Trends of Migratory and Wintering Waterbirds in the Wadden Sea 1987/1988–2016/2017

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Progress Report

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Trend calculations
Erik van Winden (SOVON, The Netherlands) performed the UINDEX and TrendSpotter operations to calculate trends and to provide the imputed numbers for the calculation of maximum estimates and distributions.

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Progress Report
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2019
Common Wadden Sea Secretariat
Joint Monitoring Group of Migratory Birds in the Wadden Sea

Content

1 Introduction

Monitoring migratory and wintering birds, the JMMB program

The Wadden Sea constitutes one of the world's most important wetlands for migratory waterbirds. It is the single most important staging and moulting area and an important wintering area for waterbirds on the East Atlantic Flyway from the Arctic to South Africa. The Joint Monitoring of Migratory Birds (JMMB) program is carried out in the framework of the Trilateral Monitoring and Assessment Program (TMAP), and constitutes an internationally coordinated long-term monitoring program. It covers a large connected ecoregion stretching from Den Helder in The Netherlands to Esbjerg in Denmark; regular ground counts for most species and areas plus aerial counts for sea ducks involves hundreds of observers and several institutes and agencies.

After the publication of trends, comprehensive species accounts and assessments in the most recent reports (Blew *et al.* 2015 and Blew *et al.* 2016), the JMMB group agreed, that from now on every two years an update of these trend calculation shall be published on this website. Here, trends of 34 waterbird species for the international Wadden Sea and the four regions - The Netherlands, the Federal States of Germany, Niedersachsen and Schleswig-Holstein, and Denmark will be presented.

Details of the "Joint Monitoring program of Migratory Birds in the Wadden Sea" are given in Rösner *et al.*, (1993) and updated in Laursen *et al.* (2010). This program, consisting of international synchronous counts, spring-tide counts and aerial counts (only Common Eider), has been carried out by all Wadden Sea countries since 1992. Some differences between the countries' programs exist, due to different national approaches and older already existing counting programs, but these do not hamper the overall goal for calculating trends. Because many usable counting data before 1992 exist as well, it has been decided to include counts back to the season 1987/1988.

The area considered is the Wadden Sea Cooperation Area. This is, in general terms, the area seaward of the main dike (or, where the main dike is absent, the spring-high-tide-water line, and in the rivers, the brackish-water limit) up to 3 nautical miles from the baseline or the offshore boundaries of the Conservation Area (Essink *et al.*, 2005). The total area covers 14,700 km², with 4,534 km² of tidal flats.

Drawing:
Niels Knudsen

2 Data and methods

Data used in the analyses are a mixture of total counts (two internationally, up to five nationally) and counts of a selection of sites which are counted more frequently (12-25 times a season). At present a total of 594 counting units are defined in the Wadden Sea, which are included in the analyses. For this report, the original counting data, available at the smallest level have been used.

Trends are calculated and presented for 34 waterbird species. These are species which use the Wadden Sea during stop-over on migration or as a wintering area with large parts of their flyway population. For 10 different subspecies of 5 of these 34 species trends are calculated also, since the subspecies can be separated by different periods of their presence in the Wadden Sea area during the year. Trends for subspecies are calculated for Common Ringed-Plover, Red Knot, Bar-tailed Godwit, Redshank and Turnstone. Species which only occur in low numbers or species which cannot be counted with sufficient representativeness have been excluded from the analyses (for a more detailed explanation see Rösner *et al.*, 1994).

Despite a large dataset with lots of real count data available also missing counts are present. A complete dataset involves counts for all counting units in all months of the year. To analyse the waterbird count data, UINDEX (Bell, 1995) was used to account for missing counts in the dataset, and then TrendSpotter is applied to calculate trends (Visser, 2004, Soldaat *et al* 2007). The program UINDEX is estimating bird numbers for missing counts (imputing) taking into account site-, year- and month-factors (Underhill & Prys-Jones 1994). Sites are grouped in four regional strata representing the four different Wadden Sea "countries". The counted and imputed values for each month are added to yearly averages for the respective "bird-years", covering the period from July to June of the following year (Fig. 2.1). After that with the program TrendSpotter so-called "flexible trends" are calculated. These are particularly suitable for time series data with different periods of decreasing, stable or increasing trends (Visser 2004, Soldaat *et al.*, 2007). A trend line calculated by TrendSpotter hardly deviates from a moving average or a smoothed trend line as calculated by a Generalized Additive Model (GAM) (e.g. Atkinson *et al.*, 2006). TrendSpotter calculates also confidence intervals and differences between the trend level of the last year and each of the preceding years can be assessed (Soldaat *et al.* 2007). This way trend estimates can be given for any period, as for example the last 10 years and the whole time period, as in the current analyses.

Trend estimates given within the text are used as categories (Fig. 2.2).

This progress report presents data of the period 1987/1988 - 2016/2017.

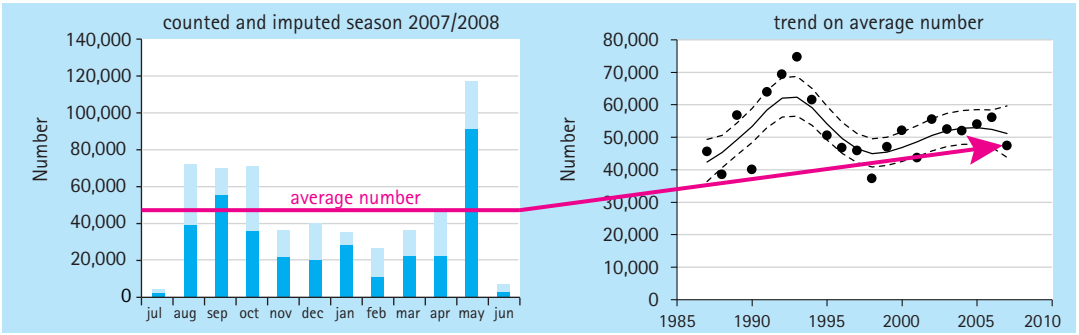


Figure 2.1
Example of the treatment of data for the trend analyses. First the seasonal pattern is reconstructed by using counted numbers and imputed numbers for each month for a certain species (left graph of the figure, dark blue is counted, light blue is imputed). Than the average over all months is taken and this is the 'yearly estimate' to be used in the trend analyses (right graph). The trend line and confidence limits are calculated over all year estimates.

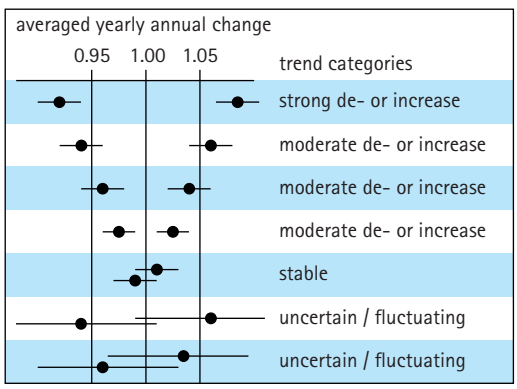


Figure 2.2
Trend classification used to express annual changes in waterbird numbers. Dots represent trend values, horizontal lines their 95% confidence limits.

Acknowledgements

In Denmark the counts were carried out by DCE - Danish Centre for Environment and Energy, Aarhus University. Aerial counts were carried out by Aarhus University and BIOVEST; in earlier years by the former Danish National Environmental Research Institute NERI in collaboration with local departments of the Ministry of the Environment.

In Schleswig-Holstein the monitoring was initiated by the Ornithological Society Schleswig-Holstein (OAG SH) in the 1960s; regular monitoring was jointly organized by the OAG SH and the World Wide Fund for Nature (WWF) in 1987 and during the first period until 1994 funded by the federal state Schleswig-Holstein and the Federal Ministry of Environment (Federal Environment Agency) as part of an ecosystem research project. Since then it was funded by the National Park Administration Schleswig-Holstein Wadden Sea. The coordination of the project moved from WWF to the Schutzstation Wattenmeer e.V. in 2004. The aerial surveys of Common Eider and Shelduck were separately financed by the National Park Administration Schleswig-Holstein Wadden Sea.

In Hamburg counts were organized by the Hamburg Wadden Sea National Park.

In Niedersachsen the counts were organized by the State Agency for Bird Conservation in the Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency (NLWKN). The aerial surveys of Common Eider were financed by the Lower Saxony Wadden Sea National Park Authority.

The waterbird counts in the Dutch Wadden Sea are part of the national monitoring program of waterbirds in The Netherlands, which is a cooperation between the Ministry of Agriculture, Nature and Food Quality, the Ministry of Water Management and Public Works, Statistics The Netherlands (CBS), Vogelbescherming Nederland (BirdLife) and Sovon Dutch Centre for Field Ornithology, co-ordinated by Sovon. The aerial surveys of Common Eider were carried out under the responsibility of the Ministry of Water Management and Public Works. Additional, annual surveys by boats of moulting Shelducks are organized and carried out by volunteers in cooperation with the WaddenUnit of the Ministry of Agriculture, Nature and Food Quality.

Photo:
Klaus Günther

3 Overview trends

Table 3.1
Trends until 2016/2017 - The whole 30 and last 10 years time period. The species names in the table are sorted according to the Euring Code.

Species	Long-term 30-years trend 1987/1988 - 2016/2017						Short-term 10-year trend 2007/2008 - 2016/2017				
	WS	DK	SH	Nds/ HH	NL		WS	DK	SH	Nds/ HH	NL
Great Cormorant	↑↑	↑↑	↑↑	↑↑	↑		→	–	→	–	→
Eurasian Spoonbill	↑↑	↑↑	↑↑	↑↑	↑↑		↑↑	↑↑	↑↑	↑↑	↑
Barnacle Goose	↑↑	↑↑	↑↑	↑	↑↑		↑	↑	↑↑	↑	↑
Brent Goose	↓	–	↓	↓	→		→	–	→	↓	→
Common Shelduck	↓	→	↓	↓	→		→	→	→	→	→
Eurasian Wigeon	↓	→	↓	→	↓		↓	→	↓	↓	↓
Common Teal	→	↑	→	↓	→		↑	↑↑	↑	–	–
Mallard	↓	↓	↓	↓	↓		↓	–	→	→	↓
Northern Pintail	↑	↑	↑	↑	↑		↑	↑	↑	↑	↑
Northern Shoveler	↑	↑	↑	→	↑		↑	–	↑	→	↑
Common Eider (25y trend)	↓	↓	↓	↓	→		↓	–	–	↓↓	→
Eurasian Oystercatcher	↓	→	↓	↓	↓		↓	→	↓	↓	↓
Pied Avocet	↓	↓	↓	↓	↓		↓	↓	↓	↓	↓
Great Ringed Plover	↑	↑	↑	↓	↑		↑	↑	↑	↓	↑
Kentish Plover	↓	–	→	↓↓	↓		–	↑	–	–	↓
European Golden Plover	→	→	↓	→	→		–	–	–	–	→
Grey Plover	→	↑	↓	↓	↑		→	→	↓	↓	→
Northern Lapwing	→	→	↑	↓	↑		→	→	↑	↓	↑
Red Knot	↓	↑	↓	→	↑		→	–	↓	–	↑
Sanderling	↑	↑	→	↓	↑↑		↑	↑	–	↓	↑↑
Curlew Sandpiper	→	–	→	↓↓	–		–	–	–	↓↓	–
Dunlin	↓	↓	↓	→	↑		↓	↓	→	→	↑
Ruff	↓	↓	↓	–	↓		↑	↑↑	↑	–	↓
Bar-tailed Godwit	→	→	↓	↓	↑		→	–	↓	↓	→
Whimbrel	→	↓↓	↑	–	→		→	↓↓	↑	–	–
Eurasian Curlew	→	↑↑	↓	→	↑		→	–	→	→	→
Spotted Redshank	↓	→	↓	→	↓		→	→	→	→	↓
Common Redshank	↓	→	↓	↓	→		↓	→	↓	↓	→
Common Greenshank	→	↑	↓	→	→		→	–	–	→	–
Ruddy Turnstone	→	↓	→	↑	→		→	↓	→	↑	–
C. Black-headed Gull	→	↓	→	→	→		→	↓	↑	↑	→
Common Gull	→	↓	↓	→	↑		→	↓	→	–	–
European Herring Gull	↓	→	↓	↓	↓		→	→	↓	↓	→
Great Black-backed Gull	↓	↓	↓	↓	→		→	↓	→	↓	–

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase ↓ moderate decrease → stable – uncertain

WS - Wadden Sea; **DK** - Denmark; **SH** - Schleswig-Holstein; **Nds/HH** - Niedersachsen/Hamburg; **NL** - The Netherlands

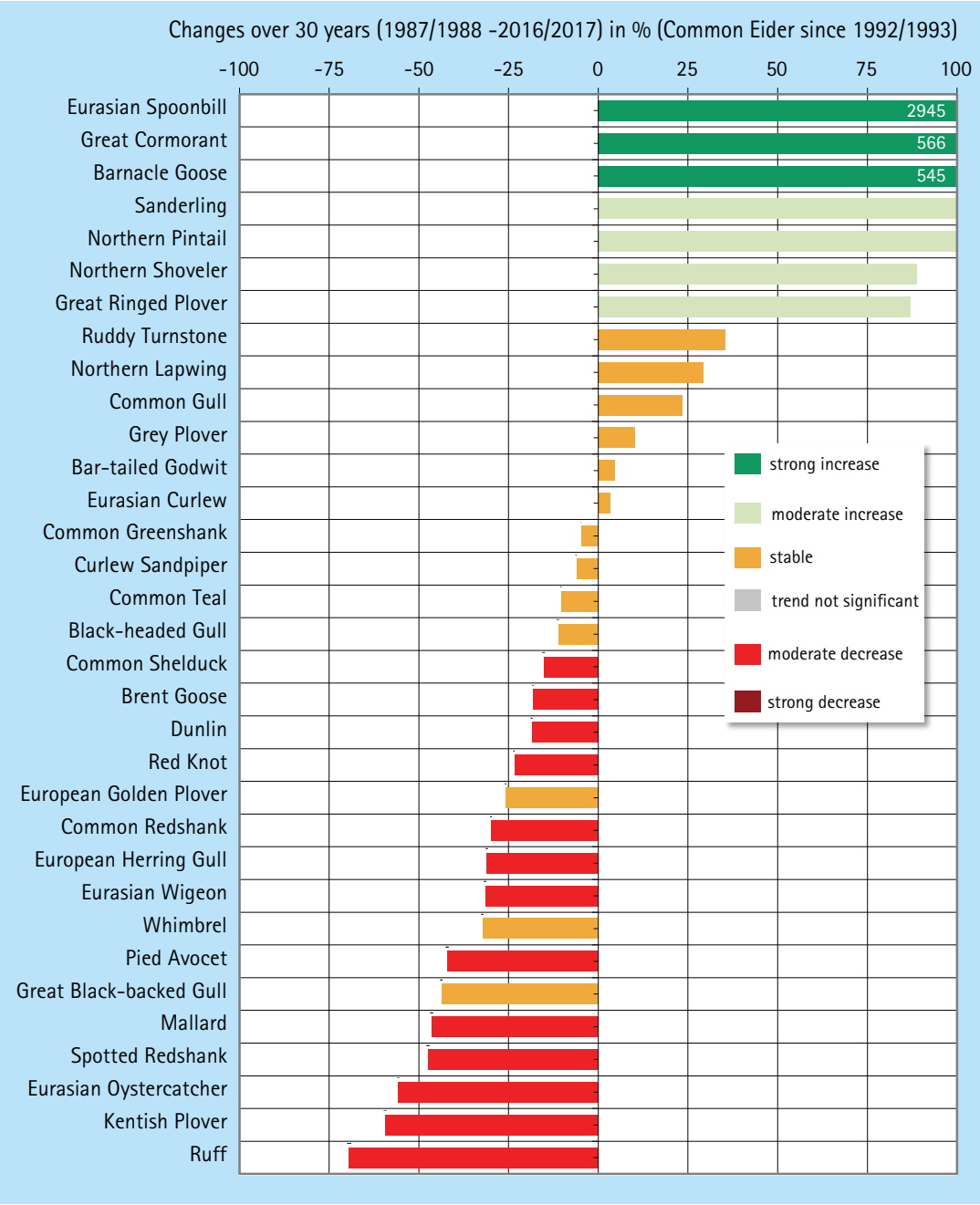
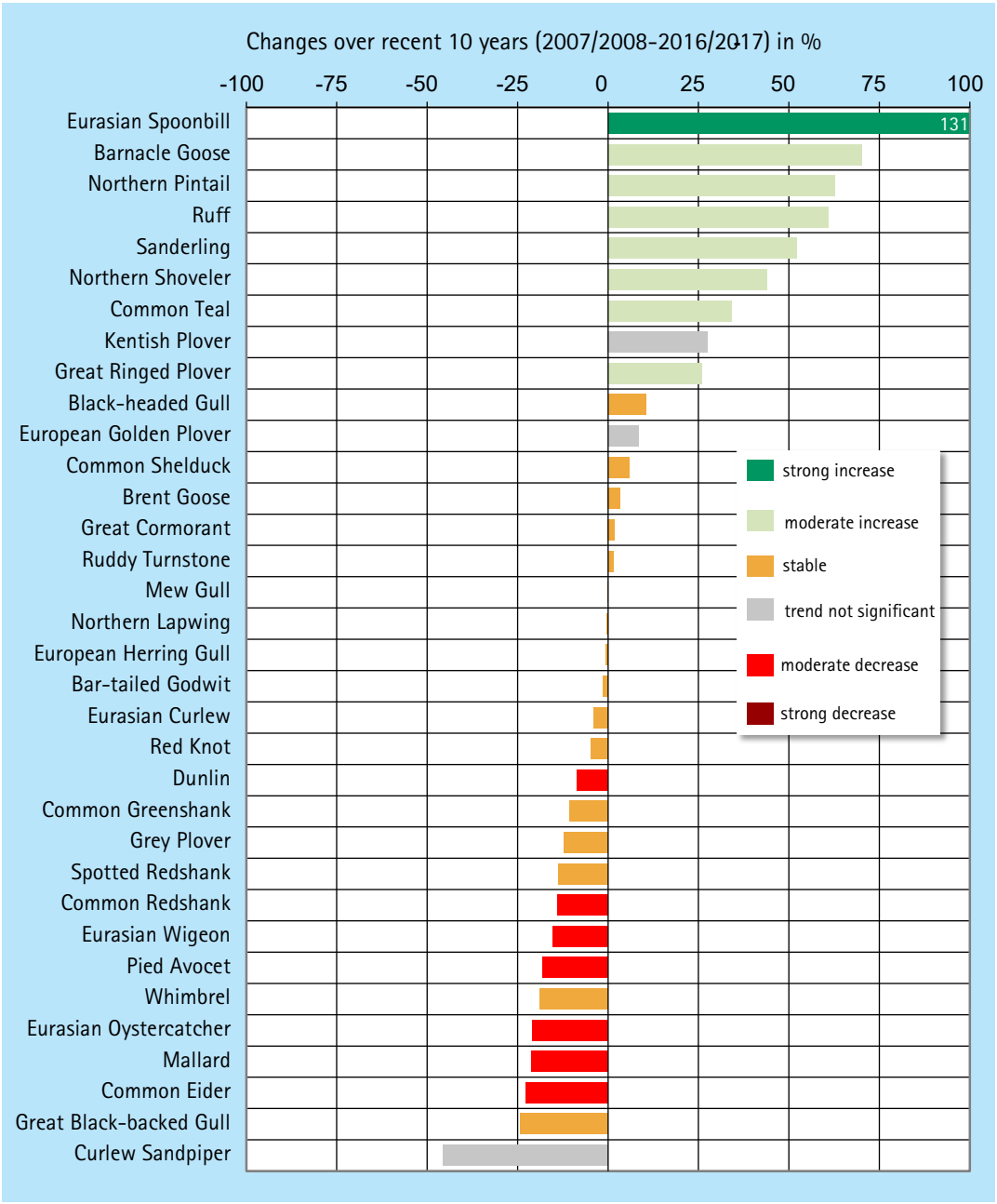


Figure 3.1
Trend categories for the 30-year period for the International Wadden Sea and the four countries, calculated with TrendSpotter on yearly estimates, ranked after trend category and value.

Figure 3.2
Trend categories for the 10-year period for the International Wadden Sea and the four countries, calculated with TrendSpotter on yearly estimates, ranked after trend category and value.



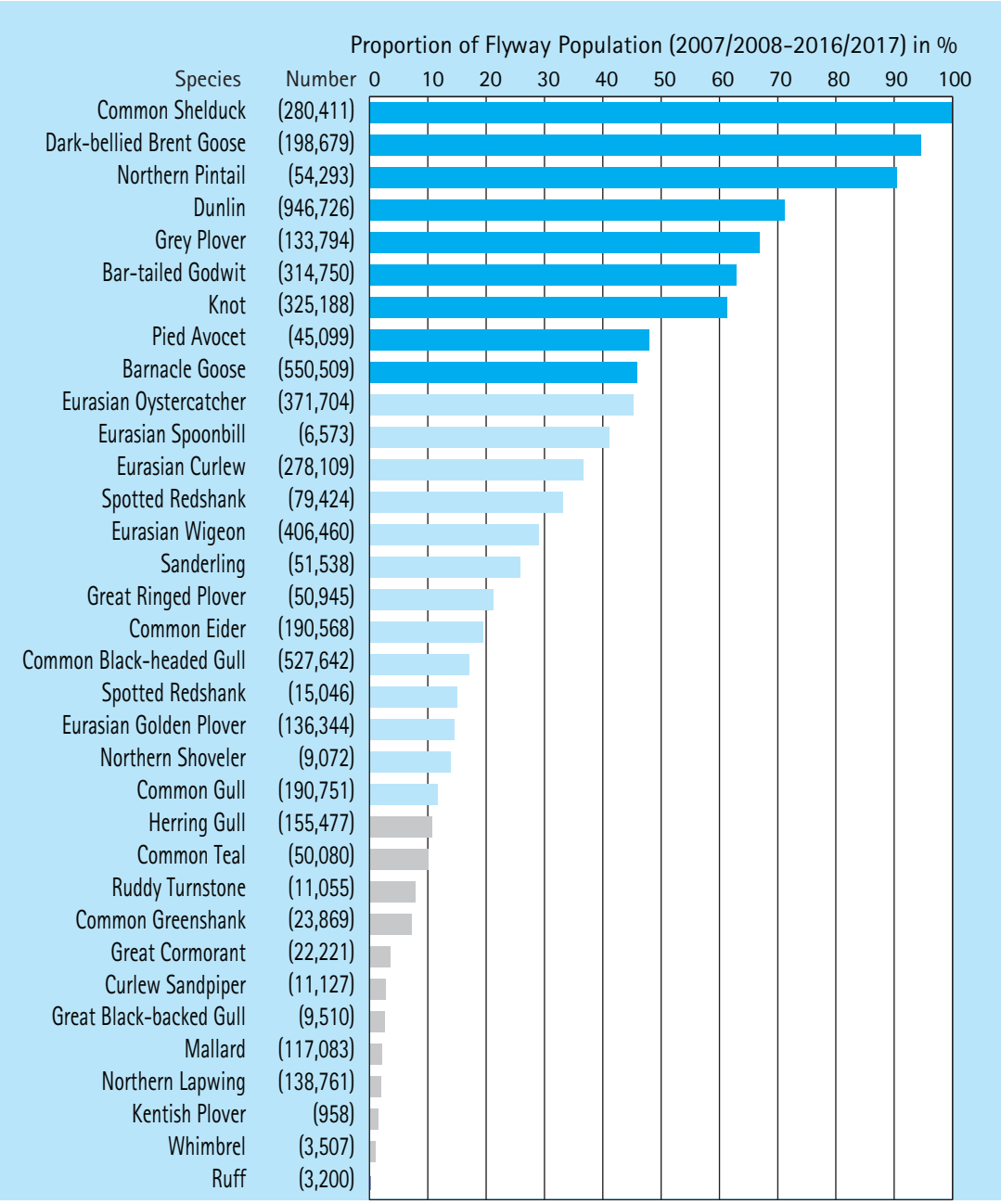


Figure 3.3
Proportion of flyway population with regard to estimated numbers (Wetlands International 2018).

Photo:
Klaus Günther

In order to help to identify possible relationships between the species' trends and their ecological traits, trends of single species were combined. Each bird species has been allocated to each of four different guilds, namely food, feeding habitat, breeding and wintering grounds.

The decisions for these allocations have not been clear-cut in all cases; in particular regarding food or feeding habitat, the choice was to pick those which represented the main food or feeding habitat, respectively.

For the combined indices the geometrical mean of species-specific indices have been used.

Results

Food

In the long run species depending on fish and plants showed a moderate increase, but over the last four seasons the trend is uncertain. That is also the case for those feeding more or less opportunistically on "other invertebrates" is, for which the long-term trend is stable. Species feeding on shellfish decreased over the years, although since ten years the trend is more or less stable. The long-term trend for worm-eating birds is stable. The only omnivorous species, Greater Black-backed Gull, declined.

Feeding Habitat

Species utilizing beaches or salt marshes show a moderate increase, while species of the coastal grasslands (European Golden Plover, Northern Lapwing, Ruff) and tidal areas show a stable long-term trend, that becomes more uncertain over the last few years.

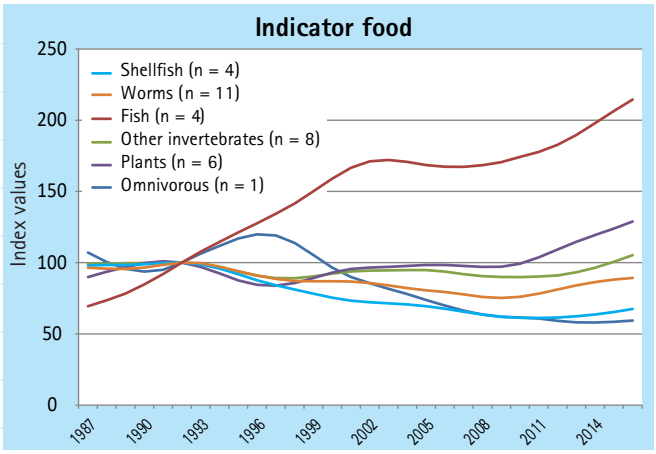
Breeding Range

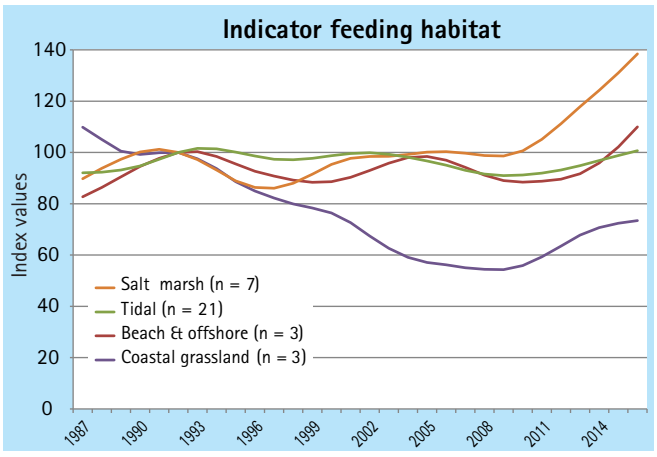
Arctic breeders as well as non-arctic breeders show a moderate increase..

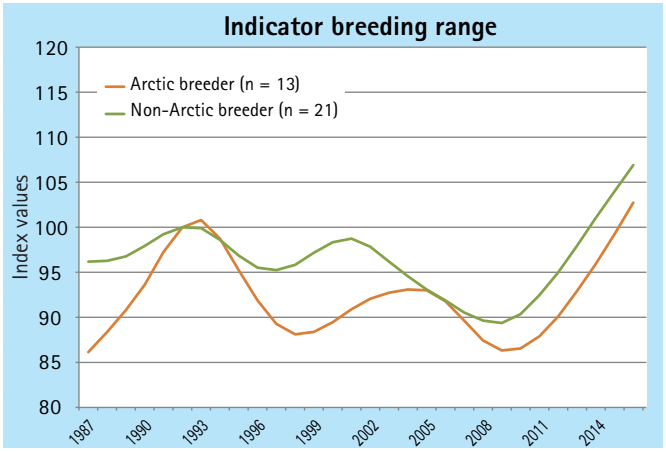
Wintering Range

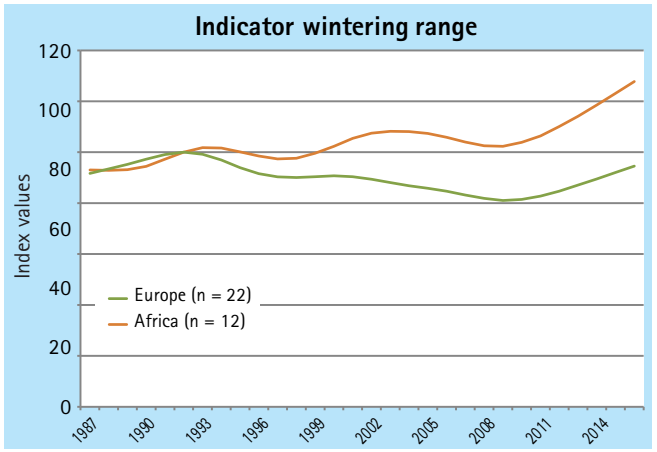
Birds wintering in Africa show a moderate increasing long-term trend. The trend for birds wintering in Europe was stable for years and is slightly increasing in the last ten years.

Figure 3.4
Combined trends according to food guilds, feeding habitat, breeding range and wintering range (see Table A1.1 & A1.2, p62-63). Trends were aggregated by using the geometrical mean of TrendSpotter trend lines of single species within each category.









