

Atypical song of Blackcap *Sylvia atricapilla*

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The song of the Eurasian Blackcap *Sylvia atricapilla* consists of two distinct parts: an initial chattering of different harsh notes followed by a louder, fluting warble. However, some enigmatic individuals present an atypical version of their song characterised by a remarkable simplification of the traditional rich fluting warble. This study documents the unprecedented observation in the Iberian Peninsula of an atypical singer in Els Ports Natural Park (Catalonia, NE Spain). This bird exhibited distinct behavior including perching high in trees and intense morning singing, in addition to the atypical song marked by the substitution of the rich fluting warble by a monotonous series of approximately 15 similar notes. In a meticulous analysis of atypical Blackcap recordings on the online portal *xeno-canto*, we identified 12 cases of similar atypical singers distributed across Europe. We compared the vocal patterns of these atypical singers with the well-known Blackcap song variant *leiem* and concluded that there are important differences. People participating in common bird censuses should be aware of this variability in Eurasian Blackcap songs and the occurrence of atypical singers to avoid misidentification. The description and reporting of such observations will help improve knowledge of the complex subject of bird vocalisations.

Key words: birdsong, chatter, warble, dialect, *leiem* song, Els Ports Natural Park

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The Eurasian Blackcap *Sylvia atricapilla* (henceforth Blackcap) is a bird belonging to the suborder Passeri, also known as the Oscines, well-known for their ability to learn complex and modulated songs (Fjeldså *et al.* 2020). Being one of the most abundant and widespread breeding birds in Europe, the song of the Blackcap has been very thoroughly described (Bergmann 1977a, Mathevon & Aubin 2001, Mathevon *et al.* 2005, Shirihai *et al.* 2010, Linossier *et al.* 2015, Vescera 2018). Each strophe of the Blackcap's song typically consists of two conspicuously different parts: (1) an initial chattering of different harsh notes followed by (2) a louder fluting warble (Fig. 1). The initial chatter can include some mimicry, mostly of passerines such as Blackbird *Turdus merula*, Song Thrush *T. philomelos*, Pied Flycatcher *Ficedula hypoleuca* and certain warbler species (Rosenbergen 1953). The fluting finale can involve a wide range of

frequencies, i.e. high and low pitched notes, and is more stereotyped, but with recognisable local dialects (Bergmann 1977b, Shirihai *et al.* 2010).

On 14 July 2022, we heard and recorded an unknown and puzzling birdsong in La Vall del Mascar in Els Ports Natural Park, municipality of Alfara de Carles, Tarragona, Catalonia (NE Spain; 40°48'32"N 0°19'38"E). On the two following mornings (15 and 16 July), we made further sound recordings and finally managed to spot and take photographs of the shy singer: a male Blackcap with a remarkably atypical song (Fig. 2). Later, we became aware that the same puzzling song had been heard 38 days earlier on 6 June in the same location by Vicent Pellicer Olles, who was unable to identify the bird in question (com. pers.). The bird was not heard again in spring 2023.

La Vall del Mascar is a damp valley lying at 1,040 m a.s.l., enclosed between the limestone

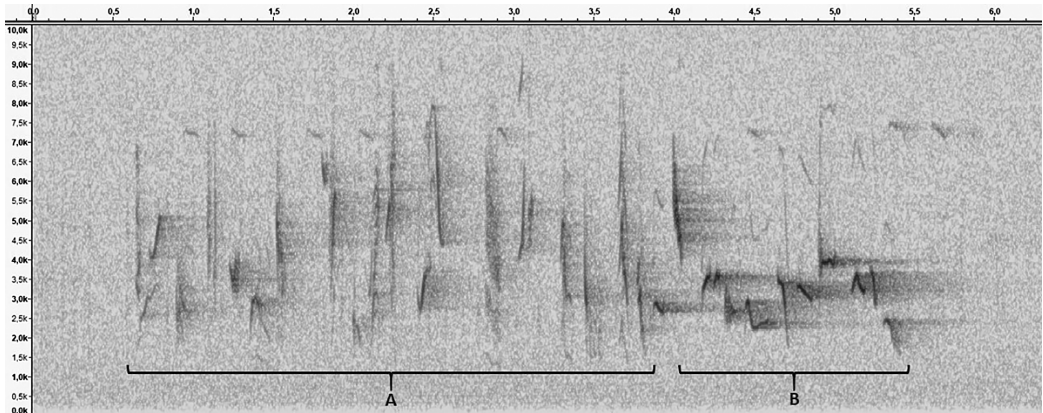


Figure 1. Sonogram of a typical strophe of a Blackcap's song. The two distinctive parts are indicated: A) the initial harsh chattering followed by B) the varied fluting warble. The Y-axis shows the frequency of the sound in hertz and the X-axis the time in seconds; this strophe lasts nearly 6 s. Pratdip, Tarragona, Catalonia, Spain, June 2021 (Xavi Riera). <https://xeno-canto.org/655429>.

