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Article

Nesting of the Oriental Turtle Dove *Streptopelia orientalis* in buildings in Primorsky Krai: the beginning of synanthropization

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Abstract. This paper provides data on cases of atypical nesting by the Oriental Turtle Dove *Streptopelia orientalis* in niches of abandoned stone and brick buildings in Primorsky Krai. This phenomenon was only recorded first in 2019, and during a survey of abandoned military bases in the southwestern part of Primorye, it was found out that nesting in the niches of the walls of abandoned barracks is not an isolated case but is quite widespread here. We found nine similar nests, including incubation of eggs and fledging of nestlings. Apparently, the Oriental Turtle Dove is currently at the next stage of synanthropization. The paper also discusses the modes of synanthropization of other representatives of the Columbidae family.

Keywords: synanthropic birds, atypical nesting, Columbidae

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Научная статья**Гнездование большой горлицы
Streptopelia orientalis (Latham, 1790)
в постройках человека в Приморском крае
как начало синантропизации**

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Аннотация. В статье приводятся данные о случаях нетипичного гнездования большой горлицы *Streptopelia orientalis* в нишах заброшенных каменных и кирпичных зданий в Приморском крае. Данный феномен был впервые зарегистрирован лишь в 2019 г. При дальнейшем обследовании заброшенных воинских частей в юго-западной части Приморья было установлено, что гнездование в нишах стен заброшенных казарм здесь достаточно широко распространено. Нами было обнаружено девять подобных гнезд, в том числе отмечено насиживание кладки и вылет птенцов. По всей видимости, большая горлица в настоящее время находится на очередном этапе синантропизации. Также в статье рассматриваются пути синантропизации других представителей семейства Голубиные.

Ключевые слова: птицы-синантропы, нетипичное гнездование, голубиные, Columbidae

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Introduction

The Oriental Turtle Dove *Streptopelia orientalis* (Latham, 1790) is a common breeding species in Primorsky Krai, inhabiting almost all available forest habitats from dense coniferous and mixed forests in the mountains to fragmentary thickets of trees and shrubs on the plains of the region (Glushchenko et al., 2015, 2022). At the same time, if in the twentieth century the Oriental Turtle Dove nested mainly in the riparian thickets along rivers, in the deciduous forests of the hills, occupying habitats fragmented by man (Panov, 1973; Shulpin, 1936; Vorobyov, 1954), then recently it has clearly tended towards landscapes mastered by man, increasing its numbers and becoming a hemerophile (Glushchenko et al., 2022; Klausnitzer, 1990). Until recently, the Oriental Turtle Dove did not nest in populated areas (Panov, 1973; Vorobyov, 1954), in the 1980s it was recorded nesting in the outskirts of Vladivostok, where there is a well-defined woody vegetation (Nazarov, 2004). At the beginning of this century, in Ussuriysk, individual pairs began to nest in built-up areas, both on the periphery of the city and in the center, building nests on trees and bushes of parks, gardens and squares (Glushchenko et al., 2006). In addition to branches, Oriental Turtle Dove can occasionally place its nests on the ground, in partial-hollows, or on top of stumps, piles of brushwood, in old nests of rooks, magpies and thrushes (Glushchenko et al., 2022; Koshelev, 1993; Spangenberg, 1965; Vorobyov, 1954).

In 2019, for the first time, a nest of this bird was found inside a human building – in the village of Novonikolsk (Ussuriysky city district of Primorsky Krai) inside an abandoned cowshed on a central concrete beam. The nesting was successful, and on a second visit to the nest, two fledglings were found there (Glushchenko et al., 2019). Three years later, in 2022, four nests were found in the same complex of buildings (Glushchenko et al., 2022). At the same time, the nest buildings of turtle doves, arranged in an abandoned cowshed, were composed not only of thin tree branches, which is characteristic of this species, but also of hard stems of herbaceous plants (for example, *Artemisia* sp.), which made them resemble the nests of hill pigeons *Columba rupestris* nesting here (Glushchenko et al., 2019, 2022). We started a detailed survey of this building to search for pigeon nests in 2017, but there were no turtle doves' nests present until 2019.

