

Population Development of Baltic Bird Species: Sandwich Tern (*Sterna sandvicensis* Lath., 1787)

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Key message

The Sandwich Tern started to expand its range to the Baltic Sea area during the first half of the 20th century, colonising Skåne in 1911, and the Swedish east coast during the 1930s. In the second half of the 20th century, the range expansion continued to the southern coasts of the western and central Baltic: The species became a breeding bird in Mecklenburg-Western Pomerania in 1957, in Estonia in 1962, and in Poland in 1977. The Baltic breeding population grew constantly and reached about 2,500 breeding pairs (bp) at the mid-1970s. Since then, despite some fluctuations and frequent shifts of breeding sites, it can be considered as more or less stable. More detailed surveillance data from the mid-1990s until now reveal a population size fluctuating between 2,000-3,500 bp. The main conservation measure for the Sandwich Tern in the Baltic is the protection of suitable breeding sites. These are especially small islands covered by low grass vegetation, without human disturbances and predatory mammals. The presence of Black-headed Gulls is an essential condition for the choice of the breeding place.

Results and assessments

Relevance of the indicator for describing developments in the environment

The Sandwich Tern (*Sterna sandvicensis*) is a typical marine bird, the breeding sites are restricted to the coast. It breeds on small islands covered by low grass vegetation, free of human disturbances and predatory mammals. The colonies of Sandwich Terns are always found within or adjacent to colonies of Black-headed Gulls (*Larus ridibundus*).

The Sandwich Tern is sensitive to environmental contamination with hazardous substances. In the Netherlands, *e.g.*, the population plummeted at the beginning of the 1960s as a consequence of pesticide contamination of the North Sea from a chemical plant near Rotterdam (GARTHE & FLORE 2007).

Furthermore, it can be considered as an indicator for breeding site quality for several marine and coastal bird species of the Baltic Sea area. Undisturbed small islands without or with low vegetation are the main breeding habitat not only for the Sandwich Tern, but also for other terns, gulls, some duck species, auks and others.

Policy relevance and policy references

The Sandwich Tern is protected by the provisions of the EU Bird Directive (79/409/EEC), which are implemented by the Member States into national law. This means, the legal protection status of the species is similar in all Baltic Sea states where it occurs. The species

is listed in Annex I of the Bird Directive, *i.e.*, Member States are obliged to establish Special Protected Areas (SPA).

Conservation target

Range and population size as established during the second half of the 20th century should not decline. The population should not be affected by losses or deterioration of breeding sites.

Assessment

Population Development of the Sandwich Tern in the Baltic Sea Area

The Sandwich Terns breeding in the Baltic Sea area maybe considered as a geographical sub-unit of the Atlantic population. Within this geographical range, shifts of breeding sites and exchange of birds between breeding places are common. Ring recovery data supply evidence for a regular exchange between the Baltic breeding sites and the North Sea or northern Kattegat (NEHLS 1969; STIENEN 2006; unpublished ring recovery data from the Bird Ringing Centre Hiddensee). Even the immigration of individuals from the Black Sea has been proven by ringing recoveries (MØLLER 1981; NEHLS 1982; SCHMIDT & DOST 1988).

During the 20th century, the Sandwich Tern has gradually expanded its range to the south-western, southern and central Baltic (Herrmann et al. 2008, Figure 1). At the beginning of the century, the species was obviously still not very common at the Baltic coasts of Denmark (central Kattegat, the Belt Sea and the Sound, HELMS 1948). On the Swedish side of the Sound, the first breeding was recorded in 1911 on Falsterbo (SW Skåne).

The coasts of the central and south-western Baltic were colonised gradually, starting in the 1930s on the Swedish east coast: The Sandwich Tern appeared first on Öland (1934) and a short time later on Gotland (1938). Blekinge was colonised in 1960, Småland, after first attempts in 1947 and 1960, starting from 1970. The most northern breeding record so far documented was in the Stockholm archipelago in 1975.

