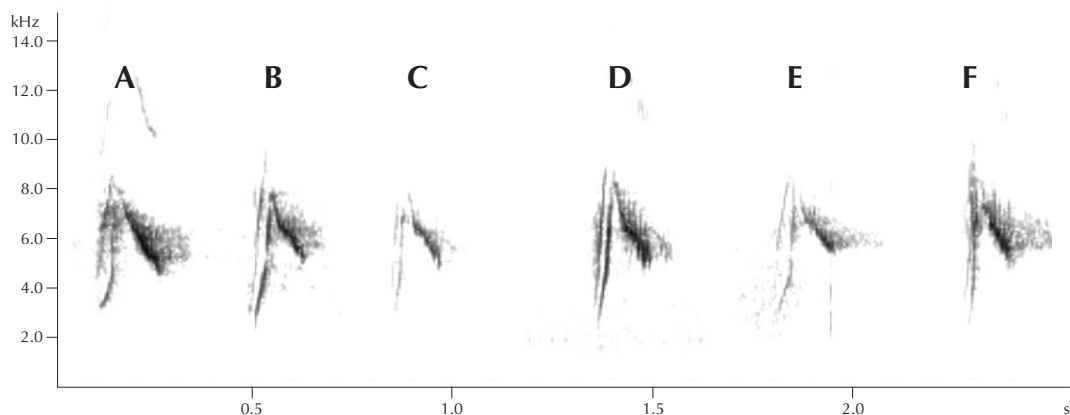


FIGURE 23 Calls of yellow wagtail / gele kwikstaart *Motacilla flava sensu lato*. Examples of rather sharp calls lacking obvious *r*-sound. Such calls occur throughout the Arctic, but they seem most frequent between Taimyr and Yamal/Ob river basin and much less common in Scandinavian *thunbergi* and in *tschutschensis* and *simillima*. **A** male, Porsanger, northern Norway, 11 July 2015 (Stein Ø Nilsen). **B** dark-headed male, Salekhard, Russia, 7 June 2018 (Alexander Hellquist). **C** male with short supercilium, Tazovsky, Russia, 5 July 2017 (Alexander Hellquist). **D** male, Nyabrsk, Russia, 22 June 2009 (Herman van Oosten). **E** female, Norilsk, Russia, 12 June 2018 (Alexander Hellquist). **F** dark-headed male, Khatanga, Russia, 9 July 2015 (Alexander Hellquist). Sonagrams similar to those in figure 22 but modulations less prominent and descending part not widening as clearly as in typical calls east of Taimyr. Note differences in spacing between two bars that constitute first ascending part. In Scandinavia, space is normally wide, while east of Taimyr it is narrow, as described by Bot et al (2014). Between Lower Ob and Western Taimyr, there seems to be considerable variation.

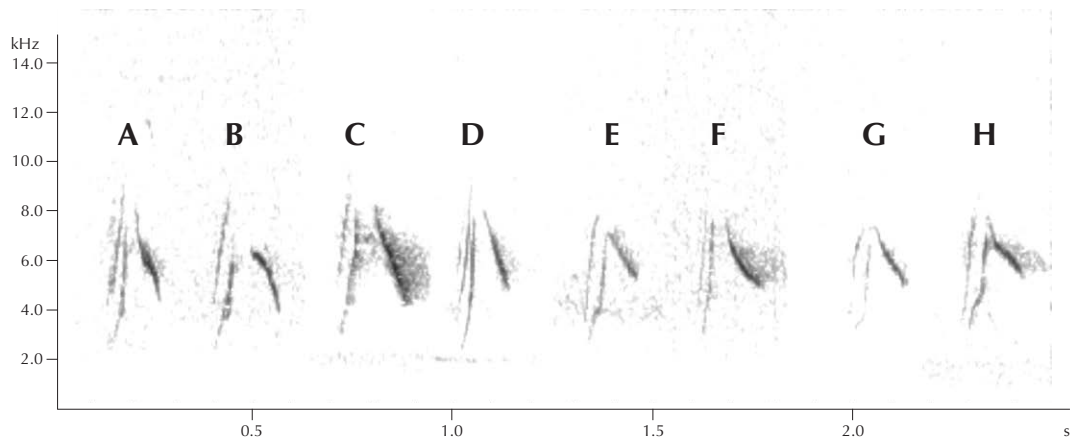


FIGURE 24 Calls of yellow wagtail / gele kwikstaart *Motacilla flava sensu lato*. Examples of soft calls that are typical of Scandinavian *thunbergi* but regularly given in Arctic populations east to Taimyr. **A** migrating male, Gotland, southern Sweden, 7 May 2016 (Alexander Hellquist). **B** migrating male *thunbergi*, Gotland, southern Sweden, 12 May 2012 (Alexander Hellquist). **C** *thunbergi* of unknown sex, Tromsø, northern Norway, 23 May 2014 (Stein Ø Nilsen). **D** female, Salekhard, Russia, 8 June 2018 (Alexander Hellquist). **E** male with short supercilium, Salekhard, Russia, 7 June 2018 (Alexander Hellquist). **F** female, Salekhard, Russia, 8 June 2018 (Alexander Hellquist). **G** female, Norilsk, Russia, 12 June 2018 (Alexander Hellquist). **H** dark-headed male, Norilsk, Russia, 12 June 2018 (Alexander Hellquist). In many calls, gap between ascending and descending part creates disyllabic impression. Note variation in spacing between bars in ascending part.



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488 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, north of Chokurdakh, Russia 26 June 2019 (Chris van Rijswijk). Paired with female in plate 468. **489** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *tschutschensis*, Anadyr, Russia, 3 June 2010 (Alexander Hellquist). Typical bird. **490** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Anadyr, Russia, 7 June 2010 (Lars Jonsson). Dark-headed bird illustrating that this phenotype occurs also in core range of *tschutschensis*, although it has not been found in studied sample from Alaska, USA. **491** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *simillima*, Petropavlovsk-Kamchatsky, Russia, 11 June 2009 (Alexander Hellquist). Individual birds in Kamchatka seem impossible to separate from *tschutschensis* and other Arctic birds with supercilium based on plumage, although males are cleaner yellow below on average. This bird gave sharp calls with conspicuous *r*-sound (sonagram figure 22D).

it lacks *r*-sound while still being sharper than typical calls in Scandinavian *thunbergi*. It seems that it is given more frequently late in the breeding season – possibly, it serves partly as an alarm call. In recordings made in early July in Khatanga, Norilsk, Tazovsky and Novy Urengoy, it was as frequent as the calls described above, while it was much less frequent in early and mid-June among birds recorded in Norilsk and Salekhard. However, recordings of the same call type from spring migrants in Central Asia and from wintering birds in India (figure 28) show that it is used year-round. The

most distinct variant of this call type, with a pronounced frequency dip in the middle, seems to be given mainly by populations in Taimyr. Further west, from the Taz peninsula to the Ob river basin and Yamal, most birds give variants with a less pronounced frequency dip (figure 26) that thus become more similar to the calls illustrated in figure 23. However, some birds recorded as far west as Yamal gave calls that are as distinctive as those in Taimyr (eg, figure 25A).

Based on recordings of five individuals and field observations of a few additional birds on breeding

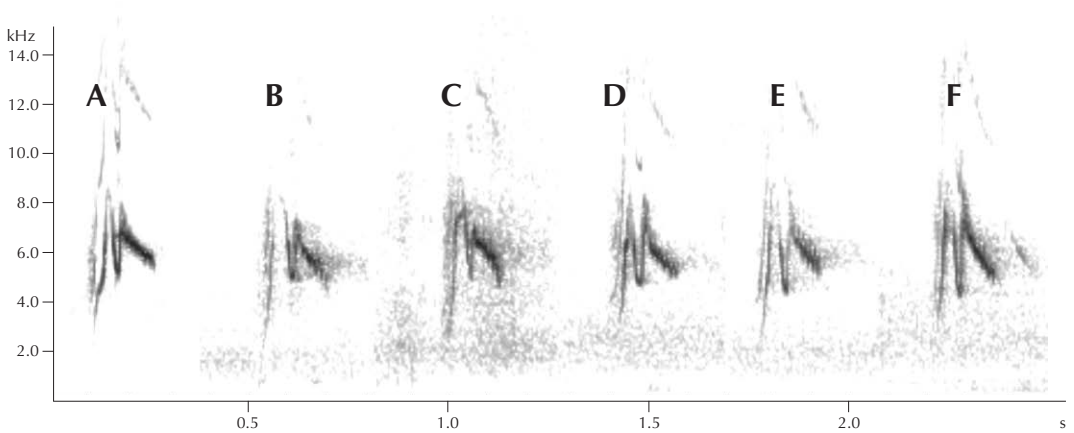


FIGURE 25 Calls of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of calls with pronounced frequency dips in middle, typical, possibly even diagnostic, of breeders between Yamal/Ob river basin and Taimyr. **A** male, southern Yamal, Russia, 10 June 2015 (*Giovanni Boano*). **B** dark-headed male, Novy Urengoy, Russia, 8 July 2017 (*Alexander Hellquist*). **C** female, Tazovsky, Russia, 7 July 2017 (*Alexander Hellquist*). **D** dark-headed male, Norilsk, Russia, 8 July 2015 (*Alexander Hellquist*). **E** male with prominent supercilium (plate 484), Khatanga, Russia, 10 July 2015 (*Alexander Hellquist*). **F** male with weak supercilium, Khatanga, Russia, 10 July 2015 (*Alexander Hellquist*).

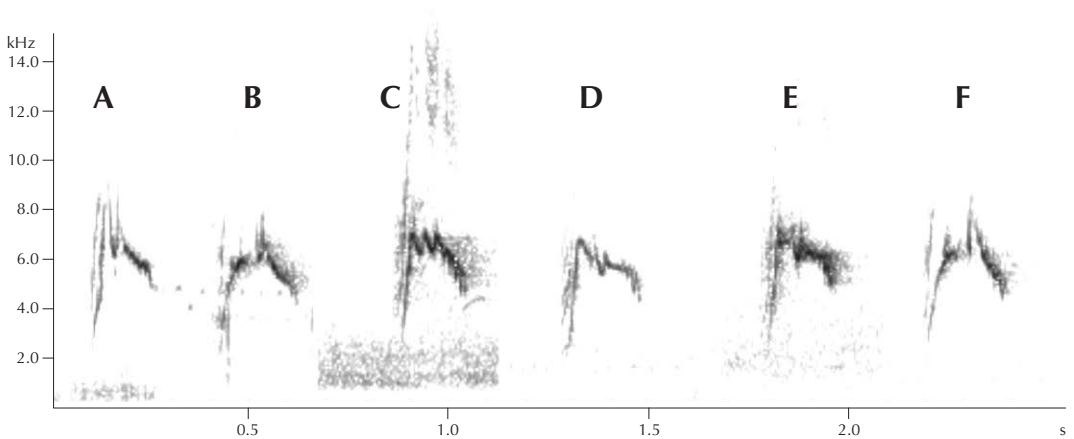


FIGURE 26 Calls of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of calls from area between Yamal and Western Taimyr. Compared with calls in figure 25, these have less pronounced or only vestigial frequency dips in middle. This call type is common in this area but is not diagnostic as similar calls can be given in both Northern Scandinavia and further east. **A** male, southern Yamal, Russia, 7 June 2015 (*Giovanni Boano*). **B** female, Salekhard, Russia, 7 June 2018 (*Alexander Hellquist*). **C** dark-headed male, Novy Urengoy, Russia, 8 July 2017 (*Alexander Hellquist*). **D** dark-headed male (plate 480), Tazovsky, Russia, 4 July 2017 (*Alexander Hellquist*). **E** male with supercilium (plate 482), Tazovsky, Russia, 6 July 2017 (*Alexander Hellquist*). **F** dark-headed male, Norilsk, Russia, 12 June 2018 (*Alexander Hellquist*).

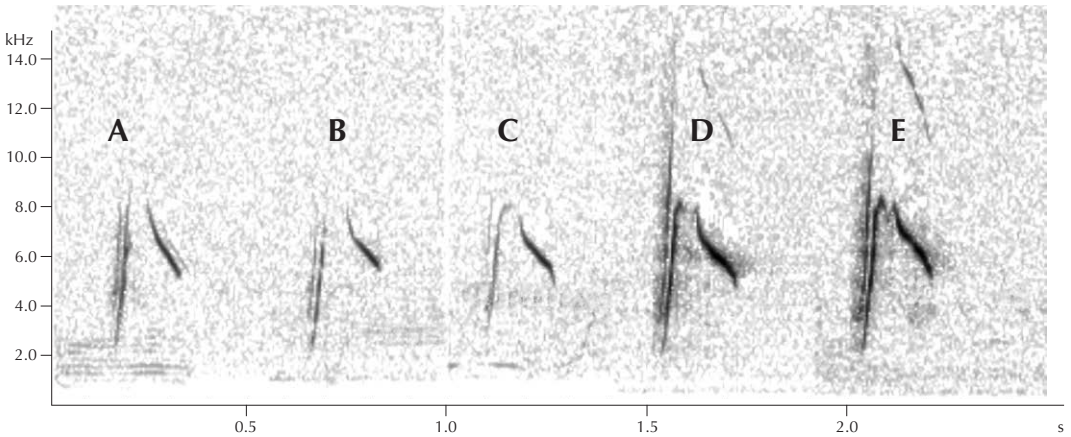


FIGURE 27 Calls of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of calls in three different *zaissanensis*, all from Kalawu Tekele lake, northern Xinjiang, China. **A** male, 18 May 2011 (Alexander Hellquist). **B** male, 18 May 2011 (Alexander Hellquist). **C-E** three calls from male (plate 499), 19 May 2011 (Alexander Hellquist). Calls similar to typical calls in Scandinavian *thunbergi* and in *beema*. Note narrow spacing between bars in ascending part in this small sample, unlike in typical Scandinavian *thunbergi* calls. *Beema* calls seem variable in this respect.

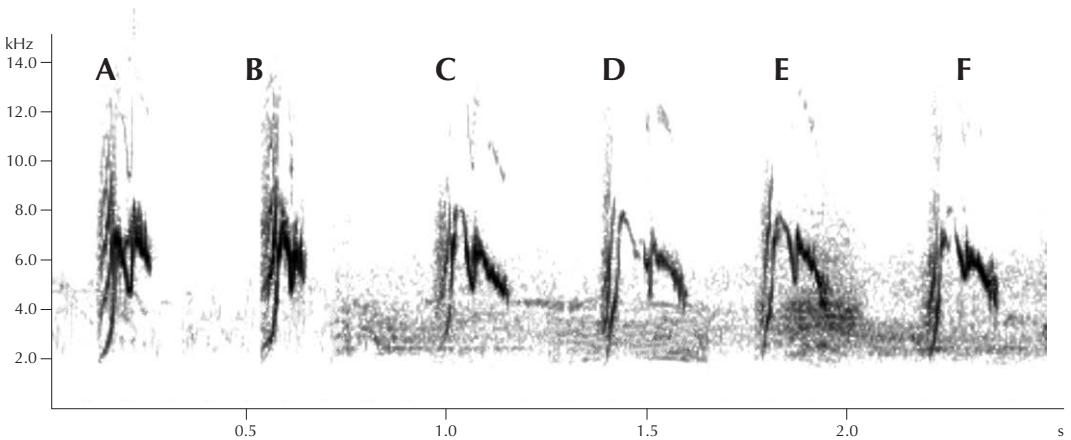


FIGURE 28 Calls of yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato. Examples of calls from wintering and migrating birds matching calls with prominent frequency dips in middle given between Yamal/Ob river basin and Taimyr. **A-B** bird identified as *thunbergi*, south-west of Astana, Kazakhstan, 15 May 2013 (Thijs Fijen). **C-F** bird identified as *thunbergi*, Periyar Tiger Reserve, Kerala, India, 13 April 2017 (Peter Boesman).

grounds in the Altai mountains, Xinjiang, China, it seems that *zaissanensis* consistently give soft calls that are often disyllabic (figure 27).

As yellow wagtail vocalisations are variable and plastic throughout the range, caution is needed when assessing the origin of single individuals based on calls. Recording distance and microphone sensitivity may influence both impression and appearance of vocalisations, with distant calls becoming thinner in sonagrams. Eastern birds may

give call variants without a discernible *r*-sound along with typical sharp calls. Conversely, although calls with obvious *r*-sounds have not been encountered in recordings of Scandinavian *thunbergi* from the breeding grounds, migrating birds in southern Sweden occasionally give calls with discernible *r*-sounds. These are rarely if ever as harsh as in birds from eastern Siberia, instead often appearing more similar to short song phrases in sonagrams. A discussion by Martin Garner on rasping

calls from migrants along with sonagrams that are similar to song phrases can be found at <https://tiny-url.com/zvkapss>. Apart from the proper contact calls described above, all populations of yellow wagtails can produce various short notes that are usually soft, as well as different chirping calls. Keeping these caveats in mind, it seems that birds that consistently give Citrine Wagtail-like calls with prominent *r*-sounds can be identified with reasonable confidence as originating east of Taimyr (southern Western Yellow Wagtail taxa that give calls with prominent *r*-sounds can in most cases be ruled out based on a less sharp, more rolling voice and different appearance of sonagrams; see Bot et al 2014). Furthermore, it is possible that calls with a pronounced frequency dip in the middle are diagnostic of populations breeding in Taimyr and westwards to the Ob river basin/Yamal. The less distinct variants of this call, that are common among breeders between the Taz peninsula and the Ob river basin/Yamal, do not seem to be diagnostic, as they can be matched by occasional calls in Scandinavian *thunbergi* and in birds from east of Taimyr as well as in other yellow wagtail taxa.

This study did not include a thorough analysis of calls given on wintering grounds but 36 examined recordings from southern Thailand and eastwards in south-eastern Asia all contain sharp calls that are consistent with those given by breeding Arctic birds east of Taimyr and by *macronyx* and *taivana* (www.hbw.com/ibc, www.macaulaylibrary.org; www.xeno-canto.org; own recordings). From southern and western India (Kerala, Goa, Maharashtra and Gujarat), 10 recordings labelled as *thunbergi* have been examined (www.hbw.com/ibc, www.macaulaylibrary.org; www.xeno-canto.org; own recordings). Four of these included calls with frequency dips that are typical of breeders between Taimyr and Ob river basin/Yamal (one example in figure 28C-F), while the other six included rather sharp calls without obvious *r*-sounds that also match those of breeders from this area. No recordings labelled as *thunbergi* have been found from sub-Saharan Africa, where most Scandinavian birds are believed to winter. 12 checked unlabeled recordings from sub-Saharan Africa (www.xeno-canto.org) contained soft calls consistent with those of breeders in northern Europe, while the other recordings contained calls that fit either *feldegg* or other south-western taxa.

Correlation between features within regions

Strong correlations between morphometrics, plumage feature scores and vocalisations among birds within single regions in the Arctic could indi-

cate that different populations occur in close proximity or sympatry while maintaining distinct characteristics. More study is required, in particular in north-western and north-central Siberia, but in the small samples examined here, no evidence of such patterns has been found. Estimated correlations between studied plumage features (using Goodman & Kruskal's gamma) and between plumage features and hind claw length (using Pearson's R; then treating plumage feature scores as continuous variables) are generally weak ($< +/-.0.4$) and/or not significant. For example, correlation between hind claw length and extent of supercilium in males is non-existent ($r=-0.03$) between Eastern Taimyr and Lower Kolyma and weakly positive ($r=0.31$) but not statistically significant (T-test; $p=0.1$) between Yamal/Ob river basin and Western Taimyr.

Field studies have not revealed any correspondence between scores for different plumage features and calls or songs within regions. Birds with a prominent supercilium have used the same calls and song types as dark-headed birds in the same locations.