Prior to this, no cases of Oriental Turtle Dove nesting on or inside human buildings were recorded from the territory of Russia. The fact that Oriental Turtle Doves occasionally build nests on buildings in Japan is briefly mentioned by Wada (1994), although breeding in such nests has not been observed. The purpose of this paper is to assess the distribution of nesting of the Oriental Turtle Dove in human buildings as evidence of a new stage of synanthropization in this species.

Materials and methods

In May–June 2022, we examined abandoned military camps in the villages of Pokrovka, Chernyatino, Novogeorgievka (Oktyabrsky district), Korfovka (Ussuriysky city district), Zaisanovka (Khasansky district). In each of the military camps, we examined all the buildings, while the niches were examined using a technical endoscope on a rod, which allowed us to look into hard-to-reach places. In 2023, the observations were continued, and their results were published in separate papers (Belyaev, 2023; Madreimov et al., 2023).

Results

In the course of this work, it was revealed that the nesting of the Oriental Turtle Dove has a much wider scale than we had previously assumed. In almost all of the abandoned complexes of military camps, we found nests of Oriental Turtle Doves – inhabited or empty – in niches of the walls of barracks (except for the military camp in the village of Zaisanovka).

So, when examining the ruins of the western military camp in the village of Pokrovka on May 6, 2022, two empty nests of Oriental Turtle Dove were found in niches of brick walls (Fig. 1).

During the second visit to the military camp on May 17, two eggs were found in one of these nests (Fig. 2), and on June 7, the nest was empty and had signs of successful departure of fledglings – it was trampled by them, and there were a lot of litter from fledglings on the sides.

In the eastern military camp in the same village on June 4, two more empty nests of Oriental Turtle Doves were found in niches of brick walls of barracks (Fig. 3). Also on June 4, an empty nest of Oriental Turtle Dove was found in a niche of the barracks wall in a military camp in the village of Chernyatino (Fig. 4). It is noteworthy that we started active survey of barracks in this military camp in 2015, but turtle doves did not nest in the niches of their walls, although in some cases their nests were located on trees growing inside the barracks that did not have ceilings. Probably, this location was a kind of transition to nesting in niches.

Another empty nest of turtle doves was discovered on June 7 in the western military camp in the village of Pokrovka on a pylon supporting a load-bearing wall, while two birds flew off the nest. They were probably young birds, as the nest was trampled, and there was a large amount of litter at its edges. When it was examined again on June 17, the nest was empty, there were no birds nearby. On the same day, in a destroyed hangar for equipment of the same military camp, a nest of Oriental Turtle Dove was found on the central beam under the roof (as in the village of Novonikolsk). The bird was incubating and allowed close approach (Fig. 5). In a military camp in Korfovka village an empty nest, from which the chicks had already flown, was found on June 21. It was located on a fallen-off wooden cover of a bricked-up window (Fig. 6). Another empty nest was found in a nearby barracks on a pile of broken bricks.

Thus, we discovered nine nests of Oriental Turtle Dove in abandoned buildings. Of these, one was on the central beam of the hangar, one was on a pile of broken bricks, one was on the window cover, and the other six were in various niches of the walls. As a rule, these were niches where the beams were fixed between the first and second floors of the barracks at a height of about 3–3.5 m. The beams eventually rotted or burned down, and turtle doves occupied the remaining niches. We discovered this type of nest of Oriental Turtle Dove for the first time. Hill pigeons nest in barracks in a similar way.

