

# Current status of the Lesser White-fronted Goose *Anser erythropus* in Northwest Germany (Lower Saxony and Bremen), an important stop-over and wintering area

Helmut Kruckenberg & Thorsten Krüger

**Kruckenberg, H. & T. Krüger 2023: Current status of the Lesser White-fronted Goose *Anser erythropus* in Northwest Germany (Lower Saxony and Bremen), an important stop-over and wintering area. *Vogelwelt* 141: 101 – 110.**

Since the 1950s Lesser White-fronted Geese *Anser erythropus* decreased dramatically all over the wide-spread breeding area (MIKANDER 2015). Nowadays Lesser Whitefronts are one of the most endangered waterbird species in Europe (BIRDLIFE INTERNATIONAL 2015). KRÜGER & KRUCKENBERG (2011) could show that the species has been frequently observed in Lower Saxony since the beginning of the 20th century. From 2012–2015 a research project of NABU Lower Saxony intensively investigated the importance of Northwest Germany for this species. As a result we present new and supplemented data on the occurrence of Lesser White-fronts in Lower-Saxony for the period 1980–2016. In this period, a strong increase in the number of observations occurred, such that Lesser White-fronted Goose has stated as a regular, annually occurring migratory bird in Lower Saxony. The number of observations in Lower Saxony peaked in the years of 1999/2000 to 2007/08 and decreased thereafter. A clear pattern in spatial distribution can be identified in the northwest of Lower Saxony in the region of East Frisia. This includes the Dollard-Lower Ems-Region (Rheiderland, Emsmarschen) with the Krummhörn, including Leybucht, which are key sites for the species. Other important sites are the Middle Elbe and the Lower Elbe. Unfortunately, information about the origin of the birds is rare. More than half of the Swedish Lesser Whitefronts are colour-marked, but the occurrence of many unmarked birds presumably consists of a mixture of Russian and Norwegian birds. Taken together all data show Lower Saxony (Northwest Germany) as a part of the range of Lesser White-fronted Geese migrate to The Netherlands and probably also for wintering individuals. So, this should be incorporate in legislative protection (f.e. key species in Bird sanctuaries or hunting regulation).

**Key words:** *Anser erythropus*, conservation, hunting, Lesser White-fronted Goose, Lower Saxony, Northwest Germany, numbers, phenology, spatial distribution

## 1. Introduction

The Lesser White-fronted Goose *Anser erythropus* is one of the most endangered waterbird species in the Western Palearctic (HEREDIA *et al.* 1996; JONES *et al.* 2008) and is listed on the IUCN and EU Red List and on Annex 1 of the EU Birds Directive (IUCN [www.iucnredlist.org](http://www.iucnredlist.org), BIRDLIFE INTERNATIONAL 2015). Formerly, the breeding grounds stretched from northern Norway in a broad belt along the southern tundra up to the Taimyr Peninsula and Chukotka Peninsula in Siberia (ALPHÉRAKY 1904). Nowadays, the western breeding range is heavily fragmented (FOX 2005), with only small remaining areas in Scandinavia and Northern Russia (LORENTZEN *et al.* 1999, ANDERSSON & HOLMQVIST 2010, MIKANDER 2015). To reverse the negative population trends an International Single Species Action Plan was launched in 2008 under the

umbrella of the African Eurasian Waterbird Agreement (AEWA, JONES *et al.* 2008). It is important to collect data on its present numbers and get insight in the sites used for stop-over and wintering. Even after a general revision of the international action plan by AEWA (MIKANDER 2015) failed and the AEWA MOP 8 in 2022 retired the Single Species Action Plan (resolution 8.2, [https://www.unep-aewa.org/sites/default/files/document/aewa\\_mop\\_res8\\_4\\_species\\_action\\_management\\_plans\\_en.pdf](https://www.unep-aewa.org/sites/default/files/document/aewa_mop_res8_4_species_action_management_plans_en.pdf)), there is a strong need for population numbers and monitoring the migration behaviour, status and numbers to protect this global threatened species.

Traditionally most of the Lesser White-fronted Geese from Scandinavia migrate from their breeding grounds via the Baltic states to Hungary, Bulgaria and

Greece, whereas Russian breeding birds move southwards via Kazakhstan to Greece, Azerbaijan or Iraq (Fox 2005).

In Sweden, the breeding population has been reinforced with supplemented birds from breeding stations since the early 1980s. First, these birds were guided by Barnacle Geese as foster parents, and thereby establishing new wintering sites in The Netherlands (VON ESSEN 1999), which nowadays are independent from Barnacle Geese with own migration and wintering strategies (e.g. KOFFIJBERG & VAN WINDEN 2013). This project was abandoned in 1999 when it turned out that part of the original breeding stock showed genetic introgression with Greater White-fronted Goose (ANDERSON 2004 in JONES *et al.* 2008), meanwhile this was not confirmed in a new genetic study. However, there were differences to the Russian and Norwegian birds, which must be considered as one genetic unit (DIEZ-DEL-MOLINO *et al.* 2020). Since 2010, a newly established conservation program in Sweden has used captive birds from Russian origin for breeding and releases nearly fledged young and 2nd year birds in the core breeding areas in the Swedish mountains (ANDERSSON & HOLMQVIST 2010). Both projects have resulted in an increase in wintering birds in Western Europe.