Discussion

Observations in Arctic populations

The examined material paints a rather complex picture of variation across the Arctic regions, as summarised below and in figure 29. The main observations are: **1** average hind claw length increases between Komi and Nenets Autonomous Okrug (NAO) and Yamal/Ob river basin; **2** on average, first-winter plumage colouration is greyer in Komi and area between Yamal/Ob river basin and Taimyr compared with birds in northern Europe, and greyer still between Lower Indigirka and Chukotka and Alaska; **3** female plumage colouration gradually becomes more male-like on average between Arkhangelsk and Lower Yenisey and Taz; **4** on average, dark spotting on the upper breast becomes more prominent and the extent of white on the throat in males becomes more extensive between Taimyr and Lower Anabar; **5** the extent of a white supercilium in males varies in most parts of the Arctic but dark-headed birds dominate from Northern Scandinavia eastwards to Western Taimyr. The average extent of supercilium increases between Western Taimyr and Eastern Taimyr, and then again between Lower Kolyma and Chukotka, with birds with a prominent supercilium dominating in Chukotka and Alaska; **6** the single-note song type dominates in Northern Scandinavia eastwards to Western Taimyr. This song type is seemingly absent in Chukotka, Kamchatka and Alaska, where

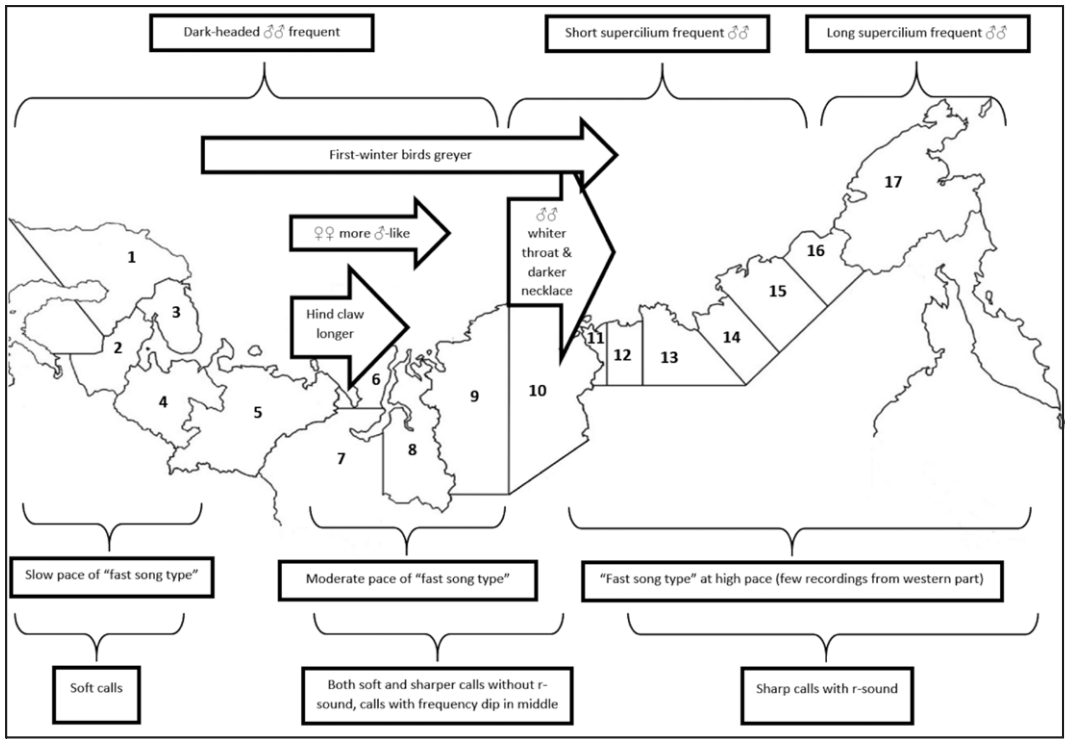


FIGURE 29 Approximate overview of distribution (brackets) and shifts (arrows) in examined features in yellow wagtail *Motacilla flava sensu lato* across the Arctic regions. Numbers refer to regions defined in figure 1. Further studies including larger samples and additional features are needed to understand geographical variation in more detail.

sampled birds only used the fast song type. The fast song type is regularly used in Northern Scandinavia as well but, here, the average number of notes per phrase is lower, the pace is slower and the voice is less ringing and lower pitched on average. Between the Ob river basin and Western Taimyr, the fast song type is intermediate between that given in Northern Scandinavia and in Chukotka, Kamchatka and Alaska. Between Eastern Taimyr and Lower Kolyma, only the fast song type has been documented but few recordings are available. Here, the song seems rather similar to that in Chukotka, Kamchatka and Alaska, although the average pace is slightly slower and average number of notes per phrase might be lower; 7 Scandinavian birds give mostly soft contact calls. From the Ob river basin and Yamal to Taimyr, sharper calls are given alongside soft ones but still without noticeable *r*-sound. East of Taimyr and in Alaska, birds give sharp calls with a conspicuous *r*-sound. Between Yamal/Ob river basin and Taimyr, a distinct call with a frequency dip midway is given alongside other call types.

Genetic research

The results can be viewed in light of existing genetic research on yellow wagtails. Several studies have identified a deep genetic divide between Western Yellow Wagtail and Eastern Yellow Wagtail based on mitochondrial DNA (mtDNA) (Ödeen & Alström 2001, Alström & Ödeen 2002, Voelker 2002, Ödeen & Björklund 2003, Pavlova et al 2003, Drovetski et al 2018, Harris et al 2018). Pavlova et al (2003) demonstrated that birds carrying a mtDNA haplotype typical of northern Eastern Yellow occur at least as far west as the Ob river basin (Labytnangi). Here, specimens carrying Western Yellow mtDNA have also been collected but their share is apparently lower: two out of 27 sampled by Drovetski et al (2018).

Based on analyses of large sets of genome wide data, Harris et al (2018) found a much less pronounced divergence between Western Yellow Wagtail and Eastern Yellow Wagtail. The data failed to distinguish between the phenotypically distinct taxa recognised in current taxonomy, conforming to a large extent with gradual isolation by

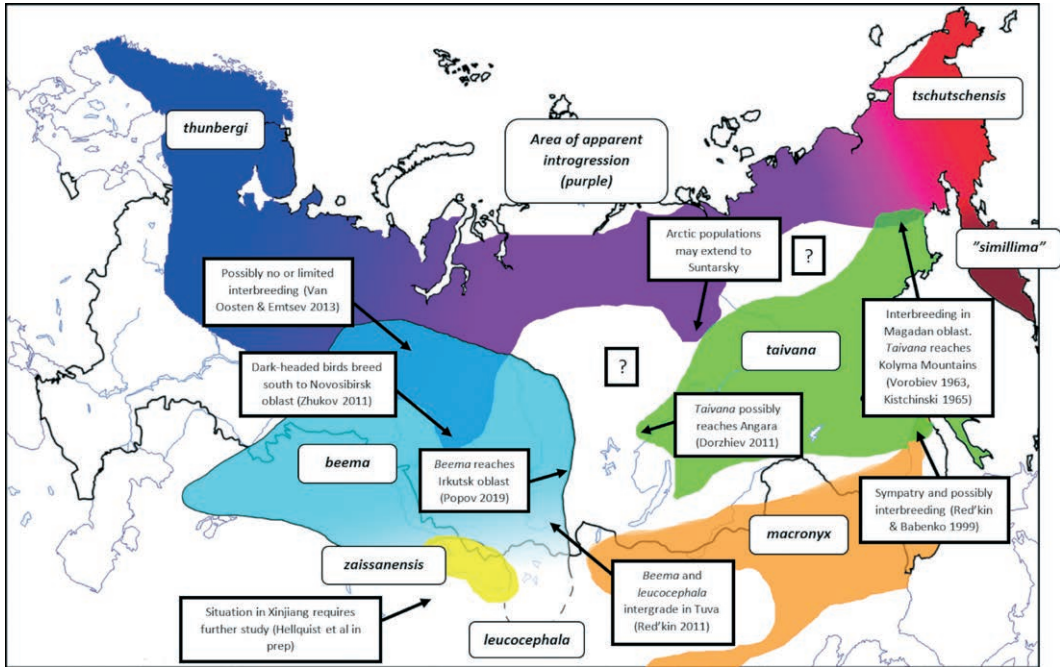


FIGURE 30 Approximate breeding distribution of studied northern and eastern populations of yellow wagtail *Motacilla flava* sensu lato based on reviewed material (cf table 1). Distributions of *flava*, *lutea* and *feldegg*, which also breed in western parts of area shown on map but have not been studied in detail here, are not shown, and neither is *tschutschensis* population in Alaska.

distance, although the authors identified two barriers with potentially restricted gene flow (Harris et al 2018; fig 4c, p 189): one separating populations breeding westwards from north-western Russia, Kazakhstan and western Mongolia from populations further east, and one separating northern Siberian and Alaskan birds from the south-eastern populations that comprise *macronyx* and *taivana*. The authors estimated roughly equal probabilities for sampled specimens from Labytnangi and Nyabrsk to belong to either Western Yellow or northern populations of Eastern Yellow, whereas specimens from Eastern Taimyr and eastwards (Lower Anabar, Lower Kolyma, Chukotka) were assigned to northern Eastern Yellow.

Introgression

The results of this study are consistent with a broad zone of differential introgression between Western Yellow Wagtail and Eastern Yellow Wagtail in the Russian Arctic, thus contrasting markedly with genetic studies showing a deep divide between the species based on mtDNA but seemingly less so with the SNP analysis in Harris et al (2018).

The shifts in examined plumage features and vocalisations seem to occur partially in separate geographic regions, and no indications of sympatry between populations showing distinct sets of features have been found. Sexual selection based on head pattern has been suggested as a mechanism behind rapid emergence of different male yellow wagtail phenotypes, despite limited genetic divergence (Ödeen & Björklund 2003). Still, the substantial share of males with intermediate head patterns across the Arctic regions suggests introgression in a zone of secondary contact between populations of dark-headed birds and birds with supercilium. Additional studies including larger samples are needed to evaluate whether the apparent increase over time in shares of males with supercilium between Karelia and Yenisey and Taz and the apparent increase in shares of dark-headed birds between Taimyr and Lower Kolyma are signs of ongoing diffusion of formerly distinct populations.

In the western part of the Arctic, it is conceivable that the head pattern is subject to influence from Arctic populations to the east, *flava* and *beema* populations to the south, or both. Southern



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492 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male intergrade *taivana* x *tschutschensis*, Magadan, Russia, 21 June 2008 (Lars Petersson). Intergrades between these subspecies seem to occur regularly in Magadan oblast, while intergrades between *taivana* and *simillima* occur in southern Kamchatka (online photographs, own observations). **493** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *macronyx*, Bayannuur, Mongolia, 5 June 2018 (Niklas Andersson). Compared with dark-headed Arctic birds, *macronyx* show cleaner yellow breast on average. **494** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *macronyx*, Bayannuur, Mongolia, 5 June 2018 (Niklas Andersson). Example of bird with few white feathers above eye.

thunbergi populations breeding in, eg, central Sweden, southern Finland, the Baltic countries, Belarus and around Moscow and St Petersburg, Russia, where *flava* phenotypes also occur, have not been included in this study, but it is possible that influence from *flava* and *beema* reaches Arctic regions. This could explain the slightly higher average scores in the more southerly Karelia and Arkhangelsk regions compared with the Northern Scandinavia and Murmansk regions (figure 12). Further study is also needed to pursue the suggestion that based on different habitat preferences, *beema* and dark-headed birds occur sympatrically with no or limited interbreeding in the middle Ob river region (van Oosten & Emtsev 2013).

Introgression can change the phenotypic composition in zones of secondary contact over short periods of time, as demonstrated in Pine Bunting *Emberiza leucocephalos* and Yellowhammer *E. citrinella* in southern Siberia (Panov et al 2003). Vocalisations can also evolve rapidly, in particular

if they are partly learned and not only controlled genetically (eg, Ribot et al 2012), and might show no or only a weak association with genetic variation (MacDougall-Shackleton & MacDougall-Shackleton 2001, Soha et al 2004). This highlights potential difficulties in capturing recent dynamics based on old specimens. The area of apparent introgression in Arctic yellow wagtails is larger than that of hybridisation between Pine Bunting and Yellowhammer, which stretches from the Urals to lake Baikal, and much larger than known areas of introgression between Western Yellow Wagtail subspecies. A contributing factor might be that the density of Arctic populations seems rather low, with apparent concentrations of breeding pairs around settlements. Dispersal distances of yellow wagtails are among the largest measured in birds considering their body mass and diet (Sutherland et al 2000), which might enable populations to expand rapidly across large sparsely populated areas.



495 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Nizhny Kolymsk, Lower Kolyma, Russia, 12 June 1912 (Jeremiah Trimble/MCZ). Holotype of *plexa* (MCZ 64033). Males with this appearance can be found along entire Arctic from Scandinavia to Alaska, USA. Combination of rather extensive white on chin, dusky markings on breast (not visible in this photograph) and weak supercilium is frequent between Lower Kolyma and Lower Anabar. **496** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Sharagolskaya village, Baikal area, Russia, 15 June 1913 (Vladimir Loskot/ZIN). Holotype of *angarensis* (ZIN 125666/466-960).

Plexa problem

The results of this study are of relevance for the definition of the Eastern Yellow Wagtail subspecies *plexa*, which is clouded by uncertainty. According to the original description (Thayer & Bangs 1914), *plexa* shows a 'very thin, but well-marked' supercilium separating it from *thunbergi*, and also more white on the chin. Plate 495 depicts the type specimen, collected in Lower Kolyma. The range of *plexa* is unclear. The western limit has been vari-

ably placed at the Pechora river (Grant & Mackworth-Praed 1952), approximately along the Urals (Red'kin et al 2016), at the Yenisey river (Sushkin 1925, Dementiev & Gladkov 1954), at the Taz river (Vaurie 1959), 'at least east from 83-85°E' (Bot et al 2014) or at the Lena river (Brazil 2009). The eastern limit is often given as the Kolyma river but some authors describe a zone of intergradation between *plexa* and *tshutschensis* from Kolyma to Anadyr in Chukotka (Dementiev &



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497 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Sharagolskaya village, Baikal area, Russia, 15 June 1913 (Vladimir Loskot/ZIN). Paratype of *angarensis* (ZIN 125667/466-960). **498** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *zaissanensis*, Kalawu Tekele lake, northern Xinjiang, China, 19 May 2011 (Alexander Hellquist). **499** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *zaissanensis*, Kalawu Tekele lake, northern Xinjiang, China, 19 May 2011 (Alexander Hellquist). This bird gave soft disyllabic calls (sonagrams figure 27C-E). **500** Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male *zaissanensis*, Kalawu Tekele lake, northern Xinjiang, China, 19 May 2011 (Peter Schmidt). Bird with less prominent supercilium.

Gladkov 1954, Kistchinski 1988, Portenko 1989) while Red'kin & Babenko (1999) argue that *tschutschensis* reaches Kolyma and that the intergradation with *plexa* takes place further west.

Based on the results of this study, it is not possible to separate the population breeding in Lower Kolyma region from *tschutschensis* breeding in Chukotka and Alaska with enough confidence to meet the often applied 75% rule for subspecific recognition (eg, Amadon 1949). The only significant identified difference is the larger share of birds with dark heads or only a short supercilium around Kolyma but such phenotypes occur in Chukotka as well (plate 490). Further studies of

song variation might establish additional differences. Westwards, birds from Lower Kolyma are very similar to populations at least as far as Lower Olenyok. Compared with breeders further west, in Taimyr, there is a seemingly consistent difference in typical contact calls, along with small average differences in male plumage and possibly also pace of song.

If *plexa* is to be regarded as a separate taxon (ignoring the 75% rule vis-à-vis *tschutschensis*), a logical delimitation of the range based on features studied here would be Lower Kolyma in the east and Lower Olenyok or Lower Anabar in the west (depending on vocalisations of breeders in Lower



501 Yellow wagtail / gele kwikstaart *Motacilla flava* sensu lato, male, Gornozavodovsk, Sakhalin, Russia, 9 July 1993 (John Klicka/UWBM). Specimen identified as intergrade between *taivana* and *macronyx* by Red'kin & Babenko (1999) but present author considers that it falls within variation of *taivana* (however, specimen not examined by author).

Anabar). However, by such standards, the populations in Taimyr and westwards to the Ob river basin and Yamal can be argued to show a comparable degree of differentiation, being possible to separate from populations further west based on longer average hind claw, brighter plumage colouration in females, generally slightly sharper calls and also a potentially distinct call type.

If future studies confirm ongoing changes in appearance and vocalisations in north-western and north-central Siberia due to introgression, it might be better to view birds breeding here as intergrades between *thunbergi* and *tshutschensis* rather than as a separate taxon. Whether the pattern of introgression is consistent with a continued division of Western Yellow Wagtail and Eastern Yellow Wagtail into separate species also requires further attention. In general, wide zones of intergradation given dispersal distance indicate lack of reproductive barriers (eg, Barton & Gale 1993). Ongoing studies of complete genomes in yellow wagtails (Per Alström pers comm) will likely shed more light on this issue in the near future.

Simillima and *macronyx*

The results of this study align with the accounts of *simillima* and *macronyx* in Alström & Mild (2003). *Simillima* differs from *tshutschensis* only slightly in terms of cleaner yellow underparts with less prominent necklace and on average less white on the throat. Kistchinski (1980) describes an intergradation zone in northern Kamchatka where birds become even more similar to *tshutschensis*. Because of the small differences, the validity of *simillima* can be questioned.

Macronyx (plate 493-494) is similar to dark-headed Arctic birds. Upon direct comparison of series of specimens, its cleaner yellow underparts are evident. Few examined Arctic birds were equally bright, especially east of Taimyr. None of the examined *macronyx* showed a prominent necklace (score 3 in figure 8), as opposed to 55% in Arctic birds between Lower Anabar and Lower Kolyma. Conversely, only 5% of birds between Lower Anabar and Lower Kolyma showed clean yellow underparts as in a majority of *macronyx*. *Macronyx* also differs on average in terms of blunter wing, longer emargination on the eighth primary (Alström & Mild 2003), and to some extent genetics (Drovetski et al 2018, Harris et al 2018). Typical calls and song separate *macronyx* from dark-headed Arctic birds from Taimyr and westwards. As indicated by Bot et al (2014), there might also be small average differences in calls between *macronyx* and Arctic birds east of Taimyr. However, additional studies based on large samples are needed to confirm this.

Zaissanensis

Zaissanensis is treated as synonymous with *tshutschensis* by some authorities, eg, AOU (Banks et al 2004) and IOC (following Alström & Mild 2003), while Red'kin (2000, 2001) groups it with Western Yellow Wagtail. It seems that it is geographically isolated from all Eastern Yellow Wagtail subspecies, as suggested by Johansen (1944) and also indicated in the map in Red'kin et al (2016). While the male head pattern in *zaissanensis* and *tshutschensis* is similar, *zaissanensis* differs in softer calls, western-type songs, shorter hind claw length

and duller female plumage, suggesting that it is a western form. It also shows a cleaner yellow breast on average in males than *tschutschensis*. It seems that *zaissanensis* and *beema* intergrade to some extent (skins in ZMUC). Still, the darker crown and ear coverts distinguish studied *zaissanensis* in the Kazakh and Chinese Altai mountains from typical *beema*.

The breeding range of *zaissanensis* is bordered in the north by a broad belt running through Novosibirsk oblast, the Altai Republic, Kemerovo oblast, southern Krasnoyarski Krai and Tuva Republic, where *beema* breeds and intergrades with *leucocephala* in the east from Tuva to north-western Mongolia (Cvetkov et al 2003, Red'kin 2011). In the studied material, no evidence of *tschutschensis*-like phenotypes breeding in this belt, or anywhere else close to the Altai, has been found. Given the relative distinctiveness of *zaissanensis*, and its apparent isolation from similar phenotypes, two alternative hypotheses regarding its taxonomic position can be considered: **1** *zaissanensis* is a valid Western Yellow Wagtail subspecies with a restricted range in the Altai; **2** *zaissanensis* represents a stable population of intergrades between other taxa, if so, possibly *feldegg* and *beema* that breed in close proximity just west and north of its range.

In support of the intergrade hypothesis, it can be noted that the plumage of *zaissanensis* is similar to that of '*dombrowski*' intergrades between *flava* and *feldegg* in south-eastern Europe, which in turn are similar to *tschutschensis* (as described in Alström & Mild 2003). Presumably, intergrades between *feldegg* and *beema* can also be similar to '*dombrowski*'. Intergradation between *feldegg* and *beema* in Trans-Caspia is mentioned by Stepanyan (1990) and Alström & Mild (2003). *Feldegg* has expanded eastwards in Central Asia as deserts have been turned into arable land (Ferlini 2016), which might increase potential for interbreeding with other taxa. Odd phenotypes including '*superciliaris*', '*melanogrisea*' as well as grey-headed birds without a supercilium breed in Xinjiang just south of the range of *zaissanensis*. It is conceivable that all of these, as well as *zaissanensis*, represent an intergradation zone (although the grey-headed birds might better be regarded as a distinct separate subspecies; Hellquist et al in prep). The typical rasping call of *feldegg* was not noted in the small sample of studied *zaissanensis*. The vocal repertoire of *feldegg*, however, is broad and soft calls are frequent.

On the other hand, the appearance of *zaissanensis* males in the studied sample is rather consistent (plate 498-500), with variability in male plum-

age seemingly equivalent to that in other yellow wagtail subspecies. In addition, it seems that *zaissanensis* has a fairly well-defined distribution in the Altai where other phenotypes are absent or very rare, although further study is needed to confirm this.

Angarensis

The apparent isolation of *zaissanensis* from Eastern Yellow Wagtails is relevant also when discussing the status of *angarensis*, another taxon clouded by uncertainty. It was described by Sushkin (1925) based on two males collected by Sharagolskaya village south-east from lake Baikal on 15 June 1913, along with six more specimens from central Siberia. The holotype and the paratype collected in the same location are depicted in plate 496-497. Sushkin (1925) defined the range of *angarensis* as Transbaikalia, northern Baikal, the Tunguska river basins and the headwaters of the Khatanga river. Little convincing evidence that birds reminiscent of the two type specimens, or of *tschutschensis* in general, breed in this area has been found in the literature or in the examined material.

