

EARLY BREEDING OF THE ENDEMIC GREAT GREY SHRIKE *LANIUS EXCUBITOR KOENIGI* (LINNAEUS, 1758) FROM THE CANARY ISLANDS (AVES, LANIIDAE)

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The Great Grey Shrike is represented in the Canary Islands by an endemic subspecies *Lanius excubitor koenigi* (Linnaeus, 1758) (Padilla *et al.*, 2015 [*Ecol. Evol.* 5: 36-45]. Nowadays, its largest populations are mainly concentrated in the eastern islands (Lanzarote and Fuerteventura), but they are also present on Tenerife and Gran Canaria, being more or less scarce there (Lorenzo, 2007 [Atlas de las aves nidificantes en el archipiélago canario (1997-2003)]). This predatory bird usually inhabit xeric habitats with variable amount of shrub cover being more common at low altitudes but also a high mountain shrublands of Tenerife (Padilla *et al.*, [*Ornis Fenn.* 82 (4): 155-65]; Lorenzo, 2007). Although, no quantitative studies have been conducted describing its breeding biology in the Canaries, it is assumed that nesting season spend at least from begins of January to May (Martín & Lorenzo, 2001 [*Aves del Archipiélago Canario*]). In this sense, in Tenerife there were some observations of breeding attempts in mid-January several decades ago (Hald-Mortensen, 1970 [*Ibis* 112: 265-266]), and recently, three recently fledged young were reported from mid-January in Fuerteventura (Nicolai, 2020 [*Vogelwarte* 58: 215 - 224]). So, the main aim of the present note is to document several early breeding attempts of this shrike in the Canaries. We also discuss the possible drivers of these events in the context of climate change and its presumed adverse effects on wild birds.

We compiled information about breeding attempts of Great Grey Shrike in the Canary Island during January 2015 and January 2023. We carried out an intensive search on social media and websites where field observations are uploaded (eBird, observations.org, inaturalist.org and Facebook) to collect all nesting attempts (nests, fledglings, juveniles). We select those information of the period 2015-2022 including images ($n = 52$), and we look recently fledging individuals. We estimated laying dates of those nesting attempts by back-calculating using the estimated minimum age of fledglings and 14-19 days as incubation period and 14-21 days as fledging period (Yosef *et al.*, 2020 [*in del Hoyo et al.*, (eds.) *Birds of the World*]). As some fledglings could abandon their nests several days before the observation date, estimated laying dates are biased in this sense.

The observation dates of fledglings roughly coincide with the previously known phenology of the species on the Canary Islands (Martín & Lorenzo, 2001), but seventeen of them, corresponding to the autumn 2022 and winter 2023 could be considered as earlier than normal (see **Table 1**; **Fig. 1**). Most of these early breeding attempts are referred to the driest islands and those that maintain apparently healthy populations, Fuerteventura ($n=7$) and Lanzarote ($n=6$) (**Table 1**). The earliest laying date recorded took place in on October, in Gran Canaria (**ID-1 in Table 1**), and the latest at the end of November in Lanzarote (**ID-17 in Table 1**).

ID	Date	Island	Observ. (n)	Estimated chick age (days)	Estimated laying date	Observer
1	10/XI/2022	Gran Canaria	Nest	-	-	Authors' data
2	23/XI/2022	Fuerteventura	Fledglings (1)	>21	14 -19 October	Albert van Gulijk ¹
3	09/XII/2022	Lanzarote	Fledglings (1)	>21	3 -4 November	Aaron Meijer ²
4	11/XII/2022	Fuerteventura	Fledglings (1)	>21	5 -6 November	Mireille Legros ³
5	15/XII/2022	Lanzarote	Fledglings (1)	> 21	5 -10 November	Authors' data