Sonograma d'una estrofa típica del cant del tallarol de casquet. S'indiquen les dues parts distintives: A) el xerroteig inicial amb notes aspres seguit B) del refilet variat i aflautat final. L'eix Y mostra la freqüència del so en hertz i l'eix X el temps en segons; aquesta estrofa dura prop de 6 s. Pratdip, Tarragona, Catalunya, Espanya, juny de 2021 (Xavi Riera). <https://xeno-canto.org/655429>.

cliffs of Mont Caro and Mola de Catí. These environmental features permit the growth of a lush Eurosiberian plant community consisting of a mixed forest of Scots pine *Pinus sylvestris*, European black pine *P. nigra*, Spanish maple *Acer granatense* and yew *Taxus baccata*, complemented with a dense understory mainly of box *Buxus sempervirens*, holly *Ilex aquifolium* and snowy mespilus *Amelanchier ovalis*.

The Blackcap is a common breeding bird at this site and other conspecifics with typical songs were heard singing nearby the atypical singer. The behaviour of the focal male differed from the rest of Blackcaps given that it (1) perched very high up in the pines at 12–15 m above ground level and (2) sang more insistently from dawn (06:00 a.m.) until approximately 09:00 am; other nearby Black-



Figure 2. Atypical male Blackcap songster perched high up in the pine canopy where it incessantly delivered its bizarre song. El Mascar, Alfara de Carles, Els Ports Natural Park, Tarragona, July 2022. Photo: Miquel Àngel Garcia-Reàdigos.

El mascle de tallarol de casquet que fa el cant atípic, posat amunt a la capçada d'un pi roig, on va emetre incessantment el seu repertori inusual. El Mascar, Alfara de Carles, PN dels Ports, Tarragona, juliol de 2022. Foto: Miquel Àngel Garcia-Reàdigos.

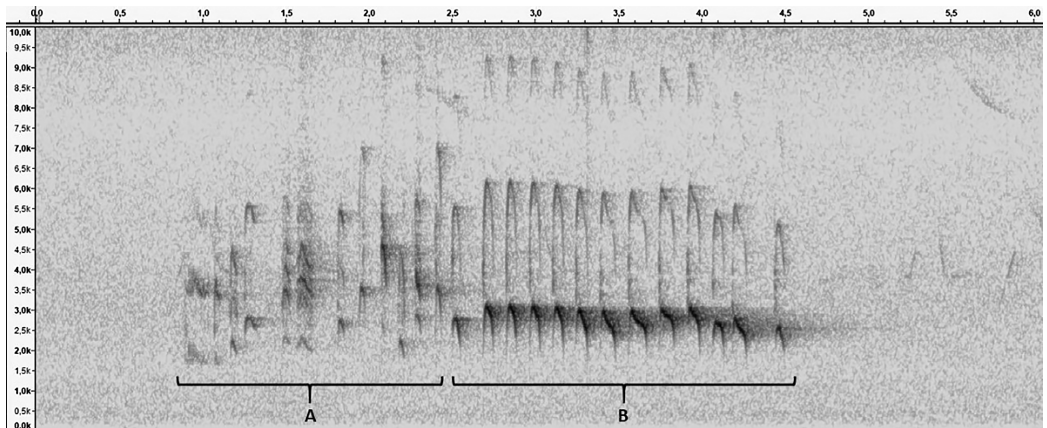


Figure 3. Sonogram of an atypical strophe of the focal male Blackcap. The strophe starts with A) the typical chattering followed by B) the monotonous series of similar notes, in this case 13, visible at the end of the song. Compare section B of this figure with the same section in Figure 1. The Y-axis shows the frequency of the sound in hertz and the X-axis the time in seconds; this strophe lasts about 5 s. El Mascar, Alfara de Carles, Els Ports Natural Park, Tarragona, July 2022 (Miquel Àngel Garcia-Reàdigos). <https://xeno-canto.org/840391>.
 Sonograma d'una estrofa atípica del mascle focal de tallarol de casquet. L'estrofa comença amb A) el típic xerroteig seguit de B) la sèrie monòtona de notes repetides, en aquest cas 13, visibles al final del cant. Compareu la secció B d'aquesta figura amb la de la figura 1. L'eix Y mostra la freqüència del so en hertz i l'eix X el temps en segons; aquesta estrofa dura uns 5 s. El Mascar, Alfara de Carles, PN dels Ports, Tarragona, juliol de 2022 (Miquel Àngel Garcia-Reàdigos). <https://xeno-canto.org/840391>.

caps sang at dawn for about one hour and only sporadically later on.

