Status of coastal waterbird populations in the East Atlantic Flyway 2014

Marc van Roomen ■ Szabolcs Nagy

Ruud Foppen ■ Tim Dodman

Geoffroy Citegetse ■ Abdoulaye Ndiaye

PROGRAMMA NAAR EEN RIJKE WADDENZEE

Sovon

Wetlands INTERNATIONAL

BirdLife INTERNATIONAL

THE WADDEN SEA FLYWAY INITIATIVE

MAVA FONDATION POUR LA NATURE

Status of coastal waterbird populations in the East Atlantic Flyway 2014

With special attention to flyway populations making use of the Wadden Sea

Compilation: Marc van Roomen[1,2], Szabolcs Nagy[3], Ruud Foppen[2, 4,5],Tim Dodman[1,3] , Geoffroy Citegetse[6] & Abdoulaye Ndiaye[7]

1 Wadden Sea Flyway Initiative
2 Sovon, Dutch Centre for Field Ornithology
3 Wetlands International
4 European Bird Census Council
5 Birdlife International, European Red List of Birds project
6 Birdlife International , Conservation of Migratory Birds project
7 AEWA African Initiative Technical Support Unit

This publication should be cited as:
van Roomen M., Nagy S., Foppen R., Dodman T., Citegetse G. & Ndiaye A. 2015. Status of coastal waterbird populations in the East Atlantic Flyway. With special attention to flyway populations making use of the Wadden Sea. Programme Rich Wadden Sea, Leeuwarden, The Netherlands, Sovon, Nijmegen, The Netherlands, Wetlands International, Wageningen, The Netherlands, BirdLife International, Cambridge, United Kingdom &, Common Wadden Sea Secretariat, Wilhelmshaven, Germany.

Lay-out: Blue Robin dtp / Arnold Meijer
Printing: GrafiServices
Photographs: Dave Montreuil, Bernd de Bruijn, Koos Dansen, Gregor Scheiffarth, Arnold Meijer / Blue Robin & Agami Photo Agency
Produced by: Doorwerk / Nadja Jansma

Photographs cover: **front:** Great White Pelican, Caspian Tern (Dave Montreuil), Curlew Sandpiper (Arnold Meijer)
back: Royal Tern (Dave Montreuil)

Programme Rich Wadden Sea
Zuidersingel 3
NL-8911 AV Leeuwarden
The Netherlands
www.rijkewaddenzee.nl

Common Wadden Sea Secretariat
Virchowstrasse 1
D-26382, Wilhelmshaven
Germany
www.waddensea-secretariat.org

Status of coastal waterbird populations in the East Atlantic Flyway 2014

With special attention to flyway populations making use of the Wadden Sea

Contents

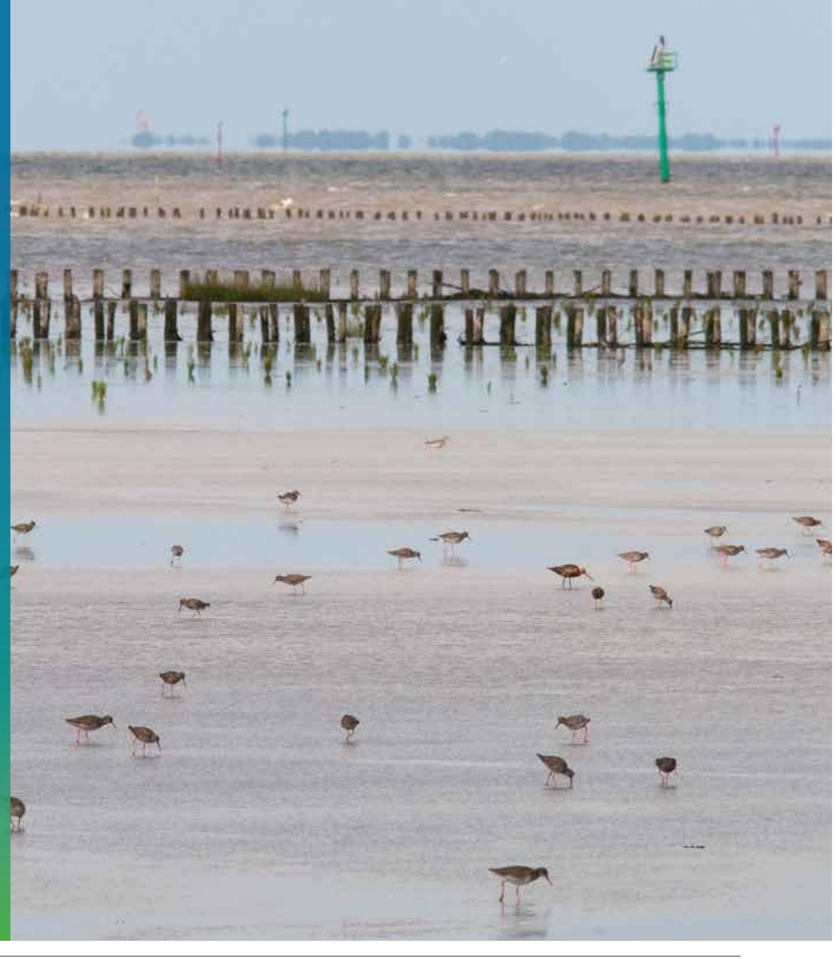


PHOTO Arnold Meijer / Blue Robin

Foreword

The Wadden Sea is one of the most important areas for migratory birds in the world. It is part of a network of sites along a flyway that is used each year by millions of birds migrating between their breeding grounds in the Arctic and their wintering sites in Western Europe and along the western seaboard of Africa. These migratory birds fascinate and excite people.

One broken link in the chain of critical sites in the flyway network can have an adverse impact on the viability of migratory shorebird populations. In turn, the Wadden Sea ecosystem is characterised by the millions of migratory birds feeding, resting and breeding on its shores and mudflats.

With the inscription of the Danish section of the Wadden Sea on the UNESCO World Heritage List in 2014, the whole Wadden Sea is now recognised as a World Heritage Site. But since 2009, when the German-Dutch Wadden Sea was inscribed on the list, the managing authorities within these countries have worked with their counterparts along all the African Eurasian Flyways to strengthen cooperation on management and research activities. The end goal is to improve the conservation management of migratory species along these flyways.

As part of that effort, the governments of Germany and the Netherlands co-ordinated their flyway activities under the Wadden Sea Flyway Initiative (WSFI), a programme managed by the Common Wadden Sea Secretariat (CWSS) from Wilhelmshaven. Between 2012 and 2014 the WSFI effort was directed towards two main working areas, Monitoring and Capacity Building.

This report is the final output of the Monitoring part of phase one of the WSFI. Monitoring of waterbirds has a long history in the region, involving many organisations and individuals. The WSFI monitoring project makes use of this vast experience. By merging and enhancing the existing methodologies and networks (notably the International Waterbird Census and Important Bird Area Programmes), this project has generated a large increase in data on the East Atlantic Flyway. The synchronous counting exercise along the entire coast of Western Africa in January 2014 was a particularly notable achievement.

This report clearly indicates that it is not enough simply to be aware of the state of the environment and nature in the Wadden Sea at a specific time. The value of that information is greatly enhanced if we can also obtain reliable estimates of trends. This report contains a unique, if preliminary, insight into trends observed along the whole flyway. The figures presented show remarkable results suggesting dynamic, and sometimes even critical, situations along the flyway.

The report gives us plenty of food for thought and stresses again the value of securing continued monitoring at flyway level.

As chair of the Trilateral Wadden Sea Cooperation, I would like to compliment all those who have contributed to this report. Organising and staging synchronous counts in so many different countries requires meticulous planning, huge effort, professionalism, good support and many committed persons!

In my opinion, this study becomes an even greater achievement when you consider the diversity of people and organisations operating along the Flyway who have contributed to the project.

Dr Co Verdaas
Chair of the Wadden Sea Board,
Trilateral Wadden Sea Cooperation

PHOTO Arnold Meijer / Blue Robin

Acknowledgements

An assessment of the status of waterbird populations along the whole East Atlantic Flyway requires a significant cooperation and involvement of organizations, coordinators and field workers, all of whom are sincerely thanked for their important contribution and dedication. National Coordinators and other focal points who provided data to the IWC, and other sources used for the January results, especially of the January 2014 total count, are summarized in Annex 2.1. It is not possible to thank individually all those who carried out surveys or collated information, but we strongly thank and acknowledge this enthusiastic network of people across continents.

The European Topic Centre for Biodiversity, BirdLife International and the European Bird Census Council are thanked for making data available on breeding birds in European countries. We also thank Jan Veen (VEDA Consultancy), whose publications were an important source of data of colonial breeding birds in Western Africa. Trends in the Wadden Sea itself are based on the Joint Monitoring of Migratory Birds (JMMB) and the Joint Monitoring of Breeding Birds (JMBB) programmes in the Wadden Sea, as coordinated by the Common Wadden Sea Secretariat. Behind these data sets are many dedicated field workers, we cannot thank them enough.

The carrying out of counts in January 2013 and 2014 in West Africa, and the preparation of this report were funded to a large extent by the Programme Rich Wadden Sea, as financed by the Ministry of Economic Affairs, The Netherlands, as part of the Wadden Sea Flyway Initiative, and by the MAVA Foundation together with Vogelbescherming Nederland through the Conservation of Migratory Birds Project in West Africa as coordinated by BirdLife International. Analyses performed by Wetlands International for the sixth edition of the Conservation Status Report, which were also used in this assessment, were funded by the African Eurasian Migratory Waterbird Agreement (AEWA).

The EU funded the summarizing of data by country in Europe as carried out by the European Topic Centre for Biodiversity and BirdLife International. For the total waterbird count in January 2014, additional funding was received from the provincial government of Niedersachsen, the National Park Wadden Sea Niedersachsen, the Danish Wadden Sea National Park, Wereld Natuur Fonds, The Netherlands and from the Wetland Bird Survey through the British Trust for Ornithology, UK. A crucial basis for all this work is provided by countries along the flyway which have invested to a greater or lesser extent in their own breeding and waterbird monitoring programmes making this flyway review possible.

Erik van Winden, Chris van Turnhout and André van Kleunen (Sovon), Tom Langendoen, Stephan Flink and Gabin Agblonon (Wetlands International) and Simon Delany (Delany Environmental) are thanked for all sorts of important work on database management, carrying out analyses and editing, which contributed greatly to this report.

Steering of this work was provided by Gerold Lüerßen (Common Wadden Sea Secretariat), Manon Tentij (Programme Rich Wadden Sea, Vogelbescherming Nederland), Bernard Baerends (Government of The Netherlands, Ministry of Economic Affairs and Programme Rich Wadden Sea), Oliver Schall and Stephanie Hedtkamp (Government of Germany, Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety), Barend van Gemerden (Vogelbescherming Nederland, BirdLife International) and Jan Steinbring Jensen (Naturstyrelsen Ribe, Denmark). Also very welcome advise was received from the advisory board of the WSFI consisting of Gerard Boere (chair), Franz Bairlein (Institute of Avian Research), Florian Keil (AEWA), Antonio Araujo (FIBA/MAVA), Klaus Günther (JMMB), John Frikke (JMBB, JMMB), Peter Südbeck (Nationalparkverwaltung Nds. Wattenmeer) and Piet van den Hout (NIOZ).

PHOTO Arnold Meijer / Blue Robin

Summary

Monitoring is essential for conservation policy and management. It enables the detection of adverse trends at an early stage, the formulation of hypotheses of the likely causes of these developments, and the evaluation of conservation interventions. In migratory birds, the wellbeing of a population depends on the quantity and quality of the breeding areas, and at the stop-over sites during migration and in the wintering range. Assessment of developments at these sites needs to be evaluated against the wellbeing of the flyway populations in total. Coastal waterbirds in the East Atlantic Flyway are a prime example of such a migratory system in need of flyway wide monitoring.

This report gives an assessment of waterbird population sizes and trends at a flyway scale for coastal populations depending on the estuarine resources of the East Atlantic Flyway. It is a result of cooperation between the Wadden Sea Flyway Initiative, Wetlands International, BirdLife International, and monitoring organizations and institutions at national level along the flyway. It focusses on populations of birds using the Wadden Sea, and other Palearctic and Intra-African populations using the same sites. As such, it forms a part of the response to the call for more cooperation in management and research along the flyway from the World Heritage Committee at the inscription of the Wadden Sea as a World Heritage Site. This assessment falls within the Flyway Monitoring Strategy that was developed to improve the coordination and cooperation for monitoring along the East Atlantic Flyway (van Roomen *et al*, 2013). For the monitoring of flyway populations, a combination of monitoring of non-breeding and breeding birds is necessary over a huge geographic range from northern and western Europe to the western seaboard of Africa. This requires substantial cooperation between countries and projects, and the input of resources.

As a result of these combined efforts, the availability and robustness of waterbird population trends along the East Atlantic Flyway have strongly increased. The 66 East Atlantic Flyway populations assessed in this study show an equal number of increasing and decreasing trends in recent years. The proportion of populations with more or less stable numbers is rather small, suggesting large environmental changes along the flyway. Considering the 40 flyway populations that occur in internationally important numbers in the Wadden Sea, populations feeding on shellfish, crabs, worms and other invertebrates (benthivores) showed predominantly decreasing trends in recent years while fish eating species (piscivores) are predominantly increasing. Among these benthivores, flyway populations that depend on the international Wadden Sea to a large extent, are predominantly decreasing. This is not the case for populations for which the Wadden Sea is less important. Correlations between local Wadden Sea trends and flyway populations are also very weak. These patterns suggest that adverse environmental changes in the Wadden Sea are stronger than elsewhere on the flyway, and that trends in the Wadden Sea are mainly caused by these local factors, especially since populations which also breed in the Wadden Sea seem to be particularly vulnerable. The patterns found are strong indications that many flyway populations studied are under pressure. Further research and monitoring, especially also on threats along the flyway, are needed to pinpoint causes and to help identify priority conservation measures.

The expertise brought together in the consortium of the Wadden Sea Flyway Initiative, Wetlands International and BirdLife International, is unparalleled in the East Atlantic Flyway. Through the sharing of expertise and resources, a very cost-effective monitoring network has been developed, with great potential for further growth and with direct links to the implementation of conservation measures. Continuation of the collaboration, also with other partners, can effectively improve our knowledge and conservation efforts for migratory waterbirds in the East Atlantic Flyway.

PHOTO Arnold Meijer / Blue Robin

Résumé

Le suivi demeure indispensable pour la politique de conservation et de gestion. Il permet, de détecter, de manière bien précoce, les tendances sévères, d'initier la formulation des hypothèses concernant les causes les plus vraisemblables des manifestations visibles ainsi que l'évaluation des interventions de conservation. Chez les oiseaux migrateurs, le bien-être d'une population dépend de la qualité et de la quantité des zones de reproduction, et des escales au cours de la migration et dans la zone d'hivernage. L'analyse de l'évolution sur ces sites a besoin d'être évaluée par rapport au bien-être total des populations qui utilisent les voies de migration Les Oiseaux d'eau Côtiers qui se trouvent dans la voie de migration de l'Atlantique Est constituent un véritable exemple d'un tel système migratoire qui requiert un large suivi de ces voies de migration .

Le présent rapport établit une évaluation des tailles et des tendances des populations d'oiseaux d'eau à l'échelle de voie de migration pour les populations côtières dépendant des ressources estuariennes des voies de migration de l'Atlantique l'Est. C'est le fruit d'une coopération entre l'Initiative de la Mer de Wadden sur les voies de migration (The Wadden Sea Flyway Initiative), Wetlands International, BirdLife International et des organisations et institutions de niveau national, le long de la voie de migration. Elle se focalise sur les populations d'oiseaux qui utilisent la mer de Wadden et les autres du paléarctique et intra-africains utilisant les mêmes sites.). Ainsi donc, forment-ils, une partie de la réponse à l'appel du Comité du Patrimoine Mondial pour une plus grande coopération dans le domaine de la gestion et de la recherche le long des voies de migration jusqu'à l'inscription de la mer de Wadden comme Site du Patrimoine Mondial. Cette appréciation relève de la Stratégie de Suivi des Voies de migration qui avait été développée pour améliorer la coordination et la coopération du suivi le long de la Voie de Migration de l'Atlantique Est (van Roomen *et al*, 2013). Pour le suivi des populations sur les voies migratoires, il est donc nécessaire de procéder à une combinaison des oiseaux nicheurs et non nicheurs sur une surface géographique très large, partant de l'Europe du Nord et de l'Ouest vers les Côtes Ouest Africaines. Cela exige une coopération substantielle entre les pays et les projets, ainsi que de l'apport des ressources.

Comme résultats de ces efforts combinés, il y a une forte une considérable et forte augmentation de la disponibilité et la robustesse des tendances des oiseaux d'eau le long des voies de migration de l'Atlantique Est. Les 66 espèces d'oiseaux de la voie de migration de l'Atlantique Est, évaluées dans cette étude, montrent un nombre également croissant et décroissant des tendances au cours des dernières années. La population avec des nombres plus ou moins stables est plutôt faible, ce qui suggère des changements environnementaux considérables, le long de la voie de migration. Si l'on considère les 40 populations de la voie de migration , les populations qui y sont présentes en nombres internationalement importants dans la mer de wadden, les populations qui se nourrissent de crustacées, de crabes, de vers et d'autres invertébrés(benthivores), nous assistons à une tendance vers la baisse au cours des dernières années, pendant que les espèces piscivores continuent d'augmenter et ce, de façon croissante . Parmi ces benthivores, les populations des voies de migration qui dépendent au plan international de la mer de Wadden dans une large mesure, sont en train de décroitre de façon prédominante. Ce qui n'est pas le cas des populations pour lesquelles la mer de Wadden est moins importante. Les corrélations entre les tendances locales de la mer de Wadden et les populations sur les voies de migration sont également très faibles. Ces tendances suggèrent que les changements environnementaux au niveau de la mer de Wadden sont plus forts qu'ailleurs sur la voie de migration, et que les tendances sur celle-ci sont essentiellement causées par ces facteurs locaux, surtout depuis que la population qui niche à la mer de Wadden semble être particulièrement vulnérables. Les tendances découvertes sont des indications très fortes montrant que beaucoup de populations le long des voies de migration ayant été étudiées sont soumises à une certaine pression. Des recherches et un suivi plus poussés, surtout sur les menaces le long de ces voies sont importants pour déceler les causes et aider à identifier les mesures de conservations prioritaires.
L'expertise réunie au sein du consortium regroupant l'Initiative de la mer de Wadden (Wadden Sea Flyway Initiative), Wetlands International, et BirdLife International est sans précédent dans la Voie de Migration de Atlantique Est. A travers le partage d'expertise et de ressources, un réseau de suivi très rentable a été mis en place, avec un potentiel réel pour une croissance ultérieure et des liens directs avec la mise en œuvre des mesures de conservation. La continuité de cette collaboration, avec d'autres partenaires, pourrait également améliorer efficacement notre connaissance et nos efforts de conservation pour les oiseaux d'eau migrateurs dans la Voie de Migration de l'Atlantique Est.

1. Introduction

Wetlands play a crucial role as breeding places, stopover sites and wintering grounds for millions of migratory waterbirds. However, worldwide, wetlands are threatened by human activities such as land reclamation, fisheries, industrial pollution, and climate change. At the same time, people are becoming more and more aware of the economic, cultural and natural values of wetlands for people and global biodiversity alike. Consequently, the conservation and management of wetlands is an important and growing issue. For migratory birds, this conservation and management poses extra challenges, as they typically travel thousands of kilometres between their (sub)arctic breeding grounds and their temperate and tropical wintering areas. Loss or degradation of a wetland site within the chain of sites they use implies that It will be more difficult, or sometimes impossible, for a migratory bird to complete its annual migration, reproduce and survive. Pressures acting on one wetland can have negative effects on bird numbers in other wetlands within the same migratory flyway.

The Wadden Sea is one of the most important coastal wetland sites in the world, and it plays a key role within the East Atlantic Flyway (Figure 1). Many populations of migratory waterbirds make use of the Wadden Sea in internationally important numbers. The conservation status of these populations depends on the quantity and quality of the habitats and sites of the Wadden Sea itself,

PHOTO Lars Rasmussen

but also on the other sites within the flyway. For proper conservation and management of these populations, cooperation along the whole flyway is necessary. With the inscription of the Wadden Sea as a World Heritage site in 2009, the World Heritage Committee requested a strengthening of cooperation with state parties along the flyway. During a workshop in 2011 in Wilhelmshaven involving a wide range of stakeholders, it was recommended, among other things, to increase the cooperation in monitoring along the flyway for the benefit of Wadden Sea populations and other Palearctic and African species using the same sites (Boere & van Roomen 2011).

After this recommendation, a proposal for integrated monitoring along the East Atlantic Flyway was formulated (van Roomen *et al*. 2013). This monitoring should provide an early warning of populations in need of conservation measures. It needs to enable the pinpointing of sites, periods of the annual cycle and likely drivers responsible for the deteriorating conservation status of waterbird populations, and it needs to evaluate the effectiveness of policy and management measures taken. The activities should focus on improving the monitoring of population sizes and trends, of threats and conservation measures, and of vital rates. These are crucial parameters to inform a knowledge base which will improve the conservation and management of the populations involved.

The current report focusses on population sizes and trends. It is based on the analyses of different datasets about (changes in) numbers of both breeding and non-breeding waterbird populations. Assessments of population sizes and trends have been made based on these datasets . This information is used to analyse patterns among species which will help in focussing conservation measures and management. Analyses focus on the conservation status of waterbird populations in the flyway in general and of the populations using the Wadden Sea in particular.

Figure 1.1. *The East Atlantic Flyway. Sites and habitats of the Arctic, and the western seaboards of Europe and Africa are used by a wide range of migratory and resident waterbirds, including many that migrate along a large part of the flyway.*

PHOTO Arnold Meijer / Blue Robin

2. Data sources

2.1 Introduction

Assessment of international population sizes and population trends of birds need to be based on periods in their annual cycle when simultaneous counts and surveys throughout their range can be organized. This is mostly during the breeding season or during the winter in January, when exchange between sites is minimal, and sometimes during migration. In waterbirds, assessment of population sizes and trends are mostly done in periods of the year when they congregate at a relatively few sites. This can be in the breeding season in the case of colonial breeders or during the non-breeding season when they concentrate in relatively few wetland sites. Some waterbird populations do not really concentrate and have a dispersed distribution in both breeding and non-breeding seasons. In these cases, population sizes and trends are often based on methods in which samples of their breeding range or non-breeding range are surveyed and results extrapolated. The choice of method very much depends on the distribution behaviour of the species and the availability of suitable data. In the current report we were fortunate that we could use data from both the breeding season and the January non-breeding period. This enabled comparison of results and made it possible to choose the best datasets for final assessment. In table 2.1 the different datasets used are given with an overviewof whether they supply data for the breeding or winter period and if they cover Western Europe or Western Africa. More details about these datasets are given in the following paragraphs.

2.2 The International Waterbird Census

The International Waterbird Census (IWC) is a long-term site-based monitoring scheme for waterbirds in the non-breeding season, predominantly based on counts in January. It is organized annually and coordinated by Wetlands International (Delany *et al*. 1999, Dodman *et al*. 1999). Nowadays national count totals are published on the internet (http://www.wetlands.org). This dataset will be referred to as Wetlands International (2014). An overview of the national coordinators of the IWC along the flyway can be found in Annex 2.1.

2.3 Total count in Western Africa in January 2014

In addition to the normal IWC activities in January 2014, an extra effort was made by carrying out a simultaneous count of coastal sites in Western Africa. This was to cover gaps in coverage which exist during 'normal counting years'. The January 2014 counts enabled comparison with former coverage of key sites during expeditions in the 1980s and 1990s. This extra effort was made possible through a cooperation between the Wadden Sea Flyway Initiative (WSFI) and the Conservation of Migratory Bird Project (CMB) coordinated by BirdLife International in cooperation with Wetlands International. Fieldwork was carried out by national organizations often with assistance from additional counters from abroad. Data collected during this 'total count' of January 2014 are also stored in the IWC database. To enable analyses of these January 2014 results with the results of earlier expeditions, the results of these earlier expeditions were also stored in the IWC database. Besides the national coordinators gives Annex 2.1 gives a more detailed overview of the data and other sources used for the assessments in this report for countries on the Atlantic seaboard of Africa.

Monitoring scheme	Breeding Birds		Birds in January	
	Western Europe	Western Africa	Western Europe	Western Africa
International Waterbird Census			x	x
January 2014 Western Africa				x
EU Birds Directive reporting	x		x	
Birds in Europe reporting	x		x	
Common Bird Monitoring Scheme	x			
Colonial breeders West Africa		x		

Table 2.1. *Datasets used in this report for the assessment of population sizes and trends and whether they involve data on the breeding season or during January, Western Europe or Western Africa.*

2.4 European Union Birds Directive and Birds in Europe reporting

The Birds Directive requires member states of the European Union to report on the status of all bird species ("art. 12 reporting"). The most recent reporting period and the one used in this report is from 2008-2012. Member states are requested to estimate the recent sizes of the total breeding wild bird populations and in some cases the wintering populations for the period 2008-2012. For some species in some countries, this might be reflected by a total count of the present population (e.g. when only a few colonies for a species are present or extensive counts of waterbirds exist), in other cases this is an estimate based on expert judgement. Countries need also to indicate the proportional changes since 1980 and 2000. The collection of this data is coordinated by the European Topic Centre on Biodiversity and the results are summarized in the report 'State of nature in the EU, Results from reporting under the nature directives 2007-2012' by the European Environment Agency. In the remainder of this report this data source will be referred to as EEA 2015. The data for the EU member states are available on the internet (http://bd.eionet/activities/Reporting/Article12/summary).
The data of the Article 12 reporting is also used for a new Europe-wide Red List assessment ("Birds in Europe 3"), coordinated by BirdLife International (results of Birds in Europe 2 are published in BirdLife International 2004). Non-EU countries in Europe have been requested by Birdlife International to report the same data as EU members in this context. This data has also been used as part of the assessment of waterbirds for the sixth edition of the AEWA Conservation Status Report (Nagy *et al*. 2015, Wetlands International 2015). This data source is referred to as Birdlife International 2015.

2.5 Pan-European Common Bird Monitoring Scheme

The European Bird Census Council together with a number of partners runs the Pan-European Common Bird Monitoring Scheme (PECBMS). See www.ebcc.info for more information. Data from monitoring schemes for breeding birds are collated and combined for more than 20 countries. This delivers Pan-European trend indices. For approximately 175, mostly common, species yearly trend indices are available from 1980 onwards. Trend data based on common breeding bird monitoring are available for four species of waterbirds described in this report: Common Redshank, Eurasian Curlew, Whimbrel and Black-headed Gull.

2.6 Colony breeders in West Africa

Surveys have been organized and data about colonial breeding waterbirds in West Africa have been summarized by Veen *et al* (2007), Veen *et al* (2011) and Dodman (2014). The comprehensive monitoring of colonial breeding birds is at an early stage, but activities through the Alcyon Project, coordinated by BirdLife International and MAVA funded will expand this in the future.

3. Methods

3.1 Selection of species and populations

The identification of separate flyway populations in this report is the same as that used by the Ramsar Convention on Wetlands and AEWA , as presented in the website on population estimates (Wetlands International 2015). The populations of waterbird species included in this report are firstly those occurring in internationally important numbers (being 1% or more of their international population size) in the international Wadden Sea and using estuarine habitats to a large extent (n=40, see van Roomen et al. 2013). Secondly, waterbird populations are included which largely overlap with the Wadden Sea populations along the East Atlantic Flyway in the same estuarine sites (n=27). In addition to these populations, many other populations partly occur on the coastal East Atlantic Flyway as well, but their full range involves many inland sites, more offshore sites or they are more typical of other flyways outside the geographical scope of this report.

3.2 Allocation of the count data to the populations

Datasets with January counts

Based on the distribution limits of a population during January, count data from countries and sites were allocated to specific (flyway) populations. This allocation was done on the basis of literature (Scott & Rose 1996, Delany *et al*, 2009 and the Critical Sites Network tool, http://csntool.wingsoverwetlands.org/csn/default.html) and following criteria as detailed in van Roomen *et al*. (2011).

Datasets with breeding counts

As for datasets with January counts, datasets with breeding counts were allocated to populations based on the distribution limits of the populations during breeding. Allocation could not be done at site level as only national estimates of breeding populations were available.

3.3 Trend analyses

January data

Based on the likely (expert judgement) consistency of the counts over the years (have the same boundaries of the sites been used and have the methods been comparable) and the availability of counts over the years (has the site been counted on a regular basis), a selection of the available data from the Atlantic coast of Africa was made for trend calculations. Data from 127 sites/subsites was selected (Annex 3.1), covering the most important sites along the coast and as far as possible including sites from the different countries. For several sites in the region, data is only available for recent years and these sites could not be used for the current trend analyses. About 850 sites in coastal Europe were important for the trend calculations for the populations covered in this report (Nagy *et al*. 2014).

For trend calculations based on IWC data, the following steps were involved:

1. For species wintering in Europe the program TRIM (Pannekoek & van Strien 2005) was used to account for missing counts (imputing). The analyses were carried out for the period 1988-2012 as required for Conservation Status report 6 (Nagy *et al*. 2014, Nagy *et al*. 2015).
2. For species wintering in western Africa, or in Western Africa and Europe, the programme Uindex (Bell 1995) was used to account for missing counts (van Roomen *et al*. 2011). When possible, the imputing for Europe, Morocco to Sierra Leone, and Liberia to South Africa were performed in different strata. In principle the analyses were carried out for the period 1979-2014 but in several cases a later start year was chosen because too few counts were available in the earlier years.
3. Sites where estimates included excessive imputing (more than 70% imputing in the total estimate) were excluded before doing further trend calculations.
4. For the trend calculations, the program TrendSpotter (Soldaat et. al.2007) was used to assess trends. When less than ten annual estimates were available, a linear trend was calculated, otherwise a flexible trend was used.

Breeding data

There are two major data sources for deriving trends of breeding populations. Each differs in the way the actual trends are derived.

Data from EU Article 12/Birds in Europe 3 reporting

In total, the data for 17populations (15 species) was selected for trend analyses on the basis of breeding bird data derived from the Article 12/Bird in Europe 3 reporting. An overview of the species and the relevant countries in their respective flyways is given in Annex 3.2.

Trends for breeding birds based on EU Article 12/Birds in Europe 3 data were calculated using the following steps:

1. Tables per species were compiled, including the minimum and maximum population estimates and minimum and maximum changes in the long and short term, and their respective time periods (start and end year) in the countries that belong to the population.
2. The length of short and long term periods were calculated, together with the minimum and maximum annual change respectively (= annual growth rate).
3. Estimates for 1980 and 2000 were back-calculated with the respective minimum and maximum annual growth rates for a fixed 12 year period (short term) and 32 year period (long term).
4. The resulting population estimates were summed per country, and the overall annual growth rate for the flyway population was determined in the short and long term. This was done for a minimum, maximum and mean (geometric mean).
5. The final figures were used to make a graphical representation of the likely population changes. See chapter 4 for examples. In the graphs, the geometric mean of the current (2012) population estimate is set at an index value of 100. Min and Max are represented as small boxes and the line connects the geometric means (black dots).

Data from PECBMS

The computation of the trends was executed with the software package TRIM, which computes national indices and trends. These national species indices and trends with standard errors were combined into regional and Pan-European trends, also taking into account the respective population sizes (see http://www.ebcc.info/index.php?ID=559). The final results are species specific trends for the total European breeding population. In most cases the index for the year 1980 was set to 100. These trends are freely available on the internet (http://www.ebcc.info/index.php?ID=557).

