

The population of the White Stork in Germany with special consideration of the years 2004/2005

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Zusammenfassung

Der 6. Internationale Weißstorchzensus wurde in Deutschland durch die NABU BAG Weißstorchschutz organisiert. Sie ist eine ehrenamtlich organisierte Arbeitsgruppe im NABU BirdLife Deutschland.

Seit 1996 schwankte die Brutpopulation des Weißstorchs um 4,000 Paare (HPa), mit Ausnahme der „Störungsjahre“ von 1997 und 2005. Im Jahr 2004 wurde mit 4,482 Paaren (HPa) der größte Brutbestand seit 1996 registriert, der jedoch im darauf folgenden Jahr auf 3,651 Paare (HPa) zurückging.

In einigen deutschen Bundesländern ist der Reproduktionserfolg mit unter 2.0 Jungen pro Paar (JZa) sehr gering. Das macht die Notwendigkeit von Schutzmaßnahmen, vor allem in den Weißstorchlebensräumen deutlich.

Das Verbreitungszentrum des Weißstorchs in Deutschland befindet sich in der Elbtalau in Ostdeutschland. Mehr als 90% der deutschen Brutpopulation befindet sich in den Bundesländern, die zum Wassereinzugsgebiet der Elbe gehören.

Wir zeigen eine Reihe von Gefährdungsfaktoren und notwendiger Schutzmaßnahmen für die Brutpopulation des Weißstorchs in Deutschland auf.

Summary

The 6th International White Stork Census was co-ordinated in Germany by the NABU BAG *Weißstorchschutz*, a working group of volunteers within NABU – BirdLife Germany.

Since 1996, the breeding population of the White Stork has fluctuated around 4,000 breeding pairs (HPa), except in the “*Störungsjahre*” [“disturbance years”] of 1997 and 2005. Peak numbers since 1996 were recorded in 2004, with about 4,482 breeding pairs (HPa), but in the following year only 3,651 pairs (HPa) were recorded.

In some federal states of Germany, productivity is very low, at less than 2.0 young fledged per pair (JZa). This demonstrates a need for conservation measures, as impacts on White Stork habitats continue to increase.

The core range of the White Stork in Germany is found in the wet river basins of eastern Germany. More than 90 % of the breeding population can be found in the federal states with land draining into the river Elbe.

We identify a number of threats and opportunities for the conservation of the breeding population White Storks in Germany.

Introduction and methods

The long history of White Stork monitoring and an account of the species' population development in Germany have previously been given by KAATZ (1999) in the report of results of the 5th International White Stork Census in 1994/95. The present article continues that narrative. The NABU-BAG *Weißstorchschutz* is a working group of volunteers within NABU – BirdLife Germany that organises annual monitoring of the White Stork population. The results have been published in annual reports prepared separately for each federal state of Germany (NABU BAG WEISSSTORCHSCHUTZ 2005; 2006).

The nomenclature for the monitoring is the same as that used by SCHÜZ (1952) and is similar to the methods of the coordinator of the International White Stork Census. The White Stork is monitored throughout the country. In each federal state, a single coordinator is responsible ensuring that data are collected, and co-ordinates White Stork workers in smaller districts. The results of the monitoring are sent from the districts to the federal state co-ordinator, who also collates them and forwards them to the chairman of the NABU-BAG *Weißstorchschutz*.

These results form the basis for conservation measures and are used to produce detailed distribution maps. In this way, a long-term dataset is developed. This was one reason why the White Stork was one of the species used to pilot the breeding bird atlas of Germany (GEDEON et al. 2004).

Results

Figure 1 shows the development of the White Stork population (breeding pairs) in Germany from 1996 to 2005 compared with the result of the census in 1974, 1984 and 1994.



Compared with census results for Germany in previous years, numbers in 2004 were very high. The number of breeding pairs in 2004 was about 300 pairs higher than in 1994. Numbers in 2005 (3,651 pairs) were very similar to 1984 (3,371 pairs). Both years were so called *Störungsjahre* [“disturbance years”], showing a sharp decline in breeding numbers, a late return from the wintering ground and a very low breeding success. In 1974, more than 4,000 pairs were also counted in Germany.

The data show that numbers of White Storks in Germany have fluctuated between 3,620 (1997) and 4,482 breeding pairs (2004), with an average of 4,176 pairs for the period since 1996. During this time, two *“Störungsjahre”* [“disturbance years”] were recorded (1997 and 2005).