The structure of the atypical song also consisted of two well-differentiated parts preceded by the introductory chattering. However, the typical fluting ending was remarkably different from any other Blackcap that we had ever heard: it was not a rich warble, i.e. a cluster of many varied, swiftly uttered notes but, rather, a relatively monotonous series of approximately 15 similar notes. The series contained two sequential slight ascending-descending patterns made of a combination of almost monotone notes with others falling in pitch (Fig. 3; <https://xeno-canto.org/840391>). The final two notes were usually uttered at an accelerated pace (the two previous to last notes in the sonogram of figure 3). On a few occasions the bird sang a long chatter lacking the atypical finale (<https://xeno-canto.org/840140>).

We searched the portal *xeno-canto* (<https://xeno-canto.org>) for recordings of Blackcaps that resembled our atypical bird. *Xeno-canto* contains a total of 4,917 Blackcap recordings, of which 90 are labelled as aberrant/atypical. We listened to them but most consisted of mimicry; however, we did find 11 cases of atypical songs of Blackcaps that were quite similar to the vocal pattern of our

bird. Additionally, we found on a private website another case of a similar atypical song. Therefore, we found 12 potential different Blackcaps, spread throughout Europe, with similar atypical songs to our bird from Catalonia (Table 1). To the best of our knowledge, our observation from El Mascar is the first described citation of this phenomenon from the Iberian Peninsula. We considered recordings of the same song from the same place in consecutive years to correspond to the same individual bird.

All the atypical Blackcap songs shown in Table 1 have in common a remarkable simplification of the rich fluting warble. In all cases the warble consists of a rather monotonous series of approximately 15 repetitions of the same note, most of them with a slight descent in pitch towards the end in a pattern that is vaguely reminiscent of the calls of Alpine Swifts *Tachymarptis melba*. None of the atypical singers uttered the normal rich warble in any of the recorded strophes except for a short hint given by the Austrian bird in one strophe. There is some variation in the initial chatter given by these birds: some virtually exclude it, others limit it to a simple series of one repeated scratchy note and, in some cases, it is given as the normal varied chatter with different notes. On two occasions –

Table 1. List of atypical Blackcap songsters with a very similar vocal pattern to the one described here from Catalonia. We gathered evidence of 11 potentially different individuals from all over Europe. To the best of our knowledge, our recording from Catalonia is the first description of this phenomenon in the Iberian Peninsula. *Mostres de cants de tallarol de casquet atípics amb un patró vocal molt semblant al descrit anteriorment a Catalunya. S'han recollit casos d'11 individus potencialment diferents d'arreu d'Europa. Que en tinguem constància, la nostra observació de Catalunya és la primera citació descrita d'aquest fenomen a la península Ibèrica.*

Location	Date	Author	Link
Germany	24 July 2007	Patrik Franke	https://www.singwarte.info/?p=120
France	8 May 2014	Vincent Pourchaire	https://xeno-canto.org/368424
Germany	18 May 2016	Mano Rathgeber	https://xeno-canto.org/329903
Italy	30 May 2020	Maurizio Sighele	https://xeno-canto.org/563394
Austria	6 May 2021	Georg Amann	https://xeno-canto.org/645912
Serbia	1 June 2021	Nikola Veljković	https://xeno-canto.org/771378
France	13 June 2021	Olivier Swift	https://xeno-canto.org/697729/ https://xeno-canto.org/659979
Belgium	4 July 2021	Franck Hidvegi	https://xeno-canto.org/737737 https://xeno-canto.org/809304
Switzerland	17 May 2022	Nicolás Martínez	https://xeno-canto.org/724896
Sweden	3 July 2022	Romain D. de Chassart	https://xeno-canto.org/785482
Hungary	30 April 2023	András Schmidt	https://xeno-canto.org/858530 https://xeno-canto.org/858529

the French observation from 2014 for two years and the Belgian observation for three years – the same atypical song was recorded in subsequent years at the same spot. This potentially indicates that at least some atypical singers keep the same song over the seasons.