Taivana seems to be the only yellow wagtail breeding in east-central Siberia. To the west, it reaches areas north of lake Baikal and possibly the upper reaches of Angara (Dorzhiev 2011, Volkov 2016). Popov (2016) mentions '*tschutschensis*' as a rare passage migrant only in Prebaikalia (ie, regions just west of lake Baikal), and states that it is not breeding in the northern Irkutsk oblast along Lower Tunguska. Igor Fefelov (in litt) asserted that presently no yellow wagtails breed in southern Irkutsk oblast, while *beema* has recently been found breeding in the westernmost part of Irkutsk oblast by Chuna river (Popov 2019). In his account of birds in Yakutia, Vorobiev (1963) mentions *angarensis* only as a passage migrant in the eastern parts (it seems likely that he refers to *tschutschensis* phenotypes) while Ivanov (1935) states that *taivana* is the only breeding subspecies in the central part of Yakutia. In an account of the avifauna of the southern Baikal region, Mel'nikov (2017) asserted that *tschutschensis* is a rare passage migrant, that *taivana* is a sparse passage migrant, and that *macronyx* is accidental but has possibly bred occasionally in recent years. Rogacheva & Vakhrushev (1983) suggest that yellow wagtails are rare or absent as breeders in the taiga zone along middle Yenisey river, north of the *beema* populations breeding around Krasnoyarsk, while stating that they become common northwards at least from the Baklanikha river tributary. Here, breeding birds should be connected with the Arctic populations

included in this study. Romanov (2015) states that yellow wagtails are locally common breeders on the Putorana plateau south of the Taimyr peninsula, ie, just west of the Khatanga river headwaters. Only one specimen from the Putorana plateau, a female, has been examined. Again, this population should be connected with those sampled from Taimyr. Dementiev & Gladkov (1954) assert that *angarensis* is a 'highly dubious subspecies' but they restate the range given by Sushkin (1925) and add that it might extend eastwards almost to Verkhoyansk and along the Yana river. The examined specimens from the northern parts of these regions are not distinct from other Arctic breeders between Anabar and Kolyma.

Apart from the examined type specimens, the only indication of birds matching the description of *angarensis* breeding well south of the Arctic is a male collected on 2 July 1965 in the Suntarsky district in south-western Yakutia (ZMMU 103702). It is similar to *tschutschensis*, with a prominent supercilium. It is also similar to birds with a prominent supercilium collected in the Lower Anabar region, almost straight north from Suntarsky district (there are also dark-headed birds breeding in the Lower Anabar, as evident among skins at ZMMU and also described by Gladkov & Zalataev 1964/2014). It is conceivable that the specimen from the Suntarsky district represents a current or former population of central Siberian birds with a white supercilium, or a southern extension of Arctic populations, but it could also be a non-breeding bird south of its normal range.

The same uncertainty regarding breeding status applies to the *angarensis* holotype and paratype. Although they were collected during the period of breeding around lake Baikal, it seems that the spring passage of *tschutschensis* phenotypes through this area extends into June, with migrating birds noted along the north-western shores on 5 June 2005 by Magnus Hellström (www.club300.se/Files/TravelReports/Siberia2005_MH.pdf). As evident in plate 496–497, the plumage of the *angarensis* paratype matches *tschutschensis* well, whereas the holotype has a dark crown and ear-coverts and a long supercilium that is partly yellow behind the eye. In this regard, it is slightly atypical. *Tschutschensis* occasionally shows yellow hues in the supercilium and the darkness of the crown varies, just as in other Arctic populations. Therefore, the *angarensis* holotype probably falls within variation of *tschutschensis* and other Arctic birds with a supercilium but an intergrade might also be considered given that the specimen was collected in between the main ranges of *taivana* and *macro-*

nyx. Very few intergrades between these two taxa have been described in literature, and no convincing case has been found during this study. Photographs of a specimen identified by Red'kin & Babenko (1999) as an intergrade between *taivana* and *macronyx* (UWBM 46975) have been examined (plate 501). In my view, it falls within the variation of *taivana*.

Another possibility is that the *angarensis* type specimen represents an intergrade between *taivana* and either *tschutschensis* or *simillima*, which seem to occur regularly in Magadan oblast and southern Kamchatka (eg, plate 492). Pending genetic analysis that clarifies the identity of the holotype, the best option is probably to consider *angarensis* a likely northern passage migrant rather than a valid separate taxon, as indeed suggested by Meinertzhagen (1954). It can be noted that Red'kin et al (2016) omitted it from their account and leave a large part of its range empty in their distribution map.

Conclusions

To summarise the main findings of this study, the variation in sampled birds across Arctic regions suggests introgression between *thunbergi* and *tschutschensis* between Lower Ob and Lower Kolyma, challenging the division into two separate yellow wagtail species. Overlap between birds from different regions makes it impossible to identify geographic origins of out of range individuals based on measurements and plumage features examined here. However, average differences may provide clues, and when combined with recordings of series of typical contact calls and song, it is possible to assign birds with reasonable certainty to three areas: **1** Scandinavia and north-western Russia: soft calls that are often slightly disyllabic; song either single note type or slow variants of fast type; **2** The area between Yamal/Ob river basin and Taimyr: sharper calls without *r*-sound and calls with prominent frequency dip midway; song either single-note type or fast type at moderate pace; **3** The area east of Taimyr and in Alaska: sharp Citrine Wagtail-like calls with *r*-sound; song most likely only a fast type at high pace (more study of song needed in area between Eastern Taimyr and Lower Kolyma). Based on examined features, it is not possible to separate birds breeding east of Taimyr to Lower Kolyma, ie, within the alleged range of *plexa*, from *tschutschensis* with enough confidence to meet the 75% rule for subspecific recognition, although males without a supercilium are regular in Lower Kolyma and westwards while being rare in *tschutschensis*.

For the more southern taxa, the findings corroborate earlier studies showing only slight average differences between *simillima* and *tschutschensis*, and more pronounced and consistent average differences in plumage between *macronyx* and Arctic dark-headed birds. No convincing evidence of the existence of the alleged taxon *angarensis* has been found. Finally, the results suggest that *zaissanensis* is a fairly distinct form of Western Yellow Wagtail. Its consistent plumage and separate breeding range in the Altai mountains suggest that it is a valid subspecies (Yaroslav Red'kin in litt), although further study is needed to firmly rule out the possibility of an intergrade population.

From a European field identification perspective, the findings confirm that recordings of calls are essential when dealing with suspected vagrant eastern yellow wagtails. Actually, in Arctic populations, calls seem to provide a more precise indication of geographic origin than the mtDNA haplotypes upon which publication of Eastern Yellow Wagtails records in Europe has relied heavily so far. As long as the status of *plexa* is unresolved, assignment of north-eastern birds to a specific taxon will however remain problematic.

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Samenvatting

HERKENNING EN TAXONOMIE VAN NOORDELIJKE EN OOSTELIJKE GELE KWIKSTAARTEN – NIEUWE PUZZELSTUKJES Dit artikel presenteert gegevens over de variatie in morfologie, kleed en geluiden van noordelijke en oostelijke gele kwikstaarten

Motacilla flava sensu lato. Om praktische redenen wordt hier de taxonomische indeling gevolgd conform *Handbook of the birds of the World* (del Hoyo & Collar 2016; westelijke *flava*-soortgroep en oostelijke *tschutschensis*-soortgroep), met focus op de Arctische ondersoorten *M f thunbergi*, *M t plexa* en *M t tschutschensis* en de meer zuidelijke *M t angarensis*, *M t simillima* en *M t macronyx*. Tevens wordt de vorm *zaissanensis* besproken.

De variatie in onderzochte vogels uit de Arctische regio's, van Europa oostwaarts door Rusland tot de Beringstraat en Alaska, VS, suggereert introgressie tussen *thunbergi* en *tschutschensis* tussen de benedenlopen van de Ob en de Kolyma, waarmee de indeling als twee aparte soorten (Gele Kwikstaart *M flava* sensu stricto en Oostelijke Gele Kwikstaart *M tschutschensis*) ter discussie komt te staan. De overlap tussen vogels van verschillende Arctische regio's maakt het onmogelijk om de geografische herkomst te bepalen van afgedwaalde individuele vogels op basis van maten en kleedkenmerken. Echter, gemiddelde verschillen kunnen aanwijzingen bieden en in combinatie met opnamen van series typische contactroepen en zang is het mogelijk om individuen met een redelijke mate van zekerheid te koppelen aan drie gebieden: **1** Scandinavië en waarschijnlijk Noordwest-Rusland: zachte roepen die vaak iets tweelettergrepig zijn, en zang van het eentonige type of een langzaam meertonig type; **2** het gebied tussen het Yamal/Ob-bekken en Taimyr: scherpere roepen zonder *r*-klank en roepen met een opvallende dip in frequentie halverwege, en zang van het eentonige type of een meertonig type met gematigd tempo; en **3** het gebied ten oosten van Taimyr en in Alaska: scherpe Citroenkwikstaart *M citreola*-achtige roepen met *r*-klank, en zang van zeer waarschijnlijk alleen een meertonig type in hoog tempo. Op basis van de onderzochte kenmerken is het niet mogelijk om broedvogels ten oosten van Taimyr tot de benedenloop van de Kolyma (ie, binnen het veronderstelde gebied van *plexa*) met voldoende zekerheid (de 75%-regel voor erkenning als aparte ondersoort) te onderscheiden van *tschutschensis*, hoewel mannetjes zonder wenkbrauwstreep regelmatig voorkomen in het gebied van de benedenloop van de Kolyma en ten westen daarvan, terwijl dat kenmerk zeer zeldzaam is in *tschutschensis*.

Voor de meer zuidelijke taxa bevestigen de resultaten eerdere studies die slechts geringe gemiddelde verschillen toonden tussen *simillima* en *tschutschensis*, en de meer uitgesproken en consistente kleedverschillen tussen *macronyx* en Arctische donkerkoppige vogels. Er is geen overtuigend bewijs gevonden voor de validiteit van het veronderstelde taxon *angarensis*. Ten slotte suggereren de resultaten dat *zaissanensis* een vrij duidelijke vorm is van de westelijke groep. Het consistente verenkleed en gescheiden broedgebied in het Altai-gebergte suggereren dat het een valide ondersoort is, hoewel verder onderzoek nodig is om de mogelijkheid van een overgangspopulatie uit te kunnen sluiten.

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APPENDIX 1 Overview of studied yellow wagtails *Motacilla flava* sensu lato in breeding grounds

Geographic region/taxon (numbers refer to regions in figure 1)	Field studies by author	Number of examined individuals in field photographs	Number of examined museum specimens	Number of singing individuals in examined recordings	Number of calling birds in examined recordings
1 Northern Scandinavia	X	152	196	26	44
2 Karelia		3	6	1	2
3 Murmansk		15	15	0	0
4 Arkhangelsk		2	18	0	0
5 Komi & NAO		16	24	0	2
6 Yamal		20	10	0	11
7 Ob river basin	X	21	50	16	44
8 Lower Yenisey and Taz	X	66	24	1	23
9 Western Taimyr	X	18	6	12	24
10 Eastern Taimyr	X	26	13	1	19
11 Lower Anabar		0	15	0	0
12 Lower Olenyok	X	10	0	2	9
13 Lower Lena	X	5	10	2	5
14 Lower Yana		0	27	0	1
15 Lower Indigirka		6	21	2	3
16 Lower Kolyma		10	42	0	0
17 Chukotka	X	10	69	1	3
18 Alaska	X	53	10	10	28
19 Kamchatka (<i>simillima</i>)	X	27	25	2	8
<i>beema</i>	X	28	17	9	10
<i>zaissanensis</i>	X	23	34	3	5
<i>macronyx</i>		8	27	9	9

Black Redstart: no evidence for multiple species or hybrid origin of eastern taxa

George Sangster

Black Redstart *Phoenicurus ochruros* is widely distributed across Asia and Europe. Geographic variation in morphology is substantial and is reflected by the recognition of five (Dickinson & Christidis 2014, Clement & Rose 2015), seven (Vaurie 1959, Cramp 1988) or nine (Fedorenko 2018) subspecies (figure 1). Two major groups have been recognised (eg, Roselaar in Cramp 1988): first, a western group, comprising the taxa *P. o. gibraltariensis* (hereafter *gibraltariensis*) and '*P. o. aterrimus*' (hereafter '*aterrimus*'), in which males show a uniformly grey forehead and crown, black breast transitioning to a grey-white central belly and vent, and large white wing-patch on secondaries and primaries and, second, a southern and eastern group comprising the taxa *P. o. semirufus* (hereafter *semirufus*), *P. o. phoenicuroides* (hereafter *phoenicuroides*), '*P. o. xerophilus*' (hereafter '*xerophilus*') and *P. o. rufiventris* (hereafter *rufiventris*), in which males show an often white forehead, rufous side of the breast, belly, flank and vent, and no wing patch (except in *semirufus*). Located between the distribution of these two groups is the taxon *P. o. ochruros* (hereafter *ochruros*), which is rather variable; many birds show a combination of character states of the western and eastern groups, including a black breast but rufous belly and vent, and no white wing patch (Vaurie 1959, Cramp 1988). The taxa '*aterrimus*' and '*xerophilus*' are not always recognised by taxonomists. The former refers to populations in Portugal and central and southern Spain which tend to be even blacker than other populations in Europe (*gibraltariensis*), whereas the latter refers to populations that are intermediate in appearance between *phoenicuroides* and *rufiventris*.

The evolutionary history of Black Redstarts is poorly understood. For instance, it is not clear whether the two groups distinguished by plumage pattern represent unique evolutionary lineages (species sensu De Queiroz 1999). A first step towards clarifying the evolutionary history and taxonomic status of western and eastern Black Redstarts is to seek other lines of evidence and assess

whether their patterns of variation are concordant. If differences between two or more populations are supported by multiple lines of evidence, this may be regarded as evidence that the populations have unique evolutionary histories. However, if patterns are discordant, more evidence is needed to clarify the evolutionary history (and taxonomy) of the relevant populations.

Another unresolved question is whether the eastern subspecies of Black Redstart (*semirufus*, *rufiventris* and *phoenicuroides*) are the result of past hybridisation between western European Black and Common Redstart *P. phoenicurus*. Male hybrids of western European Black and Common closely resemble males of the eastern subspecies of Black in plumage (Landmann 1987, Ertan 2002, 2006). In fact, hybrid Black x Common are so similar to eastern subspecies of Black that they pose a formidable identification problem that has only recently been addressed in detail (Steijn 2005, van der Spek & Martinez 2018). The egg morphology and microsatellite variation of eastern Black have also been interpreted as evidence for a hybrid origin of eastern Black (Ertan 2002).

If eastern Black Redstarts indeed resulted from past hybridisation of western Black with Common Redstarts, and if hybridisation involved both sexes of both taxa, one may expect to find mitochondrial DNA (mtDNA) of Common to be present within populations of eastern Black. Thus, as a first step towards testing the hybrid origin of the eastern subspecies of Black it is worthwhile comparing mtDNA sequences of eastern populations of Black with those of western Black and Common.

The only phylogenetic analysis of redstarts that included multiple taxa of Black Redstart was published by Ertan (2002, 2006). Ertan's study produced >40 sequences of Black but his mtDNA phylogeny included only seven or eight of these, with just one sequence each of *ochruros*, *semirufus*, *rufiventris* and *phoenicuroides*. New sequences have become available (especially from China) but these have not been included in a phylogenetic analysis (Qu et al 2010) or combined

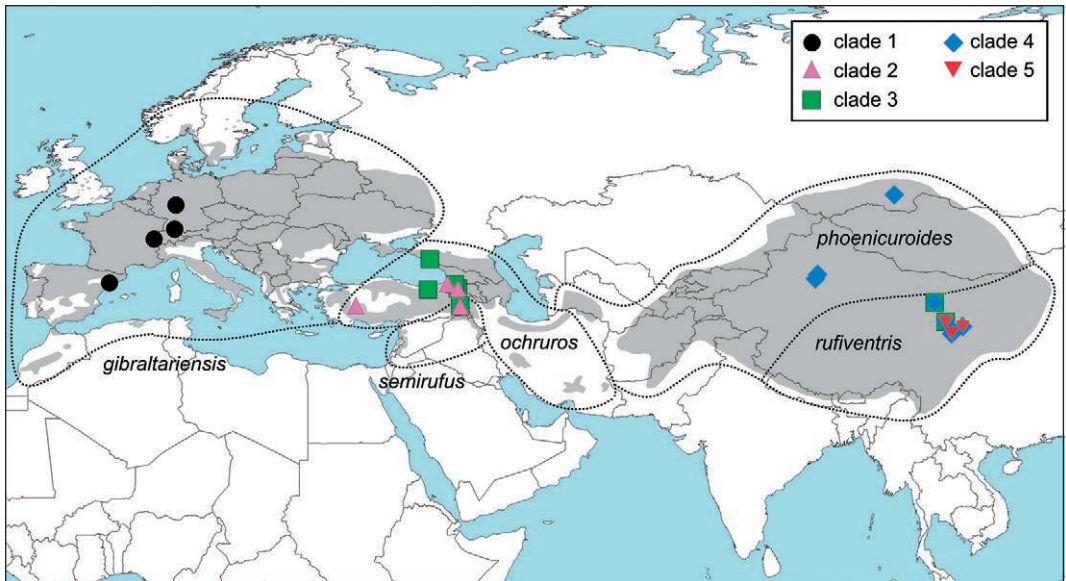


FIGURE 1 Range map of Black Redstart *Phoenicurus ochruros* (based on BirdLife International & Handbook of the birds of the world; Collar 2020) indicating subspecies limits (sensu Vaurie 1959, Clement & Rose 2015) and sampling localities of the five major cytochrome b clades. Only breeding ranges are indicated. Note lack of correspondence between cytochrome b clades and subspecies limits, and coexistence of clade 2 and 3 in eastern Turkey, and clade 3, 4 and 5 in central China.

with Ertan's data set (Pan et al 2006, Sangster et al 2010, Voelker 2010, Voelker et al 2015). In this review, I provide an updated phylogeny that combines sequences from various previously published studies, evaluate whether there is evidence for the existence of multiple species or a hybrid origin of the eastern taxa, and discuss the prospects of separating members of the eastern, rufous-bellied taxa from hybrids of Black and Common Redstart in Europe using mtDNA sequence data.

Results

Based on phylogenetic analysis of 66 DNA sequences of the mitochondrial cytochrome b gene (see description of methods in appendix 1), it is possible to distinguish five major clades (phylogenetic groups) among Black Redstarts (figure 2). Black Redstarts in clade 1-2 were found only in the Western Palearctic, those in clade 3 were found in both the Western and Eastern Palearctic, and those in clade 4-5 were only found in the Eastern Palearctic. Clade 1 included birds sampled within the range of *gibraltariensis* in Germany, Spain and Switzerland. Clade 2 consisted of birds sampled in Turkey which have been identified as *ochruros* (Kizildag) and *semirufus* (Kars, Artvin,

Van, Hosab). Clade 3 comprised birds identified as *ochruros* (Kars and Gümüşhane, Turkey; Krasnodar, Russia), *semirufus* (Ardahan, Van, Hosab and Gümüşhane, Turkey) and *rufiventris* (Gansu and eastern Qinghai, China). Clade 4 included birds identified as, or sampled within the range of, *phoenicuroides* (Tyva, Russia, Xinjiang and Gansu, China) and *rufiventris* (eastern Qinghai and Gansu, China). Clade 5 comprised birds identified as, or sampled within the range of, *rufiventris* (eastern Qinghai and Gansu).

The relationships among the five clades were only partially resolved and poorly to moderately supported by the data. The deepest divergence was between clade 1-4 and clade 5; mean sequence divergence between these was 4.1%. Relationships between clade 1+2, clade 3 and clade 4 were unresolved. Mean sequence divergence between these was 3.1%. Clade 1 and 2 were closely related but their reciprocal monophyly was not well supported. Mean sequence divergence between clade 1 and 2 was 1.3%, which was lower than the maximum divergence in clade 1 (2.1%). Thus, recognition of clade 1 and 2 is highly provisional and may not be upheld by subsequent study.

