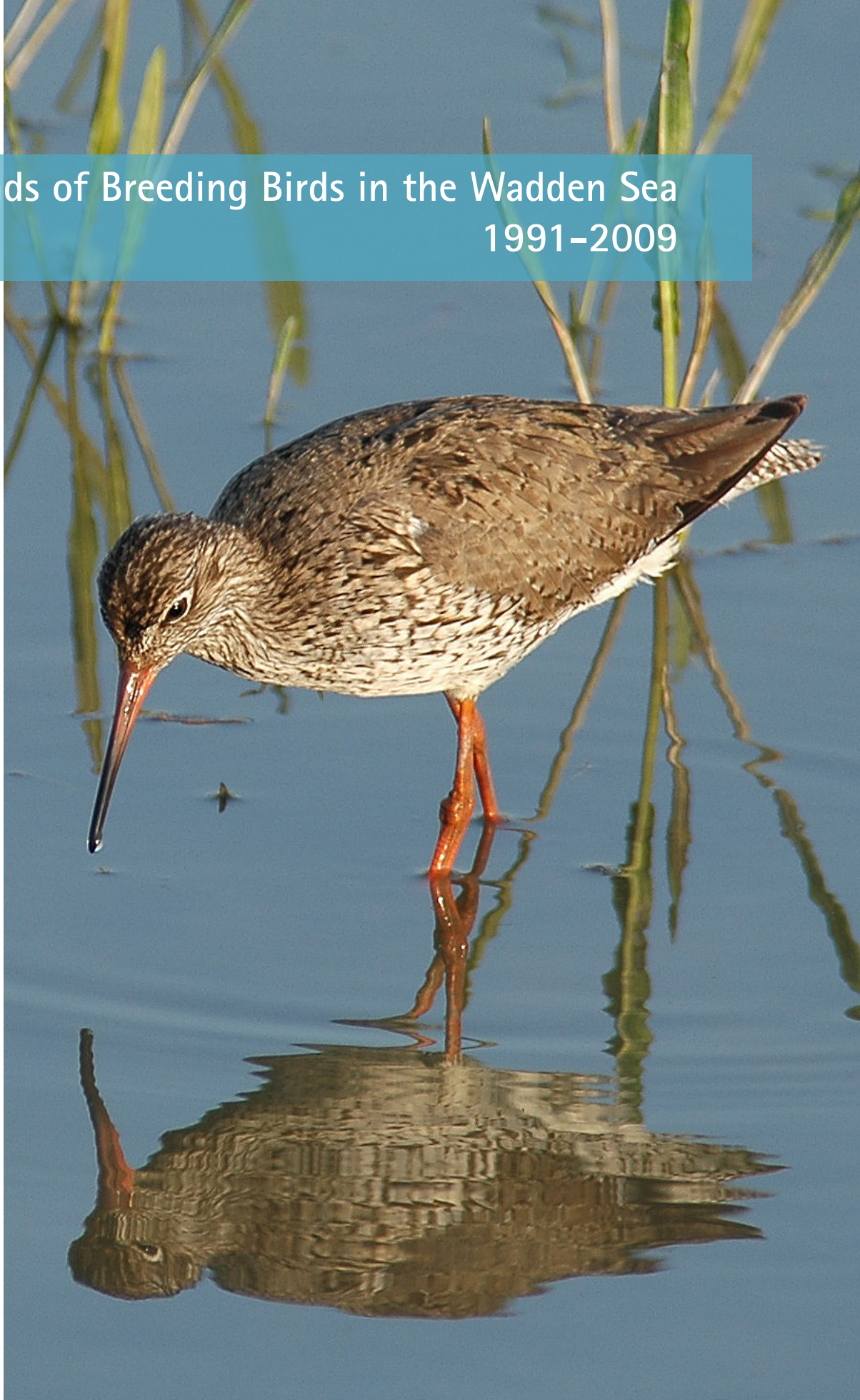


Trends of Breeding Birds in the Wadden Sea
1991–2009



WADDEN SEA ECOSYSTEM No. 32 – 2013

Progress Report 2013



Publishers

Common Wadden Sea Secretariat (CWSS), Wilhelmshaven, Germany;
Joint Monitoring Group of Breeding Birds in the Wadden Sea (JMBB).

Authors

Kees Koffijberg, SOVON Vogelonderzoek Nederland, Toernooiveld 1, NL-6503 GA Nijmegen;
Karsten Laursen, Danmarks Miljøundersøgelser / NERI, Aarhus University, Grenåvej 12,
DK 8410 Rønde;
Bernd Hälterlein, Nationalparkverwaltung Schleswig-Holsteinisches Wattenmeer, Schloßgarten 1,
D - 25832 Tönning;
Gundolf Reichert, Nationalparkverwaltung Niedersächsisches Wattenmeer, Virchowstr. 1
D - 26382 Wilhelmshaven;
John Frikke, Nationalpark Vadehavet, Havnebyvej 30,
DK - 6792 Rømø.

Title photo

Gundolf Reichert

Drawings

Niels Knudsen

Lay-out

Gerold Lüerßen

Source:

JMBB 2013. Trends of breeding birds in the Wadden Sea 1991 - 2009
www.waddensea-secretariat.org, Wilhelmshaven Germany.

Progress Report Trends of Breeding Birds in the Wadden Sea 1991 – 2009

Kees Koffijberg
Karsten Laursen
Bernd Hälterlein
Gundolf Reichert
John Frikke

Content

Introduction	5
Acknowledgements	6
Trends Overview	7
Summary of trends expressed as indicators	8
Species Account	11
Great Cormorant	13
Eurasian Spoonbill	14
Common Shelduck	15
Common Eider	16
Red-breasted Merganser	17
Hen Harrier	18
Eurasian Oystercatcher	19
Pied Avocet	20
Great Ringed Plover	21
Kentish Plover	22
Northern Lapwing	23
Black-tailed Godwit	24
Eurasian Curlew	25
Common Redshank	26
Mediterranean Gull	27
Common Black-headed Gull	28
Common Gull	29
Lesser Black-backed Gull	30
Herring Gull	31
Great Black-backed Gull	32
Gull-billed Tern	33
Sandwich Tern	34
Common Tern	35
Arctic Tern	36
Little Tern	37
Short-eared Owl	38
Total Counts Rare Species	39
References	41
Counting Units in the Wadden Sea	42
List of Census Areas	44
Species List	46

Monitoring breeding birds, the JMBB program

In addition to the 10–12 million of migratory birds, the Wadden Sea also supports large numbers of breeding birds. For several breeding bird species like eurasian spoonbill, oystercatcher, avocet, kentish plover, common redshank, lesser black-backed gull, gull-billed tern and sandwich tern, the Wadden Sea is among the most important breeding sites in Northwest-Europe. Several species are included in Annex I of the EU-Bird Directive or listed as Species of European Concern (SPEC). At national level, many Wadden Sea breeding birds represent an important share of national breeding bird populations and are listed as Red List species.

Monitoring of breeding birds in the Wadden Sea has been carried out by the Joint Monitoring Group for Breeding Birds (JMBB) in the framework of the Trilateral Monitoring and Assessment Program (TMAP) since 1991 (Fleet et al., 1994; Melter et al., 1997; Rasmussen et al., 2000; Koffijberg et al., 2006). The monitoring scheme currently focuses on 35 bird species that are considered characteristic for the Wadden Sea ecosystem. Common breeding birds (8 species) are counted annually in 103 representative census areas evenly distributed over all regions and habitats of the Wadden Sea Cooperation Area. Colonial and rare breeding birds (27 species) are difficult to survey with census areas and are counted by annual complete counts in the entire Wadden Sea. Once every 5 years, a total count of all species, including common species, is carried out (1991, 1996, 2001, 2006, interval now changed to once every 6 years). The monitoring scheme aims to assess and detect population size, distribution and population trends in Wadden Sea breeding birds. Fieldwork is standardised and carried out according to trilaterally harmonised methods (Hälterlein et al., 1995) by nearly 500 ornithologists, mainly consisting of staff of NGOs, governmental bodies, site managers and volunteers. A so-called Quality Assurance Meeting (QAM) is organised regularly to provide a platform for exchange of field experience among counters and discussion of specific counting pitfalls (e.g. Blew, 2003).

This progress report aims to present a regular update of trends in breeding bird numbers, for those species where trend calculations are possible (at the moment 26 species) and that have been monitored from 1991 onwards. Trends, methods, an overview map of census sites and important references about monitoring of breeding birds you can find here as latest version June 2011.

Methods and Acknowledgements

Introduction

As part of the JMBB program, 34 breeding birds species are monitored in the Wadden Sea, of which 26 are presented here with overall and national trends (the other species are too rare to allow trend calculations). Trends are shown for (1) the Wadden Sea as a whole, (2) The Netherlands (3) the federal states of Niedersachsen/Hamburg (Germany), (4) the federal state of Schleswig-Holstein (Germany) and (5) Denmark, see the page 'Counting sites' for an overview of counting sites.

Data and methods

For each year, data on rare and colonial birds are summarized for 56 census regions in the international Wadden Sea. Trend calculations are based on the totals of these census regions within each country or the Wadden Sea as a whole. For common species, numbers are summarised for 103 representative sample sites. Again, trends are calculated at country-level or for the whole international Wadden Sea. On few occasions where a sample plot was not counted in a certain year, data are imputed by the commonly used TRIM package (Trends and Indices in Monitoring data; Pannekoek & van Strien, 1999). Furthermore, TRIM was used to calculate trends. Trends are tested with a Wald-test for significance at $P = 0.05$, and presented as an index, where 1996 is set at 100. Thus, all indices show population changes relative to 1996. For presentation of the monitoring data, a standardized trend classification is used (similar to that in migratory birds) Fieldwork for breeding birds is carried out by a large number of people, including staff from

Table 1
Trend classification

Trend classification	Trend description	Population change
↑↑	strong increase	sign. increase of >5% per year
↑	moderate increase	sign. increase of <5% per year
→	stable	no significant population change
↓	moderate decrease	sign. decrease of <5% per year
↓↓	strong decrease	sign. decrease of >5% per year
■	uncertain	no reliable trend classification possible (mostly due to strong fluctuations)
—	data do not allow trend analysis	

Acknowledgements

NGOs and conservation agencies, local governmental bodies, volunteer bird watchers and professional bird counters. Current organisation and co-ordination for Denmark is done by the National Environmental Research Institute/University of Arhus (Kalø/Arhus), for Schleswig-Holstein by the National Park Agency 'Schleswig-Holsteinisches Wattenmeer' (Tönning), for Niedersachsen and Hamburg by the National Park Administration 'Niedersächsisches Wattenmeer' (Wilhelmshaven) and in The Netherlands by SOVON Dutch Centre for Field Ornithology (Nijmegen), commissioned by the Ministry of Agriculture, Nature and Food Quality.



Photo: Jan van de Kam

Trends Overview

Species	Long-term 19-years trend 1991 - 2009					Short-term 10-year trend 2000 - 2009				
	WS	DK	SH	Nds/ HH	NL	WS	DK	SH	Nds/ HH	NL
Great Cormorant	↑↑	—	—	↑↑	↑↑	↑↑	—	↑	→	↑↑
Eurasian Spoonbill	↑↑	—	—	↑↑	↑↑	↑↑	—	↑↑	↑↑	↑↑
Shelduck	↑	↑	↑	→	→	→	—	→	—	→
Common Eider	↓	↑	↓	↑	↓	↓	→	↓↓	→	↓
Red-breasted Merganser	↑↑	—	—	—	—	→	—	—	—	—
Hen Harrier	↓	—	—	→	↓↓	↓↓	—	—	↓	↓↓
Oystercatcher	↓	→	↓	→	↓	↓	—	↓	↓	↓
Avocet	↓	↓	→	↓	↓↓	↓	↓	→	↓	↓↓
Great Ringed Plover	↓	↓	↓	↓↓	→	↓	—	↓	↓	—
Kentish Plover	↓	↑	↓↓	↓↓	↓	↓	↓↓	—	↓↓	—
Northern Lapwing	↓	↓	↓	↓	→	↓	↓	—	↓↓	↑
Black-tailed Godwit	↓	↓	—	↓	↓	↓	↓↓	—	↓	→
Eurasian Curlew	↓	—	—	—	↓	↓	—	—	—	↓
Common Redshank	↓	→	→	↓	↓	↓	↓↓	↓	→	↓
Mediterranean Gull	↑↑	—	—	—	↑↑	—	—	—	—	—
Black-headed Gull	↓	↑	↓	↓	↓	↓	↓	↓	↓	↓
Common Gull	↑	↑	↑	↑↑	↓	↓	↓	—	—	↓
Lesser Black-backed Gull	↑↑	↑↑	↑↑	↑↑	↑↑	↑	↑↑	↑↑	↑	↑
Herring Gull	↓	↑↑	→	↓	↓	↓	↑↑	↓	↓↓	↓
Great Black-backed Gull	↑↑	—	↑↑	—	—	↑	—	—	—	—
Gull-billed Tern	↓	↓↓	—	↓	—	—	—	—	↓	—
Sandwich Tern	→	↑↑	—	—	↑	—	↑↑	—	—	—
Common Tern	↓	—	→	↓	↓	↓	↓↓	—	—	↓
Arctic Tern	↓	↓	→	→	↓	↓	↓	↓	↓	↓
Little Tern	→	↑	↓	↓	↑	↓	↓↓	↓	↓	—
Short-eared Owl	↓	—	—	→	↓	—	—	—	↓	—

↑↑ strong increase
 ↓↓ strong decrease

↑ moderate increase
 ↓ moderate decrease

→ stable
 — uncertain

— data do not allow
 trend analysis

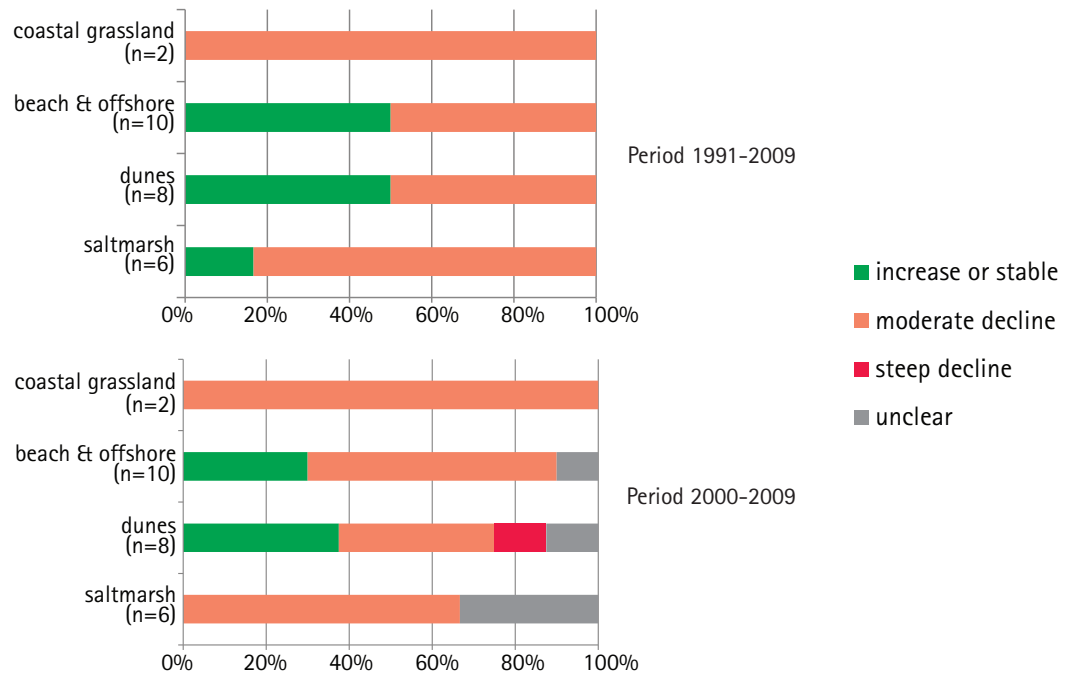
Table 2
 Trends until 2009 - The
 whole 19 and last 10 years
 time period. The species
 names in the table are
 sorted after the Euring
 Code.

Summary of trends expressed as indicators

In all habitats concerned (saltmarsh, dunes, beach & outsiders and coastal grassland) about 60% of the breeding bird species are in moderate decline. Dunes are the only habitat where steep declines occur (period 2000-2009). Among all habitats, saltmarshes have the highest proportion of declining species (>80% of all species).

declines occur (period 2000-2009). Among all habitats, saltmarshes have the highest proportion of declining species (>80% of all species).

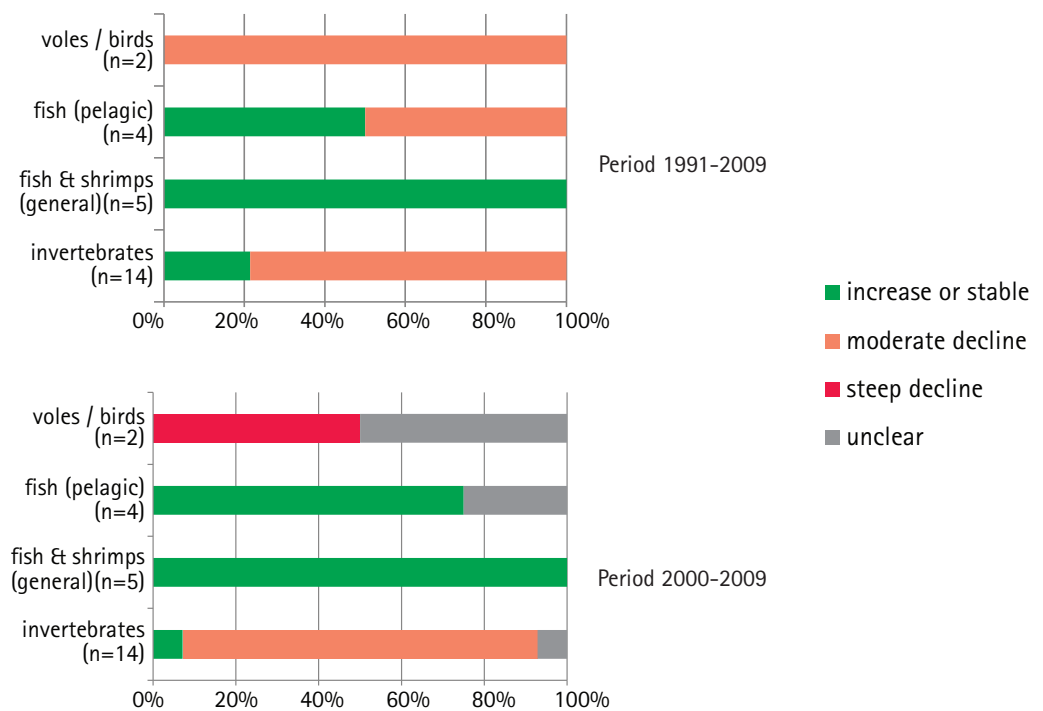
Figures 1-2
Differences in trend status in dependence of habitats for the periods 1991-2009 (left) and 2000-2009 (right)



Large differences in trend status in dependence of food choice exists. In breeding birds species depending on fish and shrimps (mainly Great Cormorant and Eurasian Spoonbill) are doing much better than species depending on invertebrates which show mixed fortunes.

Breeding birds feeding on invertebrates and showing declines can be found at saltmarshes, tidal areas and agri-cultural grasslands.

Figures 3-4
Differences in trend status in dependence of food choice for the periods 1991-2009 (left) and 2000-2009 (right)



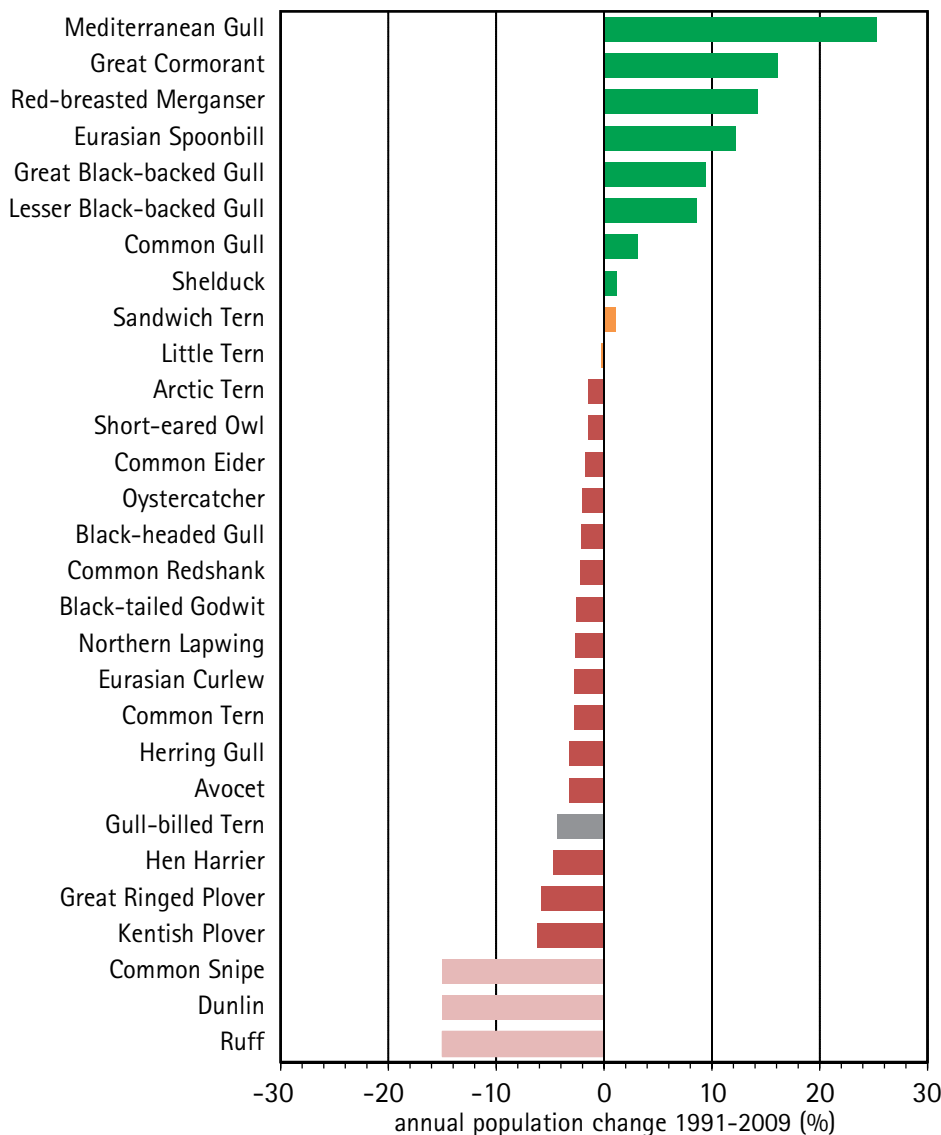
Species	Habitat			
	Saltmarsh	Dunes	Beach & outer sands	Coastal grasslands
Great Cormorant			x	
Eurasian Spoonbill			x	
Shelduck		x		
Common Eider			x	
Red-breasted Merganser			x	
Hen Harrier		x		
Eurasian Oystercatcher	x			
Pied Avocet	x			
Great Ringed Plover			x	
Kentish Plover			x	
Northern Lapwing				x
Black-tailed Godwit				x
Eurasian Curlew		x		
Common Redshank	x			
Mediterranean Gull	x			
Common Black-headed Gull	x			
Common Gull		x		
Lesser Black-backed Gull		x		
Herring Gull		x		
Great Black-backed Gull		x		
Gull-billed Tern	x			
Sandwich Tern			x	
Common Tern			x	
Arctic Tern			x	
Little Tern			x	
Short-eared Owl		x		
Total number of species	6	8	11	2

Table 3
Selection of species according to habitat.

