The Gmelin's wagtail *Motacilla lutea*: breeding range, migratory movements and wintering range

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Abstract - The breeding range, the migratory movements, and the wintering range of the yellow-headed wagtail, called *Parus luteus* from Samuel Gottlieb Gmelin (now *Motacilla flava lutea*, or *Motacilla lutea* for some authors), has always been described in very general terms. Some authors pointed out that a modern and detailed map with the real distribution of the *lutea* is lacking, especially for evaluating the overlap of breeding ranges with other subspecies of *Motacilla flava*. The purpose of this study is to fill this gap in information by drawing up an updated map of the breeding range, as well as the wintering range and the migratory movements followed by this wagtail. These same aspects are also considered in perspective terms from 1851 to 2018 in order to assess any changes that have occurred over time. This study is based on data obtained from the consultation of 672 bibliographic sources, 40 travel reports, databases (including 6 relating to museum collections), and some websites.

Since the beginning of the 20th century, the breeding range of the *lutea* is located within the area of the Eurasian steppe and forest-steppe with the greatest abundance occurring in two areas in European Russia: the southern one in the floodplain of the Volga River and the northern one in the floodplain of the Kama River. Similarly to what is happening for the subspecies *cinereocapilla* and *feldegg*, from the end of the 20th century the *lutea* is extending its breeding range west and north. The advancement of the *lutea* to the western and northern regions of the European portion of Russia became possible due to the westward and northern advancement of key plant communities and food supply facilities of this bird. The *lutea* mainly uses two migratory routes: the Great Rift Valley Flyway and the Central Asian Flyway. The first is used by birds that nest in European Russia and western Kazakhstan to reach Africa, while the second is probably only used by the minority portion of the population that is present in the central and eastern part of Kazakhstan and in the Asian portion of Russia to reach India and Sri Lanka. Starting from the 21st century, the passage of birds towards north of the Black Sea seems to intensify. East Africa is the main wintering area of the *lutea*, but starting from the last decades of the 20th century, a small part of the birds traveling towards Africa interrupt their migratory journey and wintering in the Arabian Peninsula.

Keywords: *Motacilla flava lutea*, climate change, steppe, northward expansion, Europe, Asia, Africa.

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Riassunto - La cutrettola di Gmelin *Motacilla lutea*: areale riproduttivo, movimenti migratori e areale di svernamento.

L'areale riproduttivo, i movimenti migratori e l'areale di svernamento della cutrettola dalla testa gialla chiamata da Samuel Gottlieb Gmelin *Parus luteus* (ora *Motacilla flava lutea*, o *Motacilla lutea* secondo alcuni Autori), in italiano nota come cutrettola del Caspio, sono sempre stati descritti in temini molto generali, tanto che alcuni ornitologi hanno evidenziato la mancanza di mappe aggiornate con la reale distribuzione. Questo studio si pone l'obiettivo di colmare la lacuna analizzando questi aspetti in un periodo molto ampio (dal 1851 al 2018) ed evidenziando anche i cambiamenti che sono intercorsi nel tempo.

Dall'inizio del XX secolo, l'areale riproduttivo della cutrettola del Caspio è collocato nella fascia occupata dalla steppa e dalla steppa-foresta euroasiatica. La sottospecie è più abbondante in due aree della Russia europea: quella meridionale è posizionata nella pianura alluvionale del fiume Volga e quella settentrionale nella pianura alluvionale del fiume Kama. Analogamente a quanto sta accadendo per le sottospecie *cinereocapilla* e *feldegg*, dalla fine del XX secolo la cutrettola del Caspio sta estendendo il proprio areale riproduttivo sia verso ovest sia verso nord. La progressione della sottospecie *lutea* nelle regioni occidentali e settentrionali della Russia europea è favorita dall'avanzamento a ovest e a nord delle principali comunità vegetali ad essa più idonee. Questo cambiamento ambientale è probabilmente dovuto all'aumento delle temperature sia nella steppa sia nella steppa-foresta russa. La cutrettola del Caspio prevale numericamente sulle altre sottospecie di Cutrettola nel 3,2% del suo areale riproduttivo ed è presente come unica sottospecie solo nel 4% dell'intero areale. L'ampia sovrapposizione della *lutea* (92,8% dell'areale) con le altre sottospecie, insieme con la sua inferiorità numerica generale e la possibilità di accoppiarsi con diverse sottospecie (specialmente *flava*, *beema* e *feldegg*), sono motivi di preoccupazione per la sua conservazione. Ciò è ancora più rilevante se, come suggerito dagli ornitologi russi, si considera *lutea* come una specie distinta e giustifica pienamente l'inclusione di questo uccello nelle Red Lists di molte oblast e repubbliche della Russia.

La cutrettola del Caspio utilizza principalmente due rotte migratorie: la Great Rift Valley Flyway e la Central Asian Flyway. La prima è utilizzata dagli uccelli che nidificano nella Russia europea e nel Kazakistan occidentale per raggiungere l'Africa, mentre la seconda è probabilmente seguita per raggiungere l'india e lo Sri Lanka solo dalla porzione minoritaria della popolazione che si riproduce nella parte centrale e orientale del Kazakistan e nella Russia asiatica. A partire dal XXI secolo, il flusso migratorio degli individui che transitano a nord del Mar Nero sembra intensificarsi.

L'Africa orientale è la principale area di svernamento della sottospecie *lutea*, tuttavia a partire dagli ultimi decenni del XX secolo una piccola parte degli uccelli in migrazione ha iniziato ad interrompere il viaggio verso l'Africa per fermarsi a svernare nella Penisola Arabica. L'espansione verso nord-est dell'areale "africano" di svernamento della cutrettola del Volga è in sintonia con quanto sta accadendo alle sottospecie occidentali dalla metà degli anni '80: l'area di svernamento si è notevolmente espansa a nord, occupando, pur con numeri molto limitati, la porzione dell'Europa caratterizzata dalla temperature media in gennaio superiore a 0 °C. La presenza occasionale in inverno nella

Turchia occidentale, in Israele e nell'Iran meridionale suggerisce che anche in Medio Oriente la specie *Motacilla flava* (sottospecie *lutea* inclusa) sta progressivamente occupando le aree con temperature in gennaio superiori a 0 °C. In inverno, il subcontinente indiano ospita una frazione marginale della popolazione della cutrettola del Caspio; in considerazione delle recenti segnalazioni invernali in alcuni stati settentrionali dell'India, anche in questa area geografica sembra essere in atto l'espansione verso nord dell'areale di svernamento della sottospecie *lutea*.

Parole chiave: *Motacilla flava lutea*, cambiamento climatico, espansione verso nord, Europa, Asia, Africa

INTRODUCTION

The German physician, botanist, and naturalist Samuel Gottlieb Gmelin, sponsored by the Russian Academy of Sciences under the Empress Catherine II, explored the area around the Caspian Sea and described at least 61 bird species as new to science (Mlíkovský, 2011). He conducted two expeditions. In the first he travelled, along with Peter Simon Pallas, to Persia from 1770 to April 1772; the journey led through Derbent, Baku, Sallian, Enzelly, Rescht, Gilan, and Sari. In 1773, he started from Astrakhan for the second and last exploration on the Caspian, and after exploring several parts of the Persian coast, he left his ship at Enzelly and in January 1774 proceded by land to Baku and to Derbend. He was captured on 5th February 1774 by Usmey, Khan of Khaïtakes, and during negotiations for a ransom for his release, he died of ill health and bad treatment in captivity at the age of 30 on 27th July of the same year in Akhmedkent (Dagestan) (Long, 1838). William Tooke (1799) wrote about him: «This able traveller was continually obliged to struggle with adverse events, while traversing the northern provinces of Persia; he had especially to contend with sicknesses, and the difficulties thrown in his way by the khans of that kingdom; and he is deserving of the title of a martyr to natural history, with the greater right, as, after having adorned his life with so many labours, he closed it under the weight of persecutions, and in the miseries of captivity.».

One of the 61 new species of birds discovered by Gmelin was a wagtail, captured at Bandar-e Anzali (Gilan Province, Iran) during his first expedition, to which he attributed the scientific name of *Parus luteus* (Gmelin, 1774). The German explorer described a male and a female: of the male he provided only the description and it corresponds with what is today known as *Motacilla* (*flava*) *lutea*, while the female (figured on plate 20, Fig. 1 of his paper) is actually a *Motacilla cinerea*. The unfigured and lost male specimen described by Gmelin (1774) was designated by Mlíkovský (2011) as the lectotype of the form.

The plumage variation of the male of the subspecies *lutea* in summer can by divided into three main types: a) wholly yellow head (Fig. 1); b) yellow supercilium and forehead, and largely yellow ear-coverts (Fig. 2); c) yellow supercilium, greenish forehead and crown, largely greenish ear-coverts, and distinct dark loral stripe (Fig. 3) (Alström *et al*., 2003). The adult female in reproductive plumage is similar to the female of *flavissima* (yellowish supercilium), but it may be also difficult to distinguish from *flava* and *beema* (Fig. 4); a few individuals are distinctive because they resemble the less brightly coloured male (Alström *et al*., 2003). The young specimens are similar to those of the subspecies *flava* and *beema*, but some show yellowish supercilium (Alström *et al*., 2003).

Fig. 1 - Adult male in reproductive plumage, Ulyanovsk area, Cherdaklinsky District / Maschio adulto in abito riproduttivo, area di Ul'janovsk, Distretto di Cherdaklinsky (Photo / Foto: Elena Alexandrovna Artemyeva).

Fig. 2 - Adult male in reproductive plumage, Ulyanovsk area / Maschio adulto in abito riproduttivo, area di Ul'janovsk (Photo / Foto: Elena Alexandrovna Artemyeva).

Fig. 3 - Young male, Ulyanovsk area, Cherdaklinsky District / Maschio giovane, area di Ul'janovsk, Distretto di Cherdaklinsky (Photo / Foto: Elena Alexandrovna Artemyeva).

Fig. 4 - Adult female in reproductive plumage, Ulyanovsk area, Cherdaklinsky District / Femmina adulta in abito riproduttivo, area di Ul'janovsk, Distretto di Cherdaklinsky (Photo / Foto: Elena Alexandrovna Artemyeva).

This bird is now often considered as an independent taxon (*Motacilla lutea*) based on a set of criteria - ecological, geographical, morphological and genetic (e.g., Stepanyan, 1978; 1983; Redkin, 2001a; Pavlova *et al*., 2003; Sotnikov, 2006; Artemyeva & Muravyev, 2012a, 2012b; Bakhtadze & Kazakov, 2017; etc.), and usually russian ornithologists give it the common name of yellow-backed wagtail in English, but the main world bird lists currently consider the *lutea* only as one of the subspecies of *Motacilla flava* (Dickinson & Christidis, 2014; del Hoyo *et al*., 2014-2016; Clements *et al*., 2018; Gill & Donsker, 2019), so in our discussion we have followed this last indication. In our text, for brevity and as suggested by russian ornithologists, we use the common name yellow-backed wagtail as synonymous with yellow-headed western yellow wagtail.

Some authors (Glutz von Blotzheim & Bauer, 1985; Alström *et al*., 2003) pointed out the lack of a modern and detailed map with the real distribution of the subspecies *lutea*, especially for evaluating the overlap of breeding ranges with other subspecies of *Motacilla flava*.

The purpose of this study is to fill this gap in information by drawing up an updated map of the breeding range, as well as the wintering range and the migratory movements followed by the subspecies. These same aspects are also considered in perspective terms from 1851 to 2018 in order to assess any changes that have occurred over time.

MATERIALS AND METHODS

The present study is based on data obtained from the consultation of 672 bibliographic sources, 40 travel reports, databases (including 6 relating to museum collections), and some websites. However, given the impossibility of consulting all the reports published during the study period, the data presented here should not be considered exhaustive; nevertheless, they are sufficient to obtain an understanding of the changes that have occurred, as well as the current situation and trends.

The findings of this study have been separated into four different time periods: 1851-1900, 1901-1950, 1951-2000, and 2001-2018.

In the breeding range maps, we have used these notations:

- Yellow dot: possible breeding
- Orange dot: probable breeding
- Red dot: confirmed breeding
- Black question mark: uncertain data
- Cyclamen polygon: breeding range in mid-20th century according to Dementiev & Gladkov (1954).
- In the maps about migratory movements and the wintering range, we have used these notations:
- Cyclamen dot: presence during migrations
- Blue dot: presence in winter
- Black question mark: uncertain data.

For the wintering range in Africa, transposition on distribution maps is made using colours according to the meanings below:

Single individual or presence without quantitative indication

2-10 individuals

11-100 individuals

101-1,000 individuals

1,001-10,000 individuals

Over 10,000 individuals

RESULTS

Breeding range

From 1851 to 1900

The information available for the second half of the 19th century was fragmentary and, probably, partly inaccurate. Brehm (1855) stated that the yellow-backed wagtail was present in Russia and Crimea. Severzov (1873) reported that the reproductive area was between the Don (Russia) and Irtysh (Kazakhstan) rivers. The yellow-backed wagtail was very plentiful in the Volga delta (Astrakhan Oblast) (Yakovlev, 1873), and it was present near Saratov (Saratov Oblast) on 13th June 1881 and 12th June 1883 (Zavyalov *et al*., 2009). In Ulyanovsk Oblast, the *lutea* occurred quite often along the course of the Sviyaga and Bekshanka rivers and across the Syzransky District (Samara Oblast), and in some places it was more numerous than the subspecies *flava* (Bogdanov, 1871). It was probably present also in the Eastern Samara Oblast and was particularly characteristic for the area immediately east of the Kama River (Repubblic of Tatarstan) (Ruzski, 1893). The yellow-backed wagtail was present, but not common, along the lower course of the Ilek River, along some of the tributaries of the Ural River in close proximity to Orenburg, in the Buguruslansky District (Orenburg Oblast), and along the Sakmara River; in the floodplain of the Ural River, it was regularly present only near the Pogromnaya River (Zaroudny, 1888; 1897; Karamzin, 1901). It was a breeding bird in the south of the Republic of Bashkortostan (Eversmann, 1866) and had a fairly ordinary appearance in all of the larger meadow areas near Birsk (Republic of Bashkortostan) (Pleske, 1878) and near Angasyak (Dyurtyulinsky District, Republic of Bashkortostan) (Redkin, 2001b). Sushkin (1897) stated that the *lutea* was probably breeding in the city of Ufa. It was present near the southern slopes of the Ural Mountains, between the 48th and 53rd parallels, where it most commonly nested in areas with trees and clearings and more rarely in the steppe (Nazarow, 1886a; 1886b). Sushkin (1897) considered the *lutea* the most numerous among other types of yellow wagtails in the Ufimsky District (Republic of Bashkortostan); he met the first wagtail on 19th April and the last on 23rd August.

Small colonies were present on the southern shore of Caspian Sea at Ashutah and Gyaz (nowadays Bandar-e Gaz) (Mazandaran Province, Iran) (Zaroudny, 1896). East of the Urals, the *lutea* nested in the southern parts of the Tobolsky District (Tyumen Oblast) (Ruzski, 1897).

Further east, the yellow-backed wagtail was a rare breeder near Khujand (Sughd Region, Tajikistan), in the Zarafshan valley (Navoiy Region, Uzbekistan) and in the mountains (up to 1200 m a.s.l.) and steppes between Zarafshan, the Syr Darya River, and the Kyzylkum Desert (Severzov, 1875; 1888). The same data were reiterated by Dresser (1876). This wagtail was often observed in meadows and in the basins near Lake Klatuz in the Yamyshevskaya fortress area (near the current village of Yamyshevo) (Pavlodar Region, Kazakhstan) (Plotnikov, 1898).

During the reproductive period (June 1879), the yellow-backed wagtail was observed in Mongolia in the valley of the Kunguya River, between the Zavkhan (Uvs Province) and Urgamal (Zavkhan Province) districts (Pevtsov, 1951).

The known breeding range of *lutea* for the period from 1851 to 1900 is shown in Fig. 5.

From 1901 to 1950

Hartert (1910) stated that the *lutea* nested only in Eastern Russia and Western Siberia, passing through Turkestan. More precisely, Sushkin (1925) pointed out that it nested from the provinces of Samara, southern part of the Republic of Bashkortostan and Orenburg Oblast, through the northern part of the Kirghiz steppes and southern part of West Siberia as far as the upper and middle course of the Irtysh River (Pavlodar, Yamyshevski, Georgievak on the south slope of Kalbinski Altai), largely covering the area of the subspecies *beema*. Subsequently, a general definition of the reproductive range was provided by Buturain *et al.* (1940): along the Middle and Lower Volga and its tributaries (Kama and Belaya rivers), in the steppes of Kazakhstan and Western Siberia, reaching south to the Aral Sea and Altai. According to Grant & Mackworth-Praed (1952), the breeding range extended from the Volga River to the headwaters of the Yenisei River. Additionally, the western boundary of the breeding range of the yellow-backed wagtail proceeded from the Volga River delta, northward encompassing the western side of the Ilovlya River (left bank tributary of the Don River), passes into the Saratov Region between Balashov and Atkarsk, further moves proximately along the Sura River to the Volga River, and somewhat south of Kazan (Dementiev & Gladkov, 1954). Further east, nesting was known to occur on the valley of the lower Vyatka River; these birds were particularly characteristic for the area immediately east of the Kama River, where it was found to occur in the north along the river to Elovo (Yelovsky District, Perm Krai); near the Ural Mountains boundary the range apparently turns sharply southward, skirting the taiga part of mountains (Vorontsov, 1949; Dementiev & Gladkov, 1954). Dementiev & Gladkov (1954) stated

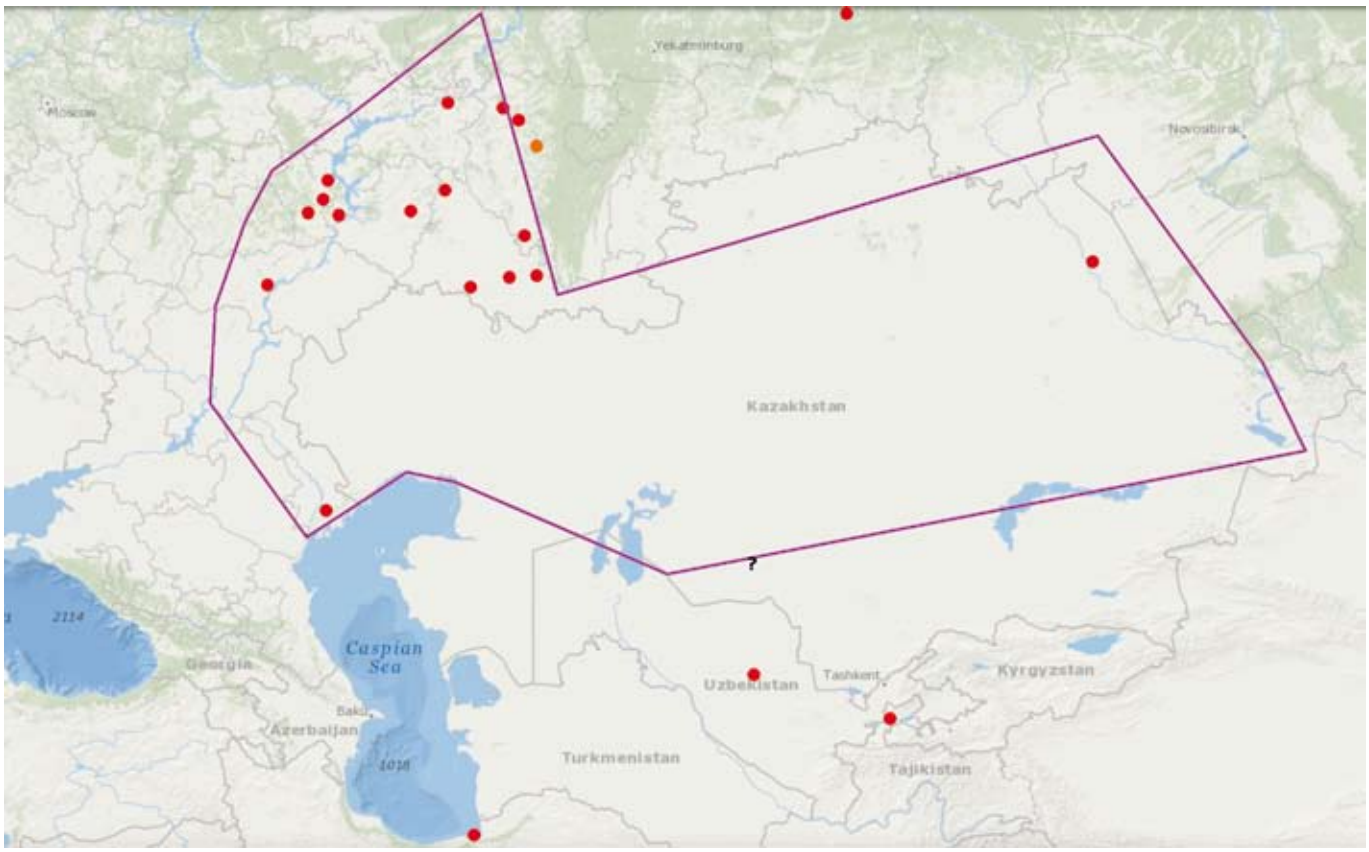


Fig. 5 - Breeding range from 1851 to 1900. / Areale riproduttivo dal 1851 al 1900. ● Probable breeding / Nidificazione probabile. ● Confirmed breeding / Nidificazione certa. ▬ Breeding range in mid-20th century. / Areale riproduttivo a metà del XX secolo (Dementiev & Gladkov, 1954).

that the extreme northeast corner of the breeding range was at Lake Chany (Novosibirsk Oblast) and the eastern boundary was unclear, but apparently passed along the Irtysh River to Ust-Kamenogorsk and then to Lake Zaysan (Kazakhstan); isolated nesting areas existed in Kazakhstan, extending far southward. Lavrov (1930) found this wagtail nesting at lakes Tengiz and Korgalzhyn (Kazakhstan), Spangenberg (1949) at lower reaches of Syr Darya (Lake Kamyshly-Bash) (Kazakhstan), and Zaroudny (1916) on the eastern shore of the Aral Sea (Uzun-Kair) (Kazakhstan). According to Ivanov (1935) and Dementiev & Gladkov (1954), the boundary of the more or less countinuous range passed considerably further north: at Turgay and Karabutak (Kazakhstan). In the steppe between the Emba River and the Mugodzhary Hills this wagtail nested in the Ural River delta and further west in the Volga River delta.