Figure 2 shows the population status in the federal states of Germany in 1994 and 2004. The main range of the White Stork is found in the eastern federal states, which hold about 80 % of the breeding population. The distribution map in Figure 3 shows a high breeding density along the river basin of the Elbe and its tributaries, in the lowland areas of the Spreewald, and in mire landscapes to the northwest of Berlin.

While White Stork numbers in Germany stabilized rapidly following the decline in associated with the 1997 *“Störungsjahr”*, at a level of about 4,300 pairs, we detected no increase following the decline of 2005. In 2006 and 2007, the breeding numbers in the federal states holding the core population in Germany (Brandenburg, Mecklenburg-Vorpommern, Sachsen-Anhalt and Sachsen) have still not returned to the levels recorded in 2004 (NABU BAG WEISSSTORCHSCHUTZ 2008).

In the federal states in the southwest (Hesse, Rhineland-Palatinate, Baden-Wuerttemberg and Bavaria) only a small decline was recorded in 2005 and in these areas the year could not really be described as a *“Störungsjahr,”* This part of the German breeding population migrates mainly along the western flyway. A large part of this population winters on the Iberian Peninsula, and shows different population trends to the eastern population. However, some reintroduction projects have been undertaken in southwest Germany in the past, and some large colonies of White Stork developed in zoos and *Vogelpflegestationen*. White Storks breeding in these colonies are dependent on artificial supplies of food. These factors have probably influenced the population development of the White Stork in southwest Germany. The numbers of pairs reliant on artificial food are recorded separately: 427 pairs in 2004 and 436 pairs in 2005 (NABU BAG WEISSSTORCHSCHUTZ 2005; 2006).

As well as the number of breeding pairs, reproductive rates are very important parameters in evaluating the status of breeding populations. Overall productivity (JZa) is the most useful statistic, and an overview is given in Table 1.

Discussion

Except the two *“Störungsjahre”* of 1997 and 2005, on average 4,300 pairs of White Storks bred in Germany over the last ten years. This is a good result, but we cannot be sure that this trend will be continued in the future.

Productivity is lower than 2.0 juvenile per pair in many years, not only in *“Störungsjahre”*. A population-level productivity rate of less than 2.0 juvenile per pair is not enough to sustain the breeding population. An analysis of the population dynamics of White Storks in the federal states of Saxony, Saxony -Anhalt and Lower Saxony calculated the net reproductive rates and the level of possible emigration over the last two decades (SCHIMKAT 2001). Despite an increasing number of breeding pairs, the population is not stable because of poor breeding success and high mortality. The increasing number is reduced to emigration. But direct evidence of immigration/emigration is not possible because of a lack of ringing programs in the countries of Eastern Europe.

There are signs from Lower Saxony, Schleswig-Holstein and also increasingly from eastern parts of Germany of an increase in the number of White Storks that migrate via the western flyway. This is shown by ringing records and satellite telemetry (KAATZ, 2004). In addition, it is likely that White Storks returning to Germany before 20th March belong to the western population. These birds winter in Spain or Portugal, and have a shorter migration route. Many breeding birds from Germany have been recorded in Spain by their rings (DAHMS & EGGERS 2000).

Conservation of the White Stork in Germany

The basis for successful conservation efforts is a detailed, annual census of the breeding population, including reproductive rates. This is organized in Germany by the NABU working group for White Stork conservation, in cooperation with other organizations.

Natural and semi-natural floodplains, backwaters, wet grasslands and temporary water bodies are all important feeding habitats for the White Stork, as well as for many other animal and plant species (GABRIEL 2001).

The Elbe river system is the area with the highest population density and the best reproductive rate in Germany. The conservation of this river system is very important for the future of the White Stork in Germany. The river Elbe has to be protected from hydrological engineering projects such as straightening, regulation, and construction of barrages and dams.

In general, environmentally friendly farming has had positive effects on the White Stork. Grazing with cattle, horses and sheep is an ideal grassland management regime to provide foraging habitat for White Storks. Short vegetation makes searching for food easy for the Storks, and a mosaic of small patches of different habitat supports high biodiversity. In contrast, grass mowing is a negative factor for many meadow birds and small mammals, because of the high speed of modern machines (ca. 30 km/h) and the large size of areas that can be cut (cutting 8-9 ha per hour). We note with concern declines in grazing management such as suckler cow herds, and the reduction in extent of grassland in general. This will lead to declining White Stork numbers, which have been recorded for example in Mecklenburg-Vorpommern.