In Germany the Lesser White-fronted Goose is a rare but regularly recorded species (MOOIJ & HEINICKE

2008, for Lower Saxony KRÜGER & KRUCKENBERG 2012). Historic publications report that shot or caught Lesser White-fronted Geese from Germany and The Netherlands (GLUTZ VON BLOTZHEIM & BAUER 1968) occurred a long time before population reinforcement was started in Sweden in 1981. Considering the low quality of optics, often restricted accessibility of roosting sites and general difficulties in identification in the first half of 20th century (and still today), it seems to be self-evident that numerous birds were overlooked many times (KRÜGER & KRUCKENBERG 2012).

As a result of a four-year project on Lesser White-fronted Goose on behalf of Naturschutzbund NABU (BirdLife Germany) in Lower Saxony, we update and summarize knowledge about the current status of the Lesser White-fronted Goose in Lower Saxony for the period 1980/81 to 2015/16. With these data, we also review the current conservation status in Lower Saxony and investigate if additional conservation measures are needed.

## 2. Methods

This study is based on data from several sources. To estimate the number and distribution of Lesser White-fronted Geese in Lower Saxony since 1980/81 the central database of water-bird counts coordinated by the Staatliche Vogelschutzwarte (NLWKN) was used. This database contains results of mid-monthly counts all over Lower Saxony (with various coverage) as well as counts with higher intervals in the most important goose areas (usually SPAs designated for geese). These counts are carried out during daytime at feeding sites.

In addition, since 2000 weekly goose monitoring has been carried out in selected bird sanctuaries in Lower Saxony during the winter months (tab. 1).

Furthermore, we used reports data export of the National Rarities Committee (pers. comm.) and a large number of local ornithological publications as additional data sources like ornitho.de and naturgucker.de. Furthermore, starting in 2012 all volunteered goose counters from the monthly census program were asked to pay special attention to Lesser White-fronted Geese during their regular counts. To support this focus, many advanced training courses and presentations were provided all over the region.

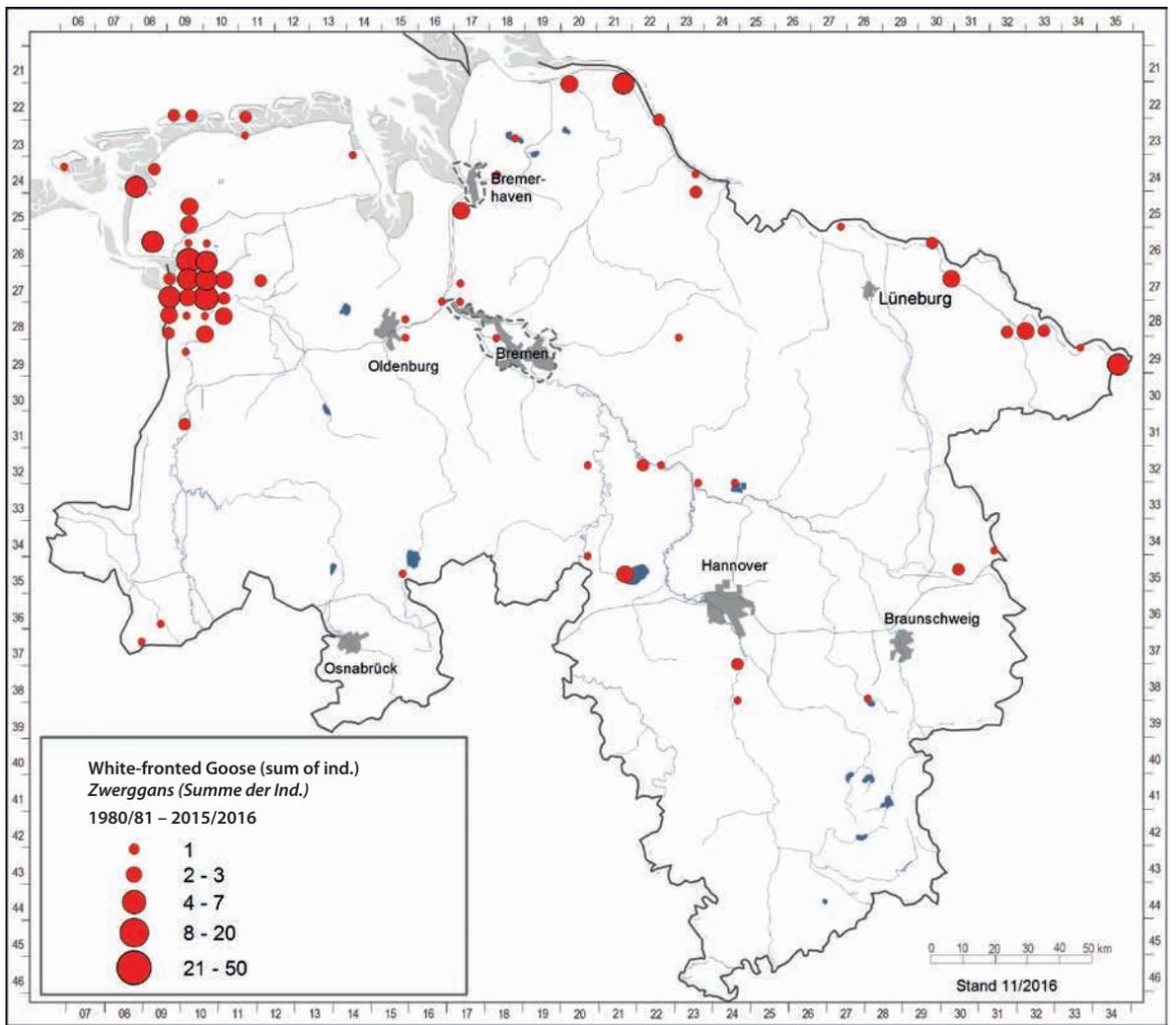
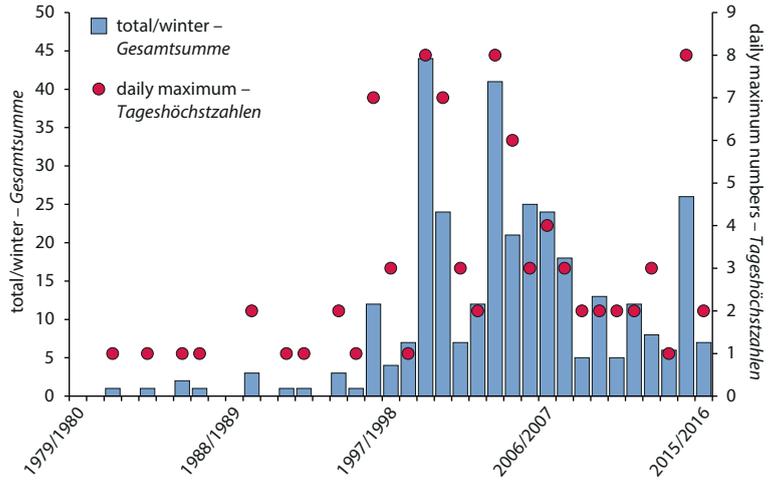
All data were checked rigorously for reliability by the authors. Uncertain and suspected false reports were rejected. From all accepted reports not only numbers and observation sites were taken into account but also additional information about habitat, age of the birds, markings or flocking behavior with other goose species were used for further analyses (if available). More than one observation per day by different observers was evaluated as confirmation, but not as an additional individual. Individuals which were staging for longer time, recognized