At the south-western and southern Baltic coast, during the first half of the 20th century the Sandwich Tern was a very sporadic breeding bird in Schleswig-Holstein (Oehe-Schleimünde, 1919-1921, 1930-1936, 1939, with a maximum of 92 bp) and at the Bold Vistula mouth (Śmiała Wisła) in Gdansk (1929 and 1932-1936, up to 3 bp).

The development of larger and stable colonies in the south-western Baltic, however, did not occur before the end of the 1950s, starting with the colonisation of the island Heuwiese near Rügen (Mecklenburg-Western Pomerania) in 1957. At the beginning of the 1960s, the Sandwich Tern started to expand its range to the southern and eastern coasts of the central Baltic (Poland and Estonia). In Estonia, the first breeding record dates from 1962. From then on, the population increased steadily. At the beginning of the 1970s, the first stable colonies were formed on small islands on the west coast of Saaremaa. In 1974, a colony with 40 breeding pairs established on Linnusita Island (near Abruksa, western Estonia). The next year, 181 nests were found on this site (MÄND 1982). In 1978, about 300 pairs were breeding in several colonies around Saaremaa, on the Väinameri islands, and islands of the Matsalu Nature Reserve (NEHLS 1982).

In Poland, the Sandwich Tern bred from 1977-1991 in the nature reserve Mewia Łacha (Gull Shoal) at the Vistula Cut mouth (Przekop Wisły) near Swibno/Mikoszewo with a maximum of 290-300 bp (Pagowski 1979; NEHLS 1982; WIELOCH 1986; TOMIALOJC & STAWARCZYK 2003). After 1991, the species did not breed in Poland for 15 years. In 2006, however, it formed a new colony with 140 bp on a jetty in the port area of Gdynia. Due to repair works on this jetty, in 2007 the birds moved to their traditional breeding place at the Vistula Cut mouth (nature reserve Mewia Łacha). The number of breeding pairs there was 400 in 2007, 270-300 in 2008, and 570 in 2009 (G. Bela & A. Janczyszyn, pers. comm.,

<http://www.kuling.org.pl/rybitwy/index.html>). In 2010, the number of breeding pairs dropped down to c. 100, probably as a consequence of clutch losses due to two flood events during breeding time. In 2011, the maximum number of nests counted was 112; again, the colony was destroyed by a flood at the beginning of July (<http://www.kuling.org.pl/rybitwy/index.html>). The birds which have formed the new colonies in Poland originate, at least to a certain proportion, from Sweden: 7 breeding birds caught in the Polish colony at the Vistula mouth had been ringed as pulli on Trollholmen (3), Hasslö Kåsaskär (1), and Norrören (3; all sites are situated in the province of Blekinge).

The expansion of the Sandwich Tern to the south-western Baltic and the southern and eastern coasts of the central Baltic during the 1950s and 1960s occurred simultaneously with a strong decline of the breeding population in the southern and eastern North Sea (Wadden Sea and northern Kattegat). It was probably a response to the worsening of the environmental conditions and subsequent abandonment of colonies in its main Atlantic breeding area.