In Russia, a specimen was collected in May 1910 in the Lake Sarpa area (Ketchenerovsky District, Republic of Kalmykia) (Korepova, 2015), and another one was in the same locality on 24th May 1913 (Creuwels, 2018).

In Astrakhan Oblast, the yellow-backed wagtail nested in the delta and floodplain of the Volga (Bostanzhoglo, 1911; Vorobiev, 1936; Dementiev & Gladkov, 1954).

A specimen was captured on 19th August 1912 near Valuyevka (Staropoltavsky District, Volgograd Oblast) (Zavyalov *et al*., 2009).

In Saratov Oblast, an individual was captured on 31st May 1924 in the Volsky District; three specimens were shot in the neighborhood of Volsk on 10th April 1926; a bird was captured near Balakovo on 17th May in the period from the beginning of the century until 1928, and an individual was shot in Pugachev (Pugachyovsky Distric) on 12th Jun 1928 (Zavyalov *et al*., 2009). The *lutea* was nesting in Saratov Oblast in the 1920s, but it was a secondary species (Volchanetsky & Yaltsev, 1934).

The yellow-backed wagtail frequently occurred in the southeastern parts of the Samara Oblast (Grote, 1919b) where it was an ordinary breeding bird (Ispolatov, 1912).

The *lutea* was breeding, but not abundant, in the Orenburg district (Sushkin, 1914; Grote, 1919b); in this Oblast, two males in reproductive dress were already observed on 25th April 1918 (Grote, 1919a). Strangely, Hartert (1921-1922) stated that the *lutea* only occasionally reached north to Orenburg.

In the Republic of Bashkortostan, it was the most frequent and numerous bird in the Ufimsky District (Sushkin, 1914; 1925).

It was cited among the species commonly found in the Shadrinsky District (Kurgan Oblast) (SDEC, 1926), while it was not recorded in the Omsk Oblast (Johansen, 1907).

The carcass of an adult male that was collected by V. Ya. Parovshchikov on 26th May (or June?) 1927 in the floodplains of the river Sozh, in the vicinity of the village

of Shershuny (Smolensk Oblast), is preserved in the collection of the Zoological Museum of Moscow University (Dementiev, 1938; Redkin & Glukhov, 2008).

In Kazakhstan, the yellow-backed wagtail was observed daily at Kumsay (Mugalzhar District, Aktobe Region) from 3rd to 15th May 1915 (Karamzin, 2003), and it nested in the Middle Kirghiz steppe and near Turgay (Zhangeldi District, Kostanay Region) (Sushkin, 1914; 1925). The wagtail was nesting on the Irtysh River 40 km north of Pavlodar (Pavlodar Region), and it was found on 3rd May in the 1920s by A. P. Velizhanin on the southern slope of Kalbinsky Altai at Georgievka (nowadays Qualbatau) (Zharma District, East Kazakhstan Region) (Sushkin, 1938).

The known breeding range of *lutea* for the period from 1901 to 1950 is shown in Fig. 6.

From 1951 to 2000

Mayr & Greenway (1960) described the breeding range of the yellow-backed wagtail as follows: "Southeastern Russia in the gouvernements of Kazan and Orenburg, Penza, and steppe country of the lower Volga eastward, south of about lat. 54° N. to about long 78° E. and southward to the Caspian and Aral Sea region". Flint *et al*. (1984) stated that the breeding range of the subspecies *lutea* included Lower Volga, Kazakhstan, South-Eastern Siberia, and Sakhalin Island, but they certainly included the actual *Motacilla tschutschensis taivana* in this description.

Regarding the European part of the range, the yellow-backed wagtail bred in the middle belt of the Volga-Caspian region, reaching Penza in the west, Kazan, Ufa, and Orenburg in the north, and the Volga and the Ural delta in the south (Molodovsky, 1997).

A single adult of *lutea* was recorded on 11th July 1991 in the vicinity of Kurush (Dokuzparinsky District), a mountain village situated at 2480-2560 m a.s.l. in Southern Dagestan (Butyev & Lebedeva, 2007).

The yellow-backed wagtail was not considered a breeding bird in Central Russia (Koblik, 1998), and it was also not listed in the catalogue of vertebrates of the Vladimir Oblast (Kuzmin & Serbin, 1998), but Vinogradov (2001) discovered territorial males singing in three swamps between Maksimovskiy and Butylitsy (Melenkovsky District) in the first decade of June 2000.

In the Kalmykia Oblast, the *lutea* was present in the breeding season in the eastern part of the Kuma-Manych depression; in the breeding period of 1962 and 1965, four birds were sighted in the lower reaches of Kuma River, but later the drainage of the Kuma's marshes led to the disappearance of the nests (Tsapko, 2008a; 2008b).

In the Astrakhan Oblast, it was reported in a limited number in the Volga delta (Lugovoy, 1963).

In Volgograd Oblast, the yellow-backed wagtail was nesting in the upper zone of the Volgograd reservoir (Piskunov, 1994), and in the Ilovlinsky and Olkhovsky districts in June 1994 (Muravyev & Artemyeva, 2012a).

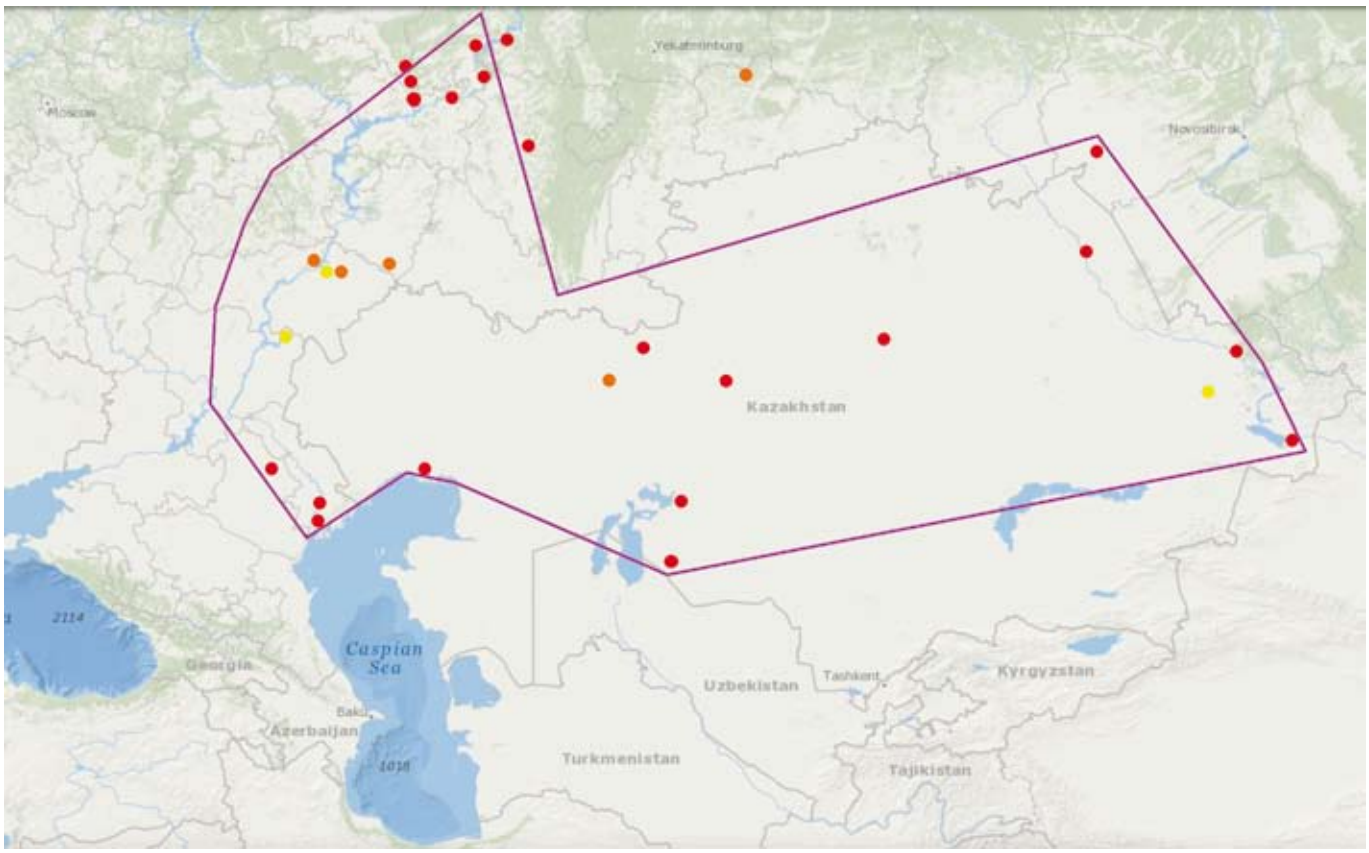


Fig. 6 - Breeding range from 1901 to 1950. / Areale riproduttivo dal 1901 al 1950. ● Possible breeding. / Nidificazione possibile. ● Probable breeding / Nidificazione probabile. ● Confirmed breeding / Nidificazione certa. ▬ Breeding range in mid-20th century. / Areale riproduttivo a metà del XX secolo (Dementiev & Gladkov, 1954).

In the Lipetsk Oblast, a female with marked nesting behavior was sighted on 5th June 1995 in the outskirts of Talitsky Camilyk (Dobrinsky District) (Mosalov, 1995; Sarychev, 2009).

In the Saratov Oblast, the subspecies *lutea* was a common breeder bird in on the left bank of the Volga River valley and was also common during migration in agricultural environments (Tabachishin & Zavyalov, 1997; Zavyalov *et al.*, 2005a; 2005b; Oparina & Oparin, 2007; Oparin *et al.*, 2013). The northern limit of the distribution was carried out along the valleys of the Bolshoy Irgiz and Maly Irgiz rivers; in 1967, it was recorded nesting on the right bank of the Bolshoy Irgiz River (Varshavsky *et al.*, 1994). From 1988, it extended its breeding range onto the right bank of the Volga River valley (Kalininsky, Lysogorsky, and Arkadaksky districts and in the vicinity of the city of Saratov) down to the latitude of the cities of Volsk and Balakovo and in some cases to the north (e.g., Volsky District and Khvalynsky District) (Zavyalov *et al.*, 2009; Muravyev & Artemyeva, 2012a).

In the Penza Oblast, the *lutea* was a breeding bird; it arrived at the end of the second-beginning of the third decade of April (19th April 1989, 25th April 1990) and flown away by late August (21st August 1990) (Muravyev, 2010).

In the Ulyanovsk Oblast, on 9th May 1997 a nest of yellow-backed wagtail with 5 eggs was found in a swampy meadow in the Staromaynsky District (Artemyeva *et al.*, 2013b; Muravyev & Artemyeva, 2016).

In the Republic of Mordovia, Lugovoy (1975) considered the *lutea* to be a breeder, but this indication was not confirmed further (Spiridonov *et al.*, 2013).

For the first time, during the years between 1997-2001 in the Nizhny Novgorod Oblast, the yellow-backed wagtail was regularly observed during the breeding season in the silt fields of the Nizhny Novgorod aeration station, but the nesting was not ascertained (Bakka & Kiseleva, 2001; 2007; Bakka *et al.*, 2010; Matsyna & Matsyna, 2016).

In the Orenburg Oblast, it was a rare breeder present from March to August; nesting was established in 1997 in the Kvarkensky District (Chibilev, 1995; Korshikov & Kornev, 2000); on 20th May 1999 a pair and a single male were sighted in the floodplain of the Ural River near the mouth of the Kinderlya River (Tashlinsky District) (Kornev & Morozov, 2008).

In the Republic of Bashkortostan, the yellow-backed wagtail was common, but its breeding range covered only the western part of the Republic (in the north, it reached the valley of the Belaya River and in the south the Obshchy Syrt) going a little to the center of Bashkiria. This subspecies was breeding in the city of Ufa between 1972 and 1992 (Karev, 2016). In the Southern Urals, it was noted in the valley of the Belaya River near Irgizly (Burzyansky District) (Ilyichev & Fomin, 1988; Valuyev, 2003). It was met on 27th August 1992 in the Shulgan-Tash Nature Reserve (Burzyansky District) (Loskutova, 1998).The *lutea* was nesting (2.22 ind./km^2) near the lakes Big and Small Tolpak (Karmaskalinsky District) (Ravkin, 1967). It only occasionally appeard in the National Park "Bashkiria" at the end of August (Torgashov, 2003).

In the Kirov Oblast, the yellow-backed wagtail was reported during the breeding period in the Vyatskopolyansky, Malmyzhsky, and Urzhumsky districts (Redkin, 2001b; Faucett, 2016).

In Perm Krai, the *lutea* was occasionaly observed (Shepel *et al.*, 2012), and it was nesting near the city of Perm (Kazakov, 2000). A territorial male was observed on 31st May 1998 in the Kishertsky District (Lapuwkin & Kazakov, 2000).

In the Chelyabinsk Oblast, the *lutea* was a rare breeder bird in the forest-steppe zone and in the steppe zone (Zakharov, 1998). In the eastern foothills of the Southern Urals, a specimen was observed on 26th May 1987 in the Miass Valley (Zakharov, 2006); another one was recorded in the Trans-Ural forest-steppe zone on 19th May 1988 in the vicinity of Khalitovo (Kunashaksky District), and it was the northernmost point for the yellow-backed wagtail in the region (Zakharov, 2006). A singing male was observed on 27th May 1996 in the Arkaim Reserve in the floodplain of the Great Karaganka River (Corovin, 1997).

The yellow-backed wagtail was included in the Red Book of the Kurgan Oblast, but in the second half of 20th century it was not recorded (Korovin, 2008). This bird was poorly studied and its status was undefined in the Kurgan Oblast (Dostovalova, 1999).

In the Sverdlovsk Oblast, the *lutea* was present every year, from the beginning of May to the middle of August in the wetlands near Krasnoufimsk (Krasnoufimsky District), in very limited numbers, manifesting reproductive behaviors (Zelentsov, 1995; 1998; Korovin & Zelentsov, 1999).

In the Novosibirsk Oblast, Lake Chany was considered the northeastern limit of distribution of the subspecies *lutea* in western Siberia (Dementiev & Gladkov, 1954; Stepanyan, 1990). Chernyshov (2017) stated that in the long-term period of research in that area (from 1972 to 1997), he observed only one individual, an adult male caught by nets on 18th July 1990 on Cheremukhov Island (Lake Chany, Barabinsky District); judging by the color of the head plumage, it was a one-year-old, probably nesting there. Balatsky (1999) included the yellow-backed wagtail within birds nesting in southern West-Siberian Plain.

In Kazakhstan, the yellow-backed wagtail nested in the valley of the Ural River, along the Irtysh and Turgay rivers, here and there in the north and east of the Republic, as well as in the lower reaches of the Syr Darya; moreover, its number was more or less high only in the Volga-Ural interfluve and in the Tengiz-Kurgaldzhinskoy depression. In other places, it was a rare bird (Kovshar, 1983). This wagtail was nesting in the floodplain of the middle reaches of the Ural River (Terekti District, West Kazakhstan Region) (Levin & Gubin, 1982). Between the Utva and Ilek rivers, the *lutea* was a rare nesting bird: at Aksay (Borili District, West Kazakhstan Region) single wagtails were encountered on 18th and 30th April 1991; a couple of wagtails were seen on 17th June 1989 at Konshubay; about a dozen adult birds, jointly with young, were observed on 26th June 1990 in the floodplain of the Aschi River between Amangeldy and Utva River (Berezovikov *et al.*, 2000). In the Aqmola Region, it was possibly nesting as on 8th

August a group of 4 young and 2 adults birds was observed near Shortandy (Shortandy District) (Berezovikov & Kovalenko, 2001). On 22nd May 2000, one specimen was found near Lake Zharken (Zhambyl District, North Kazakhstan Region) (Vilkov, 2010).

The known breeding range of *lutea* for the period from 1951 to 2000 is shown in Fig. 7.

From 2001 to 2018

In the European portion of Russia, the yellow-backed wagtail was distributed to the west up to the Kama, Vyatka, Sura, and Ilovlya valleys, to the north approximately to the 58th parallel, to the south to the Volga delta, to the east towards the northern border of the range bent around the Urals from the south towards Western Siberia, where it passed approximately into the region of the 55th parallel, and the eastern limits of distribution in Western Siberia was limited to Lake Chany (Koblik *et al.*, 2014).

In the Rostov Oblast, the *lutea* was very rare during the breeding period; it was probably nesting only near Zimovniki (Zimovnikovsky District) (Matveyev *et al.*, 2017) and possibly inside the Rostov Nature Reserve (Orlovsky District) (Lipkovich, 2016).

In the Republic of Kalmykia, Tsapko (2008b) believed there was possible episodic nesting of the yellow-backed wagtail in the Ilmenno-Bugrovoy area on the border with the Astrakhan Oblast and in the Volga-Akhtuba floodplain in Yustinsky District; in effect in May and June 2016 around 20 pairs of this bird was found nesting near Tsagan Aman (Yustinsky District) (Muzaev, 2016; Khokhlov & Ilyuh, 2017). During breeding period, some individuals were sighted in the Yashkulsky District (Fedosov, 2015), and breeding was probable near Iki-Bukhus (Maloderbetovsky District) (Isakov *et al.*, 2017c). A male was collected on 19th May 2001 at Lake Sarpa (Ketchenerovsky District) (Tomkovich, 2018).

In the Astrakhan Oblast, this wagtail was found in small numbers during seasonal migrations (e.g., Kamyzyaksky, Ikryaninsky and Volodarsky districts) (Natural Heritage Protection Fund, 2008). During an expedition in early May 2011, a mixed flock of western yellow wagtails (*flava*, *beema*, *thunbergi*, *lutea*) was observed in which 5 individuals (3 males, 2 females) of *lutea* were recorded on the territory of the Ilmenno-Bugrovy Reserve (data by E. A. Artemyeva). Occasionally it nested in meadows with shrub thickets in substeppe ilmens, in the flood plain, and near the delta (e.g., pairs and territorial males were noted during the breeding period in the Ilmeno-Bugrovoj Region and on the right bank of the Volga near Narimanov and Beregovoy) (Lindell & Lindell, 2000; Arkhipov *et al.*, 2003; Reutsky, 2015; Korepov *et al.*, 2015; Perkovsky & Meshcheryakova, 2016). In the Astrakhansky State Nature Biosphere Reserve, it was not recorded as a breeding bird (Natural Heritage Protection Fund, 2008). The wagtail nested in the Akhtubinsky District, near the

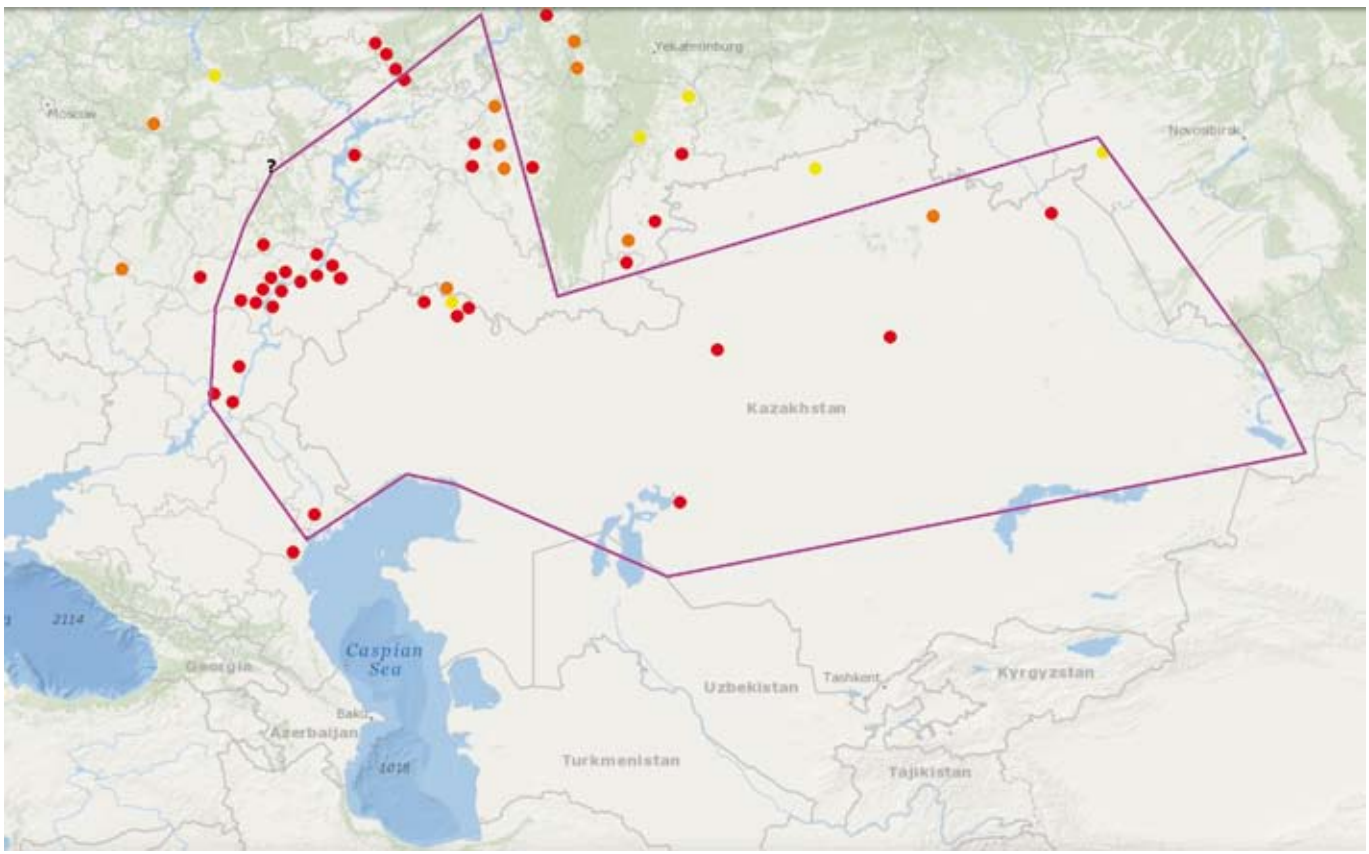


Fig. 7 - Breeding range from 1951 to 2000. / Areale riproduttivo dal 1951 al 2000. ● Possible breeding. / Nidificazione possibile. ● Probable breeding / Nidificazione probabile. ● Confirmed breeding / Nidificazione certa. ▬ Breeding range in mid-20th century. / Areale riproduttivo a metà del XX secolo (Dementiev & Gladkov, 1954).

border with the Leninsky District (Volgograd Oblast) (Belyachenko *et al.*, 2018b).