**Tab. 3:** Total number of Lesser White-fronted Geese recorded per “Goose region” of Lower Saxony ( $n = 348$ ). – *Gesamtzahl der erfassten Zwerggänse (Ind.) pro „Gänseregion“ in Niedersachsen ( $n = 348$ ).*

Goose region – Gänseregion	Total number of individuals – Gesamtzahl	Proportion – Anteil (%)
Dollard-Lower-Ems*	175	47.2
Middle Elbe area*	46	12.4
Lower Elbe area*	35	9.4
Krummhörn with Leybucht*	30	8.1
Ostfriesische Binnenmeere*	11	3.0
Allertal	8	2.2
Lake Dümmer	7	1.9
Unterweser and Butjadingen*	7	1.9
Ostfriesian Islands	5	1.3
Leinetal	4	1.1
Emstal	2	0.5
Middle Weser area	2	0.5
Geeste lowlands	2	0.5
Hunte lowlands	2	0.5
Jadebusen and Jadeküste*	2	0.5
Ostfriesische Seemarschen	1	0.3
Drömling	1	0.3
Salzgitter-Heerte	1	0.3
Wümme lowlands	1	0.3

\* Special Protection Areas with a special goose monitoring program – Vogelschutzgebiete mit Gänsemonitoringprogramm

**Fig. 1:** Annual total and daily maximum numbers of Lesser White-fronted Geese (individuals) recorded in Lower Saxony in winters 1980/81–2015/16 (n = 348). – *Gesamtsumme- und Tageshöchstzahlen von Zwerggänsen (Individuen) in Niedersachsen in den Wintern 1980/81 bis 2015/16 (n = 348).*



Kartenerstellung: Katja Behm

Kartengrundlage: NLWKN/Naturschutz

**Fig. 2:** Spatial distribution of Lesser White-fronted Goose (sum of ind.) in Lower Saxony in winters 1980/81–2015/16 (n = 348). – *Räumliche Verbreitung der Zwerggänsen (Summe der Ind.) in Niedersachsen in den Wintern 1980/81 bis 2015/16 (n = 348).*

by colour-marks or repeated observation at the same site, were interpolated (see fig 3 “following records”).

### 3. Results

From 1980/81 to 2015/16, the sum of individuals ( $n = 348$  ind.) and the maximum number of individuals per day per winter (max. 8 ind.) are shown in fig. 1. In the early 1980s, only some observations of Lesser Whitefronts were documented. With the beginning of the Swedish restocking project in the 1980s the number of observations increased. At first the numbers of observations grown slowly, but when intense goose monitoring in Lower Saxony was started end of the 1990s and later expanded, a large increase occurred and more than 40 individuals per winter were recorded with in maximum eight birds on the same day in both 1999/2000 and 2003/04. The highest number of records was made in the 2000s, while the numbers decreased again in the 2010s. Tab. 2 gives an overview of the number of individuals recorded in each decade with annual mean and total number of birds. The increase in records up to the 2000s is clear, subsequently followed by a slight decrease until the winter 2015/16.

