

Courtship-Display in Masked Shrike (*Lanius nubicus*, Lichtenstein 1823) – Undescribed Behaviour of a Bird Species from the Western Palearctic

Boris Nikolov

Bulgarian Ornithological Centre, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences; 1 Tsar Osvo-
boditel Blvd., 1000 Sofia, Bulgaria; E-mail: lanius.bg@gmail.com

Abstract: Masked Shrike (*Lanius nubicus*) is the least studied species among European shrikes due to its skulking and arboreal habits, as well as restricted range. Hence it still has poorly known courtship-display. For first time detailed description of the courtship-display and display-flight in male Masked Shrikes is provided. Although the courtship-display ('parading-display') shares some similar elements with the same ritual in other true shrikes (Laniidae) – bows (head in line with the body), wing-shivering and courtship-song, it shows some differences in the way of performance like carrying it out 'on the move' while stepping down from a higher starting point. Mean advertising-song duration was 26.3 sec and it was found to decrease significantly from May to July. Singing males were observed during all stages of the breeding season – from courtship to fledglings. Highest singing activity was recorded in May and June, in July it was considerably smaller. Similarly to other non-cooperative breeding true shrikes no duetting was recorded. Mimicry was not present in Masked Shrike songs as well.

Courtship-display in birds is an important clue in establishing phylogenetic relationships, hence more efforts should be put into better understanding of their behavioural communication characters. Masked Shrike relationships within *Lanius* genus still need clarification.

Key words: Masked Shrike, *Lanius nubicus*, courtship-display

Introduction

Masked Shrike (*Lanius nubicus*) is the least studied species among the European shrikes due to its skulking and arboreal habits, as well as restricted range (NIKOLOV 2008). Hence it still has poorly known courtship-display, until now courtship-feeding recorded only (CRAMP, PERRINS 1993, HARRIS, FRANKLIN 2000). To my knowledge no description of species' courtship-display and display-flight exists in the scientific literature. PANOV (2008) provided only a short note about them, based on unpublished data of ours (NIKOLOV 2006).

Here data is presented on the duration and way of performance of courtship-display in male Masked Shrikes, as well as data on other behaviour patterns in relation to species' courtship.

Study Area & Methods

Due to species' secretive way of life data were collected for a number of years. Field work was carried out between late April and August in three regions of Southern Bulgaria considerably influenced by Mediterranean climate, especially Rupite area (STANEV *et al.* 1991):

Rupite area – located in the downstream valley of Struma River, SW Bulgaria. The study area includes the volcanic ridge of Kozhuh (highest peak 281 m), covered by diverse Mediterranean vegetation. Masked Shrikes inhabit a loose Downy Oak (*Quercus pubescens*) grove in the area (NIKOLOV, 2006). Data were collected in 2000-2004 and 2010. Courtship-display was recorded four times (19.05.2001, 11.05.2002 – twice, 9.05.2010); possi-

ble additional record (not well seen) – on 8.05.2010. Display-flight was observed twice only (11.05.2002, 6.07.2003). Data on singing activity and courtship-feeding were obtained in most years of study.

Upper Thracian Valley – along Maritsa River, SE Bulgaria (more specifically Popovitsa and Lyubimets). Masked Shrikes occupy mainly artificial plantations of hybrid Poplar (*Populus x euramericana*) in the area. Data were collected in 2000-2004 and 2008. Courtship-display was recorded once only (29.05.2004); possible additional record (not seen well) – on 11.05.2008. Data on singing activity and courtship-feeding were obtained in most years of study.

Besapara Hills – open karst ridges at the foothills of the Rhodopes, Southern Bulgaria. Masked Shrikes inhabit a loose Downy Oak grove in the area (NIKOLOV *unpubl. data*). Data on singing activity were obtained on a single occasion (29.04.2008).

The courtship-display data presented is based on a single video recording and direct visual observations (field sketches and descriptions). The only video footage of courtship-display was shot in 2001 when leading a team from Bulgarian National Television. Song duration was recorded using digital stopwatch both in the field and subsequently from video recordings. All data on song duration were pooled on a monthly basis and then tested for statistical significance. The statistical analyses were performed using SigmaStat 3.5 and SigmaPlot 11.0 (SYSTAT SOFTWARE, INC. 2006, 2008).

Local time is used throughout the text (GMT+3).

Results

Courtship-display

Courtship-display was recorded only in the morning hours, before mid-day – between 8:50 and 12:20 h. Only one record of courtship-display duration was made – 21 sec.