The trend classification

The trend classification (INC=increase, DEC= decline, STA/FLU= stable or fluctuating) are based on the IUCN trend classification criteria, also adopted by BirdLife International and AEWA. This takes into account generation length of the species involved and has its rationale in extinction risk. According to the IUCN criteria, trends are considered over periods of (usually) ten years or three generation lengths whichever is longer.

3.4 Estimation of population sizes

January data

In principle, an estimate of waterbird population sizes for countries in Africa was made for the period 2010-2014. All sites from the African Atlantic coast were used as a basis. Clustering of some sites was sometimes nec-

PHOTO Peter de Boer

essary for this, as well as excluding others, to avoid having the same sites under different names in the dataset, or having sites with large overlapping parts as two different sites in the dataset, which would cause overestimation. For the remaining sites in western Africa (n=701) the average count total per species for 2010-2014 was calculated and these averages were summed per country. For certain sites and countries, older data, literature or expert judgement were used because the data collected in 2010-2014 represented an underestimate of the total numbers present. See Annex 2.1 for further details. For countries in Europe, the wintering data as reported to the IWC and the Birds Directive/Birds in Europe reporting was used for 2008-2012. Averages over this period were used, in cases where ranges were given, medians were used.

Based on the allocation of countries to populations, the country January totals were summed to produce flyway population totals. The final population size often involved rounding of the figures and sometimes accounting for underestimates.

Breeding data

For Europe, the breeding data as reported for the Birds Directive/Birds in Europe programme was used, mainly giving averages for 2008-2012. Based on the allocation of countries to populations, country breeding totals were summed to reach total population sizes. Breeding pairs were converted to numbers of individuals by multiplying by three as recommended by Meininger *et al.* 1995. More details can be found in the specific population assessments in Wetlands International (2015). For a selection of colonial breeders in West Africa, the estimates were based on Dodman (2014) and Veen *et al.* (2007, 2011)

3.5 Registration of threats and conservation measures

In the Flyway Monitoring Framework (van Roomen *et al.* 2013) the approaches of the International Waterbird Census (Wetlands International) and Important Bird and Biodiversity Areas monitoring (BirdLife International) were integrated. While efforts were already made in the 2014 count to carry out the new combined methodology , it has become clear that the field teams were much more focussed on counting bird numbers than on scoring threats and responses. As a result, the information gathered on threats and conservation measures is at present still incomplete. To remedy the gap in information gathering in the future, a strategy and manual for waterbird and site monitoring along the Atlantic coast of Africa has been developed (van Roomen *et al.* 2014). Special attention will paid in the preparation of the next integral count to ensuring data collection on the whole range of indicators needed for good monitoring for nature conservation. More guidance and training is needed, especially in African countries without BirdLife representation, but also in European countries, to properly score threats and conservation measures following IBA methodology.

In the absence of a full assessment of threats and conservation measures, an ad hoc assessment is presented in this report. For this the scores collected in the field were complemented with data from other sources. This assessment should be seen as preliminary, and the starting point for more work on this in future.

A selection of wetlands (IBA and not IBA, n= 120) was made from along the flyway from different regions: Northwest Europe (Denmark-France) (n=40), Mediterranean (Spain-Morocco)(n=15), West Africa (Mauritania-Sierra Leone)(n=30), Gulf of Guinea (Liberia-Congo) (n=25) and Southern Africa (Angola-South Africa) (n=10). One conservation measure (legal protection status) and three threat categories were scored (habitat loss, hunting and recreation pressure). The level of protection and the presence of these threat types were assessed per wetland site. No distinction was made between factors that have been affecting bird populations at present (pressure) or those that are expected to do so in the near future (threats). Besides submitted IBA-forms, several reports were consulted (including Agblonon & Aliou 2014, Bruinzeel 2012, Diagana & Dodman 2006). Legal protection status was scored as protected (more than 75% of the site is officially protected), moderately protected (10-75% of the site is protected) and unprotected (less than 10% of the site is protected). Threats were scored as small (affecting fewer than 10% of the present bird populations), moderate (affecting 10-50%) or severe (effecting more than 50% of birds present).

4. Species accounts

The species accounts in this section follow the same structure. In the introduction, a general description of the population is given. It starts with a description of the flyway population(s) within the East Atlantic Flyway, for example, which flyways have been identified, which sub-species use them and (roughly) what are the boundaries of the flyway. This information comes from the Critical Sites Network Tool (http://csntool.wingsoverwetlands.org/csn/default.html), Scott & Rose (1996) and Delany et al. (2009). The general ecology of the species and its habitats are presented in the next part. Where does it occur in which seasons, is it solitary or gregarious, which food sources does it prefer and in which season? This information is largely based on the species information given in the BirdLife Data Zone (http://www.birdlife.org/datazone/species). In many cases the source reference for this information is the Handbook of the Birds of the World (del Hoyo et al. 1992, del Hoyo et al. 1996).

In the population trend section, a number of figures of estimated population trend indices are usually presented. Depending on the available and chosen trend information, indices are either shown for trends of breeding birds, by means of a line connecting trend indices for certain years, or a graph is shown with data from wintering birds. In the latter case, data points per year are given and lines describe the trend and confidence intervals. For a number of species, different trends are shown for the European and African part of the flyway (in cases where the species winters in both regions). In the final section on population size, an estimate is given of the total numbers of the population present in the flyway. For most species, a map is also shown with the estimated wintering numbers per country for the population in the East Atlantic Flyway based on numbers in 2010-2014.

PHOTO Dave Montreuil

Geographical terms used refer to Western Europe as Norway to Spain, and the western seaboard of Africa as Morocco to South Africa. Northwest Europe as Norway-Ireland-France, West Mediterranean as Spain to Morocco, West Africa as Mauritania to Sierra Leone and Western Africa as Mauritania to Cameroon.

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.1 GREAT WHITE PELICAN

Pelecanus onocrotalus
Pélican blanc

This large fish-eating colonial breeding bird occurs in Western Africa as a resident, partly nomadic species. The local breeding population in Western Africa inhabits coastal floodplain areas and inland shallow lakes. The population occurs in the coastal areas from Mauritania to Sierra Leone with smaller numbers from Mali to Chad and from Liberia to Nigeria; the eastern and southern limits of the population are not well known. The migratory southeast European breeding population does not reach these areas but migrates to the Middle East and Eastern Africa. The South African population not only occurs along the coast, for instance in Namibia and Angola but also inland. The preferred breeding sites are swamps and sandbanks that are secure from disturbance by humans and natural predators. The species depends entirely on fish.

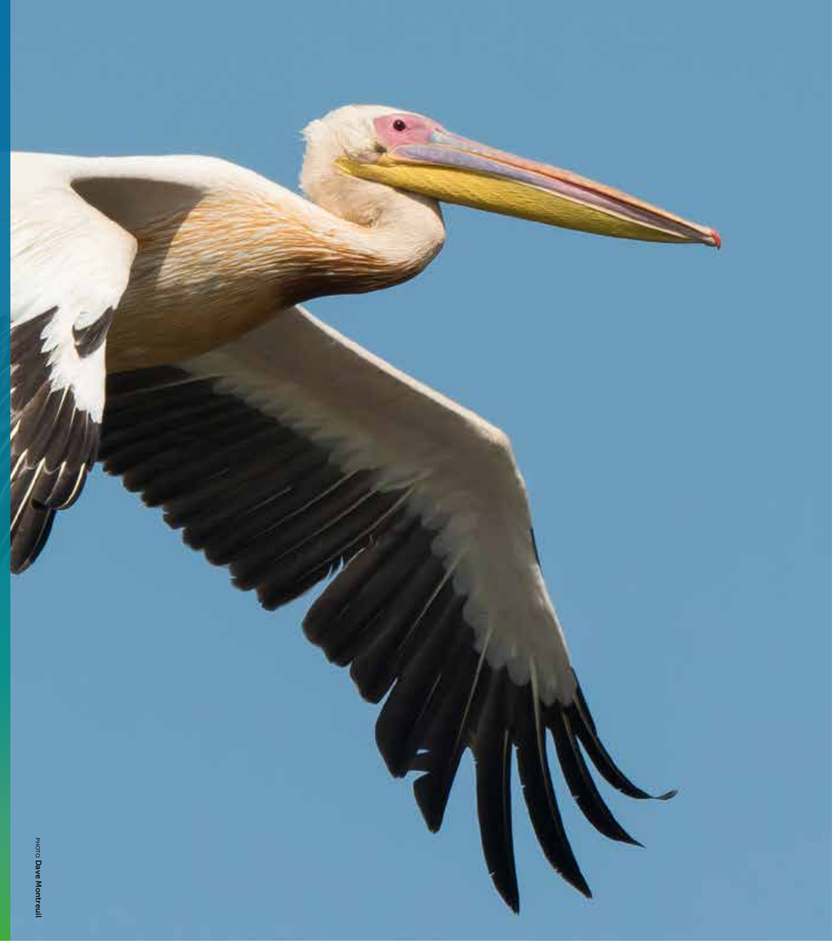


PHOTO Dave Montreuil

Population trend

The species has increased significantly since the 1960s and was presumed stable in the 2000s based on numbers of breeding birds (Dodman 2014). The IWC data show a continuing increase from 1989 onwards (6% per year) but with a large scatter (Figure 4.1).

Population size

A population size of 60,000 birds is estimated for 2014, based on the number of breeding pairs (Dodman 2014). There were approximately 10,000 breeding pairs in the Senegal Delta, 4,000 in the Banc d'Arguin and a rough estimation of 6,000 pairs elsewhere. This 20,000 pairs relates to 60,000 birds with young and immatures. This number relates rather well to the number counted during IWC surveys in January 2014 and before. Between Mauritania and Sierra Leone and including Mali almost 50,000 birds were estimated to be present (Annex 4.1). The stronghold for this population was well covered, with comprehensive coverage in Mauritania (16,000 counted) and Senegal (29,000 counted) in January 2014 (Figure 4.2).

PHOTO Dave Montreuil

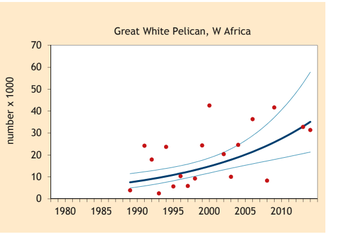


Figure 4.1. *Population trend of Great White Pelican in West Africa based on January IWC counts.*

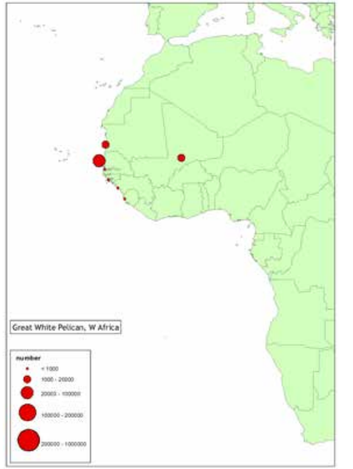


Figure 4.2. *Numbers and distribution of the Western African population of Great White Pelican in January 2010-2014. Red dots are the estimated totals per country.*

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.2 GREAT CORMORANT

Phalacrocorax carbo
Grand Cormoran

The Great Cormorant is found in many parts of Eurasia and Africa. For estuarine sites in the East Atlantic Flyway two taxon are of importance. The *sinensis* sub-species is the common species of continental Europe, it breeds in Northern and Western Europe and winters in Western and Southwest-Mediterranean Europe. The *lucidus* population of West Africa occurs from Mauritania to Sierra Leone. The *lucidus* population of Southern Africa is not considered here. The *carbo* population of NW Europe and *maroccanus* from Morocco are confined to rocky coasts. The species occurs in freshwater and marine habitats, is gregarious year-round (in both colonies and feeding flocks) and is a piscivore specialist preying on benthic fish species in shallow coastal waters or freshwater lakes. Breeding sites vary from trees to bare ground in (mixed) colonies. It is capable of performing foraging flights up to 25 km or more from a nesting colony. The *sinensis* sub-species occurs in the Wadden Sea.

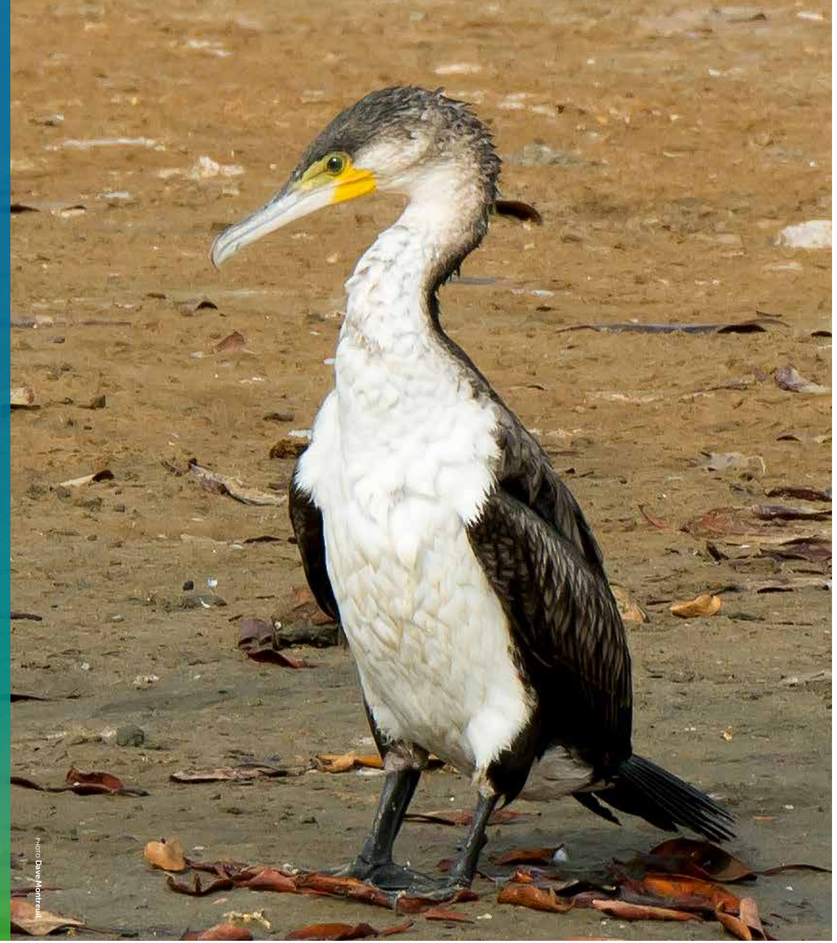


Photo Dave Montreuil

Population trend

Based on the breeding numbers in Europe (EEA 2015), the *sinensis* sub-species of Great Cormorant has shown a large increase since the 1980s, at a rate of 7% per year. after the trend seems to have stabilized since 2003 and showed an increase of 1% per year (Figure 4.3). The West Africa coastal population of the African breeding sub-species *lucidus* shows a long term stable trend based on the IWC January counts, but a lot of yearly variation might mask any underlying trends. The trend since 2003 is upwards but the large variation means that this estimated trend should be treated with caution (Figure 4.3).

Population size

The population size of *sinensis* Great Cormorants is based on a comprehensive breeding colony survey in 2012/13 (Bregnballe *et al.* 2014). The estimated number of birds of the North and Central European population is 615,000, a considerable increase from the 400,000 in the 1990s. For the West Africa *lucidus* population of Great Cormorant, data from the IWC was used to estimate the population size (Annex 4.1). More than 30,000 birds were counted from Mauritania to Sierra Leone during January 2010-2014 and it was estimated that 40,000 birds must have been present considering that this species also occurs on parts of the coast that were not counted. Almost 25,000 birds were counted in Mauritania and almost 7,000 in Senegal. Further South the species is considerably more scarce, with 80 counted in The Gambia and 570 in Guinea-Bissau, but none in Guinea or Sierra Leone (Figure 4.4).

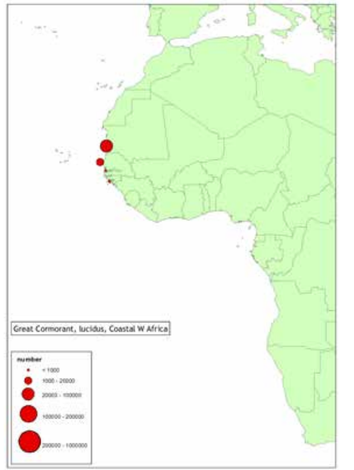


Figure 4.4. *Numbers and distribution of Great Cormorant, Phalacracorax carbo lucidus, West African population, in January 2010-2014. Red dots are the estimated totals per country.*

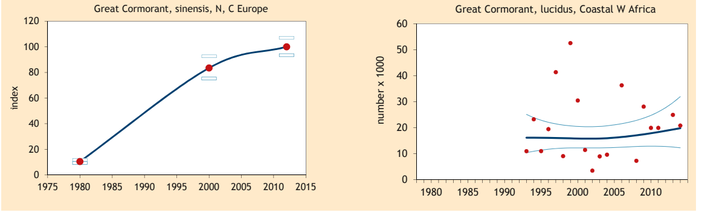


Figure 4.3. *Population trends of the Great Cormorant sinensis population of North and Central Europe based on breeding bird assessments (left) and of the lucidus population of West Africa based on January IWC counts (right).*

Photo Dave Montreuil

Photo Dave Montreuil

4.3 GREY HERON

Ardea cinerea
Héron cendré

The Grey Heron is a widespread species in Europe and Africa. The nominate sub-species *cinerea* occurs in three slightly overlapping flyways. The eastern Atlantic flyway part of western, northern Europe and northern Africa, a sub-Saharan flyway part and an East-European and Northeast-African part. In West Africa, the sub-species *Ardea cinerea monicae* breeds in a relatively small area at the Banc d'Arguin, Mauritania. This population is resident (Isenmann 2006). As Grey Herons of the nominate sub-species *A. c. cinerea* also winter at the Banc d' Arguin and field identification of *monicae* is not very straightforward, usually no separation of the two sub-species has been made during January counts. Because of the wide distribution of the other forms beyond the East Atlantic Flyway, we focus only on the *monicae* sub-species in this report.

PHOTO Dave Montreuil

Population trend

The population trend of the sub-species *monicae* is unknown.

Population size

During January 2014 an attempt was made to separate *monicae* from the nominate sub-species during the count on the Banc d'Arguin. Field identification was usually only possible for adult birds. Of 414 Grey Herons checked, 73% were adult. Among 305 of these adults 48% were *monicae*. If we assume that this sample is representative for the Banc d'Arguin, and assume a similar sub-species ratio in juvenile birds, we can conclude that the total of 2,600 Grey Herons consisted of about equal parts (ca. 1,300 each) of *monicae* and *cinerea*.

PHOTO Hans Schiekeman

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.4 WESTERN REEF-EGRET

Egretta gularis
Aigrette à gorge blanche

The Western Reef-egret, population *gularis* is confined to Western Africa, where it occurs along the whole coastline and at some inland sites from Morocco to Gabon. The preferred foraging sites are small pools in mudflat areas, sandy or rocky shores and reefs. It nests on the ground, in mangrove trees or in reedbeds either solitarily or in small colonies. The food is variable: fish, crustaceans, earthworms and other invertebrates.

PHOTO Dave Montreuil

Population trend

Dodman (2014) concluded that the population trend is stable on the basis of the distribution of breeding colonies and availability of suitable habitat. Within the IWC, the Western Reef-egret shows an increase in numbers since 1997, of 4% per year (Figure 4.5). The annual variation between the counts is, however, large.

Population size

The population size is estimated to be between 10,000 and 50,000 birds, based on non-breeding numbers (Dodman 2014). During January 2010-2014 almost 16,000 Western Reef-egrets were counted (Annex 4.1). The species is widespread along the coast with 2,000 to 4,000 per country from Mauritania to Sierra Leone and some hundreds per country from Liberia to Cameroon (Figure 4.6).

PHOTO Dave Montreuil

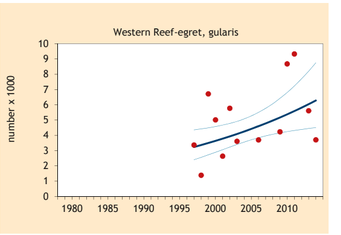


Figure 4.5. *Population trend of Western Reef-egret in Western Africa based on January IWC counts.*

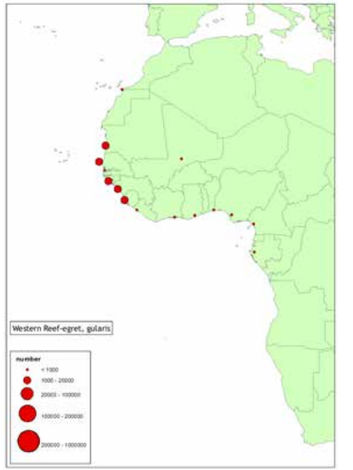


Figure 4.6. *Numbers and distribution of Western Reef-egret in January 2010-2014. Red dots are the estimated totals per country.*

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.5 EURASIAN SPOONBILL

Platalea leucorodia
Spatule blanche

The Eurasian Spoonbill has two populations in the East Atlantic flyway, (1) a population of the nominate sub-species *leucorodia* breeding in Western and South-western Europe and sub-specieswintering in Western Africa and increasingly in the western Mediterranean, (2) a resident population of the sub-species *balsaci*, breeding on the Banc d'Arguin in Mauritania. The species is gregarious all year round and breeds either in colonies on the ground or in emergent vegetation (reedbeds) or in trees/ shrubs. Foraging occurs mainly in shallow fresh and saltwater, usually with a mud, clay or sandy substrate, floodplains, lakes, lagoons and mudflats. Preferred food items are generally small and highly variable: insects, molluscs, crustaceans, fish and worms. The sub-species *leucorodia* uses the Wadden Sea as a breeding, spring and autumn staging site.

PHOTO: Arnold Meijer / Blue Robin

Population trend

There are two contrasting trends, each based on breeding numbers: the *leucorodia* sub-species of Western Europe has shown a very large increase of 4% per year since 1980 based on EU national breeding bird estimates (EEA 2015) (Figure 4.7), see also Overdijk *et al*. 2013. The local breeding population in West Africa (sub-species *balsacii*), however shows a decline which seemed to start mainly after 1995 (based on Isenmann 2006, Overdijk & El Hacen 2013).

There is an apparent difference in trend between birds of the *leucorodia* population wintering in West Europe and in West Africa respectively (IWC January counts, Figure 4.8). In Europe the wintering numbers show a large increase (9% per year) and in Western Africa the wintering number is more or less stable. To account for the number of *balsacii* in the total of counted Eurasian Spoonbills in Western Africa, the presumed population size, based on the breeding population development (Figure 4.7 right panel) has been subtracted from the total number.

Population size

The population size of *leucorodia* is estimated to be 14,200 - 18,900 birds based on breeding numbers in Overdijk *et al*. 2013 (Wetlands International 2015). During January 2014 almost 10,000 were counted in Mauritania (excluding *balsacii*) and more than 2,500 in Senegal, none further south (Annex 4.1). Together with estimates based on the IWC and EEA (2015) for Morocco, France, Spain and Portugal (Figure 4.9, Annex 4.1) altogether more than 16,000 birds are estimated to winter in these countries which fits the breeding estimate rather well. The population of *balcacii* is estimated to be 2,250 birds based on breeding numbers (Overdijk & EL Hacen 2013).

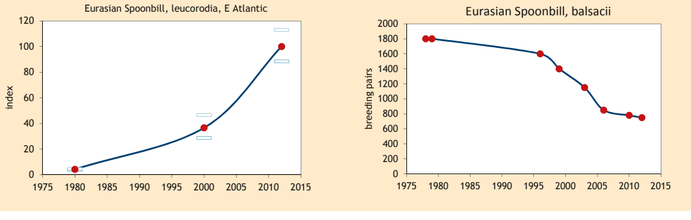


Figure 4.7. *Population trends of Eurasian Spoonbill leucorodia population of the East Atlantic Flyway based on breeding bird assessments (left panel) and the balsacii breeding population of the Banc d'Arguin (right panel).*

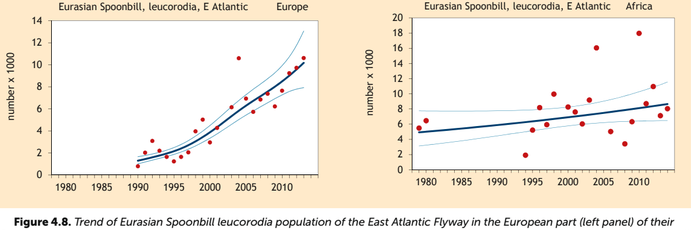


Figure 4.8. *Trend of Eurasian Spoonbill leucorodia population of the East Atlantic Flyway in the European part (left panel) of their January range and in the West African part (right panel) of their January range based on IWC counts. The presumed number of balsacii is excluded from the right panel.*

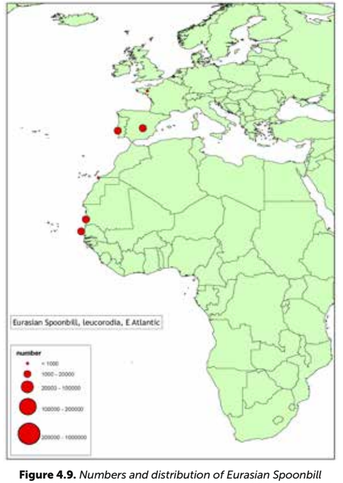


Figure 4.9. *Numbers and distribution of Eurasian Spoonbill leucorodia East Atlantic population in January 2010-2014. Red dots are the estimated totals per country.*

4.6 GREATER FLAMINGO

Phoenicopterus ruber
Flamant rose

Greater Flamingos have an extensive range in southern Europe, Africa and Asia. In the coastal East Atlantic Flyway one population is present year-round, the local breeding population of West Africa occurring from Mauritania to Sierra Leone. Overlap exists during the non-breeding season with the population of the west Mediterranean (Iberian peninsula, Italy, France and parts of North Africa). Another population in Southern Africa makes partial use of coastal sites. The species shows nomadic behaviour depending on the availability of suitable breeding and foraging areas. Breeding in West Africa occurs in large colonies. Foraging occurs in shallow saline or alkaline water bodies such as lagoons, saltpans and lakes. It feeds on crustaceans and other small food items, especially *Artemia* shrimps.

PHOTO Arnold Meijer / Blue Robin

Population trend

Assessment of the trend in this population is difficult because of the large yearly fluctuations in breeding success and the mixing with the Mediterranean population in winter. Fluctuations are expected, based on breeding numbers (Dodman 2014). Over the long run, since 1990, numbers of Greater Flamingo wintering in West Africa do not show a conclusive trend (Figure 4.10). At best a more or less stable development seems to take place, without signs of real increases or decreases.

Population size

Based on numbers of breeding birds, a population size of 45,000 - 95,000 is given (Dodman 2014). There are regular large colonies on the Banc d'Arguin, Mauritania (16,600 pairs in 2005, 11,500 pairs in 2007) and in Aftout, Mauritania (possible breeding of thousands of pairs in 2005 based on the presence of 21,000 adults, 1,400 pairs in 2008). In January 2010-2014 almost 100,000 Greater Flamingos were counted from Mauritania to Sierra Leone (Annex 4.1, Figure 4.11). Greater Flamingos are also present in Morocco, but these are expected to originate mostly from the Mediterranean population. In Mauritania a smaller proportion of the population probably originates from the Mediterranean as well.

PHOTO Arnold Meijer / Blue Robin

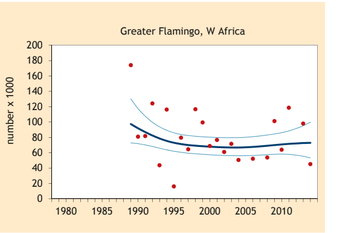


Figure 4.10. *Trend of Greater Flamingo in West Africa based on January IWC counts.*

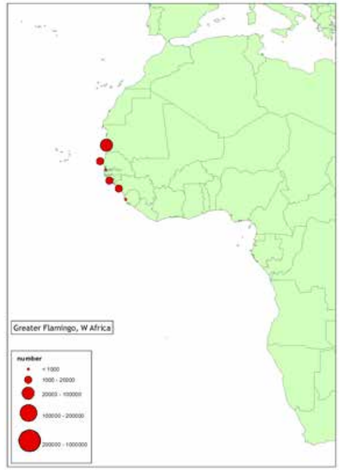


Figure 4.11. *Numbers and distribution of Greater Flamingo, from mainly West Africa population, in January 2010-2014. Red dots are the estimated totals per country. Data from the Southern African population are not shown.*

PHOTO Dave Montreuil

PHOTO Arnold Meijer / Blue Robin

4.7 LESSER FLAMINGO

Phoenicopterus minor
Flamant nain

The Lesser Flamingo has a patchy distribution throughout Africa and western Asia. In West Africa the species occurs in a few breeding places but large year-to-year variation can occur due to variable habitat conditions. In the non-breeding season it can occur along the whole coastal area from Mauritania to Guinea. Further south, there is a distinct flyway population ranging from the coasts of Angola downwards to South Africa and also extending inland. The species is highly gregarious, often occurring together with the Greater Flamingo. Nesting occurs on large saline or alkaline lakes, lagoons and salt pans, and the same habitats are visited outside the breeding season. The species is a specialist and forages mainly on blue-green algae and diatoms in saline or alkaline waters.

photo Marc Guyt/Aganni

Population trend

Figures on which to base the trend of the Lesser Flamingo in West Africa are sparse. However, using the IWC data the short-term trend shows a significant increase (Figure 4.12). Due to the small number of data points this interpretation should be treated with caution. The frequency of breeding in the region is, however, also increasing (Moreno-Opo *et al.* 2012). Because of uncertainties in the development of the breeding population, Dodman (2014) treated the population as being stable.

Population size

The population size is estimated to be 15,000 to 25,000 birds, based on Trolliet & Fouquet (2002) and Dodman (2014). The results, based on the IWC, seem to overestimate the population size because of regular exchange of birds between sites, which are not always counted simultaneously. Regional annual totals of simultaneously counted sites ranged from 11,000 to 25,000 birds in January 2010 to 2014. Averaging totals for regularly counted sites give an average of more than 23,000 birds (Annex 4.1 and Figure, 4.13).

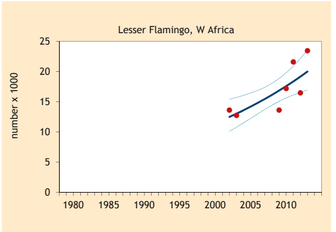


Figure 4.12. *Trend of Lesser Flamingo in West Africa based on January IWC counts.*

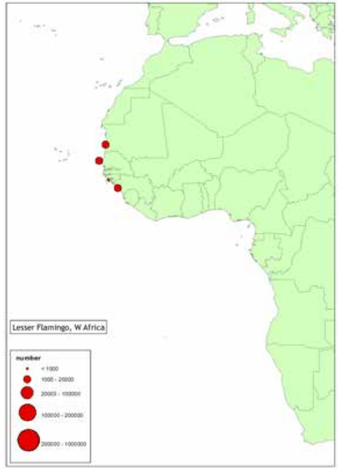


Figure 4.13. *Numbers and distribution of Lesser Flamingo, West Africa population in January 2010-2014. Red dots are the estimated totals per country.*

photo Jacqueline van der Kaat/Aganni

photo Marc Guyt/Aganni

4.8 BARNACLE GOOSE

Branta leucopsi
Bernache nonnette

For the Barnacle Goose three flyway populations can be distinguished, only one of which is relevant to the Wadden Sea. Barnacle geese breeding in northern Russia and the eastern Baltic migrate in a south-western direction towards Western Europe via the Baltic coast and southern Sweden and winter mainly in north-west Europe. Breeding occurs increasingly in the Baltic region, southern Sweden and western European countries such as The Netherlands, of which the most southern populations are resident and these birds mix in winter with the migratory population from the far north. Breeding occurs in small to medium sized colonies (up to a few hundred). The northern population breeds in tundra on rocky outcrops. The southern population breeds on islands with sparse vegetation. Migration takes place in a narrow pathway with very localized, traditional staging areas mainly along the coast, allowing foraging in saltmarshes, but an increasing number of birds use agricultural fields and forage on the grasses. This is also the preferred wintering habitat. The birds are highly gregarious and flocks of many thousands are not uncommon. They use communal roosting sites on large lakes.