4 Species accounts

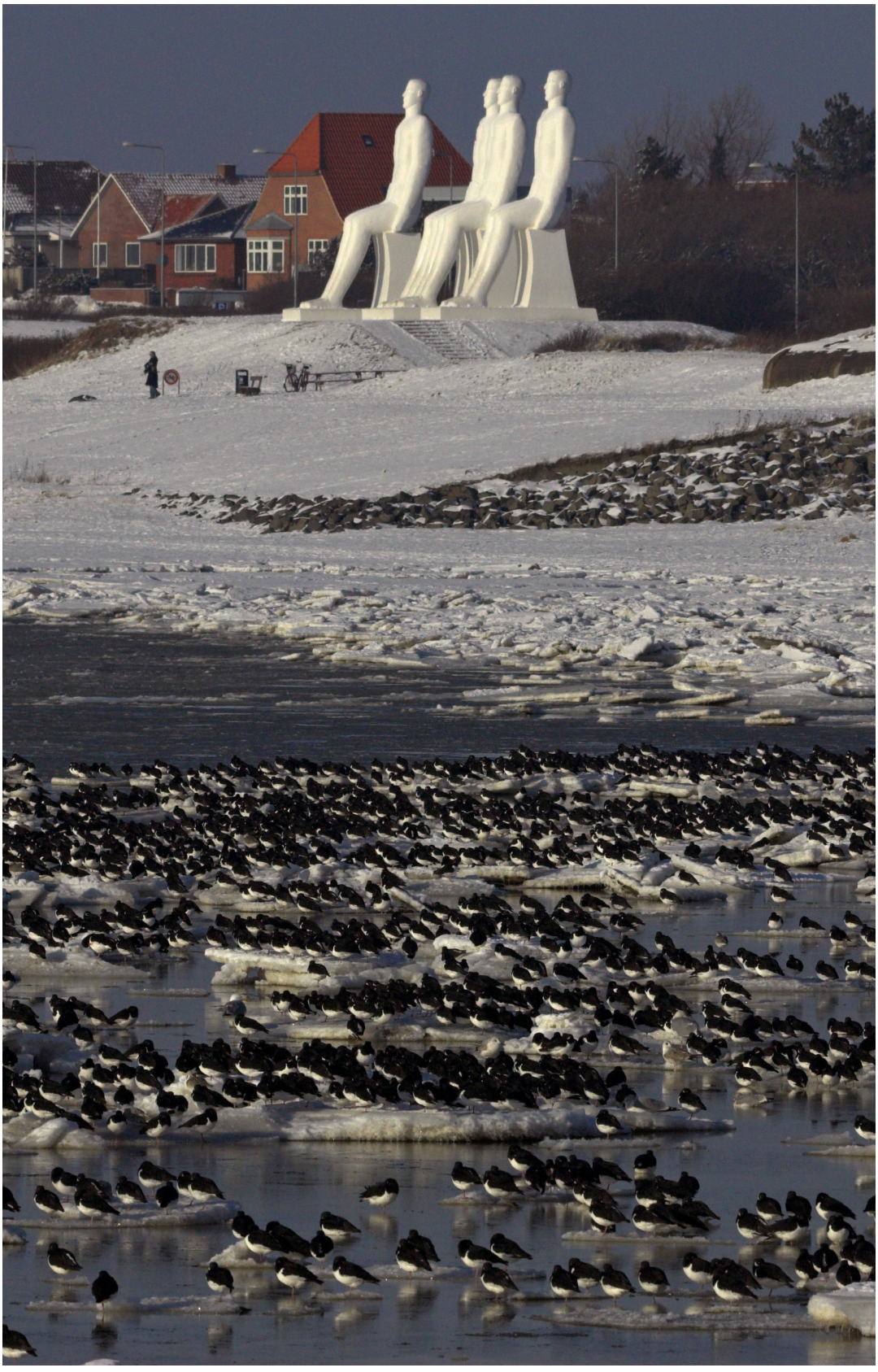
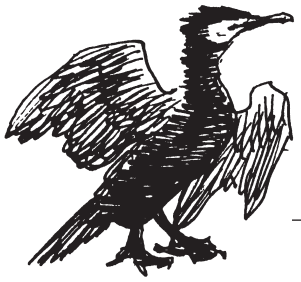


Photo:
Bo Lassen Christiansen

Photo:
Klaus Günther

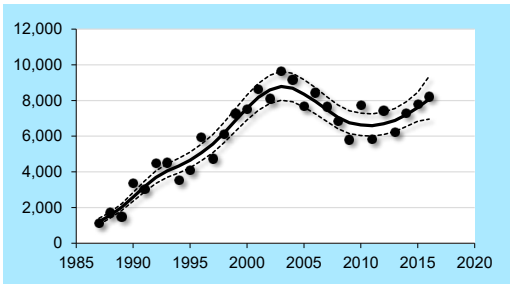
Photo:
Klaus Günther



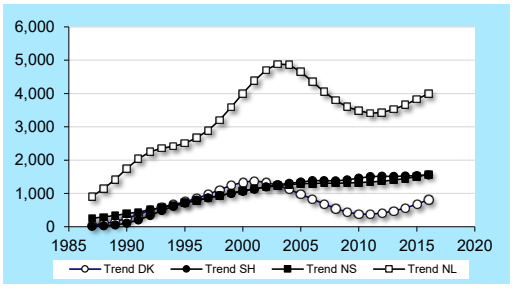
4.1 Great Cormorant

Phalacrocorax carbo 00720

DK: Skarv D: Kormoran NL: Aalscholver



(A) Overall trend in the international Wadden Sea

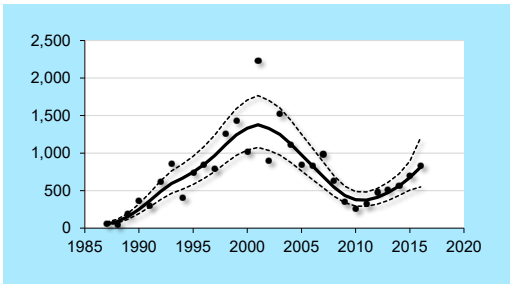


(B) Trends in the different countries compared

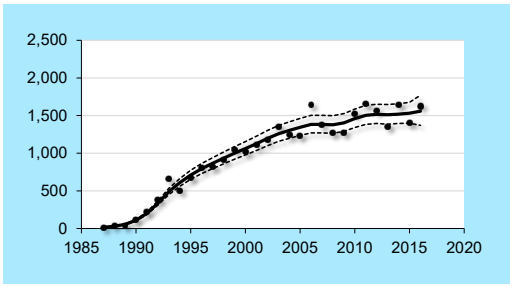
Figure 4.1.1-4.1.6
Trends of Great Cormorant in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

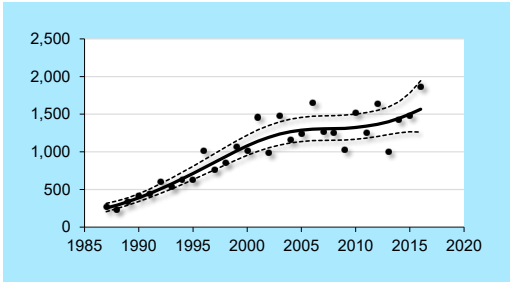
Great Cormorant numbers increased remarkably in the Wadden Sea from the 1980s up until 2003 during all seasons, reflecting the increase in the breeding populations in Northern Europe. Since then this increase turned into a stable to uncertain trend, due do a trend break in the Netherlands and Denmark, while in Schleswig-Holstein and Niedersachsen/Hamburg trends are stable since.



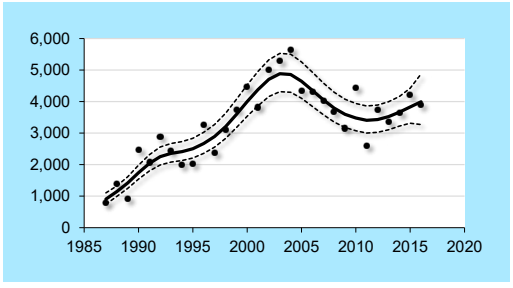
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Great Cormorant in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↑↑	→
(C) Denmark		↑↑	–
(D) Schleswig-Holstein		↑↑	→
(E) Niedersachsen/Hamburg		↑↑	–
(F) The Netherlands		↑	→

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

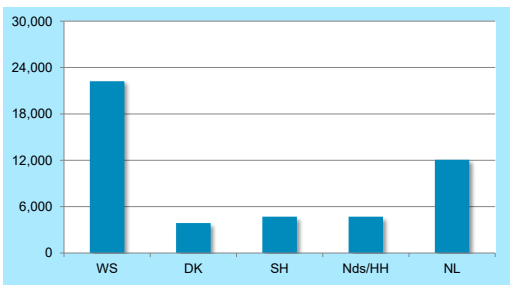
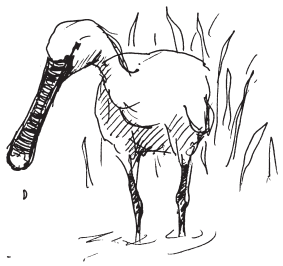


Figure 4.1.7
Absolute numbers of Great Cormorant in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

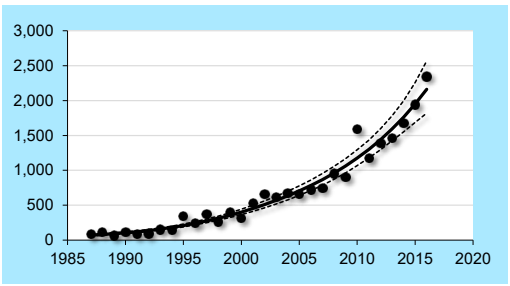


4.2 Eurasian Spoonbill

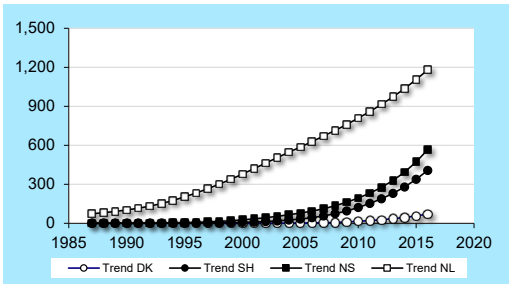
01440

Platalea leucorodia

DK: Skestork **D: Löffler** **NL: Lepelaar**



(A) Overall trend in the international Wadden Sea

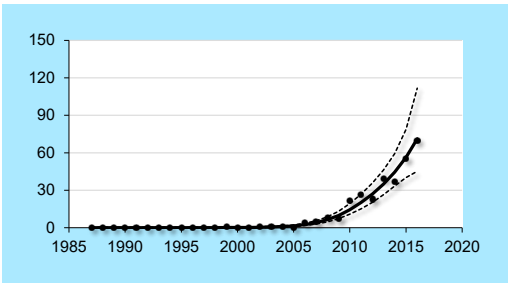


(B) Trends in the different countries compared

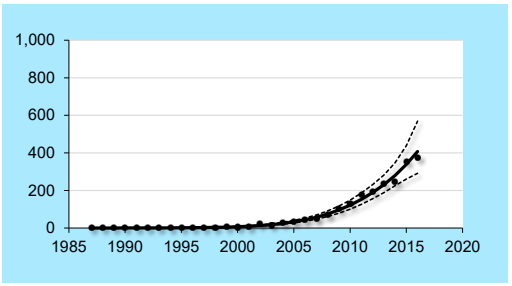
Figure 4.2.1.-4.2.6
Trends of Eurasian Spoonbill in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

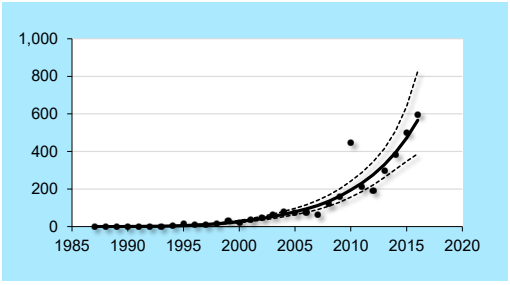
Since the 1980s the **Eurasian Spoonbill** shows a strong increase in the international Wadden Sea, which reflects the trends in all four Wadden Sea regions. The non-breeding numbers also reflect the growth of the breeding population the Wadden Sea. This Eurasian Spoonbill is both long and short term the species with the strongest increase.



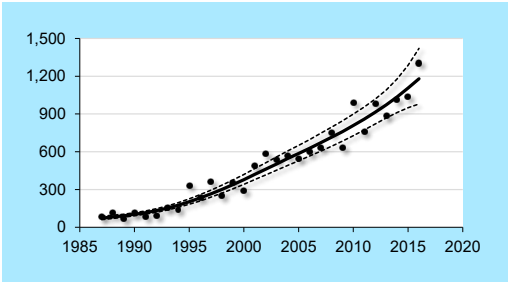
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Eurasian Spoonbill in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↑↑	↑↑
(C) Denmark		↑↑	↑↑
(D) Schleswig-Holstein		↑↑	↑↑
(E) Niedersachsen/Hamburg		↑↑	↑↑
(F) The Netherlands		↑↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

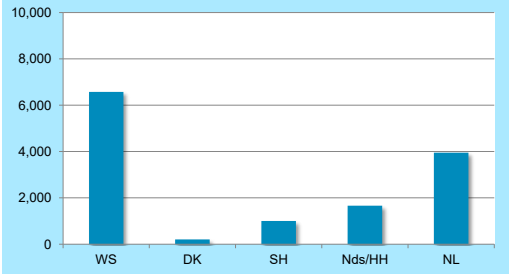
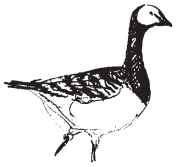


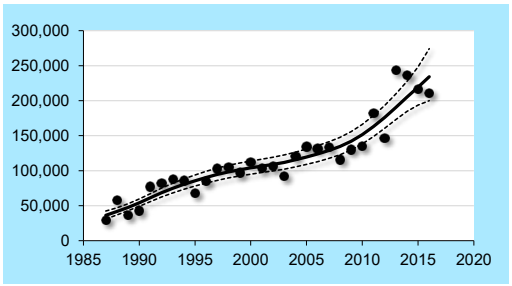
Figure 4.2.7
Absolute numbers of Eurasian Spoonbill in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.



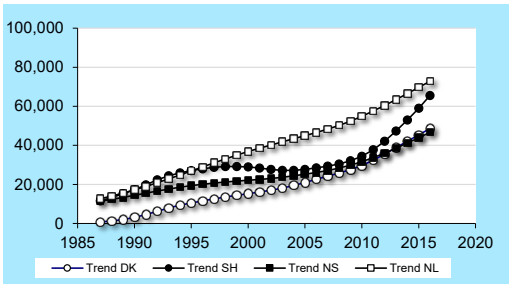
4.3 Barnacle Goose

Branta leucopsis 01670

DK: Bramgås D: Weißwangengans NL: Brandgans



(A) Overall trend in the international Wadden Sea

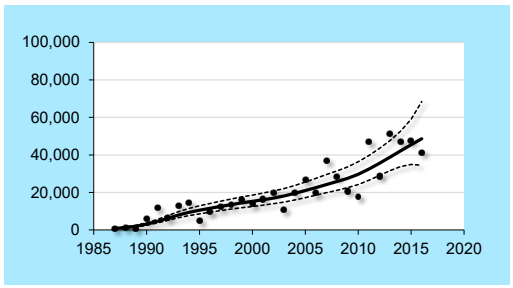


(B) Trends in the different countries compared

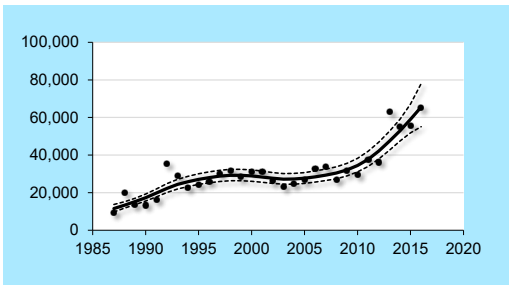
Figure 4.3.1-4.3.6
Trends of Barnacle Goose in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

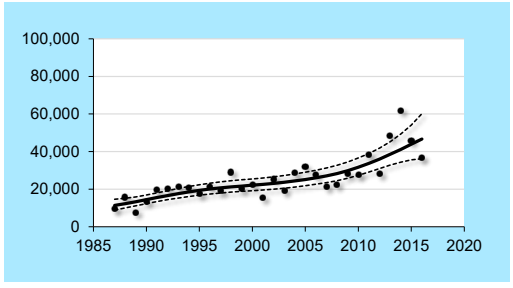
The **Barnacle Goose** flyway population increased. This trend is clearly reflected by the numbers in the Wadden Sea. In all four Wadden Sea regions the increase is moderate to strong, although in recent years the trend development becomes unclear. Only Schleswig-Holstein still has increasing numbers of Barnacle Geese. Besides growing numbers of 'barnacles' in the winter season, the species also prolonged its staging period in spring, leaving for Acrtic breeding grounds in the end of May. The Barnacle Goose also settled and increased as a breeding bird in all Wadden Sea regions, with moulting sites throughout the Wadden Sea shores and islands.



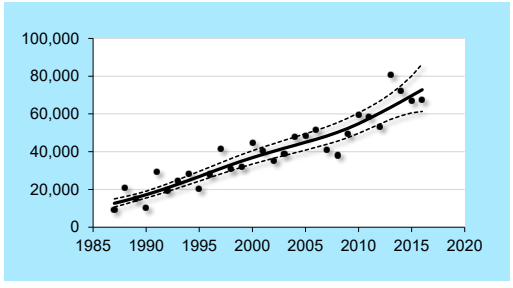
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Barnacle Goose in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↑↑	↑
(C) Denmark		↑↑	↑
(D) Schleswig-Holstein		↑↑	↑↑
(E) Niedersachsen/Hamburg		↑	↑
(F) The Netherlands		↑↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

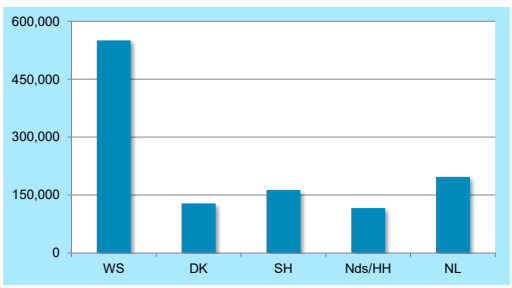


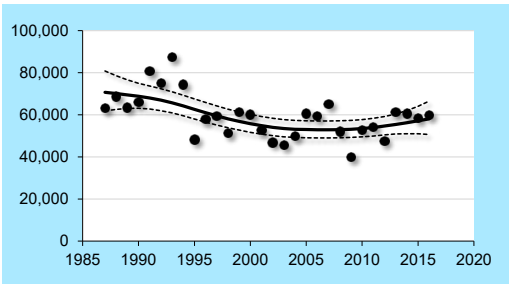
Figure 4.3.7
Absolute numbers of Barnacle Goose in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

4.4 Dark-bellied Brent Goose

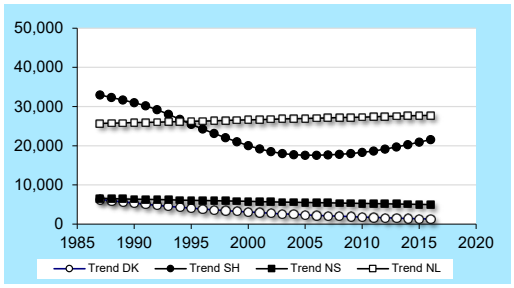
01680

Branta bernicla bernicla

DK: Mørkbuget Knortegås D: Dunkelbäuchige Ringelgans NL: Rotgans



(A) Overall trend in the international Wadden Sea

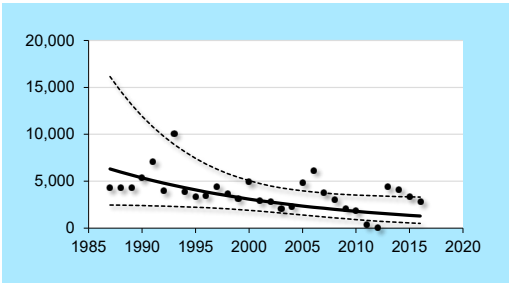


(B) Trends in the different countries compared

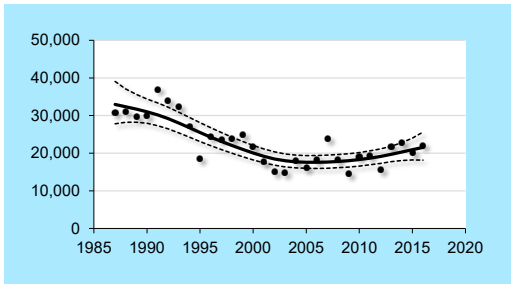
Figure 4.4.1-4.4.6 Trends of Dark-bellied Brent Goose in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

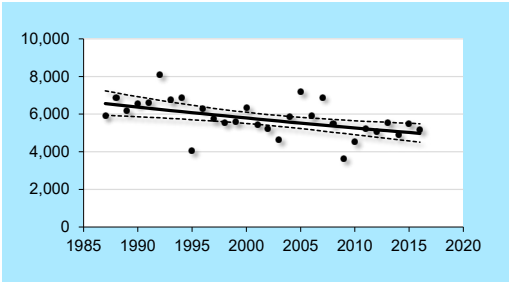
Over 80% of the **Dark-bellied Brent Goose** flyway population can be found in the Wadden Sea. The long-term trend of the species in the international Wadden Sea is stable. Mainly Schleswig-Holstein showed an decrease in the early years, but the trend is quite stable for over twenty years now. Denmark and Niedersachsen both have slightly decreasing numbers, while in the Netherlands the overall trend is stable.



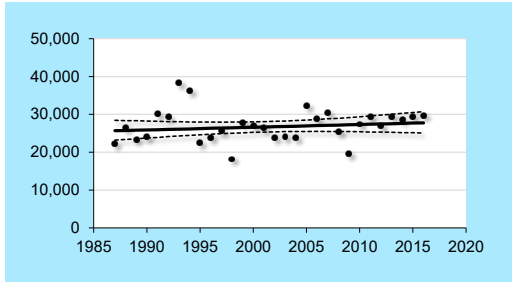
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Dark-bellied Brent Goose in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	→
(C) Denmark		–	–
(D) Schleswig-Holstein		↓	→
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		→	→

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

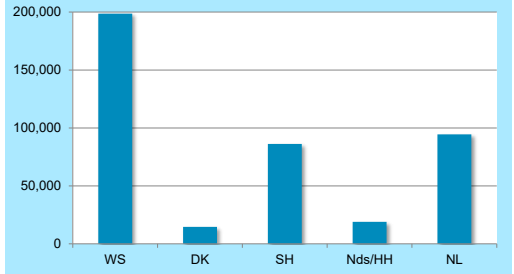
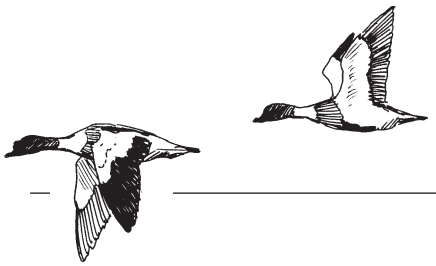


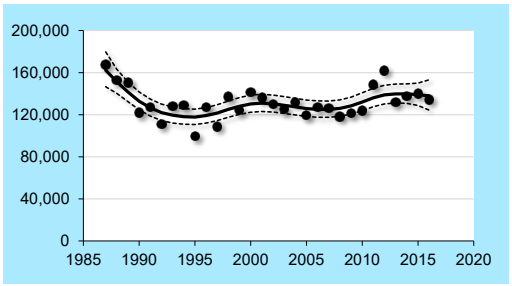
Figure 4.4.7 Absolute numbers of Dark-bellied Brent Goose in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.



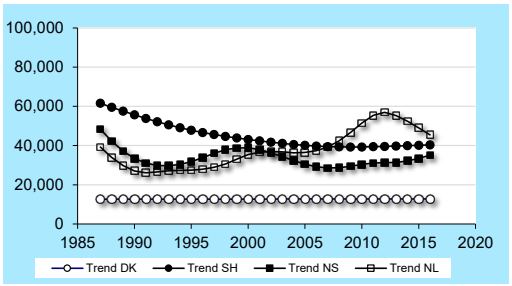
4.5 Common Shelduck

Tadorna tadorna 01730

DK: Gravand D: Brandgans NL: Bergeend



(A) Overall trend in the international Wadden Sea



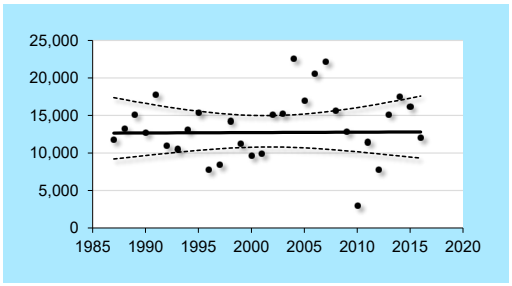
(B) Trends in the different countries compared

Figure 4.5.1-4.5.6 Trends of CommonShelduck in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

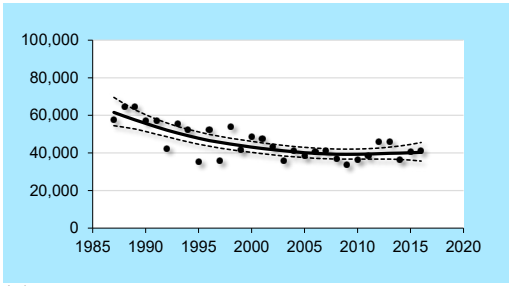
Explanatory Note

Almost a 100% of the **Common Shelduck** flyway population uses the Wadden Sea, especially in the moulting period. Overall numbers on high tide roosts decreased up to the mid 1990´s; from then on slow fluctuations occur. Recent increases mostly in the Netherlands and less clear in Schleswig-Holstein combined with decreases in Niedersachsen/Hamburg and fluctuations in Denmark lead to an overall stable trend.

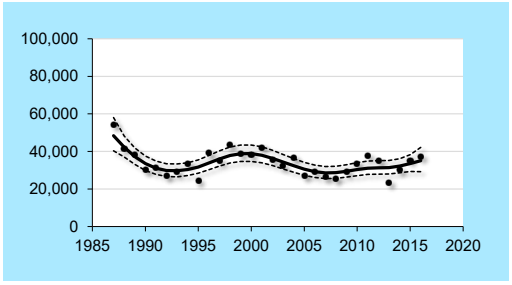
The Common Shelduck moulting population used to have its main concentration in the Schleswig-Holstein Wadden Sea, but since the millennium the importance of the Dutch Wadden Sea for moulting Shelducks got bigger (Kleefstra & Kempf 2013). Since then numbers of moulting Shelducks in Schleswig-Holstein have continuously been decreasing up to 2009. The long-term trend is now increasing, but the short-term trend seems stable.



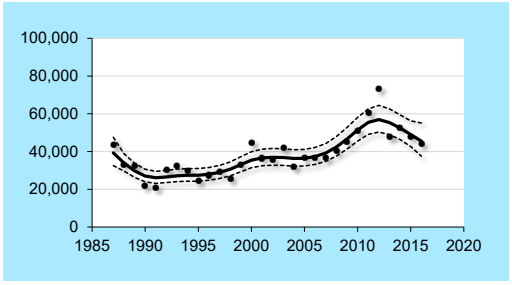
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Common Shelduck in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	→
(C) Denmark		→	→
(D) Schleswig-Holstein		↓	→
(E) Niedersachsen/Hamburg		↓	→
(F) The Netherlands		→	→

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

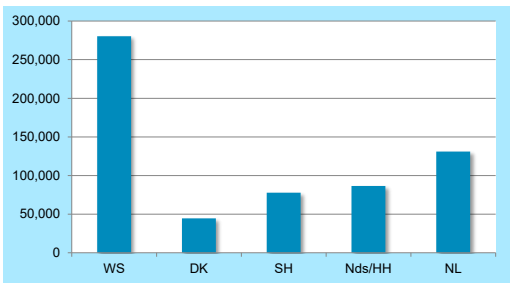
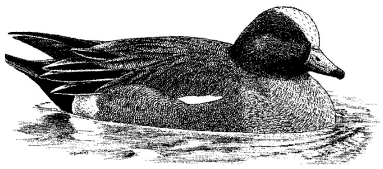


Figure 4.5.7 Absolute numbers of Common Shelduck in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

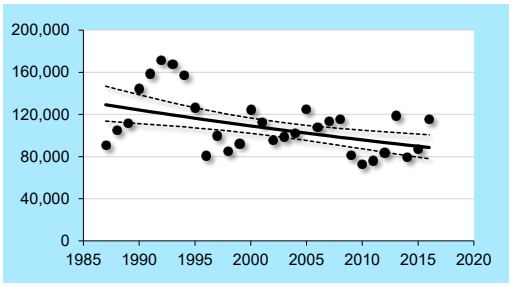


4.6 Eurasian Wigeon

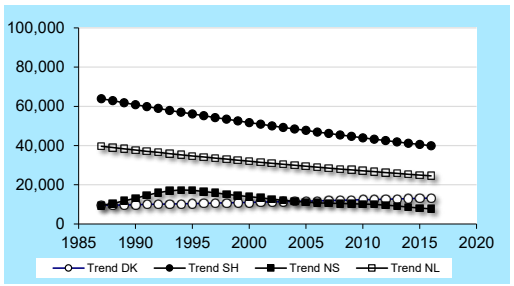
01790

Anas penelope

DK: Pibeand **D: Pfeifente** **NL: Smient**



(A) Overall trend in the international Wadden Sea

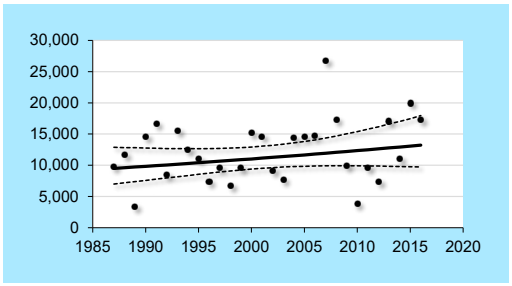


(B) Trends in the different countries compared

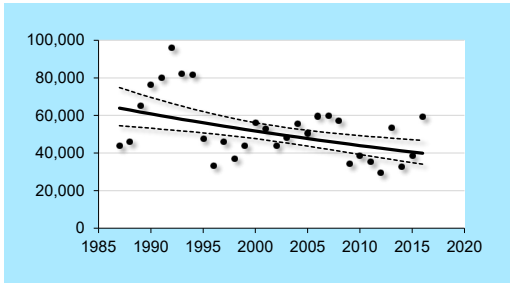
Figure 4.6.1-4.6.6
Trends of Eurasian Wigeon in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

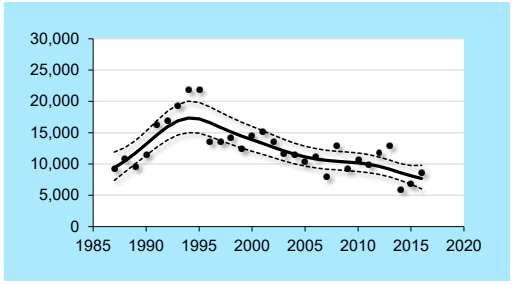
After increasing numbers of **Wigeons** in all regions of the Wadden Sea up to the mid 1990s the species shows a moderate decrease in all regions ever since. Only in Denmark the long-term trend is stable. The decrease in the Wadden Sea reflects international population changes, with Wigeons increasing on the northern latitude and decreasing numbers further south, in combination with a decreased breeding success in Fenno-Scandivian breeding areas (Fox *et al.* 2015).



