

Breeding Birds in the Wadden Sea
Trends 1991–2017 and results of total counts in 2006 and 2012



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Joint Monitoring Group of Breeding Birds in the Wadden Sea (JMBB).

Authors

Kees Koffijberg,	SOVON Vogelonderzoek Nederland, Toernooiveld 1, NL-6503 GA Nijmegen, kees.koffijberg@sovon.nl;
Thomas Bregnballe,	Aarhus University, Department of Bioscience – Wildlife Ecology, Grenåvej 14, DK – 8410 Rønde, tb@bios.au.dk;
John Frikke,	Nationalpark Vadehavet, Havnebyvej 30, DK – 6792 Rømø, jofri@nst.dk;
Benjamin Gnep,	Schutzstation Wattenmeer, Nationalparkhaus Husum, Hafenstraße 3 D – 25813 Husum, b.gnep@schutzstation-wattenmeer.de;
Bernd Hälterlein,	Nationalparkverwaltung Schleswig-Holsteinisches Wattenmeer, Schloßgarten 1, D – 25832 Tönning, bernd.haelterlein@lkn.landsh.de;
Morten Bentzon Hansen,	Miljø- og Fødevareministeriet, Miljøstyrelsen, Skovridervej 3, Arnum, DK – 6510 Gram, mobha@svana.dk;
Peter Körber,	Freie und Hansestadt Hamburg, Behörde für Umwelt, Klima, Energie und Agrarwirtschaft, Neuenfelder Straße 19, D – 21109 Hamburg, peter.koerber@bukea.hamburg.de;
Gundolf Reichert,	Nationalparkverwaltung Niedersächsisches Wattenmeer, Virchowstr. 1, D – 26382 Wilhelmshaven, gundolf.reichert@nlpv-wattenmeer.niedersachsen.de;
Jens Umland,	Mühlenstraße 3, D-25870 Oldenswort, jens.umland@t-online.de;
Tom van der Meij,	Statistics Netherlands (CBS), Henri Faasdreef 312, NL – 2492 JP The Hague,.

Title photo

John Frikke

Drawings

Niels Knudsen, Winfried Daunicht

Layout

Gerold Lürßen

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Summary

Introduction

In the framework of the Trilateral Monitoring and Assessment Program (TMAP), coastal breeding birds have been surveyed in the international Wadden Sea since 1991. This standardized survey is coordinated by the Joint Monitoring Group for Breeding Birds (JMGB) and national institutions each of the five Wadden Sea 'countries'. Fieldwork is supported by a large number of volunteers and staff of various governmental agencies and NGOs (see Appendix 6). It includes annual counts of 27 rare and colonial breeding birds (e.g. Pied Avocet, Herring Gull, Common Tern), annual counts in a large number of sample areas for 8 common and widespread birds (e.g. Shelduck, Oystercatcher, Common Redshank) and a total count of all species once every six years (Tab. 2.1). Additional parameters like breeding success and contaminants in bird eggs are investigated as well, but not part of this progress report. Also, there is no scheme to assess mortality rates, which would enable a more integrated approach to assess population dynamics. Main aims of the TMAP-breeding bird census is to monitor population size and trends in breeding numbers as well as to assess overall distribution within the international Wadden Sea. Among the species and populations covered, several are of international importance, representing a large share of the international population, or even being the single most breeding spot in Northwest Europe (e.g. Eurasian Spoonbill, Gull-billed Tern). Thus the fate of breeding birds in the Wadden Sea also affects how birds fare on flyway level, as has also been recently pointed at by the results from the Wadden Sea Flyway Initiative (assessing census data on flyway level).

Outline of this report

This progress report provides baseline information on trends in breeding numbers in the period 1991–2017 on the level of the international Wadden Sea, the respective countries (Fig. 3.1, Tab. 3.1) and for a selection of species also for separate regions (Fig. 3.3–3.18), in order to highlight contrasting patterns which may hint specific causes for the trends observed. In addition, results of the total counts in 2006 and 2012 have been included (as they had not been published before; Tab. 4.1, Fig. 4.1–4.2). Distribution maps have also been included in the species accounts, showing both 2006 and 2012 and thus also enabling a direct comparison if distribution has changed. Results of the latest total count in 2018 are not available for all countries yet, but will be included in the next progress report.

Total numbers and distribution

Both in 2006 and 2012 about 395,000 breeding pairs of coastal breeding birds were counted. A large share of these is taken by a number of colonial breeding birds like Black-headed Gull, Lesser Black-backed Gull and Herring Gull, as well as widely dispersed breeding birds like Oystercatcher and Northern Lapwing. More rare are those species which are relatively 'new' to the Wadden Sea, like Little Egret, or species that have suffered long-term declines and nowadays balance on the verge of extinction as a breeding bird, for instance Hen Harrier and Dunlin. Few species, e.g. Little Gull and Turnstone, do not breed annually and thus can be regarded as accidental breeders. On average (mean of both counts), the Dutch Wadden Sea supports largest numbers (44% of all breeding pairs), followed by Niedersachsen/Hamburg (25%), Schleswig-Holstein (24%) and Denmark (7%). These differences of course partly reflect the size and habitats of the respective parts of the international Wadden Sea. Overall distribution patterns mainly reflect geographical distribution on a larger scale. Some species predominantly occur north of the Elbe estuary, e.g. Ruff, Gull-billed Tern, Dunlin, Kentish Plover, Red-breasted Merganser and Arctic Tern. On the other hand Little Egret, Eurasian Spoonbill, Common Eider, Eurasian Curlew, Sandwich Tern, Great Cormorant, Hen Harrier and Lesser Black-backed Gull are most abundant west of the River Elbe. Overall, 75% of all breeding pairs (situation 2012) occur on the Wadden Sea islands (Fig. 4.2). This is especially true for colonial breeding birds (which also take a large share in total populations). Coastal wader for instance, clearly breed more dispersed and are also abundant along the mainland shores, which have been abandoned by many colonial breeding birds after 2000. Drivers for population change may differ considerably between islands and mainland. Especially along the mainland (but also on islands connected with dams) predation risk has been identified as one of the drivers for declines, as mammalian predators are more abundant there (see below), whereas aspects like flooding risk due to summer storms affect both breeding birds at islands and those breeding at exposed sites along the mainland coast.

Update of trends in numbers

Previous progress reports as well as the latest Quality Status Report (2017) have pointed at the large number of breeding bird species that have experienced significant declines in the international Wadden Sea since the start of the monitoring scheme in 1991, and notably have

become pronounced after the late 1990s. With the update of recent data, this pattern can be largely confirmed. Overall 18 from 32 species (56%) for which trends could be calculated have significantly gone down in numbers between 1991 and 2017 (Fig. 3.1). Among those showing the highest rates of decline are not only species that have become already rare due to long-lasting declines (e.g. Common Snipe, Hen Harrier, Ruff) but also species that still breed dispersed, like Great Ringed Plover, or even are among the more abundant species found, like Oystercatcher (Fig. 3.1). On the other end, Barnacle Goose is the fastest expanding breeding bird in the Wadden Sea (reflecting its overall population increase at temperate breeding sites), albeit its numbers during summer are only a small fraction of the wintering populations from the Baltic and the Russian Arctic. Other thriving species are Mediterranean Gull and Great Black-backed Gull (also two rather 'new' breeding bird species), Great Cormorant and Eurasian Spoonbill. Trends in Sandwich Tern, Little Tern and Gull-bird Tern are classified as stable. When looking at the past 12 years (2006-2017), long-term declines since 1991 in species like Common Eider, Black-tailed Godwit, Common Redshank and Herring Gull have stabilized recently. The same applies to Shelduck and Lesser Black-backed Gull, two species with long-term increases but now leveling off. Among the increasing species, annual growth rates went down in Great Cormorant and Eurasian Spoonbill. Due to annual fluctuations or wave-like patterns in trends ("ups and downs"), many trends for the period 2006-2017 can only be classified as fluctuating, i.e. no significant trend could be detected, thus some caution is needed for interpretation.

At country level, more long-term decreasing species are found in Niedersachsen/Hamburg (14 out of 24) and in The Netherlands (16 out of 28), whereas in Denmark and Schleswig-Holstein there are more species subject to a stable trend in 1991-2017. Also this is a pattern which has been pointed out before, suggesting that in the western Wadden Sea breeding birds face more difficult conditions as in the northern parts. Contrasting trends within the international Wadden Sea are especially found in Shelduck, Pied Avocet, Northern Lapwing, Common Redshank, Black-headed Gull, Common Gull, Herring Gull, Common Tern and Little Tern (Fig. 3.3-3.18). Some of these patterns show some sort of a gradient from decreases in the southwest to stable/increasing numbers in the northeast, e.g. Pied Avocet, Black-headed Gull, Common Gull and Herring Gull. It would be interesting to investigate further possible reasons for these patterns, as it may point at large-scale factors operating instead

of varying local conditions. The latter may explain local differences in trends in e.g. Kentish Plover (Denmark, recently also Schleswig-Holstein), Northern Lapwing (eastern Wadden Sea in The Netherlands and Dollard area Netherlands/Niedersachsen) and Little Tern (The Netherlands). Also in this case, further explorations may find drivers for such patterns to emerge and help to understand backgrounds for changing numbers.

Interaction with management

The long-term declines observed in many breeding birds have got much attention in the past few years, both at trilateral level (e.g. workshops on 'Breeding birds in Trouble' and Predation Management') and at national level. Results from international counts carried out in the framework of the Wadden Sea Flyway Initiative also suggest that for some species declines in overall population sizes are to some extent associated with drivers in the Wadden Sea. In all countries, efforts have been ongoing, or have started recently, to improve conditions for breeding birds. This is e.g. expressed in a national breeding bird action plan ("Actieplan broedvogels Waddenzee") and the Wadden Fund project "Wij en Wadvogels" in the Dutch Wadden Sea, LIFE-projects (Lower Saxony, Schleswig-Holstein, Denmark), concerted action to prevent high predation rates (Niedersachsen, Schleswig-Holstein, Denmark) and various local measures, including de-embankment of polder areas and rewetting or restoration of salt marshes (The Netherlands, Niedersachsen, Hamburg) or measures targeted at specific species (e.g. protection of beach-breeding birds in all countries, species-protection measures for Gull-billed Tern in Schleswig-Holstein). Some of these projects are also accompanied with specific monitoring and research activities (apart from general TMAP-monitoring) and hopefully succeed in reversing the negative trends. Still, however, not all drivers for population declines are currently well-known (especially when it comes to impact of changes in food availability), urging the need for species-specific investigations (at least for key-species). Moreover, especially along the mainland coast, various pressures like predation or flooding risk may make proper success or failure evaluations of measures taken difficult, as they occur simultaneously or even interact.

Resumé

Introduktion

Inden for rammerne af det trilaterale overvågningsprogram (Trilateral Monitoring and Assessment Program - TMAP) er ynglende kystfugle blevet optalt i det internationale Vadehav siden 1991. Denne standardiserede overvågning er koordineret af den trilaterale ekspertgruppe vedrørende overvågning af ynglefugle (Joint Monitoring Group for Breeding Birds - JMGB) og nationale institutioner i hver af de fem 'vadehavslande' – Danmark, Slesvig-Holsten, Hamborg, Nedersaksen og Nederlandene. Feltarbejdet udføres af et stort antal frivillige og af personale fra forskellige statslige myndigheder og grønne organisationer. Overvågningen inkluderer årlige optællinger af 27 arter, der enten yngler fåtalligt eller i kolonier (f.eks. klyde, sølvmåge og fjordterne) samt årlige optællinger af otte mere almindelige arter (f.eks. gravand, strandskade og rødben) i et antal afgrænsede områder (såkaldte 'kontrolområder'). Desuden gennemføres der en totaltælling af alle arter hvert sjette år (Tab 2.1). I Nederlandene og Tyskland gennemføres der også registreringer af fuglenes ynglesucces, og alle tre vadehavslande udvalgte fuglearter æg for forekomst af forurenende stoffer, men resultaterne fra disse undersøgelser udgør ikke en del af denne statusrapport. Der er ikke igangsat noget program til at følge udviklingen i fuglenes overlevelse, hvilket ellers ville muliggøre en mere integreret tilgang til vurderingen af bestandenes dynamik.

Hovedformålet med TMAP-ynglefugletællingerne er at overvåge bestandenes størrelser og deres udviklingstendenser, såvel som at vurdere den overordnede udbredelse og fordeling af arterne i Vadehavet. Blandt de arter og bestande, der er omfattet af overvågningen, er der flere af international betydning, som repræsenterer en stor del af den samlede bestand eller endda udgør den eneste ynglebestand i Nordvesteuropa (f.eks. skestork og sandterne). Således påvirker ynglefuglenes trivsel i Vadehavet også, hvordan arterne klarer sig på trækvejs-niveau – som det for nyligt også er blevet påvist i projektet 'the Wadden Sea Flyway Initiative' ud fra analyser af resultaterne fra optællingerne.

Opbygningen af denne rapport

Denne statusrapport giver basis-informationer om tendenserne i ynglebestandene i perioden 1991-2017 for Det Trilaterale Vadehav. Der fremlægges

resultater fra de respektive dele af Vadehavet (Fig. 3.1, Tab. 3.1) og for et udvalg af arter også for separate regioner (Fig. 3.3-3.18). Det er således relevant at belyse, hvorvidt der er geografiske forskelle i bestandenes udvikling, idet dette i visse tilfælde kan give et fingerpeg om de specifikke årsager til de observerede bestandsudviklinger. Derudover er resultaterne af de totale tællinger i 2006 og 2012 medtaget, da de ikke har været offentliggjort før (Tab 4.1, Fig. 4.1-4.2). Udbredelseskort, som viser fundene i både 2006 og 2012, er også inkluderet i artsgennemgangen og muliggør en direkte sammenligning, som kan afsløre, om udbredelsen har ændret sig. Resultaterne af den seneste, totale optælling i 2018 er endnu ikke tilgængelige for alle områder, men de vil blive inkluderet i den næste statusrapport.

Totale antal og udbredelse

Både i 2006 og i 2012 blev der talt ca. 395.000 par af ynglende kystfugle. En stor andel af disse udgøres af et antal kolonirugende ynglefugle som hættemåge, sildemåge og sølvmåge såvel som vidt udbredte ynglefugle som strandskade og vibe. Mere sjældne er de arter, der er relativt nye som ynglefugle i Vadehavet, som silkehejre, eller arter, der har lidt under langvarige nedgange og i dag balancerer på randen af at uddø som ynglefugle, f.eks. blå kærhøg og almindelig ryle. Få arter, som f.eks. dværgmåge og stenvender, yngler ikke årligt og kan derfor betragtes som ustabile ynglefugle. I gennemsnit findes det største antal af ynglefugle i det hollandske Vadehav (44 % af alle ynglepar), efterfulgt af Nedersaksen/Hamborg (25 %), Slesvig-Holsten (24 %) og Danmark (7 %).

Disse forskelle afspejler naturligvis til dels størrelsen af områderne og levestederne i de respektive dele af det internationale Vadehav. Overordnede udbredelser afspejler primært den geografiske fordeling på en større skala. Nogle arter forekommer overvejende nord for Elbens munding, som f.eks. brushane, sandterne, almindelig ryle, hvidbrystet præstekrave, toppet skallesluger og havterne. På den anden side er arter som silkehejre, skestork, ederfugl, storspove, splitterne, skarv, blå kærhøg og sildemåge især udbredt vest for Elben. Samlet set forekommer omkring 75 % af alle ynglepar på vadehavsøerne (status 2012). Det gælder især for kolonirugende ynglefugle, som også udgør en stor andel af de samlede bestande. F.eks. yngler de kysttilknyttede vadefugle tydeligvis mere spredt, men findes også med tættere bestande langs fastlandskysten, som til gengæld er blevet opgivet af mange kolonirugende arter efter 2000. Faktorer som medfører forandringer i bestandene, kan

variere temmelig meget fra øerne til fastlandet. Især på fastlandskysten (men også på øer forbundet med dæmninger) er øget risiko for at æg og unger bliver præderet af rovdyr blevet identificeret som en væsentlig faktor, der har bidraget til de observerede tilbagegange. En anden betydende faktor som oversvømmelser i forbindelse med sommerstorme påvirker både ynglefuglene på øerne og på de lavtliggende og eksponerede dele af fastlandskysten.

Opdatering af viden om udviklingen i antallene

Både tidligere statusrapporter for ynglefuglene og tilstandsvurderinger af Vadehavet (f.eks. Quality Status Report 2017) har peget på det store antal arter blandt de ynglende fugle, hvis bestande er skrumpet betydeligt i det internationale Vadehav siden starten af overvågningsprogrammet i 1991 og især efter slutningen af 1990'erne.

Med nærværende nye opdatering kan denne tendens stort set bekræftes. Samlet set er 18 ud af 32 (56 %), arters bestande faldet markant mellem 1991 og 2017 (Fig. 3.1; tendenser i bestandenes udvikling har kunnet beregnes for 32 arter). Blandt de arter, der viser de største tilbagegange, er ikke kun arter, der allerede er sjældne på grund af langvarig tilbagegang (f.eks. dobbeltbekkasin, blå kærhøg og brushane), men også arter, der stadig yngler spredt, som stor præstekrave, eller endda er blandt de mere talrige arter som strandskade (Fig. 3.1). Bramgåsen er den ynglefugl, hvis bestand har haft den største vækstrate i Vadehavet, men ind til videre er antallet af ynglepar af denne art i Vadehavet dog fortsat lavt, især sammenlignet med bestandene omkring Østersøen og arktiske dele af Rusland, der i vinterhalvåret bl.a. benytter Vadehavet. Andre succesrige arter er sorthovedet måge og svartbag (også to ret nye ynglefuglearter), skarv og skestork. Bestandsudviklingen hos splitterne, dværgterne og sandterne er vurderet som stabile. Når man ser på de sidste 12 år (2006-2017), har langvarige fald siden 1991 for arter som ederfugl, stor kobbersneppe, rødben og sølvmåge i de senere år stabiliseret sig. Det samme gælder for gravand og sildemåge, som er to arter, hvis bestande i længere tid har været i fremgang, men som nu stabiliserer sig. Blandt arterne i fremgang faldt den årlige vækstrate for skarv og skestork. På grund af årlige udsving eller skiftende tendenser over tid (op- og nedture) kan mange tendenser for perioden 2006-2017 kun klassificeres som 'svingende' (fluktuerende). Det vil sige, at der ikke kunne påvises en signifikant tendens for stigning

eller fald, og der er derfor for visse arter behov for forsigtighed, når man fortolker tilsyneladende tendenser.

På 'lands-niveau' findes der flere arter med langvarige fald i bestandene i Nedersaksen/Hamborg (14 ud af 24 arter) og i Nederlandene (16 ud af 28 arter), mens der i Danmark og Slesvig-Holsten er flere arter, der holder mere stabile tendenser for bestandene i 1991-2017. Dette er et mønster, der er blevet påpeget før, og det tyder på, at ynglefuglene i det vestlige Vadehav har vanskeligere forhold end ynglefuglene i de nordlige dele. Modsatrettede tendenser inden for det internationale Vadehav ses især hos gravand, klyde, vibe, rødben, hættemåge, stormmåge, sølvmåge, fjordterne og dværgterne (Fig. 3.3-3.18). Nogle af disse mønstre viser en slags gradient fra tilbagegange mod sydvest til stabile/voksende bestande mod nordøst. Det gælder f.eks. for klyde, hættemåge, stormmåge og sølvmåge. Det ville være interessant at undersøge de mulige årsager til disse mønstre yderligere, for det peger måske på, at det er storskala-faktorer, der styrer udviklingen frem for de varierende lokale forhold. Sidstnævnte kan måske forklare lokale forskelle i udviklingen af bestandene af f.eks. hvidbrystet præstekrave (Danmark og for nyligt også Slesvig-Holsten), vibe (de østlige del af det nederlandske Vadehav og Dollard-området i Nederlandene/Nedersaksen) og dværgterne (Nederlandene). Også i dette tilfælde kan yderligere undersøgelser måske afsløre faktorerne bag sådanne mønstre og dermed bidrage til forståelsen af årsagerne til ændringer ynglefuglenes antal.

Sammenhænge med forvaltning

De langvarige bestandsnedgange, der er observeret hos mange ynglefugle, har fået stor opmærksomhed i de senere år, både på trilateralt niveau (f.eks. med workshops om ynglefugle i knibe og om forvaltning af prædatorer) og på nationalt niveau. Resultater fra internationale tællinger foretaget inden for rammerne af 'Wadden Sea Flyway Initiative' antyder også, at for nogle arter er fald i den samlede bestand til en vis grad forbundet med forhold i Vadehavet.

I alle lande er der projekter, både igangværende og nystartede, som har til formål at forbedre forholdene for ynglefuglene. Det er f.eks. udtrykt i en national handlingsplan for ynglefugle (Actieplan Broedvogels Waddenzee) og et projekt iværksat af den nederlandske vadehavsfond (Wadden Fund), 'Wij en Wadvogels', i det nederlandske Vadehav, LIFE-projekter i Nedersaksen og Danmark, sam-

menhængende indsatser til fordel for at begrænse prædationstrykket fra rovdyr i Nedersaksen, Slesvig-Holsten og Danmark samt forskellige lokale tiltag, herunder 'uddigning' af inddigede områder og hævning af vandstand eller genopretning af strandenge i Nederlandene, Nedersaksen og Hamborg eller foranstaltninger målrettet specifikke arter (f.eks. beskyttelse af strandrugende fugle i alle lande og beskyttelse af sandternen i Slesvig-Holsten). En del af disse projekter ledsages også af specifikke overvågnings- og forskningsaktiviteter (ud over den generelle TMAP-overvågning), og forhåbentlig lykkes det, at vende de negative tendenser for flere af ynglefuglene.

Det er imidlertid ikke alle årsager til bestandsnedgangene, som i øjeblikket er kendte (især når det kommer til ændringer forårsaget af ændringer i fødetilgængeligheden), og det illustrerer behovet for flere artsspecifikke undersøgelser (i det mindste for nøglearter). Desuden findes, især langs fastlandskysterne, forskellige påvirkninger af bestandene som f.eks. prædation eller oversvømmelser som kan vanskeliggøre ordentlige målinger af succeser eller fiaskoer blandt de valgte forvaltningstiltag, da påvirkningerne ofte forekommer samtidigt eller endda i samspil.

Zusammenfassung

Einleitung

Im Rahmen des Trilateraleren TMAP-Programms werden seit 1991 im internationalen Wattenmeer die Brutbestände von See- und Küstenvögeln erfasst. Diese standardisierte Erfassung wird von der Trilateralen Expertengruppe für Brutvögel (Joint Monitoring Group for Breeding Birds, JMGB) und nationalen Institutionen in Dänemark, Schleswig-Holstein, Hamburg, Niedersachsen und die Niederlande koordiniert. Die Feldarbeit wird durch eine große Zahl von Freiwilligen und Mitarbeitern öffentlicher Stellen und Naturschutzverbänden unterstützt (s. Anhang 6). Das Brutvogelmonitoring im Wattenmeer umfasst jährliche Zählungen der 27 seltenen Küstenvogelarten (z.B. Alpenstrandläufer, Kampfläufer) sowie der Koloniebrüter (z.B. Säbelschnäbler, Silbermöwe, Flusseeeschwalbe). Häufige und weit verbreitete Arten (8) wie z.B. Brandente, Austernfischer oder Rotschenkel werden alljährlich auf repräsentativen Probeflächen erfasst. Eine Gesamterfassung ("total census") aller Brutvogelarten des TMAP-Artensets (siehe Anhang 5) erfolgt alle sechs Jahre auf der gesamten Fläche des trilateralen Kooperationsgebietes (Tab. 2.1). Weitere Parameter wie Bruterfolg und Schadstoffe in Vogeleiern werden im TMAP ebenfalls untersucht, sind aber nicht Teil dieses Zwischenberichts. Eine Analyse der Mortalitätsraten fehlt im Moment, würde es aber besser möglich machen die Gründe der Populationsänderungen zu ergründen. Die Ziele der TMAP-Brutvogelmonitorings sind die Überwachung der Bestandsgrößen und ihrer Trends sowie die Beschreibung der Gesamtverteilung innerhalb des internationalen Wattenmeeres. Die Brutbestände mehrerer im Wattenmeer brütender Vogelarten sind von internationaler Bedeutung, da sie einen großen Anteil an der Gesamtpopulation ausmachen oder das Wattenmeer das einzige Brutgebiet in Nordwesteuropa darstellt (z.B. Löffler, Lachseeeschwalbe). Die Entwicklung der im Wattenmeer brütenden Vögel hat also einen wesentlichen Einfluss auf die Gesamtbestände entlang des Ostatlantischen Zugweges, so wie auch bereits aufgezeichnet wurde von der Wadden Sea Flyway Initiative.

Gliederung

Dieser Brutvogelbericht liefert als Kerninformation die Entwicklung der Brutbestände im Zeitraum 1991-2017 auf der Ebene des internationalen

Wattenmeeres, der jeweiligen Länder (Abb. 3.1, Tab. 3.1) sowie - für eine Auswahl von Arten - auch für einzelne Regionen (Abb. 3.3-3.18). So werden sowohl übereinstimmende wie gegensätzliche Bestandstrends herausgearbeitet und beschrieben.

Zudem veröffentlicht dieser Bericht die Ergebnisse der Gesamterfassungen der Jahre 2006 und 2012 (Tab. 4.1, Abb. 4.1-4.2), u.a. in Form von Karten bei den Artkapiteln, die die Verbreitung der Arten sowohl 2006 als auch 2012 zeigen. So sind direkte Vergleiche möglich und Veränderungen in der Verteilung sichtbar. Die Ergebnisse der Gesamterfassung im Jahr 2018 liegen noch nicht für alle Länder vor, werden aber im nächsten Brutvogelbericht berücksichtigt.

Gesamtbestände und Verteilung

Sowohl 2006 als auch 2012 wurden etwa 395.000 Brutpaare von 33 See- und Küstenvogelarten erfasst. Der überwiegende Anteil entfällt auf koloniebrütende Arten wie Lachmöwe, die Hering- und Silbermöwe sowie auf weitverbreitete Arten wie Austernfischer und Kiebitz. Weitaus seltener sind jene Arten, die relativ "neu" im Wattenmeer sind wie z.B. Seidenreier oder Arten, die einen langfristigen Rückgang erlitten haben und derzeit im Wattenmeer als Brutvogel am Rande des Aussterbens stehen, wie z.B. Kornweihe und Alpenstrandläufer. Wenige Arten wie Zwergmöwe oder Steinwälzer brüten nicht alljährlich im Wattenmeer und sollten daher als unregelmäßige Brutvögel eingestuft werden. Im Durchschnitt (der Mittelwert beider Zählungen) weist das niederländische Wattenmeer die höchste Anzahl von Brutpaaren auf (44%), gefolgt von Niedersachsen/Hamburg (25%), Schleswig-Holstein (24%) und Dänemark (7%). Hierbei ist zu beachten, dass diese Verteilung auch die jeweiligen Flächenanteile der Länder am internationalen Wattenmeer und seiner Brutgebiete und Bruthabitate widerspiegelt.

In den Verbreitungsmustern im Wattenmeer findet sich häufig die geographische Artverbreitung auf größeren Maßstab wieder. So kommen einige Arten vorwiegend nördlich der Elbmündung vor wie z.B. Kampfläufer, Lachseeeschwalbe, Alpenstrandläufer, Seeregenpfeifer, Mittelsäger und Küstenseeschwalbe. Auf der anderen Seite sind Seidenreier, Löffler, Eiderente, Brachvogel, Brandseeeschwalbe, Kormoran, Kornweihe und Lachmöwe westlich der Elbe am häufigsten anzutreffen. Insgesamt kommen 75% aller Brutpaare (Jahr 2012) auf den Wattenmeerinseln und Halligen vor (Abb. 4.2). Dies gilt insbesondere für Koloniebrüter, die ohnehin einen großen Anteil am Brutvogel-Gesamtbestand aufweisen. Einige

Watvogelarten brüten weit verteilt im Wattenmeer und kommen auch an der Festlandsküste regelmäßig vor. Ab dem Jahr 2000 verschwanden viele Brutstandorte von Koloniebrütern an der Festlandsküste. Sie wurden aufgegeben und die Vögel wanderten ab.

Dabei können sich bestandsbeeinflussende Faktoren auf den Inseln und am Festland erheblich unterscheiden. Vor allem an der Festlandsküste (aber auch auf solchen Inseln, die über Dämme mit dem Festland verbunden sind) unterliegen Brutvögel einem hohen Prädationsrisiko durch Raubsäuger während die Inseln natürlicherweise frei von Raubsäufern sind. Verluste durch Prädation zählt zu den Hauptursachen für den Rückgang der Brutvogelbestände an der Wattenmeer-Festlandsküste und auch in vielen Binnenlandsgebieten (Binnendeichs).

Andere Faktoren wie Gelegeverluste aufgrund von Überschwemmungen durch Sommerfluten, also erhöhte Tiden während der Brutzeit, können sich auf die Brutvögel auf Inseln wie am Festland gleichermaßen auswirken.

Aktuelle Bestandstrends

Frühere TMAP-Brutvogelberichte sowie der jüngste Bericht zum Zustand des Wattenmeeres (QSR 2017) haben auf die hohe Zahl von Brutvogelarten hingewiesen, die seit Beginn des Monitoringsprogramms im Jahr 1991 erhebliche Rückgänge zu verzeichnen haben. Mit der Aktualisierung der Trendberechnungen in diesem Bericht kann dieser Negativtrend weitgehend bestätigt werden. Insgesamt konnten für 18 von 32 Arten (56%) seit 1991 stark rückläufige Trends berechnet werden (Abb. 3.1). Zu den Brutvogelarten mit den stärksten Rückgängen zählen einerseits Arten, die durch lang anhaltende Rückgänge bereits selten geworden waren (z.B. Bekassine, Kornweihe, Kampfläufer). Andererseits betrifft der Rückgang Arten, die spärlich verteilt im Wattenmeer vorkommen, wie z.B. Sandregenpfeifer, aber auch häufige, weitverbreitete Arten wie den Austernfischer (Abb. 3.1).

Im Gegensatz dazu ist die Weißwangengans (Nonnengans) gegenwärtig die sich am schnellsten ausbreitende Brutvogelart im Wattenmeer. Dies spiegelt den allgemeinen Anstieg der Brutpopulation in den nicht-arktischen Brutgebieten wider, wengleich die Sommerbestände der Art nur einen Bruchteil der im Wattenmeer überwinterten Rastbestände von Gänsen aus der Ostsee und der russischen Arktis ausmacht. Zudem nehmen Schwarzkopfmöwe und Mantelmöwe zu, ebenfalls zwei relativ "neue" Brutvogelarten im Wattenmeer sowie Kormoran und Löffler. Die Bestände von

Brand-, Zwerg- und Lachseeschwalbe werden in diesem Trendupdate als stabil eingestuft. Die ehemals langfristig rückläufigen Trends haben sich im Laufe der vergangenen zwölf Jahre (2006-2017) bei einigen Arten verlangsamt, bzw. stabilisiert: Eiderente, Uferschnepfe, Rotschenkel und Silbermöwe. Auch Arten mit einer langfristigen Zunahmen wie Brandgans und Heringsmöwe zeigen in den letzten Jahren gleichbleibende Bestände. Es konnte festgestellt werden, dass die jährlichen Bestandszuwächse bei langfristigen zunehmenden Arten wie Kormoran und Löffler abflachten. Aufgrund jährlicher Schwankungen oder stark wellenförmiger Trendkurven können viele Trends im Zeitraum 2006-2017 nur als schwankend eingestuft werden, d.h. es konnte kein signifikanter Trend festgestellt werden, so dass bei der Interpretation eine gewisse Vorsicht geboten ist.

Auf der Ebene der Wattenmeer-Länder finden sich langfristig (seit 1991) abnehmende Arten in Niedersachsen/Hamburg (14 von 24 Arten) und in den Niederlanden (16 von 28), während in Dänemark und Schleswig-Holstein mehr Arten zu finden sind, die im Zeitraum 1991-2017 einem stabilen Trend unterliegen. Dieses Muster wurde bereits in früheren Berichten beschrieben. Es deutet darauf hin, dass Brutvögel im westlichen Wattenmeer schwierigeren Bedingungen ausgesetzt sind als in den nördlichen Teilen. Gegensätzliche Trends innerhalb des internationalen Wattenmeeres finden sich vor allem bei Brandgans, Säbelschnäbler, Kiebitz, Rotschenkel, Lachmöwe, Sturmmöwe Silbermöwe, Flusseeeschwalbe und Zwergseeeschwalbe (Abb. 3.3-3.18). Einige dieser Muster zeigen eine Art Gradient von einem Rückgang im Südwesten zu stabilen bzw. zunehmenden Brutbeständen im Nordosten, z.B. Säbelschnäbler, Lachmöwe, Sturmmöwe und Silbermöwe. Weitere Untersuchungen zur Erklärung dieser Muster sind wünschenswert, da zu vermuten ist, dass die Verteilung auf großräumige Faktoren zurückzuführen sind und nicht auf die unterschiedlichen lokalen Bedingungen. Letztere könnten lokale Unterschiede in der Entwicklung von z.B. Seereggenpfeifer (Dänemark, neuerdings auch Schleswig-Holstein), Kiebitz (östliches Wattenmeer in den Niederlanden und Dollartgebiet Niederlande/Niedersachsen) und Zwergseeeschwalbe (Niederlande) erklären. Auch in diesem Fall können weitere Untersuchungen die Ursachen für die Erklärung solcher Muster finden und damit Hinweise liefern für Schutzkonzepte.

Verknüpfung mit Management

Der langfristige Rückgang vieler Brutvögel

hat in den letzten Jahren sowohl auf trilateraler wie nationaler Ebene eine große Aufmerksamkeit erfahren, z.B. in den Workshops "Breeding birds in Trouble" und "Predation Management". Die Ergebnisse internationaler Rastvogelzählungen, z.B. im Rahmen der Wadden Sea Flyway Initiative (WSFI), deuten darauf hin, dass der Rückgang einiger Arten zu einem gewissen Grad im Wattenmeer zu suchen ist. Dies hat dazu geführt, dass in allen Ländern Maßnahmen zum Schutz von Brut- und Rastvögeln im Wattenmeer umgesetzt werden, so z.B. mit einem Brutvogelaktionsplan ("Actieplan broedvogels Waddenzee") und dem Wattenmeerfondsprojekt "Wij en Wadvogels" im niederländischen Wattenmeer, in LIFE-Wiesenvogelschutzprojekten (Niedersachsen, Schleswig-Holstein, Dänemark), Programmen zum Prädationsmanagement (Niedersachsen, Schleswig-Holstein, Dänemark) sowie Maßnahmen zur Renaturierung von Salzwiesen z.B. durch Ausdeichungen und Vernässung (Niederlande, Hamburg, Niedersachsen). Ein Teil dieser Projekte geht auch mit maßnahmenspezifischen Effizienzuntersuchungen und Forschungsaktivitäten einher. All dies wird hoffentlich dazu beitragen, die negativen Trends bei vielen Arten umzukehren. Allerdings sind derzeit noch nicht alle Ursachen für den Populationsrückgang eindeutig geklärt, insbesondere was die Auswirkungen von Veränderungen in der Nahrungsverfügbarkeit betrifft, so dass art- und themenspezifische Untersuchungen dringend erforderlich sind.

Samenvatting

Inleiding

In het kader van het trilaterale TMAP-programma (in Nederland onderdeel van het Netwerk Ecologische Monitoring) worden sinds 1991 kustbroedvogels in de internationale Waddenzee gemonitord. Deze gestandaardiseerde tellingen worden gecoördineerd door de gezamenlijke coördinatoren per land, die trilateraal bijeenkomen als de Joint Monitoring Group for Breeding Birds (JMBB). Het veldwerk gebeurt door een groot aantal vrijwilligers, medewerkers van terreinbeheerders en medewerkers van verschillende overheden (zie bijlage 6 voor overzicht), terwijl de trends door het Centraal Bureau voor de Statistiek (CBS) worden bepaald. Het telprogramma bestaat uit jaarlijkse integrale tellingen van 27 zeldzame of in kolonies broedende vogelsoorten (bijv. Kluut, Zilvermeeuw, Visdief) en tellingen in steekproefgebieden (BMP) van 8 wijd verspreid voorkomende algemene soorten (bijv. Bergeend, Scholekster, Tureluur). Eens in de zes jaar worden ook deze algemene soorten integraal geteld ("integraal waddenjaar"). Ook wordt bij een selectie van soorten het broedsucces jaarlijks gemeten en worden eieren onderzocht op belasting met contaminanten (Tab. 2.1), maar deze aspecten worden in dit rapport niet besproken. Hoewel er vogels worden geringd, vindt er nog geen analyse plaats naar de jaarlijkse overleving van kustbroedvogels, dat met de andere beschikbare gegevens een beter licht zou kunnen werpen op de achtergronden van de waargenomen aantalsveranderingen. Belangrijkste doel van TMAP voor broedvogels is het volgen van populatiegrootte en – trends en het in kaart brengen van de verspreiding, en veranderingen daarin. Van verschillende soorten zijn de aantallen in internationaal opzicht relevant, o.a. bij Lepelaar en Lachstern, die in NW-Europa hun voornaamste kolonies in het internationale Waddengebied hebben. Zoals eerder reeds vastgesteld bij de analyse van resultaten van het Wadden Sea Flyway Initiative, hebben ontwikkelingen bij de broedvogels in de Waddenzee ook repercussies op de hele flyway.

Opzet rapport

Dit rapport heeft het karakter van een voortgangsrapport en vat de basale informatie samen over trends in aantallen broedvogels in de internationale Waddenzee in 1991-2017 (Fig. 3.1, 3.2), incl. trends per land en per regio (kaarten in Fig.

3.3-3.18). Dit laatste is vooral bedoeld om te laten zien of soorten binnen de Waddenzee verschillende (contrasterende) ontwikkelingen laten zien, en daarmee kunnen wijzen op mogelijke oorzaken achter de waargenomen trends. Daarnaast worden de resultaten van de integrale jaren 2006 en 2012 gepresenteerd (Tab. 4.1, Fig. 4.1-4.2), omdat deze niet eerder in rapportvorm waren verschenen. Van deze tellingen zijn de verspreidingsgegevens in kaartbeelden bij de soortbesprekingen in hoofdstuk 5 opgenomen. Deze kaartbeelden maken ook een directe vergelijking van de verspreiding in beide jaren mogelijk. De resultaten van de laatste integrale telling in 2018 zullen in het eerstvolgende rapport worden gepresenteerd.

Aantallen en verspreiding

Zowel in 2006 als 2012 werden ongeveer 395.000 broedparen (of territoria) vastgesteld. Koloniebroedvogels als Kokmeeuw, Kleine Mantelmeeuw en Zilvermeeuw nemen daarvan een belangrijk aandeel voor rekening, net als wijd verspreide soorten als Scholekster en Kievit. Uitgesproken zeldzaam zijn 'nieuwe' broedvogels als Kleine Zilverreiger of soorten die al geruime tijd afnemende zijn, en nu op het punt staan om als broedvogel in de internationale Waddenzee uit te sterven, bijv. Blauwe Kiekendief en Bonte Strandloper. Zeldzame soorten als Dwergmeeuw en Steenloper moeten eerder als onregelmatige broedvogels worden beschouwd. Op basis van het gemiddelde van beide tellingen, broeden de meeste vogels in de Nederlandse Waddenzee (44% totale aantal), gevolgd door Nedersachsen/Hamburg (25%), Schleswig-Holstein (24%) en Denemarken (7%). Deze verschillen hangen natuurlijk deels samen met de grootte van elk deel van de Waddenzee en de verdeling van de verschillende habitats, maar weerspiegelen tegelijk bij veel soorten ook de geografische verspreiding op Europese schaal. Een aantal soorten kent een zwaartepunt van voorkomen ten noorden van de Elbe, waaronder Kemphaan, Lachstern, Bonte Strandloper, Strandplevier, Middelste Zaagbek en Noordse Stern. Kleine Zilverreiger, Lepelaar, Eider, Wulp, Grote Stern, Blauwe Kiekendief en Kleine Mantelmeeuw komen daarentegen ten westen van de Elbe in grotere aantallen tot broeden. In 2012 werd ongeveer de 75% van alle broedparen op de eilanden (en Halligen) geteld (Fig. 4.2). Vooral koloniebroedvogels hebben een sterke voorkeur voor de eilanden, terwijl steltlopers meer verspreid over de eilanden en het vasteland voorkomen. Juist langs het vasteland zijn veel kolonies na 2000 verlaten worden. Eilanden en vasteland verschillen ook wat betreft

de oorzaken voor aantalsveranderingen. Vooral langs het vasteland (en eilanden die met een dam zijn verbonden met het vasteland) worden veel afnames in verband gebracht met een hoog predatierisico door roofdieren (zie verderop), die op de meeste eilanden van nature ontbreken. Andere factoren die het aantalsverloop beïnvloeden, zoals stormvloed in voorjaar en zomer, spelen zowel op eilanden als aan de lagere delen van de vastelandskust.

Actualisatie aantalstrends

Eerdere voortgangsrapporten en het Quality Status Rapport uit 2017 wezen er al op dat veel broedvogeltrends sinds de start van de trilaterale monitoring in 1991 negatief zijn (vooral vanaf 2000). Met de toevoeging van nieuwe gegevens, blijft deze constatering grotendeels staan. 18 van de 32 soorten (56%) waarvoor trends konden worden bepaald, namen over de periode 1991–2017 af (Fig. 3.1). Onder de soorten met de sterkste afname vinden we niet alleen bekende soorten die al veel langer afnemen (o.a. Watersnip, Blauwe Kiekendief, Kemphaan), maar ook soorten die we nog steeds op tal van plaatsen kunnen aantreffen (Bontbekplevier) of zelfs nog redelijk algemeen zijn (Scholekster)(Fig. 3.1). Bij de toenemende soorten staat de Brandgans op de eerste plaats, wat niet verrassend is gezien de expansie van deze soort elders in de flyway. Andere soorten die het goed doen zijn Zwartkopmeeuw en Grote Mantelmeeuw, beide relatief 'nieuwe' soorten, Aalscholver en Lepelaar. Trends van Grote Stern, Dwergstern en Lachstern zijn stabiel. Meer recent (2006–2017) zijn de afnames bij Eider, Grutto, Tureluur en Zilvermeeuw op een lager niveau gestabiliseerd. Dat geldt ook voor de tot voor kort toenemende Bergeenden en Kleine Mantelmeeuwen, die nu tenderen naar stabilisatie. Ook bij Aalscholver en Lepelaar verloopt de toename trager dan enkele jaren geleden. Veel recente trends zijn overigens niet significant, omdat jaarlijkse fluctuaties het beeld bepalen. Hier is dus voorzichtigheid op z'n plaats bij de interpretatie van de cijfers.

Kijken we naar de landen onderling, dan blijkt dat meer afnemende soorten te vinden zijn in het deel van Nedersachsen en Hamburg (14 van de 24 soorten) en Nederland (16 van de 28), terwijl in Denemarken en Schleswig-Holstein meer soorten stabiel zijn. Ook dit fenomeen is in eerdere rapporten aangestipt en het lijkt er dus op dat veel soorten in het westen van de internationale Waddenzee minder goede omstandigheden ondervinden dan ten noorden van de Elbe. Bij verschillende soorten zien we ook contrasterende trends, bijv. bij Bergeend, Kluut, Kievit, Tureluur, Kokmeeuw,

Stormmeeuw, Zilvermeeuw, Visdief en Dwergstern (Fig. 3.3–3.18). Er lijkt soms zelfs sprake van een soort gradiënt van afnames in het zuidwesten naar stabiele of groeiende aantallen in het noordoosten, let bijv. op Kluut, Kokmeeuw, Stormmeeuw en Zilvermeeuw. Het zou interessant zijn om na te gaan welke oorzaken hieraan ten grondslag liggen, omdat we dan misschien meer algemene mechanismen vinden, in plaats van aansturing door hele lokale omstandigheden. De laatste zijn waarschijnlijk belangrijk voor 'afwijkende' regionale trends bij o.a. Strandplevier, Kievit en Dwergstern. Ook hier geldt dat het achterhalen van de oorzaken informatie oplevert tegen welke problemen de soorten in specifieke delen van de Waddenzee aanlopen.

