

The Population of the White Stork in Bulgaria in the years 2004/05

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Zusammenfassung

In Bulgarien wurden während des 6. Internationalen Weißstorchzensus 2004/2005 insgesamt 4.826 Paare (HPa) gezählt. Das ergab einen Populationsanstieg von 14,2% seit 1994/95. Die Feuchtgebiete entlang der Flüsse Iskar, Maritsa und Struma sowie die Reisfelder um Plovdiv und Pazardzhik beherbergten die größten Bestände. Die durchschnittliche Siedlungsdichte (StD) in Bulgarien betrug 4,3 Paare/100 km². Der größte Anteil der Paare (86,5%) brütete unterhalb von 500 m ü NN. 55,3% aller Nester im Lande befanden sich auf Strommasten, 26,7% auf Nistmasten, 19,5% auf Gebäuden, 14% auf Bäumen und 2,8% auf Denkmälern, Kirchen und Türmen. In den Jahren 2004/05 wurden insgesamt 3.408 Nester als gefährdet angesehen (78,3% auf Strommasten, 15,5% auf Schornsteinen, 3,9 % auf Denkmälern und 2,3% auf toten Bäumen).

Summary

There were 4,826 breeding pairs (HPa) of White Stork in Bulgaria in 2004/2005. This suggests a population increase of 14.2% since 1994/95. The highest numbers were found in the wetlands along the rivers Iskar, Maritsa and Struma and the rice fields around Plovdiv and Pazardzhik. Mean breeding density (StD) was 4.3 pairs per 100 km². Most of the population (86.5%) lives at altitudes lower than 500m a.s.l. 55.3% of all nests in the country were situated on poles from the national electricity network; 26.7% on man made platforms and poles without wires; 19.5% on buildings; 14.0% on trees; and 2.8% on monuments, church domes and towers. In 2004/05 3,408 nests were judged to be in risky locations (78.3% on electrical poles, 15.5% on chimneys, 3.9 % on monuments and 2.3% on dead trees).

Introduction

The first specific data for the size of White Stork population in Bulgaria dates from 1958 (CRAMP & SIMMONS 1977). Over the following 33 years, several questionnaires surveys were carried out into the distribution, numbers and the conservation of the species in the country (MICHEV & STOYANOVA 1986; MICHEV *et al.*, 1989). The first more comprehensive picture for the status of the White Stork in Bulgaria was obtained by the 5th International White Stork census 1994/1995, when 88.2% of the nests were counted by site visits, with information for the remaining nests collected by questionnaire (PETROV *et al.* 1999).

Methods

The 6th International White Stork Census in Bulgaria 2004/05 was coordinated and conducted by the Bulgarian Society for the Protection of Birds/BirdLife Bulgaria (BSPB) and involved visits to 100% of the municipalities in Bulgaria. Data about White Stork nests was collected by more than 270 participants in 70 teams, who were mainly members and volunteers of BSPB, representatives from Regional Inspections of Environment and Water, Nature and National Parks, Natural History Museums and employees of the Regional Electricity Company. In 2004, the Census was conducted in 188 (71%) out of 265 municipalities in Bulgaria. The remaining 77 municipalities (29%) were visited in 2005. Information about storks was collected on specially designed data forms, which were completed for each nest at every site. An Internet database was designed for analysing the results.

Results

Population size

The population size of the White Stork in Bulgaria in 2004/2005 was estimated to be 4,826 breeding pairs (HPa) (Table 1). The highest number of breeding pairs was found in the Plovdiv and Haskovo municipalities, 486 and 433 pairs respectively. The lowest numbers were in the municipalities of Smolian and Gabrovo (1 and 36 pairs respectively).

155 nests were occupied for at least a month by only a single bird, and 730 nests were unoccupied. Most unoccupied nests were found in the municipalities of Bourgas (81 nests) and Haskovo (74 nests).

The total number of all recorded nests in the country (occupied by a pair + occupied by a single bird + unoccupied) was 5,711. This suggests that the number of stork nests in Bulgaria has increased by 18.6% since 1994/95.