Discussion

The recordings we found on *xeno-canto* span from 2014 to 2023, with one from 2007. We consider atypical singers with the song pattern described above as a very scarce, exceptional occurrence. We are aware, however, that the shy behaviour of these birds and the difficulty of identifying this generally unknown song type probably keeps them below the radar of many birdwatchers. Moreover, an additional online search through other portals may throw up a few more citations. Cramp (1992) reports what is probably the same aberrant Blackcap song as we heard, described as a rolling trilling sound and likened to Alpine Swift or Canary *Serinus canaria*. This author regards this song as occurring widely but sporadically in mainland Europe, which coincides with our conclusion from the data gathered from *xeno-canto*.

Of the overall variation in fluty ending notes that Blackcaps present, there is one very stereotyped variant that roughly resembles the

pattern of the atypical vocalisation under study: the *leiem* song. The German verb *leiem* means 'to recite monotonously', a reference to the monotonous sound of the hurdy-gurdy, known in ancient German by the name *Leier* and today *Drehleier* (Pfeifer *et al.* 1989). The Blackcap's *leiem* song was first reported from the central Alps as early as the 1860s (von Blotzheim & Bauer 1991), where it is still very abundant (pers. obs. from Switzerland 2023). This monotonous variation of the song occurs throughout the entire distribution range of the Blackcap, from Cape Verde to Western Asia, and the proportion of *leiem* singers varies significantly across populations and can also vary over time. This is not surprising since this song type is an acquired character of young birds from their parents (Bergmann 1977a, 2020; von Blotzheim & Bauer 1991).

The vocal pattern of the *leiem* song consists of two (or exceptionally three) sequential notes that differ in pitch and are typically repeated 2–4 times (Fig. 4) at a faster or slower velocity depending on the individual and probably also the particular circumstances: compare the velocity in the recording of Figure 4 with the audio n^o 7 of Constantine & The Sound Approach 2020 (<https://soundapproach.co.uk/which-came-first/>). The *leiem* song is often uttered alone or incorporated into the normal fluting finale (Bergmann 1977a, Shirihai *et al.* 2010, Constantine & The Sound Approach 2020;

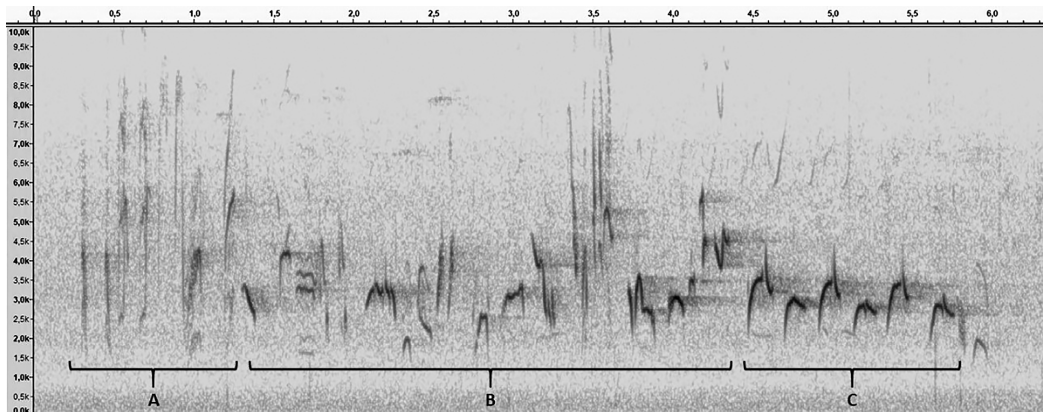


Figure 4. Sonogram of a Blackcap's song strophe including *leiern* motifs. In this case the strophe starts with A) the typical chattering and B) the fluting warble. At the end of the warble C) the *leiern* motifs are added consisting of three pairs of notes with alternating pitches. Valle de Baztán, Navarre, April 2022 (Xavi Riera). <https://xeno-canto.org/716581>.