Interactie met beheer

De afnemende aantallen broedvogels in de (internationale) Waddenzee staan al langer in de schijnwerpers en waren o.a. onderwerp van discussie tijdens de twee trilaterale workshops 'Breeding birds in Trouble' and 'Predation Management' en bij tal van overleggen op nationale schaal. Werk voor de internationale Wadden Sea Flyway Initiative heeft ook laten zien dat de negatieve ontwikkelingen in de Waddenzee door kunnen werken op de schaal van de gehele populatie. In alle landen worden dan ook inspanningen gedaan om de omstandigheden voor broedvogels te verbeteren, zoals het geval bij het "Actieplan Broedvogels Waddenzee" en het "Wij en wadvogels" project in de Nederlandse Waddenzee, LIFE projecten voor weidevogels (Niedersachsen, Schleswig-Holstein, Denemarken), maatregelen om het predatierisico te verlagen (Niedersachsen, Schleswig-Holstein, Denemarken) en verschillende lokale voornemens voor habitatverbetering, zoals verkweldering en vernatting van kwelders (Nederland, Nedersachsen, Hamburg) of specifieke soortbeschermingsmaatregelen (strandbroeders in de hele Waddenzee, Lachstern in Schleswig-Holstein). Sommige van deze projecten gaan ook gepaard met eigen monitoring en onderzoek (naast de reguliere TMAP-monitoring) en zullen hopelijk in staat zijn de negatieve trends tot staan te brengen. Niet in alle gevallen is evenwel goed bekend waarom afnames plaatsvinden (vooral in geval van voedselproblemen), zodat de noodzaak voor soort-specifiek onderzoek overeind blijft. Bovenal spelen vooral langs de vastelandskust ook verschillende factoren doorelkaar: en hoog predatierisico en hoge vloed tijdens het broedseizoen, die het op hun beurt lastig kunnen maken om het succes van de verschillende maatregelen goed in kaart te brengen.

1 Introduction

Monitoring breeding birds, the JMBB program

The Wadden Sea supports large numbers of breeding birds and 10–12 million of migratory birds. For several breeding bird species like Eurasian Spoonbill, Eurasian Oystercatcher, Pied 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 (Tab. A.4.1). Common breeding birds (8 species) are counted annually in a network of census areas, distributed over all regions and habitats of the Wadden Sea 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, 2012; interval changed to once every 6 years according to EC Birds Directive reporting). The monitoring scheme aims to assess and detect population size, distribution and population trends in Wadden Sea breeding birds. Fieldwork is standardized and carried out according to trilaterally harmonised methods (Hälterlein et al., 1995) by nearly 800 ornithologists in recent years, mainly consisting of staff of NGOs, governmental bodies, site managers and volunteers (see Annex 6 for full account of all collaborators). 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), and more recently e.g. the use of drones in counts of colonial breeding birds.

This progress report summarises trends in breeding numbers in the period 1991–2017, for those species for which a reliable trend analysis was possible (32 species). In addition, the results of total counts in 2006 and 2012 are presented, as these have not been published before. Results of these counts are also included in the species accounts, showing distribution maps and changes in overall distribution between 2006 and 2012. The main aim of this report is to share the results of the breeding bird monitoring and support further initiatives to improve breeding conditions in the international Wadden Sea.



Pied Avocet with chicken.
Photo G. Reichert

Northern Lapwing.
Photo: J. Frikke



Introduction

As part of the JMBB program, 35 breeding birds species are currently being monitored in the Wadden Sea, of which 32 are presented here with overall and national trends. Trends are shown for (A) the Wadden Sea Area, (B) Denmark, (C) the federal state of Schleswig-Holstein (Germany), (D) the federal states of Niedersachsen/Hamburg (Germany) and (E) The Netherlands. More information on counting units can be found in Annex 2. For a selection of 16 abundant species also regional trends are presented on a map of the Wadden Sea. These regional trends have been added in this report as they provide a good indicator of changes in local numbers, which can be more easily linked with changes in environmental conditions and other local drivers. National trends on the other hand, give a more comprehensive overview in changes in bird populations, not necessarily driven by ecological changes, but just representing political borders. For regional trends, the Wadden Sea has been divided in 7 regions, in which also estuarine (Ems, Weser-Elbe) and non-estuarine regions have been separated (Fig. 3.2).

For very rare species, total numbers from the total counts in 1991-2012 are shown in a separate account (chapter 6). Data from total counts only give a limited overview of trends, as there has been only one count every 5-6 years. Total counts primarily aim to assess total population size and distribution.

Data and methods

For rare and colonial breeding birds annual counts have been carried out in all years, and their numbers are summarized for 56 census regions in the international Wadden Sea (Fig. A.2.1). Occasional missing counts for rare and colonial breeding birds, were estimated by the national co-ordinators, by using counts from other years and/or expert judgement (this usually applies to < 5% of the collected data). Abundant species, for which total counts are only carried out once every 6 years, trends are derived from annually counted sample sites, so-called census areas. This dataset contains an internationally agreed network of 103 representative census areas, spread equally over the international Wadden Sea. For The Netherlands, 245 additional census areas have been used that are counted frequently in the framework of the Dutch Common Bird Census (BMP) of the national surveillance scheme 'Netwerk Ecologische Monitoring'. On occasions where a census area was not counted in a certain year, data have been imputed by the commonly used TRIM package (Trends and Indices in Monitoring data; Pannekoek & van Strien, 1999) at present carried out by the rTRIM package. For this imputing, missing data are estimated with help of available data elsewhere in the region (separation after 7 regions, see above).

With the trend update from 1991-2011 onwards, trends have been calculated by CBS Statistics Netherlands (A. Gmelig Meyling, T. van der Meij). Trends are calculated at the level of 7 the distinguished regions (see above), from which then national trends and the trend for the international Wadden Sea are derived. In order to





	Numbers, distribution & trends since 1991		Breeding success since 2009/10	Contaminants in bird eggs since 1998
Species monitored	27 rare and colonial breeding bird species	8 common breeding bird species	Selection of 10 representative species	Selection of 2 representative species
				
	Photo: K. Koffijberg	Photo: K. Koffijberg	Photo: K. Koffijberg	Photo: P. de Boer
Count strategy	Total count annually	Count in census areas annually Total count once every 5-6 years: 1991, 1996, 2001, 2006, 2012	Sample sites annually	Sample sites annually








Table 2.1
TMAP strategies and methods for the status assessment of breeding birds in the international Wadden Sea.

compensate for the large number of census areas in The Netherlands, trends for abundant species have been weighted according to the distribution of those species in 2006 (data derived from the total count, see also Annex 3). Due to this slightly different approach of trend calculations, annual indices may be not entirely identical to those published before.

Trend analysis is carried out with the rTRIM package (see above). Trends are tested for significance at $P = 0.05$ with a Wald-test. Annual indices are presented relative to the base year 1996 (set at 100). Exceptions are species which did not occur in 1996 (e.g. Eurasian Spoonbill in Schleswig-Holstein). In such occasions, the base year is set differently, marked with the red dot in the trend graphs.

For a proper assessment of the trends, a standardized trend classification is used (identical to that in migratory birds) (Tab. 2.2).

Table 2.2
Trend classification, used to describe trends of breeding birds and migratory birds in The Wadden Sea. The colours which are used to depict trends are used throughout this report.

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	

3 Overview trilateral and regional trends

This chapter gives an overview of general trends on the level of the trilateral Wadden Sea, the four countries (Denmark, Schleswig-Holstein, Niedersachsen/Hamburg and The Netherlands) and on the level of seven regions (Fig. 3.2). This overview aims to present an overall impression of trends for each species, and similarities or differences within the Wadden Sea. Especially the regional trends may provide a good indicator of changes in local numbers and eventually point at local drivers causing these changes. Regional trends have been included only for a selection of 16 more or less abundant and widely distributed species. They are plotted on a map to highlight regional differences.

A summary of trends for all species for which trends could be calculated (32 out of the 35

monitored species) shows that 18 species have significantly decreased in the long-term trend 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. 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.

Highest annual increase rates are shown by Barnacle Goose, which is currently expanding its breeding range in temperate breeding areas.

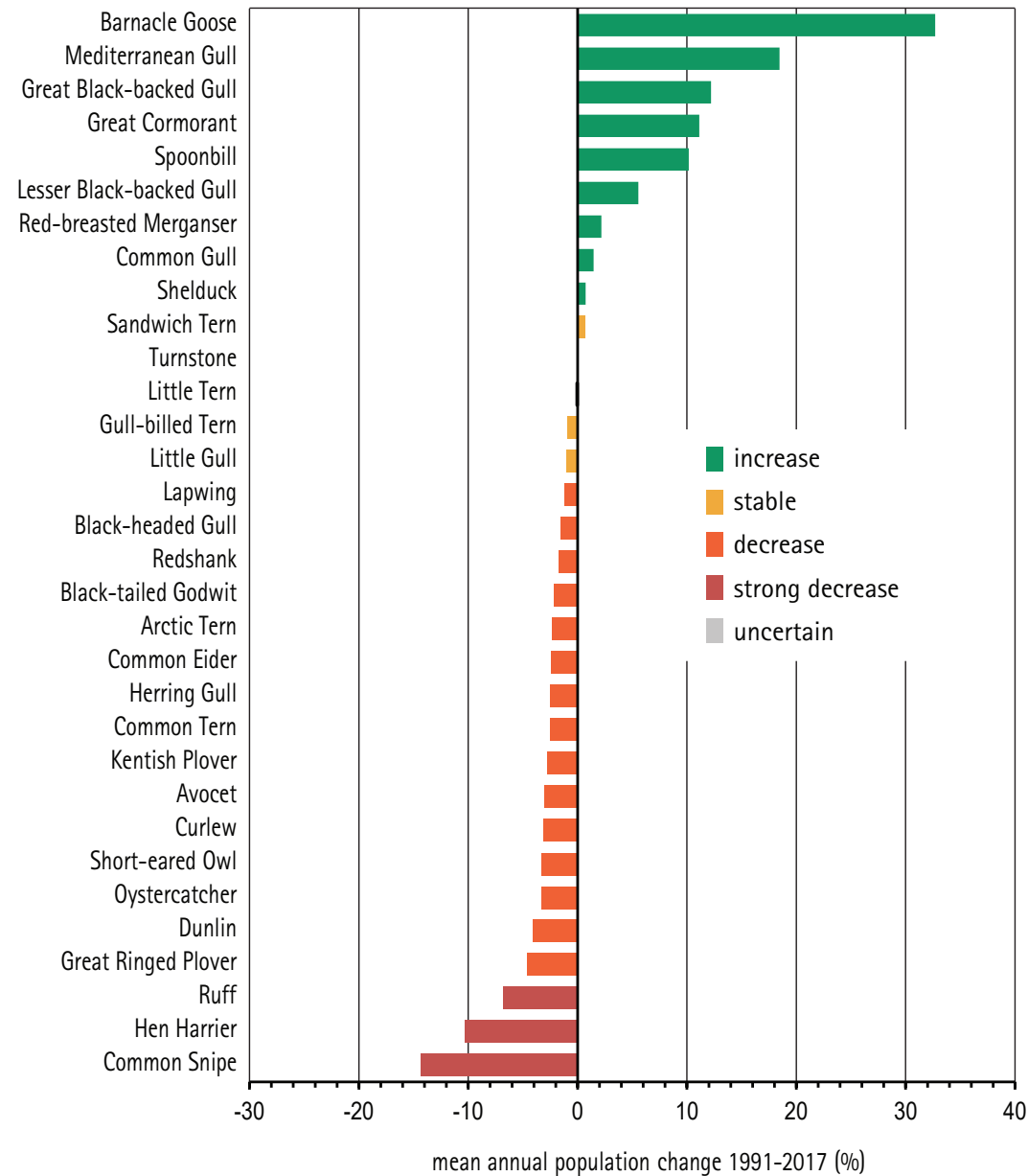


Figure 3.1 Summary of trends in breeding birds in the Wadden Sea 1991-2017. Shown is the mean annual population change in %, ranked from increasing species (top) to decreasing species (bottom), and based on the output of the analysis.

Table 3.1 Long-term (1991-2017) and short-term (2006-2017) trends, to allow for a comparison of recent developments..

Species	Long-term 27-years trend 1991 - 2017					Short-term 12-years trend 2006 - 2017				
	WS	DK	SH	Nds/HH	NL	WS	DK	SH	Nds/HH	NL
Great Cormorant	↑↑	—	—	↑	↑↑	—	↓	↑	—	↑
Eurasian Spoonbill	↑↑	—	↑↑	↑↑	↑↑	↑	—	↑↑	↑↑	↑
Common Shelduck	↑	↑	→	↑	→	→	—	—	—	→
Common Eider	↓↓	↑↑	↓	↑	↓	→	↑↑	↑	↑	↓
Red-breasted Merganser	↑	—	—	—	—	—	—	—	—	—
Hen Harrier	↓↓	→	—	↓↓	↓↓	↓↓	→	—	↓↓	↓↓
Oystercatcher	↓↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Pied Avocet	↓↓	↓	→	→	↓↓	↓	—	↓	—	↓
Great Ringed Plover	↓↓	↓	↓	↓	↓	—	—	—	—	—
Kentish Plover	↓↓	↑	↓	↓↓	↓	↑	—	↑	—	↓
Northern Lapwing	↓↓	↓	↓	↓	→	↓	—	—	—	↓
Black-tailed Godwit	↓↓	↓	—	↓	↓	→	—	—	—	→
Eurasian Curlew	↓↓	—	—	—	↓	↓	—	—	—	↓
Common Redshank	↓↓	↓	→	↓	↓	→	↓	↑	→	→
Mediterranean Gull	↑↑	↑↑	—	↑↑	—	—	—	—	↓	↓
Common 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
 ↑ moderate increase
 → stable
 — data do not allow trend analysis
↓↓ strong decrease
 ↓ moderate decrease
 — uncertain

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

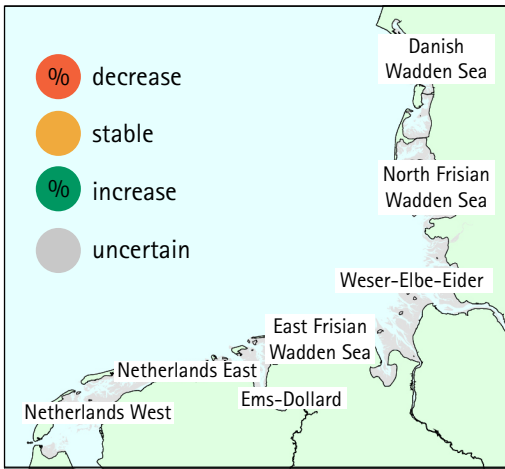


Figure 3.2
Seven regions of the Wadden Sea of where the available data allowed a statistical trend analysis in 4 categories. Percentages represent mean annual population change but are not given for stable and uncertain trends.

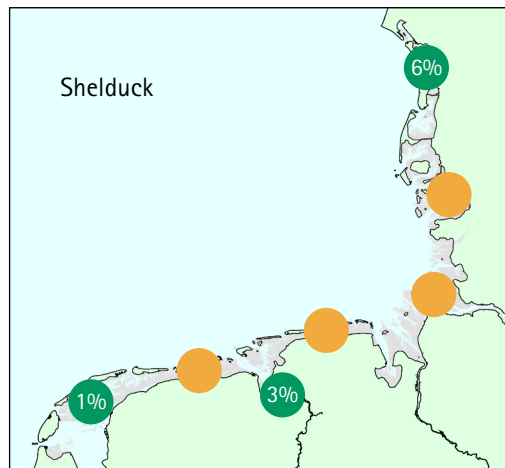
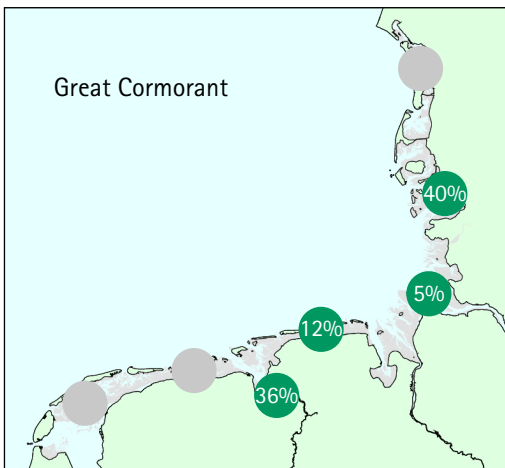


Figure 3.3 - 3.6
Regional trends of breeding bird species in the Wadden Sea 1991-2017.

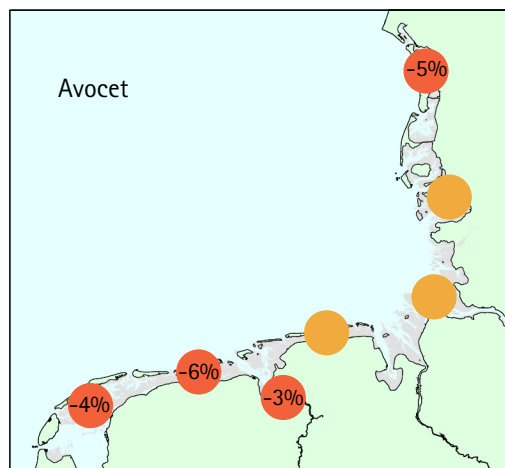
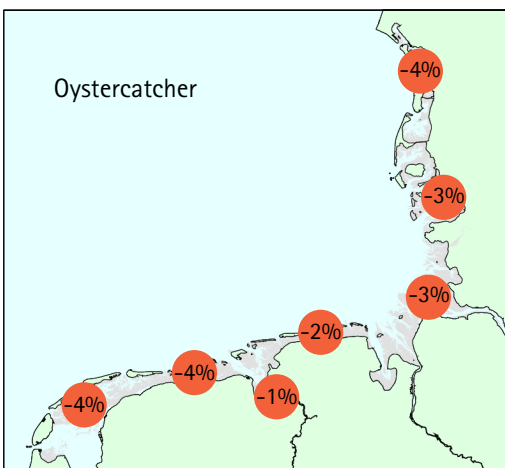
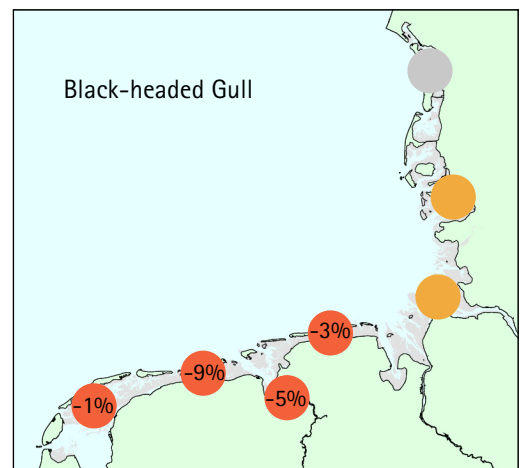
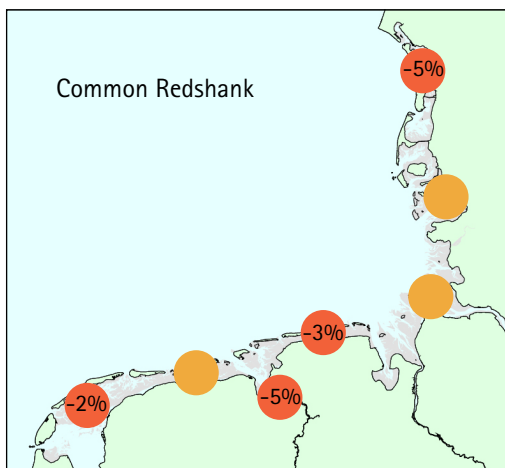
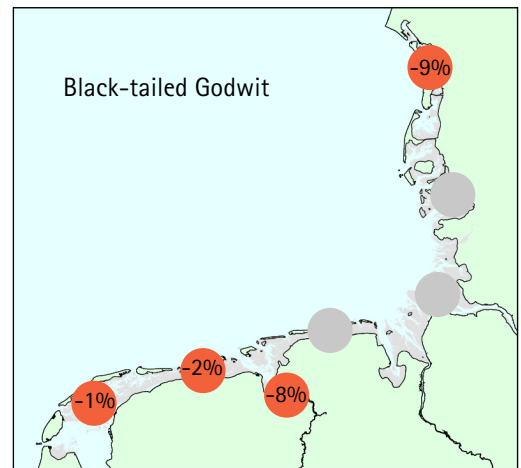
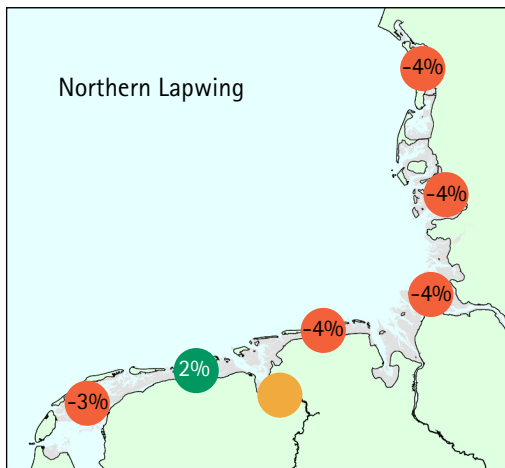
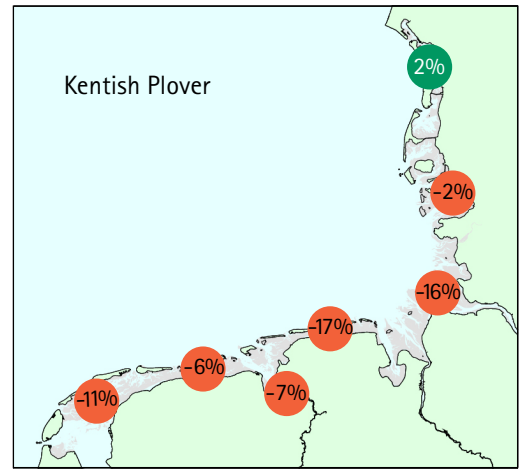
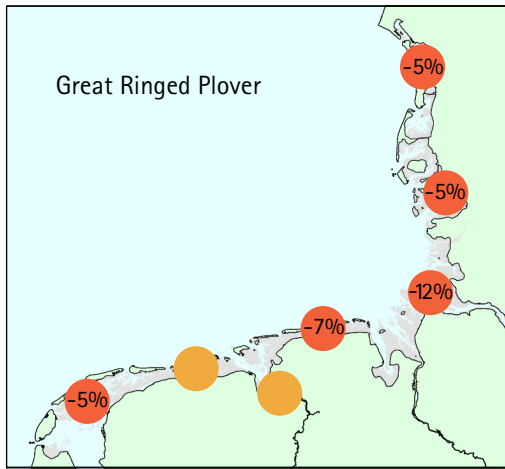


Figure 3.7 - 3.12
Regional trends of breeding
bird species in the Wadden
Sea 1991-2017.



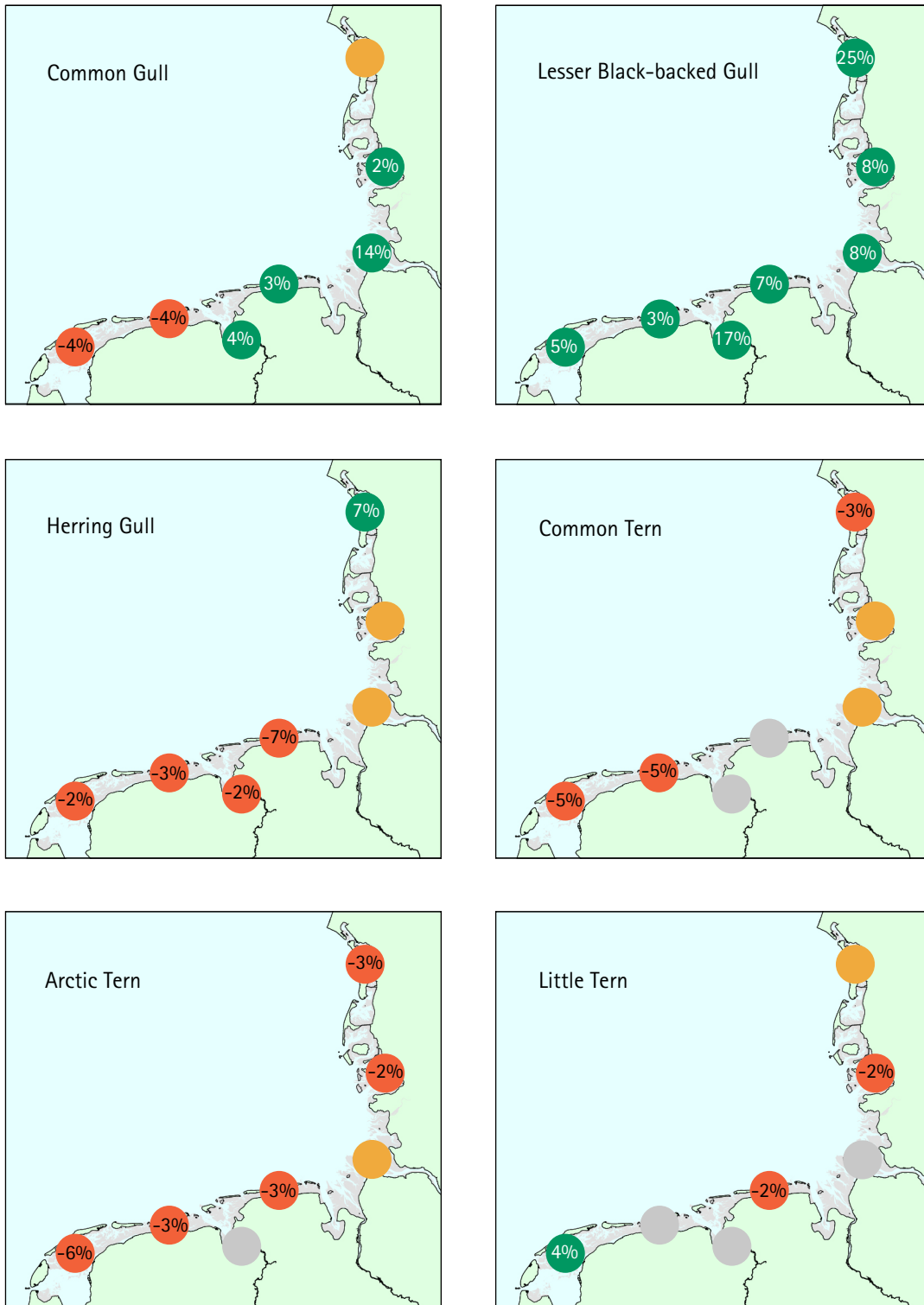
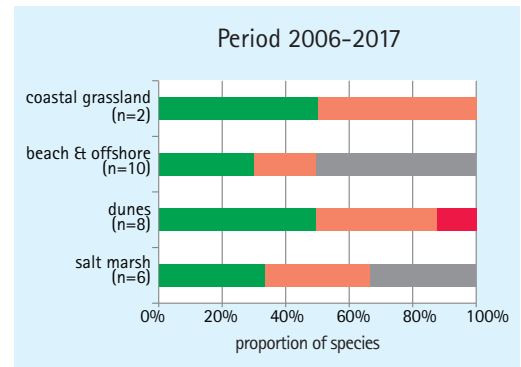
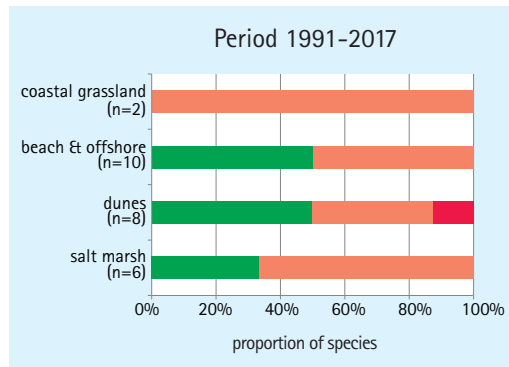


Figure 3.13 - 3.18
Regional trends of breeding
bird species in the Wadden
Sea 1991-2017.

In all habitats concerned (coastal grassland, beach & offshore, dunes and salt marsh) about 60% of the breeding bird species (relation to species in Annex 1) are in decline. Among birds of coastal grasslands and birds of salt marshes the largest proportion of declining species is found.

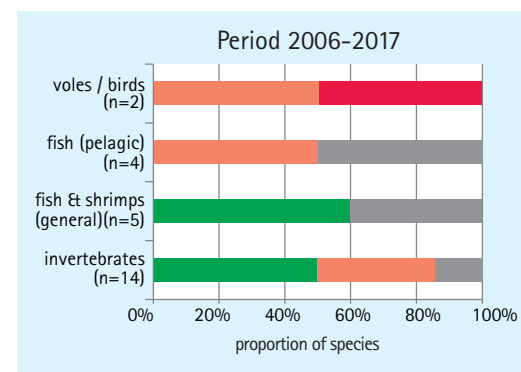
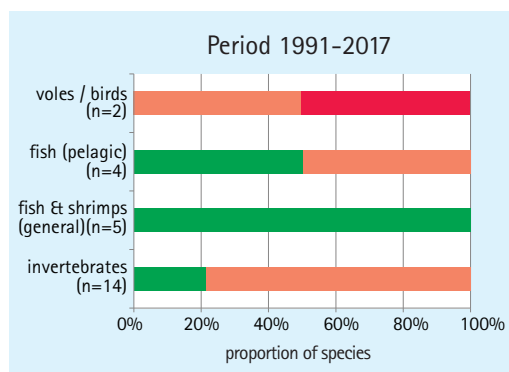
Figures 3.18-3.19
Trend status of species in different breeding habitats for the periods 1991-2017 (left) and 2006-2017 (right).



- increase or stable
- moderate decline
- steep decline
- unclear

Large differences in trend status in dependence of food choice exist (relation to species in Annex 1). 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 include both increasing and decreasing species. Breeding birds feeding on invertebrates and showing declines can be found at salt marshes, tidal areas and agricultural grasslands.

Figures 3.20-3.21
Trend status of species differing in food choice for the periods 1991-2017 (left) and 2006-2017 (right)



- increase or stable
- moderate decline
- steep decline
- unclear

4 Summary of total counts 2006 and 2012

Once every 6 years, all species listed in the TMAP program (see Annex 5) are counted all over the international Wadden Sea. In practice this means that 8 common species are covered in a much more extended set of counting areas, compared to the surveys running annually (the 27 rare and colonial breeding birds are counted annually anyway, see Tab. 2.1). Results of these counts formerly were communicated in single reports (Fleet et al., 1991, Rasmussen et al., 2000, Koffijberg et al., 2006), but since the focus of the breeding bird reports has changed recently to trends in numbers only, there was a gap in reporting on the results of total counts. For this reason, results of the total counts in 2006 and 2012 have been included in this progress report (and will be included in future progress reports).

Total counts are primarily aimed to assess total population size and distribution in common and widespread coastal breeding birds in the Wadden Sea. To some extent their results also reflect trends in numbers, but we need to account for the fact that total counts are only a momentum once every five to six years, thus differ from counts delivering annual information (and which primarily serve the purpose to deliver information on trends).

In 2006 and 2012, a highly similar number of 395,500 and 395,000 breeding pairs (or territories) of all 35 species covered were counted respectively (Table 4.1). Among the most abundant species we find both some colonial breeders like Black-headed Gull, Lesser Black-backed Gull and Herring Gull as well as widely dispersed breeding birds like Oystercatcher and Northern Lapwing. More rare are species that are relatively 'new' to the Wadden Sea, like Little Egret, or species that have suffered long-term declines and are now close to extinction as a breeding bird, for instance Hen Harrier and Dunlin. On the other hand, other rare breeders like Little Gull and Turnstone should be regarded as accidental breeders. In an international context, especially numbers in Eurasian Spoonbill, Pied Avocet, Lesser Black-backed Gull, Gull-billed Tern and Sandwich Tern represent relevant shares of the Northwest European breeding populations. For Gull-billed Tern, the colony in the Elbe Estuary even represents the only relevant breeding spot in Northwest Europe. The small numbers of Dunlin are part of a small and declining subspecies (*schinzii*) breeding in Europe and thus represent an important conservation issue as well.

As shown in the distribution maps in the species accounts, many species show pronounced distribution patterns within the international Wadden Sea. In terms of total numbers of all species, the Dutch Wadden Sea takes the largest

share of all numbers (average 2006/2012: 44%), followed by Niedersachsen/Hamburg (25%), Schleswig-Holstein (24%) and Denmark (7%), but of course this also reflects the part of each country takes from the total international Wadden Sea and the occurrence of certain habitats. Dune breeders like Eurasian Curlew, Lesser Black-backed Gull and Herring Gull e.g. mainly occur in The Netherlands and in Niedersachsen, as this habitat is most extended on the barrier islands in these two countries, thus in the western part of the Wadden Sea. For the individual species, some show a clear gradient from south to north, or the other way round (Fig. 5.1). Typical breeding birds for the northern part of the Wadden Sea (N of Elbe Estuary) are e.g. Ruff, Gull-billed Tern, Dunlin, Kentish Plover, Red-breasted Merganser and Arctic Tern, whereas Little Egret, Eurasian Spoonbill, Common Eider, Eurasian Curlew, Sandwich Tern, Great Cormorant, Hen Harrier and Lesser Black-backed Gull are most abundant west of the Elbe estuary. These patterns mainly reflect geographical distribution on a larger scale.

The species' distribution maps also point out that some species mainly breed on the barrier islands and Halligen, especially colonial breeding gulls and terns, while others occur more dispersed or mainly along the mainland coasts, e.g. Pied Avocet. Overall, however, the largest proportions of the breeding bird numbers occur on the islands. In 2012, this referred to 75% of all birds, and this percentage has little changed since 1996 (Fig. 4.2). Colonial breeders (which also dominate in breeding numbers) fit best in this pattern. Coastal waders occur more equally along the mainland coast and on the islands. For non-colonial breeders islands like coastal waders, saltmarshes of islands and Halligen hold up to 50 % of the wader breeding population (Fig. 4.2), though they only hold a 40% share of all saltmarsh habitats in the Wadden Seas (see Tab. 1 in Esselink et al., 2017). The quality of breeding habitats on islands is often assessed being in a more natural conservation status than in mainland saltmarshes, which face a higher human influence (e.g. by historical land claiming, coastal protection measures, Esselink et al., 2017).

In the context of predation risk, which is regarded one of the pressing issues affecting breeding numbers and breeding success (Thorup & Koffijberg, 2015; Koffijberg et al., 2016; Leyrer et al., 2019), one might think that the proportion of birds breeding on islands would have increased recently. Especially when islands are situated far from the mainland coast, they may represent a refuge with lower predation risk (for ground predators), but when close to the mainland, or

connected to the mainland, predation risk may be very similar, as shown e.g. for the island of Norderney (invaded by Red Fox, crossing the mudflats in the intertidal area), some of the Halligen in Schleswig-Holstein (connected with a dam to the mainland, facilitating ground predators) and larger islands with dams to the mainland (Sylt, Rømø, Mandø). It would be interesting though, to compare trends within the same species, between islands and mainland. As shown in Fig. 3.3 – 3.18, there are already striking differences in trends in numbers between the regions within the Wadden Sea. Regarding habitat restoration and other measures to improve habitat quality along the mainland coast, it should also be taken into account that success or failure rates of such measures is currently hard to segregate from other problems coastal breeding birds are faced with, like high predation risk and flooding risk during the breeding season.

Table 4.1. Status of breeding birds in the Wadden Sea during total counts in 1991, 1996, 2001, 2006 and 2012, expressed as the number of counted breeding pairs or territories. Data from 1991 after Fleet et al. (1994); data from 1996 after Rasmussen et al. (2000), data from 2001 after Koffijberg et al. (2006), some with corrections. Little Egret and Barnacle Geese were first implemented in 2006 in TMAP, so only data presented for 2006 and 2012.

¹ Numbers represent underestimate since coastal meadows ('marsken') behind the seawall on the Danish mainland were not covered during the 1991 survey.
² incomplete coverage in Denmark

Species	Scientific name	1991	1996	2001	2006	2012
Great Cormorant	<i>Phalacrocorax carbo</i>	312	838	2,475	3,666	4,873
Little Egret	<i>Egretta garzetta</i>	-	-	-	14	4
Eurasian Spoonbill	<i>Platalea leucorodia</i>	216	484	724	1,215	1,945
Barnacle Goose	<i>Branta leucopsis</i>	-	-	-	236	727
Shelduck	<i>Tadorna tadorna</i>	4,413 ¹	4,982	6,480	6,582	7,431
Common Eider	<i>Somateria mollissima</i>	8,408	11,534	10,497	8,981	7,283
Red-breasted Merganser	<i>Mergus serrator</i>	15	41	44	42	41
Hen Harrier	<i>Circus cyaneus</i>	124	142	167	89	21
Oystercatcher	<i>Haematopus ostralegus</i>	37,156 ¹	46,591	39,927	30,476	26,313
Avocet	<i>Recurvirostra avosetta</i>	11,844	11,214	12,389	10,827	7,179
Great Ringed Plover	<i>Charadrius hiaticula</i>	1,364 ²	1,367	1,093	688	658
Kentish Plover	<i>Charadrius alexandrinus</i>	569 ²	521	330	282	291
Northern Lapwing	<i>Vanellus vanellus</i>	8,753 ¹	12,521	11,643	12,650	10,834
Dunlin	<i>Calidris alpina schinzii</i>	51	39	23	24	13
Ruff	<i>Philomachus pugnax</i>	242	82	35	46	39
Common Snipe	<i>Gallinago gallinago</i>	5291	646	181	291	55
Black-tailed Godwit	<i>Limosa limosa</i>	2,117 ¹	3,004	2,824	2,513	2,351
Eurasian Curlew	<i>Numenius arquata</i>	782	632	640	611	515
Common Redshank	<i>Tringa totanus</i>	12,081 ¹	16,197	14,046	12,383	10,373
Turnstone	<i>Arenaria interpres</i>	3	2	1	0	0
Mediterranean	<i>Gull Larus melanocephalus</i>	2	5	45	183	137
Little Gull	<i>Larus minutus</i>	2	2	0	0	0
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	128,317	133,313	157,371	98,006	113,723
Common Gull	<i>Larus canus</i>	6,671	10,481	16,309	15,233	13,011
Lesser Black-backed Gull	<i>Larus fuscus</i>	18,016	38,252	79,013	88,623	94,496
Herring Gull	<i>Larus argentatus</i>	89,522	74,551	78,845	60,655	62,278
Great Black-backed Gull	<i>Larus marinus</i>	6	15	33	35	72
Gull-billed Tern	<i>Gelochelidon nilotica</i>	28	86	60	45	40
Sandwich Tern	<i>Thalasseus sandvicensis</i>	16,982	17,285	17,170	22,398	15,779
Common Tern	<i>Sterna hirundo</i>	13,677	13,064	14,224	10,511	8,442
Arctic Tern	<i>Sterna paradisaea</i>	5,256	9,011	8,725	5,459	4,849
Little Tern	<i>Sternula albifrons</i>	654	983	1,099	708	760
Short-eared Owl	<i>Asio flammeus</i>	83	114	103	75	68

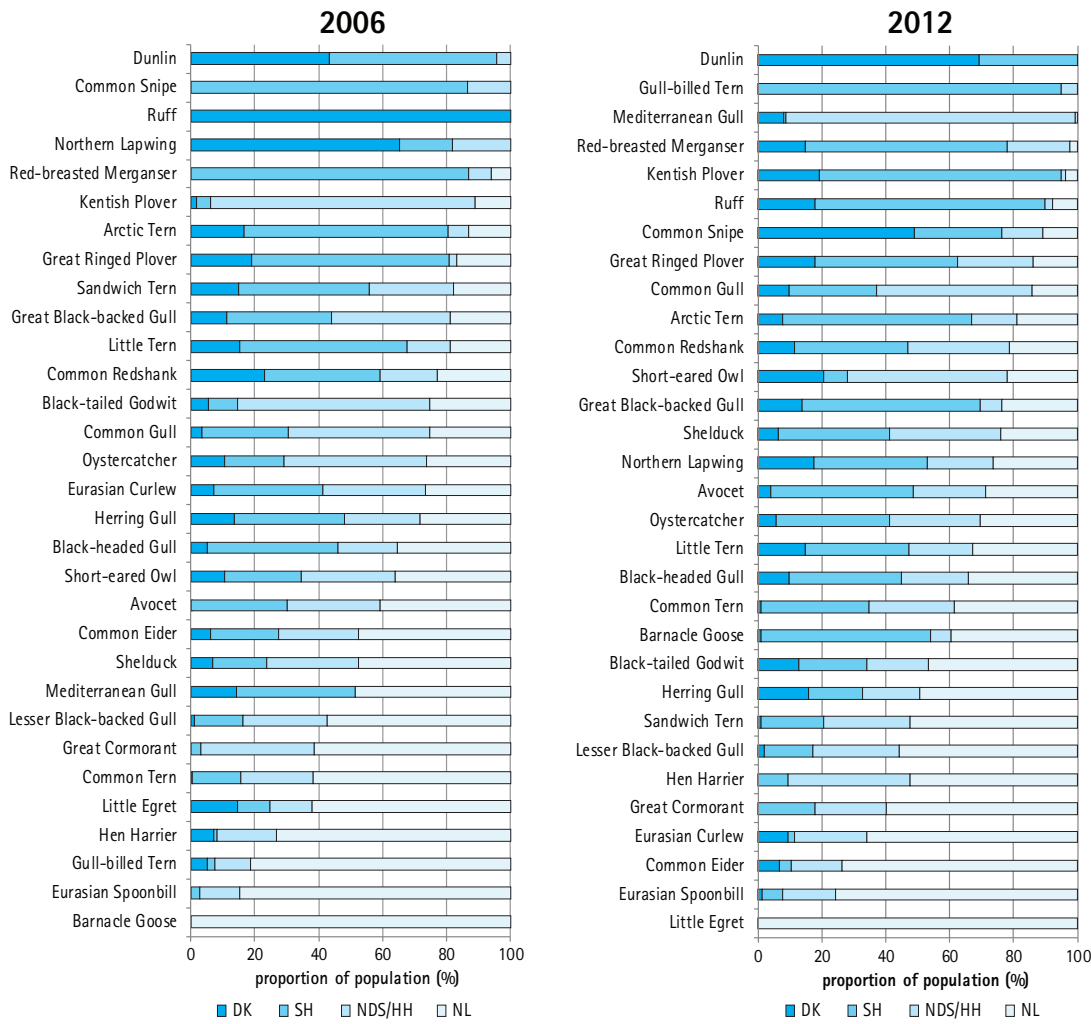


Figure 4.1. Distribution of coastal breeding birds in the Wadden Sea, expressed as the share of populations taken by each country and ranked after the share occurring in The Netherlands (i.e. predominantly occurring in the southwestern part of the Wadden Sea).
DK Denmark, SH Schleswig-Holstein, NDS/HH Niedersachsen/Hamburg, NL Netherlands.

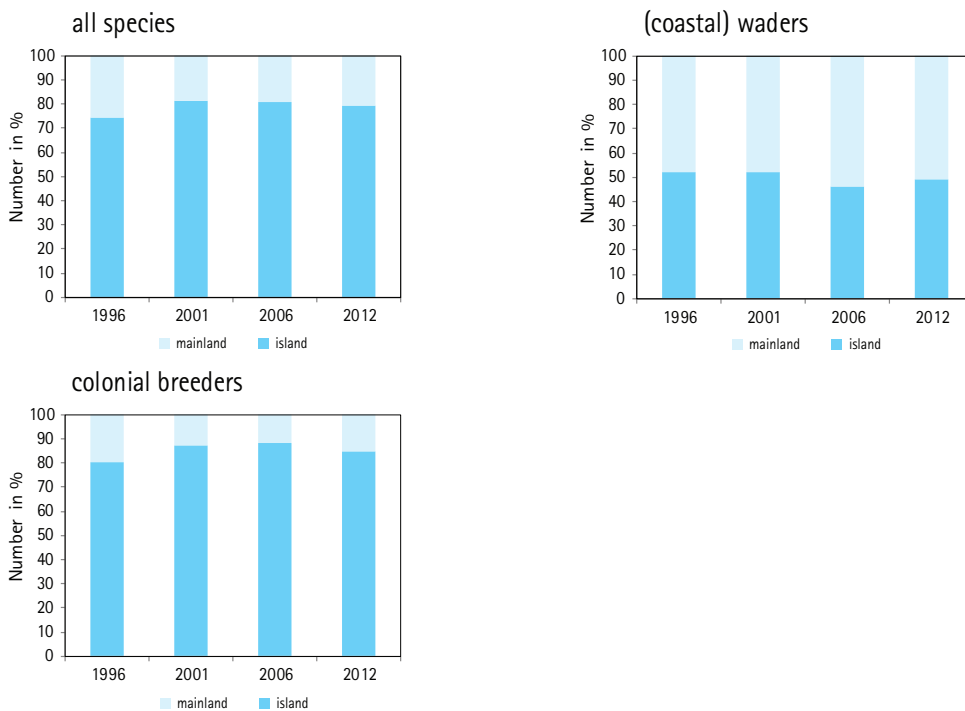


Figure 4.2. Distribution of coastal breeding birds in the Wadden Sea 1996-2012 (1991 coverage on mainland incomplete), expressed as the share of populations on islands and mainland.