Distribution

White Stork nests were found almost throughout the entire country, except: in dry regions; dense woodlands; areas with highly rugged terrain; and areas with an altitude of more than 1,317m a.s.l (Fig. 1). The highest densities were found in wetlands along the Iskar, Maritsa and Struma rivers, and in the rice fields around Plovdiv and Pazardzhik.



The distribution of breeding pairs by altitude is given in Fig.2. Out of 4,826 pairs, 86.5% bred at altitudes of 0 - 500m a.s.l. One pair was found at 1,317m a.s.l. (Ravnogor village in the Pazardzhik region).

Most White Stork nests were found within villages or cities, and only 9.6% (463) of the nests were found outside them, mainly in areas with large wetlands in Plovdiv, Lovetch and Pleven counties (Tab. 1).

Density

The average breeding density (StD) of White Storks in Bulgaria in 2004/05 was 4.3 pairs per 100 km². Compared with 1994/95, this represents an increase of 13.2%. The highest densities were recorded in the following municipalities: Plovdiv (8.2 pairs per 100 km²), Haskovo (7.8 pairs per 100 km²) and Montana (7.5 pairs per 100 km²). The lowest densities were in Smolian (0.03 pairs per 100 km²), Dobritch (1.4 pairs per 100 km²), Gabrovo (1.7 pairs per 100 km²) and Sliven (1.9 pairs per 100 km²).

The highest densities were in UTM squares: FL89 (40 HPa/100 km²), FM99 (45 HPa/100 km²) and GM19 (48 HPa/100 km²), where the storks find optimal foraging and breeding grounds.

Breeding success

The overall number of fledged juvenile storks (JZG) was 12,046 from a total of 4,240 successful pairs. Overall, 44% of the pairs had 3 chicks, 28.7% - 2 chicks, 20.6% - 4 chicks, 4.4% - 1 chick and 2.3% - 5 chicks. These numbers are similar those from 1994/95, with the main difference that in 2004/05 there were no pairs with 6 chicks (Fig. 3). 544 pairs failed, and 42 pairs had an unknown number of chicks (tab. 1).

The highest productivity was 3.0 chicks/pair and was estimated for the Sofia city county. The highest mean fledged brood size was 3.4 chicks/pair and was estimated for the Sofia city county and for the Varna county. Mean productivity for Bulgaria was 2.5 young/pair and mean fledged brood size (JZa) was 2.8. These values are nearly identical with the results from (JZm) the 1994/95 census and indicate the current stable state of the population in the country.

Development

Figure 4 shows the development of White Stork breeding population in Bulgaria from the middle of the 20th century onwards. Numbers were lowest at the end of the 20th century (4,227 pairs). The 2004/05 census suggests that since then numbers have increased by 14.2%.

Nest locations

In 2004/05 a total of 5,665 nests was found, and 3,910 of these were situated on poles forming part of the electricity network. Around 68% of these nests (2,652) were placed directly on the electrical transmission cables. For the remaining nests on electrical poles (1,258) there was no danger from electrocution or destruction, because they were either placed on platforms elevated 90-120 cm above the wires, or were situated on poles without wires.

Buildings accounted for 944 nests, and the riskiest of these were situated on chimneys (56%) of houses, factories, bakeries and baths, or on church domes and towers (10%).

There were 678 nests in trees 678, most frequently in acacia (29%), poplar (14%), and mulberry trees (12%). Other trees used for nesting include pine, oak, walnut, elm, ash, and lime, among others. Monuments, abandoned machinery and appliances accounted for 2.8 % of nest locations.

Analysis of the type of nest support recorded by the last two censuses suggests that the number of nests situated on trees has rapidly declined. At the same time, the number of nests on artificial platforms and on poles without wires has increased from 1.9% to 22.2% of the total number of nests (Fig.5).