The following stages of courtship-display in male Masked Shrikes can be outlined (Fig. 1):

(1) Upright posture and wing-shivering

This posture is similar to the one described for Red-backed Shrike *Lanius collurio* by PANOW (1983, see Fig. 29b on p.55): the bird is sitting on exposed branch upright, wing-shivering from time to time (Fig. 2). Sitting in an upright posture usually alter-

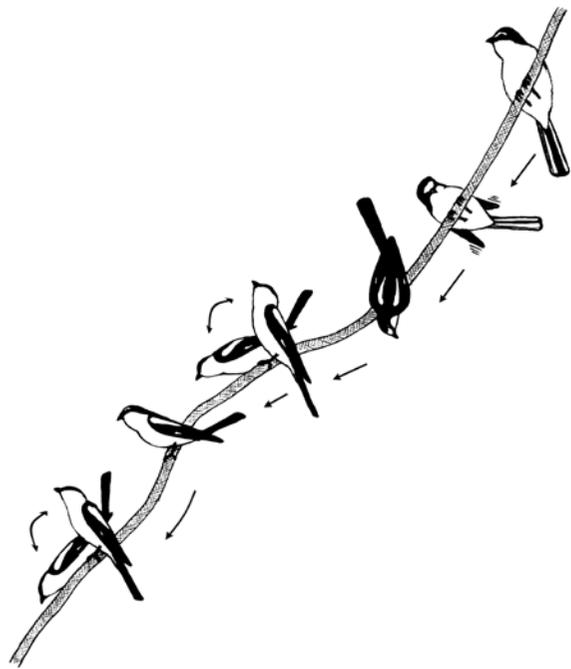


Fig. 1. Main stages of male Masked Shrike (*Lanius nubicus*) courtship-display ('parading-display') – typically performed 'on the move' while stepping down from a higher starting point.

nates with singing (advertising-song). This upright posture is often used by males just for static marking of the occupied breeding territory. In few cases only it is followed by the next stages of the courtship-display. Just before next stage the bird could sit 'frozen' for a while – slightly hunched.

(2) Stepping down

Stepping down the branch starts suddenly after stage (1). Bird movement down from a higher starting point during courtship-display performance was recorded in most of the cases.

(3) Bows

Bows occurred either on the move (while stepping down) – 3-4 bows about 3-4 sec each, or standing on the branch – usually 4-5 bows, about one second each. In most cases the bird was bowing sideways, less often frontally. While making the bows the male performed wing-shivering (stopping just for the moments between the bows), as well as singing courtship-song. He was looking ahead of him all the time, keeping its head in line with the body during the bows. At the lowest body position of bowing the tail was held angled to its maximum in relation to the body. When finishing a bow and standing upright, the tail was back in line with the body.



Fig. 2. Upright posture of male Masked Shrike (*Lanius nubicus*) used for static marking of the breeding territory and sometimes preceding the courtship-display.

Bows occurred on several series on the same or another branch nearby (reached after a short flight).

Although both partners were observed together shortly before or after the courtship-display, during the display of the males no females were seen nearby. This can be due to the secretive behaviour of the species, especially the females during the initial stages of the breeding season.

Display-flight

The display-flight is a fluttering flight on a zigzag trajectory. In both observations the male was singing, and in one of the cases the display-flight followed immediately after the courtship-display was interrupted.

Courtship-feeding

Courtship-feeding was recorded a number of times as part of the courtship-display, then during the nest-building stage and during incubation. In all cases the male was providing food the female. Sometimes courtship-feeding is accompanied by begging calls and wing-shivering in the female.

Advertising-song

In most cases when singing male Masked Shrikes are sitting on exposed branches, usually on tree tops. Rarely singing birds are hidden in the canopy. While singing, male is sitting usually upright, sometimes slightly bent over. The plumage is ruffled – slightly on the nape and crown and much more on breast and belly, so that the rusty flanks are visible even from behind (Fig. 3). Singing in flight was recorded as well, though rarely (five observations only at Rupite area).

