Short Communication

Updates on the occurrence in Italy and biometrics of Thrush Nightingale (*Luscinia luscinia*)

Niccolò Fagotto[1], Enrico Carta[2]

Abstract - Thrush Nightingale is a difficult-to-identify species that occurs regularly in Italy; despite this, little is known about its temporal and geographical presence, the role of our country during migration, and biometric data. We update the phenology of the species in Italy, considering records from ringing activity and observations documented with photos. We found that the species was a regular migrant in the northeastern regions, while it was vagrant in the remaining parts of the country. Most records were registered in the post-breeding migration, with maximum values between August and September. We also analyzed the biometrics, including some considerations about the movements and age of the ringed individuals.

Key words: Thrush Nightingale, ringing, phenology, Muscicapidae, northeastern Italy.

Riassunto - L'usignolo maggiore (*Luscinia luscinia*) in Italia, aggiornamenti sullo status e biometrie.

L'usignolo maggiore è una specie di difficile identificazione e presente regolarmente in Italia; nonostante ciò, poco è noto relativamente a fenologia, distribuzione geografica, ruolo del nostro paese durante le migrazioni e biometrie. Con il presente lavoro aggiorniamo le conoscenze in merito alla fenologia della specie in Italia considerando i dati di inanellamento e le segnalazioni documentate con foto. La specie risulta migratrice regolare nelle regioni nord-orientali, mentre è accidentale nelle altre; la maggior parte delle osservazioni fanno riferimento alla migrazione post-riproduttiva, con valori massimi tra agosto e settembre. Infine, presentiamo una breve analisi dei dati biometrici, comprese alcune considerazioni sugli spostamenti e sull'età degli individui inanellati.

Parole chiave: usignolo maggiore, inanellamento, fenologia, Muscicapidae, Italia nord-orientale.

[1]Pordenone (PN), Italy.
[2]Department of Biology, University of Padua, Italy.

* Corresponding author: n.fagotto14@gmail.com

Received for publication: 26 November 2024.
Accepted for publication: 24 December 2024.

The Thrush Nightingale *Luscinia luscinia* (Linnaeus, 1758) is a monotypic trans-Saharan migratory bird. It breeds mostly in northeastern Europe, from S Norway, N Romania and C Finland to N Kazakhstan and SW Siberia, while it spends the non-breeding period in SE Africa, moving through Balkan Peninsula, Middle East and East Africa (Collar, 2020; Keller *et al.*, 2020; Franks *et al.*, 2022). It is considered a Least Concerned Species according to the International Union for Conservation of Nature Red List (BirdLife International, 2016). Large fluctuations characterized by range expansions and retractions of the species are known: local population trends in Sweden, Denmark, Poland and Germany show a decrease, while in Finland and Russia an increase; at the western limit of its breeding distribution, running across central and eastern Europe, there is a contact and hybridization zone with the Common Nightingale *Luscinia megarhynchos* (Keller *et al.*, 2020; Sottas *et al.*, 2023).

In Italy, it is considered a regular migrant (Baccetti *et al.*, 2021). However, little is known about the species in the country: the only and last Italian paper focused on Thrush Nightingale refers back to 40 years ago (Fracasso *et al.*, 1984), while more recent research is part of wider works (Spina & Volponi, 2009; Brichetti & Fracasso, 2022). The aim of this short communication is to update the current knowledge about its seasonal presence in Italy and western Europe, summarize data on biometrics, and increase interest in this elusive species.

Primary sources for our investigation were the ANITA databank (Italian Bird Ringing Databank, ISPRA, which includes first capture data through mist nets and ringing recoveries; last access on 23.12.2023) and online databases (especially ornitho.it and eBird.org). Besides these, we consulted regional and local checklists, studies about specific areas, and ornithological reports (Frugis, 1976; Imperiale *et al.*, 1998; Parodi, 1999; Fornasari, 2003; Bon *et al.*, 2005; Sighele *et al.*, 2008; Nicoli *et al.*, 2013; Nicoli *et al.*, 2016). To obtain a reliable and uniform dataset, we included only ringing data (n=144, first capture plus recoveries, excluding the ones in following days), properly documented field observations (n=5) and information about recovered dead/injured birds (n=3) dated from 1950 onward. The few old records before 1950 are reported by Moltoni (1954) and Foschi (1996); they have been excluded from the phenological analysis and the cartographic

distribution due to the significant temporal and spatial inaccuracy.