5.1 Great Cormorant

00720

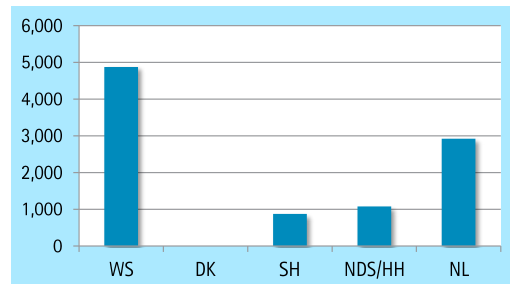
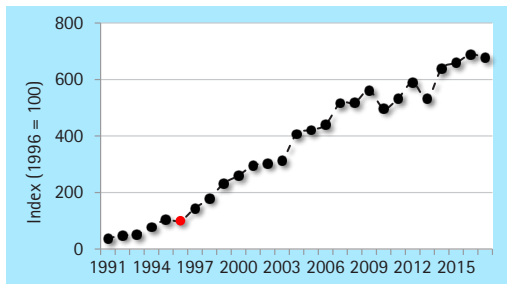
Phalacrocorax carbo

DK: Skarv

D: Kormoran

NL: Aalscholver

Figures 5.1.1-5.1.2
The left figure represent the trend of Great Cormorant in the international Wadden Sea from 1991 to 2017 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.

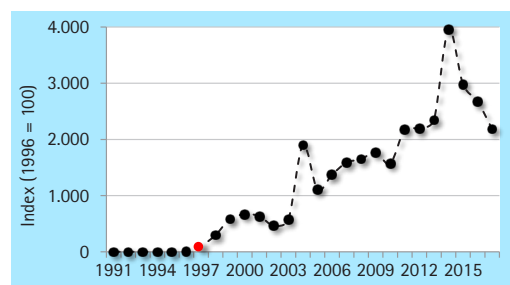
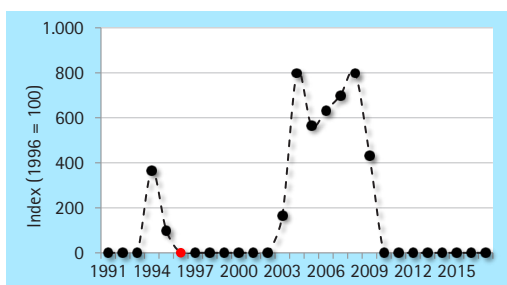


(A) Overall trend in the International Wadden Sea

Explanatory Note

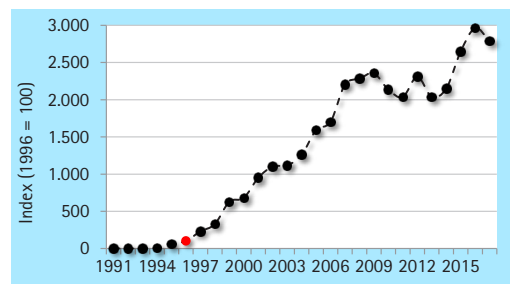
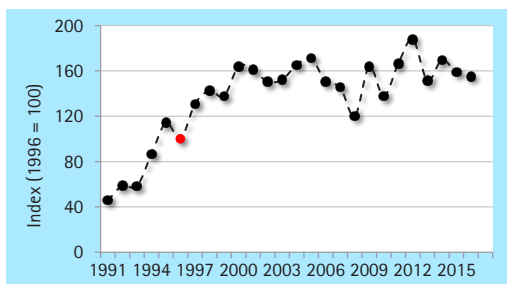
Although only a small part of the NW-European population is breeding in the Wadden Sea, the species is still increasing. Apart from irregular (and controlled) occurrence in the Danish Wadden Sea, the species shows mixed fortunes between the countries. The Netherlands and Niedersachsen support the largest colonies. Schleswig-Holstein (1997) and Denmark (2003) were colonized later on. Nearly all colonies are situated at islands or artificial offshore structures (platforms, etc.) where cormorants breed on the ground. Only a few sites hold tree-nesting Colonies (e.g. Norderney Südstrandpolder since 2009).

Figures 5.1.3-5.1.6
The figures represent the trends of Great Cormorant in the countries from 1991 to 2017 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

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↑↑	—
(B) Denmark		—	↓
(C) Schleswig-Holstein		—	↑
(D) Niedersachsen/Hamburg		↑	—
(E) The Netherlands		↑↑	↑

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

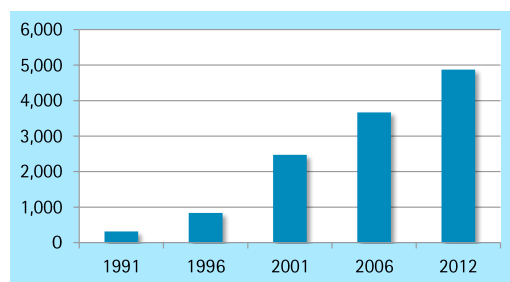


Figure 5.1.7
Total counts of Great Cormorant in the international Wadden Sea.

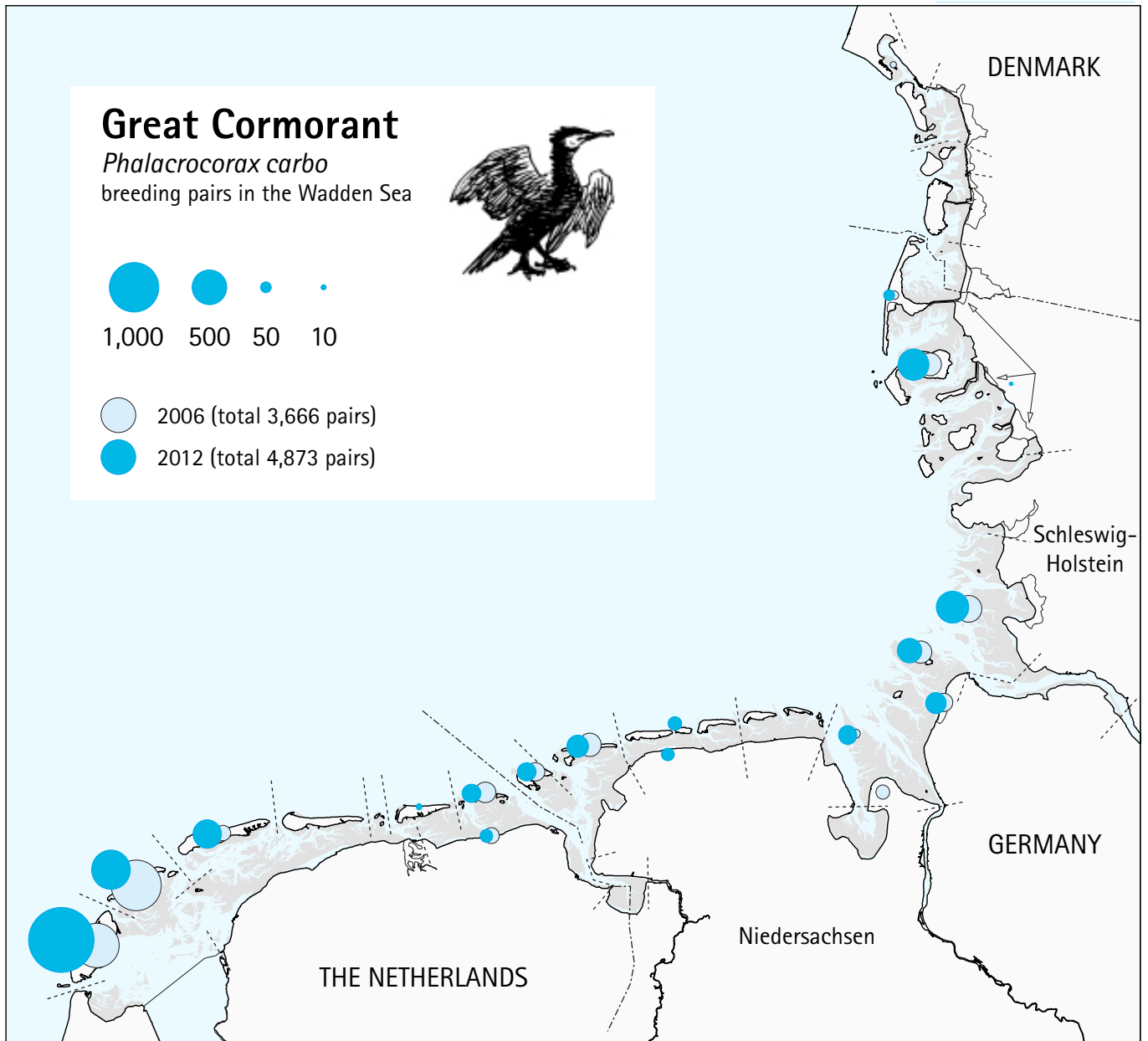


Figure 5.1.8
 Distribution of Great
 Cormorant in the international
 Wadden Sea.
 Note that dots usually show
 the midpoint of the census
 region and have sometimes
 be slightly moved to
 show difference between
 both years (see appendix 2
 for delineation of census
 regions).





5.2 Eurasian Spoonbill

01440

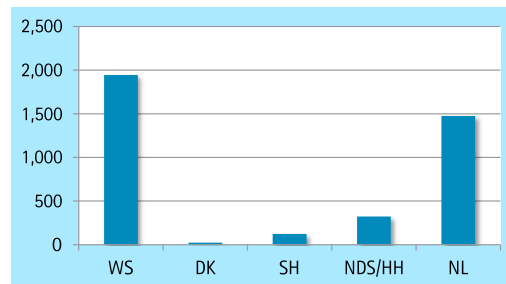
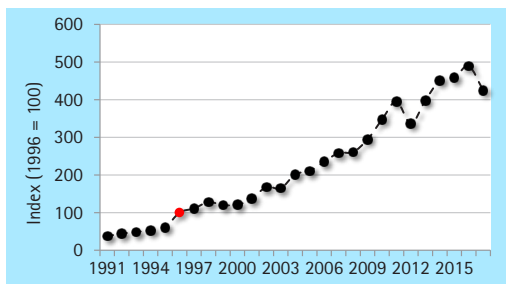
Platalea leucorodia

DK: Skkestork

D: Löffler

NL: Lepelaar

Figures 5.2.1–5.2.2
The left figure represent the trend of Eurasian Spoonbill in the international Wadden Sea from 1991 to 2017 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 2012.

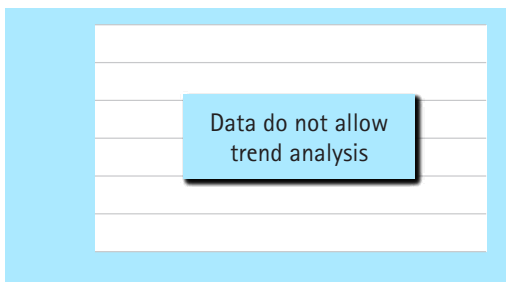


(A) Overall trend in the International Wadden Sea

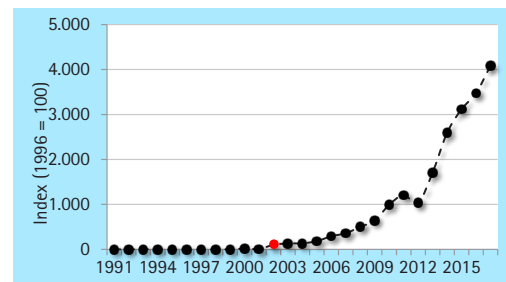
Explanatory Note

In line with the numbers outside the breeding season, Eurasian Spoonbill experienced a 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. Often mixed colonies with Herring Gull and Lesser Black-backed Gull occur.

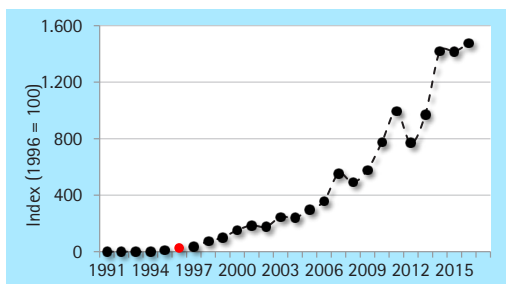
Figures 5.2.3–5.2.6
The figures represent the trends of Eurasian Spoonbill in the countries from 1991 to 2017 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot; 2001 for SH). Annual index values are expressed at the y-axis.



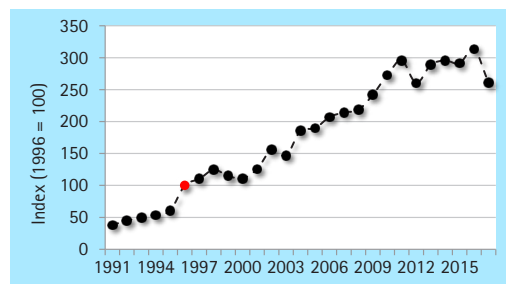
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

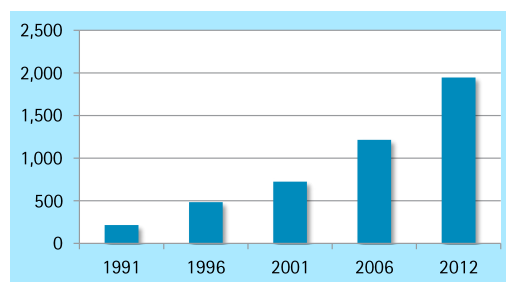


(E) The Netherlands

Figure 5.2.7 (right)
Total counts of Eurasian Spoonbill in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↑↑	↑
(B) Denmark		—	—
(C) Schleswig-Holstein		↑↑	↑↑
(D) Niedersachsen/Hamburg		↑↑	↑↑
(E) The Netherlands		↑↑	↑

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



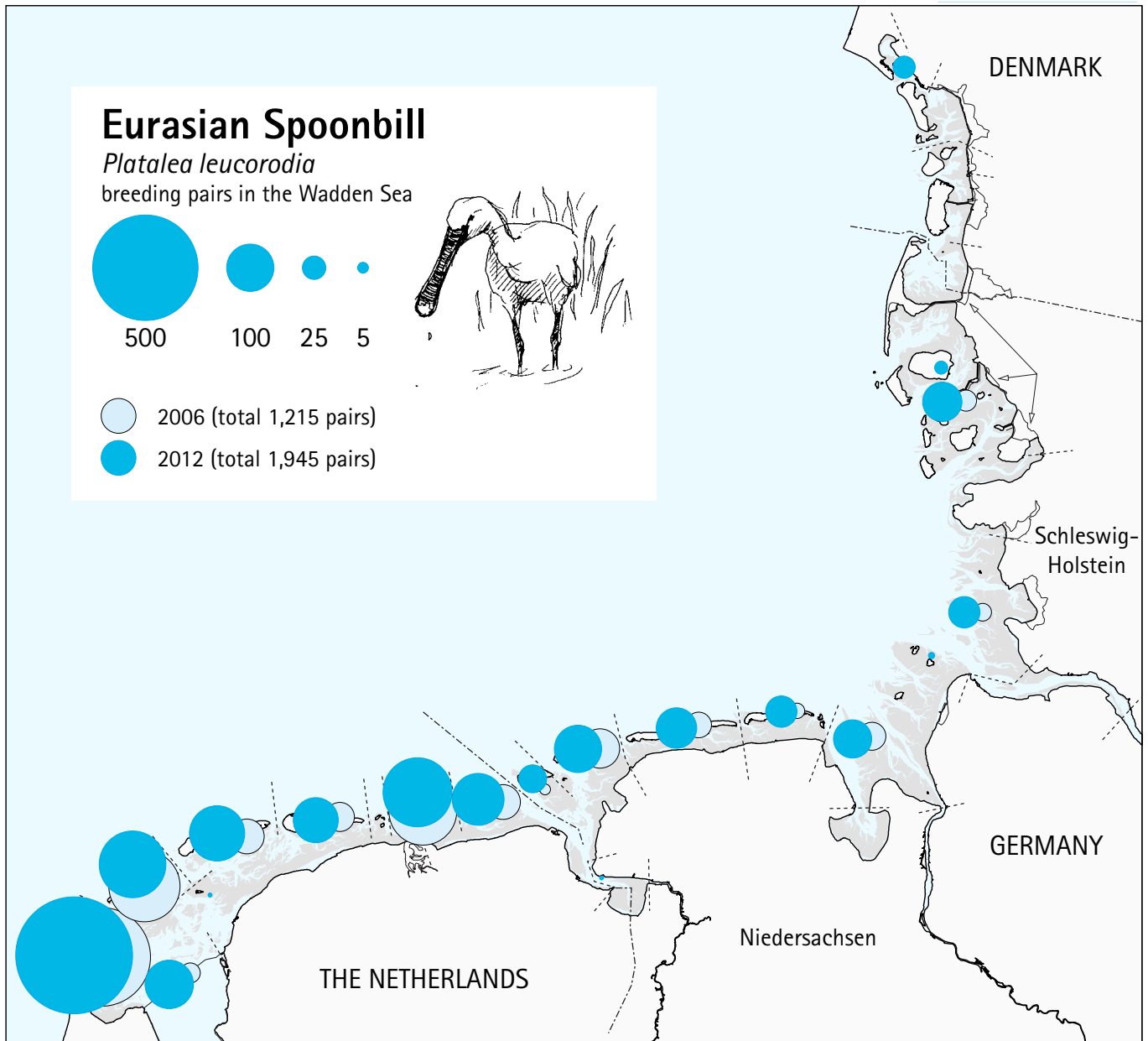


Figure 5.2.8
 Distribution of Eurasian
 Spoonbill in the interna-
 tional Wadden Sea.
 Note that dots usually show
 the midpoint of the census
 region and have some-
 times be slightly moved to
 show difference between
 both years (see appendix 2
 for delineation of census
 regions).



5.3 Common Shelduck

01730

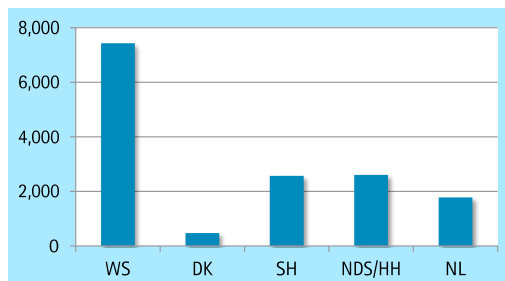
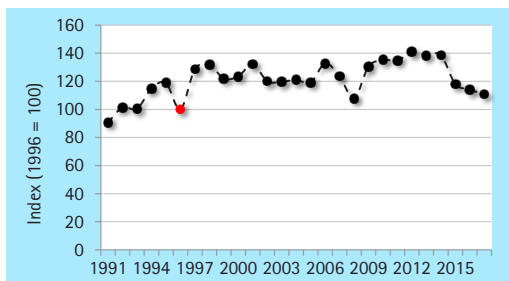
Tadorna tadorna

DK: Gravand

D: Brandgans

NL: Bergeend

Figures 5.3.1–5.3.2
The left figure represent the trend of Common Shelduck in the international Wadden Sea from 1991 to 2017 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 2012.

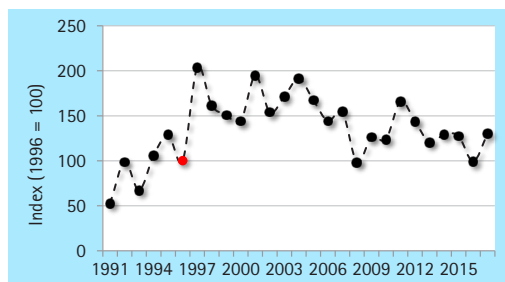
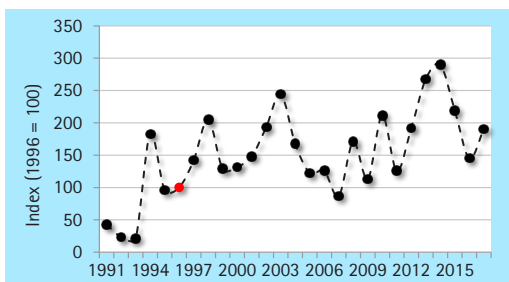


(A) Overall trend in the International Wadden Sea

Explanatory Note

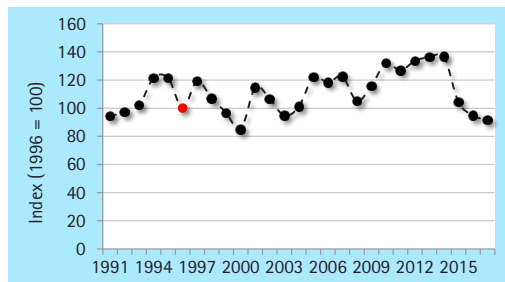
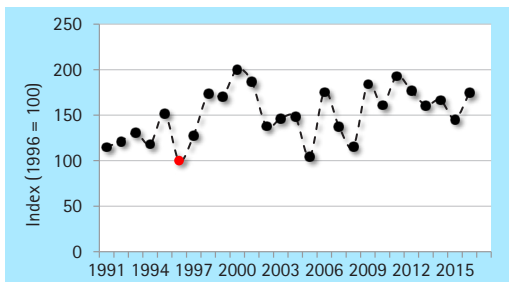
Numbers of **Common Shelduck** have increased on the long term, but have stabilized recently. Part of the fluctuations shown is probably due to census problems, as the species is notorious difficult to count and not all birds present do actually breed. The species is mainly breeding in rabbit holes (dunes areas) and in e.g. deserted buildings (mainland). By far the largest numbers breed on the Wadden Sea islands.

Figures 5.3.3–5.3.6
The figures represent the trends of Common Shelduck in the countries from 1991 to 2017 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



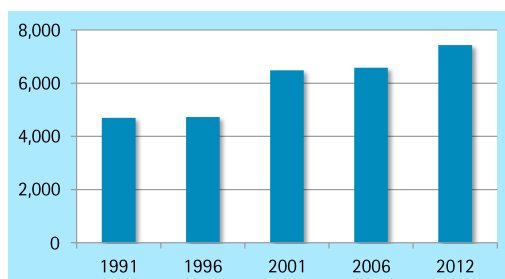
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.3.7
Total counts of Common Shelduck in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↑	→
(B) Denmark		↑	—
(C) Schleswig-Holstein		→	—
(D) Niedersachsen/Hamburg		↑	—
(E) The Netherlands		→	→

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



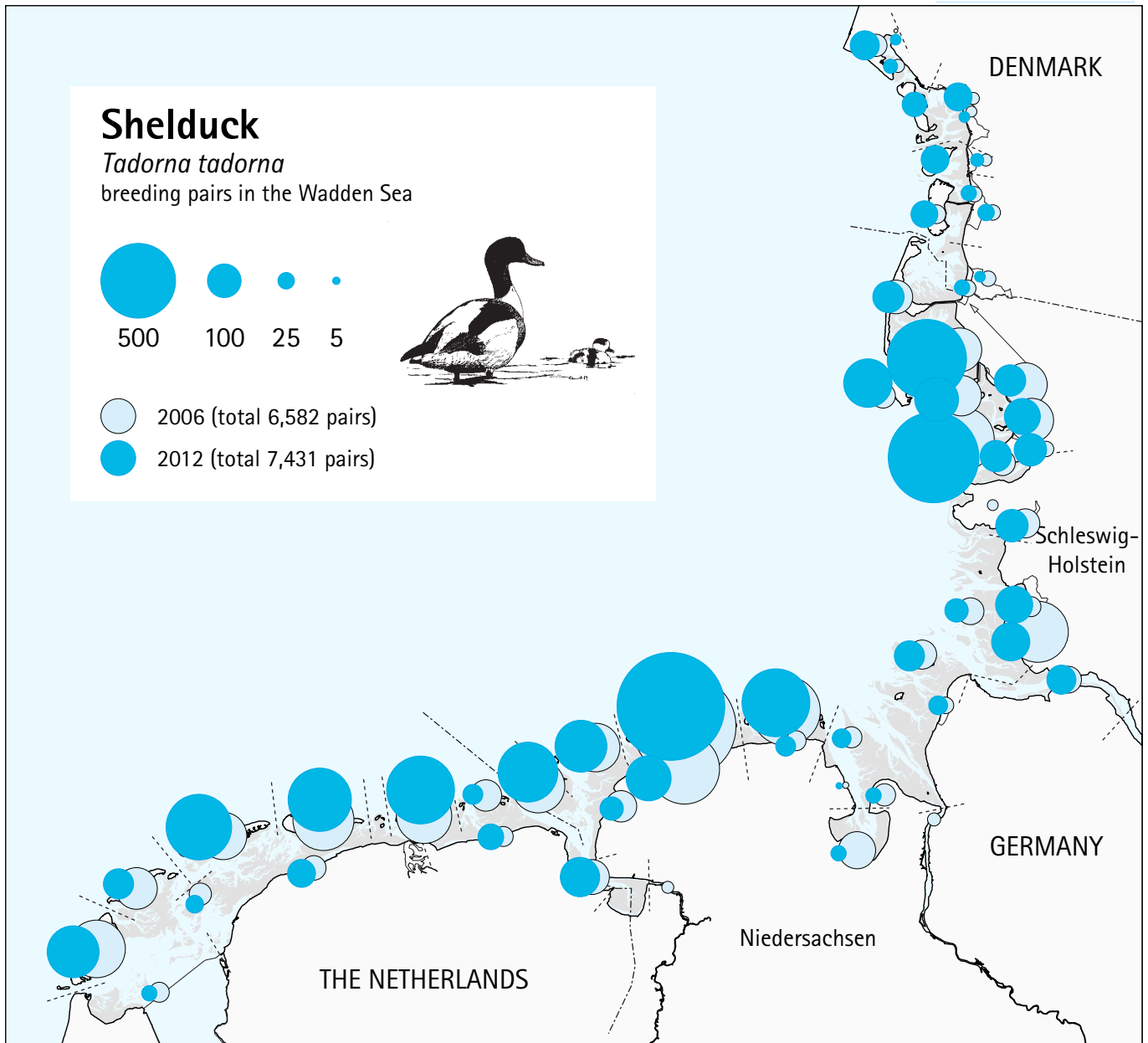


Figure 5.3.8
Distribution of Common Shelduck in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).

5.4 Common Eider

02060

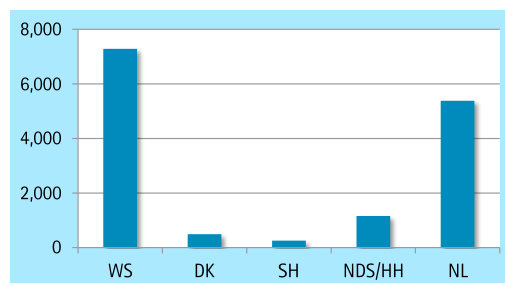
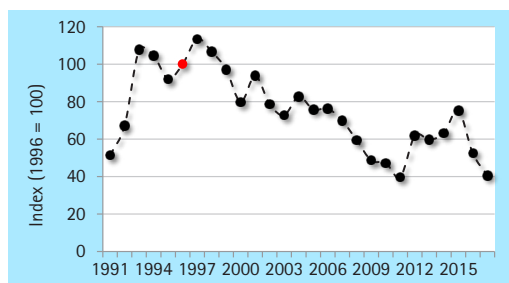
Somateria mollissima

DK: Ederfugl

D: Eiderente

NL: Eidereend

Figures 5.4.1-5.4.2
The left figure represent the trend of Common Eider in the international Wadden Sea from 1991 to 2017 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 2012.

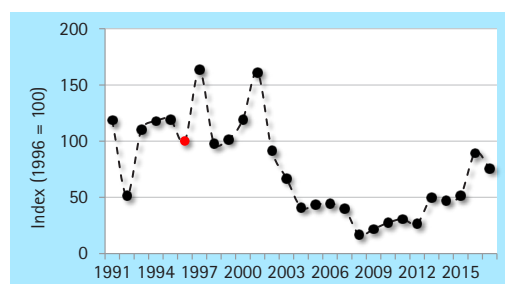
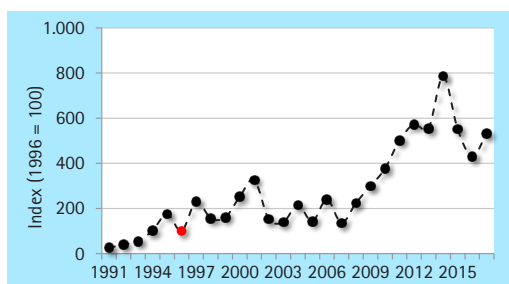


(A) Overall trend in the International Wadden Sea

Explanatory Note

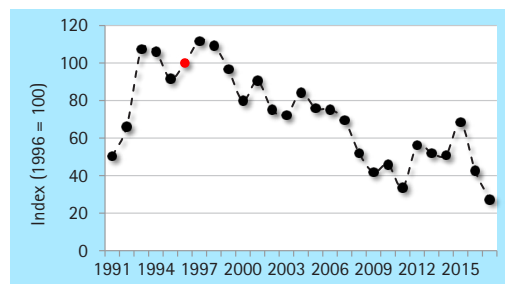
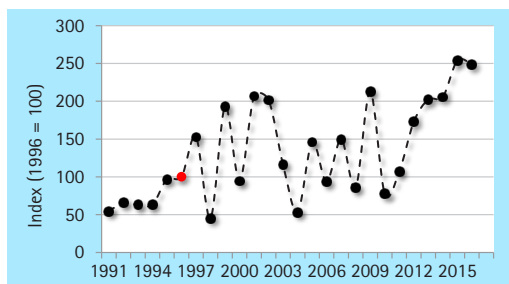
The trend in Common Eider is dominated by The Netherlands, where the largest part of the Wadden Sea population is breeding. Nests are mainly found in dune areas. The downward trend observed here from the late 1990s onwards was preceded by mass-starvation among wintering Eiders in 1999/2000 and attributed 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. In Schleswig-Holstein a strong decrease has been recorded at the former main breeding ground at the island Amrum, but increasing numbers on the Halligen. As the species is difficult to monitor due to its breeding behaviour, some fluctuations might also reflect census problems or annual variation in the number of birds that actually breed.

Figures 5.4.3-5.4.6
The figures represent the trends of Common Eider in the countries from 1991 to 2017 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



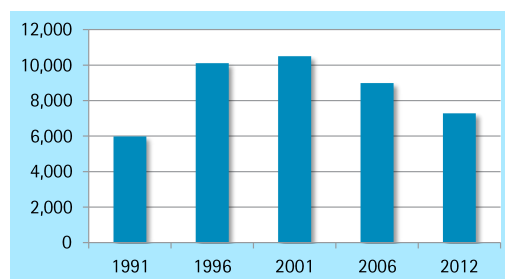
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.4.7 (right)
Total counts of Common Eider in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	→
(B) Denmark		↑ ↑	↑ ↑
(C) Schleswig-Holstein		↓	↑
(D) Niedersachsen/Hamburg		↑	↑
(E) The Netherlands		↓	↓

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



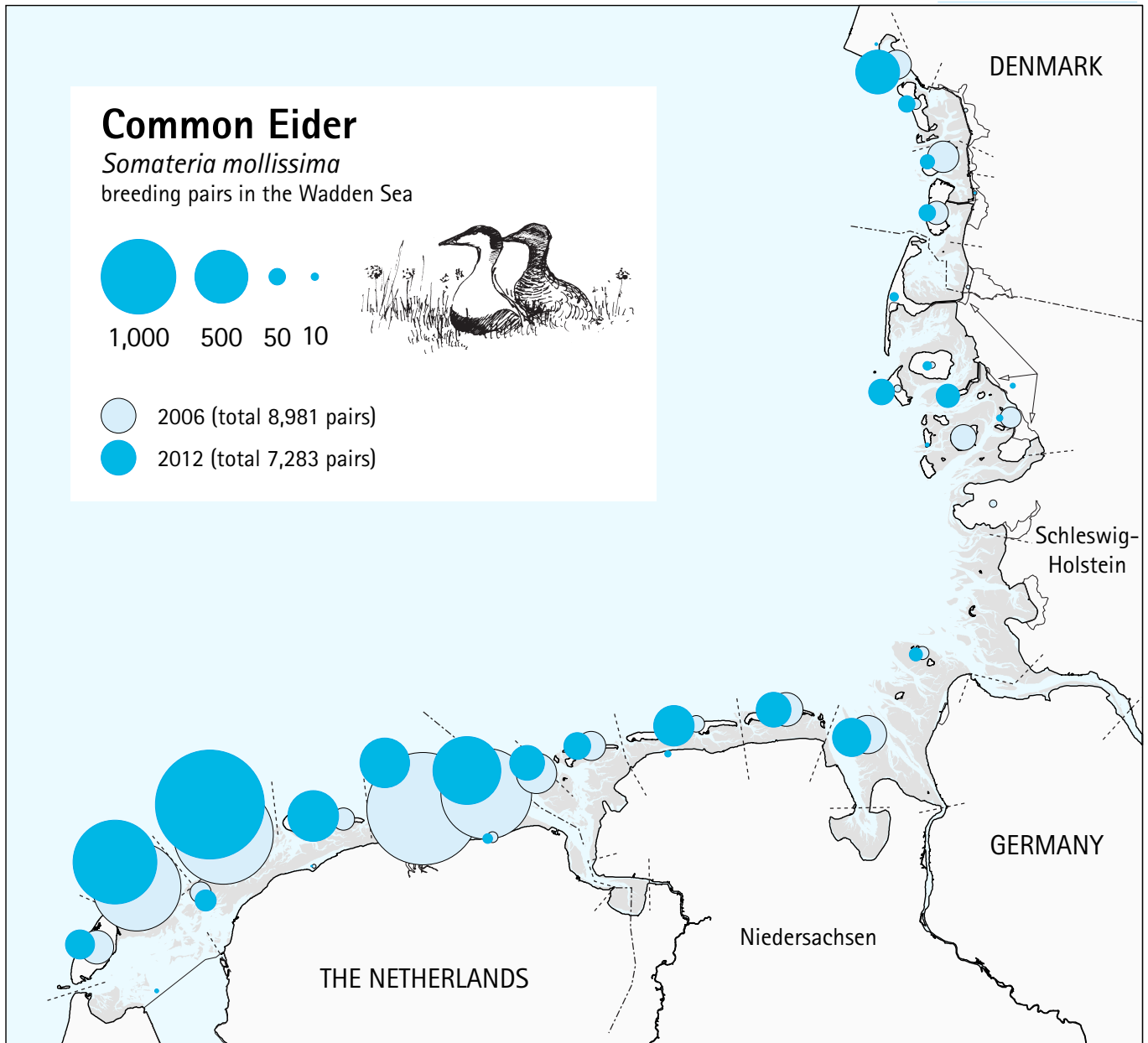


Figure 5.4.8
Distribution of Common Eider in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).

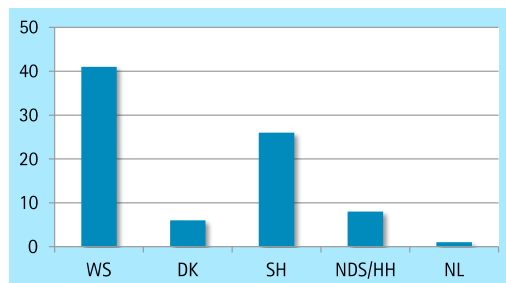
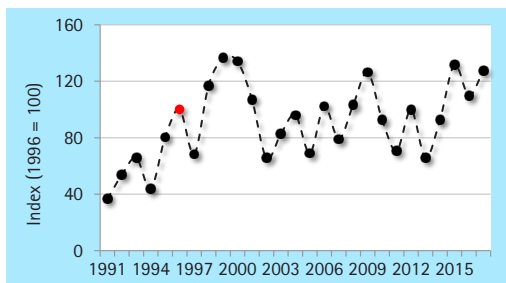
5.5 Red-breasted Merganser

02210

Mergus serrator

DK: Toppet Skallesluger D: Mittelsäger NL: Middelste Zaagbek

Figures 5.5.1-5.5.2
The left figure represent the trend of Red-breasted Merganser in the international Wadden Sea from 1991 to 2017 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 2012.

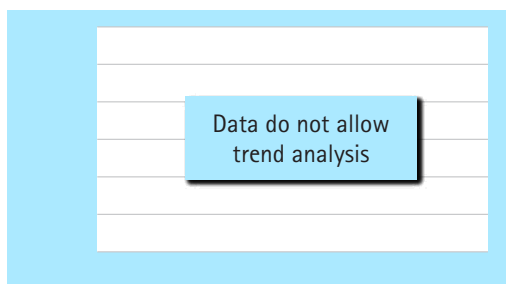
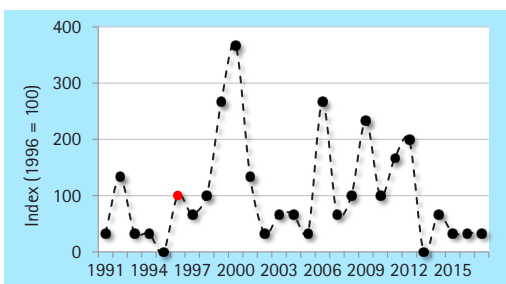


(A) Overall trend in the International Wadden Sea

Explanatory Note

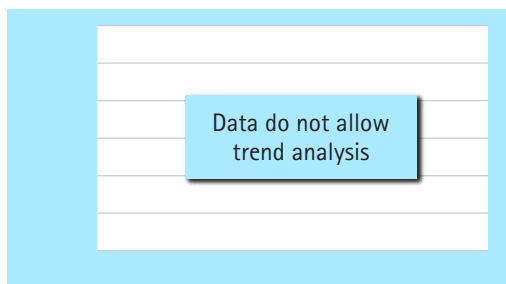
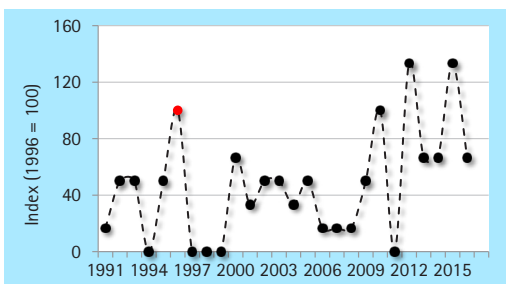
Red-breasted Merganser is only breeding in small numbers in the Wadden Sea, where it reaches the southern edge of its breeding range. On a long-term, numbers have increased, but nowadays keep at around a similar level (fluctuations may partly be explained by census problems). Core breeding areas are situated in Schleswig-Holstein. In other parts of the Wadden Sea it is an accidental breeder. On Mellum Red-breasted Merganser breed at least since 2000 annually in low numbers showing increase between 2006 and 2012.

Figures 5.5.3-5.5.6
The data about Red-breasted Merganser allow no trend analysis in the countries.



(B) Denmark

(C) Schleswig-Holstein



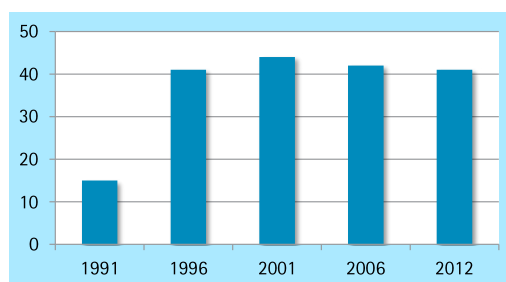
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.5.7
Total counts of Red-breasted Merganser in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↑	—
(B) Denmark		—	—
(C) Schleswig-Holstein		—	—
(D) Niedersachsen/Hamburg		—	—
(E) The Netherlands		—	—

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



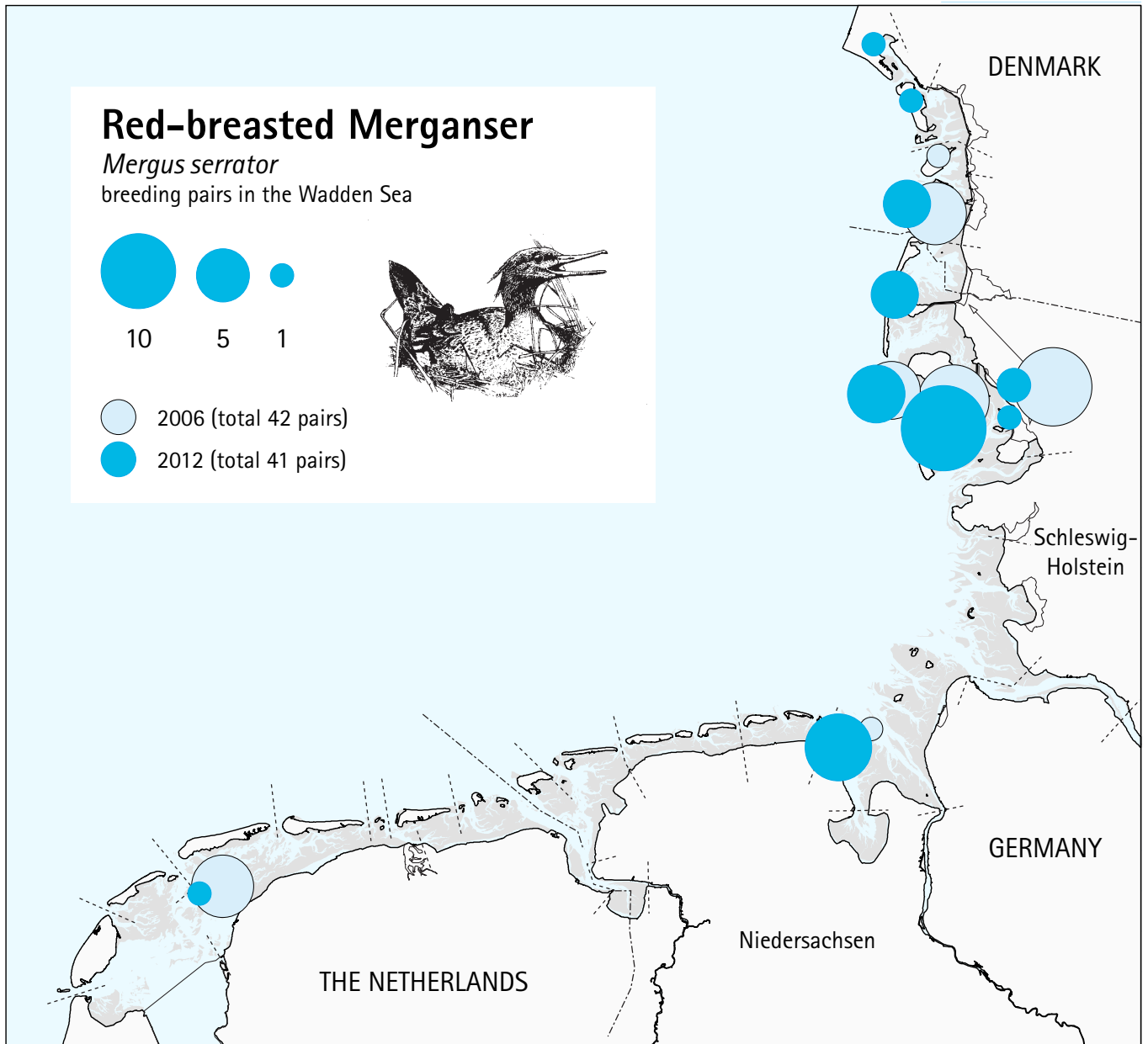


Figure 5.5.8
 Distribution of Red-breasted Merganser in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).



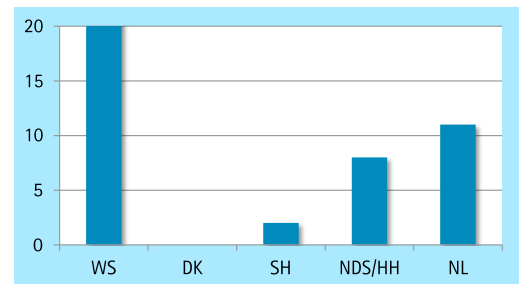
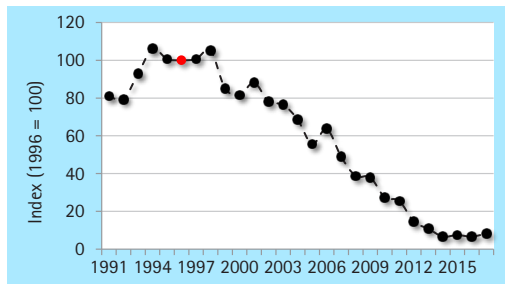
5.6 Hen Harrier

02610

Circus cyaneus

DK: Blå Kærhøg D: Kornweihe NL: Blauwe Kiekendief

Figures 5.6.1-5.6.2
The left figure represent the trend of Hen Harrier in the international Wadden Sea from 1991 to 2017 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 2012.