Conservation aspects

With regards to the future conservation of the White Stork population in Bulgaria, it should be observed that the number of "risky" nests has increased from 2,595 in 1994/95 to 3,408 in 2004/05 (Fig.6). During both of the censuses, more than 77% of risky nests were situated on electricity transmission poles. The highest proportion of risky nests was found in the following counties: Sofia region, Vratsa, Vidin, Blagoevgrad and Veliko Tarnovo. Over the next 1-2 years, the national electricity company needs to safeguard all the White Stork nests situated on poles from the electricity network.

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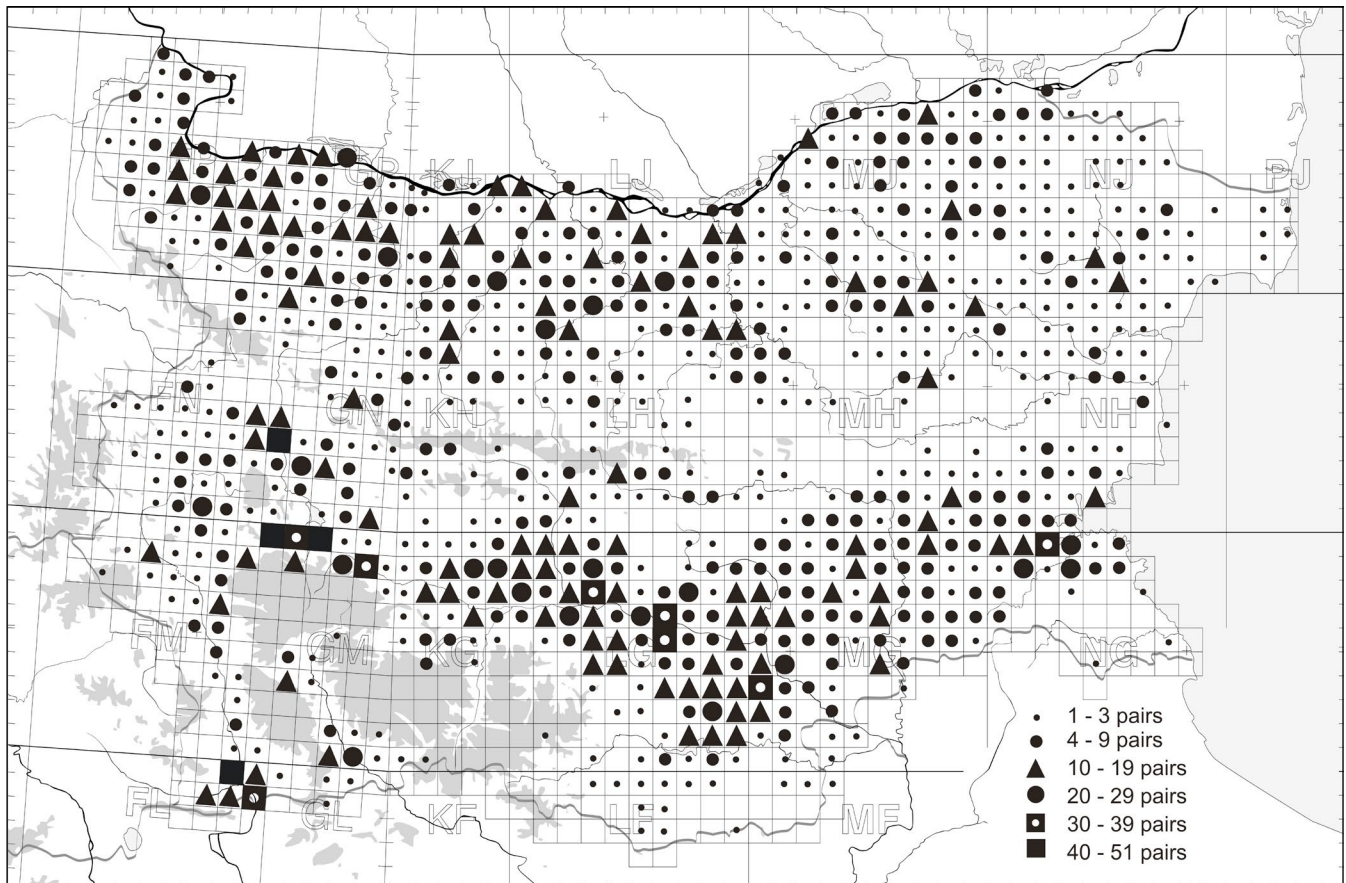


Fig. 1: Distribution and numbers of White Stork breeding pairs in Bulgaria during 2004/05.
Verbreitung und Anzahl des Weißstorchs in Bulgarien 2004/05.