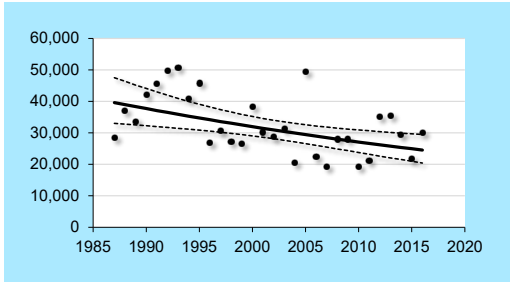
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Eurasian Wigeon in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		→	→
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		→	↓
(F) The Netherlands		↓	↓

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

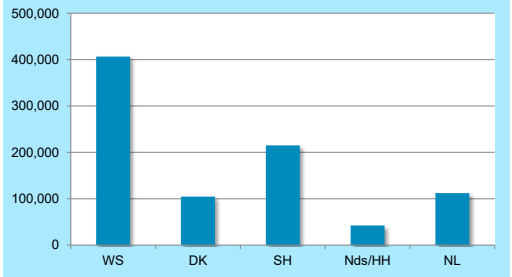
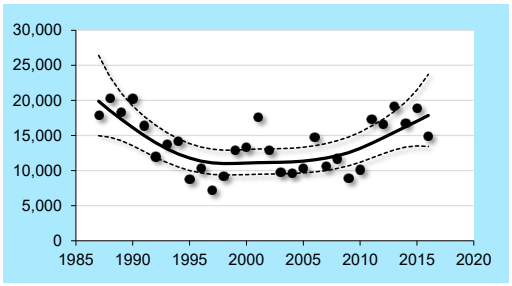


Figure 4.6.7
Absolute numbers of Eurasian Wigeon in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

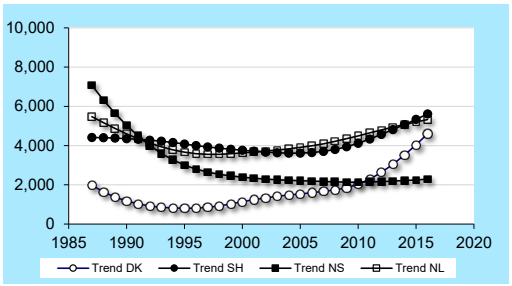
4.7 Common Teal

Anas crecca 01840

DK: Krikand D: Krickente NL: Wintertaling



(A) Overall trend in the international Wadden Sea

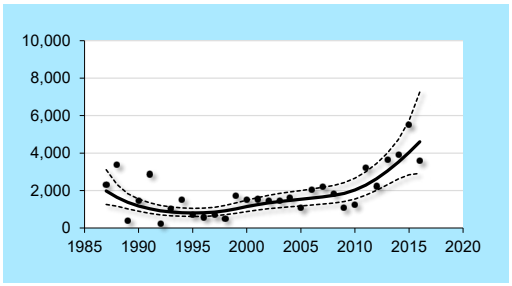


(B) Trends in the different countries compared

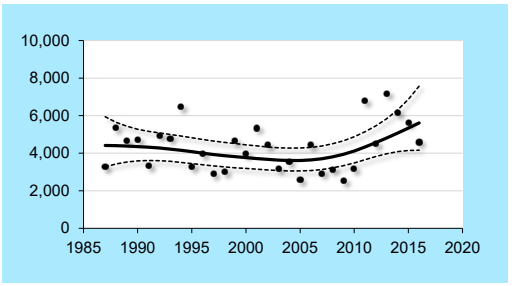
Figure 4.7.1-4.7.6
Trends of Common Teal in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

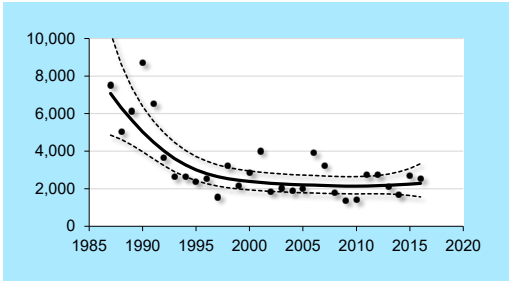
Only fractions of the large flyway population of the **Common Teal** are counted in the Wadden Sea. Thus, trends in the Wadden Sea depend more on climate and habitat availability than on flyway trends. The flyway population is increasing, in the Wadden Sea the current trend, after a decrease up to the mid 1990s, is positive. Apart from Niedersachsen numbers were bigger in all regions since 2010.



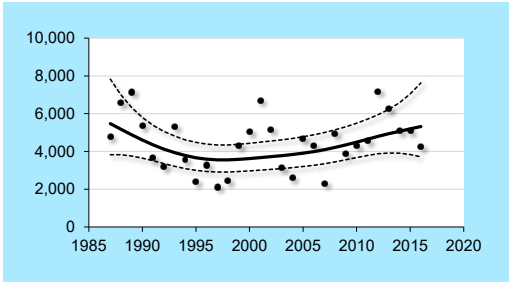
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Common Teal in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		→	↑
(C) Denmark		↑	↑↑
(D) Schleswig-Holstein		→	↑
(E) Niedersachsen/Hamburg		↓	–
(F) The Netherlands		→	–

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

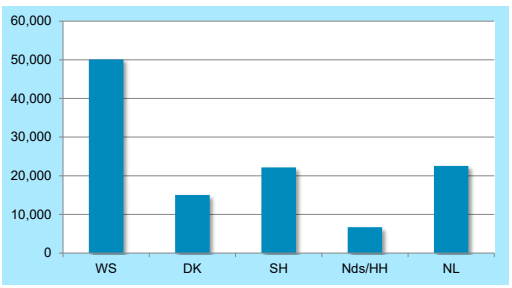


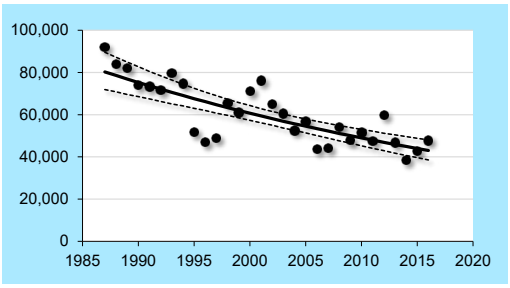
Figure 4.7.7
Absolute numbers of Common Teal in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

4.8 Mallard

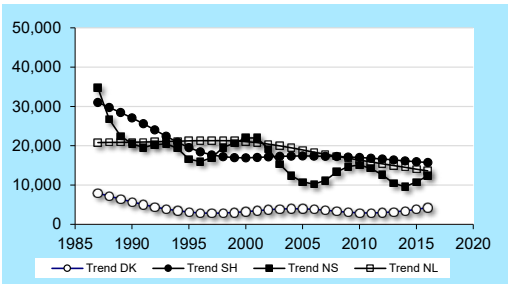
01860

Anas platyrhynchos

DK: Gråand **D: Stockente** **NL: Wilde Eend**



(A) Overall trend in the international Wadden Sea

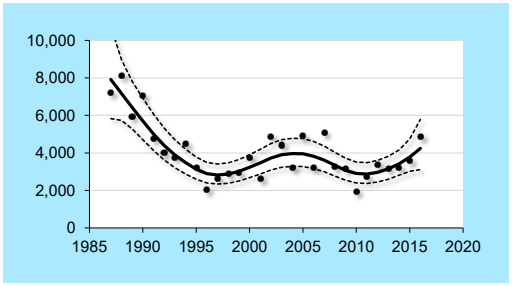


(B) Trends in the different countries compared

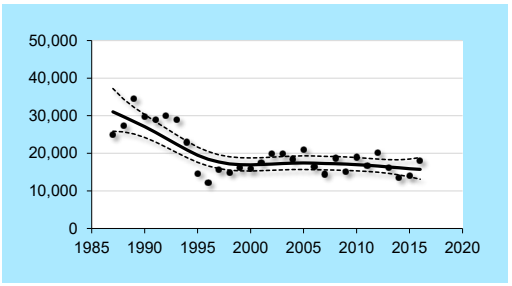
Figure 4.8.1-4.8.6 Trends of Mallard in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

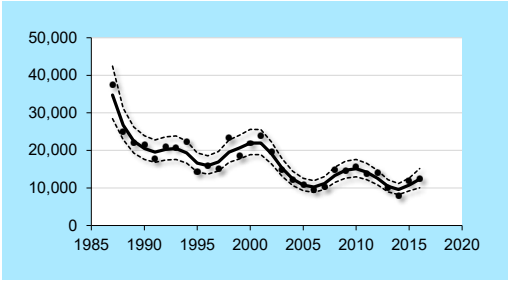
The **Mallard** is counted in the Wadden Sea with less than 5% of its flyway populations. The overall trends are moderate but long-lasting decreases in the entire Wadden Sea. The short-term trend seems to be uncertain in all regions of the Wadden Sea.



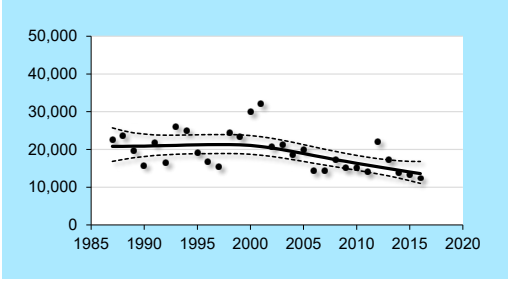
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

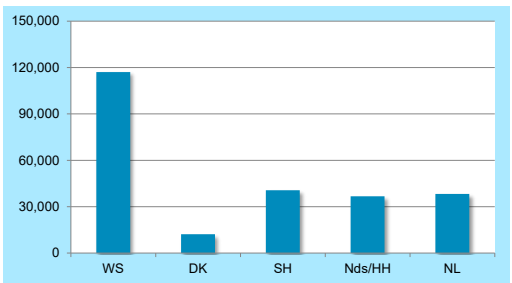
Trends for Mallard in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Figure 4.8.7 Absolute numbers of Mallard in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		↓	–
(D) Schleswig-Holstein		↓	→
(E) Niedersachsen/Hamburg		↓	→
(F) The Netherlands		↓	↓

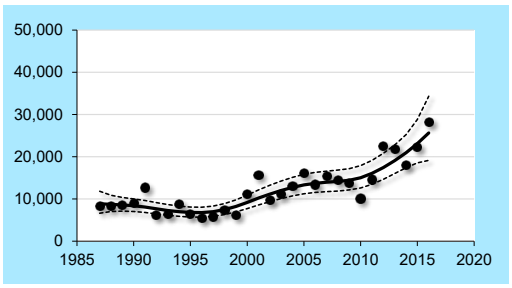
↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain



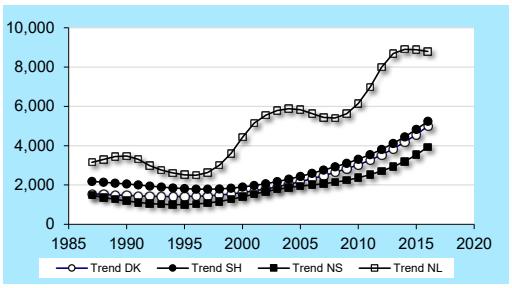
4.9 Northern Pintail

Anas acuta 01890

DK: Spidsand D: Spießente NL: Pijlstaart



(A) Overall trend in the international Wadden Sea

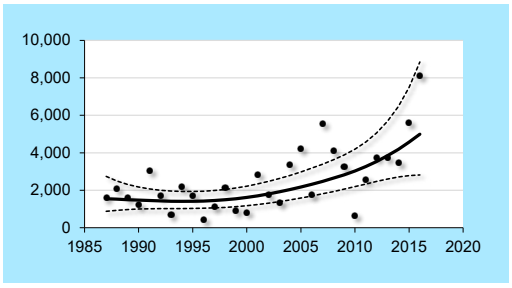


(B) Trends in the different countries compared

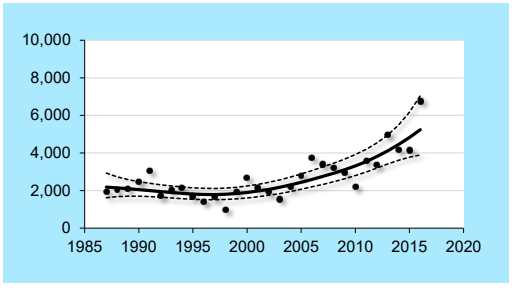
Figure 4.9.1-4.9.6
Trends of Northern Pintail in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

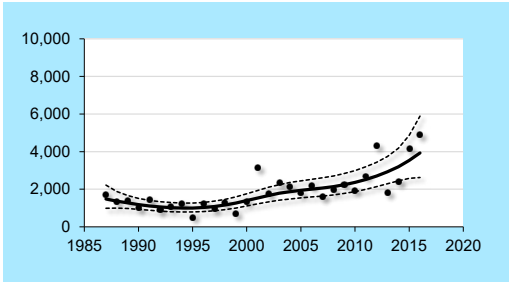
The proportion of the **Northern Pintail** population exceeds the 60% amply and numbers are clearly increasing. That seems to be the case for all regions, although the trend has become unclear in recent years. Annual averages for the Wadden Sea ran up from about 7600 on average during the 1980s and 1990s to about 16.000 on average since the millennium.



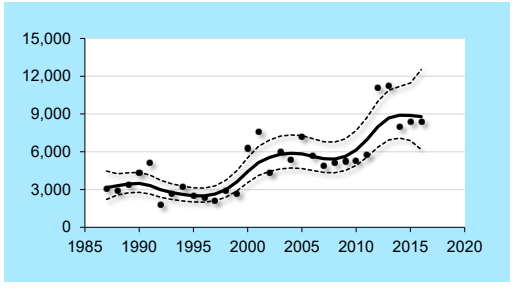
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Northern Pintail in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↑	↑
(C) Denmark		↑	↑
(D) Schleswig-Holstein		↑	↑
(E) Niedersachsen/Hamburg		↑	↑
(F) The Netherlands		↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

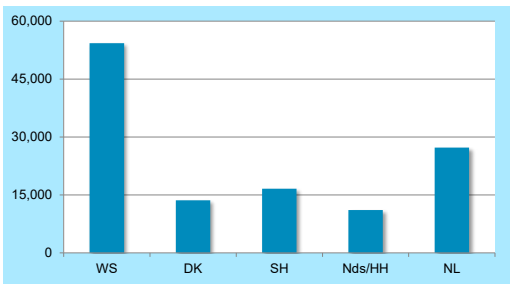


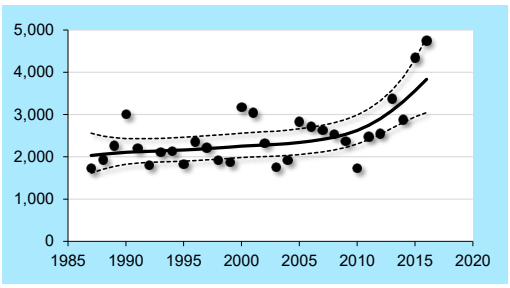
Figure 4.9.7
Absolute numbers of Northern Pintail in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

4.10 Northern Shoveler

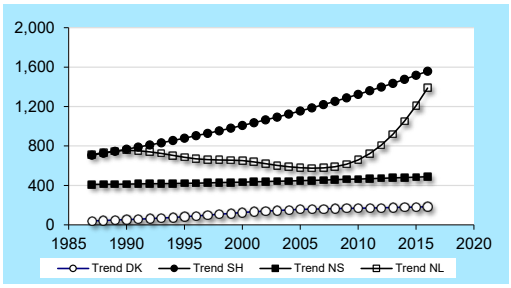
01940

Anas clypeata

DK: Skeand D: Löffelente NL: Slobeend



(A) Overall trend in the international Wadden Sea

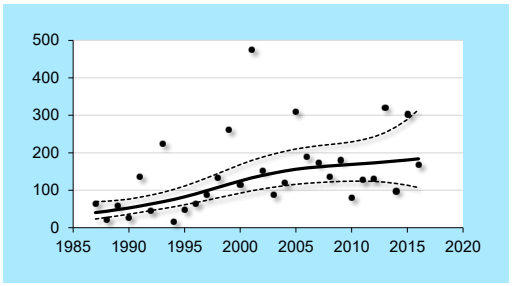


(B) Trends in the different countries compared

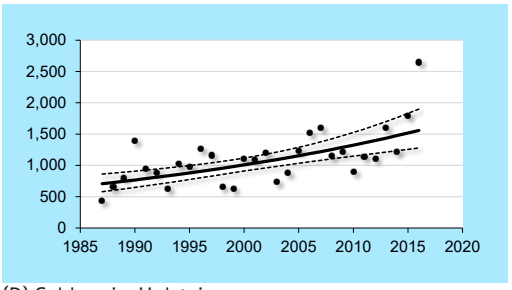
Figure 4.10.1-4.10.6 Trends of Northern Shoveler in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

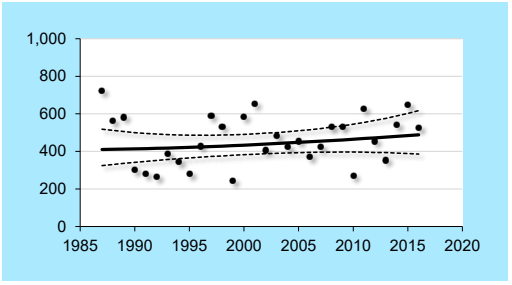
The Wadden Sea represents some 20% of the flyway population of the **Northern Shoveler**. The species shows a moderate increase in the long run. This differs between the four Wadden Sea regions. The trend in Denmark is unclear, in Schleswig-Holstein increasing, in Niedersachsen stable, while the Northern Shoveler showed a strong increase in the Dutch Wadden Sea in recent years.



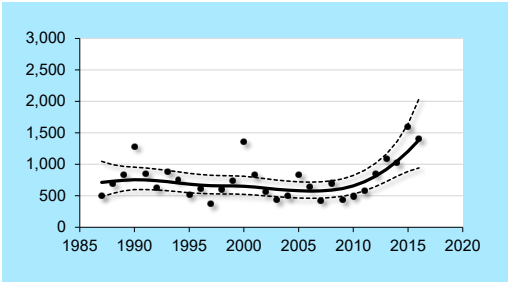
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

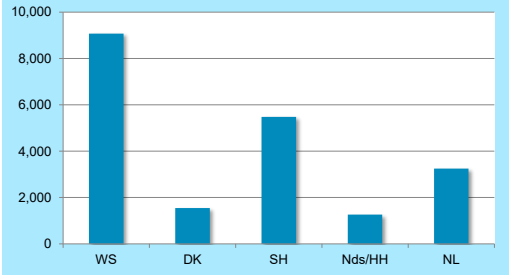
Trends for Northern Shoveler in the Wadden Sea

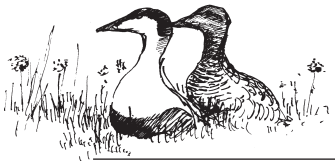
Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Figure 4.10.7 Absolute numbers of Northern Shoveler in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↑	↑
(C) Denmark		↑	–
(D) Schleswig-Holstein		↑	↑
(E) Niedersachsen/Hamburg		→	→
(F) The Netherlands		↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

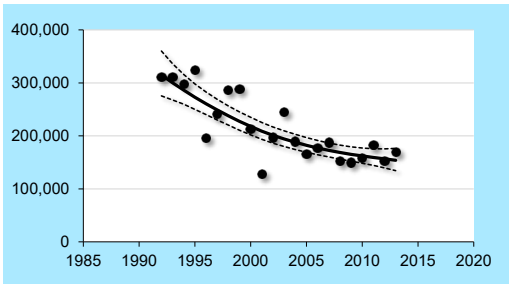




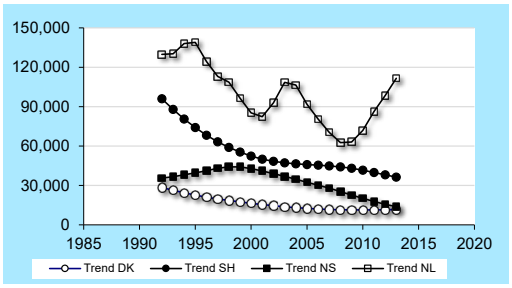
4.11 Common Eider

Somateria mollissima 02060

DK: Ederfugl D: Eiderente NL: Eidereend



(A) Overall trend in the international Wadden Sea

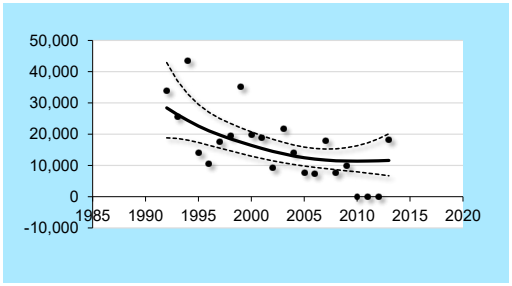


(B) Trends in the different countries compared

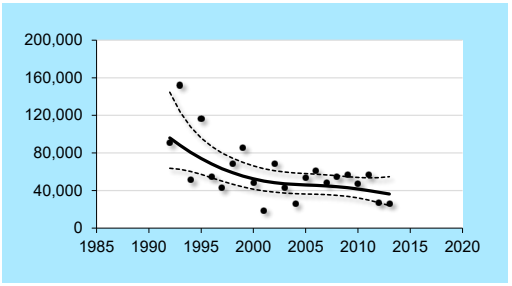
Figure 4.11.1-4.11.6 Trends of Common Eider in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

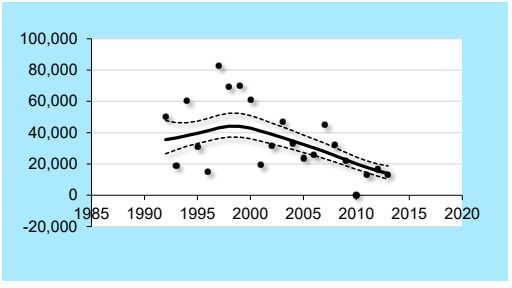
Common Eider numbers counted from the airplane at mid winter (only since 1993) were stable in the Wadden Sea for the first years up to 1995/1996 and continuously decreased thereafter. Since 2005 numbers seem to stabilize overall. Especially counts in Niedersachsen/Hamburg were rather low in 2011-2016 (except for 2015).



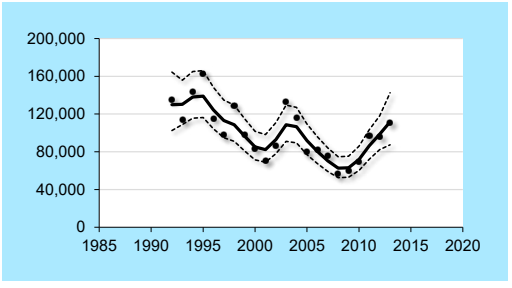
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Common Eider in the Wadden Sea

Figures represent the trend 1992/1993 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	*1992/93 - 2016/17*	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		↓	–
(D) Schleswig-Holstein		↓	–
(E) Niedersachsen/Hamburg		↓	↓↓
(F) The Netherlands		→	→

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

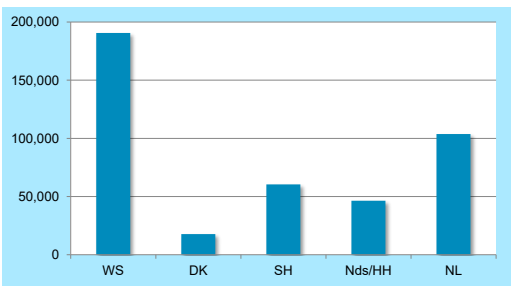


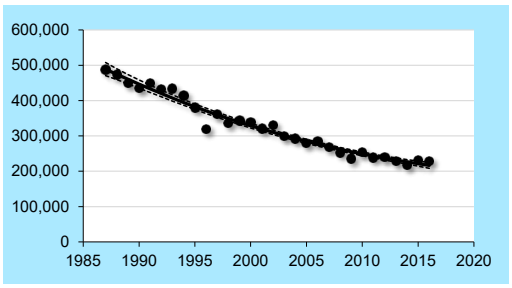
Figure 4.11.7 Absolute numbers of Common Eider in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017. Numbers are derived by aerial counts.

4.12 Eurasian Oystercatcher

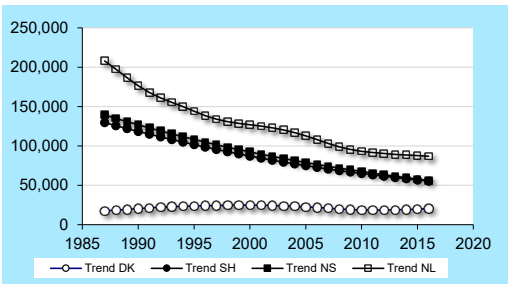
04500

Haematopus ostralegus

DK: Strandskade D: Austernfischer NL: Scholekster



(A) Overall trend in the international Wadden Sea

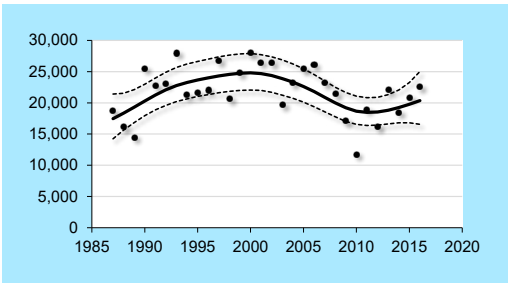


(B) Trends in the different countries compared

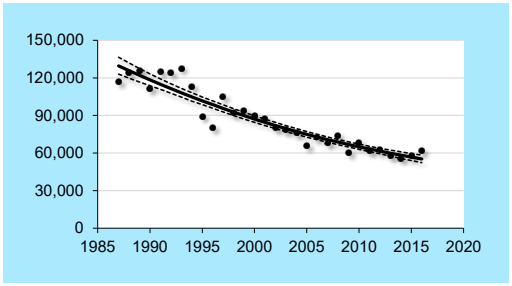
Figure 4.12.1-4.12.6 Trends of Eurasian Oystercatcher in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

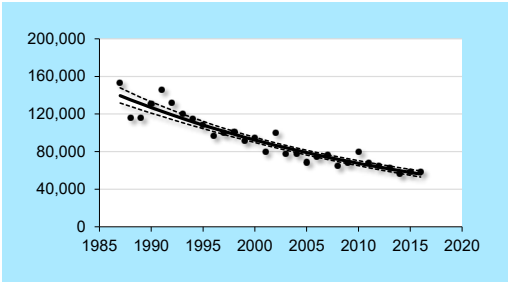
About 50% of the **Eurasian Oystercatcher** flyway population can be found in the Wadden Sea. Like the flyway population, the overall Wadden Sea numbers show a continuous and long-lasting moderate decrease. The decline is going on in all regions, apart from the Danish Wadden Sea, although numbers are much smaller there then in the other parts of the Wadden Sea. The development of maximum estimates in the Wadden Sea signs the decrease; 739,000 Oystercatchers in the period 1980-1991 (Meltofte *et al.* 1994), 582,000 for the period 1992-2000 (Blew *et al.* 2005) and 409,000 individuals for the period 2004-2014 (Blew *et al.* 2016).



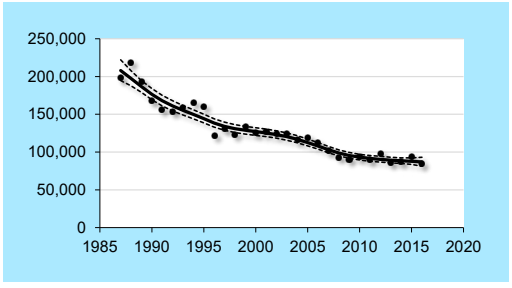
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Eurasian Oystercatcher in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		→	→
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↓	↓

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

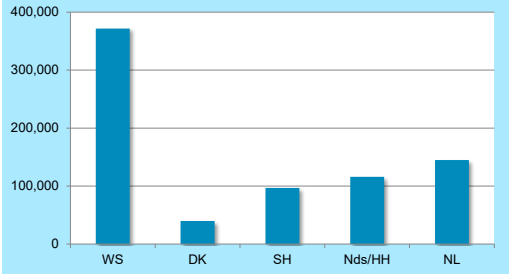
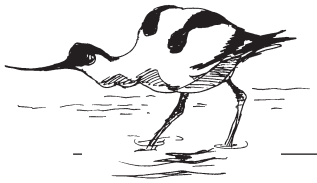


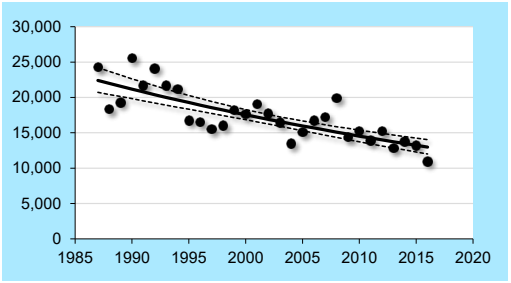
Figure 4.12.7 Absolute numbers of Eurasian Oystercatcher in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.



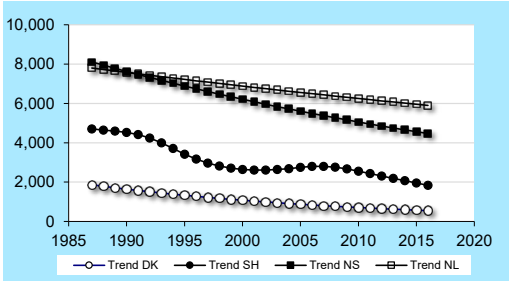
4.13 Pied Avocet

Recurvirostra avosetta 04560

DK: Klyde D: Säbelschnäbler NL: Kluut



(A) Overall trend in the international Wadden Sea

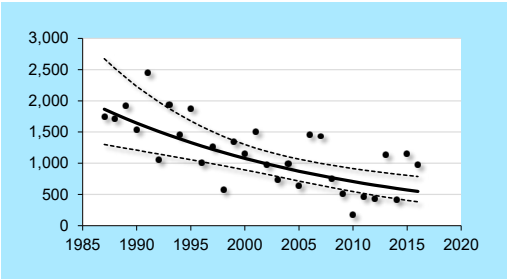


(B) Trends in the different countries compared

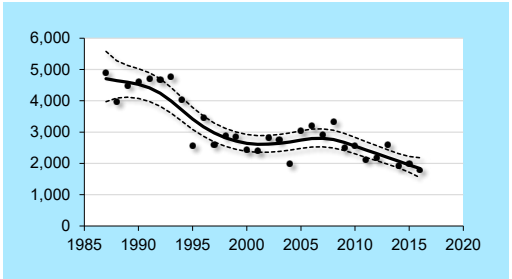
Figure 4.13.1-4.13.6
Trends of Pied Avocet in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

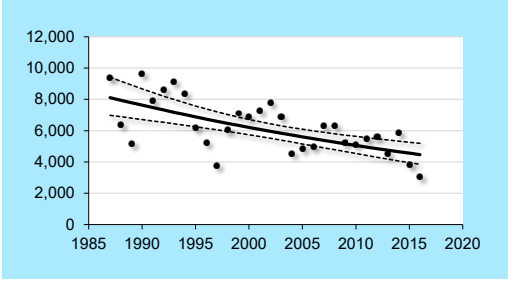
Peak numbers of **Pied Avocet** during summer and autumn in the Wadden Sea contain almost 60% its flyway population. The overall Wadden Sea numbers show a continuous and long-lasting moderate decrease, which is going on in all Wadden Sea regions. Large numbers during the moulting period in the Danish and German Wadden Sea seem to be history. There seems to be a (slight) increase along the Dutch Wadden Sea coast in summer, but this does not seem to compensate the decline in Denmark and Germany and it is also not visible in the annual average numbers of Avocets in the Netherlands.



