

On the occurrence and diet of a migrating Woodchat Shrike (*Lanius senator*) in Slovakia

*K výskytu a potrave migrujúcich strakošov červenohlavých (*Lanius senator*) na Slovensku*

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Abstract. Occurrence and food composition on migration stopover is described in the regionally extinct breeding bird, the Woodchat Shrike in Slovakia. All vagrant birds in the last 20 years were observed in May in agricultural landscape, similarly to most vagrants of the species observed elsewhere in Central Europe. In the food of the individual bird at the migration stopover in western Slovakia there were found mainly the field crickets (*Gryllus campestris*; 31%) and carabids of the genus *Pterostichus* (19%) and beetles (*Scarabeidae*; 18%). Food composition and history of occurrence of the species in Slovakia and central Europe is discussed.

Key words: shrikes, Laniidae, migration stopover; foraging, Central Europe

The Woodchat Shrike *Lanius senator* is a species with Mediterranean breeding distribution and the nearest current breeding occurrence to Slovakia is in Croatia (Lefranc & Worfolk 1997, Yosef & ISWG 2008). Its occurrence is recorded only seldom during migration in Central Europe. For example in neighbouring Czech Republic there were only four records in four years from 1975 till 2019, all these in the breeding period (July 5, 2006, site Březina, author J. Stříteský; April 27, 2008, Jihlávka, M. Dušek; July 6, 2011, Tovačov, J. Šafránek and June 9, 2014, Cvikov, T. Kunca), and in 2020 in total three independent records (May 7, 2020, Třeboň, J. Zeman; May 16, 2020, Pohansko, J. Gregor; May 27, 2020, Žerotín, G. Čamlík; see www.birds.cz). As breeding species it is missing from Central Europe at least from 1980s and, while showing negative range

and population trends all over its entire range (Lefranc & Worfolk 1997). This negative trend led to the end of breeding in Slovakia (Kristín 1998), where the last breeding attempts were documented in 1973–1977 along Váh River in western Slovakia, in the area of Nové Mesto nad Váhom and Piešťany, where 11–22 pairs bred in that time (Kaňuščák & Šnajdar 1977). The birds bred there in alleys of old trees, mostly poplars, at the edges of broadleaved forests, at the margins of villages up to 300 m a.s.l. (Danko et al. 2002). The species is wintering in the vast belt of sub-Saharan Africa N of equator, and leaving European breeding grounds mostly in second half of August with main arrivals on the breeding grounds beginning in May. This is the month when it is mostly recorded as rare vagrant some hundreds to thousand km (up to Norway and S Sweden) from the limits of the breeding

range (Lefranc & Worfolk 1997, Yosef & ISWG 2008). In Slovakia, in the last 20 years the species was recorded only in four sites of western Slovakia, always in May, probably during the so-called overshoot spring migration. On May 15, 2008 it was near Dvorníky pri Hlohovci locality (M. Noga), May 29, 2010 near Devínska Nová Ves (M. Noga), May 22, 25, and 29, 2013 in Dubové near Turčianske Teplice (M. Dobrota) (www.birding.sk).

In 2020 (May 4, 2020) the first author managed more detailed observations with documentation of food composition and foraging of the species. Here we analyse and describe the prey species (from photos and pellets) used near Piešťany in W Slovakia (48.5488889N, 17.8036111E, 152 m a.s.l.). A singing and hunting male was observed and documented by photos between 9.20–15.40 h. (Fig. 1, 2). This migration stopover (polygon 10–14 ha) was localized 4 km south of Piešťany city center and 500 m W of water reservoir and SPA Sĺňava. Habitat was an unmanaged fallow (abandoned for nine years), covered mainly by grassland, partially ruderalized vegetation with few shrubs (Fig. 3). Up to 2011 it was managed field, regularly covered by agricultural crops (barley, maize, wheat and oilseed rape). During the observations, visible activity of insects and other invertebrates indicated a high density suitable shrike food. No pesticide and chemical application was observed during our regular and frequent bird monitoring (> once weekly) since 2011 there. We suspect that this abundant and easily available supply of insects was the probably reason for the Woodchat Shrike's stop-over in this case of over-shoot spring migration.

During more than six hours of behavioural observations of this bird we found very high hunting attempt frequency, while there we observed also regular regurgitation of pellets (Fig. 2). Analyzing the contents of one pellet (size 10 × 20 mm) we found high diversity of diet composition and identified 18 prey species within 47 prey individuals (Table 1). Analysing the photos during hunting attempts we identified another five prey items with four species.



Fig. 1. Woodchat shrike *Lanius senator* with the main prey species *Gryllus campestris*. Piešťany, May 4, 2020 (Photo by Ján Kočí).

Obr. 1. Strakoš červenohlavý *Lanius senator* s hlavným druhom svojej koristi *Gryllus campestris*. Piešťany, 4. 5. 2020 (Foto: Ján Kočí).



Fig. 2. Woodchat shrike regurgitating the pellet. Piešťany, May 4, 2020 (Photo by Ján Kočí).

Obr. 2. Strakoš červenohlavý pri vyvrhovani zvyškov potravy. Piešťany, 4. 5. 2020 (Foto: Ján Kočí).



Fig. 3. Habitat of the Woodchat shrike occurrence near Piešťany. May 4, 2020 (Photo by Ján Kočí).

Obr. 3. Biotop výskytu strakoša červenohlavého pri Piešťanoch, 4. 5. 2020 (Foto: Ján Kočí).