Field identification of *L. luscinia* and separation from *L. megarhynchos* can be particularly problematic: albeit solid visual criteria are available (Shirihai & Svensson, 2018; Svensson *et al.*, 2022), their application is not easy and requires a certain degree of experience; that is why citizen science records not supported by photos where the animal was recognizable have been excluded.

We also excluded sound recordings (n=8), since there are no shared and reliable criteria for call identification, even though all recordings fell in periods suitable for phenology and seemed compatible with the vocalizations recorded within its breeding range found in Xeno-canto. Indeed, an intriguing possibility regarding the detection of this species is represented by bioacoustics: this field has seen an upsurge in attractiveness in recent years, albeit the descriptions of calls and songs often refer to difficult-to-quantify characters; this should not prevent birdwatchers and ornithologists paying attention to unusual Nightingale *Luscinia sp.* calls, since this could represent a screening method, which would still require visual confirmation.

We found that all the records fell inside the migratory periods, with the great majority (145 out of 152) during the post-breeding migration. The main migration period took place between the second 10 days of August and the first of September (80%); early birds appeared in the first days of August, while late ones referred to the second 10-day period of October (Fig. 1). The migration curve was unimodal, suggesting a single-wave migration. Spring records were only a handful and were spread between mid-April and late May, as observed in migration sites in Slovenia (Šere, 1996) and Hungary (Kováts, 2012; Csörgó *et al.*, 2018).

Geographical distribution followed a strongly marked NE-SW gradient (Fig. 2): 85% of data refers to three north-eastern regions (Friuli-Venezia Giulia n=67, Veneto n=34, Emilia-Romagna n=29), even if the presence was not regular (i.e., taxa recorded in at least 9 out of the last 10 years, after Baccetti *et al.*, 2021) in any of these; the presence of the species was occasional in other regions (Trentino-Alto Adige n=2, Lombardia n=6, Piemonte n=4, Liguria n=3, Marche n=2, Puglia n=1, Lazio n=2, Sardegna n=1, Campania n=1).

Most Italian birds have been found in shrub vegetation near the margins of wetlands or along watercourses (Parodi, 1999); however, it was not possible to state if this reflects a habitat preference of the species or a bias in ringing activity. The species preferred marshes, swamps, and gallery forests characterized by dense and patchy vegetation with moist, little-covered ground during the breeding season (Sorjonen, 1980), which could explain the places where these birds have been found in Italy.

Knowledge about movements in Italy were anecdotal: a bird ringed at Foce dell'Isonzo Natural Reserve, Staranzano - Gorizia, on 18.08.1989 was retrapped 2 years later, in the same site, on 10.08.1991 (ANITA databank, ISPRA; Parodi, 1999). Only two recaptures were from foreign countries: a bird from Ottenby (Sweden), marked on 18.08.1952, covered a distance of 1350 km and was recov-