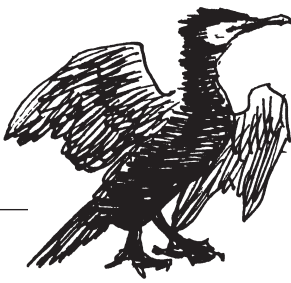
Species	Food			
	Invertebrates	fish & shrimps (general)	fish (pelagic)	voles/birds
Great Cormorant		x		
Eurasian Spoonbill		x		
Shelduck	x			
Common Eider	x			
Red-breasted Merganser		x		
Hen Harrier				x
Eurasian Oystercatcher	x			
Pied Avocet	x			
Great Ringed Plover	x			
Kentish Plover	x			
Northern Lapwing	x			
Black-tailed Godwit	x			
Eurasian Curlew	x			
Common Redshank	x			
Mediterranean Gull	x			
Common Black-headed Gull	x			
Common Gull	x			
Lesser Black-backed Gull		x		
Herring Gull	x			
Great Black-backed Gull		x		
Gull-billed Tern				
Sandwich Tern			x	
Common Tern			x	
Arctic Tern			x	
Little Tern			x	
Short-eared Owl				x
Total number of species	14	6	4	2

Table 4
Selection of species according to food guild.

Figure 5
Summary of trends in breeding birds in the Wadden Sea 1991-2009. Shown is the mean annual population change in %, ranked from increasing species (top) to decreasing species (bottom), and based on the output of the TRIM-analysis. Dunlin, Ruff and Common Snipe have become so rare that their annual decline was arbitrarily set at -15%.



A summary of trends for all species for which trends could be calculated (29 out of the 35 monitored species) shows that 15 species have significantly decreased since 1991, among them typical Wadden Sea breeders such as Kentish Plover, Great Ringed Plover, Hen Harrier, Avocet, Common Tern, Common Redshank, Oystercatcher and Common Eider. Dunlin, Ruff and Common Snipe already went down before the monitoring in the Wadden Sea started, and meanwhile have become so rare and scattered breeders that an analysis of their trend after 1991 is not possible. Among the thriving species are mainly colonial breeding birds, like Mediterranean Gull (a 'new' species that is currently expanding its breeding range), Great Cormorant, Eurasian Spoonbill, Great Black-backed Gull and Lesser Black-backed Gull.



Great Cormorant

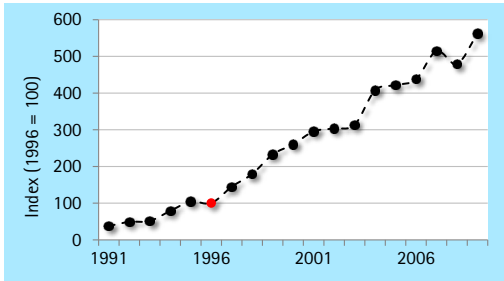
Phalacrocorax carbo

00720

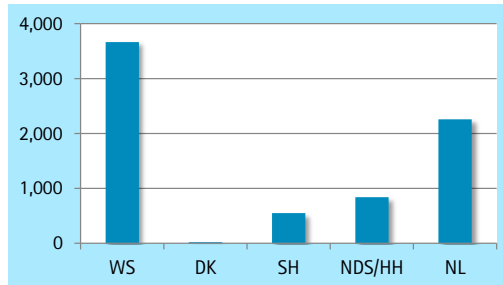
DK: Skarv

D: Kormoran

NL: Aalscholver



(A) Overall trend in the International Wadden Sea

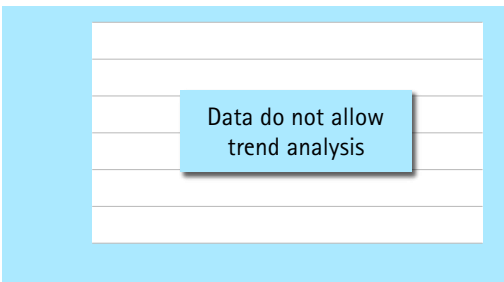


Figures 6-7
The left figure represent the trend of Great Cormorant in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.

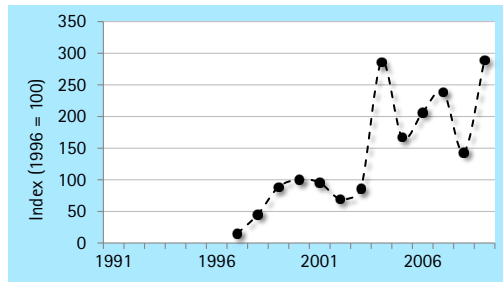
The right figure shows the total count of Great Cormorant in the international Wadden Sea and in the countries in 2006.

Explanatory Note

Great Cormorant although only a small part of the NW-European population is breeding in the Wadden Sea, the species is still increasing. This is in contrast with numbers outside the breeding season, which mainly originate from the large inland colonies, where numbers tend to stabilize. Recent developments in Niedersachsen, however, also show declines in breeding numbers. The Netherlands and Niedersachsen support the largest colonies. Schleswig-Holstein (1997) and Denmark (2003) were colonized later on. Nearly all colonies are situated at islands or artificial offshore structures (platforms, etc.).

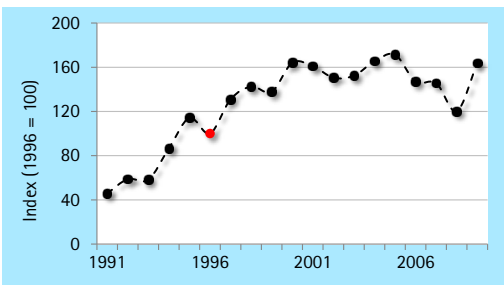


(B) Denmark

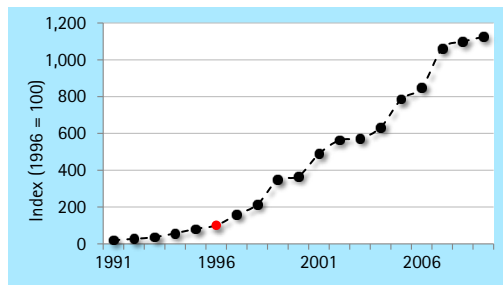


(C) Schleswig-Holstein

Figures 8-11
The figures represent the trends of Great Cormorant in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



(D) Niedersachsen/Hamburg



(E) The Netherlands

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis

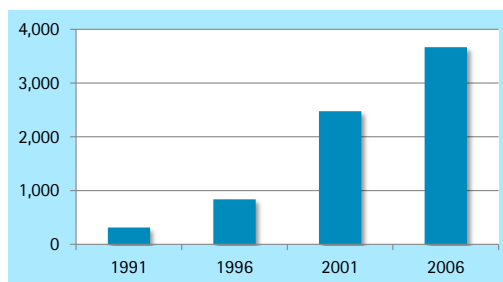
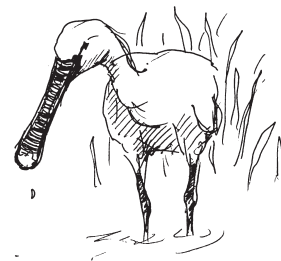


Figure 12
Total counts of Great Cormorant in the international Wadden Sea.



Eurasian Spoonbill

01440

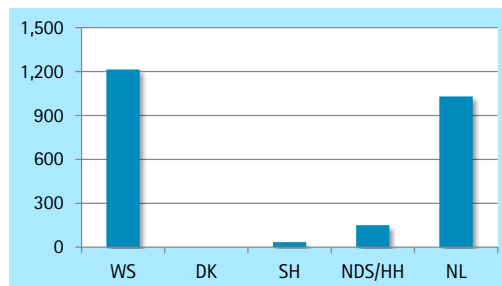
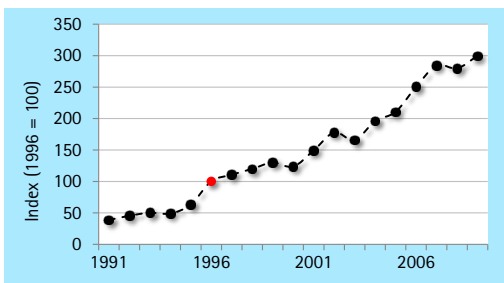
Platalea leucorodia

DK: Skkestork

D: Löffler

NL: Lepelaar

Figures 13-14
The left figure represent the trend of Eurasian Spoonbill in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Eurasian Spoonbill in the international Wadden Sea and in the countries in 2006.

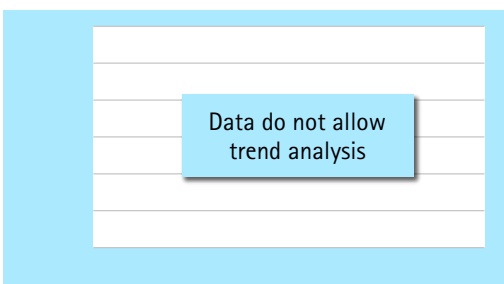


(A) Overall trend in the International Wadden Sea

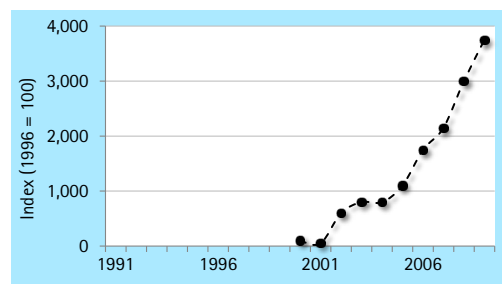
Explanatory Note

In line with the numbers outside the breeding season, Eurasian Spoonbill experienced strong increase in all parts of the Wadden Sea. Since the area was initially colonized from The Netherlands, highest numbers still breed west of the River Elbe. Schleswig-Holstein was colonised in 2000, Denmark in 2007. Further increases are expected, although in The Netherlands also signs of saturation appear. Colonies are mainly found at the islands, both in dune areas and on salt marshes.

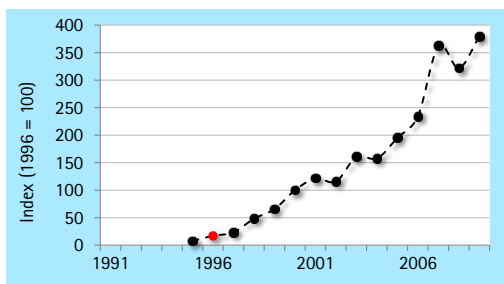
Figures 15-18
The figures represent the trends of Eurasian Spoonbill in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



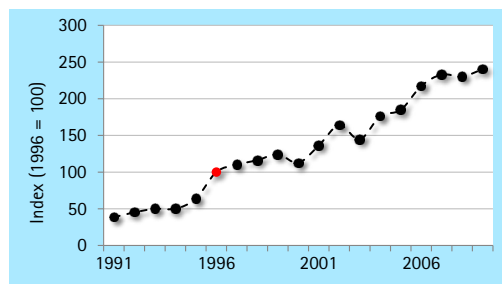
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

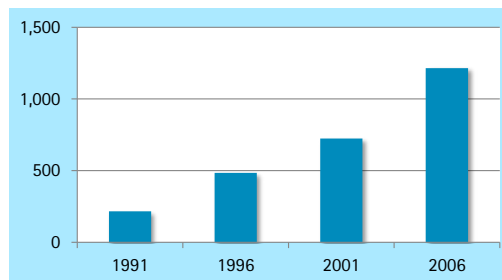


(E) The Netherlands

Figure 19 (right)
Total counts of Eurasian Spoonbill in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis





Common Shelduck

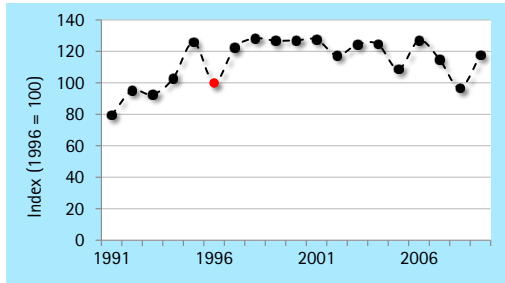
Tadorna tadorna

01730

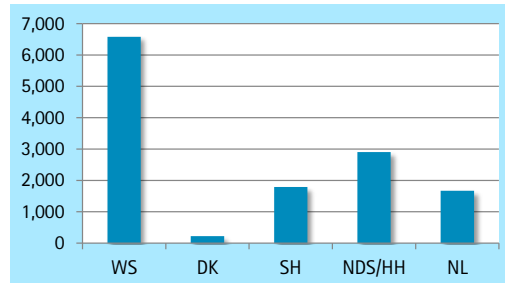
DK: Gravand

D: Brandgans

NL: Bergeend



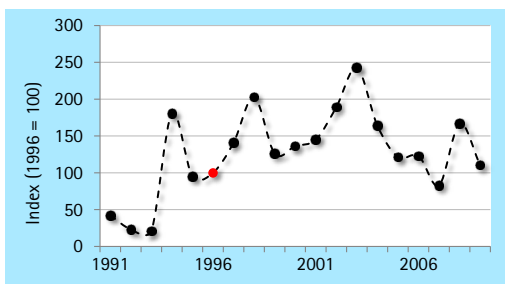
(A) Overall trend in the International Wadden Sea



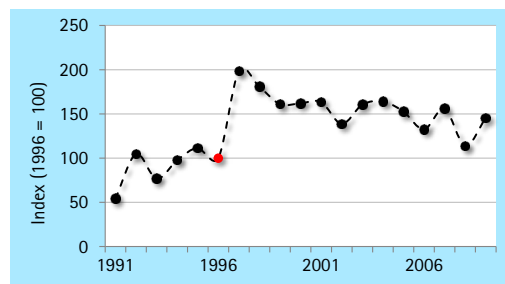
Figures 20-21
The left figure represent the trend of Common Shelduck in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Common Shelduck in the international Wadden Sea and in the countries in 2006.

Explanatory Note

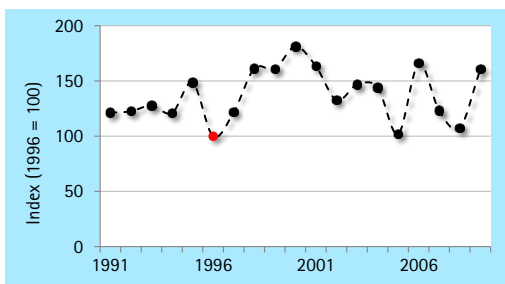
Overall numbers of Common Shelduck have remained stable over the years. In Schleswig-Holstein and Denmark, the species has increased. Especially in Niedersachsen and The Netherlands, recent numbers suggest a decline, but further monitoring is necessary to confirm this. Shelduck is also a notorious difficult species to monitor due to large numbers of non-breeders and the large distances parents move with their offspring. Hence some fluctuations are probably due to census problems. The species is mainly breeding in rabbit holes (dunes areas) and in e.g. deserted buildings (mainland).



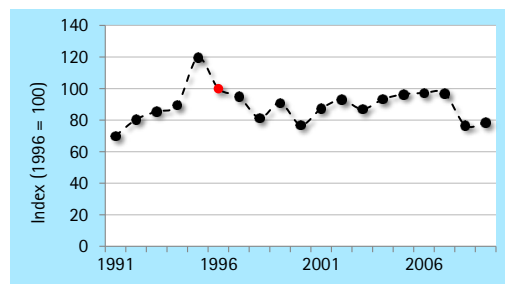
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg



(E) The Netherlands

Figures 22-25
The figures represent the trends of Common Shelduck in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis

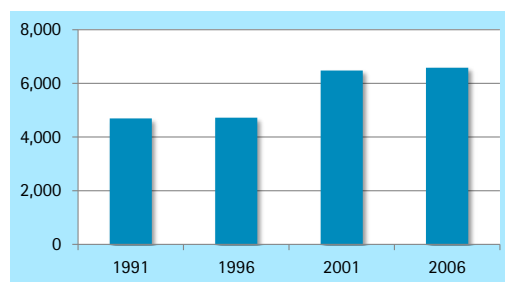
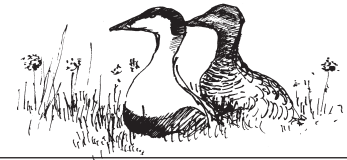


Figure 26
Total counts of Common Shelduck in the international Wadden Sea.



Common Eider

02060

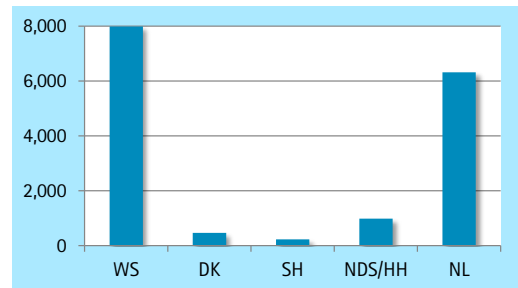
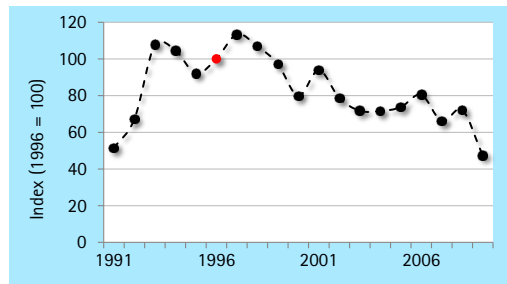
Somateria mollissima

DK: Ederfugl

D: Eiderente

NL: Eidereend

Figures 27-28
The left figure represent the trend of Common Eider in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Common Eider in the international Wadden Sea and in the countries in 2006.

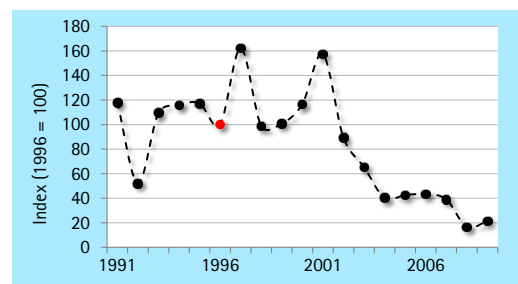
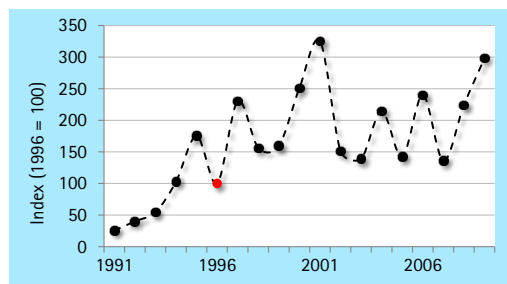


(A) Overall trend in the International Wadden Sea

Explanatory Note

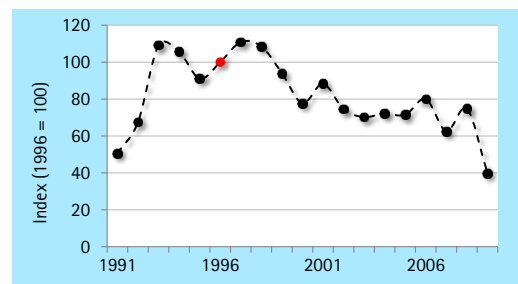
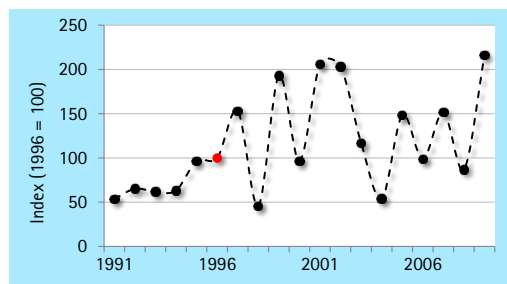
The trend in Common Eider is dominated by The Netherlands, where largest part of the Wadden Sea population is breeding. Nests are mainly found in dune areas. The downward trend observed here from the late 1990s onwards was preceded by mass-starvation among wintering Eiders in 1999/2000 and attributed to depletion of mussel stocks by shellfish fisheries. Small populations in the Danish and Niedersachsen part of the Wadden Sea fluctuate from year to year, but point at an increase. As the species is difficult to monitor due to its breeding behaviour, some fluctuations might also reflect census problems.