In total we recorded 19 prey species from four orders, documenting diverse food supply at

this site and habitat. The most abundant prey group were crickets (Orthoptera) and beetles (Coleoptera), less true bugs (Heteroptera) and spiders (Araneidea). The most abundant prey species was the Field cricket *Gryllus campestris* (Fig. 1) with 31% of abundance (n = 52 prey objects), followed by the ground-dwelling carabids *Pterostichus* (19%), beetles of the family Scarabeidae (18%), Silphidae and Staphylinidae (Table 1). Prey size varied between 7 and 27 mm of body length (mean 12.7 ± 5.2 mm), what is comparable with the data from literature (mean 15.7 mm; Lefranc & Worfolk 1997, Yosef & ISWG 2008).

The Woodchat Shrike is insectivorous in the entire range, small vertebrates (lizards, young passerines and small mammals) are only seldom preyed. It prefers generally larger insect species (> 30 mm), mainly beetles from families Carabidae and Scarabeidae, grasshoppers and crickets (Orthoptera), catterpillars and spiders also confirmed by our short observation. Food composition correlates with the season and availability and phenology of particular species and groups of insects (Becker & Nottbohm 1976,

Yosef & ISWG 2008). The food during migration stopovers was less analysed, e.g. in beginning of April in SE Romania its diet was dominated by beetles (Coleoptera, Cicindelidae, Hygrophilidae, Carabidae) and few Mole-crickets (*Gryllotalpa gryllotalpa*), in a period when the other orthopterans were not available yet and could be expected in later breeding season in July - August (Sándor et al. 2004). A special case of predation on migrating passerines in poor conditions was found at a Trans-Saharan migration stopover, where Woodchat Shrikes predated 6 bird species (Aispuro et al. 2019). In our case, at the Slovak migration stopover area field cricket *Gryllus campestris* was abundant, this was reflected also in the shrike's food. Diet composition of the species in Slovakia was not studied, neither during the breeding season nor during migration (Hudec 1983). One can expect that food composition will be similar there to Lesser Grey Shrike's *Lanius minor* (Krištín 1995). In the breeding period, e.g. in Georgia the Woodchat Shrike's food consisted of 69 prey species (518 prey items), mainly beetles Coleoptera (45%), Orthoptera (33%) and Hymenoptera (18%).

Table 1. Food composition of the Woodchat Shrike *Lanius senator* near Piešťany (W Slovakia) in May 2020 (n = No. prey items, n% = relative abundance, prey body length after Chinery (1987)).

Tab. 1. Zloženie potravy strakoša červenohlavého *Lanius senator* pri Piešťanoch (Z Slovensko) v máji 2020 (n = počet kusov, n% = relatívna početnosť, dĺžka tela koristi podľa Chinery (1987)).

Prey taxa / Druh potravy	Pellets (n) / Vývržky	Photo (n) / Foto	Σ n	n%	Prey body length (mm) / Dĺžka tela koristi
Araneidea					
Agelenidae		1	1	1.9	10
Orthoptera					
<i>Gryllus campestris</i>	15	1	16	30.8	23
Heteroptera					
<i>Eurygaster maura</i>	2		2	3.8	10
<i>Carpocoris</i> spp.	1		1	1.9	11
Coleoptera					
Staphylinidae g.sp.	1		1	1.9	10
<i>Staphylinus caesareus</i>	3		3	5.8	19
<i>Ocyopus</i> spp.	2		2	3.8	27
Carabidae g.sp.	2	1	3	5.8	11
<i>Pterostichus mellanarius</i>	2		2	3.8	11
<i>Pterostichus cupreus</i>	2		2	3.8	11
<i>Pterostichus</i> spp.	4	2	6	11.5	11
Scarabeidae g.sp.	1		1	12.7	10
<i>Aphodius distinctus</i>	5		5	9.6	7
<i>Aphodius</i> spp.	1		1	1.9	8
<i>Onthophagus</i> spp.	2		2	3.8	8
<i>Potosia cuprea</i>	1		1	1.9	17
Silphidae g.sp.	1		1	1.9	13
<i>Oecoptoma thoracica</i>	1		1	1.9	13
<i>Necrophorus vespilloides</i>	1		1	1.9	15
Σ	47	5	52	100	

More detailed information on the food composition and factors, leading to sustainable range and population trend are needed, not only in the breeding grounds, but also at migration routes (Smogorzhevski 1994, Papageorgiou et al. 2017). Very little is known on the causes of these so-called over-shoots of spring migration, reaching far behind recent breeding range.

In regard to habitat selection on migration stopovers, all last four Slovak localities (from 2008, see above) were recorded in agricultural landscape between 140 (Dvorníky) and 500 m a.s.l. (Turiec area). It is therefore very important to maintain the mosaic structure of cultures in the agricultural landscape, to increase the number of ecotons, small sized plots and similar islands of biodiversity suitable for birds like Woodchat Shrikes.

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Súhrn

Strakoš červenohlavý je na Slovensku regionálne vyhynutý ako hniezdič. V tejto práci opisujeme jeho výskyt a zloženie potravy počas migrácie. Všetky záznamy druhu na migrácii zaznamenané v posledných 20 rokoch boli zistené v máji v poľnohospodárskej krajine, podobne ako u migrujúcich jedincov druhu v zvyšku strednej Európy. V potrave jedinca na migračnej zastávke na západnom Slovensku boli zistené hlavne svrčky poľné (*Gryllus campestris*; 31 %), bystrušky rodu *Pterostichus* (19 %) a chrobáky čeľade Scarabaeidae (18 %). Opisuje a diskutuje sa aj história výskytu a zloženie potravy druhu na Slovensku a strednej Európe.

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