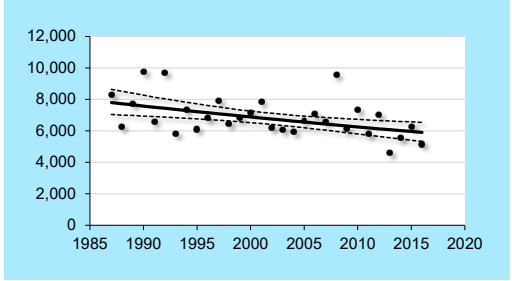
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Pied Avocet in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		↓	↓
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↓	↓

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

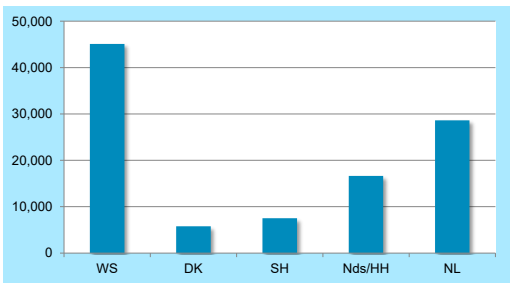
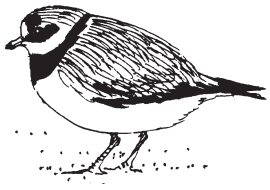


Figure 4.13.7
Absolute numbers of Pied Avocet in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

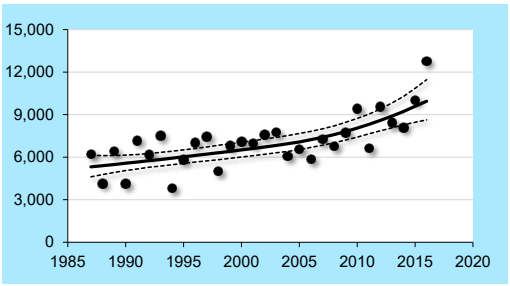


4.14 Great Ringed Plover

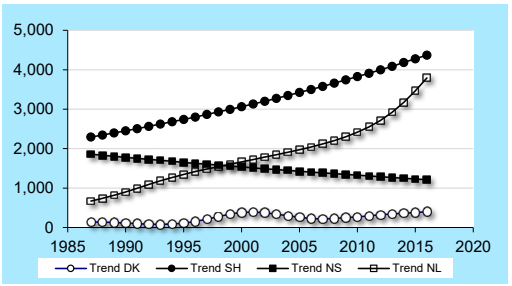
04700

Charadrius hiaticula

DK: Stor Præstekrave D: Sandregenpfeifer NL: Bontbekplevier



(A) Overall trend in the international Wadden Sea



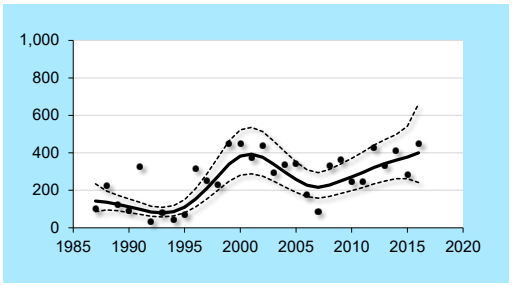
(B) Trends in the different countries compared

Figure 4.14.1-4.14.6 Trends of Great Ringed Plover in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

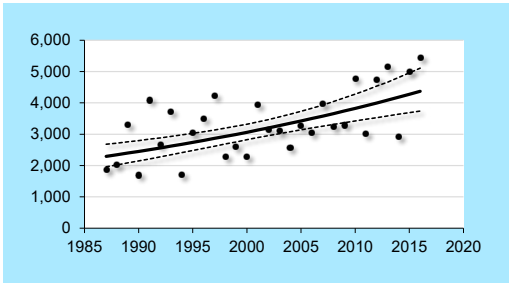
Explanatory Note

Already since the 1980s the **Great Ringed Plover** shows a moderate increase. This increase is mainly going on in the Wadden Sea regions of Schleswig-Holstein and the Netherlands. In the Danish Wadden Sea the trend is unclear, while in the Niedersachsen Wadden Sea numbers are decreasing.

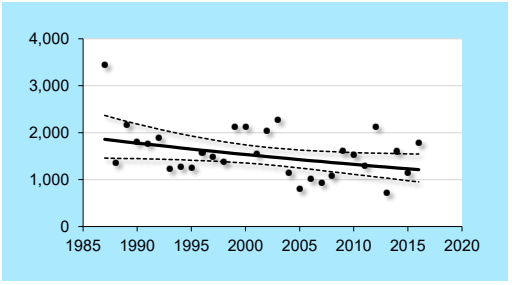
Three populations of Great Ringed Plover pass the Wadden Sea during migration; *C.h. hiaticula* is present form October to April, both Arctic breeding populations of *C.h. tundra* and *C.h. psammodroma* peak in May during spring migration.



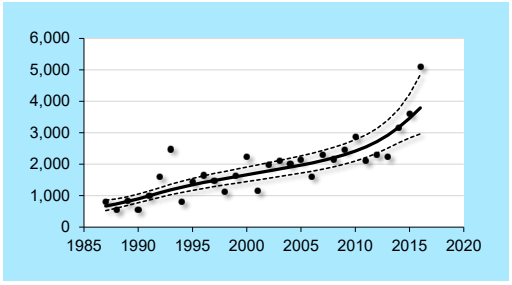
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

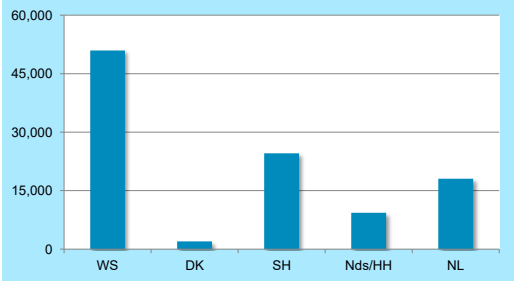
Trends for Great Ringed Plover in the Wadden Sea

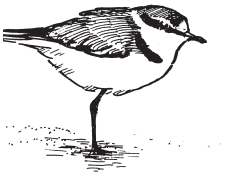
Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Figure 4.14.7 Absolute numbers of Great Ringed Plover in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↑	↑
(C) Denmark		↑	↑
(D) Schleswig-Holstein		↑	↑
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

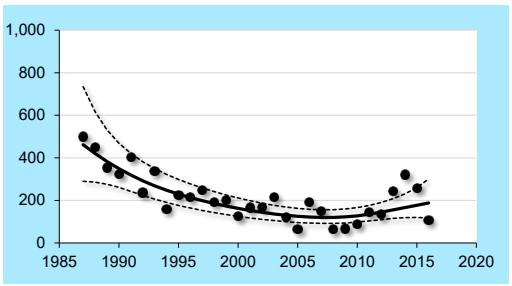




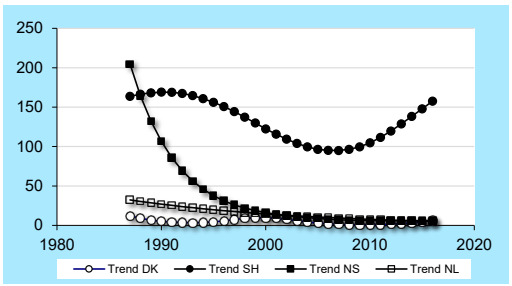
4.15 Kentish Plover

Charadrius alexandrinus 04770

DK: Hvidbrystet Præstekrave D: Seeregenpfeifer NL: Strandplevier



(A) Overall trend in the international Wadden Sea

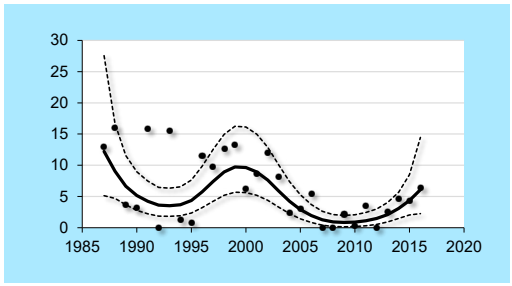


(B) Trends in the different countries compared

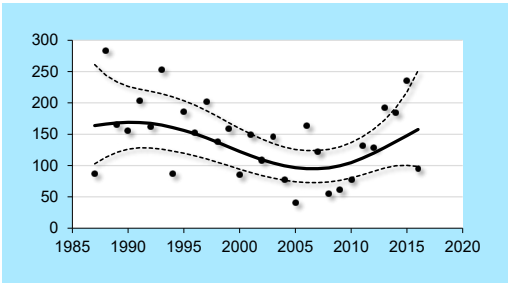
Figure 4.15.1-4.15.6 Trends of Kentish Plover in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

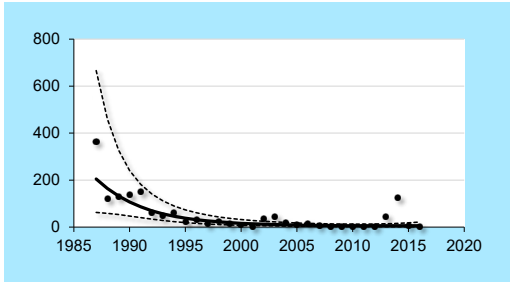
For the **Kentish Plover**, the Wadden Sea holds less than 1% of the entire flyway population, and overall very low numbers are registered during the synchronous counts. Both during spring and autumn these birds represent the local breeding population. Most trends in the overall Wadden Sea decreased during the 1980's, but are unclear since then, apart from the Netherlands where the trend is plainly negative, what reflects the decline of the Kentish Plover as a breeding bird in the Dutch Wadden Sea.



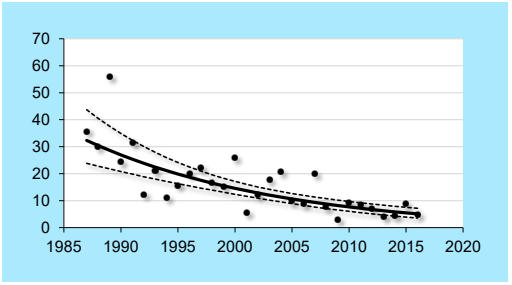
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Kentish Plover in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	–
(C) Denmark		–	↑
(D) Schleswig-Holstein		→	–
(E) Niedersachsen/Hamburg		↓↓	–
(F) The Netherlands		↓	↓

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

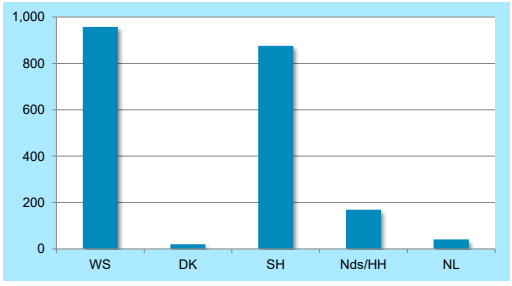


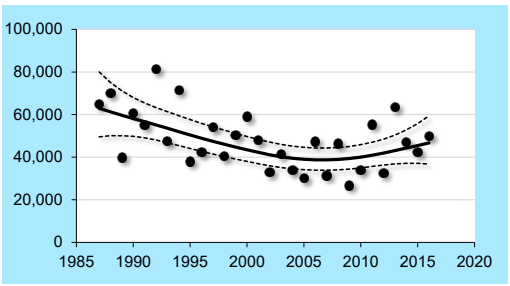
Figure 4.15.7 Absolute numbers of Kentish Plover in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

4.16 European Golden Plover

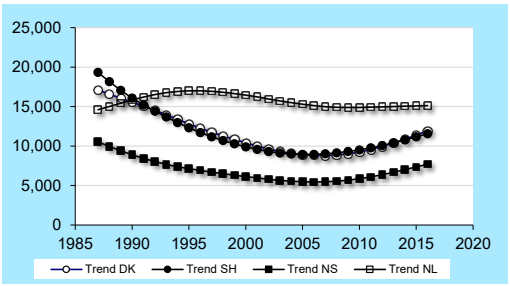
04850

Pluvialis apricaria

DK: Hjejle D: Goldregenpfeifer NL: Goudplevier



(A) Overall trend in the international Wadden Sea

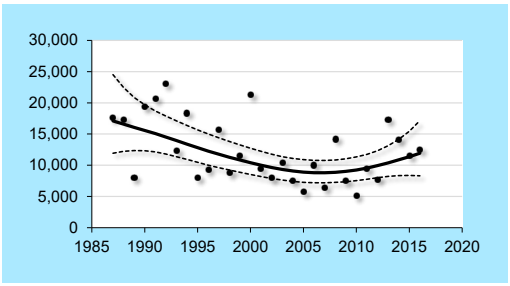


(B) Trends in the different countries compared

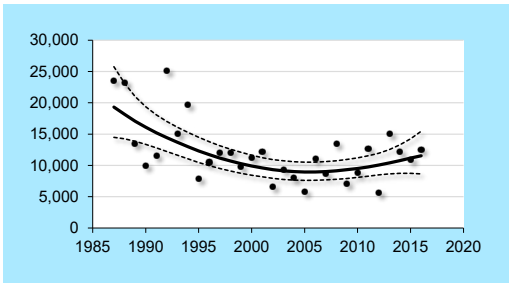
Figure 4.16.1-4.16.6 Trends of European Golden Plover in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

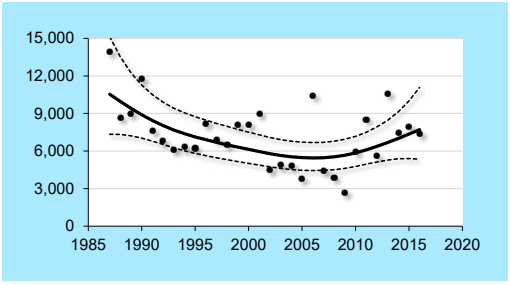
Of the **European Golden Plover**, three sub-populations may occur in the Wadden Sea, with the largest share belonging to the sub-population *P. a. altifrons*, which breeds in Northern Europe and winters in Central and Western Europe and North-West Africa. No method exists to distinguish Golder Plover populations during the counts (areas, counting month). Over 10% of the Golder Plover populations are covered by the coordinated counts in the Wadden Sea. The long-term trend over 30 years is stable, the short-term trend uncertain. This reflects the regional trends, except the Dutch trend, which seems stable for 30 years.



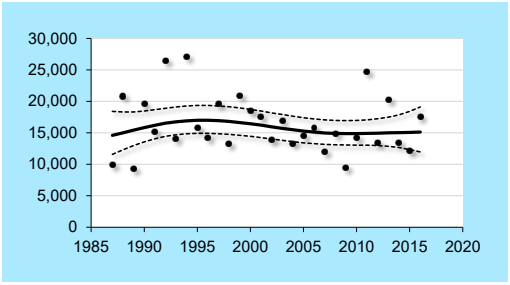
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

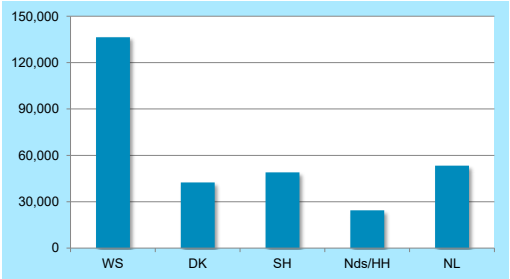
Trends for European Golden Plover in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Figure 4.16.7 Absolute numbers of European Golden Plover in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		→	–
(C) Denmark		→	–
(D) Schleswig-Holstein		↓	–
(E) Niedersachsen/Hamburg		→	–
(F) The Netherlands		→	→

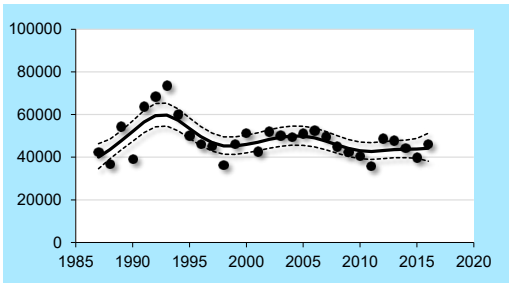
↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain



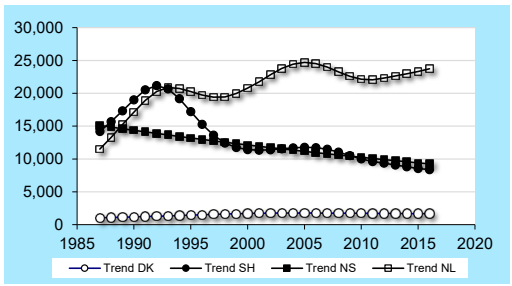
4.17 Grey Plover

Pluvialis squatarola 04860

DK: Strandhjejle D: Kiebitzregenpfeifer NL: Zilverplevier



(A) Overall trend in the international Wadden Sea

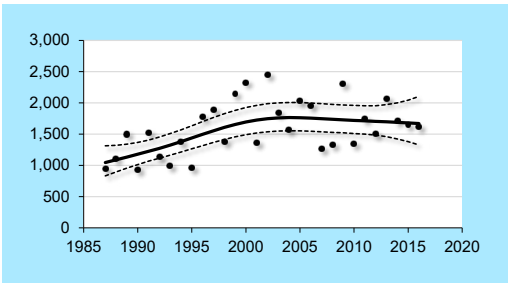


(B) Trends in the different countries compared

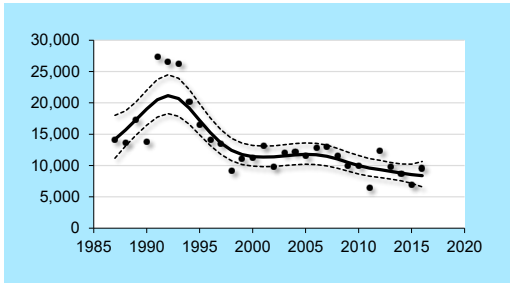
Figure 4.17.1-4.17.6 Trends of Grey Plover in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

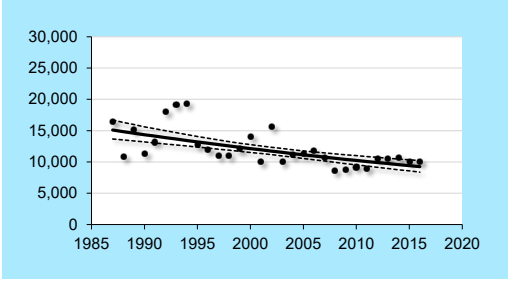
Almost 60% of the total flyway population of **Grey Plover** uses the Wadden Sea outside the breeding season, thus the region is of high importance for the species. The total flyway population is reported with an uncertain decrease. In the Wadden Sea the overall trend had shown a short peak during the mid 1990s; afterwards a short decrease was followed by a stable period. Long-term stable trend increases are registered in the Netherlands and Denmark and moderate decreases in Niedersachsen/Hamburg and Schleswig-Holstein.



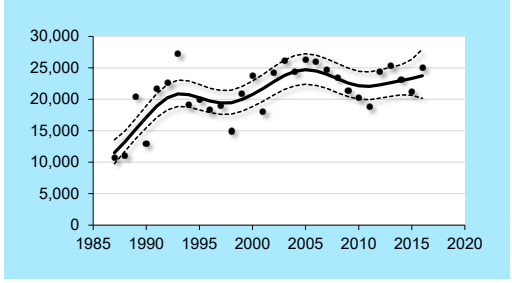
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Grey Plover in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		→	→
(C) Denmark		↑	→
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↑	→

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

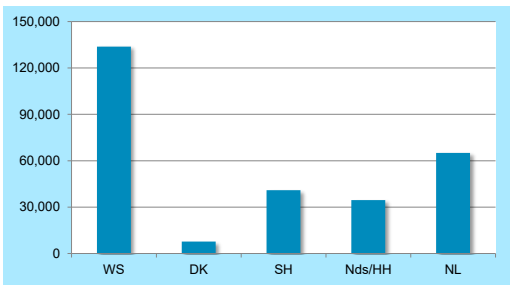


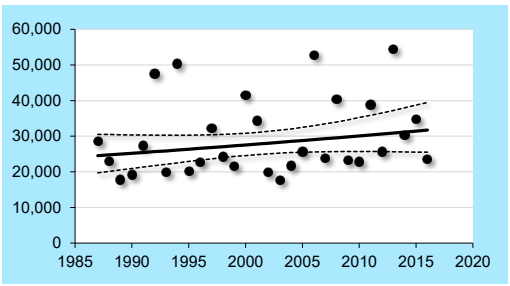
Figure 4.17.7 Absolute numbers of Grey Plover in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

4.18 Northern Lapwing

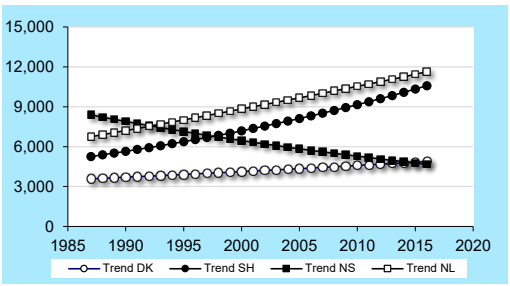
04930

Vanellus vanellus

DK: Vibe D: Kiebitz NL: Kievit



(A) Overall trend in the international Wadden Sea

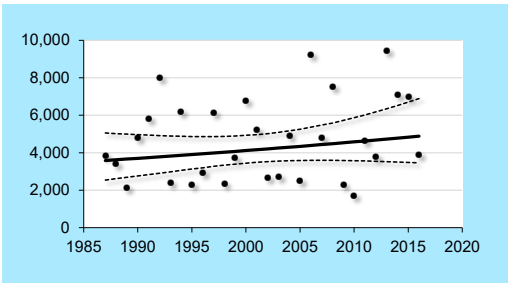


(B) Trends in the different countries compared

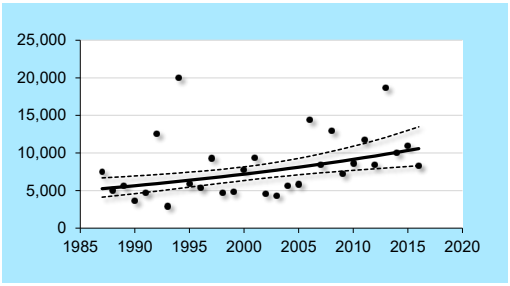
Figure 4.18.1-4.18.6 Trends of Northern Lapwing in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

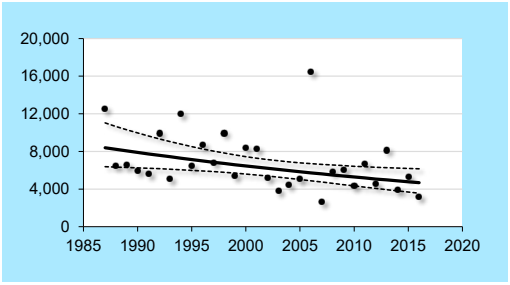
Only a small fraction of the **Northern Lapwing** flyway population uses the Wadden Sea. Like the flyway populations with an uncertain assessment of being stable, the Wadden Sea numbers show considerable fluctuations, but the overall Wadden Sea trends are stable. Regional trends differ. In Denmark the long-term trend is stable, in Schleswig-Holstein increasing, in Niedersachsen decreasing and in the Netherlands increasing in 1980s en 1990s and stable since then.



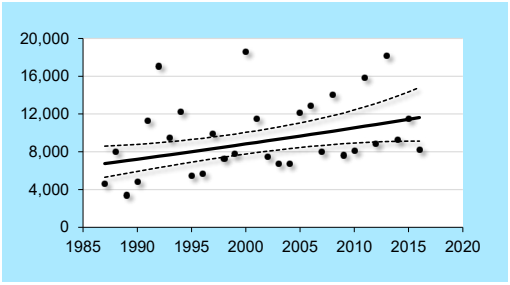
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

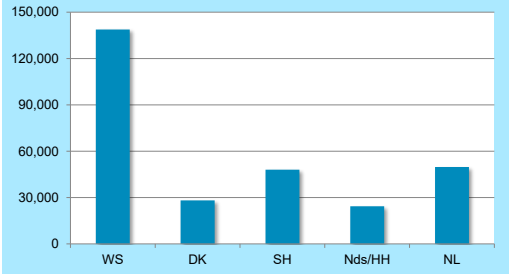
Trends for Northern Lapwing in the Wadden Sea

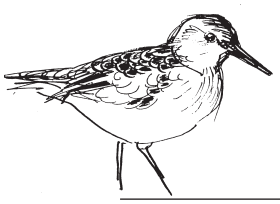
Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Figure 4.18.7 Absolute numbers of Northern Lapwing in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		→	→
(C) Denmark		→	→
(D) Schleswig-Holstein		↑	↑
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

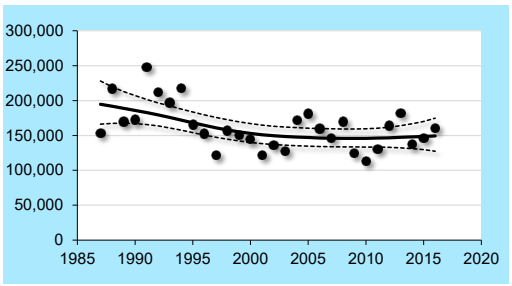




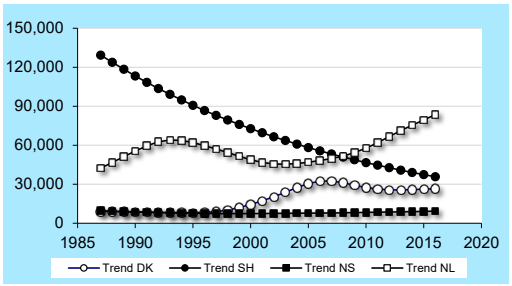
4.19 Red Knot

Calidris canutus 04960

DK: Islandsk Ryle D: Knutt NL: Kanoetstrandloper



(A) Overall trend in the international Wadden Sea



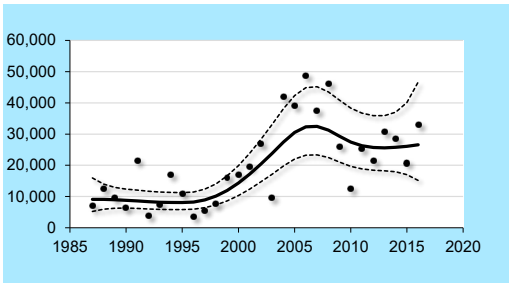
(B) Trends in the different countries compared

Figure 4.19.1-4.19.6 Trends of Red Knot in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

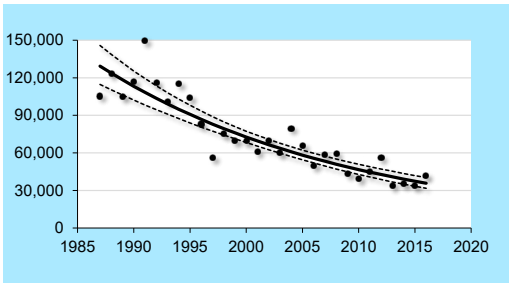
Explanatory Note

Large parts of both flyway populations of the **Red Knot**, the *C. c. canutus* migrating from Africa to Siberia and the *C. c. islandica* wintering in the European regions and breeding in Greenland and Canada, use the Wadden Sea. The proportion is over 75% of the flyway population. The overall long-term trend is stable, where the decrease in Schleswig-Holstein is compensated by the increase in the Netherlands.

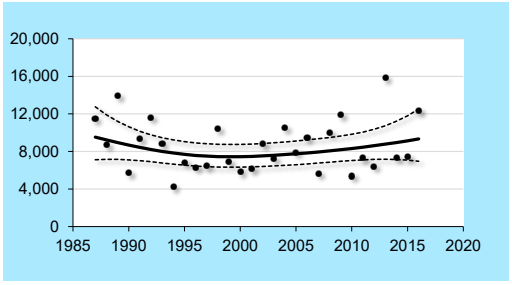
The comparable lower numbers of the *C. c. canutus* population (counted in July and May) have an overall stable trend, but differ between Schleswig-Holstein and the Netherlands like the overall trend does. The high numbers of the *C. c. islandica* population (counted from September to April) are responsible for the overall trends.



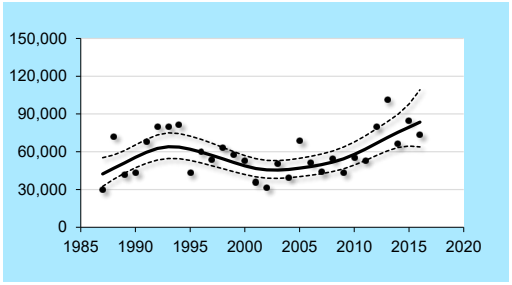
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Red Knot in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	→
(C) Denmark		↑	–
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		→	–
(F) The Netherlands		↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

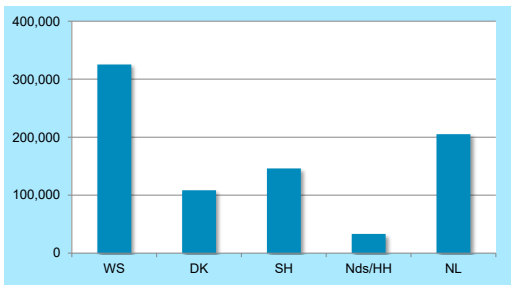


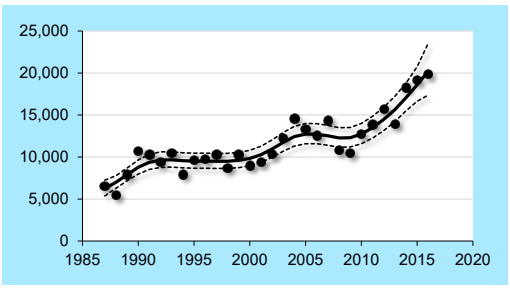
Figure 4.19.7 Absolute numbers of Red Knot in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

4.20 Sanderling

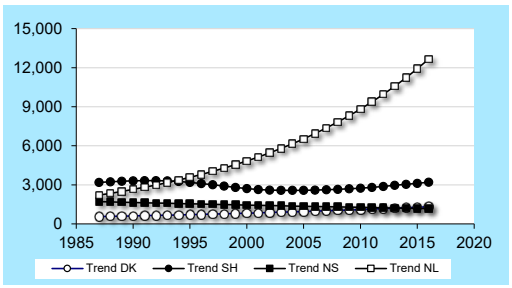
04970

Calidris alba

DK: Sandløber D: Sanderling NL: Drieteenstrandloper



(A) Overall trend in the international Wadden Sea

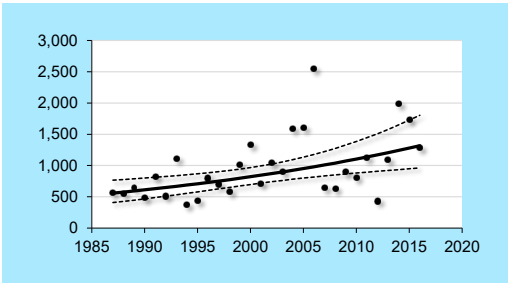


(B) Trends in the different countries compared

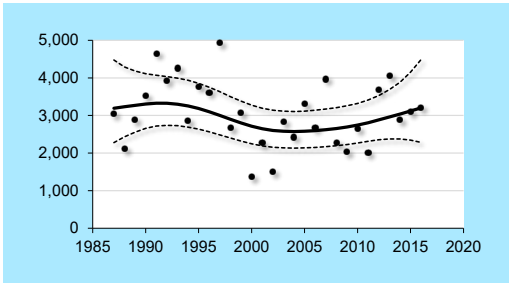
Figure 4.20.1-4.20.6 Trends of Sanderling in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

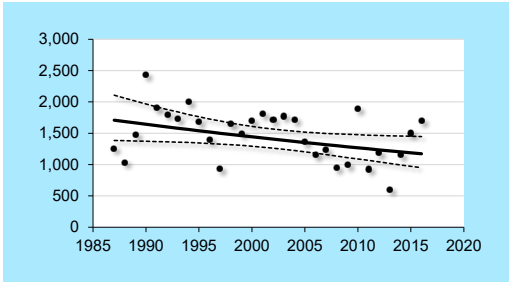
Sanderling numbers are difficult to survey due to high peak numbers during a short time period in spring and summer. If the counts do not occur within this time window the numbers can vary greatly from year to year, as special Sanderling counts show in the western part of the Dutch Wadden Sea (Reneerkens *et al.* 2012). The overall trends in the Wadden Sea are increasing, mostly on account of results in the Netherlands. Trends are also positive in the Dannish Wadden Sea, but negative in Niedersachsen.