The phylogenetic relationships among Black

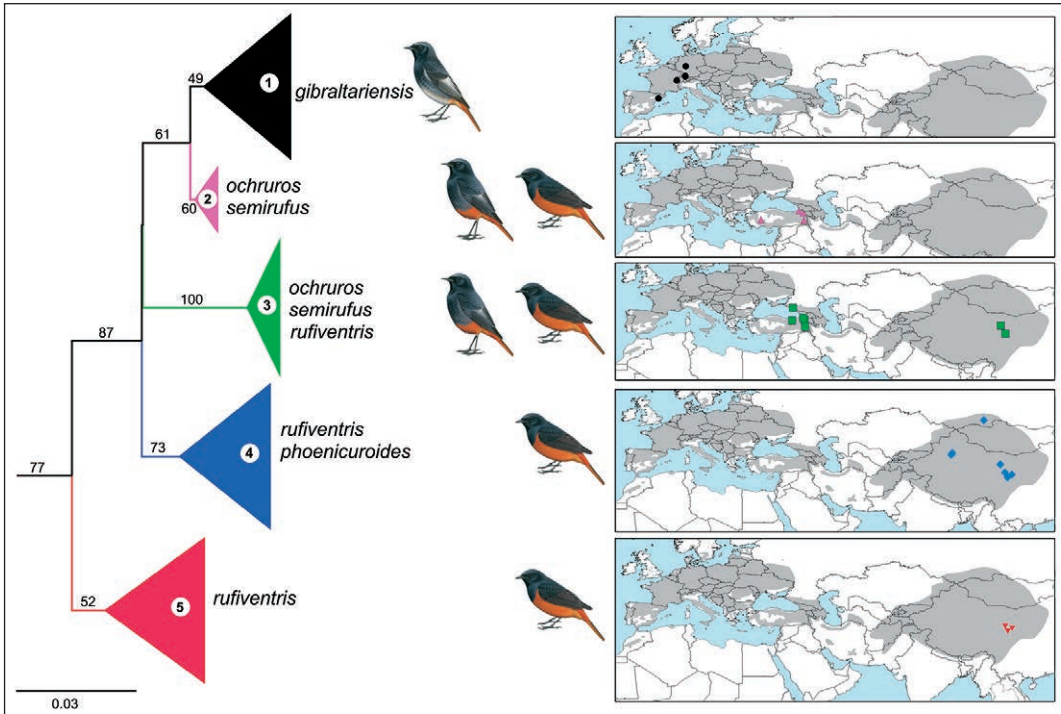


FIGURE 2 Maximum likelihood phylogeny based on 880 base pairs of mitochondrial cytochrome b gene ($n=66$) in Black Redstart *Phoenicurus ochruros*. The five major clades are indicated by colour and identified by number. Numbers above branches represent bootstrap support values. Height of each clade is proportional to number of sequences. The three major phenotypes are indicated by vignettes. All bird paintings are by François Desbordes, reproduced with permission from *Handbook of the birds of the world* (Collar 2020). Sampling localities for each clade are indicated on range maps. Note that clade 1-2 are only known from Western Palearctic, clade 3 is known from both Western and Eastern Palearctic, and clade 4-5 are known only from Eastern Palearctic.

Redstarts inferred from mtDNA do not correspond to the two major groups identified by plumage, nor to the subspecies currently recognised by taxonomists (figure 1). Birds in eastern Turkey and central China turned up in multiple clades. Thus, mtDNA sequences of clade 2-3 were both present in birds sampled in eastern Turkey, whereas members of clade 3, 4 and 5 were found to coexist in Xinghai and Gansu.

Discussion

Multiple species?

The phylogeny obtained in this study (figure 2) reveals a complicated pattern of variation which does not correspond to morphology, geography or subspecies limits. MtDNA shows four or five major groups whereas morphology shows two or three major groups. One of these mtDNA groups corresponds to the white-bellied European birds

whereas the other four mtDNA groups refer to rufous-bellied eastern birds. The mtDNA groups corresponding to rufous-bellied birds overlap in Turkey (clade 2-3) and central China (clade 3, 4 and 5). Three of the five phylogroups comprise multiple subspecies. The lack of concordance between variation in morphology and mtDNA sequences does not support recognition of multiple species of Black Redstart. Thus, a change in species limits is not warranted based on currently available data. Nevertheless, it would be interesting to see if there are differences in other types of data, such as songs and nuclear DNA markers, and how morphologically distinct taxa interact where they come into contact (eg. *gibraltariensis* and *ochruros* in the Caucasus and Turkey, *ochruros* and *semirufus* in the Levant and Turkey, and *ochruros* and *phoenicuiroides* in north-eastern Iran and western Turkmenistan).

Hybrid origin of eastern taxa?

If the red belly of eastern Black Redstarts is the result of introgressive hybridisation between white-bellied Black and Common Redstarts one would expect to: **1** find mtDNA haplotypes of both Black and Common in eastern Black (unless hybridisation was almost exclusively between female Black and male Common), and, in addition, **2** the Black population with white-bellied phenotypes (*gibraltariensis*) to carry equally divergent mtDNA haplotype(s) than those of red-bellied eastern Black. The evidence contradicts both predictions. First, there is no evidence of Common mtDNA in (eastern) Black populations. Second, white-bellied Black carry less divergent mtDNA haplotypes (clade 1; figure 2), whereas red-bellied populations carry more divergent mtDNA haplotypes (clade 3, 4 and 5; figure 2).

Egg colouration of the eastern subspecies of Black Redstart, which is variable with colour ranging from white to blue, has also been interpreted as evidence for a hybrid origin of the eastern taxa (Ertan 2002). Eggs of western European Black (*gibraltariensis*) are white, rarely tinged blue, or with faint brownish spotting (Cramp 1988, Ertan 2002), whereas those of Common Redstart are described as pale blue (Cramp 1988) or bluish-green or pale blue to sky-blue (Ertan 2002). Thus, the range of variation in egg colouration of the eastern subspecies of Black includes the colours seen in both western European Black and Common. However, this is hardly convincing; egg colouration is variable in all species of redstarts (*Phoenicurus*, *Phoenicuropsis*, *Rhyacornis*, *Chaimarrornis*; Ertan 2002, Clement & Rose 2015).

Microsatellite data from the eastern subspecies of Black Redstart (*ochruros*, *semirufus*, *rufiventris* and *phoenicuroides*) and Ehrenberg's Redstart *P p samamiscus* showed higher variability than those of western European Black and nominate Common Redstart *P p phoenicurus*. Ertan (2002) interpreted this as evidence of a hybrid origin of the eastern subspecies of Black and Ehrenberg's but did not actually show that the higher variation in these populations was a result of interspecific gene flow. Ertan (2002) also did not consider alternative explanations for geographic differences in microsatellite variation, including differences in: **1** levels and directions of intraspecific gene flow, and **2** effective population size.

A simple alternative hypothesis for the red belly in eastern taxa is that this is the plesiomorphic ('ancestral') character state of Black Redstarts, and that the white belly of *gibraltariensis* is an apomorphic ('derived') character state. Nearly all species

of redstarts (*Phoenicurus*, *Phoenicuropsis*, *Rhyacornis*, *Chaimarrornis*) have a red belly, so this character state was likely present in the common ancestor of Black. This interpretation is supported by the geographic distribution of mtDNA clades in Black: the oldest clade (clade 5), and two of the clades of intermediate divergence (clade 3-4) show red bellies, whereas one of the two clades with the lowest divergence has a white belly (clade 1). In conclusion, there is as yet no need to invoke ancient inter-specific hybridisation to explain the red belly in eastern Black. However, current data do not exclude that possibility either. To be able to fully exclude the possibility that the red belly in eastern Black is the result of ancient inter-specific hybridisation, nuclear data are needed.

A recent origin of a distinctive phenotype within a widespread species, such as the white belly in western Black Redstarts, is not unheard of in muscicapoid passerines. For instance, Blue Rock Thrush *Monticola solitarius* comprises two divergent clades (uncorrected p-distance 4.8-5.1%); one of these includes the blue-bellied subspecies *M s solitarius* and *M s longirostris* and the other includes the blue-bellied *M s madoci* and *M s pandoo* and red-bellied *M s philippensis* (Zuccon & Ericson 2010). Thus, a split into two species based on phylogeny would be inconsistent with morphology whereas a split into two species based on morphology would be inconsistent with phylogeny. A similar situation is found in White-throated Dipper *Cinclus cinclus*, which comprises multiple clades; most of these correspond to populations of brown- or black-bellied birds but one clade includes the distinctive white-bellied taxon *C c leucogaster* but also typical brown-bellied birds (*C c przewalski*) (Hourlay et al 2008). A mismatch between morphology and major phylogenetic groups of mtDNA is a clear indication that other evidence is warranted to clarify the evolutionary history of the relevant species.

Prospects for DNA identification

The efficacy of DNA identification of Black Redstarts depends on the problem being addressed. Based on present knowledge, it should be possible to distinguish a vagrant eastern bird (*phoenicuroides*, *rufiventris*) from a local hybrid Black (*gibraltariensis*) x Common Redstart in Europe using mtDNA sequences. A European hybrid Black x Common should carry mtDNA of either the European subspecies of Black Redstart (*gibraltariensis*) (ie, clade 1) or Common Redstart (depending on which species was the mother of the bird in question). A vagrant eastern bird (*phoeni-*

cuiroides, *rufiventris*) would carry the mtDNA typical of clade 3, 4 or 5.

In contrast, subspecies identification in most cases is not feasible using mtDNA alone. The phylogeny shows that clade 2, 3 and 4 include multiple subspecies (figure 2) which means that the relevant subspecies (*ochruros*, *semirufus*, *phoenicuiroides* and some *rufiventris*) cannot be reliably separated by mtDNA. Based on current evidence, it is possible to identify *gibraltariensis* because clade 1 only includes members of that taxon. Clade 5 only includes sequences of *rufiventris*. A bird carrying a sequence typical of this clade would be identifiable as *rufiventris*. However, not all sequences of *rufiventris* were part of this clade, and thus some *rufiventris* would not be identifiable by mtDNA alone.

Comparison with Common Redstart

The pattern described here for Black Redstart has some similarities to that found in Common Redstart. A detailed study of DNA variation in Common has shown that two divergent mtDNA clades coexist across the entire geographic range of the species (Hogner et al 2012). The authors ruled out that this was a result of artifacts such as laboratory issues or nuclear pseudogenes. Evidence from nuclear DNA sequences and analyses of historical population trends did not support different origins followed by a recent merger of the two major mtDNA clades. The evidence also did not support introgression from other species of redstarts. Hogner et al (2012) concluded that the two divergent mtDNA clades observed in Common are a result of ancestral polymorphism that is retained by a process called incomplete lineage sorting. Hogner et al (2012) rejected the idea of a hybrid origin of Ehrenberg's Redstart (Ertan 2002) due to the absence of Black DNA in Common.

The pattern observed in Black Redstart is more complex than that in Common Redstart. However, it seems likely that the overlap of multiple mtDNA lineages of Black in China and Turkey is similarly caused by incomplete lineage sorting of ancestral polymorphism.

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Samenvatting

ZWARTE ROODSTAART: GEEN BEWIJS VOOR MEERDERE SOORTEN OF HYBRIDE OORSPRONG VAN OOSTELIJKE TAXA Bij Zwarte Roodstaart *Phoenicurus ochruros* komen twee morfologisch verschillende groepen voor: **1** een westelijke groep (ondersoorten *P. o. gibraltariensis* en '*P. o. aterrimus*') met grijs voorhoofd en kruin, zwarte borst die overgaat in een grijswitte buik en anaalstreek, en witte vleugelvlek, en **2** een oostelijke groep (ondersoorten *P. o. semirufus*, *P. o. phoenicuiroides*, '*P. o. xerophilus*' en *P. o. rufiventris*) met vaak een wit voorhoofd, roodachtige zijborst, buik en anaalstreek en geen witte vleugelvlek (behalve bij *semirufus*). Tussen deze groepen bevindt zich het taxon *ochruros* dat nogal variabel is en kenmerken vertoont van beide groepen. Over de evolutionaire geschiedenis van Zwarte Roodstaart is weinig bekend. Het is niet duidelijk of de twee groepen corresponderen met aparte afstammingslijnen (soorten sensu De Queiroz 1999). Ertan (2002, 2006) heeft gesuggereerd dat de oostelijke groep van ondersoorten het resultaat is van interspecifieke hybridisatie tussen de westelijke groep en Gekraagde Roodstaart *P. phoenicurus*. De roodachtige buik van de oostelijke groep zou dan afkomstig zijn van Gekraagde.

In dit artikel wordt een nieuwe fylogenie gebruikt om beide kwesties te verhelderen. De fylogenie op basis van 66 sequenties van het mitochondriale cytochroom b-gen, laat vijf monofyletische groepen (clades) zien. Eén van deze clades correspondeert met de westelijke groep, de overige corresponderen met de oostelijke groep. Vogels in centraal China en Turkije doken op in meerdere clades. Drie van de vijf clades bevatten meerdere ondersoorten. De clades kwamen nauwelijks overeen met de huidige indeling van ondersoorten. Het gebrek aan overeenstemming tussen mitochondriaal DNA en verenkleed geeft geen steun aan het idee dat er sprake is van meer dan één soort.

Het ontbreken van mitochondriale sequenties (haplotypes) van Gekraagde Roodstaart in de oostelijke populaties van Zwarte Roodstaart en het feit dat de oostelijke populaties van Zwarte meer divergent zijn dan de westelijke populaties van Zwarte geeft geen ondersteuning aan de hypothese dat oostelijke populaties van Zwarte het resultaat zijn van interspecifieke hybridisatie tussen westelijke Zwarte en Gekraagde. De hybridisatie-hypothese kan echter met behulp van mitochondriaal DNA nog niet worden uitgesloten; daarvoor zijn nucleaire DNA-sequenties nodig.

Een alternatieve verklaring voor de rode buik van oostelijke Zwarte Roodstaart is dat dit de oorspronkelijke (plesiomorfe) toestand was. In dit scenario is de grijswitte buik in de westelijke groep later ontstaan. Dit scenario wordt ondersteund door: **1** het feit dat bijna alle soorten roodstaarten een rode buik hebben, en **2** de westelijke groep van Zwarte Roodstaart correspondeert met één van de twee minst divergente clades in de mitochondriale fylogenie.

De nieuwe fylogenie laat zien dat DNA-identificatie van oostelijke Zwarte Roodstaarten goed mogelijk is. Het mitochondriale DNA van oostelijke Zwarte verschilt namelijk duidelijk van dat van westelijke Zwarte en

Gekraagde Roodstaart, waardoor hybriden van de laatste twee gemakkelijk zijn te herkennen. Ondersoortbepaling van oostelijke Zwarte is echter niet goed mogelijk.

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APPENDIX 1

Methods

DNA sequences of the mitochondrial cytochrome b gene were used because this marker was best represented in GenBank. A total of 66 sequences (880-1041 bp) from Black Redstart *Phoenicurus ochruros* was available for study (Ertan 2002 [n=44], Pan et al 2006 [n=1], Qu et al 2010 [n=16], Sangster et al 2010 [n=1], Voelker 2010 [n=1], Voelker et al 2015 [n=3]). Sequences re-

ported by Ertan (2002) were not available from GenBank but were manually entered. Sequences of Moussier's Redstart *P. moussieri*, Common Redstart *P. phoenicurus* (Sangster et al 2010) and Blue-capped Redstart *P. caeruleocephala* (Price et al 2014) were used as outgroups. Sequence alignment was made with CLUSTAL W as implemented in MEGA7 (Kumar et al 2016). The best substitution model was determined in MEGA7 using the

Bayesian Information Criterion. A maximum likelihood analysis was run in RAXML v7.7.1 (Stamatakis et al 2008) under a HKY+G+I model, with the data set partitioned by codon and support calculated from 1000 bootstraps. Uncorrected (p) pairwise sequence divergences were calculated in MEGA7 with complete deletion of nucleotide positions with missing data, resulting in strictly homologous sequence data (ie, the 880 bp shared among all sequences). The phylogenetic tree was visualised with FigTree v1.4.3 (Rambaut 2007).

Sequence authenticity

To exclude the possibility that sequences result from introgression with other species or represent chimeras of DNA fragments of Black Redstart and those of other species, comparisons were made with cytochrome b se-

quences of all other species of *Phoenicurus* (Voelker et al 2015). No evidence was found for introgression: none of the sequences attributed to Black were more closely related to those of other species of *Phoenicurus* than to Black. Substitutions were found across the entire sequence and did not share any identical or nearly-identical portions with published sequences of other species. This rules out the possibility that the sequences used in this study represent chimeras of Black and other species. No evidence for nuclear pseudogenes (numts) was found; none of the sequences contained any stop codons, gaps or frameshift mutations, and most (84%) of the variable sites showed substitutions in the third codon, as would be expected from a protein coded gene under natural selection.

Assortative flocking behaviour of irruptive Lesser Redpolls and Mealy Redpolls in Belgium in November-December 2017

Redpoll taxonomy has been much debated. Arrangement of the eight *Acanthis* redpoll taxa (*cabaret*, *flammea*, *rostrata*, *hornemanni*, *exilipes*, *islandica*, *fuscescens* and *holboellii*) ranges from eight separate species (Coues 1862) to a single species (Salomonsen 1928, Marthinsen et al 2008, del Hoyo & Collar 2016), with various options in between. Mostly, two to three species are recognised (Williamson 1961, Molau 1985, Troy 1985, Knox 1988, Herremans 1990, Seutin et al 1995, Ottvall et al 2002, Clements et al 2019, Knox & Lowther 2020ab). Over time, the views have shifted back and forth between many and few species. Genetic evidence currently indicates that all the world's redpoll taxa should be united into a single species (Mason & Taylor 2015). Morphologic variation between the taxa is explained by different genetic expression, while genetic differentiation itself is very poor (Mason & Taylor 2015). Yet, so far, the IOC world bird list and the Dutch CSNA list still treat not only Arctic Redpoll *A hornemanni* (*A h hornemanni* and *A h exilipes*) but also Lesser Redpoll *A cabaret* and Mealy Redpoll *A flammea* as separate species (Gill et al 2021; www.dutch-avifauna.nl/wpvogelnamen).

Regardless of the taxonomic arrangement, subtle to clear differences have been documented between Lesser Redpoll and Mealy Redpoll regarding plumage (Lindström et al 1984, Knox 1988, Knox et al 2001, Herremans 2007, Lehtikonen & Lindholm 2009), vocalisations (Herremans 1989), diurnal rhythm (Herremans 1973, Pohl & West

1976), breeding habitat selection (Götmark 1981, Lifjeld & Bjerke 1996) and flocking behaviour (Lifjeld & Bjerke 1996). The latter authors documented assortative mating from an area of incidental breeding overlap in southern Norway. Meanwhile, birds with intermediate characteristics suspected to be of hybrid origin have been on the increase in southern Scandinavia (Ottvall et al 2002).

Some Belgian bird ringers are adamant that redpolls are easier to catch with decoys 'of their own kind', ie, Lesser Redpolls allegedly respond better to a Lesser decoy and Mealy Redpolls better to a Mealy decoy: an intriguing presumption but difficult to investigate. Furthermore, opportunities to do so are sparse in Belgium, not least because irruptions of Mealy are on average about a decade apart (Herremans & Gielen 2020).

Experiment

A large irruption of Mealy Redpolls reached Belgium in November 2017, 12 years after the previous large irruption, and eventually the opportunity arose to undertake a small experiment. I trapped and ringed redpolls in my garden at Zichem, Vlaams-Brabant, Belgium, on 22 days between 24 November and 22 December: 190 hours in total, 19 full days (including civil twilight) and three days interrupted by rain with 5.5-8.5 trapping hours. I used two decoys: one Mealy Redpoll and one Lesser Redpoll (caged 10 days earlier, under license of the Belgian Ringing Service). Two mistnets of 9 m length each were mounted adjacent to each other but at an angle of 130°, facing a 12 m tall birch tree in the narrow corner and a 1.4 m high fence copiously decorated with seed stalks of evening primrose *Oenothera* along the obtuse corner (figure 1). The perpendicular distance from the tree trunk to each of the nets was similar (10

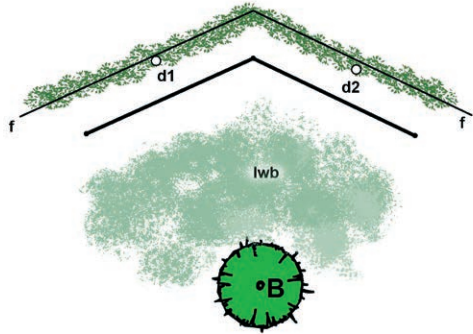


FIGURE 1 Sketch of ringing place. B = birch tree; d1-d2 = positions of decoys; f = fence; lwb = low willow bushes; lines = 9 m mistnets

and 11 m). Decoys were placed amongst the primroses, each behind one of the nets, and interchanged between nets daily.

