

White Stork in Poland in 2004 – Results of the 6th International White Stork Census

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Zusammenfassung

Der 6. Internationale Weißstorchzensus in Polen wurde im Jahr 2004 durchgeführt. Zwei sich ergänzende Methoden der Datenerfassung wurden genutzt: Fragebögen, die an die Bürgermeister der Gemeinden verschickt wurden und direkte Zählungen durch Ornithologen und Freiwillige. Basierend auf der Zählung von 48.059 Brutpaaren (HPa) wurde die Weißstorchpopulation in Polen auf 52.500 Paare (HPa) hochgerechnet. Der Weißstorchbestand nahm seit dem letzten Zensus 1994 um 28% zu. Allerdings variierten die Populationstrends, denn in SW Polen nahm die Anzahl der Brutpaare ab. Die Siedlungsdichte (StD) betrug durchschnittlich 16,8 Paare pro 100 km² und nahm von Südwest nach Nordost zu. Der Gesamtbruterfolg (JZa) im Jahr 2004 war mit 2,33 Jungen pro Paar sehr hoch. Der Bruterfolg war jedoch landesweit sehr unterschiedlich verteilt. Es bestand eine starke Überlappung der Regionen mit einem Bestandsanstieg und dem höchsten Bruterfolg, der vor allem die Regionen östlich der Weichsel abdeckte. Die meisten Weißstorchnester (60%) befanden sich auf Masten, zumeist auf Strommasten. Derzeit ist der Weißstorch in Polen nicht gefährdet, jedoch ist ein Populationsrückgang in einigen Regionen fest zu stellen.

Summary

The 6th International White Stork Census in Poland has been carried out in 2004. Two mutually supporting methods of data collecting have been used: a questionnaire directed to the village mayors and direct field control by ornithologists and volunteers. Based on the recording of 48,059 breeding pairs (HPa) the White Stork population in Poland has been estimated at 52,500 pairs (HPa). The White Stork population in Poland has increased by 28% since the last census in 1995. However, regional population trends have varied. In Southwest-Poland the number of pairs even decreased. Population densities (StD) grow from the Southwest of the country towards the Northeast, with a national average density of 16.8 pairs per 100 km². The breeding success in 2004 was very high with 2.33 young per breeding pair (JZa). The breeding success was unevenly distributed across the country. There was a clear and strong overlapping of the areas with population increase and highest breeding success in 2004, which covered areas east from the Wisla River. The majority (60%) of the White Stork nests

were placed on poles, mainly of electricity lines. At present, the White Stork is not considered threatened in Poland, but a decrease was recorded in some regions.

Poland has taken a full part in all of the International White Stork Censuses since 1974 (JAKUBIEC 1985, JAKUBIEC et al. 1986, PROFUS et al. 1989, GUZIAK & JAKUBIEC 1999). The results of the 6th IWSC in Poland have already been published in book form, with articles presenting results for each of the 16 Polish provinces, and chapters summarising results for the whole country and considering different conservation aspects (GUZIAK & JAKUBIEC 2006). The book is published in Polish, but rich illustrations and extensive English summaries make it accessible to a wider audience and give an insight into the world's largest national population of the species, accounting for up to 20% of the global population.

Methods and material

The aims and methods of the census in Poland were much the same as those suggested by the international census coordinators – including the recommendation that, if possible, all nests should be visited. The information was collected in order to estimate population size and breeding parameters, as well as nest site selection. Optionally, additional information was collected on arrival and departure dates, clutch size and other bird species using stork nests; in some regions these data were gathered systematically (see for instance INDYKIEWICZ 2006).

Data were collected and presented by administrative unit (province, county and commune/municipality/borough), this approach being the most practical and easy to administer. Two mutually supportive methods of data gathering were used: questionnaires sent to village mayors, and direct field observations made by professional and amateur ornithologists. These two sources of information were supplemented by data from schools taking part in the “Stork” educational programme, as well as by casual records. The total number of records collected was 117,352. Data were recorded at the level of individual nests (occupied or unoccupied), or a settlement where no nest was recorded.

Data from multiple sources required careful collation to avoid double-counting of the same nest (this task was simplified by the existence of a comprehensive database that has been maintained



since 1994 by the Polskie Towarzystwo Przyjaciół Przyrody “pro Natura” (PTPP). Centralisation of computerised data entry and analysis ensures standard methodologies, but has disadvantages including poor local knowledge. Changes such as the dynamic development of human settlements, changes to place-names, the introduction of street systems in villages where previously only house numbers had been used, as well as administrative reforms, all make the tracking of nest histories more difficult.