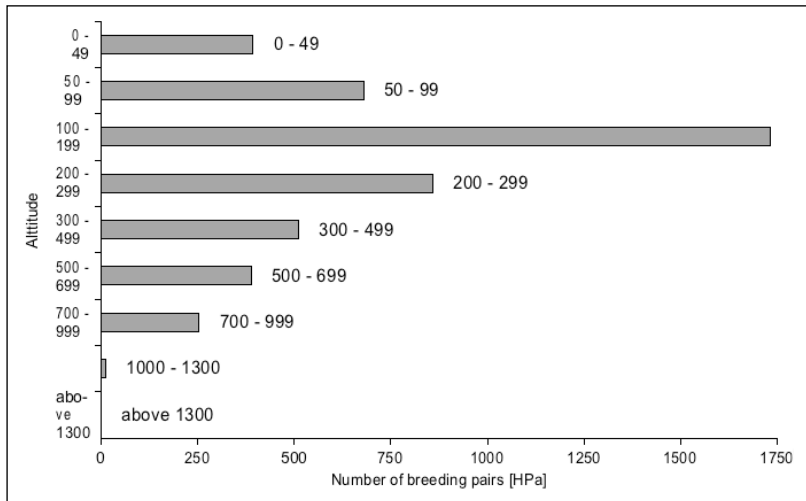


Fig. 2: Altitudinal distribution of breeding White Storks in Bulgaria in 2004/05.
Höhenverbreitung der Brutpaare des Weißstorchs in Bulgarien.

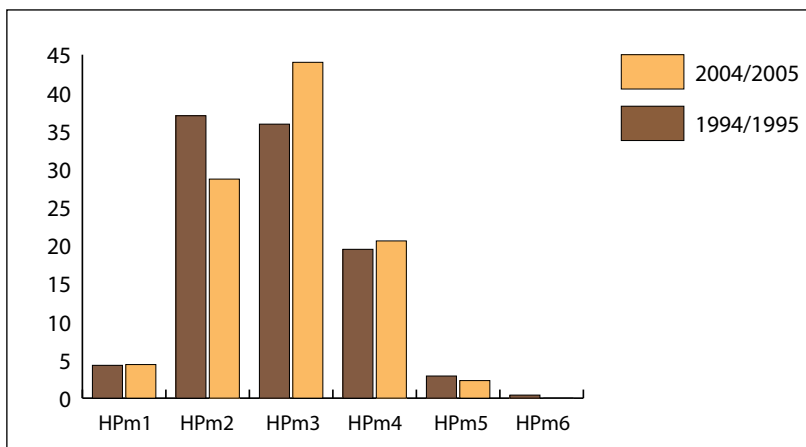


Fig. 3: Frequency distribution of White Stork fledged brood size in Bulgaria in 1994/95 and 2004/05.
Häufigkeitsverteilung der Anzahl ausfliegender Jungvögel pro Nest in Bulgarien 1994/95 und 2004/05.