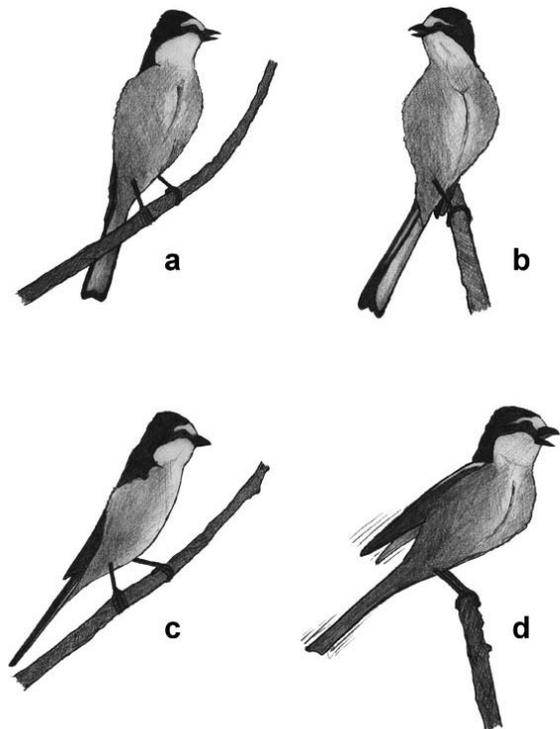


Fig. 3. Singing behaviour of male Masked Shrikes (*Lanius nubicus*), sometimes accompanied by wing-shivering mainly in the pauses (d). In most cases the plumage on breast and belly is ruffled so much that the rusty flanks are visible even from behind (a, b, c).

The mean duration of advertising-songs in Masked Shrikes was 26.3 sec (SD=18.3; n=166; 3-118). Songs longer than 60 sec were an exception. The difference between the median values of advertising-song duration for May (27 sec; n=115), June (17 sec; n=34) and July (14 sec; n=15) was found to be highly significant – Kruskal-Wallis One Way ANOVA on Ranks $H_2=19.343$, $p<0.001$ (Fig. 4). When applying Dunn's *post hoc* test (pairwise multiple comparisons) only the differences in May-June and May-July turned out to be significant ($p<0.05$).

As soon as the males arrive on their breeding grounds they start singing actively, sometimes even from the end of April (29.04.2008, Besapara Hills: two song records, of 18 and 37 sec respectively). Highest singing activity was recorded in May and June, in July it was considerably smaller. Just a single record exists for August – a short song of about 4s (8.08.2008, Upper Thracian Valley; Hristova-Nikolova, pers. comm.). Treated as exceptions, both cases were not included in the analysis above. Singing males were observed during all stages of the breeding season – courtship, nest-building, incubation, nestlings and fledglings.

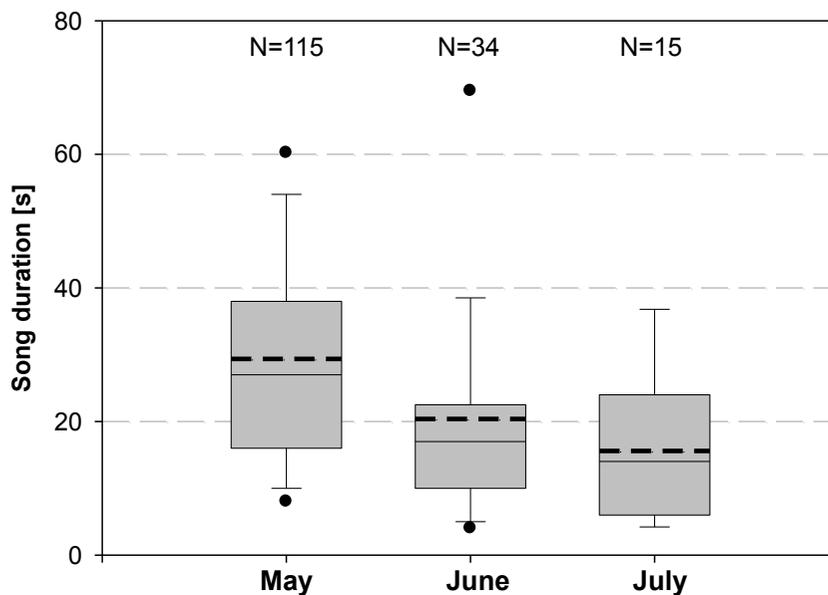


Fig. 4. Advertising-song duration (sec) of male Masked Shrikes (*Lanius nubicus*) from May to July in Bulgaria. Box-plot data presentation: mean (bold dashed line), median (solid line) and outliers (5th and 95th percentiles). Sample size is shown for each month as well.

Advertising-song in Masked Shrikes was recorded between 6:15 and 20:01 h. In June and July, especially in hot weather, singing males were established mainly in the early morning and late afternoon hours.