Figures 29-32
The figures represent the trends of Common Eider in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



(B) Denmark

(C) Schleswig-Holstein



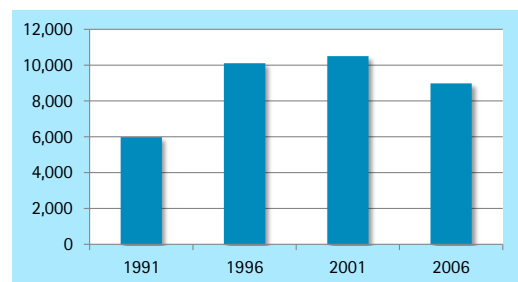
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 33 (right)
Total counts of Common Eider in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		↑	→
(D) Schleswig-Holstein		↓	↓↓
(E) Niedersachsen/Hamburg		↑	→
(F) The Netherlands		↓	↓

↑ strong increase
 ↓ moderate decrease
 ↑ moderate increase
 → stable
 — uncertain
 — data do not allow trend analysis

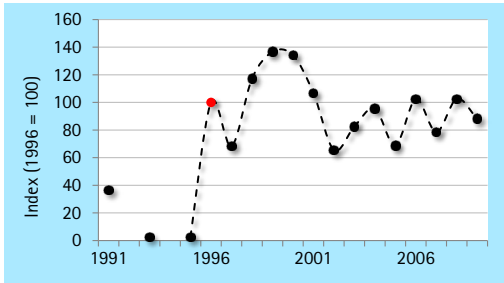


Red-breasted Merganser

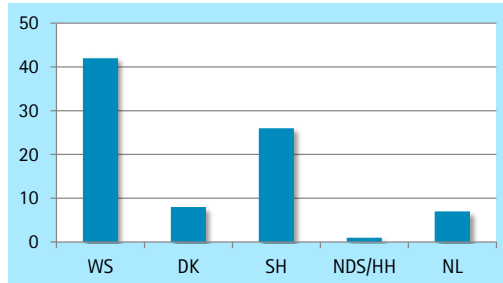
Mergus serrator

02210

DK: Toppet Skallesluger D: Mittelsäger NL: Middelste Zaagbek



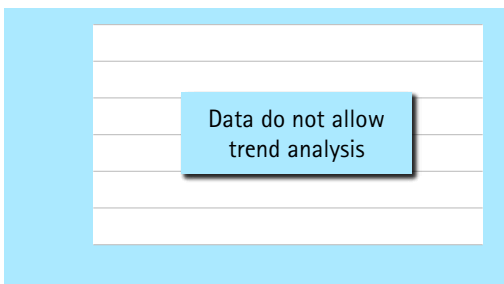
(A) Overall trend in the International Wadden Sea



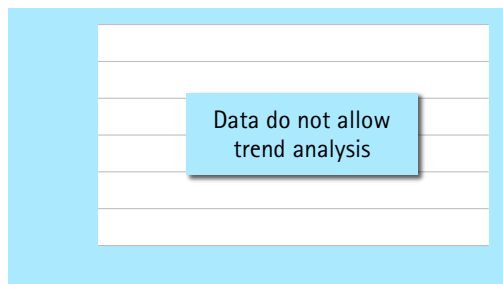
Figures 34-35
The left figure represent the trend of Red-breasted Merganser in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis. The right figure shows the total count of Red-breasted Merganser in the international Wadden Sea and in the countries in 2006.

Explanatory Note

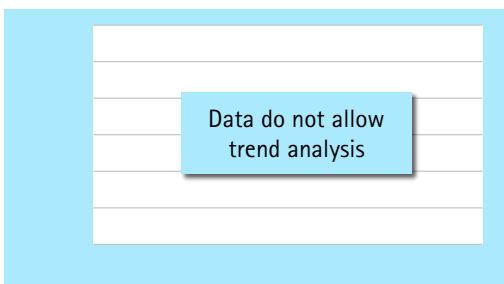
Red-breasted Merganser is only breeding in small numbers in the Wadden Sea, where it reaches the southern edge of its breeding range. Numbers fluctuate, but have increased over a longer term. Core breeding areas are situated in Schleswig-Holstein. In other parts of the Wadden Sea it is an accidental breeder.



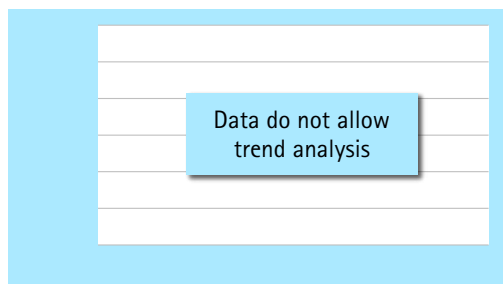
(B) Denmark



(C) Schleswig-Holstein



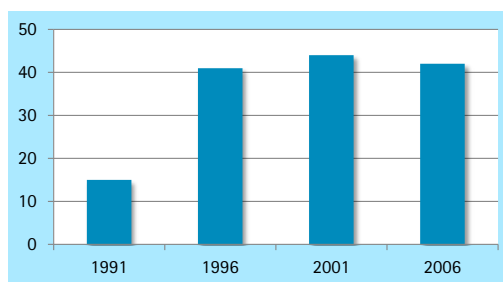
(D) Niedersachsen/Hamburg



(E) The Netherlands

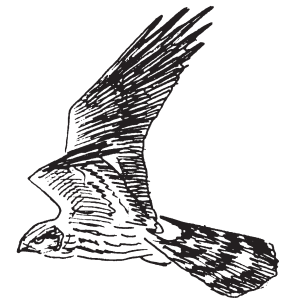
Area	Period	1991 - 2009	2000 - 2009
(A)/(B) International Wadden Sea		↑↑	→
(C) Denmark		—	—
(D) Schleswig-Holstein		—	—
(E) Niedersachsen/Hamburg		—	—
(F) The Netherlands		—	—

↑↑ strong increase ↓↓ strong decrease ↑ moderate increase
 ↓ moderate decrease → stable — uncertain — data do not allow trend analysis



Figures 36-39
The data about Red-breasted Merganser allow no trend analysis in the countries.

Figure 40
Total counts of Red-breasted Merganser in the international Wadden Sea.



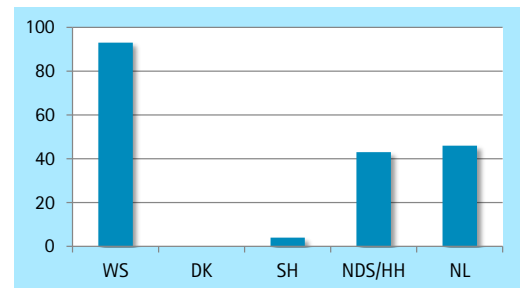
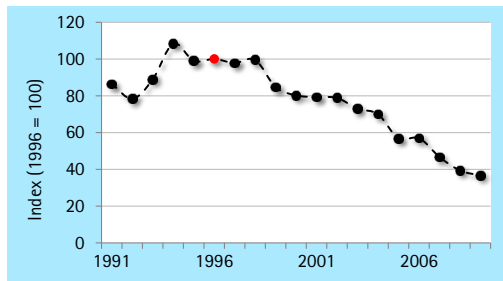
Hen Harrier

02610

Circus cyaneus

DK: Blå Kærhøg D: Kornweihe NL: Blauwe Kiekendief

Figures 41-42
The left figure represent the trend of Hen Harrier in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Hen Harrier in the international Wadden Sea and in the countries in 2006.

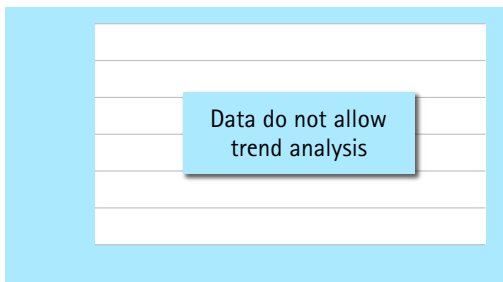


(A) Overall trend in the International Wadden Sea

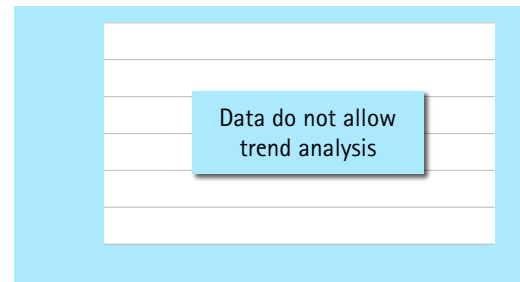
Explanatory Note

Breeding in Hen Harrier is restricted to The Netherlands and Niedersachsen, where it mainly inhabits the dune areas on the islands. In The Netherlands an ongoing decline has been observed from 1994 onwards. In Niedersachsen the species initially was able to maintain a high population level (resulting in an overall increase). However, recently, numbers are also going down here. A collaborative ringing programme and research on feeding ecology has been set up in both countries to unravel backgrounds for the decline.

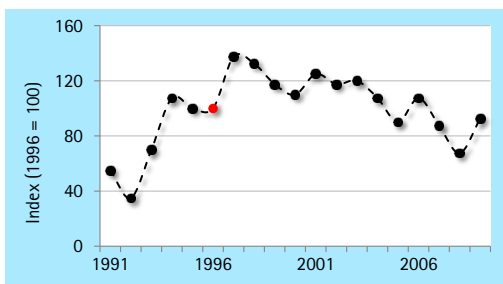
Figures 43-46
The figures represent the trends of Hen Harrier in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



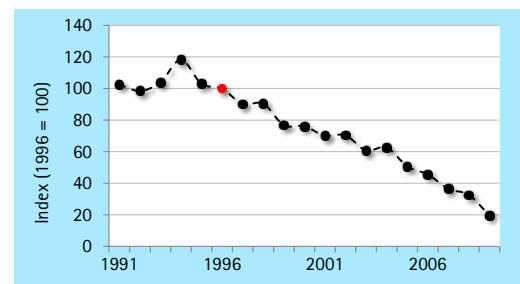
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

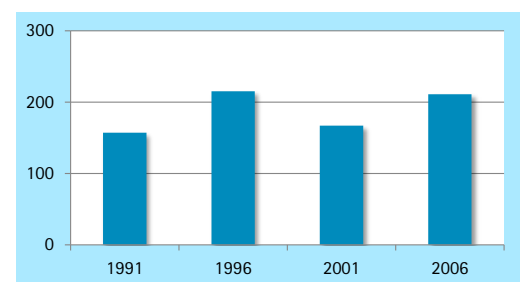


(E) The Netherlands

Figure 47 (right)
Total counts of Hen Harrier in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(A)/(B) International Wadden Sea		↓ ↓	↓ ↓ ↓
(C) Denmark		—	—
(D) Schleswig-Holstein		—	—
(E) Niedersachsen/Hamburg		↘	↓ ↓
(F) The Netherlands		↓ ↓ ↓	↓ ↓ ↓

↑ strong increase
 ↓ moderate decrease
 ↑ moderate increase
 ↘ stable
 — uncertain
 — data do not allow trend analysis





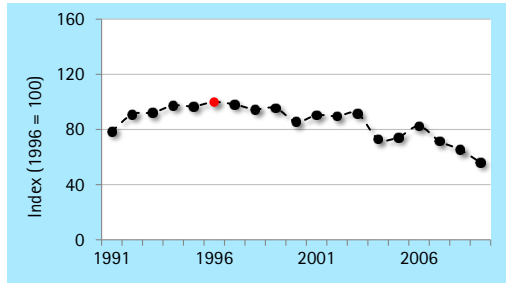
Eurasian Oystercatcher

Haematopus ostralegus

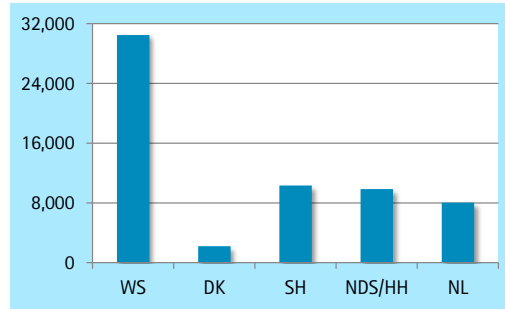
04500

DK: Strandskade

D: Austernfischer NL: Scholekster



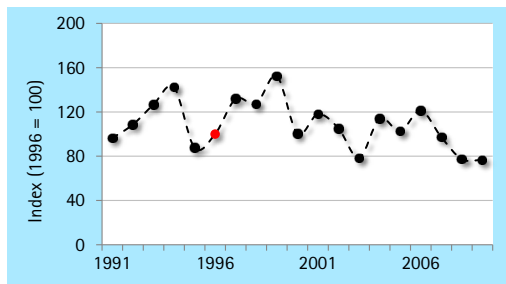
(A) Overall trend in the International Wadden Sea



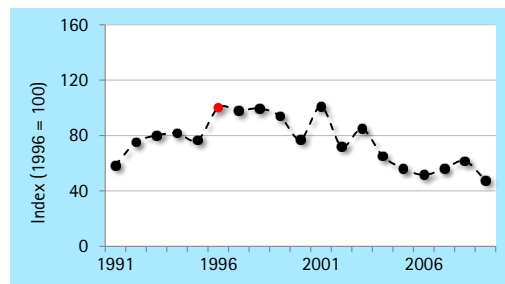
Figures 48–49
The left figure represent the trend of Eurasian Oystercatcher in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis. The right figure shows the total count of Eurasian Oystercatcher in the international Wadden Sea and in the countries in 2006.

Explanatory Note

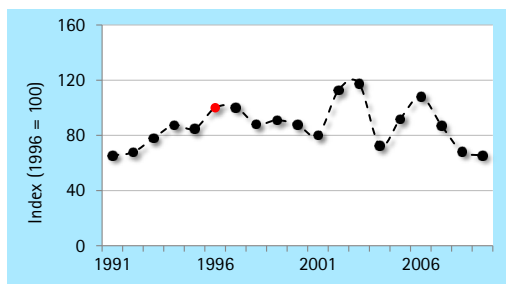
Oystercatcher is one of the most abundant breeding birds in the Wadden Sea and a large proportion of the NW-European breeding population can be found here. Long term trends point at declines, especially in The Netherlands and Schleswig-Holstein (other sections have shown stable numbers so far). The decline was initiated by the cold winter 1995/96 and low food stocks, as a result of depletion mainly by shellfish fisheries in the 1990s (in The Netherlands). Although fishery regulations meanwhile have changed, a population recovery has not occurred so far. Research has shown that the species has suffered from increased storm tides in the breeding season. Results from the new parameter breeding success point at ongoing low reproduction rates in large parts of the Wadden Sea, suggesting further declines in near future.



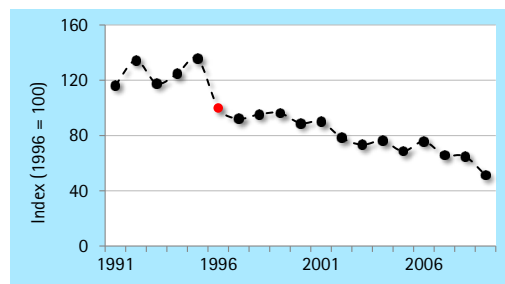
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg



(E) The Netherlands

Figures 50–53
The figures represent the trends of Eurasian Oystercatcher in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis

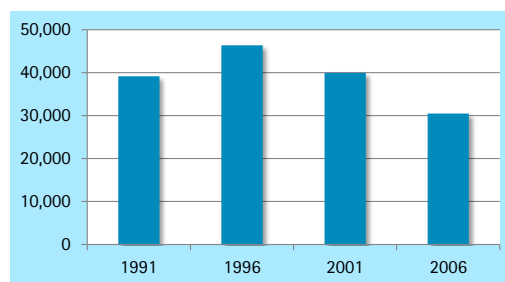
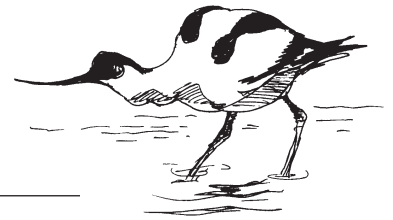


Figure 54
Total counts of Eurasian Oystercatcher in the international Wadden Sea.



Pied Avocet

04560

Recurvirostra avosetta

DK: Klyde

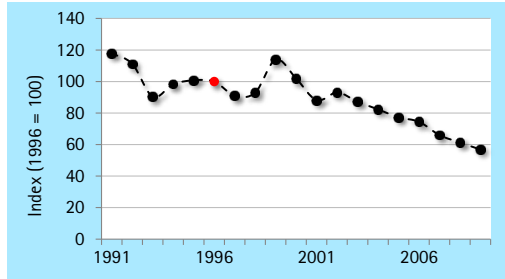
D: Säbelschnäbler

NL: Kluut

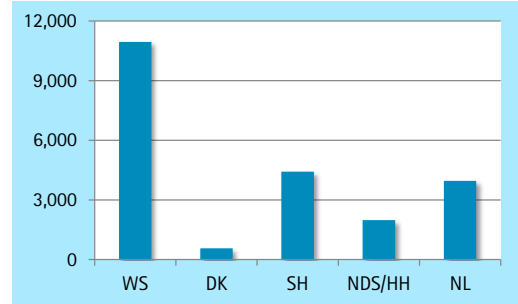
Figures 55-56

The left figure represent the trend of Pied Avocet in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.

The right figure shows the total count of Pied Avocet in the international Wadden Sea and in the countries in 2006.



(A) Overall trend in the International Wadden Sea

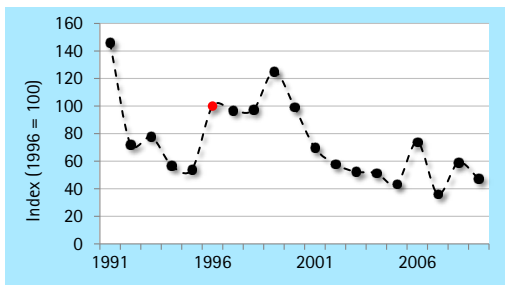


Explanatory Note

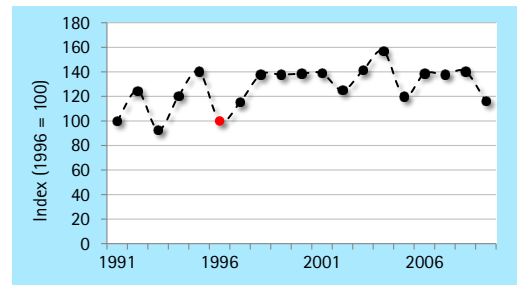
Avocet is one of the prime breeding bird species in the Wadden Sea, supporting a large share of the NW-European breeding population. The overall population shows a decline from 1999 onwards, being most pronounced in The Netherlands and Niedersachsen. In Schleswig-Holstein on the other hand, numbers have remained stable, whereas in Denmark initial declines has partly been reversed recently (resulting in a fluctuating trend). Due to its preference for silty mud flats, Avocet mainly breed on the mainland coast, where they locally suffer from high predation rates by mammalian predators. Besides, the species is susceptible to cold and stormy weather in the chick-rearing period in May and June, affecting chick survival.

Figures 57-60

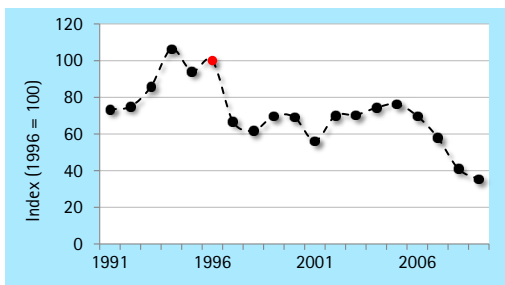
The figures represent the trends of Pied Avocet in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



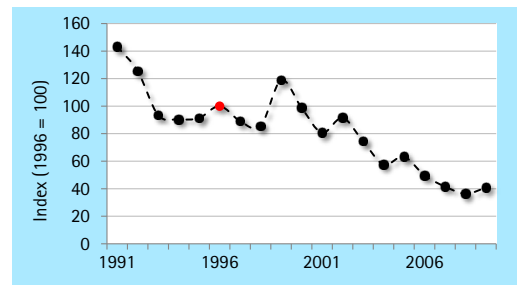
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

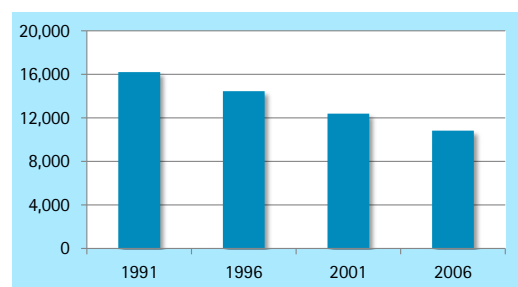


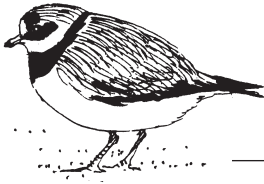
(E) The Netherlands

Figure 61 (right)
Total counts of Pied Avocet in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		↓	↓
(D) Schleswig-Holstein		↔	↔
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↓↓	↓↓

↑ strong increase
 ↓ moderate decrease
 ↑ moderate increase
 ↔ stable
 — uncertain
 — data do not allow trend analysis



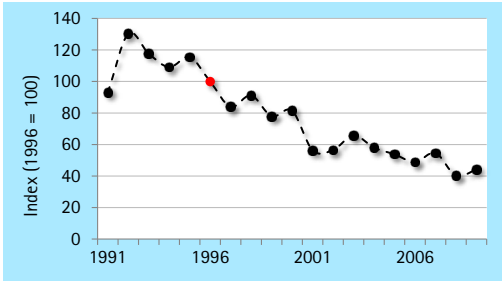


Great Ringed Plover

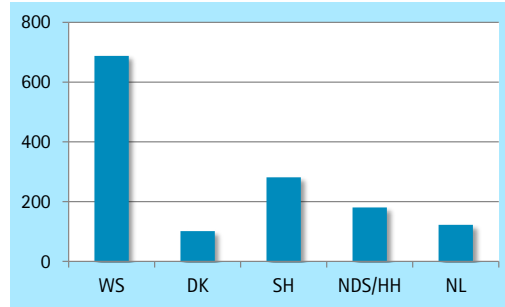
Charadrius hiaticula

04700

DK: Stor Præstekrave D: Sandregenpfeifer NL: Bontbekplevier



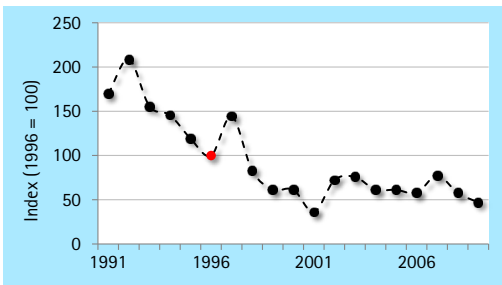
(A) Overall trend in the International Wadden Sea



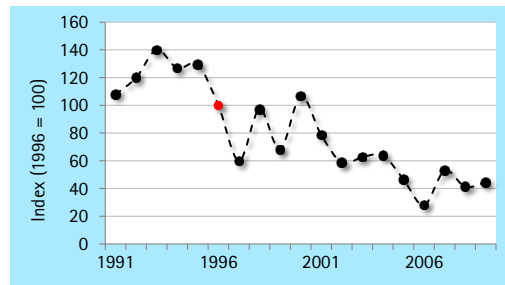
Figures 62-63
The left figure represent the trend of Great Ringed Plover in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Great Ringed Plover in the international Wadden Sea and in the countries in 2006.