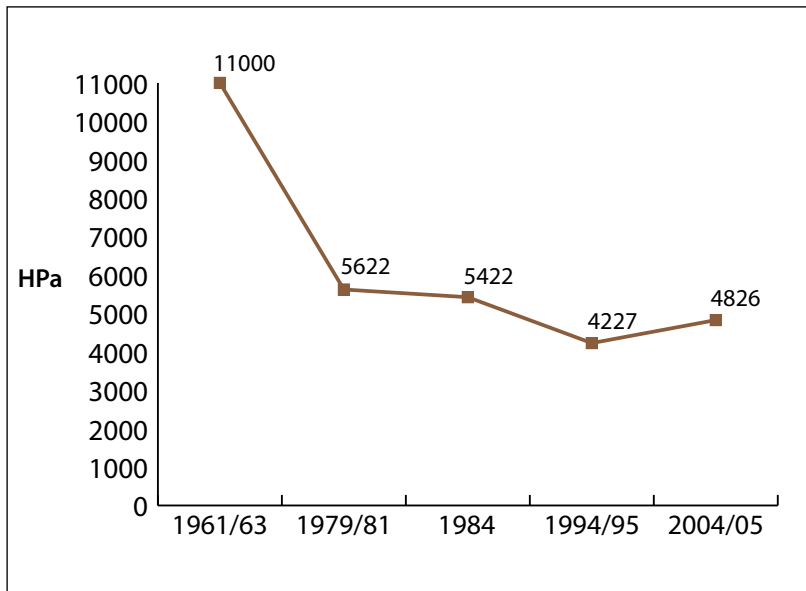


Fig. 4. Population development of the White Stork in Bulgaria from 1961/63 to 2004/05.
Bestandsentwicklung des Weißstorchs in Bulgarien zwischen 1961/63 und 2004/05.

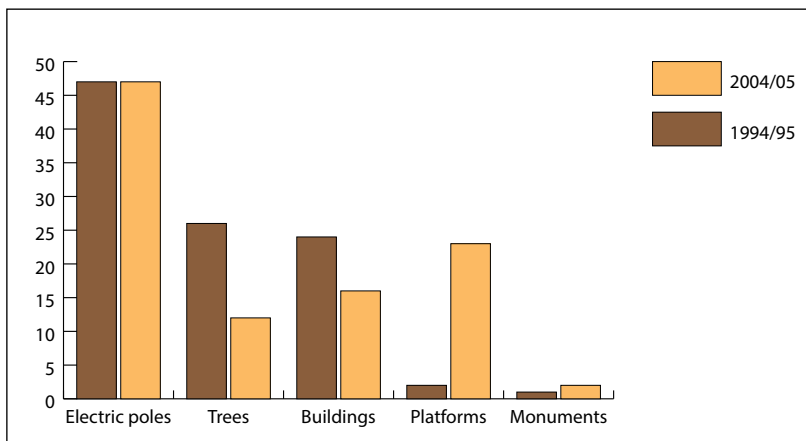


Fig. 5. Types of nest support for White Stork breeding in Bulgaria in 1994/95 and 2004/05.
Neststandorte von Weißstorchbrutpaaren in Bulgarien 1994/95 und 2004/05.

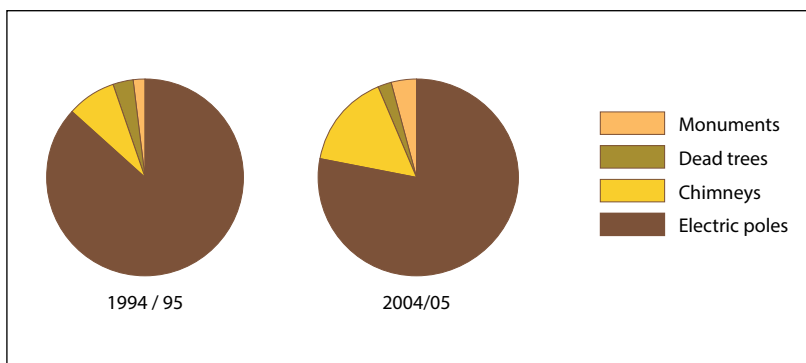


Fig. 6. "Risky" nest supports for White Storks breeding in Bulgaria in 1994/95 and 2004/05.
Gefährdete Neststandorte von Weißstorchbrutpaaren in Bulgarien 1994/95 und 2004/05

Tab. 1: Results of the 6th White Stork census 2004/05 in Bulgaria.
Ergebnisse des 6. Internationalen Weißstorchzensus 2004/05 in Bulgarien.