The spatial distribution of occurrence of Lesser White-fronted Geese in Lower Saxony 1980–2016 is shown in Fig. 2 (348 individuals). Lesser White-fronted Geese were reported from most of the important goose

**Tab. 2:** Mean annual numbers of Lesser White-fronted geese (individuals) recorded per decade in Lower Saxony, 1980/81–2015/16 ( $n = 348$ ). – *Mittlere Zahl beobachteter Zwerggänse (Individuen) pro Jahrzehnten in Niedersachsen, 1980/81 bis 2015/16 ( $n = 348$ ).*

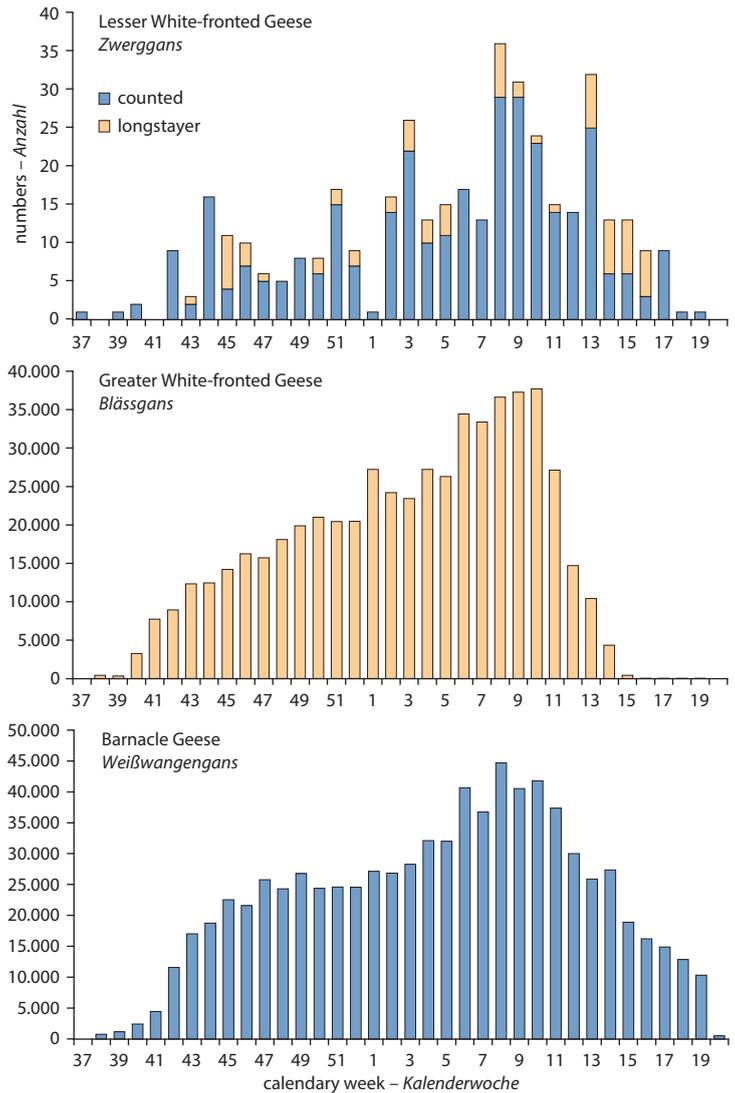
Period – Zeitraum	Annual means – Mittlere Anzahl	Total number of individuals recorded – Gesamtzahl
1980/81–1989/90	0.8	8
1990/91–1999/00	7.3	73
2000/01–2009/10	19.0	190
2010/11–2015/16	12.8	77

staging areas, but there is a clear hotspot in the north-western part of Lower Saxony. In the Ems-Dollard area, as well as the Leybucht area, Lesser White-fronted Geese were reported regularly every year, especially since the late 1990s. Lesser White-fronted Geese were seen again at the “traditional” goose sites like Lake Dümmer and Lake Steinhude in 1st half of 1900s (KRÜGER & KRUCKENBERG 2011), but from 1980–2018 sightings also were reported along the rivers: especially Elbe, but additionally Weser, Aller and Leine.

Table 3 summarizes the total number of individuals recorded in each of the main staging sites (“goose regions”) in Lower Saxony as well as the importance of these regions for the species (percentage of records).

**Tab. 1:** Areas with intensive (weekly) monitoring scheme. – *Gänserastgebiete mit einem speziellen (wöchentlichen) Gänsemonitoring.*

Area – Gebiet		Monitoring scheme started	Turnus	Status	Size – Gebietsgröße
Dollard-Lower Ems Region		1997	yearly 1997–2020	whole region	360 km <sup>2</sup>
Middle Elbe area	V18	2001	2001 – 2005 2008 – 2011 2015 – 2020	only SPA	16 km <sup>2</sup>
Lower Elbe area	V37	2004	2004 – 2020	only SPA	34 km <sup>2</sup>
Krummhörn with Leybucht	V03/04	2008	2008 – 2011 2015 – 2020 (2019 Jan. – Mai)	only SPA	83 km <sup>2</sup>
Ostfriesische Binnenmeere	V09	2001	2001 – 2002 2005 – 2007 2012 – 2013 2015 – 2018 2019 – 2020	only SPA	59 km <sup>2</sup>
Jadebusen	V64	2000	2000 – 2001 2006 2011 – 2012 2015 – 2020 (2019 Jan. – Mai)	only SPA	77 km <sup>2</sup>
Unterweser and Butjadingen	V65 u. V27	2007 2002	2007 – 2008 2015 – 2020 2002 2014 2016 – 2018 2019 – 2020 (2019 Jan. – Mai)	only SPA	92 km <sup>2</sup>