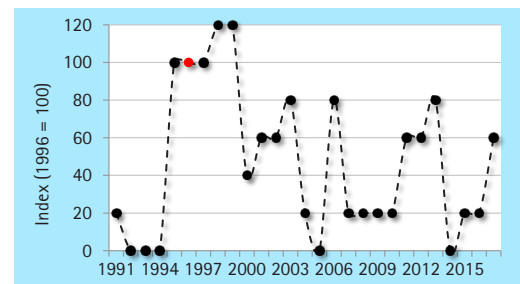
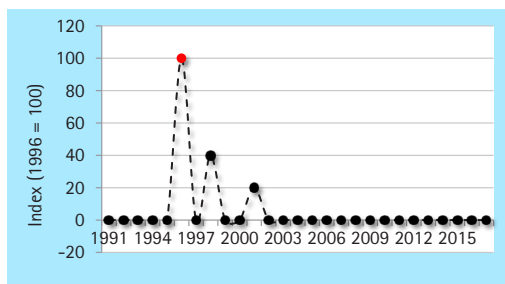


(A) Overall trend in the International Wadden Sea

Explanatory Note

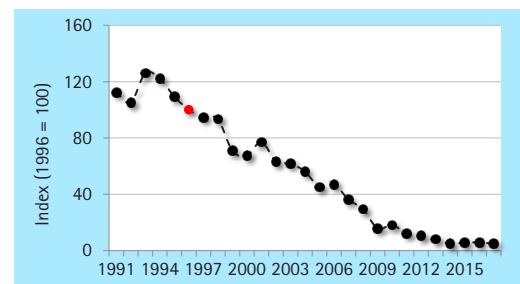
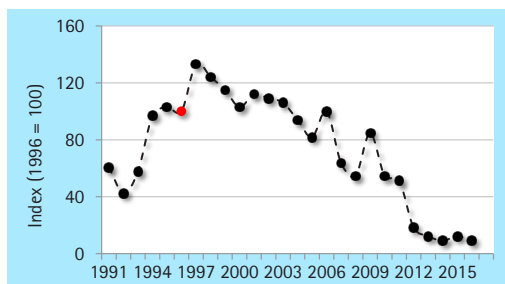
Breeding in Hen Harrier is mainly restricted to The Netherlands and Niedersachsen, where it mainly inhabits the dune areas on the islands. In The Netherlands an ongoing decline has been observed from 1994 onwards. In Niedersachsen the species initially was able to maintain a high population level (resulting in an overall increase). However, recently, numbers are also going down here. In Schleswig-Holstein some pairs are breeding on the Northfrisian islands Sylt and Amrum. Survival analyses and data from ring recoveries suggest that Hen Harrier especially face problems in their wintering areas, mainly outside of the Wadden Sea. The current small breeding population is balancing on the verge of extinction.

Figures 5.6.3-5.6.6
The figures represent the trends of Hen Harrier in the countries from 1991 to 2017 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



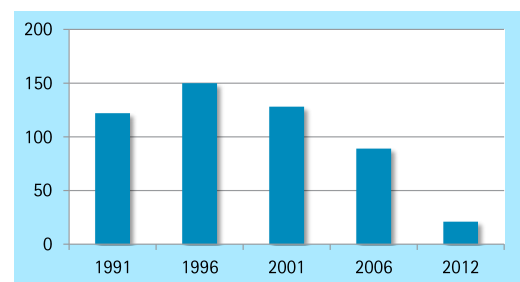
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.6.7 (right)
Total counts of Hen Harrier in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	↓ ↓ ↓
(B) Denmark		→	→
(C) Schleswig-Holstein		—	—
(D) Niedersachsen/Hamburg		↓ ↓ ↓	↓ ↓ ↓
(E) The Netherlands		↓ ↓ ↓	↓ ↓ ↓

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



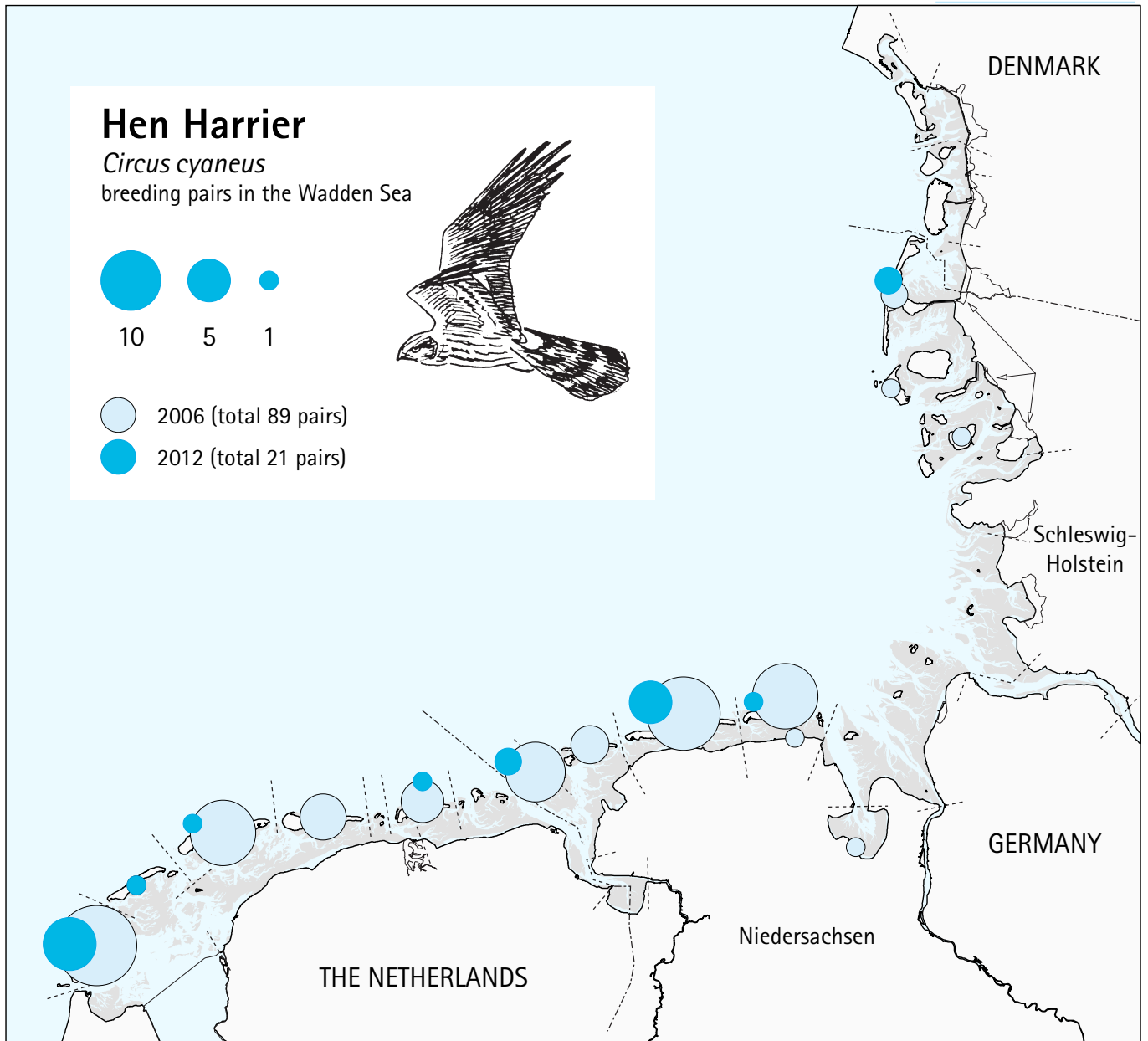


Figure 5.6.8
Distribution of Hen Harrier
in the international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

5.7 Eurasian Oystercatcher

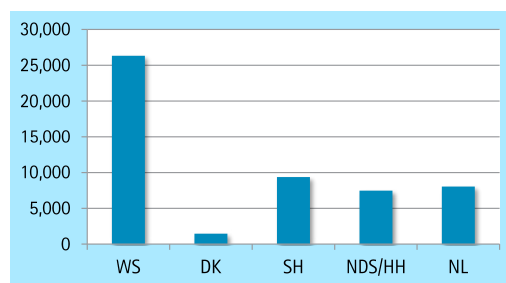
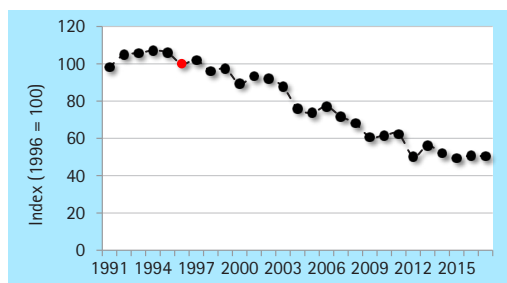
04500

Haematopus ostralegus

DK: Strandskade

D: Austernfischer NL: Scholekster

Figures 5.7.1–5.7.2
The left figure represent the trend of Eurasian Oystercatcher in the international Wadden Sea from 1991 to 2017 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 2012.

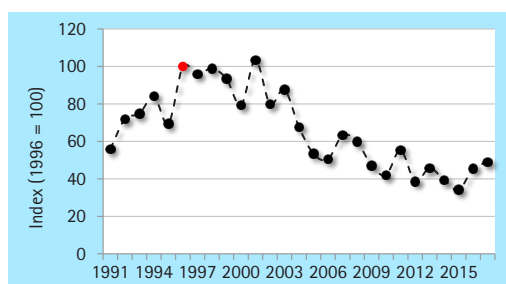
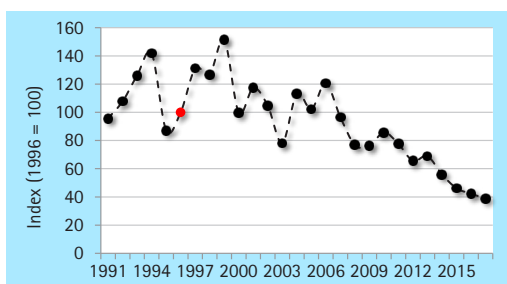


(A) Overall trend in the International Wadden Sea

Explanatory Note

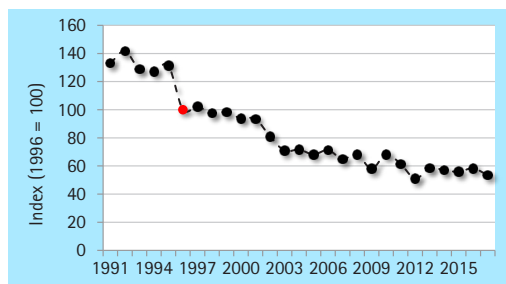
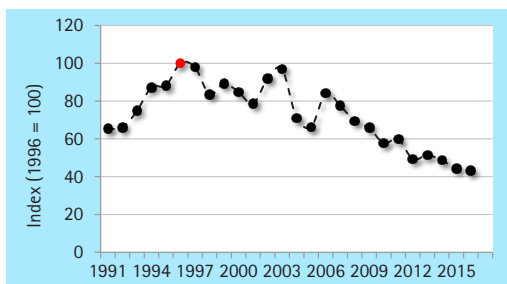
Eurasian Oystercatcher is one of the most abundant breeding birds in the Wadden Sea and a large proportion of the NW-European breeding population can be found here. Trends from 1991 onwards point at declines (after an overall increase), starting earliest in Schleswig-Holstein and The Netherlands. The 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 bird 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 succes point at ongoing low reproduction rates in large parts of the Wadden Sea (mainly due to flooding and mammalian predation, suggesting further declines in near future.

Figures 5.7.3–5.7.6
The figures represent the trends of Eurasian Oystercatcher in the countries from 1991 to 2017 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



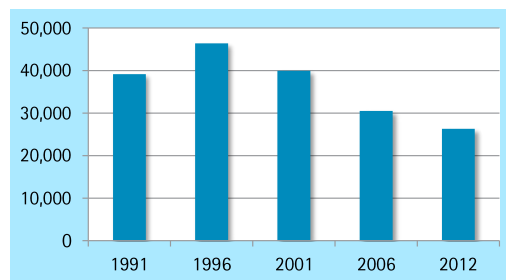
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.7.7
Total counts of Eurasian Oystercatcher in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	↓
(B) Denmark		↓	↓
(C) Schleswig-Holstein		↓	↓
(D) Niedersachsen/Hamburg		↓	↓
(E) The Netherlands		↓	↓

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



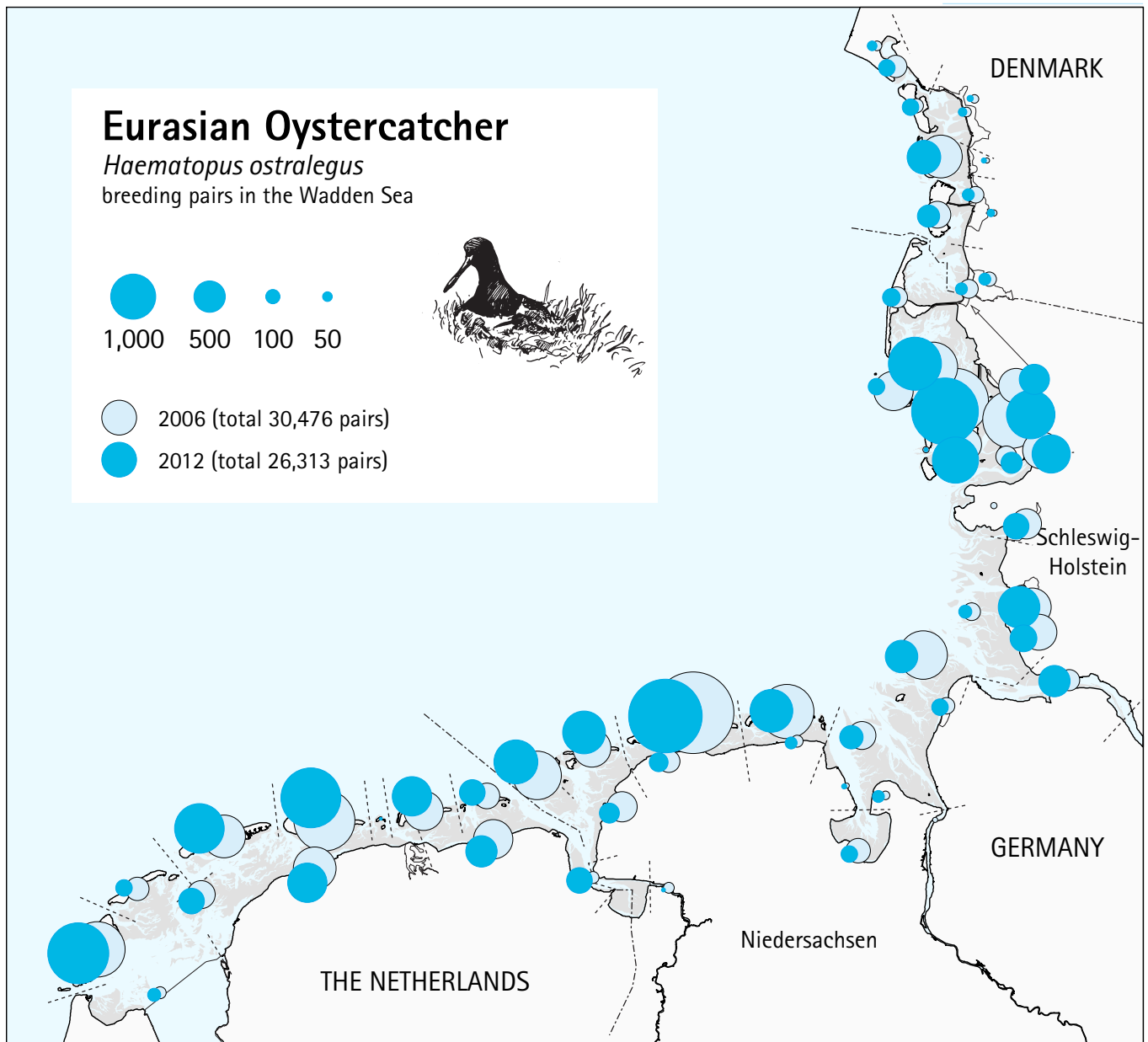


Figure 5.7.8
Distribution of Eurasian
Oystercatcher in the
international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

Photo: J. Frikke.

5.8 Pied Avocet

04560

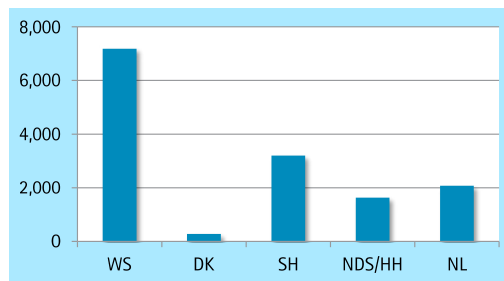
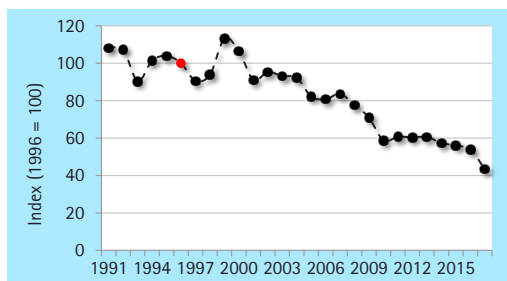
Recurvirostra avocetta

DK: Klyde

D: Säbelschnäbler

NL: Kluut

Figures 5.8.1-5.8.2
The left figure represent the trend of Pied Avocet in the international Wadden Sea from 1991 to 2017 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 2012.

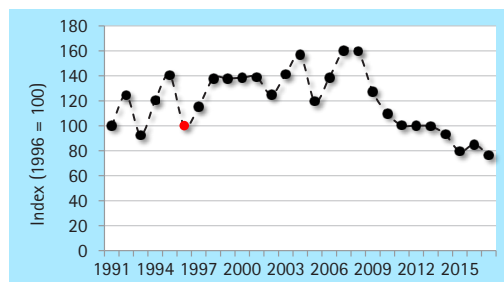
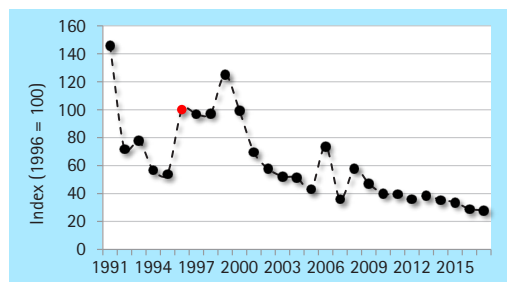


(A) Overall trend in the International Wadden Sea

Explanatory Note

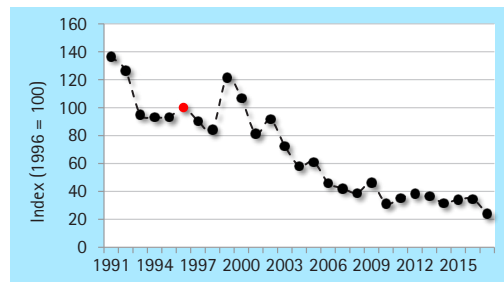
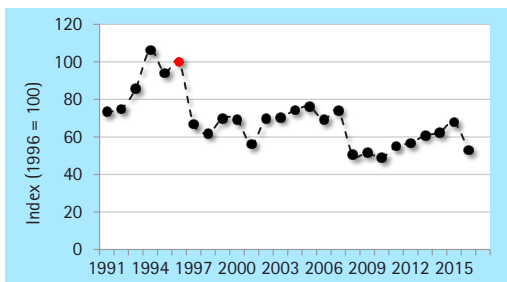
Pied Avocet is one of the prime breeding bird species in the Wadden Sea, supporting a large share of the NW-European breeding population. The overall population shows a decline from 1999 onwards, being most pronounced in Denmark and The Netherlands. On the other hand in Schleswig-Holstein numbers have remained stable for a long time, but recently start to decline as well. 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. Data from the TMAP parameter breeding success point at low breeding success all over the Wadden Sea.

Figures 5.8.3-5.8.6
The figures represent the trends of Pied Avocet in the countries from 1991 to 2017 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



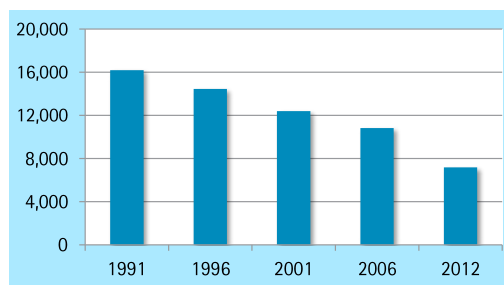
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.8.7 (right)
Total counts of Pied Avocet in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	↓
(B) Denmark		↓	—
(C) Schleswig-Holstein		↓	↓
(D) Niedersachsen/Hamburg		↓	—
(E) The Netherlands		↓ ↓	↓

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



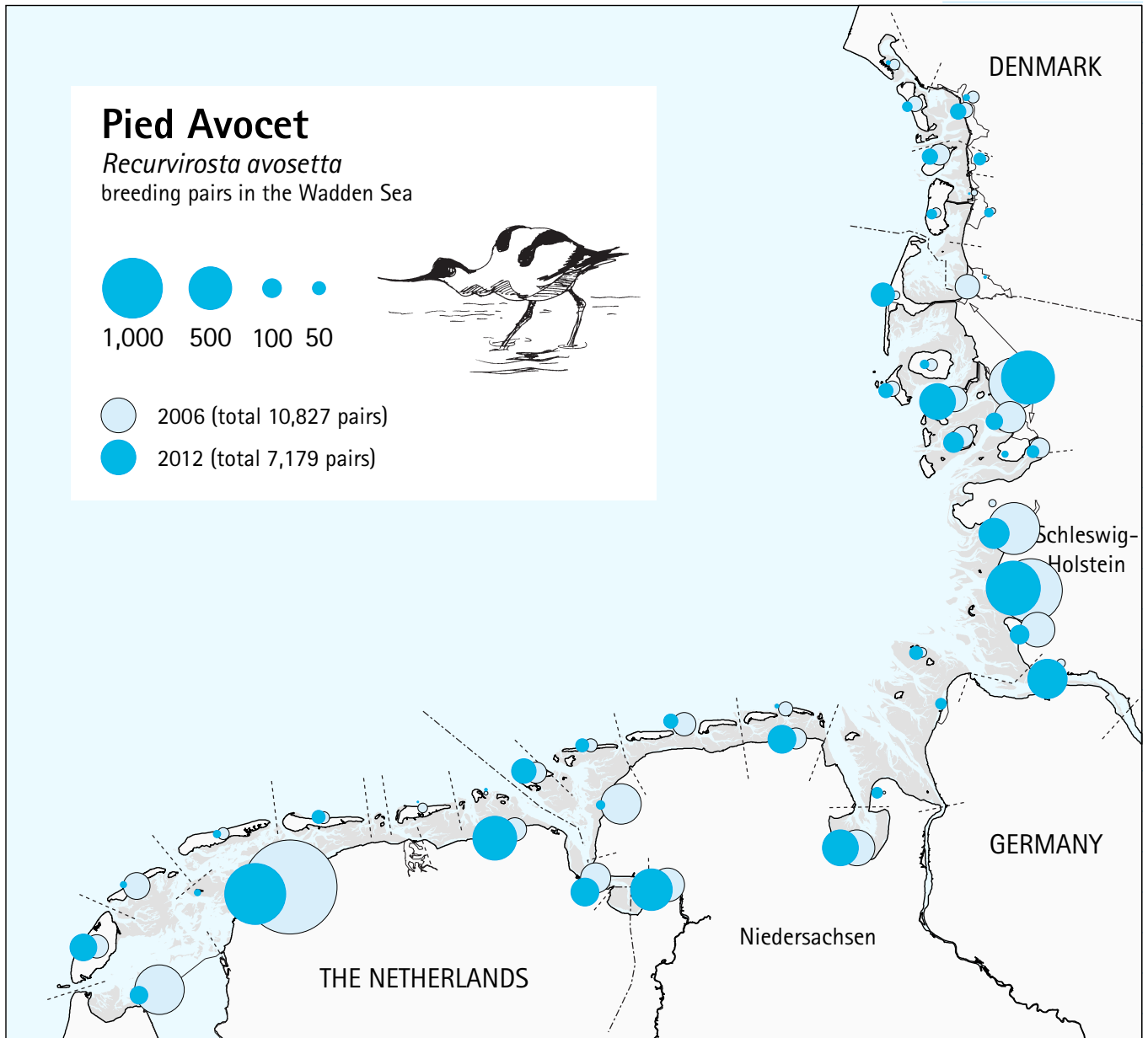


Figure 5.8.8
Distribution of Pied Avocet
in the international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

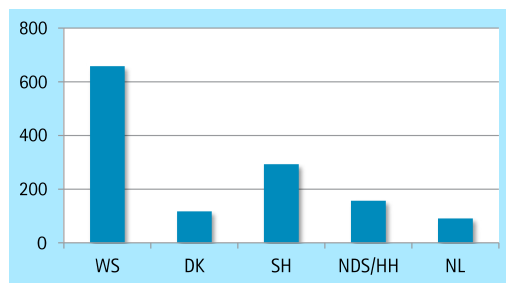
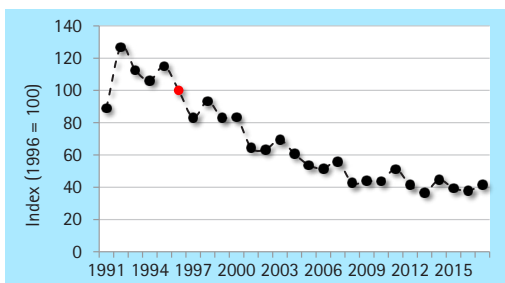
5.9 Great Ringed Plover

04700

Charadrius hiaticula

DK: Stor Præstekrave D: Sandregenpfeifer NL: Bontbekplevier

Figures 5.9.1-5.9.2
The left figure represent the trend of Great Ringed Plover in the international Wadden Sea from 1991 to 2017 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 2012.

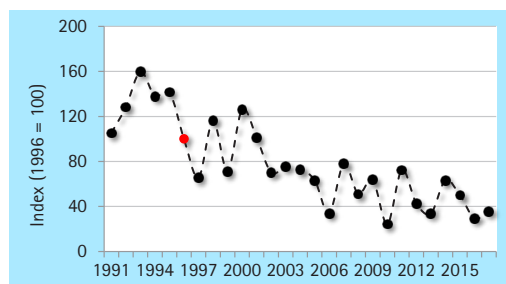
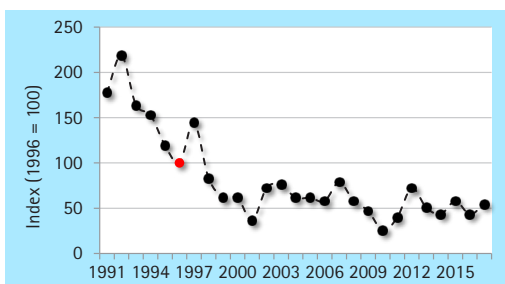


(A) Overall trend in the International Wadden Sea

Explanatory Note

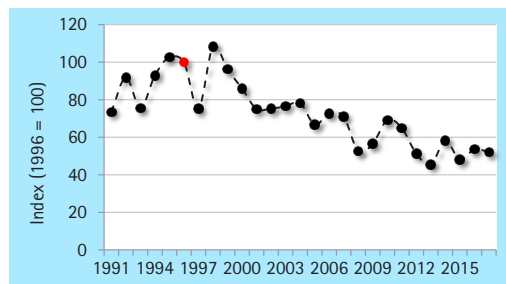
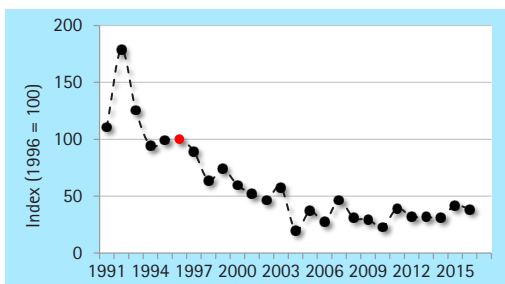
Great Ringed Plover is among the most declining breeding bird species in the Wadden Sea. In recent years the population fluctuates at a low level. The decline in the Wadden Sea coincides with declines elsewhere in the breeding range. In the Wadden Sea, losses have been often attributed to disturbance and reduced habitat dynamics on the preferred breeding sites at the beaches and lower dunes. Good numbers still occur in the Schleswig-Holstein part of the Wadden Sea, both on the islands and Halligen and in coastal wetlands behind the dikes, e.g. Beltringharder Koog with 60 pairs in 2012. Ringed Plover has changed from a common to a rather rare species in the Wadden Sea which makes trend monitoring by census areas more difficult. Here the total census is especially helpful to crosscheck the trend.

Figures 5.9.3-5.9.6
The figures represent the trends of Great Ringed Plover in the countries from 1991 to 2017 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



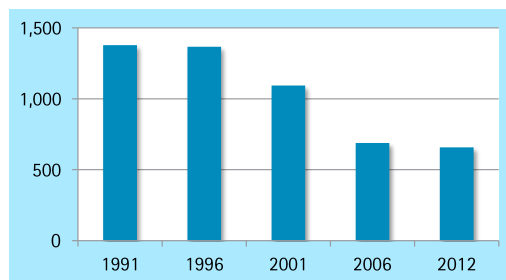
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.9.7
Total counts of Great Ringed Plover in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	—
(B) Denmark		↓	—
(C) Schleswig-Holstein		↓	—
(D) Niedersachsen/Hamburg		↓	—
(E) The Netherlands		↓	—

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



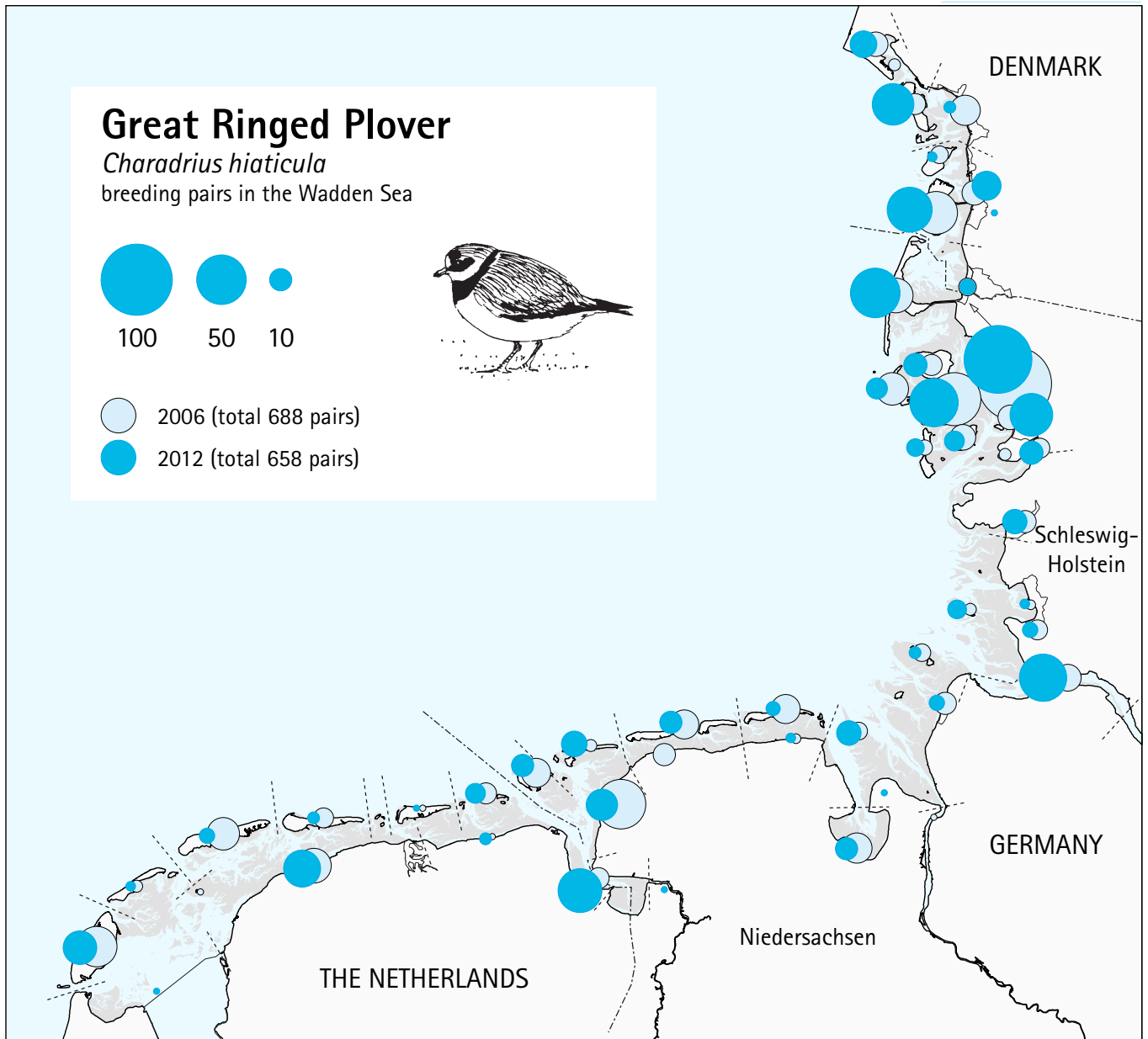


Figure 5.9.8
Distribution of Great Ringed Plover in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).

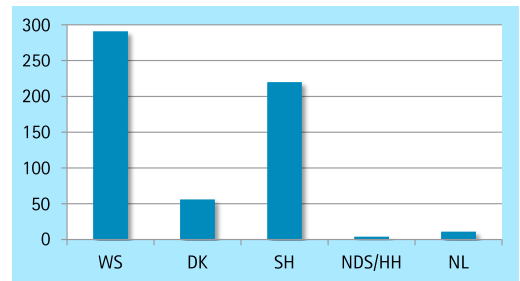
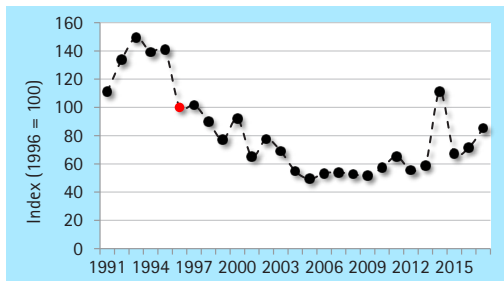
5.10 Kentish Plover

04770

Charadrius alexandrinus

DK: Hvidbrystet Præstekrave D: Seeregenpfeifer NL: Strandplevier

Figures 5.10.1-5.10.2
The left figure represent the trend of Kentish Plover in the international Wadden Sea from 1991 to 2017 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 2012.

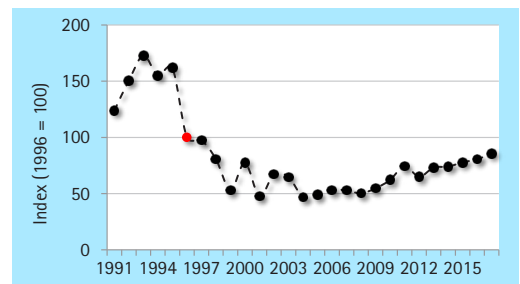
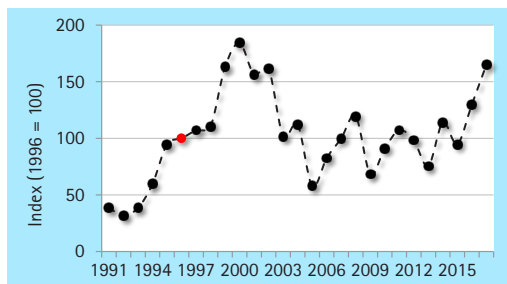


(A) Overall trend in the International Wadden Sea

Explanatory Note

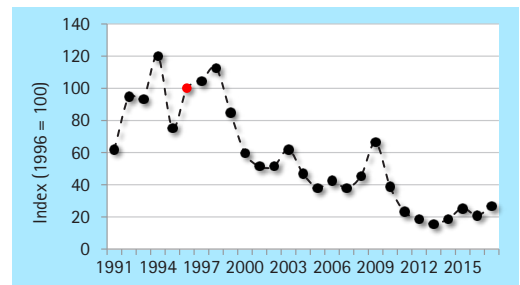
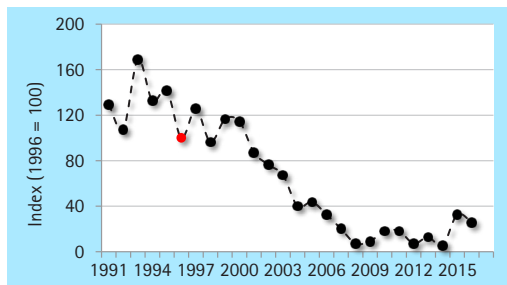
The Wadden Sea represents the core breeding area for Kentish Plovers in NW-Europe. Ongoing declines have been observed from the mid 1990s onwards with highest rates of decline in Niedersachsen. Only in Denmark, the species is still thriving at islands like Rømø. Secondly, large numbers breed in coastal wetlands in Schleswig-Holstein, where management anticipates on the requirements of the species and numbers have increased recently, e.g. Beltringharder Koog up to 183 pairs in 2014. On the other hand in St. Peter-Ording, the population in the main natural breeding area has now almost died out. The decline in other parts of the Wadden Sea seems to level off recently. 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 5.10.3-5.10.6
The figures represent the trends of Kentish Plover in the countries from 1991 to 2017 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



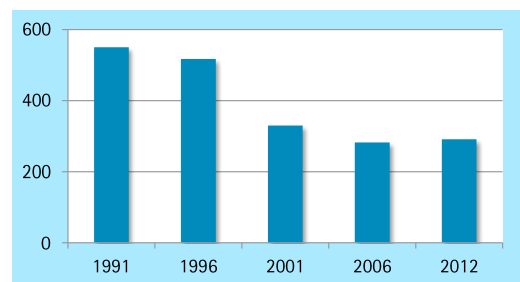
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.10.7 (right)
Total counts of Kentish Plover in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	↑
(B) Denmark		↑	—
(C) Schleswig-Holstein		↓ ↓	↑
(D) Niedersachsen/Hamburg		↓ ↓	—
(E) The Netherlands		↓ ↓	↓ ↓

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



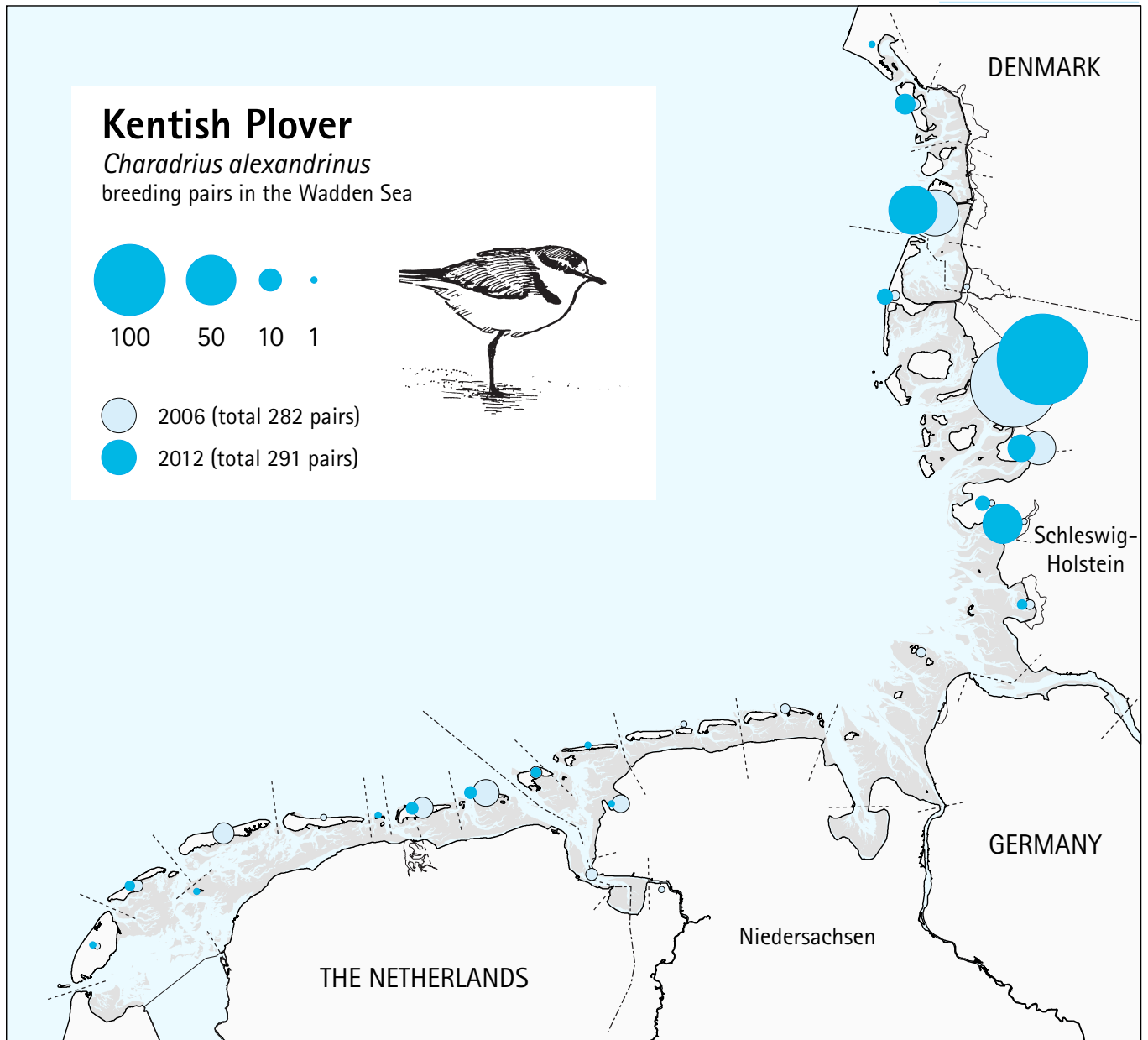


Figure 5.10.8
Distribution of Kentish Plover in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).

5.11 Northern Lapwing

04930

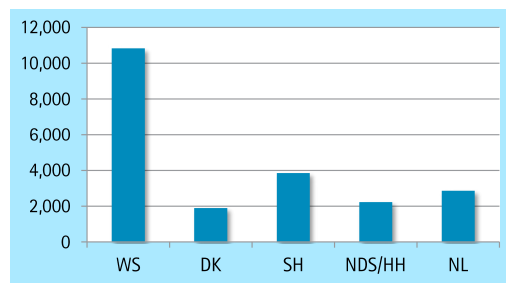
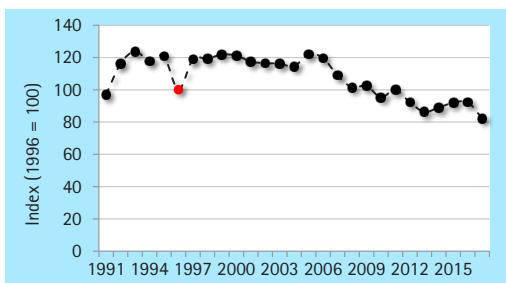
Vanellus vanellus

DK: Vibe

D: Kiebitz

NL: Kievit

Figures 5.11.1-5.11.2
The left figure represent the trend of Northern Lapwing in the international Wadden Sea from 1991 to 2017 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 2012.