In the Volgograd Oblast, the *lutea* nested in the seguent districts: Leninsky (Belyachenko *et al.*, 2018a), Ilovlinsky, Olkhovsky (Muravyev & Artemyeva, 2012a), Sredneakhtubinsky (Belyachenko *et al.*, 2017), Pallasovsky (Isakov *et al.*, 2017b), Staropoltavsky (Piskunov, 2015a; 2015b; 2016b), Kamyshinsky (Isakov *et al.*, 2017a), Zhirnovsky (Belyachenko *et al.*, 2015), Kotovsky (Belyachenko *et al.*, 2018a), Danilovsky (Belyachenko & Belyachenko, 2018b), Yelansky (Belyachenko & Belyachenko, 2016g; Belyachenko *et al.*, 2016e), Mikhaylovsky (Belyachenko & Belyachenko, 2018a), Kikvidzensky (Belyachenko & Belyachenko, 2016d), and in the middle and upper zone of the Volgograd reservoir (Piskunov & Oparin, 2012; Shliakhtin *et al.*, 2014). Probabily it nested also where the Rudnyansky, Kotovsky, and Zirnovsky districts meet (Belyachenko & Belyachenko, 2016h).

In the Voronezh Oblast, it was observed occasionally as a migratory bird (Vlasov & Mironov, 2008), but some individuals were recorded during the breeding period probably near the border with the Saratov and Volgograd Oblast (Koblik *et al.*, 2014; Belyachenko & Belyachenko, 2016c).

In the Tambov Oblast, it nested for the first time in 2001 in the lower reaches of the Karay River (Inzhavinsky District) with a density of 84 pairs/km^2 (Gudina *et al.*, 2001); 4 males were also sighted in a meadow between the villages of Taliky and Pokrovka on 19th June 2001 (Inzhavinsky District) (Gudina, 2001; 2009; 2012), and apparently the yellow-backed wagtail nested regularly in subsequent years in the same District (Gudina, 2009). It was later confirmed in the Voroninsky State Natural Reserve (Gudina, 2014) and, possibly, in the southern part of the Umyotsky District (Belyachenko & Belyachenko, 2016f).

In the Central Federal District, it was dubiously nesting also in the Vladimir Oblast (Sharikov *et al.*, 2015).

In the Saratov Oblast, the yellow-backed wagtail was a common nesting bird, extending its breeding range from the right bank of the Volga River down to the latitude of the cities of Volsk and Balakovo, and in some cases to the north (Zavyalov *et al.*, 2009). It was particularly abundant (56.2 pairs/km^2) in the fields of grain crops (Oparin & Oparina, 2010; Oparin *et al.*, 2013). On the left bank of the Voga River, breeding was ascertained in the following districts: Rovensky (Piskunov, 2016a), Krasnokutsky (Piskunov, 2016b), Dergachyovsky (Piskunov, 2015c), Ozinsky (Mosolova & Tabachishin, 2015c; Mosolova & Tabachishin, 2015d), Krasnopartizansky (Piskunov, 2015d), Marksovsky (Mosolova & Tabachishin, 2017b), Southern Pugachyovsky (Belyachenko *et al.*, 2016b; Mosolova & Tabachishin, 2015a), Balakovsky (Piskunov & Belyachenko, 2014b; Belyachenko & Belyachenko, 2015), and Perelyubsky (Belyachenko *et al.*, 2016c; Belyachenko *et al.*, 2016d). This wagtail was probably nesting also in the following districts: Alexandrovo-Gaysky (Mosolova & Tabachishin, 2013), Novouzensky (Mosolova & Tabachishin, 2014; Mosolova & Tabachishin, 2015b), Sovetsky (Piskunov & Belyachenko, 2014a), Engelssky (Belyachenko *et al.*, 2014c), and Dukhovnitsky (Lebedeva, 2018a). In breeding period, it was also present in northern Pugachyovsky District (Mosolova & Tabachishin, 2016). On the right bank of the Volga River, breeding was ascertained in the following districts: Samoylovsky (Belyachenko & Belyachenko, 2016g), Krasnoarmeysky (Belyachenko *et al.*, 2014b; Belyachenko *et al.*, 2015), Bazarno-Karabulaksky (Belyachenko *et al.*, 2015), Novoburassky (Belyachenko *et al.*, 2014a), Tatishchevsky (Belyachenko *et al.*, 2014e), Petrovsky (Belyachenko *et al.*, 2014d; Belyachenko & Belyachenko, 2016b), Romanovsky (Belyachenko & Belyachenko, 2016a), Arkadaksky (Belyachenko & Belyachenko, 2016e), Rtishchevsky (Belyachenko & Belyachenko, 2016i; Belyachenko & Belyachenko, 2016j), and Yekaterinovsky (Belyachenko *et al.*, 2016f). The *lutea* was probably nesting also in Kalininsky District (Belyachenko & Belyachenko, 2014), and it was recorded during the breeding period in the Volsky District and Khvalynsky District (Zavyalov *et al.*, 2009; Mosolova & Tabachishin, 2017a).

In the Penza Oblast, the yellow-backed wagtail was breeding in the southeastern part of the territory (Muravyev, 2005; 2011; Muravyev & Artemyeva, 2012a; Fyattyahovna, 2016; Viktorovna, 2017). Breeding of the subspecies *lutea* was ascertained in the following districts: Tamalinsky (Belyachenko & Belyachenko, 2016f), Serdobsky (Belyachenko & Belyachenko, 2016j), Kolyshleysky (Belyachenko *et al.*, 2016f), Lopatinsky (Belyachenko & Belyachenko, 2016b), Kameshkirsky (Belyachenko *et al.*, 2016a), and Kuznetsky (Lebyazhinskaya, 2007).

In the Ulyanovsk Oblast, this wagtail was a rare breeder (Borodin, 2003; 2006; 2007; Mockvichev, 2016; Korepova, 2017): on 4th July 2001, a couple was sighted in the Radishchevsky District (Barabashin & Valiyeva, 2001), in summer 2011 and 2012, the nesting was confirmed in the Radishchevsky and Melekessky districts (Muravyev & Artemyeva, 2012a), and in summer 2012 and 2013, 50-60 pairs were found in the Cherdaklinsky District, near Lake Peschanoye, in a joint nesting settlement with *M. f. flava* and *M. citreola* (ratio: 40% *lutea*, 40% *flava,* and 20% *citreola*) (Artemyeva *et al.*, 2013b; 2014; 2015a; 2015b). The *lutea* probably nested also in 2014 in the same District (Korepov *et al.*, 2014). In 2017, the wagtail nested again on the south margin of the Melekessky District (Lebedeva, 2017a). Moskvichev (2010) ipotized the breeding of this bird in Brekhovo swamp (Ulyanovsky District), and in 2013 it was ascertained near Ulyanovsk (Moskvichev, 2013b). This wagtail was also recorded during the breeding period in the Starokulatkinsky District (Korepov & Korepova, 2014), the Karsunsky District (Moskvichev & Shashkin, 2013), and the Tsilninsky District (Moskvichev, 2013a). In the city of Ulyanovsk, there were some observations during the breeding period (14th June 2001, 2nd and 9th July 2002, 18th June 2010), but the nesting was not ascertained (Moskvichev *et al.*, 2011).

In the Repubblic of Mordovia, the *lutea* was not established as a breeder until October 2012, although there were settlements near its borders (Spiridonov *et al.*, 2013), and it was not recorded during the data collection for the atlas of nesting birds in European Russia.

In the Nizhny Novgorod Oblast, on 19th June 2007, the first reproductive pair was recorded in the Shava bog

near Zaprudnoye (Kstovsky District) (Bakka & Kiseleva, 2007; 2009; Bakka *et al.*, 2010), and the breeding was confirmed in 2014 (Levashkin, 2014). In August 2002 and 2007, some young birds were caught in the floodplain of the Oka and Volga rivers (Muravyev & Artemyeva, 2012a). In June 2013, the *lutea* was recorded also in floodplain meadows of the Pyana River (Sergachsky District) in high numbers (105 birds/km^2) (Malafeeva *et al.*, 2014).

In the Chuvash Republic, a male was onserved on 11th June 2008 in the Ibresinsky District (Yakovlev *et al.*, 2012b), nesting was probable in 2014 (Isakov & Yakovlev, 2014), and ascertained in the summer of 2015 (Nikiforova, 2015).

In the Mari El Oblast, the yellow-backed wagtail was sighted in the nesting period in summer 2013 near the Zheleznoye swamp and Berezovoye swamp (Volzhsky District) for the first time (Drobot, 2013), and it was probably breeding in the extreme eastern part of the Oblast (Mari-Tureksky District) (Menshikov, 2016a).

In Samara Oblast, the *lutea* was breeding in the Bogatovsky District (Lebedeva, 2016b), the Stavropolsky District (Korepov *et al.*, 2014; Lebedeva, 2014; 2017a), the Shentalinsky District (Lebedeva, 2017c), the Pokhvistnevsky District (Lebedeva, 2017e; Morozov & Kornev, 2017), and the Kinel-Cherkassky District (Morozov & Kornev, 2017). It was probably breeding in the Khvorostyansky District (Lebedeva, 2018a; 2018b), the Kinel-Cherkassky District (Lebedeva, 2017d), the Chelno-Vershinsky District (Lebedeva, 2016a), the Shentalinsky District (Lebedeva, 2017b), and it was observed during the breeding period in the Ust-Kinelsky area (Golovlyov & Saxon, 2016).

In the Repubblic of Tatarstan, the *lutea* was breeding in the Aksubayevsky District (Kutushev & Rakhmatullin, 2015a), the Alexeyevsky District (Isakov & Bekmansurov, 2016b), the Chistopolsky District (Isakov & Bekmansurov, 2016d), the Rybno-Slobodsky District (Isakov & Bekmansurov, 2016b; 2016c), the Cheremshansky District (Kutushev & Rakhmatullin, 2015a), the Yutazinsky District (Bekmansurov *et al.*, 2017a), the Aznakayevsky District (Bekmansurov *et al.*, 2017a), the Southern Nizhnekamsky District (Kutushev & Rakhmatullin, 2013), the Zainsky District (Kutushev & Rakhmatullin, 2016a), the Sabinsky District (Isakov & Bekmansurov, 2016f), the Kukmorsky District (Hasanova, 2014; Isakov & Bekmansurov, 2016f), the Tukayevsky District (Bekmansurov & Rebrina, 2009; Menshikov, 2015a), the Yelabuzhsky District (Bekmansurov *et al.*, 2013), Menzelinsky District (Kutushev & Rakhmatullin, 2015b), and the western Muslyumovsky District (Kutushev & Rakhmatullin, 2016b). It was probably breeding in the Buinsky District (Isakov, 2015), Apastovsky District (Isakov, 2015), the Spassky District (Bekmansurov, 2013), the Laishevsky District (Ayupov, 2013), the Pestrechinsky District (Isakov & Bekmansurov, 2016a), the Arsky District (Isakov & Bekmansurov, 2016e), the Mamadyshsky District (Bekmansurov & Kutushev, 2018), and the Baltasinsky District (Menshikov, 2016b). The wagtail was also recorded during the breeding period in the northern Agryzsky District (Menshikov, 2014).

In the Orenburg Oblast, Kornev & Morozov (2008) stated that this wagtail did not usually nest in the central and eastern districts of the Oblast, and even encountering it was very rare and related to migrants who deviate from the main route (in 10 years only two encounters with yellow-backed wagtails east of the Orenburg Region beyond the Urals, both of them in the Svetlinsky District); the wagtail was found more regularly on the territory which lies south of the Ural River. A nest was found in the Kvarkensky District near the Suunduk River in the early 2000s (Klimova *et al.*, 2006; Velts, 2012; Velts *et al.*, 2012). The north-western districts (Buguruslansky, Ponomaryovsky, and Abdulinsky districts) were the main nesting place of this wagtail in the Oblast (Kornev & Morozov, 2008; Morozov & Kornev, 2009; Morozov & Kornev, 2016c; 2016d; Bekmansurov & Rakhmatullin, 2017; Morozov & Kornev, 2017). The yellow-backed wagtail was probably breeding in the Kurmanayevsky District (Morozov & Yakushev, 2017), the Totsky District (Morozov & Kornev, 2016a), the Sol-Iletsky District (Morozov & Kornev, 2009; Morozov & Kornev, 2013), the Asekeyevsky District (Morozov & Kornev, 2016b), and the Sharlyksky District (Morozov, 2016; Boyko, 2017a). The wagtail was also recorded during the breeding period in the Alexandrovsky District (Boyko, 2017c) and the Saraktashsky District (Boyko, 2015f; 2015g).

In the Republic of Bashkortostan, Valuyev (2006a; 2006b; 2008; 2014) stated that the range of the subspecies *lutea* covers only the western part of the Republic, and in the north it reached the valley of the Belaya River and in the south the Obshchy Syrt going a little to the center of Bashkiria (earliest date of registration 25th April, latest 19th August). The most eastern nesting in the Pre-Urals was in the center of the Republic (Chishminsky District) were this wagtail was substantially more numerous than in other areas (from 44 to 66 individuals per km²) (Valuyev, 2003; 2011; 2018). In the Trans-Urals from 2000 to 2005, it was encountered only once on 2nd June 2004 on a flood meadow near Lake Talkas (Baymaksky District) (Valuyev, 2006a). In 2014, in the Abzelilovsky District the *lutea* was present on 29th April at the lakes of Northern Ulandyand and on 17th July at Lake Karabalykty (Zagorskaya, 2014c). The yellow-backed wagtail was common in the Yelanovsky Zoological Reserve in 2002-2003 (Dyurtyulinsky District) (Bayanov & Valuyev, 2004), and two couples were sighted in the protected natural area "Kulchum" (Yermekeyevsky District) (Kvtyin, 2016). The wagtail was recorded near Lake Olkhovoe (Ufimsky District) in June 2013 (Zagorskaya, 2014a), in the Big and Small Tolpak lakes area (Karmaskalinsky District) where, in summer 2014, it was a rare breeding bird (0.74 ind./km^2) (Zagorskaya, 2014b), near Lake Ol'khovoye (Southern Ufimsky District) (Zagorskaya, 2014d), and near the village of Staroaktashevo (Karmaskalinsky District) (14 pairs in the floodplains of the Belaya valley in May 2016) (Lastukhin *et al.*, 2016). The wagtail was present during the breeding period near Ufa (Polezhankina & Gabbasova, 2016; Polezhankina *et al.*, 2018). Valuyev (2013) hypothesized that the *lutea* did not nest near the city of Ufa (presence only of vagrant individuals) and that therefore the breeding area had moved westward, but sub-

sequently the nesting near the city was again verified (Polezhankina *et al.*, 2017). Nesting of this wagtail was also ascertained in the Tuymazinsky District (Bekmansurov *et al.*, 2017a; 2017b), and in the Sharansky District (Bekmansurov *et al.*, 2017a). The yellow-backed wagtail was probably breeding in the seguent districts: Alsheyevsky (Boyko, 2017e), Davlekanovsky (Boyko, 2017e), Buzdyaksky (Boyko, 2017d), Southern Blagovarsky (Boyko, 2017e), Bakalinsky (Bekmansurov, 2017), northern Dyurtyulinsky (Boyko, 2017i), Kaltasinsky (Fominykh, 2009a; Valuyev & Zernov, 2018), Krasnokamsky (Fominykh, 2009a; Boyko, 2017g; 2017i; Valuyev & Zernov, 2018), Baltachevsky (Boyko, 2015d), Karaidelsky (Boyko, 2015a; 2015b; 2015e), and Askinsky (Boyko, 2015d). The wagtail was also recorded during the breeding period in the seguent districts: Zianchurinsky (Boyko, 2015g), Kugarchinsky (Boyko, 2015g), Fyodorovsky (Valuyev, 2004; Boyko, 2017b), northern Blagovarsky (Boyko, 2017f), Chekmagushevsky (Boyko, 2017h), Ilishevsky (Boyko, 2017h; Valuyev & Zernov, 2018), Southern Dyurtyulinsky (Boyko, 2017j), and Yanaulsky (Boyko, 2015c). It was recorded also in the mountainous part of the Southern Urals in the territory of the Republic of Bashkortostan (Valuyev & Polezhankina, 2007) during migration. This wagtail was not present at Lake Asly Kul, in the "Asly Kul" Natural Park (Davlekanovsky District) until 1987, but it presence was ascertained in 2001 (Martynenko, 2016), and later in 2004 and 2010 (Valuyev, 2010; 2017). Near Birsk (Birsky District), it was present at the end of August 2009 and the nesting was confirmed in July 2010 (Fominykh, 2009b; 2011).

In the Kirov Oblast, the *lutea* was nesting in the Vyatskopolyansky (Sotnikov & Ryabov, 2013), Kilmezsky (Ryabov & Sotnikov, 2013), Lebyazhsky (Sotnikov & Ryabov, 2017a), Urzhumsky (Sotnikov & Ryabov, 2017b), and Nolinsky (Sotnikov & Ryabov, 2017a) districts. The yellow-backed wagtail was probably breeding in the Malmyzhsky District (Menshikov, 2016b).

In the Udmurt Republic, the nesting of this wagtail was ascertained in the Alnashsky (Altyntsev, 2015), Sarapulsky (Menshikov, 2013a), Zavyalovsky (Menshikov & Zagumenov, 2013), Yakshur-Bodyinsky (Menshikov & Zagumenov, 2013), Votkinsky (Menshikov, 2013b), and Igrinsky (Menshikov & Marochkin, 2013) districts. Breeding was probable in the Grakhovsky and Karakulinsky districts (Menshikov, 2016c) and was possible in the Malopurginsky District (Menshikov, 2014).

In Perm Krai, the breeding of yellow-backed wagtail was possible in: the Yelovsky District (Menshikov, 2015b), the Chastinsky District (Menshikov, 2015b), the Kungursky District (Naumkin, 2013a), and the Kishertsky District (Naumkin, 2013b). In 2014, it nested in the suburbs of the city of Perm (Shepel, 2015).

In the Chelyabinsk Oblast, the *lutea* was classified as a breeding and migratory bird (MECR, 2016). It was rare in the East Ural Nature Reserve (Ozyorsk), where arrived in the last five days of April and departed in the first half of September (Tarasov, 2004). It was rare during migration in Taganay National Park (Sereda, 2016). An anxious bird with feed was met on 17th June 2004 on the marshy pond shore in the vicinity of the Arsinskiy village (Nagaybaksky District) (Gashek, 2004). The wagtail was probably breeding in the Verkhneuralsky District (Zakharov, 2013). A male was photographated at Khalitova (Argayashsky District) on 2nd June 2018 (Redkin Y., in NEBW, 2018).

In the Kurgan Oblast, the yellow-backed wagtail was considered a presumibly nesting bird and was included in the Red Book of the region, but there were no recent observations (Korovin, 2008; Fedorova, 2012; DNREPKR, 2016).

In the Sverdlovsk Oblast, the *lutea* was rare (Korovin, 2008). It was present from late April-mid May to late August in the Krasnoufimsky District where it was found nesting (several hundred individuals) (Korovin, 2008). A male in reproductive dress was met on 1st June 2013 near Gorny Shchit carp fish factory ponds (Yekaterinburg) and on 6th July 2013, an individual with a completely white head was observed: a hybrid form of the first generation between *flava* and *lutea* (Redkin, 2013; Reshetkova, 2013). A single male kept in a large flock of migratory *Motacilla tschutschensis plexa*, was sighted in a meadow near Lake Poplygino on 13th May 2013 (Ryabitsev & Ryabitsev, 2013).

In the Tyumen Oblast, the presence of nomadic specimens in the forest-steppe area was considered possible (GTO, 2010).

In the Novosibirsk Oblast, the yellow-backed wagtail was a rare *taxon* included in the Red Book of the Oblast (Balatsky, 2006; DFNR, 2010); at Lake Chany and the surrounding area it was a very rare breeding bird (Yurlov *et al.*, 2015).

In the Omsk Oblast, the *lutea* was occasionally present (Milovidov & Nekhoroshev, 2002).