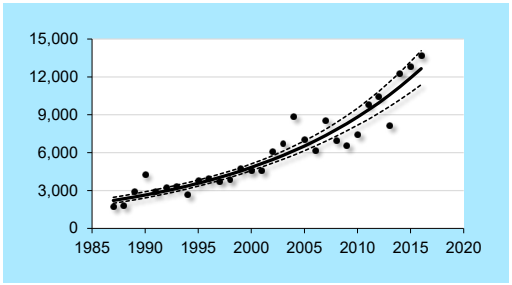
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

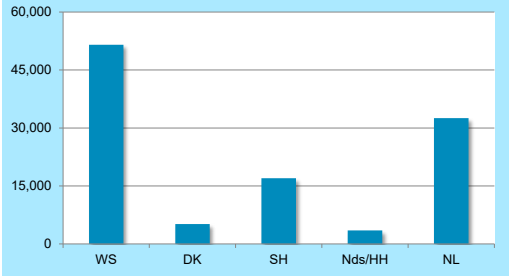
Trends for Sanderling in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↑	↑
(C) Denmark		↑	↑
(D) Schleswig-Holstein		→	–
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↑↑	↑↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

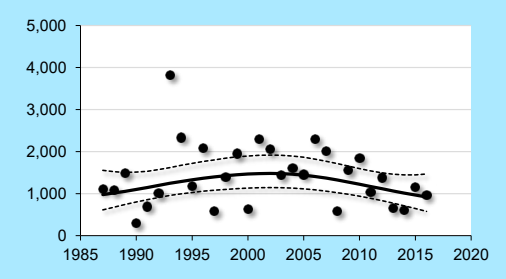
Figure 4.20.7 Absolute numbers of Sanderling in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.



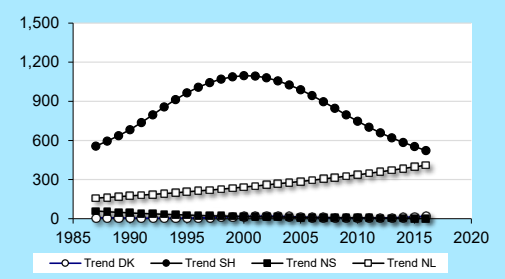
4.21 Curlew Sandpiper

Calidris ferruginea 05090

DK: Krumnæbbet Ryle D: Sichelstrandläufer NL: Krombekstrandloper



(A) Overall trend in the international Wadden Sea

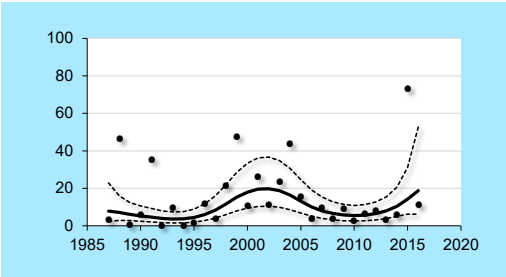


(B) Trends in the different countries compared

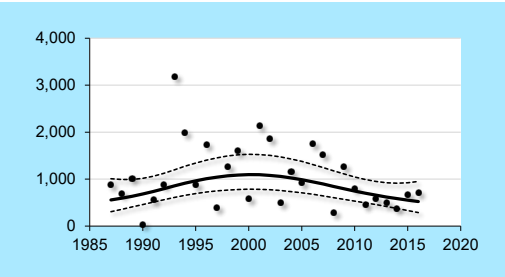
Figure 4.21.1-4.21.6 Trends of Curlew Sandpiper in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

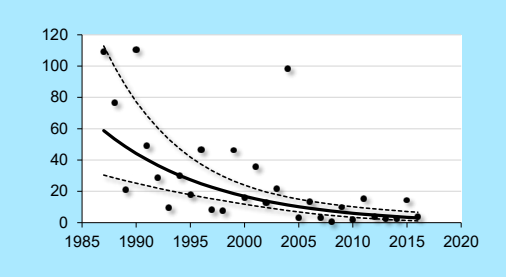
The **Curlew Sandpiper** has a large flyway population of which only 1-2% visits the Wadden Sea during southbound migration. They migrate through the Wadden Sea in a very short period during July/August in a small number of sites, which makes them hard to count with the regular high tide roost counts. Schleswig-Holstein still has the biggest numbers, although numbers dropped since the millennium. Along the Frisian Wadden Sea coast of the Netherlands the number of Curlew Sandpipers increased and are almost comparable with Schleswig-Holstein numbers.



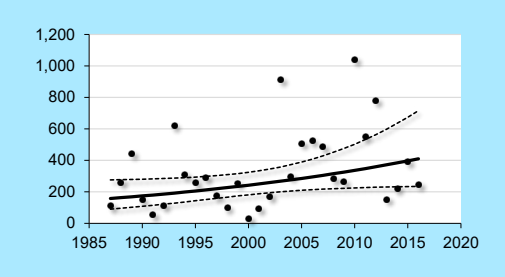
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Curlew Sandpiper in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	–
(C) Denmark		–	–
(D) Schleswig-Holstein		➡	–
(E) Niedersachsen/Hamburg		↓↓	↓↓
(F) The Netherlands		–	–

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease ➡ stable – uncertain

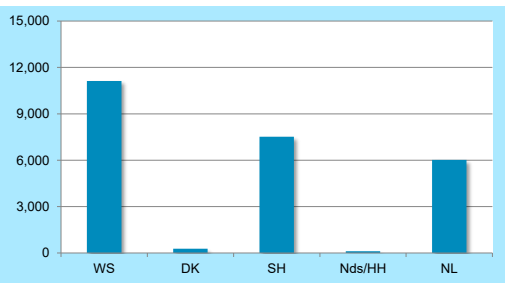
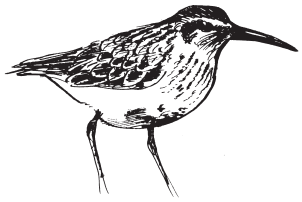


Figure 4.21.7 Absolute numbers of Curlew Sandpiper in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

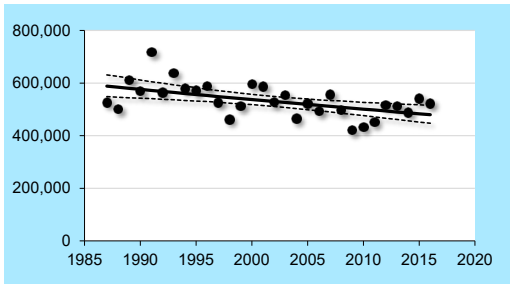


4.22 Dunlin

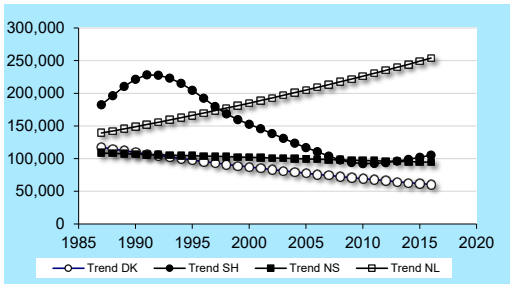
05120

Calidris alpina

DK: Almindelig Ryle D: Alpenstrandläufer NL: Bonte Strandloper



(A) Overall trend in the international Wadden Sea

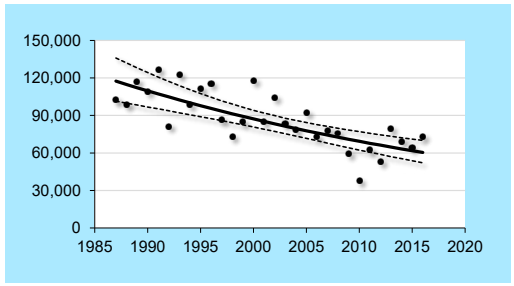


(B) Trends in the different countries compared

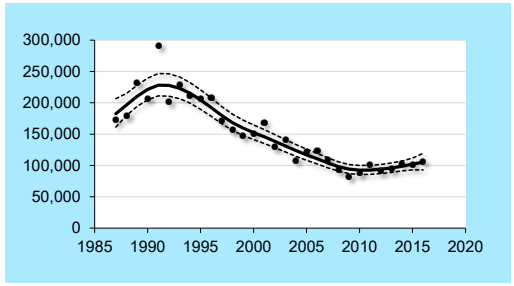
Figure 4.22.1-4.22.6 Trends of Dunlin in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

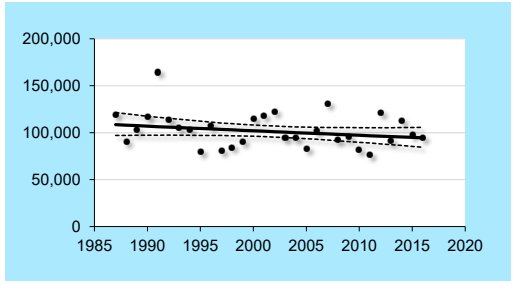
While the trends for the flyway populations of the nominate sub-species of **Dunlin** (*C.c. alpina*) is stable, estimates for the small populations of *C.c. schinzii* are uncertain. The overall long- and short-term trends in the Wadden Sea, where large numbers and most likely large proportions of about 70% of these flyway population are present during the yearly cycle, show moderate decreases. The decrease is going on the nortern part of the Wadden Sea (Denmark, Schleswig-Holstein), while in the southern part numbers are stable (Niedersachsen) to increasing (the Netherlands).



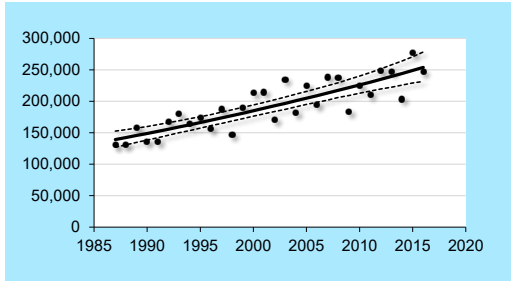
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Dunlin in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		↓	↓
(D) Schleswig-Holstein		↓	→
(E) Niedersachsen/Hamburg		→	→
(F) The Netherlands		↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

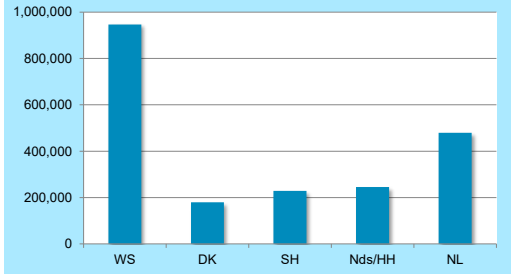
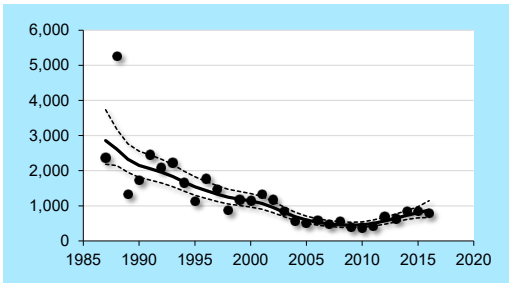


Figure 4.22.7 Absolute numbers of Dunlin in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

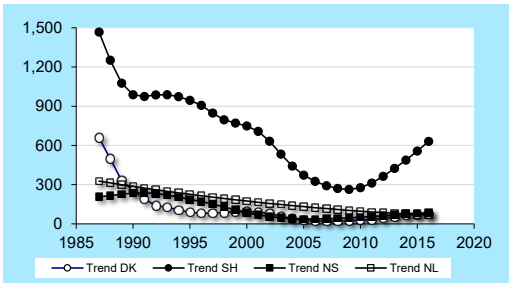
4.23 Ruff

Philomachus pugnax 05170

DK: Brushane D: Kampfläufer NL: Kemphaan



(A) Overall trend in the international Wadden Sea

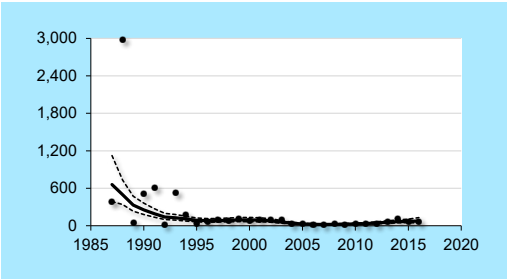


(B) Trends in the different countries compared

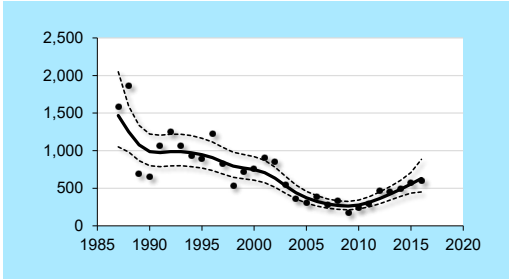
Figure 4.23.1-4.23.6 Trends of Ruff in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

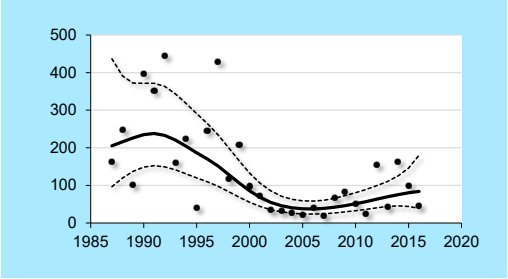
Less than 1% of the Ruff flyway population migrates through the Wadden Sea. The flyway population trend is seriously decreasing. In the Wadden Sea the long-term trend is decreasing, but due to higher numbers in Schleswig-Holstein the short-term trend is positive.



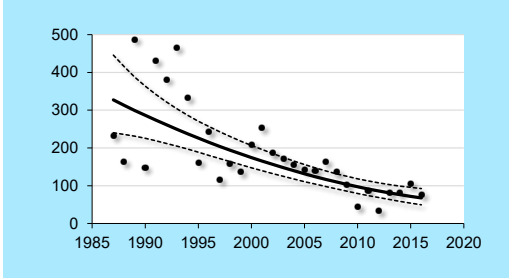
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Ruff in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↑
(C) Denmark		↓	↑↑
(D) Schleswig-Holstein		↓	↑
(E) Niedersachsen/Hamburg		–	–
(F) The Netherlands		↓	↓

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

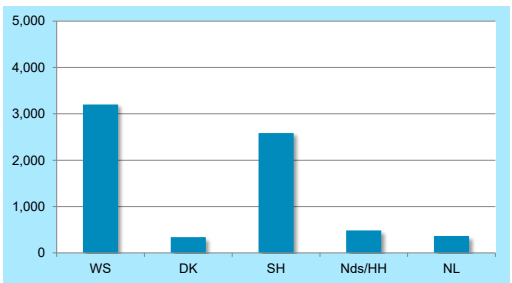
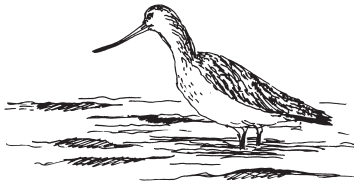


Figure 4.23.7 Absolute numbers of Ruff in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

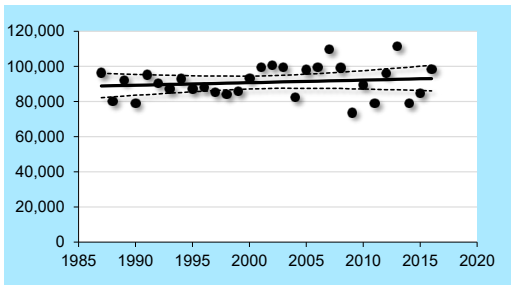


4.24 Bar-tailed Godwit

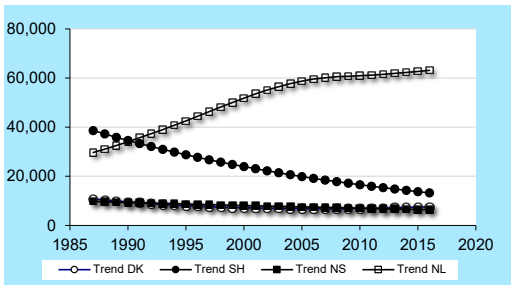
05340

Limosa lapponica

DK: Lille Kobbersneppe D: Pfuhlschnepfe NL: Rosse Grutto



(A) Overall trend in the international Wadden Sea



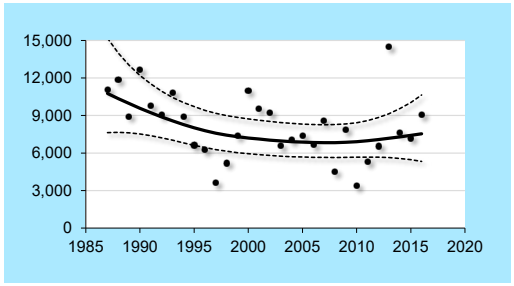
(B) Trends in the different countries compared

Figure 4.24.1-4.24.6 Trends of Bar-tailed Godwit in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

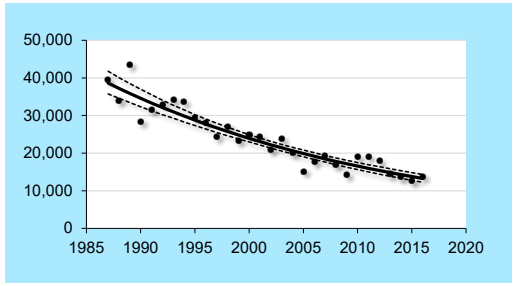
Explanatory Note

Two populations of the **Bar-tailed Godwit** migrate through the Wadden Sea, both with comparable numbers; the nominate sub-species *L. l. lapponica* breeds in high arctic Scandinavia and Northern Russia, and winters in coastal Western Europe and North-West Africa. It is present in the Wadden Sea most of the year from September to April, from which counts apply. The flyway population counts 120,000 individuals and its trend is stable. The *L. l. taymyrensis* breeds in Western and Central Siberia and winters in coastal West and South-West Africa; individuals of this population will migrate through the Wadden Sea in May and return during July and August. The flyway population counts 500,000 individuals and its trend is an uncertain decrease.

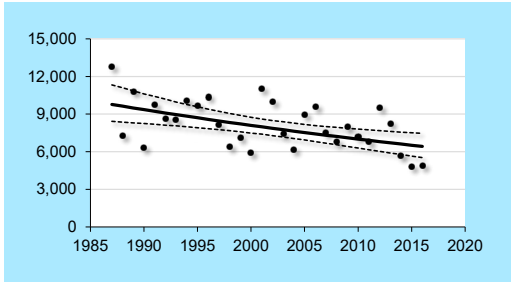
Overall numbers in the Wadden Sea are stable. In the German parts of the Wadden Sea the Bar-tailed Godwit shows a decline, while the species increased in the Dutch Wadden Sea during the 1980s and 1990s and numbers are stable since then.



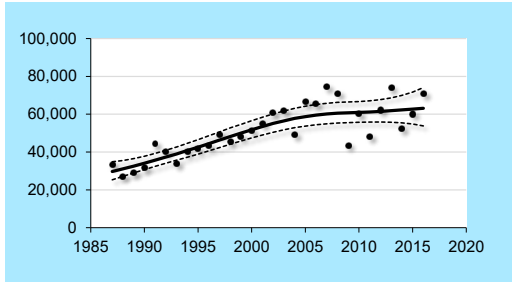
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

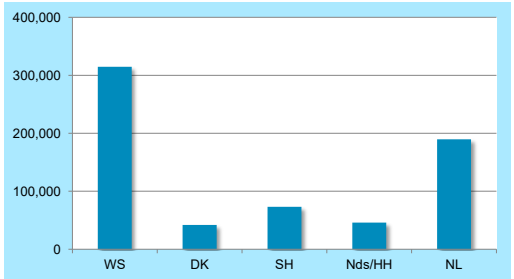
Trends for Bar-tailed Godwit in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Figure 4.24.7 Absolute numbers of Bar-tailed Godwit in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	➡
(C) Denmark		➡	▬
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↑	➡

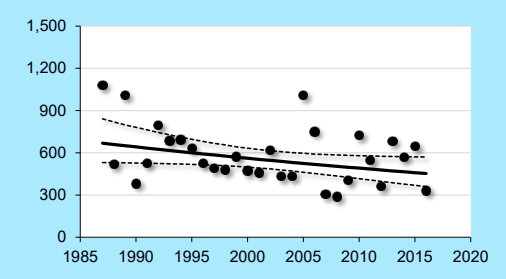
↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease ➡ stable ▬ uncertain



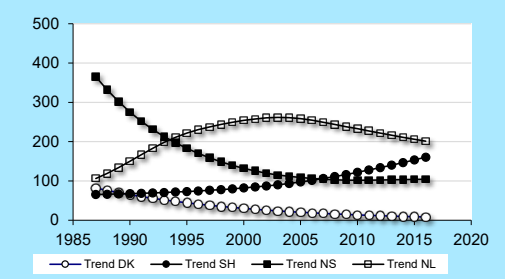
4.25 Whimbrel

Numenius phaeopus 05380

DK: Lille Regnspove D: Regenbrachvogel NL: Regenwulp



(A) Overall trend in the international Wadden Sea

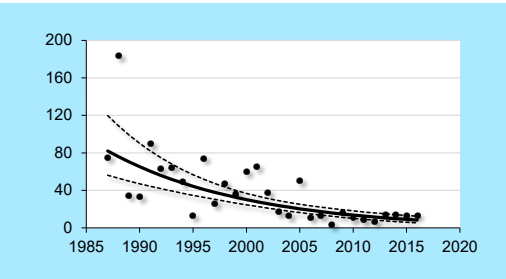


(B) Trends in the different countries compared

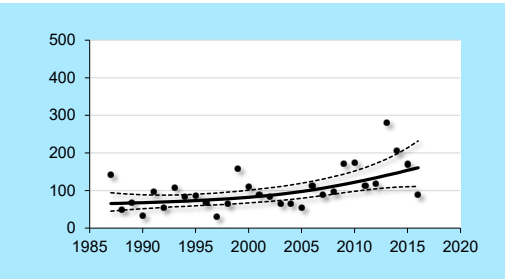
Figure 4.25.1-4.25.6 Trends of Whimbrel in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

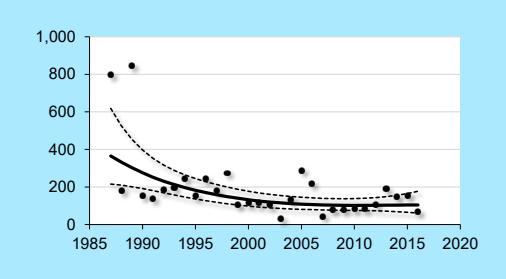
Only 1-2% of the stable **Whimbrel** flyway population is counted in the Wadden Sea region. Numbers are hard to monitor, because spring migration peaks shortly in the end of April. Long- and short-term trends are currently stable in the Wadden Sea, but fluctuating. In Denmark numbers have been very low during the last decade and lead to a decreasing trend. In all other parts short-term trends are uncertain.



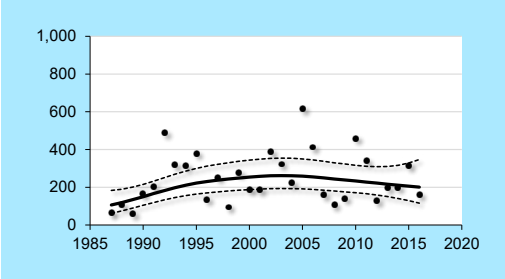
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Whimbrel in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	➡
(C) Denmark		⬇⬇	⬇⬇
(D) Schleswig-Holstein		⬆	⬆
(E) Niedersachsen/Hamburg		–	–
(F) The Netherlands		➡	–

⬆⬆ strong increase ⬇⬇ strong decrease ⬆ moderate increase
⬇ moderate decrease ➡ stable – uncertain

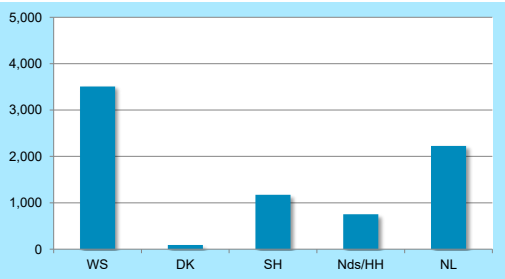


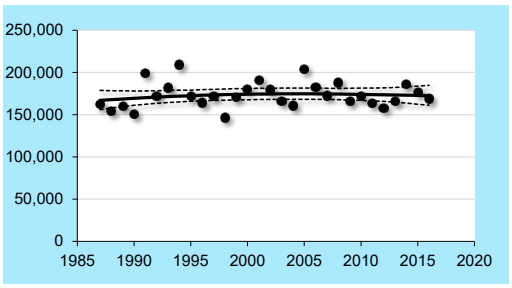
Figure 4.25.7 Absolute numbers of Whimbrel in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

4.26 Eurasian Curlew

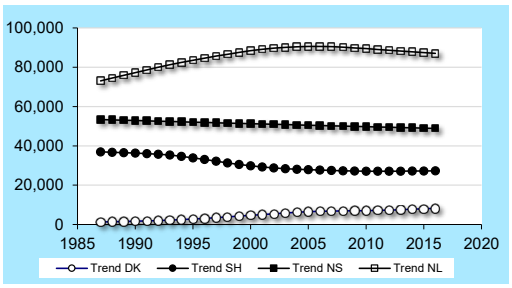
05410

Numenius arquata

DK: Stor Regnspove D: Großer Brachvogel NL: Wulp



(A) Overall trend in the international Wadden Sea

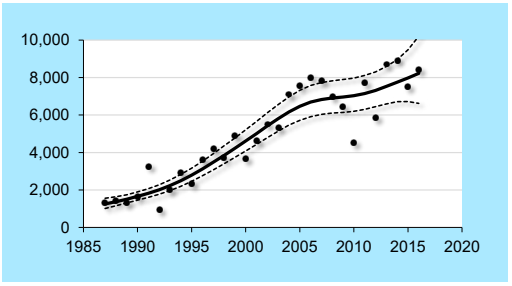


(B) Trends in the different countries compared

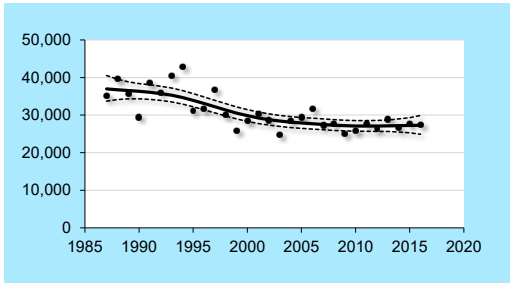
Figure 4.26.1-4.26.6 Trends of Eurasian Curlew in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

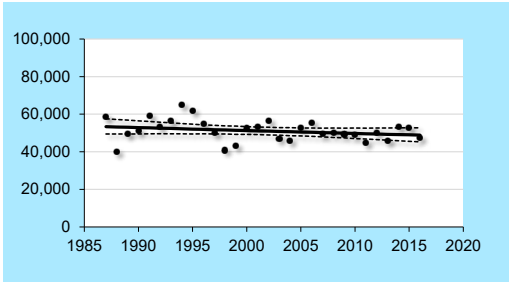
The **Eurasian Curlew** flyway population is seriously decreasing. However, the Wadden Sea population, representing some 35-40% of the flyway population, is stable both in the long- and short-term trends; particularly the last 10 years, estimates in all regions have not changed but stabilised at one level. Of these regions Niedersachsen and the Netherlands hold the biggest numbers by far and in both parts of the Wadden Sea numbers are stable over a thirty year period.



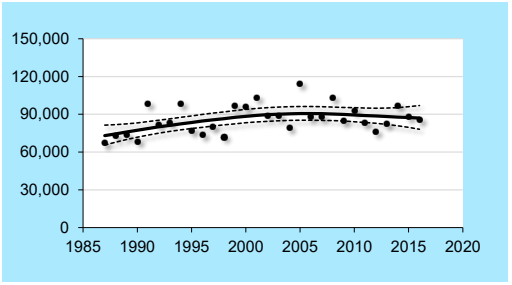
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

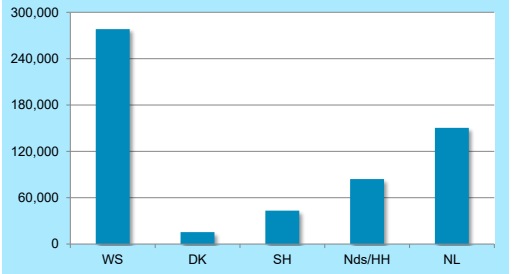
Trends for Eurasian Curlew in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Figure 4.26.7 Absolute numbers of Eurasian Curlew in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	➡
(C) Denmark		↑↑	–
(D) Schleswig-Holstein		↓	➡
(E) Niedersachsen/Hamburg		➡	➡
(F) The Netherlands		↑	➡

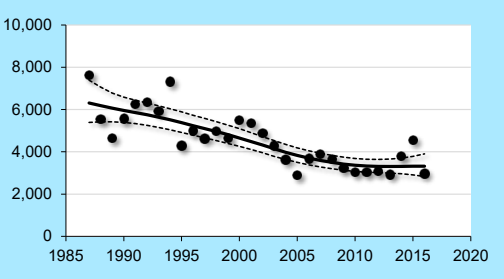
↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease ➡ stable – uncertain



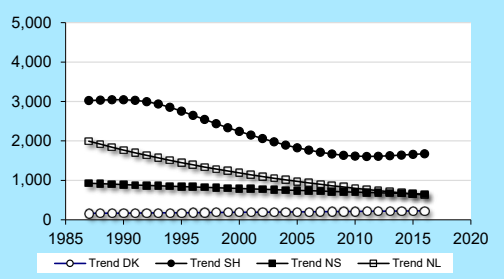
4.27 Spotted Redshank

Tringa erythropus 05450

DK: Sortklire D: Dunkler Wasserläufer NL: Zwarte Ruiter



(A) Overall trend in the international Wadden Sea

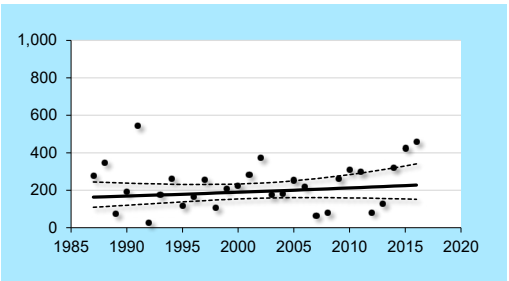


(B) Trends in the different countries compared

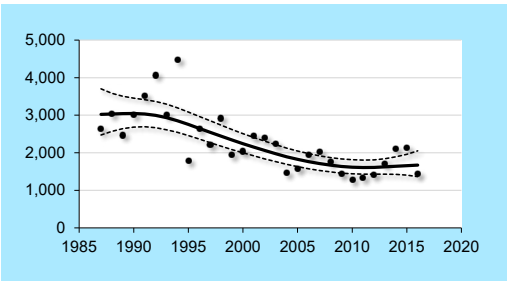
Figure 4.27.1-4.27.6 Trends of Spotted Redshank in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

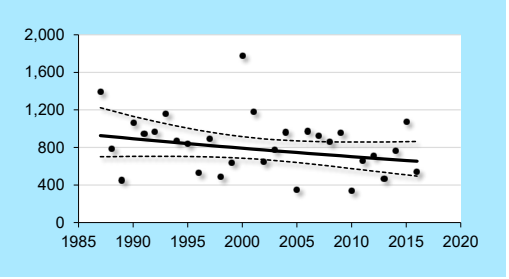
The **Spotted Redshank** is difficult to monitor due to its short passage time period, with large numbers at only a few sites. Wadden Sea numbers represent about 20% of the flyway population which is assessed to be stable, however with some uncertainty. The overall Wadden Sea was decreasing on the long-term, but seems to stabilize in the short-term. This reflects the trend in Schleswig-Holstein. In the Dutch Wadden Sea the trend of the Spotted Redshank is negative over the whole thirty year period.