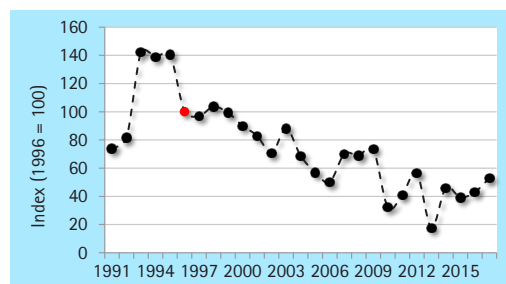
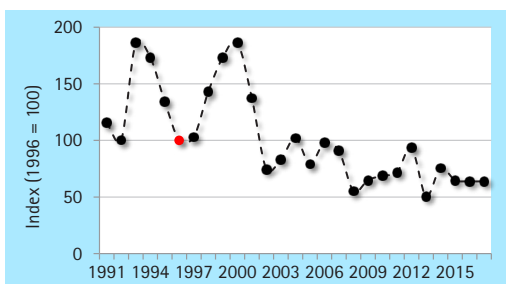


(A) Overall trend in the International Wadden Sea

Explanatory Note

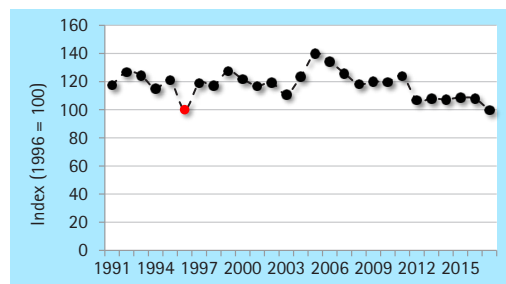
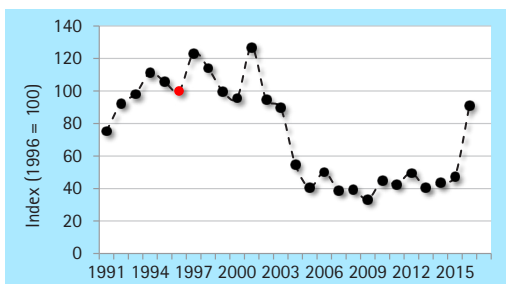
Northern Lapwing is a declining species in the Wadden Sea, although only in Denmark, Schleswig-Holstein and Niedersachsen. In the Dutch Wadden Sea the population has remained stable over the entire period. However, more recently numbers have also started to go down in the Dutch Wadden Sea, following earlier and even more pronounced declines in farmland areas in the interior parts of the country. Preferred habitat is grassland, both behind the seawall and at salt marshes managed as such.

Figures 5.11.3-5.11.6
The figures represent the trends of Northern Lapwing in the countries from 1991 to 2017 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



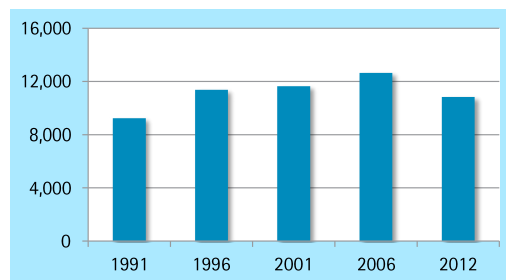
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.11.7
Total counts of Northern Lapwing in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓ ↓	↓
(B) Denmark		↓ ↓ ↓	—
(C) Schleswig-Holstein		↓ ↓ ↓	—
(D) Niedersachsen/Hamburg		↓ ↓ ↓	—
(E) The Netherlands		↗ ↘	↓

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



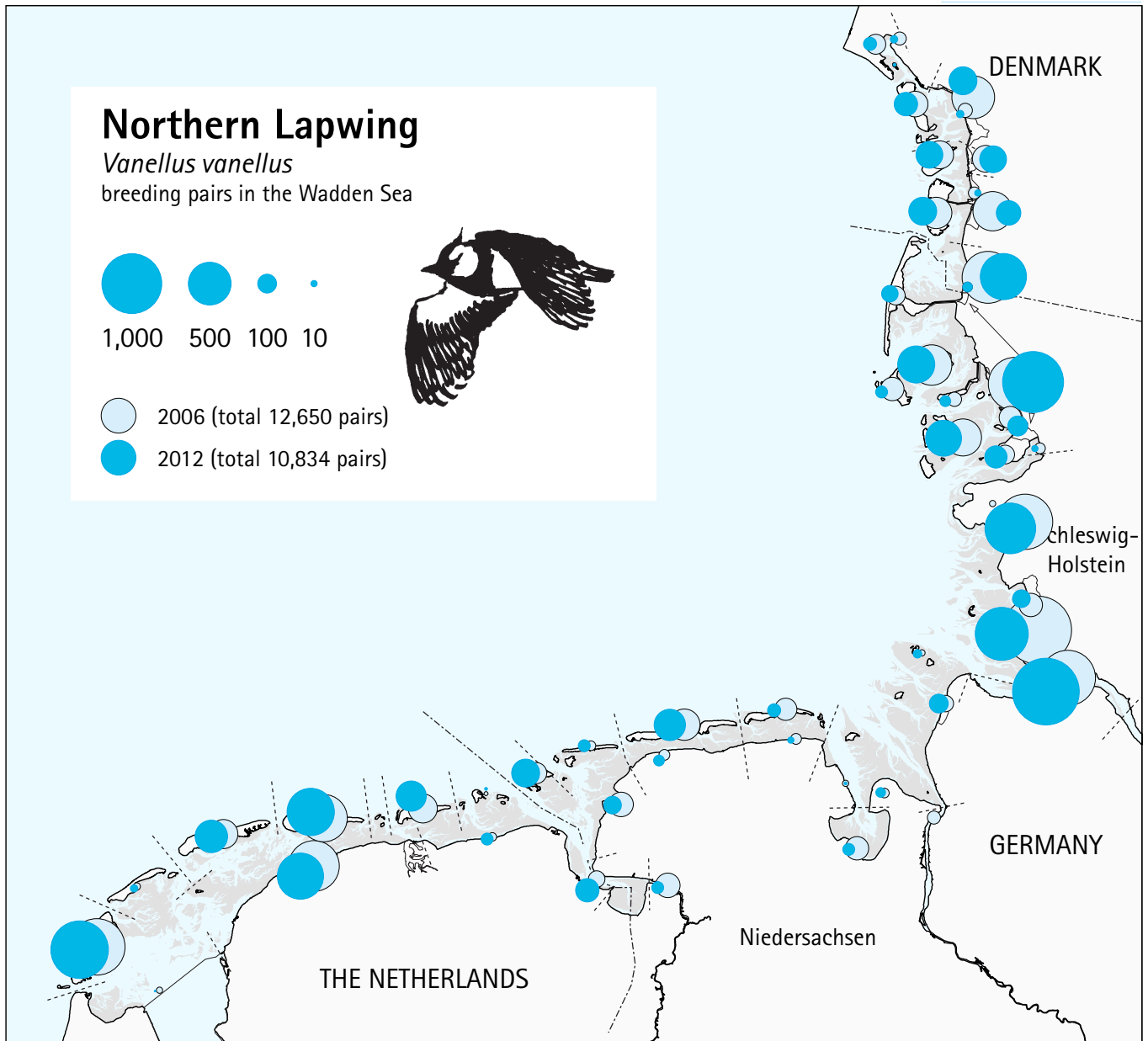


Figure 5.11.8
 Distribution of Northern Lapwing in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).



Photo: J. Frikke.

5.12 Black-tailed Godwit

05320

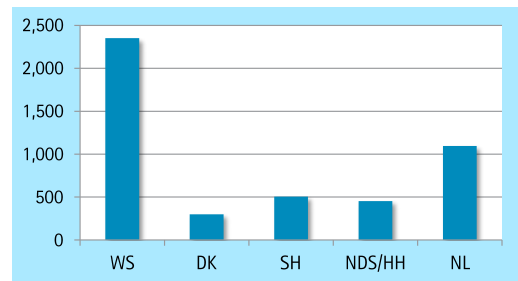
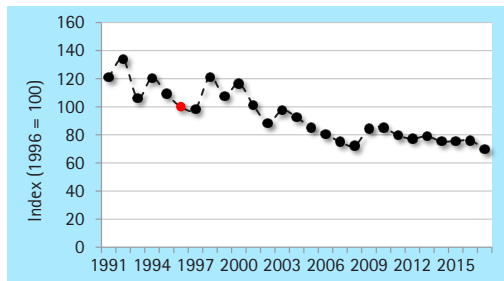
Limosa limosa

DK: Stor Kobbersneppe

D: Uferschnepfe

NL: Grutto

Figures 5.12.1-5.12.2
The left figure represent the trend of Black-tailed Godwit in the international Wadden Sea from 1991 to 2017 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 2012.

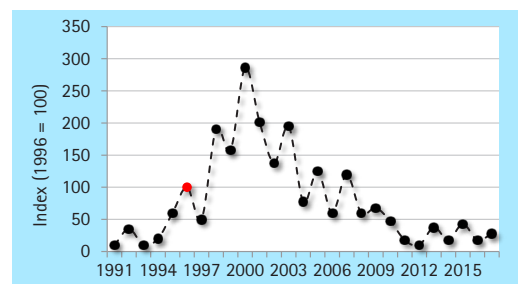
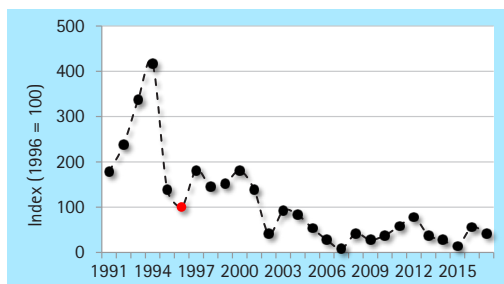


(A) Overall trend in the International Wadden Sea

Explanatory Note

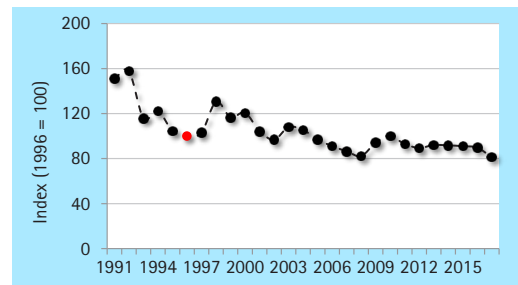
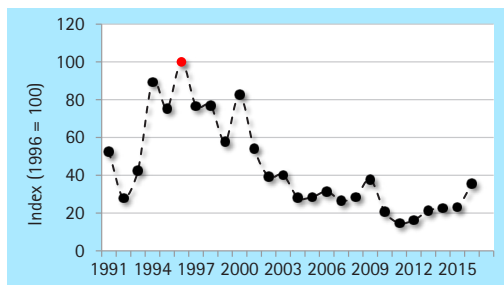
Breeding Black-tailed Godwit in the Wadden Sea are mainly found in coastal grasslands behind the seawall, coastal wetlands, summer-polders and salt marshes. In the Dutch Wadden Sea largest numbers concentrate in the farmland areas on the islands. Numbers have gone down in all parts of the area. In Schleswig-Holstein the data from the census areas are considered not representative for the overall situation. More recently, breeding numbers have stabilised on a lower level, especially in The Netherlands. Also the rate of the long term decline has been slower than elsewhere in the Wadden Sea (cf. Northern Lapwing). Predation pressure and increased agricultural practices are among the most important causes for the observed trends.

Figures 5.12.3-5.12.6
The figures represent the trends of Black-tailed Godwit in the countries from 1991 to 2017 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



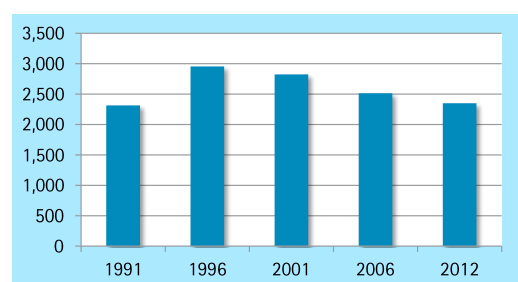
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.12.7 (right)
Total counts of Black-tailed Godwit in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	→
(B) Denmark		↓	—
(C) Schleswig-Holstein		—	—
(D) Niedersachsen/Hamburg		↓	—
(E) The Netherlands		↓	→

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



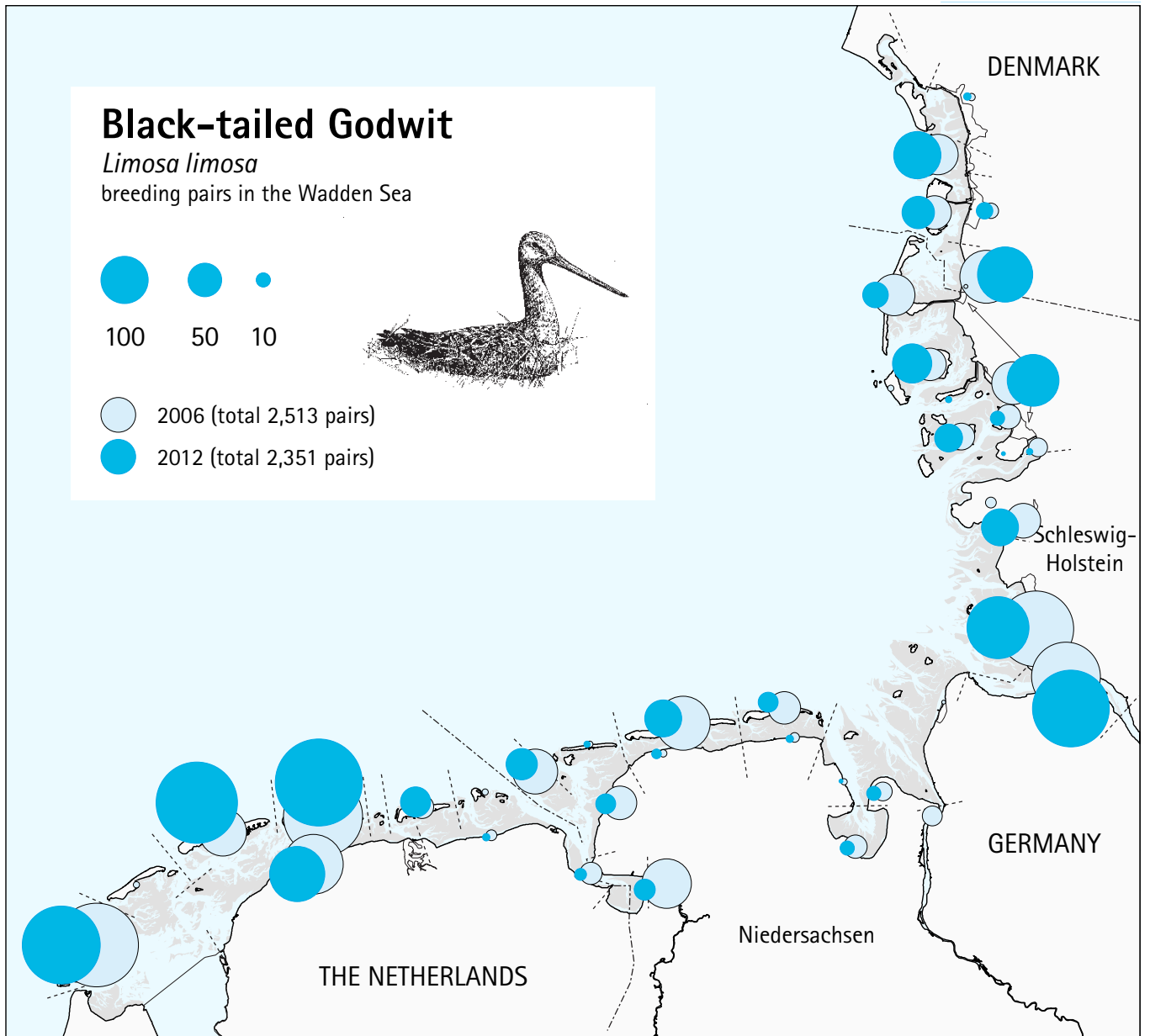


Figure 5.12.8
Distribution of Black-tailed Godwit in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).

Photo: J. Frikke.

5.13 Eurasian Curlew

05410

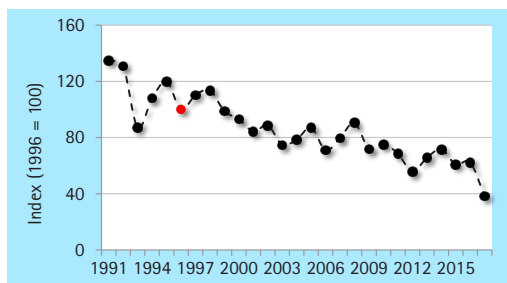
Numenius arquata

DK: Stor Regnspeve

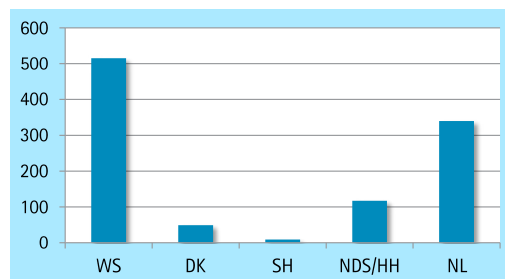
D: Brachvogel

NL: Wulp

Figures 5.13.1-5.13.2
The left figure represent the trend of Eurasian Curlew in the international Wadden Sea from 1991 to 2017 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 2012.



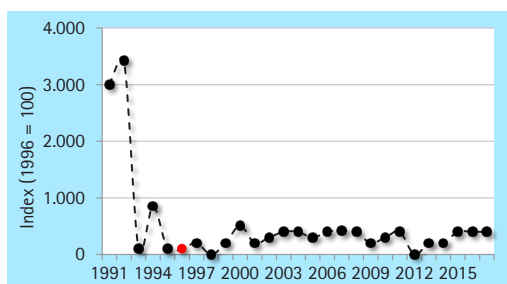
(A) Overall trend in the International Wadden Sea



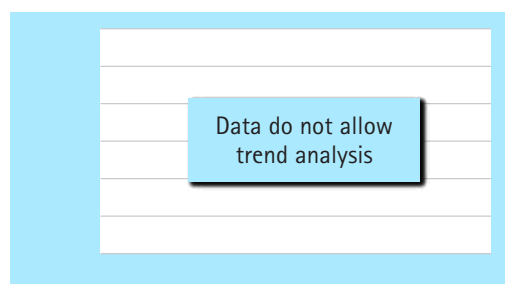
Explanatory Note

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.

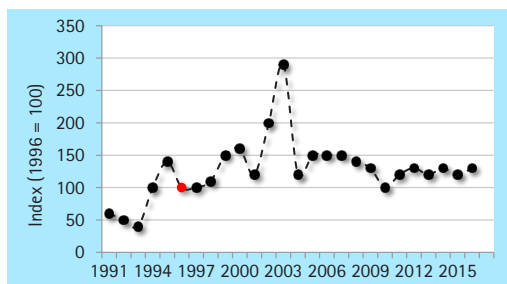
Figures 5.13.3-5.13.6
The figures represent the trends of Eurasian Curlew in the countries from 1991 to 2017 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



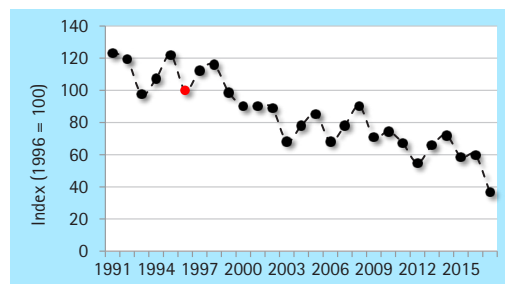
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

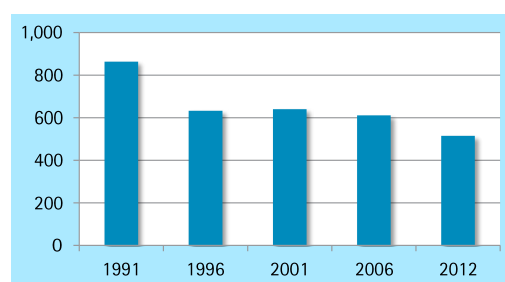


(E) The Netherlands

Figure 5.13.7
Total counts of Eurasian Curlew in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	↓
(B) Denmark		—	—
(C) Schleswig-Holstein		—	—
(D) Niedersachsen/Hamburg		—	—
(E) The Netherlands		↓	↓

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



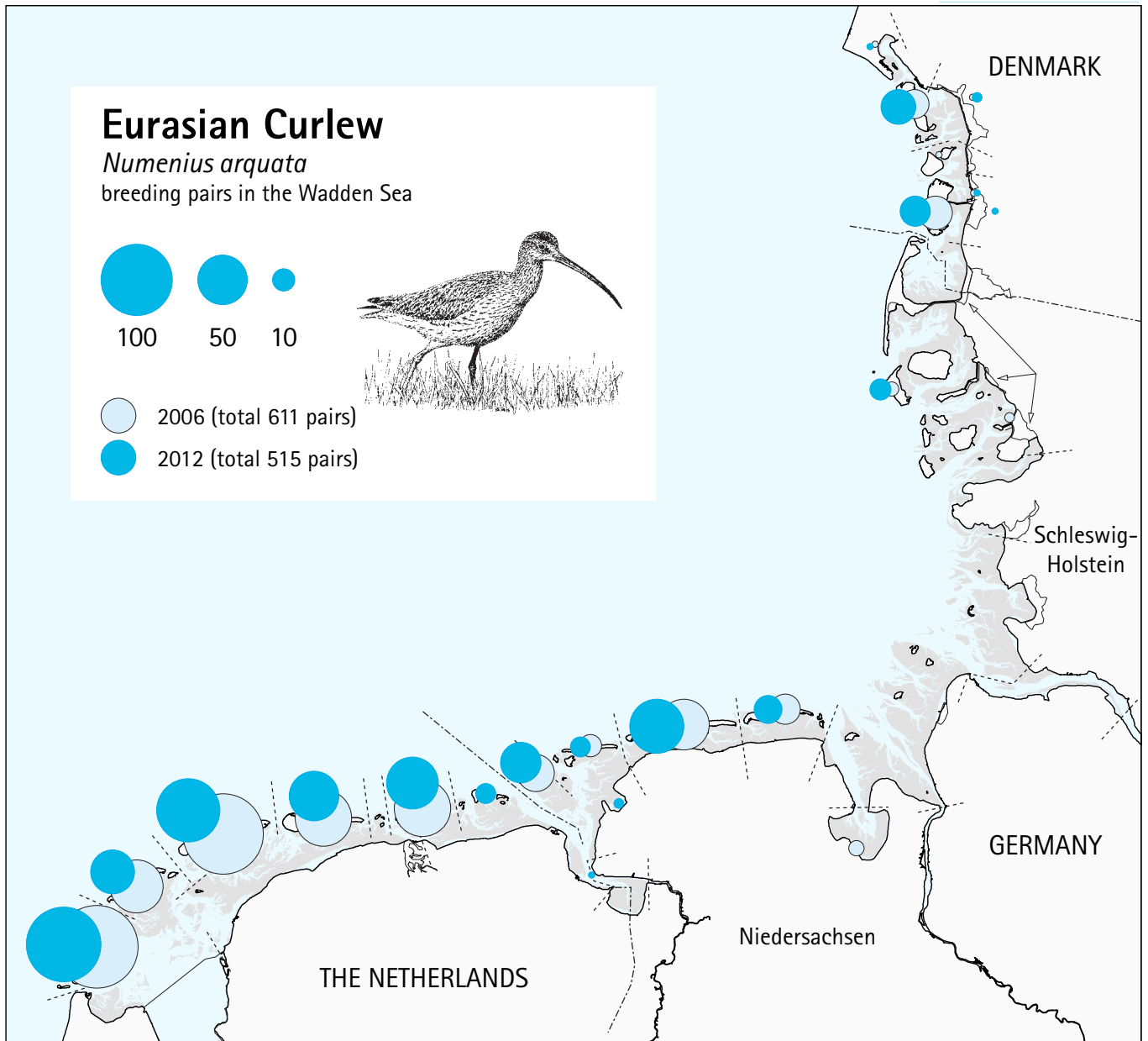


Figure 5.13.8
Distribution of Eurasian Curlew in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).

5.14 Common Redshank

05460

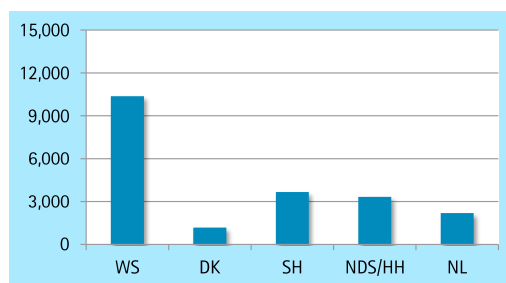
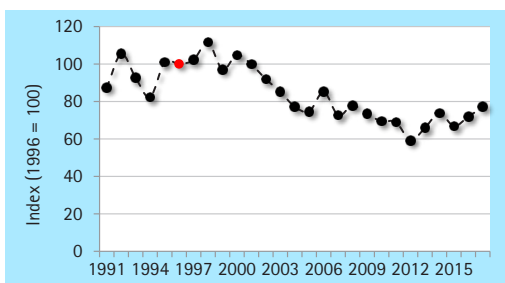
Tringa totanus

DK: Rødben

D: Rotschenkel

NL: Tureluur

Figures 5.14.1-5.14.2 The left figure represent the trend of Common Redshank in the international Wadden Sea from 1991 to 2017 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 2012.

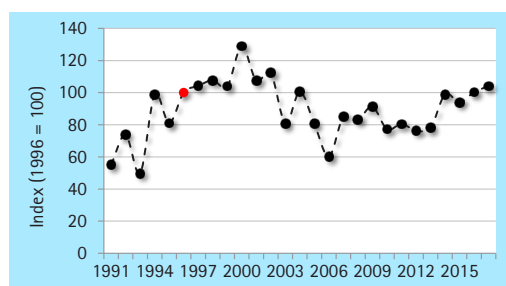
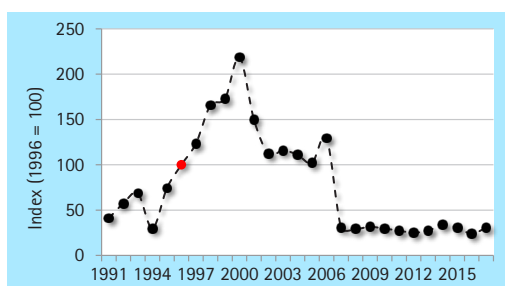


(A) Overall trend in the International Wadden Sea

Explanatory Note

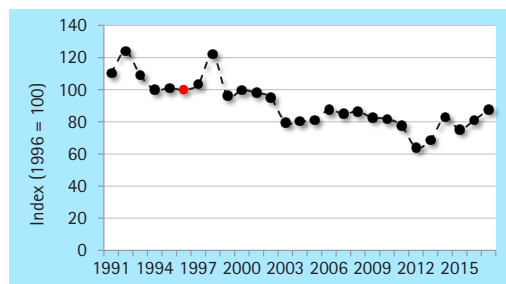
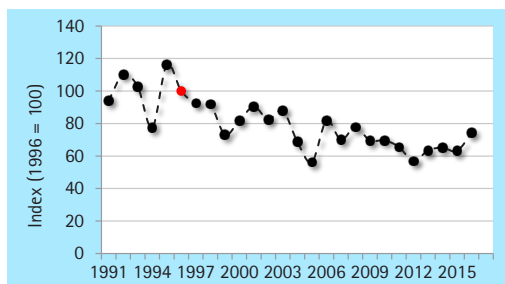
Common Redshank preferably breed in salt marsh areas with tall vegetation, often associated with low-intensity management regime (no or low intensity grazing). The overall trend is negative, but has become stable in recent years. In Schleswig-Holstein numbers have remained stable over all years, and have experienced an increase in the past 12 years. In Niedersachsen and The Netherlands the population has stabilized recently, whereas in Denmark a sharp decline has occurred after 2006 (perhaps also associated with counting methods).

Figures 5.14.3-5.14.6 The figures represent the trends of Common Redshank in the countries from 1991 to 2017 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



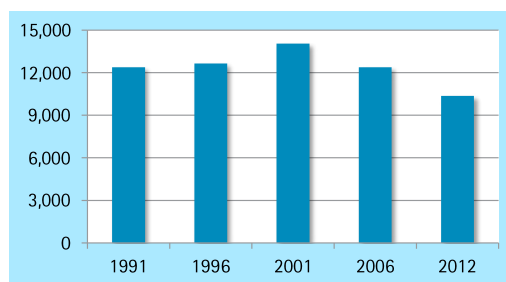
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.14.7 (right) Total counts of Common Redshank in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	→
(B) Denmark		↓	↓
(C) Schleswig-Holstein		→	↑
(D) Niedersachsen/Hamburg		↓	→
(E) The Netherlands		↓	→

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



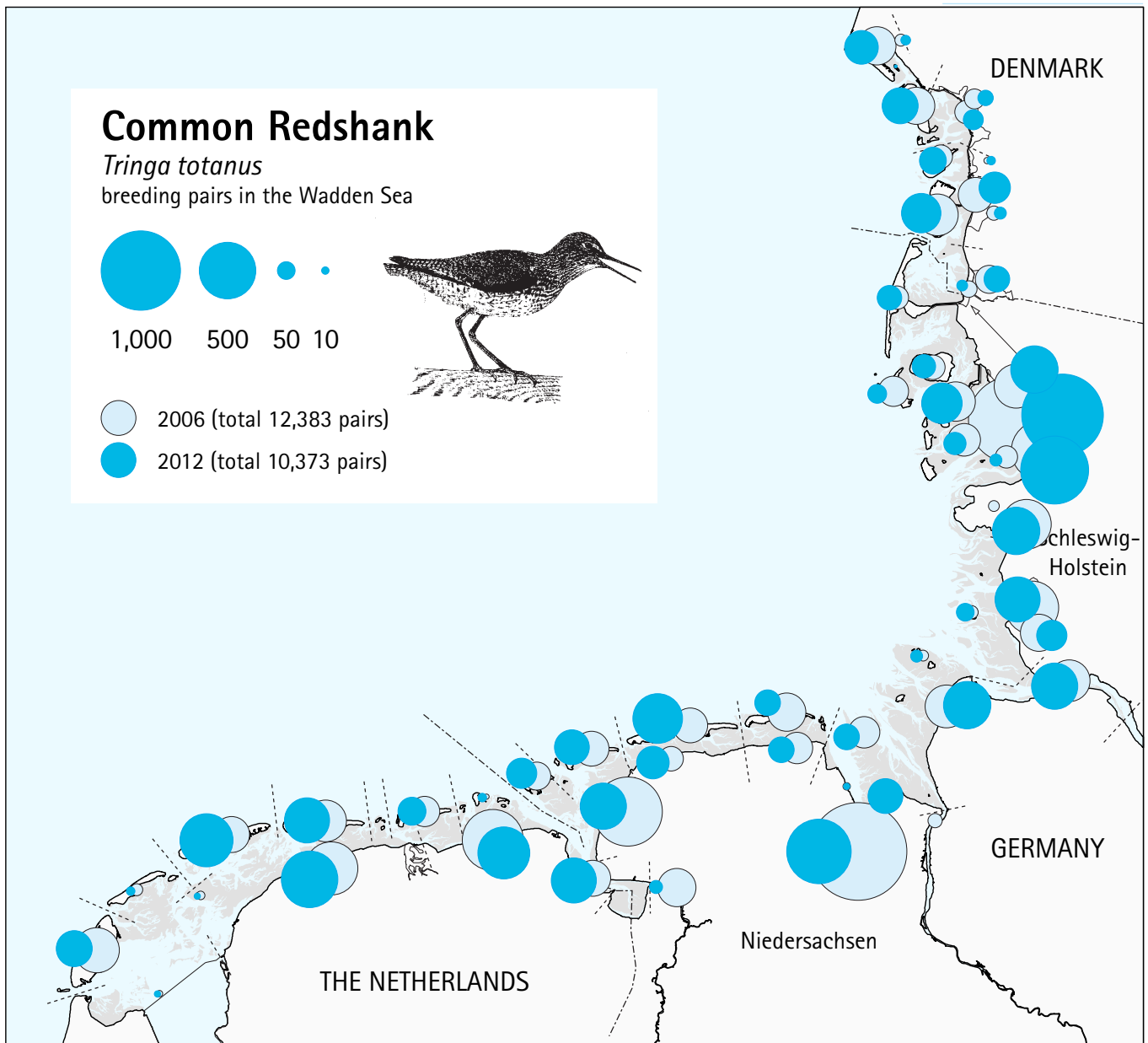


Figure 5.14.8
Distribution of Common Redshank in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).

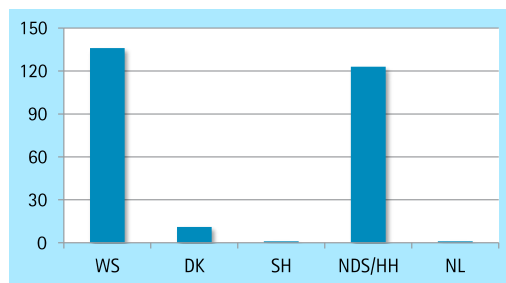
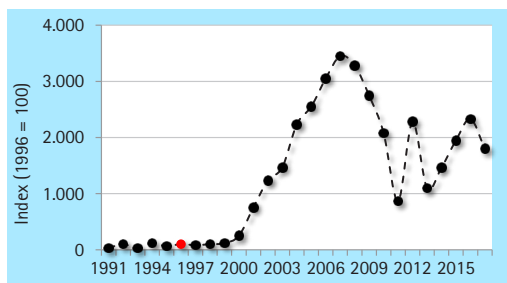
5.15 Mediterranean Gull

05750

Ichthyaetus melanocephalus

DK: Sorthovedet Måge D: Schwarzkopfmöwe NL: Zwartkopmeeuw

Figures 5.15.1-5.15.2 The left figure represent the trend of Mediterranean Gull in the international Wadden Sea from 1991 to 2017 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 countries in 2012.

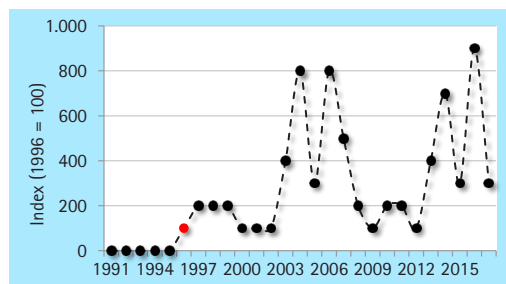
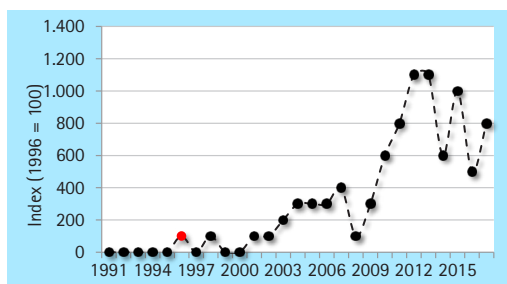


(A) Overall trend in the International Wadden Sea

Explanatory Note

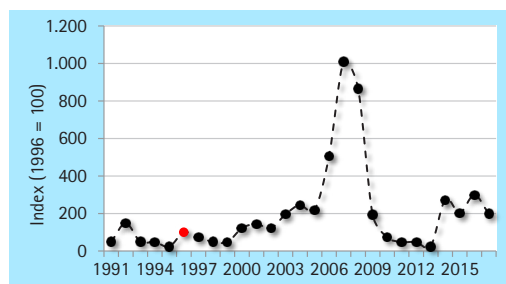
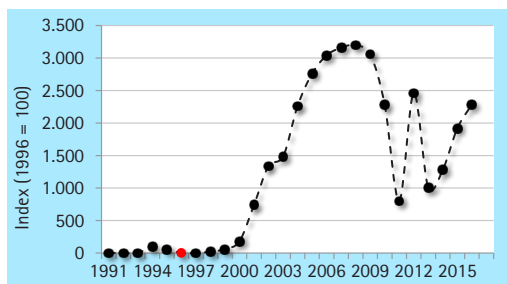
Mediterranean Gull is a rather new breeding species to the Wadden Sea, and in line with developments in e.g. the Delta area, SW-Netherlands, numbers and distribution have also expanded in the Wadden Sea (though not as fast as elsewhere). In 1991, it was only found in the Dutch Wadden Sea, in 1994 it colonized the Wadden Sea of Niedersachsen and in 1996 the Schleswig-Holstein part. After 2008 numbers have gone down to the level of the early 2000s. In this period the main colony on an island in the River Elbe (sometimes considered outside the Wadden Sea) was raided by predators. Elsewhere mainly scattered pairs are found breeding, often also associated with colonies of Black-headed Gull.

Figures 5.15.3-5.15.6 The figures represent the trends of Mediterranean Gull in the countries from 1991 to 2017 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



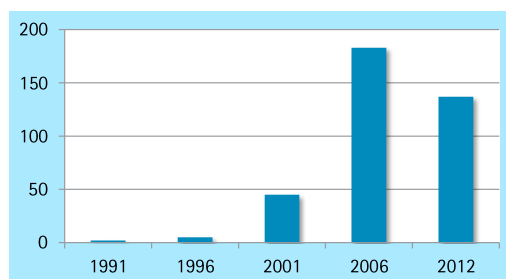
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.15.7 Total counts of Mediterranean Gull in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↑↑	—
(B) Denmark		↑↑	—
(C) Schleswig-Holstein		—	—
(D) Niedersachsen/Hamburg		↑↑	↓
(E) The Netherlands		—	↓

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



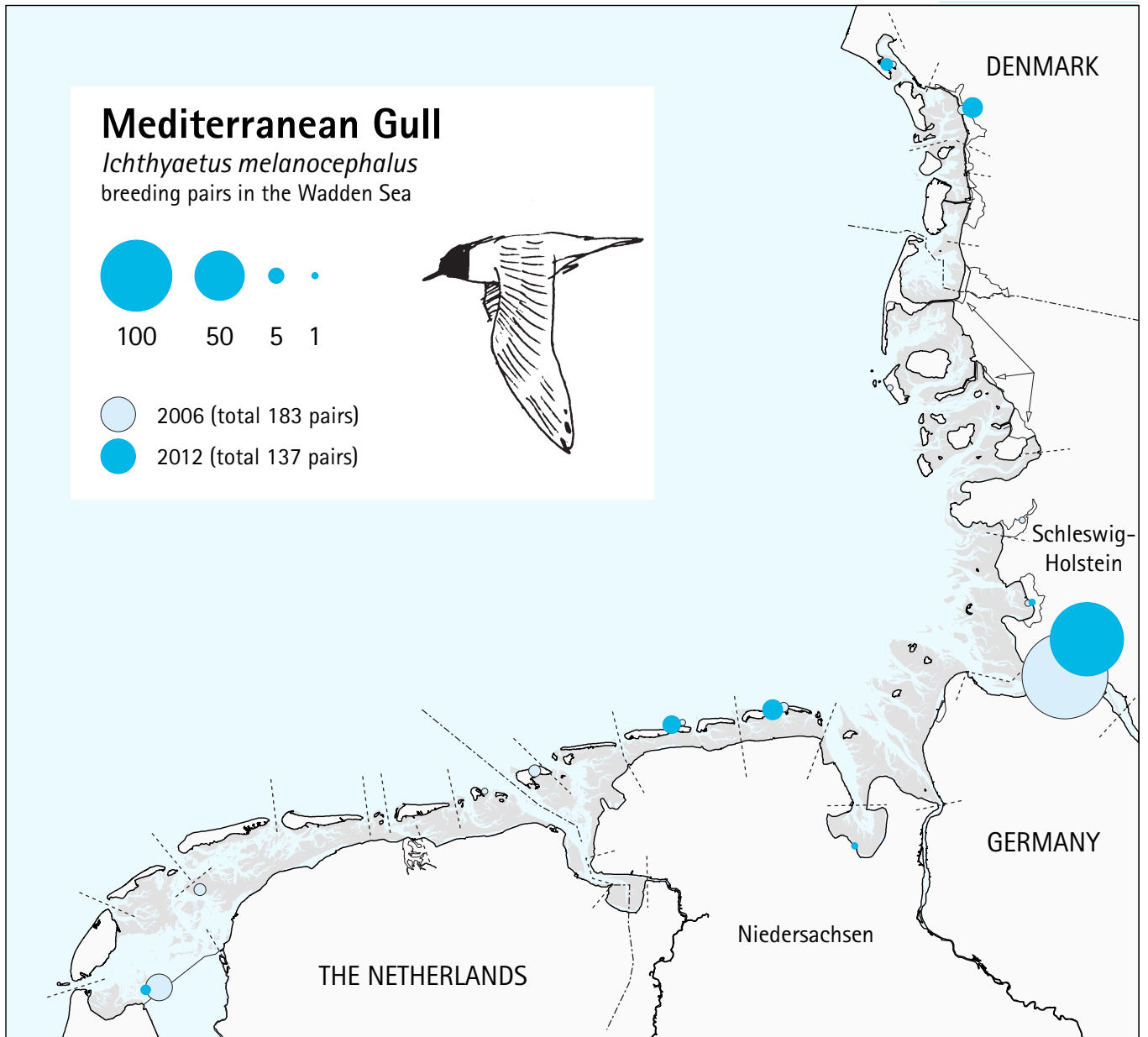


Figure 5.15.8
Distribution of
Mediterranean Gull in the
international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

5.16 Common Black-headed Gull

05820

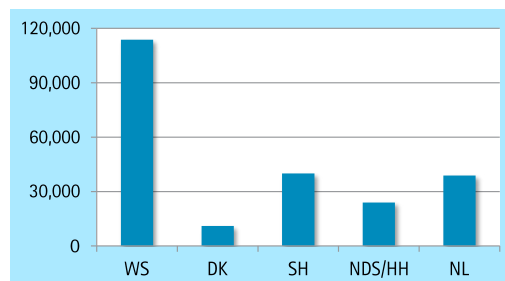
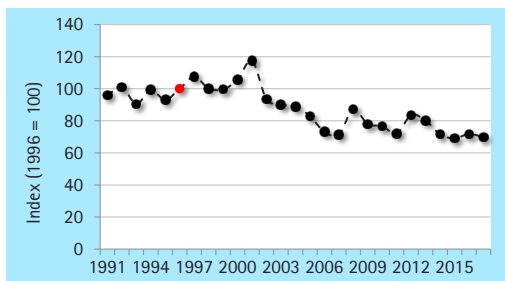
Chroicocephalus ridibundus

DK: Hættemåge

D: Lachmöwe

NL: Kokmeeuw

Figures 5.16.1-5.16.2
The left figure represent the trend of Common Black-headed Gull in the international Wadden Sea from 1991 to 2017 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.



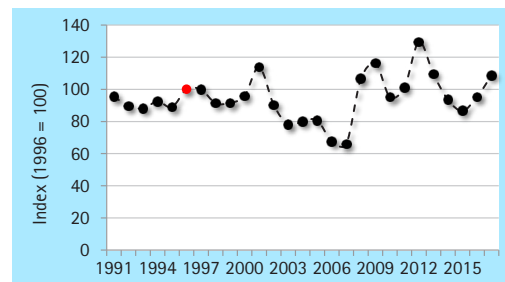
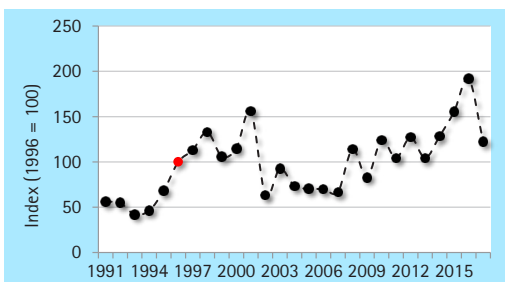
(A) Overall trend in the International Wadden Sea

The right figure shows the total count of Common Black-headed Gull in the international Wadden Sea and in the countries in 2012.

Explanatory Note

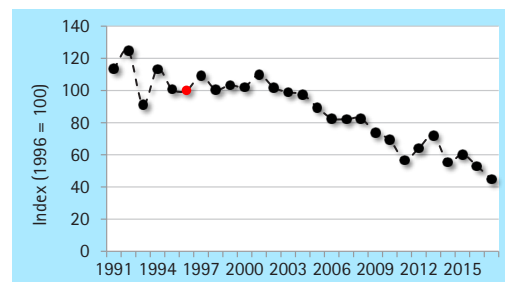
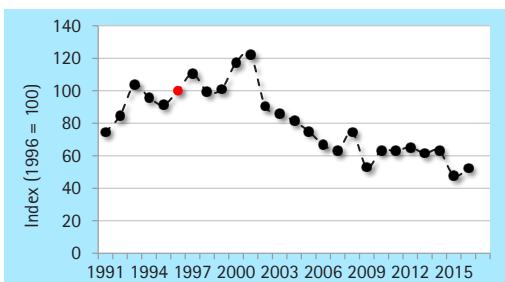
Black-headed Gull is one of the most abundant breeding birds in the Wadden Sea and a major part of the NW-European population is found here. Highest numbers breed west of the River Elbe. Largest colonies are situated in salt marshes and on remote islands. The trend is partly dominated by fluctuations, but points at downward numbers since 1991. Only in Schleswig-Holstein the population has remained stable, and even has shown a tendency to increase recently (trend not significant). At least locally, colonies have been abandoned due to predation pressure, but other factors like food availability might affect population trends as well.