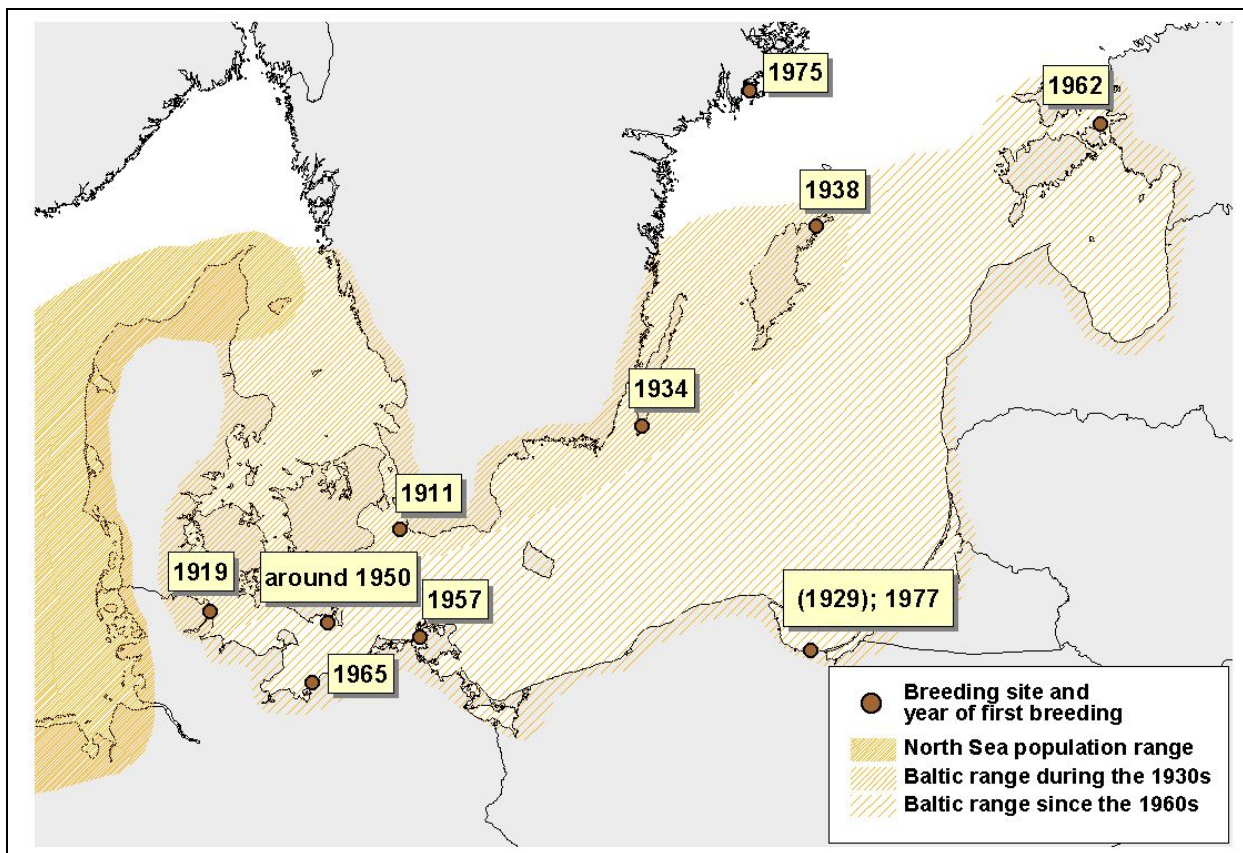


Figure 1: The range expansion of the Sandwich Tern into the Baltic Sea area during the 20th century.

The Baltic population of the Sandwich Tern continued to grow until the 1970s. Since Danish population numbers of that time do not permit separation between North Sea and Baltic Sea breeding sites it is difficult to give exact numbers for the Baltic Sea area. However, in 1975 the numbers reported for Sweden, Mecklenburg-Western Pomerania and Estonia give a total of about 2,000 bp. Assumed that the distribution of the Danish population between North Sea and Baltic Sea was about similar to the situation found during the 1990s, the total Baltic population at the mid-1970s should have been in the magnitude of 2,500-3,000 bp. For 1978/79, NEHLS (1983) estimated the total population breeding in the Baltic Sea area at 2,500 bp.

Continuous time series are available now for the period 1994-2011, except of Estonia, where the population is estimated to be about stable at a level of 600-900 bp (Elts et al. 2009).

Some recent Estonian data concerning the distribution and numbers of Sandwich Terns have been gathered recently within the frame of an inventory of breeding birds on small maritime islands in 2008-2011. According to the results of this inventory the breeding population in Estonia was estimated to 700-900 bp in 2010.

The total Baltic numbers give a breeding population in the range of 2,000-3,500 bp (Fig. 2). This suggests that, despite some fluctuations, the population was more or less stable from the mid-1970s until now. One reason for the fluctuations are common shifts of Sandwich Terns between Danish North Sea and Baltic Sea breeding sites.