Discussion

Apparently, we are observing a change in the nesting behavior of the Oriental Turtle Dove. This can serve as an example of the ecological plasticity of the species, allowing birds to find places most favorable for nest construction (Malchevsky, 1959). At the same time, birds undergo several stages of synanthropization. The first stage begins with contact with settlements. One of the main reasons for contact is visiting of settlements by birds in search of food. The second stage of synanthropization is associated with the process of birds' habituation to new conditions. The next stage is connected with the nesting of birds in populated areas. Here they find good conditions for protection, and feeding nestlings. The stage of synanthropization ends with the formation of local populations adapted to inhabit settlement landscapes (Dorzhiev and Sandakova, 2010; Lykov, 2018). Settling down next to humans, many birds begin to build nests in unusual places, using human buildings and structures (Novikov, 1964). In this sense, representatives of the family Columbidae, together with representatives of the families Turdidae and Corvidae, show a rather strong tendency to colonize settlements (Lykov, 2009). Many representatives of pigeons have been true synanthropes for a long time. First, of course, among these is the Rock Pigeon *Columba livia* Gmelin, 1789. In addition, the Collared Dove *Streptopelia decaocto* (Frivaldszky, 1838) and the Laughing Turtle Dove *S. senegalensis* (L., 1766) (Fielder et al., 2012; Gavrilov et al., 1982; Koshelev, 1993; Malovichko et al., 2020; Nasrulaev, 2022; Novak and Novak, 2019; Rustamov, 1993) can be called true synanthropes. Initially, they also nested mainly in trees in human settlements, but later increasingly built nests on various human structures – cornices of houses, lanterns, gazebos, poles, chandeliers, etc. (Bochenski, 1958; Fielder et al., 2012; Koshelev, 1993; Malovichko et al., 2019; Nasrulaev, 2022; Rustamov, 1993). The rather fragile nests of turtle doves in such locations are able to resist the destruction of the nests from adverse external conditions and avoid predators – such as domestic cats and corvid birds (Malovichko et al., 2019). Tolerance of humans, combined with their flexible nesting behavior, apparently, allowed these species of turtle doves to expand and colonize new territories (Gavrilov et al., 1982; Koshelev, 1993; Malovichko et al., 2020; Rustamov, 1993, etc.).

The European Turtle Dove *Streptopelia turtur* (L., 1758) – the closest relative of the Oriental Turtle Dove – is not so flexible in this regard and nests exclusively on trees. Generally, this species also nests in suburbs of rural settlements and agricultural landscapes in different parts of its range (Browne and Aebischer, 2004; Grishanov et al., 2019; Lykov, 2009; Mansouri et al., 2020, 2021; Novak and Novak, 2019; Priklonsky, 1993; Spiridonov and Grishutkin, 2019; Vengerov et al., 2019), but, considering the recent critical reduction in the numbers of this species almost throughout its entire distribution (Browne and Aebischer, 2004; Grishanov et al., 2019; Mansouri et al., 2020, 2021; Pchelintsev, 2019; Spiridonov and Grishutkin, 2019; Vengerov et al., 2019), the European Turtle Dove cannot be called a synanthropic species.

Among other pigeons, the Wood Pigeon *Columba palumbus* L., 1758 has shown a distinct tendency to synanthropization in the territory of the former USSR in recent years (Astafieva and Grishanov, 2012; Astafieva et al., 2011; Bobenko, 2009; Grishanova et al., 2020; Lykov, 2009; Lykov et al., 2012; Malovichko et al., 2021; Redchuk and Kosciushin, 2011; Samoylova and Aralov, 2021; Skilsky et al., 1997; Sokolov, 2012; Yufereva et al., 2022, etc.). Until the 1990s, in the vast territory of the former Soviet



Fig. 1. The nest of oriental turtle dove in a niche of the wall of the barracks of the western military camp in the village of Pokrovka (Oktyabrsky district, Primorsky Krai). 06.05.2022. Photograph by D.A. Belyaev.



Fig. 2. Clutch of oriental turtle dove in a nest built in a niche of the wall of the barracks of the western military camp in the village of Pokrovka (Oktyabrsky district, Primorsky Krai). 17.05.2022. Photograph by D. V. Korobov.



Fig. 3. The nest of oriental turtle dove in a niche of the wall of the barracks of the eastern military camp in the village of Pokrovka (Oktyabrsky district, Primorsky Krai). 04.06.2022. Photograph by D.A. Belyaev.