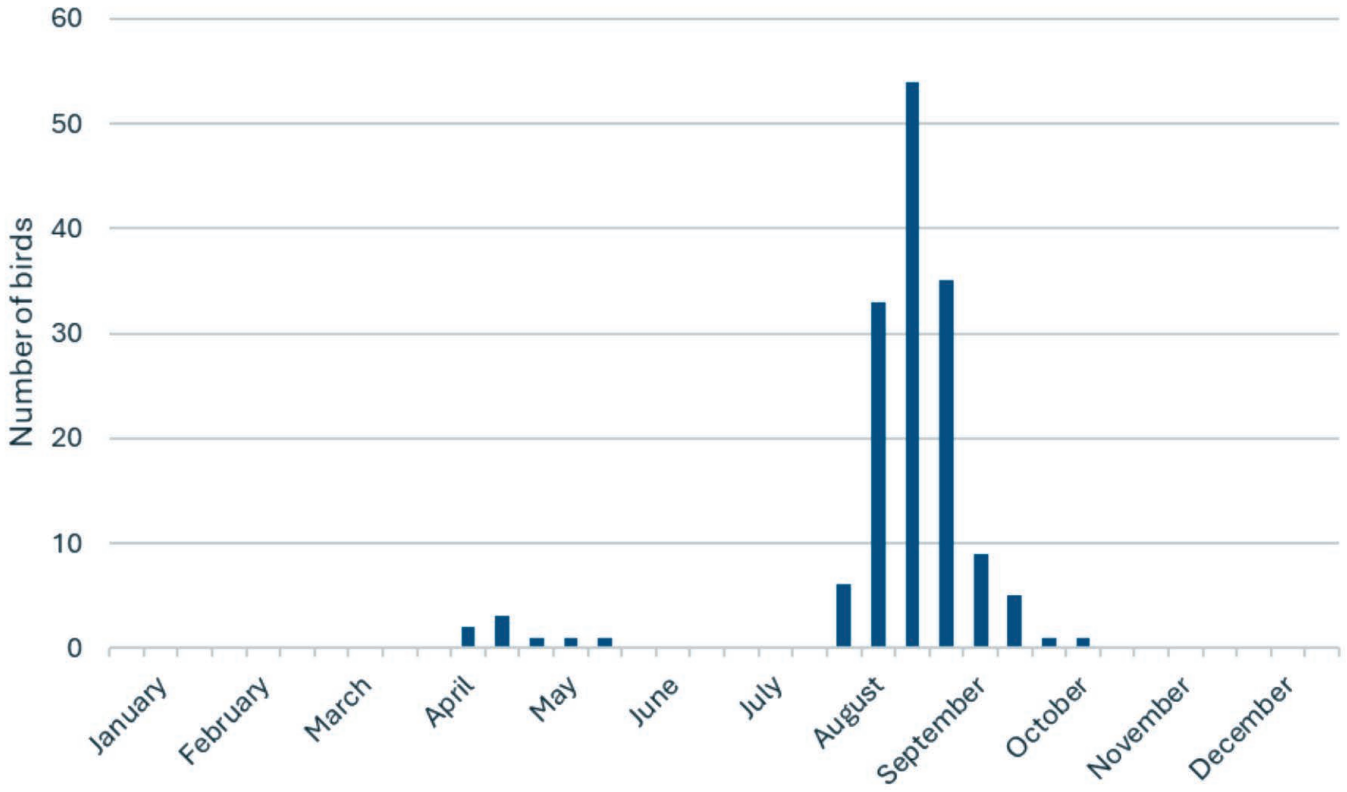

Fig. 1 – Number of Thrush Nightingale *Luscinia luscinia* records per 10-day periods (n=152). / Numero di dati di usignolo maggiore *Luscinia luscinia* per decade (n=152).

ered on the following 15th October at Legnago - Verona (Moltoni, 1954); even though this record was not accepted by Zink (1973), it is regarded as reliable by Fransson & Hall-Karlsson (2008). A juvenile ringed at Lankersee (Germany) on 4.08.2000 was retrapped less than a month later, on 26.08, at Camino al Tagliamento - Udine, after 940 km (Spina & Volponi, 2009).

The species has been ringed in Italy every year since 1986, representing a regular presence in our country, even with just a few individuals per year. In the year 2000, there was the maximum number of records (n=14, including one recapture of a bird from Germany). There was no linear trend for the number of captures during the years, and the distribution of records over time was irregular.

Most of the ringed and aged individuals during post-breeding migration (n=132) were juveniles, i.e., individuals born during the same year of ringing [European Union for Bird Ringing (EURING) age code 3], representing 84% (n=111) of the total ringed birds; 14% (n=19) of the birds were born the year before the one of ringing or earlier (EURING age code 4), while unknown age (EURING age code 2) was assigned to n=2. The sample referred to spring migration (n=6) presented a less clear tendency: 1 bird was born the year before the one of ringing or earlier (EURING age code 4), 2 were in their second year (EURING age code 5) and 3 individuals more than 2 years old (EURING age code 6).