In Kazakhstan, the yellow-backed wagtail arrives in spring from end of March to late April; autumn migration begins in August, and the last birds are recorded in mid September (Gavrilov & Gavrilov, 2005). It was breeding prevalently in the northern part of the country (Gavrilov & Gavrilov, 2005; Kovshar, 2012; Berkinbai *et al.*, 2013). Nesting was ascertained at lakes Kamysh-Samarskiye (West Kazakhstan Region) (Gavrilov & Gavrilov, 2005), near the Telnov village (West Kazakhstan Region) (Gavrilov & Gavrilov, 2005) and in the Iletsky steppe of the Aktobe Region (Belyalov & Kovshar, 2009). Birds were recorded during the breeding period in the Zelenov District (West Kazakhstan Region) on May 2016 and 2017 (Isabekova A., in NEBW, 2018). In Aralkum (Kyzylorda Region), this wagtail was nesting at the coast on islands and at the deltaic lakes of the Syr Darya delta (Joger *et al.*, 2012). In summer 2004, broods fed by adults were found in the floodplain of the the Syr Darya River near the city of Baikonur (Karmakshy District, Kyzylorda Region); nomadic individuals were noted on artesians in the eastern part of the cosmodrome (Belyalov & Kovshar, 2005; Kovalenko, 2005). It was breeding in wetland of the Altyn Dala State Nature Reserve (Amangeldy and Dzhangeldy districts, Kostanay Region) (MARK, 2008; Bragin, 2008; KSRIEC, 2011), in the Naurzum State Nature Reserve (Nauyrzym District, Kostanay Region), and in the shrubed meadows of the Torgay River (Gavrilov & Gavrilov, 2005; Berkinbai *et al.*, 2013). The yellow-backed wagtail was a rare breeding bird in the Korgalzhyn

State Nature Reserve (Aqmola and Karaganda regions) (Andersen, 2003; 2004; Jashenko, 2006; Hendriks, 2007; GRK, 2007; Dortu, 2011), but recently it was recoded only in May without reliable data on breeding (Koshkin, 2017). In the Pavlodar Region, it was a rare nesting species in the floodplain of the Irtysh River and the northern areas of the region (arrives in late April-early May and flies off in September) (Bazarbekov & Lyakhov, 2004). Two pairs of yellow-backed wagtails, which showed great concern in nesting sites, were found on 12th June 2009 among small shoots of reeds and sedges in the western part of Lake Small Maysor (Ekibastuz District) (Berezovikov, 2009). In the Almaty Region, the yellow-backed wagtail nested in the Zaysan depression and Chiliktinskaya valley (Gavrilov & Gavrilov, 2005; Berkinbai *et al.*, 2013).

The known breeding range of *lutea* for the period from 2001 to 2018 is shown in Fig. 8.

For the period 2001-2018, it is possible to create a map from which to deduce the areas in which *lutea* is the prevalent or the exclusive western yellow wagtail subspecies during the reproductive period (Fig. 9). Considering the European part of Russia and the only squares 50×50 km for which comparative data exist, the *lutea* is quantitatively inferior to the other sympatric forms (subspecies) in 68.8% of the areas, quantitatively equivalent in 24% of the cases, quantitatively prevalent in 3.2 % of the areas and present as the unique subspecies only in 4% of the areas. It is surprising to note that even though it is rather common (0.04-0.4 pairs/km^2) in the central part (North-Eastern Ulniakov Oblast, Samara Oblast and Northern Orenburg Oblast) and, above all, southern of its reproductive range (Saratov and Volgograd oblasts), it is however numerically smaller or equivalent to the other subspecies. The yellow-backed wagtail is prevalent only in Tatarstan with the same densities (0.04-0.4 pairs/km^2), and in four areas (included in the Sarmanovsky, Muslyumovsky, Menzelinsky, Cheremshansky, Novosheshminsky and Nizhnekamsky districts) it is the only breeding subspecies.

Migratory movements

From 1851 to 1900

The presence of the *lutea*, in groups in additon to individuals, was reported between mid-March and mid-April at Lenkoran (Azerbaijan) (Radde, 1884; Radde & Pelzein, 1984; Seebohm, 1884; Floericke, 1896; 1897; Senckenberg, 2018), in Mount Talysch (Lerik District) (Radde, 1886; 1899) and the Baku area (Azerbaijan) (Zaroudny, 1889a; 1889b). A male was collected at Lenkoran even later (2nd May 1893) (Picchi, 1904; Millen, 2018). In spring, the yellow-backed wagtail seemed to follow the Caspian coast north to reach the nesting areas. Some specimens were also observed near Argun (Chechen Republic) (Ta-

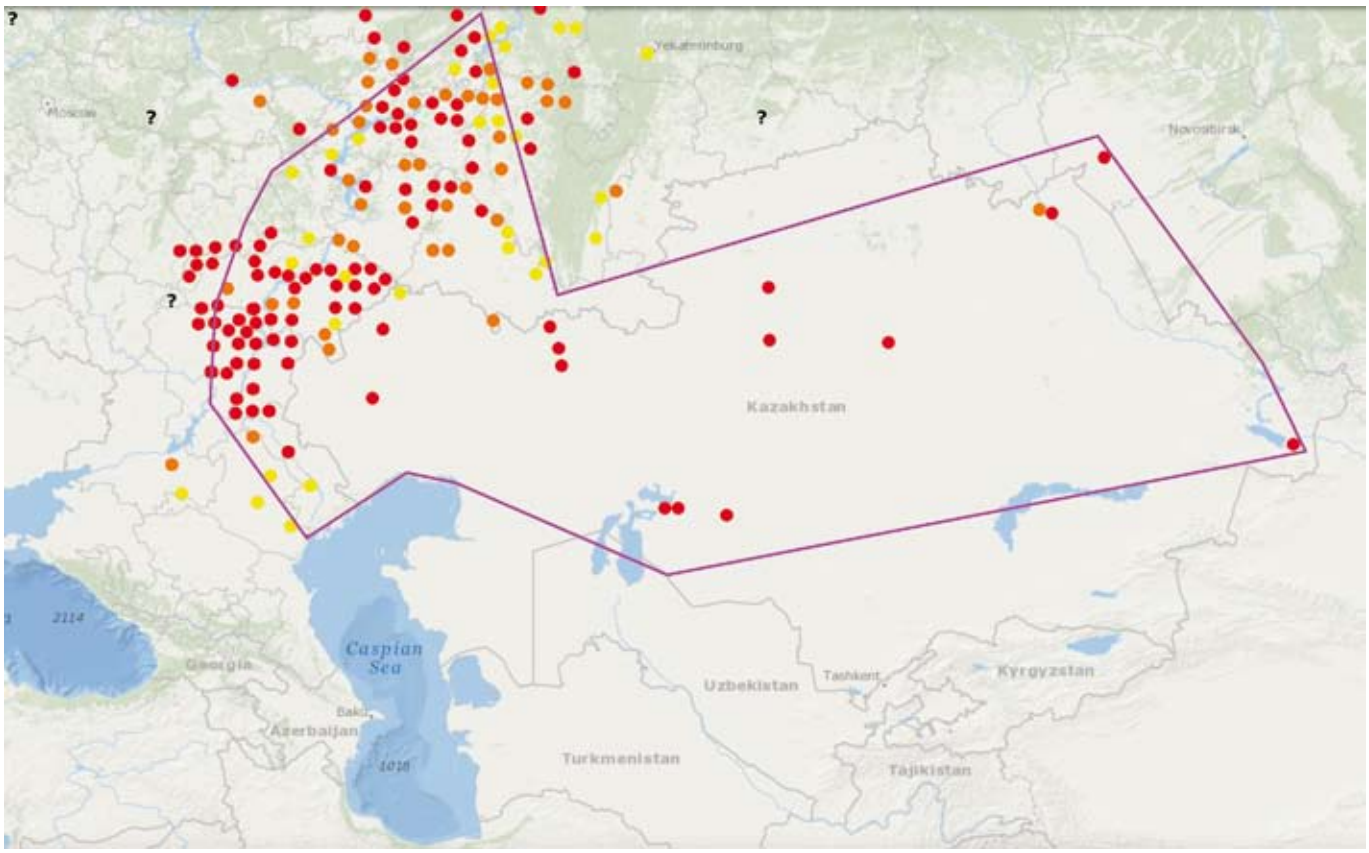


Fig. 8 - Breeding range from 2001 to 2018. / Areale riproduttivo dal 2001 al 2018. ● Possible breeding. / Nidificazione possibile. ● Probable breeding. / Nidificazione probabile. ● Confirmed breeding. / Nidificazione certa. **?** Uncertain data. / Dato incerto. ▬ Breeding range in mid-20th century. / Areale riproduttivo a metà del XX secolo (Dementiev & Gladkov, 1954).

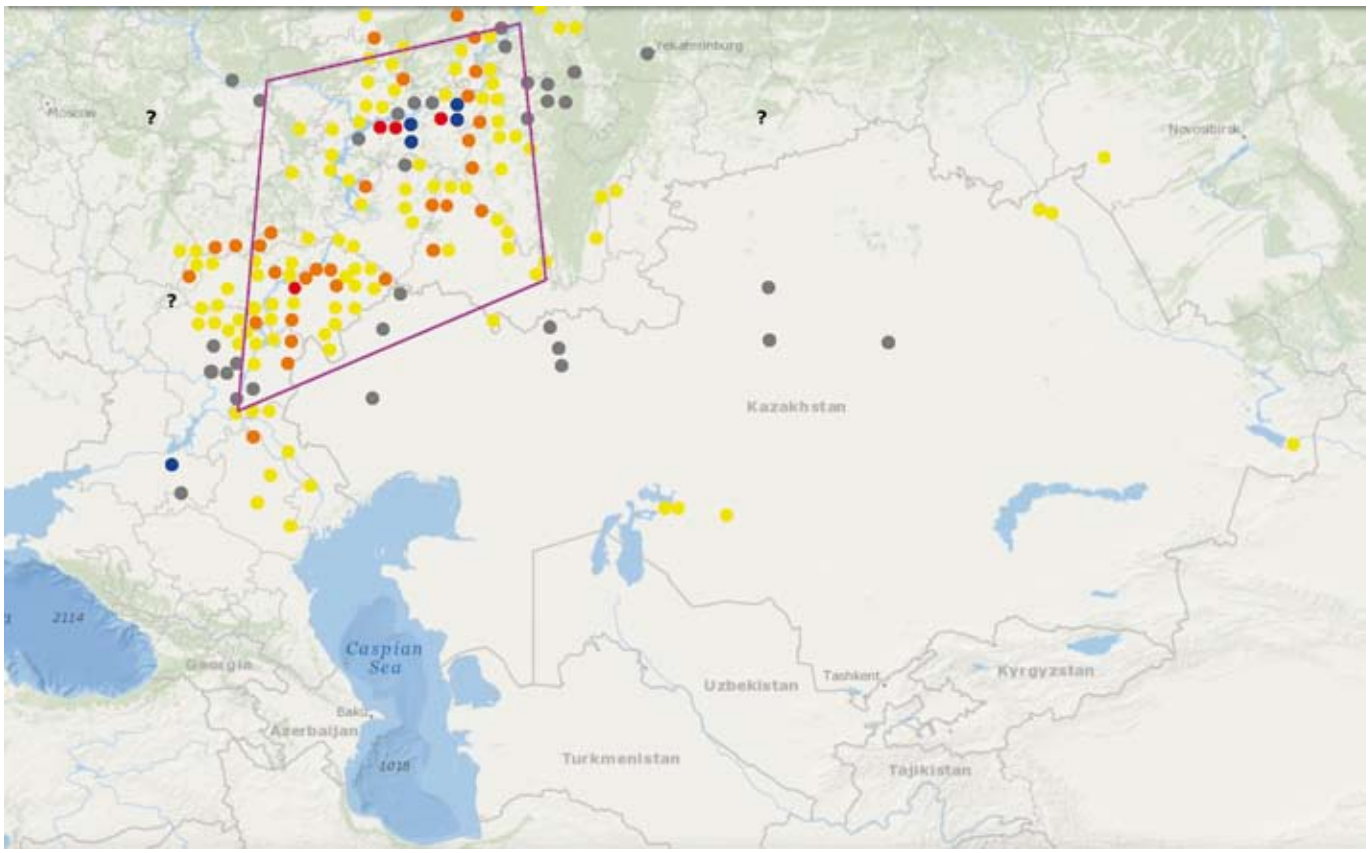


Fig. 9 - Comparison between the abundance of *lutea* in breeding period and that of other subspecies (2001-2018) / Confronto fra l'abbomdanza di *lutea* in periodo riproduttivo e quella delle altre sottospecie (2001-2018). ● *lutea* is quantitatively inferior to the other sympatric subspecies / *lutea* quantitativamente inferiore alle alte sottospecie simpatriche. ● *lutea* is quantitatively equivalent to the other sympatric subspecies / *lutea* quantitativamente equivalente alle alte sottospecie simpatriche. ● *lutea* is quantitatively prevalent over the other sympatric subspecies / *lutea* quantitativamente prevalente rispetto alle alte sottospecie simpatriche. ● *lutea* is the only subspecies present / *lutea* unica sottospecie presente. ● No data available. / Mancanza d'informazione. ▬ Area in which *lutea* was possibly the only regularly breeding subspecies at the end of 20th century. / Area in cui probabilmente *lutea* era l'unica sottospecie che si riproduceva regolarmente alla fine del XX secolo (Alström *et al*., 2003).

ezanowski, 1874). In Azebaijan, a female was observed from 27th June to 9th July 1887 on Mount Shahdagh (Qusar Region) at around 900 m a.s.l. (Radde, 1887).

It arrived in late April in Tatarstan (Ruzskii, 1893).

On the east coast of the Caspian, this wagtail migrated through both in the post-reproductive period (as early as August) (Stolzmann, 1889) and, more frequently, in March-April (Naumann, 1897; Radde & Walter, 1889; Radde, 1899). A male was collected by Radde on 21st April 1886 at Türkmenbaşy (formerly known as Krasnovodsk) (Turkmenistan) (Dresser, 1889).

During migration, it appeared not only in the reproduction areas of Central Asia (Khujand, Zarafshan valley and between Zarafshan, the Syr Darya River, and the Kyzylkum Desert), but even further east in Kazakhstan at Karatau, Arys, Keles, Talas and Tschu, in Uzbekistan at Chirchiq, and in Kirghisistan at Čatyr-Köl (Severzov, 1875; Dresser, 1876).

To the west, the route passed through Iran (a female was at Bam, in Kerman Province on 22nd April 1872) (Blanford, 1876), Turkey (Elwes, 1870), the United Arab Emirates (one was in Dubai on 24th April 1881) (Swinhoe, 1882), and Socotra Island (Yemen) (Balfour collected three specimens near Ghor Gharrieh in March 1880) (Sclater & Hartlaub, 1881).

Some reports occurred in Eastern Europe: a specimen was captured near Turiek (Slovakia, ex-Hungary) on 20th August 1841 (Madarasz, 1884; Almäsy, 1898; Herman, 1899; 1903; Gyula, 1899-1903; Petenyi, 1905), and one was killed on the south bank of Lake Neusiedl (Hungary) on 2nd September 1898 (Csörget, 1927-1928). Other more generic reports referred to presences in the Czech Republic at Dobrovice (Central Bohemian Region) (Hauer, 1894; Naumann, 1897; Arrigoni degli Oddi, 1902; Kněžourek, 1910) and in Croatia (Naumann, 1897; Arrigoni degli Oddi, 1902). In the Collection Aves of Senckenberg, there is a specimen collected on 5th April 1888 in an indefinite location in Hungary (Senckenberg, 2018).

To the east, a specimen was captured in April 1881 between Kandahar (Afghanistan) and Pishin (Pakistan) (John, 1889), and it was observed in the Sutlej Valley (Stolicska, 1868). Some authors also affirmed that the *lutea* was common at Yarkant (Prefecture of Kashgar, Xinjiang, China) (Brooks, 1878; John, 1889), and some individuals were collected on 9th and 10th May 1874 in the Sarikol Range (in the Pamirs, on the border of Taji-

kistan and China) (Yarkand Mission, 1891). Specimens, probably more attributable to the yellow-backed wagtail, were observed in Kashmir (Stoliczka, 1868), particularly near Srinagar (Pelzeln, 1868). Butler (1875; 1876; 1877) reported a single subject probably captured around 1870 on Mount Abu (Rajasthan, India) taking care to underline, "it is the only instance on record of this species occurring within the limits of British India, and it was this that made me hesitate before recording the specimen as I did.".

The known migratory movements of the *lutea* for the period from 1851 to 1900 are shown in Fig. 10.

From 1901 to 1950

Dementiev & Gladkov (1954) confirmed that one of the most important migratory routes lapped the western shore of Caspian Sea (Baku-Lenkoran), while the flow in central parts of Transcaucasia was less intense. Birds in migrations were also observed along the eastern shore of the Caspian Sea, on Syr Darya River, in Kyzyl-Kum Desert, around Tashkent, in Iran, on the shores of the Persian Gulf, in Arabia, and in Northeast Africa.

With regard to migration times, Bobrinskii (1915) observed individuals in the Yerevan Province (Armenia) on 29th April 1911, and Serebrovskii (1925) sighted specimens at Zaquatala (Azerbaijan) on 22nd April 1916. In the Republic of Kalmynkia, the *lutea* was present near Lake Sarpa on 7th April 1903, on 1st May 1910, and on 5th May 1912 (Creuwels, 2018).

In the Buguruslan area (Orenburg Oblast), these birds arrived in different years on 21st-22nd-23rd April (Ispolatov, 1912). In the spring, the yellow-backed wagtail was reported in the foothills of the western Altai (Poljakow, 1921-1923). Migratory movements could be extended even further: Boehme (1925) reported a small flock of migrant wagtails along the banks of the Terek River at Kizlyar (Dagestan) on 19th May 1922.

Departures from Tatarstan were in late August; at Cape Sue, just to the north of the Turkmen town of Garabogaz on eastern shore of Casian Sea, they were not uncommon at the end of July, but migration properly began apparently on 10th-11th August (Dementiev & Gladkov, 1954). Only once was an individual found in Tashkent (Uzbekistan) by Zaroudny on 7th September 1909 (Mitropolsky, 2013).

In Turkey, some individuals were observed on 21st and 29th April 1948 and on 18th May 1948 at Çatalağzı (Zonguldak Province) (Ogilvie, 1954).

In Iran, a male was collected on 18th May 1907 on the southern coast of the Caspian Sea (Witherby & Woosnam, 1910). The subspecies was very common at Enzeli (nowadays Bandar-e Anzali, Gilan Province) in the last ten days in April 1919, and then the number decreased progressively until the end of May (Buxton, 1921).

In Iraq, the *lutea* was common near Ar-Rutbah (Al Anbar Governorate) in the third week of April 1933 (Meinertzhagen, 1935). In Mesopotamia, it was a fairly common passage migrant (Ticehurst *et al.*, 1922). Specimens of *lutea* were observed in the Ali Al-Gharbi District

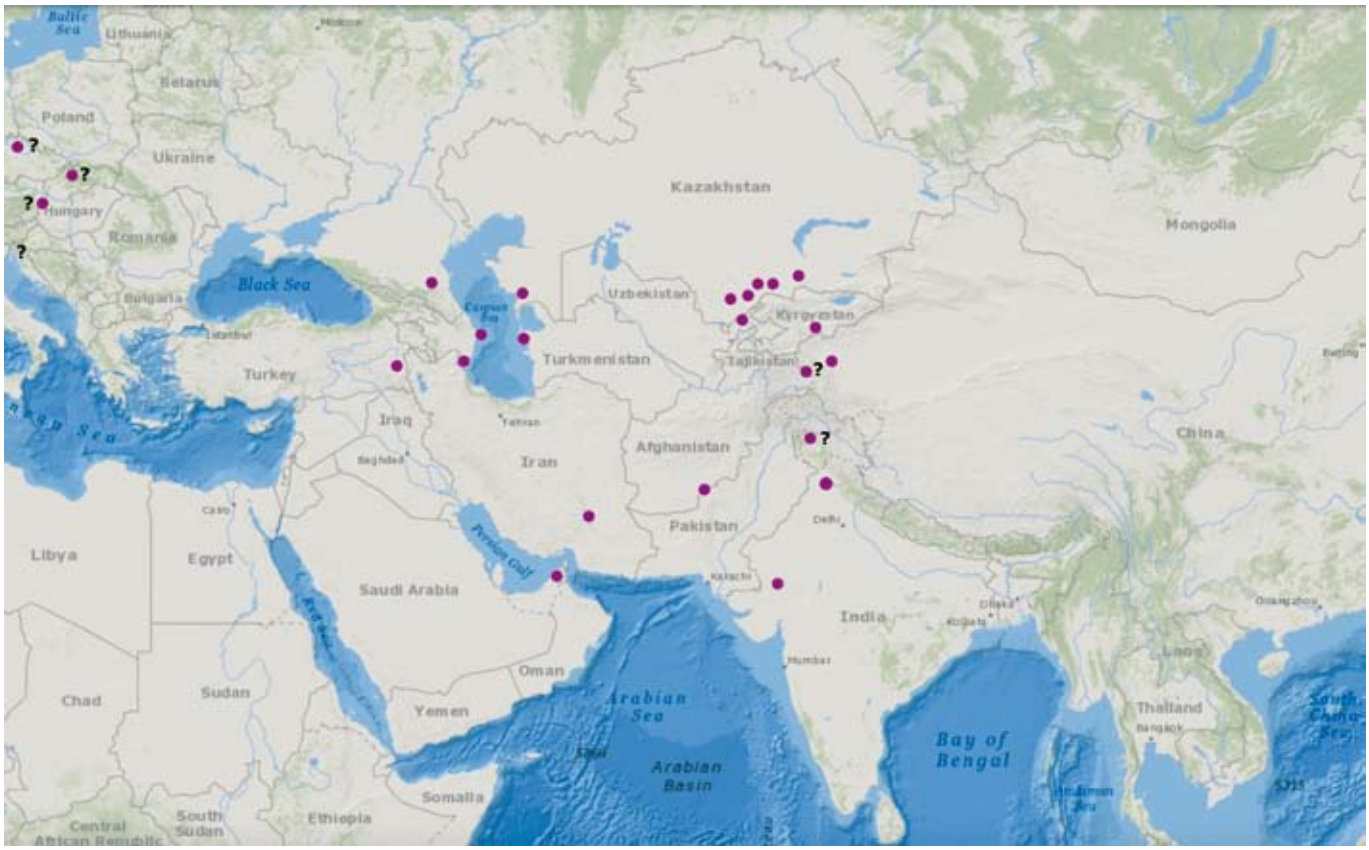


Fig. 10 - Migratory movements and wintering range in Eurasia from 1851 to 1900. / Movimenti migratori e areale di svernamento in Eurasia dal 1851 al 1900. ● Presence during migrations. / Presenza durante le migrazioni. **?** Uncertain data. / Dato incerto.