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6	17/XII/2022	Lanzarote	Nest	-	-	Authors' data
7	18/XII/2022	Lanzarote	Fledglings (1)	15	14 –19 November	Authors' data
8	20/XII/2022	Gran Canaria	Fledglings (1)	>21	10 –15 November	Bouacida Lobna ⁴
9	20/XII/2022	Lanzarote	Fledglings (3)	>21	10 –15 November	Stefan Ingels ⁵
10	23/XII/2022	Fuerteventura	Fledglings (1)	>21	13 –18 November	Will O'Connor ⁶
11	28/XII/2022	La Graciosa	Fledglings (3)	>21	18 –23 November	Jorge Pérez ⁷
12	30/XII/2022	Fuerteventura	Fledglings (4)	>21	20–25 November	Authors' data
13	30/XII/2022	Fuerteventura	Fledglings (3)	>21	20 –25 November	Authors' data
14	02/I/2023	Fuerteventura	Fledglings (1)	>21	23 –28 November	Nicholas Turner ⁸
15	04/I/2023	Tenerife	Fledglings (3)	>21	25–30 November	Jasper Blomme ⁹
16	06/I/2023	Fuerteventura	Fledglings (3)	>21	27 November – 2 December	Authors' data
17	08/I/2023	Lanzarote	Fledglings (1)	20	30 November – 5 December	Dennis Rabeling ¹⁰

Table 1: Details of early breeding attempts of the endemic Great Grey Shrike *Lanius excubitor koenigi* on the Canary Islands during October 2022-January 2023 (see the main text for further details).

[1] observation.org/observation/259913034/
 [2] observation.org/observation/261028272/
 [3]facebook.com/photo?fbid=10228869731278167&set=gm.5596971307092304&idolvantty=983957138393767

[4] observation.org/observation/260972099/

[5] canarias.observation.org/waarneming/view/260971526

[6] facebook.com/photo/?fbid=6232461653431581&set=pcb.6232461783431568

[7] ebird.org/checklist/S124950990

[8] facebook.com/photo/?fbid=1506251403229881&set=pcb.5602228723233229

[9] canarias.observation.org/waarneming/view/261651727

[10] inaturalist.org/observations/146218404

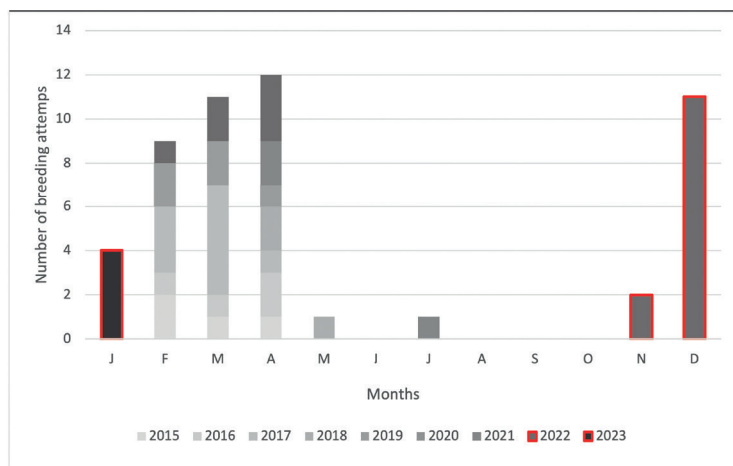


Figure 1: Monthly distribution of breeding attempts of the endemic Great Grey Shrike *Lanius excubitor koenigi* on the Canary Islands during the period 2015–2023 [see main text for further details]. Early breeding attempts remarked in red.

The mentioned early breeding attempts must be related, in some degree, with strong rains occurred in September, when the storm called “Hermine” produced abundant rains in all islands. These precipitations could be considered atypical as the normal rainfall regime correspond to September (Aemet, 2022 [AEMET Septiembre 2022]). In xeric environments, bird reproduction is usually a food mediated process greatly influenced by seasonal rain regimens (Norman, 1983 [Weather And Bird Behaviour]). Nevertheless, some populations of Great Grey Shrike (*L. e. elegans*) in Morocco, found at latitudes similar to those of the Canary Islands, usually breed in October, after the first autumn rains (Bergier *et al.*, 2022 [Oiseaux du Maroc-Birds of Morocco]).