The presence of subcutaneous fat was variable amongst the captured individuals. On a scale from 0 (no fat visible) to 8 (breast muscle completely covered with fat) (after Kaiser, 1993), during spring, individuals showed fat scores from 0 to 4 (out of 3 individuals). In autumn (n=64), the most common fat score values corresponded to 2 (n=18) and 3 (n=12), and all categories were represented. Fat scores increased during migration (Fig. 3), as described in Hungary (Csörgó & Lövej, 1995): birds caught before the 25th of August had a median score of 2 (score 0-2=72%), and no score higher than 5 was recorded. In the period 26th-31st August, 35% of birds had a fat score equal to 3, and 25% of 4 or more; scores 4-8 rose to 58% in the last time period considered (1st-30th September).

Main measures of ringed birds were (these values express average measure, standard deviation, minimum and maximum for each parameter respectively): body weight (g) 25.7±4.8 (17.8-37.7); third primary length (mm) 66.9±2.3 (59-71); maximum wing chord length (mm) 88.6±2.3 (83.0-93.0).

There are also 14 records of individuals captured one or more times in the same ringing station (excluding cases of ringing and recapture on the same day). Only one rep-

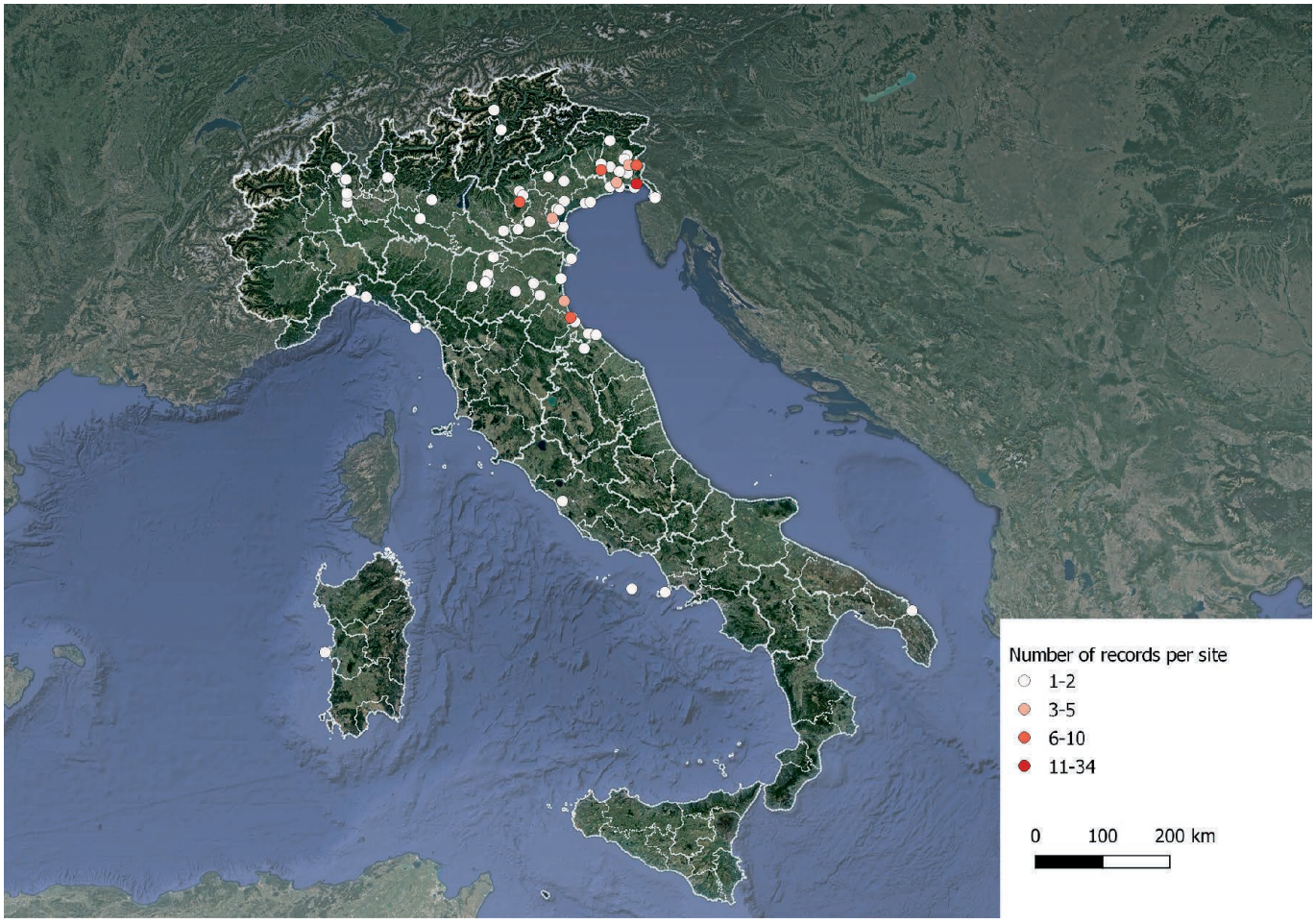

Fig. 2 – Spatial distribution of Thrush Nightingale *Luscinia luscinia* in Italy (n=152). / Distribuzione spaziale dei dati di usignolo maggiore *Luscinia luscinia* in Italia (n=152).

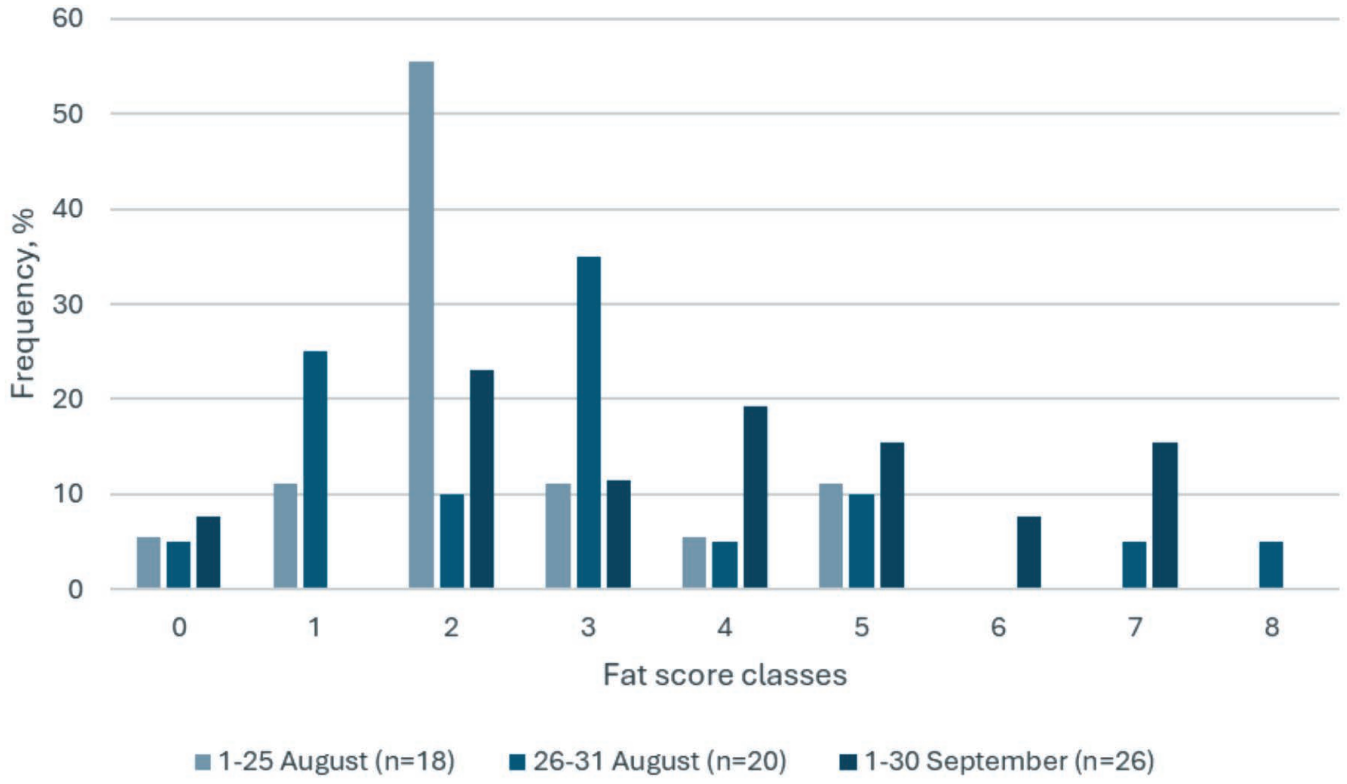

Fig. 3 – Fat scores classes of ringed Thrush Nightingale *Luscinia luscinia* during post-breeding migration (n=64). / Suddivisione per classi di grasso degli individui di usignolo maggiore *Luscinia luscinia* inanellati durante la migrazione post-riproduttiva (n=64).