Figures 5.16.3-5.16.6
The figures represent the trends of Common Black-headed Gull in the countries from 1991 to 2017 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



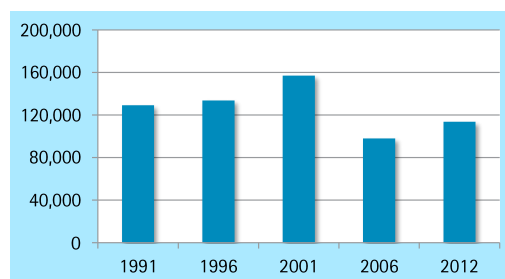
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.16.7 (right)
Total counts of Common Black-headed Gull in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	→
(B) Denmark		—	—
(C) Schleswig-Holstein		→	—
(D) Niedersachsen/Hamburg		↓ ↓	—
(E) The Netherlands		↓ ↓	↓ ↓

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



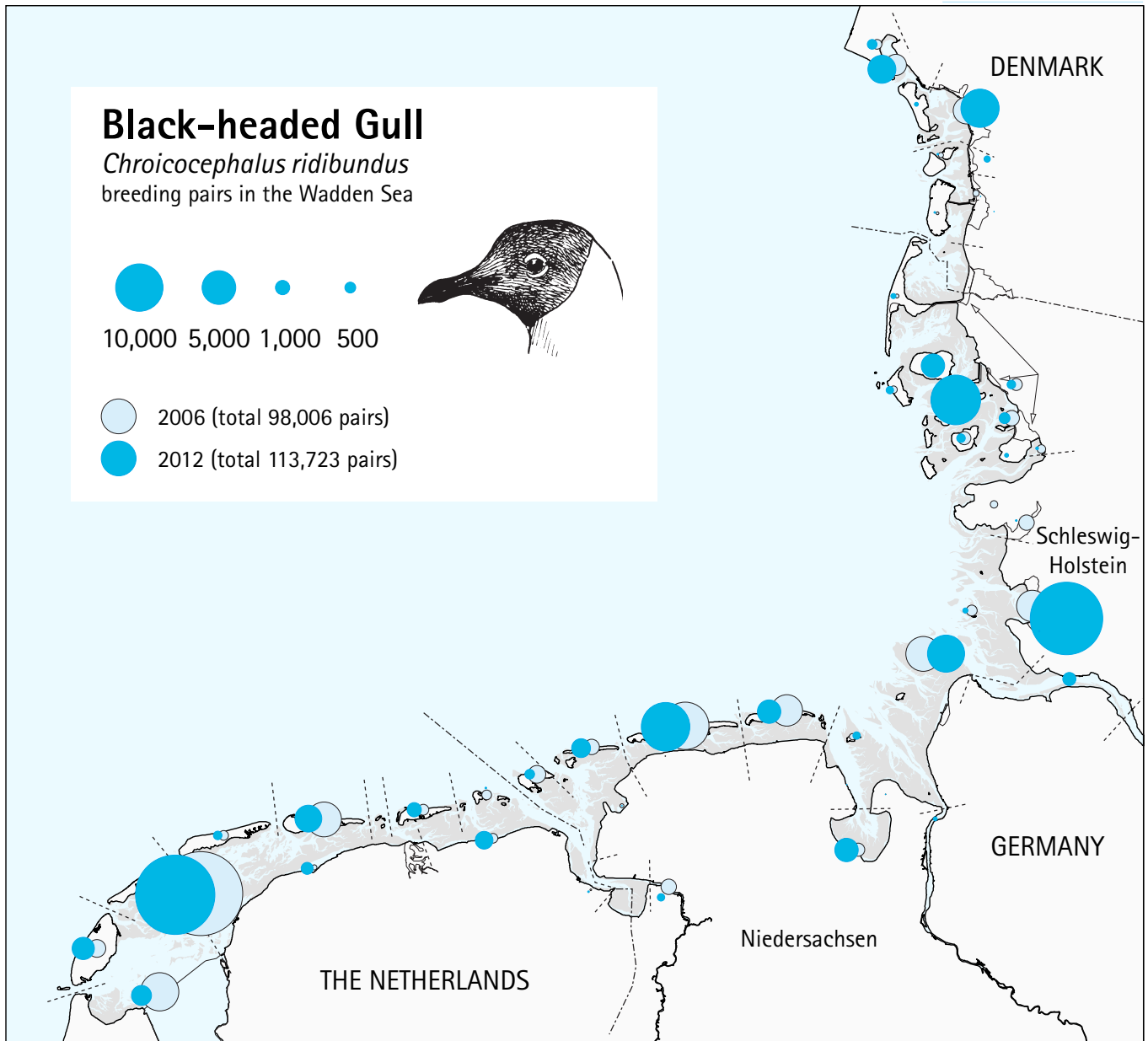


Figure 5.16.8
Distribution of Common
Black-headed Gull in the
international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

5.17 Common Gull

05900

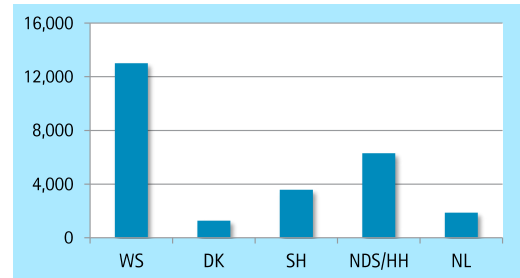
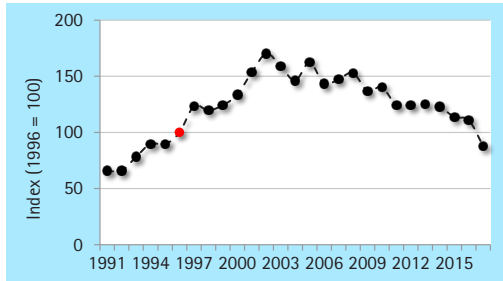
Larus canus

DK: Stormmåge

D: Sturmmöwe

NL: Stormmeeuw

Figures 5.17.1-5.17.2
The left figure represent the trend of Common Gull in the international Wadden Sea from 1991 to 2017 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 2012.

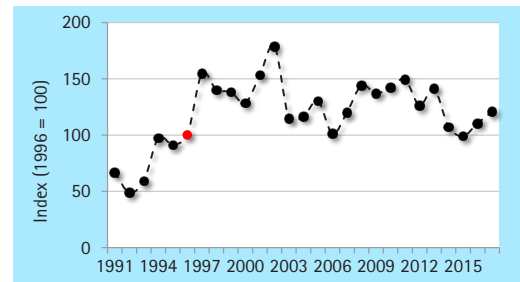
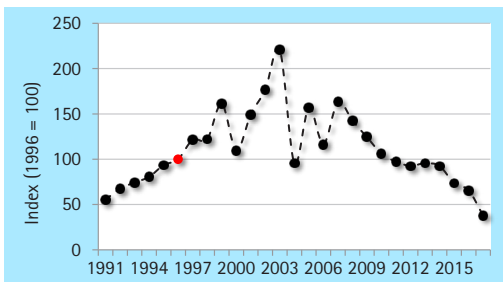


(A) Overall trend in the International Wadden Sea

Explanatory Note

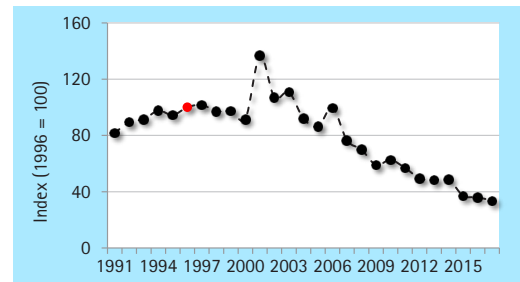
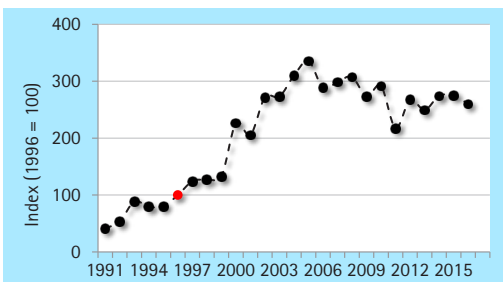
Highest numbers of **Common Gull** breed in Niedersachsen and Schleswig-Holstein, including a large colony in the inland part of the river Elbe (previously not always accounted for in trilateral reports). Trends in numbers within the international Wadden Sea show large contrasts between The Netherlands (long term decline, recently even accelerating) and increases in the other sections. However, recently also (small) numbers in Denmark are going down, whereas in the German sections the former increase has levelled off. Overall, this has resulted in a recent decline. As the species is not part of the breeding success scheme or subject to any other research, it remains unknown which factors have to be considered as drivers for this negative trend.

Figures 5.17.3-5.17.6
The figures represent the trends of Common Gull in the countries from 1991 to 2017 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



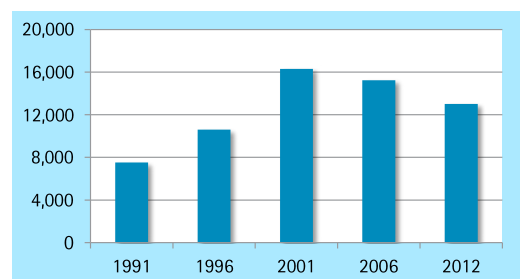
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.17.7
Total count of Common Gull in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↑	↓
(B) Denmark		→	↓↓
(C) Schleswig-Holstein		↑	→
(D) Niedersachsen/Hamburg		↑↑	→
(E) The Netherlands		↓	↓↓

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



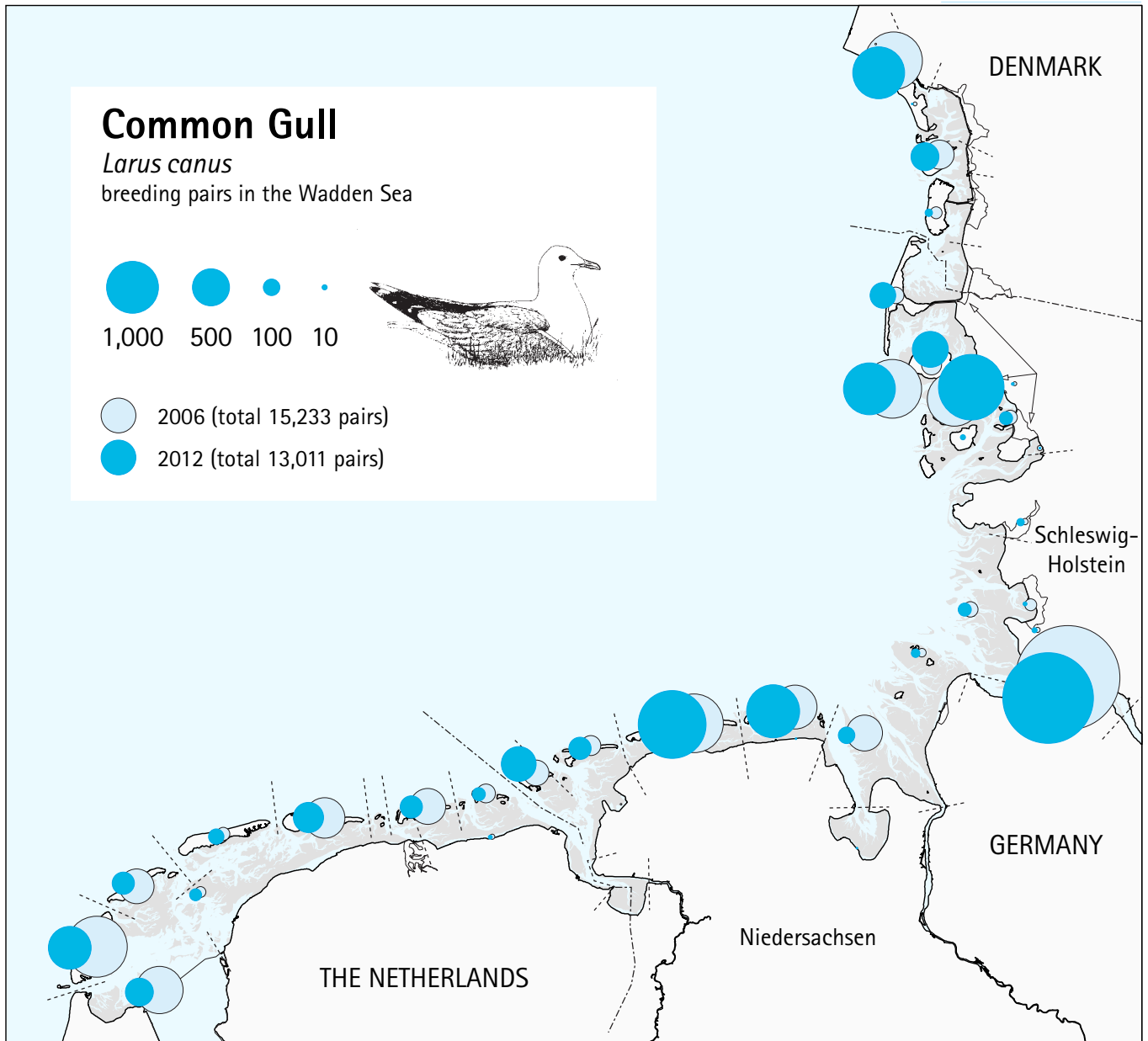
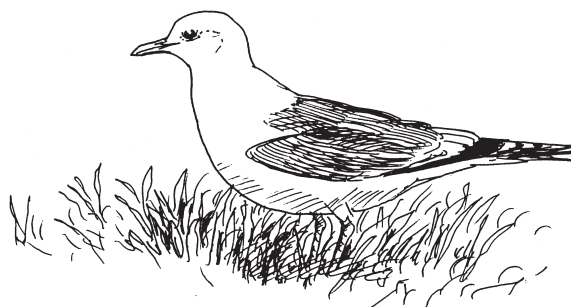


Figure 5.17.8
Distribution of Common Gull in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).



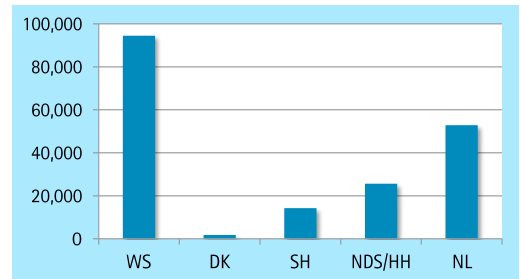
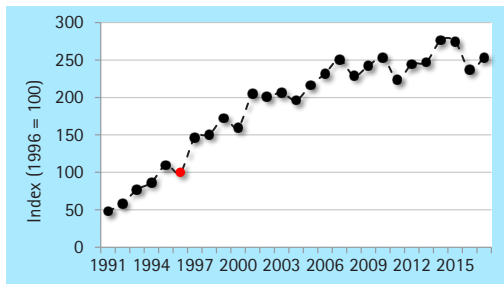
5.18 Lesser Black-backed Gull

05910

Larus fuscus

DK: Sildemåge D: Heringsmöwe NL: Kleine Mantelmeeuw

Figures 5.18.1-5.18.2
The left figure represent the trend of Lesser Black-backed Gull in the international Wadden Sea from 1991 to 2017 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 2012.

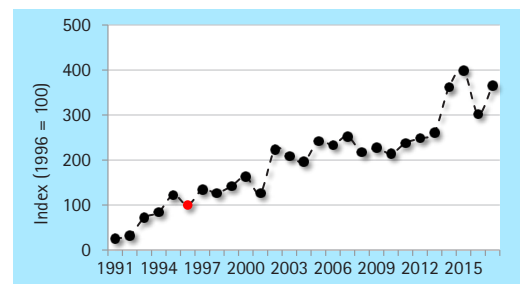
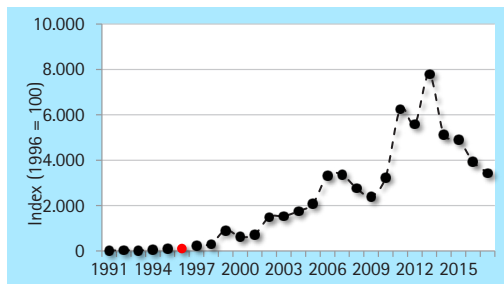


(A) Overall trend in the International Wadden Sea

Explanatory Note

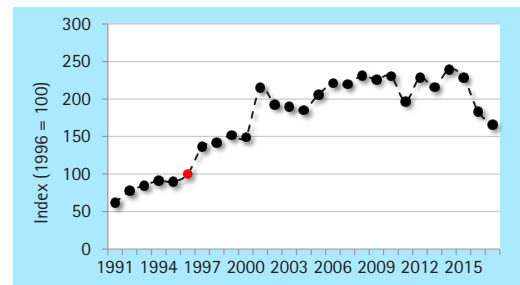
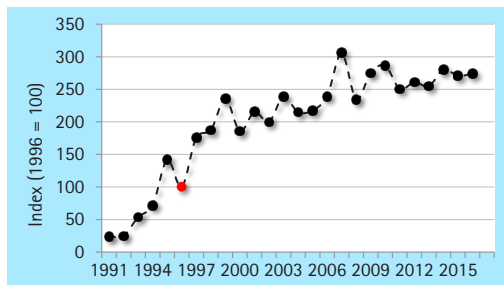
Lesser Black-backed Gull for a long time was among the fastest expanding species in the Wadden Sea. More recent data from Niedersachsen and The Netherlands point at a stabilization whereas in Schleswig-Holstein the species has continued to increase (levelling of in very recent years as well). Data from 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. The distribution is confined to the barrier islands. Originally, the species was mainly a marine feeder, but in the past years large numbers (locally even nearly all birds) also move to the mainland to feed in farmland areas. Little known on the numbers of roof-breeding birds at mainland coastal cities and harbours, but likely a small share.

Figures 5.18.3-5.18.6
The figures represent the trends of Lesser Black-backed Gull in the countries from 1991 to 2017 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



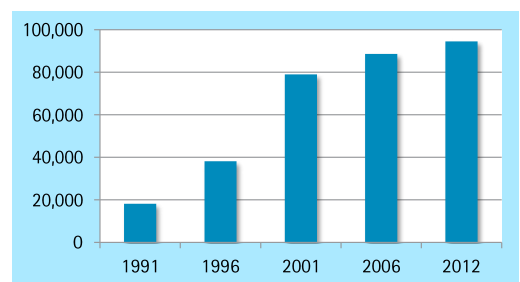
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.18.7 (right)
Total counts of Lesser Black-backed Gull in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↑	→
(B) Denmark		↑↑	—
(C) Schleswig-Holstein		↑↑	↑
(D) Niedersachsen/Hamburg		↑↑	→
(E) The Netherlands		↑	→

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



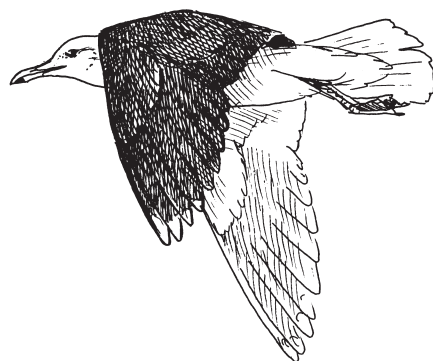
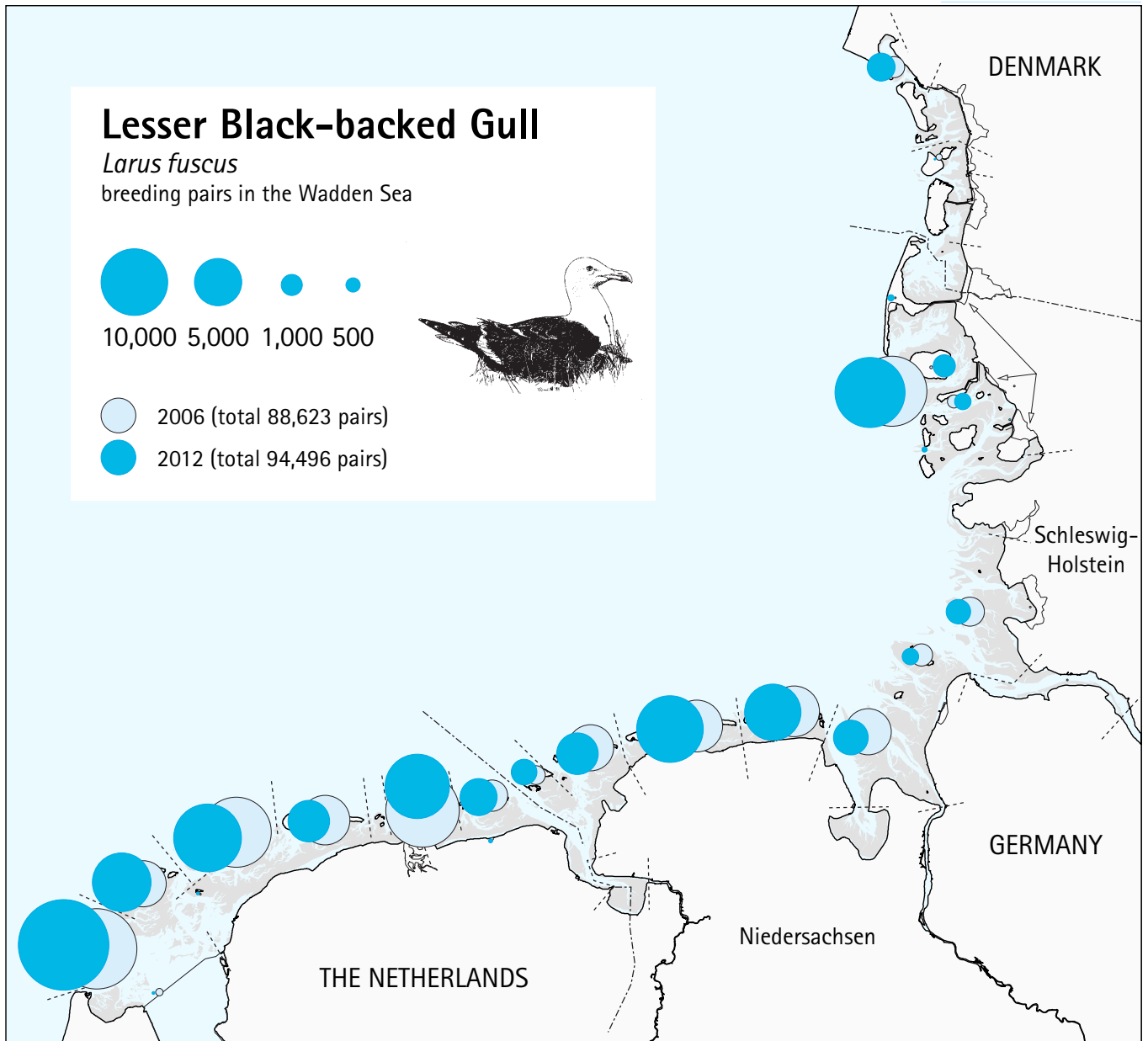


Figure 5.18.8
 Distribution of Lesser
 Black-backed Gull in the
 international
 Wadden Sea.
 Note that dots usually show
 the midpoint of the census
 region and have some-
 times be slightly moved to
 show difference between
 both years (see appendix 2
 for delineation of census
 regions).

5.19 Herring Gull

05920

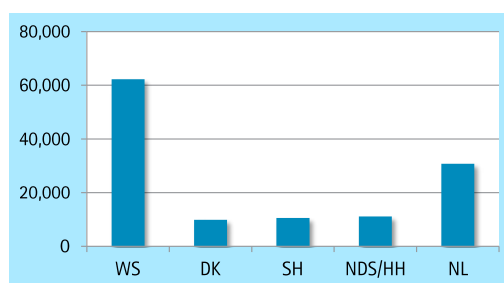
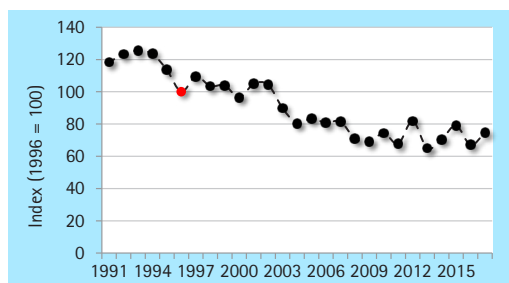
Larus argentatus

DK: Sølvmåge

D: Silbermöwe

NL: Zilvermeeuw

Figures 5.19.1-5.19.2
The left figure represent the trend of Herring Gull in the international Wadden Sea from 1991 to 2017 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 2012.

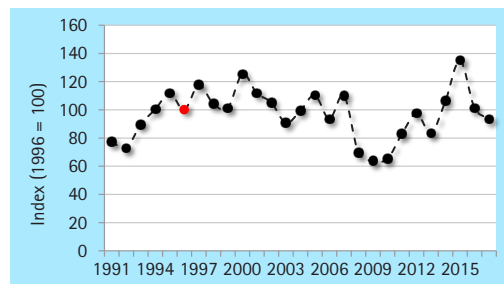
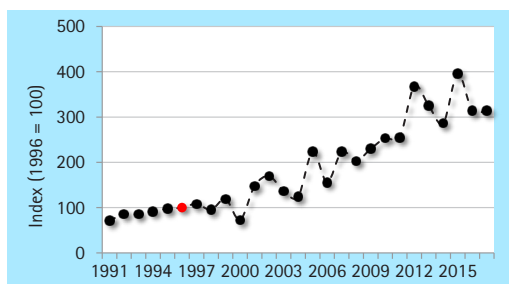


(A) Overall trend in the International Wadden Sea

Explanatory Note

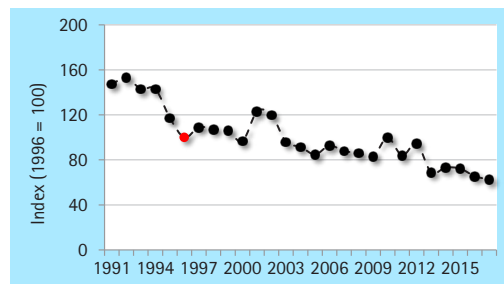
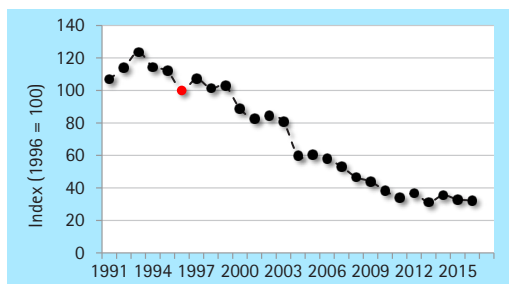
Herring Gull often breeds in mixed colonies with Lesser Black-backed Gull. Compared to the latter species, it feeds more extensively on the mud flats in most areas. Populations have declined in the whole Wadden Sea, mainly due to losses in The Netherlands and Niedersachsen, which are the core breeding 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. Population size is still biggest in the Dutch Wadden Sea, but numbers in the other sections are about the same.

Figures 5.19.3-5.19.6
The figures represent the trends of Herring Gull in the countries from 1991 to 2017 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



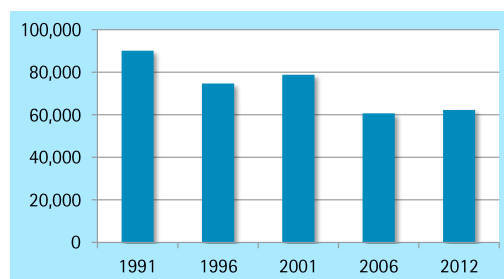
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.19.7
Total counts of Herring Gull in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	→
(B) Denmark		↑ ↑	↑
(C) Schleswig-Holstein		→	—
(D) Niedersachsen/Hamburg		↓ ↓	↓ ↓
(E) The Netherlands		↓ ↓	↓ ↓

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



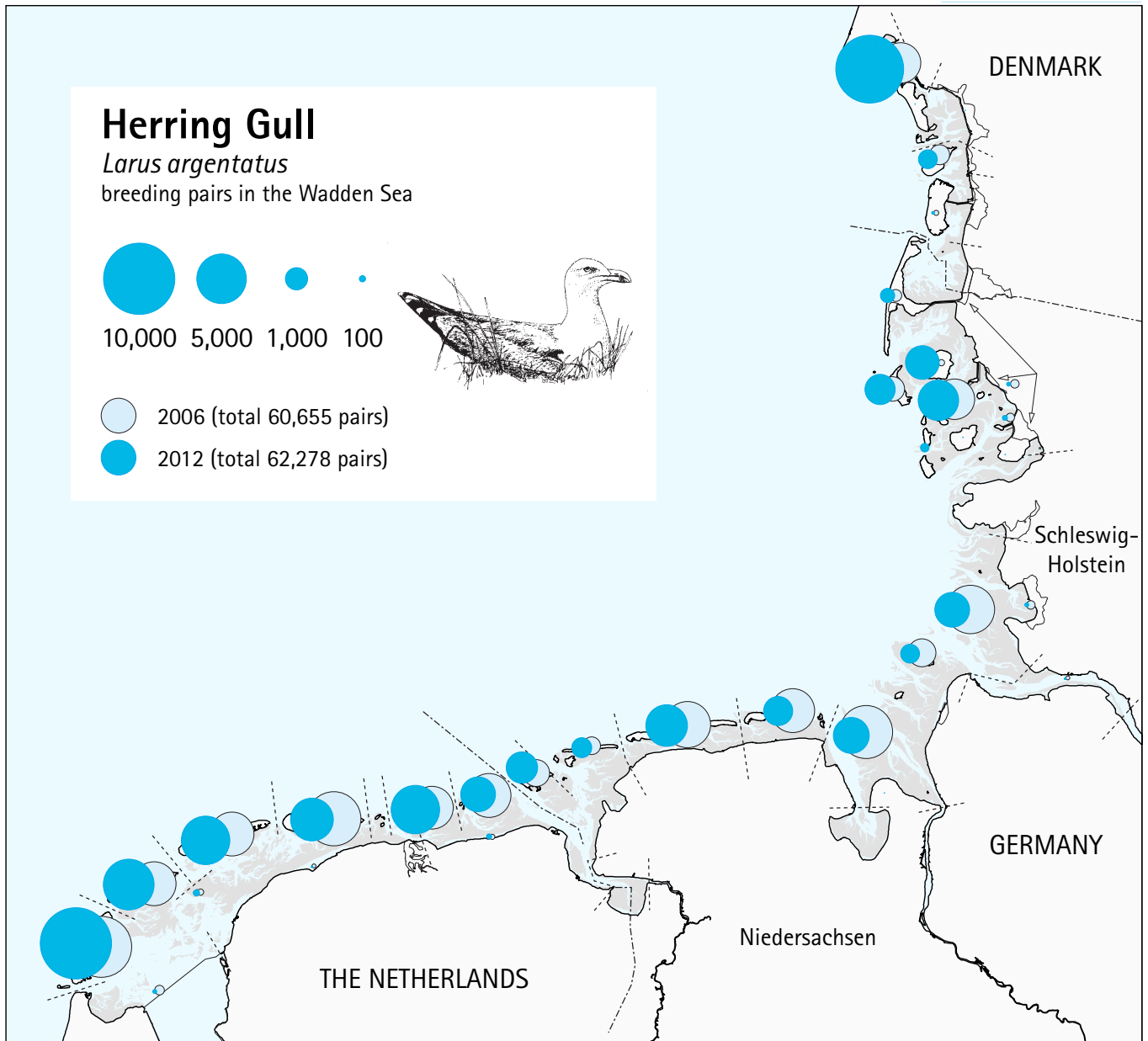


Figure 5.19.8
Distribution of Herring Gull
in the international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

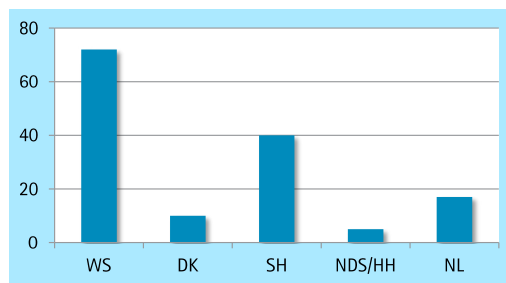
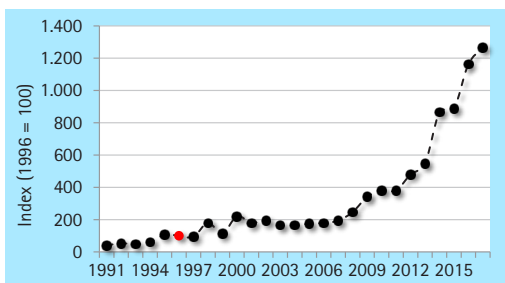
5.20 Great Black-backed Gull

06000

Larus marinus

DK: Svartbag D: Mantelmöwe NL: Grote Mantelmeeuw

Figures 5.20.1-5.20.2
The left figure represent the trend of Great Black-backed Gull in the international Wadden Sea from 1991 to 2017 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 2012.

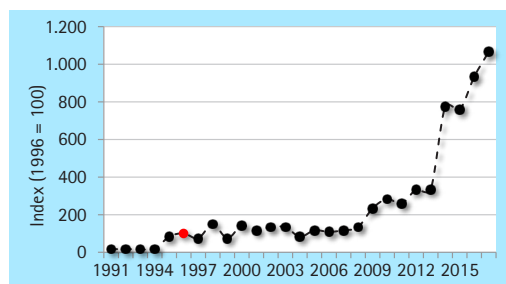
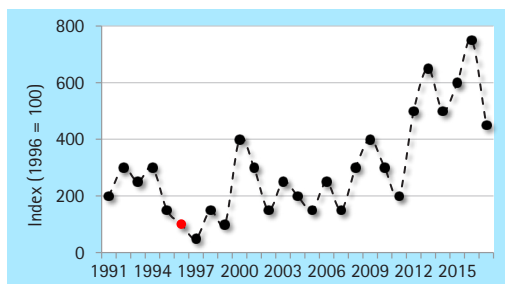


(A) Overall trend in the International Wadden Sea

Explanatory Note

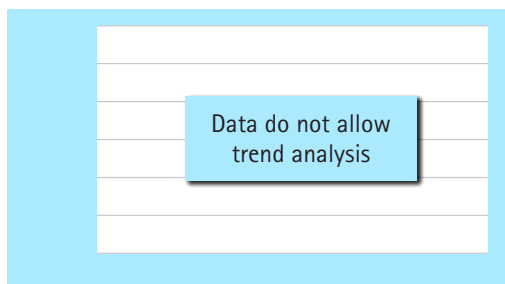
Great Black-backed Gull is expanding its breeding range in southwestern direction. Hence, its distribution in the Wadden Sea has become less scattered and numbers have shown an overall increase since 1991 (actually after first breeding in 1988). This trend is most pronounced in Schleswig-Holstein, where also highest numbers are found. The small Danish population shows considerable fluctuations.

Figures 5.20.3-5.20.6
The figures represent the trends of Great Black-backed Gull in the countries from 1991 to 2017 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.

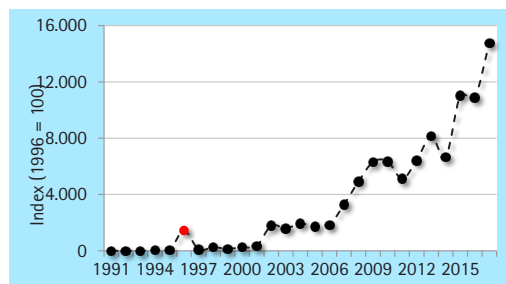


(B) Denmark

(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

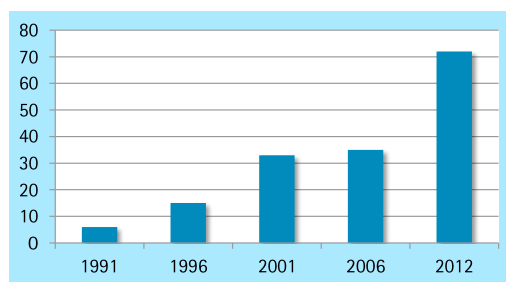


(E) The Netherlands

Figure 5.20.7 (right)
Total counts of Great Black-backed Gull in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↑↑	↑↑↑
(B) Denmark		↑	↑
(C) Schleswig-Holstein		↑↑	↑↑↑
(D) Niedersachsen/Hamburg		—	—
(E) The Netherlands		—	↑

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



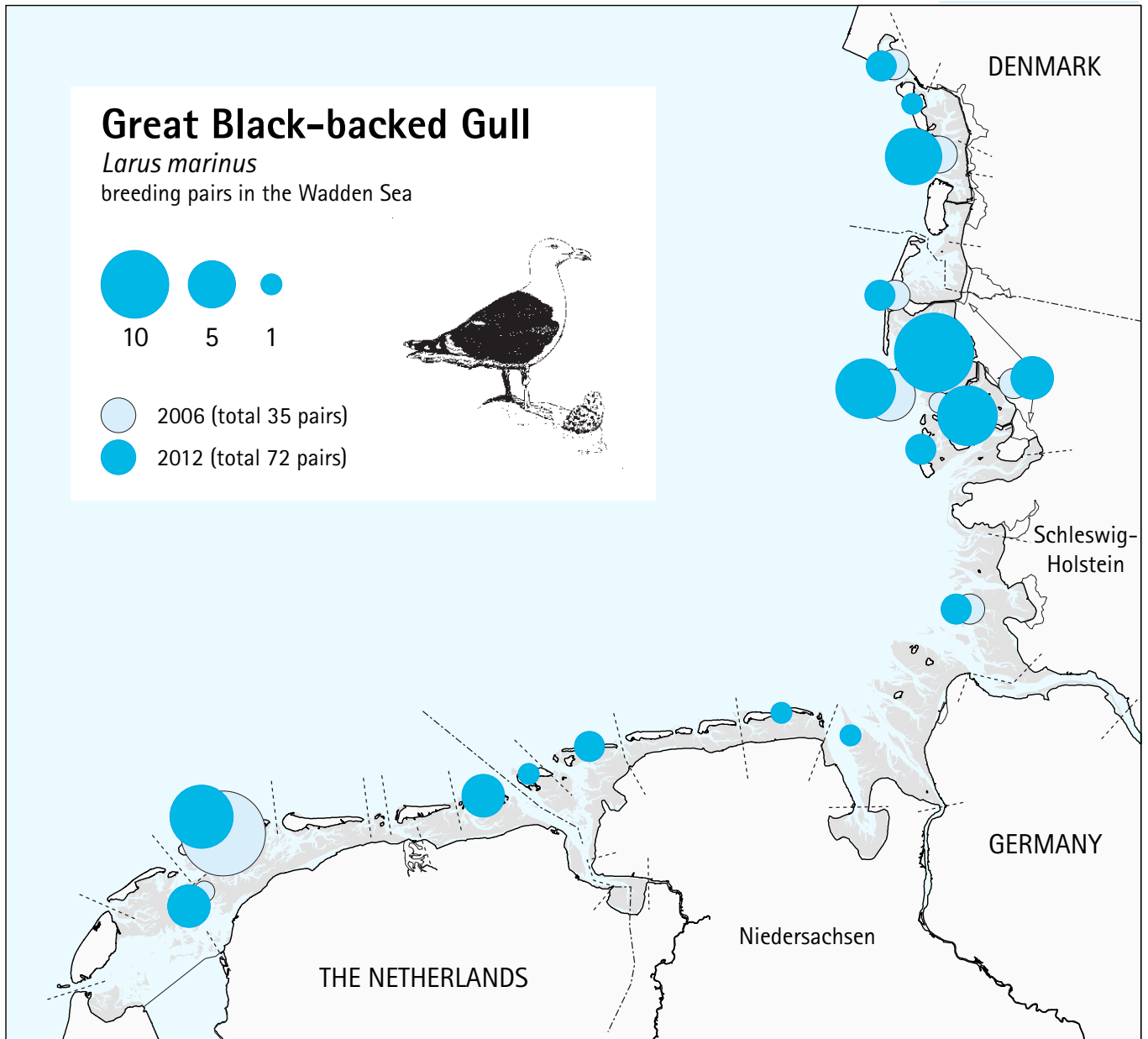


Figure 5.20.8
Distribution of Great
Black-backed Gull in the
international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

5.21 Gull-billed Tern

06050

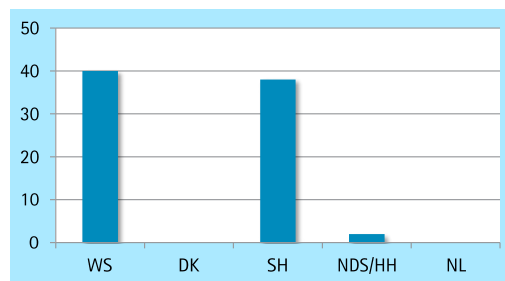
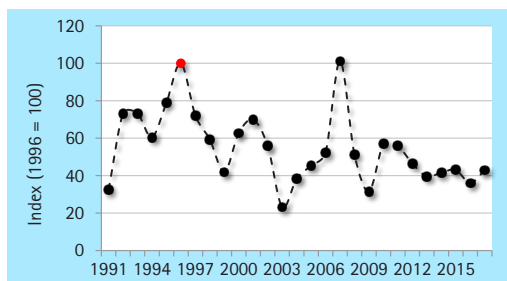
Gelochelidon nilotica

DK: Sandterne

D: Lachseeschwalbe

NL: Lachstern

Figures 5.21.1-5.21.2 The left figure represent the trend of Gull-billed Tern in the international Wadden Sea from 1991 to 2017 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 2012.

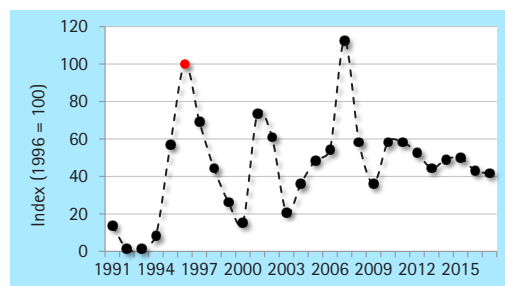
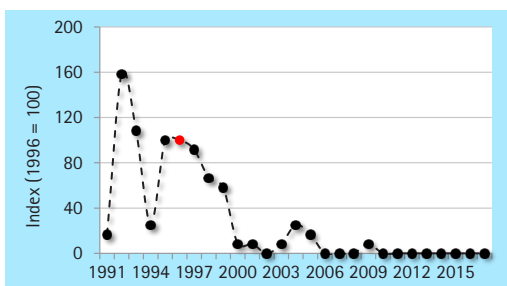


(A) Overall trend in the International Wadden Sea

Explanatory Note

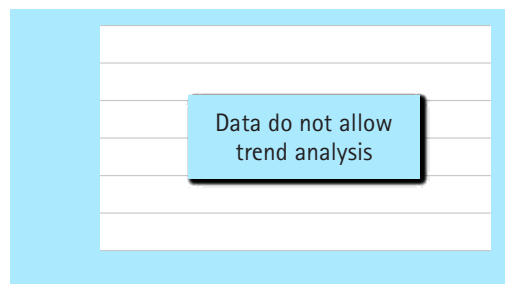
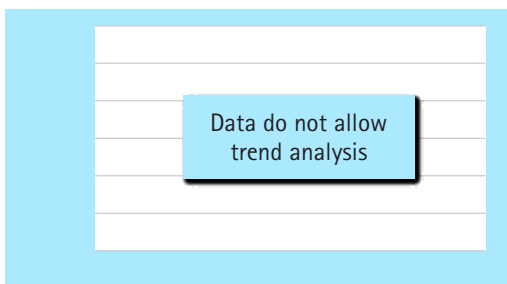
The Elbe estuary represents the only breeding area for Gull-billed Terns in NW Europe. Initially this was confined to Denmark, but since the 1970s this has shifted to Schleswig-Holstein, where the species is currently breeding in a colony in the foreland of Neufelder Koog in the Elbe estuary, associated with Black-headed Gull and Common Tern. Earlier settlements in the Niedersachsen part of the Elbe estuary have been deserted now. However, the breeding birds from Schleswig-Holstein are often feeding on the Niedersachsen side of the River Elbe and occasionally the species also still appears as scattered breeder along the Niedersachsen coast.