Currently, the Danish areas of the Baltic Sea, especially the Central Kattegat and Storebaelt (c. 1 560 bp in 2011), host the largest colonies and the highest number of breeding pairs. However, the colony sites are characterised by strong fluctuations. In previous years, several colonies have been abandoned due to intrusion of foxes (e.g., Siø 2010), but also new colonies have been formed (e.g. Glaenø Østerfed in 2010). The general situation is characterized by a declining trend in the south part of Denmark and an increasing trend in the southwestern Kattegat and Storebelt (especially Sprogø and Hiarnø with a total of 1457 bp in 2011).

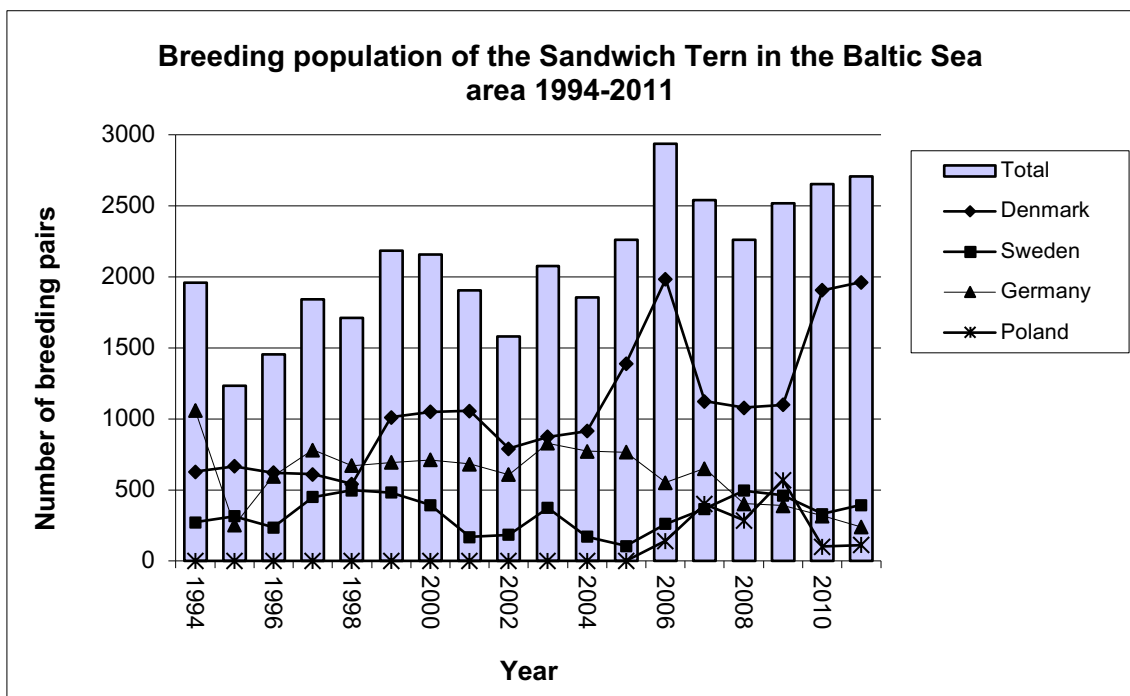


Figure 2: The breeding population of the Sandwich Tern in the Baltic Sea area 1994-2011. Detailed data from Estonia are not available and hence cannot be shown in the graph. About 600-900 bp from this country have to be added to the total.

Metadata

Technical information

Data source: Annual surveys of the breeding population are organized and data are collected by the following institutions or people:

Denmark: Jens Gregersen

Germany: Staatliche Vogelschutzwarte Schleswig-Holstein; Agency for Environment, Nature Conservation and Geology Mecklenburg-Western Pomerania

Estonia: several inventories, mainly by Mati Martinson; inventory of breeding birds on small maritime islands in 2008-2011, on behalf of the Estonian Board of Environment

Sweden: Rolf Larsson; Kjell Larsson

Poland: G. Bela & A. Janczyszyn; <http://www.kuling.org.pl/rybitwy/index.html>

Geographical coverage: entire breeding range of the Baltic Sea area (Denmark, Sweden, Germany, Poland, Estonia)

Temporal coverage: 1994-2011

Methodology and frequency of data collection: annual nest counts in colonies.