Explanatory Note

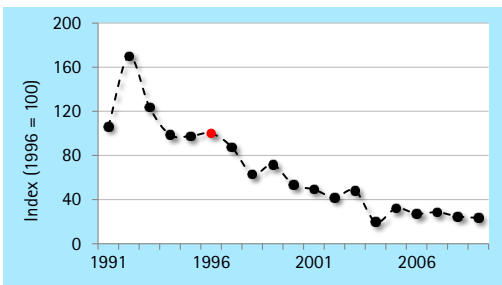
Great Ringed Plover is among the most declining breeding bird species in the Wadden Sea, notably in Denmark, Schleswig-Holstein and Niedersachsen. In The Netherlands the trend has remained stable, although recent numbers are on a lower level than in the 1990s and tend to go down recently. The decline in the Wadden Sea coincides with declines elsewhere in the breeding range. In the Wadden Sea, losses have been often attributed to disturbance and reduced habitat dynamics on the preferred breeding sites at the beaches and lower dunes.



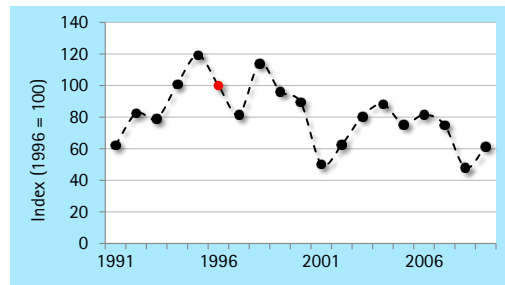
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg



(E) The Netherlands

Area	Period	1991 - 2009	2000 - 2009
(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
 — data do not allow trend analysis

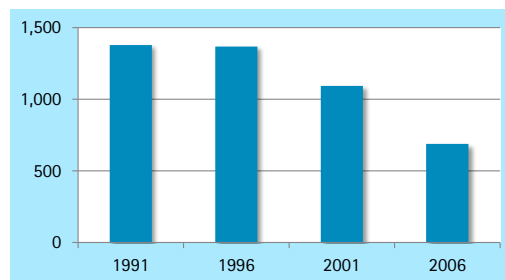
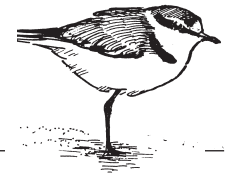


Figure 68
Total counts of Great Ringed Plover in the international Wadden Sea.



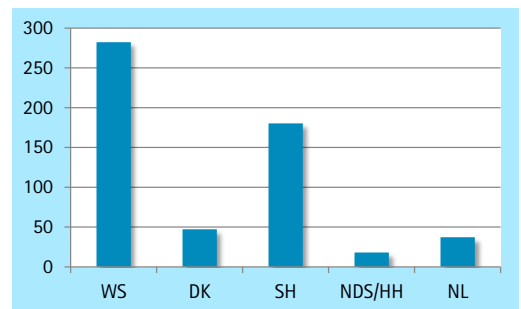
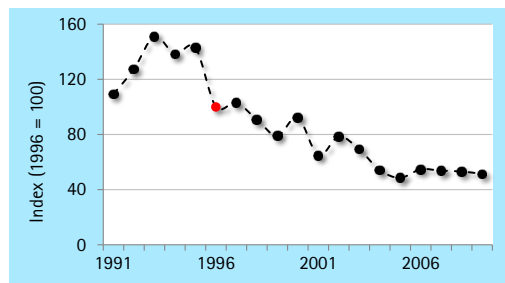
Kentish Plover

04770

Charadrius alexandrinus

DK: Hvidbrystet Præstekrave D: Seeregenpfeifer NL: Strandplevier

Figures 69–70
The left figure represent the trend of Kentish Plover in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Kentish Plover in the international Wadden Sea and in the countries in 2006.

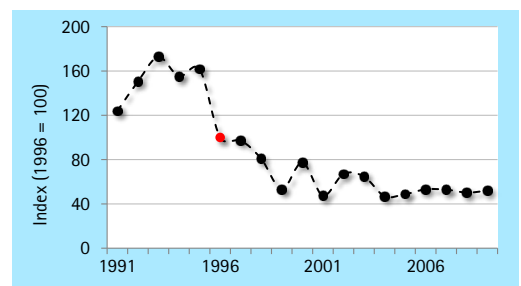
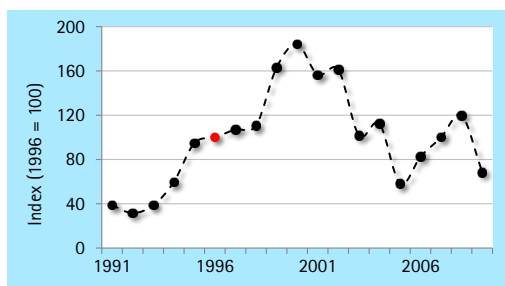


(A) Overall trend in the International Wadden Sea

Explanatory Note

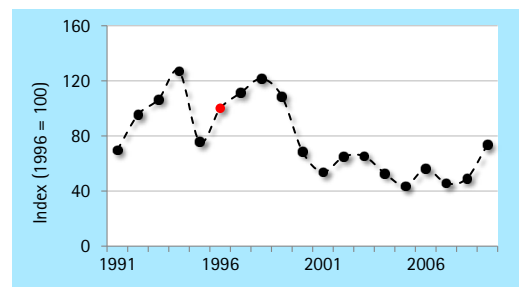
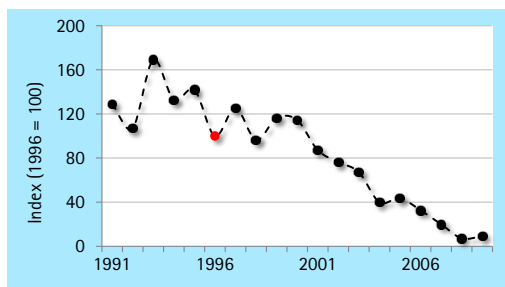
The Wadden Sea represents the core breeding area for Kentish Plovers in NW-Europe. Ongoing declines have been observed from the mid 1990s onwards. Only in Denmark, the species is still thriving at islands like Rømø. The decline in other parts of the Wadden Sea seems to level off recently, but this has to be confirmed by future monitoring. Declines have not only been reported in the Wadden Sea, but also elsewhere in the breeding range. In the Wadden Sea, the species has faced limited habitat dynamics in coastal habitats (beaches and lower dunes) and increased disturbance by tourism.

Figures 71–74
The figures represent the trends of Kentish Plover in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



(B) Denmark

(C) Schleswig-Holstein



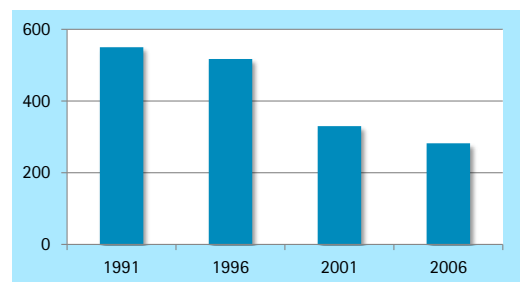
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 75 (right)
Total counts of Kentish Plover in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		↑	↓ ↓
(D) Schleswig-Holstein		↓ ↓	—
(E) Niedersachsen/Hamburg		↓ ↓	↓ ↓
(F) The Netherlands		↓	—

↑ strong increase
 ↓ moderate decrease
 ↓ strong decrease
 ↑ moderate increase
 → stable
 — uncertain
 — data do not allow trend analysis





Northern Lapwing

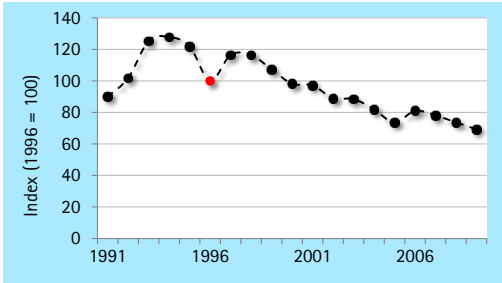
Vanellus vanellus

04930

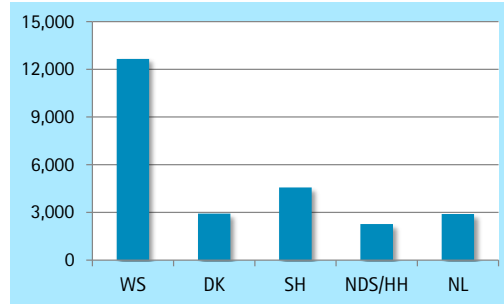
DK: Vibe

D: Kiebitz

NL: Kievit

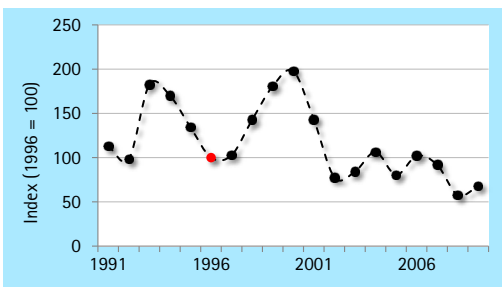


(A) Overall trend in the International Wadden Sea

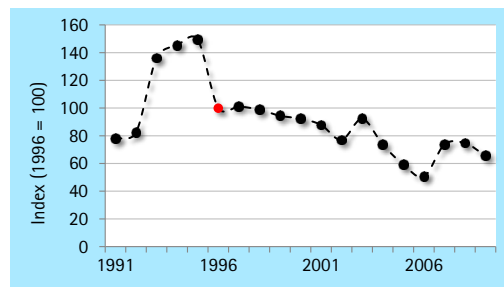


Explanatory Note

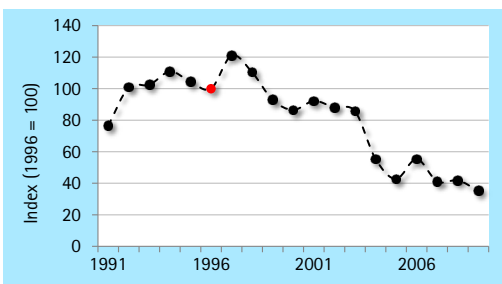
In line with many inland sites, trends in Northern Lapwing have undergone declines in all parts of the Wadden Sea. Nevertheless, the species is still widely distributed and prefers improved grasslands behind the seawall and salt marshes with short swards (often associated with agricultural use) to breed.



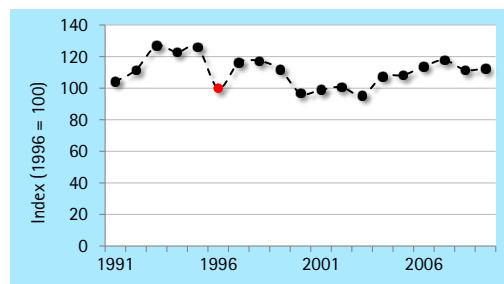
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg



(E) The Netherlands

Area	Period	1991 - 2009	2000 - 2009
(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
 — data do not allow trend analysis

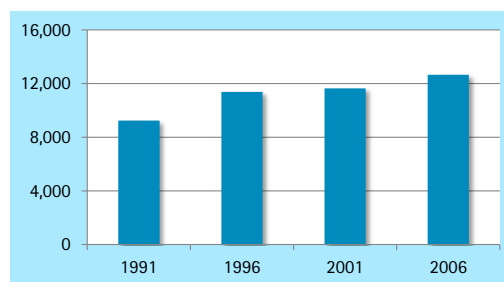


Figure 82
Total counts of Northern Lapwing in the international Wadden Sea.

Figures 76-77
The left figure represent the trend of Northern Lapwing in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Northern Lapwing in the international Wadden Sea and in the countries in 2006.

Figures 78-81
The figures represent the trends of Northern Lapwing in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.

Black-tailed Godwit

05320

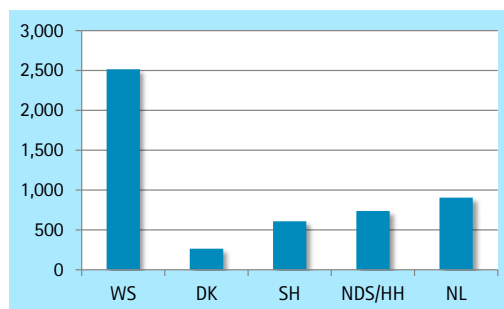
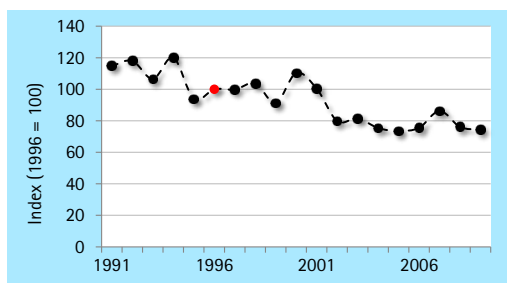
Limosa limosa

DK: Stor Kobbersneppe

D: Uferschnepfe

NL: Grutto

Figures 83-84
The left figure represent the trend of Black-tailed Godwit in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Black-tailed Godwit in the international Wadden Sea and in the countries in 2006.

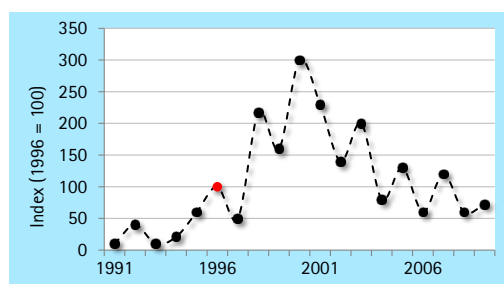
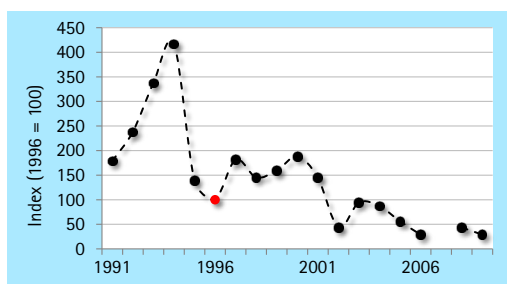


(A) Overall trend in the International Wadden Sea

Explanatory Note

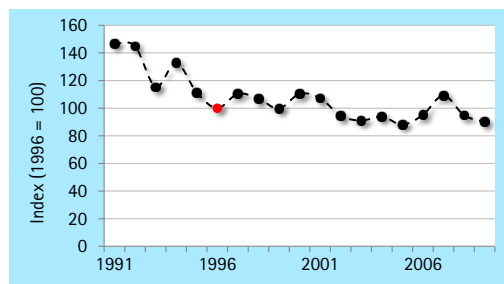
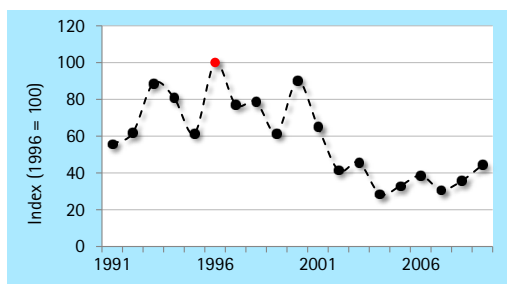
Breeding Black-tailed Godwit in the Wadden Sea are mainly found in coastal grasslands behind the seawall, coastal wetlands, summer-polders and salt marshes. Numbers have gone down in all parts of the area, most pronounced in Denmark and Niedersachsen. Predation pressure and increased agricultural practices are among the most important causes for the observed trends.

Figures 85-88
The figures represent the trends of Black-tailed Godwit in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



(B) Denmark

(C) Schleswig-Holstein



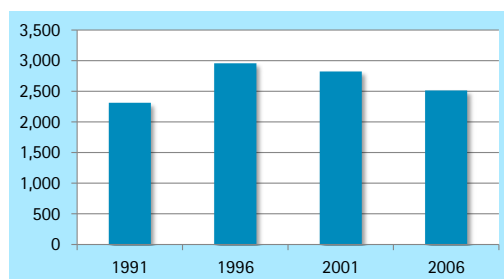
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 89 (right)
Total counts of Black-tailed Godwit in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis



Eurasian Curlew

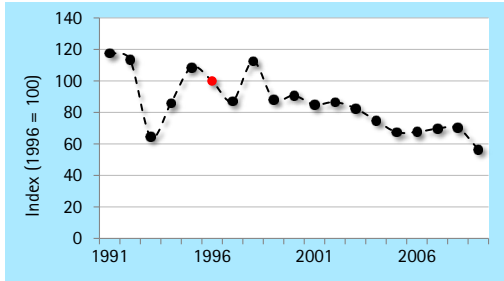
Numenius arquata

05410

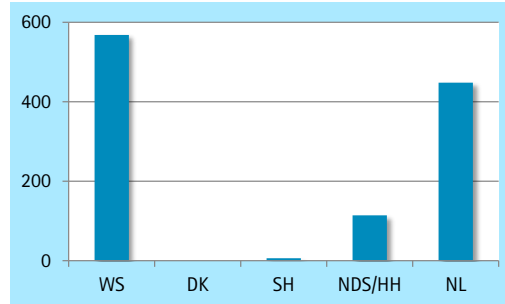
DK: Stor Regnspove

D: GroÙer Brachvogel

NL: Wulp



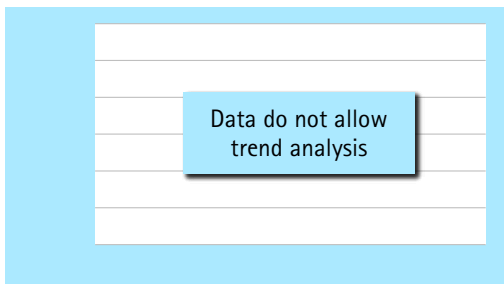
(A) Overall trend in the International Wadden Sea



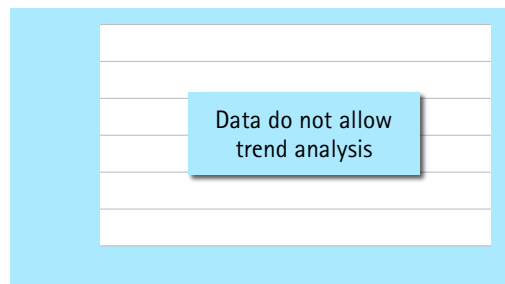
Figures 90-91
The left figure represent the trend of Eurasian Curlew in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Eurasian Curlew in the international Wadden Sea and in the countries in 2006.

Explanatory Note

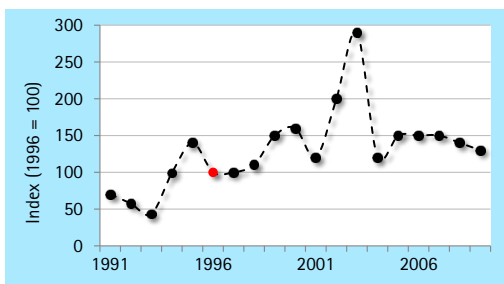
Eurasian Curlew is a typical dune-breeding species in the Wadden Sea. Hence, it is mainly confined to the islands, especially those west of the River Elbe. The species is in decline, mainly due to losses in The Netherlands, where highest densities occur. This development has been attributed to vegetation succession in coastal dunes and negative impact of outdoor recreation. At the same time, birds have shifted from coastal dunes, to agricultural areas inland.



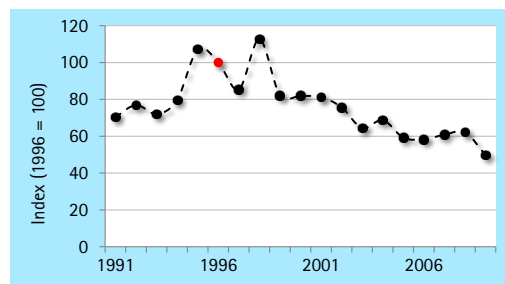
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg



(E) The Netherlands

Figures 92-95
The figures represent the trends of Eurasian Curlew in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.

Area	Period	1991 - 2009	2000 - 2009
(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
 — data do not allow trend analysis

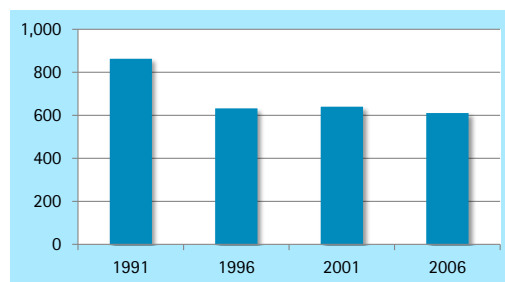


Figure 96
Total counts of Eurasian Curlew in the international Wadden Sea.

Common Redshank

05460

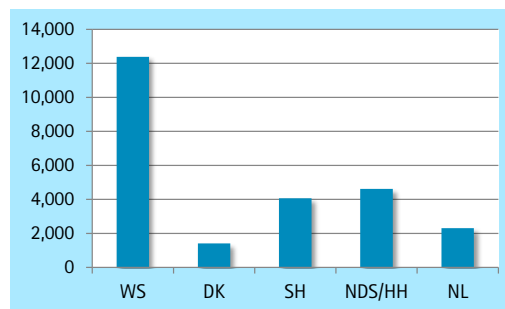
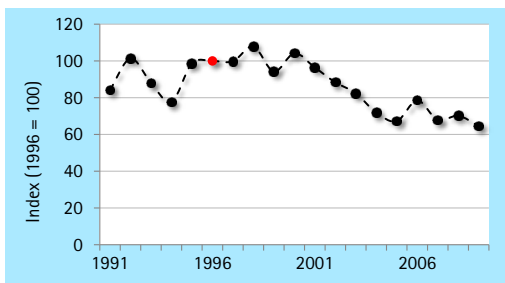
Tringa totanus

DK: Rødben

D: Rotschenkel

NL: Tureluur

Figures 97-98
The left figure represent the trend of Common Redshank in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis. The right figure shows the total count of Common Redshank in the international Wadden Sea and in the countries in 2006.