PHOTO Koos Dansen

Population trend

The Barnacle Goose population is clearly increasing (Figure 4.14, Nagy *et al.* 2014). Both the long term (since 1988) and the short term trend (since 2003) in wintering numbers, show an annual increase of 7%.

Population size

The population size is estimated to be around 1 million birds (Wetlands International 2015), based on the assessment for 2007/08 (Fox *et al.* 2010) and the annual growth rate. In winter, this population is mainly in The Netherlands and Germany with smaller numbers in Denmark and Sweden (Fig. 4.15).

PHOTO Arnold Meijer / Blue Robin

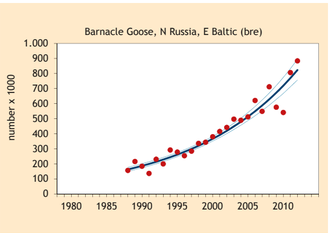


Figure 4.14. *Population trend of the North Russia, Eastern Baltic and Dutch population of Barnacle Goose in NW Europe based on January counts.*

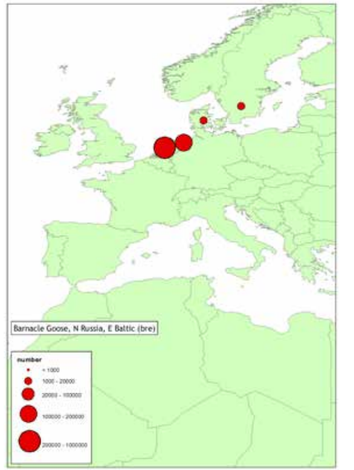


Figure 4.15. *Numbers and distribution of the Russian and Baltic population of Barnacle Goose in January 2010-2014. Red dots are the estimated totals per country.*

PHOTO Arnold Meijer / Blue Robin

PHOTO Arnold Meijer / Blue Robin

4.9 BRENT GOOSE

Branta bernicla
Bernache cravant

This Holarctic species occurs in three flyway populations in Europe, *hrota* breeding in Greenland and wintering in Ireland, *hrota* breeding on Svalbard and wintering in Denmark and Britain, and the nominate *bernicla*, breeding in northern Russia on the Taymyr peninsula and wintering in Western Europe. *Bernicla* is especially important in the Wadden Sea but *hrota* from Svalbard also uses the Wadden Sea to a lesser extent. The *bernicla* population breeds mainly on lowland tundra near the coast, or on small islets in small colonies. Migration starts already in mid-August after the moult, and birds fly along the coasts of the Baltic, reaching the wintering areas in the Wadden Sea, The UK and France from September onwards. Depending on the winter situation large numbers migrate south as far as southern Atlantic France. During migration and winter, birds congregate in large flocks and traditionally feed on algae like seaweed (*Ulva sp*), seagrasses (*Zostera*) and saltmarsh plants. A substantial proportion of this population has also recently started feeding on agricultural grasslands and arable land. Numbers in the Wadden Sea are highest in spring when a large population is fattening up for migration to the breeding grounds. At that time, almost the whole East Atlantic Flyway population concentrates in the Wadden Sea.

PHOTO Arnold Meijer / Blue Robin

Population trend

The Brent Goose *bernicla* population has shown a small but significant decrease (1% per year, data from Ebbinge *et al*. 2013) in wintering numbers since 2003 although there is considerable annual variation related to fluctuating breeding success (Ebbinge *et al*. 2013)(Figure 4.16). There was no significant trend over the period since 1988. The *hrota* population from Svalbard continued to increase after 2003 (Wetlands International 2015) but numbers have been decreasing since 2011/12 (Clausen *et al*. 2014).

Population size

The population of *bernicla* is estimated to be 200,000 to 250,000 birds (Wetlands International 2015, Ebbinge *et al*. 2013). In January, most birds are in France, The UK and The Netherlands (Figure 4.17). The population of *hrota* from Svalbard is very small with a current estimation of 7,300 birds (Wetlands International 2015, WWT 2013).

PHOTO Arnold Meijer / Blue Robin

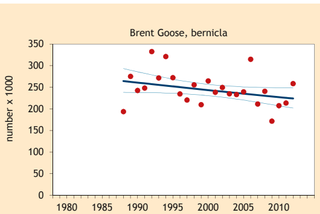


Figure 4.16. *Population trend of the North Russia population of Brent Goose in NW Europe in January. Data from Ebbinge et al. (2013).*

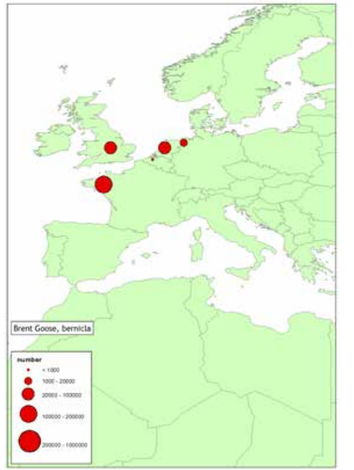


Figure 4.17. *Numbers and distribution of the bernicla population of Brent Goose in January 2010-2014. Red dots are the estimated totals per country.*

PHOTO Arnold Meijer / Blue Robin

PHOTO Koos Dansen

4.10 COMMON SHELDUCK

Tadorna tadorna
Tadorne de Belon

The Common Shelduck has two distinct populations in Europe: in North-west Europe and in the (East)-Mediterranean. The north-western population is the most relevant to the East Atlantic Flyway. The species breeds in countries around the North-Sea and the Baltic, Norway and Iceland and in low numbers south to France and Spain. Large populations breed in The UK, The Netherlands, Germany, Denmark and Sweden. After the breeding season in which the species is mostly solitary it congregates in huge flocks to moult at specific sites. Breeding occurs in coastal dune areas where it uses burrows, but it also occurs inland along rivers and lakes. Common Shelducks are partially migratory and wintering occurs in the same range as breeding. The moulting and wintering habit is saline lagoons, estuaries and mudflats where it feeds mainly on small molluscs and other aquatic invertebrates, such as crustaceans (*Corophium volutator*). The Wadden Sea is extremely important as a moulting and breeding site. During the moulting period, 80% of the EAF population can be found in the international Wadden Sea.

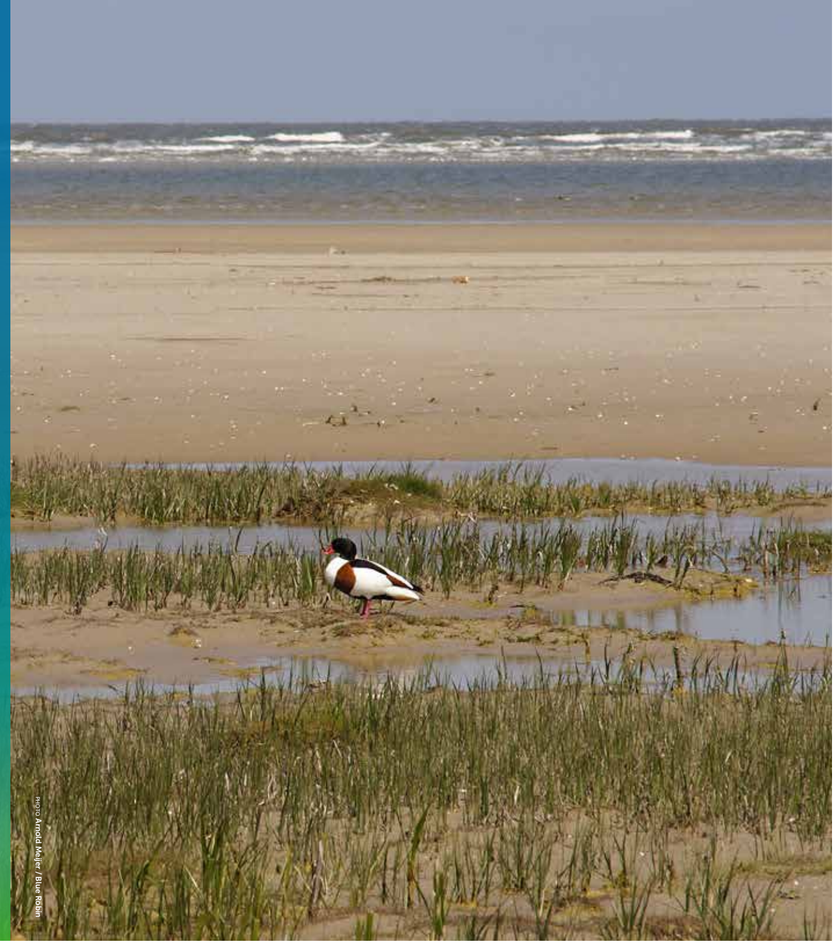


photo Arnold Meijer / Blue Robin

Population trend

The population of Common Shelduck in Western Europe has been stable since 1988 and also since 2003, based on the IWC (Nagy *et al*. 2014, Figure 4.18). This contradicts the results from national breeding bird surveys, where an increase is apparent (Wetlands International 2015 based on EEA 2015 and BirdLife 2015). However, the IWC gives a more consistent annual estimation of population development.

Population size

The population size is estimated to be 250,000 birds, based on the results of the IWC (Wetlands International 2015). The estimation is smaller when adding up national breeding population sizes (125,000 - 163,000) or bigger when adding up national wintering population sizes (300,000 - 310,000) based on EEA 2015 and BirdLife 2015 (Wetlands International 2015). In January, this North-west European population of Common Shelduck is found from Denmark to France and in The UK and Ireland (Figure 4.19).

photo Koos Dansen

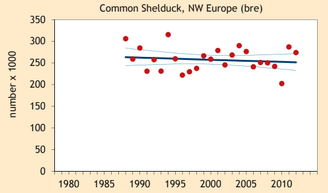


Figure 4.18. *Population trend of the Northwest European population of Common Shelduck based on January IWC counts.*

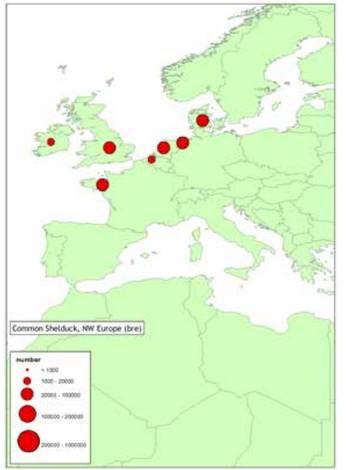


Figure 4.19. *Numbers and distribution of the North-west European population of Common Shelduck in January 2010-2014. Red dots are the estimated totals per country.*

photo Koos Dansen

photo Koos Dansen

4.11 EURASIAN WIGEON

Anas penelope
Canard siffleur

The Eurasian Wigeon occurs in two sub-populations in Europe: a north-west European wintering population and a Black Sea-Mediterranean wintering group. The breeding origin of these two groups overlap, however, over large areas of northern Russia. For the East Atlantic Flyway, only the north-west European wintering population is considered here. This population breeds mainly in the boreal zone of Fennoscandia, with large numbers in Finland, Sweden and Russia, and much lower numbers in countries further south around the North Sea. Wintering mainly occurs in western Europe. Breeding habitat consists of freshwater wetlands such as marshes, small lakes, mires in sparsely forested areas, avoiding tundra. Wintering occurs in marine habitats such as salt-marshes, saline lagoons and estuaries and also on agricultural grasslands. The species is largely herbivorous, but in the breeding season relies also on invertebrates The wintering population mainly feeds on grasses. The species uses the Wadden Sea to a large extent.

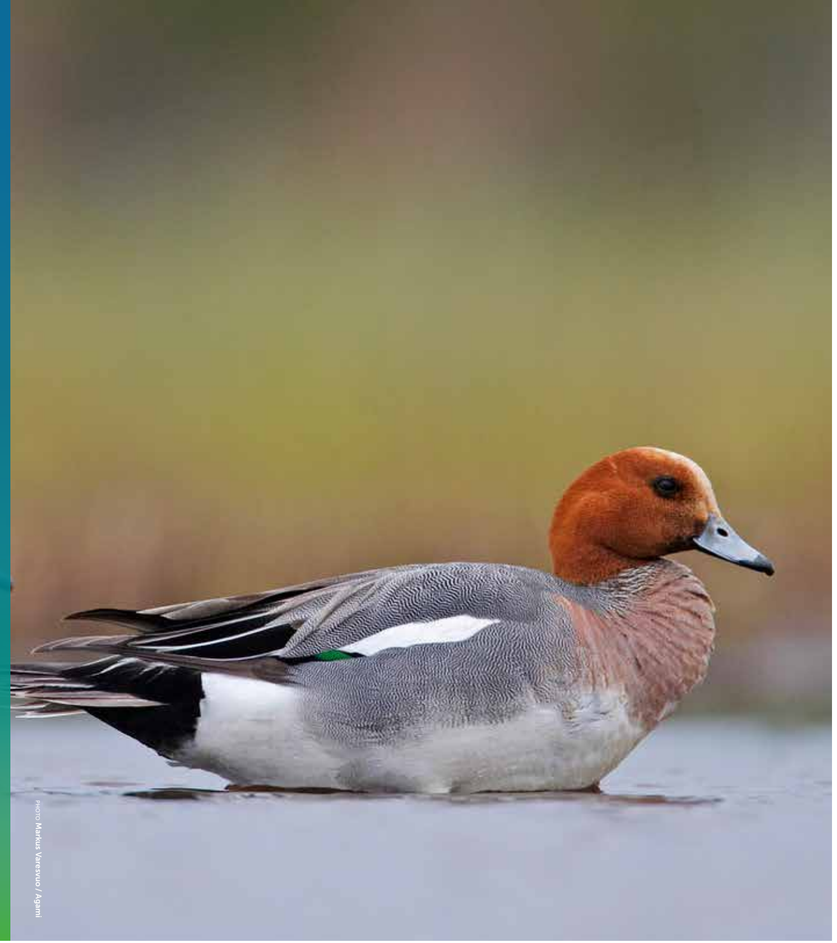


PHOTO Markku Vainiranta / Agami

Population trend

Based on the IWC, the Eurasian Wigeon showed an annual increase in the period 1988-2003 of 1%. However, the short-term trend is negative and since 2003 the population has declined at a rate of 2% per year (Figure 4.20) (Nagy *et al*. 2014).

Population size

A population size of 1.3-1.5 million is estimated, based on the results of the IWC. Adding up the results of the national wintering population sizes based on EEA (2015) and BirdLife (2015) gives an estimate of 1.7-2 million birds but with that method there is a risk of over-estimation (Wetlands International 2015). The northwest European population of Eurasian Wigeon winters from Denmark to France and in The UK and Ireland (Figure 4.21).

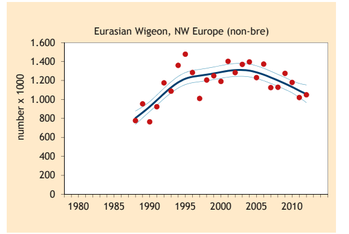


Figure 4.20. *Population trend of the non-breeding population of the Eurasian Wigeon in Northwest Europe based on January IWC counts.*

PHOTO Arnold Meijer / Blue Robin

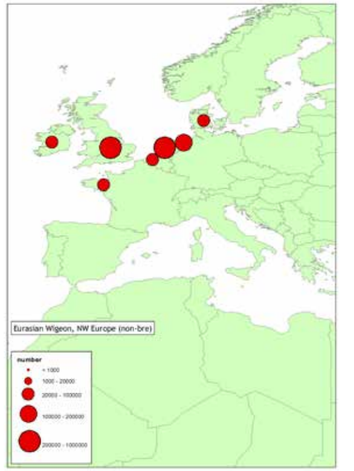


Figure 4.21. *Numbers and distribution of the North-west European population of Eurasian Wigeon in January 2010-2014. Red dots are the estimated totals per country.*

PHOTO Arnold Meijer / Blue Robin

PHOTO Arnold Meijer / Blue Robin

4.12 NORTHERN PINTAIL

Anas acuta
Canard pilet

This Holarctic species is highly migratory. There seems to be considerable overlap in the breeding areas of sub-populations wintering in Europe and West Africa. The northwest European wintering population is most important for the Wadden Sea, whilst other Northern Pintail populations winter In the Mediterranean and the Sahel zone of Western Africa. The species breeds in shallow freshwater marshes, lakes and rivers in open habitats (e.g. tundra) with a dense (semi)aquatic vegetation layer. Large numbers mainly breed in the Boreal zones of Fenno-Scandinavia, with the highest numbers originating from Finland and probably Russia. After the breeding season, large numbers congregate to moult, some in Western Europe. After the moult, the species migrates further south, for the northwest European population as far as southern France. Wintering and moulting habitats consist of coastal lagoons, saline marshes, estuaries and tidal flats but also freshwater wetlands like inland lakes. The species is omnivorous with seeds, algae, grasses, and benthic invertebrates in their diet.

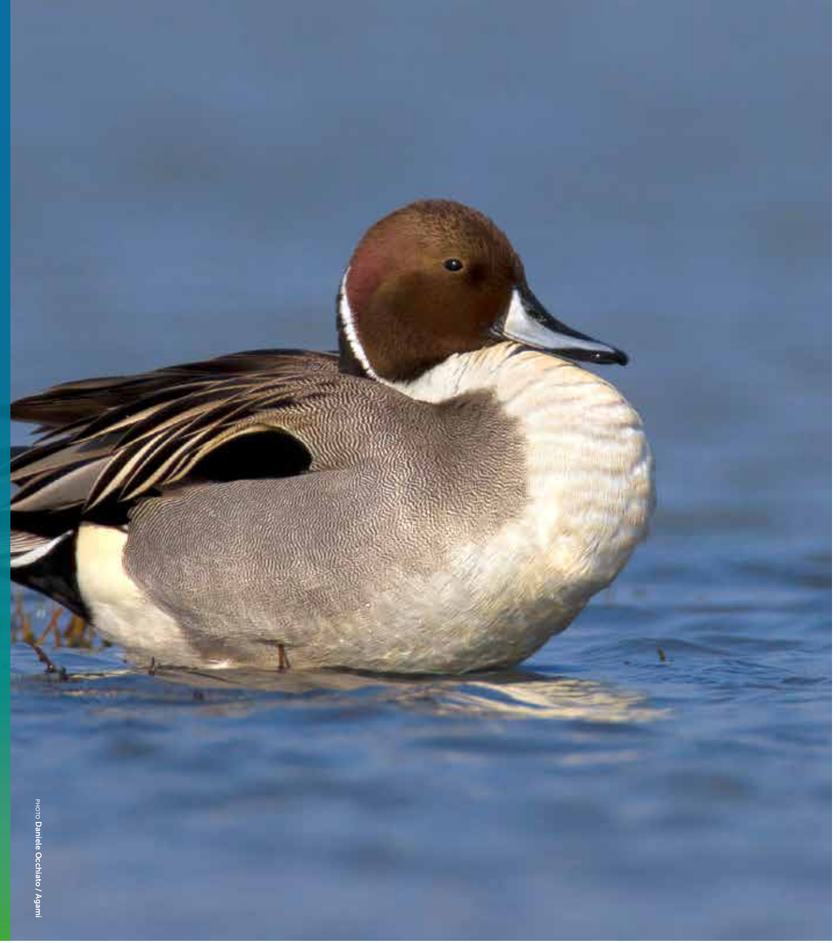


PHOTO Daniele Occhiato / Agami

Population trend

Based on the IWC, the Northern Pintail population wintering in Northwest Europe showed a fluctuating trend with an increase since 1988 and a decrease shortly after 2000. The resulting long-term trend 1988-2012 was increasing, and the short term from 2003 - 2012 decreasing at an annual rate of 2% (Figure 4.22, Nagy *et al*. 2014).

Population size

a population size of 65,000 is estimated, based on the results of the IWC (Wetlands International 2015). Adding up the national winter estimates from EEA (2015) and BirdLife International 2015 gives an estimation of 66,000 - 90,000 birds but this is considered an over-estimate (Wetlands International 2015). The population winters from Denmark to France and in The UK and Ireland (Figure 4.23).

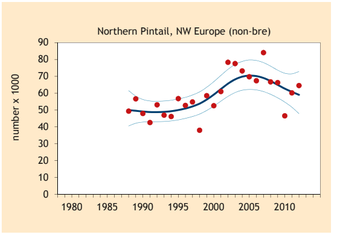


Figure 4.22. *Population trend of the non-breeding population in NW Europe of the Northern Pintail based on January IWC counts.*

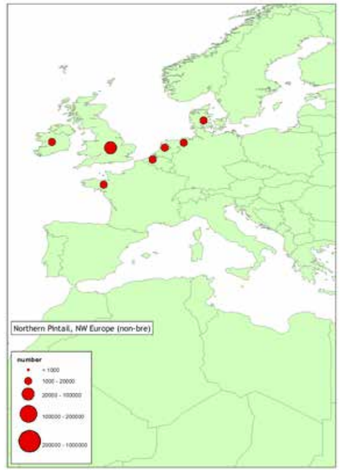


Figure 4.23. *Numbers and distribution of the North-west European population of Northern Pintail in January 2010-2014. Red dots are the estimated totals per country.*

PHOTO Per Harald Olsen / Agami

PHOTO Markus Varesvuo / Agami

4.13 COMMON EIDER

Somateria mollissima
Eider à duvet

The Common Eider, a Holarctic breeder, has five distinct sub-populations in Europe of which three are within the wider area of the East Atlantic Flyway: (1) the Baltic-Wadden Sea population, (2) the Britain-Ireland population and (3) the Norway - north-western Russia population. Only the Baltic-Wadden Sea population is presented here because of its relevance to the Wadden Sea. Breeding within this sub-population occurs in many marine coastal areas in the Baltic and the Wadden Sea. It is a partial or short-distance migrant and wintering areas are mainly within this breeding range and areas more to the south (to Atlantic France). Breeding habitats are offshore islands and islets in grassy or dense, low-growing vegetation (shrubs and bushes) or under rocks. Breeding occurs in loose colonies of up to a few thousand pairs. Outside the breeding season, the species is highly gregarious and concentrates on shallow seashores and estuaries. Its diet in the Wadden Sea predominantly consists of large benthic molluscs, predominantly mussels (*Mytilis* sp.) and to lesser extent cockles (*Cerastoderma* sp). More recently, American Razor Shell (*Ensis* sp) has also been recorded in the diet.

PHOTO Arnold Meijer / Blue Robin

Population trend

The trend of the Baltic-Wadden Sea population of Common Eider is based on breeding numbers and shows an increase followed by a sharp decrease. The indices are based on national estimates of the change in breeding numbers from the EU Article 12 reporting which accounts for 74% of the total flyway-population (EEA 2015). From 1980-2012 the population decreased by 2% per year, but since 2000 there has been an annual decline of 7% (Figure 4.24). This decrease, based on numbers of breeding birds, was also described by Ekroos *et al*. (2012). In contrast with this decrease is the trend based on IWC numbers (so wintering birds) which show a more stable trend since 2003 (Nagy *et al*. 2014). Combining the Wadden Sea January data with counts in the Baltic is difficult at present because of low annual coverage in the Baltic, where only 25% of the estimated population size is counted each year during the IWC.

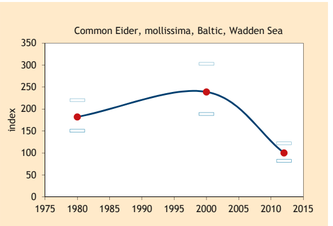


Figure 4.24. *Population trend of the Common Eider, sub-species mollissima, breeding in the Baltic and Wadden Sea, based on the breeding numbers reported in the EU article 12 reporting (EEA 2015).*

Population size

The population size is estimated to be about 976,000 birds, based on the assessment of the size of the breeding population (Wetlands International 2015) based on Ekroos *et al*. (2012), EEA (2015) and BirdLife International (2015).

PHOTO Arnold Meijer / Blue Robin

PHOTO Kees Dersjan

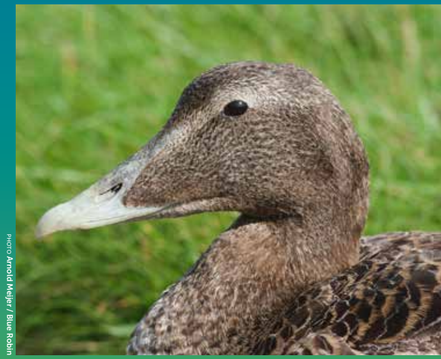


PHOTO Arnold Meijer / Blue Robin

4.14 AFRICAN OYSTERCATCHER

Haematopus moquini
Huîtrier de Moquin

The African Oystercatcher is a species with a limited range, occuring only on the coasts of Namibia and South Africa. Its IUCN status is Near Threatened due to the small total population size. It occurs along rocky and sandy coasts, either along the shoreline or in estuaries. The species is largely sedentary with only limited movements outside the breeding season. Preferred breeding sites are rocky islands and sandy beaches. The species forages year-round in the intertidal zone and feeds primarily on bivalves. Within the breeding season, the species is solitary, outside the breeding season small groups of up to a few hundred individuals can be found.

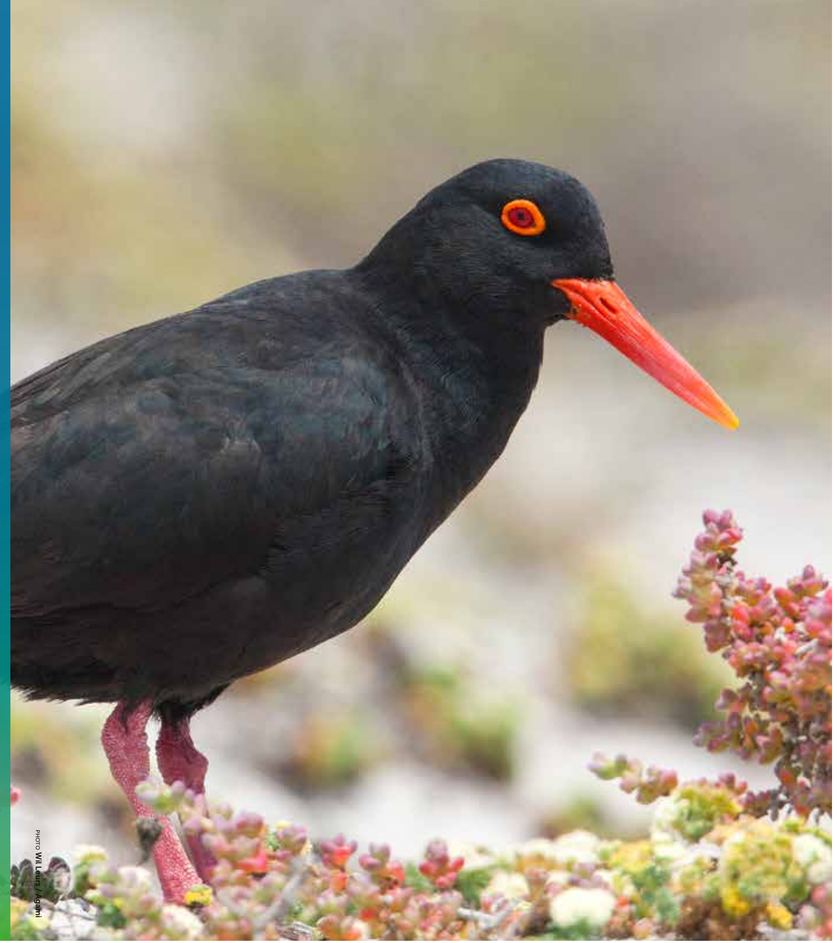


PHOTO: Wil Leurs / Agami

Population trend

Based on IWC counts, an increase has taken place from 2003 onwards (Nagy *et al.* 2014). An increase from 1979/80 until 2003 was also described by Underhill (2014).

Population size

6,600 - 6,700 birds, based on Underhill (2014).

PHOTO: Wil Leurs / Agami

PHOTO: Wil Leurs / Agami

PHOTO: Wil Leurs / Agami

4.15 EURASIAN OYSTERCATCHER

Haematopus ostralegus
Huîtrier pie

Only one sub-population of the Eurasian Oystercatcher occurs within the East Atlantic Flyway, the nominate sub-species *ostralegus*. The largest breeding numbers occur in the countries around the North Sea (The UK, The Netherlands, Germany) and in Scandinavia. Further south in Europe, breeding populations are small and dispersed. Many populations are migratory, some over small distances, others over much larger distances (Northern Europe to Africa). The Eurasian Oystercatcher is a typical breeder of coastal habitats but also occurs inland, along lakes and rivers and in farmland. Small populations even occur in urban habitats. The species breeds in all kinds of open habitats such as dunes, saltmarshes, rocky shores, sand beaches, (bare) arable fields and short cut or grazed grasslands. In urban areas, breeding on flat roofs is recorded. Breeding occurs solitarily but densities in suitable habitats can be quite high. Outside the breeding season the species is highly gregarious and forages and roosts in large flocks, congregating mainly on estuarine mudflats and saltmarshes. The preferred food is either bivalves and gastropods (in estuarine situations) or earthworms and insect larvae in farmland areas. This is an important species in the international Wadden Sea.

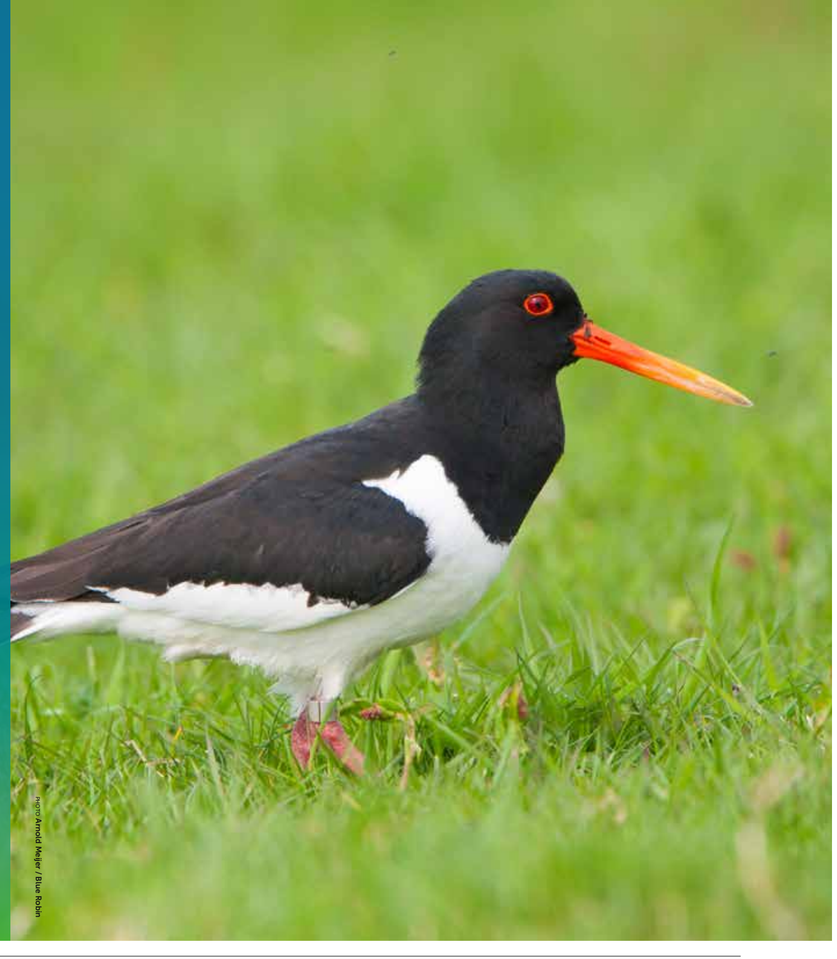


PHOTO Arnold Meijer / Blue Robin

Population trend

Based on the numbers of wintering birds, the Eurasian Oystercatcher has declined at an annual rate of 2% since 1988 (Fig. 4.25, Nagy *et al.* 2014). The breeding population in Europe has shown a decline in the last 10 years as well (EEA 2015, BirdLife International 2015).