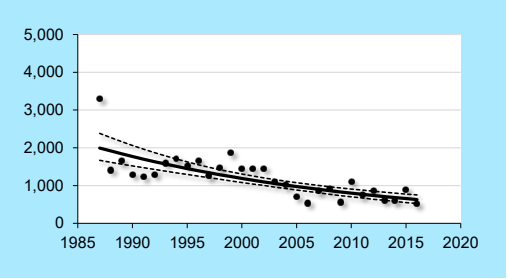
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Spotted Redshank in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	→
(C) Denmark		→	→
(D) Schleswig-Holstein		↓	→
(E) Niedersachsen/Hamburg		→	→
(F) The Netherlands		↓	↓

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

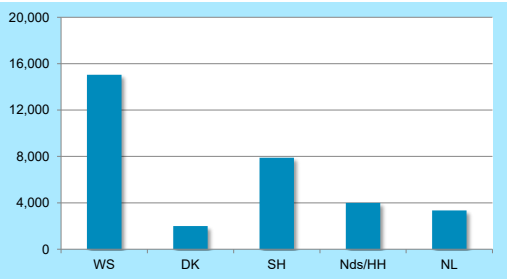


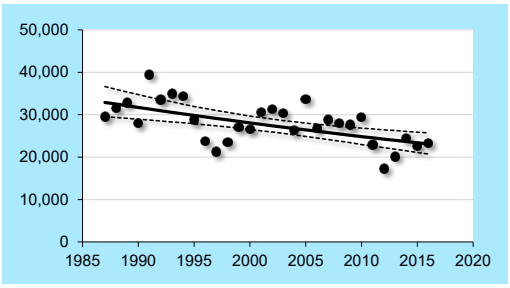
Figure 4.27.7 Absolute numbers of Spotted Redshank in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

4.28 Common Redshank

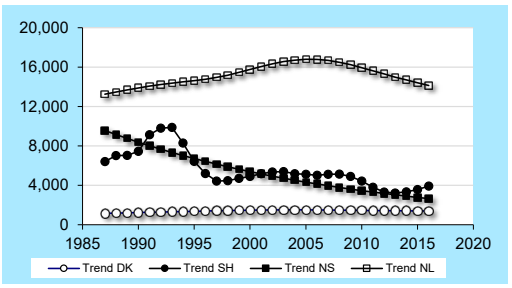
05460

Tringa totanus

DK: Rødben D: Rotschenkel NL: Tureluur



(A) Overall trend in the international Wadden Sea

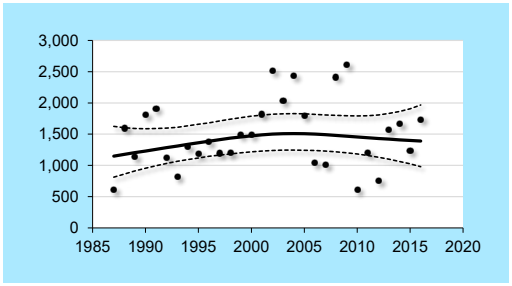


(B) Trends in the different countries compared

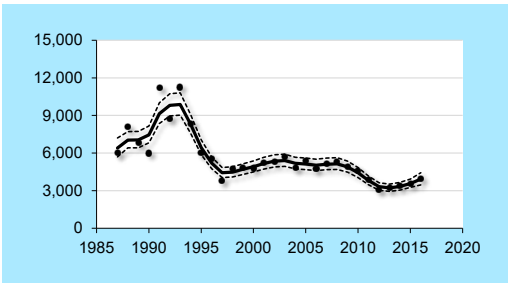
Figure 4.28.1-4.28.6 Trends of Common Redshank in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

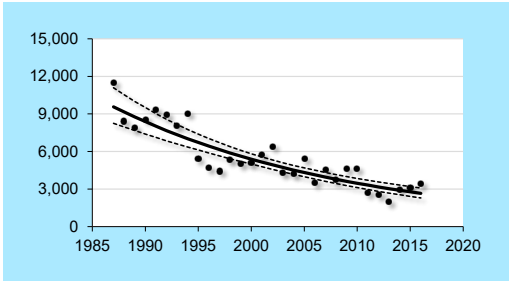
The **Common Redshank** occurs in the Wadden Sea with three populations, thus numbers and trends are not easy to assess in relation to the respective flyway populations. The overall Wadden Sea long-term trend is moderate decreasing, due to declining numbers in the German parts of the Wadden Sea. In both the Danish and Dutch Wadden Sea numbers of Common Redshanks are stable.



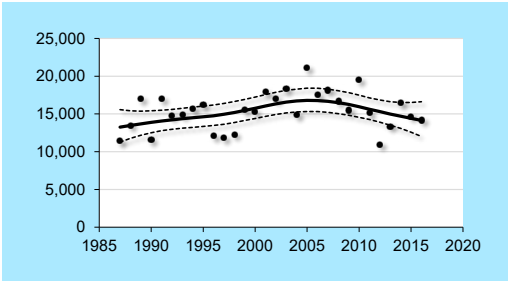
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

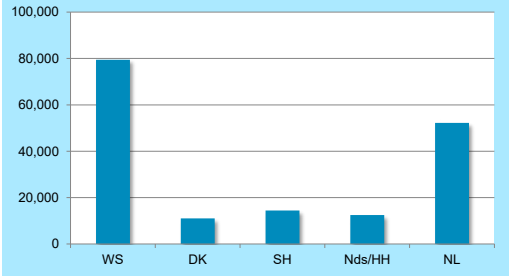
Trends for Common Redshank in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Figure 4.28.7 Absolute numbers of Common Redshank in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		→	→
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		→	→

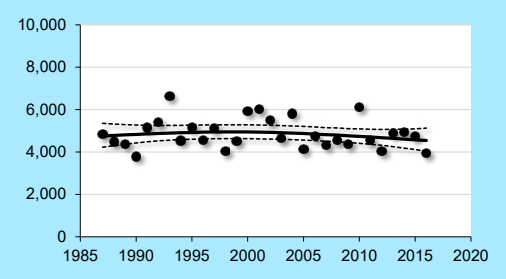
↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain



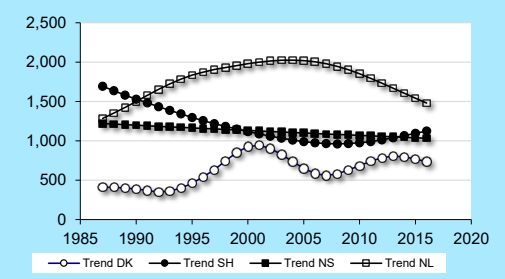
4.29 Common Greenshank

Tringa nebularia 05480

DK: Hvidklire D: Grünschenkel NL: Groenpootruiter



(A) Overall trend in the international Wadden Sea

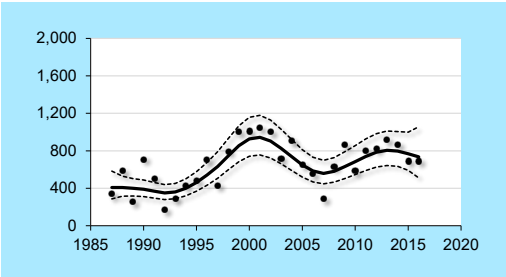


(B) Trends in the different countries compared

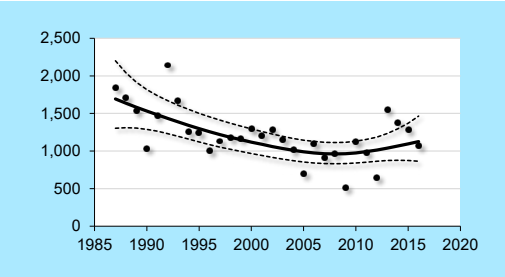
Figure 4.29.1-4.29.6 Trends of Common Greenshank in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

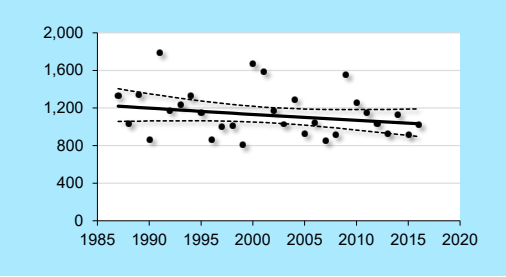
The Wadden Sea plays a minor role for the **Common Greenshanks** with only some 10% of the stable flyway population staging during autumn, and fewer during spring. The overall trend in the Wadden Sea is stable, yet fluctuating largely in low numbers. Trends differ between regions. In Denmark Common Greenshanks increased in the 1980s and early 1990s, but the short-term trend is unclear. Same goes for the short-term trends in Schleswig-Holstein and the Netherlands, where numbers used to be stable. In Niedersachsen numbers are stable over the whole thirty year period.



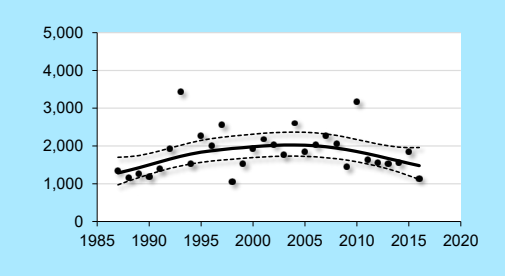
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Common Greenshank in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		→	→
(C) Denmark		↑	–
(D) Schleswig-Holstein		↓	–
(E) Niedersachsen/Hamburg		→	→
(F) The Netherlands		→	–

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

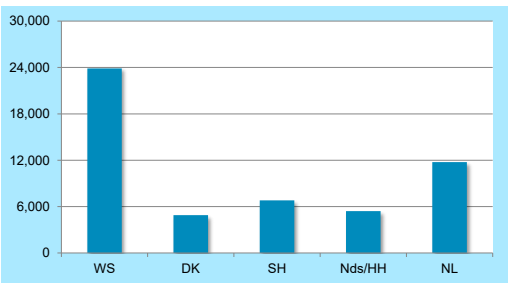
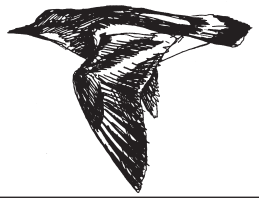


Figure 4.29.7 Absolute numbers of Common Greenshank in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

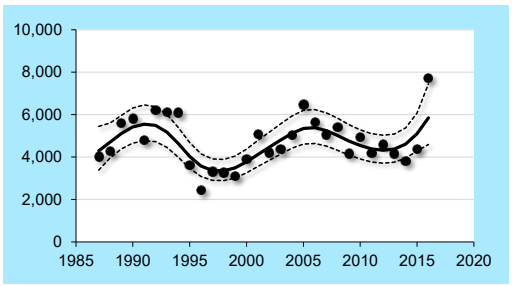


4.30 Ruddy Turnstone

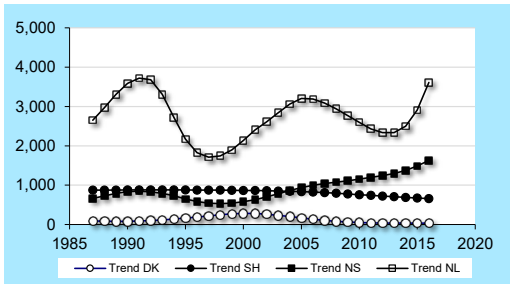
05610

Arenaria interpres

DK: Stenvender D: Steinwälzer NL: Steenloper



(A) Overall trend in the international Wadden Sea



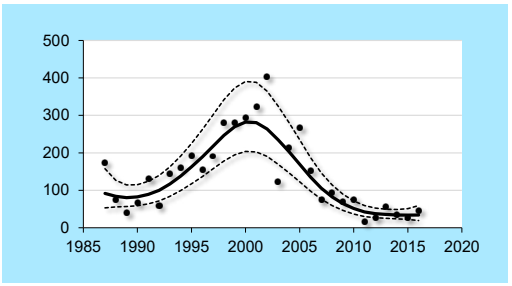
(B) Trends in the different countries compared

Figure 4.30.1-4.30.6 Trends of Ruddy Turnstone in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

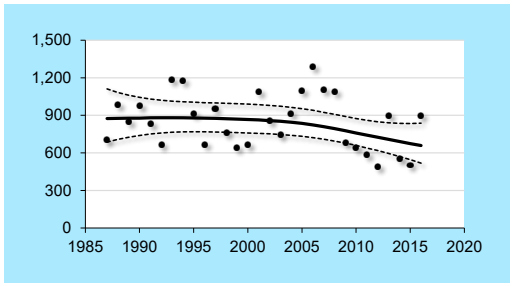
Explanatory Note

Two populations of **Ruddy Turnstone** pass the Wadden Sea on migration. One population, breeds in Canada and Greenland and winters in Western Europe and North-West Africa and is present in the Wadden Sea most of the year from August to April; this flyway population is assessed to be increasing. The other population breeds in Fennoscandia and North-West Russia and winters in Africa, and passes the Wadden Sea mainly during July and May; it is decreasing.

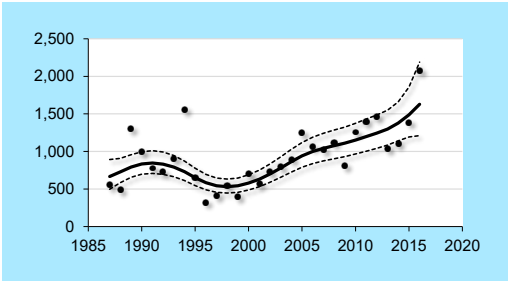
The overall Wadden Sea trend for this species is stable in the long-term, despite big fluctuations, dominated by the numbers of Ruddy Turnstones in the Dutch part of the Wadden Sea. During the last 10 years the trend is uncertain. While the number of Ruddy Turnstones increased in Niedersachsen/Hamburg over some 20 years, numbers in Denmark are decreasing. Coverage of this species by the Trilateral Monitoring Program is generally poor and low numbers, in particular in Denmark, are registered.



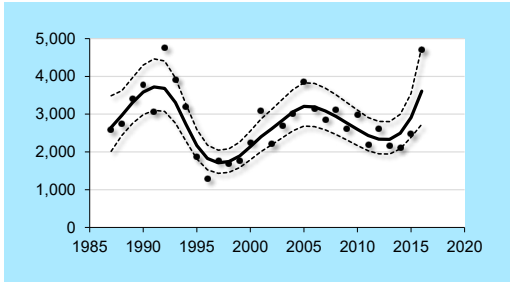
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Ruddy Turnstone in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	➡
(C) Denmark		⬇	⬇
(D) Schleswig-Holstein		➡	➡
(E) Niedersachsen/Hamburg		⬆	⬆
(F) The Netherlands		➡	–

⬆⬆ strong increase ⬇⬇ strong decrease ⬆ moderate increase
⬇ moderate decrease ➡ stable – uncertain

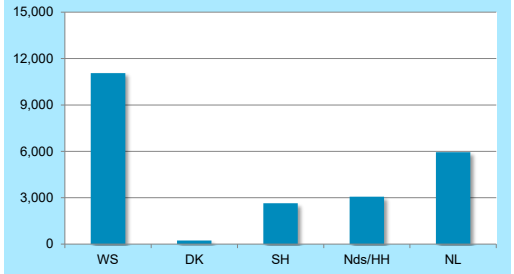
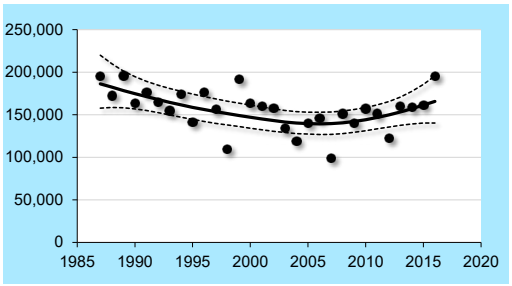


Figure 4.30.7 Absolute numbers of Ruddy Turnstone in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

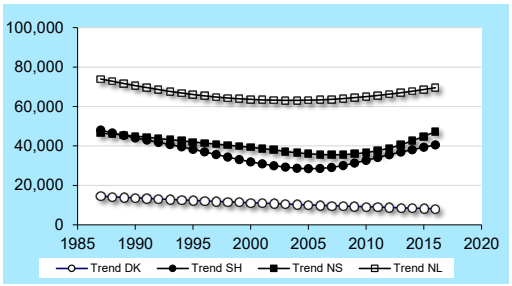
4.31 Common Black-headed Gull

Larus ridibundus 05820

DK: Hættemåge D: Lachmöwe NL: Kokmeeuw



(A) Overall trend in the international Wadden Sea

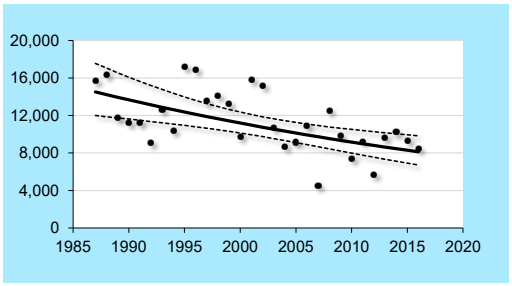


(B) Trends in the different countries compared

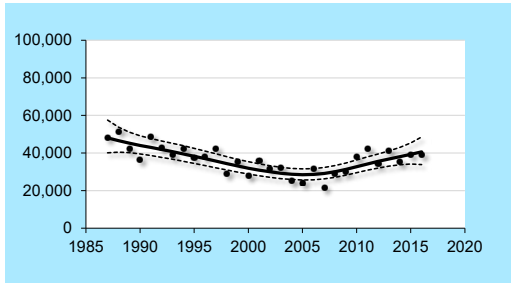
Figure 4.31.1-4.31.6 Trends of Common Black-headed Gull in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

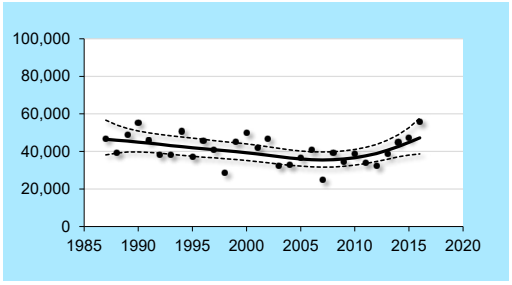
Some 10-15% of the **Black-headed** Gull flyway population use the Wadden Sea. The Trilateral counts only cover a part of the numbers actually using the Wadden Sea, because many birds occur offshore, inland, at harbours or rubbish dumps. However, for the 20-25 % of the flyway population present in the Wadden Sea, the trend is stable in the long-term trend, but uncertain in the short-term trend. For Denmark the long-term trend shows a slight decrease, while numbers in the German parts of the Wadden Sea increase. In The Netherlands the long-term trend is stable.



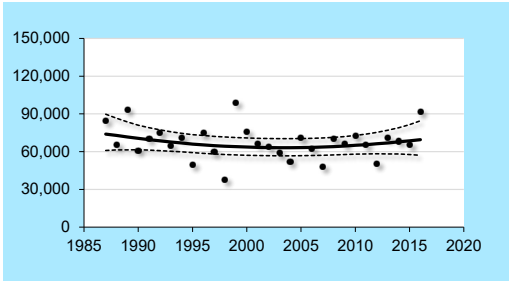
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Common Black-headed Gull in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	➡
(C) Denmark		⬇	⬇
(D) Schleswig-Holstein		➡	⬆
(E) Niedersachsen/Hamburg		➡	⬆
(F) The Netherlands		➡	➡

⬆⬆ strong increase ⬇⬇ strong decrease ⬆ moderate increase
⬇ moderate decrease ➡ stable uncertain

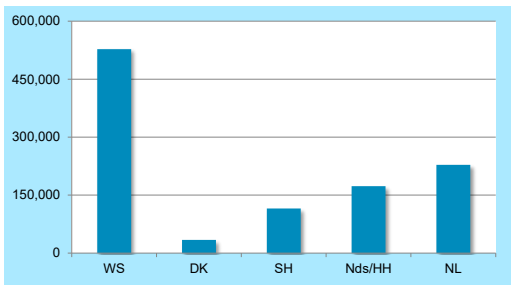
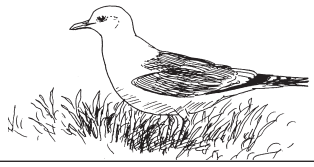


Figure 4.31.7 Absolute numbers of Common Black-headed Gull in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

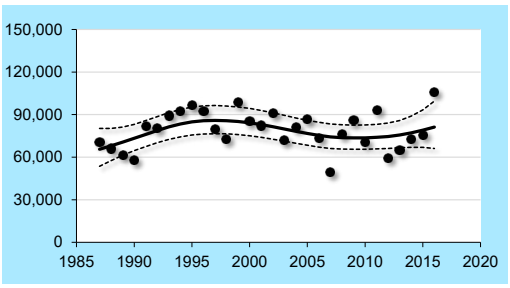


4.32 Common Gull

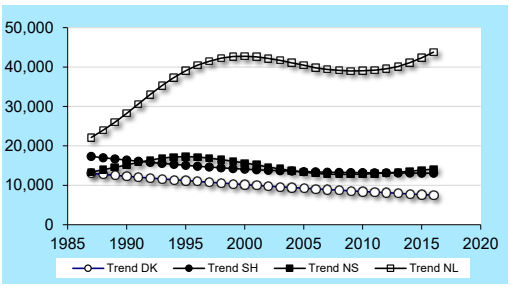
05900

Larus canus

DK: Stormmåge D: Sturmmöwe NL: Stormmeeuw



(A) Overall trend in the international Wadden Sea

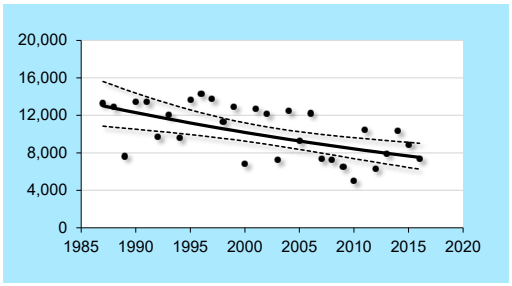


(B) Trends in the different countries compared

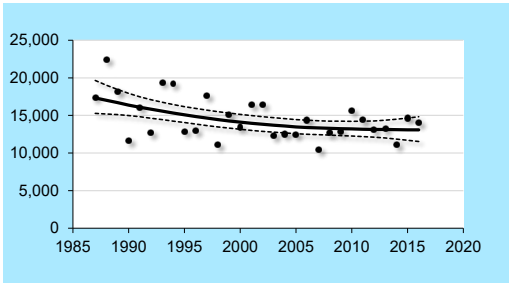
Figure 4.32.1-4.32.6 Trends of Common Gull in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

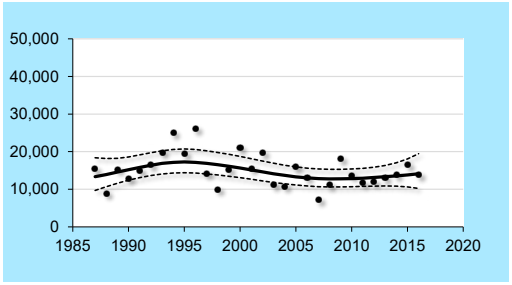
Over 10% of the **Common Gull** flyway population uses the Wadden Sea, however, many of them feed inland and only rest in the Wadden Sea during night. The overall long-term trend is stable for the Wadden Sea, but uncertain for the short-term. Thisis the samen for Niedersachsen/Hamburg and the Netherlands. Denmark shows a slight decrease, whereas numbers in Schleswig-Holstein are stable.



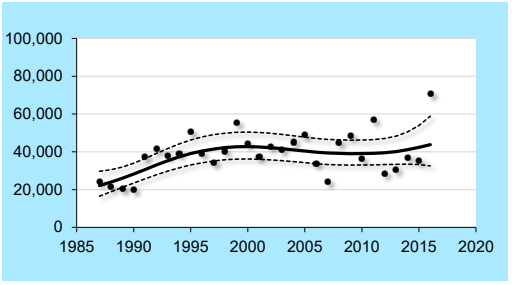
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Common Gull in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		→	→
(C) Denmark		↓	↓
(D) Schleswig-Holstein		↓	→
(E) Niedersachsen/Hamburg		→	–
(F) The Netherlands		↑	–

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

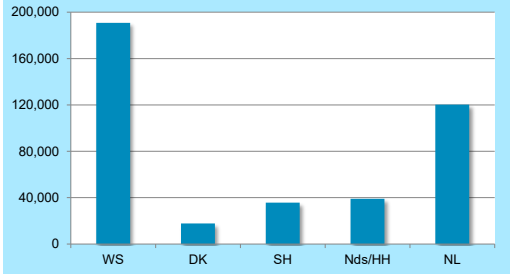
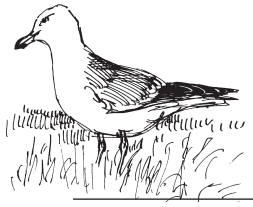


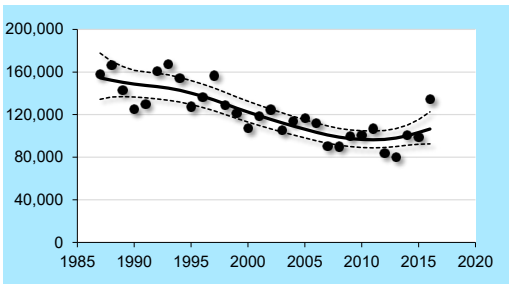
Figure 4.32.7 Absolute numbers of Common Gull in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.



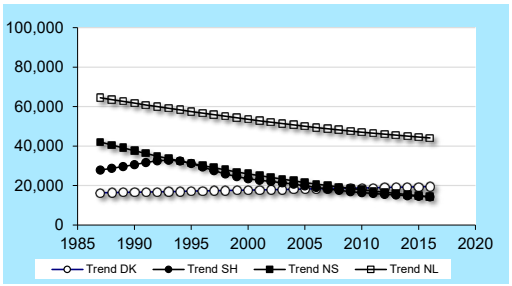
4.33 Herring Gull

Larus argentatus 05920

DK: Sølvmåge D: Silbermöwe NL: Zilvermeeuw



(A) Overall trend in the international Wadden Sea

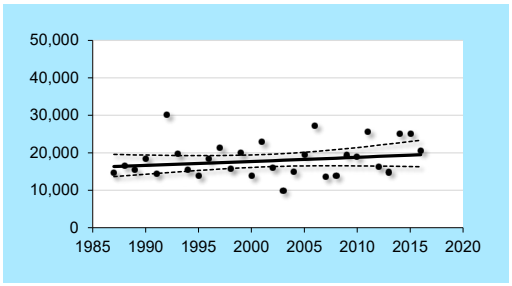


(B) Trends in the different countries compared

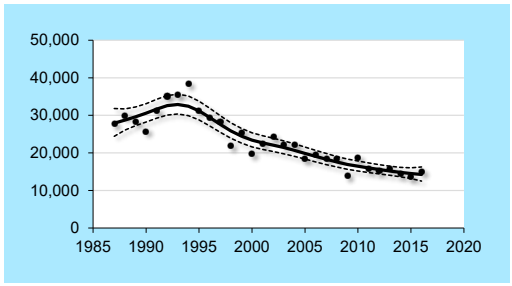
Figure 4.33.1-4.33.6 Trends of Herring Gull in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

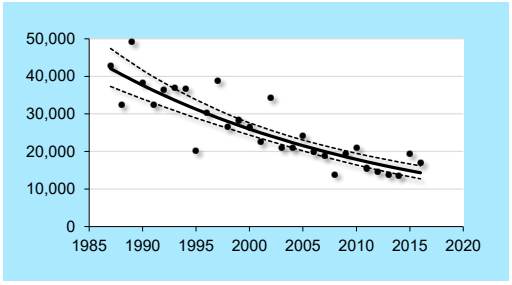
Less than 10% of the **Herring Gull** flyway population is registered in the Wadden Sea, however many birds are not covered because birds either feed offshore or inland. The species showed a moderate decrease over the years, but numbers seem to stabilize. The decrease took place in the whole international Wadden Sea, apart from Denmark, where the Herring Gull increased and number became even bigger than in the German parts of the Wadden Sea.



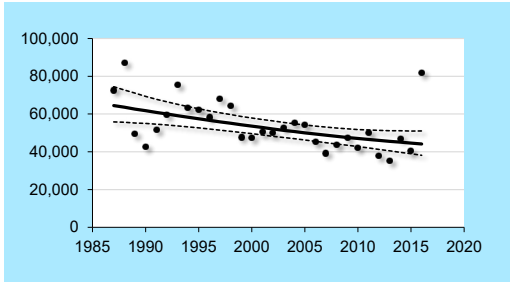
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Herring Gull in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	→
(C) Denmark		→	→
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↓	→

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

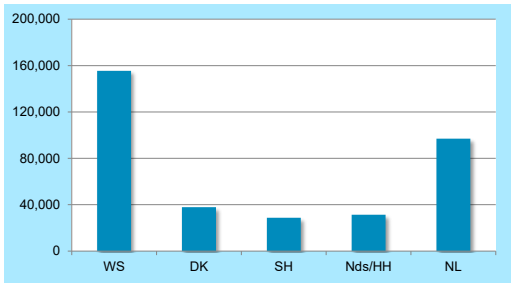


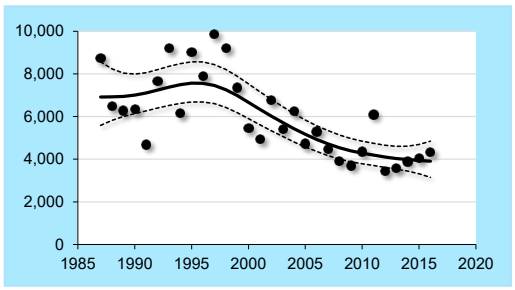
Figure 4.33.7 Absolute numbers of Herring Gull in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

4.34 Great Black-backed Gull

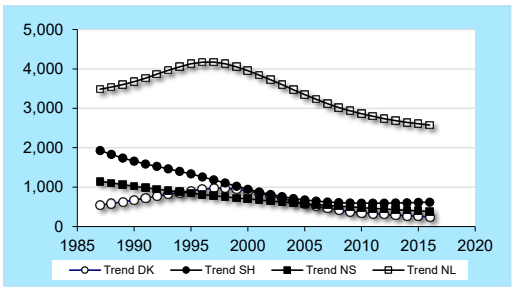
06000

Larus marinus

DK: Svartbag D: Mantelmöwe NL: Grote Mantelmeeuw



(A) Overall trend in the international Wadden Sea

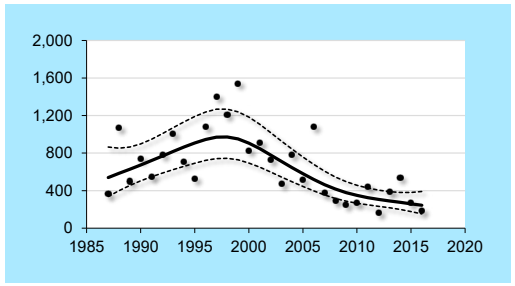


(B) Trends in the different countries compared

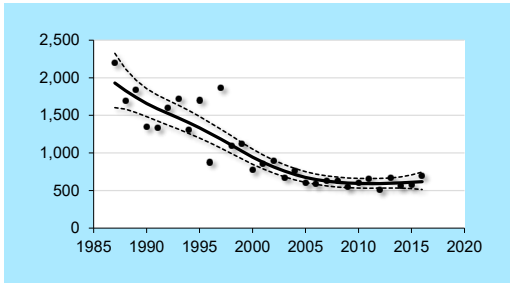
Figure 4.34.1-4.34.6 Trends of Great Black-backed Gull in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

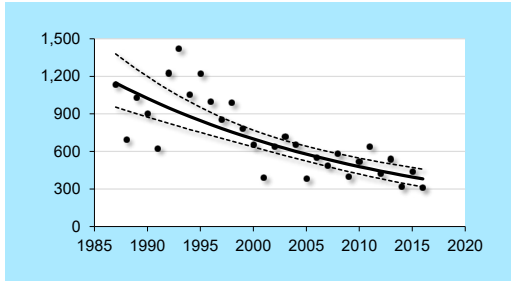
Only a small fraction of the **Great Black-backed Gulls** flyway population is counted in the Wadden Sea, since many birds use harbours and offshore areas. Apart from some peak numbers in the mid 1990s, mainly caused by trends in Denmark and the Netherlands, the numbers of Great Black-backed Gulls declined up to 2005 and are more or less stable since then.