**Fig. 3:** Seasonal occurrence of: Lesser White-fronted Goose, Greater White-fronted Goose and Barnacle Goose in Lower Saxony. In the case of Lesser White-fronted Goose the bars represent totals per week from 1980/81–2015/16 ( $n = 348$ ), in White-fronted ( $n = 12,089,039$ ) and Barnacle Goose ( $n = 16,590,648$ ) means per week 1996/97–2016/17 in the Ems-Dollard-Region, which is the most important staging and wintering area for Lesser White-fronted Goose. – *Saisonales Vorkommen von Zwerggans, Weißwangengans und Blässgans in Niedersachsen. Bei der Zwerggans stellen die Balken die Summen pro Woche von 1980/81-2015/16 ( $n = 348$ ) dar, bei Bläss- ( $n = 12.089.039$ ) und Weißwangengans ( $n = 16.590.648$ ) die Mittelwerte pro Woche 1996/97-2016/17 in der Ems-Dollart-Region, dem wichtigsten Rast- und Überwinterungsgebiet der Zwerggans in Niedersachsen.*



Lesser White-fronted Geese can be distinguished by the bright yellow eye ring and long wing tips. – *Zwerggänse sind deutlich an dem auffälligen gelben Augenring und den langen Flügelspitzen erkennbar.* Foto: H. Kruckenberg, Hudiksvall, 09.09.2013.

Nearly half of all observations were made in the Dollard area and Ems estuary (47.2%), in the far northwest of the country, bordering The Netherlands. Here nowadays, Greater White-fronted and Barnacle Geese roost in large numbers. 12.4% of all observations were made in the Middle Elbe area, close to Mecklenburg-Vorpommern and Brandenburg, where Greater White-fronted (*Anser albifrons*) and Tundra Bean Geese (*Anser serrirostris*) dominate. 9.4% of all birds were seen in the Lower Elbe area between Stade and Cuxhaven, mainly used by Barnacle Geese. The Leybucht and Krummhörn area (8% of the records), in the northwestern part of Lower Saxony, along the North Sea coast and the Elbe estuary, are used by Greater White-fronts, Barnacle and Brent geese.

The phenology of roosting geese in north-western Lower Saxony (Ems-Dollart region, fig. 3) shows that Lesser White-fronted Geese now show a migratory pattern different from Greater White-fronts and also Barnacle Geese. Although all three species reach their maximum population on site at the same time, the Lesser Whitefronts stay longer than the Barnacles, leaving at about the same time as the Greater Whitefronts.

#### 4. Discussion

##### Current status

In Lower Saxony Lesser White-fronted geese are known as a rare but regularly occurring staging species

(KRÜGER & KRUCKENBERG 2011). Our results largely confirm this status. The earliest records are from the early 1900s and originate from hunters. The numbers during the first half of 20th century were low, most probably because of low accessibility to the staging sites, the low level of mobility as well as public interest in migratory birds in general and poor optical equipment.

In Lower Saxony the international goose counts started in the 1970s and were expanded in the 1980s and 1990s. At the same time the number of records increased. This went along with a slide recovery of Lesser White-fronted Goose breeding population in Sweden, which was reinforced since the early 1980s and consequently increased in size (VON ESSEN 1997, 1999). As a result, small flocks of mainly colour-marked birds were also found in Lower Saxony (KRÜGER & KRUCKENBERG 2011). When the University of Osnabrück and Alterra Wageningen started with intensive colour-marking of Greater White-fronts in the late 1990s (KRUCKENBERG 2002), the number of sightings of all marked goose species and also rare species increased. Additionally in 1997/98 the Ministry of Environment of Lower Saxony started weekly monitoring of geese in important staging areas, beginning in the Dollard and Middle Elbe region. By 2000, the contractual nature conservation program was extended to other areas and these areas were also intensively monitored accordingly. Most of the records were collected in the



Once the Lesser White-fronted Goose was widespread. Today, the population is so small that great efforts are being made everywhere to protect the species – *Einstmals war die Zwerggans weit verbreitet. Heute ist die Population so klein, dass überall große Anstrengungen zum Schutz der Art unternommen werden.* Foto: Helmut Kruckenberg, Hudiksvall 09.09.2013.

area covered by these weekly counts, underscoring the importance of comprehensive goose monitoring. The monitoring scheme itself also explains a part of the phenology: traditionally the intensive (weekly) goose monitoring starts mid-October. At the same time the first roosting Lesser White-fronted Geese were reported, but we know that Swedish Lesser White-fronted Geese may reach their wintering sites in The Netherlands already in the beginning of October (KOFFIJBERG & VAN WINDEN. 2013), using also site like Dollard region and Lower Elbe as stepping stones (KRUCKENBERG et al. 2023). Hence, we assume by arrival dates of this birds at Oude Land van Strijen (NL) that Lesser White-fronted Geese are also present in northwestern Germany earlier than mid-October.

### Distribution in Lower Saxony

As already reported for the period 1907/08 - 2006/07 (56,6%, KRÜGER & KRUCKENBERG 2011) the two goose areas in the northwest of Lower Saxony (Ems-Dollard-Region and Leybucht-Krummhörn-area) still hold more majority of staging Lesser White-fronted geese (55%). This is on one hand a consequence of the monitoring intensity, on the other hand also because these two areas are situated within the direct flyway from Sweden to The Netherlands (KRUCKENBERG et al. 2023). In this context, it is all the more remarkable that roosting Lesser White-fronted Geese are

encountered in significantly lower numbers in the other areas of Lower Saxony along the migration route than in the northwest: at Nordkehdingen, the Jadebusen, the Butjadinger Land or the Unterweser, there are clearly fewer reports. Because of the relationship between observation effort, the number of geese that accompany the Lesser White-fronted and the general importance of a staging site for arctic and nordic geese, the interpretation of the spatial distribution pattern is not straightforward.