Interestingly there is a different trend between the wintering populations of Eurasian Oystercatcher in Western Europe and West Africa (sum of estimates in 1980s, 1990s and 2010-2014, Figure 4.26). In Europe, the wintering numbers show a decrease and in West Africa the wintering population is increasing. This increase makes no difference to the development of the total flyway population because the numbers in West Africa are much smaller than those wintering in Europe.

Population size

The population size is estimated to be 850,000 - 950,000 birds (Wetlands International 2015). The estimations based on different sources are rather comparable. Based on national breeding population sizes 800,000 - 980,000 birds are estimated (EEA 2015, BirdLife International 2015 as summarized in Wetlands International 2015). Based on assessments of national wintering population sizes, 846,000 - 902,000 birds are estimated (Wetlands International 2015, EEA 2015, Van de Pol *et al.* 2014, see Annex 4.1). Based on the distribution of wintering numbers it is clear that the wintering stronghold is in North-west Europe, but that the species also winters further south (Figure 4.27).

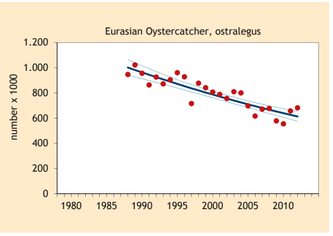
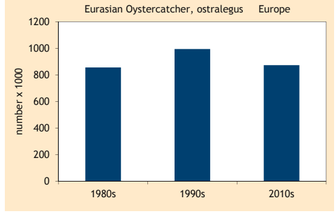


Figure 4.25. *Population trend of the wintering population of the Eurasian Oystercatcher in North-west Euriope, based on January IWC counts.*



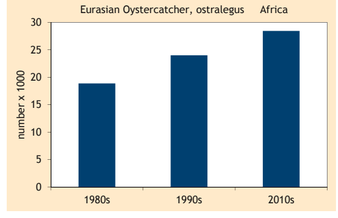


Figure 4.26. *The difference in wintering numbers in Europe and Africa based on Smit & Piersma (1989), Stroud et al. (2004) and the present study. The total wintering numbers for the 1980s, 1990s and 2010s are indicated.*

PHOTO Arnold Meijer / Blue Robin

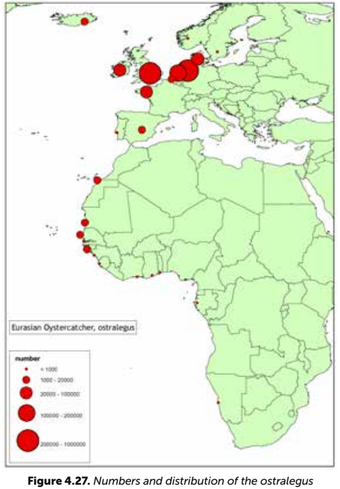


Figure 4.27. *Numbers and distribution of the ostralegus population of Eurasian Oystercatcher in January 2010-2014. Red dots are the estimated totals per country.*

4.16 PIED AVOCET

Recurvirostra avosetta
Avocette élégante

The Pied Avocet breeds in many parts of Western and Southern Europe. It is a highly migratory species. Within Europe, two populations have been identified, one along the East Atlantic Flyway and a more easterly population centred on the Mediterranean and Black Seas. In Southern Africa another population occurs, which uses many inland sites as well as sites on the Atlantic coast. The breeding birds of Western Europe migrate as far south as West Africa. Breeding in the East Atlantic Flyway population occurs mainly in coastal areas of Denmark, The Netherlands and Germany. In southern Europe, France and Spain have moderate breeding numbers. The species is gregarious year-round, it breeds in colonies, and usually migrates and winters in large flocks. Breeding occurs in sparsely or unvegetated places in saline and brackish wetlands. Outside the breeding season, the species occurs on coastal mudflats, lagoons and estuaries. Pied Avocets feed on a wide variety of items such as aquatic insects, crustaceans, small fish and oligochaete and polychaete worms, which they find in shallow water. The Wadden Sea is a significant breeding site and important during moult after the breeding season.

PHOTO Arnold Meijer / Blue Robin

Population trend

Wintering numbers of Pied Avocets have increased since 1988 with an annual rate of 2% since 1988, and more rapidly, at 3% per year, since 2003 (Figure 4.28).The long-term trend of the species in many EU countries is also positive, although in the short term, more declines have occurred and the trend is stable or slightly negative (EEA 2015, BirdLife International 2015). Comparing trends between the Western European and African parts of the wintering range is difficult due to the large annual variation in count numbers in Africa (Figure 4.29).

Population size

The population size estimate is 88,000 - 98,500 birds, based on national breeding population sizes (EEA 2015, BirdLife International 2015, summarized in Wetlands International 2015). The winter estimates for Europe from EEA (2015) and the estimates for West Africa total almost 75,000 wintering birds (Annex 4.1). The largest wintering numbers were found in France (17,000), Morocco (17,000) and Spain (12,000). Good numbers were also present in Portugal (8,500), the UK (7,500), Guinea (5,600) and Senegal (2,600), (Figure 4.30).

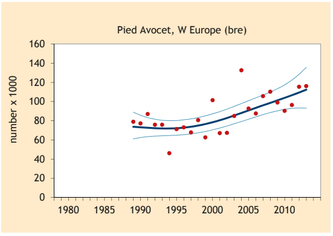


Figure 4.28. *Population trend of the wintering population of the Pied Avocet in the East Atlantic Flyway based on January IWC counts.*

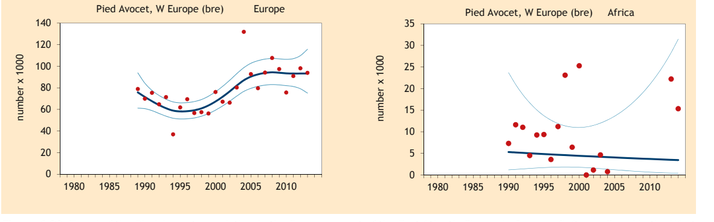


Figure 4.29. *Trend of the Pied Avocet population in the European part of the East Atlantic Flyway in January (left panel) and in the West African part in January (right panel) based on IWC counts.*

PHOTO Dave Montreuil

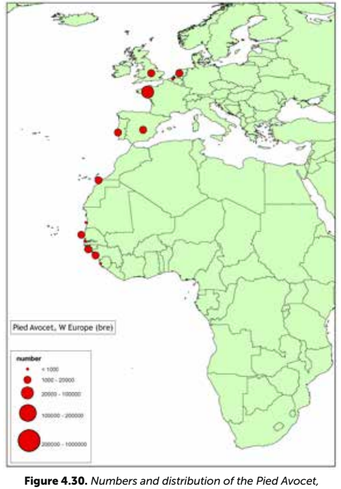


Figure 4.30. *Numbers and distribution of the Pied Avocet, breeding in Western Europe and North-west Africa population in January 2010-2014. Red dots are the estimated totals per country.*

4.17 GREY PLOVER

Pluvialis squatarola
Pluvier argenté

The nominate sub-species *squatarola* of the Grey Plover breeds in the tundra zone of Siberia east of the Kanin peninsula. This sub-species has two recognized flyways, an eastern one, where birds winter in South-west Asia, Eastern & Southern Africa, and the East Atlantic Flyway. During migration, the species occurs in coastal areas in large parts of Western and Southern Europe and Western Africa. During the breeding period from May to August, the species is solitary, occurring in the high Arctic in various types of open, low growing vegetation. In the remainder of the year it is a gregarious species occurring mainly on intertidal mudflats and salt marshes. The principal food sources outside the breeding season are polychaete worms, molluscs and crustaceans. The Wadden Sea is an extremely important stopover and wintering site.

PHOTO Arnold Meijer / Blue Robin

Population trend

The IWC January counts of Grey Plover in the East Atlantic wintering regions showed an increase through the 1980s and early 1990s. After 1995 however, the trend stabilized or even decreased, Figure 4.31). The long-term trend since 1979 shows an annual increase of 1%.

There is a clear difference in trend between the European and African part of the wintering range (Figure 4.32). In the European part the population has increased since 1979 (at an average annual rate of 3%) with the increase only until the early 1990s and stabilization afterwards (short term trend stable). In the African wintering part the species declined at an annual rate of 1%.

Population size

Based on the winter estimates for Europe from EEA (2015) and the winter estimates for Western Africa, a population size of 200,000 was estimated (Annex 4.1). In the 1990s the population size was estimated to be 250,000 birds (Stroud *et al*. 2004). The lower current estimate reflects the recent decline after the initial increase from 1980. The largest wintering numbers are found in The Netherlands, France and The UK in the north and in Mauritania, Guinea-Bissau and Guinea in the south (Figure 4.33).

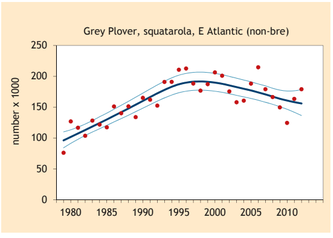


Figure 4.31. *Population trend of the Grey Plover wintering in the entire East Atlantic Flyway based on the January IWC counts.*

PHOTO Dave Montreuil

PHOTO Koos Dansen

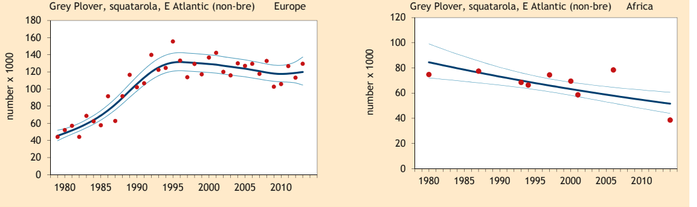


Figure 4.32. *Trend of the East Atlantic Flyway population of the Grey Plover in the European part (left panel) of their January range and in the West African part (right panel) based on IWC counts.*

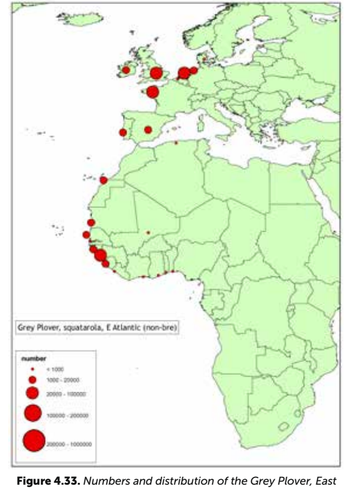


Figure 4.33. *Numbers and distribution of the Grey Plover, East Atlantic population in January 2010-2014. Red dots are the estimated totals per country.*

4.18 COMMON RINGED PLOVER

Charadrius hiaticula
Grand Gravelot

Two sub-species are recognized within the East Atlantic Flyway, the nominate *hiaticula* breeding from north(east) Europe to northern France, The UK and Ireland, and *psammodroma*, breeding in north-eastern Canada, Greenland and Iceland. The position of the sub-species *tundrae* on the East Atlantic Flyway is uncertain It breeds from northern Fennoscandia east to northern Russia as far as the Bering Straits, and winters mainly along the west Asian-East African flyway with unknown overlap in Western Africa. The nominate sub-species is partly sedentary and a short distance migrant and mainly remains in Europe in winter. *Psammodroma* winters along the coast of Western Africa. Breeding occurs in single pairs or loose colonies. Preferred habitat is sand or shingle beaches along the Atlantic coast, sometimes also inland on sand and gravel along big rivers, lakes and reservoirs. Further north it also breeds inland on tundra (particularly on the edges of pools). Outside the breeding season the species is highly gregarious. It prefers muddy and sandy coasts, e.g. estuaries, tidal mudflats and lagoons. Its diet consists of small invertebrates such as crustaceans and insects, worms and small molluscs. The Wadden Sea has a rather small breeding population of the sub-species *hiaticula*. During the migration period, large numbers of *hiaticula* and *psammodroma* use the Wadden Sea as a stopover site. *Tundrae* is probably also present in the Wadden Sea during migration but their numbers are unknown.

PHOTO Arnold Meijer / Blue Robin

Population trend

The trend of the sub-species *hiaticula* of the Common Ringed Plover is considered to be stable or decreasing (Wetlands International 2015). The decreasing estimate is based on breeding bird trends (EEA 2015). The stable estimate is based on the IWC in Europe (Nagy *et al*. 2014). The decreasing trend estimate based on the breeding bird numbers is considered to be more robust. The *psammodroma* sub-species shows fluctuating numbers although the overall trend appears to be one of decline (Fig. 4.34).

Population size

The population size of *hiaticula* is estimated to be 55,600 - 68,600 birds based on national breeding population sizes (EEA 2015, BirdLife International 2015) as summarized in Wetlands International (2015). This agrees rather well with the counts from the IWC, which are around 60,000 - 70,000 birds (Nagy *et al*. 2014). Tthe population size of *psammodroma* is based on wintering numbers along the Atlantic coast of Western Africa following Stroud *et al*. (2004). During 2010-2014 more than 200,000 Common Ringed Plovers were found on the West African coast in January (Annex 4.1). Assuming some underestimates, this total has been increased to an estimated population size of 240,000 birds. While *hiaticula* winters in Western Europe with the largest numbers in The UK, Ireland, France, Portugal and Spain, *psammodroma* is most common in Mauritania (almost 65,000), Guinea-Bissau (around 30,000) and Guinea (more than 70,000), (Figure 4.35).

PHOTO Arnold Meijer / Blue Robin

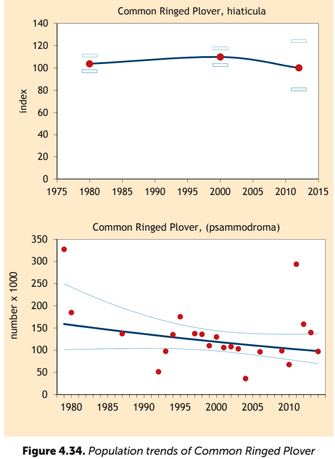


Figure 4.34. *Population trends of Common Ringed Plover populations on the East Atlantic Flyway. On the left side the trend of the nominate hiaticula based on breeding bird estimates in Europe, on the right side the trend of the sub-species psammodroma based on the January IWC counts in the African winter quarters.*

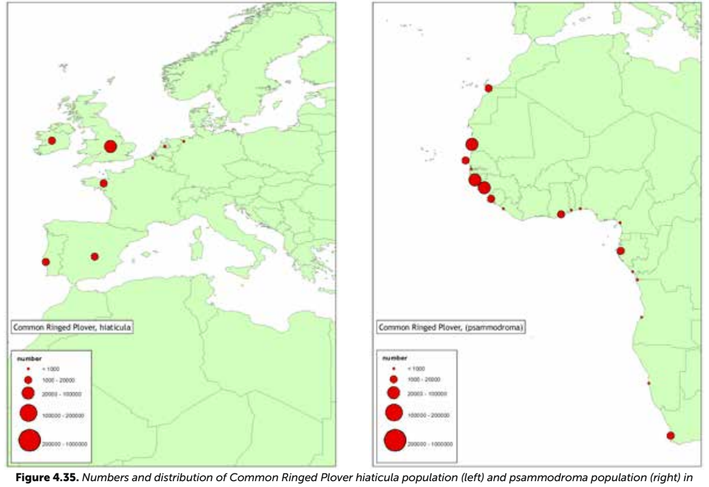


Figure 4.35. *Numbers and distribution of Common Ringed Plover hiaticula population (left) and psammodroma population (right) in January 2010-2014. Red dots are the estimated totals per country.*

4.19 KENTISH PLOVER

Charadrius alexandrines
Gravelot à collier interrompu

For the Kentish Plover, two sub-populations of the nominate form are distinguished in Europe: one in Western Europe and the west Mediterranean and one in south-eastern Europe and the east Mediterranean. The East Atlantic Flyway population range covers breeding areas in Western Europe and the western Mediterranean, and breeding areas in Africa along the north and west coasts south to Senegal. The range of this population also covers wintering areas of the migratory northern populations in southern Europe, northern Africa, coastal western Africa and the Sahel. The majority of the European East Atlantic Flyway breeding population occurs in France and the Iberian Peninsula.

In the breeding season, the Kentish Plover is mostly a coastal species in this part of its range. The species breeds in solitary pairs or loose colonies. They mainly forage on sand and silt mudflats and breed on sandy and sparsely vegetated places in e.g. lagoons, dunes and estuaries. Outside the breeding season, the species is more gregarious and is usually seen in small flocks. It occurs in the same habitats as during the breeding season and only occasionally uses freshwater habitats. The diet of the Kentish Plover consists mainly of insects, crustaceans (e.g. gammarids), small molluscs and polychaete worms. The Wadden Sea only harbours a small breeding population of Kentish Plover; outside the breeding season only some dozens of individuals are present. The breeding population was bigger in the past.

PHOTO Dietrich Ochsner / Agami

Population trend

Giving an overall trend indication for this population is not easy. The Kentish Plover shows an increase of 2% annually based on IWC counts (Figure 4.36). There are some remarkable outliers in the count data, which complicate the interpretation of this figure. The short-term trend after 2003 seems to indicate a more straightforward increase. There is a difference with the trend in numbers of breeding birds in most EU countries (EEA 2015), which fluctuates and has a tendency to decline. However, especially small local populations seem prone to decline while the numbers in Spain, which holds the bulk of the European breeding population, are stable.

When differential trends for the European and the African part of the wintering range are considered (Figure 4.37) a clear difference in trends appears. In the European part, the Kentish Plover numbers increase (both long term and short term, at 5% annually) and in the African part numbers seem to decrease although there is a large variation (minus 3% annually).

Population size

The population size is 57,000 - 68,000 birds (Wetlands International 2015) based on national breeding population sizes in Europe (EEA 2015, BirdLife International 2015) and an estimate of the breeding population in NW Africa (Dodman 2014). Based on the winter estimates for Europe from EEA (2015) and on the estimates for West Africa (Annex 4.1), in total more than 45,000 wintering birds were recorded in 2010-2014. The highest wintering numbers were found in Morocco, Tunisia, and Mauritania (Figure 4.38). Substantial wintering numbers are also present in Spain, Portugal, Italy and Guinea-Bissau.

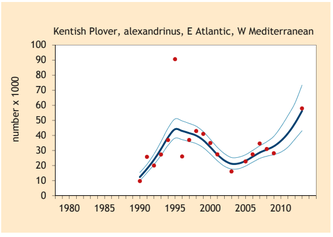
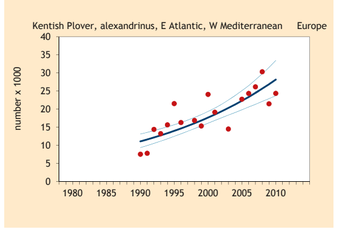


Figure 4.36. *Population trend of the Kentish Plover wintering in the East Atlantic Flyway based on the January IWC counts.*

PHOTO Dave Montreuil

PHOTO Dave Montreuil



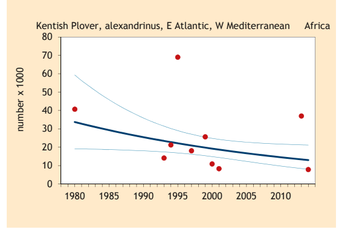


Figure 4.37. *Trend of the Kentish Plover population of the East Atlantic Flyway in the European part (left panel) and in the West African part (right panel) of their January range, based on IWC counts.*

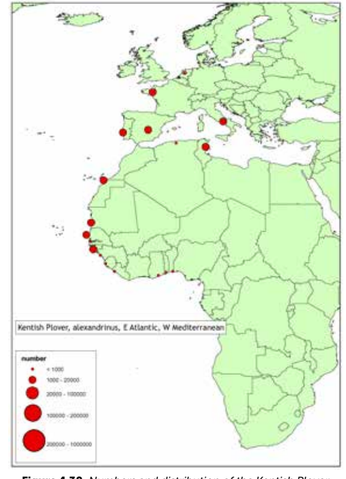


Figure 4.38. *Numbers and distribution of the Kentish Plover, East Atlantic and West Mediterranean population in January 2010-2014. Red dots are the estimated totals per country.*

4.20 WHITE-FRONTED PLOVER

Charadrius marginatus
Gravelot à front blanc

The White-fronted Plover is an African species occurring in most of sub-Saharan Africa. The sub-species *mechowi* occurs in West Africa. It is a sedentary and partially migratory species that breeds along the coasts and large rivers. During the breeding season the species is solitary, in the non-breeding periods larger groups can occur up to a few hundred individuals. Its breeding habitat in West Africa consists of sandy beaches and dunes, but it can also be found on a wide variety of other coastal habitats such as estuaries, lagoons and salt-pans. Inland, the species breeds on the sandy shores of large rivers, and it occurs in the same habitats outside the breeding season, it. Its diet consists of a wide variety of invertebrate food items like insects, gastropods, molluscs, bivalves, crustaceans, isopods and worms.

PHOTO Wil Leurs / Agami

Population trend

The trend of this population is treated as stable based on preliminary assessment of January count data. However relatively few data is involved from only coastal sites while this population also occurs more inland.

Population size

The size of this population is estimated to be 10,000 - 15,000 birds (Dodman 2014).

PHOTO Wil Leurs / Agami

PHOTO Wil Leurs / Agami

PHOTO Wil Leurs / Agami

4.21 BLACK-TAILED GODWIT

Limosa limosa
Barge à queue noire

Two separate breeding populations of the Black-tailed Godwit occur on the East Atlantic Flyway: birds breeding in North and West Europe belonging to the nominate *limosa* and birds from the sub-species *islandica*, mainly breeding on Iceland. *Islandica* migrates through western Europe to winter quarters as far south as Iberia and Morocco, but large numbers remain in France, Britain and Ireland. *Islandica* predominantly uses estuarine sites during migration and winter, whereas *limosa* is more found on floodplains, rice fields and other inland waters. This report focusses on the *islandica* population. The species is highly gregarious on passage and in winter quarters. During the breeding season it breeds in loose colonies and *islandica* shows a distinct preference for large patches of dwarf-birch bog and marsh, particularly with abundant sedge-pools. During the breeding season it feeds on adult and larval insects, annelid and polychaete worms. Particularly during the winter and on migration it feed on polychaetes, bivalves and chironomid larvae. Small numbers of *islandica* make use of the Wadden Sea but this is of minor importance for the population.

PHOTO Markus Varesvuo / Agami

Trend

The numbers of wintering *islandica* have increased sharply at a rate of more than 2% per year since the mid 1980s (Nagy *et al*. 2014). This is clear from the wintering counts (Figure 4.36), but also from indications of the breeding numbers (BirdLife International 2015).

Population size

The population size is 98,000 - 125,000 birds (Wetlands International 2015) based on a combination of results of the IWC (Nagy *et al*. 2014) and the national winter estimates (EEA 2015, BirdLife International 2015).

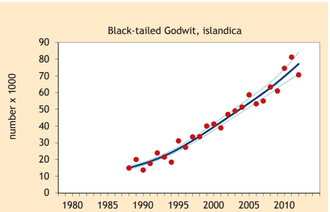


Figure 4.36. *Population trend of the Black-tailed Godwit (sub-species islandica) wintering in the East Atlantic flyway based on the January IWC counts.*

PHOTO Markus Varesvuo / Agami

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.22 BAR-TAILED GODWIT

Limosa lapponica
Barge rousse

Two sub-species of the Bar-tailed Godwit use the East Atlantic Flyway, showing classic leapfrog migration, with breeders from the high Arctic in Siberia migrating further south than the population breeding in Fennoscandia. The nominate *lapponica* breeds in northern Fennoscandia east to the Kanin peninsula and migrates and winters in western Europe, with smaller number south to Portugal and Spain. The highest breeding numbers are recorded in Norway and Russia. The sub-species *taymyrensis* breeds in western Siberia and migrates through western Europe (mainly the Wadden Sea) and winters in western and southern Africa. Both sub-species mix in the Wadden Sea during spring and autumn migration. Breeding habitats are swampy tundra and heathlands, and sometimes open bogs, in the far north. The species is solitary nesting. During migration and wintering it is highly gregarious and occurs in huge flocks of up to tens of thousands of individuals. Preferred foraging habitats are intertidal mudflats, lagoons and estuaries. Roosting can occur also on short-grass meadows. The diet of the Bar-tailed Godwit consists mainly of worms, but bivalves and crustaceans are also taken. 80% of the winter diet in the Wadden Sea consists of the polychaete worm *Hedistes diversicolor*. The Wadden Sea is extremely important for this species. The nominate sub-species moults and winters in large numbers, and *taymyrensis* occurs in large numbers in autumn and spring.

photo: Markus Varesvuo / Arpiin

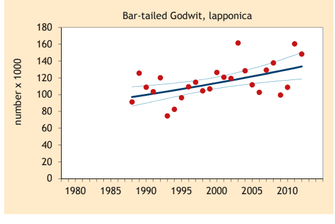
Population trend

The two sub-species have different trends. The nominate form *lapponica* has increased over the long term (since 1988) at an annual rate of 1%, although the short term trend since 2003 has been stable (Nagy *et al*. 2014, Figure 4.40). The sub-species *taymyrensis* seems however to be decreasing. There are only a few data points and there is some variation, but the long-term trend line indicates an annual decrease of 1% (Figure 4.40).

Population size

The population size of *lapponica* is estimated to be 120,000 birds (Wetlands International 2015) based on recent IWC counts and the sum of national wintering population sizes (EEA 2015, BirdLife International 2015), with highest numbers in The UK and The Netherlands (Figure 4.41). For *taymyrensis* in Western Africa, a population size of 500,000 is estimated based on wintering numbers in 2012-2014 (Annex 4.1). Highest numbers are present in Mauritania (280,000) and Guinea-Bissau (130,000) (Figure4.41). This estimate is lower than the 600,000 from around 2000 but much higher than the estimate of 240,000 for 2007 based on mark-resighting calculations (Spaans *et al* 2011).

photo: Koos Dansen



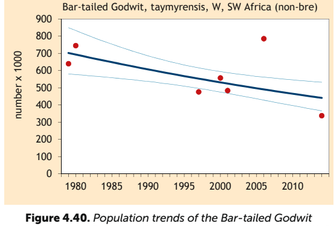


Figure 4.40. *Population trends of the Bar-tailed Godwit wintering in the East Atlantic Flyway based on the January IWC counts. Upper panel: lapponica, bottom panel: taymyrensis*

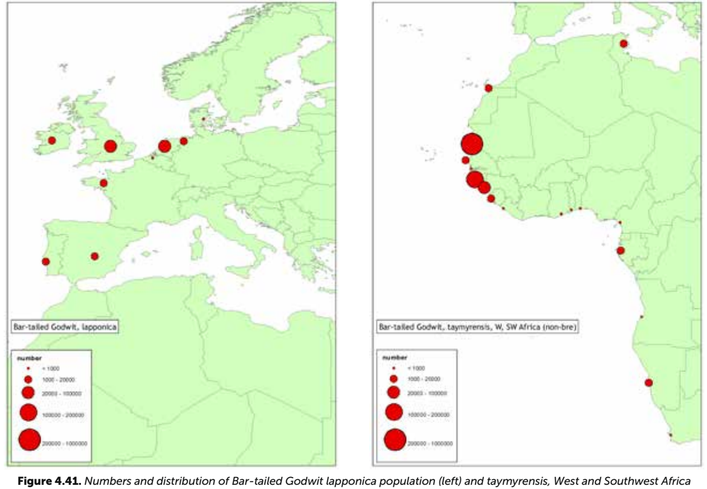


Figure 4.41. *Numbers and distribution of Bar-tailed Godwit lapponica population (left) and taymyrensis, West and Southwest Africa population (right) in January 2010-2014. Red dots are the estimated totals per country.*

4.23 WHIMBREL

Numenius phaeopus
Courlis corlieu

Two sub-species of the Whimbrel use the East Atlantic Flyway - the nominate, breeding in Fennoscandia, the Baltic states and northern Russia and wintering all along the coast of western Africa south to Gabon and the sub-species *islandicus* breeding in Iceland and a small part of adjacent Greenland and wintering in the same African region. Large breeding populations occur in Iceland, Finland and (probably) northern Russia. The species breeds in solitary pairs on wet and dry heathlands and wetlands, moors and bogs in Boreal and Arctic regions. Sometimes breeding in open forested areas occurs. During migration and wintering the species prefers sandy and rocky coasts, tidal mudflats and mangroves. During migration the species congregates in flocks and besides the mentioned habitats also uses inland habitats like heathland and short grasslands. Important food items during breeding are invertebrates e.g. insects and worms. In coastal habitats, during the non-breeding season, the species specializes in crustaceans such as crabs, but foraging on berries (*Empetrum* sp.) is also not uncommon. The highest numbers in the Wadden Sea are observed in autumn. The importance of the Wadden Sea for Whimbrel as a foraging site is relatively small, but larger numbers use it for roosting.

PHOTO Arnold Meijer / Blue Robin

Population trend

There are two sources of information for the population trend of the nominate form of the Whimbrel (Figure 4.42). The Pan European Breeding Bird Monitoring Scheme (www.ebcc.info), which delivers an index value per year based on sampling plots (left panel-dashed line), and the estimates on breeding numbers in EU countries in three time frames from the Article 12 reporting process (EEA 2015), which also delivers a trend. The latter is based on approximately 45% of the total flyway population. Both data sources indicate a stable long-term trend (1980-2012). The data from the EU countries based on the Article 12 reporting indicates a short-term decrease, but that based on the EBCC data indicates a short-term increase at a rate of 4% per year. The EBCC trend is considered to be more reliable. For the sub-species *islandicus* the population trend cannot be assessed based on breeding numbers due to a lack of data. The IWC data suggests that the combined trend of both populations over the whole period since 1978 has increased at an annual rate of 5% (Figure 4.42, right panel), which is more rapid than *phaeopus* alone, so that *islandicus* seems to be increasing as well (Figure 4.42, right panel).

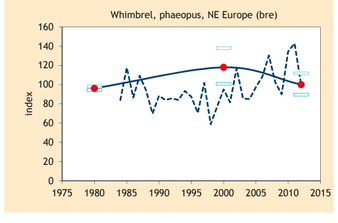


Figure 4.42. *Population trend of the Whimbrel in the East Atlantic Flyway. Subpopulation phaeopus based on PECBMS data (left panel dashed line) and EU breeding bird estimates (upper panel solid line). Total population based on the January IWC counts (bottom panel).*

Population size

The population estimate for phaeopus is 273,000-450,000 (Wetlands International 2015) based on national breeding population sizes (EEA 2015, BirdLife International 2015). The population size for islandicus is estimated to be 600,000 - 750,000 (Wetlands International 2015) also based on breeding birds (Thorup 2006). These two populations occur in winter along the Atlantic coast of Western Africa with small numbers in South Europe (Figure 4.43). Estimates for these countries add up to not more than 130,000 birds (Annex 4.1), which is considerably less than the presumed population size based on breeding birds (see also Trolliet 2006). As Whimbrel occurs along many mangrove-fringed creeks which are not counted, and as the population size from Ivory Coast to Nigeria is probably larger than presently indicated, the wintering population size is probably underestimated. On the other hand, there is also uncertainties in the size of the breeding populations, maybe involving over-estimates.

