

New high altitude nesting site of White Stork (*Ciconia ciconia* Linnaeus, 1758) in Bulgaria

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Abstract. We observed a new White storks' breeding site in 2014-2019 in Yundola village at 1390 m a.s.l. The first successful nesting was in 2016. The breeding pair had produced two hatchlings per year for three successive years until 2018. The nest site is new for Bulgaria.

Key words: White Stork, high mountains, nesting site.

Introduction

Throughout its breeding habitat in Europe, the White Stork (*Ciconia ciconia*) inhabits mainly lowlands and areas at low altitude (Michev & Stoyanova 1986; Glutz von Blotzheim & Bauer 1987; del Hoyo *et al.* 1992; Tsachalidis & Papageorgiou 1996; Baltag *et al.* 2009; Profus 2014; Cheshmedjiev *et al.* 2016; Matasaru *et al.* 2018). Avoids areas with persistent cold, wet weather and tracts of tall, dense vegetation, such as reedbeds and forests (del Hoyo *et al.* 1992). Although the species prefers lowlands, rarely it could be seen higher up (Profus 2006; Abuladze *et al.* 2014), e.g. at 3500 m a.s.l. in the Caucasus (del Hoyo *et al.* 1992).

White Stork is widespread in Bulgaria, inhabiting open areas, wetlands, cultivation, often near pools, marshy areas, slow streams or ditches, water meadows, flooded or damp pastures, lakesides, a wide variety of human constructions and also rubbish dumps mainly in lowlands, but also in the high fields, e.g. near Samokov and Batak (Patev 1950, Simeonov *et al.* 1990). The only exception in Bulgaria is occurring of White Stork in mountainous terrains with a large vertical partition or dense forest areas devoid of wetlands (Petrov *et al.* 2007). According to Michev & Stoyanova (1986), in the 1980s White Stork' nests at low altitude (0-200 m) predominated (3937 nests out of 5622 examined were found below 200 m a.s.l.). During this period nests over 1100 m a.s.l. were not recorded at all (Michev & Stoyanova 1986). In 1994-2004 four breeding pairs were registered at the height above 1000 m, (Kmetova 2005). The highest known nesting site so far in Bulgaria is situated at 1270 m a.s.l. in the Nova Mahala village, near Batak (Western Rhodope Mts.; Cheshmedjiev *et al.* 2016).

Results

We observed occupied breeding territory of a pair of White Storks between 2014 and 2019 in the village of Yundola (Fig.1,2).



Fig. 1. White Stork (*Ciconia ciconia*) at the nest in Yundola village in 16.07.2015 (Photograph: S. Stoyanov).



Fig. 2. The nest of White Stork (*Ciconia ciconia*) in Yundola village, 13.07.2016. (Photograph: G. Gruychev).

The nest site is new for Bulgaria, located GM36 (N4203; E2351). The nest is situated on a tree of Scots pine (*Pinus sylvestris* L.) at a height of 21 meters and in 1390 meters above sea level. In 2014, two birds appeared and occupied a breeding territory. That same year, they laid the fundament of a nest with several branches. In 2015, the nest building was completed, but again there was no nesting (Fig.1). The first successful nesting was in 2016 (Fig. 2). Between 2016 and 2018, the breeding pair had produced two hatchlings per year for three successive years, but the hatches throughout the observation period were late. On August 17, 2016, we observed the adults carrying food in the nest. The juveniles were still not able to fly. Each of these three years of successful breeding they have leaved the nest after August 20. In the winter of 2018-2019 the nest has fallen and in the spring of 2019 the pair was not observed.

Discussion

Creutz (1988) reported a White Stork nesting site situated at 2500 m a.s.l., specifying the nutritional supply as a major determinant of species distribution. Nests at high altitude were also reported in Georgia – between 1250 and 2140 m a.s.l. (Abuladze *et al.* 2014) and in the Caucasus – at 3500 m (del Hoyo *et al.* 1992). In Europe some of the highest breeding habitats of White Storks are recorded in the Iberian and the Balkan Peninsula – 1350 m a.s.l. and 1300 m a.s.l. (Profus 2006). The studied nesting site is the highest known so far in Bulgaria. It is adjacent to previously known localities (Petrov *et al.* 2015; Cheshmedjiev *et al.* 2016).

The breeding success of the observed pair was lower than typical for nests situated in lowlands, but still fell within the range reported for the White Stork (Glutz von Blotzheim & Bauer 1987; Simeonov *et al.* 1990; Cheshmedjiev *et al.* 2016). Breeding success is known to be negatively affected by altitude (Matasaru *et al.* 2018) and depends mainly on the food supply in breeding area (Djerdali *et al.* 2008). We suggest that the pair abandoned breeding territory most likely due to scanty food resources in Yundola at this high altitude with typical mountain terrain. However, the reported nest location with three successive years of breeding success considerably completes the White Stork's breeding biology in the country. It could be dependent by the shortage of suitable nesting sites in the lowlands or even due the climate changes in last decades.

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