### Phenology

Whereas the number of Lesser White-fronted Goose in The Netherlands reaches a more or less stable level from November up to January (KOFFIJBERG & VAN WINDEN 2013), the number of recorded individuals in Lower Saxony shows a slight increase over that period. The first Lesser White-fronted Geese reach Lower Saxony early in the autumn. The numbers remain quite low until the end of the year, only increasing with the home migration of the Arctic geese from the turn of the year. The peak of staging numbers in March (s. fig. 3) goes along with the start of spring migration in The Netherlands in the end of February (KOFFIJBERG & VAN WINDEN 2013). Fig. 3 shows that the Lesser White-fronted Geese have given up their joint migration with Barnacle Geese as it was when the restocking program with foster parents was ongoing and are



Despite the yellow rings around their eyes and their distinctive voice, Lesser White-fronted Geese are often mistaken for White-fronted Geese. – *Trotz der gelben Augenringe und ihrer markanten Stimme werden Zwerggänse häufig mit Blässgänsen verwechselt.*

Foto: H. Kruckenberg, Hudiksvall, 10.09.2013.

orienting themselves towards the White-fronted Geese in the timing and migrating together with them. They stay longer than the Barnacle Geese and leave Lower Saxony around the same time as the White-fronted Geese.

### Trends in numbers

Since the beginning of the restocking program, the population of wintering Lesser White-fronted Geese had increased significantly and reached a maximum of 130 individuals in 2003/04. In Lower Saxony, too, this population increase can be seen until the first decade of the 2000s. Due to high predation on the breeding grounds the number of Swedish birds wintering in The Netherlands dropped markedly since 2011 (LILJEBÄCK 2015), as well as in Lower Saxony. Taking in account that most of the Swedish Lesser White-fronts are colour-marked nowadays, we guess that just a part of the Lesser White-fronted geese staging in Lower Saxony might be of Scandinavian origin in autumn, in other cases, especially in mid-winter, we assume that several of the observed birds might originate from other parts of the breeding range. In the 1980s a large number of Lesser White-fronted Geese observed in northern Germany were Swedish birds, whereas sightings in eastern and the more southern part of Germany were unmarked, probably Norwegian or Russian birds (MOOIJ & HEINICKE 2007). Satellite-tracked birds from Norway were found in Eastern Germany (AARVAK & ØIEN 2003, LORENTZEN et al. 1997) and unfortunately disappeared later on.

Nowadays it is not so easy to discriminate different breeding populations because a higher percentage of the wild Swedish birds from the known breeding area are unmarked. New tracking studies show that Lesser White-fronted Geese have a complex network of stopover areas on their way from northern Sweden to The Netherlands (KRUCKENBERG et al. 2023). The changes in the Swedish program – away from foster parents, instead releasing one- and two-year-old birds in groups – also mean that the released birds are much more likely to discover new sites (KOOFIJBERG et al. 2023), which is another reason why it is not so easy to assign individuals.

Despite the intense monitoring in the main staging sites, it's still a challenge to find Lesser White-fronted Geese in the huge flocks of Barnacle Geese and Greater White-fronted Geese. In most cases they were associated with Greater White-fronted Geese, which is the most numerous arctic goose species in northwest Germany. Just 19% of all records Lesser White-fronted Geese were associated with Barnacle Geese (in such flocks they could be found much easier) and just a small part of all birds were accompanied by larger species as Tundra Bean- or Greylag Goose (*Anser anser*) (KRÜGER & KRUCKENBERG 2011). In large flocks of up to 10,000 bird's rare species are hard to find. Nevertheless, to accumulate more data on this threatened species of international importance in the future, the intensive monitoring should be continued and probably expanded to potential staging sites and in an optimal case combined with continuing the international tagging program.



Normally Lesser White-fronted Geese are always associated with other Arctic Geese – *Normalerweise sind Zwerggänse immer mit anderen arktischen Gänsen (hier Blässgänse) vergesellschaftet.* Foto: H. Kruckenberg, Soltborg, Leer, 30.03.2010.

## Conservation status in Lower Saxony and conclusions

The annual migration and wintering of the Lesser White-fronted geese in Lower Saxony is an undisputed fact now, as is the question of legal protection according to EU's Bird Directive. Accordingly, to Appendix I of the Birds Directive, there is an urgent responsibility for national authorities to promote and protect these birds in the best possible way. Our findings clearly demonstrate the importance that Lower Saxony also has for the protection of this species on the annual migration.

On their traditional migration routes as well as in the wintering areas the Lesser White-fronted Geese are highly threatened by accidental shooting during Greater White-fronted Goose hunting and poaching (JONES *et al.* 2008). So, in fact the only effective way to protect Lesser Whitefronts for shooting is a hunting ban on all staging sites, where this species might occur (KRUCKENBERG & MOOIJ 2007, KRUCKENBERG *et al.* 2022). In particular, the current joint appearance within flocks of Greater White-fronted and Tundra Bean Geese increases their degree of endangerment through confusion or lack of knowledge during hunting. That's why all authorities with wintering areas of larger amounts of arctic geese and especially along the flyway to the wintering grounds in The Netherlands have to be attentive to this species and the high risk of mistaken identification during hunting. Because this species cannot be distinguished confidently, the extreme threatened status as well as the requirement of the EU Birds Directive Appendix I makes a total hunting ban appear sensible in areas where Lesser

White-fronted Geese occur. Of course, also a proper monitoring of staging and wintering geese is needed as a basis of all protection activities. Designating only some of these areas as Special Protection Areas for this species is a first step forward, but it does not seem enough to protect the leftovers. The roosting places of the Lesser White-fronted Geese in Germany are by no means all within the boundaries of existing bird sanctuaries (KRÜGER & KRUCKENBERG 2011). No single area has been designated for the special needs of this species. At least Lesser White-fronted Geese from the Swedish population live nearly exclusively within the EU. In contrast to birds wintering in the Middle East, western European member states have responsibility, facilities and power to protect this part of this globally threatened species properly and improve this subpopulation by better protection of sites and birds.