Figures 5.21.3-5.21.6 The figures represent the trends of Gull-billed Tern in the countries from 1991 to 2017 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



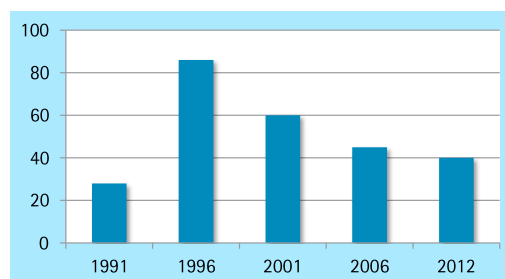
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.21.7 Total count of Gull-billed Tern in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		→	—
(B) Denmark		↓ ↓	—
(C) Schleswig-Holstein		↑	—
(D) Niedersachsen/Hamburg		—	—
(E) The Netherlands		—	—

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



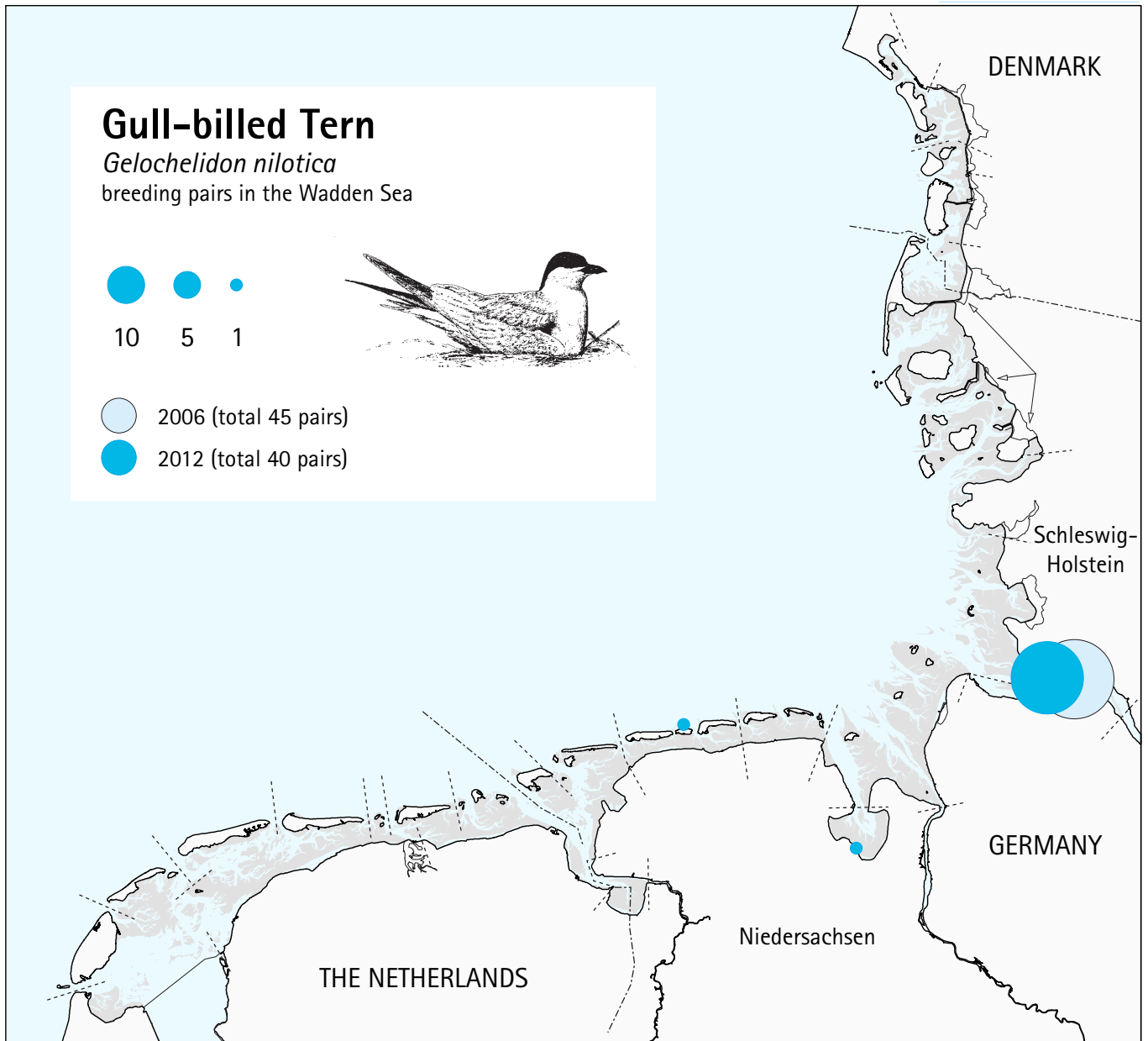


Figure 5.21.8
 Distribution of Gull-billed
 Tern in the international
 Wadden Sea.
 Note that dots usually show
 the midpoint of the census
 region and have some-
 times be slightly moved to
 show difference between
 both years (see appendix 2
 for delineation of census
 regions).

5.22 Sandwich Tern

06110

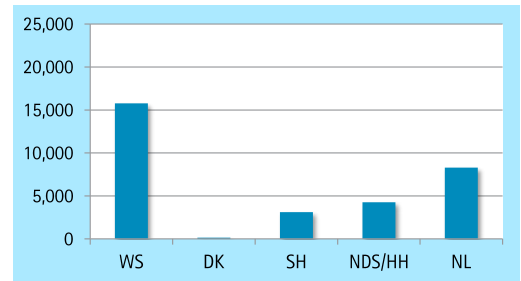
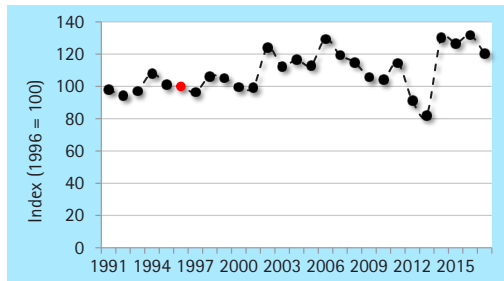
Thalasseus sandvicensis

DK: Splitterne

D: Brandseeschwalbe

NL: Grote Stern

Figures 5.22.1-5.22.2
The left figure represent the trend of Sandwich Tern in the international Wadden Sea from 1991 to 2017 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 2012.

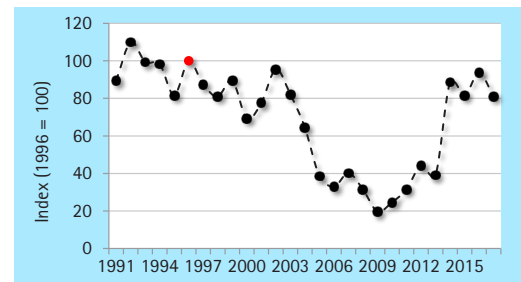
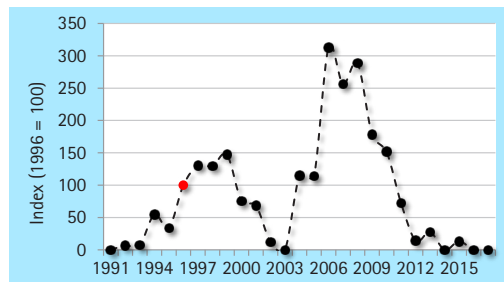


(A) Overall trend in the International Wadden Sea

Explanatory Note

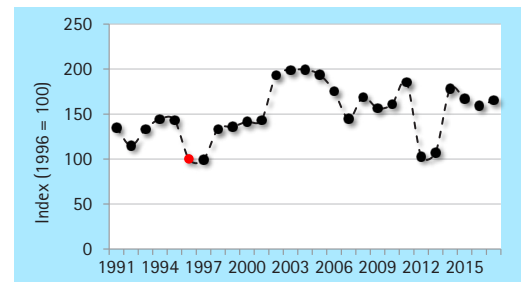
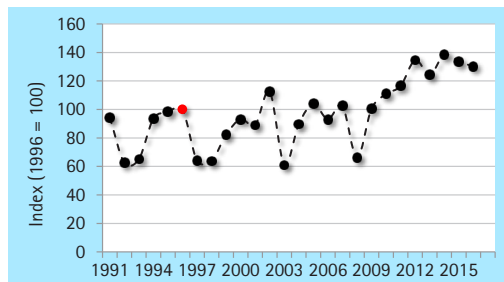
Sandwich Tern is confined to only few specific colony sites on the islands. The colonies in the Wadden Sea represent a large part of the NW-European breeding population. The overall trend is classified as stable, but single colonies may show large dynamics in numbers due to exchange between breeding sites. This is also obvious between Denmark and Schleswig-Holstein. Sightings of colour-ringed birds also show that dispersion takes place on the scale of the entire North Sea region (e.g. birds in the Norderoog colony in Schleswig-Holstein show exchange with birds from the Dutch Wadden Sea and UK).

Figures 5.22.3-5.22.6
The figures represent the trends of Sandwich Tern in the countries from 1991 to 2017 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



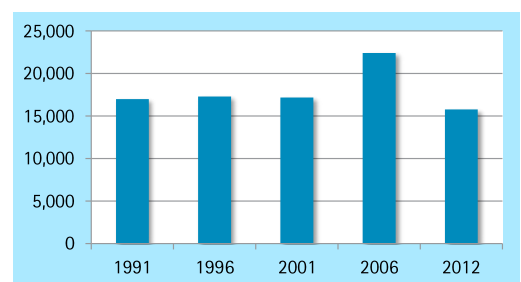
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.22.7 (right)
Total counts of Sandwich Tern in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		→	—
(B) Denmark		—	—
(C) Schleswig-Holstein		↓	↑↑
(D) Niedersachsen/Hamburg		—	—
(E) The Netherlands		→	—

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



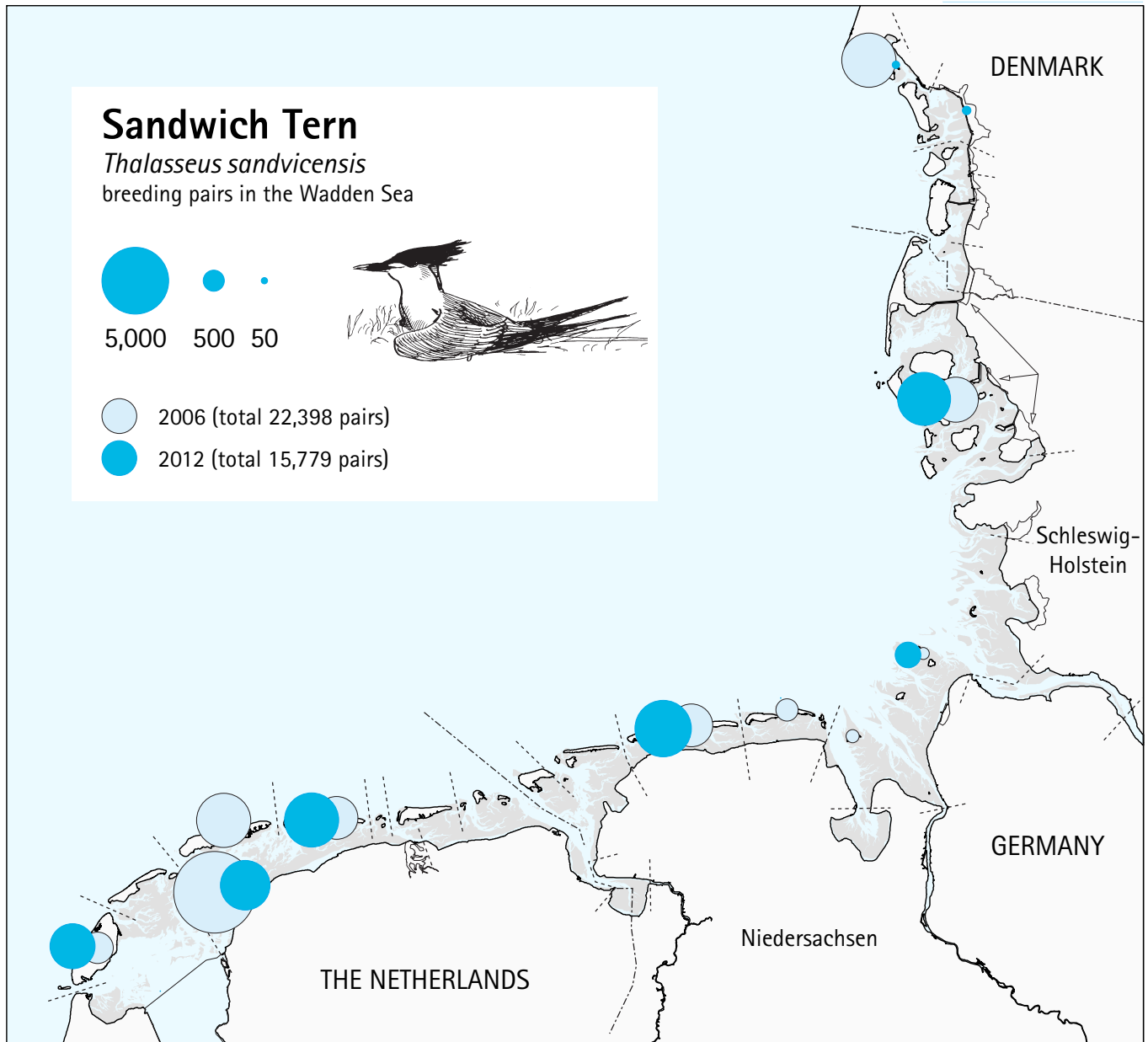


Figure 5.22.8
Distribution of Sandwich
Tern in the international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

5.23 Common Tern

06150

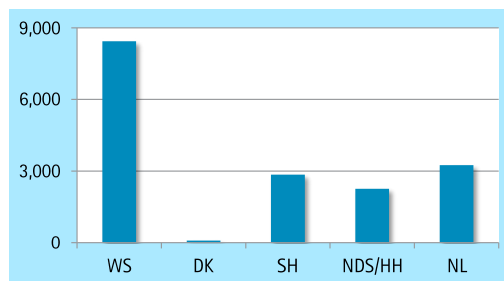
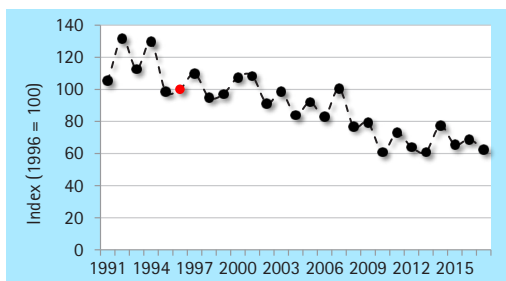
Sterna hirundo

DK: Fjordterne

D: Flusseeeschwalbe

NL: Visdief

Figures 5.23.1-5.23.2
The left figure represent the trend of Common Tern in the international Wadden Sea from 1991 to 2017 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 2012.

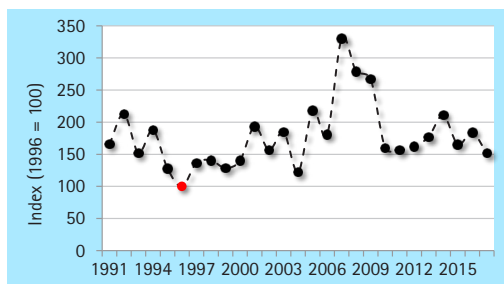
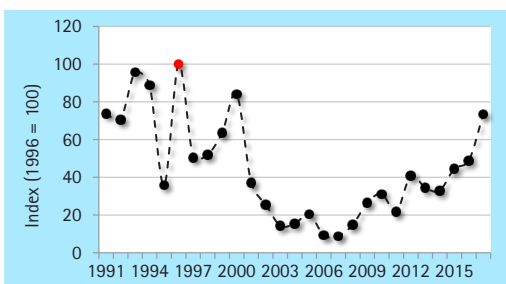


(A) Overall trend in the International Wadden Sea

Explanatory Note

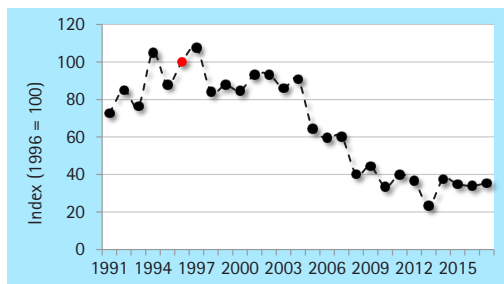
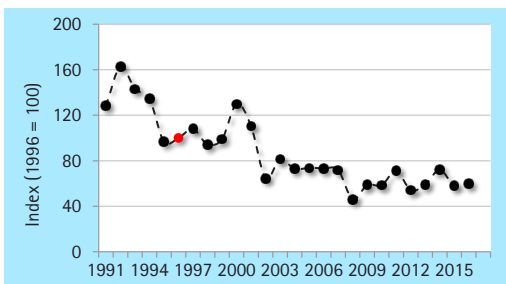
Breeding Common Terns are widespread in the Wadden Sea and inhabit different natural habitats, but also including harbour areas, rooftops of buildings and other anthropogenic habitats. Apart from stable long-term numbers in Schleswig-Holstein (mainly driven by the Halligen and notably the Elbe colonies) and a recent tendency to increase in Denmark (small numbers involved), the species is in decline. Downward numbers are most pronounced in the western part of the Wadden Sea, especially in The Netherlands. 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.

Figures 5.23.3-5.23.6
The figures represent the trends of Common Tern in the countries from 1991 to 2017 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



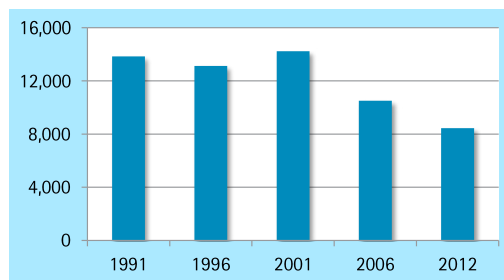
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.23.7
Total counts of Common Tern in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓ ↓	↓
(B) Denmark		↓	—
(C) Schleswig-Holstein		→	—
(D) Niedersachsen/Hamburg		↓ ↓ ↓	—
(E) The Netherlands		↓ ↓ ↓	↓ ↓ ↓

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



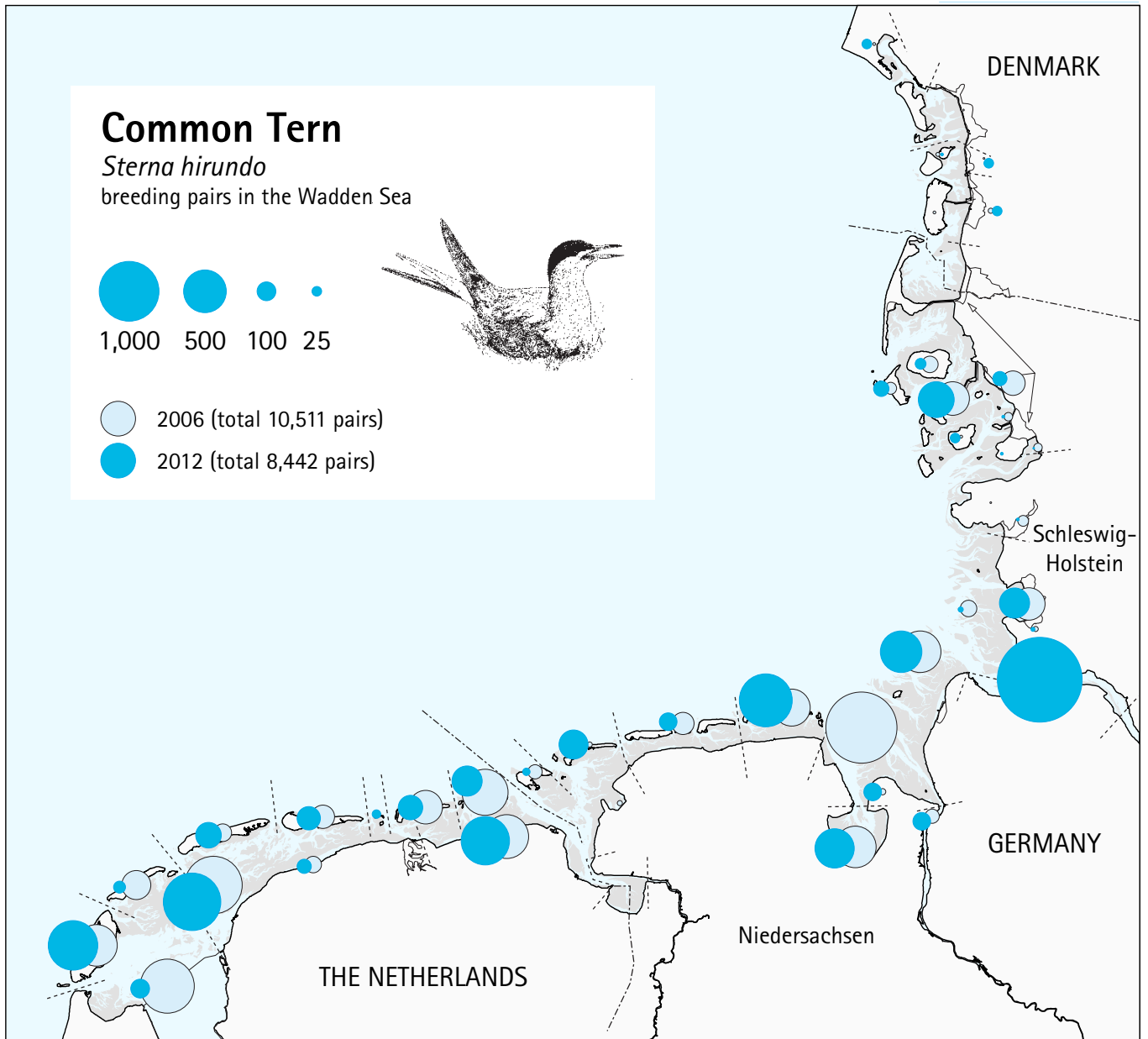


Figure 5.23.8
Distribution of Common Tern in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).

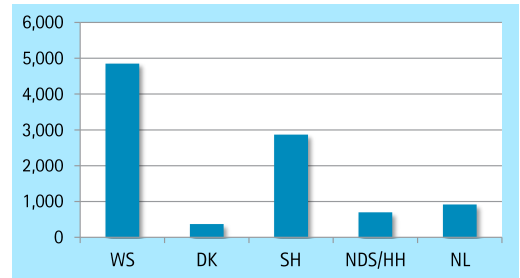
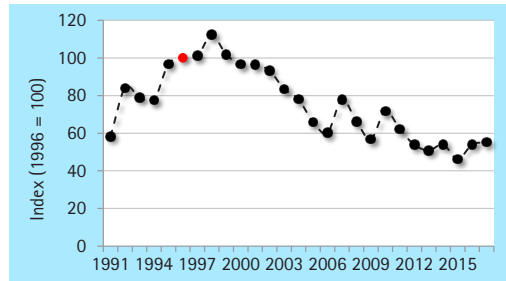
5.24 Arctic Tern

06160

Sterna paradisaea

DK: Havterne D: Küstenseeschwalbe NL: Noordse Stern

Figures 5.24.1-5.24.2
The left figure represent the trend of Arctic Tern in the international Wadden Sea from 1991 to 2017 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 2012.

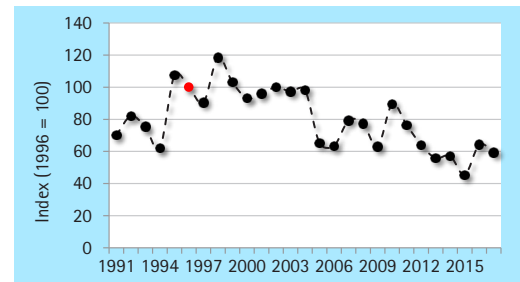
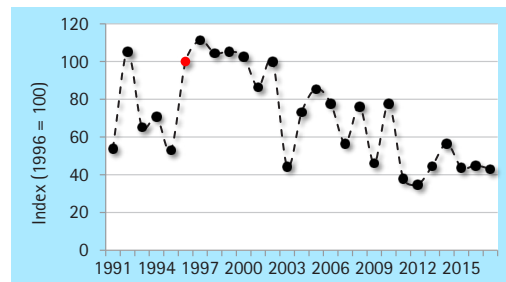


(A) Overall trend in the International Wadden Sea

Explanatory Note

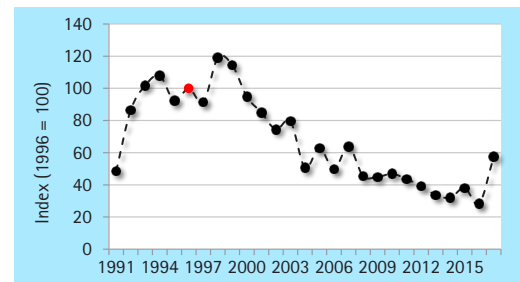
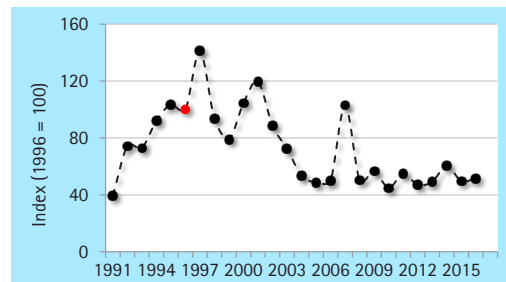
Arctic Tern has a more northerly breeding range in Europe than Common Tern and therefore largest colonies are found north of the River Elbe in Schleswig-Holstein. Large colonies are mainly situated in Schleswig-Holstein. Compared to Common Tern (where it sometimes associates with), they prefer more sparsely vegetated breeding sites and are found less in anthropogenic habitats. Populations in all parts of the Wadden Sea have declined. In all countries, numbers have fluctuated too much in the past 12 years to derive a significant trend. Recent increases in the Eems estuary in The Netherlands, resulting from newly created habitat and other measures, have given the Dutch population a small boost.

Figures 5.24.3-5.24.6
The figures represent the trends of Arctic Tern in the countries from 1991 to 2017 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



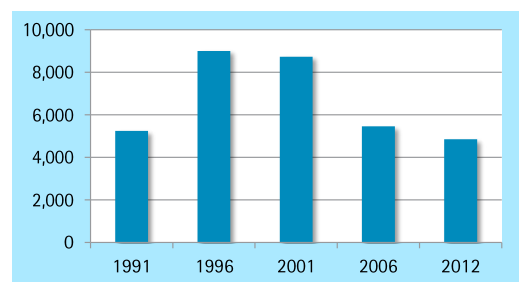
(D) Niedersachsen/Hamburg

(E) The Netherlands

Figure 5.24.7 (right)
Total counts of Arctic Tern in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓ ↓	↓
(B) Denmark		↓ ↓ ↓	—
(C) Schleswig-Holstein		↓ ↓ ↓	—
(D) Niedersachsen/Hamburg		↓ ↓ ↓	—
(E) The Netherlands		↓ ↓ ↓	—

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



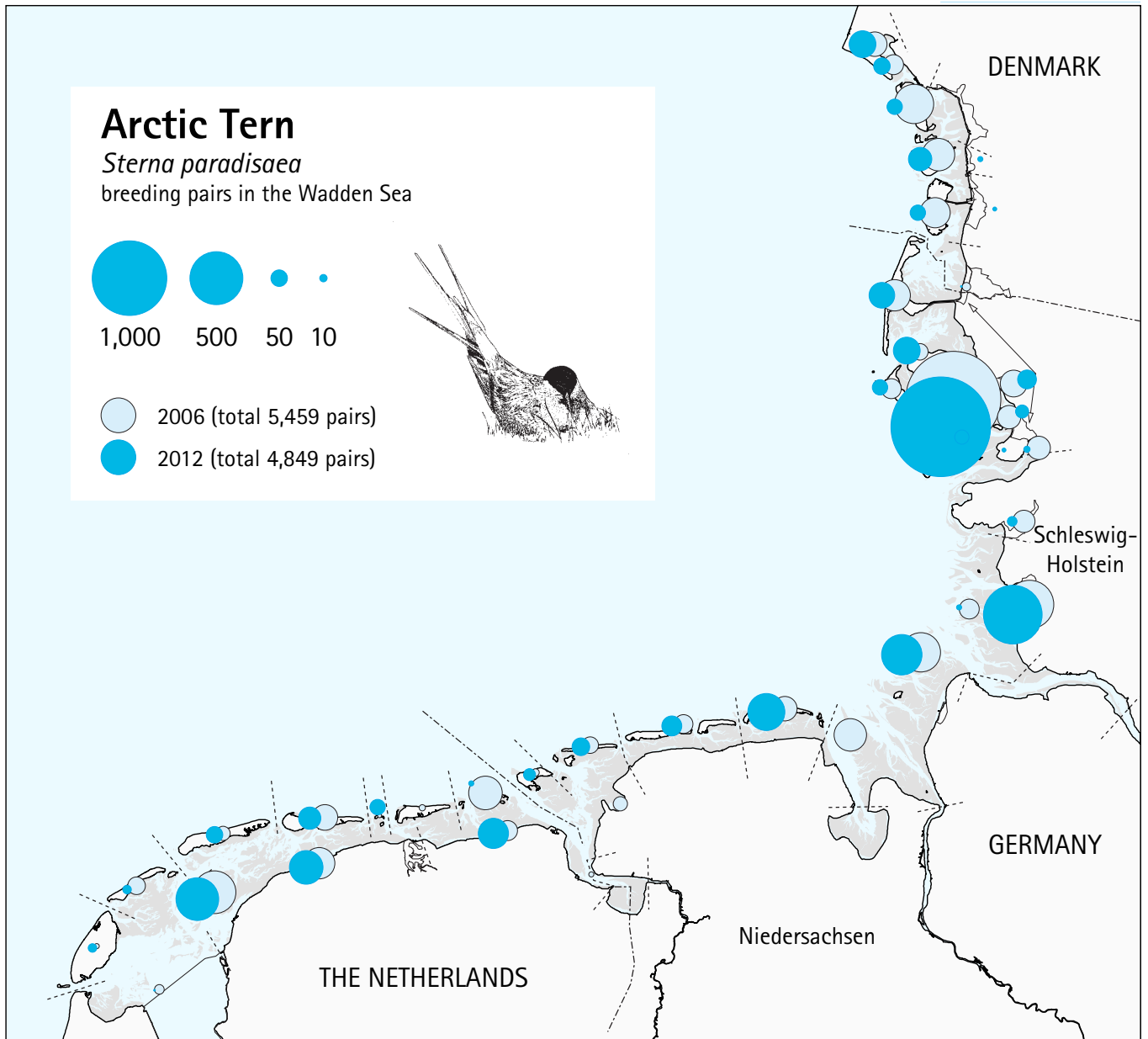


Figure 5.24.8
Distribution of Arctic Tern
in the international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

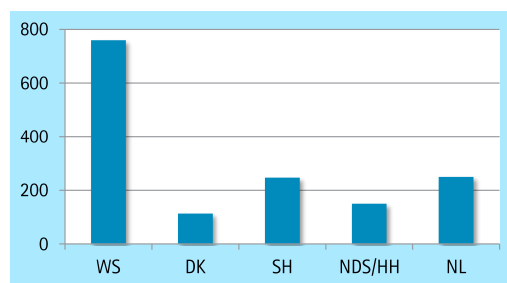
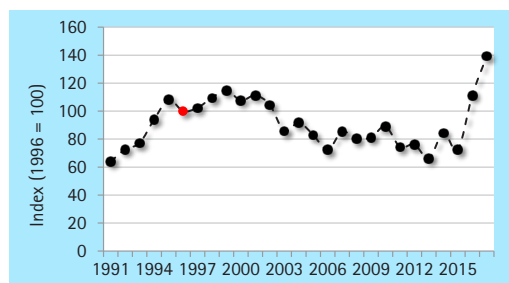
5.25 Little Tern

06240

Sternula albifrons

DK: Dværgterne D: Zwergseeschwalbe NL: Dwergstern

Figures 5.25.1-5.25.2
The left figure represent the trend of Little Tern in the international Wadden Sea from 1991 to 2017 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 CLittle Tern in the international Wadden Sea and in the countries in 2012.

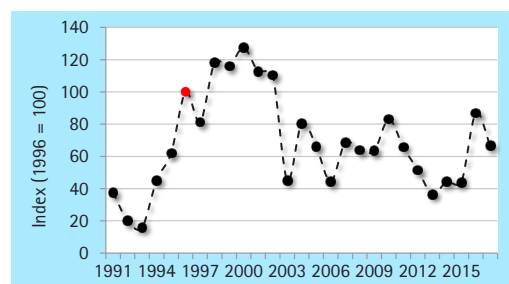


(A) Overall trend in the International Wadden Sea

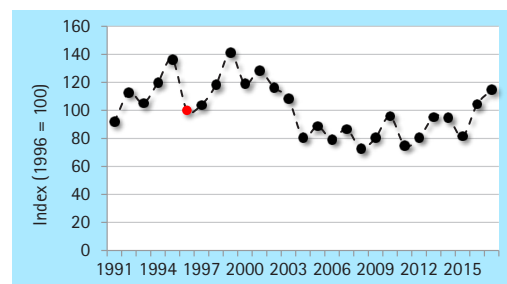
Explanatory Note

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. Fluctuating numbers in more recent years, including an obvious rise in numbers in Dutch colonies, have hampered a proper trend classification. The Dutch Wadden Sea is also the only section where the species has significantly increased since the start of the monitoring scheme in 1991.

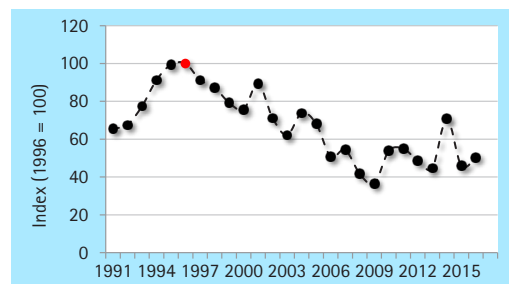
Figures 5.25.3-5.25.6
The figures represent the trends of Little Tern in the countries from 1991 to 2017 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



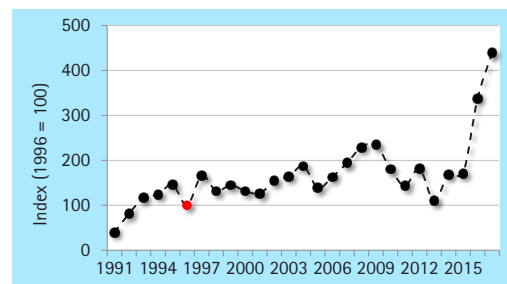
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

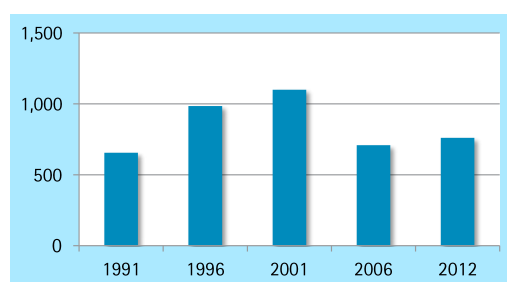


(E) The Netherlands

Figure 5.25.7
Total counts of Little Tern in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		→	—
(B) Denmark		→	—
(C) Schleswig-Holstein		→	—
(D) Niedersachsen/Hamburg		↓	—
(E) The Netherlands		↑	—

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



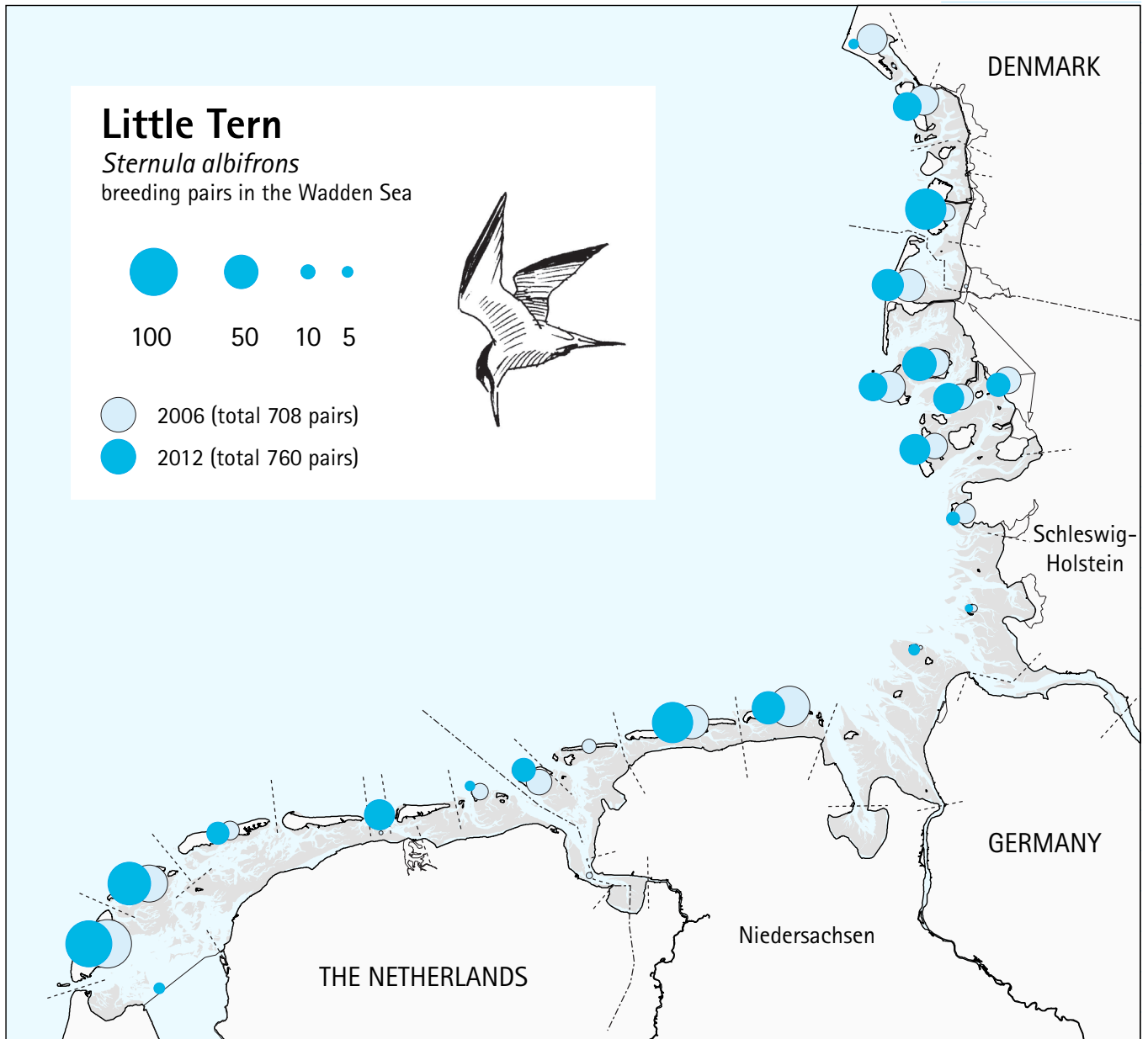


Figure 5.25.8
Distribution of Little Tern in the international Wadden Sea. Note that dots usually show the midpoint of the census region and have sometimes be slightly moved to show difference between both years (see appendix 2 for delineation of census regions).

5.26 Short-eared Owl

07680

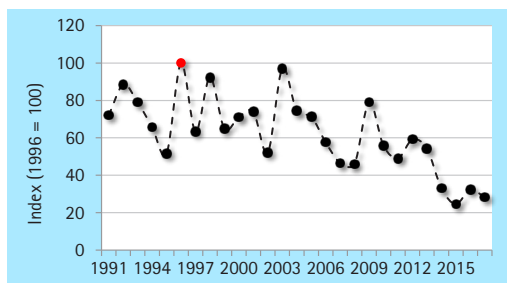
Asio flammeus

DK: Mosehornugl

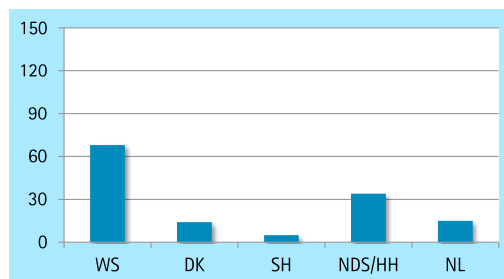
D: Sumpfohreule

NL: Velduil

Figures 5.26.1–5.26.2
The left figure represent the trend of Short-eared Owl in the international Wadden Sea from 1991 to 2017 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 2012.



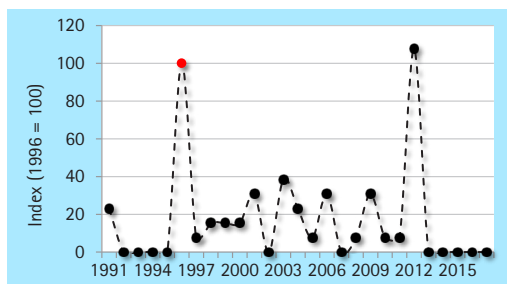
(A) Overall trend in the International Wadden Sea



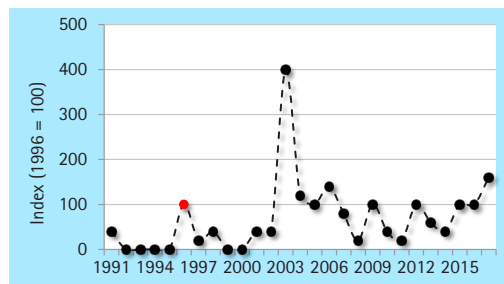
Explanatory Note

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. Numbers usually fluctuate and partly show synchronous peaks throughout the Wadden Sea, in association with years with high abundance of voles. The overall trend is negative, especially due to the declines in The Netherlands (more recently also Niedersachsen), highly comparable as described for Hen Harrier.

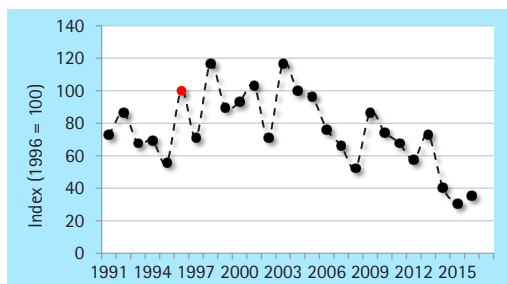
Figures 5.26.3–5.26.6
The figures represent the trends of Short-eared Owl in the countries from 1991 to 2017 and show annual indices of the breeding population relative to 1996 (=100, shown by the red dot). Annual index values are expressed at the y-axis.



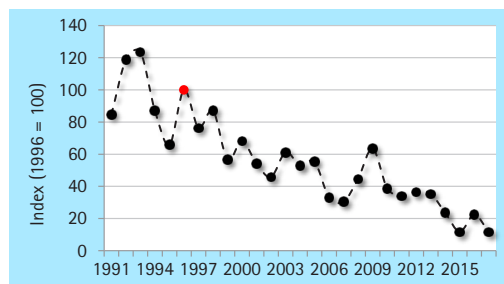
(B) Denmark



(C) Schleswig-Holstein



(D) Niedersachsen/Hamburg

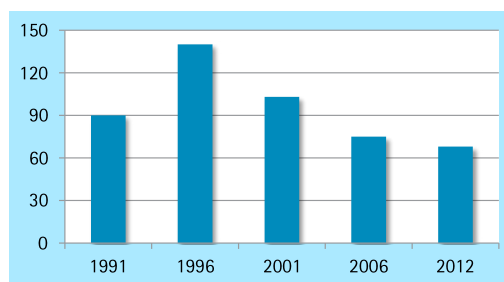


(E) The Netherlands

Figure 5.26.7 (right)
Total counts of Short-eared Owl in the international Wadden Sea.