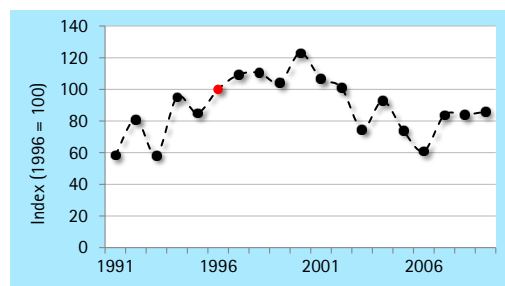
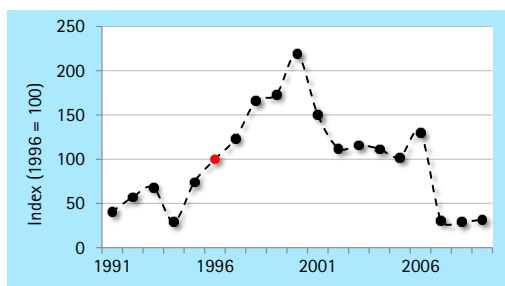


(A) Overall trend in the International Wadden Sea

Explanatory Note

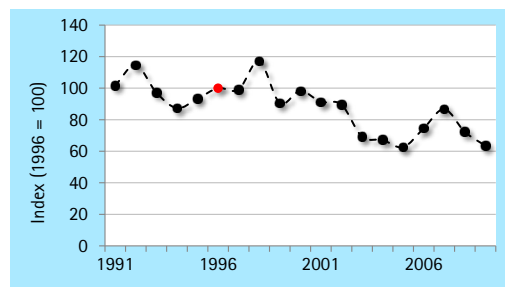
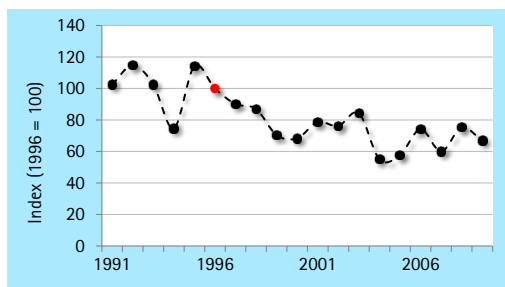
Common Redshank preferably breed in salt marsh areas with tall vegetation. The species has experienced declines from the late 1990s onwards, resulting in an overall negative trend. This is mainly due to lower numbers in The Netherlands and Niedersachsen, whereas in Denmark and Schleswig-Holstein trends have remained stable over the years. Recent counts in Niedersachsen and The Netherlands point at a partial population recovery, but future counts have to confirm if this development is sustaining.

Figures 99-102
The figures represent the trends of Common Redshank in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



(B) Denmark

(C) Schleswig-Holstein



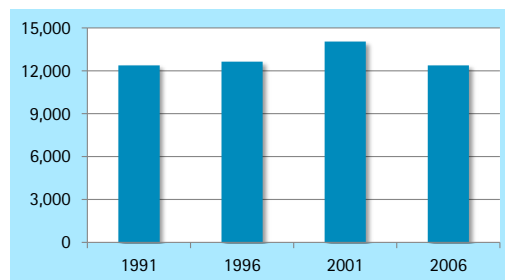
(D) Niedersachsen/Hamburg

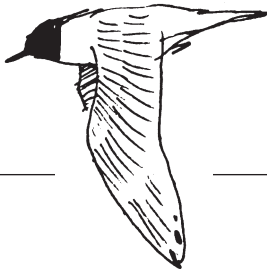
(E) The Netherlands

Figure 103 (right)
Total counts of Common Redshank in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(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
 — data do not allow trend analysis



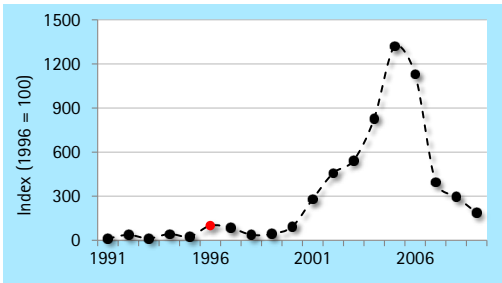


Mediterranean Gull

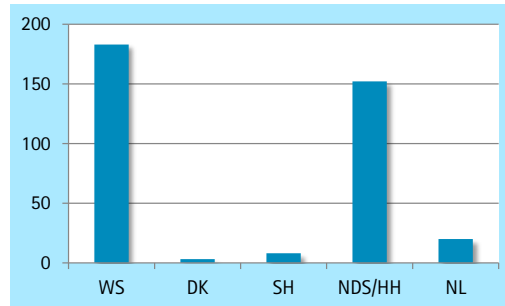
Larus melanocephalus

05750

DK: Sorthovedet Måge D: Schwarzkopfmöwe NL: Zwartkopmeeuw



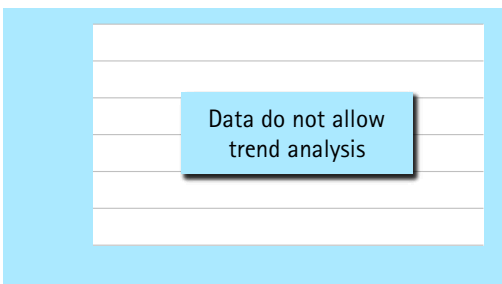
(A) Overall trend in the International Wadden Sea



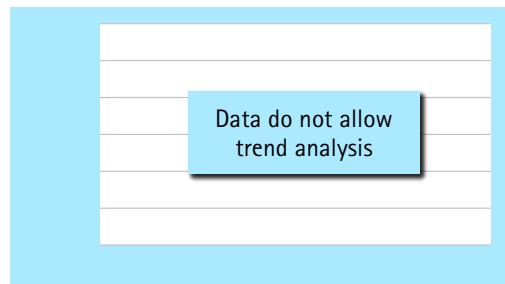
Figures 104-105
The left figure represent the trend of Mediterranean Gull in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Mediterranean Gull in the international Wadden Sea and in the Wadden countries in 2006.

Explanatory Note

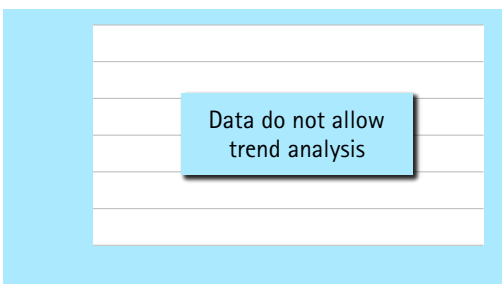
Mediterranean Gull is a rather new breeding species to the Wadden Sea, and in line with developments in e.g. the Delta area, SW-Netherlands, numbers and distribution have also expanded in the Wadden Sea (though not as fast as elsewhere). In 1991 the species was only found in The Netherlands, in 1994 it colonized Niedersachsen and in 1996 Schleswig-Holstein and Denmark. Recent counts suggest that numbers are stabilizing. The largest colony is found on an island in the River Elbe. Elsewhere mainly scattered pairs are found breeding, often also associated with colonies of Black-headed Gull.



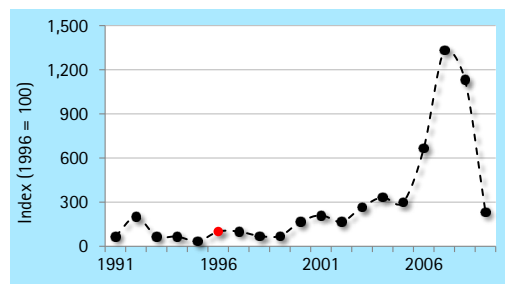
(B) Denmark



(C) Schleswig-Holstein



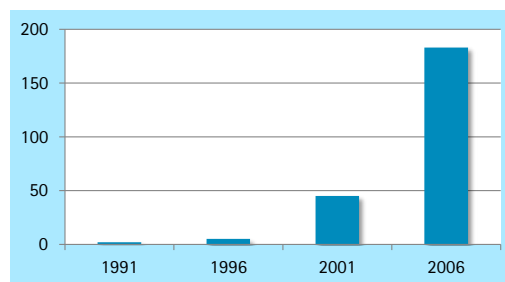
(D) Niedersachsen/Hamburg



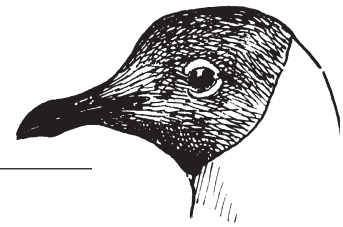
(E) The Netherlands

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis



Figures 110
Total counts of Mediterranean Gull in the international Wadden Sea.



Common Black-headed Gull

05820

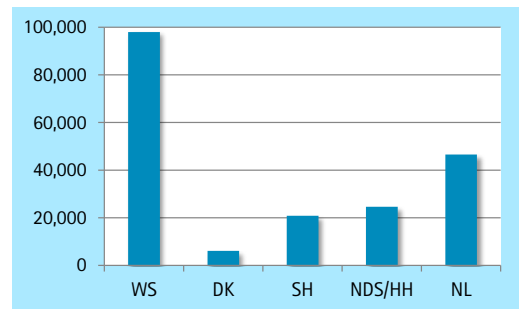
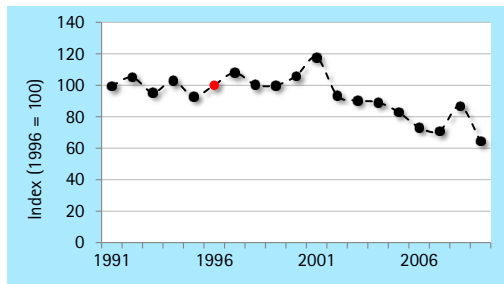
Larus ridibundus

DK: Hættemåge

D: Lachmöwe

NL: Kokmeeuw

Figures 111-112
The left figure represent the trend of Common Black-headed Gull in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Common Black-headed Gull in the international Wadden Sea and in the countries in 2006.

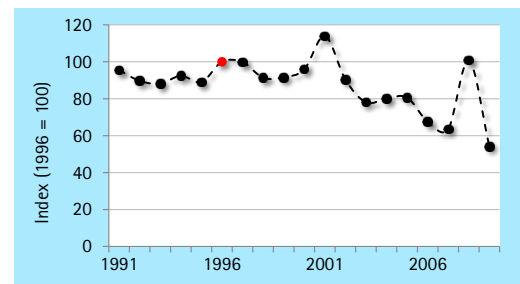
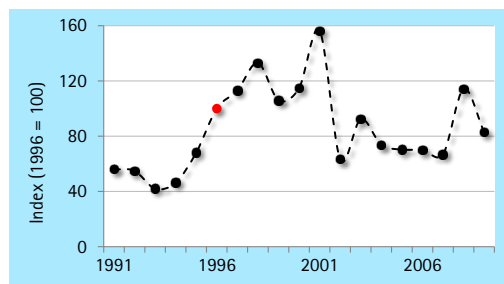


(A) Overall trend in the International Wadden Sea

Explanatory Note

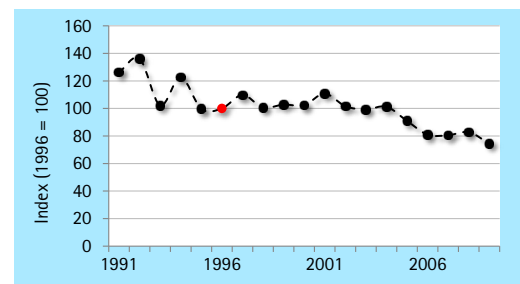
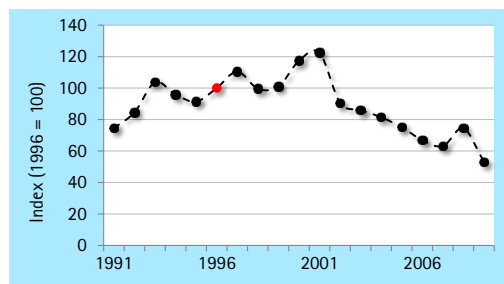
Black-headed Gull is one of the most abundant breeding birds in the Wadden Sea and a major part of the NW-European population is found here. Highest numbers breed west of the River Elbe. Largest colonies are situated in salt marshes and on remote islands. Apart from Denmark, declines have been reported all over the Wadden Sea, especially after 2000. Hence, earlier statements that Wadden Sea breeding birds performed better than inland breeding colonies are no longer valid. At least locally, colonies have been abandoned due to predation pressure, but other factors like food availability might affect population trends as well.

Figures 113-116
The figures represent the trends of Common Black-headed Gull in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



(B) Denmark

(C) Schleswig-Holstein



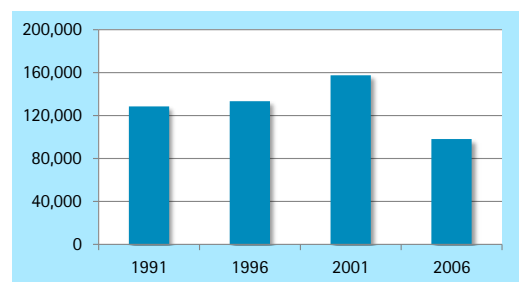
(D) Niedersachsen/Hamburg

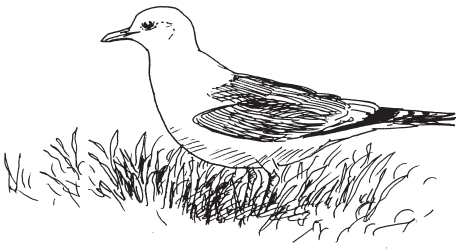
(E) The Netherlands

Figure 117 (right)
Total counts of Common Black-headed Gull in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(A)/(B) International Wadden Sea		↓	↓
(C) Denmark		↑	↓
(D) Schleswig-Holstein		↓	↓
(E) Niedersachsen/Hamburg		↓	↓
(F) The Netherlands		↓	↓

↑ strong increase
 ↓ moderate decrease
 ↑ moderate increase
 → stable
 — uncertain
 — data do not allow trend analysis





Common Gull

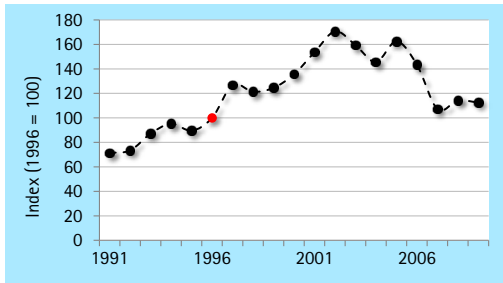
Larus canus

05900

DK: Stormmåge

D: Sturmmöwe

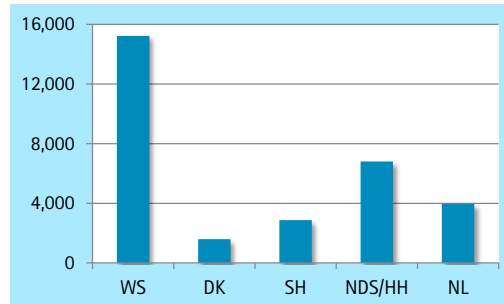
NL: Stormmeeuw



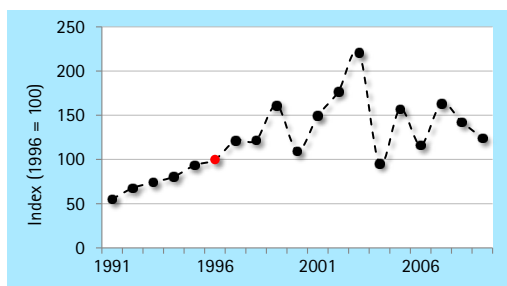
(A) Overall trend in the International Wadden Sea

Explanatory Note

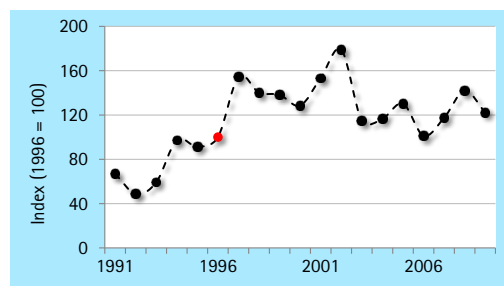
Even if, the Wadden Sea is not a main breeding area for **Common Gull** in an international context, the species is thriving in most countries, resulting in a positive overall trend. Only in The Netherlands the species is in decline, especially after 2000. Breeding colonies are mainly found in coastal dune areas. It is not precisely known for what reason the population in The Netherlands is doing less well than elsewhere. In some years low reproductive rates have been recorded, but as the species is not part of the breeding success monitoring scheme, it is not known on what scale this occurs.



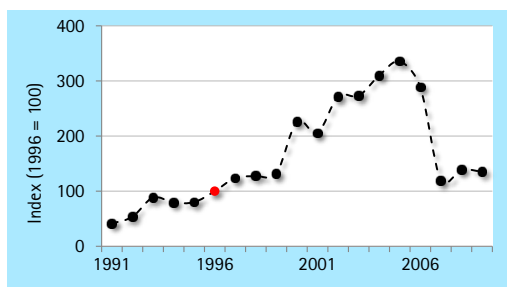
Figures 118-119
The left figure represent the trend of Common Gull in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Common Gull in the international Wadden Sea and in the countries in 2006.



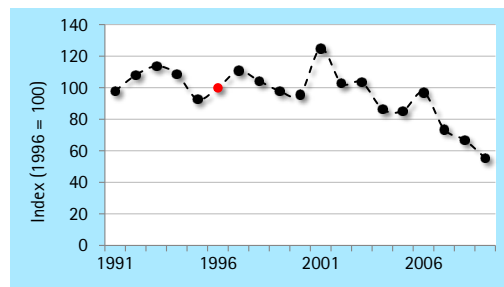
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg



(E) The Netherlands

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis

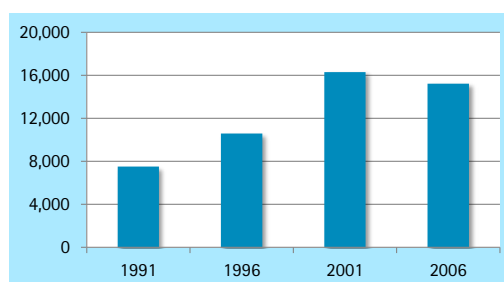
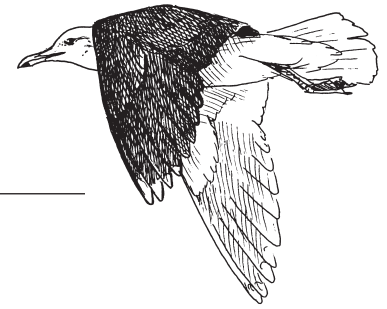


Figure 124
Total count of Common Gull in the international Wadden Sea.



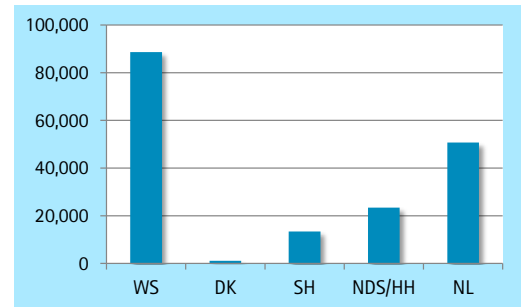
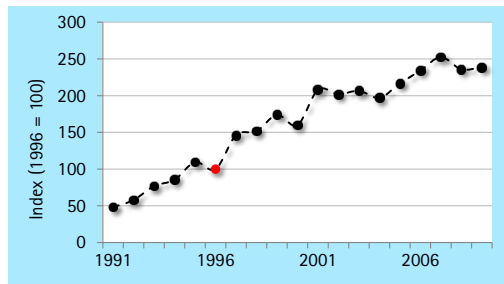
Lesser Black-backed Gull

05910

Larus fuscus

DK: Sildemåge D: Heringsmöwe NL: Kleine Mantelmeeuw

Figures 125-126
The left figure represent the trend of Lesser Black-backed Gull in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Lesser Black-backed Gull in the international Wadden Sea and in the countries in 2006.

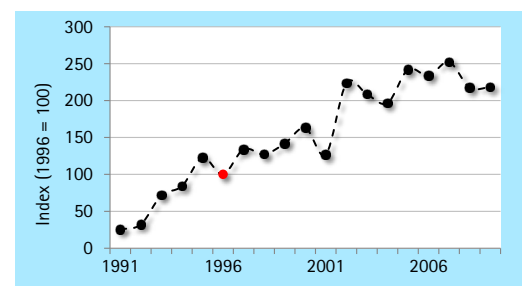
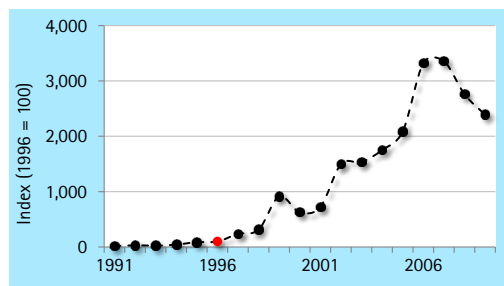


(A) Overall trend in the International Wadden Sea

Explanatory Note

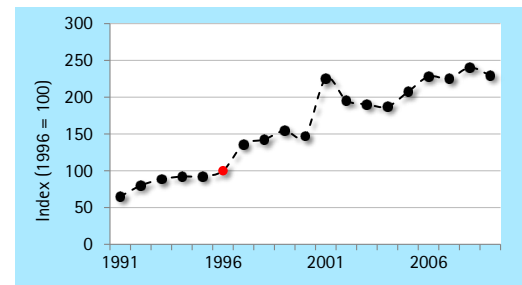
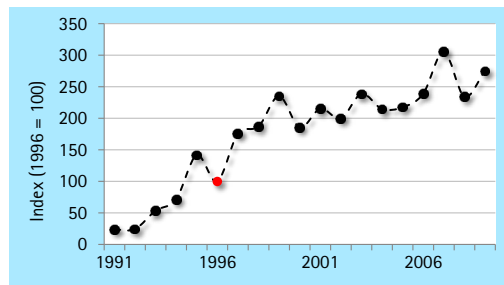
Lesser Black-backed Gull is among the fastest expanding species in the Wadden Sea. Recent counts in Denmark, Schleswig-Holstein and Niedersachsen point at possible declines. Data from the breeding success monitoring in The Netherlands show high chick mortality due to limited food provision. Hence, the increase observed so far might reverse in a drop in numbers, but this has to be confirmed by further counts and continued monitoring of breeding success. In an international context, a large proportion of the NW-European population is breeding in the Wadden Sea.