resented an outside-season recapture; all the others fell inside a short-term period (average = 11 days, standard deviation = 5 days, maximum = 22 days), which may suggest the role of some sites as a stopover during migration. This hypothesis is supported by the fact that in most cases (12 out of 13), ringers observed an increase in weight (average = 5.9 g, standard deviation = 4 g, maximum = 13.1 g), which corresponded to a statistically significant increase in fat score (r=0.92, t=7.2).

This short communication updates the knowledge about the Thrush Nightingale in Italy, providing detailed seasonal phenology of the species and a description of some biometric parameters. We are aware that other reliable records could be obtained from undocumented observations in the field, and these must be considered for a complete revision of the species in Italy. Nevertheless, the species can be easily confused with the Common Nightingale *Luscinia megarhynchos*; for this reason, most likely its presence is underestimated in our country, as in other parts of the non-breeding range. New frontiers for identifying the species in the wild could be provided by the analysis of the sonogram of the calls, as soon as reliable criteria for the identification are defined.

ACKNOWLEDGMENTS

Stefano Amato, Alessandro Bertoli, Daniela Casola, Luciano Conventi, Giancarlo Fracasso, Alberto Frigo, Aldo Imperiale, Enrico Selmi, Matteo Toller. We would like to thank Simona Imperio and Lorenzo Serra (Italian Bird Ringing Centre, ISPRA) and Pietro D'Amelio for a critical reading of the text. We are also grateful to Elan Federico Zucchetti for the revision of the English text.

REFERENCES

Baccetti N., Fracasso G. & Commissione Ornitologica Italiana, 2021 – CISO-COI check-list of Italian birds - 2020. *Avocetta*, 45: 21-82.

BirdLife International, 2016 – *Luscinia luscinia*. <https://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T22709691A87882842.en>

Bon M., Sighele M. & Verza E., 2005 – Rapporto ornitologico per la regione Veneto. Anno 2004. *Bollettino del Museo di Storia Naturale di Venezia*, 56: 187-211.

Brichetti P. & Fracasso G., 2022 – The birds of Italy. Volume 3: Cisticolidae-Icteridae. *Edizioni Belvedere*, Latina.

Collar N., 2020 – Thrush Nightingale (*Luscinia luscinia*), version 1.0. In Birds of the world. del Hoyo J., Elliott A., Sargatal J., Christie D. A. & de Juana E. (eds.). *Cornell Lab of Ornithology*, Ithaca, NY.

Csörgó T. & Lövej G., 1995 – Autumn migration and recurrence of the Thrush Nightingale *Luscinia luscinia* at a stopover site in central Hungary. *Ardeola*, 42: 57-68.

Csörgo T., Fehérvári P., Karcza Z., Ócsai P. & Harnos A., 2018 – Exploratory analyses of migration timing and morphometrics of the Thrush Nightingale *(Luscinia luscinia)*. *Ornis Hungarica*, 26: 149-170.

eBird – <www.ebird.org>. Online database consulted for the last time on March 1, 2024.

Fornasari L., 2003 – La migrazione degli uccelli nella Valle del Ticino e l'impatto di Malpensa. *Consorzio Parco Lombardo della Valle del Ticino*, Milano.

Foschi U. F., Bulgarini F., Cignini B., Lipperi M., Melletti M., Pizzari

T. & Visentin M., 1996 – Catalogo della collezione ornitologica "Arrigoni degli Oddi" del Museo Civico di Zoologia di Roma. *Ricerche di Biologia della Selvaggina*, Ozzano dell'Emilia.

Fracasso G., Niederfriniger O. & Piacentini D., 1984 – Nuovo status per l'usignolo maggiore *Luscinia luscinia* in Italia? *Rivista Italiana di Ornitologia*, 54: 230-234.