(Maysan Governorate) on 27th March and 11th April 1916 when many wagtails were on passage; two specimens were captured at Amarah (Maysan Governorate) on 19th and 20th April 1916 and two on 9th September 1916 (Ticehurst *et al.*, 1922).

Grant & Mackworth-Praed (1952) attested to the presence of the *taxon* on the Socotra Island (Yemen) and in Saudi Arabia.

In Saudi Arabia, a specimen was collected at Riyadh on 27th September 1934 and another one was at Al Kharj (Al Kharj Governatorate) on 11th October 1934 (Bates & Philby, 1936). A male in reproductive dress was recorded in Ranyah (Makkah Region) on 23rd May 1936 (Bates, 1937) and four males were captured in Hadda (Makkah Region) on 3rd April 1948 (Meinertzhagen, 1949).

In Hungary, there were two other reports: a male was at Császárszállás, near Nagykálló, on 22nd August 1926 (Szabolcs-Szatmár-Bereg County), and one specimen was near Budapest on 23rd April 1928 (Csörget, 1927-1928), but Keve (1958) stated that the *lutea* had to be eliminated from the Hungarian check-list because the subjects thus identified were young individuals of the form "dombrowskii".

Chasen (1921) reported the presence of males of the subspecies *lutea* in mixed flocks in the Struma Plain (Central Macedonia, Greece) during the last few days of August and the beginning of September 1917.

During spring migration, the *lutea* was also reported in the Voronezh Oblast (Russian Central Federal District): in May 1922 in the Kamennaya Steppe (Talovsky District) (Ognev & Vorobyev, 1923) and in May 1939 in the Khopra floodplain (Povorinsky District) (Barabash-Nikiforov & Semago, 1963).

In Southern Kazakhstan, one bird was obtained near Almaty on 24th March 1916 (Gavrilov, 1999; Gavrilov & Gavrilov, 2005). A. P. Velizhanin observed a yellow-backed wagtail at Lake Zaysan (Almaty Region) on 20th April in the 1920s (Sushkin, 1938).

There are no known data on the presence of yellow-backed wagtail in the Lake Baikal area (Mel'nikov & Gagina-Scalon, 2014).

In Afghanistan, two males were observed at Kabul on 4th April 1937, and one was sighted near Bamyan (Bamyan Province) on 19th April 1937 (Meinertzhagen, 1938).

There was also a specimen collected in Nanjing (Jiangsu Province, China) on 24th September 1923 (University of Michigan Museum of Zoology, 2019).

The known migratory movements of *lutea* for the period from 1901 to 1951 are shown in Fig. 11.

From 1951 to 2000

Along the Caucasian and Iranian coast of the Caspian Sea in August-September, the yellow-backed wagtail occured sporadically as separate individuals in mixed flocks of "yellow" wagtails, but it was fairly common during the spring migration (between March-early April and the third week of May (in 1989 until 20th May) (Schüz, 1956;

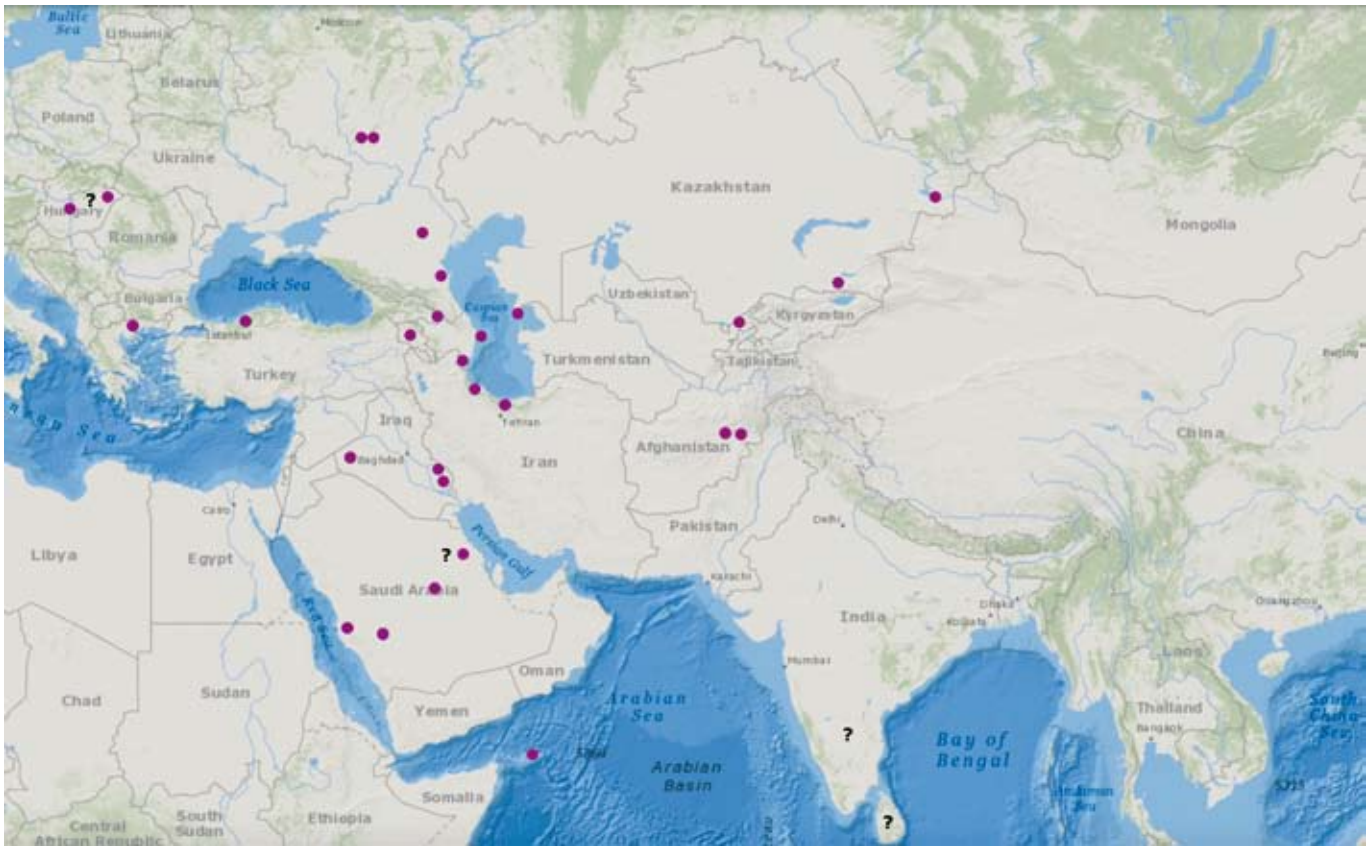


Fig. 11 - Migratory movements and wintering range in Eurasia from 1901 to 1950. / Movimenti migratori e areale di svernamento in Eurasia dal 1901 al 1950. ● Presence during migrations. / Presenza durante le migrazioni. **?** Uncertain data. / Dato incerto.

1959; Butyev *et al.*, 2012). In spring, it was a rare migrant in the Absheron Peninsula (Baku, Azerbaijan) (Gambarov & Gazanchyan, 1958).

In Iran, the *lutea* was a fairly common and widespread passage migrant (Vaurie, 1959; Genanger & Genanger, 1968). One individual (male) was at Babolsar (Mazandaran Province) on 15th May 1958 (Diesselhorst, 1962). An adult was observed during the autumn migration in 1961 in the South Caspian Region (Feeny *et al*., 1968). Between June 1972 and February 1976, it was common in spring and autumn in the Latyan Dam (Shemiranat County, Tehran Province) and in the Lashgarak area (Mazandaran Province) (Scott, 2007).

In Iraq, the most regular wagtail was *lutea*, along with *dombrowski* and *thunbergi*, during migration (Allouse, 1953; 1960; 1961; 1962; Chapman & McGeoch, 1956).

In the United Arab Emirates, the *lutea* was very scarce: in 1998 only one bird was at Khor Kalba on 10th March; in 1999 one was at Sir Bani Yas on 29th March, four individuals were at the Emirates Golf Course on 18th April, one was at Al Wathba on 22nd April and on 21st November; in 2000 a single individual was at Khalidiyah on 2nd May and one was at the Al Wathba camel track on 3rd November (UAE Bird Report, 1991; Richardson & Aspinall, 1997; Richardson *et al.*, 2003).

In Saudi Arabia, the *lutea* (usually single or a few individual in flocks of *M. f. flava*) was observed during the spring migration in the Thumamah National Park (Riyadh Region) (max 5 birds on 23rd April 1990) (Rietkerk & Wacher, 1996), along the coast of the Persian Gulf (e.g., at Dhahran and Ras Tanura) (Eddy, 1962), and in the islands of the Gulf (e.g., an individual ringed in the Karan Island on 22nd April 1994) (Fain *et al.*, 1995).

In Yemen, it was a scarce passage migrant from the coast to the highlands on the Socotra and Abd al Kuri islands, but did not overwinter here (Brooks *et al.*, 1987; Kirwan *et al.*, 1996; Martins *et al.*, 1996).

In Russia, the yellow-backed wagtail was rare in the Rostov Oblast during migration (Belik, 1997; 2000); it was sighted along the coast of Sea of Azov (in spring migration in the vicinity of Azov and at end of August at the seaside of the Don delta) (Belik, 1992), and an individual was recorded on 25th April 2000 in the Rostov Nature Reserve (Minoransky *et al.*, 2006). This subspecies was reported occasionaly in the Voronezh Oblast (e.g., April 1978) (Natural Resources of the Voronezh Region, 1996; Numerov, 1996) and also rarely sighted in the Tambov Oblast (Cherubimov *et al.*, 1977; Skoptsov, 1987), in the Ryazan Oblast (one bird was noted on 15th April 1986 near the eastern border of the Oka Nature Reserve) (Ananieva *et al.*, 2008; Ivanchev, 2012), in the Chuvash Republic (one male in the Chavash Varmane Bor National Park, Shemurshinsky District, on 3rd May 1999) (Lastukhin, 2008), and in the south of the Chelyabinsk Oblast (3 individuals on 17th April 1997) (Gashek,1998). The nesting was excluded in the Yetkulsky District of the Chelyabinsk Oblast (Redko, 1998). In the Irkust Oblast, the *lutea* was very rare appearing only with wandering subjects (Fefelov, 2001). In the Ziminsko-Kuytunsky steppes, single individuals were observed on 18th May 1984 and 22nd May 1994 at the village Barluk (Mel'nikov, 1999). A yellow-backed wagtail was sighted on 28th May 1985 in a meadow in the Selenga delta, and it was reported on the southern shore of Lake Baikal, at the mouth of the Irkut River, and in the Olkhinskoe plateau (Bogorodsky, 1989; 2014; Mel'nikov, 2000; 2017; Fefelov *et al.*, 2001; Dorzhiev, 2011; Mel'nikov & Gagina-Scalon, 2014). The subspecies *lutea* was rarely sighted in southern Baikal, very rarely observed in central Baikal, and was absent in northern Baikal (Mel'nikov & Gagina-Scalon, 2016). On the Primorsky range along the shore of Baikal, its density in autumn reached 8.4 ind./km^2 (Bogorodsky, 1989).

In Romania, one bird attributed to *lutea* was observed on 5th September 1952 not far from Feteşti (Ialomiţa County) and a group of 10 individuals was sighted on 1st September 1963 on the shores of Lake Amara (Ialomiţa County) (Paşcovschi, 1968).

In ex-Yugoslavia and Bulgaria, the presence of the *lutea* was considered probable (but not ascertained) during migration (Matvejev & Vasić, 1973; Nankinov, 1992).

In Greece, the *lutea* was reported on a few occasions (Handrinos & Akriotis, 1997): a bird was observed on the shore of Lake Koroneia (Central Macedonia) on 10th September 1959 (Ballance & Lee, 1961) and three individuals (two adults and one youth) were present on 16th August 1993 in a fallow at Kamari on the Kos Island (Dodecanese) (Ferlini, 1994).

In Cyprus, from 13th to 19th September 1969 the first individual for the island was observed at Akrotiri (RAF Ornithological Society, 2016), and one specimen was reported in 1991 (Balmer & Betton, 2006).

In Italy, Cova (1969) stated that it was to be confirmed as accidental.

In Jordan, some individuals were recorded in the springs of 1965 and 1966 at Azraq (Zarqa Governorate) in a mixed flock with *feldegg*, *thunbergi*, and *flava* (Wallace, 1982).

In Finland, for the first time on 5th July 1954 a wagtail attributed to *lutea* was sighted at Krunnit (Oulu Region) in the northern part of the Gulf of Bothnia (Tenovuo, 1956); another specimen (male) was recorded on 25th May of 1958 near Haukiputa (Oulu Region) (Törnroos, 1960). Two individuals were recorded in the years of 1974 and 1976 (Harju, 1975; 1978), and a male was sighted on 4th-6th June 1976 at Lågskär (Åland Islands) (Mikkola, 1978). In June 1982 in Sonkajärvi (Northern Savonia Region), a mixed pair of western yellow wagtails *Motacilla flava lutea* and *M. flava flava* was reported; on 30th June the female (*M. f. flava*) carried insects to the nest (Antikainen & Sorvari, 1985). Until 1976, in the Scandinavian Peninsula, the yellow-backed wagtail appeared occasionally only in Finland (Iso-Iivari, 1976). The occurrence of the yellow-headed wagtail in Finland was considered a prolongation of the spring migration (Sammalisto, 1983).

In Kazakhstan, dozens of individuals mixed with other wester yellow wagtails were seen in the Kamysh-Samara lakes system (West Kazakhstan Region) on 19th April 1996 (Belik, 2008). In the Kyzylkum Desert (Kyzylorda Region), during the years 1970-1990 the *lutea* was frequently present in May and in September-October (in some places it stopped during the whole summer) (Sabilaev, 2014). Between 1982 and 2016, only one individual was

tagged on 23rd April 2000 during the studies on migratory birds at Chokpak Pass (West Tien Shan foothills) (Gavrilov & Gavrilov, 2005; Gavrilov *et al.*, 2017).

In Turkmenistan, unlike *beema*, *thunbergi*, and *feldegg* (*melanogrisea*), the *lutea* was not included in the list of birds of the Karakum Desert (Rustamov, 1994).

In Afghanistan, a specimen was observed near Jalalabad (Nangarhār Province) in late September 1977 (Inskipp & Inskipp, 1979).

Roberts (1992) made no reference to the subspecies *lutea* for Pakistan.

Shrestha (2001) in his book on birds of Nepal included this wagtail, but without any precise data.

The known migratory movements of *lutea* for the period from 1951 to 2000 are shown in Fig. 12.

From 2001 to 2018

In Azerbaijan, the subspecies *lutea* was observed in spring passage (Patrikeev, 2004; Aspinall, 2005; Koblik & Arkhipov, 2014). It was reported during the last ten days of April in Ag-Gel National Park (Aghjabadi and Beylagan districts), Shirvan National Park (Salyan District), the Saatly District, the Absheron Peninsula, and the Siyazan District (de Hoog G., Hogeveen B., Kimstra J., Lagendijk A. & van Oostveen J., in Observation, 2018).

In Armenia, the yellow-backed wagtail was a rare passage migrant (Koblik & Arkhipov, 2014), mainly in spring: a male was observed on 17th May 2008 at Lake Sevan (Redman, 2008), and a specimen was reported on 2nd May 2017 near Armash (Ararat Province) (Gerber M., in Observation, 2018).

In Georgia, the *lutea* was a passage migrant (Koblik & Arkhipov, 2014), mainly in spring (last week of April-first week of May) in the internal part of the country with some presence also during the first two weeks of September along the coast of Black Sea. In spring, one or two specimens were reported in the Chachuna Nature Reserve area (Kakheti Region) in early May 2012 (Adams *et al.*, 2012; Chachuna Nature Reserve, 2016) and in late April 2014 (Bailo, 2014; Frew *et al.*, 2014). A male was sigthed near Akhalkalaki (Samtskhe-Javakheti Region) on 30th April 2017 (van Oostveen J., in Observation, 2018), and another one was in the same region in the Khanchali Managed Reserve on 10th May 2018 (Broeckaert M., Bucks L. & Leguijt T., in Observation, 2018). In the Imereti lowland (Imereti Region), it was not reported in 2000-2009; from 2013 to 2016, it was observed only in spring, but not every year (Merabovich, 2016). In the Khevi Province (Mtskheta-Mtianeti Region), one bird was photographed at Stepantsminda on 3rd May 2012 (Bird & Köster, 2012), and on 6th May 2018 three individuals were observed flying over Mount Kazbegi at around 2170 m a.s.l. (Broeckaert M., Bucks L., Leguijt T. & Verwaal M., in Observation, 2018). During the post-reproductive migration, single specimens were observed in the Chorokhi

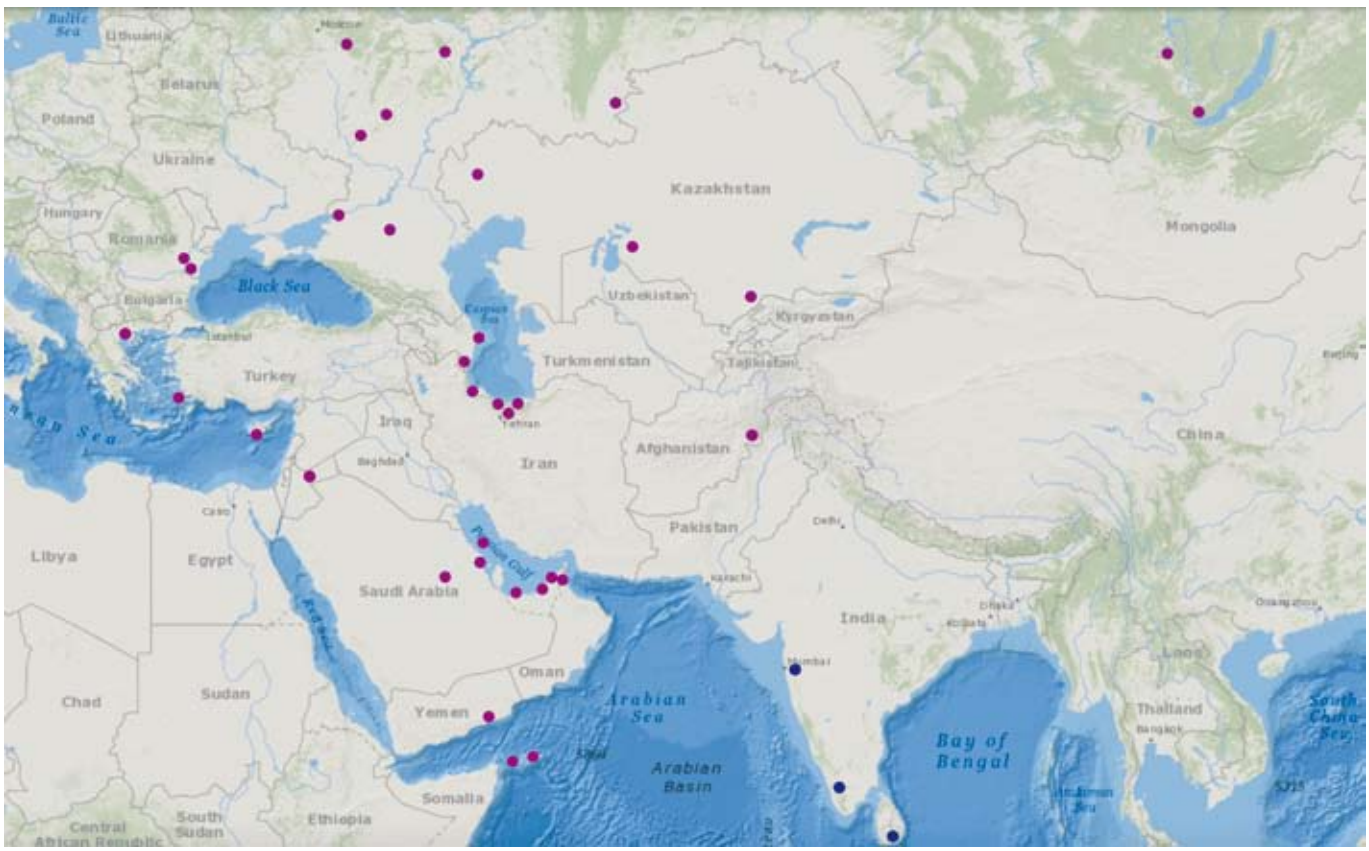


Fig. 12 - Migratory movements and wintering range in Eurasia from 1951 to 2000 / Movimenti migratori e areale di svernamento in Eurasia dal 1951 al 2000. ● Presence during migrations. / Presenza durante le migrazioni. ● Presence in winter. / Presenza in inverno.

delta (near Batumi, Autonomous Republic of Adjara) on 20th September 2017 (Rousseau-Piot J.-S., in Observation, 2018) and on 17th September 2018 (Driessens G. & Rottiers J., in Observation, 2018); an individual was reported near Poti (Samegrelo-Zemo Svaneti Region) on 6th September 2018 (de Boer F., in Observation, 2018) and another one was in the same place on 11th September 2018 (Zwart J., in Observation, 2018).