Figures 127-130
The figures represent the trends of Lesser Black-backed Gull in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



(B) Denmark

(C) Schleswig-Holstein



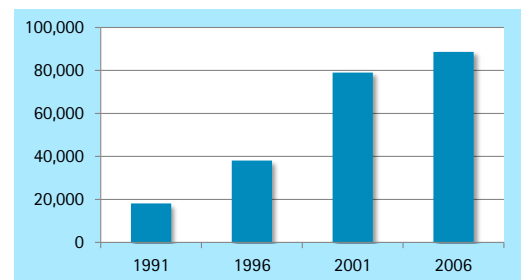
(D) Niedersachsen/Hamburg

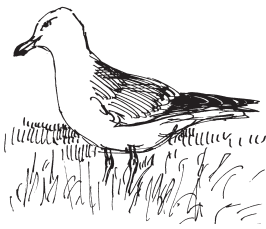
(E) The Netherlands

Figure 131 (right)
Total counts of Lesser Black-backed Gull in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(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
 — data do not allow trend analysis





Herring Gull

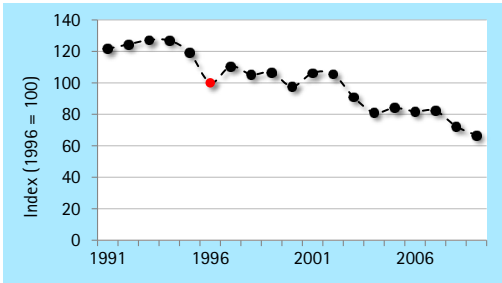
Larus argentatus

05920

DK: Sølvmåge

D: Silbermöwe

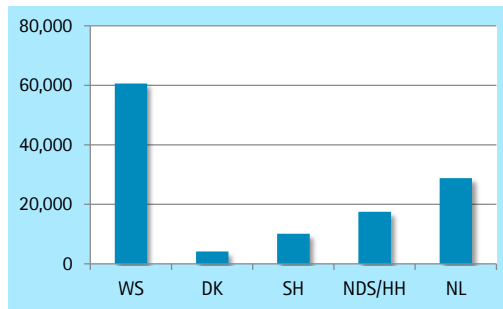
NL: Zilvermeeuw



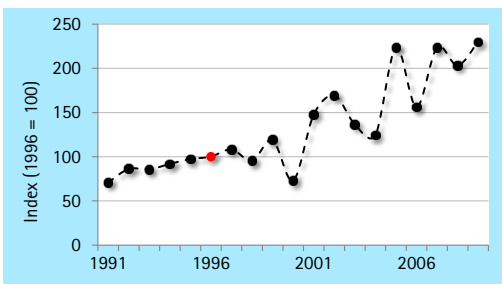
(A) Overall trend in the International Wadden Sea

Explanatory Note

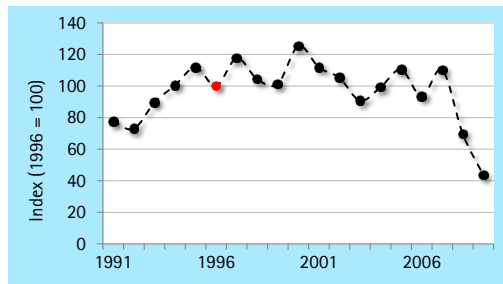
Herring Gull often breeds in mixed colonies with Lesser Black-backed. Compared to the latter species, it feeds more extensively on the mud flats in most areas. Populations have declined in the whole Wadden Sea, mainly due to losses in The Netherlands and Niedersachsen, which are the core breeding areas. In The Netherlands the species has suffered from depletion of mussel stocks by shellfish fisheries. Moreover, they have benefited from rubbish dumps earlier, which today are all closed and not available as food resource anymore. The smaller populations in Denmark and the colonies in Schleswig-Holstein are performing better, and especially in Denmark have shown a strong increase.



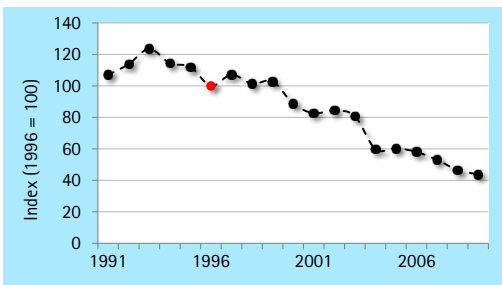
Figures 132-133
The left figure represent the trend of Herring Gull in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Herring Gull in the international Wadden Sea and in the countries in 2006.



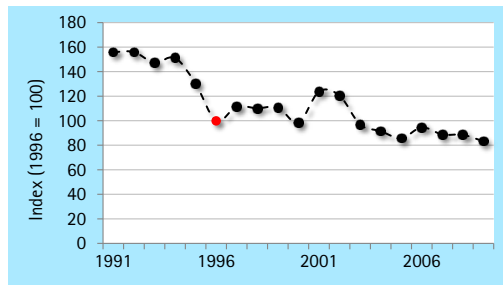
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg



(E) The Netherlands

Area	Period	1991 - 2009	2000 - 2009
(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
 — data do not allow trend analysis

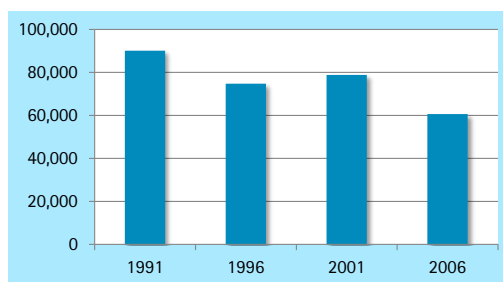


Figure 138
Total counts of Herring Gull in the international Wadden Sea.



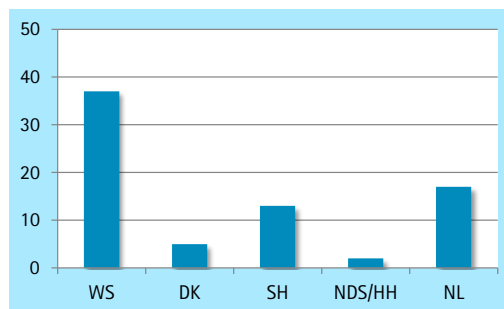
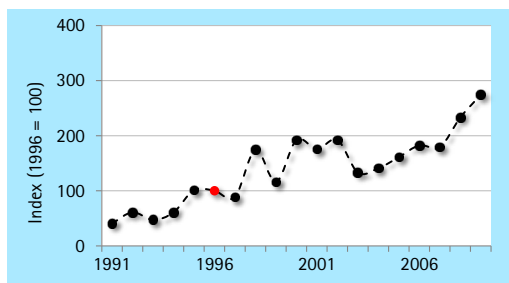
Great Black-backed Gull

06000

Larus marinus

DK: Svartbag D: Mantelmöve NL: Grote Mantelmeeuw

Figures 139-140
The left figure represent the trend of Great Black-backed Gull in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Great Black-backed Gull in the international Wadden Sea and in the countries in 2006.

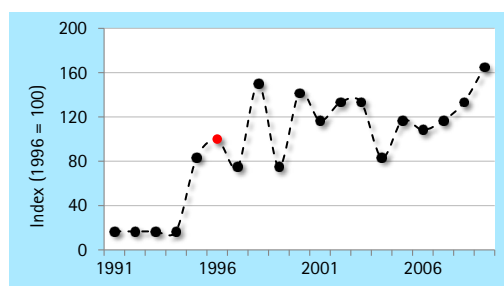
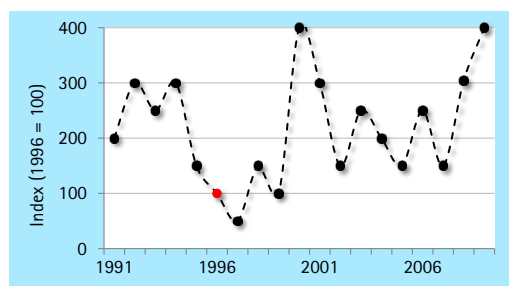


(A) Overall trend in the International Wadden Sea

Explanatory Note

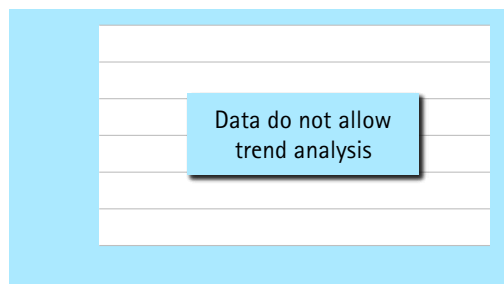
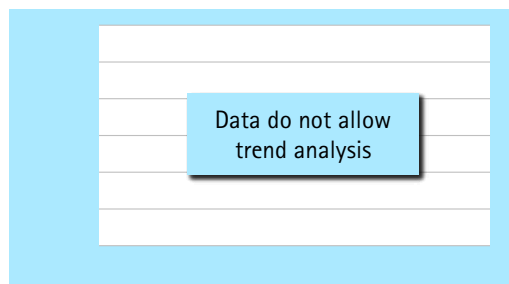
Great Black-backed Gull is expanding its breeding range in southwestern direction. Hence, its distribution in the Wadden Sea has become less scattered and numbers have shown an overall increase since 1991. This trend is most pronounced in Schleswig-Holstein, where also highest numbers are found. The small Danish population shows considerable fluctuations.

Figures 141-144
The figures represent the trends of Great Black-backed Gull in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



(B) Denmark

(C) Schleswig-Holstein



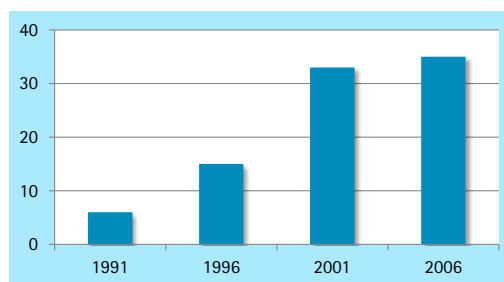
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 145 (right)
Total counts of Great Black-backed Gull in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(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
 — data do not allow trend analysis

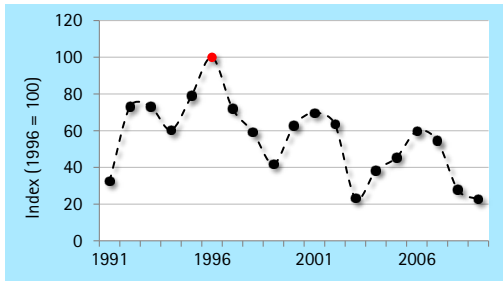


Gull-billed Tern

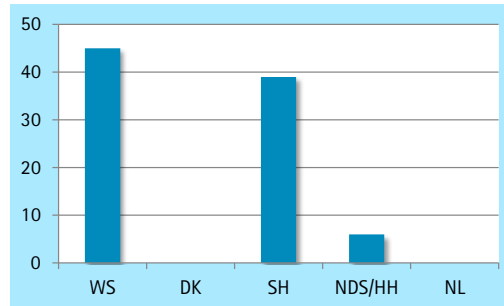
Gelochelidon nilotica

06050

DK: Sandterne D: Lachseeschwalbe NL: Lachstern



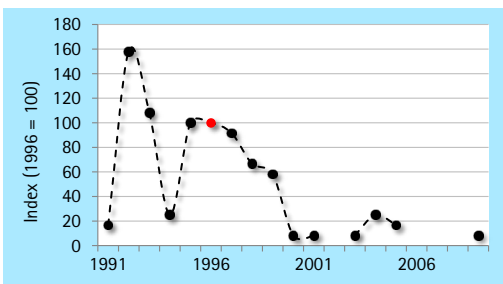
(A) Overall trend in the International Wadden Sea



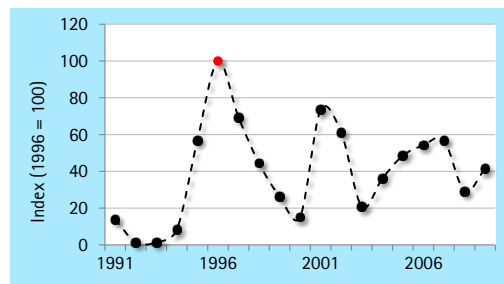
Figures 146-147
The left figure represent the trend of Gull-billed Tern in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Gull-billed Tern in the international Wadden Sea and in the countries in 2006.

Explanatory Note

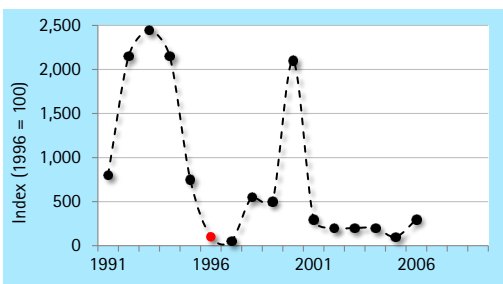
The Wadden Sea represents the only breeding area for Gull-billed Terns in the Wadden Sea. Initially this was confined to Denmark, but since the 1970s this has shifted to Schleswig-Holstein, where the species is currently breeding in a colony in Neufelder Koog in the Elbe estuary, associated with Black-headed Gull, Common Tern and Arctic Tern. Earlier settlements in the Niedersachsen part of the Elbe estuary have been deserted now. Due to fluctuating numbers, the overall trend is not clear, although current numbers are lower compared to the 1990s.



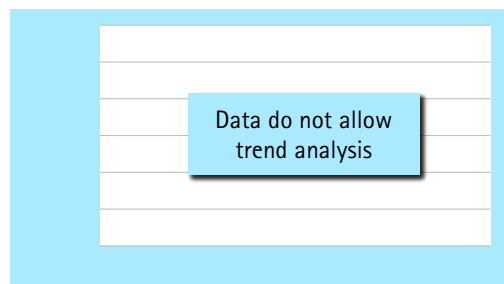
(B) Denmark



(C) Schleswig-Holstein



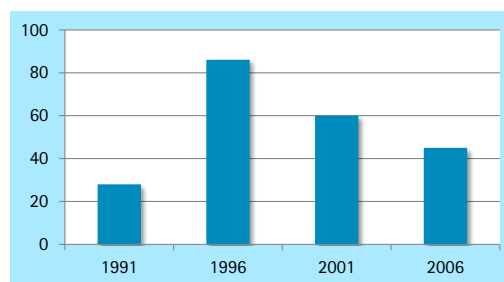
(D) Niedersachsen/Hamburg



(E) The Netherlands

Area	Period	1991 - 2009	2000 - 2009
(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
 — data do not allow trend analysis



Figures 148-151
The figures represent the trends of Gull-billed Tern in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.

Figure 152
Total count of Gull-billed Tern in the international Wadden Sea.

Sandwich Tern

06110

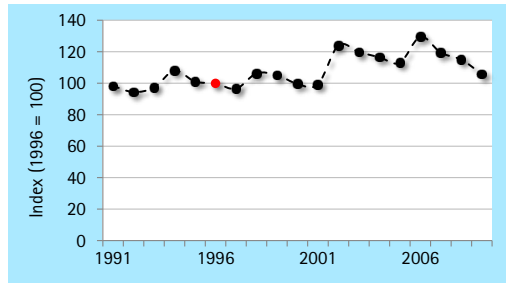
Sterna sandvicensis

DK: Splitterne

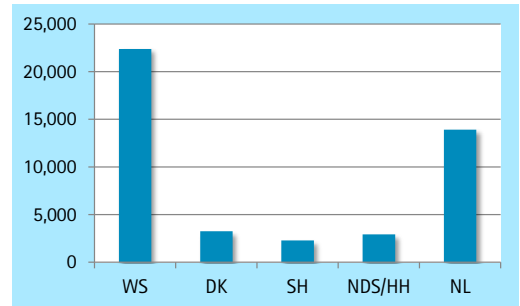
D: Brandseeschwalbe

NL: Grote Stern

Figures 153-154
The left figure represent the trend of Sandwich Tern in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Sandwich Tern in the international Wadden Sea and in the countries in 2006.



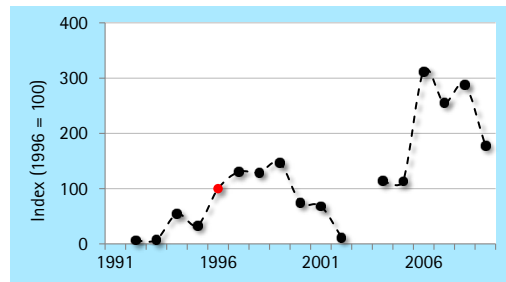
(A) Overall trend in the International Wadden Sea



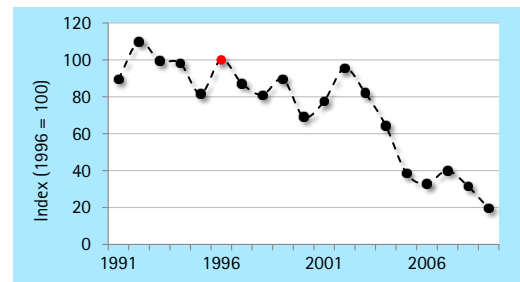
Explanatory Note

Sandwich Tern is entirely breeding on remote islands like Griend (The Netherlands) and Norderoog (Schleswig-Holstein). The colonies in the Wadden Sea represent a large part of the NW-European breeding population. The overall trend is classified as stable. The small and growing population in Denmark probably received some input from Schleswig-Holstein, where the colonies have experienced declines (notably after 2000). Exchange between colonies has also been observed elsewhere in The Wadden Sea.

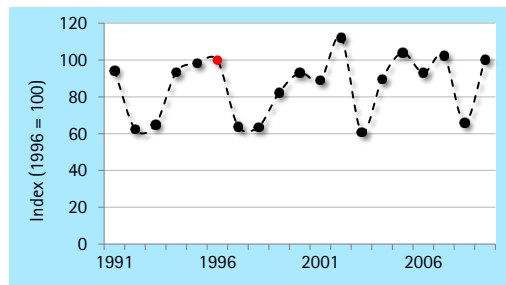
Figures 155-158
The figures represent the trends of Sandwich Tern in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



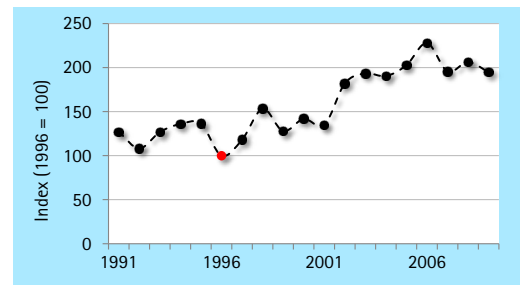
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

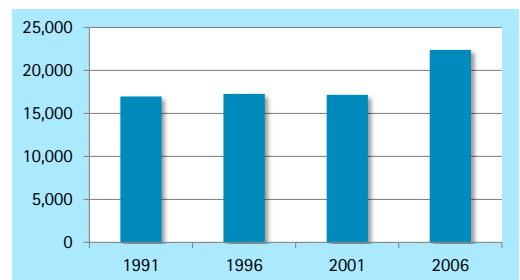


(E) The Netherlands

Figure 159 (right)
Total counts of Sandwich Tern in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis



Common Tern

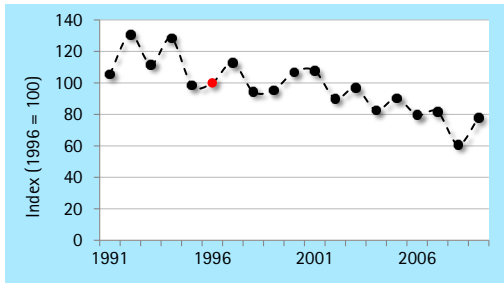
Sterna hirundo

06150

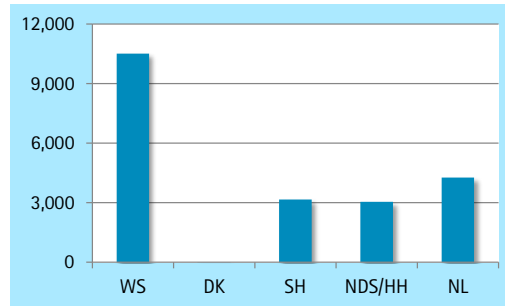
DK: Fjordterne

D: Flußseeschwalbe

NL: Visdief



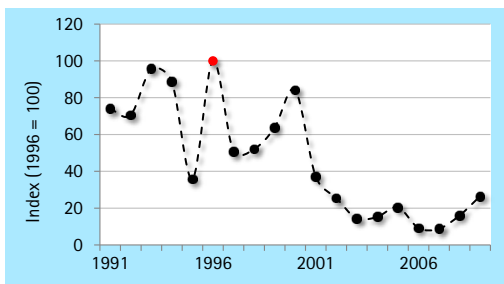
(A) Overall trend in the International Wadden Sea



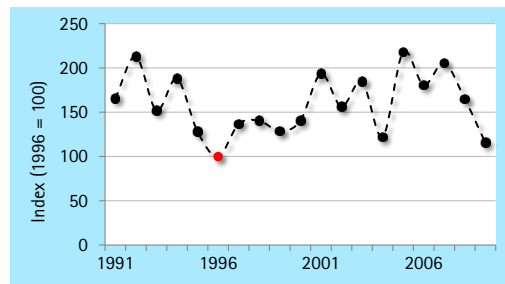
Figures 160-161
The left figure represent the trend of Common Tern in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Common Tern in the international Wadden Sea and in the countries in 2006.