Other species of xeric habitats from the Canary Islands are known to adjust its breeding phenology to take advantage of the trophic resources generated after the first autumn rains. That are the cases of the Canary Islands Stonechat (*Saxicola*

dacotiae) (Illera & Díaz, 2006 [J. Avian Biol. 37 (5): 447–56]), the Berthelot's Pipit (*Anthus berthelotii*) (García-del-Rey & Cresswell, 2007 [Ostrich 78 (3): 583–89]), the Common Kestrel (*Falco tinnunculus*) (Carrillo & González-Dávila, 2009 [Ardeola 56 (2): 215–28]), the Yellow-legged Gull (*Larus michahellis*) (López *et al.*, 2016 [Bird Study 63 (3): 337–45]) and some other passerine species (Nicolai, 2020).

In a scenario of climate change, many bird populations are suffering changes in their distribution, abundance, phenology and different aspects related to their migration (Carrillo *et al.*, 2007 [Ibis 149 (1): 166–69]; Crick, 2004 [Ibis 146 (5): 48–56]; Mainwaring *et al.*, 2021 [Front. Ecol. Evol. 9 (October)]; Pape *et al.*, 2010 [Effects of Climate Change on Birds]). The Canary Islands are not exempt from climate change effects and different models already foresee an increase in temperatures, less rainfall and less humidity, with the consequent impacts on resident species, mainly endemic ones (Costello *et al.*, 2022 [Cross-Chapter Paper 1: Biodiversity Hotspots. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)); Esquivel & González, 2022 [Cambio Climático En Canarias]). In fact, in certain ecosystems of the Canary archipelago, strong seasonal and environmental changes have been already described (Esquivel & González, 2022).

On the other hand, the episodes of African airmass (called *Calima* in the Canary Islands) and prolonged warmth periods are more frequent than before (Alonso-Pérez *et al.*, 2011 [Tellus, Series B: Chemical and Physical Meteorology 63 (2):255–65]). They produce accelerated evaporation of water in the soil, dry the vegetation and reduce drastically air humidity, reducing the productivity of trophic resources to birds (Newton, 2013 [Bird Populations]; Mainwaring *et al.*, 2021 [Front. Ecol. Evol. 9 (October)]). The rain regime is also changing, so now rains are shorter but with higher intensity and in less time (García-Herrera *et al.*, 2003 [Int. J. Climatol. 23 (2): 235–41]). This can produce an explosion of invertebrates, mainly after the dry season, altering the seasonal availability of trophic resources for birds (Visser *et al.*, 2003 [Proc. R. Soc. B Biol. Sci. B: Biological Sciences 270 (1513): 367–72]).

In summary, long-term consequences of future changes in climatic conditions on birds of the Canary Islands are still unknown. We hope that these observations on Great Grey Shrikes on the Canaries encourage to conduct more exhaustive studies to get a better understanding of these climatic condition changes and their effects on local birds of the archipelago.

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Figure 2: (ID-4) Two fledglings Great Grey Shrike (*Lanius excubitor koenigi*) (Antigua, Fuerteventura), 1.XI.2022. Photo: M. Legros.



Figure 3: (ID-5) Fledglings Great Grey Shrike (Arrecife, Lanzarote), 15.XII.2022. Photo: J. M. Caballero.



Figure 4: (ID-10) Fledglings Great Grey Shrike (Caleta del Sebo, La Graciosa), 28.XII.2022. Photo: J. Pérez.



Figure 5: (ID-15) Adult together with two fledglings Great Grey Shrike (Granadilla de Abona, Tenerife), 04.I.2023. Photo: J. Blomme.