During courtship-display the song is very quiet, though not different from the advertising-song, and can be referred as ‘courtship-song’. Sometimes advertising-song and courtship-song cannot be distinguished by volume alone, and one needs to look at the bird’s behaviour.

Discussion

Courtship-display in shrikes is usually performed by males in order to drive away rivals and to attract females. In spite of the interspecific differences it often includes bowing dance and sometimes actions mimicking those of impaling prey (YOSEF 2008). Masked Shrike’s parading-display shares some similar elements with the same ritual in other true shrikes (Laniidae) – bows (head in line with the body), wing-shivering and courtship-song, but it also shows some differences in the way of performance like carrying it out ‘on the move’ while stepping down from a higher starting point. In addition, the zigzagging display-flight in this species is sharing considerable similarities with the one already described for other

shrike species as well, as an important part of their courtship-display (HARRIS, FRANKLIN 2000).

Courtship-feeding commonly occurs in shrikes and has been documented for a number of species. Providing nutrients to the female is used by male to influence the female choice, as well as to increase the female’s reproductive success (CARLSON 1989; TRYJANOWSKI, HROMADA 2005, YOSEF 2008). Courtship-feeding has been among the few elements recorded, although not in detail, in Masked Shrike courtship-display to date – in Cyprus just after the nest is built or during incubation (CRAMP, PERRINS 1993).

Masked Shrike advertising-song has been described resembling the song of various Sylviidae (*Hippolais*, *Sylvia*, *Acrocephalus*) warblers (PANOW 1983, CRAMP, PERRINS 1993). To my opinion its song is closer to that of *Hippolais* warblers, especially the Olive-tree Warbler (*Hippolais olivetorum*), which often shares the same habitat in Southern Bulgaria. No mimicry was present in Masked Shrike advertising-songs. This view is currently shared by most researchers, although mimicry in Masked Shrike songs was supposed in the past (CRAMP, PERRINS 1993). Duetting was not recorded in this species as well, similarly to other non-cooperative breeding true shrikes (HARRIS, FRANKLIN 2000).

Published data on duration of Masked Shrike advertising-song are quite limited. From ‘up to 35

sec' in Iraq (MOORE, BOSWELL 1956) to 'bursts' of up to one minute or more without breaks in Southern Turkey (HOLLOM 1955). We recorded only five songs longer than a minute, the longest one being nearly 2 min (118 sec). In most relevant references, Masked Shrike singing activity has been recorded only at the onset of the breeding season, usually in May – both throughout the species range (CRAMP, PERRINS 1993) and Bulgaria (MAUERSBERGER, STÜBS 1963; PASPALEVA-ANTONOVA 1965; VATEV *et al.* 1980; MILCHEV 1991). Singing Masked Shrikes have been observed, though rarely, during migration and wintering as well (CRAMP, PERRINS 1993).

Mating in Masked Shrike was not recorded during the present study. On several occasions the male was observed to follow closely the female but both birds stayed hidden most of the time. Mating still remains undescribed but it could be expected to occur after the parading-display of the male – similarly to other shrike species (CRAMP, PERRINS 1993, HARRIS, FRANKLIN 2000). Attempt for mating was reported from 1.06.1963 (10:00 h) in a pair of Masked Shrikes on a Pear tree, in Southeastern Bulgaria

(DONCHEV 1964).

Courtship-display in birds is an important clue in establishing phylogenetic relationships, hence more efforts should be put into better understanding of their behavioural communication characters. Although it has been suggested that Masked Shrike may not be a *Lanius* shrike (MEES 1996 cit. in HARRIS, FRANKLIN 2000), its position within *Lanius* genus is currently not questioned (ULLRICH 2002, HOYO *et al.* 2008, PANOV 2008) but its relationships with other *Lanius* shrikes still need clarification (HARRIS, FRANKLIN 2000, PANOV 2008).

Acknowledgements: My sincere thanks go to Ms Iva Hristova-Nikolova who helped a lot during the field work. A team from Bulgarian National Television (Dobrin Keresteliev, Kamen Kolev), based on scripts of mine, shot in 2001 the documentaries 'Shrikes in Bulgaria' (dedicated on all shrike species in the country) and 'The White-fronted Nubian' (dedicated on Masked Shrikes) – their efforts in recording for first time the Masked Shrike courtship-display are gratefully acknowledged as well. Present manuscript was partly summarised within the Project No BG051PO001.3.3-04/41 (Development of scientific potential in the field of faunistic diversity and the protection of environment) of Bulgarian Ministry of Education, Youth and Science.