In Germany, a national action plan for the White Stork was developed by THOMSEN *et al.* (2001). Beside general aspects of

White Stork conservation, the plan identifies important areas for White Stork conservation, and the specific conservation measures required to manage them.

The most important cause of White Stork mortality is electrocution. Under national nature conservation law, energy supply companies in Germany are required to make the electricity powerlines safe. Nature conservationists support them by ensuring that the most dangerous points are made safe first.

Of course, the traditional activities of maintaining and protecting nests and nest platforms have to be carried out by the members of the NABU BAG Weißstorchschutz.

As a flagship species, the White Stork is essential for the promotion of nature conservation to wider society. It is an indicator species for intact habitats with high biodiversity. The White Stork is also very important as a subject of scientific research. Many results from White Stork research are applicable to other bird species.

Acknowledgements

Thanks to the commitment of many people, it has been possible to increase the German population of White Stork to more than 4,000 pairs. Hopefully this is the long-term result of our work. To represent all of those White Stork conservationists involved in the census and other conservation measures who are too many to name individually, we extend our thanks to the following regional coordinators (Tab.2).

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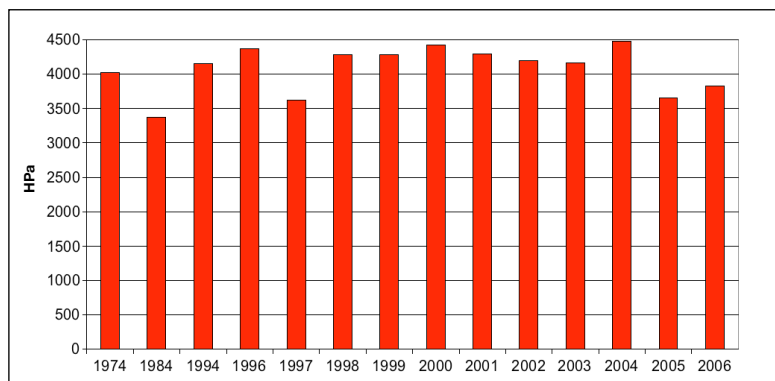


Fig. 1. Development of the White Stork population in Germany since 1974.

Entwicklung der Weißstorch Population in Deutschland seit 1974.

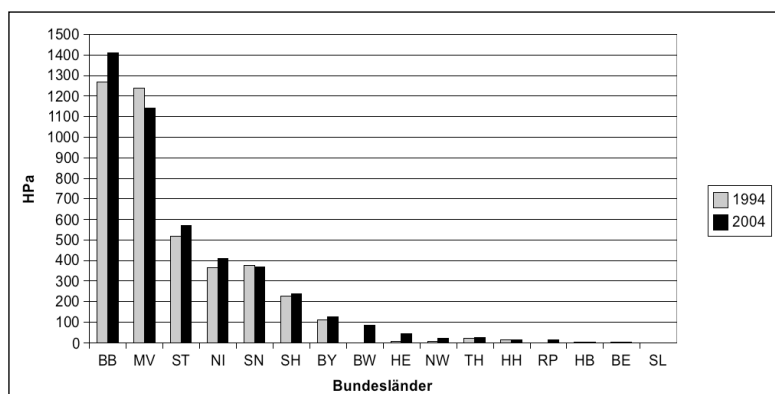


Fig. 2. Numbers of White Storks breeding in the federal states of Germany, and comparison of the two years of the International White Stork Census 1994 and 2004 (abbreviations: BB = Brandenburg, MV = Mecklenburg-Western Pomerania, ST = Saxony-Anhalt, NI = Lower Saxony, SN = Saxony, SH = Schleswig-Holstein, BY = Bavaria, BW = Baden-Wuerttemberg, HE = Hesse, NW = North Rhine-Westphalia, TH = Thuringia, HH = Hamburg, RP = Rhineland-Palatinate, HB = Bremen, BE = Berlin, SL = Saarland).

Vergleich der Anzahl der Brutpaare des Weißstorchs (HPa) in den deutschen Bundesländern während der beiden Zensusjahre 1994 und 2004.

Tab. 1. Number of breeding pairs (HPa) and productivity (young fledged per pair, JZa) of White Storks in the federal states of Germany between 1996 and 2005. Anzahl der Brutpaare (HPa) und Gesamtbrüterfolg (JZa) des Weißstorchs in den deutschen Bundesländern zwischen 1996 und 2004.