District	H	HPa	HPm	HPo	HPx	HE	H0	JZG	JZa	JZm	StD	El.poles		Trees		Build.		Monu- ments	Nests outside settle- ments
												with wires	plat- forms	live	dead	roof	chim- neys		
Blagoevgrad	253	234	211	22	1	5	14	649	2,8	3,1	3,6	155	29	12	4	15	37	1	15
Burgas	377	284	260	23	1	12	81	718	2,5	2,8	3,7	233	106	1	1	11	22	2	19
Dobrich	87	65	60	5	0	9	13	179	2,7	3	1,4	53	20	9	5	0	0	0	5
Gabrovo	45	36	18	4	14	2	7	43	1,2	2,2	1,7	16	5	7	0	4	11	2	4
Haskovo	522	433	388	40	5	15	74	1084	2,5	2,8	7,8	163	292	22	3	27	14	1	28
Kardzhali	113	79	71	8	0	2	32	209	2,6	2,9	2,4	55	29	21	1	3	4	0	5
Kustendil	101	76	69	7	0	4	21	209	2,7	3	2,4	24	8	26	1	16	23	3	3
Lovech	165	141	118	21	2	3	21	314	2,2	2,7	3,4	77	18	29	4	11	23	3	39
Montana	298	270	248	16	6	0	28	707	2,6	2,8	7,5	130	17	73	2	23	49	4	30
Pazardzhik	180	157	140	17	0	7	16	432	2,7	3,1	3,5	22	72	6	2	39	32	7	13
Pernik	98	81	72	9	0	2	15	217	2,7	3	3,4	80	8	3	1	4	2	0	2
Pleven	362	312	282	24	6	10	40	782	2,5	2,8	6,7	162	64	59	6	31	37	3	31
Plovdiv	567	486	430	54	2	11	70	1168	2,4	2,7	8,2	194	150	15	7	102	61	38	123
Razgrad	116	106	81	25	0	0	10	216	2	2,7	4,4	53	16	34	5	4	1	3	4
Rousse	135	119	107	12	0	6	10	291	2,4	2,7	4,2	68	33	7	0	10	12	5	16
Silistra	125	109	89	20	0	1	15	251	2,3	2,8	3,8	84	11	20	0	5	1	4	4
Sliven	83	68	61	7	0	3	12	186	2,7	3	1,9	43	13	15	0	2	6	4	5
Smolian	2	1	1	0	0	0	1	4	4	4	0,03	1	1	0	0	0	0	0	0
Sofia town	124	101	91	10	0	5	18	308	3	3,4	5	60	27	22	0	9	5	1	0
Sofia district	416	363	311	50	2	11	42	926	2,5	3	5,1	212	42	22	5	47	75	13	31
Shumen	93	75	68	7	0	2	16	181	2,4	2,7	2,2	45	24	13	1	2	4	4	3
Stara Zagora	295	234	185	48	1	16	45	513	2,2	2,8	4,6	144	85	8	4	20	18	17	10
Targovishte	114	90	79	11	0	2	22	203	2,3	2,6	3,3	81	15	10	0	1	2	5	6
Varna	117	93	82	11	0	6	18	250	2,7	3,4	2,4	82	25	7	0	0	2	1	2
Veliko Tarnovo	217	195	174	20	1	4	18	497	2,5	2,9	4,2	101	31	37	4	13	28	3	22
Vidin	186	159	148	10	1	2	25	447	2,8	3	5,2	121	6	28	8	4	17	2	9
Vratza	256	245	221	24	0	2	9	604	2,5	2,7	6,8	80	22	89	14	10	34	7	22
Yambol	264	214	175	39	0	13	37	458	2,1	2,6	6,5	129	119	4	1	3	8	0	12
Total	5711	4826	4240	544	42	155	730	12046	2,5	2,8	4,3	2668	1288	599	79	416	528	133	463

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