Area	Period	1991 - 2017	2006 - 2017
(A) International Wadden Sea		↓ ↓	↓
(B) Denmark		—	—
(C) Schleswig-Holstein		—	—
(D) Niedersachsen/Hamburg		↓ ↓	↓ ↓
(E) The Netherlands		↓ ↓	↓ ↓

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



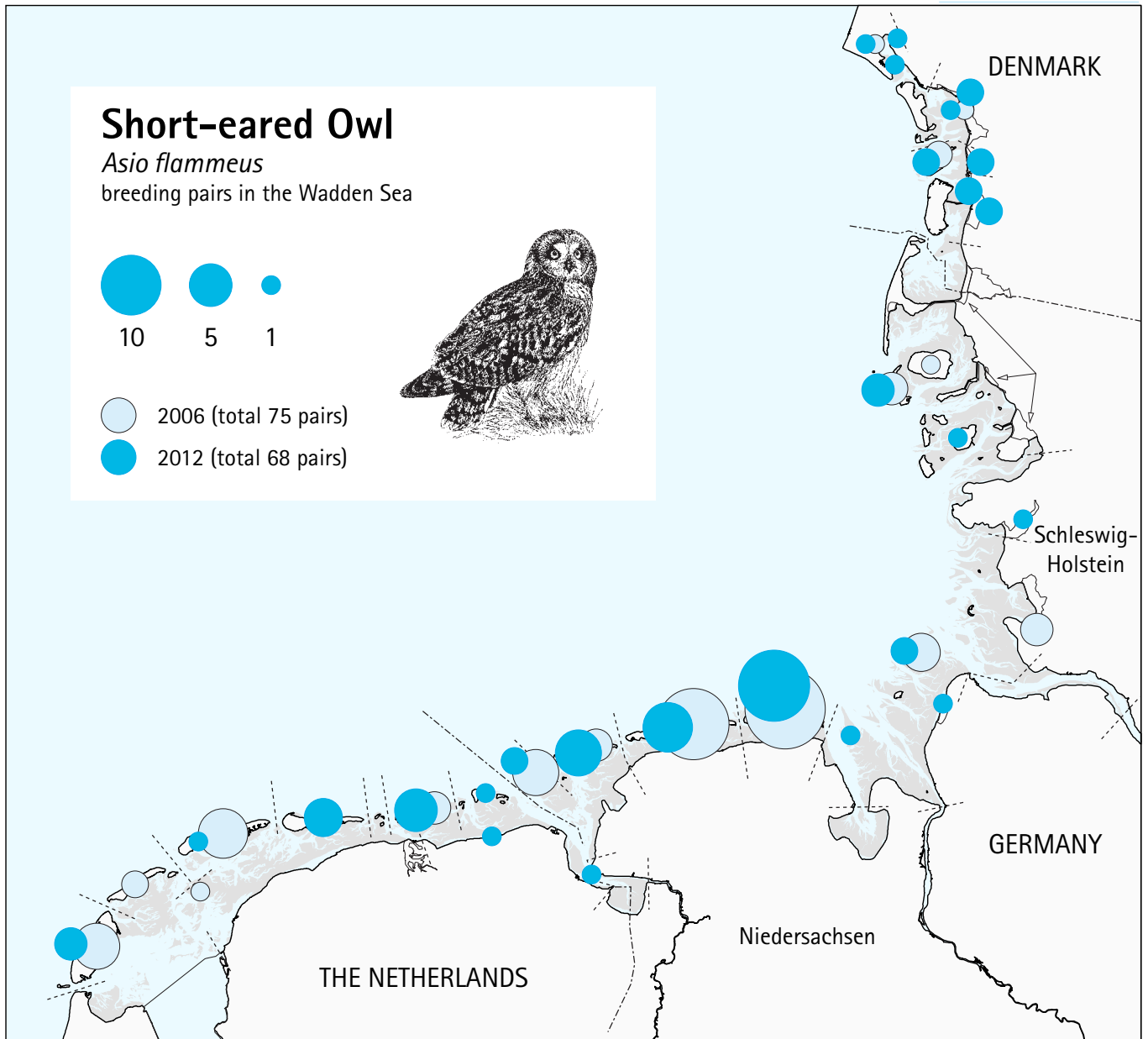


Figure 5.26.8
Distribution of Short-eared
Owl in the international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

6 Total counts rare species

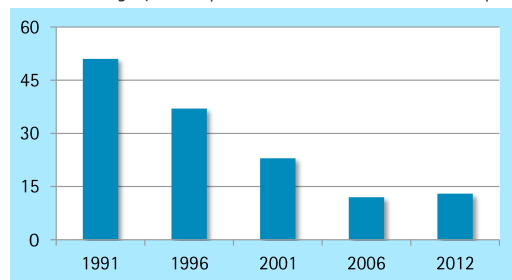
For 5 breeding bird species, data from total counts (numbers per count and distribution in 2006-2012) are shown in this aggregated account. They mainly refer to very rare species, or species that have been added recently to the monitoring scheme (Little Egret and Barnacle Goose). Barnacle Goose is expanding fast, and

will get a full account in the next report.

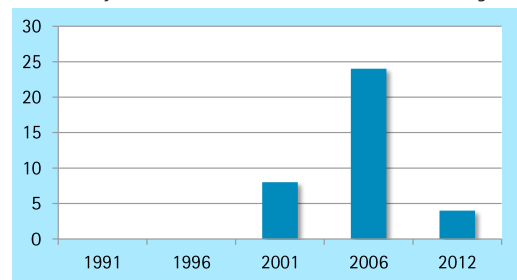
Dunlin, Ruff, and Common Snipe have become very rare, occurring not annually and/or only in few areas. The same applies to (Eurasian) Wigeon, (Northern) Pintail, Turnstone and Little Gull (not shown).

Figures 6.1-6.7
Total counts of rare breeding bird species in the international Wadden Sea.

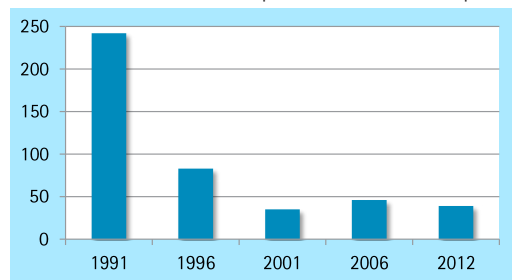
5120 **Dunlin** *Calidris alpina*
DK: Almindelig Ryle D: Alpenstrandläufer NL: Bonte Strandloper



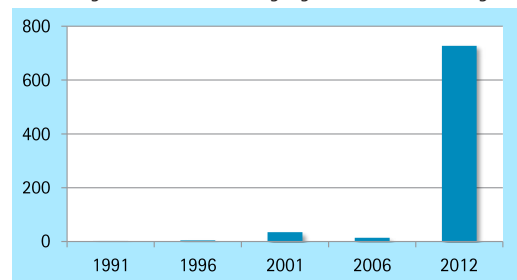
1190 **Little Egret** *Egretta garzetta*
DK: Silkehejre D: Seidenreiher NL: Kleine Zilverreiger



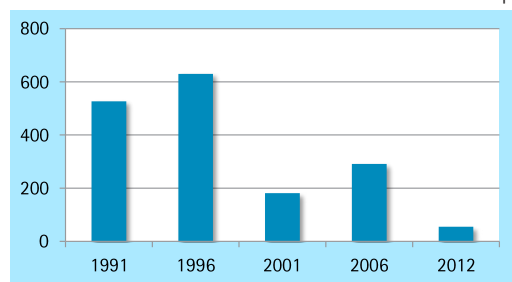
5170 **Ruff** *Calidris pugnax*
DK: Brushane D: Kampfläufer NL: Kemphaan



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



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



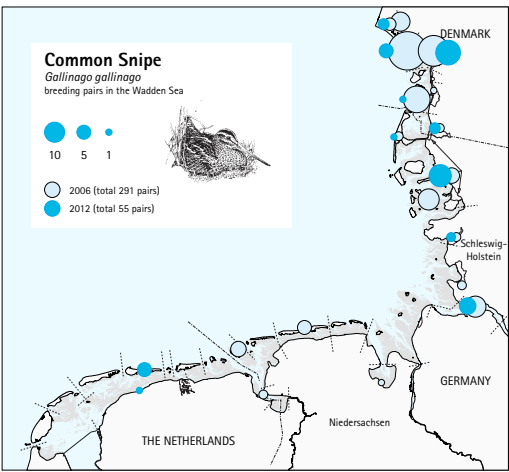
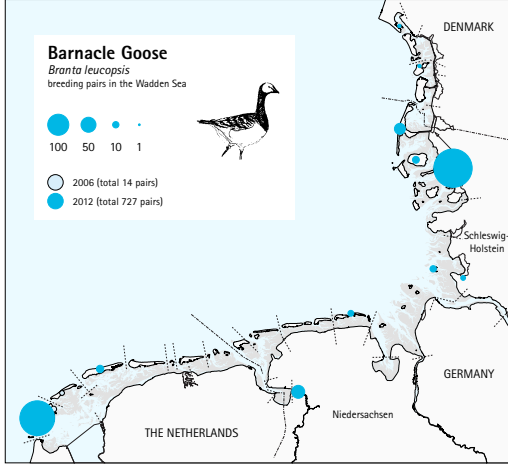
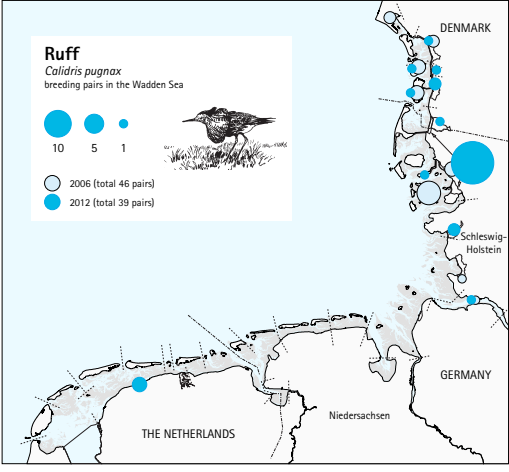
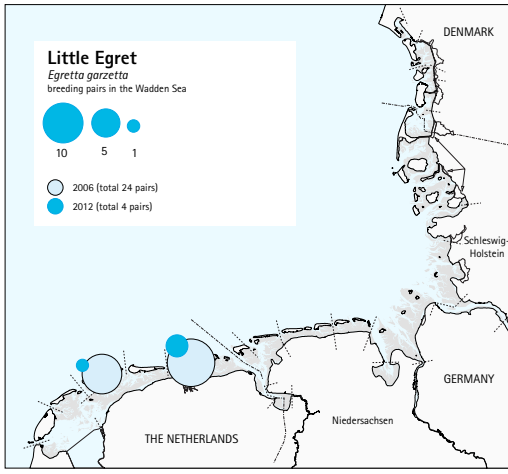
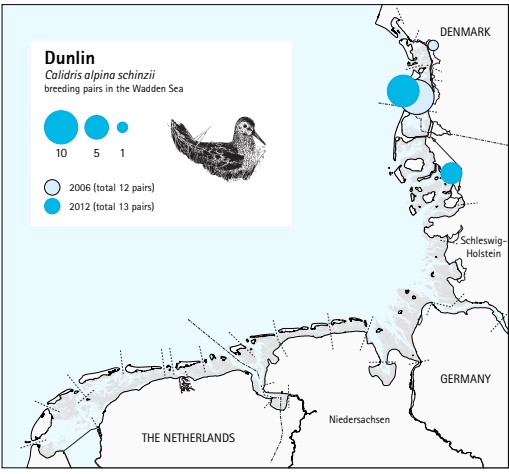


Figure 6.8- 6.14
Distribution of rare species
in the international
Wadden Sea.
Note that dots usually show
the midpoint of the census
region and have some-
times be slightly moved to
show difference between
both years (see appendix 2
for delineation of census
regions).

7 References

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Annex 1 Species according to habitats and food

Species	Breeding habitats			Food guilds				
	coastal grasslands	beach & outer sands	dunes	salt marsh	voles/birds	fish (pelagic)	fish & shrimps (general)	invertebrates
Great Cormorant		x					x	
Eurasian Spoonbill		x					x	
Shelduck			x					x
Common Eider		x						x
Red-breasted Merganser		x					x	
Hen Harrier			x		x			
Eurasian Oystercatcher				x				x
Pied Avocet				x				x
Great Ringed Plover		x						x
Kentish Plover		x						x
Northern Lapwing	x							x
Black-tailed Godwit	x							x
Eurasian Curlew			x					x
Common Redshank				x				x
Mediterranean Gull				x				x
Common Black-headed Gull				x				x
Common Gull			x					x
Lesser Black-backed Gull			x				x	
Herring Gull			x					x
Great Black-backed Gull			x				x	
Gull-billed Tern				x				
Sandwich Tern		x				x		
Common Tern		x				x		
Arctic Tern		x				x		
Little Tern		x				x		
Short-eared Owl			x		x			
Total number of species	2	10	8	6	2	4	5	14

Table A1.1
Selection of species according to breeding habitats and food guilds.



Photo: Klaus Janke

Annex 2 Counting units in the Wadden Sea



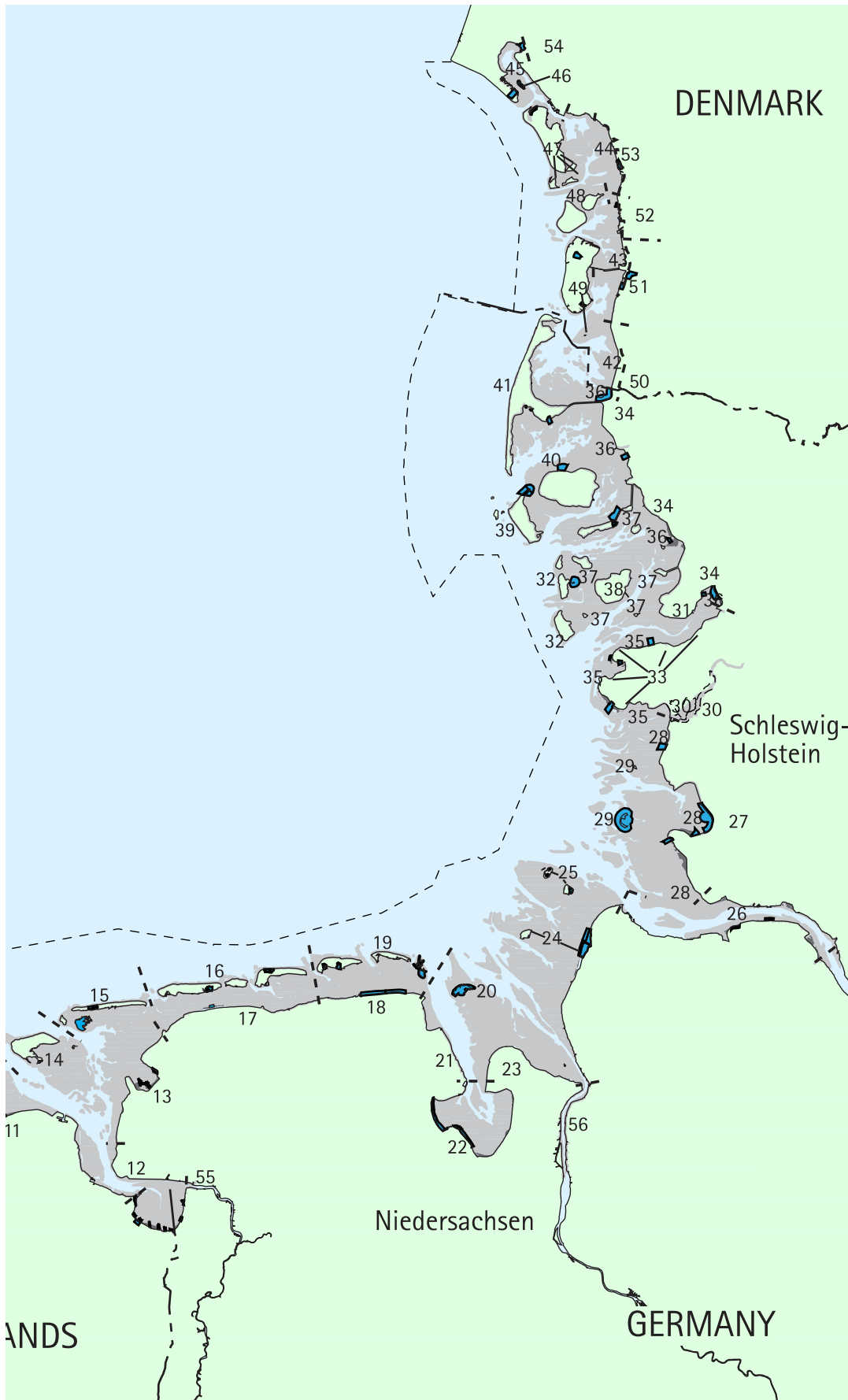


Figure A.2.1
The Wadden Sea Area
including delimitations
of all counting units and
counting sites.

Annex 3 Total numbers 2006

Census region	Arctic Tern	Avocet	Barnacle Goose	Black-headed Gull	Black-tailed Godwit	Common Eider	Common Gull	Common Redshank	Common Snipe	Common Tern	Dunlin	Eurasian Curlew	Eurasian Spoonbill	Great Black-backed Gull	Great Cormorant	Great Ringed Plover	Gull-billed Tern	Hen Harrier	Herring Gull
1	5	154	8	1,500	312	201	1,370	318	0	482	0	137	430	0	832	32	0	43	7,518
2	57	202	6	8	2	1,400	458	22	0	245	0	56	226	0	1,031	3	0	3	3,812
3	320	0	0	30,990	0	85	42	13	0	915	0	0	0	1	0	1	0	0	100
4	36	39	0	477	101	1,792	64	209	0	93	0	128	53	16	102	21	0	40	3,774
5	120	40	0	5,377	280	86	604	278	0	157	0	63	38	0	0	8	0	15	5,861
6	3	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	9	30	0	605	26	2,260	478	144	0	311	0	64	208	0	0	1	0	16	3,643
8	210	4	0	425	2	1,461	130	5	0	606	0	0	56	0	180	9	0	0	3,818
9	16	693	0	6,573	0	0	817	6	0	832	0	0	19		0	0	0	0	176
10	173	2,438	0	128	160	3	0	454	0	76	0	0	0		0	25	0	0	43
11	75	156	0	429	5	21	10	594	0	534	0	0	0		113	1	0	0	67
12	7	352	0	19	40	0	0	468	4	23	0	0	0	0	0	31	0	0	0
13	39	451	0	86	51	0	1	757	0	7	0	0	0	0	0	49	0	0	0
14	10	131	0	1,364	92	291	240	122	12	61	0	28	5	0	140	17	0	20	1,479
15	48	54	0	1,168	2	147	146	188	0	8	0	10	70	0	221	3	0	8	611
16	67	158	0	9,890	129	49	1,252	200	10	136	0	52	30	0	0	17	0	30	4,345
17	0	0	0	1	3	0	0	97	0	0	0	0	0	0	0	10	0	0	0
18	0	130	0	2	4	0	0	162	0	0	0	0	0	0	0	2	0	2	0
19	105	63	0	4,557	46	209	711	240	0	395	0	19	11	0	0	17	0	24	3,907
20	185	0	0	191	0	258	467	155	0	1,406	0	0	34	0	36	6	0	0	5,524
21	0	0	0	0	2	0	0	10	0	0	0	0	0	0	0	0	0	0	0
22	0	361	0	734	25	0	0	1,522	2	488	0	5	0	0	0	19	0	2	0
23	0	2	0	6	16	0	0	104	0	12	0	0	0	0	85	0	0	0	0
24	0	1	0	0	1	0	0	296	0	0	0	0	0	0	154	10	0	0	0
25	286	30	0	5,562	0	30	32	19	0	476	0	0	0	0	204	6	0	0	1,621
26	0	641	0	2,425	217	0	4,014	328	24	2,109	0	0	0	0	0	15	45	0	46
27	2	331	0	0	260	0	11	221	4	9	0	0	0	0	0	8	0	0	0
28	412	1,120	0	4,494	0	0	55	451	0	293	0	0	0	0	0	2	0	0	168
29	76	0	0	508	0	0	92	29	0	82	0	0	14	2	287	3	0	0	4,780
30	91	754	0	1,097	53	0	15	401	4	31	0	0	0	0	0	10	0	0	9
31	0	0	0	0	0	0	0	81	0	0	0	0	0	0	0	3	0	0	0
32	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	5	0	0	0
33	0	18	0	261	5	10	0	21	0	1	0	0	0	0	0	0	0	0	0
34	134	746	0	648	83	0	8	304	12	169	0	0	0	2	0	108	0	0	148
35	103	119	0	317	16	0	11	565	0	21	0	0	0	0	0	8	0	0	7
36	99	280	0	1,099	28	80	73	1,189	0	20	0	2	0	0	0	12	0	0	152
37	1,612	189	0	7,389	0	0	1,052	247	0	311	0	0	21	1	0	55	0	0	3,249
38	33	127	0	765	33	119	0	168	22	3	0	0	0	0	0	13	0	2	0
39	76	65	0	251	2	10	1,242	145	0	41	0	4	0	6	0	21	0	2	1,264
40	52	40	0	1,454	48	9	146	96	0	78	0	0	0	0	231	9	0	0	74
41	172	21	0	93	77	0	99	88	4	0	0	0	0	2	31	25	0	4	275
42	13	177	0	1	1	3	0	42	0	0	0	0	0	0	0	6	0	0	0
43	0	14	0	164	0	4	0	200	2	0	0	1	0	0	0	12	0	0	0
44	0	65	0	3,276	0	3	0	90	0	1	0	0	0	0	0	18	0	0	0
45	108	0	0	434	0	0	1	240	8	2	0	1	0	0	0	12	0	0	0
46	69	32	0	2,033	0	147	1,231	2	0	0	0	0	0	2	19	3	0	0	3,345
47	286	71	0	0	0	23	6	215	74	0	0	17	0	0	0	9	0	0	0
48	190	120	0	110	72	183	302	86	0	6	0	1	0	3	0	6	0	0	784
49	160	30	0	45	51	97	52	276	36	2	22	22	0	0	0	36	0	0	55
50	0	0	0	0	125	0	0	127	4	0	0	0	0	0	0	0	0	0	0
51	0	11	0	0	11	0	0	33	1	8	0	0	0	0	0	0	0	0	0
52	0	11	0	0	0	0	0	8	0	1	0	0	0	0	0	0	0	0	0
53	0	42	0	0	3	0	0	64	47	0	2	1	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	23	18	0	0	0	0	0	0	0	0	0	0
55	0	314	0	1,050	110	0	0	227	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	19	0	0	33	3	60	0	0	0	0	0	1	0	0	0
Total	5,459	10,827	14	98,006	2,513	8,981	15,233	12,383	291	10,511	24	611	1,215	35	3,666	688	45	211	60,655

Census region	Kentish Plover	Lesser Black-backed Gull	Little Egret	Little Gull	Little Tern	Mediterranean Gull	Northern Lapwing	Oystercatcher	Red-breasted Merganser	Ruff	Sandwich Tern	Shelduck	Short-eared Owl	Turnstone
1	1	14,612	0	0	106	0	902	1,511	0	0	1,100	299	6	0
2	3	4,809	0	0	63	0	17	288	0	0	0	156	2	0
3	0	11	0	0	0	3	0	380	7	0	7,513	46	1	0
4	9	11,151	10	0	16	0	247	895	0	0	3,300	205	7	0
5	1	5,532	0	0	0	0	620	1,860	0	0	2,002	333	0	0
6	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7	9	12,136	14	0	0	0	246	774	0	0	0	276	3	0
8	14	2,289	0	0	13	1	4	327	0	0	0	88	0	0
9	0	126	0	0	0	15	12	77	0	0	0	35	0	0
10	0	0	0	0	0	0	711	912	0	0	0	54	0	0
11	0	21	0	0	0	0	21	765	0	0	0	38	0	0
12	3	0	0	0	2	1	200	336	0	0	0	244	0	0
13	6	0	0	0	0	0	172	472	0	0	0	89	0	0
14	3	851	0	0	30	3	131	1,164	0	0	0	247	6	0
15	0	4,890	0	0	10	0	26	727	0	0	0	214	3	0
16	1	6,072	0	0	51	1	286	3,298	0	0	2,028	942	14	0
17	0	0	0	0	0	0	31	251	0	0	0	442	0	0
18	0	0	0	0	0	0	35	71	0	0	0	38	0	0
19	2	5,841	0	0	75	2	141	1,456	0	0	550	419	18	0
20	0	4,685	0	0	0	0	0	380	1	0	185	40	0	0
21	0	0	0	0	0	0	13	12	0	0	0	4	0	0
22	0	0	0	0	0	0	155	314	0	0	0	121	0	0
23	0	0	0	0	0	0	26	40	0	0	0	45	0	0
24	0	0	0	0	0	0	74	136	0	0	0	25	0	0
25	2	1,107	0	0	1	0	14	1,174	0	0	171	75	4	0
26	0	5	0	0	0	151	889	431	0	2	0	65	0	0
27	0	0	0	0	0	0	1,277	655	0	2	0	336	3	0
28	2	6	0	0	0	1	150	714	0	0	0	36	0	0
29	0	1,849	0	0	3	0	0	164	0	0	0	67	0	0
30	1	0	0	0	0	1	849	456	0	0	0	78	0	0
31	0	0	0	0	0	0	106	230	0	0	0	62	0	0
32	0	0	0	0	30	0	0	23	0	0	0	0	0	0
33	1	0	0	0	0	0	12	25	0	0	0	12	0	0
34	151	5	0	0	33	0	785	602	11	6	0	177	0	0
35	23	0	0	0	20	0	36	704	0	0	0	22	0	0
36	0	8	0	0	0	0	144	1,634	0	0	0	173	0	0
37	0	409	0	0	29	0	63	2,151	9	0	2,300	147	0	0
38	0	0	0	0	0	0	378	545	0	16	0	350	0	0
39	0	11,118	0	0	45	1	159	784	6	0	0	53	3	0
40	0	17	0	0	36	0	467	1,217	0	0	0	177	1	0
41	2	9	0	0	47	0	100	219	0	0	0	100	0	0
42	1	0	0	0	1	0	30	185	0	0	0	24	0	0
43	0	0	0	0	0	0	39	132	0	0	0	21	0	0
44	0	0	0	0	0	2	63	50	0	0	0	10	1	0
45	0	0	0	0	40	0	118	44	0	4	0	47	1	0
46	0	975	0	0	1	1	6	241	0	0	3,249	17	0	0
47	3	0	0	0	40	0	192	102	0	0	0	0	0	0
48	0	89	0	0	0	0	213	928	1	6	0	0	2	0
49	43	0	0	0	15	0	287	373	7	6	0	32	0	0
50	0	0	0	0	0	0	765	104	0	0	0	22	0	0
51	0	0	0	0	0	0	444	18	0	0	0	21	0	0
52	0	0	0	0	0	0	206	13	0	0	0	13	0	0
53	0	0	0	0	0	0	511	41	0	4	0	14	0	0
54	0	0	0	0	0	0	47	0	0	0	0	2	0	0
55	1	0	0	0	0	0	176	55	0	0	0	14	0	0
56	0	0	0	0	0	0	54	16	0	0	0	15	0	0
Total	282	88,623	24	0	708	183	12,650	30,476	42	46	22,398	6,582	75	0

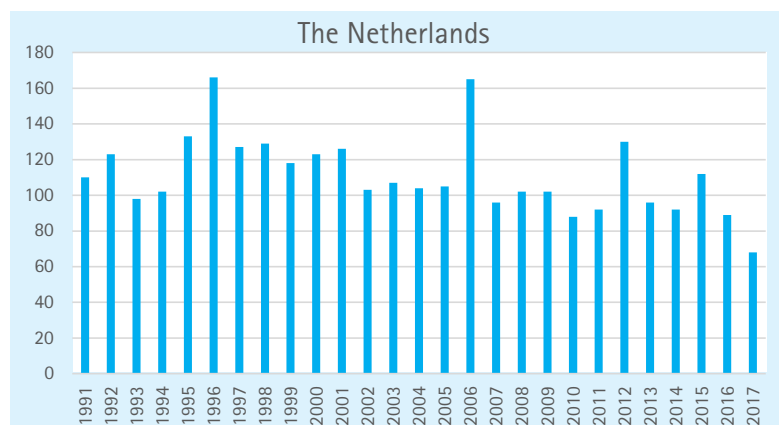
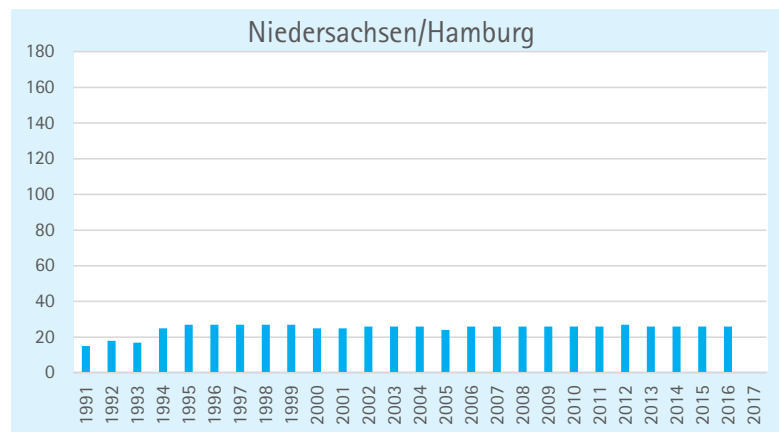
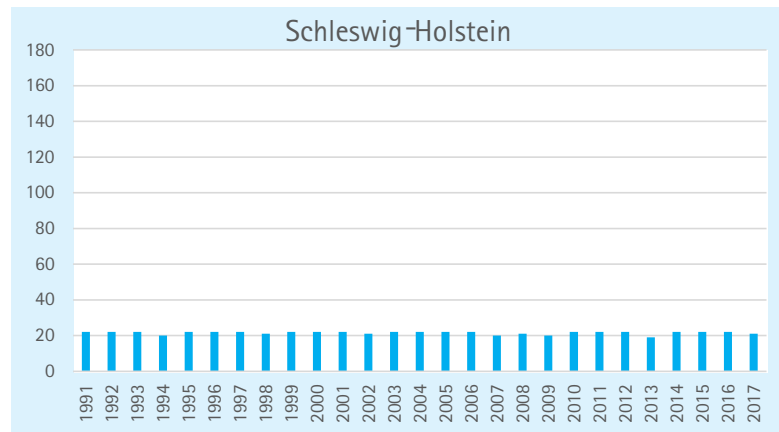
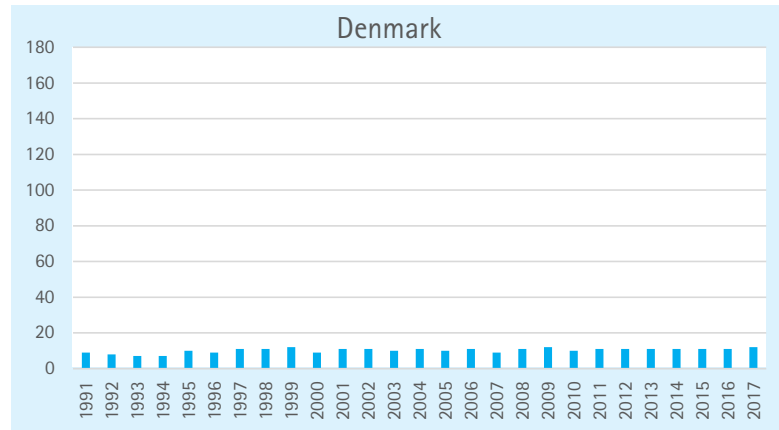
Annex 3 Total numbers 2012

Census region	Arctic Tern	Avocet	Barnacle Goose	Black-headed Gull	Black-tailed Godwit	Common Eider	Common Gull	Common Redshank	Common Snipe	Common Tern	Dunlin	Eurasian Curlew	Eurasian Spoonbill	Great Black-backed Gull	Great Cormorant	Great Ringed Plover	Gull-billed Tern	Hen Harrier	Herring Gull
1	15	197	276	2,294	271	156	677	205	0	697	0	112	610	0	1,704	22	0	8	10,008
2	13	10	0	0	0	1,268	190	12	0	40	0	39	202	0	641	2	0	1	5,073
3	325	13	0	27,972	0	77	51	8	0	922	0	0	1	4	0	0	0	0	75
4	52	16	12	344	299	2,131	86	453	0	190	0	79	139	9	345	5	0	1	4,702
5	88	52	0	3,285	340	457	329	317	5	149	0	48	90	0	0	3	0	0	3,600
6	41	0	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0
7	0	1	0	867	40	451	182	122	0	170	0	53	210	0	18	1	0	1	4,760
8	6	2	0	20	0	815	60	11	0	250	0	8	118	4	138	8	0	0	2,425
9	1	95	0	1,802	0	4	285	6	0	103	0	0	104	0	0	1	0	0	39
10	204	1,024	0	714	139	1	0	504	1	60	0	0	0	0	0	28	0	0	9
11	169	548	0	1,503	3	18	8	420	0	648	0	0	0	0	76	3	0	0	61
12	0	222	0	10	7	0	0	328	0	0	0	1	1	0	0	39	0	0	0
13	0	21	0	5	18	0	0	332	0	0	0	2	0	0	0	20	0	0	0
14	26	166	0	462	44	223	457	143	0	17	0	32	35	1	154	10	0	2	1,902
15	57	52	0	1,672	2	132	176	193	0	242	0	8	100	2	196	13	0	0	770
16	75	60	0	10,377	62	288	1,657	384	0	90	0	59	75	0	79	10	1	5	3,506
17	0	0	0	0	4	7	0	171	0	0	0	0	0	0	66	0	0	0	0
18	0	228	0	0	3	0	1	103	0	0	0	0	0	0	0	2	0	0	0
19	248	4	8	2,519	18	214	1,008	102	0	803	0	16	44	1	0	4	0	1	1,669
20	0	0	0	231	0	263	108	109	0	0	0	0	67	1	142	12	0	0	2,535
21	0	0	0	1	1	0	0	8	0	0	0	0	0	0	0	0	0	0	0
22	0	367	0	2,424	10	0	1	661	0	440	0	0	0	0	0	10	1	0	0
23	0	36	0	5	9	0	0	198	0	84	0	0	0	0	0	1	0	0	1
24	0	34	0	0	0	0	0	365	0	0	0	0	0	0	185	5	0	0	0
25	293	47	0	6,158	0	31	27	25	0	495	0	0	2	0	253	3	0	0	694
26	0	425	0	789	263	0	2,958	345	7	2,016	0	0	0	0	0	45	38	0	11
27	0	97	6	21	171	0	9	142	0	6	0	0	0	0	0	5	0	0	0
28	626	813	0	23,494	0	0	5	326	0	260	0	0	0	0	0	2	0	0	42
29	5	0	10	105	0	0	64	54	0	9	0	0	45	2	431	7	0	0	2,446
30	16	259	0	29	61	0	20	361	2	2	0	0	0	0	0	12	0	0	0
31	4	11	0	71	1	0	0	25	0	2	0	0	0	0	0	0	0	0	1
32	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	6	0	0	149
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	62	791	330	360	120	5	3	354	12	56	4	0	0	4	9	92	0	0	29
35	9	39	0	43	2	0	2	727	0	1	0	0	0	0	0	11	0	0	3
36	31	77	1	530	10	7	63	1,063	0	2	0	0	0	0	0	36	0	0	60
37	1,787	359	0	11,218	2	96	1,581	261	0	370	0	0	71	8	0	46	0	0	3,211
38	37	119	0	341	34	0	10	81	0	25	0	0	0	0	0	8	0	0	3
39	42	62	0	255		121	1,001	55	0	67	0	9	0	8	0	9	0	0	1,870
40	125	23	11	2,542	69	13	477	92	0	31	0	0	8	14	391	11	0	0	2,327
41	123	155	28	123	29	13	249	96	1	0	0	0	0	2	45	48	0	2	435
42	1	0	0	0	0	0	0	19	0	0	0	0	0	0	0	5	0	0	0
43	0	1	0	1	0	1		159	0	0	0	1	0	0	0	17	0	0	0
44	0	69	0	6,657	0	0	0	62	0	0	0	0	0	0	0	3	0	0	3
45	129	0	0	457	0	2	0	176	3	27	0	1	0	0	0	14	0	0	1
46	48	4	3	3,570	0	352	963	2	0	0	0	0	23	2	0	0	0	0	9,143
47	42	27	0	98	0	49	2	204	5	0	0	25	0	1	0	35	0	0	3
48	99	73	3	28	101	35	282	116	0	3	0	0	0	7	0	2	0	0	699
49	41	30	0	16	47	50	19	245	1	0	9	19	0	0	0	40	0	0	13
50	0	3	0	0	135	0	0	110	3	0	0	0	0	0	0	0	0	0	0
51	3	19	0	1	13	0	0	23	0	28	0	1	0	0	0	1	0	0	0
52	6	43	0	209	0	0	0	12	0	30	0	0	0	0	0	0	0	0	0
53	0	11	0	0	3	0	0	37	15	0	0	2	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0
55	0	474	39	0	20	0	0	30	0	0	0	0	0	0	0	1	0	0	0
56	0	0	0	100	0	0	0	0	0	85	0	0	0	0	0	0	0	0	0
Total	4,849	7,179	727	113,723	2,351	7,283	13,011	10,373	55	8,442	13	515	1,945	72	4,873	658	40	19	62,278

Census region	Kentish Plover	Lesser Black-backed Gull	Little Egret	Little Gull	Little Tern	Mediterranean Gull	Northern Lapwing	Oyster-catcher	Pintail	Red-breasted Merganser	Ruff	Sandwich Tern	Shelduck	Short-eared Owl	Turnstone	Wigeon
1	1	18,504	0	0	94	0	935	1,829	0	0	0	2,222	236	3	0	0
2	2	7,803	0	0	83	0	18	138	0	0	0	0	82	0	0	0
3	1	15	0	0	0	0	0	332	0	1	0	2,796	29	0	0	0
4	0	10,145	1	0	22	0	303	1,216	0	0	0	0	382	1	0	0
5	0	3,910	0	0	0	?	625	1,752	0	0	0	3,265	361	4	0	0
6	1	0	0	0	41	0	0	4	0	0	0	0	0	0	0	0
7	3	9,309	0	0	0	0	256	791	0	0	0	0	412	5	0	0
8	3	3,114	3	0	4	0	2	319	0	0	0	0	38	1	0	0
9	0	17	0	0	6	2	1	92	0	0	0	1	21	0	0	0
10	0	0	0	0	0	0	584	784	0	0	3	0	73	0	0	0
11	0	51	0	0	0	0	40	495	0	0	0	0	60	1	0	0
12	0	0	0	0	0	0	158	336	0	0	0	0	136	1	0	0
13	1	0	0	0	0	0	95	200	0	0	0	0	48	0	0	0
14	2	1,430	0	0	24	0	229	944	0	0	0	0	324	2	0	0
15	1	3,884	0	0	0	0	38	926	0	0	0	0	244	6	0	0
16	0	9,822	0	0	72	6	283	2,681	0	0	0	3,496	1,035	7	0	0
17	0	0	0	0	0	0	33	180	0	0	0	0	181	0	0	0
18	0	0	0	0	0	0	14	68	0	0	0	0	37	0	0	0
19	0	7,057	0	0	49	8	47	893	0	0	0	2	412	14	0	0
20	0	2,744	0	0	0	0	0	278	0	8	0	0	34	1	0	0
21	0	0	0	0	0	0	3	12	0	0	0	0	4	0	0	0
22	0	0	0	0	0	1	41	148	0	0	0	0	23	0	0	0
23	0	0	0	0	0	0	30	77	0	0	0	0	22	0	0	0
24	0	0	0	0	0	0	107	137	0	0	0	0	33	1	0	0
25	0	647	0	0	5	0	19	540	0	0	0	751	81	2	0	0
26	0	0	0	0	0	108	1,241	485	0	0	1	0	76	0	0	1
27	0	0	0	0	0	0	781	369	0	0	0	0	134	0	0	0
28	2	0	0	0	0	1	92	854	0	0	0	0	126	0	0	0
29	0	1,361	0	0	3	0	0	93	0	0	0	0	48	0	0	0
30	31	0	0	0	0	0	719	335	4	0	2	0	97	1	0	5
31	0	0	0	0	0	0	145	222	1	0	0	0	91	0	0	0
32	0	74	0	0	41	0	0	7	0	0	0	0	0	0	0	0
33	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	163	0	0	0	24	0	1,054	460	5	2	25	0	91	0	0	18
35	15	0	0	0	8	0	12	714	0	0	0	0	95	0	0	0
36	0	2	0	0	0	0	111	1,178	0	1	0	0	119	0	0	0
37	0	619	0	0	42	0	36	2,180	0	13	1	3,100	173	0	0	0
38	0	0	0	0	0	0	353	1,061	0	0	0	0	735	1	0	0
39	0	10,970	0	0	34	0	42	130	0	6	0	0	214	3	0	0
40	0	1,141	0	0	52	0	375	1,420	0	0	0	0	563	0	0	0
41	5	89	0	0	43	0	79	162	0	4	0	0	87	0	0	0
42	0	0	0	0	0	0	27	69	3	0	0	0	23	0	0	0
43	0	0	0	0	0	0	10	70	0	0	2	0	23	2	0	0
44	0	0	0	0	0	8	18	38	0	0	0	80	10	1	0	0
45	1	0	0	0	4	0	53	47	0	1	0	0	75	1	0	0
46	0	1,778	0	0	0	3	2	134	1	0	0	67	20	1	0	0
47	8	0	0	0	34	0	161	135	0	1	0	0	54	0	0	0
48	0	10	0	0	0	0	198	583	0	0	1	0	70	2	0	0
49	47	0	0	0	75	0	217	247	1	4	1	0	66	0	0	0
50	0	0	0	0	0	0	595	69	0	0	1	0	12	0	0	0
51	0	0	0	0	0	0	169	31	0	0	0	0	25	2	0	0
52	0	0	0	0	0	0	203	17	0	0	1	0	17	2	0	0
53	0	0	0	0	0	0	224	21	0	0	1	0	69	2	0	0
54	0	0	0	0	0	0	16	0	0	0	0	0	10	1	0	0
55	0	0	0	0	0	0	40	10	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	291	94,496	4	0	760	136	10,834	26,313	15	41	39	15,780	7,431	68	0	24

Annex 4 Counting coverage of census areas

Figure A.4.1 - A.4.4
 Coverage of sample sites (census areas) to determine trends in common bird species. The larger sample covered in The Netherlands is corrected for in the trend analyses, by weighting the trends according to the population share from the total-count data (see chapter 2).



Annex 5 Species list

Table A.4.1
List of breeding bird species
monitored in the Trilateral
Monitoring and Assessment
Program (TMAP) sorted by
Euring code.

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
01190	Little Egret	<i>Egretta garzetta</i>	Silkehejre	Seidenreier	Kleine Zilverreiger
01670	Barnacle Goose	<i>Branta leucopsis</i>	Bramgås	Weißwangengans	Brandgans
01730	Common Shelduck	<i>Tadorna tadorna</i>	Gravand	Brandgans	Bergeend
01790	Eurasian Wigeon	<i>Anas penelope</i>	Pibeand	Pfeifente	Smient
01890	Northern Pintail	<i>Anas acuta</i>	Spidsand	Spießente	Pijlstaart
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
05120	Dunlin	<i>Calidris alpina</i>	Almindelig Ryle	Alpenstrandläufer	Bonte Strandloper
05170	Ruff	<i>Calidris pugnax</i>	Brushane	Kampfläufer	Kemphaan
05190	Common Snipe	<i>Gallinago gallinago</i>	Dobbeltbekkasin	Bekassine	Watersnip
05320	Black-tailed Godwit	<i>Limosa limosa</i>	Stor Kobbersneppe	Uferschnepfe	Grutto
05410	Eurasian Curlew	<i>Numenius arquata</i>	Stor Regnspove	Brachvogel	Wulp
05460	Common Redshank	<i>Tringa totanus</i>	Rødben	Rotschenkel	Tureluur
05610	Ruddy Turnstone	<i>Arenaria interpres</i>	Stenvender	Steinwälzer	Steenloper
05750	Mediterranean Gull	<i>Ichthyaeus melanocephalus</i>	Sorthovedet Måge	Schwarzkopfmöwe	Zwartkopmeeuw
05780	Little Gull	<i>Hydrocoloeus minutus</i>	Dværgmåge	Zwergmöwe	Dwergmeeuw
05820	Common Black-headed Gull	<i>Chroicocephalus 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>Thalasseus sandvicensis</i>	Splitterne	Brandseeschwalbe	Grote Stern
06150	Common Tern	<i>Sterna hirundo</i>	Fjordterne	Flusseeschwalbe	Visdief
06160	Arctic Tern	<i>Sterna paradisaea</i>	Havterne	Küstenseeschwalbe	Noordse Stern
06240	Little Tern	<i>Sternula albifrons</i>	Dværgterne	Zwergseeschwalbe	Dwergstern
07680	Short-eared Owl	<i>Asio flammeus</i>	Mosehornugl	Sumpfohreule	Velduil

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Schleswig-Holstein

Florian Achterhold, Moritz Adam, Elias Aksamski, Jannes Ammon, Jasper Augustin, Silke Backsen, Julia Baer, Benjamin Baumert, David Bayer, Milan Beck, Ilka Beermann, Mareike Beermann, Mareike Berghald, Johannes Bernau, Lena Berneburg, Felix Bernert, Carina Betz, Reiner Betz, Sarah Betz, Malte Bickel, Antonia Biehl, Jan Blew, Daniel Bloche, Sebastian Blüm, Eva Maria Blumenrath, Clara Böhm, Jonas Boldt, Bastian Borchardt, Nina Borst, Maria Brande, Jonas Brandenburg, Anne Breidenstein, Sebastian Breidenstein, Eva-Janina Brinken, Charlotte Brock, Philip Broermann, Johanna Brosig, Holger A. Bruns, Miriam Bruttel, Lukas Bublies, Lea Busch, Thomas Chrobock,

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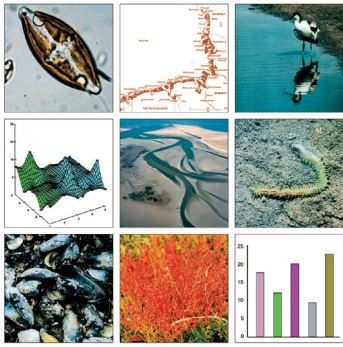
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The Trilateral Monitoring and Assessment Program (TMAP)

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