Explanatory Note

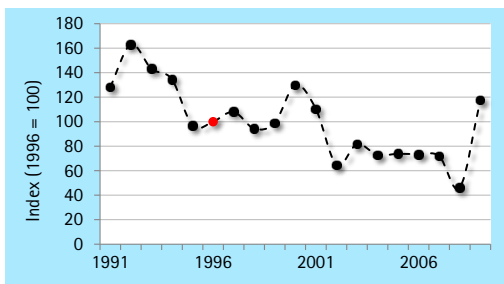
Breeding Common Terns are widespread in the Wadden Sea and inhabit different habitats, including harbour areas, rooftops of buildings and other anthropogenic habitats. The species is only doing well in Schleswig-Holstein, whereas in other countries populations have gone down, especially in Denmark. Hence, overall trend is negative. Often, poor food availability has been put forward as main background for declines, but other factors as predation pressure (mainland colonies), reduced habitat dynamics and losses due to storm tides in the breeding season are probably operating as well.



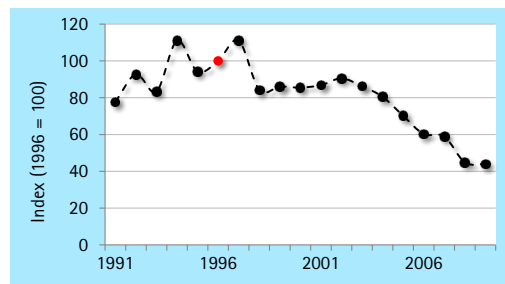
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg



(E) The Netherlands

Area	Period	1991 - 2009	2000 - 2009
(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
 — data do not allow trend analysis

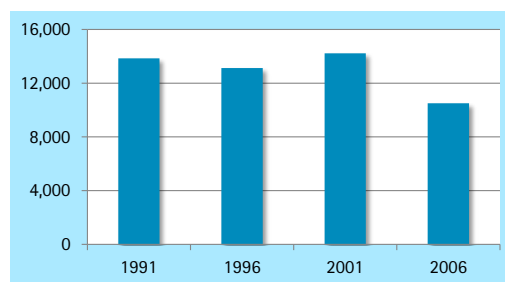


Figure 166
Total counts of Common Tern in the international Wadden Sea.

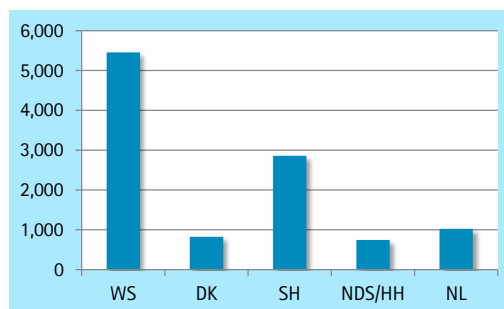
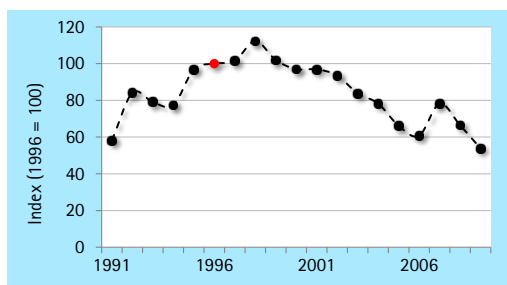
Arctic Tern

06160

Sterna paradisaea

DK: Havterne D: Küstenseeschwalbe NL: Noordse Stern

Figures 167-168
The left figure represent the trend of Arctic Tern in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Arctic Tern in the international Wadden Sea and in the countries in 2006.

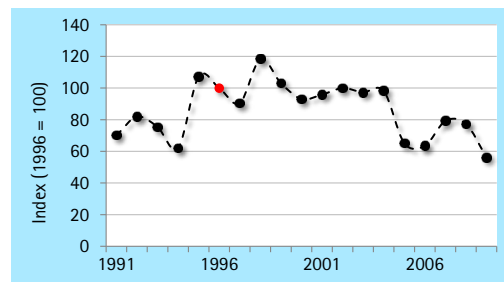
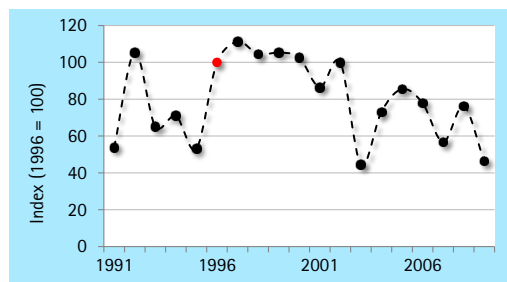


(A) Overall trend in the International Wadden Sea

Explanatory Note

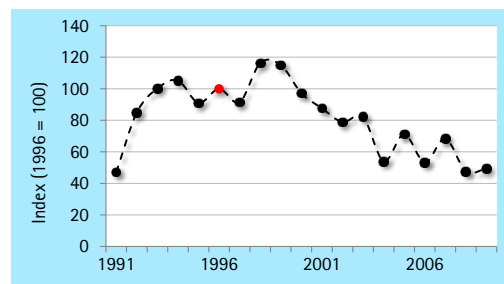
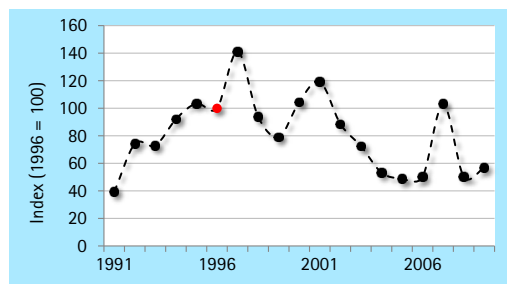
Arctic Tern has a more northerly breeding range in Europe and therefore largest colonies are found north of the River Elbe. Large colonies are mainly situated in Schleswig-Holstein. Compared to Common Tern (where it sometimes associates with), they prefer more sparsely vegetated breeding sites and are found less in anthropogenic habitats. Apart from Denmark, populations in all parts of the Wadden Sea have decreased. This trend is most pronounced in the westernmost breeding sites in The Netherlands and Niedersachsen and mainly occurred in from the late 1990s onwards.

Figures 169-172
The figures represent the trends of Arctic Tern in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



(B) Denmark

(C) Schleswig-Holstein



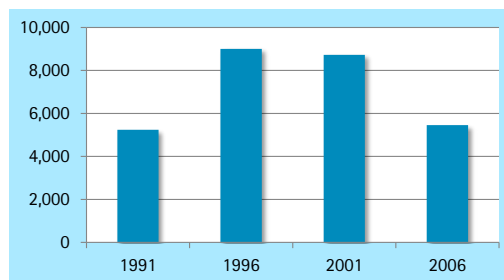
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 173 (right)
Total counts of Arctic Tern in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis

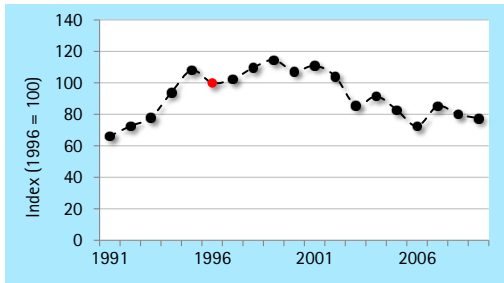


Little Tern

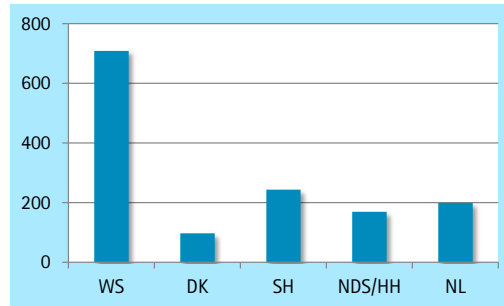
Sterna albifrons

06240

DK: Dværgterne D: Zwergseeschwalbe NL: Dwergstern



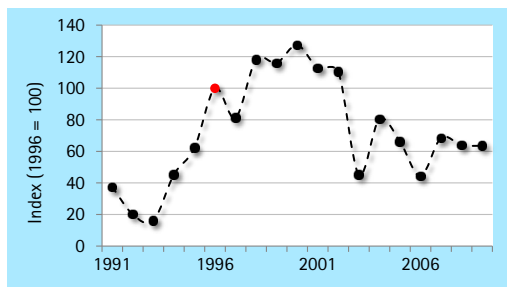
(A) Overall trend in the International Wadden Sea



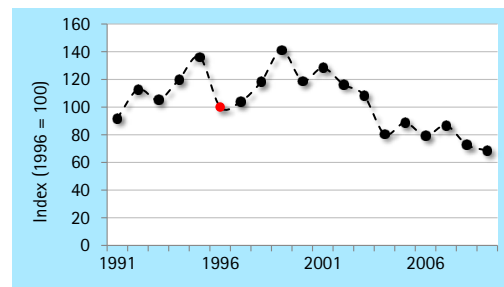
Figures 174-175
The left figure represent the trend of Little Tern in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.
The right figure shows the total count of Little Tern in the international Wadden Sea and in the countries in 2006.

Explanatory Note

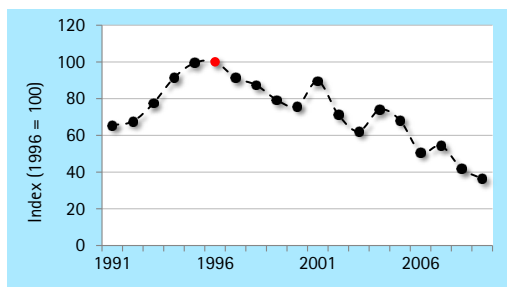
Little Tern predominantly breeds on the islands, where it inhabits beaches, sand pits and primary dunes. At many sites, protective measures are taken to keep colonies undisturbed from public. After an initial increase in the 1990s, the species is showing negative trends in the past decade, leading to an overall stable trend classification. However, in Schleswig-Holstein and Niedersachsen, both supporting core breeding sites, significant declines have occurred. In Denmark (increase) and The Netherlands (stable) populations show more annual variation in numbers.



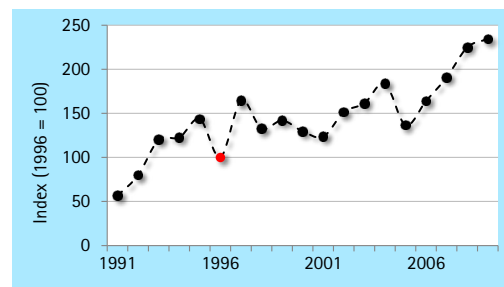
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg



(E) The Netherlands

Figures 176-179
The figures represent the trends of Little Tern in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.

Area	Period	1991 - 2009	2000 - 2009
(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 — data do not allow trend analysis

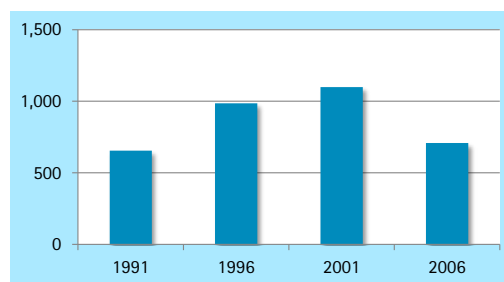
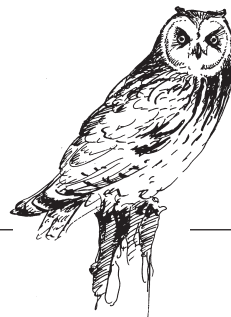


Figure 180
Total counts of Little Tern in the international Wadden Sea.



Short-eared Owl

07680

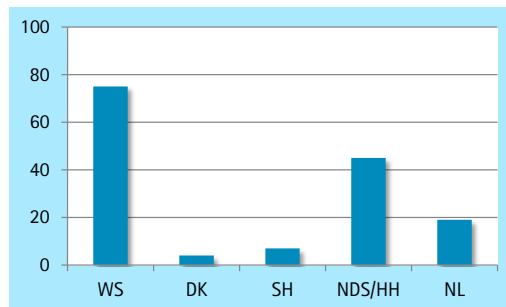
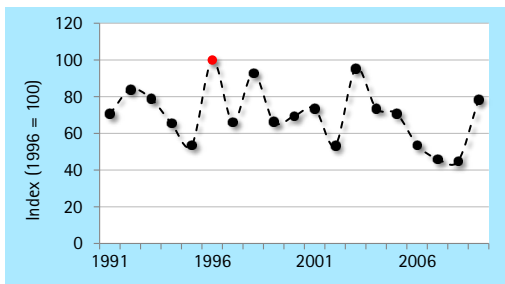
Asio flammeus

DK: Mosehornugl

D: Sumpfohreule

NL: Velduil

Figures 181-182
The left figure represent the trend of Short-eared Owl in the international Wadden Sea from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis. The right figure shows the total count of Short-eared Owl in the international Wadden Sea and in the countries in 2006.

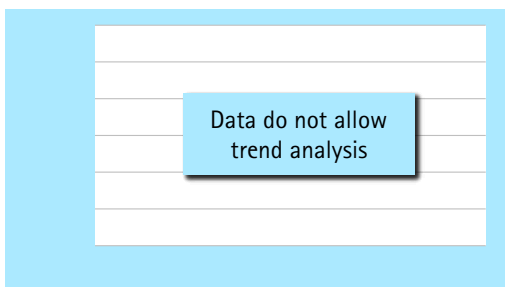


(A) Overall trend in the International Wadden Sea

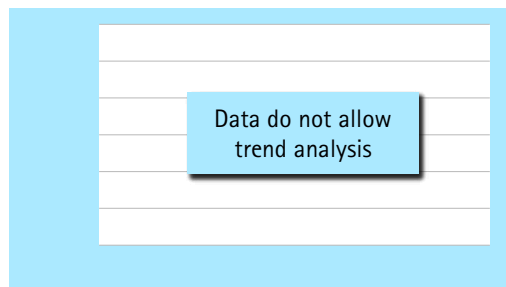
Explanatory Note

Short-eared Owls prefer open dunes and heathland as breeding habitat, often in association with feeding areas in grassland or salt marshes. It has its strongholds west of the River Elbe and its distribution is mainly confined to the islands. The overall trend is classified as stable, but tends to decline recently. Especially in The Netherlands the species has suffered major losses and is on the brink of extinction. In Niedersachsen, it was able to keep population stable (compare Hen Harrier), but here a decline started in 2003.

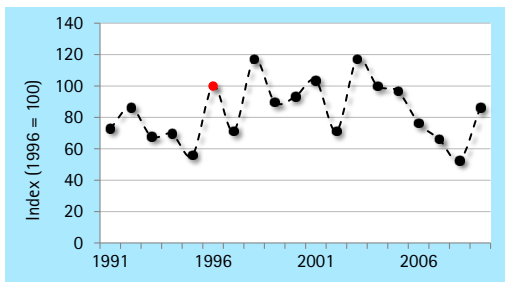
Figures 183-184
The figures represent the trends of Short-eared Owl in the countries from 1991 to 2009 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



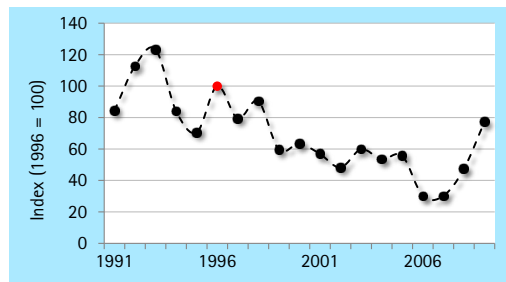
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

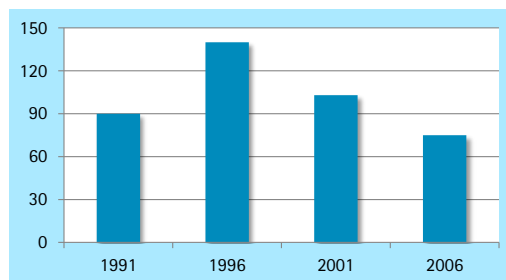


(E) The Netherlands

Figure 185 (right)
Total counts of Short-eared Owl in the international Wadden Sea.

Area	Period	1991 - 2009	2000 - 2009
(A)/(B) International Wadden Sea		↓	—
(C) Denmark		—	—
(D) Schleswig-Holstein		—	—
(E) Niedersachsen/Hamburg		→	↓
(F) The Netherlands		↓	—

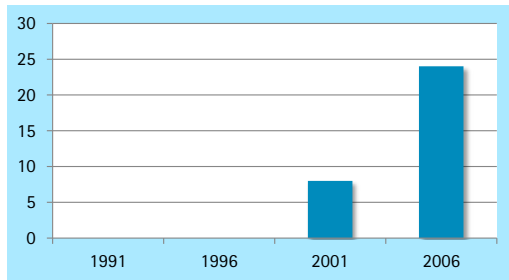
↑ ↑ strong increase
 ↓ ↓ strong decrease
 ↑ moderate increase
↓ moderate decrease
 → stable
 — uncertain
 — data do not allow trend analysis



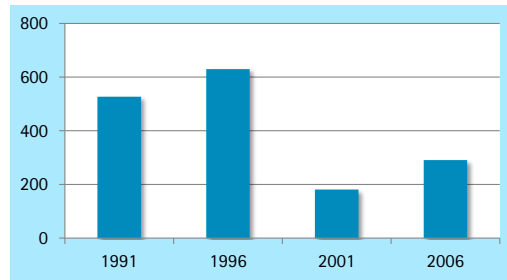
Total Counts Rare Species

For 7 breeding bird species of the JMBB program data do not allow trend analysis. Nevertheless, to give an impression on numbers of these bird species the total count numbers are given.

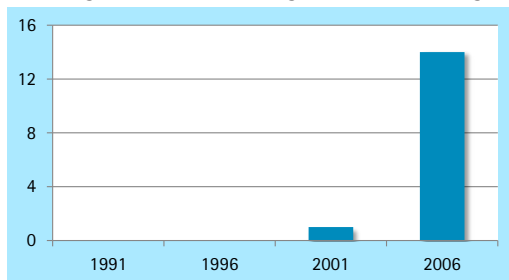
1190 **Little Egret** *Egretta garzetta*
DK: Silkehejre D: Seidenreiher NL: Kleine Zilverreiger



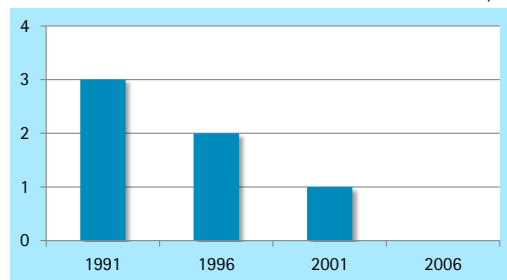
5190 **Common Snipe** *Gallinago gallinago*
DK: Dobbeltbekkasin D: Bekassine NL: Watersnip



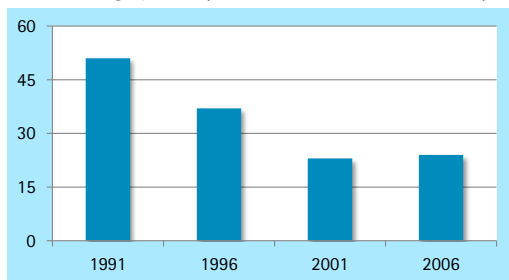
1670 **Barnacle Goose** *Branta leucopsis*
DK: Bramgås D: Nonnengans NL: Brandgans



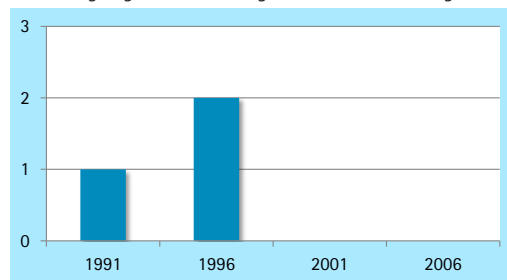
5610 **Ruddy Turnstone** *Arenaria interpres*
DK: Stenvender D: Steinwälzer NL: Steenloper



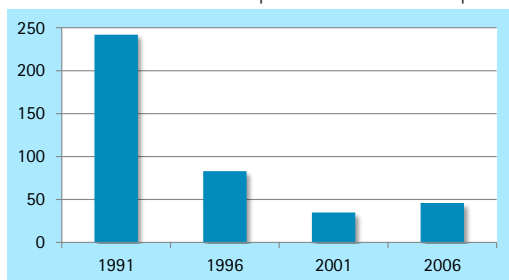
5120 **Dunlin** *Calidris alpina*
DK: Almindelig Ryle D: Alpenstrandläufer NL: Bonte Strandloper



5780 **Little Gull** *Larus minutus*
DK: Dvær gmåge D: Zwergmöwe NL: Dwer gmeeuw



5170 **Ruff** *Philomachus pugnax*
DK: Brushane D: Kampfläufer NL: Kemphaan



Figures 186-192
Total counts of rare
breeding bird species in the
international Wadden Sea.



Photo: Gundolf Reichert

References

Blew, J. 2003. New ways to improve and test methods – Quality Assurance activities in breeding bird monitoring. Wadden Sea Newsletter 2003-2, 18-23.

Fleet, D.M., Frikke, J., Südbeck, P. and Vogel, R.L., 1994. Breeding birds in the Wadden Sea 1991. Wadden Sea Ecosystem No. 1. Common Wadden Sea Secretariat, Wilhelmshaven.

Hälterlein, B., Fleet, D.M., Henneberg, H.R., Menebäck, T., Rasmussen, L-M., Südbeck, P., Thorup, O. and Vogel, R.L., 1995. Anleitung zur Brutbestandserfassungen von Küstenvögeln im Wattenmeerbereich. Wadden Sea Ecosystem No. 3. Common Wadden Sea Secretariat, Wilhelmshaven.

Koffijberg, K., Dijkzen, L., Hälterlein, B., Laursen, K., Potel, P. & Südbeck, P., 2006. Breeding birds in the Wadden Sea in 2001. Results from the total survey in 2001 and trends in numbers between 1991-2001. Wadden Sea Ecosystem No 22. Common Wadden Sea Secretariat, Trilateral Monitoring and Assessment Group, Joint Monitoring Group of Breeding Birds in the Wadden Sea, Wilhelmshaven, Germany.