## 5. Acknowledgements

We thank all goose observers for reporting Lesser White-fronted Geese to the Lower Saxony Goose database and the National Rarity Committee. We also thank the National Rarity Committee for its co-operation. The project "Protection of Lesser White-fronted Geese in Lower Saxony – more knowledge for a countrywide strategy of conservation" was carried out on behalf of Naturschutzbund Deutschland, Landesverband Niedersachsen (BirdLife Germany Section Lower Saxony) and funded by the Lower Saxony Wadden Sea Foundation and the Bingo Umweltlotterie Lower Saxony in cooperation with the Federal State Agency for Bird Protection of Lower Saxony. Thanks to Johan H. Mooij and Kees Koffijberg for giving helpful comments to our manuscript and Katja Behm for making the maps. We thank committee of ornitho.de and naturgucker.de for using data of the databases.

## Zusammenfassung

**Kruckenberg, H. & T. Krüger 2023: Das Vorkommen der Zwerggans *Anser erythropus* im Nordwesten Deutschlands (Niedersachsen und Bremen), einem wichtigen Zwischenstopp- und Überwinterungsgebiet. Vogelwelt 141: 101 – 110.**

Seit den 1950er Jahren ist der Bestand an Zwerggänsen *Anser erythropus* im gesamten Verbreitungsgebiet dramatisch zurückgegangen (MIKANDER 2015). Heute ist die Zwerggans eine der am stärksten gefährdeten Wasservogelarten in Europa. KRÜGER & KRUCKENBERG (2011) konnten zeigen, dass die Art in Niedersachsen seit Beginn des 20. Jahrhunderts häufiger beobachtet wurde. Ein Forschungsprojekt des NABU Niedersachsen untersuchte daher von 2012–2015 intensiv die Bedeutung Nordwestdeutschlands für diese Art. Als ein Ergebnis präsentieren wir neue und ergänzte Daten zum Vorkommen der Zwerggans in Niedersachsen für den Zeitraum 1980–2016. In diesem Zeitraum kam es zu einem starken Anstieg der Beobachtungen, sodass die Zwerggans heute als seltener, aber regelmäßiger, jährlich vorkommender Zugvogel in Niedersachsen charakterisiert werden darf. Die Zahl der Beobachtungen in Niedersachsen erreichte in den Jahren 1999/2000 bis 2007/08 ihren Höhepunkt und nahm danach ab. Ein deutliches Muster in der räumlichen Verteilung lässt sich erkennen: der Schwerpunkt liegt im Nordwesten

Niedersachsens in der Region Ostfriesland. Dazu gehört die Ems-Dollart-Region (Rheiderland, Emsmarschen) mit der Krummhörn, einschließlich der Leybucht. Weitere wichtige Rastgebiete sind die Mittel- und die Unterelbe. Leider gibt es nur wenige Informationen über die Herkunft der Vögel. Der größte Teil der schwedischen Zwerggänse ist farblich markiert. Die Beobachtung vieler unmarkierter Vögel lässt daher eine Mischung mit russischen und norwegischen Vögeln vermuten. Alle diese Daten zusammengenommen zeigen, dass Niedersachsen (NW-Deutschland) ein Teil des winterlichen Verbreitungsgebiets der Zwerggänse ist. Dies gilt für die Individuen, die in die Niederlande weiterziehen. Gleichzeitig spricht viel dafür, dass auch Individuen in Niedersachsen überwintern. Das Vorkommen dieser hochgradig gefährdeten und geschützten Art muss sich daher auch in den Schutzbemühungen auf rechtlicher und praktischer Ebene wiederfinden (z. B. in den Schutzplänen der Vogelschutzgebieten oder Jagdbestimmungen).