Quality of information

The reliability and quality of data is high.

Monitoring recommendations

The Sandwich Tern monitoring in the Baltic Sea area should be continued annually.

References:

- ELTS, J., A. KURESOO, E. LEIBAK, A. LEITO, A. LEIVITS, V. LILLELETH, L. LUIGUJÕE, E. MÄGI, R. NELLIS, R. NELLIS & M. OTS 2009: Status and Numbers of Estonian Birds, 2003-2008. *Hirundo* 22, 3-31.
- GARTHE, S. & B.-O. FLORE 2007: Population trend over 100 years and conservation needs of breeding Sandwich Terns (*Sterna sandvicensis*) on the German North Sea coast. *J. Ornithol.* 148: 215-227
- GREGERSEN, J. 2006: Ynglebestanden af Splitterne i Danmark 1993-2005. *Dansk Orn. Foren. Tidsskr.* 100, 88-96.
- Herrmann, C., H.W. Nehls, J. Gregersen, W. Knief, R. Larsson, J. Elts & M. Wieloch (2008): Distribution and Population Trends of the Sandwich Tern (*Sterna sandvicensis* Lath., 1787) in the Baltic Sea Area. *Die Vogelwelt* 129, 35-46.
- HELMS, O. 1948: *Danske Fugle ved Stranden*. G.E.C. Gads Forlag, Copenhagen.
- LARSSON, R. 2006: Kentsk tärna i Blekinge 1996-2006 – Sammanställning av 10 års övervakning. Länsstyrelsen Blekinge län, Karlskrona, Report nr: 2006/14.
- MÄND, R. 1982: *Tiirud*. Valgus, Tallinn.
- MØLLER, A.P. 1981: The migration of European Sandwich Terns *Sterna s. sandvicensis*. *Die Vogelwarte* 31, 74-94, 149-168.
- NEHLS, H.W. 1982: *Sterna sandvicensis* Latham 1787 – Brandseeschwalbe. In: Glutz v. Blotzheim, U.N. & K.M. Bauer (eds.): *Handbuch der Vögel Mitteleuropas*. Volume 8/II, *Charadriiformes* (3. Teil), Akadem. Verlagsgesellsch. Wiesbaden, 864-911.
- NEHLS, H.W. 1983: Studies on the Sandwich Tern *Sterna sandvicensis* population of the Baltic with special regard to the coast of the German Democratic Republic. *Ornis Fennica*, Suppl. 3, 79-80.
- PAGOWSKI, Z. 1979: The actual record of Sandwich Tern breeding in Poland. *Not. Orn.* 20, 1-4: 50-51.
- SCHMIDT, R. & H.-U. DOST 1988: Nachweis einer am Schwarzen Meer erbrüteten Brandseeschwalbe (*Sterna sandvicensis*) als Brutvogel in einer Kolonie der Ostseeküste der DDR. *Beitr. Vogelkunde* 34, 60
- STIENEN, E.W.M. 2006: Living with Gulls. Trading off food and predation in the Sandwich Tern *Sterna sandvicensis*. PhD thesis University of Groningen, The Netherlands, <http://dissertations.ub.rug.nl/faculties/science/2006/e.w.m.stienen/>

TOMIAŁOJĆ, L. & T. STAWARCZYK 2003: Awifauna Polski. Rozmieszczenie, liczebności zmiany. - The Avifauna of Poland. Distribution, Numbers and Trends. Vol. I, Wrocław, 418-419.

WIELOCH, M. 1986: A colony of terns at the mouth of the Vistula river and problems connected with their protection. *Vår Fågelv. Suppl.* 11, 239-340.

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