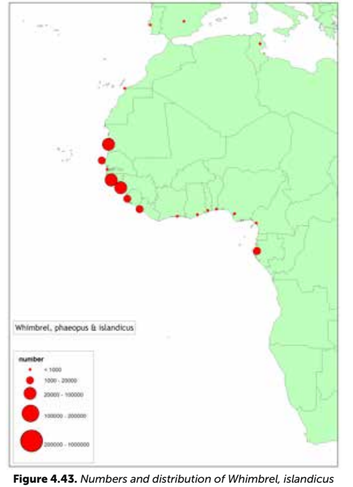


Figure 4.43. *Numbers and distribution of Whimbrel, islandicus and phaeopus population in January 2010-2014. Red dots are the numbers counted per country.*

PHOTO Dave Montreuil

4.24 EURASIAN CURLEW

Numenius arquata
Courlis cendré

Eurasian Curlews breed in large parts of Europe. The East Atlantic Flyway breeding population encompasses the total European breeding population of the nominate form. Wintering occurs in western and southern Europe, and partly also on the coast of West Africa (south to Guinea-Bissau). Large breeding populations occur in Finland, The UK, Sweden and Russia. The species breeds solitarily on heathland, upland moors, peat bogs, coastal marshlands but also farmland areas (both grasslands and arable fields). During migration and in the winter quarters, it occurs in more coastal habitats such as estuaries, tidal mudflats, mangroves and saltmarshes, but also occurs on agricultural grasslands. The diet consists of a variety of invertebrate food items like annelid worms and insects. Inland and during the breeding season adult and larval insects are important. On the coast during the winter the species takes crustaceans (e.g. crabs). The Wadden Sea is very important for migrating and wintering Curlews.

photo Arnold Meijer / Blue Robin

Population trend

The trend of the Eurasian Curlew has been assessed by examining breeding bird numbers over time. Two data sources are available. The Pan European breeding bird monitoring scheme (PECBMS) delivers an index value per year based on sampling plots, while the estimates of breeding numbers in EU countries from the EU Article 12 reporting (EEA 2015) delivers a total estimate in three time frames. The latter is based on approximately 70% of the total breeding population within the flyway. Both are in concordance and clearly indicate a decline of on average 2% annually (Figure 4.44). According to Nagy *et al.* (2014) the trend of the wintering birds since 2003 has been increasing (see also Figure 4.45). In the African part of the range, however, the populations seems to have decreased (Figure 4.45).

Population size

The population size is estimated to be 640,000-920,000 birds (Wetlands International 2015) based on national breeding bird estimates (EEA 2015, BirdLife International 2015). During winter around 550,000 are found along the East Atlantic coast (Annex 4.1, Figure 4,46).

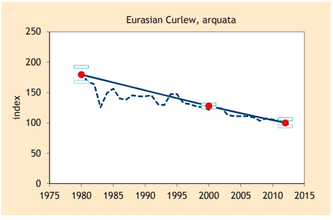
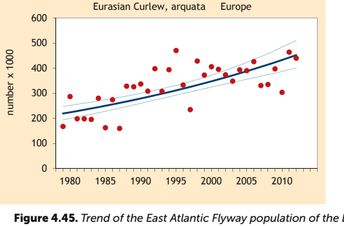


Figure 4.44. *Population trend of the Eurasian Curlew in the East Atlantic Flyway based on breeding bird data delivered by the PECBMS project (dashed line) and EU breeding bird estimates (solid line).*

photo Dave Montreuil

photo Dave Montreuil



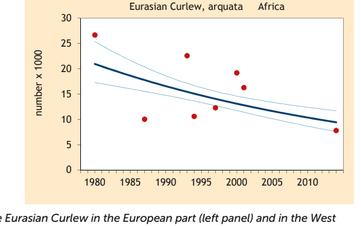


Figure 4.45. *Trend of the East Atlantic Flyway population of the Eurasian Curlew in the European part (left panel) and in the West African part (right panel) of their January range, based on IWC counts.*

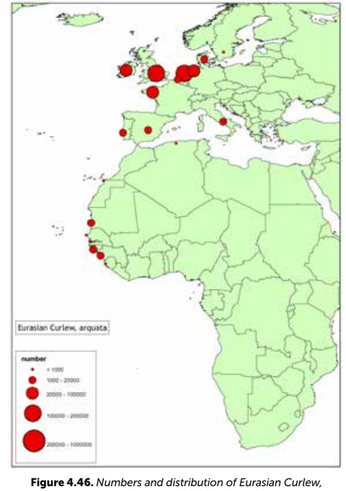


Figure 4.46. *Numbers and distribution of Eurasian Curlew, arquata population in January 2010-2014. Eurasian Curlews in Tunisia and from Liberia further South are considered to belong to the orientalis population. Red dots are the estimated totals per country.*

4.25 SPOTTED REDSHANK

Tringa erythropus
Chevalier arlequin

The Spotted Redshank is a species of the high north, breeding in northern Fennoscandia and further east in northern Russia. The total European breeding population belongs to one flyway population and the borders with more eastern populations are uncertain. High breeding numbers occur in Finland, Russia and Sweden. The European breeding population winters around the Mediterranean Sea and along the coast and inland wetlands of Western Africa (Senegal, Mali, Nigeria, Chad). The Spotted Redshank breeds in solitary pairs in wooded shrub and open tundra and in marshes near the arctic tree-line. On migration, flocks use specific but widely separated stop-over/staging areas in both fresh and brackish wetlands such as lagoons, salt marshes, tidal mudflats, sewage farms and rice fields. The species forages on invertebrates such as aquatic insects, crustaceans, polychaete worms, and regularly also small fish. The Wadden Sea is an important staging area during migration.

PHOTO: Daniele Occhiato / Agami

Population trend

Based on numbers counted in winter, the Spotted Redshank population seems to be stable, both in the short and long term (Figure 4.47). There is, however, considerable variation between years and a rather small proportion of the total population is included in the trend calculation. A remarkable difference is apparent when the European trend data of wintering birds are compared to the African wintering data (Figure 4.48). In Europe, numbers of the species have approximately tripled since 1989, whereas in the African wintering quarters, numbers have dropped more than 80% since 1997. The trend for Africa should be treated with caution however given the apparently annual variation and the small number of the total African wintering population included in that trend calculation. The trend based on breeding numbers is uncertain (Wetlands International 2015).

Population size

Based on national breeding populations (EEA 2015, BirdLife International 2015) the European breeding population size is estimated to be 61,000 - 162,000 birds (Wetlands International 2015). The range indicates considerable uncertainty. In winter along the East Atlantic Flyway, mostly only small numbers are encountered (Annex 4.1, Figure 4.49), Ghana is the exception with 7,000 birds. Further inland, large numbers are found in Mali (5,000, Zwarts *et al.* 2009) and at inland sites in Nigeria (2,000 birds, IWC). Altogether, much lower numbers are counted in January (16,630) than the population size based on breeding bird numbers (Annex 4.1).

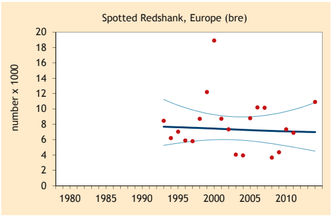
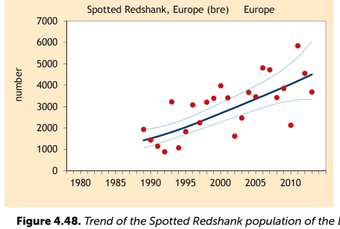


Figure 4.47. *Population trend of the Spotted Redshank wintering in the entire East Atlantic Flyway based on the January IWC counts.*

PHOTO: Daniele Occhiato / Agami

PHOTO: Markus Varesvuo / Agami



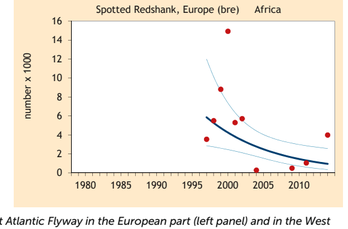


Figure 4.48. *Trend of the Spotted Redshank population of the East Atlantic Flyway in the European part (left panel) and in the West African part (right panel) of their January range, based on IWC counts.*

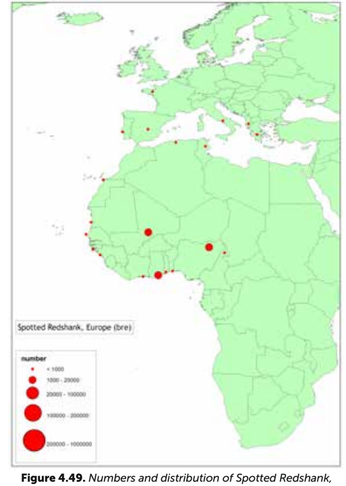


Figure 4.49. *Numbers and distribution of Spotted Redshank, European breeding population in January 2010-2014. Red dots are the numbers counted per country.*

4.26 COMMON REDSHANK

Tringa totanus
Chevalier gambette

The Common Redshank breeds in large parts of western, northern and eastern Europe. A complex system of flyway sub-populations has been identified, involving five populations of which four sub-populations and three sub-species are assigned to the East Atlantic Flyway: (1) *robusta* breeding in Iceland and wintering in the North Sea countries and France, (2) *brittanica* breeding in The UK, Ireland and the countries around the North Sea, a short distance migrant wintering within its breeding range but also occurring in France/Iberia, (3) a western *totanus* sub-population, breeding in Fennoscandia and the Baltic and wintering on the Atlantic coasts of western Europe to West Africa (as far as Ghana) and (4) an eastern *totanus* sub-population, breeding in central and north-eastern Europe, and wintering in the Mediterranean area and sub-Saharan Africa. Large breeding populations (>25,000 pairs) occur in Belarus, The Netherlands, Germany, Iceland, Norway, Poland, Russia and the The UK. Breeding occurs in a wide variety of habitats: coastal saltmarshes, inland short-sward wet grasslands, swampy heathlands and moors and river or lake borders. In winter, however, the species is largely coastal, occupying a variety of habitats such as beaches, saltmarshes, tidal mudflats, lagoons and estuaries. The diet consists of insects, spiders and annelid worms in the breeding season and also molluscs and crustaceans in other seasons. The Wadden Sea is extremely important as a stopover site for the western *totanus* population which moults there in large numbers in early autumn. In winter the area is important for the *robusta* population and in summer also holds important numbers of *brittanica*.

PHOTO Arnold Meijer / Blue Robin

Population trend

For the Common Redshank, trends have been derived for three sub-species. Subspecies *robusta* shows a long term decline since 1988 of on average 1% annually based on winter counts (Figure 4.50 left panel); the decline is larger in the most recent 12 years (3% per year). Numbers of *totanus* show large variations between counts but on average are stable (Figure 4.50 middel panel). The trend in numbers of the sub-species *brittanica* have been determined by comparing national breeding population estimates in three time periods from the EU Article 12 reporting (EEA 2015). These estimates cover the whole breeding population in the flyway. Furthermore there is a population index available from the Pan European Common Breeding Bird Scheme. Both trends indicate a long-term (since 1980) average annual decline of 3% (Figure 4.50 right panel).

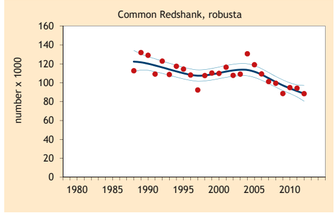
For the sub-species *totanus* the wintering population trends in Europe and West Africa can be compared. Both the short term and long term trends are stable in both regions (Figure 4.51).

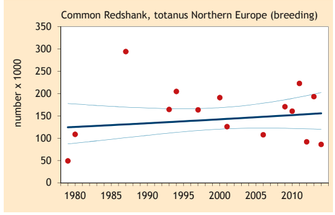
Population size

The population size of *robusta* is based on breeding numbers but there is considerable uncertainty, ranging from 50,000 pairs to 140,000 pairs (Delany *et al*. 2009). The resulting total population size estimate is 150,000 - 420,000 birds (Wetlands International 2015). Also, during winter this population is difficult to estimate as they partly overlap with the *brittanica* population. However

PHOTO Koos Dansen

PHOTO Dave Montreuil





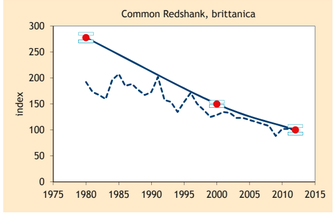


Figure 4.50. *Population trends of the robusta (left panel) and totanus (middel panel) sub-species of Common Redshank wintering in the East Atlantic Flyway based on the January IWC counts. Right panel: Population trend of the brittanica sub-species of Common Redshank in the East Atlantic Flyway based on breeding bird data delivered by the PECBMS project (dashed line) and EU breeding bird estimates (solid line).*

PHOTO Koos Dansen

based on wintering numbers and subtracting the presumed number of *brittanica* gives estimates for the winter population of *robusta* of not more than 65,000 (Stroud *et al*. 2004). The population size of *brittanica* is estimated to be 76,500 (Wetlands International 2015) based on the breeding populations in Ireland and the The UK (EEA 2015). However this could be an underestimate as the breeding population of The Netherlands, Germany and Denmark probably also belong to this sub-population (Engelmoer & Roselaar 1998). The population size of *totanus* is estimated to be 154,000 - 205,000 birds (Wetlands International 2015) based on national estimates of breeding populations (EEA 2015, Birdlife International 2015). During January 2010-2014 not more than 140,000 birds were found in the countries where *totanus* winters (Annex 4.1, Figure 4.52).

PHOTO Arnold Meijer / Blue Robin

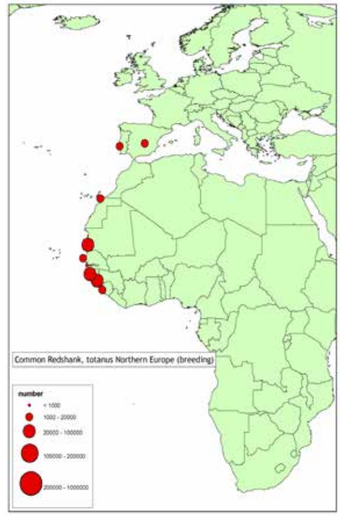
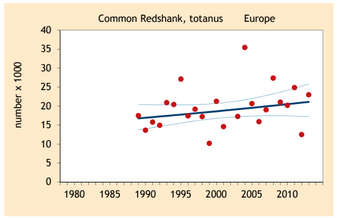


Figure 4.52. *Numbers and distribution of Common Redshank, totanus East Atlantic population in January 2010-2014. Red dots are the estimated totals per country.*



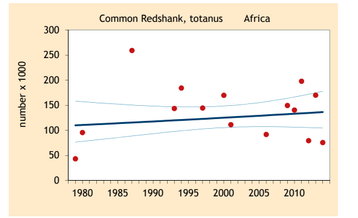


Figure 4.51. *Trends of the Common Redshank (subsp. totanus) population of the East Atlantic Flyway in the European part (left panel) and in the West African part (right panel) of their January range, based on IWC counts.*

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.27 COMMON GREENSHANK

Tringa nebularia
Chevalier aboyeur

The Common Greenshank breeds in boreal and arctic habitats in the north of Europe. This species shows a broad-front migration through Atlantic, continental and Mediterranean Europe and mainly winters in Africa. During this period, birds are found in coastal areas, but also inland in sub-Saharan wetland areas. Breeding occurs solitarily in the boreal forest zone in swampy clearings, bogs, marshes and moorlands and at small lakes. During migration and wintering, the species congregates in small flocks, usually of less than 100 individuals. In the wintering areas in Africa, the species occurs in a variety of freshwater, marine and artificial wetlands. On migration this species occurs on tidal mudflats and estuaries, but also frequents inland shallow water wetlands. The diet consists of insects, crustaceans, annelids, molluscs, amphibians and small fish. The Wadden Sea is an important staging area for Greenshanks.

Photo: Dave Montreuil

Population trend

The number of Common Greenshanks counted in 1993 during the IWC was significantly lower than recent numbers with an average annual increase of 2%. The data should, however, be treated with caution because recent numbers show large fluctuations (Figure 4.53).
It seems that the increase in numbers of Common Greenshank mainly affected the population wintering in Europe, while the numbers in the African wintering sites were more or less stable (Figure 4.54). This could reflect a shift in wintering areas from Africa to Europe and might be related to climate change (higher winter temperatures).

Population size

The population size is estimated to be 230,000 - 470,000 birds (Wetlands International 2014) based on national breeding population sizes (EEA 2015, BirdLife International 2015). During the January counts, much smaller numbers are found in the range states of this population (35,000, Annex 4.1, Figure 4.55).

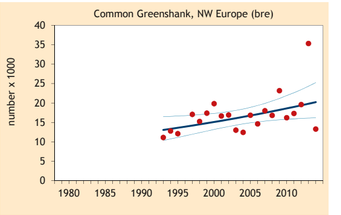


Figure 4.53. *Population trend of the Common Greenshank wintering in the East Atlantic Flyway based on the January IWC counts.*

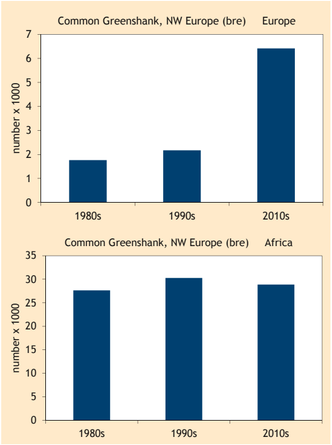


Fig 4.54. *The difference in wintering numbers in Europe and Africa based on Smit & Piersma (1989), Stroud et al. (2004) and the present study. Indicated are the total wintering numbers for the 1980s, 1990s and 2010s.*

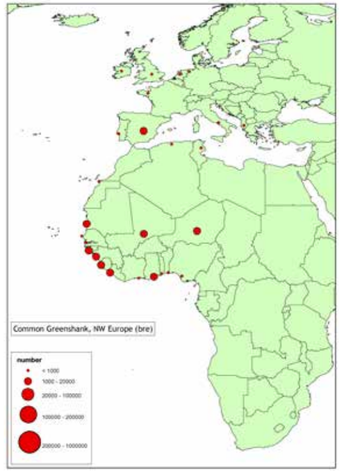


Figure 4.55. *Numbers and distribution of Common Greenshank Northwest Europe breeding population in January 2010-2014. Red dots are the numbers counted per country.*

Photo: Dave Montreuil

Photo: Dave Montreuil

4.28 RUDDY TURNSTONE

Arenaria interpres
Tournepierre à collier

The Ruddy Turnstone is a cosmopolitan high arctic breeding species with an enormous range. In the East Atlantic Flyway, two sub-populations of the nominate sub-species occur: a Nearctic population breeding in Northeast Canada and Greenland that winters mainly in western Europe and a Palearctic breeding population from northern Scandinavia and west Russia, including Svalbard, that winters in Western Africa. During the breeding season the species breeds in solitary pairs in coastal habitats in the high Arctic with a preference for bare rock or shingle near water. During migration and in the winter quarters it is mainly coastal, when it frequents rocky or shingle shores, also sandy beaches with seaweed, reefs and mudflats with molluscs. The species is mainly insectivorous during the breeding season. Outside of the breeding season it also feeds on crustaceans, molluscs, annelids, echinoderms and fish, and even carrion is taken. The Wadden Sea is of importance for the Ruddy Turnstone during winter and migration.

photo Arnold Meijer / Blue Robin

Population trend

The Ruddy Turnstone occurs in the East Atlantic Flyway in two distinct populations. The Greenland breeding population mainly winters in Western Europe. Based on the wintering numbers this population has increased since 1988. For the long-term trend the average increase is 1% per year. The short-term trend from 2003 onwards shows a higher annual increase of 2%. The individuals counted in Africa are probably from the Fennoscandian population. There is a large variation in the numbers counted and this trend is therefore considered uncertain (fluctuating) (Figure 4.56). However population estimates in two Nordic countries with rather large breeding populations, Sweden and Finland, show considerable long-term declines in breeding numbers (EEA 2015).

Population size

Based on estimates of the breeding population (Meltofte 2001, Thorup 2006) an estimate of 100,000 - 200,000 birds was given for the Northeast Canada-Greenland population by Delany *et al.* (2009), this is maintained in Wetlands International (2015). This population winters predominantly in North-west-Europe. The population size of Ruddy Turnstones from Fennoscandia, predominantly wintering in West Africa, is also based on breeding numbers, estimating 62,700 - 111,000 birds, (EEA 2015, BirdLife International 2015) as summarized in Wetlands International (2015). During January 2010-2014 not more than 22,000 were estimated to be present along the West African coast (Figure 4.57, Annex 4.1). This is an under-estimate caused by the habit of Ruddy Turnstones of using poorly counted non-estuarine coasts.

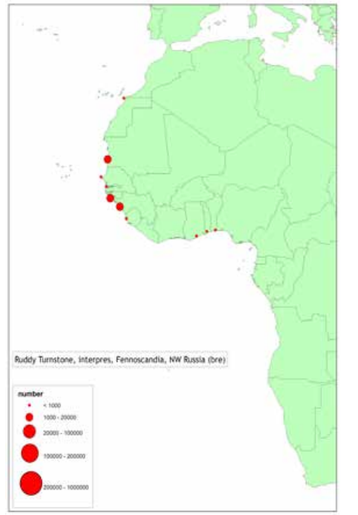


Figure 4.57. *Numbers and distribution of Ruddy Turnstone, Fennoscandia and NW Russian breeding population in January 2010-2014. Red dots are the estimated totals per country.*

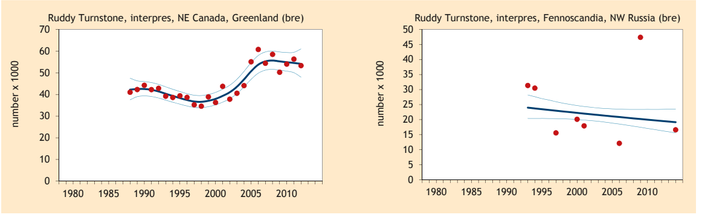


Figure 4.56. *Population trend of the Ruddy Turnstone wintering in the East Atlantic Flyway based on the January IWC counts. The left panel shows the trend of the Canada/Greenland population, the right panel shows the trend for the Fennoscandia population.*

photo Arnold Meijer / Blue Robin

photo Arnold Meijer / Blue Robin

4.29 RED KNOT

Calidris canutus
Bécasseau maubèche

Two sub-species of the Red Knot use the East Atlantic Flyway. The Palearctic nominate (*canutus*), breeding in the Arctic zones of eastern Russia (Taymyr peninsula), migrating through Europe to the coast of West Africa, and the Nearctic breeding population of Greenland and eastern Canada (*islandica*) wintering in Western Europe. There is no breeding population in Europe. Breeding occurs in solitary pairs on Arctic tundra vegetation, mostly dry upland tundra and gravel close to water. Migration and wintering occurs in large flocks in coastal areas, with a preference for tidal mud- or sand-flats and sandy beaches. The species congregates in large numbers in estuaries and lagoons, the birds dividing their time between feeding and roosting. Insects are the main food items during the breeding season, but early in the season seeds and grass shoots are also eaten. Outside the breeding season, bivalves are an important food source, in the Wadden Sea for example *Macoma* sp. and small cockles (*Cerastium* sp.). The Wadden Sea is one of the major wintering and staging areas for both sub-species of the Red Knot.

PHOTO Markus Varesvuo / Alpha

Population trend

The *islandica* population of the Red Knot shows a stable or slightly decreasing trend (Wetlands International 2015). This is based on analyses of the IWC data (Nagy *et al*. 2014 and this report, Figure 4.58). Based on the national estimates (EEA 2015) as summarized in Wetlands International (2015) the trend is increasing. Based on wintering birds in Africa the nominate *canutus* is in decline. Recent estimates are almost half of the numbers around 1980 (Figure 4.58).

Population size

The size of the islandica population wintering in Northwest Europe is estimated to be 500,000 - 565,000 birds (Wetlands International 2015) based on national winter estimates (EEA 2015, Figure. 4.59). This estimate is 150,000 - 200,000 birds higher than based on calculations using mark-resighting techniques (Spaans *et al*. 2011). The size of the *canutus* population is estimated to be 250,000 birds based on the 2010-2014 counts along the western seaboard of Africa (Annex 4.1, Fig 4.49). This estimate is 150,000 birds less than based on Spaans *et al*. 2011.

PHOTO Koos Dansen

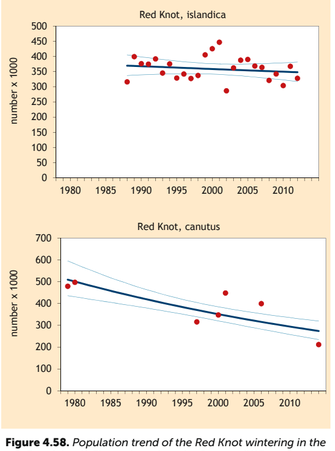


Figure 4.58. *Population trend of the Red Knot wintering in the East Atlantic Flyway based on the January IWC counts. The upper panel shows the trend of the islandica sub-species, the bottom panel shows the trend for nominate canutus.*

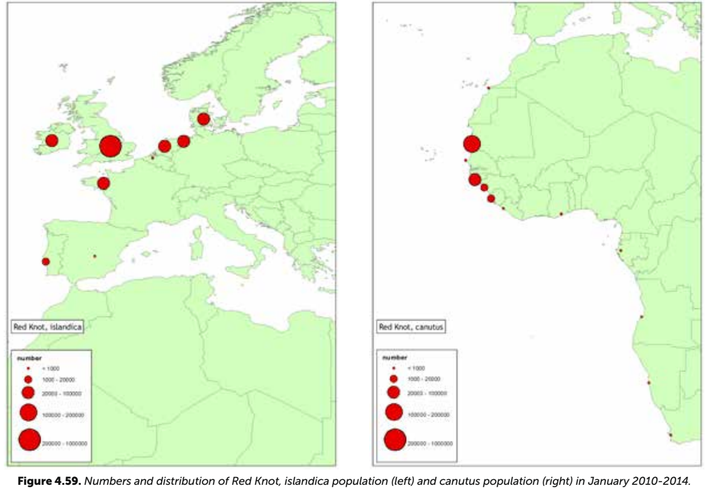


Figure 4.59. *Numbers and distribution of Red Knot, islandica population (left) and canutus population (right) in January 2010-2014. Red dots are the estimated totals per country.*

4.30 SANDERLING

Calidris alba
Bécasseau sanderling

One population of the Sanderling occurs in the East Atlantic Flyway. Breeding occurs in the high Arctic tundra, from Greenland and northeast Canada. Whether the eastern breeding birds from the Taymyr peninsula also belong to this flyway is currently doubtful (Reneerkens et al. 2009). The species migrates and winters through Western Europe, and wintering occurs along the western coast of Africa probably until Benin. Non-breeding birds from Cameroon south to South Africa are probably related to the West Asia - Eastern & Southern Africa flyway. The species is strictly coastal and uses specific stopover sites. It occurs as a solitary breeder in well-drained barren or stony tundra. The breeding diet consists mainly of insects, spiders and small crustaceans and plant material when insects are too scarce in spring. On passage and in winter, its diet consists of insects, small molluscs, crustaceans and polychaete worms and occasionally also fish and carrion. The Wadden Sea is an important stopover and wintering site.

photo Arnold Meijer / Blue Robin

Population trend

The East Atlantic flyway Sanderling population is increasing. On average, the annual increase was 4% in the long term (since 1979) and as much as 6% in the short term (since 2003).

The Sanderling numbers wintering in Europe have increased at a higher rate than the numbers wintering in West Africa (Figure4.61), respectively 5% and 1% per year, on average in the long term and 6% and 1% in the short term (since 2003).

Population size

The size of the East Atlantic Flyway population is estimated to be 200,000 birds based on EEA 2015 estimates for wintering numbers in Europe and the 2010-2014 January counts in Western Africa (Annex 4.1, Figure 4.62). As Sanderling makes extensive use of non-estuarine sites as well, which are only partly incorporated in these counts, this new estimate of the population size is probably conservative although already a major increase with the former population size.

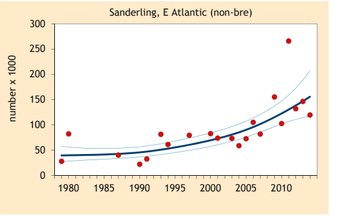


Figure 4.60. *Population trend of the Sanderling wintering in the East Atlantic Flyway based on the January IWC counts.*

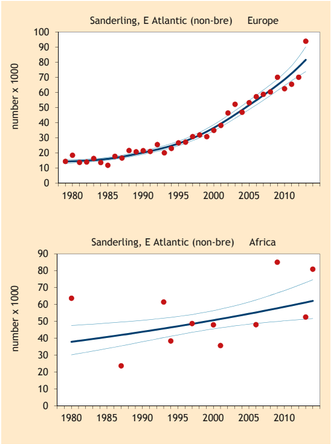


Figure 4.61. *Trend of the Sanderling population of the East Atlantic Flyway in the European part (upper panel) and in the West African part (bottom panel) of their January range, based on IWC counts.*

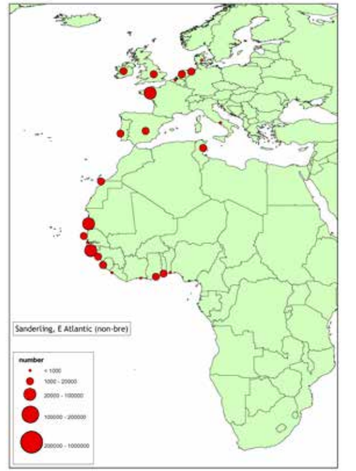


Figure 4.62. *Numbers and distribution of Sanderling East-Atlantic - Western Africa population in January 2010-2014. Red dots are the estimated totals per country.*

photo Dave Montreuil

photo Dave Montreuil

4.31 LITTLE STINT

Calidris minuta
Bécasseau minute

A single population is distinguished for the Little Stint within the East Atlantic Flyway. Birds of this population breed in northern Fennoscandia and parts of Russia, the exact borders with a more easterly occurring sub-population (SW Asia, Eastern and Southern Africa) are unclear and show considerable overlap. The East Atlantic Flyway population migrates on a broad front through Europe and winters in western and central Africa. The highest breeding numbers of this population occur in Russia. The species breeds in solitary pairs on tundra vegetation at low altitudes. It prefers dry ground with dwarf willows or crowberries *Empetrum*. It is found in a wide range of freshwater wetlands and on coastal mudflats and seashores. In its African winter range both coastal and inland wetlands are used. The diet in the breeding areas consists primarily of insects. A much wider group of invertebrates, depending on the habitat, is taken outside the breeding season including crustaceans and small molluscs. The Wadden Sea is of minor importance for this species.

Photo: Daniel Occhiato / Agami

Population trend

Both the long and the short term population trends of the Little Stint are negative. On average, the decline was 4% per year, which indicates a huge decline of 75% since 1980, but the number of data points is limited, and only data from coastal sites was used, so this decrease should be treated with caution (Figure 4.63). Comparing average wintering numbers from the 1980s and 1990s with recent numbers shows a stable or even slight increase in Europe and a fairly large decrease in Africa. Since numbers in Europe are far fewer than in Africa, the modest increase there does not explain the decline in Africa.

Population size

The estimated results for January 2012-2014 (Annex 4.1, Fig 4.65) being 270,000 birds seem to corroborate the earlier population estimate of 300,000 individuals (Delany *et al.* 2009) as several countries were not counted completely for this species. However, considering the current decline, these numbers, and those in the 1980s (211,000, Smit & Piersma 1989) were probably underestimates.