Melter, J., Südbeck, P., Fleet, D.M., Rasmussen, L-M. and Vogel, R.L., 1997. Changes in breeding bird numbers in census areas in the Wadden Sea 1990 until 1994. Wadden Sea Ecosystem No. 4. Common Wadden Sea Secretariat, Wilhelmshaven.

Pannekoek J. and van Strien, A.J., 1999. Missen is gissen. Ontbrekende tellingen in vogelmeetnetten. Limosa 72, 49-54.

Rasmussen, L-M., Fleet, D.M., Hälterlein, B., Koks, B.J., Potel, P. and Südbeck, P., 2000. Breeding birds in the Wadden Sea in 1996. Wadden Sea Ecosystem No. 10. Common Wadden Sea Secretariat, Wilhelmshaven.

Counting Units in the Wadden Sea



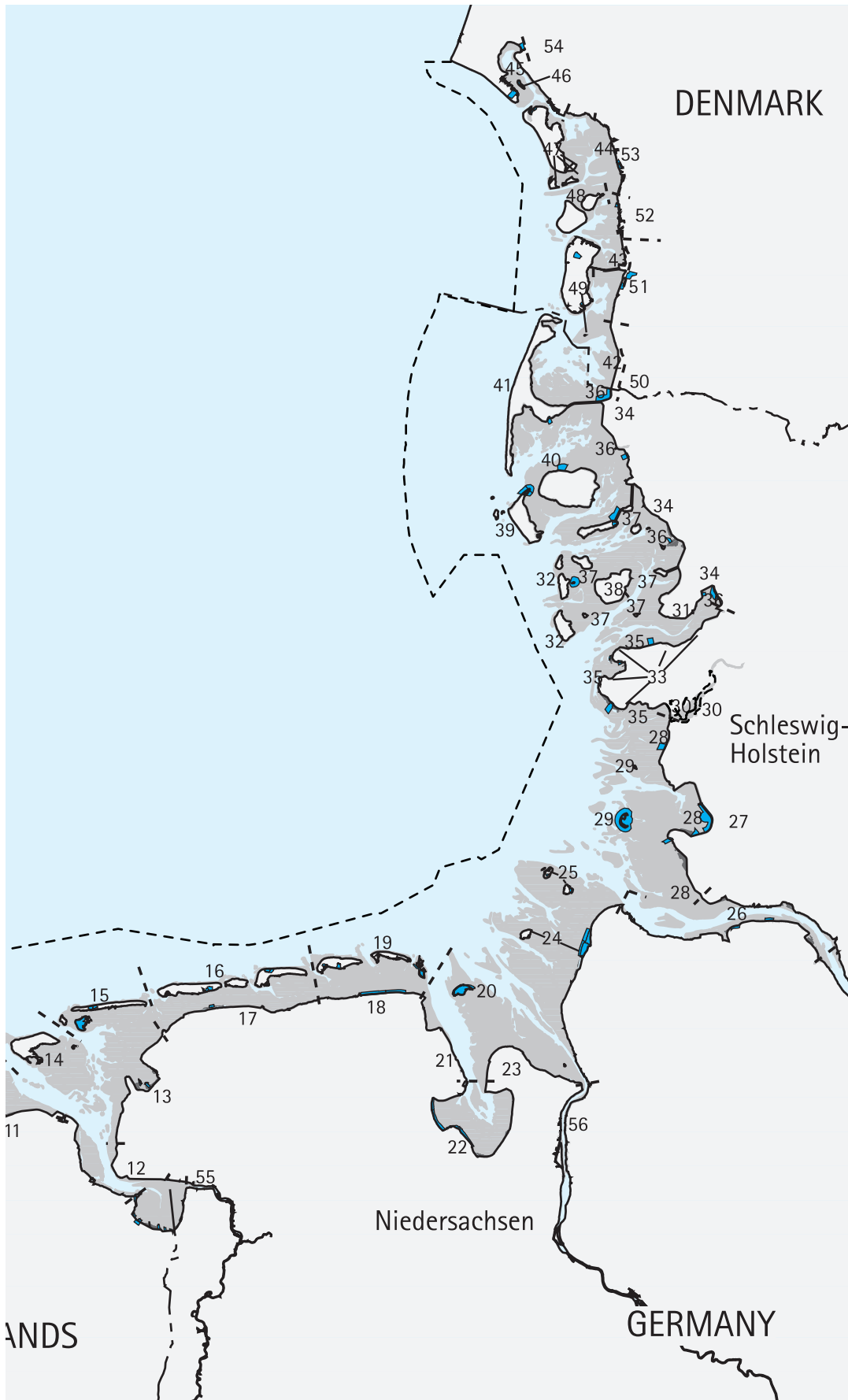


Figure 193
 The Wadden Sea Area
 (Cooperation Area),
 including delimitations
 of all counting units and
 spring tide counting sites

List of Census Areas

List of census areas in the Wadden Sea (see Figure 193) that are used to assess trends in this report. The size is given in ha.

Table 5
List of census areas.

Country	Census region	Region name	Trilateral code	Name census area	Size in ha
The Netherlands					
NL	1	Texel	11001	De Schorren	47
NL	1	Texel	11002	De Slufter	96
NL	1	Texel	11003	De Bol/Wagejot	88
NL	1	Texel	11004	Westerduinen/Bleekersvallei	304
NL	1	Texel	11005	De Geul	35
NL	1	Texel	11006	Prins Hendrik polder	98
NL	2	Vlieland	12020	Kroon's polders	184
NL	2	Vlieland	12021	Vallei van het Veen	223
NL	2	Vlieland	12022	Richel	223
NL	3	Griend	12023	Griend	21
NL	4	Terschelling	12024	Noordvaarder	207
NL	4	Terschelling	12025	Waterplak	166
NL	4	Terschelling	12026	Polder Hoorn	83
NL	4	Terschelling	12027	Douwkesplak	192
NL	4	Terschelling	12028	Vierde Duintjes, dunes	265
NL	4	Terschelling	12029	Vierde Duintjes, salt marsh (included in 12028)	
NL	5	Ameland	12030	Lange Duinen, noord	14
NL	5	Ameland	12031	polder near Hollum	178
NL	5	Ameland	12032	Hagedoornveld	126
NL	5	Ameland	12033	Nieuwlandsreid	366
NL	6	Engelsmanplaat/'t Rif	12034	Engelsmanplaat/'t Rif	775
NL	7	Schiermonnikoog	12035	Bancks polder	33
NL	7	Schiermonnikoog	12036	Oosterkwelder	764
NL	8	Rottumeroog en -plaat	13050	Rottumerplaat	723
NL	8	Rottumeroog en -plaat	13069	Rottumeroog	202
NL	8	Rottumeroog en -plaat	13070	Zuiderduin	38
NL	9	oast Noord-Holland	11007	Balgzand saltmarsh	67
NL	9	coast Noord-Holland	11010	Wieringen 1 Westerland	17
NL	9	coast Noord-Holland	11011	Wieringen 2 Stroe	5
NL	9	coast Noord-Holland	11012	Wieringen 3 Vatrop	7
NL	9	coast Noord-Holland	11009	Stroeërkoog	58
NL	10	coast Friesland	12037	Blija zomerpolder Et kwelder	218
NL	10	coast Friesland	12038	Holwerd-oost	116
NL	10	coast Friesland	12039	Paesummerlannen	168
NL	10	coast Friesland	12040	Polder De Band	122
NL	11	coast Groningen	13065	Julianapolder	51
NL	11	coast Groningen	13066	Linthorst-Homanpolder	38
NL	11	coast Groningen	13067	Noordpolder	55
NL	11	coast Groningen	13068	Lauwerpolder	29
NL	12	Dollart-Außenems	13053	Polder Breebaart	68
NL	12	Dollart-Außenems	13059	Dollard 1 CCP km 9 Wa	38
NL	12	Dollart-Außenems	13060	Dollard 2 CCP km 7 Wb	37
NL	12	Dollart-Außenems	13061	Dollard 3 CCP km 4 Ia	27
NL	12	Dollart-Außenems	13062	Dollard 4 CCP km 3 If	43
NL	12	Dollart-Außenems	13063	Dollard 5 RWP km 1 Ilb	32
NL	12	Dollart-Außenems	13064	Dollard 6 RWP km 0 lie	21
NL	12	Dollart-Außenems	13055	Carel Coenraadpolder akker	84
Niedersachsen					
Nds	12	Dollart-Außenems	21020	Bohrinsel Süd	24
Nds	12	Dollart-Außenems	21021	Buttje Pad Süd	41
Nds	13	Leybucht	21022	Buscherheller	64

Country	Census region	Region name	Trilateral code	Name census area	Size in ha
Nds	13	Leybucht	21023	Mittelplate	65
Nds	13	Leybucht	21024	Hauener Hooge	52
Nds	15	Juist-Memmert	21005	Memmert	261
Nds	15	Juist-Memmert	21033	Aussichtsdüne, Augustenhöhe /Juist	115
Nds	16	Norderney-Baltrum-Langeoog	21026	Schlopp-Ost / Norderney	40
Nds	16	Norderney-Baltrum-Langeoog	21027	Peilbake / Norderney	85
Nds	16	Norderney-Baltrum-Langeoog	21032	Pyrolatal West, Pyrolatal / Langeoog	132
Nds	17	Norderland-Harlingerland	21025	Westerneßmer Vorland - Teichbecken	56
Nds	18	Elisabeth-Außengroden	21010	Vorland	180
Nds	18	Elisabeth-Außengroden	21011	Vorland W	150
Nds	19	Spieker./Wanger./Minsener Oog	21003	Minsener Oog	125
Nds	19	Spieker./Wanger./Minsener Oog	21028	Franzosenschanze /Spiekeroog West	63
Nds	19	Spieker./Wanger./Minsener Oog	21029	Legde Heller West / Spiekeroog Ost	98
Nds	20	Mellum	21004	Mellum	336
Nds	22	Jadebusen	21016	Vorland S, Vorland N	300
Nds	22	Jadebusen	21017	Vorland	330
Nds	24	Wurster Küste	21007	Vorland N, Vorland S, Vorland Sommerpolder N, Vorland Sommerpolder S	970
Nds	25	Neuwerk-Scharhörn	22001	Scharhörn	18
Nds	25	Neuwerk-Scharhörn	22002	Nigehörn	20
Nds	25	Neuwerk-Scharhörn	22003	Neuwerk Vorland O	85
Nds	26	Elbe Niedersachsen	21030	Baljer Loch, Außendeich Nordkehdingen West	59
Nds	26	Elbe Niedersachsen	21031	Wildvogelreservat Nordkehdingen	59
Schleswig-Holstein					
SH	28	Salt marshes in Dithmarschen	23001	Vorland Dieksander Koog Nord	155
SH	28	Salt marshes in Dithmarschen	23002	Vorland Friedrichskoog/Aug. Vikt. Koog	143
SH	28	Salt marshes in Dithmarschen	23003	Helmsand	1027
SH	28	Salt marshes in Dithmarschen	23004	Vorland Hedwigenkoog	219
SH	29	Trischen	23014	Trischen	1549
SH	35	Salt marshes in Eiderstedt	23005	Vorland St. Peter	245
SH	35	Salt marshes in Eiderstedt	23006	Tuemlauer Bucht	72
SH	35	Salt marshes in Eiderstedt	23007	Westerhever-Vorland	27
SH	35	Salt marshes in Eiderstedt	23008	Vorland Norderheverkoog	181
SH	36	Salt marshes in Nordfriesland	23009	Vorland Schobuell	328
SH	36	Salt marshes in Nordfriesland	23010	Vorland Nordstrand Sued	60
SH	36	Salt marshes in Nordfriesland	23011	Hamburger Hallig	75
SH	36	Salt marshes in Nordfriesland	23012	Vorland Marienkoog	149
SH	36	Salt marshes in Nordfriesland	23013	Vorland Rickelsbüller Koog	528
SH	37	Halligen	23015	Hallig Norderoog	377
SH	37	Halligen	23016	Hallig Langeneß	61
SH	37	Halligen	23017	Hallig Langeneß Vorland	367
SH	39	Amrum	23019	Amrum-Odde	561
SH	40	Föhr	23018	Foehrer Vorland	256
SH	41	Sylt	23020	Sylt Sandinseln Keitum	11
SH	41	Sylt	23021	Sylt Morsum-Odde	119
Denmark					
DK	43	Rejsby-Ballum salt marshes	31014	Ballum Forland	97
DK	43	Rejsby-Ballum salt marshes	32016	Råhede Vade	58
DK	44	Ribe-Darum salt marshes	32015	Jedsted Forland	133
DK	45	Ho Bugt coast Skallingen	32013	Skallingen	223
DK	45	Ho Bugt coast Skallingen	32014	Tarphage Enge	155
DK	46	Langli	32001	Langli	97
DK	47	Fano	32007	Grønningen	92
DK	49	Romo-Jordsand	31006	Stormengene	55
DK	49	Romo-Jordsand	31011	Rømø Nørreland	151
DK	51	Ballummarsken	31007	Husum Enge	224

Species List

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

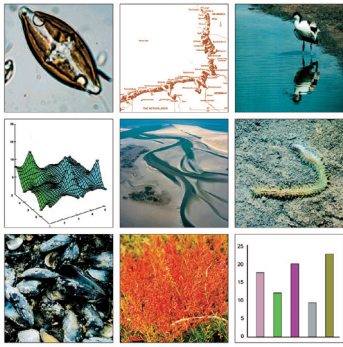
Table 6
List of species names.

Euring	English name	Scientific name	Dansk navn	Deutscher Name	Nederlandse naam
00720	Great Cormorant	<i>Phalacrocorax carbo</i>	Skarv	Kormoran	Aalscholver
01440	Eurasian Spoonbill	<i>Platalea leucorodia</i>	Skestork	Löffler	Lepelaar
01730	Common Shelduck	<i>Tadorna tadorna</i>	Gravand	Brandgans	Bergeend
02060	Common Eider	<i>Somateria mollissima</i>	Ederfugl	Eiderente	Eidereend
02210	Red-breasted Merganser	<i>Mergus serrator</i>	Toppet Skallesluger	Mittelsäger	Middelste Zaagbek
02610	Hen Harrier	<i>Circus cyaneus</i>	Blå Kærhøg	Kornweihe	Blauwe Kiekendief
04500	Eurasian Oystercatcher	<i>Haematopus ostralegus</i>	Strandskade	Austernfischer	Scholekster
04560	Pied Avocet	<i>Recurvirostra avosetta</i>	Klyde	Säbelschnäbler	Kluut
04700	Great Ringed Plover	<i>Charadrius hiaticula</i>	Stor Præstekrave	Sandregenpfeifer	Bontbekplevier
04770	Kentish Plover	<i>Charadrius alexandrinus</i>	Hvidbrystet Præstekrave	Seeregenpfeifer	Strandplevier
04930	Northern Lapwing	<i>Vanellus vanellus</i>	Vibe	Kiebitz	Kievit
05320	Black-tailed Godwit	<i>Limosa limosa</i>	Stor Kobbersneppe	Uferschnepfe	Grutto
05410	Eurasian Curlew	<i>Numenius arquata</i>	Stor Regnspove	Großer Brachvogel	Wulp
05460	Common Redshank	<i>Tringa totanus</i>	Rødben	Rotschenkel	Tureluur
05750	Mediterranean Gull	<i>Larus melanocephalus</i>	Sorthovedet Måge	Schwarzkopfmöwe	Zwartkopmeeuw
05820	Common Black-headed Gull	<i>Larus ridibundus</i>	Hættemåge	Lachmöwe	Kokmeeuw
05900	Common Gull	<i>Larus canus</i>	Stormmåge	Sturmmöwe	Stormmeeuw
05910	Lesser Black-backed Gull	<i>Larus fuscus</i>	Sildemåge	Heringsmöwe	Kleine Mantelmeeuw
05920	Herring Gull	<i>Larus argentatus</i>	Sølvmåge	Silbermöwe	Zilvermeeuw
06000	Great Black-backed Gull	<i>Larus marinus</i>	Svartbag	Mantelmöwe	Grote Mantelmeeuw
06050	Gull-billed Tern	<i>Gelochelidon nilotica</i>	Sandterne	Lachseeschwalbe	Lachstern
06110	Sandwich Tern	<i>Sterna sandvicensis</i>	Splitterne	Brandseeschwalbe	Grote Stern
06150	Common Tern	<i>Sterna hirundo</i>	Fjordterne	Flußseeschwalbe	Visdief
06160	Arctic Tern	<i>Sterna paradisaea</i>	Havterne	Küstenseeschwalbe	Noordse Stern
06240	Little Tern	<i>Sterna albifrons</i>	Dværgterne	Zwergseeschwalbe	Dwergstern
07680	Short-eared Owl	<i>Asio flammeus</i>	Mosehornugl	Sumpfohreule	Velduil
1190	Little Egret*	<i>Egretta garzetta</i>	Silkehejre	Seidenreiher	Kleine Zilverreiger
1670	Barnacle Goose*	<i>Branta leucopsis</i>	Bramgås	Nonnengans	Brandgans
1790	Eurasian Wigeon*	<i>Anas penelope</i>	Pibeand	Pfeifente	Smient
1890	Northern Pintail*	<i>Anas acuta</i>	Spidsand	Spießente	Pijlstaart
5120	Dunlin*	<i>Calidris alpina</i>	Almindelig Ryle	Alpenstrandläufer	Bonte Strandloper
5170	Ruff*	<i>Philomachus pugnax</i>	Brushane	Kampfläufer	Kemphaan
5190	Common Snipe*	<i>Gallinago gallinago</i>	Dobbeltbekkasin	Bekassine	Watersnip
5610	Ruddy Turnstone*	<i>Arenaria interpres</i>	Stenvender	Steinwälzer	Steenloper
5780	Little Gull*	<i>Larus minutus</i>	Dværgmåge	Zwergmöwe	Dwergmeeuw

* Species where data do not allow trend analysis

Issues of the Publication Series „Wadden Sea Ecosystem“

- No. 1: Breeding Birds in the Wadden Sea 1991. 1994.
- No. 2: Migratory Waterbirds in the Wadden Sea 1992/93. 1994.
- No. 3: Guidelines for Monitoring of Breeding Birds in the Wadden Sea (in Dutch, German, Danish). 1995.
- No. 4: Breeding Birds on Census Areas 1990 until 1994. Status of Shorelark, Twite and Snow Bunting in the Wadden Sea. 1997.
- No. 5: Migratory Waterbirds in the Wadden Sea 1993/94. 1996.
- No. 6: Trilateral Monitoring and Assessment Program. TMAP Expert Workshops 1995/96. 1996.
- No. 7: Assessment of the Wadden Sea Ecosystem. 1997.
- No. 8: Monitoring Breeding Success of Coastal Birds. Monitoring Pollutants in Coastal Bird Eggs in the Wadden Sea. 1998.
- No. 9: Wadden Sea Quality Status Report 1999. 1999.
- No. 10: Breeding Birds in the Wadden Sea in 1996. 2000.
- No. 11: Contaminants in Bird Eggs in the Wadden Sea. Spatial and Temporal Trends 1999 - 2000. 2001.
- No. 12: Lancelwad. Landscape and Cultural Heritage in the Wadden Sea Region. 2001.
- No. 13: Final Report of the Trilateral Working Group on Coastal Protection and Sea Level Rise. 2001.
- No. 14: Wadden Sea Specific Eutrophication Criteria. 2001.
- No. 15: Common and Grey Seals in the Wadden Sea. TSEG-plus Report March/June 2001.2002.
- No. 16: High Tide Roosts in the Wadden Sea. A Review of Bird Distribution, Protection Regimes and Potential Sources of Anthropogenic Disturbance. 2003.
- No. 17: Management of North Sea Harbour and Grey Seal Populations. Proceedings of the International Symposium at EcoMare, Texel, The Netherlands November 29 - 30, 2002. 2003.
- No. 18: Contaminants in Bird Eggs in the Wadden Sea. Recent Spatial and Temporal Trends. Seabirds at Risk? Effects of Environmental Chemicals on Reproductive Success and Mass Growth of Seabirds at the Wadden Sea in the Mid 1990s. 2004.
- No. 19: Wadden Sea Quality Status Report 2004. 2005.
- No. 20: Migratory Waterbirds in the Wadden Sea 1980 - 2000. 2005.
- No. 21: Coastal Protection and Sea Level Rise - Solutions for Sustainable Coastal Protection. 2005
- No. 22: Breeding Birds in the Wadden Sea in 2001. 2006.
- No. 23: Seriously Declining Trends in Migratory Waterbirds: Causes-Concerns-Consequences. Proceedings of the International Workshop on 31 August 2005 in Wilhelmshaven, Germany. 2007.
- No. 24: Nomination of the Dutch-German Wadden Sea as World Heritage Site. 2008.
- No. 25: Wadden Sea Quality Status Report 2009. 2009.
- No. 26: Science for Nature Conservation and Management: The Wadden Sea Ecosystem and EU Directives. Proceedings of the 12th International Scientific Wadden Sea Symposium in Wilhelmshaven, Germany, 30 March - 3 April 2009. 2010.
- No. 27: Exploring contrasting trends of migratory waterbirds in the international Wadden Sea. 2010.
- No. 28: CPSL Third Report. The role of spatial planning and sediment in coastal risk management. 2010.
- No. 29: The Wadden Sea - A Universally Outstanding Tidal Wetland. The Wadden Sea Quality Status Report. Synthesis Report 2010.
- No. 30: Migratory Waterbirds in the Wadden Sea 1987-2008. 2010.
- No. 31: Trends of Migratory and Wintering Waterbirds in the Wadden Sea 1987/1988-2010/2011. 2013.
- No. 32: Trends of Breeding Birds in the Wadden Sea 1991-2009. 2013



The Trilateral Monitoring and Assessment Program (TMAP)

COMMON WADDEN SEA SECRETARIAT
Virchowstrasse 1
D-26382 Wilhelmshaven
Federal Republic of Germany
www.waddensea-secretariat.org