Sonograma d'una estrofa del cant del tallarol de casquet que inclou motius *leiern*. En aquest cas, l'estrofa comença amb A) el xerroteig típic B) el refilet aflautat. Al final del refilet C) s'afegeixen els motius *leiern*, tres parells de notes amb tonalitats que s'alternen. Valle de Baztán, Navarra, abril de 2022 (Xavi Riera). <https://xeno-canto.org/716581>.

pers. obs.). In this recording (<https://xeno-canto.org/841158>), three trisyllabic *leiern* motifs are initially delivered alone and not uttered at all or incorporated into the fluty segment of the song in subsequent strophes. Just like the atypical song we recorded in the Els Ports Natural Park, the *leiern* song is a simplification of the usual rich warble that Blackcaps sing. However, we are reluctant to consider our focal bird and the similar previously reported atypical singers as *leiern* singers for three principal reasons: (1) the *leiern* song is a stereotyped song defined by the alternation of two (or three) different pitched notes rather than a series of one repetitive note; (2) the *leiern* song is a locally common song, a dialect, (e.g. in the Central Alps) and not an exceptional occurrence and, finally, (3) all of the *leiern* singers also produce regularly the typical fluty rich warble in their songs (Bergmann 2020).

We do not know the reasons for this abnormality. Since it is a rare but consistent occurrence, we think it could be related to a malfunction of the syrinx (i.e. the vocal organ of birds). Acquired deafness has been suggested for the Garden Warbler *Sylvia borin* in which abnormal songs have also been recorded and known as the Kaspar-Hauser song in German scientific literature (Rheinwald *et al.* 2009). However, we would expect the survival of a deaf bird in the wild to be extremely unlikely

and the fact that there are two cases where the same atypical singer individuals were (very probably) detected over different years makes this hypothesis implausible.

Automatic tools for identifying bird species by song like BirdNET suggested Song Thrush, Little Grebe *Tachybaptus ruficollis* and Dusky Antbird *Cercomacroides tyrannina* as the best matches for the identification of our atypical singer, so are not useful for that purpose. Neither did this application manage to identify a Blackcap strophe of *leiern* motifs alone; however, when the *leiern* motifs were combined with fragments of the typical song, its identification was correct. These tools need more training in aberrant songs to improve their identification algorithms.

Despite being a rare occurrence, people who participate in common bird censuses should be aware of the existence of aberrant singers like the case of our Blackcap. This will ensure correct identification and reports will help deepen our knowledge of the fascinating subject of bird vocalisations.

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Resum

Cant atípic en el tallarol de casquet *Sylvia atricapilla*

El cant del tallarol de casquet *Sylvia atricapilla* és una vocalització molt estudiada que consta de dues parts: un xerroteig inicial de diverses notes aspres, seguit d'un refilet variat i melodiós. Tanmateix, alguns individus enigmàtics presenten una versió atípica del cant, caracteritzada per una notable simplificació del tradicional refilet melodiós. Aquest estudi documenta l'observació sense precedents a la península Ibèrica, d'un tallarol de casquet amb cant atípic al Parc Natural dels Ports (Catalunya, nord-est d'Espanya). L'ocell va exhibir comportaments únics, com ara posar-se molt alt a la capçada dels arbres i cantar de manera intensificada al matí, a més del cant atípic marcat per la substitució del ric refilet melodiós per una sèrie monòtona d'aproximadament 15 notes similars. En una anàlisi meticulosa d'enregistraments atípics de tallarol de casquet a través del portal en línia *xeno-canto*, vam identificar 12 tallarols amb cants atípics distribuïts per tot Europa. Hem comparat el patró vocal d'aquests cants atípics amb la coneguda variant del cant de la tallarol de casquet anomenada "leiern" i concloum que hi ha diferències importants. Les persones que participen en censos comuns d'ocells haurien de ser conscients de la variabilitat en els cants dels ocells i de l'ocurrència de cants atípics per assegurar una identificació correcta. A més, si aquestes observacions es descriuen i recullen, podrem aprofundir el nostre coneixement sobre el complex tema de les vocalitzacions dels ocells.

Resumen

Canto atípico en la curruca capirotada *Sylvia atricapilla*

El canto de la curruca capirotada *Sylvia atricapilla* es una vocalización muy estudiada que consta de dos partes distintas: un parloteo inicial de notas ásperas, seguido por un gorjeo variado y melódico. Sin embargo, algunos individuos enigmáticos presentan una versión atípica del canto, caracterizada por una notable simplificación del tradicional y rico gorjeo melódico. Este estudio documenta la observación sin precedentes en la península Ibérica, de una curruca con canto atípico en el Parque Natural de Els Ports (Cataluña, noreste de España). El ave exhibió compor-