Redpolls almost invariably landed first in the birch tree (which, however, had no seeds: see Herremans & Gielen 2020), before joining one of the decoys amongst the primroses (if at all). Birds trapped within 2.5 m from a decoy were considered as trapped 'on the decoy' and birds outside that distance as 'elsewhere in the net'. The distance of 2.5 m was chosen to allow for some scatter around the target, because birds not always end up in the net exactly where they initially aim at: sometimes birds notice the net and make an avoidance manoeuvre, or they hit the net more than once before getting trapped, or they avoid a bird hitting the net just in front or next to them. Nets were continuously monitored and birds removed as soon as caught. The set up was specifically equipped to catch redpolls and the site was chosen also because few other birds interfere here with the trapping of redpolls.

I managed to catch 223 redpolls during the experiment: 194 Mealy Redpolls, 27 Lesser Redpolls and two

birds that could not be ascertained. Birds recaptured later (14) are not included in the analyses. Identification of taxa was primarily on plumage (Lesser being warmer buff-brown, Mealy being colder grey-brown) and size (figure 2). Without decoys, redpolls only exceptionally came down to net high in the garden to forage: this was only observed three times in 20 years.

159 (71%) birds were trapped within 2.5 m from the decoys, the remaining 62 were further away in the net ('elsewhere'). The great majority of Mealy Redpolls were trapped near the Mealy decoy (69% of all) and similarly, most Lesser Redpolls were trapped near the Lesser decoy (74% of all) (table 1: the difference is highly significant). Therefore, relative to net length, both taxa were trapped six to seven times more frequently close to their conspecific decoy than elsewhere in the nets. When we consider each group of birds caught as a single event, there were 74 catching events, 54 exclusively catching Mealy, 11 Lesser and only nine with both taxa mixed. The preference for the conspecific decoy remains highly significant (table 1). These results clearly indicate assortative flocking behaviour of Lesser and Mealy during autumn:

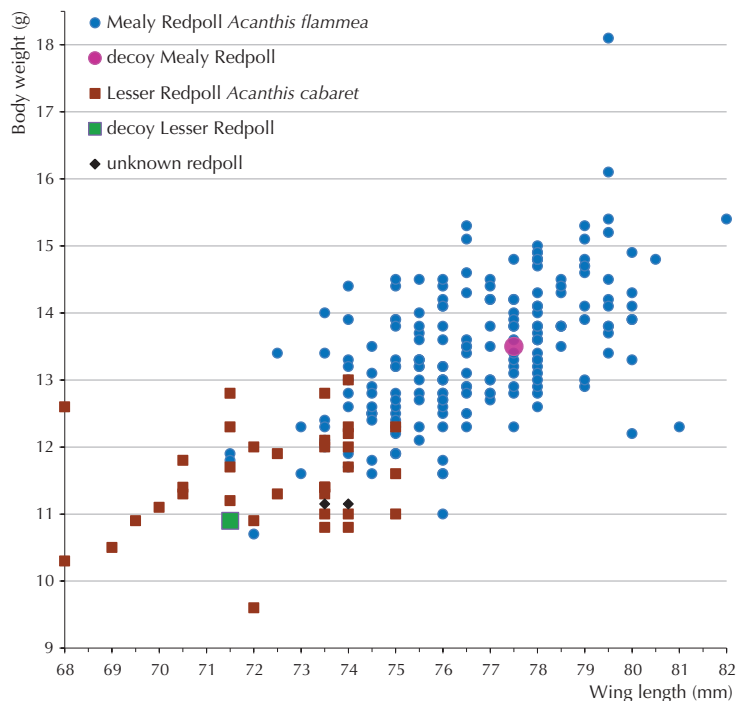


FIGURE 2 Measurements of 222 redpolls *Acanthis* trapped at Zichem, Vlaams-Brabant, Belgium, in autumn 2017: distribution of wing length and body weight.

TABLE 1 Number of Mealy Redpolls *Acanthis flammea* and Lesser Redpolls *A. cabaret* trapped with decoy Mealy and decoy Lesser. Difference highly significant (Yates corrected Chi-square $p < 0.00001$ for birds and $p < 0.0001$ for groups). One Mealy escaped from hand before being ringed and measured; it is included in table 1 but not figure 2.

		on decoy	
		Mealy	Lesser
birds trapped	Mealy	134	2
	Lesser	3	20
groups trapped ('events')	Mealy	57	1
	Lesser	2	15

when given the choice, each taxon preferred to join a bird of the same taxon. It implies that the birds themselves make a clear distinction between the taxa, and recognise their congener. The subtle but diagnostic vocalisations are probably involved in the recognition. To know this for sure, however, I should have hidden the decoys (but they were in full sight, so birds might have used visual clues too).

Taxonomic implications?

It is tempting to infer taxonomic conclusions from these observations of assortative flocking behaviour. However, for genetic isolation, only what happens in the breeding season is actually relevant. Nevertheless, behaviour can indeed be a decisive barrier to genetic mixing. The observations reported here were in autumn during migration to wintering grounds. Other factors might also have played a role at this time: the experiment was carried out during the peak of the invasion, with birds still actively on the move (Herremans & Gielen 2020). The two taxa, however, have different migratory urge, bearing, and speed at that time, which all make good reasons not to flock together: a few Lesser Redpolls winter locally but most are mainly still on a south-east course (the majority come from England and winter inland on the continent: BeBirds 2021), while irruptive Mealy Redpolls move rapidly on a south-west course through the Low Countries (Lensink et al 1989, Herremans & Gielen 2020). Mealy rise very early (well before dawn) and have – for western European birds – a peculiar crepuscular rhythm (Herremans 1973, Pohl & West 1976, Glutz von Blotzheim & Bauer 1997). As a result, during autumn and winter, flocks of Mealy are already on the move even before Lesser wake up or can still be trapped well after sunset, when Lesser are already at the roost.

Furthermore, when arriving in Belgium in autumn, most redpolls have never encountered the other taxon before: most Lesser Redpolls come from England and most irruptive Mealy Redpolls originate from northern Scandinavia or more likely even from the taigas much further to the east, far from the small zone of sympatry in southern Scandinavia. The more delicate Lesser were observed to usually avoid the dense flocks of Mealy. Mixed flocks generally constituted of a few Mealy that joined a group of Lesser, while Lesser was rarely present in the larger, more compact and faster flying flocks of Mealy.

While the differences in trapping results are compelling, it should also be noted that it is possible that not every bird made its own independent decision and it is likely that not all data are therefore 'independent' in the statistical sense. Particularly Mealy Redpolls arrived sometimes in substantial flocks (largest numbers caught together 17 and 23). If the first bird decided to duck to a particular decoy, many were likely to follow suit in quick succession and end up close to each other in the net near the decoy, more or less as part of a single 'decision event'. However, when only groups are taken into account, the difference between the taxa remains (table 1).

Nevertheless, the observations are intriguing and indicate a clear capacity of Lesser Redpolls and Mealy Redpolls to distinguish between each other and segregate if they feel the need. Whether that will also happen consequently during the breeding season cannot be inferred from the observations reported here but it indicates that this is possible. Most of the recent information affecting redpoll taxonomy has originated from the genetic laboratory but behavioural evidence from the field should not be ignored. After all, the birds themselves decide how the genes are mixed.

Similar, though anecdotal cases of Coues's Redpolls *A. h. exilipes* responding only to an *exilipes* decoy and ignoring Mealy Redpoll decoys nearby have been witnessed in Belgium (Herremans 1991), and suggest that a similar experiment involving these two taxa might be revealing. Vocal differences between *flammea* and *exilipes* were described by Molau (1985), in what is so far the finest and most extensive field study of these taxa on the (European) breeding grounds.

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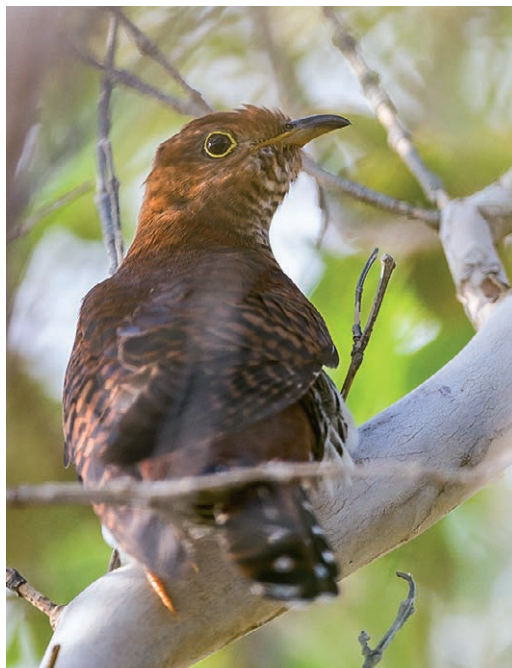
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Lesser Cuckoos in Oman in November 2014 and October 2019

In November 2014 and October 2019, Lesser Cuckoos *Cuculus poliocephalus* were photographed in Dhofar, southern Oman. These records represent the first and second for Oman and the 'greater' Western Palearctic and are documented in this paper.

November 2014

In the evening of 1 November 2014, we (Martin Kühn, Susanne Kühn, Ralph Martin and Tom Wulf) were birding in a little palm plantation in the southern part of Al Beed farm (18°35' N, 53°98' E) in Dhofar, southern Oman. There were few birds around; the most common species was probably Common Cuckoo *C canorus*, with more than 10 birds present. MK and RM were walking along a



502-504 Lesser Cuckoo / Kleine Koekoek *Cuculus poliocephalus*, adult, Al Beed farm, Dhofar, Oman, 1 November 2014 (*Ralph Martin*). First record for Oman.



dirt track when a cuckoo flew out of a bush in front of them and straight into another one. Both were alerted, as the bird seemed to be tiny in flight, although it showed no other obvious features. Discussing its probable identity, MK and RM headed for the bush. The bird was well hidden but tame; it could be approached up to c 5 m. Its colouration was very close to hepatic Common and most striking were its tiny size and broadly barred underparts. SK and TW were called to watch the bird as well. It was obvious that it was much smaller than any present Common. When it moved to another bush, it could be observed in the open (while the Common sat in the tree tops of the palms, this bird perched low in the trees and bushes). We discussed its possible identity again but in the only available literature (Porter & Aspinall 2010) the only other similar cuckoo species mentioned for the region are Common and Oriental Cuckoo *C. optatus*. Some features seemed to fit Oriental better than Common, mainly the smaller, broader barring on the underside and undertail-coverts. After watching the bird extensively and taking photographs (plate 502-504), we left the site. Back in Germany, RM immediately browsed through Erritzøe et al (2012) and checked the section on Oriental. Again, this description was not conclusive but the description of Lesser Cuckoo was: both colouration and size matched.

Checking the description and the photographs, we found the following features to confirm the identification as Lesser Cuckoo (cf van Duivendijk 2011, Erritzøe et al 2012): **1** size about one third smaller than Common Cuckoo; **2** unmarked rump (marked in Oriental Cuckoo); **3** unmarked, bright rufous nape (marked in Common and Oriental and less rufous); **4** broad and limited number of bars on underparts (more and finer bars especially in Common); **5** black bars on tail feathers and on primaries broader than rufous parts (narrower in Common); **6** broad and limited number of blackish bars on undertail-coverts (narrower in Common); and **7** jizz, with smallish looking head, large eye and striking eye-ring (larger head with relatively smaller eye in Common and Oriental). Being the hepatic morph, it was most likely a female.

Because none of us had any experience with Lesser Cuckoo, RM contacted Clive Mann, one of the authors of Erritzøe et al (2012). CM replied (in litt) that he agreed with our identification concerning the coloration and stressed that size is the most important character. Other cuckoo species can be excluded either by size and colouration (Indian Cuckoo *C. micropterus* and African Cuckoo *C. gularis*) or by the colour of the undertail-coverts (Madagascar Cuckoo *C. rochi*).

The bird was accepted by the Oman Bird Records Committee (OBRC) as the first record for Oman and constitutes the first for the 'greater' Western Palearctic (Jens Eriksen in litt).

October 2019

On 31 October 2019, we (Urban Grenmyr, Barbro Risberg, Lennart Risberg and Mikael Wikström) found a Lesser Cuckoo at Shisr, Dhofar, southern Oman (18°05' N, 53°39' E). UG had just rediscovered a Black Scrub Robin *Cercotrichas podobe*, which we had not seen for c half an hour, when he suddenly flushed a small cuckoo which took shelter in a c 6 m tall tree in a row of 30-40 trees. After he had secured some photographs (plate 505-506), he alerted the others. The bird was sitting 4-5 m up in the tree and it clearly appeared much smaller than Common Cuckoo, of which we had seen at least six different individuals the same morning. The small size was emphasised when it flew c 2 m to another tree before trying to hide again. We judged the size to be between that of a Redwing *Turdus iliacus* and a Song Thrush *T. philomelos*. LR suggested that it was a Lesser Cuckoo, which we later confirmed by consulting appropriate literature.

The following features visible in the photographs confirm the identification as Lesser Cuckoo (cf van Duivendijk 2011, Erritzøe et al 2012): **1** small thrush-like size; **2** unmarked, bright rufous nape; **3** broad and limited number of bars on underparts; **4** black bars on tail feathers and on primaries broader than rufous parts; **5** broad and limited number of blackish bars on undertail-coverts; and **6** jizz, with smallish looking head, large eye and striking eye-ring. Being the hepatic morph, it was most likely a female. For exclusion of other *Cuculus* species, see the November 2014 record.

This bird was accepted by the OBRC as the second for Oman (Jens Eriksen in litt).

Distribution and vagrancy

Lesser Cuckoo breeds from south-east Asia west to Pakistan (Payne et al 2020). It winters locally in south-eastern Asia, southern India and Sri Lanka (rare) and in eastern Africa ('sometimes common') and very rarely in Mozambique and Zimbabwe (Sinclair et al 2002, Stevenson & Fanshawe 2002, Chittenden 2018, Payne et al 2020). In eastern Africa, Lesser occurs from December to mid-April (Erritzøe et al 2012, Payne et al 2020). In order to reach Africa, birds are presumed to cross the Indian Ocean, as indicated by records from the

Seychelles (November and April) and one from Amsterdam Island (c 3200 km from any large land mass; cf Payne et al 2020) but none from the Middle East (cf figure 1). According to Erritzøe et al (2012), Lesser associates with Common Cuckoo during migration. As a result, the potential for Lesser to occur in Oman and the Arabian Peninsula in general is high and it is surprising that there were no previous records. There have been five reports in Oman but only the two documented here have been accepted (Jens Eriksen in litt).

Acknowledgements

We want to thank Clive Mann for his comments on the identification.

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505-506 Lesser Cuckoo / Kleine Koekoek *Cuculus poliocephalus*, Shisr, Dhofar, Oman, 31 October 2019 (Urban Grenmyr). Second record for Oman.



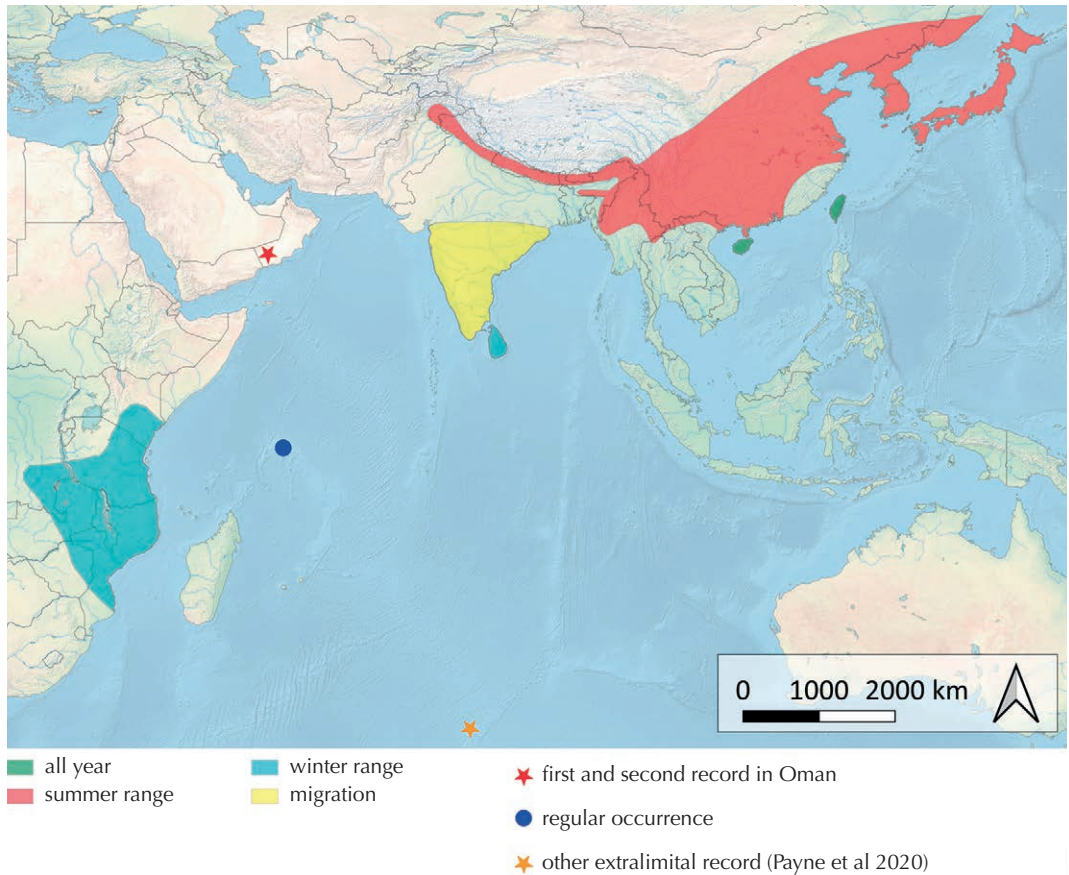


FIGURE 1 Distribution of Lesser Cuckoo *Cuculus poliocephalus* (BirdLife International & Handbook of the birds of the world 2017) with extralimital records (see text)

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Little Bunting at Cap Blanc, Mauritania, in April 2018

In April 2018, I (Kris De Rouck) joined a group of birders for a trip to the Western Palearctic part ('sensu BWP') of Mauritania. Other group members were Josh Jones, Dan Pointon, Peter Stronach and Bob Swann. Main goal was to seek WP specialities like Golden Nightjar *Caprimulgus eximius*, African Grey Woodpecker *Dendropicus goertae*, Blue-naped Mousebird *Urocolius macrourus*, Cricket Warbler *Spiloptila clamans* and Sudan Golden Sparrow *Passer luteus* (cf Mauras 2018, Swann et al 2019). On 14 April, we also visited a long-staying Abyssinian Roller *Coracias abyssinicus* in a garden near Nouadhibou on Cap Blanc peninsula (cf Haas & Ławicki 2018). When searching for the roller (at 20°55'34"N, 17°03'00"W), I heard a bird making a *zick* call. When I got it in view, I was surprised that it was a Little Bunting *Emberiza pusilla* – a very unexpected species in Mauritania. The observation lasted c 10 min and I took a few photographs but, since I was momentarily alone, there were no other observers. A little bit later, the roller was found and seen by all of us.

Description and identification

The identification was not difficult, due to the short distance, good photographs and my experience with this species in many European countries. It was a compact bunting with a small grey bill, chestnut ear-coverts and loreal area, dark lateral crown-stripe, dark eye-stripe behind the eye curving downwards to surround the ear-coverts, dark moustachial stripe connecting to the breast streaking and pale eye-ring. The upperparts showed a grey-brown rump lightly streaked black, and a mantle with heavy black streaking. The median coverts were tipped buff-white, creating a wing-bar. The underparts were buff-white with narrow, distinct black streaking on breast and flank. This combination of characters only fits Little Bunting (cf Byers et al 1995). Based on my photographs, it is not possible to determine the bird's age and sex. Nils van Duivendijk (in litt) commented: '[ageing and sexing] is often impossible in spring unless extremely good pictures show details of the primary coverts and alula (ageing), or when very obvious males show all chestnut supercilium and ear coverts and pure black other parts of the head (sexing)'.

Status and records in Africa

The sighting constituted the first record of Little Bunting for Mauritania (cf Isenmann et al 2010,

Isenmann & Benmergui 2018). Its locality, Cap Blanc peninsula, has a reputation as a good spot for eastern vagrants. In November 2016, a Dutch team found two Olive-backed Pipits *Anthus hodgsoni* and two Yellow-browed Warblers *Phylloscopus inornatus* here – also new species for Mauritania (van Bemmelen et al 2017).

Little Bunting breeds from north-eastern Scandinavia across northern Russia to the coast of the Pacific Ocean with an isolated population in north-eastern China. In autumn, it migrates south or south-east to winter in south-eastern Asia (Byers et al 1995). The species has been recorded as a vagrant or scarce visitor in most countries of Europe and the Middle East, mainly in autumn (Mitchell 2017).