In Iran, the yellow-backed wagtail was considered a common and widespread passage migrant, especially in the western regions (Kaboli *et al.*, 2016; Khaleghizadeh *et al.*, 2017; Zarei *et al.*, 2018). It was recorded in the Zagros Mountain area near Lake Anna (Isfahan Province) on 23rd April 2008 (Gardner, 2008); three specimens were sighted in Chahak (Bushehr Province) on 18th April 2013 (Klunderud, 2013); a bird was photographed at the Quri Gol Lagoon near Tabriz (East Azerbaijan Province) on 26th April 2017 (Iran Birdwatching, 2018), and single individuals were sighted on 20th and 21st April 2017 in wetlands around the area of Ahvaz (Khuzestan Province) (Ullman, 2017).

In Iraq, the *lutea* was a regular passage migrant (Salim *et al*., 2012).

In Kuwait, the yellow-backed wagtail was a common passage migrant, especially in spring between the last week of March and the first week of May (Haavisto & Karlsson, 2007; Al-Sirhan, 2009; 2010; Fågel, 2011; Pope, 2008a; 2008b; Pope & Zogarsi, 2012). Out of this range, an individual was recorded on 31st May 2008 in the Jahra pools (Lindroos, in Tarsiger.com, 2018).

In Saudi Arabia, it passed through the central regions, generally from March to May and again from August to November, but it was not common (Bertilsson, 2004; Porter & Aspinall, 2010). In the Eastern Province, eight birds were observed between 21st April and 16th May 2013 at Dhahran Hills, and some specimens were seen near Dammam on 28th April 2015 (Babbington, 2018). In the Eastern Province of Saudi Arabia, the *lutea* was the least common western yellow wagtail along with the *superciliaris* (Babbington, 2012). In the western part of Saudi Arabia, a bird was recorded on Wadi Muhayil (Asir Province) on 8th May 2002 (Edgecombe *et al.*, 2002).

In Bahrain, a specimen was sighted at Alba Marses on 13th October 2011 (Babbington, 2011).

In Qatar, an individual was recorded near Al Ruwais on 11th September 2009 (Thompson J.A., in HBW.com, 2018).

In the United Arab Emirates, the yellow-backed wagtail was uncommon during migration (March/April and October/November) (Van den Schoor, 2004; Tovey, 2009; Pedersen & Aspinall, 2010; Pedersen *et al.*, 2017). Occasionally, it was recorded in February (e.g., one bright individual was seen at Dubai Pivot Fields on 21st February 2005; Richardson, 2005) and in May (e.g., one specimen was at Al Wathba camel track on 11th May 2001; Richardson, 2007). In 2010, there were 7 records: three individuals between 2nd and 17th April and the rest between 30th Aug and 22nd November (Smiles *et al.*, 2012); in 2011 there were five spring records between 12th April and 5th May and one record in autumn on 7th September (Smiles *et al.*, 2013). In 2012, ten birds were reported: six between 16th March to 23rd April and four from 19th August to 21st September (Smiles *et al.*, 2014a); in 2013, there were many records from 8th to 29th April (34 specimens on 9th April was an exceptionally high count) and only two records in September (Smiles *et al.*, 2014b). In 2014, there were 8 records all falling in the months of April and September (Smiles *et al.* 2016) and in 2015 a total of seven birds were seen during the year (four in April and three in September) (Smiles *et al.*, 2017). On 22nd January 2016, an individual was sighted at East Khor Park (Gregory, 2016).

In Oman, the yellow-backed wagtail was a fairly common spring passage migrant, less common in autumn and in winter (Eriksen & Porter, 2017; Eriksen & Eriksen, 2018; OSME, 2018). In the Dhofar Governorate a bird was observed at Khawr Taqah on 12th March 2015 (Harrison & Lamsdell, 2015) and three individuals were reported on 24th February 2016 at Salalah (Hofland, 2016); one was at As Sayh (Musandam Governorate) on 22nd-23-rd April 2013 (Harrison & Lamsdell, 2013). This wagtail was also sighted in autumn: a specimen was at Sur (Ash Sharqiyah South Governorate) on 13th November 2001 and another one was at Khor Taqah (Dhofar Governorate) on 22nd & 23rd November 2001 (Anonymous, 2001); an individual was at Salalah (Dhofar Governorate) on 29th October 2009 (Olsson, 2009) and two males were present on 14th November 2016 (Luiten T., in Observation.org, 2018); at Sun Farms Sohar (Al Batinah North Governorate) one *lutea* was found on 15th November and two on 16th November 2013 (Harrison & Lamsdell, 2014); an individual was at Raysut Lagoon (Dhofar Governorate) on 27th October 2017 (Deissner A., in eBird, 2018) and a male was at Salalah (Dhofar Governorate) on 4th November 2017 (Demeulemeester M., in Observation, 2018).

Regarding Yemen, the status of the *lutea* was uncertain in Socotra Archipelago, but is probably a rare passage migrant or vagrant (Porter & Suleiman, 2012; 2013).

In Turkey, the *lutea* was a regular passage migrant, but uncommon (Kirwan *et al.*, 2008; 2014); it was particularly sighted in wetland areas (e.g., Van marshes and Kizilirmak delta) (Gursoy *et al.*, 2009) and more rarely in Central Anatolia (Olofson, 2014).

In Greece, individuals attributed to the subspecies *flavissima*/*lutea* were reported occasionaly: an adult on 30th September 2006 in Katsaneviana on Antikythera Island (HRC, 2007) and 2 adult males on 29th September 2009 in Georgioupoli (Chania Region) on Crete Island (HRC, 2011). For the Lesbos Island, the status of the *lutea* was uncertain (Dudley, 2012).

In Italy, it was considered accidental on the Adriatic side of the Pensula and in Sicily; however no specific data is reported (Brichetti & Fracasso, 2007).

In Cyprus, the yellow-backed wagtail was vagrant passage migrant (Porter & Aspinall, 2010). A specimen was seen at Apostolos Andreas (Peninsula of Karpasia) on 17th April 2006 (5th record for the island in the last 20 years); the last record was in 1991 (Balmer & Betton, 2006; 2008). On 22nd April 2016, an individual was photographed at Lady's Mile beach (Limassol District) (Stapley & Walker, 2016), and one was sighted at Ayia Napa (Limassol District) on 3rd September 2017 (9th recent record for the island) (Stylianou, 2018).

Until 2014, there was only one record concening Lebanon: one specimen was at Tyre Coast (South Governorate) on 4th April 2002 (Ramadan-Jaradi *et al.*, 2008; Ramadan-Jaradi, 2011; Ramadan-Jaradi & Serhal, 2014).

In Israel, the yellow-backed wagtail photographed at km 20 near Eilat on 8th-11th April 2005 was only the 20th recorded for Israel (Landsberger, 2005a; van den Berg & Haas, 2005). On 22nd April 2005, 7 individuals were at Yotvata's circular field (Arava, Southern District), singles were seen in the Arava area throughout the month of April until 1st May 2005 (Landsberger, 2005a; 2005b). At Eilat (Southern District), a wagtail was sighted on 27th April 2008 (Van der Werf, in eBird, 2018), and two individuals were recorded on 2nd May 2011 (Kislev L., in HBW, 2018).

In the Sinai Peninsula (Egypt), one bird was sigthed at Naama Bay (Sharm El Sheikh) on 2nd April 2005 (Swann, 2005).

In Ukraine, an individual was seen on Snake Island (Black Sea, Odessa Oblast) on 27th April 2007 for the first time (Yakovlev M., in NEBW, 2018; Yakovlev *et al.*, 2012a).

In the Crimean Pensula, a male was observed near the village of Gurzuf (Yalta City Municipality) on 22nd April 2004; this was the first meeting of *lutea* in the territory of thePeninsula (Redkin & Koblik, 2015). Subsequently the subspecies was also observed in the Opuksky Nature Reserve (Kerch Peninsula) (Sikorsky, *pers. comm.*).

On 9th May 2012, the *lutea* was reported in the Republic of North Ossetia-Alania for the first time: two birds (male and female) were sighted near Chermen (Prigorodny District) (Komarov & Shevtsov, 2012; 2016; 2018).

In the Kabardino-Balkarian Republic, a male in reproductive plumage was photographed near the Mount Elbrus, in the gorge of the Terskol River on 4th May 2013 for the first time (Zhurtov H., in NEBW, 2018; North Caucasian Ornitho-faunistic Commission, 2014).

A male was met in the Krasnodar Territory on 22nd April 2016 in the Natural Ornithological Park, in the Imereti Lowland, for the first time (Sochi, Adler District) (Shagarov, 2016; 2018; Merabovich, 2016; Tilba & Shagarov, 2017).

In the Dagestan Republic, the yellow-backed wagtail was a regular, but scarce, passing migrant in the Nogai Steppe (Dzhamirzoyev *et al.*, 2008) and on the western coast of the Caspian Sea. In the Dagestan Nature Reserve (Tarumovsky District), it was not numerous during migrations (e.g., on 26th-29th July 2012) (Bukreev & Dzhamirzoyev, 2013; Dzhamirzoyev *et al.*, 2014). One male was observed on 19th August 2006 near the village of Biryuzyak (Tarumovsky District) (Sementsova & Aksenov, 2007; Vilkov, 2008), and a single individual was sighted in a flock jointly with other western yellow wagtails in the flooded meadows of Kizlyar Bay (Dzhamirzoyev & Perevozov, 2011). Further south, it was reported in the delta of the Terek River (Dzhamirzoyev *et al.*, 2010).

In the Rostov Oblast, the yellow-backed wagtail was a rare passing bird in the Don delta (Minoransky, 2004) and in the Manych valley (Minoransky *et al.*, 2006; Lipkovich, 2016).

In Kalmykia, the *lutea* was observed during spring migration (April-early May) in the Chernozemelsky District (Durnev *et al.*, 2013; 2014) and the Yashkulsky District (World Wide Fund for Nature, 2014).

In the Astrakhansky State Nature Biosphere Reserve (Kamyzyaksky and Volodarsky districts, Astrakan Oblast) it was recorded during migrations, but was scarce in number (Natural Heritage Protection Fund, 2008); in the Bogdinsko-Baskunchakski Nature Reserve (Akhtubinsky District, Astrakan Oblast), a male was recorded on 5th-6th May 2008 (Tkachenko, 2008; Govorova, 2009).

An individual was observed and photographed further to the west at Kamushki (Mosalsky District, Kaluga Oblast) on 18th April 2018 (Golubeva A., in NEBW, 2018).

In the Ulyanovsk Oblast, a bird was photagraphated at Pervomayskiy (Cherdaklinsky District) on 21st September 2017 (Kalagin M., in NEBW, 2018).

In the Chuvash Republic, an individual was photographed on 24th April 2016 in the Ibresinsky District (Nikiforova V., in NEBW, 2018).

In the far east along the shore of Lake Baikal, the yellow-backed wagtail was found in both spring (May) and autumn (August); it was recorded on the western coast of the lake and in the mouth of the Irkut in small groups (3-4 individuals), often in flocks along with *Motacilla citreola* (Mel'nikov & Durnev, 2009; Prelovsky *et al.*, 2010; Mel'nikov & Gagina-Scalon, 2014; Popov, 2015).

Vagrant individuals were reported in the Republic of Buryatia (Dorzhiev, 2016) and further north in the Numto Natural Park in the Beloyarsky District of the Khanty-Mansiysk Autonomous Okrug-Ugra (Valentinovna, 2017).

In Romania, a bird was observed in the beginning of August 2007 on the left side of the oldest branch of Danube, close to the Danube's mouth into the Black Sea near the village of Sfântu Gheorghe (Tulcea County) (Droz *et al.*, 2008).

In Finland, an individual *flavissima*/*lutea* (2nd calendar year) was ringed on 15th July 2006 at Hanko Bird Observatory (Uusimaa Region) (11st record for Finland) (Lindholm *et al.*, 2007), and a male was sighted at the Hamnskär Island (Uusimaa Region) on 7th June 2014 (12th record for Finland, including 4 before 1975) (Väisänen *et al.*, 2015).

In Kazakhstan, on the northern coast of the Caspian Sea, between the Ural and Emba rivers, the *lutea* was observed on migrations (predominantly April and September) (Meldebekov & Bayzhanov, 2005; Gistsov & Little, 2014; MacDonald, 2014). Single individuals were sighted on an artificial island in the North-East Caspian Sea on 22nd April 2009 and 10th April 2013 (Kovshar V., in NEBW, 2018). In the years 2005-2018, on the eastern Caspian coast (Mangystau Region) between the Tub-Karagan Bay and the Kendirli Bay, the yellow-backed wagtail was seen, also in small groups, from 13th July to 6th September and in spring from 24th April to 27th May (Belyalov & Kovshar, 2006; Le Nevé *et al.*, 2010; Wassink, 2010; Yasko, 2017; Belyaev A., Dyakin G., Kadirov A., Vilyayev A., Yasko A., in NEBW, 2018). In the Small Aral Sea area, Syr Darya avandelta, Kamystybas, and Acchatas lake systems (Kyzylorda Region) the presence of the *lutea* increased during migration, especially

in the post-reproductive period (from July to August, with a maximun frequency in the second half of August) (Berezovikov, 2012; 2014; 2015; Michael Succow Foundation, 2013; RKMEWR, 2014). In the Shieli District of the Kyzylorda Region and in Chardara e Kazygurt districts of the Turkistan Region, this wagtail was observed during migration (Otarov & Ibrayeva, 2002). In the Jambyl Region, two individuals were sighted near the Korday Pass (Korday District) on 13th April 2015 (Kolbintsev & Vickery, 2015). In the Almaty Region, the *lutea* was sighted in May (especially in the first two decades) (Kennerley & Kovshar, 2007; Wassink & Oreel, 2008) and in August (mainly in the last decade) (Dyakin G., Fedorenko V. & Isabekov A., in NEBW, 2018). On 3rd May 2011, some migrant birds were observed in mixed flocks with individuals of the subspecies *beema* at Orkendeu and in the Nura Valley (Zhanaarka District, Karaganda Region) (Francke, 2011). In the North Kazakhstan Region, a specimen was tagged during the ringing work carried out from May to August 2007 (Gubin *et al.*, 2008).

In Tajikistan, the *lutea* was a passing migrant (Koblik & Arkhipov, 2014) recorded in the Zorkul Nature Reserve (Gorno-Badakhshan Autonomous Province) (Jashenko, 2006).

In Uzbekistan, the yellow-backed wagtail was a passing migrant (Koblik & Arkhipov, 2014; Uzbekistan Society for the Protection of Birds, 2018) sighted in the Badai-Tugai Nature Reserve (Jashenko, 2006) and in the Termez area (Termiz District, Surxondaryo Region) (Azimov, 2008).

In Turkmenistan, the *lutea* was found in small numbers during migration in deserts, along foothills, valleys, oases, and along the seacoast (spring migration: end March-mid May; autumn migration: September-October) (Rustamov, 2011; 2013; 2015). In the Ashgabat area, it was sighted in March-April and in August-September (Rustamov *et al.*, 2013).

We found no data concerning the subspecies *lutea* in Pakistan. Only the subspecies *beema* and *feldegg* (*melanogrisea*) were sighted at Lake Kallar Kahar (Muhammad *et al.*, 2010).

In Nepal, the *lutea* was likely to occur (Grimmett *et al.*, 2016).

In India, the *lutea* was recorded during migration, but it was very scarce. In Rajasthan, some individuals, along with some *thunbergi*, were sighted between the canal at Bharatpur and the semi-desert near Kumher (Bharatpur District) on 17th November 2009 (Acheson, 2009); two males were on the shore of the Banas River in the Sawai Madhopur District on 13th November 2014 (Olsson, 2014). In Maharashtra, a specimen was at Pune (Pune District) on 17th October 2018 (Ali A., in Macaulay Library, 2018). In Karnataka, in the Bangalore Metropolitan Region, only the subspecies *thunbergi*, *beema*, and *feldegg* (*melanogrisea*) were reported (Neginhal, 2009), but on 5th and 10th March 2018, one individual was sighted at Lake Hoskote (Noopuran, 2018; Praveen *et al.*, 2018; Noopuran S., Shankar V. & Viswanathan A., in Macaulay Library, 2018).

The known migratory movements of the subspecies *lutea* for the period from 2001 to 2018 are shown in Fig. 13.

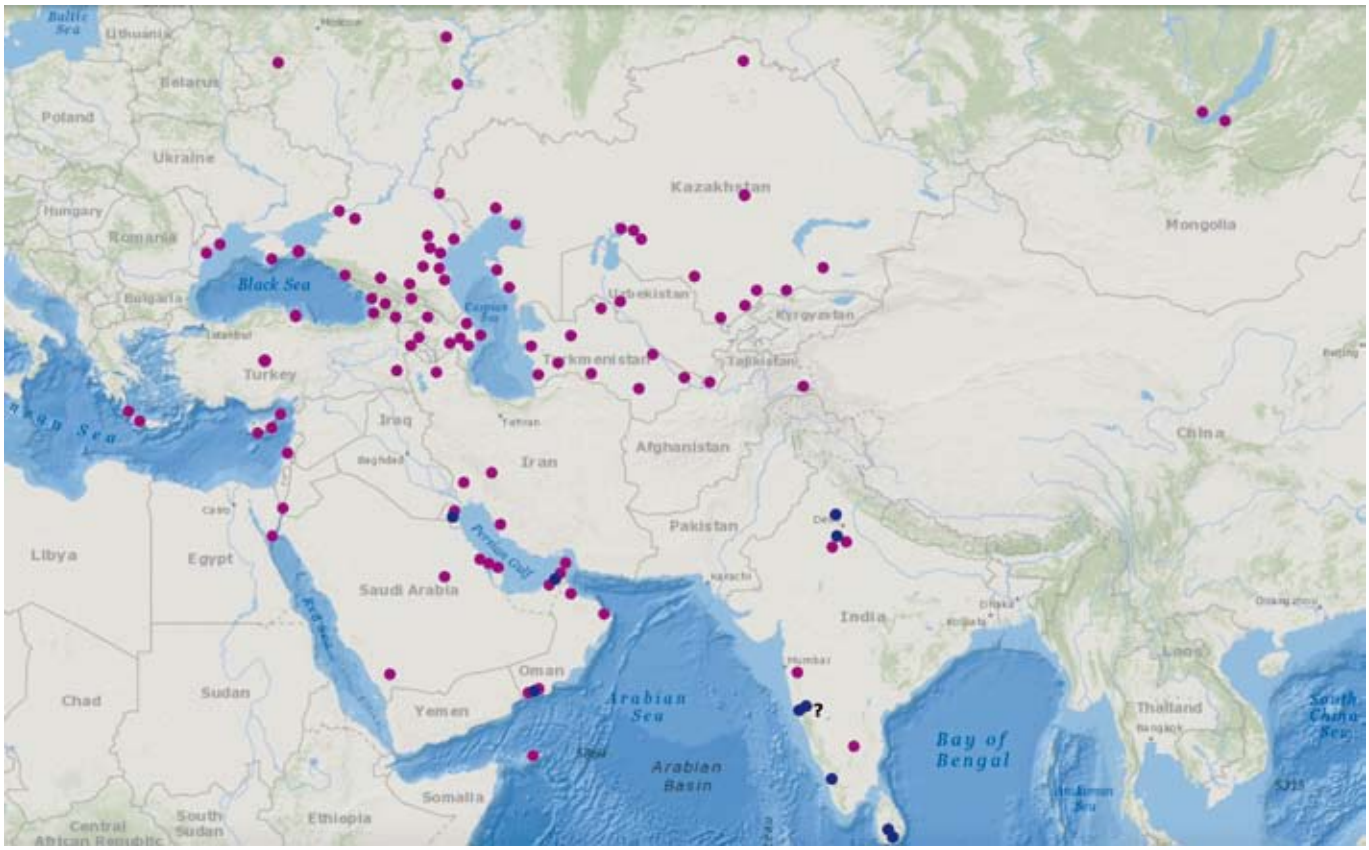


Fig. 13 - Migratory movements and wintering range in Eurasia from 2001 to 2018 / Movimenti migratori e areale di svernamento in Eurasia dal 2001 al 2018. ● Presence during migrations. / Presenza durante le migrazioni. ● Presence in winter. / Presenza in inverno. **?** Uncertain data. / Dato incerto.

Wintering range

From 1851 to 1900

In Africa, the wintering range extended along the eastern part of the continent, with presences in Ethiopia, Kenya, Uganda, Tanzania, Malawi, Mozambique, Zimbabwe, and South Africa, as well as a sporadic appearance in the Seychelles (Fig. 14) (Ferlini, 2020).

There are no data that confirm wintering in the Arabian Peninsula area.

Regarding India, some autors did not mention the presence of the yellow-backed wagtail in the subcontinent (Horsfield & Moore, 1856-1858; Hume, 1879; Murray, 1890). Only Jerdon (1840; 1863; 1877) considered this bird to be wintering in India. Cripps (1878) and Oates (1890), while doubting the presence of this bird within the Indian limits, provided useful elements for its correct identification.

From 1901 to 1950

As also indicated by other authors (Grant & Mackworth-Praed, 1952; Dementiev & Gladkov, 1954), in Africa the wintering range extended along the

Fig. 14 - Wintering range in Africa from 1848 to 1900 / Areale di svernamento in Africa dal 1848 al 1900 (Source / Fonte: Ferlini, 2020).

Single ind. 2-10 ind. 11-100 ind. 101-1,000 ind. 1,001-10,000 ind. Over 10,000 ind.

eastern part of the continent, with presences occurring in Ethiopia, Kenya, Uganda, Tanzania, Malawi, Mozambique, Zambia, and South Africa (Fig. 15) (Ferlini, 2020).

No data suggested the wintering of the yellow-backed wagtail in the Arabian Peninsula.

From India, most of the bibliography consulted does not mention the presence of the yellow-backed wagtail in the subcontinent (Baker, 1923; 1930; Whistler, 1930; 1949; Ali, 1945), however Grant & Mackworth-Praed (1952), describing the *lutea* distribution in the non-breeding season also indicated their presence in India and Ceylon.