Federal State	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005	
	HPa	JZa	HPa	JZa	HPa	JZa	HPa	JZa	HPa	JZa	HPa	JZa	HPa	JZa	HPa	JZa	HPa	JZa	HPa	JZa
Mecklenburg-Western Pomerania	1223	1,8	1016	1,3	1188	2,3	1157	2,2	1177	1,9	1143	2,1	1091	1,8	1065	1,6	1142	2,1	894	1,3
Brandenburg	1354	1,9	1127	1,3	1316	2,4	1357	2,3	1405	2,0	1372	2,1	1369	2,0	1318	1,7	1409	2,3	1181	1,3
Berlin	3	1,3		2,0	2	3,0	2	4,0	3	1,7	3	2,3	2	3,5	2	4,0	2	4,0	2	2,0
Saxony-Anhalt	583	1,9	485	1,3	549	2,2	554	2,1	574	2,1	563	1,9	538	1,8	522	1,8	572	2,3	485	1,5
Saxony	442	1,5	346	1,0	409	2,2	413	1,8	394	1,8	393	1,8	364	1,8	344	1,6	368	2,2	274	1,5
Lower Saxony	355	2,0	313	1,3	353	2,1	339	2,0	361	2,0	353	1,7	356	1,8	387	1,7	411	2,2	354	1,3
Schleswig-Holstein	228	2,0	196	1,2	240	2,0	231	2,1	249	1,4	213	1,4	207	1,4	215	1,5	238	2,1	170	1,2
Hamburg	18	1,8	11	1,0	11	1,7	13	1,7	10	1,6	15	1,5	11	1,5	16	1,6	16	2,3	15	0,8
Bavaria	123	1,5	93	1,4	124	1,9	118	1,8	126	1,9	109	2,0	114	2,0	121	2,2	128	1,9	128	1,9
Baden-Wuerttemberg					40	2,4	45		57		61		74		80		86		97	
Thuringia	26	1,7	16	1,1	25	2,2	22	1,8	24	1,9	19	1,8	21	1,8	22	2,0	24	2,0	20	2,3
North Rhine-Westphalia	6	2,0	5	2,8	7	2,3	7	2,3	10	2,1	8	2,3	8	1,8	18	1,7	23	1,9	23	1,7
Bremen	4	2,3	4	0,8	4	2,5	4	1,8	4	2,3	4	1,3	5	1,0	3	2,7	5	2,6	4	1,5
Hesse	5	2,6	6	1,2	9	2,2	15	2,4	19		22		23		34	2,6	44	2,2	47	2,2
Rhineland-Palatinate	0		0		4		6		8		10		13		14		13	2,7	15	2,6
Saarland	0		0		1		1		1		2		1		1		1		2	0,5
Absolut	4370	1,8	3620	1,3	4282	2,2	4284	2,2	4422	2,2	4290	2,0	4198	1,9	4162	1,7	4482	2,2	3651	1,4

Tab. 2. Regional Coordinators of the White Stork Census in Germany 2004/2005.

Regionalkoordinatoren des Weißstorchzensus in Deutschland 2004/05.

Federal state	coordinator
Mecklenburg-Western Pomerania	H.-H. ZÖLLICK, H. EGGERS, H.-D. GRAF, Dr. L. DAUBNER
Brandenburg	B. LUDWIG, H.-R. FRIEDRICH, W. KÖHLER
Berlin	NABU Berlin, W. und H.ZOELS
Saxony-Anhalt	Dr. C. KAATZ, Dr. Me. KAATZ
Saxony	Dr. J. SCHIMKAT, G. ERDMANN, Dr. HEINRICH
Lower Saxony	Arbeitsgemeinschaft der Weißstorchbetreuer Nordwest-Deutschlands, Staatliche Vogelschutzwarte Niedersachsen, Hannover, D. STIEFEL, Dr. R. LÖHMER, V. BLÜML
Schleswig-Holstein	AG Storchenschutz im NABU, J. HAECKS, U. PETERSON
Hamburg	NABU Hamburg, J. PELCH
Bavaria	Landesbund für Vogelschutz in Bayern e.V., LBV, O. WIEDING
Baden-Wuerttemberg	W. und U. FELD
Thuringia	K. SCHMIDT
North Rhine-Westphalia	Arbeitsgemeinschaft der Weißstorchbetreuer Nordwest-Deutschlands, Staatliche Vogelschutzwarte Niedersachsen, Hannover, D. STIEFEL, Dr. A. BENSE
Bremen	Arbeitsgemeinschaft der Weißstorchbetreuer Nordwest-Deutschlands, Staatliche Vogelschutzwarte Niedersachsen, Hannover
Hesse	NABU Hessen, B. PETRI, Dr. R. LORENZ, K. HILLERICH
Rhineland-Palatinate	I. DORNER, W. und U. FELD
Saarland	W. und U. FELD