Population sizes had to be estimated for areas where data were not collected. This was done by extrapolation, assuming equal densities on adjacent surveyed and unsurveyed areas. The commune (comprised on average of around 20 settlements) was chosen as the basic unit for these calculations and no extrapolation was made below this level. Communes where data were available for less than 75% of settlements were considered insufficiently surveyed, and were not used as a basis for extrapolation. Extrapolations for counties were summed to produce estimates for Provinces, and thus the whole country. For counties where extrapolation gave lower numbers than those actually recorded, the observed number of pairs was used. Both observed and estimated numbers are presented in the tables.

Analysis of nest site selection was based on all nests, both occupied and unoccupied. Artificial platforms that had never been occupied by storks were excluded.

Results

Population size

After compiling data from different sources, 58,036 nests were recorded, of which 48,059 were occupied by pairs (Tab. 1). After extrapolation of data to account for areas with little or no survey coverage, the number of breeding pairs in Poland in 2004 was estimated to be 52,550 pairs (HPa), rounded to 52,500. Taking into account the possibility of a 5% error, the range was 49,900 – 55,100 HPa. To avoid the risk of overestimation, the probable range should be estimated at 49,900 - 52,550 HPa. The White Stork population in Poland has increased by 28% since the last census in 1995 (Fig. 1).

Numbers in individual provinces ranged from 577 pairs in Opolskie province to 10,226 pairs in Warmińsko-Mazurskie, equivalent to 1.1% and 19.5% of the Polish population respectively. These differences are a consequence of variable province size and uneven distribution of White Storks in Poland.

Distribution

In 2004, the White Stork was recorded across the whole of Poland, including highlands and valleys in the Carpathian and Sudety mountains. Breeding distribution was uneven, with forested areas avoided, especially in the north and west of Poland (Fig. 2). Concentrations of nests were observed in some larger river valleys (Noteć, Narew, Bug, Bzura, Wieprz, San, and the upper and middle Wisła). Concentrations were less obvious in the valleys of the Pilica, Warta and Barycz, while along the Odra such concentrations were virtually absent.

There was a clear regional difference on either side of the river Wisła. To the east of the Wisła, with exception of the Wyżyna Lubelska uplands but including the mountainous catchment of the river San, White Storks were present at much higher densities than in the west of Poland. There is a southwest-northeast density gradient. In northeast Poland, especially in the province of Warmińsko-Mazurskie, densities are very high and the area contains the only Polish SPA dedicated to the protection of White Stork (Warmińskie Bociany, PLB 280009, 1079.4 km²). In western Pomerania (northwest Poland) densities were much lower, in spite of similar natural conditions.

Colonial breeding

Clusters of nests were recorded in 1936 settlements. The test of whether such concentrations met the criteria for classification as colonies (5 nests less than 200 m apart - PETERSON *et al.* 1999) was difficult and not applied in Poland. Instead, the presence of nests within the same settlement was considered satisfactory. Most colonies were relatively small clusters of up to 10 pairs, although the largest exceeded 40 pairs at one region (Tab. 2).

Density

The average breeding density (StD) in 2004 was 16.8 pairs per 100 km² for the whole country (Tab. 1). At a province scale, densities ranged from 4.5 (Dolnośląskie) to 44.9 in Podlaskie, a 10-fold difference, with a southwest to northeast gradient (Fig. 3). Densities varied unevenly – only 4 out of 16 provinces exceeded the average.

Breeding success in 2004 was very good, with a low proportion of unsuccessful pairs (%HPo) at 11.1%. Productivity (JZa) was 2.33 young per pair, and at least 111,000 young fledged that year. Breeding performance varied geographically. Areas east of the Wisła river showed strong population increases and good breeding performance in 2004.

Most White Stork nests (60%) were placed on pylons, mainly for electricity lines. The next most frequent nest locations were buildings and trees, but neither category exceeded 20%. In some areas, the proportion of nests on supports other than pylons was higher. Storks in central Poland traditionally nest in trees, whereas in northeast Poland buildings are the most common nest support. In the southwest of the country, where breeding densities are lowest, nest sites are more evenly distributed between categories.

Conclusion

At present, the White Stork is not considered threatened in Poland, although caution should be drawn from the decreases recorded in some regions of the country and from abroad. This risk of decline, as well as the use of the White Stork as an umbrella species for wetland habitats, have justified a large and complex conservation project for the species in Poland.