The known Asian wintering range of *lutea* for the years from 1901 to 1950 is shown in Fig. 11.

From 1951 to 2000

As indicated by other authors (Mayr & Greenway, 1960; Molodovsky, 1997), Africa was an important wintering area, particularly along the eastern part of the continent, with presences occurring in Ethiopia, Kenya, Uganda, Tanzania, Malawi, Mozambique, Zambia, Zimbabwe, Botswana, and South Africa (Fig. 16) (Ferlini, 2020).

Molodovski (1997) reported the wintering of the yellow-backed wagtail in Arabian Peninsula for the first time, but did not provide more details.

Fig. 15 - Wintering range in Africa from 1901 to 1945 / Areale di svernamento in Africa dal 1901 al 1945 (Ferlini, 2020).

Single ind. 2-10 ind. 11-100 ind. 101-1,000 ind. 1,001-10,000 ind. Over 10,000 ind.

Fig. 16 - Wintering range in Africa from 1946 to 1980 / Areale di svernamento in Africa dal 1946 al 1980 (Ferlini, 2020).

Single ind. 2-10 ind. 11-100 ind. 101-1,000 ind. 1,001-10,000 ind. Over 10,000 ind.

Mirza (1998) stated that only the subspecies *flava*, *beema*, *feldegg* (*melanogrisea*), and *leucocephala* were wintering in Pakistan.

In the Indian subcontinent, the *lutea* was generically referred to as wintering in India and Sri Lanka (Mayr & Greenway, 1960; Ali & Ripley, 1973; Flint *et al*., 1984), and in particular, it was a winter visitor in the Pune District (Maharashtra) (Mahabal & Lamba, 1987) and a rare winter visitor in the Thattakad Bird Sanctuary (Ernakulam District, Kerala State) (Sugathan & Varghese, 1996). The yellow-backed wagtail was not reported in the Andaman & Nicobar islands (where *thunbergi*, *similissima*, and *beema* were present) (Tikader, 1984), and in the Great Indian Desert (only *thunbergi* was wintering) (Mukherjee, 1995).

The known Asian wintering range of *lutea* for the years from 1951 to 2000 is shown in Fig. 12.

From 2001 to 2018

Africa was confimed as an important wintering area, particularly along the eastern part of the continent, with presences in Ethiopia, Kenya, Uganda, Tanzania, Malawi, Mozambique, Zambia, Zimbabwe, Botswana, and South Africa (Fig. 17) (Ferlini, 2020).

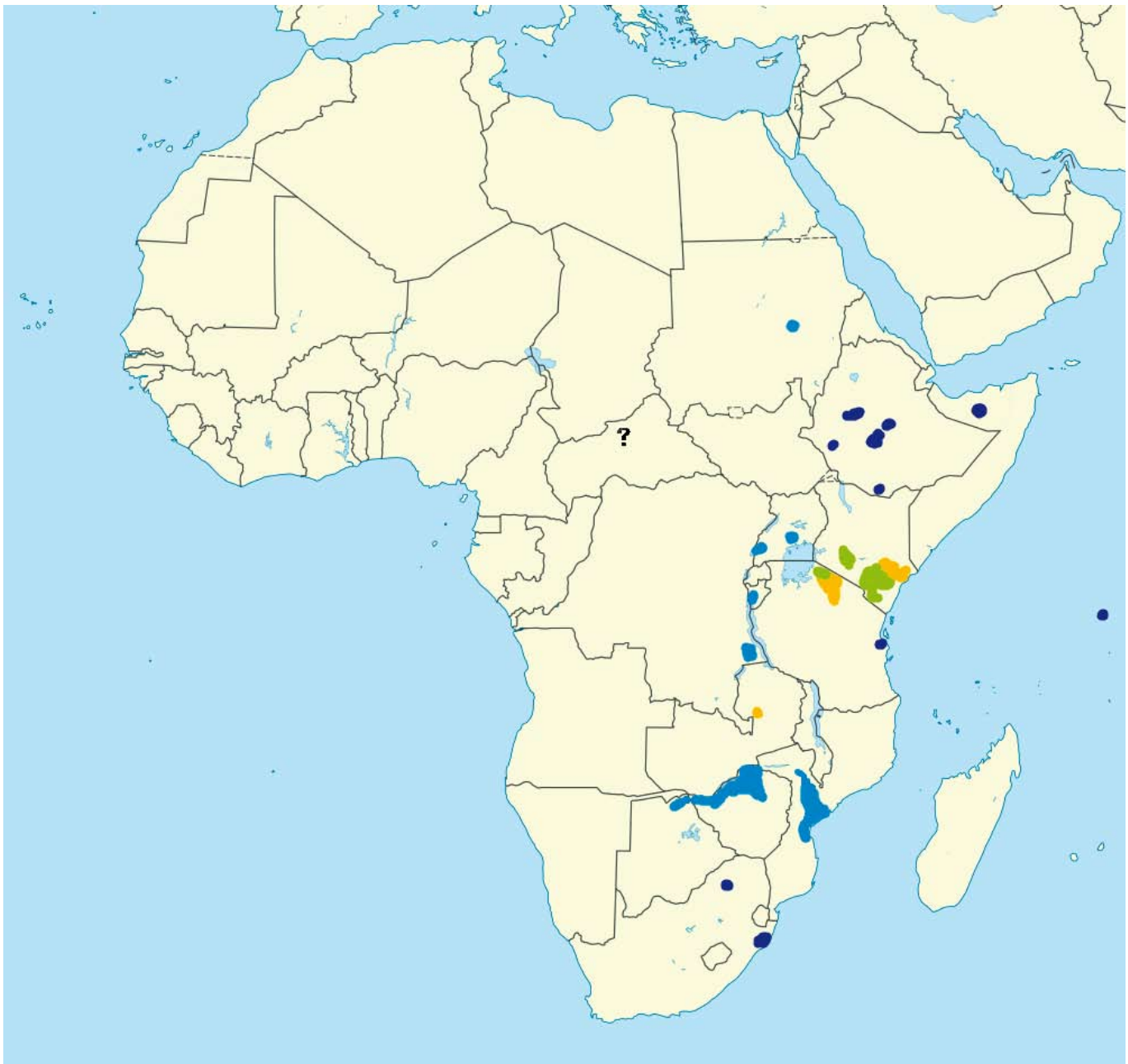


Fig. 17 - Wintering range in Africa from 1981 to 2017 / Areale di svernamento in Africa dal 1981 al 2017 (Ferlini, 2020).
Single ind. 2-10 ind. 11-100 ind. 101-1,000 ind. 1,001-10,000 ind. Over 10,000 ind.

The yellow-backed wagtail was reported in winter in Oman: some individuals were at Jarziz Farm (Salalah, Dhofar Governorate) on 10th December 2008 (Grundsten, 2008); some birds, along with *feldegg* and *thunbergi*, were at the Raysut Waste Disposal Site (Dhofar Governorate) on 4th January 2009 (Faveyts, 2009); some individuals were at Salalah (Dhofar Governorate) on 22nd January 2016 (Gregory, 2016) and on 25th January 2017 (Devoucoux, 2017).

In the United Arab Emirates, some specimens, along with *beema*, *thunbergi* and *feldegg*, were present at Dubai Pivot Fields on 4th January 2005 and at Sun Farms on 6th-7th January 2005 (Bourdin, 2005).

In Kuwait, one bird was observed at al Jahra Farm (Al Jahrah) on 4th February 2017 (Craig M., in Macaulay Library, 2018).

In Sri Lanka, the yellow-backed wagtail was a rare wintering bird (de Silva Wijeyeratne, 2007; Harrison, 2011; Biodiversity of Sri Lanka, 2012) reported prevalently in the southern provinces. In the Hambantota District of the South Province, 6 individuals (four males and two females) were observed at Kalimetiya on 16th January 2005 (Malling Olsen, 2005). In the same District, some birds were seen in the Bundala National Park: one on 31st January 2011 (Grundsten, 2011) and one on 20th February 2016 (Perera H. and Arachchi M. K., in The Ceylon

Bird Club, 2016); 10 individuals were reported on 14th January 2017 (Meijer & van Scheepen, 2017); one on 19th January 2017 (Ilahiane L., in Observation, 2018), and one on 7th March 2018 (Darshana, 2018). Isolated individuals were sighted also in the Udawalawe National Park (Sabaragamuwa and Uva provinces): one on 2nd March 2016 (Westra, 2016) and one on 4th March 2016 (Rensen D., in Observation, 2018).

In India, the yellow-backed wagtail was a very rare wintering bird (Arlott, 2015; Premkumar, 2017). The *lutea* was included in the check list of the birds of the Kerala State as a rare winter visitor, possibly a passage migrant (Sashikumar *et al.*, 2009; Anonymous, 2010; Elamon, 2018), and in particular, it was observed in the Thrissur District at Kole Wetlands near Manakodi on 16th February 2014 (eBird.org, 2018), and at Thrissur on 13th November 2017 (Isabekov, 2017). In the Goa State, a bird was sighted at Lake Carambolim on 1st February 2005 and another one between 21st and 28th February 2006, one was at Lake Mersem on 5th February 2005, and one was at Bondla on 7th February 2005 (Olausson & Persson, 2005; Nieuwstraten, 2006); an individual was observed at Velguem on 12th December 2017 (Gauns H. and Gawas M., in eBird, 2018). These data are uncertain: in the checklist of the birds of Goa (Baidya & Bhagat, 2018), the subspecies *beema* and *thunbergi* are included, but not the *lutea*. Until 2004, there were not any records in central India (Madhya Pradesh and Chhattisgarh states) (Chandra & Singh, 2004). In the Rajasthan State, a specimen was observed at Bharatpur on 23rd November 2017 for the first time (Aley, 2017). In the Haryana State, the *lutea* was obsereved in winter 2000-2001 in the Mohamedabad marshes (Sonipat District) (Sharma, 2001).

The known Asian wintering range of *lutea* for the years from 2001 to 2018 is shown in Fig. 13.

DISCUSSION

Breeding range

During the 19th century, the subspecies *lutea* was widespread in the Volga River valley and along its tributaries, as well as in a discontinuous way, in Kazakhstan and the Asian portion of Russia. In qualitative terms, the breeding range did not differ significantly from that described by Dementiev & Gladkov (1954) in the middle of the following century with the exception of the nestings reported in Iran, Uzbekistan, Tajikistan, and Mongolia. Until the 18th century, the *lutea* was also breeding in the Nogai Steppe, between the Kuma and Terek valleys (Dzhamirzoyev, 2010). Assuming that these reports were reliable, it should be concluded that from the beginning of the 20th century, the *lutea* disappeared as a breeder from the southern and eastern margins of the ancient range.

Unlike what was previously known, towards the end of the 20th century, there were reports of possible nestings in Western Russia (e.g., Lipetsk Oblast, Vladimir Oblast, Nizhny Novgorod Oblast), as well as breeding occurring in the north, especially along the Vyatka River (Kirov Oblast) and in the Perm Krai. The westward expansion of the range was confirmed in the 21st century with ascertained nesting near the eastern border of the Tambov Oblast and in the Nizhny Novgorod Oblast, while in the north the presence of the *lutea* was consolidated in the Kirov Oblast, Udmurt Republic, and Perm Krai (Solovyev, 2008). In the most recent decades, the presence of the subspecies in the southern part of the European area (Republic of Kalmykia and Astrakhan Oblast) seemed to decrease.

In the Asian portion of the breeding range, the distribution seems to remain qualitatively constant, while the number of reports in the Russian part beyond the Urals increased from the middle of the 20th century. However, according to Ryzhanovskiy (2011), the *lutea* is decreasing in Western Siberia.

Since the beginning of the 20th century, the breeding range of *Motacilla flava lutea* is localized within the area of the Eurasian steppes and forest-steppes.

The steppe extends as a continuous belt from the plains adjacent to the Black Sea across the European territory, Western Siberia, and Kazakhstan to the Altai Mountains in Central Asia. In the north, this area is bordered by the forest-steppe and in the south by the semi-deserts and deserts of Central Asia and the Black and Caspian seas (Kerven *et al*., 1996; Kremenetski, 2003). Characteristic of the steppe are treeless plains with a dominance of *Stipa* spp. and *Festuca sulcata*. Trees and shrubs are confined to depressions and ravines and include *Caragana frutex*, *Spiraea* spp., *Amygdalus nana*, and *Cytisus* spp. (Boonman & Mikhalev, 2005). Steppe grasses, including the xerophytic types, cease activity in summer and dry up entirely. With new rains in late August and early September, growth recommences. In sharp contrast to the forest and forest-steppe zones, ephemerals and ephemeroids appear in spring and conclude their cycle of development in 60-70 days (Boonman & Mikhalev, 2005). Now truly virgin steppe has become a rarity, especially west of the Urals. The last major onslaught took place in the 1950s when huge campaigns to raise agricultural production led to 43 million hectares of steppe being sacrificed to the plough; it virtually meant the end of the virgin steppe in the Volga region, in Kazakhstan, and Western Siberia (Maslov, 1999). During the last 25-30 years, the steppe landscapes have been degrading (for example, in the Saratov Oblast humus losses are of 30%-50%) (Milanova, 2012). The biodiversity of steppe landscapes is under conservation only in natural reserves.

The forest-steppe is a natural or near-natural vegetation complex of arboreal and herbaceous components distributed in a mosaic pattern in the temperate zone where the co-existence of forest and grassland is enabled primarily by the semi-humid to semi-arid climate complemented by complex interactions of biotic (e.g., grazing, land use) and abiotic (e.g., soil, topography) factors operating at multiple scales (Erdős *et al*., 2018). The arboreal cover (with a minimum height of 2 m) is 10%-70% across the entire landscape mosaic, and the vascular vegetation cover within the grassland is at least 10% (Erdős *et al*., 2018). Generally, the steppe component of forest-steppes frequently grows on chernozem soils, and the forest component on grey forest soil (Zamotaev, 2002; Zech *et al*., 2014). The forest-steppe extends as an uninterrupted zone from the Carpathian foothills to Altai and, similar

to the steppe, becomes fragmented further east; in the north, this area is bordered by deciduous forest (Chibilyov, 2002).

The temperature and precipitation vary considerably across this broad area of steppe and forest-steppe according to geographical position, altitude, and local topography (Kerven *et al*., 1996). The Eurasian steppe biome is in a zone of high atmospheric pressure, and moisture supply is insufficient across the biome; in fact, evaporation exceeds precipitation by a factor of 2-3 (Chibilyov, 2002). The distinct June maximum in precipitation and its high interannual variability are typical. The temperature gradient changes eastwards due to the increase in continentality, so the steppe and forest-steppe can be divided into two broad climatic regions: the area west of the Ural Mountains (Pontic steppe) which has a continental and temperate climate, and to the east (Kazakh steppe) which is continental (Kremenetski, 2003; Kotova & Makhortykh, 2010).

The trends of climatic characteristics of the Russian steppe show a summer increase in temperatures. The rate of summer warming in the period from 1936-2016 in the Russian steppe zone was 0.2-0.3 °C/10 years (Zolotokrylin & Titkova, 2018). The highest rate of summer warming was observed in the steppe regions of the European portion of Russia in the period from 1991-2016, when its speed was maximized (over 1 °C/10 years) in Central Russia, Priazovsko-Manychskoy, Volga Steppe, and Zavolzhskaya provinces. In the steppe of Western Siberia, the warming rate gradually decreased to 0.2 °C/10 years, and even a cold snap was observed in the pre-Altai steppe (Zolotokrylin & Titkova, 2018). The maximum increase in precipitation (more than 20 mm/10 years) occurred in the Central Russian, Oka-Don, Volga steppe, South Transural, and Irtysh provinces (Zolotokrylin & Titkova, 2018). Annual rainfall significantly decreased in the dry steppes of the European portion of the zone (in the Azov-Manych, Central Russian, Volga, Trans-Volga, and South Ural provinces) in the period from 1991-2016 (Zolotokrylin & Titkova, 2018). In line with global trends, increasing temperatures have been detected in many Eurasian forest-steppe areas, including Eastern Europe (Matveev *et al*., 2017) and Kazakhstan (Kamp *et al*., 2016). In Central Asia, (Eastern Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) the absence of a buffering coastline stimulates the extreme variations in temperature between seasons, slowing air circulation, and compounding contrasting temperatures. Generally, across the region the summers are warm to hot, with mean temperatures ranging from 20 °C to 40 °C, and winters are moderate to cool, with mean temperatures ranging from -3° C to 20 °C (USAID, 2018). Summer daily maximum temperatures can be as high as 50 °C in the desert areas, and over the past three decades, average annual temperatures have risen by 0.5 °C in the region (USAID, 2018). As a result, entire ecosystem zones have been disturbed in the drought-prone region. In the future, the region is projected to experience increased incidences of extreme weather such as dust storms, melting permafrost, wildfires, floods, mudflows, landslides and droughts (Mirimanova *et al*., 2018).

Vegetation responses to changing climates may include (a) changing species composition within patches, but sustained patchwork of grassland and forest stands, (b) altered patterns of grassland and forest patches, such as shrinkage or expansion of one patch type at the expense of the other, and (c) complete disappearance of one patch type and thus a shift of biome boundaries (Erdős *et al*., 2018). Increases in temperature without precipitation increases would tend to shift vegetation to more xeric types, and temperature increases with adequate precipitation could promote northward movement of vegetation types constrained at the northern limits of their ranges by winter conditions and/or growing season length (Wagner *et al*., 2003).

In this environmental context, the yellow-backed wagtail is a local species. On the basis of the quantitative data available mainly deriving from the surveys carried out as part of the project "European Breeding Bird Atlas 2", a possible estimate of the breeding population of yellow-backed wagtail in European Russia is included in the range of 16,500-165,000 pairs with an average value equal to 90,750 pairs. The breeding pairs in Asia must be added, but they are small in number. In fact, during ringing activities from 1951 to 2012 in Kazakhstan only 44 individuals of the subspecies *lutea* were captured compared to the 57,120 *flava*, *beema,* and *thunbergi* and the 12,842 *feldegg* (Gavrilov & Gavrilov, 2014). By way of comparison, the number of pairs of the subspecies *cinereocapilla* that nest in Italy, on a very limited surface compared to *lutea*, is estimated at 100,000-200,000 (Brichetti & Fracasso, 2007; Gustin *et al*., 2019). In most of its range, the yellow-backed wagtail forms little dense and dispersed settlements, especially in Asia. The species-specific distribution of nesting settlements of this subspecies may limit its reproduction (Muravyev & Artemyeva, 2011). In the reproductive period, the *lutea* is mainly concentrated in two areas of European Russia (Fig. 18):

- a southern one whose center is the Saratov Oblast with extensions towards the northern part of the Volgograd Oblast and the southern part of the Penza Oblast
- a northern one whose center is the the Republic of Tatarstan with extensions into the neighboring oblasts (Kirov, Republic of Bashkortostan, Orenburg).

Using the classification proposed by Chibilyov (2002) (Fig. 19), the southern area is included in the steppic belt of the East European Plan with particular reference to the provinces of the Lower Don and the Transvolga. The northern area is instead located in the forest-steppe zone in the province of Transvolga, but extends towards the north where the ecotonal environment of the deciduous forest prevails (Chibilyov, 2002; Serebryanny, 2002).