Franks S., Fiedler W., Arizaga J., Jiguet F., Nikolov B., van der Jeugd, Ambrosini R., Aizpurua O., Bairlein F., Clark J., Fattorini N., Hammond M., Higgins D., Levering H., Skellorn W., Spina F., Thorup K., Walker J., Woodward I. & Baillie S. R., 2022 – Online Atlas of the movements of European bird populations. *EURING/CMS.* <https://migrationatlas.org>

Fransson F. & Hall-Karlsson S., 2008 – Swedish bird ringing atlas (vol. 3. passerines). *Naturhistoriska Riksmuseet*, Stockholm.

Frugis S., 1976 – Il valore ornitologico di Montecristo. *Lavori della Società Italiana di Biogeografia*, V: 879-897.

Imperiale A., Selmi E. & Zoboli A., 1998 – La fauna dell'area di riequilibrio ecologico "il torrazzuolo" di Nonantola (MO). *Atti della Società dei Naturalisti e Matematici di Modena*, 129: 75-96.

Kaiser A., 1993 – A new multi-category classification of subcutaneous fat deposits of songbirds. *Journal of Field Ornithology*, 64: 246-255.

Keller V., Herrando S., Voříšek P., Franch M., Kipson M., Milanesi P., Martí D., Anton M., Klvaňová A., Kalyakin M. V., Bauer H. G. & Foppen R. P. B., 2020 – European breeding bird atlas 2: distribution, abundance and change. *European Bird Census Council & Lynx Edicions*, Barcelona.

Kováts D., 2012 – Autumn migration of the Thrush Nightingale (*Luscinia luscinia*) in Northern Hungary. *The Ring*, 34: 23-36.

Moltoni E., 1954 – Altra cattura di usignolo maggiore *Luscinia luscinia* avvenuta in Italia. *Rivista Italiana di Ornitologia*, 24: 140-141.

Nicoli A., Di Masso E. & La Grua G., 2013 – Annuario 2012. *Quaderni di Birdwatching*, 15: 61-88.

Nicoli A., Di Masso E. & La Grua G., 2016 – Annuario 2015. *Quaderni di Birdwatching*, 20: 62-88.

Ornitho – <www.ornitho.it>. Online database consulted for the last time on March 1, 2024.

Parodi R., 1999 – Gli uccelli della provincia di Gorizia. *Museo Friulano di Storia Naturale*, 42, Udine.

Šere D., 1996 – Autumn migration of the Thrush Nightingale *Luscinia luscinia* across Slovenia. *Acrocephalus*, 77: 104-106.

Shirihai H. & Svensson L., 2018 – Handbook of western palearctic birds, vol. 1: passerines: larks to warblers. *Helm*, London.

Sighele M., Bon M. & Verza E., 2008 – Rapporto ornitologico per la regione Veneto. Anno 2007. *Bollettino del Museo di Storia Naturale di Venezia*, 59: 129-150.

Sorjonen J., 1980 – Selection of breeding habitat by the Thrush Nightingale *Luscinia luscinia* and its position in bird communities. *Ornis Scandinavica*, 11: 125-134.

Svensson L., Mullarney K. & Zetterström D., 2022 – Collins bird guide. Third edition (revised). *Collins*, London.

Spina F. & Volponi S., 2009 – Atlante della migrazione degli uccelli in Italia. Vol. 2. Passeriformi. *ISPRA-MATTM*. <https://www.isprambiente.gov.it/files/atlante/vol2-116-189.pdf>

Sottas C., Reif J., Piàlek L., Poignet M., Kverek P., Dolata P. & Reifovà R., 2022 – Patterns of hybridization in a secondary contact zone between two passerine species, the common nightingale *Luscinia megarhynchos* and the thrush nightingale *Luscinia luscinia*. *Journal of Avian Biology*, 2023: e03061.

Xeno-canto – <www.xeno-canto.org>. Online database consulted for the last time on March 1, 2024.

Zink G., 1973 – Der zug europäischer singvögel. Ein atlas der wiederfunde beringter vögel. Vol. 1. *Vogelzug-Verlag*, Mögginngen.