In Africa, Little Bunting is an extreme vagrant and outside Mauritania it has been recorded only in Algeria (one photographed at Togouret, Ouargla, on 2 November 2020; Adamou 2021); Egypt (four; but only one in the African part of the country, at Agamy, Alexandria, on 2 November 1980; Goodman & Meininger 1989); and Morocco (two; one ringed at Souss-Massa national park on 9 October 2013 and another photographed at Tiznit on 28 February 2016; Ramírez et al 2013, Praus 2016). Moreover, one was ringed at Ceuta (the Spanish enclave in northern Morocco) on 7 November 2017 (MaghrebOrnitho 2017). The Mauritanian bird concerned the first spring and most southerly record for Africa.

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507 Little Bunting / Dwerggors *Emberiza pusilla*,
Nouadhibou, Cap Blanc, Mauritania, 14 April 2018
(Kris De Rouck)



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Corrigenda

In het bijschrift van de foto van de Vale Gierzwaluw *Apus pallidus* bij Heerjansdam, Zuid-Holland (*Dutch Birding* 42: 451, plaat 605, 2020) werd niet de juiste datum vermeld. Die moet zijn 27 (niet 26) oktober 2020. REDACTIE

In the caption of the photograph of the Pallid Swift *Apus pallidus* at Heerjansdam, Zuid-Holland (*Dutch Birding* 42: 451, plate 605, 2020) the wrong date was mentioned. This should be 27 (not 26) October 2020. EDITORS

WP reports

This review lists rare and interesting Western Palearctic birds reported mainly from **August to late September 2021**. The reports are largely unchecked and their publication here does not imply future acceptance by a rarities committee. Observers are requested to submit their records to each country's rarities committee. Corrections are welcome and will be published.

DUCKS A breeding population of **Velvet Scoter** *Melanitta fusca* was discovered on Tabatskuri lake, Samtskhe-Tabatskuri, Georgia, with 25-35 pairs in 2018-20 (<https://tinyurl.com/2vah2wse>). On 2 September, **Black Scoter** *M. americana* males were reported off Montrose, Angus, Scotland, and at Põõsaspea, Noarootsi, Estonia. A genetic study by Brown et al (2020) in North America identified (only) one first-generation hybrid between **Barrow's Goldeneye** *Bucephala islandica* and **Common Goldeneye** *B. clangula*, with no further evidence of contemporary or historical gene flow (*J Avian Biol* 51: jav.02600, 2020). Two males **Hooded Merganser** *Lophodytes cucullatus* were present at Botnsvogur, Hvalfjörður, Iceland, on 3-15 August.

GREBES TO CUCKOOS The long-staying **Pied-billed Grebes** *Podilymbus podiceps* on São Miguel, Azores, and at Loch Feorlin, Argyll and Bute, Scotland, remained into September. In Iran, 10 **Yellow-eyed Pigeons** *Columba eversmanni* were found at Kashaf-Rud, Mashhad, Khorasan-e Razavi, on 2 August. **Rufous Turtle Doves** *Streptopelia orientalis meena* were photographed on Christiansø, Denmark, on 31 August and on North Ronaldsay, Orkney, Scotland, on 9-10 September. Four **Laughing Doves** *S. senegalensis* were recorded in Bulgaria in late August: one at Beloslav on 24 August; a male at Svilengrad on 25 August; and a pair at Aytos on 28 August (there are three previous records). The fourth **Red-billed Tropicbird** *Phaethon aethereus* for Morocco flew past near Oued Massa on 13 May. A **Red-necked Nightjar** *Caprimulgus ruficollis* stayed at Pianotti-Caldarello, Corse-du-Sud, France, on 26-31 July. In mainland Portugal, a second **Plain Swift** *Apus unicolor* colony with four nests was found at Porto this summer (for information on the first, see *Dutch Birding* 42: 58, 151, 224, 2021). In June, two or three pairs of **Alpine Swift** *Tachymarptis melba* at Michalovce constituted the first breeding for Slovakia. In June, the second **Great Spotted Cuckoo**



508 Allen's Gallinule / Afrikaans Purperhoen *Porphyrio alleni*, adult, Santa Maria, Sal, Cape Verde Islands, 5 August 2021 (Uwe Thom)

509 Northern Bald Ibis / Heremietibis *Geronticus eremita*, juvenile, Gvulot, Israel, 11 August 2021 (Yoav Perlman)





510 Matsudaira's Storm Petrel / Japans Stormvogeltje *Hydrobates matsudairae*, off Eilat, Gulf of Aqaba, Israel, 22 August 2021 (*Noam Weiss*) **511** Cape Verde Shearwater / Kaapverdise Pijlstormvogel *Calonectris edwardsii*, 22 km south-east off Madeira, 5 August 2021 (*Rob Williams*) **512** Trindade Petrel / Arminjons Stormvogel *Pterodroma arminjoniana*, c 8 km off Graciosa, Azores, 7 August 2021 (*Josh Beck*)





513 Black-browed Albatross / Wenkbrauwalbatros *Thalassarche melanophris*, adult, Bempton Cliffs, East Yorkshire, England, 27 August 2021 (Phil Palmer)

Clamator glandarius for Serbia was found in the south of the country.

RAILS TO BUSTARDS An **African Crane** *Crecopsis egregia* was photographed on La Gomera, Canary Islands, in December 2020 (cf Dutch Birding 43: 277, 2021). This summer, as many as 70 adult **Western Swamphens** *Porphyrio porphyrio* were counted at Domber, Ain, France; the first breeding here was in 2016. If accepted, an adult at Worms, Rheinland-Pfalz, on 13-21 August will be the second for Germany. An **Allen's Gallinule** *P. alleni* at Santa Maria, Sal, on 5 August was the third for the Cape Verde Islands. The second **Sandhill Crane** *Antigone canadensis* for Norway remained at Lakselv, Finnmark, until 30 August (the same individual stayed in Sweden and Denmark between 13 October 2020 and 13 May). This summer, a pair of **Common Cranes** *Grus grus* with two chicks at Zwarte Beek, Beringen, Limburg, constituted the first successful breeding for Belgium. The species had a good summer in the Netherlands, with 46 pairs, 40 nests, 36 hatchlings and 21 fledglings. The number of **Great Bustards** *Otis tarda* in Anatolia, Turkey, declined by 20-29% over the last five years to 559-780 individuals in two subpopulations; the species' range shrunk by c 65% since early 20th century (Bird Conserv Int, <https://tinyurl.com/2sfee6ra>). Between 1998 and 2019, c 135 000 captive-bred **Houbara Bustards** *Chlamydotis undulata* were released in several regions of Morocco. Monitoring an area of 50 170 km² in the eastern part of

the country in 2010-18, Monnier-Corbel et al (2021) concluded that the reinforced population numbered an estimated 16 918 individuals, varying between 10 409 and 32 401 annually. Although the decline has been temporarily stopped, it is thought that the measures are not (yet) enough for the population's viability and self-sufficiency (Anim Conserv, <https://tinyurl.com/wfcv23eu>).

TUBENOSES On 15 September, the second **Wilson's Storm Petrel** *Oceanites oceanicus* for the Faeroes was seen c 74 km north of Fugloy. The adult **Black-browed Albatross** *Thalassarche melanophris* at Bempton Cliffs, East Yorkshire, England, from 28 June remained into September. If accepted, a **Matsudaira's Storm Petrel** *Hydrobates matsudairae* photographed in the Gulf of Aqaba off Eilat on 22 August may be the first for Israel (the only previous record for the greater WP was off Muscat, Oman, on 19 August 2013). In the Azores, a **Trindade Petrel** *Pterodroma arminjoniana* was seen c 8 km off Graciosa on 7 August. On 5 August, the first **Cape Verde Shearwater** *Calonectris edwardsii* for Madeira was photographed 22 km south-east of the main island.

STORKS TO IBISES A flock of seven **African Openbills** *Anastomus lamelligerus* near Wadi Zikt from 20 July to 10 August constituted the first record for the United Arab Emirates. Four (probably part of this flock) were seen at Dhalkut, Dhofar, Oman, on 10 August (first record). In

the Azores, up to three **Great Blue Herons** *Ardea herodias* were present on Terceira during August. In the last 30 years, the wintering population of **Dalmatian Pelican** *Pelecanus crispus* along the Black Sea-Mediterranean flyway (Albania, Bulgaria, Greece, Montenegro, Romania and Turkey) increased to an average of c 5800 individuals in 2011-15 (Barbouts et al in *Ardea* 109, <https://tinyurl.com/m236n7hw>, 2021). In Israel, two Turkish-ringed young **Northern Bald Ibises** *Geronticus eremita* were seen in the north-western Negev near Gvulot on 11-23 August and near Bnei Netzarim on 27 August; both originated from the semi-wild reintroduced population breeding at Birecik, Turkey (where the total increased from c 40 individuals in 2000 to 285 in 2020; cf *Br Birds* 114: 541-553, 2021).

BOOBIES TO CORMORANTS In A Coruña, Spain, a **Brown Booby** *Sula leucogaster* flew past Lira on 11 August, and possibly the same individual was seen at Estaca de Bares on 11 September. On 23 April, using drones to survey the Brown Booby colony between Porto Mosquito and Baía do Inferno on the west coast of Santiago, Loureiro et al (2021) found three adult and two immature **Red-footed Booby** *S. sula* with three nest structures and a single egg incubated by one of the adults, constituting the first breeding for the Cape Verde Islands and the WP. In the last five years, the numbers in the Cape Verde Islands increased from the first record of two birds on Raso in summer 2015 to 17 birds in October 2016. In late September 2017, as many as c 40 were present on Raso, and nowadays up to 130 are present between June and October (*Zool Caboverdiana* 9 (1): 14-16, 2021). From July into September, an influx of **Pygmy Cormorant** *Microcarbo pygmaeus* in central and western Europe comprised, eg, c 170 individuals in Czechia (including 107 at Nové Mlýny reservoir, Břeclav, on 29 August), c 120 in Germany (with largest flocks of 35 at Bergrheinfeld, Bayern, on 9 September; 17 at Pfatter, Bayern, on 10 August; and 17 at Rotenburg, Niedersachsen, on 16 August), c 33

in Poland (almost all in the southern part of the country with the largest flock of 16 at Spytkowo, Malopolska, on 3 August), three in France, at least two in Switzerland (reported at eight sites), and one in the Netherlands (from 23 June into September).

WADERS An **American Golden Plover** *Pluvialis dominica* at Hortobágy, Hajdú-Bihar, on 20 September was the fifth for Hungary. The second **Eurasian Dotterel** *Charadrius morinellus* for the Cape Verde Islands turned up on Sal on 18 September. A **Semipalmated Plover** *C. semipalmatus* at Reykjanes on 23 September was the third for Iceland. The adult **Spur-winged Lapwing** *Vanellus spinosus* at Strzelno, Kujawsko-Pomorskie, from 24 September to 18 December 2017 has recently been accepted as the first for Poland. The first **Grey-headed Lapwing** *V. cinereus* for Slovenia stayed at Škocjanski zatok nature reserve, Koper, on 6-9 August. **White-tailed Lapwings** *V. leucurus* were reported at Zichow, Brandenburg, Germany, on 5-17 August and at Blacktoft, Yorkshire, England, from 26 August to at least 20 September. The fourth **Hudsonian Whimbrel** *Numenius hudsonicus* for the Cape Verde Islands was found on Sal on 13 September. A **Great Knot** *Calidris tenuirostris* at Pomorie lake, Burgas, on 2-7 September was the first for Bulgaria. A **Red-necked Stint** *C. ruficollis* at Skalmören, Korppoo, on 1 July was the fifth for Finland. The third **Baird's Sandpiper** *C. bairdii* for Portugal was found at Barrinha de Esmoriz, Aveiro, on 1 August. A record 51 **White-rumped Sandpipers** *C. fuscicollis* for Britain were recorded in autumn 2019 (*Br Birds* 114: 374-396, 2021). The sixth **Western Sandpiper** *C. mauri* for Ireland was seen at Cloonea, Waterford, from 31 July to 2 August. The first for Switzerland stayed at Maggia delta, Ticino, on 14-19 September and probably the same bird was found as the first for Italy at Casei Gerola, Pavia, on 27 September. In Poland, **Spotted Sandpipers** *Actitis macularia* were present at Mikoszewo, Pomerania, on 2-4 August and at Mietkowski reservoir, Silesia, on 12-14 September. From

514 Western Swamphen / Purperkoet *Porphyrio porphyrio*, adult, Worms, Rheinland-Pfalz, Germany, 14 August 2021 (Friedemann Arndt)



515 Hybrid tern / hybride stern *Sterna*, Hirsholm, Nordjylland, Denmark, 28 July 2021 (Kjeld Tommy Pedersen)





516 White-tailed Lapwing / Witstaartkievit *Vanellus leucurus*, adult, Blacktoft, Yorkshire, England, 26 August 2021
(Graham P Catley)

517 Grey-headed Lapwing / Grijskopkievit *Vanellus cinereus*, adult, Škocjanski zatok nature reserve, Koper, Slovenia, 6 August 2021 (Milan Cerar)





518 American Black Tern / Amerikaanse Zwarte Stern *Chlidonias niger surinamensis*, adult, Long Nanny, Northumberland, England, 20 May 2021 (Gary Woodburn) **519** Least Tern / Amerikaanse Dwergstern *Sternula antillarum*, adult, Portrane Point, Dublin, Ireland, 9 August 2021 (Kris De Rouck) **520** Western Sandpiper / Alaskastrandloper *Calidris mauri*, adult, Maggia delta, Ticino, Switzerland, 19 September 2021 (Michael Gerber)





521 Great Knot / Grote Kanoet *Calidris tenuirostris*, adult, Pomorie lake, Burgas, Bulgaria, 7 September 2021
(Iordan Hristov/naturemonitoring.com)

522 Spotted Sandpiper / Amerikaanse Oeverloper *Actitis macularius*, adult, Mikoszewo, Pomerania, Poland,
3 August 2021 (Lech Iwanowski)





523 Egyptian Vulture / Aasgier *Neophron percnopterus*, adult, Dunfanaghy, Donegal, Ireland, 15 July 2021 (John Coveney) **524** Oriental Pratincole / Oosterse Vorkstaartplevier *Glareola maldivarum*, Hauke-Haien-Koog, Dagebüll, Schleswig-Holstein, Germany, 21 August 2021 (Thomas Sacher) **525** Short-billed Dowitcher / Kleine Grijze Snip *Limnodromus griseus*, juvenile, Aguilar de Campoo reservoir, Palencia, Spain, 21 September 2021 (Alberto Benito)





526 Steppe Eagle / Steppearend *Aquila nipalensis*, second calendar-year, Trient, Valais, Switzerland, 12 September 2021 (Raphaël Arlettaz)

527 Pallas's Fish Eagle / Witbandzeearend *Haliaeetus leucoryphus*, juvenile, Volma, Chervenski, Belarus, 27 August 2021 (Dmitry Yakubovich)



21 August to 7 September, the first **Oriental Pratincole** *Glareola maldivarum* for Germany stayed together with three (!) **Long-billed Dowitchers** *Limnodromus scolopaceus* at Hauke-Haien-Koog, Dagebüll, Schleswig-Holstein. The second **Short-billed Dowitcher** *L. griseus* for Spain was present at Aguilar de Campoo reservoir, Palencia, from 19 September onwards.

SKUAS TO TERNS **South Polar Skua** *Stercorarius macromicki* was added to the British list on the basis of a second calendar-year seen and photographed at West Bexington, Dorset, England, from 27 January to 4 February 1996. In Galicia, Spain, one was reported off Estaca de Bares on 21 August. The only Norwegian records of **noddy** *Anous* (at Mølen, Vestfold, on 3 August 1974) and **West African Crested/American Royal Tern** *Sterna albididorsalis/maxima* (on Rauer, Vestfold, on 26 June 1976) have been rejected after review. The fifth **Ross's Gull** *Rhodostethia rosea* for Estonia was photographed at Põõsa-spea on 6 August. A pair of **Audouin's Gulls** *Larus audouinii* raising a fledgling at Banc d'Arguin, Gironde, this summer constituted the first successful breeding for the Atlantic coast of France. Two returning adult **Ring-billed Gulls** *L. delawarensis* were reported in Warmia-Mazury, Poland: at Wulpińskie lake from 25 August (ringed at Szczecin, Pomerania, in December 2005) and at Siedliszka on 4 September. The first **Least Tern** *Sternula antillarum* for Ireland at Portrane Point, Dublin, from 19 June remained until 24 August. GPS-tracking data from adult and juvenile **Caspian Terns** *Hydroprogne caspia* in 2017-19 from five breeding colonies in the Baltic Sea in Sweden showed six migration routes to wintering areas across the Sahel via the Nile river basin and the southern Iberian Peninsula; the most important stopover sites were on Rügen, Mecklenburg-Vorpommern, Germany, at Rhône delta, Camargue, Bouches-du-Rhône, France, and at Danube river delta (J Avian Biol, jav.02743, 2021). A hybrid juvenile **White-winged x Black Tern** *Chlidonias leucopterus* x *niger* was reported at Brière, Loire-Atlantique, France, on 15 July (cf Dutch Birding 43: 309, 2021). An adult **American Black Tern** *C. n. surinamensis* at Long Nanny, Northumberland, England, from 18 May to 22 July was probably the same individual as the one here between 30 May and 25 June 2020. In Ireland, the long-staying and wide-ranging adult **Forster's Tern** *S. forsteri* was reported at Soldier's Point, Louth, on 3-30 August and again from 1 September onwards and also at Gormanstown, Meath, on 31 August. In Italy, two **Lesser Crested Terns** *S. bengalensis* were seen at Castel Volturno, Campania, on 5 August and one was found the same day at Priolo Salt-Pans, Siracusa, Sicily. An adult **Elegant Tern** *S. elegans* at Cemlyn Bay, Anglesey, Wales, on 4-30 July moved to England where it was seen at a few sites in Cumbria, Lancashire and Merseyside from 1 August into September. In Nordjylland, Denmark, a mystery **orange-billed hybrid tern** was photographed on Hirsholm on 28 July and then stayed at Krik Sandø, Agger Tange, on 4-10 August.

RAPTORS In almost all regions of France, also in the north and in the west, **Black-winged Kites** *Elanus caeruleus*

bred this summer. In Cyprus, breeding was suspected at Karpas peninsula because of the presence of two adults from 8 May to 21 July and a juvenile nearby on 22-23 August. An individual photographed at Beshbarmag on 6 September was the second for Azerbaijan. The first **Egyptian Vulture** *Neophron percnopterus* for Ireland at Dunfanaghy, Donegal, on 14-15 July was photographed in Mayo at Ballycastle on 4 August and at Shanvolahan on 11 August; previously, this individual had been seen on St Mary's, Scilly, England, on 14 June. A **Short-toed Snake Eagle** *Circaetus gallicus* at Sutherland, Highland, for over five hours on 20 June was the first for Scotland. A **Himalayan Vulture** *Gyps himalayensis* photographed between Sarbaz and Rask, Sistan and Baluchestan, on 25 December 2020 was the third for Iran and the fourth for the WP (cf Dutch Birding 36: 159-161, 2014). The second **Rüppell's Vulture** *G. rueppelli* for Algeria was found exhausted and taken into care at Timekten, Adrar, on 9 November 2020 (Alauda 89: 147-149, 2021). Dobrev et al (2021) estimated the breeding population of **Griffon Vulture** *G. fulvus* in the Balkans in 2019 at 445-565 pairs with another 250-340 pairs on Crete, Greece; both totals suggest a slight increase in the last four decades (Bird Conserv Int, <https://tinyurl.com/snppdp924>). A **Steppe Eagle** *Aquila nipalensis* photographed at Trient, Valais, on 12 September was the first for Switzerland; it flew across the French border (sixth record). A ringed **Eastern Imperial Eagle** *A. heliaca* flying over Eursinge, Drenthe, on 4 August was the third for the Netherlands; it had fledged at Jászivány, Hungary, in 2020 and, between 18 and 26 June, was seen along the southern coast of Finland. The second **Bonelli's Eagle** *A. fasciata* for Hungary near Rábapaty, Vas, on 30 July wore a GPS transmitter from Greece. A juvenile **Pallas's Fish Eagle** *Haliaeetus leucoryphus* at Volma, Chervenski, from 22 August to at least 12 September was the first for Belarus; previous European records were, eg, birds collected in Norway (7 July 1949) and Poland (19 June 1943). A record flock of 18 immature **White-tailed Eagles** *H. albicilla* for the Netherlands was counted at Oostvaardersplassen, Flevoland, on 7 September. An adult **Yellow-billed Kite** *Milvus aegyptius* photographed at Arico, Tenerife, on 7 March 2020 was the first for the Canary Islands and Macaronesia (Afr Bird Club Bull 28: 238-240, 2021).