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References

- GUZIAK, R. & Z. JAKUBIEC (1999). Der Weißstorch *Ciconia ciconia* in Polen im Jahr 1995 - Verbreitung, Bestand und Schutzstatus. In: H. Schulz (Ed.) (1999). Weißstorch im Aufwind? - White Storks on the up? - Proceedings, Internat. Symp. on the White Stork, Hamburg 1996: 171. NABU, Bonn.
- GUZIAK, R. & Z. JAKUBICA, (2006). Bocian biały *Ciconia ciconia* (L.) w Polsce w roku 2004. 432. Pro Natura, Wrocław.
- INDYKIEWICZ, P. (2006). House Sparrow *Passer domesticus*, Starling *Sturnus vulgaris*, Tree Sparrow *Passer montanus* and other residents of nests of the White Stork *Ciconia ciconia*. In: P. Tryjanowski, T. H. Sparks & L. Jerzak (Eds.) (2006). The White Stork in Poland: studies in biology, ecology and conservation: S. 225 Bogucki Wydawnictwo Naukowe, Poznan.

- JAKUBIEC, Z. (1985). The population of the White Stork *Ciconia ciconia* (L.) in Poland. I. Number and Reproduction of the White Stork according to results of field control and inquiry data. Stud. Nat., A., 28, 262 S.
- JAKUBIEC, Z., P. PROFUS & J. SZECÓWKA (1986). Zum Status des Weißstorchs (*Ciconia ciconia*) in Polen. Beih. Veröff. Nat.sch. Landsch.pfl. Bad.-Württ., 43, 131.
- PROFUS, P., Z. JAKUBIEC & P. MIELCZAREK (1989). Zur Situation des Weißstorchs, *Ciconia ciconia* L., in Polen, Stand 1984. In: G. Rheinwald, J. Ogden & H. Schulz" (Eds.) (1989). Weißstorch - White Stork, Proc. I Int. Stork Conserv. Symp., Schriftenreihe des DDA 10: 81. Dachverband Deutscher Avifaunisten.

Tab. 1. Results of the 6th International White Stork Census 2004 in Poland. Ergebnisse des 6. Internationalen Weißstorchzensus in Polen.

Parameters	Values
Number of nests; H	58,036
Pairs counted; HPa counted	48,059
Pairs estimated; HPa estimated	52,550
Single birds; HE	826
Successful pairs; HPm	42,432
Pairs without success; HPo	5,279
Percentage of unsuccessful pairs; % HPo	11.1
Pairs with unknown success; HPx	348
total number of fledgelings; JZG	110,930
Productivity [JZG/HPa]; JZa	2.33
Mean fledged brood size [JZG/HPm]; JZm	2.61
Population density [HPa/100km ²]; StD	16.8

Tab. 2. Numbers of White Stork colonies in the provinces (Voivodeship) of Poland, 2004.

Anzahl der Weißstorchkolonien in den Woiwodschaften Polens.

Province; Voivodeship	size categories - HPa					
	≥ 5	≥ 10	≥ 15	≥ 20	≥ 30	≥ 40
Dolnośląskie	5	0	0	0	0	0
Kujawsko-Pomorskie	36	2	0	0	0	0
Lubelskie	300	53	18	6	0	0
Lubuskie	28	4	3	2	0	0
Łódzkie	6	0	0	0	0	0
Mazowieckie	152	11	3	0	0	0
Małopolskie	24	3	0	0	0	0
Opolskie	2	0	0	0	0	0
Podkarpackie	126	26	6	2	0	0
Podlaskie	485	108	26	11	2	0
Pomorskie	63	7	3	1	0	0
Śląskie	14	0	0	0	0	0
Świętokrzyskie	3	0	0	0	0	0
Warmińsko-Mazurski	629	178	64	28	7	4
Wielkopolski	38	4	1	0	0	0
Zachodniopomorski	25	3	0	0	0	0
POLSKA	1936	399	124	50	9	4

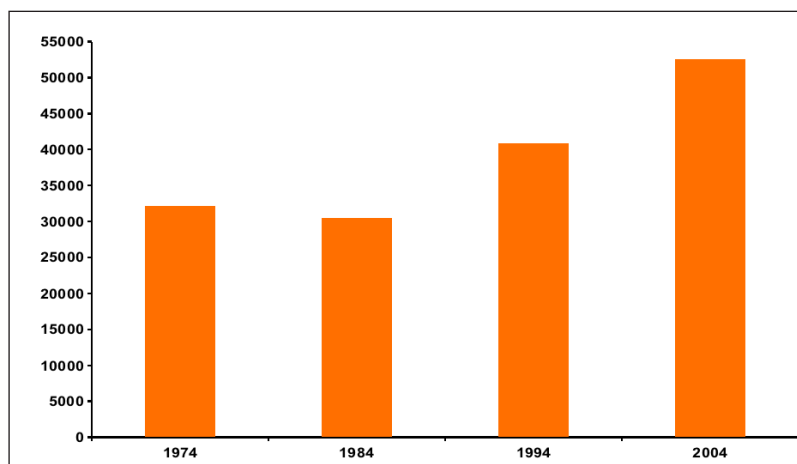


Fig. 1. Development of the breeding population of the White Stork in Poland since 1974. Populationsentwicklung des Weißstorchs in Polen seit 1974.