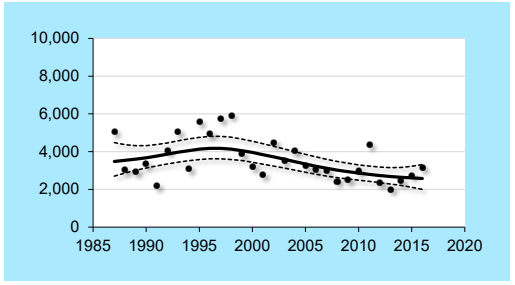
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

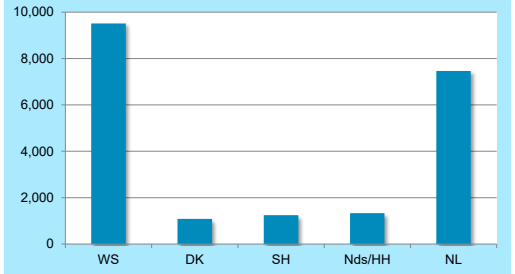
Trends for Great Black-backed Gull in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from all months to express an overall trend for the entire year. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Figure 4.34.7 Absolute numbers of Great Black-backed Gull in the international Wadden Sea and the four regions calculated by average of the 3 maximum numbers in the period 2007/2008-2016/2017.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	→
(C) Denmark		↓	↓
(D) Schleswig-Holstein		↓	→
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		→	–

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain



5 Subspecies accounts

Table 5.1
Trends until 2016/2017 - The whole 30 and last 10 years time period. The species names in the table are sorted according to the Euring Code.

Species	Long-term 30-years trend 1987/1988 - 2016/2017						Short-term 10-year trend 2007/2008 - 2016/2017				
	WS	DK	SH	Nds/ HH	NL		WS	DK	SH	Nds/ HH	NL
Great Ringed Plover (*hiaticula*)	↓	–	→	↓	→		↓	–	→	↓	–
Great Ringed Plover (*psammodroma/tundrae*)	↑	↑	↑	→	↑↑		↑	–	↑	→	↑
Red Knot (*canutus*)	→	↑	↓	→	↑		→	↑	↓	→	↑
Red Knot (*islandica*)	↓	↑	↓	→	↑		→	–	↓	↑	↑
Bar-tailed Godwit (*taymyrensis*)	→	→	↓	↓	↑		→	–	↓	↓	→
Bar-tailed Godwit (*lapponica*)	→	→	↓	→	↑		→	→	↓	–	→
Common Redshank (*totanus*)	↓	↑	↓	↓	↑		↓	↑	→	↓	→
Common Redshank (*robusta*)	→	↓	→	↓	→		↓	↓	↓	–	–
Ruddy Turnstone (Greenland & NE Canada)	↑	→	→	↑	↑		–	↓	–	↑	↑
Ruddy Turnstone (Scandinavia - Western Russia)	→	↓	↓	→	→		→	↓	↓	–	→

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase ↓ moderate decrease → stable – uncertain

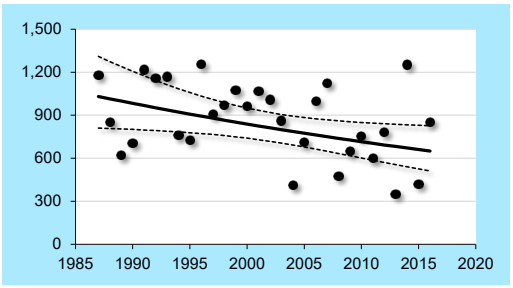
WS - Wadden Sea; **DK** - Denmark; **SH** - Schleswig-Holstein; **Nds/HH** - Niedersachsen/Hamburg; **NL** - The Netherlands

5.1 Great Ringed Plover (*hiaticula*)

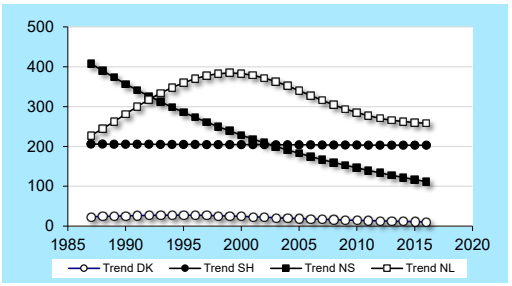
04701

Charadrius hiaticula hiaticula

DK: Stor Præstekrave D: Sandregenpfeifer NL: Bontbekplevier



(A) Overall trend in the international Wadden Sea

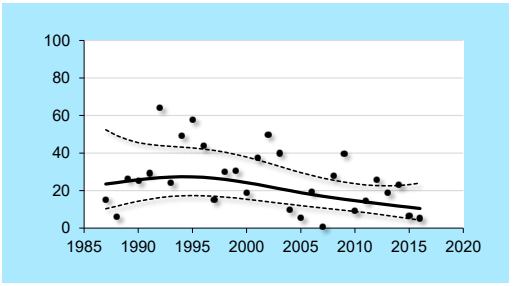


(B) Trends in the different countries compared

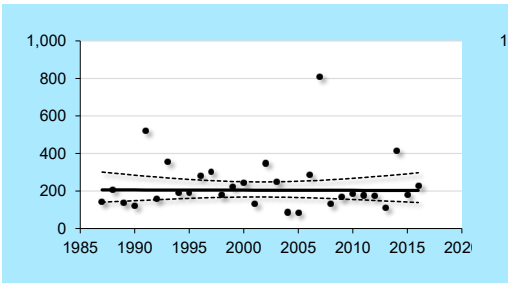
Figure 5.1.1-5.1.6 Trends of subspecies Great Ringed Plover*(hiaticula)* in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

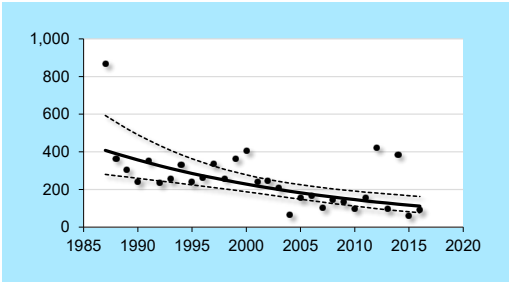
The rather low numbers of nominate sub-species *C.h.hiaticula* (counts from October to April) show a moderate decrease, mainly caused by the negative trend in Niedersachsen/Hamburg. In the Netherlands the sub-species is decreasing since the millennium.



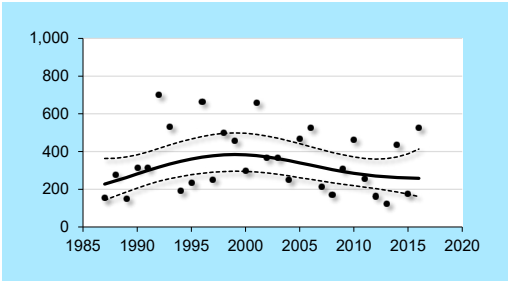
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Great Ringed Plover (*hiaticula*) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

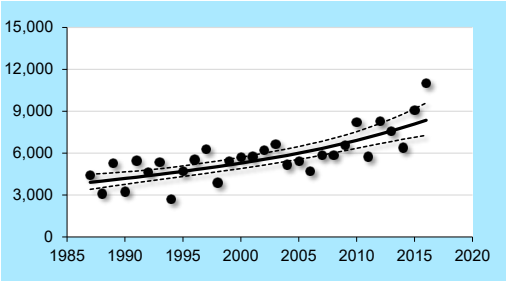
Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		–	–
(D) Schleswig-Holstein		→	→
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		→	–

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

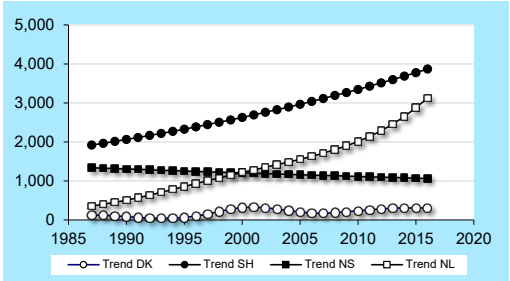
5.2 Great Ringed Plover (*psammodroma/tundrae*)

Charadrius hiaticula psammodroma/tundrae 04702

DK: Stor Præstekrave D: Sandregenpfeifer NL: Bontbekplevier



(A) Overall trend in the international Wadden Sea

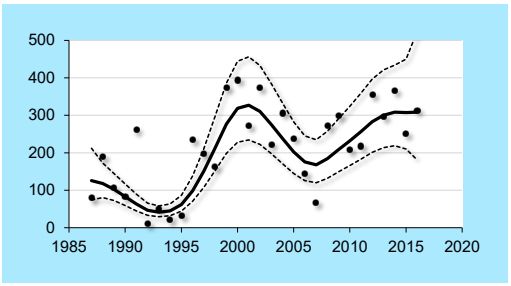


(B) Trends in the different countries compared

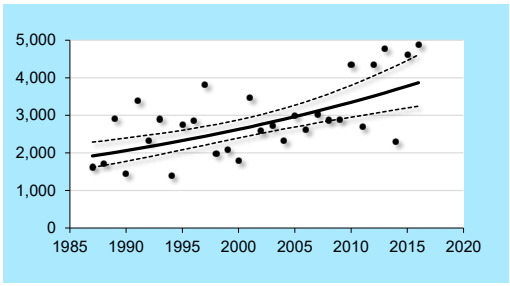
Figure 5.2.2-5.2.6
Trends of subspecies Great Ringed Plover (*psammodroma/tundrae*) in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

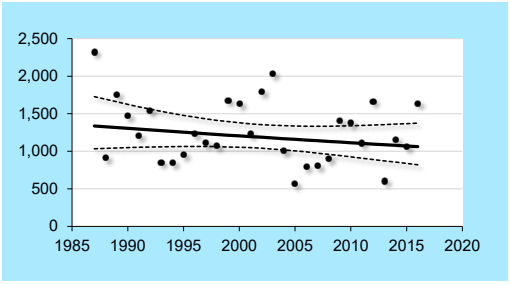
Large numbers of both the arctic breeding *C. h. tundrae* and *C. h. psammodroma* pass through during May and from July to September also. Highest numbers occur in Schleswig-Holstein and the Netherlands, where numbers are still increasing. The overall trend is positive, both long- and short-term.



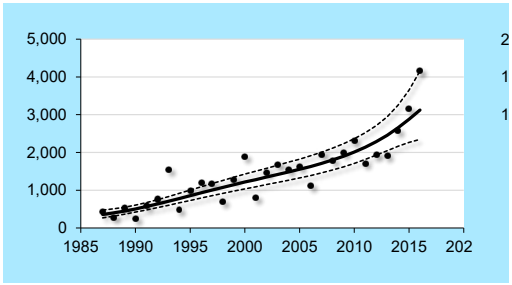
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Great Ringed Plover (*psammodroma/tundrae*) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↑	↑
(C) Denmark		↑	–
(D) Schleswig-Holstein		↑	↑
(E) Niedersachsen/Hamburg		→	→
(F) The Netherlands		↑↑	↑

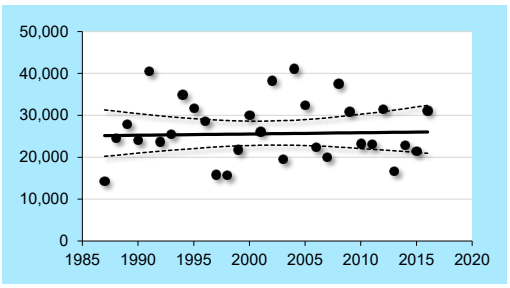
↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

5.3 Red Knot (*canutus*)

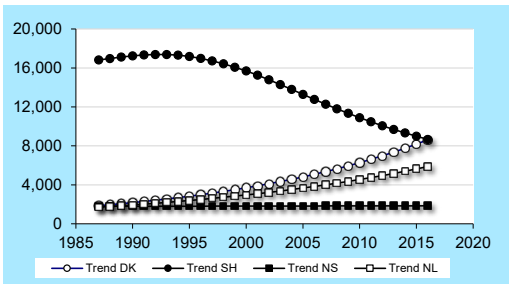
04961

Calidris canutus canutus

DK: Islandsk Ryle **D: Knutt** **NL: Kanoetstrandloper**



(A) Overall trend in the international Wadden Sea

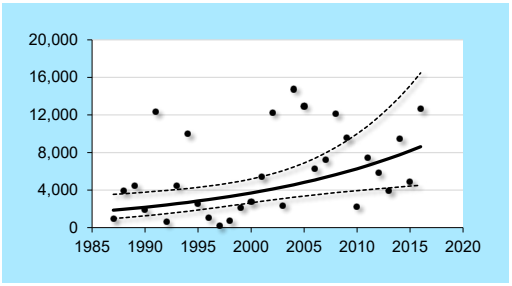


(B) Trends in the different countries compared

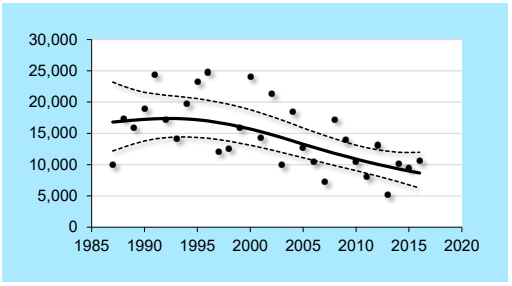
Figure 5.3.1-5.3.6 Trends of subspecies Red Knot (*canutus*) in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

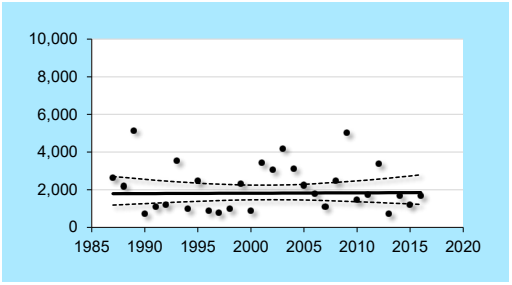
Red Knots of the sub-species *C. c. canutus* migrating from Africa to Siberia are mainly present in the Wadden Sea in May and July-August. The overall trend is stable, although in Schleswig-Holstein a continuous decrease occurs since the late 1990's, which is compensated by the increase in the Danish and Dutch Wadden Sea. Something similar is going on with the other sub-species *C. c. islandica*.



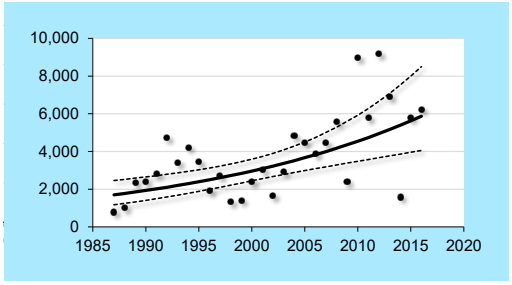
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Red Knot (*canutus*) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

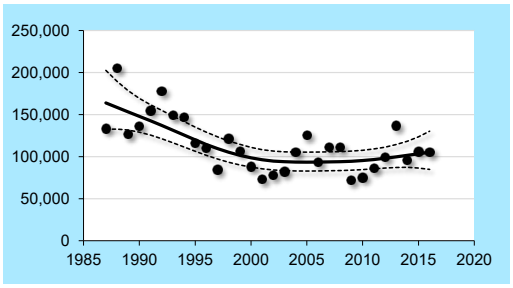
Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	➡
(C) Denmark		↑	↑
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		➡	➡
(F) The Netherlands		↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease ➡ stable uncertain

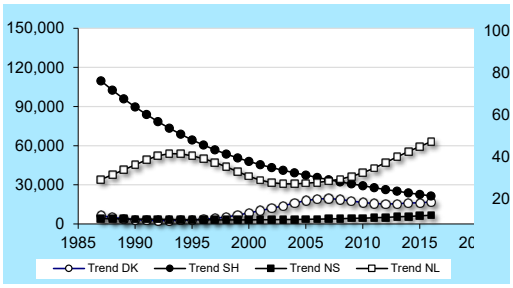
5.4 Red Knot (*islandica*)

Calidris canutus islandica 04962

DK: Islandsk Ryle D: Knutt NL: Kanoetstrandloper



(A) Overall trend in the international Wadden Sea

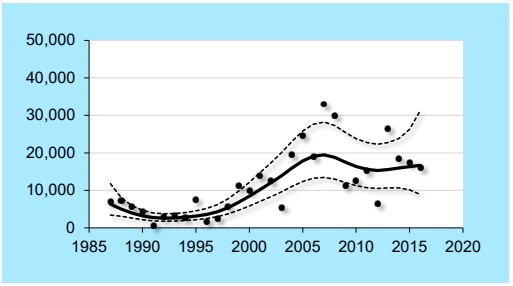


(B) Trends in the different countries compared

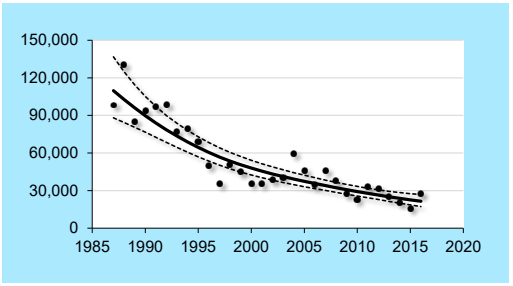
Figure 5.4.1-5.4.6 Trends of subspecies Red Knot (*islandica*) in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

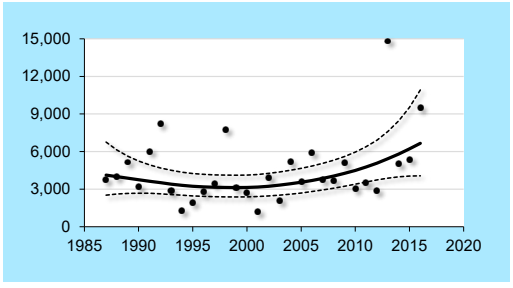
Birds of the subspecies *C. c. islandica* winter in the European region and breed in Greenland and Canada. In comparison with the *C. c. canutus* subspecies the overall trend of *C. c. islandica* uncertain for the short-term. The sub-species shows a strong decrease in Schleswig-Holstein, but numbers in Denmark and the Netherlands got bigger through the years.



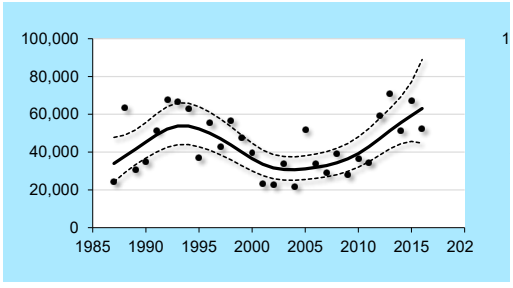
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Red Knot (*islandica*) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	→
(C) Denmark		↑	–
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		→	↑
(F) The Netherlands		↑	↑

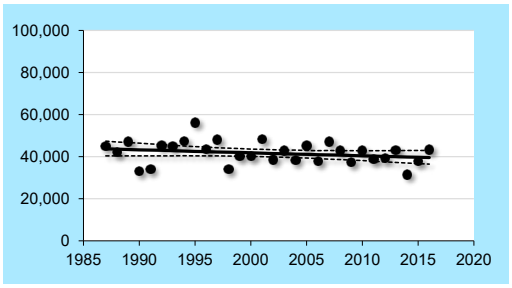
↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

5.5 Bar-tailed Godwit (*taymyrensis*)

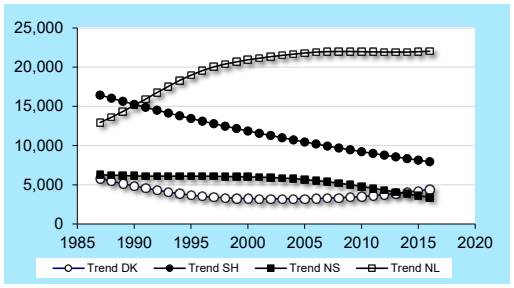
05341

Limosa lapponica taymyrensis

DK: Lille Kobbersneppe D: Pfuhlschnepfe NL: Rosse Grutto



(A) Overall trend in the international Wadden Sea

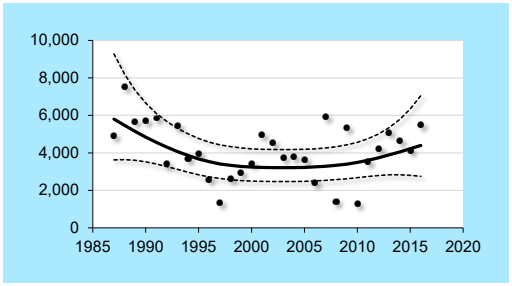


(B) Trends in the different countries compared

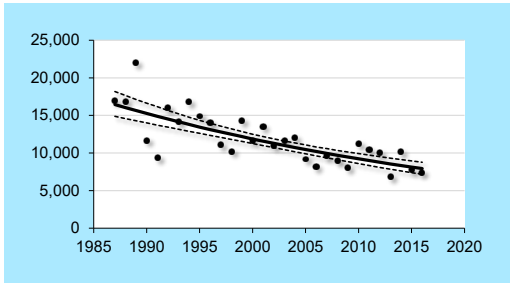
Figure 5.5.1-5.5.6 Trends of subspecies Bar-tailed Godwit (*taymyrensis* in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

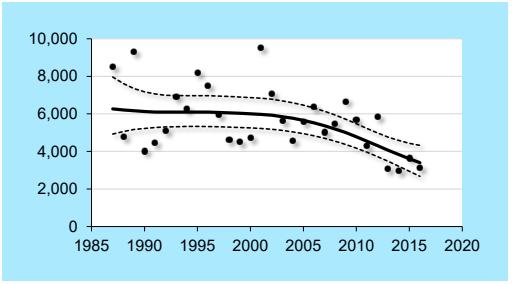
Birds of the Siberian subspecies *L. l. taymyrensis* are mainly present in the Wadden Sea in May and in July/August. The overall trend is stable, but different in the sub regions. Most birds occur in the Netherlands, where numbers increased until the mid 1990's and remained stable since then. In opposite a continuous decrease occurred in the German parts of the Wadden Sea.



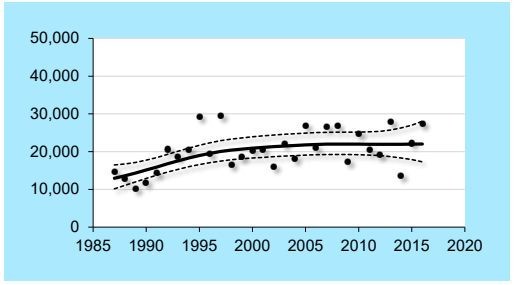
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Bar-tailed Godwit (*taymyrensis*) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

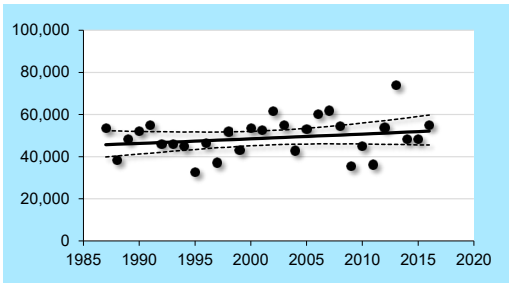
Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	➡
(C) Denmark		➡	–
(D) Schleswig-Holstein		⬇	⬇
(E) Niedersachsen/Hamburg		⬇	⬇
(F) The Netherlands		⬆	➡

⬆⬆ strong increase ⬇⬇ strong decrease ⬆ moderate increase
⬇ moderate decrease ➡ stable – uncertain

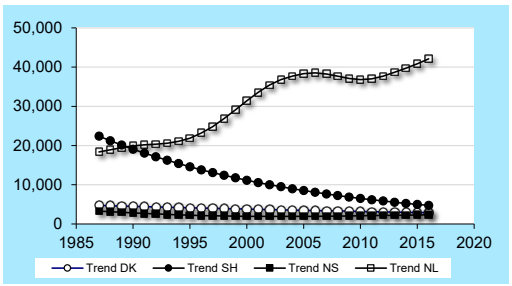
5.6 Bar-tailed Godwit (*lapponica*)

Limosa lapponica lapponica 05342

DK: Lille Kobbersneppe D: Pfuhlschnepfe NL: Rosse Grutto



(A) Overall trend in the international Wadden Sea

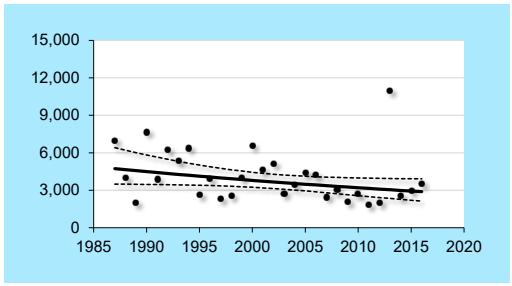


(B) Trends in the different countries compared

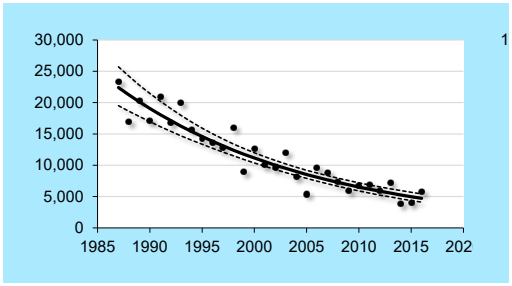
Figure 5.6.1-5.6.6 Trends of subspecies Bar-tailed Godwit (*lapponica*) in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

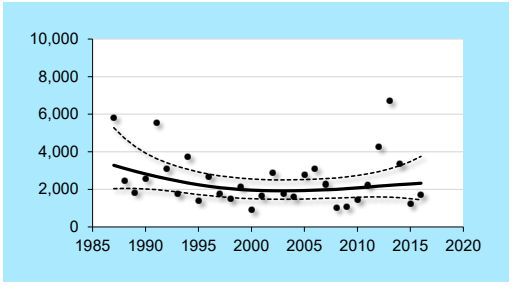
Birds of the subspecies *L. l. lapponica* breed in northern Scandinavia and northern Russia and winter in coastal Western Europe and North-West Africa. From Septmber to April all birds in the Wadden Sea are supposed to belong to this subspecies. The overall trend of these wintering birds is stable. Also for this sub-species the biggest numbers are found in the Dutch Wadden Sea, where the *L. l. lapponica* is increasing. Schleswig-Holstein shows an opposite trend, where the 'lapponica's are continuously decreasing.



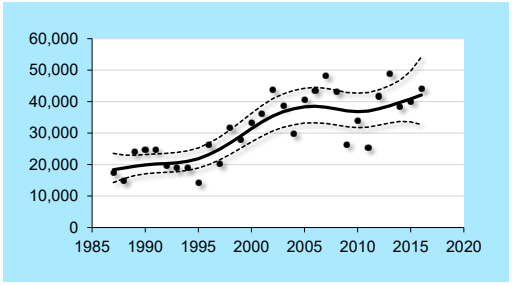
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Bar-tailed Godwit (*lapponica*) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	➡
(C) Denmark		➡	➡
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		➡	–
(F) The Netherlands		↑	➡

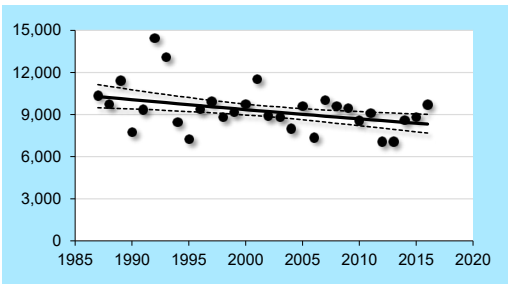
↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease ➡ stable – uncertain

5.7 Common Redshank (*totanus*)

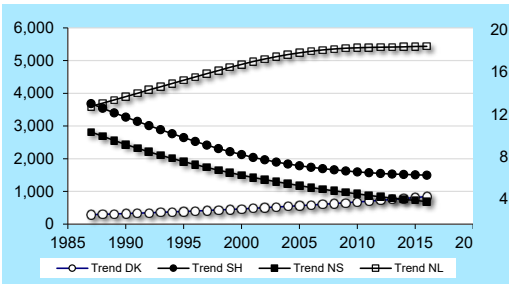
05461

Tringa totanus totanus

DK: Rødben D: Rotschenkel NL: Tureluur



(A) Overall trend in the international Wadden Sea

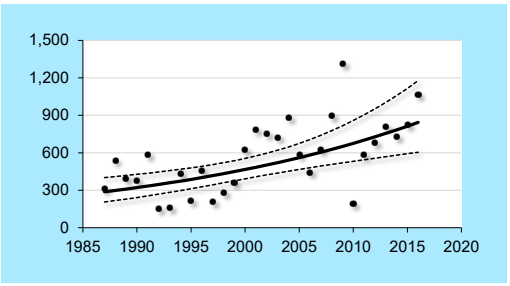


(B) Trends in the different countries compared

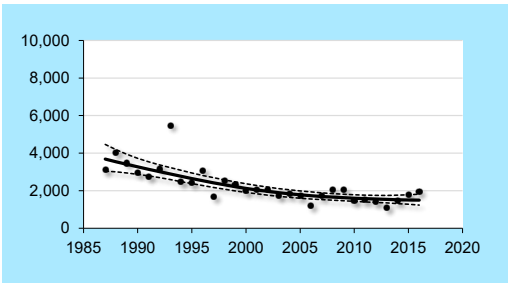
Figure 5.7.1-5.7.6 Trends of subspecies Common Redshank (*totanus*) in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

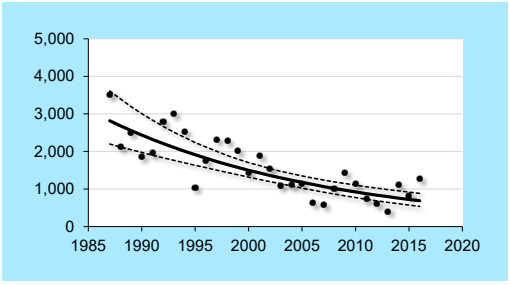
Birds from the Fennoscandia and north-western Russian population *T. t. totanus*, which winter in western Africa, pass through the Wadden Sea in April/May and July/August mainly. The overall trend is slightly decreasing, but very much contrasting within the Wadden Sea regions. Numbers are stable in the Netherlands, decreasing in the German parts of the Wadden Sea, but increasing in the Danish Wadden Sea.