The yellow-backed wagtail occupy hydrophilic and mesophilic biotopes in the northern areas of the range, mesophilic and xerophilic biotopes in the central areas of the range, and xerophilic biotopes and agrocenoses in the southern areas of the range (Artemyeva *et al*., 2013b). The selection of nesting biotopes in the northern and western regions of the European portion of Russia has historically changed: here *lutea* often use wet meadows, wetlands, agricultural land, and sewage treatment plants of large

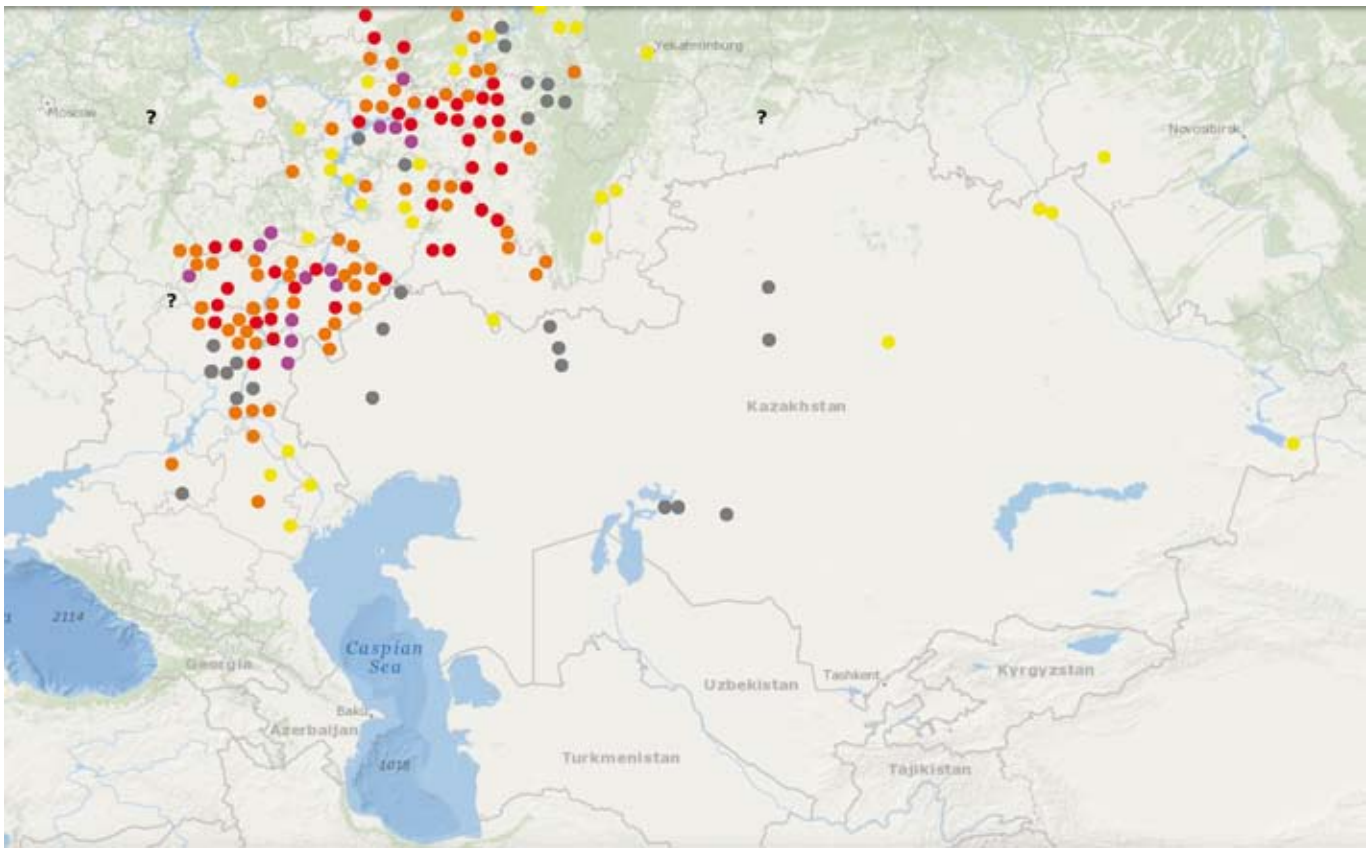


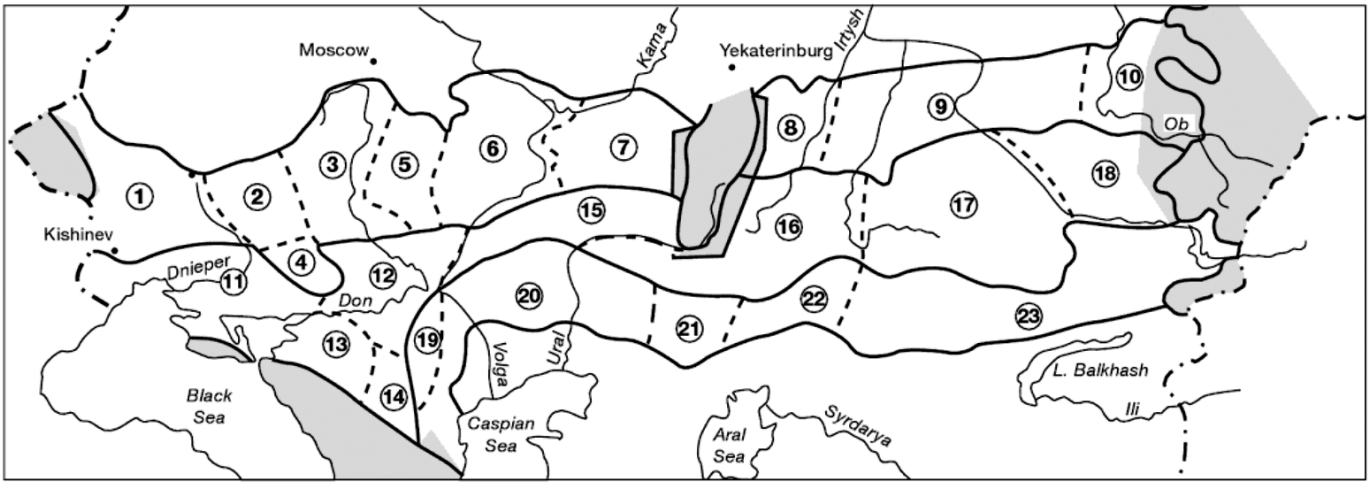
Fig. 18 - Breeding abundance (number of estimated nesting pairs) in squares of 50×50 km / Abbondanza riproduttiva (numero stimato di coppie nidificanti) in quadrati di 50×50 km. ● 1-10 nesting pairs / coppie nidificanti; ● 11-100 nesting pairs / coppie nidificanti; ● 101-1000 nesting pairs / coppie nidificanti; ● 1001-10000 nesting pairs / coppie nidificanti; ● no estimate / non stimata; **?** uncertain data / dato incerto.

settlements (Artemyeva *et al*., 2013b). The advancement of *lutea* to the northern and western regions became possible due to the north and west advancement of key plant communities and food supply facilities of this species (Artemyeva *et al*., 2013b). These variations are probably related to climate change, since changes in temperature may have a major effect on the range of vegetation zone occurrences; it is estimated that each 1 °C of warming can move the range of plant distribution from 100 to 160 km northward (Davis, 1989; Musselman & Fox, 1991; Puhe & Ulrich, 2001).

In connection with climate aridization and desertification of the steppe, in the last decades *lutea* has disappeared or become very rare in most of its range in the southern part of the European area (Republic of Kalmykia and Astrakhan Oblast) and in Western Siberia and Kazakhstan (Ryzhanovsky, 2011; Yakovlev *et al*., 2012a).

In agreement with Glutz von Blotzheim & Bauer (1985), Alström *et al*. (2003) hypothesized the presence of an area in which *lutea* was possibly the only regularly breeding subspecies and so described it: «This core area runs from where Sura River feeds into the Volga and east-north-east to central Kama River (between Perm and Izhevsk [Ustinov]), then sharply south along the Ural foothills, approximately through Ufa to the Ural River slightly east of Orenburg, then south-west to the western banks of the Volga River some 15 to 20 kilometres south-east of Volgograd, and then north to the mouth of the Sura River.». Graphically superimposing this area on the current distribution (Fig. 9), we note that it is almost the same as the geographical area where the reproductive density of the *lutea* is actually maximum, but it is much greater than that where it is the only subspecies in the reproductive period. In the second half of the 20th century, the presence in the Volga region of other subspecies besides *lutea* (especially *flava* to the west of the Volga River and *beema* to the east) was documented by various authors (e.g., Dementiev & Gladkov, 1954; Artemyeva *et al*., 2013a), but no quantitative comparison items are available. If the statement by Alström *et al*. (2003) were correct, we should then conclude that from the beginning of the 21st century, a process of progressive incorporation and marginalization of *lutea* by the other subspecies is underway. Probably the core area described by Alström *et al*. (2003) did not match the true situation (the authors pointed out that the available data are incomplete and partially contradictory), since the geographical area of prevalence of *lutea* had to be smaller and concentrated in the northernmost part of the reproductive area already by the end of the last century.

The existence of *lutea* mating with other subspecies, particularly *flava, beema*, and *feldegg*, is a common and proven phenomenon (Zaroudny, 1891; Beregovoy, 1970;



Forest-steppe

Sectors

East European Plain

Western Siberia

Provinces

① Podolsk and Dnieper uplands
② Dnieper lowland
③ Srednerusskaya (Central Russian) upland
④ Donets upland
⑤ Oka-Don plain
⑥ Volga upland
⑦ Transvolga
⑧ Urals-Tobolsk
⑨ Ishim-Barabinsk
⑩ Cis-Altay

Steppe

Sectors

East European Plain

Provinces

⑪ Black Sea (Pontic)
⑫ Lower Don
⑬ West Cis-Caucasus
⑭ Stavropol
⑮ Transvolga

Western Siberia and Kazakhstan

⑯ Turgai
⑰ Kazakh Knolls
⑱ West Siberian

Semi-desert

Sectors

Caspian

Mugodzhar-Kazakhstan

Provinces

⑲ Yergeni
⑳ Caspian
㉑ Mugodzhars
㉒ Turgai
㉓ Kazakh Knolls

Mountainous areas

Fig. 19 - Provinces of the forest steppe, steppe, and semi-desert zones / Province delle zone a steppa boscosa, steppa e semi-deserto (Chibilyov, 2002).

1974; Grichik, 1992; Pavlova *et al*., 2003; Sotnikov, 2006; Artemyeva & Muravyev, 2012a; 2012b; Zabashty, *pers. comm.*) (Fig. 20), and this is the most important limiting factor of distribution and abundance of the yellow-backed wagtail (Artemyeva *et al*., 2013b; 2016). It is common that if *Motacilla flava flava* appears in the mixed breeding settlement of *lutea*, after a few seasons, *lutea* completely disappear.

The reports of nesting specimens in the Scandinavian Peninsula are of dubious interpretation and could also be attributed to individuals of the subspecies *flavissima*. If they really were individuals belonging to the subspecies *lutea*, the "drag" effect due to the migration carried out jointly with *flava* and *thunbergi* could also be valid for them. However, currently, the cases are absolutely marginal with respect to the actual reproductive area.

Migratory movements

The data collected are more abundant in spring, but certainly this depends on the simpler recognition of the subspecies in breeding plumage. From these data the use of two main migratory routes by *lutea* clearly emerges: the Great Rift Valley Flyway and the Central Asian Flyway. As can be deduced from the recaptures of ringed individuals, the first is used by birds that nest in European Russia and Western Kazakhstan, while the second is probably only used by the minority portion of the population that reproduces in the central and eastern part of Kazakhstan and in Asian Russia.

With regard to the route to Africa, the largest number of birds passes through the Caucasus. In the past, the flow was mainly concentrated along the western coast of the Caspian Sea, but in recent decades the frequency has also

Fig. 20 - Adult male *lutea* x *beema* in reproductive plumage, Ulyanovsk area, Cherdaklinsky district / Maschio adulto *lutea* x *beema* in abito riproduttivo, area di Ul'janovsk, Distretto di Cherdaklinsky (Photo / Foto: Elena Alexandrovna Artemyeva).

increased in the central part of the mountain complex and along the east coast of the Black Sea. Following recent observations in Romania, Crimea, and near the delta of the Don River, some authors have hypothesized that *lutea* has begun to migrate by passing to the north of the Black Sea (Yakovlev *et al*., 2012a; Tilba & Shagarov, 2017). The reports during the entire 20th century in Romania, in the area of Central Macedonia (Greece), and in the Aegean islands seem to suggest that this route has always been used by *lutea*. For this reason, it is more correct to assume that the number of yellow-backed wagtails that use this route is increasing. Similar phenomena in this geographical area are also being observed for other species such as *Phalaropus fulicarius* (Tilba *et al.*, 2015), *Lanius nubicus* (Shagarov & Borel, 2015), and *Oenanthe deserti* (Tilba & Shagarov, 2016).

Another migratory route develops along the eastern coast of the Caspian Sea and then flows southward into the Caucasian stream. This route is probably used by the portion of population that nests in the area near the Urals and along the course of the Ural River. To these could also be added specimens coming from the area of the Aral Sea. Further south, the migration proceeds through Eastern Turkey, Iraq, and Western Iran to reach the Arabian Peninsula. The individuals that are observed in Cyprus and in the countries along the eastern coast of the Mediterranean Sea (Jordan, Israel) could be those that migrate through the route to the north of the Black Sea, but at present there is no scientific evidence to prove it. The transition from Asia to Africa takes place on a very broad front that goes from the area of Hurghada (Read Sea Governatorate, Egypt) (Gauger & Völlm, 2008) to Somalia (Ferlini, 2019; 2020).

During spring migration, the same main directions are confirmed in the opposite direction. In this season, vagrant specimens were reported also in Western Russia (e.g., in the Kaluga Oblast and the Ryazan Oblast), as well as in the Republic of Buryatia in the Khanty-Mansiysk Autonomous Okrug-Ugra. These unusual spring presences may depend on a "dragging" effect of some specimens within flocks mainly consisting of individuals of other subspecies (especially *flava* and *thunbergi*). Doubts (Keve, 1958) have been expressed on very dated (19th and early 20th century) reports on subjects observed in Hungary and actually appear out of context with respect to the migratory routes of the subspecies. The situation in Italy is also very doubtful and the presence of *lutea* in this country must be demonstrated with certain data. Suitably, the subspecies was not included in the recent list of Italian birds (Baccetti *et al*., 2019).

In the East, the increase in the presence of yellow-backed wagtails in the Small Aral Sea area, Syr Darya avandelta, Kamystybas, and Acchatas lake systems (Kyzylorda Region) in the post-breeding period is probably due to the arrival of birds nesting in the few scattered groups present in the central regions of Kazakhstan (Kostanay and Kyzylorda regions). These birds are probably the same ones observed as they migrate in the fall following the courses of the Syr Darya and Amu Darya rivers towards the southeast and in the opposite direction in the spring.

Even more to the east, the convergence of the scarce nesting population in the extreme eastern regions of Kazakhstan and Russian Siberia (Novosibirsk Oblast) towards the area of Lake Balkhash and Ili River, in the Almaty Region, is clearly evident, probably following the Irtysh River for part of the course. Regarding the birds that nest in the Akmola Region and, powerfully, in the North Kazakhstan Region, it is known that in autumn the Asian migrants tend to avoid the deserts and the semi-desert (Chernetsov *et al*., 2007); however, considering that the semi-desert trait that separates the central steppes from Lake Balkhash is relatively short (around 300 km), it is possible that the yellow-backed wagtail, along with the sympatric subspecies *beema*, follows the direct route. Minor difficulties it encounters in the opposite direction in the spring as the steppes and the semi-deserts, after relatively wet winters, offer trophic resources to migrators well above those available in autumn after the summer dryness. To confirm this, mixed *lutea-beema* groups have been observed at Orkendeu

and in the Nura Valley (Zhanaarka District, Karaganda Region) (Francke, 2011) along the route from Lake Balkhash directly to the wetlands of Tengiz-Korgalzhyn. The yellow-backed wagtails that arrived in the Almaty Region in autumn face the Tien Shang mountains. These, in both directions, are a major obstacle for birds. For this reason, most migrants use the Chokpak Pass; it is situated in Western Tien Shan between the Zabaglytau (Talassky Alatau, 2700-2900 m a.s.l.) and Boroldai (Karatau, 1500-1700 m a.s.l.) ridges, and it is the highest point of the intermountain valley (1200 m a.s.l.) (BirdLife International, 2016). The Chokpak Pass connects the steppes of Kazakhstan with the southern plains; birds in spring, flying to the north along the western end of the Chatkal range would reach one of these mountain ranges and vice versa in autumn (Schweizer & Mitropolskiy, 2008; Harris, 2013). At Chokpak Pass, while the catches and ringing of subjects belonging to the subspecies *beema* are common, the subspecies *lutea* is very rare, so that, as already highlighted, between 1982 and 2016, only one specimen was tagged on 23rd April 2000 (Gavrilov & Gavrilov, 2005; Gavrilov *et al*., 2017). In the area of Afghanistan and Pakistan, the data, scarce and very distributed over time, seem to suggest the transit of the subspecies *lutea* through Eastern Afghanistan and North-Eastern Pakistan. It is plausible that the migration route is the same one followed by the sympatric subspecies *beema* of which more information is available. In Pakistan, the presence of *beema* has been confirmed in the North-West Frontier Province (Bannu, Kohat), Punjab (Rawalpindi, Rahim Yar Khan and Lahore), Northern Baluchistan, and Sind (Thatta, Bannu); it has also been found in the metropolitan areas of Rawalpindi and Islamabad (Pyhala, 2001; Rais *et al*., 2011; Yousuf *et al*., 2015). Instead, it is rare in Azad Jammu and Kashmir (Awan *et al*., 2004). The main autumnal entry point of *lutea* in India could be the Indian Punjab from which the subspecies continues towards the wintering range favoring the western sector of the Peninsula and vice versa during the spring migration.

The yellow-backed wagtail performs erratic movements even in areas very far from the reproductive ones and outside the normal migratory routes used. For example, starting in 1985, there have been repeated reports of individuals of the subspecies *lutea* in the Lake Baikal area, usually single birds or small groups along with *Motacilla citreola*. In some circumstances, numerous presences were also reported, but doubts were expressed on this statement, hypothesizing that reference was made to *Motacilla tschutschensis* (Fefelov *et al*., 2001). The easternmost record relates to an individual sighted in Nanjing (Jiangsu Province, China) on 24th September 1923 (University of Michigan Museum of Zoology, 2019). This data is unfortunately not verifiable, however erratisations towards the Far East are also known for other subspecies: on 13th May 2013 a *Motacilla flava feldegg* was observed in Beijing at Lake Shahe (Townshend, 2013), and a specimen of *Motacilla flava beema* was observed in Japan at Takahama (Nagasaki) on 6th May 2014 for the first time (Ikenaga & Yanagisawa, 2015).

Wintering range

For the quantity of birds that it houses, East Africa is largely the main wintering area of the yellow-backed wagtail. In particular, the subspecies *lutea* reaches the southern part of Sudan on the northern side of its range and to the Eastern Cape Province (South Africa) on the southern side of its range, with the greatest abundance recorded in Tanzania and Kenya (Ferlini, 2020). In this last country, ringing activity was particularly intense, thus allowing information on the origin of the wintering individuals to be obtained. On 23rd August 1969, an adult male was collected in Raveskii (Republic of Bashkortostan, Russia) after being ringed on 8th December 1968 in Kariobangi (Nairobi, Kenya); in July 1974, an adult male was captured in Novotulka (Saratov, Russia) after being ringed in the suburbs of Nairobi (Kenya) on 18th February 1969 at a distance of 5,884 km; another male ringed in Kariobangi (Nairobi, Kenya) on 10th October 1972 was captured in Ufa (Republic of Bashkortostan, Russia) on 24th June 1974 at a distance of 6,473 km; an individual in the second year was ringed at Nairobi (Kenya) on 2nd February 1975 and returned to Engels (Saratov, Russia) on 2nd May 1975 after traveling 5,931 km (Backhurst, 1970; 1977). During the stay in Africa, *lutea* shows environmental preferences that vary radically from area to area; both in Sudan and in Congo, it seems particularly linked, more than other subspecies, to wetlands and the banks of rivers (Macleay, 1960; Curry-Lindahl, 1965), while in Kenya, Tanzania, and Uganda it winters in drier areas (Wallace, 1955; Curry-Lindahl, 1965; Pearson, 1972; Britton, 1980; Carswell, 1986; Pearson & Turner, 1986).

Only towards the end of the 20th century the winter presence of the subspecies *lutea* in the Arabian Peninsula was reported in general terms, and only since the 21st century have there been rare reports of isolated individuals or small groups wintering in areas close to the southern (Oman) and eastern coasts of the Arabian Peninsula (United Arab Emirates, Kuwait). Considering that in winter the western yellow wagtail (here understood as species) is occasionally recorded in lowlands in the western two-thirds of Turkey (Kirwan *et al*., 2008), at ponds in Israel (Balmer & Murdoch, 2009), and in the southern lowlands of Iran (Khaleghizadeh *et al*., 2017), it is possible that even some individuals of the subspecies *lutea* may spend the winter in these areas (especially in Iran).

Until the mid-20th century, there was no definite information regarding the presence of the yellow-backed wagtail in the Indian subcontinent. Subsequently, the reports have become more detailed: Southern Sri Lanka is the wintering area where the *lutea* is most frequently and abundantly present (even small groups), while single individuals are also reported in the western states of India. The subspecies has been observed in Northern India (Rajasthan State and Haryana State) only since the 21st century. It is evident that the Indian subcontinent is absolutely marginal as a wintering area for the subspecies *lutea* and probably hosts only the small portion of population that nests in the eastern part of the breeding range and that probably migrates south along with the sympatric subspecies *beema*.

CONCLUSIONS

Since the beginning of the 20th century, the breeding range of *Motacilla flava lutea* is located within the area of the Eurasian steppe and forest-steppe with the greatest abundance in two areas in European Russia: a southern one in the floodplain of the Volga River and a northern one in the floodplain of the Kama River. Similarly to what is happening for the subspecies *cinereocapilla* and *feldegg* (Ferlini, 2015; 2016), the *lutea* is extending its breeding range towards the west and north. The advancement of the *lutea* to the western and northern regions of European Russia became possible due to the advance to the west and north of key plant communities and food supply facilities of this species. This environmental change is probably due to the increased temperatures found in the Russian steppe and forest-steppe.

The wide overlap of the yellow-backed wagtail with the other subspecies, its general numerical inferiority, and the possibility of mating with different subspecies (specially *flava, beema*, and *feldegg*), are reasons of concern for the conservation of this subspecies. This is even more relevant if the *lutea* is considered a distinct species and fully justifies the inclusion of this bird in the Red Books of many oblasts and republics of Russia.

The yellow-backed wagtail mainly uses two migratory routes: the Great Rift Valley Flyway and the Central Asian Flyway. The first is used by birds that nest in European Russia and Western Kazakhstan, while the second is probably only used by the minority portion of the population that reproduces in the central and eastern part of Kazakhstan and in Asian Russia. In more contemporary times, the passage of birds north of the Black Sea seems to intensify.

East Africa is confirmed as the main wintering area of the subspecies *lutea*; however starting from the last decades of the 20th century, a small portion of individuals interrupted the migratory journey to Africa to winter in the Arabian Peninsula. This north-eastward expansion of the "African" wintering range of the yellow-backed wagtail is analogous to what is happening for the western subspecies since the mid-1980s: the wintering range has significantly expanded to the north, occupying areas in Europe with average temperatures in January above 0 °C (Ferlini, 2020). The occasional presence in winter in Western Turkey, Israel, and Southern Iran suggests that even in the Middle East the species *Motacilla flava* (the subspecies *lutea* included) is progressively occupying areas with temperatures in January higher than 0 °C (Ferlini, 2019), and it is therefore possible, as suggested by the January isotherms, that in the future specimens can also be observed in central and Northern Iran and in Turkmenistan (most likely along the Caspian Sea coast). In winter, the Indian subcontinent hosts a marginal fraction of the population of the subspecies *lutea*; due to the recent winter reports in some northern states of India, the northward expansion of the wintering range of the subspecies *lutea* seems to be underway in this geographical area.

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