References

- CARLSON A. 1989. Courtship feeding and clutch size in Red-backed Shrikes (*Lanius collurio*). – *Am. Nat.*, **133** (3): 454-457.
- CRAMP S., C. M. PERRINS (Eds.). 1993. The Birds of the Western Palearctic. Vol. 7. Oxford Univ. Press, Oxford, New York, 577 p.
- DONCHEV S. 1964. On the distribution of some new and rare birds in Bulgaria. – *Zool. Inst. Mus. Bull.*, **16**: 23-28. (In Bulgarian).
- HARRIS T., K. FRANKLIN 2000. Shrikes & Bush-shrikes: Including wood-shrikes, helmet-shrikes, flycatcher-shrikes, philentomas, batises and wattle-eyes. Christopher Helm, A & C Black. London, 392 p.
- HOLLOM P. A. D. 1955. A fortnight in South Turkey. – *Ibis*, **97**: 1-17.
- HOYO J., A. ELLIOTT, D. A. CHRISTIE (Eds.). 2008. Handbook of the Birds of the World. Volume 13: Penduline-tits to Shrikes. Lynx Edicions, Barcelona, 879 p.
- MAUERSBERGER G., J. STÜBS 1963. Drei für Bulgarien neue Vogelarten. – *J. Orn.*, **104** (3/4): 440-441.
- MEES, G. F. 1996. Geographical variation in birds of Java. – *Publ. Nuttall Ornithol. Club*, **26**: 1-119.
- MILCHEV B. 1991. Ornithocological studies of Strandzha Mountain in Bulgaria. PhD Thesis. University of Sofia, Faculty of Biology. (In Bulgarian).
- MOORE H. J., C. BOSWELL. 1956. Field observations on the birds of Iraq. – *Iraq Nat. Hist. Mus. Publ.*, **10**, 299 p.
- NIKOLOV B. 2006. The shrikes (family Laniidae) (Aves, Passeriformes) in Bulgaria – distribution, breeding biology and migration. PhD Thesis. Institute of Zoology, Bulgarian Academy of Sciences, Sofia. 422 p. + XLII. (In Bulgarian).
- NIKOLOV B. 2008. Masked Shrike *Lanius nubicus*. In: del Hoyo J., A. Elliott, D. A. Christie (Eds.): Barcelona, Lynx Edicions, p. 794.
- PANOV E. 2008. Shrikes (Laniidae) of the world fauna. Ecology, behaviour, evolution. KMK Sci. Press Soc., Moscow. (In Russian), 650 p.
- PANOV E. 1983. Die Würger der Paläarkt. Neue Brehm Bucherei. Ziemsen, Wittenberg Lutherstadt, 196 p.
- PASPALLEVA-ANTONOVA M. 1965. Data on new and rare Bulgarian birds. – *Zool. Inst. Mus. Bull.* **19**: 33–38 (In Bulgarian).
- STANEV S., M. KYUCHUKOVA, S. LINGOVA (Eds.). 1991. The climate of Bulgaria. BAS, Sofia, 500 p. (In Bulgarian).
- SYSTAT SOFTWARE, INC. 2006. SigmaStat for Windows Version 3.5.
- SYSTAT SOFTWARE, INC. 2008. SigmaPlot for Windows Version 11.0.
- TRYJANOWSKI P., M. HROMADA 2005. Do males of the great grey shrike, *Lanius excubitor*, trade food for extrapair copulations? – *Anim. Behav.* **69**: 529-533.
- ULLRICH B. 2002. Verhaltensökologische Beobachtungen am Maskenwürger, *Lanius nubicus*, im Vergleich mit anderen Würgerarten der Gattung *Lanius* unter Berücksichtigung

- ökolomorphologischer Besonderheiten. – *Ökol. Vögel* **24**: 523-558.
- VATEV I, P. SIMEONOV, T. MICHEV, B. IVANOV 1980. Masked Shrike (*Lanius nubicus* Lichtenstein) – breeding species in Bulgaria. – *Acta zool. bulg.* **15**: 115-118 (In Bulgarian).
- YOSEF R. 2008. Family Laniidae (Shrikes). In: del Hoyo J., A. Elliott, D. A. Christie (Eds.): Barcelona: Lynx Edicions. 732-773.

Received: 29.02.2012

Accepted: 12.06.2012