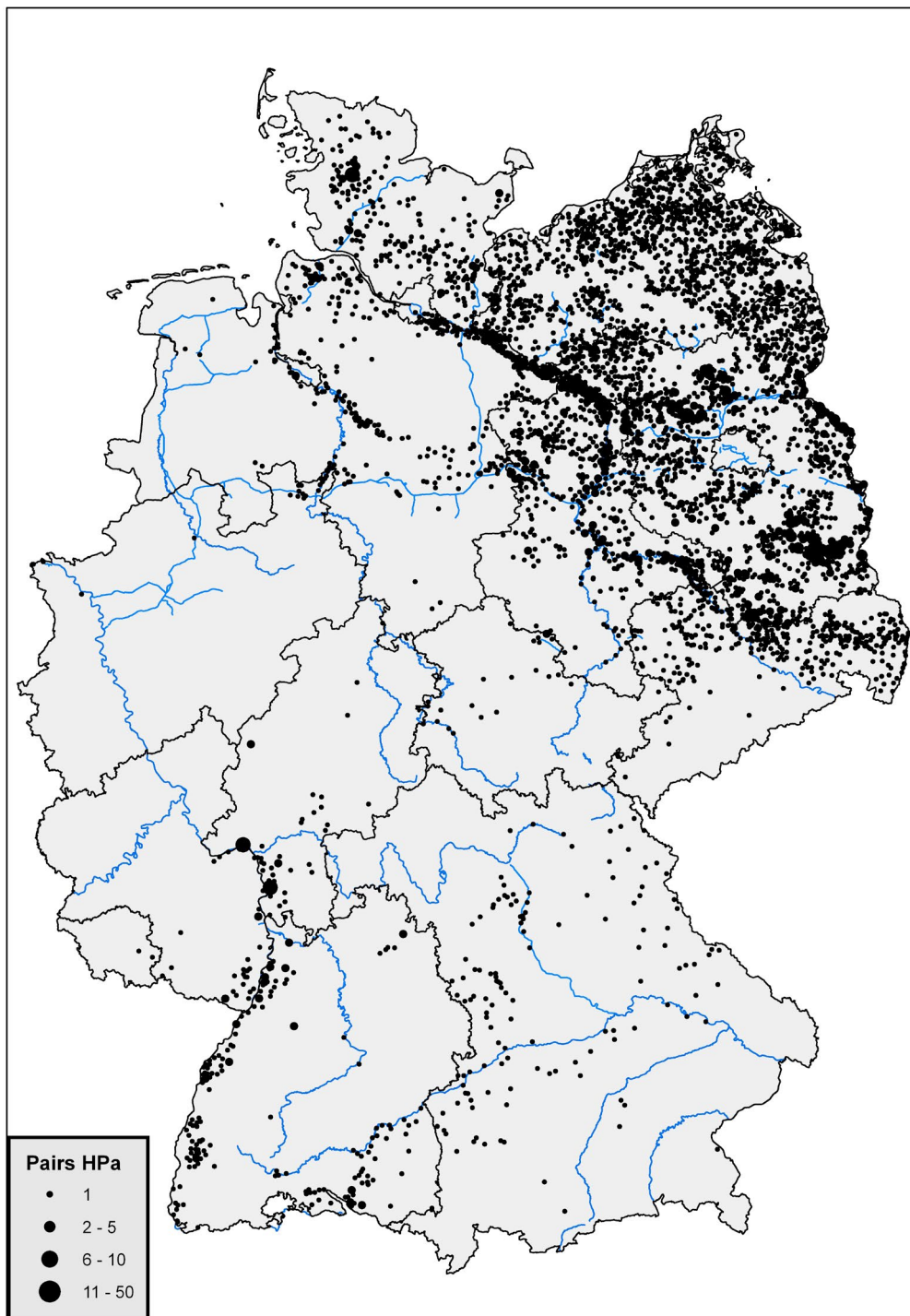


Fig. 3. Distribution of the White Stork in Germany 2004.
 Verbreitung des Weißstorchs in Deutschland 2004.

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