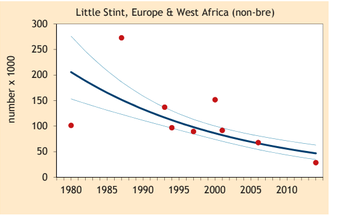


Figure 4.63. *Population trend of the Little Stint wintering in the entire East Atlantic Flyway based on the January IWC counts.*

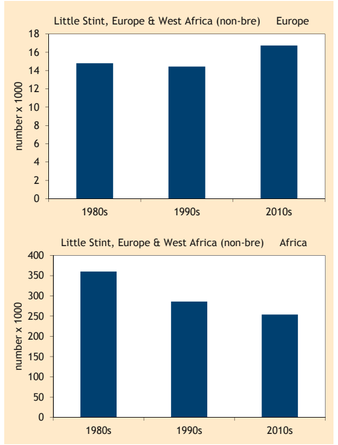


Figure 4.64. *The difference in wintering numbers in Europe and Africa based on Smit & Piersma (1989), Stroud et al. (2004) and the present study. The total wintering numbers for the 1980s, 1990s and 2010s are indicated.*

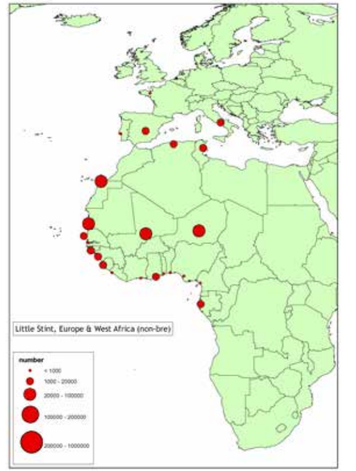


Figure 4.65. *Numbers and distribution of Little Stint, Europe and West Africa population in January 2010-2014. Red dots are the estimated totals per country.*

Photo: Mark Lewis / Agami

Photo: Markku Rantanen / Agami

4.32 CURLEW SANDPIPER

Calidris ferruginea
Bécasseau cocorli

The East Atlantic Flyway population of Curlew Sandpiper breeds in northern Russia (Taymyr and further east). Part of this population uses the east Mediterranean and Black Sea route to Africa and the other part migrates through western and eastern Europe to western sub-Saharan Africa. Breeding occurs in solitary pairs on lowlands of the high Arctic, with a preference for open tundra with wet patches (marshy areas). In winter, the species is mainly coastal and occurs on brackish lagoons, tidal mud- and sand-flats, estuaries and saltmarshes. Inland habitats such as muddy edges of freshwater wetlands are also used. The species is insectivorous during the breeding season and forages on polychaete worms, molluscs and crustaceans on passage and winter in more saline habitats. The Wadden Sea is visited by a relatively small proportion of the population.

PHOTO Arnold Meijer / Bluebird

Population trend

The Curlew Sandpiper showed a moderate decline since 1979 (an average of minus 2% annually). The decline was most obvious after 2003 with high peak numbers still recorded in the 1990s (Figure 4.66).

size

A population size of 350,000 - 450,000 is estimated based on numbers of wintering birds during the 2010-2014 counts (see Annex 4.1, Fig 4.66). An upper limit of 450,000 is used to account for uncertainties in some countries and underestimates in others. This is a much lower estimate than the former one of 1,000,000 birds (Stroud *et al*. 2004, Delany *et al*. 2009).

PHOTO Markus Varesvuo / Agami

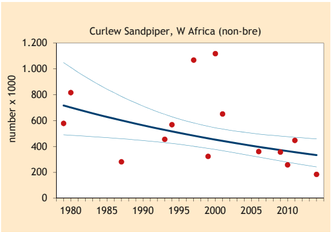


Figure 4.66. *Population trend of the Curlew Sandpiper wintering in the East Atlantic Flyway based on the January IWC counts.*

Figure 4.67. *Numbers and distribution of Curlew Sandpiper, West Africa population in January 2010-2014. Red dots are the estimated totals per country.*

PHOTO Markus Varesvuo / Agami

PHOTO Daniele Occhiato / Agami

4.33 DUNLIN

Calidris alpina
Bécasseau variable

The Dunlin has a complicated flyway population/ sub-species structure. Five populations can be distinguished that use (part of) the East Atlantic Flyway, two of which make use of the Wadden Sea. (1) Nominate *alpina*: one sub-population that breeds in northern Scandinavia, northern Russia east to Taymyr and winters mainly in Western Europe, (2) *arctica*: a relatively small population breeding in northeastern Greenland and wintering in West Africa, not migrating through the Wadden Sea (3) *schinzii*: three sub-populations; a. a population breeding in Iceland and wintering in West Africa, not migrating through the Wadden Sea, b. a population breeding in The UK and Ireland and wintering in Northwest Africa and Southwest Europe, not migrating through the Wadden Sea, c. a population breeding in the Baltic region and wintering in (south)western Europe. Large breeding populations occur in Iceland, Scandinavia and Russia. Birds counted in winter in West Africa probably belong mainly to the Icelandic *schinzii* population, while those counted in Western Europe and Morocco probably belong mainly to the *alpina* population. The species breeds in loose colonies but aggregates in huge flocks during migration and in winter. A variety of migration strategies are recognized over many parts of Europe, from short-distance coastal migration to broad-front long distance migration.

Breeding habitats vary according to latitude, but it seems to prefer moist ground interspersed with open water, from tussock or peat tundra in the Arctic to wet coastal grasslands and wet upland moorland further south. In the non-breeding season this species mainly prefers estuarine mudflats, although it also occurs in a wide variety of freshwater and brackish wetlands (mainly on migration). It is regarded as an omnivorous generalist all year round, taking insects, spiders, mites, earthworms, snails, slugs and seeds in the breeding season and also polychaete worms, small gastropods, crustaceans and bivalves in the non-breeding season. The Wadden Sea is extremely important for the *alpina* and *schinzii*-Baltic flyway populations.

Population trend

Two populations have been selected for trend analyses in this report. The nominate *alpina*, wintering mainly in Western Europe shows little variation with time. The long-term trend since 1988 is stable. However, the short-term trend since 2003 shows a slight decline averaging 1% per year (Figure4.68, left panel). This is also apparent for the breeding populations (EEA 2015, BirdLife International 2015). The sub-species *schinzii* wintering in Africa seems to be in decline but the data points are sparse and the decline is based only on the 2014 counts (Figure 4.68). It is known that the Baltic part of the *schinzii* population suffered a huge decline, but that the British breeding population of *schinzii* remained stable or slightly increased (EEA 2015). The *arctica* population is considered stable (Wetlands International 2015), this population remains poorly known.

Population size

The size of the *alpina* population is estimated to be 1,330,000 birds (Wetlands International 2015) based on national winter estimates (EEA 2015). This population winters In Western Europe (Fig. 4.69). The size of the *schinzii* population breeding in Iceland is estimated to be 730,000 - 830,000 birds based on the 2010-2014 counts in Western Africa; they winter predominantly on the Banc d'Arguin in Mauritania (Annex 4.1, Fig 4.69).

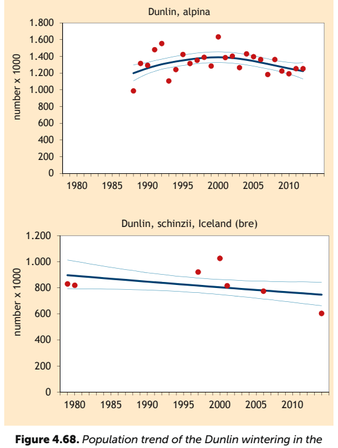


Figure 4.68. *Population trend of the Dunlin wintering in the East Atlantic Flyway based on the January IWC counts. Upper panel: sub-species alpina, bottom panel: sub-species schinzii, Icelandic breeding population.*

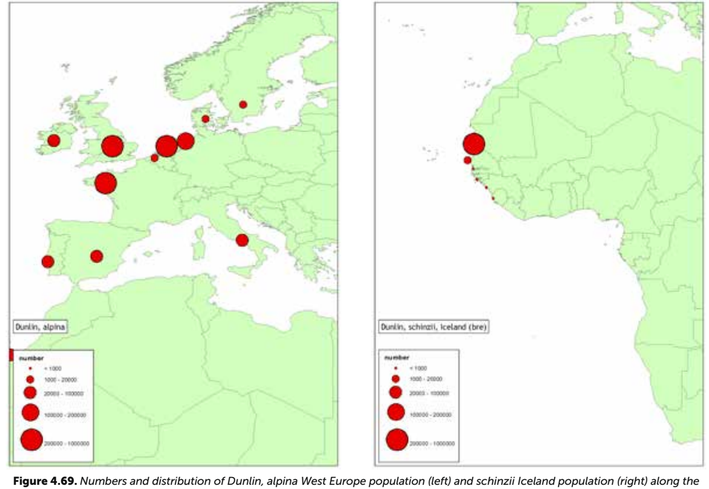


Figure 4.69. *Numbers and distribution of Dunlin, alpina West Europe population (left) and schinzii Iceland population (right) along the East Atlantic Flyway in January 2010-2014. Red dots are the estimated totals per country.*

4.34 COMMON GULL

Larus canus
Goéland cendré

Two sub-species of Common Gull, are distinguished in Europe, nominate *canus* and *heinei*. The nominate sub-species occurs in the East Atlantic Flyway, breeding in large areas of northern and eastern Europe and wintering in western and central Europe, including offshore areas. Breeding numbers are high in some Nordic countries such as Denmark, Norway, Sweden, Finland, Estonia and European Russia, but also in Germany and the The UK. Breeding occurs in many other countries in western and central Europe but the numbers are low. The Netherlands and neighbouring countries around the North Sea are the most important wintering areas. This gull species breeds in single pairs and (mixed) colonies in a variety of coastal but also inland habitats: dune areas, beaches, grassy islands and rocky or grassy cliff ledges along the coast and small islands or shores of inland waterbodies or in bogs. The species occupies similar habitats outside the breeding season, and is often found foraging in agricultural grasslands and on intertidal mudflats, but also in urban habitats, usually in flocks. The diet consists of earthworms and insects in terrestrial habitats and also crustaceans and molluscs in marine habitats. The Wadden Sea is important in autumn and winter.

PHOTO Arnold Meijer / Blue Robin

Population trend

The population trend of the Common Gull has been derived from the national breeding bird estimates reported in the flyway as a result of the EU Article 12 reporting process. (EEA 2015). An estimated 60% of the total population is covered by the available national estimates. The population is regarded stable, based on the derived population indices (Figure 6.70). This trend has also been estimated from the winter counts (Nagy *et al.* 2014)

Population size

The population size is estimated to be 1.2 - 2 million birds (Wetlands International 2015) based on national breeding population sizes (EEA 2015, BirdLife International 2015).

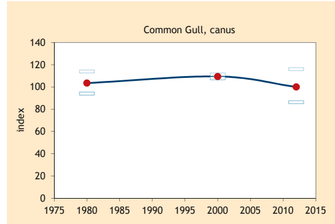


Figure 4.70. *Population trend of Common Gull based on the national breeding bird estimates in the total flyway in three time periods.*

PHOTO Arnold Meijer / Blue Robin

PHOTO Arnold Meijer / Blue Robin

PHOTO Arnold Meijer / Blue Robin

4.35 HERRING GULL

Larus argentatus
Goéland argenté

The Herring Gull occurs in two sub-species in the East Atlantic Flyway: the nominate *argentatus* breeding in Fennoscandia and European Russia and *argenteus*, breeding in countries around the North Sea and the north-west of Europe (including Iceland). Large populations of the nominate breed in Denmark, Norway, Sweden, Finland, Estonia and Russia. They are partial migrants, with some birds wintering further south, for example along the North Sea coasts. Large *argenteus* populations occur mainly in The UK, France and The Netherlands. They are also partial migrants. Breeding occurs in colonies mostly in or near coastal areas, in a wide variety of habitats, for example islands with grassy vegetation, dune areas, sandy beaches, rocky outcrops and roofs in urban areas. In the non-breeding season a wide variety of habitats is also used, but populations in western Europe seem to prefer tidal mudflats and beaches. The species is opportunistic, certainly in the breeding season, and will take almost any food available. Outside the breeding season it has a preference for bivalves (mussels, cockles) which is more marked than among other gull species in tidal habitats and along beaches.
The Wadden Sea is an important breeding and wintering area for the breeding *argenteus* population. The exact importance of the Wadden Sea for wintering *argentatus* is unknown.

PHOTO Arnold Meijer / Blue Robin

Population trend

The population trends of the two European sub-species of the Herring Gull have been derived from national breeding bird estimates available from the EU Article 12 reporting (EEA 2015). Countries were assigned to either of both sub-species within the flyway according to the breeding range. It was possible to derive breeding bird numbers for both sub-species for around half of the total estimated population within the flyway. Both sub-species have declined since 1979, *argenteus* at an average annual rate of 1,5% and *argentatus* at 1% (Figure 4.71).

Population size

The population of *argenteus* is estimated to be 706,000-783,000 birds and *argentatus* 1.3 - 1.6 million birds (Wetlands International 2015). Both estimates are based on national breeding population sizes (EEA 2015, BirdLife International 2015).

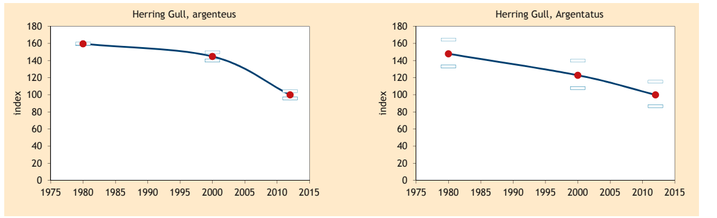


Figure 4.71. *Population trend of two sub-species of the Herring Gull based on the national breeding bird estimates in the total flyway in three time periods, left panel: sub-species argenteus, right panel: argentatus*

PHOTO Arnold Meijer / Blue Robin

PHOTO Arnold Meijer / Blue Robin

PHOTO Arnold Meijer / Blue Robin

4.36 GREY-HEADED GULL

Larus cirrocephalus
Mouette à tête grise

The Grey-Headed Gull breeds in sub-Saharan Africa and South America. Three sub-populations are distinguished within the AEWA region. Only the West African breeding population is considered here. In West Africa this resident species is a coastal colonial breeder, but also occurs on large inland lakes (e.g. in Chad and Mali). Important breeding sites are in Senegal, the Gambia and Guinea-Bissau, where it breeds on rocky offshore islands, coastal dunes, estuaries and harbours. The same habitats are frequented outside the breeding season. Its diet consists predominantly of fish.

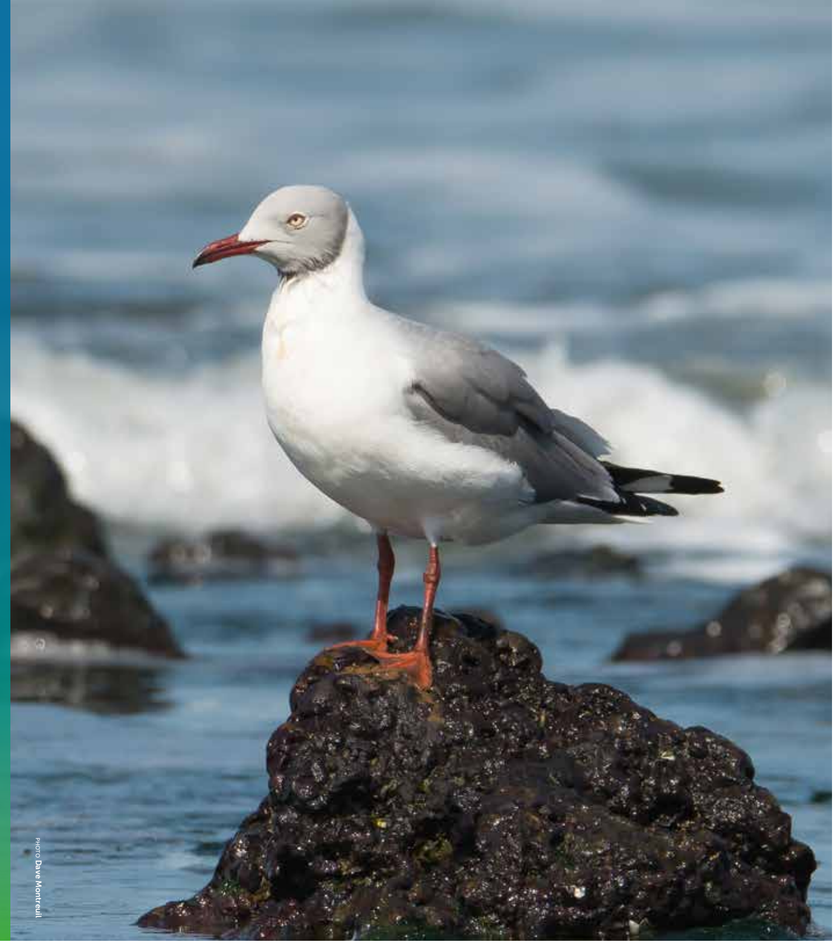


PHOTO Dave Montreuil

Population trend

Only recent data are available for compiling population trends for the West African population of the Grey-headed Gull. Since 1997, the population seems to have declined (on average by 4% annually), but data fluctuated strongly and should be treated with caution (Figure 4.72).

Population size

The West African population is estimated to be 25,000-30,000 birds (Wetlands International 2015). This is based on estimates of the breeding population in the region: 10,000 pairs by Keijl *et al*. (2001) and 8,000 -10,000 pairs by Veen *et al*. (2007) and Veen *et al*. (2011) for recent years. Results from the IWC counts in 2010-2014 indicate a total of around 23,000 birds in January (Annex 4.1). Most birds were seen between Senegal and Guinea (Fig. 4.73).

PHOTO Dave Montreuil

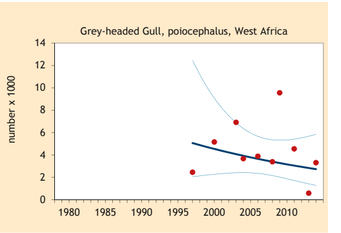


Figure 4.72. *Population trend of the Grey-headed Gull West Africa population, based on the January IWC counts.*

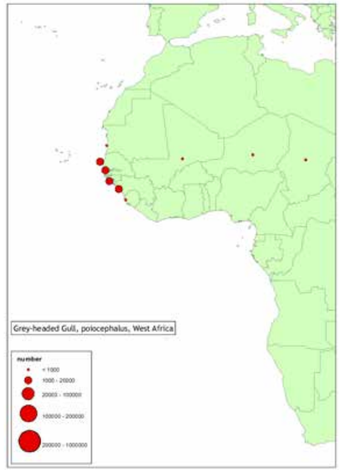


Figure 4.73. *Numbers and distribution of Grey-headed Gull West Africa population in January 2010-2014. Red dots are the estimated totals per country.*

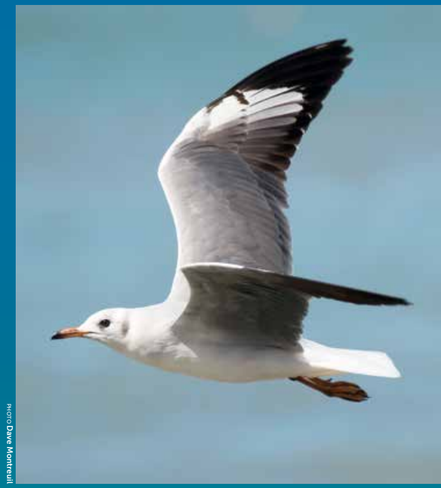


PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.37 BLACK-HEADED GULL

Larus ridibundus
Mouette rieuse

The Black-headed Gull is a common breeding bird in most countries of Europe. The West and Central European sub-population using the East Atlantic Flyway covers most of Europe including Iceland and the southern tip of Greenland. Large breeding populations (>50,000 pairs) occur in Belarus, the Czech Republic, Denmark, Estonia. Finland, Germany, Lithuania, The Netherlands, Norway, Poland, Sweden and The UK. Northern populations are highly migratory. Wintering occurs mainly in countries around the North Sea: Germany, Denmark, France, The UK and The Netherlands. Colonial breeding chiefly occurs in inland habitats, however, in The Netherlands a shift from inland to coastal sites has occurred. Breeding habitats range from freshwater wetlands with lush vegetation such as lakes, rivers, marshes with tussocks, lowland peat marshes to marine habitats such as estuaries, lagoons, saltmarshes, dunes and offshore islands. In the non-breeding season it is more a coastal species occurring for example in estuaries and other tidal waters, but large flocks also occur on farmland (wet grasslands)and in urban areas (city parks, rubbish dumps). The diet is diverse and the species is quite opportunistic. During the breeding season, the diet for inland populations consists of insects and earthworms, and for marine populations also molluscs, crustaceans and worms.

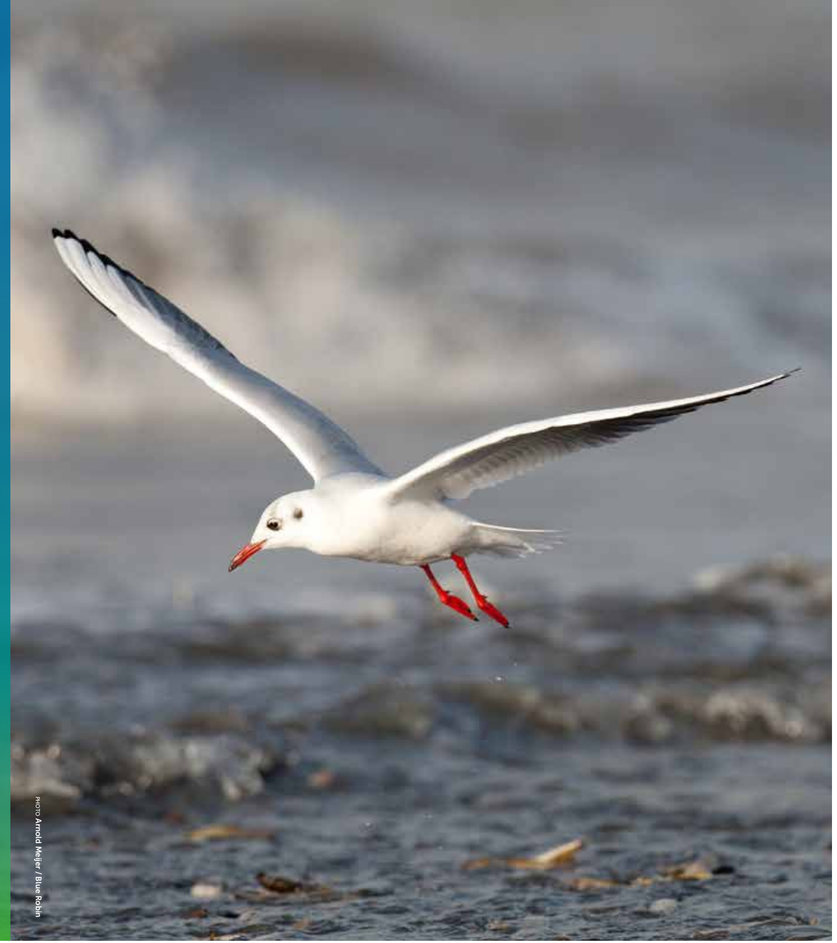


PHOTO Arnold Meijer / Blue Robin

During the non-breeding season some populations rely heavily on human supplied food sources, for example in urban areas, or scavenging for fish waste while following trawlers at sea. The Wadden Sea is an especially important moulting and foraging area in autumn.

Population trend

Two data sources were available to compile trends for the Black-headed Gull: the EBCC data from the Pan European Common Bird Monitoring Scheme and the national estimates as a result of the EU Article 12 reporting process (EEA 2015). Both trend figures show declines. The long term trend from 1980-2012 based on the reporting data shows a 1% annual average decline (Figure 4.74).

Population size

The population size is estimated to be 2.7 - 3.5 million birds (Wetlands International 2015) based on national breeding population sizes (EEA 2015, BirdLife International 2015).

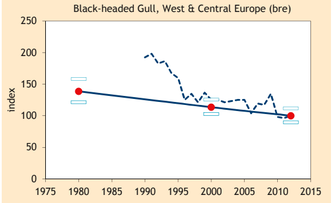


Figure 4.74. *Population trend of the Black-headed Gull based on the national breeding bird estimates in the total flyway in three time periods (solid line) and the PECBMS trend line (dashed line).*

PHOTO Arnold Meijer / Blue Robin

PHOTO Arnold Meijer / Blue Robin

PHOTO Arnold Meijer / Blue Robin

4.38 SLENDER-BILLED GULL

Larus genei
Goéland railleur

The Slender-billed Gull in Europe is a Mediterranean breeding bird, mostly in the eastern part, and the European part of the population is not considered to belong to the East Atlantic Flyway. There is, however, a local breeding population in West Africa (Mauritania, Senegal and Guinea-Bissau). The species is considered resident, but outside the breeding season, birds disperse across the region. This coastal colonial breeder inhabits saltwater habitats and breeds on sandy islands and sand beaches, also in saline inland seas, with a preference for shallow waters. Outside the breeding season it is a strictly coastal species and shallow waters such as inshore waters and saltpans are also preferred here. Its diet consists mainly of fish, but also invertebrates such as crustaceans and insects.

Photo: Dave Montreuil

Population trend

The population trend of the Slender-billed Gull based on the January counts is regarded as stable, see also Dodman 2014), although the numbers do fluctuate considerably between years (Figure 4.75).

Population size

The size of the West African population is estimated to be 24,000-30,000 birds (Wetlands International 2015). This is based on an estimate of the breeding population in the region of 8,000 - 10,000 pairs (Veen *et al*. 2007, 2011). Results from the IWC counts in 2010-2014 gave a total of almost 18,000 birds in January (Annex 4.1). Most birds were seen in Mauritania, Senegal and The Gambia (Fig. 4.76).

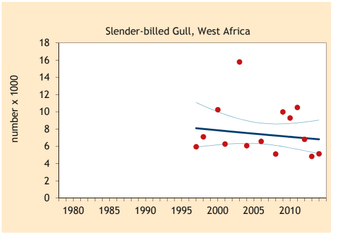


Figure 4.75. *Population trend of the Slender-billed Gull of the West Africa population in the East Atlantic Flyway based on the January IWC counts.*

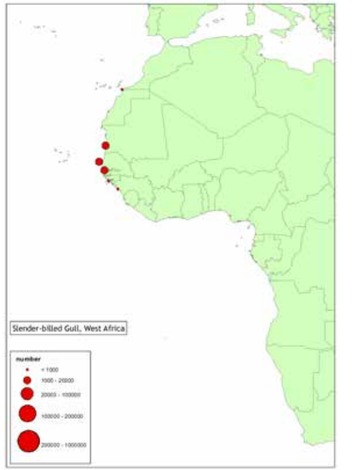


Figure 4.76. *Numbers and distribution of Slender-billed Gull, West Africa population in January 2010-2014. Red dots are the estimated totals per country.*

Photo: Dave Montreuil

Photo: Dave Montreuil

4.39 GULL-BILLED TERN

Sterna nilotica
Sterne hansel

The Gull-billed Tern is a dispersed breeder over a wide range in Europe and Africa. The breeders of western Europe and the western Mediterranean area together with the West African breeders are considered to belong to the same flyway population. Individuals of the European sub-population are strictly migratory, the African sub-population is largely resident. Breeding sub-populations in north-western Europe are very small and dispersed, with larger sub-populations occurring in France, Italy and Spain. In West Africa, important breeding colonies are known from Mauritania, Senegal and Guinea-Bissau. Outside the breeding season it is gregarious. Most of the European breeding birds probably migrate to West Africa and mix with local breeders. The breeding habitat is highly variable and includes bare or sparsely vegetated places such as islands, banks, dunes, saltmarshes and saltpans. It also occurs in freshwater lagoons, estuaries and inland lakes. Migrating birds are often seen over saltpans, coastal lagoons and various other coastal wetland types, but it also forages over large rivers, lakes and rice fields. It is largely insectivorous but quite opportunistic, taking a wide variety of food items like vertebrates (reptiles, amphibians and fish).

PHOTO Dave Montreuil

Population trend

The Gull-billed Tern is clearly increasing in the East Atlantic Flyway. Based on the national breeding estimates as a result of the EU Article 12 reporting process (EEA 2015) in a subset of the flyway, the population increased at an average rate of 3% per year in the long term and 1% more recently (since 2000) (Figure 4.77). Unfortunately, there was only data for a small proportion (10%) of the total flyway estimate and the representativeness is uncertain.

Population size

The population size is estimated to be 32,000 - 63,000 birds (Wetlands International 2015) based on 7,800 - 8,800 breeding pairs in Europe (EEA 2015, BirdLife International 2015) and 4,500-12,000 pairs for North-west and West Africa (Dodman 2014). Results from the IWC counts in 2010-2014 gave a total of 33,000 birds in January (Annex 4.1, Fig. 4.78).

PHOTO Dave Montreuil

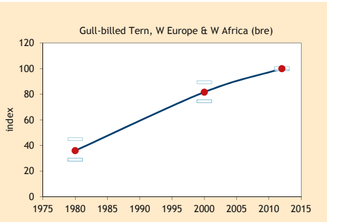


Figure 4.77. *Population trend of the Gull-billed Tern based on the national breeding bird estimates available in three time periods.*

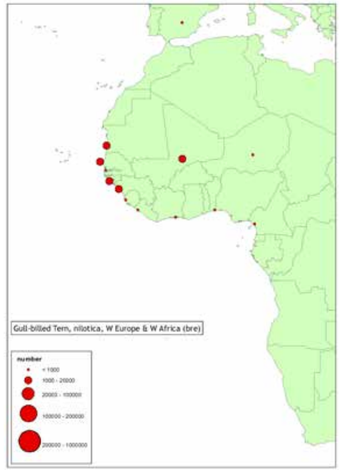


Figure 4.78. *Numbers and distribution of Gull-billed Tern, West Europe and West Africa population in January 2010-2014. Red dots are the estimated totals per country.*

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.40 CASPIAN TERN

Sterna caspia
Sterne caspienne

The Caspian Tern is a cosmopolitan species. Several sub-populations occur in the AEWA region. The north European breeding population mainly winters inland in Sahelian Africa (Zwarts et al. 2009), a Southern African breeding population occurs both inland and at coastal sites. The West African breeding population along the coast is reported here. Confirmed large breeding sites in West Africa range from Mauritania south to Guinea. Habitat requirements year-round are quite similar: it prefers sheltered coastal waters and estuaries including saltpans, lagoons, inlets, bays, harbours, freshwater lakes and saline inland wetlands. It often nests on shell and shingle beaches and islands. Roosting occurs on sandbars or shell banks.

PHOTO Dave Montreuil

Population trend

Dodman (2014) considered the Caspian Tern to be a fluctuating species. Based on the IWC January counts an average increase of 3% per year since 1993 is apparent, although this is partly based on two 'high counts' after 2010 (Figure 4.79).

Population size

The population size of the West African population is estimated to be 45,000-60,000 birds (Wetlands International 2015). This is based on the size of the breeding population in Mauritania-Guinea, estimated at 15,000 - 20,000 pairs (Dodman 2014, Veen *et al*. 2007, 2011). Results from the IWC counts in 2010-2014 in the range states of this population gave a total of more than 46,000 birds in January (Annex 4.1, Figure 4.80).