OWLS TO CROWS In a reintroduction project, 300 **Ural Owls** *Strix uralensis* were released in Austria in 2008-17 and, in 2011-17, a minimum of 58 breeding attempts were recorded with a total of 115 owlets fledging (Airo 29: 511-520, 2021). In Scotland, the female **Snowy Owl** *Bubo scandiacus* on St Kilda, Outer Hebrides, from 23 March remained into September and a male was reported at Ben Macdui, Aberdeenshire, from 27 August onwards. An **Alder Flycatcher** *Empidonax alnorum* or **Willow Flycatcher** *E. traillii* was photographed at Garður, Iceland, on 20 September. An **Eastern Kingbird** *Tyrannus tyrannus* at Suður-Bár, Snæfellsnes, on 20 July was the first for Iceland and the fourth for the WP. The first **Brown Shrike** *Lanius cristatus* for Finland was found at Hannus-ranta, Hailuoto, on 9 September. In England, the number of successful **Red-billed Chough** *Pyrrhocorax pyrrho-*



528 Sykes's Warbler / Sykes' Spotvogel *Iduna rama*, Blakeney Point, Norfolk, England, 3 September 2021
(Steve Gantlett)

529 Moustached Warbler / Zwartkoprietzanger *Acrocephalus melanopogon*, Bingsmarken, Skurups, Skåne, Sweden, 31 August 2021 (Björn Malmhagen)





530 Cape May Warbler / Tijgerzanger *Setophaga tigrina*, Porto Pim, Faial, Azores, 13 September 2021
(Olivier Coucelos)

531 American Redstart / Amerikaanse Roodstaart *Setophaga ruticilla*, first-winter male, Stafnes, Miðnes, Iceland,
24 September 2021 (Yann Kolbeinnsson)





532 Brown Shrike / Bruine Klauwier *Lanius cristatus*, first-winter, Hannusranta, Hailuoto, Finland, 9 September 2021 (Andreas Uppstu) **533** Greenish Warbler / Grauwe Fitis *Phylloscopus trochiloides*, first-winter, Antikythera, Greece, 29 August 2021 (Christos Barboutis/HOS/BirdLife Greece) **534** White's Thrush / Goudlijster *Zoothera aurea*, De Tuintjes, De Cocksdorp, Texel, Noord-Holland, Netherlands, 25 September 2021 (Anco Euser)





535 Eastern Kingbird / Koningstiran *Tyrannus tyrannus*, Suður-Bár, Snæfellsnes, Iceland, 20 July 2021 (Dirk Yzewyn)

corax breeding pairs in Cornwall in 2021 increased to 23 which produced a total of 66 young.

LARKS TO LEAF WARBLERS A **Greater Hoopoe-Lark** *Alaemon alaudipes* at Ceylanpinar, Sanliurfa, on 15 August was the fourth for Turkey. In the Azores, an **American Cliff Swallow** *Petrochelidon pyrrhonota* was seen on Corvo on 4 September. In Turkey, three **Iraq Babbler** *Argya altostris* were found at Amik Baraj Golu, Hatay, on 1 September. A **Green Warbler** *Phylloscopus nitidus* on Væroy, Nordland, on 7-9 September was the second for Norway and the 10th for Britain was ringed at Buckton, East Yorkshire, on 9 September, remaining until 14 September. The first **Greenish Warbler** *P trochiloides* for Greece was ringed on Antikythera on 29 August. The third **Arctic Warbler** *P borealis* for Poland was ringed at Dąbkowice, Pomerania, on 16 September. One on Ameland, Friesland, on 25-27 August was the earliest ever in the Netherlands. DNA analysis confirmed the identification of the first **Kamchatka Warbler** *P examinandus* for the WP; it was singing, sound-recorded, photographed and trapped at Kilpisjärvi, Enontekiö, Lapland, Finland, on 18-19 July (cf Dutch Birding 43: 312, plate 417, 2021). A **Western Bonelli's Warbler** *P bonelli* trapped at Chituc, Corbu, on 31 August was the first for Romania. If accepted, an **Eastern Bonelli's Warbler** *P orientalis* photographed at Jahra pools reserve on 23 August will be the fourth for Kuwait. The sixth for the Netherlands was calling frequently at De Koog, Texel, from 22 September onwards. In Britain, 2019 was the best year for **Siberian Chiffchaff** *P tristis* with 524 individuals, of which 124 in Shetland, Scotland (Br Birds 114: 443-464, 2021).

SYLVIAS TO REED WARBLERS The second **Eastern Orphean Warbler** *Sylvia crassirostris* for Romania was ringed at Chituc on 29 August. **Sykes's Warblers** *Iduna rama* were photographed at Blakeney Point, Norfolk, England, on 3 September and on Selvær, Træna, Nordland, Norway, on 9 September. An **Icterine Warbler** *Hippolais icterina* on Sal on 4 September was the first for the Cape Verde

Islands. At least three adults and five juveniles **Paddyfield Warbler** *Acrocephalus agricola* trapped and ringed at Pulgoja, Pärnumaa, on 27 July constituted the first breeding for Estonia. A **Moustached Warbler** *A melanopogon* ringed at Bingsmarken, Skurups, Skåne, on 31 August was the first for Sweden.

NUTHATCHES TO PIPITS Mayache et al (2021) described a range extension of **Algerian Nuthatch** *Sitta ledanti* over a fragmented area of c 25 000 ha of different forests in Kabylie des Babors, Algeria (Alauda 89: 135-138, 2021). A **Brahminy Starling** *Sturnia pagodarum* was recorded at Tabas, Khorasan-e Razavi, Iran, on 22 May. The first **Rosy Starling** *Pastor roseus* for Greenland was an adult at Asiaat from 12 August to at least 3 September. A **White's Thrush** *Zoothera aurea* perched for hours in a bush at De Cocksdorp, Texel, on 25 September was (already) the 23rd for the Netherlands. A **Rufous-tailed Scrub Robin** *Cercotrichas galactotes* at The Lizard, Cornwall, England, on 22-23 August was the 10th for Britain. A record 1230 singing males **Red-flanked Bluetail** *Tarsiger cyanurus* were counted in eastern Finland this summer; the previous best year was 2020 with c 730 males. The first three for Belarus were ringed near Sasnovy Bor, Ratsyn, on 14, 27 and 29 September. Probably the second **Semicollared Flycatcher** *Ficedula semitorquata* for the Netherlands was a suppressed singing male seen by five observers at Putten, Gelderland, on 6-10 May; its identification was confirmed by DNA. If accepted, the first was a second calendar-year male ringed at Wijlberg, Beek, Gelderland, on 21 May 2020 but not confirmed by DNA. A presumed hybrid **Common Redstart x Whinchat** *Phoenicurus phoenicurus x Saxicola rubetra* was photographed at Grutness, Mainland, Shetland, in September. A **Pechora Pipit** *Anthus gustavi* trapped at Farsund, Vest-Agder, on 25 September was (already) the 57th for Norway and a **Buff-bellied Pipit** *A rubescens* at Arfadalsvík on 21 September the 41st for Iceland.

FINCHES TO BUNTINGS Based on phylogenetic analyses, Recuerda et al (2021) showed that the Common Chaffinch *Fringilla coelebs* complex should be split into five species since the colonisation of Macaronesia by mainland chaffinches resulted in independent evolutionary lineages: **Common Chaffinch** *F coelebs* (continental Eurasia), **African Chaffinch** (Tunisian/Atlas Chaffinch) *F spodiogenys/africana* (North Africa), **Azores Chaffinch** *F moreletti* (Azores), **Madeiran Chaffinch** *F maderensis* (Madeira) and **Canary Islands Chaffinch** *F canariensis* (Canary Islands). Although populations of various Canary Islands are genetically distinct, their phenotypic differentiation is minor which is why they propose to maintain their current subspecific status (*F c canariensis* on Tenerife and La Gomera; *F c palmae* on La Palma; *F c ombriosa* on El Hierro; and *F c bakeri* on Gran Canaria) (Mol Phylogenet Evol 164: 107291, 2021; <https://tinyurl.com/axthmsvu>). A first-winter male **Rose-breasted Grosbeak** *Pheucticus ludovicianus* on Unst, Shetland, on 25 September was (already) the 30th for Britain. In France, three singing males and at least one female **Black-headed Bunting** *Emberiza melanocephala* were recorded in the

southern Alps in July. A **House Bunting** *E. sahari* was ringed at Jews' Gate Cemetery, Gibraltar, on 19 September. A **Bobolink** *Dolichonyx oryzivorus* photographed at Jandia, Fuerteventura, on 19 September was the third for the Canary Islands.

AMERICAN WARBLERS The fourth **Black-and-white Warbler** *Mniotilta varia* for Iceland remained at Syðra-Lágafell, Vesturland, from 11 June to 22 August. On 23 September, the second **American Redstart** *Setophaga ruticilla* for Iceland was found at Stafnes, Miðnes; the first was on 10-12 September 1975. A **Cape May Warbler** *S. tigrina* at Porto Pim, Faial, on 11-15 September was the second for the Azores and the fifth for the WP. The ninth **American Yellow Warbler** *S. aestiva* for the Azores was seen on Corvo on 11-14 September and the fifth for Iceland stayed at Þorlákshöfn on 17-22 September.

SEABIRD HOTSPOT Using a combination of phenology and tracking data, Davies et al (2021) identified an important area for 21 seabird species in the North Atlantic (from 41 to 53°N and 32 to 42°W) which supports up to five million (!) seabirds from 56 colonies, situated in 16 different countries, including two million **Little Auks** *Alle alle* and 1.5 million **Great Shearwaters** *Ardena gravis*. For three species, more than 50% of the global population depends on this wintering or staging area: **Sooty Shearwater** *A. grisea* (61%; April-June), **South Polar Skua** (c 65%; April-September) and **Long-tailed Jaeger** *S. longicaudus* (63%; July-September); moreover, 46% of the world's **Bermuda Petrels** *P. cahow* frequent the hotspot between July and September (Conserv Lett, <https://tinyurl.com/yvhnwdbc>).

RARE BIRDS IN ITALY In its new report, the Italian rarities committee listed, eg, the second **Pallas's Sandgrouse** *Syrhaptes paradoxus* (December 1961; specimen found in a museum collection), the second **Great Shearwater** (photographed at the mouth of Metauro river, Fano, on

20 October 2019), the first **Russian Common Gull** *L. canus heinei* (Garlate lake, Pescate, from 5 December 2019 to 5 March 2020), the first **Rüppell's Vulture** (Militello Rosmarino, Sicily, from 2 October 2019 to 22 July 2020), the first **Red-eyed Vireo** *Vireo olivaceus* (Linosa on 21-23 October 2019), the second **Brown Shrike** (Rivoli di Osoppo, Udine, from 23 December 2019 to 9 February 2020), the second **Brown-necked Raven** *Corvus ruficollis* (Lampedusa from 28 March to 26 October 2019), the first **Ehrenberg's Redstart** *P. phoenicurus samamiscus* (adult male ringed on Ventotene on 2 May 2019), and the second **Black-throated Accentor** *Prunella atrogularis* (Entella river, Lavagna, from 30 November to 5 December 2019) (Avocetta 44: 107-114, 2021).

For a number of reports Birdwatch, British Birds, Global Rare Bird Alert Facebook, Sovonnieuws, www.birdguides.com, www.clan-ga.com, www.dutchavifauna.nl, www.go-south.org, www.magnornitho.org, www.rarebirdalert.co.uk, www.tarsiger.com, www.waarneming.nl and many others were consulted. We wish to thank Ross Ahmed, Mohamed Amezian, Raphaël Arlettaz, Friedemann Arndt, Dániel Balla, Christos Barboutis, Josh Beck, Samuel Betschart, Paul Bradbeer, Mika Bruun, Oscar Campbell, Graham Catley, Milan Cerar, José Luis Copete, Magnus Corell, Andrea Corso, Olivier Coucelos, John Coveney, Mitja Denac, Kris De Rouck, Jochen Dierschke, Philippe Dubois, Nils van Duivendijk, Jon Dunn, Enno Ebels, Raymond Galea, Steve Gantlett, Michael Gerber, Ricard Gutiérrez, Radosław Gwóźdź, Jakob Habicht, Karim Haddad, Axel Halley, Jordan Hristov, Harry Hussey, Lech Iwanowski, Josh Jones, Zbigniew Kajzer, Niall Keogh, Abolghasem Khaleghizadeh, Leander Khil, Yann Kolbeinson, Nikolai Kolev, Christopher König, Richard Kvetko, Petteri Lehtikoinen, André van Loon, Björn Malmhagen, Lionel Maumary, Geir Mobakken, Killian Mullarney, Kjeld Tommy Pedersen, Yoav Perlman, René Pop, Nikos Probonas, Pedro Ramalho, Colin Richardson, Magnus Robb, Thomas Sacher, Manuel Schweizer, Dare Šere, Jiri Sirek, Rasmus Strack, Ehsan Talebi, Uwe Thom, Mikhail Tikhonovich, Andreas Uppstu, André Vieira, Sam Viles, Roland van der Vliet, Peter de Vries, Noam Weiss, Rob Williams, Gary Woodburn, Dmitry Yakubovich, Emin Yöğurtcuoğlu and Dirk Yzewyn for their help in compiling this review.

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Recente meldingen

Dit overzicht van recente meldingen van zeldzame en interessante vogels in Nederland beslaat voornamelijk de periode **juli-augustus 2021**. De vermelde gevallen zijn deels niet geverifieerd en het overzicht is niet volledig.

EENDEN TOT AALSCHOLVERS **Ijseenden** *Clangula hyemalis* zijn normaalgesproken schaars in de zomermaanden. Toch werden er, naast de bekende exemplaren op de Marker Wadden, Flevoland, en nabij Lienden, Gelderland, drie pleisterende vrouwtjes waargenomen: van 4 tot 19 juli langs de Waddendijk op Texel, Noord-

Holland; van 19 juli tot 18 augustus op het Volkerakmeer, Zeeland; en op 28 en 29 augustus op de Richel bij Vlieland, Friesland. Daarnaast trok op 2 juli een vrouwtje in zomerkleed naar zuid langs Camperduin, Noord-Holland, en op 15 juli een mannetje in zomerkleed naar noord langs Egmond aan Zee, Noord-Holland. Op 24 juli werd een **Alpengierzwaluw** *Tachymarpis melba* gemeld bij de Sint Pietersberg bij Maastricht, Limburg. Er werden nog roepende **Kleinste Waterhoenders** *Zapornia pusilla* gemeld op 4 juli in de Oostpolder in het Zuidlaardermeergebied, Groningen, en op 11 juli in de Weer-

ribben, Overijssel. Een **Stormvogeltje** *Hydrobates pelagicus* vloog op 17 augustus langs telpost Savoy in Katwijk aan Zee, Zuid-Holland; er is maar een handjevol eerdere waarnemingen in augustus. Ook bijzonder voor de tijd van het jaar was de waarneming van een **Vaal Stormvogeltje** *H leucorhous* op 1 juli langs Camperduin; in de database van www.waarneming.nl staan acht juliwaarnemingen. Daarnaast waren er op 17 augustus meldingen op Terschelling, Friesland, en langs Katwijk aan Zee (twee). Langs de telposten vlogen in totaal 10 **Vale Pijlstormvogels** *Puffinus mauretanicus*, met als hoogtepunt drie op 17 augustus langs Nes op Ameland, Friesland. Verder werden op de telposten 35 **Grauwe Pijlstormvogels** *Ardenna grisea* opgeschreven. **Zwarte Ooievaars** *Ciconia nigra* werden in 331 uurhokken gezien, vooral in het zuidoosten, waaronder ook een grootste groep van 20 overvliegers op 11 augustus over Posterholt, Limburg. Op telposten werden 119 exemplaren geteld. De enige **Ralreiger** *Ardeola ralloides* werd op 16 juli gefotografeerd bij Nieuwehorne, Friesland. De toename van het aantal **Koereigers** *Bubulcus ibis* leidde tot een voorlopig hoogtepunt in de vorm van drie broedparen in een gemengde kolonie van Kwak *Nycticorax nycticorax* (één broedpaar), Blauwe Reiger *Ardea cinerea*, Purperreiger *A purpurea*, Grote Zilverreiger *A alba*, Kleine Zilverreiger *Egretta garzetta*, en Aalscholver *Phalacrocorax carbo* in De Wieden bij Steenwijk, Overijssel. Er is één jong uitgevlogen, waarmee het eerste geslaagde broedgeval, na mislukte pogingen in 1998 (ook in De Wieden) en 2006 (De Braakman, Zeeland), een feit is. Verder was er sprake van een beperktere verspreiding dan in de vorige periode (79 uurhokken versus 102), met als hoogste aantal 14 bij Vlaardingen, Zuid-Holland. Op telposten werden vijf

exemplaren gezien. Op 25 augustus werden 35 **Kleine Zilverreigers** geteld over telpost Breskens, Zeeland, wat een nieuw nationaal telpostrecord betekende. Het vorige record stond met 22 op 2 november 2016 (deels foeraageer- en slaaptrek) op naam van telpost Lauwersoog Haven, Groningen. **Zwarte Ibissen** *Plegadis falcinellus* doken op in 18 uurhokken, goed voor in ieder geval 10 afzonderlijke locaties. Op verschillende plaatsen ging het om een duo. De **Dwergaalscholver** *Microcarbo pygmaeus* die de vorige periode bij Enschede, Overijssel, werd ontdekt was vanaf begin juli te vinden in de provincie Utrecht. De vogel werd voor het eerst gezien op 1 juli langs de Lek bij Everdingen, en bleef daar tot 4 juli. Vanaf 16 juli werd de vogel vooral gezien op zijn favoriete plas bij Laagraven en bij Nieuwegein.

STELTLOPERS Dicht bij de grens met België werd op 14 juli in Grenspark Kalmthoutse Heide ten oosten van Ossendrecht, Noord-Brabant, de enige **Griël** *Burhinus oedichnemos* gemeld. Ten opzichte van de vorige periode, met een presentie in 525 uurhokken, waren **Steltkluten** *Himantopus himantopus* beduidend minder talrijk (63 uurhokken). Toch waren er op sommige plaatsen flinke groepen, waarbij 36 op 21 juli bij de Kleine Praambult in de Oostvaardersplassen, Flevoland, zelfs het hoogste aantal ooit in de database van www.waarneming.nl is. De enige twee **Aziatische Goudplevieren** *Pluvialis fulva* werden op dezelfde dag gevonden, op 16 juli op de Kwade Hoek en op de Slikken van Flakkee, beide op Goeree-Overflakkee, Zuid-Holland. **Morinelplevieren** *Charadrius morinellus* trokken in kleine aantallen door, met onder meer 33 op telposten en twee op nachtelijke geluidsoptnamelocaties. Op 25 augustus werd een exem-

536 Dwergaalscholver / Pygmy Cormorant *Microcarbo pygmaeus*, adult, Laagraven, Utrecht, Utrecht, 31 juli 2021
(Martin van der Schalk)





537 Woestijnplover / Greater Sand Plover *Anarhynchus leschenaultii*, met Bonte Strandlopers / Dunlins *Calidris alpina*, Utopia, Texel, Noord-Holland, 10 augustus 2021 (*Jeroen de Bruijn*) **538** Grijsze Wouw / Black-winged Kite *Elanus caeruleus*, Het Twiske, Den IJp, Noord-Holland, 6 juli 2021 (*Arjan Bakker*) **539** Aziatische Goudplevier / Pacific Golden Plover *Pluvialis fulva*, Slikken van Flakkee, Melissant, Zuid-Holland, 16 juli 2021 (*C G Visser & C E Temming*) **540** Gestreepte Strandloper / Pectoral Sandpiper *Calidris melanotos*, adult, Marken, Noord-Holland, 5 augustus 2021 (*Hans Niekus*)

plaat geringd bij Castricum, Noord-Holland. Groepjes pleisteraars bleven klein, zoals gebruikelijk in deze periode, met maximaal vijf bij Biervliet, Zeeland. Het landelijke telpostrecord van **Bontbekplevier** *C. hiaticula* van telpost Breskens (1498 op 14 mei 2005) sneuvelde op 21 augustus door toedoen van telpost Lauwersmeer Kustweg, Groningen, en kwam op 1980. Een **Woestijnplover** *Anarhynchus leschenaultii* was op 10 augustus kort aanwezig in de massa steltlopers in Utopia op Texel. Indien aanvaard is dit het 19e geval. **Breedbekstrandlopers** *Calidris falcinellus* liepen op 7 juli in Waal en Burg op Texel; op 15 juli en van 7 tot 10 augustus op het wad bij Schiermonnikoog, Friesland; op 12 en 25 augustus in de Breebaartpolder bij de Dollard, Groningen; op 31 augustus langs de Oostvaardersdijk, Flevoland; en vanaf deze dag ook bij Bergen, Noord-Holland. Bijzonder is de opname van een roepend exemplaar op de nachtelijke ge-

luidsopnamelocatie Beijum, Groningen, in de nacht van 9 op 10 juli. De mogelijke **Steltstrandloper** *C. himantopus* in de waterberging bij Twisk, Noord-Holland, werd gemeld tot 10 juli. Op drie plekken werden **Bonapartes Strandlopers** *C. fuscicollis* gevonden. Twee daarvan betroffen 'traditionele' locaties langs de Friese Waddenkust: Westhoek, met maximaal twee van 6 tot 15 augustus, en Zwarte Haan, op 12 augustus. Daarnaast liep een veelvuldig bezocht exemplaar vanaf 26 augustus in De Bol op Texel. Net als in de vorige periode waren op zes locaties **Gestreepte Strandlopers** *C. melanotos* aanwezig, waaronder nog één van de twee van de Ezumakeeg, Friesland, tot 7 augustus. De overige waarnemingen waren op 17 juli langs de Oostvaardersdijk; van 27 tot 31 juli op het Groene Strand op Ameland; op 30 juli in de Scherpenissepolder op Tholen, Zeeland; van 4 tot 16 augustus op Marken, Noord-Holland; en op 19 augustus bij