Union, it was considered a purely forest bird, avoiding the proximity of humans, and not nesting closer than 1.5–2 km from populated areas (Kotov, 1993). In Western Europe, this species has long been a full-fledged inhabitant of built-up areas. Its first attempts to nest in Paris were recorded in the 1830s-1840s, by the 1880s, it colonized the cities of Germany and by 1900 it colonized the center of London (Lykov, 2009). In Ukraine, Wood Pigeons began to colonize human settlements in the 1990s, starting from the western regions of the country. Therefore, within the limits of the city of Chernovtsy the nesting of this pigeon has been reported since the late 1980s (Skilsky et al., 1997), and since the second half of the 1990s it colonized the parks and squares of Kiev, but then it did not nest in crowded places. By the 2010s, the synanthropization of the Wood Pigeon intensified here: birds began to nest in more crowded parts of the city and their flight zone decreased. These pigeons also inhabited the surrounding villages and suburbs of Kiev (Redchuk and Kostyushin, 2011). In the southern and central regions of Russia, the synanthropization of the Wood Pigeon has not been so strongly apparent. Birds nest in rural settlements, forest shelterbelts and green areas of cities, without penetrating into zones of continuous development. This situation is typical for Voronezh (Sokolov, 2012), Tula (Samoylova and Aralov, 2021), Oryol (our own data) regions, Crimea (our own data), Stavropolsky Krai (Malovichko et al., 2021; Yufereva et al., 2022).



Fig. 4. The nest of oriental turtle dove in a niche of the wall of the barracks of a military camp in the village of Chernyatino (Oktyabrsky district, Primorsky Krai). 04.06.2022. Photograph by D.A. Belyaev.



Fig. 5. Oriental turtle dove incubates the clutch under the roof of a hangar in the western military camp in the village of Pokrovka (Oktyabrsky district, Primorsky Krai). 17.06.2022. Photograph by D.A. Belyaev.



Fig. 6. The nest of oriental turtle dove on the cover of a window in a military camp in the village of Korfovka (Ussuriysk city district, Primorsky Krai). 21.06.2022. Photograph by D.A. Belyaev.

Among Russian regions, the population of Wood Pigeons in the westernmost region of our country – the Kaliningrad region – is the most synanthropic (Astafieva and Grishanov, 2012; Astafieva et al., 2011; Grishanova et al., 2020; Lykov, 2009; Lykov et al., 2012). If in the above-mentioned regions the Wood Pigeon continues to nest only in trees in settlements and anthropogenically transformed landscapes, then in Kaliningrad nests located on human buildings have been known since 2004. Such an arrangement of Wood Pigeons nests has long been common in parts of Western Europe (Lykov, 2009; Lykov et al., 2012). For nine years (2004–2012) in the Kaliningrad region, 12 Wood Pigeon nests were discovered on human buildings (Lykov et al., 2012), and in 2020 alone, 10 nests of Wood Pigeon on various human buildings were found in Kaliningrad (Grishanova et al., 2020). The above-mentioned authors attribute the nesting of Wood Pigeons on balconies and other structures to the need for a stable surface of sufficient area for the simple, loose nest structure of this species, while the origin and material of this base is not significant (Grishanova et al., 2020). The success rate of the nesting of these pigeons in Kaliningrad on human buildings was 50%, partly determined, among other things, by the attitude of people towards Wood Pigeons that settled on their balconies (Grishanova et al., 2020).

Conclusion

We are currently observing the process of synanthropization of the Oriental Turtle Dove. The first stage of this process can be considered the nesting of this bird in the green areas of rural and urban settlements of Primorsky Krai. It began in this region at the turn of the century, but at first, the birds nested exclusively on trees and bushes located outside buildings. The second stage was their nesting on trees growing inside the ruins of buildings that no longer have a roof (first noted in 2015). Now the turtle dove has moved on to the next stage – nesting in niches available in abandoned buildings, regardless of the presence or not of a roof, birds can get inside the building through broken windows, broken doors, or some other openings (this was first observed in 2019). This is undoubtedly facilitated by the presence of a large number of abandoned stone and brick buildings in Primorye, the length of the nesting period (from the beginning of April to the end of September), the presence of two or three nesting cycles per season and the typical rapid re-nesting after the destruction of the nest, which often happens when the turtle dove nests openly (Glushchenko et al., 2022). The probable reasons for the change in the nesting behavior of the Oriental Turtle Dove were the availability of a large amount of food in the vicinity of set-

lements, as well as the better protection of nests located in stone niches from predators, primarily corvid birds. The current prevalence of nesting of the Oriental Turtle Dove in stone buildings in the Primorsky Krai is noteworthy, and suggests not individual events, but an emerging trend. In the future, we plan to continue the study of the nesting of the Oriental Turtle Dove in abandoned buildings in Primorsky Krai.

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