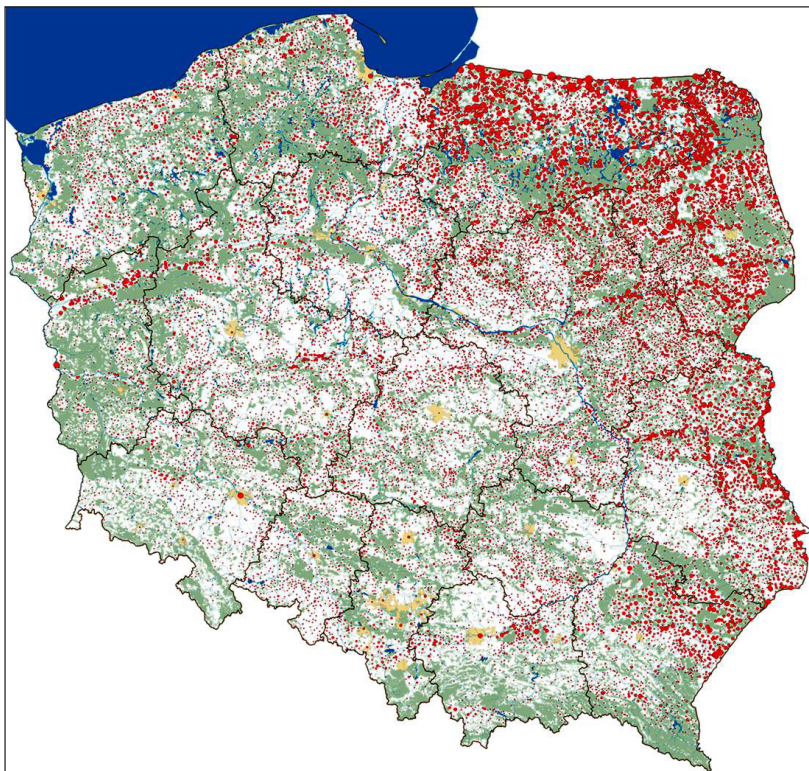


Fig. 2. Distribution of the White Stork in Poland 2004.
 Verbreitung des Weißstorchs in Polen 2004.

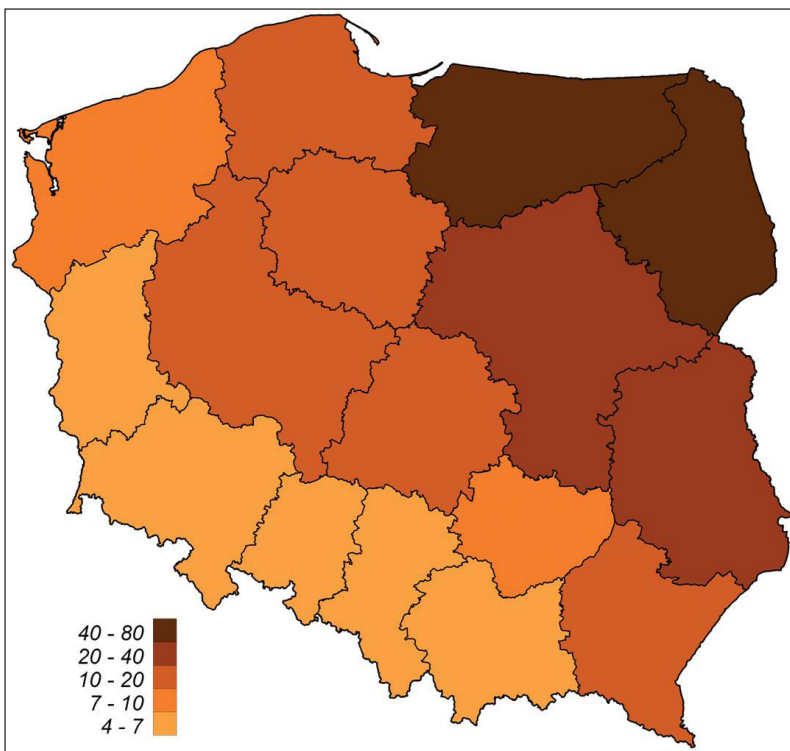


Fig. 3. Population density (StD) of the White Stork in the provinces (Voivodeship) of Poland 2004.
 Siedlungsdichte (StD) des Weißstorchs in den Woiwodschaften Polens 2004.

Imprint

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