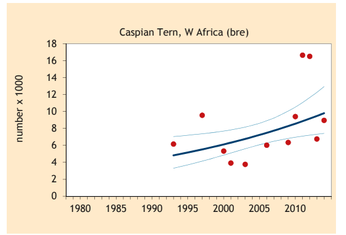


Figure 4.79. *Population trend of the West Africa breeding population of the Caspian Tern, based on the January IWC counts.*

PHOTO Dave Montreuil

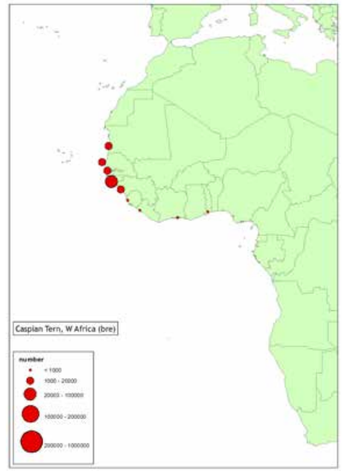


Figure 4.80. *Numbers and distribution of Caspian Tern, West Africa population in January 2010-2014. Red dots are the estimated totals per country.*

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.41 SANDWICH TERN

Sterna sandvicensis
Sterne caugek

The Sandwich Tern is a strictly coastal species occurring in many parts of Europe and Africa as well as the Americas. The East Atlantic Flyway is used by populations breeding in northern and western Europe and wintering in the west Mediterranean Sea or on the western seaboard of Africa. Large breeding populations (>5,000 pairs) in the East Atlantic Flyway occur in The Netherlands, The UK, Germany, Denmark and France. The species breeds in large colonies and is gregarious throughout the year. Migration occurs along the Atlantic coasts. Probably part of the population winters in the Mediterranean Sea and mixes with individuals of eastern European origin (particularly Ukraine). Ring recoveries from Dutch birds show a clearly coast-bound pattern with birds found along the whole European and African Atlantic coasts, as far south as South Africa. Colonies occur on sandy islands, sand dunes and rocky islets near suitable foraging grounds (shallow sandy substrates). Outside of the breeding season the species is found in the open sea, but also frequents sandy or rocky beaches. The main diet consists of fish (of up to 15 cm in length), in The Netherlands, often Herring, Sprats and Sandeels. The Wadden Sea is important for breeding and migration.

PHOTO: Dave Montreuil

Population trend

The Sandwich Tern population breeding in northern and western Europe has shown a clear and steady increase since 1980 of about 1% annually (Figure 4.81). The data are based on the national breeding estimates of EU countries in the flyway as a result of the EU Article 12 reporting process (EEA 2015). Data are available for almost all countries within the flyway (>95% of the population).

Population size

The population size is estimated to be 160,000 - 186,000 birds (Wetlands International 2015) based on national breeding population sizes (EEA 2015). Results from the IWC counts in 2010-2014 gave a total of 34,000 birds in January (Annex 4.1, Fig 4.82). Many birds are missed by counts because Sandwich Terns make extensive use of offshore areas and relatively few use the estuarine sites where counts were concentrated.

PHOTO: Dave Montreuil

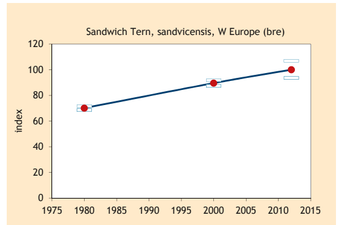


Figure 4.81. *Population trend of the Sandwich Tern based on the national breeding bird estimates for West Europe in three time periods.*

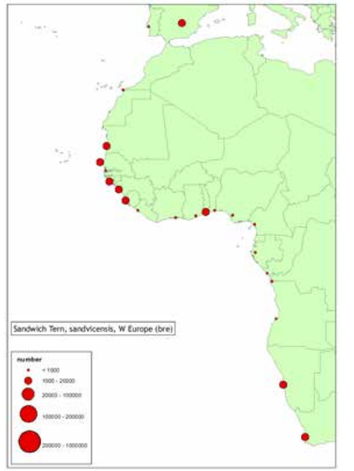


Figure 4.82. *Numbers and distribution of Sandwich Tern along the western seaboard of Africa and south-west Europe in January 2010-2014.Red dots are the numbers counted per country.*

PHOTO: Dave Montreuil

PHOTO: Koos Dansen

4.42 ROYAL TERN

Sterna maxima
Sterne royale

Royal Terns of the sub-species *albididorsalis* breed on the West African coast from Mauritania to Guinea and use a wider coastal range outside the breeding season. The species is gregarious year-round. It shows a preference for inaccessible sites such as sandy or coral islands, lacking vegetation and offering a good vantage point. Foraging occurs in coastal waters including estuaries, lagoons and mangroves. The diet consists mainly of small fish, but also squid, shrimps and crabs.

PHOTO Dave Montreuil

Population trend

The population is considered to be stable or fluctuating (Wetlands International 2015) based on developments in the breeding population. Numbers at particular sites can change rather extensively but this seems to be related to exchange between sites (Veen *et al*. 2011, 2007, Dodman 2014).

Population size

The population size of *albididorsalis* is estimated to be 255,000 - 315,000 birds (Wetlands International 2015) based on the breeding population (Veen *et al*. 2011, 2007, Dodman 2014). Results from the IWC counts in 2010-2014 gave a total of 64,000 birds in January (Annex 4.1, Fig 4.83). Many birds are missed by counts because Royal Terns make extensive use of offshore areas and relatively few use the estuarine sites where counts were concentrated.

PHOTO Dave Montreuil

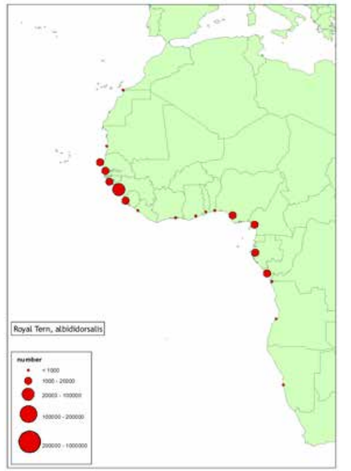


Figure 4.83. *Numbers and distribution of Royal Tern, albididorsalis population in January 2010-2014. Red dots are the numbers counted per country.*

PHOTO Dave Montreuil

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.43 COMMON TERN

Sterna hirundo
Sterne pierregarin

The Common Tern is one of the most globally numerous and widespread tern species. In the East Atlantic Flyway, two sub-populations have been identified, (1) a population breeding in western, central and south-western Europe and also including breeding birds from North-west Africa and (2) a population breeding in northern and eastern Europe. The European breeding birds mainly winter in Africa. The Atlantic coastal and marine waters are very important sites for both the local breeders and the birds with a European origin. Breeding in Europe is quite scattered, occurring both in coastal and inland situations. The main populations breed in Belarus, Fennoscandia, Germany, The Netherlands, Russia, Ukraine and The UK. The resident West African population is small and scattered along the coast of countries from Mauritania to Ghana. Migration shows a leapfrog pattern with the most northern breeders wintering furthest south. Breeding occurs in marine and freshwater habitats, from sea-level to high mountains. Along the coast it prefers rocky surfaces on inshore islands, shingle and sand beaches, dunes and islands in estuaries, lagoons and saltmarshes. Inland it occurs on sand or shingle lake shores and gravel banks on river or lake islands, sand and gravel pits. Its diet is mainly fish and small crustaceans. The Wadden Sea is an important breeding and migration site.

PHOTO Arnold Meijer / Blue Robin

Population trend

For the Common Tern, the population trends for the two different sub-populations in Europe could be determined by using the national breeding number estimates resulting from the EU Article 12 reporting process (EEA 2015). Only moderate coverage was established (30%), For the northern and eastern European sub-population, but for the southern and western sub-population this was much higher (>75%). The long-term trend in the south and west is positive (average increase 1% annually since 1979), however the short-term trend is stable. For the north and east of Europe both trends are positive (on average 1% increase), (Figure 4.84).

Population size

The population of Common Tern in South and West Europe is estimated to be 169,000-208,000 birds and in North and East Europe 640,000 - 1,500,000 birds (Wetlands International 2015), both based on national breeding population sizes (EEA 2015, BirdLife International 2015). Small numbers also breed in North and West Africa, as far south as Gabon (Dodman 2014). The two populations mix in Africa during the northern winter. Results from the IWC counts in 2010-2014 gave a total of 52,000 birds in January (Annex 4.1, Fig 4.85). Many birds are missed by counts because Common Terns make extensive use of offshore areas and relatively few use the estuarine sites where counts were concentrated.

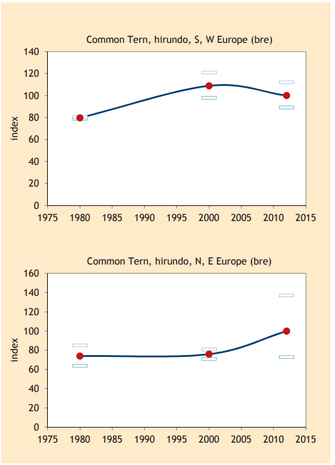


Figure 4.84. *Population trends of the Common Tern based on the national breeding bird estimates in the flyway in three time periods. Upper panel: S and W Europe, bottom panel: N and E Europe.*

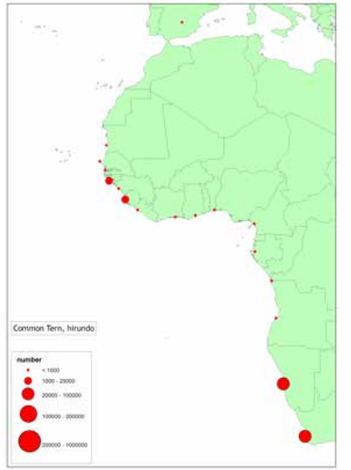


Figure 4.85. *Numbers and distribution of Common Tern along the western seaboard of Africa in January 2010-2014. Red dots are the numbers counted per country.*

PHOTO Arnold Meijer / Blue Robin

PHOTO Arnold Meijer / Blue Robin

4.44 ROSEATE TERN

Sterna dougallii
Sterne de Dougall

The Roseate Tern is a globally widespread species of mostly tropical and subtropical regions. The most northerly flyway population breeds in Western Europe and is treated in this report. Much further south along the East Atlantic Flyway a breeding population occurs also in South Africa. In Europe, breeding distribution is usually very dispersed on offshore islands in the Atlantic region. The largest populations occur on the Azores and in Ireland, while much smaller numbers occur in mainland Portugal, The UK and France. Wintering occurs along the western African coast with the highest numbers probably in Ghana. Breeding occurs in colonies, often mixed with other tern species such as the Common Tern. It remains gregarious all year round, roosting in big flocks and also congregating with other terns and gulls. Breeding occurs on islands and islets with rocky coasts, but also on shingle and sandy beaches. It has a preference for densely vegetated places. Outside the breeding season, the species remains coastal and pelagic (probably depending on colony location). Populations nesting in temperate regions feed over tide rips, shoals, inlets and upwelling areas. The diet is quite specialized compared to other terns and consists of small pelagic fish species such as Sandeel and Sprat. Colonies are usually located near areas with suitable foraging.

PHOTO Markus Varesvuo / Agami

Population trend

The population trend of the Roseate Tern in western Europe is based on the national estimates for the EU Article 12 reporting of the EU (EEA 2015). The trend is based on more than half of the total flyway population. The Roseate Tern population has shown a large increase since 1979; on average 2% per year in the long term and as much as 5% per year since 2000 (Fig. 4.86). It is, however, recovering from a large decline in the 1950s.

Population size

The population size of Roseate Tern in Western Europe is estimated to be 6,800 - 8,600 birds (Wetlands International 2015) based on national breeding population sizes (EEA 2015). Roseate Terns winter along the coast of West Africa. Only small numbers have been seen during the IWC. As well as often being pelagic, they are not confined to estuarine sites and are difficult to identify in their non-breeding plumage.

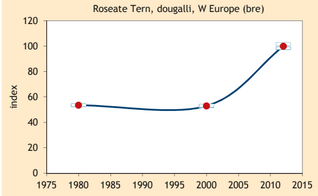


Figure 4.86. *Population trend of the Roseate Tern in western Europe based on the national breeding bird estimates for the total flyway in three time periods.*

PHOTO Pete Morris / Agami

PHOTO Markus Varesvuo / Agami

PHOTO Pete Morris / Agami

4.45 LITTLE TERN

Sterna albifrons
Sterne naine

The Little Tern is a widely, though sparsely distributed species, breeding in Europe and Africa as well as Asia and Oceania. In Europe, relatively small breeding numbers occur in most countries, both coastal and inland. In the East Atlantic Flyway, three populations have been identified covering two sub-species: the nominate with a population in Northwest Europe and a population in the Mediterranean, and the resident *guineae* in West Africa. Important breeding populations in (south) western Europe occur in Spain, Italy, France and The UK. The *guineae* population in West Africa breeds in widely dispersed small colonies. In winter, the European population migrates to West Africa. The breeding distribution of the Little Tern is also very dispersed and includes the coast but also the shores and islands of large rivers and lakes. Its preferred breeding sites (small colonies) are small islets of gravel, sand, shells or shingle within rivers, lakes or along beaches, in estuaries and in saltpans on sparsely vegetated or bare places. Outside the breeding season, coastal waters are preferred and foraging occurs in tidal creeks, lagoons and saltpans. Its diet consists mainly of small fish and crustaceans. In the Wadden Sea the species breeds in important numbers and in autumn there is probably an additional influx of individuals from northern breeding populations.

PHOTO Dave Montreuil

Population trend

The population trend of the Western European population of the Little Tern is based on the national estimates for the EU Article 12 reporting (EEA 2015). The trend is based on the entire breeding population in West Europe, taking the two populations of the nominate sub-species of the East Atlantic Flyway together. The trend is more or less stable, including a slight decrease from 1980 to 2000 and a small increase since then (Fig. 4.87). This European breeding population is, however, considered nowadays to comprise two separate geographical populations with one breeding in NW Europe and another one around the Mediterranean (Wetlands International 2015). The NW Europe population is stable while the Mediterranean population is decreasing in the short term (Wetlands International 2015). The population trend of *guineae* is unknown (Wetlands International 2015).

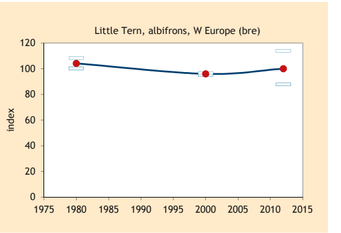


Figure 4.87. *Population trend of the Western Europe breeding population of Little Tern based on the national breeding bird estimates for the total flyway in three time periods.*

Population size

The population of *albifrons* Little Tern in NW Europe is estimated to be 19,000 - 25,000 birds and in the West Mediterranean 21,000 - 28,000 birds (Wetlands International 2015). Both these estimates are based on national breeding population sizes in Europe (EEA 2015, BirdLife International 2015) and an estimate of 800 pairs breeding in NW Africa (Dodman 2014). The population of *guineae* is estimated to be 2,000-3,000 birds (Dodman 2014). The three populations mix along the coast of Western Africa during the northern winter. Results from the IWC counts in 2010-2014 gave a total of 22,000 birds in January (Annex 4.1, Fig 4.88).

PHOTO Dave Montreuil

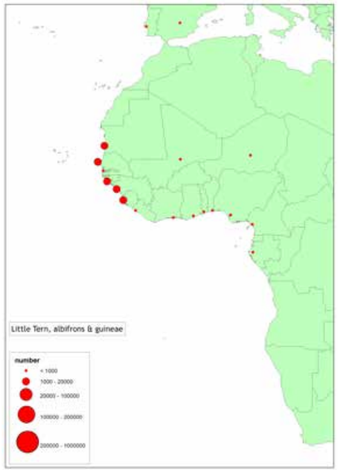


Figure 4.88. *Numbers and distribution of Little Tern in Western Africa in January 2010-2014. Red dots are the numbers counted per country.*

PHOTO Dave Montreuil

PHOTO Dave Montreuil

4.46 DAMARA TERN

Sterna balaenarum
Sterne des baleiniers

Damara Terns breed in coastal areas of Namibia and South Africa and winter further north and west, probably as far as Ghana and Côte d'Ivoire. The species breeds in colonies on gravel and in stony places, often some kilometres inland, and also salt pans and deserted beaches. Outside the breeding season it occurs on exposed coasts where it forages in shallow water and feeds on small fishes.

PHOTO Andy & Gill Swash / Aparmi

Population trend

The population of Damara Tern is in decline (Wetlands International 2014) based on estimated numbers of breeding birds (Angel *et al*. 2014). The IWC counts in January coincide with the breeding season, and a tendency to decline is also apparent in these results (Figure 4.89) but the scatter between years is very large.

Population size

The population size is estimated to be 3,000 - 7,250 birds (Wetlands International 2015, Angel *et al*. 2014).

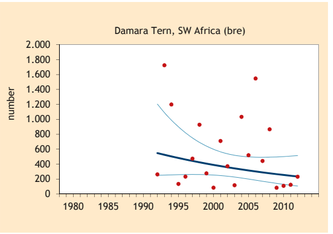


Fig 4.89. *Population trend of the Damara Tern based on the January IWC counts.*

PHOTO Menno Hornman

PHOTO Menno Hornman

PHOTO Menno Hornman

4.47 AFRICAN SKIMMER

Rynchops flavirostris
Bec-en-ciseaux d'Afrique

The African Skimmer is a typical river-dependent species, breeding and dispersing along rivers to find suitable foraging areas. Two sub-populations have been indentified. The West and Central Africa population occurs partially within the East Atlantic Flyway, at the coast from Senegal to Angola. Breeding in this zone is rather dispersed in small colonies, whilst larger non-breeding congregations may be found. It breeds along broad rivers on large, dry, bare sandbars, including within estuaries. Outside the breeding season, lakes and more coastal habitats are frequented as well, including lagoons and salt pans. The diet consists of fish.

PHOTO: Greg & Yvonne Dean / Agami

Population trend

There is not much solid information upon which to base the assessment of a trend. The population seems to be in decline in the Sahel zone and stable in the forested zone (Dodman 2014).

Population size

A population size of 7,000 - 13,000 is suggested (Wetlands International 2015) based on Dodman (2014). Large non-breeding congregations may occur from Nigeria to Congo along the Atlantic coast of Africa.

PHOTO: Roy de Haas / Agami

PHOTO: Andy & Gill Swash / Agami

PHOTO: Hans Germeaad / Agami

5 Threats and conservation along the flyway

As elsewhere on the globe, the condition of wetlands for waterbirds along the East Atlantic Flyway is under pressure as a consequence of anthropogenic activities, such as those related to the exploitation of natural resources, and disturbance. Good knowledge of which pressures are relevant for waterbirds at the wetlands along the East Atlantic Flyway and to what extent, is essential to clarify trends in bird numbers and to undertake effective conservation action to undo or mitigate the negative impact. A preliminary assessment of the protection status and some threats along the flyway are presented in this chapter (see methods in 3.5). Improvements are needed in the coming years to monitoring the levels of protection, threats and conservation measures along the East Atlantic Flyway.

Protection status

The conservation of waterbirds often starts with the protection of their sites. This is an effective strategy because many waterbirds congregate at a few sites along their flyway, especially during migration and wintering, but also during breeding in the case of colonial breeders. By protecting relatively smallareas of habitat, a high proportion of bird populations can be captured in a network of protected sites. This strategy is behind the Natura 2000 sites in the framework of the EU Birds Directive, the internationally important sites for waterbirds in the framework of the Ramsar Convention on wetlands, and the worldwide Important Bird and Biodiversity Areas strategy of BirdLife International. That such a strategy really works in the sense of more positive trends within the network of sites compared with unprotected sites has been demonstrated by Kleijn *et al.* (2013).

When the larger coastal sites along the East Atlantic Flyway are considered, many have a legal conservation status (Figure 5.1 and Figure 5.2). They may be designated as wetlands of international importance under the Ramsar Convention, under national legislation as national parks or other national classification, or as Special Protected Areas under the EU Birds Directive.

Relatively many unprotected sites are located on the coast between Liberia and Cameroon (Figure 5.1 & Figure 5.2). However unprotected important sites are also still found in Europe, Mediterranean and West Africa (Figure 5.1 & 5.2). It is important to note that this present analyses only involved the bigger sites. There are also many other smaller sites in between, which together can have an important role in the flyway, especially for species which take shorter flights between stop-over sites. The formal legal protection status of the sites is also only the start of good conservation. The follow-up, with good management, is also of utmost importance.

Habitat loss

Habitat loss along the flyway is mostly nowadays not in the form of complete sites disappearing, although substantial sites have been lost in the past, especially in Western Europe. Compared with the East Asian - Australasian Flyway, the level of habitat loss along the East Atlantic Flyway is fortunately much less of an immediate threat. However, moderate or severe habitat loss is reported at 75% of the sites (Figure 5.2). Causes are as diverse as building of harbours and other industrial expansion, damming of estuaries to prevent flooding, modification of natural habitat into salt ponds or rice fields, etc. This mostly takes relatively small amounts of the total habitat, but it is continuing all the time and the effects become substantial over the years.

Hunting

Hunting is much less of a threat at coastal sites along the East Atlantic Flyway compared with the past (see for example Laursen 2005). At almost 60% of the sites it is seen as only a minor influence. Many legal protection measures were taken in the last century to regulate hunting, both in terms of decisions about which species can be hunted, and regulation of sites and seasons where hunting is allowed. As waterbirds concentrate at a relatively small number of sites, it is important that they have these hunting free areas. At individual species, country and site level, hunting can still be a serious threat. Hirschfeld & Heyd (2005) reported bag statistics

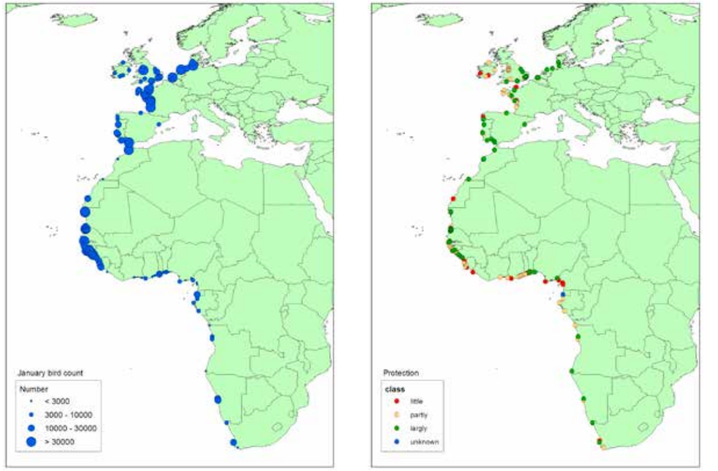


Figure 5.1. *Number of waterbirds 2010-2014 (left, January counts of populations included in this report) and protection status of important sites (right) along the East Atlantic Flyway.*

Photo: Bernard van Camelbeeck

for Red Knot, Eurasian Curlew, Eurasian Oystercatcher and Bar-tailed Godwit which added substantially to the mortality rate of these populations (Bruinzeel 2012).

Disturbance

Habitat loss will immediately destroy feeding, breeding and resting areas for waterbirds. However continuous disturbance can work in the same way as it prevents birds from utilizing the habitats they need. Disturbance comes from all sort of activities, and in the present assessment we have concentrated on the effects of tourism and recreation (Figure 5.2). Levels of disturbance from tourism can be high, especially in northwest Europe and the Mediterranean. In most cases, solutions for these kind of conflicts can be sought by creating closed areas, by enforcement of regulations, and also by creating opportunities for recreation (and wildlife viewing) without causing disturbance of birds present. Although the registration of disturbance is not difficult, it is in fact the magnitude and frequency which is important to monitor. A flock of birds which is scared away once will not usually leave an area and their survival will not be compromised.

Photo: Gregor Scheiffarth

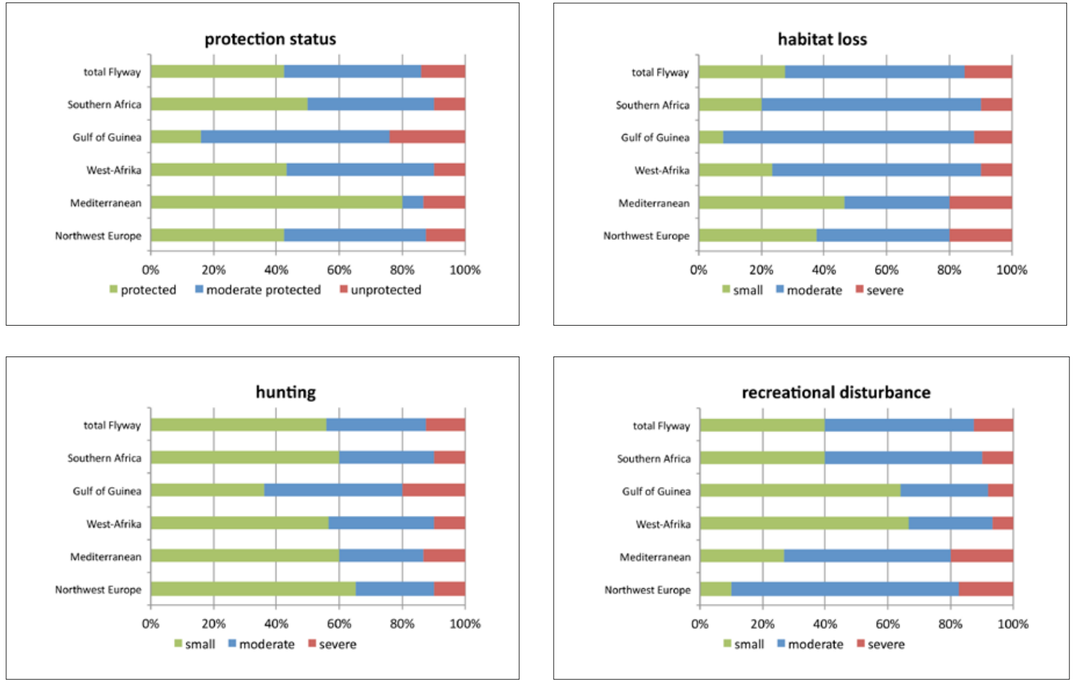


Figure 5.2 *Frequency of different levels of legal protection status, habitat loss, hunting and recreation pressure at regions along the East Atlantic Flyway as collected during the present study and literature review (see 3.5).*

6 Synthesis and discussion

6.1 Availability and quality of information on flyway population trends

Van Roomen et al. (2013) identified 40 populations of waterbirds that occur in internationally important numbers in the international Wadden Sea area and largely depend on estuarine habitats along their East Atlantic Flyway. For these populations, monitoring of all major estuarine sites along the entire flyway is necessary to improve the existing flyway population trend estimates. At least an additional 26 populations could benefit from such extensive monitoring coverage, because their distribution during the northern midwinter overlaps to a large extent with the former 40 populations. These are both other Palearctic migratory waterbirds, that do not use the Wadden Sea in substantial numbers, and populations with a strictly African distribution (van Roomen et al. 2013).

The availability of trend data for these largely estuarine East Atlantic flyway populations in 2009 is shown in Figure 6.1. A relatively high proportion of flyway trends was unavailable, or very unreliable at the time, because data from NW European sites predominated in the dataset and counts from sites within the African wintering range were largely lacking. As a result of the present study (including analyses in preparation for the sixth AEWA Conservation Status report, the EU Birds Directive report and the new Birds In Europe 3 analyses) , the availability of flyway trends has strongly increased in 2014 (Figure 6.1), because of: 1) extra counting efforts along the entire coast of the western seaboard of Africa in January 2014, 2) adding counting data from (expeditions to) Western Africa in the past to the IWC database, which had not been digitized up to now, and 3) making use of increasingly available breeding bird estimates.

An overview of the trend assessments for the individual species and populations covered in this report can be found in Annex 6.1. The assessments are in line with the Conservation Status Report 6, as prepared for AEWA (Nagy *et al.* 2015). However, some simplification or additional interpretation of those assessments have been made for this synthesis (annex 6.1). Details per species are presented in chapter 4.

We have carried out a basic assessment of the quality of the flyway trends presented in this report. The first robustness checks focussed on completeness of coverage of counts in Africa. By estimating what percentage of the total population is 'captured' in the counts, we are able to qualify the representativeness of the trends and assess the potential bias (Annex 6.2). Averaged over all populations, 61% of the total populations covered were included in the trend analyses. For Spotted Redshank for example, the proportion of the population in the selection of sites was relatively small, and the risk of the trend being unrepresentative is relatively large for this species. It should be stressed however that a trend based on a rather small proportion of the total population may well actually be representative, particularly if counts from all relevant regions in the wintering range are available. Substantial bias in trend estimates may arise in the situation of major sites that are not counted showing very different trends compared to the counted sites.

The second robustness check focussed on the number of data points in the time series. For some of the flyway populations, the time series consist of relatively few years, mainly because of scarcity of count data in their main wintering areas in Western Africa (see examples in chapter 4). Trend estimates for these populations are particularly sensitive to data points at the beginning and the end of the time series ('leverage'), and might be prone to rather large changes when new data will become available in the future. To test the robustness of these trends consisting of relatively few data points (n=11, 18% of the total number of flyway trends), we calculated the trend with and without the new data points in 2014 (see Annex 6.1). In almost half of the species tested, this indeed caused a change in trend qualification (trend class). Overall, this means that about 10% of the flyway trend estimates are still far from robust, and conclusions for these species should be treated with particular caution (see chapter 4). We do not expect however that these weaknesses substantially affect the general patterns as described in the remainder of this chapter.

6.2 General patterns in trends of East Atlantic Flyway populations

The total of 66 populations assessed in this study all depend to varying degrees on estuarine habitats along the East Atlantic Flyway. Overall, increasing and decreasing populations are in balance (35% are increasing and 35% decreasing). Furthermore, the proportion of populations with more or less stable numbers is rather small (25%, Figure 6.2), suggesting that important changes in environmental conditions (biotic, abiotic and/or anthropogenic) are occurring along the flyway.

6.3 Patterns in trends of populations relevant to the Wadden Sea

In this section, patterns in trends within the 40 flyway populations relevant to the Wadden Sea are investigated for the period 2003-2014. By grouping species and populations according to main food choice, main wintering area and importance of the Wadden Sea as a staging or wintering site, it is hoped that hypotheses for underlying drivers of population changes can be formulated.

Relation between trend status and food choice

Of the 40 flyway populations, 43% were decreasing in 2003-2014 (Annex 6.1), which was slightly higher than the percentage based on all 66 estuarine populations in the flyway (Figure 6.2). Because of our focus on estuarine habitats, mainly benthos-eating (n=29; see Annex 6.1) and fish-eating species (n=7; Annex 6.1) are represented.Only four herbivore populations (Annex 6.1) were included in

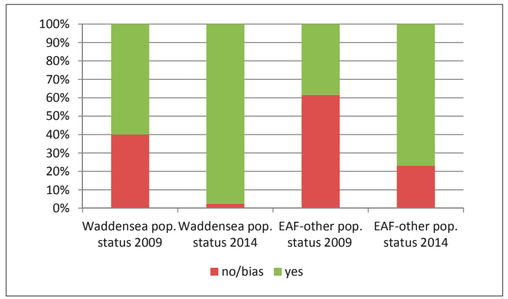


Figure 6.1. *Availability of flyway trend information for estuarine waterbird populations of the East Atlantic Flyway, in 2009 and in 2014. A distinction is made between populations that substantially use the Wadden Sea (n=40) and other Palearctic migrants or intra-African populations (n=26). Yes = trend estimate available; No/bias = no trend estimate available, or estimate heavily biased.*

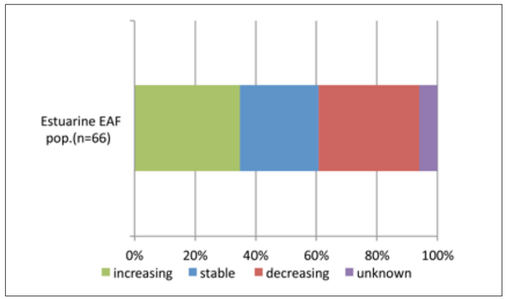


Figure 6.2. *The proportion of increasing, stable, decreasing, and unknown trends of estuarine waterbird species along the East Atlantic Flyway in the period 2003-2014 (n=66).*

analyses, and it could be argued. that the latter are not predominantly estuarine species (two populations of Brent Goose and one population each of Barnacle Goose and Eurasian Wigeon). Furthermore, these four populations may well not be very representative of the total group of herbivores using the Wadden Sea area. The herbivores were therefore excluded from further analyses.