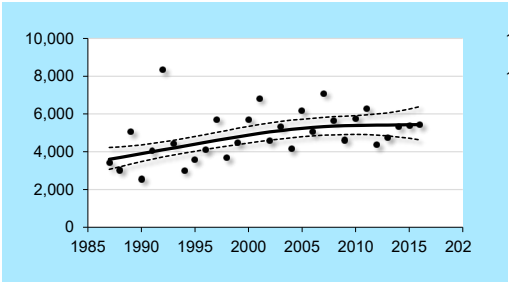
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Common Redshank (*totanus*) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

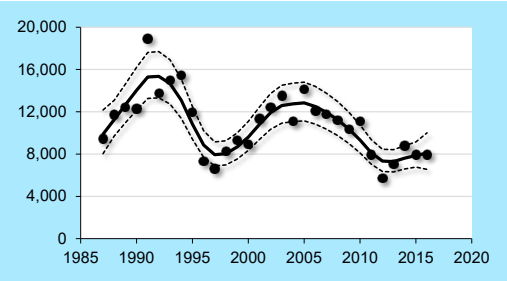
Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		↑	↑
(D) Schleswig-Holstein		↓	→
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↑	→

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable uncertain

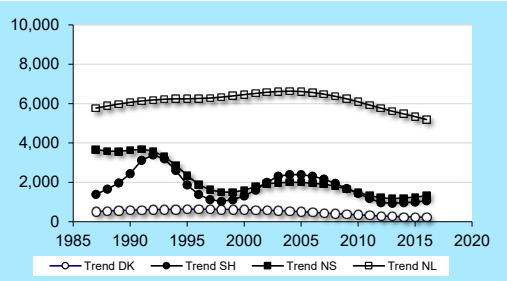
5.8 Common Redshank (*robusta*)

Tringa totanus robusta 05462

DK: Rødben D: Rotschenkel NL: Tureluur



(A) Overall trend in the international Wadden Sea

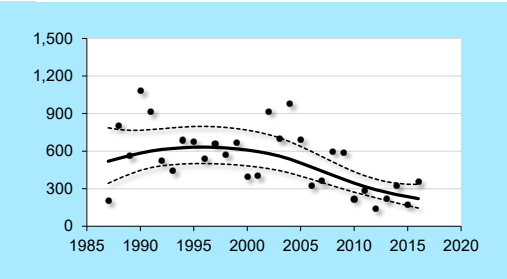


(B) Trends in the different countries compared

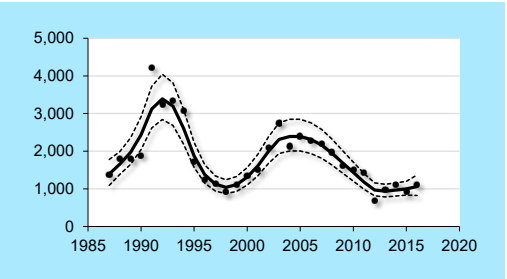
Figure 5.8.1-5.8.6 Trends of subspecies Common Redshank (*robusta*) in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

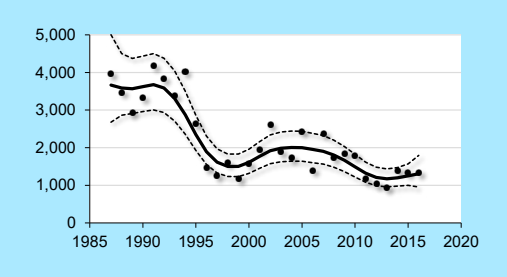
Only birds of the subspecies *T. t. robusta* from islandic breeding grounds winter in the Wadden Sea region. Thus, numbers and trends reflect the occurrence of severe winters. Numbers increased up to the mid 1990's, but dropped rapidly due to the severe winters in the mid 1990s, recovered until 2005/2006 and decreased since then again due to a series of cold winters during the last years. Almost the same pattern appears mainly in the German parts of the Wadden Sea. The winter-effect is not that clear in the Dutch Wadden Sea.



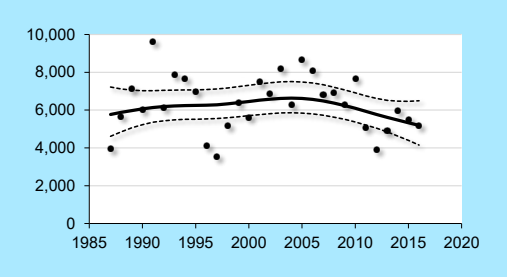
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Common Redshank (*robusta*) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	↓
(C) Denmark		↓	↓
(D) Schleswig-Holstein		➡	↓
(E) Niedersachsen/Hamburg		↓	–
(F) The Netherlands		➡	–

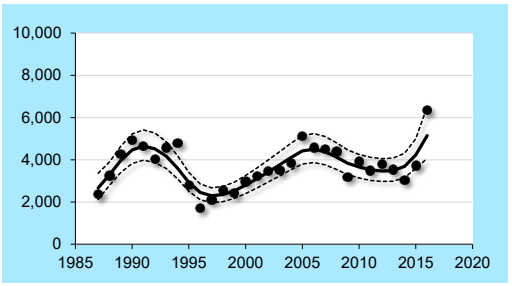
↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease ➡ stable – uncertain

5.9 Ruddy Turnstone (Greenland & NE Canada)

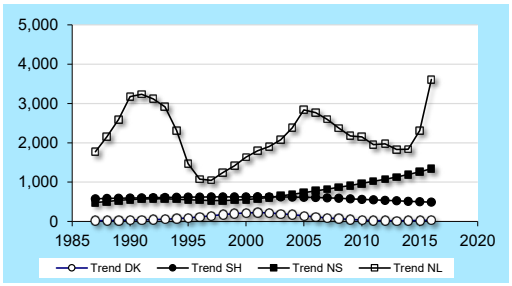
05611

Arenaria interpres morinella

DK: Stenvender D: Steinwälzer NL: Steenloper



(A) Overall trend in the international Wadden Sea

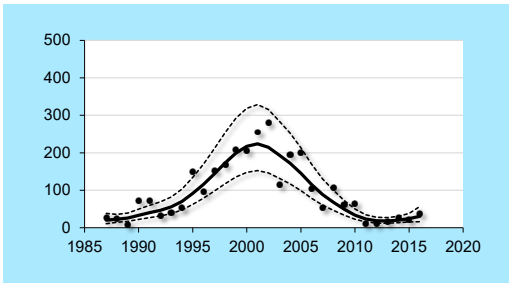


(B) Trends in the different countries compared

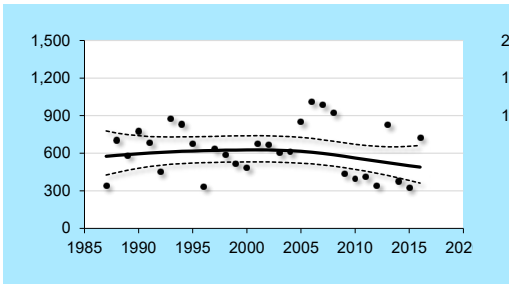
Figure 5.9.1-5.9.6 Trends of subspecies Ruddy Turnstone (Greenland & NE Canada) in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

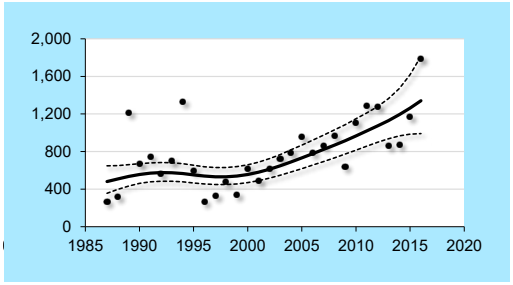
Birds from the Greenlandic and north-eastern Canadian population stay in the Wadden Sea during winter, but also in western Europe and north-western Africa. Like in *Tringa t. robusta* wintering numbers are reflecting the occurrence of severe winters during the last 25 years. Numbers increased after the severe winters in the mid 1980s, dropped again due to the severe winters in the mid 1990s, recovered continuously for several years until 2008 and dropped again during the row of severe winters around 2009-2011. Opposite to the *Tringa t. robusta* this pattern mainly appears in the Dutch Wadden Sea, where the biggest numbers are found.



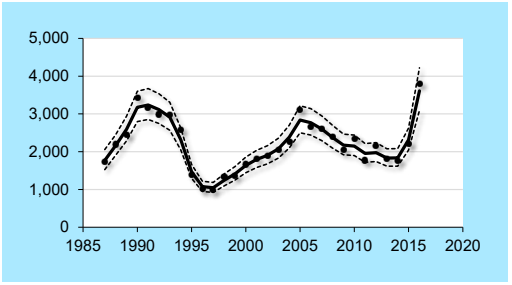
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Ruddy Turnstone (Greenland & NE Canada) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

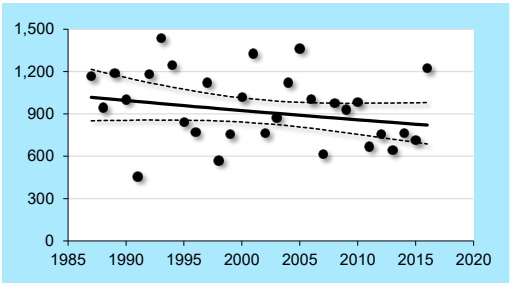
Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		↑	–
(C) Denmark		→	↓
(D) Schleswig-Holstein		→	–
(E) Niedersachsen/Hamburg		↑	↑
(F) The Netherlands		↑	↑

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
↓ moderate decrease → stable – uncertain

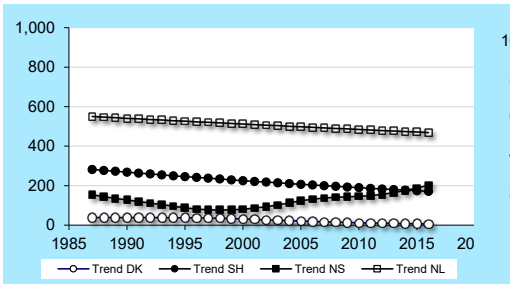
5.10 Ruddy Turnstone (Scandinavia-Western Russia)

Arenaria interpres 05612

DK: Stenvender D: Steinwälzer NL: Steenloper



(A) Overall trend in the international Wadden Sea

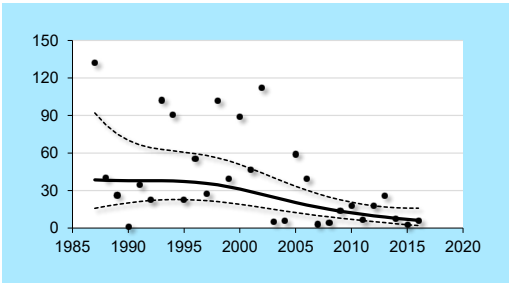


(B) Trends in the different countries compared

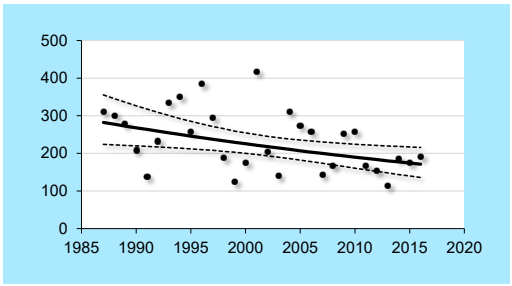
Figure 5.10.1-5.10.6 Trends of subspecies Ruddy Turnstone (Scandinavia - Western Russia) in the international Wadden Sea (WS) and the four regions 1987/1988-2016/2017; dots represent annual averages; trendline calculated by Trendspotter (solid line) together with the ± 95 % confidence limits (dotted line).

Explanatory Note

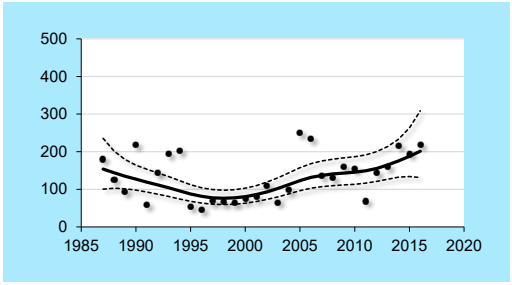
Birds from the Scandinavian and north-western Russian population winter in western Africa and pass the Wadden Sea mainly in May and July. The overall trend is stable. There are small differences within the regions with a stable to slight decreasing numbers in the Netherlands, a slight long-term decrease in Schleswig-Holstein too, a more positive trend in Niedersachsen and the small numbers in Denmark dropped.



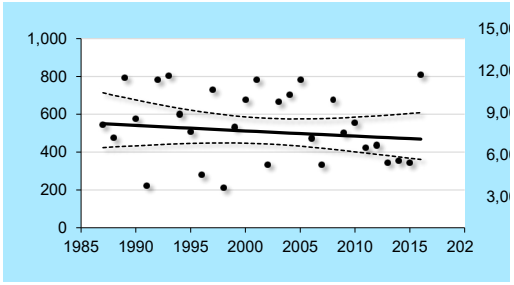
(C) Denmark



(D) Schleswig-Holstein



(E) Niedersachsen/Hamburg



(F) The Netherlands

Trends for Ruddy Turnstone (Scandinavia - Western Russia) in the Wadden Sea

Figures represent the trend 1987/1988 to 2016/2017, taking into account data from those months in which this subspecies dominates counts in the Wadden Sea. Numbers on the y-axis represent monthly mean occurrences. Dots are the individual yearly estimates, solid lines the trend calculated by TrendSpotter, dotted lines the 95% confidence limits of the trend lines.

Area	Period	1987/88 - 2016/17	2007/08 - 2016/17
(A)/(B) International Wadden Sea		➡	➡
(C) Denmark		⬇	⬇
(D) Schleswig-Holstein		⬇	⬇
(E) Niedersachsen/Hamburg		➡	–
(F) The Netherlands		➡	➡

⬆⬆ strong increase ⬇⬇ strong decrease ⬆ moderate increase
⬇ moderate decrease ➡ stable – uncertain

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Annex 1 Assignment of species according to living conditions

Table A1.1
Assignment of species according to food and feeding habitats

	Food						Feeding habitats				
	shellfish	worms	fish	other vertebrates	plants	omnivorous	salt marsh	tidal	dunes	beach & offshore	coastal grassland
Great Cormorant			x					x			
Eurasian Spoonbill			x					x			
Barnacle Goose					x		x				
Brent Goose					x		x				
Common Shelduck				x				x			
Eurasian Wigeon					x		x				
Common Teal					x		x				
Mallard					x		x				
Northern Pintail					x		x				
Northern Shoveler				x			x				
Common Eider	x							x			
Eurasian Oystercatcher	x							x			
Pied Avocet		x						x			
Great Ringed Plover		x						x			
Kentish Plover		x						x			
European Golden Plover		x									x
Grey Plover		x						x			
Northern Lapwing		x									x
Red Knot	x							x			
Sanderling		x								x	
Curlew Sandpiper		x						x			
Dunlin		x						x			
Ruff		x									x
Bar-tailed Godwit		x						x			
Whimbrel				x				x			
Eurasian Curlew				x				x			
Spotted Redshank			x					x			
Common Redshank				x				x			
Common Greenshank			x					x			
Ruddy Turnstone				x						x	
Black-headed Gull				x				x			
Common Gull				x				x			
European Herring Gull	x							x			
Great Black-backed Gull						x				x	
Total number of species	**4**	**11**	**4**	**8**	**6**	**1**	**7**	**21**	**0**	**3**	**3**

Photo:
John Frikke

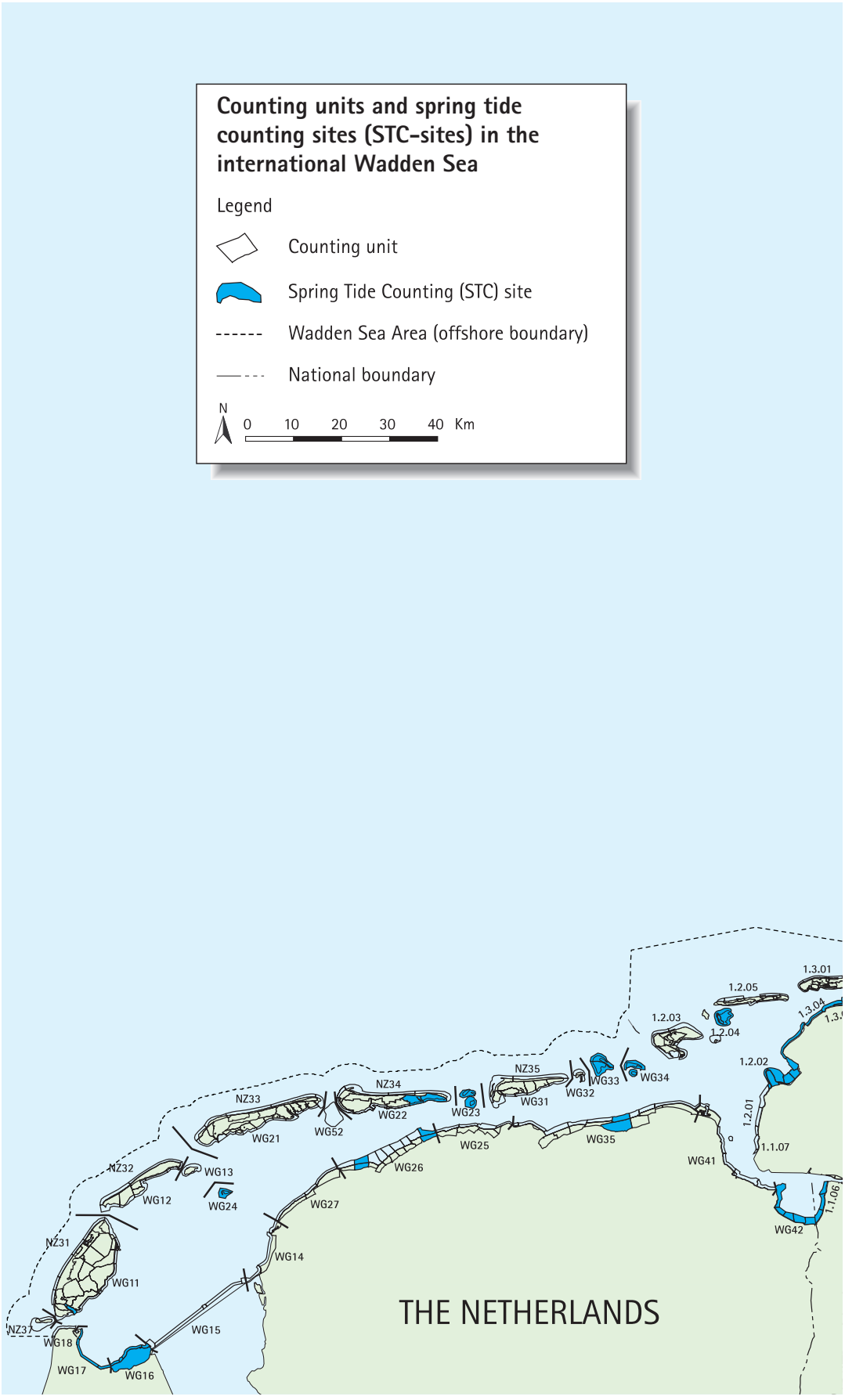
Table A1.2
Assignment of species according to breeding and wintering range.

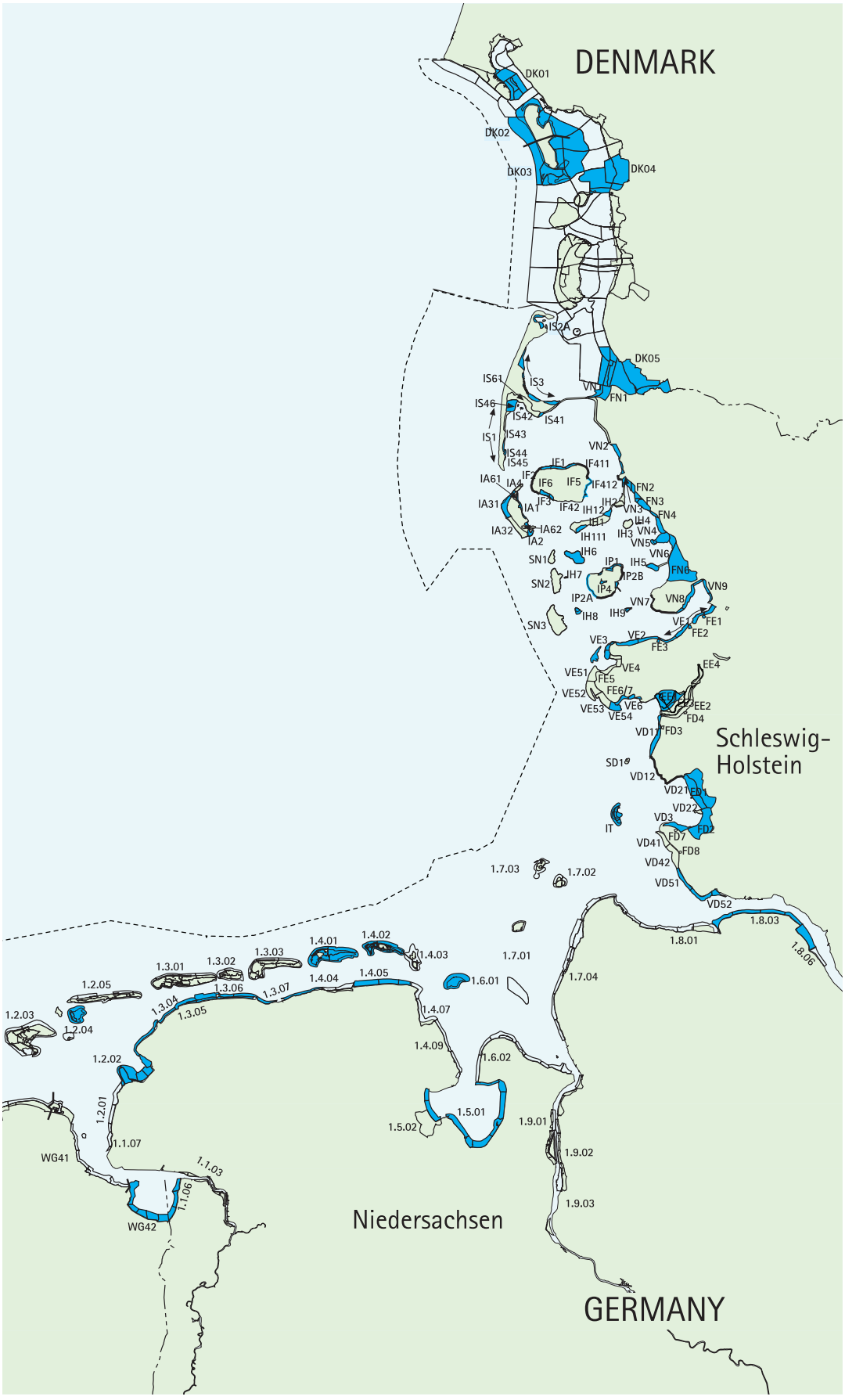
	Breeding range		Wintering range	
	arctic breeder	non-arctic breeder	Europe	Africa
Great Cormorant		x	x	
Eurasian Spoonbill		x		x
Barnacle Goose	x		x	
Brent Goose	x		x	
Common Shelduck		x	x	
Eurasian Wigeon		x	x	
Common Teal		x	x	
Mallard		x	x	
Northern Pintail		x		x
Northern Shoveler		x	x	
Common Eider		x	x	
Eurasian Oystercatcher		x	x	
Pied Avocet		x	x	
Great Ringed Plover	x			x
Kentish Plover		x	x	
European Golden Plover		x	x	
Grey Plover	x			x
Northern Lapwing		x	x	
Red Knot	x			x
Sanderling	x			x
Curlew Sandpiper	x			x
Dunlin	x		x	
Ruff	x			x
Bar-tailed Godwit	x			x
Whimbrel	x			x
Eurasian Curlew	x		x	
Spotted Redshank		x		x
Common Redshank		x	x	
Common Greenshank		x		x
Ruddy Turnstone	x		x	
Black-headed Gull		x	x	
Common Gull		x	x	
European Herring Gull		x	x	
Great Black-backed Gull		x	x	
Total number of species	**13**	**21**	**22**	**12**

Photo:
Klaus Günther

Annex 2 Counting units in the Wadden Sea

Figure A2.1
The international Wadden Sea, including delimitations of all counting units and spring tide counting sites

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DK02
DK03
DK04
DK05
IS2A
IS3
IS61
IS46
IS42
IS41
IS1
IS43
IS44
IS45
VN1
FN1
VN2
IF411
IE1
IA61
IA4
IF7
IF6
IF5
IF412
FN2
FN3
IA31
IA1
IF3
IF42
IH12
IH2
VN3
FN4
IH4
IA32
IA62
IA2
IH111
IH3
VN4
VN5
VN6
SN1
IH6
IP1
IH5
FN5
SN2
IH7
IP2B
IP4
VN9
IP2A
VN7
VN8
IH8
IH9
VE1
FE1
SN3
VE2
FE2
VE3
FE3
EE4
VE4
VE51
IFE5
VE52
FE6/7
VE53
VE6
EE2
VE54
FD4
VD11
FD3
Schleswig-
Holstein
SD1
VD12
VD21
FD1
VD22
VD3
IT
FD2
FD7
VD41
FD8
VD42
VD51
VD52
1.8.03
1.8.01
1.8.06
1.7.03
1.7.02
1.7.01
1.7.04
1.4.01
1.4.02
1.4.03
1.3.01
1.3.02
1.3.03
1.2.05
1.3.06
1.3.07
1.4.04
1.4.05
1.6.01
1.2.03
1.3.04
1.3.05
1.2.04
1.4.07
1.2.02
1.4.09
1.6.02
1.2.01
1.5.01
1.5.02
1.9.01
1.1.07
1.9.02
WG41
1.1.03
1.1.06
1.9.03
WG42
Niedersachsen
GERMANY

Annex 3 Species List

List of the species monitored in the Trilateral Monitoring and Assessment Program (TMAP)

Euring	English name	Scientific name	Dansk navn	Deutscger Name	Nederlandse naam
00720	Great Cormorant	Phalacrocorax carbo	Skarv	Kormoran	Aalscholver
01440	Eurasian Spoonbill	Platalea leucorodia	Skestork	Löffler	Lepelaar
01670	Barnacle Goose	Branta leucopsis	Bramgås	Nonnengans	Brandgans
01680	Dark-bellied Brent Goose	Branta bernicla	Knortegås	Ringelgans	Rotgans
01610	Greylag Goose*	Anser anser	Grågås	Graugans	Grauwe Gans
01730	Common shelduck	Tadorna tadorna	Gravand	Brandgans	Bergeend
01790	Eurasian Wigeon	Anas penelope	Pibeand	Pfeifente	Smient
01840	Common Teal	Anas crecca	Krikand	Krickente	Wintertaling
01860	Mallard	Anas platyrhynchos	Gråand	Stockente	Wilde Eend
01890	Northern Pintail	Anas acuta	Spidsand	Spießente	Pijlstaart
01940	Northern Shoveler	Anas clypeata	Skeand	Löffelente	Slobeend
02060	Common Eider	Somateria mollissima	Ederfugl	Eiderente	Eidereend
02430	White-Tailed Eagle*	Haliaeetus albicilla	Havørn	Seeadler	Zeearend
02900	Rough-Legged Buzzard*	Buteo lagopus	Fjeldvåge	Rauhfußbussard	Ruigpootbuizerd
03090	Merlin*	Falco columbarius	Dværgfalk	Merlin	Smelleken
03200	Peregrine Falcon*	Falco peregrinus	Vandrefalk	Wanderfalke	Slechtvalk
04500	Eurasian Oystercatcher	Haematopus ostralegus	Strandskade	Austernfischer	Scholekster
04560	Pied Avocet	Recurvirostra avosetta	Klyde	Säbelschnäbler	Kluut
04700	Great Ringed Plover	Charadrius hiaticula	Stor Præstekrave	Sandregenpfeifer	Bontbekplevier
04770	Kentish Plover	Charadrius alexandrinus	Hvidbrystet Præstekrave	Seeregenpfeifer	Strandplevier
04850	Golden Plover	Pluvialis apricaria	Hjejle; Hedehjejle	Goldregenpfeifer	Goudplevie
04860	Grey Plover	Pluvialis squatarola	Strandhjejle	Kiebitzregenpfeifer	Zilverplevier
04930	Northern Lapwing	Vanellus vanellus	Vibe	Kiebitz	Kievit
04960	Red Knot	Calidris canutus	Islandsk Ryle	Knutt	Kanoetstrandloper
04970	Sanderling	Calidris alba	Sandløber	Sanderling	Drieteenstrandloper
05090	Curlew Sandpiper	Calidris ferruginea	Krumnæbbet Ryle	Sichelstrandläufer	Krombekstrandloper
05120	Dunlin	Calidris alpina	Almindelig Ryle	Alpenstrandläufer	Bonte Strandloper
05170	Ruff	Philomachus pugnax	Brushane	Kampfläufer	Kemphaan
05320	Black-tailed Godwit*	Limosa limosa	Stor Kobbersneppe	Uferschnepfe	Grutto
05340	Bar-Tailed Godwit	Limosa lapponica	Lille Kobbersneppe	Pfuhlschnepfe	Rosse Grutto
05380	Whimbrel	Numenius phaeopus	Lille Regnspove	Regenbrachvogel	Regenwulp
05410	Eurasian Curlew	Numenius arquata	Stor Regnspove	Großer Brachvogel	Wulp
05450	Spotted Redshank	Tringa erythropus	Sortklire	Dunkler Wasserläufer	Zwarte Ruiter
05460	Common Redshank	Tringa totanus	Rødben	Rotschenkel	Tureluur
05480	Common Greenshank	Tringa nebularia	Hvidklire	Grünschenkel	Groenpootruiter
05610	Ruddy Turnstone	Arenaria interpres	Stenvender	Steinwälzer	Steenloper
05820	Common Black-headed Gull	Larus ridibundus	Hættemåge	Lachmöwe	Kokmeeuw
05900	Common Gull	Larus canus	Stormmåge	Sturmmöwe	Stormmeeuw
05910	Lesser Black-backed Gull*	Larus fuscus	Sildemåge	Heringsmöwe	Kleine Mantelmeeuw
05920	Herring Gull	Larus argentatus	Sølvmåge	Silbermöwe	Zilvermeeuw
06000	Great Black-backed Gull	Larus marinus	Svartbag	Mantelmöwe	Grote Mantelmeeuw
09780	Shore (Horned) Lark*	Eremophila alpestris	Bjerglærke	Ohrenlerche	Strandleeuwerik
16620	Twite*	Carduelis flavirostris	Bjergirisk	Berghänfling	Frater
18500	Snow Bunting*	Plectrophenax nivalis	Snespurv	Schneeammer	Sneeuwgors

* Species where data does not allow trend analysis

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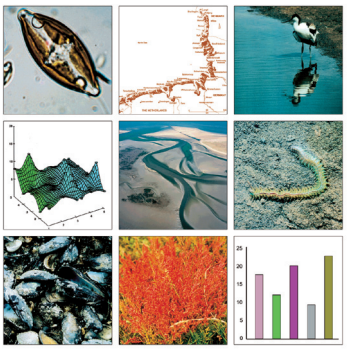

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