tamientos únicos, como posarse muy alto en la copa de los árboles y cantar de manera intensificada por la mañana, además de la canción atípica marcada por la sustitución del rico gorjeo melódico por una serie monótona de aproximadamente 15 notas similares. En un análisis meticuloso de grabaciones atípicas de curruca capirotada a través del portal en línea *xeno-canto*, identificamos 12 currucas con cantos atípicos distribuidos por toda Europa. Comparamos el patrón vocal de estos cantantes atípicos con la conocida variante del canto de la curruca capirotada llamada "leiern" y concluimos que hay diferencias importantes. Las personas que participan en censos comunes de aves deberían ser conscientes de la variabilidad en los cantos de las aves y de la ocurrencia de cantos atípicos para asegurar una identificación correcta. Además, si tales observaciones son descritas y reportadas, podremos profundizar nuestro conocimiento sobre el complejo tema de las vocalizaciones de las aves.

References

- Bergmann, H.-H.** 1977a. Mönchsgrasmücke (*Sylvia atricapilla*) lernt Leiergesang. *J. Orn.* 118: 288–293. <http://dx.doi.org/10.1007/BF01643538>.
- Bergmann, H.-H.** 1977b. Über Verbreitung und Eigenschaften eines erlernten Motivs in den Reiveiergesängen einer westfranzösischen Population der Mönchsgrasmücke (*Sylvia atricapilla*). *Vogelwarte* 29: 101–110.
- Bergmann, H.-H.** 2020. Das "fatale Geleier" der Mönchsgrasmücke *Sylvia atricapilla* –Geschichte einer Tradition: Rückblick und Ausblick. *Orn. Anz.* 59: 161–174.
- Constantine, M. & The Sound Approach.** 2020. Which came first? the blackcap song of the mystery? The Sound Approach 6: <https://soundapproach.co.uk/which-came-first/>. Accessed on 20 December 2024.
- Cramp, S.J. (ed.)** 1992. *The Birds of the Western Palearctic*. Vol. 6: Warblers. Oxford: University Press.
- Fjeldså, J., Christidis, L. & Ericson, P.** 2020. *The largest avian radiation. The evolution of perching birds, or the Order Passeriformes*. Barcelona: Lynx Edicions.
- Linossier, J., Courvoisier, H. & Aubin, T.** 2015. The two parts of the blackcap song: Acoustic analysis and male responses to playbacks. *Behav. Process.* 121: 87–92. <http://dx.doi.org/10.1016/j.beproc.2015.10.007>
- Mathevon, N. & Aubin, T.** 2001. Sound-based species-specific recognition in the blackcap *Sylvia atricapilla* shows high tolerance to signal modifications. *Behaviour* 138: 511–524. <http://dx.doi.org/10.1163/156853901750382133>
- Mathevon, N., Dabelsteen, T. & Blumenrath, S. H.** 2005. Are high perches in the Blackcap *Sylvia atricapilla* song or listening posts? A sound transmission study. *J. Acoust. Soc. Am.* 117: 442–449. <http://dx.doi.org/10.1121/1.1828805>
- Pfeifer, W., Braun, W., Ginschel, G., Hagen, G., Huber, A., Müller, K., Petermann, H., Pfeifer,**

- G., Schröter, D. & Schröter, U.** 1989. Etymologisches Wörterbuch des Deutschen, Academy of Sciences of the GDR. Digitized and processed version based on the second edition, Akademie-Verlag. Accessed: 16-01-2024. <https://www.dwds.de/wb/leiern>
- Rheinwald, G., Hauth, E. & Kuhn, M.** 2009. Garden warblers (*Sylvia borin*) with mysterious songs. *Vogelwelt* 130: 135–140.
- Rosenbergen, W.** 1953. Spottende Mönchsgrasmücken (*Sylvia atricapilla*). *Orn. Mitt.* 5: 169.
- Shirihai, H., Gargallo, G., Helbig, A., Harris, A. & Cottridge, D.** 2010. *Sylvia Warblers: Identification, taxonomy and phylogeny of the genus Sylvia*. Bloomsbury: Helm.
- Vescera, C.** 2018. *Do the male blackcaps (Sylvia atricapilla) increase the temporal features of their song in response to traffic noise?* Master's Thesis. Liège, Belgique: Université de Liège.
- von Blotzheim, U. N. G. & Bauer, K. M.** 1991. *Handbuch der Vögel Mitteleuropas*. Band 12/II (Teil 3), Passeriformes. Weiesbaden: AULA-Verlag.