## 6. References

- AARVAK, T. & I. J. ØIEN 2003: Moulting and autumn migration of non-breeding Fennoscandian Lesser White-fronted Geese *Anser erythropus* mapped by satellite telemetry. *Bird Conserv. Int.* 13: 213–226. doi: 10.1017/S0959270903003174
- ALPHÉRAKY, S. 1904: Geese of Russia. Kutschnerew & Co, Moskau.
- ANDERSSON, Å. & N. HOLMQVIST 2010: The Swedish population of Lesser White-fronted Goose *Anser erythropus* – supplement or re-introduced? *Ornis Svec.* 20: 202–206.
- BIRDLIFE INTERNATIONAL 2015: European Red List of Birds. Office for Official Publications of the European Communities. <http://datazone.birdlife.org/info/euroredlist>.
- DIEZ-DEL-MOLINO, D., J. VON SETH, N. GYLLENSTRAND, F. WIDEMO, N. LILJEBÄCK, M. SVENSSON, P. SJÖRGEN-GULVE & L. DALÉN 2020: Population genomics reveals lack of greater white-fronted introgression into the Swedish lesser white-fronted goose. *Sci. Rep.* 10: 18347, doi: 10.1038/s41598-020-75315-y.
- FOX, A. D. 2005: Lesser White-fronted Goose *Anser erythropus*. In: J. KEAR (eds.): Ducks, Geese and Swans of the World. Vol. 1: 286–289. Oxford University Press, Oxford.
- GLUTZ VON BLOTZHEIM, U. M. & K. M. BAUER 1968: Handbuch der Vögel Mitteleuropas. Bd. 2 (Anseriformes). Akademische Verlagsgesellschaft, Frankfurt/M.
- HEREDIA, B., L. ROSE & M. PAINTER, M 1996: Globally threatened birds in Europe: Action plans. Council of Europe Publishing, Strasbourg.
- JONES, T., K. MARTIN, B. BAROV & S. NAGY 2008: International Single Species Action Plan for the Conservation of the Western Palearctic Population of the Lesser White-fronted Goose *Anser erythropus*. AEWA Tech. Ser. No. 36, Bonn.
- KOFFIJBERG, K. & E. VAN DER WINDEN 2013: Lesser White-fronted Geese in The Netherlands: a review of trends, phenology, distribution patterns and origin. SOVON-rapport 2013/48, Sovon Vogelonderzoek Nederland, Nijmegen.
- KOFFIJBERG, K., C. KOWALLIK, B. BECKERS, A. MÜLLER & W. POTT 2023: Zunahme von Zwerggänsen *Anser erythropus* in Nordrhein-Westfalen von 2011 bis 2022. *Charadrius* 59: 1–12.
- KRUCKENBERG, H. 2002: Muster der Raumnutzung markierter Blessgänse (*Anser alb. albifrons*) in West- und Mitteleuropa unter Berücksichtigung sozialer Aspekte. Diss., Univ. Osnabrück, Osnabrück.
- KRUCKENBERG, H. & J. H. MOOIJ 2007: Warum Wissenschaft und Vogelschutz die Gänsejagd in Deutschland ablehnen. *Ber. Vogelschutz* 44: 107–119.
- KRUCKENBERG, H., A. KÖLZSCH, J. H. MOOIJ & H.-H. BERGMANN 2022: Das große Buch der Gänse. Aulaverlag, Wiebelsheim.
- KRUCKENBERG, H., S. MOONEN, A. KÖLZSCH, N. LILJEBÄCK & G. J. D. M. MÜSKENS 2023: Migration routes and stepping stones along the western flyway of Lesser White-fronted Geese (*Anser erythropus*). *Bird Conserv. Int.* 33: e42, doi:10.1017/S0959270922000478
- KRÜGER, T. & H. KRUCKENBERG 2011: Zum Vorkommen der Zwerggans *Anser erythropus* in Niedersachsen. *Vogelkd. Ber. Niedersachs.* 42: 89–110.
- LILJEBÄCK, N. 2015: Projekt Fjällgås: Fünfzehn Jahre harte Arbeit und politische Diskussionen, fünf Jahre neue Hoffnung und künftige Herausforderungen um die Rettung der Zwerggans. *Vogelwarte* 210–211.
- LORENTZEN, S.-H., I. J. ØIEN, T. AARVAK, J. MARKKOLA, L. VAN ESSEN, S. FARAGÒ, V. MOROZOV, E. V. SYROCHKOVSKY jr & P. TOLVANEN 1999: Lesser White-fronted Goose *Anser erythropus*. In: MADSEN, J., G. CRACKNELL & A. D. FOX (eds.): Goose Populations of the Western Palearctic. A review of Status and Distribution. *Wetlands Int. Publ. No.* 48: 144–161.
- LORENTZEN, S.-H., I. J. ØIEN & T. AARVAK 1997: Migration of Fennoscandian Lesser White-fronted Geese *Anser erythropus* mapped by satellite telemetry. *Biol. Conserv.* 84: 47–52. doi: 10.1016/S0006-3207(97)00088-8
- MIKANDER, N. 2015: International Single Species Action Plan for the Conservation of the Lesser White-fronted Goose in the Western Palearctic region (draft). AEWA Tech. Ser., Bonn.
- MOOIJ, J. H. & T. HEINICKE 2008: Status, distribution and numbers of the Lesser White-fronted Goose *Anser erythropus* in Germany. *Vogelwelt* 129: 281–292.
- VON ESSEN, L. 1997: Results of the project on reintroduction of Lesser White-fronted Geese (*Anser erythropus*) in Swedish Lapland. *Casarca* 3: 215–247.
- VON ESSEN, L. 1999: New data on several projects on the Lesser White-fronted Goose. *Casarca* 5: 155–160.

Manuskript-Eingang: 19. August 2019

Annahme: 10. Februar 2023

Helmut Kruckenberg, Institute für Wetlands and Waterbird Research (IWWR) e. V. Germany, Am Steigbügel 3, 27283 Verden (Aller);

E-Mail: [helmut.kruckenberg@blessgans.de](mailto:helmut.kruckenberg@blessgans.de)

Thorsten Krüger, Staatliche Vogelschutzwarte im NLWKN, Im Dreieck 12, 26127 Oldenburg;

E-Mail: [thorsten.krueger@nlwkn.niedersachsen.de](mailto:thorsten.krueger@nlwkn.niedersachsen.de)