541 Breedbekstrandloper / Broad-billed Sandpiper *Calidris falcinellus*, adult, Waal en Burg, Texel, Noord-Holland, 7 juli 2021 (Jos van den Berg/birdingtexel.com)

542 Breedbekstrandloper / Broad-billed Sandpiper *Calidris falcinellus*, juveniel, Bergermeerpolder, Bergen, Noord-Holland, 3 september 2021 (Johan Apperloo)





543 Bonapartes Strandloper / White-rumped Sandpiper *Calidris fuscicollis*, adult, De Bol, Texel, Noord-Holland, 31 augustus 2021 (Jos van den Berg/birdingtexel.com)

544 Poelruiters / Marsh Sandpipers *Tringa stagnatilis*, juveniel, Minkewaal, Texel, Noord-Holland, 18 juli 2021 (Ruwan Aluvihare)





545 Steenarend / Golden Eagle *Aquila chrysaetos*, derde-kalenderjaar, Hoge Veluwe, Gelderland, 2 september 2021 (Jan-Freerk Kloen) **546** Morinelplevier / Eurasian Dotterel *Charadrius morinellus*, eerste-kalenderjaar, Soesterberg, Utrecht, 22 augustus 2021 (Pieter Hilgeman) **547** Morinelplevier / Eurasian Dotterel *Charadrius morinellus*, eerste-kalenderjaar, Terschelling, Friesland, 26 augustus 2021 (Pim Rijk)





548 Dougalls Stern / Roseate Tern *Sterna dougallii*, adult-zomer (links), met Visdief / Common Tern *S. hirundo*, Maasvlakte, Zuid-Holland, 17 juli 2021 (Diederik Kok)

549 Vorkstaartmeeuw / Sabine's Gull *Xema sabini*, adult-zomer, Westkapelle, Zeeland, 16 augustus 2021 (Corstiaan Beeke)





550 Keizerarend / Eastern Imperial Eagle *Aquila heliaca*, tweede-kalenderjaar (met Hongaarse kleurring), Eursinge, Drenthe, 4 augustus 2021 (*Ben Gaxiola*)

551 Lammergier / Bearded Vulture *Gypaetus barbatus*, tweede-kalenderjaar ('Eglazine'), Hoge Veluwe, Gelderland, 31 augustus 2021 (*Edwin Winkel*)





552 Slangenarend / Short-toed Snake Eagle *Circaetus gallicus*, tweede-kalenderjaar, Hippolytushoef, Noord-Holland, 28 augustus 2021 (Ruwan Aluvihare)

553 Slangenarend / Short-toed Snake Eagle *Circaetus gallicus*, tweede-kalenderjaar, Strabrechtse Heide, Noord-Brabant, 11 juli 2021 (Martin van der Schalk)



Zwarte Haan. **Grauwe Franjepoten** *Phalaropus lobatus* werden waargenomen in 27 uurhokken, met name langs de Fries-Groningse Waddenkust, waar op meerdere plekken maximaal vijf exemplaren zwommen, zoals buitendijks bij Zwarte Haan; bij Noorderleech, Friesland; in de Ezumakeeg; en bij Warffum, Groningen. Ook ver in het binnenland werden ze aangetroffen, zoals op 16 augustus bij Losser, Overijssel, en op 25 augustus bij Meers, Limburg. Vroege **Rosse Franjepoten** *P. fulicarius* werden gezien op 3 en 4 juli bij de Kleine Praambult in de Oostvaardersplassen (adult) en op 9 augustus in het Jaap Deensgat in de Lauwersmeer, Groningen (juveniel). **Poelruiters** *Tringa stagnatilis* waren goed vertegenwoordigd met waarnemingen in 25 uurhokken. Op Texel werden er twee bij elkaar gezien op meerdere locaties en ook bij Wommels, Friesland, was een duo aanwezig. Op 11 juli trok er één langs telpost Lauwersmeer Kustweg, in een groepje van vijf Groenpootruiters *T. nebularia*. Op 4 en 21 augustus werd een overvliegende **Steppenvorkstaartplevier** *Glareola nordmanni* gemeld in de Workumerwaard, Friesland.

ALKEN TOT STERNS Op 17 augustus trok een **Papegaaiduiker** *Fratercula arctica* langs Nes op Ameland. De tweede-kalenderjaar **Zwarte Zeekoet** *Cephus grylle* van de Waddenkust van Texel werd voor het laatst gemeld op 18 augustus. Het was een uitzonderlijke periode voor de vier soorten jagers. Zeetrekters registreerden maar liefst 51 **Kleinste** *Stercorarius longicaudus*, 1127 **Kleine** *S. parasiticus*, 27 **Middelste** *S. pomarinus* en 270 (waarvan 164 op 17 augustus langs Ameland) **Grote Jagers** *S. skua*. Voor de laatste drie soorten was dit verreweg de beste juli-augustusperiode van de afgelopen 10 jaar. Voor de eerste soort was alleen 2012 iets beter met 54 (tegen bijvoorbeeld nul in 2017). Opmerkelijk was de passage van adulte **Vorkstaartmeeuwen** *Xema sabini* medio augustus, met in totaal 24 langs zeetrekposten, waaronder zeven adulte op 16 augustus langs Westkapelle, Zeeland, een nieuw landelijk maandrecord. Een juveniel hing op 30 augustus rond boven het IJmeer bij Muiderberg, Noord-Holland. Op 28 augustus werd een vroege adulte **Kleine Burgemeester** *Larus glaucoideus* gemeld langs Huisduinen, Noord-Holland. Het zwaartepunt in de aantallen **Lachsters** *Gelochelidon nilotica* lag duidelijk in Oost-Groningen. Hier werden op verschillende plekken enkele 10-tallen gezien; het maximum bedroeg 41 op 3 augustus op het Heeresmeer bij Nieuwe Pekela. Noord-Holland stak daar wat pover bij af, want het hoogste aantal bleef steken op 15 op 30 juli op slaappleats Balgzand. In polder Mijzen bij Schermerhorn, Noord-Holland, werden maximaal 10 gezien. In totaal acht trekkers passeerden telposten. Waarnemingen van **Reuzensterms** *Hydroprogne caspia* kwamen uit 132 uurhokken. In de 'Top of Holland' verbleven de hoogste aantallen: maximaal 83 op 25 augustus bij Gaast, Friesland; 67 op 21 augustus in de Workumerwaard; en 63 op 23 augustus in de Westerbroekstermadepolder in het Zuidlaardermeergebied. Op telposten en nachtelijke geluidsopnamelocaties werden er 75 respectievelijk twee vastgesteld. Het hoogste aantal **Witwangsters** *Chlidonias hybrida* in het Zuidlaardermeergebied en wijde om-

geving was 75; er werden minimaal 26 broedparen gemeld. Elders werden slechts enkele gezien, waaronder een adult op 16 augustus langs Westkapelle. Het broedpaar **Witvleugelsters** *C. leucopterus* van de Zouweboezem bij Ameide, Utrecht, bracht twee jongen groot. Over broedsucces van het paar van het Zuidlaardermeergebied is niets bekend. Opmerkelijk was het totaal van 23 dat half augustus meevloog in de ongekende stromen Zwarte Sterns *C. niger* langs de zeetrekposten. Zo werden op 16 augustus 5248 Zwarte geteld langs Scheveningen, Zuid-Holland, de vierde dag ooit. Het landelijk record **Visdief** *Sterna hirundo* werd met 21 323 gevestigd op 16 augustus op telpost Westkapelle. Hiervoor was telpost Flevocentrale Zuid bij Lelystad, Flevoland, recordhouder met 18 463 op 17 juli 2015. Op 7 juli verbleef een geringde **Dougalls Stern** *S. dougallii* in de Putten bij Camperduin. Hier was ook nog een melding op 5 augustus. Op 17 juli werd een exemplaar gevonden op het Slufterstrand van de Maasvlakte, Zuid-Holland, en op 12 augustus werd een exemplaar gemeld op telpost Pettemer Zeewering bij Petten, Noord-Holland.

ROOFVOGELS TOT VALKEN Ook in deze periode ontbrak **Grijze Wouw** *Elanus caeruleus* niet, met een exemplaar kort op 6 juli in Het Twiske bij Den IJp, Noord-Holland. De gezenderde **Lammergier** *Gypaetus barbatus* ('Eglazine') van het Franse herintroductieproject in de Grandes Causses vloog de gehele periode nog rond op het zuidelijke deel van de Hoge Veluwe, Gelderland. Het bleek een uitzonderlijk goede periode voor **Slangenarend** *Circaetus gallicus*, met waarnemingen uit niet minder dan 40 uurhokken van naar schatting 28 exemplaren. Tot 5 juli en op 10 augustus verbleef een exemplaar op het Dwingelderveld, Drenthe, en tot 14 juli was het tweetal op de Strabrechtse Heide bij Someren, Noord-Brabant, nog aanwezig. Tot 26 augustus kwamen meldingen van het Fochteloërveen, Drenthe/Friesland, met een maximum van drie. Op de Hoge Veluwe bleven de meldingen doorkomen tot 30 augustus, waar het ook om drie verschillende individuen ging. Op 2 juli werden er twee gemeld bij Tongeren, Gelderland, gevolgd door één in het Zuidlaardermeergebied op 5 juli. Van 9 juli tot 17 augustus verbleef er één langdurig in het Drents-Friese Wold, Drenthe. Andere meldingen in Drenthe betroffen overvliegers op 8 en 11 juli over Vries en op 11 juli over Assen. Op 18 juli werd een exemplaar gefotografeerd bij Sellinger, Groningen. Juli werd afgesloten met nog eens drie exemplaren: op 27 juli over Leidschendam, Zuid-Holland, met een vervolgwarneming op 29 juli over Zoetermeer, Zuid-Holland; op 27 juli bij Haamstede, Zeeland; en op 30 juli over de Schoorlse Duinen, Noord-Holland. In augustus volgden nog negen waarnemingen: op 1 augustus bij Wormer, Noord-Holland; van 15 tot 30 augustus bij Hippolytushoef, Noord-Holland; op 20 augustus over het gehucht Megen, Noord-Brabant; op 20 augustus op de Netterselsche Heide, Noord-Brabant; op 21 augustus over Bergschenhoek, Zuid-Holland; op 23 augustus over Dannemeer, Groningen; op 26 augustus in de Onlanden, Drenthe; op 28 augustus over het Kootwijkerzand, Gelderland; en ten slotte op 31 augustus bij Ossendrecht. Het aantal **Vale Gieren** *Cypus fulvus*



554 Waterrietzanger / Aquatic Warbler *Acrocephalus paludicola*, eerste-kalenderjaar, Rottemeren, Zuid-Holland, 7 augustus 2021 (*Chris van Rijswijk*) **555** Kleine Klappekster / Lesser Grey Shrike *Lanius minor*, adult, Grote Vlak, Texel, Noord-Holland, 28 augustus 2021 (*Peter de Man*) **556** Noordse Boszanger / Arctic Warbler *Phylloscopus borealis*, Kooидуinen, Ameland, Friesland, 25 augustus 2021 (*Diederik Kok*) **557** Grauwe Fitis / Greenish Warbler *Phylloscopus trochiloides*, Oosterend, Terschelling, Friesland, 24 augustus 2021 (*Thijs Glastra*)

was beduidend lager dan in de vorige periode. Voldoende gedocumenteerde waarnemingen betroffen solitaire exemplaren op 12 en 13 juli uit de omgeving van Wilnis, Utrecht; op 16 juli tussen Hilversum en Laren, Noord-Holland; op 8 augustus bij Dalfsen, Overijssel; op 12 augustus ten noorden van Rijs, Friesland; en op 13 augustus bij Kootwijkerbroek, Gelderland. Op 4 augustus werd een tweede-kalenderjaar **Keizerarend** *Aquila heliaca* waargenomen bij Eursinge, Drenthe. Op de foto's was een kleurering te zien die duidde op een Hongaarse afkomst. Dezelfde vogel werd eind juni in Finland waargenomen. Indien aanvaard is dit het derde geval na dat van april 2005 bij de Ketelbrug, Flevoland, en de Hongaarse vogel ('Ladybird') die in najaar 2017 rondzwierf door verschillende provincies. De al sinds februari in Nederland aanwezige derde-kalenderjaar **Steenarend** *A. chrysaetos* verbleef de gehele periode op de zuidelijke Veluwe. Het was bepaald geen sinecure om de vogel te

zien te krijgen, maar de volhouders hadden de meeste kans vanaf uitkijkpunt Oud Reemst op het Planken Wambuis. Met zeven waarnemingen was dit een vrij magere periode voor **Steppiekiekendief** *Circus macrourus*. De roep van een mogelijke **Dwergooruil** *Otus scops* werd opgenomen op 3 augustus in Lutenberg, Overijssel. Op c. 20 plekken werden **Hoppen** *Upupa epops* gezien, waarbij de twee van De Plateaux ten zuiden van Valkenswaard, Noord-Brabant, tot 8 augustus werden gezien. Op 9 juli werd hier ook transport van voedsel of ontlasting gezien maar verdere bewijzen van een broedgeval ontbreken vooralsnog. Er werden nog in 18 uurhokken **Bijeneters** *Merops apiaster* gezien. De grootste groep (14) vloog op 21 augustus boven Herkenbosch, Limburg. Op ruim 10 plekken werden **Roodpootvalken** *Falco tinnunculus* waargenomen, waaronder opmerkelijk genoeg een geringde juveniele escape van 10 tot 12 augustus rond vliegveld De Kooy bij Den Helder, Noord-Holland.



558 Graszanger / Zitting Cisticola *Cisticola juncidis*, Vught, Noord-Brabant, 22 augustus 2021
(Co van der Wardt)

559 Struikrietzanger / Blyth's Reed Warbler *Acrocephalus dumetorum*, juveniel, De Tuintjes, De Cocksdorp, Texel,
Noord-Holland, 12 augustus 2021 (Jeroen de Bruijn)



KLAUWIJEREN TOT GRASZANGERS Van 27 augustus tot in september werd een adulte **Kleine Klapekster** *Lanius minor* waargenomen in het Grote Vlak op Texel. Het betreft het vierde geval in vijf jaar tijd voor het eiland. Een mannetje **Roodkopklauwier** *L. senator* werd op 4 juli gefotografeerd bij Lichtenvoorde, Gelderland. Op Schiermonnikoog was de gehele periode een **Bonte Kraai** *Corvus cornix* aanwezig. Ook verbleef een exemplaar op 14 juli bij Tolbert, Groningen, en werd een mogelijk zuiver exemplaar gefotografeerd op 29 augustus bij Petten. Opmerkelijk was de **Roodstuitzwaluw** *Cecropis daurica* die op 23 augustus werd gefotografeerd bij Almere, Flevoland. Er werden vier **Grauwe Fitissen** *Phylloscopus trochiloides* gevonden: één op 23 augustus in Bomenland op Vlieland; één op 24 augustus langs het Gorzenpaadje op Terschelling; één op 24 augustus in Boerhaard, Overijssel; en één op 26 augustus bij het Vuurboetsduin op Vlieland. De eerste **Noordse Boszanger** *P. borealis* voor augustus werd van 25 tot 27 augustus waargenomen in de Kooiduinen op Ameland. De **Iberische Tijftjaf** *P. ibericus* bij Spaarndam, Noord-Holland, werd voor het laatst gemeld op 14 juli. De eerste **Spervergrasmus** *Sylvia nisoria* van het jaar verscheen op 12 augustus op Ameland. Hierna volgden nog diverse waarnemingen en ringvangsten in de kuststreek. Op 29 augustus zaten twee exemplaren bij elkaar op de Robbenjager op Texel. De enige **Krekeltzanger** *Locustella fluviatilis* was een overblijver uit de vorige periode die tot 14 juli bij Lieveen, Drenthe, zong. Na een uitstekend voorjaar voor **Orpheusspotvogel** *Hippolais polyglotta* volgden er in juli nog maar enkele waarnemingen. De enige nieuwe betroffen een zingende van 5 tot 8 juli bij Tilburg, Noord-Brabant, en een exemplaar op 5 augustus in Cadzand, Zeeland. In augustus kwam het grote nieuws naar buiten: Nederland is een broedvogel rijker, namelijk **Struikrietzanger** *Acrocephalus dumetorum*. Een zingend mannetje werd op 3 juni ontdekt in De Tuintjes op Texel, en de ontdekking van een vrouwtje volgde op 19 juni. Spannende weken volgden maar op 3 augustus was het raak: er bleken drie jongen uitgevlogen. De familie werd op verschillende plekken in de omgeving waargenomen tot 25 augustus. Veldwaarnemingen van **Waterrietzangers** *A. paludicola* werden gedaan op 11 locaties en betroffen 13 exemplaren. Verder werden er slechts drie vogels geringsd. **Graszangers** *Cisticola juncidis* werden gemeld in 23 uurhokken, met het zwaartepunt duidelijk in Zeeland. Buiten deze provincie werden ze waargenomen op zes plekken: op 2 juli en 20 augustus bij Oostvoorne, Zuid-Holland; van 3 tot 7 juli bij Hôfte, Groningen; op 12 en 13 juli bij Woudbloem, Groningen; op 12 en 13 juli bij Elslou, Limburg; op 15 augustus langs telpost Pettemer Zeewering, en in het Noordhollands Duinreservaat bij Egmond aan Zee; en vanaf 18 augustus bij Vught, Noord-Brabant.

SPREEUWEN TOT GORZEN Na opnieuw een goed voorjaar voor **Roze Spreeuw** *Pastor roseus* druppelden de waarnemingen nog door in de zomermaanden, met vijf exemplaren: een adult op 1 en 3 juli op Schiermonnikoog; een adult op 9 juli bij Marknesse, Flevoland; een tweede-kalenderjaar op 17 juli in de Prunjepolder-Zuid, Zeeland; een adult op 30 en 31 juli bij Almere; en een adult op 9 en 10 augustus in de Amsterdamse Waterleiding-duinen bij De Zilk, Zuid-Holland. Een vroege **Kleine Vliegenvanger** *Ficedula parva* werd op 28 augustus gezien in de Nieuwe Eendenkooi op Vlieland. Van 6 tot 10 mei verbleef een territoriaal mannetje **Balkanvliegenvanger** *F. semitorquata* in het Speulderbos bij Putten, Gelderland. Deze werd gevonden tijdens een broedvogelinventarisatie en werd stilgehouden op verzoek van de terreinbeheerder. Indien aanvaard betreft dit het eerste of tweede geval, afhankelijk van aanvaarding van de ringvangst bij Beek, Gelderland, in 2020. Er werden 40 **Duinpiepers** *Anthus campestris* opgeschreven op de telposten, met name in het zuidoosten. Op telpost Loozerheide, Limburg, vlogen de meeste langs, namelijk 11. Op 21 juli werd een juveniele **Roodmus** *Erythrura erythrura* gevangen bij Castricum, gevolgd door de vangst van een andere juveniel en een vrouwtje met broedvlek op 26 juli. Op 1 september werd een vrouwtje gevangen op Vlieland. Ook deze vogel had een broedvlek, wat de suggestie wekt dat in de buurt gebroed is. Verder had de enige nieuwe locatie betrekking op een melding op 8 juli bij Woensdrecht, Noord-Brabant, waar een vrouwtjes-type kort werd waargenomen. Op 20 juli werden twee **Witbandkruisbekken** *Loxia leucoptera* waargenomen over telpost Kwintelooyen bij Veenendaal, Utrecht; hun geluid werd opgenomen. Daarnaast was er een melding op 22 augustus van een groepje van zes over een camping bij Otterlo, Gelderland. De soort is de laatste jaren behoorlijk zeldzaam met de laatste twitchbare gevallen in de winter van 2013/14 bij Noordlaren, Groningen, en bij Doorn, Utrecht. **Europese Kanaries** *Serinus serinus* werden waargenomen op 13 locaties, waarvan drie langs telposten. De enige **Grauwe Gors** *Emberiza calandra* betrof een pleisteraar tot 8 juli bij Rouveen, Overijssel. Er vlogen 22 **Ortolanen** *E. hortulana* langs de telposten. Daarnaast werden nog zes exemplaren op nachtelijke geluidsopnamelocaties vastgelegd.

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