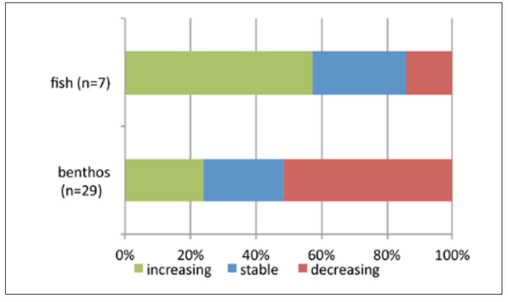
Populations of benthivores are faring much worse than populations of piscivores. Half of the benthivore populations are decreasing and only 25% are increasing. For piscivores, almost 60% are increasing, while only 15% are decreasing (Figure 6.3).

Relation between trend status and main wintering area

The East Atlantic Flyway stretches from the high Arctic in the north through the coasts of NW Europe to Africa in the south. In January, waterbird populations are distributed from Scandinavia and Scotland to South Africa. There are large differences in migration strategies between these populations, varying from mainly wintering in Europe to exclusively wintering in Africa, with populations wintering both in Europe and Africa in between. It appears that decreases strongly dominate among benthivore populations wintering mainly in Western Europe, whereas this is much less the case in populations wintering in West Africa. Strikingly, populations spreading over a larger area in winter, including both Western Europe and West Africa, show more increases than decreases (Figure 6.4).

This interesting pattern does not necessarily suggest that adverse environmental changes are occuring primarily in the European wintering areas. If we split the trends of the populations wintering in both Western Europe and West Africa (n=7) into sub-trends for the European and African parts of their ranges, an opposite pattern arises (see Figure 6.5 and individual species in chapter 4). In the European part of their ranges, increases predominate, whereas decreases predominate in the African part. When we incorporate this result into Figure 6.4, the difference in population trends between West Europe and West Africa disappears (Figure 6.6). So, in conclusion, no clear relation exists between flyway population trends and main wintering area for Wadden Sea relevant populations. Declines dominate among benthivores in both the European and African parts of their wintering ranges, but there is a large variation in trends.

PHOTO Arnold Meijer / Blue Robin



Figurer 6.3. *The proportion of increasing, stable and decreasing flyway trends in 2003-2014 of benthivore and piscivore populations for which the Wadden Sea is important as a staging or wintering area.*

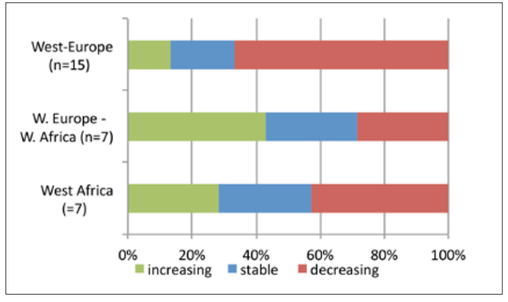


Figure 6.4. *Flyway trends of benthivores in the period 2003-2014 in relation to their main wintering area.*

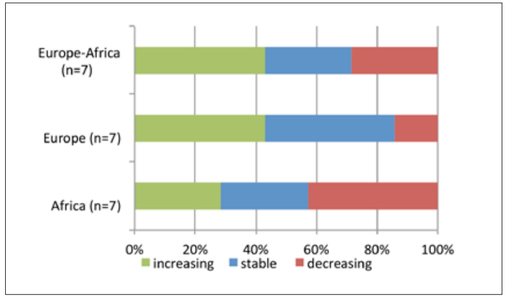


Figure 6.5. *Trends in the European and African parts of the wintering range for benthivore species wintering both in Europe and Africa in the period 2003-2014.*

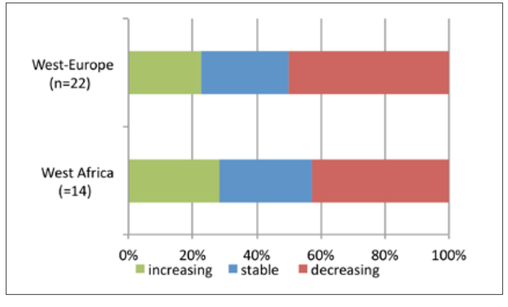


Figure 6.6. *Trends of benthivores in Western Europe and Western Africa in the period 2003-2014 when trends are separated for the European and African parts of the wintering range of populations wintering in both regions.*

Relation between trend status and importance of the Wadden Sea for populations

The various flyway populations use the international Wadden Sea to a different extent. Among benthivores that depend on the Wadden Sea to a large extent (defined here as at least 15% of the total population size is present in the Wadden Sea during a part of their annual cycle) population decreases were dominant in the period 2003-2014 (60%) (Figure 6.7). In contrast, among populations for which the Wadden Sea is less important (less than 15% of the total population size occurs at any time in the Wadden Sea) decreases and increases were in balance. Among other Palearctic benthivore populations, that do not occur in the Wadden Sea in substantial numbers, population increases predominate. This pattern suggests that adverse environmental changes occur primarily in the international Wadden Sea, and that local factors may predominate over global factors (e.g. climate change) in explaining flyway population changes of benthivores. This pattern was described earlier (Davidson 2003) and clearly needs further research, as this correlative and comparative approach cannot of course be a source of causal evidence.

6.4 Local Wadden Sea trends compared with flyway trends

In this paragraph, population trends of benthivores in the international Wadden Sea are compared with the trends of the same populations in the entire flyway (Figure 6.8). When trends are similar (close to the line y=x), underlying drivers are likely to operate on large spatial scales, and are less likely to be specific for the Wadden Sea. When the trends are different, however, it is more likely that local factors primarily operating in the Wadden Sea are playing an important role.

As the correlation between species-specific Wadden Sea trends and flyway population trends appears very weak and far from statistically significant (P=0.46), this again suggests (see also previous paragraph) that predominantly local factors are driving population changes in the Wadden Sea. Wadden Sea trends are, moreover, on average more negative than overall flyway trends. For 63% of the populations, the Wadden Sea trend is more negative (reflecting either a smaller population increase or a larger population decrease) compared to

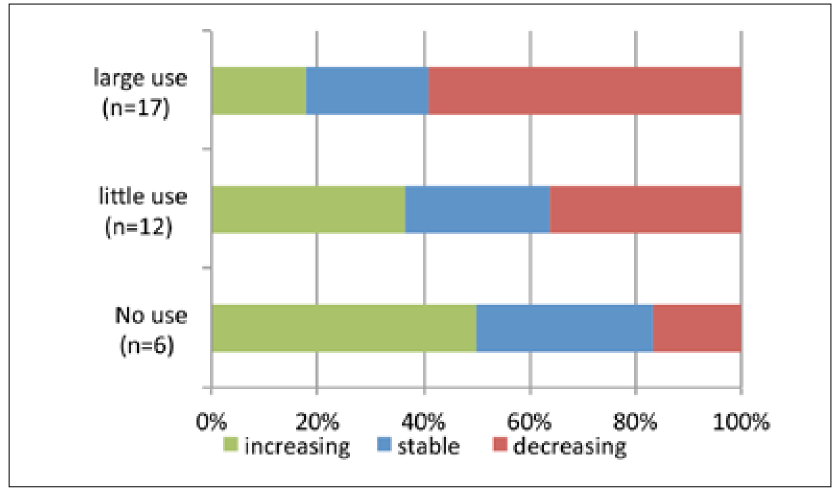


Figure 6.7. *Flyway population trends for benthivore populations in 2003-2014, in relation to the extent to which they use the international Wadden Sea as a staging or wintering area (large use = > 15% of total population present in Wadden Sea, little use = 1-15% of total population, other = no use).The difference in number of decreasing and increasing populations between 'large use' and 'little or no use' reaches statistical significance, despite small sample sizes (chi2=3.23, P=0.07).*

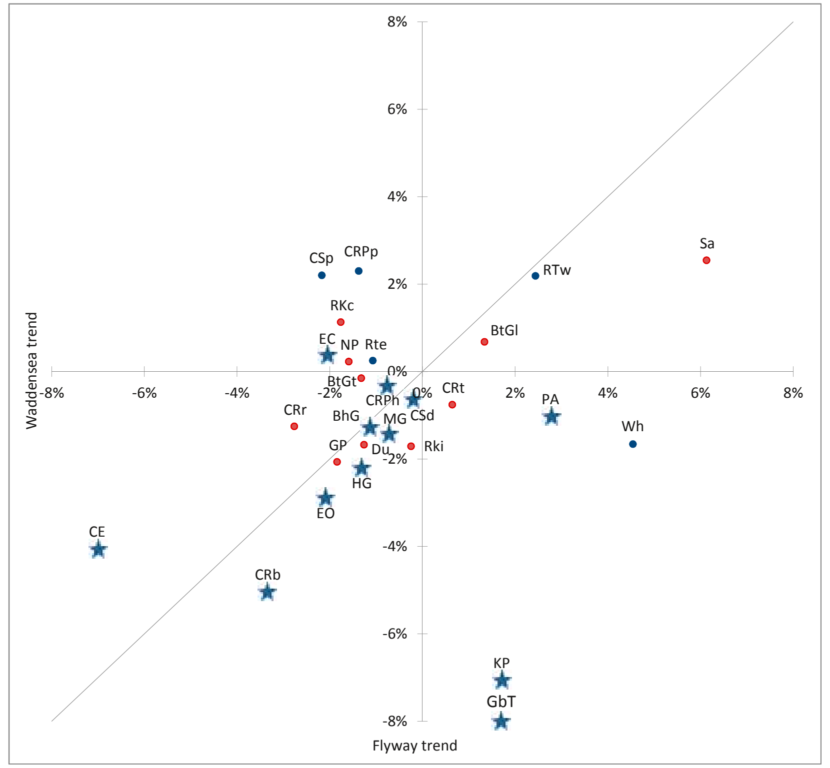


Figure 6.8. *Average annual change in flyway populations of benthivores in 2003-14 (horizontal axis), in relation to annual change in the international Wadden Sea population (vertical axis). Species using the Wadden Sea to a large extent are depicted in red, to a smaller extent in blue (large extent/smaller extent as in Figure 6.7). Populations also breeding in the Wadden Sea are indicated with stars. For acronyms of populations, see below. Populations right of the diagonal have a more positive trend in the total flyway populations than locally in the Wadden Sea. Populations left of the diagonal are doing better in the Wadden Sea. Populations above the x-axis are increasing locally in the Wadden Sea, those below the x-axis are decreasing (data source: Wadden Sea trends from Joint Monitoring Migratory and Breeding Birds Wadden Sea).*

Bar-tailed Godwit, lapponica	BtGl	Grey Plover	GP
Bar-tailed Godwit, taymyrensis	BtGt	Gull-billed Tern	GbT
Black-headed Gull	BhG	Herring Gull, argentateus	HG
Common Eider	CE	Kentish Plover	KP
Common Redshank, brittanica	CRb	Common Gull	MG
Common Redshank, robusta	CRr	Northern Pintail	NP
Common Redshank, totanus	CRt	Pied Avocet	PA
Common Ringed Plover, hiaticula	CRPh	Red Knot, canutus	RKc
Common Ringed Plover, psammodroma	CRPp	Red Knot, islandica	Rki
Common Shelduck	CSd	Ruddy Turnstone, Fennoscandia, NW Russia	Rte
Curlew Sandpiper	CSp	Ruddy Turnstone, NE Canada, Greenland	RTw
Dunlin, alpina	Du	Sanderling	Sa
Eurasian Curlew	EC	Whimbrel, phaeopus	Wh
Eurasian Oystercatcher	EO		


PHOTO Arnold Meijer / Blue Robin


PHOTO Arnold Meijer / Blue Robin

BOX

Differences in population trends between different parts of the Wadden Sea

Declines of benthivores predominate particularly among flyway populations that are largely dependent on the Wadden Sea (Figure 6.7) and trends are generally more negative in the Wadden Sea than in their total flyway population, particularly for species also breeding in the Wadden Sea (Figure 6.8). Earlier work has already shown that between 1999 and 2009 within the international Wadden Sea, large differences in population trends of waterbirds exist between different regions and in relation to benthivore diet (van Roomen *et al*. 2012; Figure 6.9). Monitoring of breeding birds in the Wadden Sea has also shown major differences in local trends (Koffijberg *et al*. 2009). For breeding populations, trends in the south-western part of the Wadden Sea (The Netherlands and Niedersachsen) are more negative in comparison with the trends in the north-eastern part (Schleswig-Holstein and Denmark) (Koffijberg *et al*. 2009). For migrant and wintering benthivore populations, decreases dominate for all feeding guilds in the central parts of the Wadden Sea (Germany), whereas trends are generally more positive in the western and northern parts (The Netherlands and Denmark), particularly for polychaete feeders.

The drivers behind these differences in trends within the Wadden Sea are not yet well understood (Ens *et al*. 2009, van Roomen *et al*. 2012, Koffijberg *et al*. 2009), but are most likely to be operating at local scales.

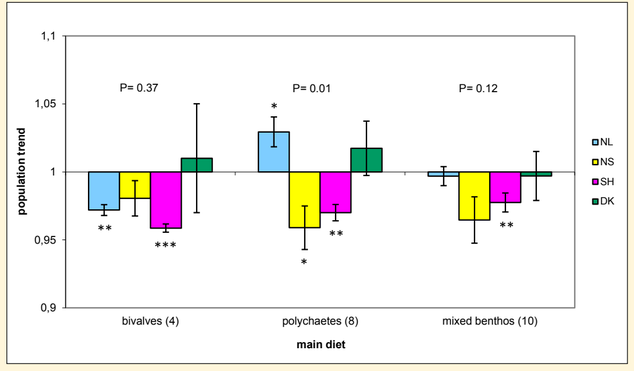


Figure 6.9. *Trends of migratory benthivore populations in the Wadden Sea in 1999-2009, in relation to their main diet and region (from van Roomen et al. 2012). NL= The Netherlands, NS and SH= Niedersachsen and Schleswig-Holstein in Germany, DK=Denmark.*

the flyway population trend (points in Figure 6.8 located on the right hand side of the line y=x). The Wadden Sea trend is thus more positive than the flyway trend (points left of the diagonal) for only 37% of the populations. This contrasting pattern between Wadden Sea and flyway population trends is even more obvious when restricting the comparison to species/populations that also breed in the Wadden Sea in substantial numbers (indicated with stars in Figure 6.8). 9 out of 12 of these populations (75%) perform worse in the Wadden Sea than along their entire flyway. Of the species with a negative trend in the Wadden Sea (n=18) 61% are breeding in the Wadden Sea. On the other hand, species with positive trends in the Wadden Sea (n=9) mainly consist of migrants, either using the Wadden Sea during migration or as wintering site (89%). The conclusion that breeding birds in the Wadden Sea have recently been faring worse than migrants was also drawn in a multi-species integrated population analysis by van der Jeugd *et al* (2014), focussing on the Dutch part of the Wadden Sea.

6.5. Patterns in trends on the western seaboard of Africa

The coastal wetlands of Western Africa are used by millions of waterbirds. These populations are a mixture of local residents, intra-African migrants and Palearctic migrants. Trends have been assessed for 40 populations in Western Africa, comprising a mixture of flyway populations staying entirely in this region (Annex 6.1) and regional populations of migrants that winter both in Europe and Africa (see chapter 4). In general, the proportion of population decreases and increases in the region is similar for both piscivores and benthivores (Figure 6.10). Compared to the trends in populations for which the Wadden Sea is important, the proportion of decreasing populations of fish eating species is somewhat larger and the proportion of decreasing populations of benthivores is smaller (Figure 6.7). This is mainly caused by the differences in trends between the intra-African populations and the Palearctic populations (Figure 6.11). For piscivores, the proportion of decreases is larger in the 'African' populations in comparison with Palearctic populations. For benthivores an opposite pattern exists, although the number of African benthivore populations is small.

	2003	2014	difference (%)	difference (numbers)
Total	18,700,000	16,350,000	-12.6%	-2,350,000
Piscivore	1,300,000	1,450,000	11.5%	150,000
Benthivore	17,400,000	14,900,000	-14.4%	-2,500,000

Table 6.1. *Changes between 2003 and 2014 in estimated total flyway population sizes of piscivore and benthivore species for which the Wadden Sea is important (n=36).*

	2003	2014	difference (%)	difference (numbers)
Total	17,400,000	14,900,000	-14.4%	-2,500,000
winter Europe	12,700,000	10,700,000	-15.7%	-2,000,000
winter Europe-Africa	2,700,000	2,400,000	-11.1%	-300,000
winter Africa	2,000,000	1,800,000	-10.0%	-200,000

Table 6.2. *Changes between 2003 and 2014in estimated total flyway population sizes of benthivore species for which the Wadden Sea is important, in relation to wintering area (n=29).*

6.6 Changes in flyway population numbers

Apart from examining population trends, it is also of interest to evaluate the changes recorded in the total number of birds over time. A small decrease in a large population might have a stronger effect on the total number of birds than a large decrease in a small population, while the total number of birds might be a useful indicator of changes in the quality of staging and wintering sites. Estimates of total population sizes from 2003 and 2014 were therefore compared. In order to ensure that the comparison reflected real changes in waterbird numbers rather than changes in counting effort and methodology between two independent estimates, the 2014 estimates were used in combination with the slope of the trend in 2003-2014 to back-calculate the 2003 estimates (Annex 6.1). In Table 6.1 the results are summarized for the Wadden Sea relevant piscivore and benthivore populations (n=36, see Figure 6.3). In 2014, an estimated total of 2,3 million fewer birds were present compared to 2003. This net loss is composed of a decrease of 2,5 million benthivorous birds and an increase of 150,000 piscivorous birds. Most birds were lost in their European wintering ranges (2 million; table 6.2), and far fewer from their African wintering ranges (200,000). The populations that winter both in Europe and Africa lost 300,000 birds, and most of this decrease occurred in their African range, while numbers in their European range increased (see Figure 6.5).

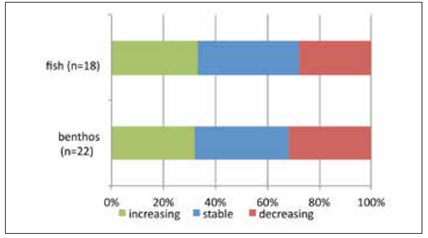


Figure 6.10. *The proportion of increasing, stable and decreasing trends in 2003-2014 of benthivore and piscivore populations on the western seaboard of Africa.*

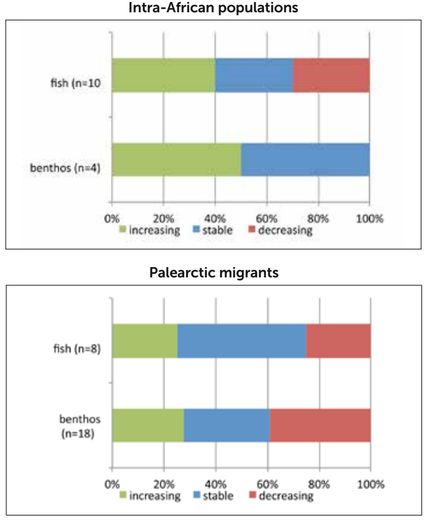


Figure 6.11. *The proportion of increasing, stable or decreasing trends in 2003-2014 of fish or benthos eating populations of (a) intra-African populations and (b) Palearctic migrants (both Wadden Sea and other) on the western seaboard of Africa.*

BOX

Changes in numbers at some important Western African wintering sites

In January 2014, both the Banc d'Arguin (Mauritania) and the Bijagos Archipelago (Guinea-Bissau), the two most important coastal wetland sites in Western Africa, were counted simultaneously. At both sites, rather large declines in Palearctic wader populations were observed in comparison with complete counts at the end of the 1990s (Figure 6.12): in total 1 million fewer birds were counted. For most species these declines were consistent between the two sites. The declines are alarming, as they indicate large decreases in a number of populations for which these sites are especially important. However, the result is also a bit puzzling when compared with table 6.2, which shows that 'only' 200,000 fewer benthivores were estimated to winter in West Africa in 2014. Another 300,000 birds should be added, or at least a large proportion of these, belonging to the species that winter both in Africa and Europe. This will be a large proportion because this group mostly increased in the European part of their range and decreased in the African part (see Figure 6.5). This still only accounts for half of the 1 million birds that are thought to be missing from the two most important sites in Western Africa. Several reasons might contribute to this apparent difference, but the most important one is probably annual fluctuations around the overall trend. Population trends are based on multiple years in the period 2003-2014, but the comparisons in numbers between both African sites are based on only a few years at the beginning and the end of the study period. Several large populations (Red Knot, Bar-tailed Godwit, Curlew Sandpiper) had particularly low numbers in 2014 compared to the trend over the entire period (see chapter 4). Another reason might be that not all populations included in Figure 6.12 using the Banc d'Arguin and Bijagos also use the Wadden Sea to a large extent (e.g. Dunlins wintering in Africa do not use the Wadden Sea).

The above result might indicate that, although table 6.2 suggests that the declines have mainly occurred in Europe, substantial declines are also happening in West Africa. More counts are needed to clarify whether 2014 was indeed an exceptional year with smaller numbers than usual in the most important African sites, or if it marks the onset of a steeper decline.

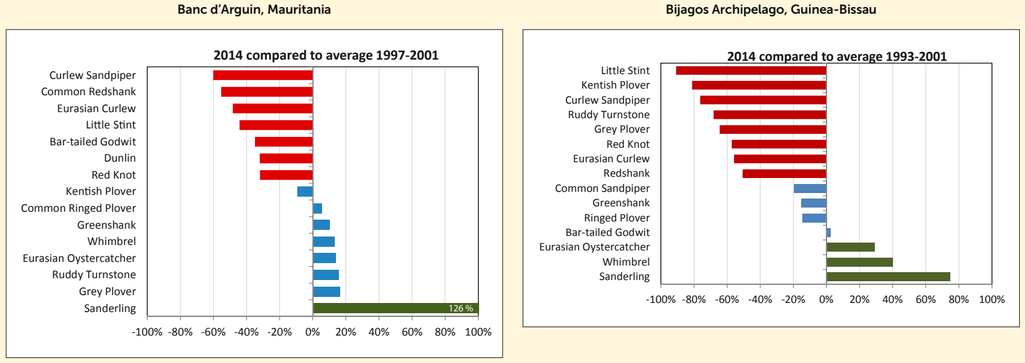


Figure 6.12. *Proportional change in numbers at Banc d'Arguin, Mauritania (upper) and at the Bijagos Archipelago, Guinea-Bissau (lower). Counts for Banc d'Arguin in 2014 are compared with the average of counts in 1997-2001 (n=3). Counts for Bijagos in 2014 are compared with the average of counts in 1993-2001 (n=2).*

7 Conclusions and recommendations

7.1 Conclusions

The main conclusions of this project to date are as follows:

- As a result of this project, the availability of population trend and population size data for waterbirds on the East Atlantic Flyway has strongly increased. This is a result of: 1) additional counting efforts along the Atlantic seaboard of Africa, 2) adding historical count data (from expeditions to Western Africa) to the IWC database, and 3) the opportunity to make use of breeding bird estimates, of which the availability has increased in recent years.

- About 10% of the flyway population trend estimates are still far from robust at present, mainly due to a lack of data from the past. This stresses the importance of continued monitoring and capacity building for monitoring in the future. Extending monitoring of bird numbers and wetland threats and attributes to other countries, assessments could also be made of the status of additional populations and sites of the East Atlantic Flyway.

- Although the monitoring of threats and conservation measures was also an aim of this project, the availability and consistency of data is still far from complete hampering firm conclusions at this stage. Besides threat data from African sites, data from European sites also needs to be collected in a consistent way to be able to draw flyway-wide conclusions.

- The 66 East Atlantic Flyway populations assessed in this study showed an equal number (about 35% each) of increasing and decreasing trends over the period 2003-14. The proportion of populations with more or less stable numbers is rather small suggesting large environmental changes (with positive and negative drivers) along the flyway.

- Considering the 40 flyway populations that occur in internationally important numbers in the Wadden Sea, populations of benthivores were predominantly decreasing from 2003-14, while piscivores were predominantly increasing. The total number of benthivores along the flyway has decreased by an estimated 2,5 million birds between 2003 and 2014. Most of these birds were apparently 'lost' in their European wintering ranges (2 million), and many fewer from their African wintering ranges (200,000).

PHOTO Gregor Scheiffarth

- Among these benthivores, flyway populations that depend to a large extent on the international Wadden Sea were predominantly decreasing. This was not the case for populations for which the Wadden Sea is less important. This pattern suggests that adverse environmental changes have occurred primarily in the international Wadden Sea, and that local factors may dominate over global factors (e.g. climate change) in explaining the flyway population changes of benthivores.

- Correlation between species-specific Wadden Sea trends and flyway population trends is very weak. Once again, this indicates that local factors seem to predominate over global factors in causing population changes in the Wadden Sea.

- Generally, overall flyway population trends are more positive than population trends in the Wadden Sea. This contrasting pattern is particularly strong for species that also breed in the Wadden Sea.

- Trends within the Wadden Sea show rather large differences, with decreases in populations of breeding birds predominating in the western parts and decreases in migratory benthivores predominating in the central parts. This adds to the previous indications that primarily local drivers are causing population changes in the Wadden Sea.

- Many populations of migratory waterbirds along the East Atlantic Flyway of which a part of the population is wintering in Western Africa and a part in Western Europe show a tendency to decrease in the their African range and to increase in their European range. Future research should address this important finding in what drives this range shift which could be connected to climate change.

Photo: Arnold Meijer / Blue Robin

- Benthivore intra-African populations are faring better than Palearctic migrants, including Wadden Sea populations, when present in Africa. Among piscivores, the proportion of decreasing intra-African migrant populations is similar to Palearctic migrants in the region.

- In January 2014, the number of Palearctic waders counted in the two most important wintering sites in Western Africa (Banc d 'Arguin, Mauritania and Bijagós Archipelago, Guinea-Bissau) was more than 1 million lower than in 2000. This result is alarming, as it suggests large decreases for a group of species for which these sites are especially important. However, more counts are needed to clarify if this indeed marks the onset of a steeper decline or whether 2014 was a year with exceptionally low numbers in these sites due to short-term fluctuations or other unidentified factors.

7.2 Recommendations

- The monitoring activities that were developed and implemented as part of the Wadden Sea Flyway Initiative and Conservation of Migratory Birds project, and coordinated by the Common Wadden Sea Secretariat, BirdLife International and Wetlands International has to continue in the coming years. The value of recently enhanced activities has been confirmed by current results. Continued effort is needed to further implement and consolidate the monitoring strategy for the flyway.

- While the availability of flyway trend and population size data has improved substantially as a result of this project, the quality of the trends and population sizes still needs further improvement. This stresses the importance of continued monitoring and capacity building : with more sites and more years added to the monitoring network, the quality of the population trends will increase. This can be implemented in cooperation with the IWC project of Wetlands International.

- The combination of data on trends in numbers with data on threats will provide a strong basis for advising on management measures. Substantial improvements in the quantity and quality of monitoring data on threats at sites are therefore needed. Consistent collection of threat indicators is therefore a high priority. Capacity building, and a concrete, flyway-wide, project on threats and conservation measures is therefore needed. This can be implemented in cooperation with the IBA project of BirdLife International.

- As the January 2014 counts showed large decreases in numbers which could indicate an exceptional year with unusually low numbers, but also the start of acceleration of decreasing trends, it is recommended not to wait until 2019 for a new total count as originally planned, but instead to bring it forward to January 2017, together with capacity building initiatives. An additional total count will improve the robustness of the trend estimates and will help in further developing the strategy for monitoring in the flyway. This can be implemented in cooperation of the IWC project of Wetlands International.

- Besides currently collected data on numbers during January, which is the wintering period for Wadden Sea and other Palearctic populations, increased monitoring of breeding birds is also needed. It is recommended that within Europe, the annual monitoring of a number of colonial waterbird populations should be organized to supplement the present populations included in PECBMS. This can probably best be implemented by the EBCC. Also for arctic breeding birds an increased monitoring is recommended as organized in the Arctic Birds Breeding Conditions Survey (Soloviev & Tomkovich 2008). In Western Africa, the monitoring of colonial water- and seabirds is under development by the Marine Programme of BirdLife International (Alkyon project). The further implementation of that programme should be encouraged.

Photo: Rob Buurman

Photo: Bernd de Bruijn

8 References

- Agblonon G. & Aliou D. M. (eds) 2014. Report on the Regional Training Workshop on the Management of key sites along the western coast of Africa for migratory birds. Wetlands International Africa, BirdLife International, Regional office for Africa and Common Wadden Sea Secretariat.

- Altenburg, W., Engelmoer, M., Mes, R. and Piersma, T. 1982. Wintering waders on the Banc d' Arguin, Mauritania. Report of the Netherlands Ornithological Mauritanian Expedition 1980. Communication No 6, Wadden Sea Working Group.

- Angel, A., Wanless, R. & Hagen, C. 2014. Fact sheets for AEWA-listed seabird species in the Benguela region. Prepared for the African-Eurasian Waterbird Agreement by BirdLife South Africa

- Bell M.C. 1995. UINDEX 4. A computer programme for estimating population index numbers by the Underhill-method. The Wildfowl & Wetlands Trust, Slimbridge , UK.

- BirdLife International (2004). Birds in Europe, population estimates, trends and conservation status. Cambridge, UK: BirdLife International. (BirdLife Conservation Series No. 12).

- BirdLife International 2015. European Red List of Birds. Luxembourg: Office for Official Publications of the European Communities.

- Blew, J., Günther, K., Hälterlein, B., Kleefstra, R., Laursen,K., Scheiffarth, G. 2013. Trends of Migratory and Wintering Waterbirds in the Wadden Sea 1987/1988 - 2010/2011. Wadden Sea Ecosystem No. 31. Common Wadden Sea Secretariat, Joint Monitoring Group of Migratory Birds in the Wadden Sea, Wilhelmshaven, Germany.

- Boere, G.C & van Roomen, M. 2011. The Wadden Sea. Strengthening Management and Research along the African Eurasian Flyway. Workshop Report, Wilhelmshaven 2011. Common Wadden Sea Secretariat. Wilhelmshaven. Germany.

- Bregnballe, T., Lynch, J., Parz-Gollner, R., Marion, L., Volponi, S., Paquet, J.-Y., David N., Carss & van Eerden, M.R. (eds.) 2014. Breeding numbers of Great Cormorants Phalacrocorax carbo in the Western Palearctic, 2012-2013. IUCN-Wetlands International Cormorant Research Group Report. - Scientific Report from DCE - Danish Centre for Environment and Energy No. 99

- Brouwer J. & Mullié W.C. 2001. A method for making whole country waterbird population estimates, applied to annual waterbird census data from Niger. Ostrich Supplement.

- Bruinzeel, L. W. 2012. Migratory birds of the Wadden Sea: survey of bottlenecks along the East Atlantic Flyway (in Dutch). A&W rapport 1621. Altenburg & Wymenga ecologisch onderzoek, Feanwâlden.

- Clausen, P., Ahmed, R. & Craggs, A. (2014) Another poor breeding year for East Atlantic Light-bellied Brent in 2013. Goose News 13: 26

- Davidson N. 2003. Declines in East Atlantic wader populations: is the Wadden Sea the problem? Wader Study Group Bulletin 101/102.
Del Hoyo, J., Elliot, A. & Sargatal, J. 1992. Handbook of the Birds of the World, vol. 1: Ostrich to Ducks. Lynx Edicions, Barcelona, Spain.

- Del Hoyo, J., Elliott, A., & Sargatal, J. 1996. Handbook of the Birds of the World, vol. 3: Hoatzin to Auks. Lynx Edicions, Barcelona, Spain.

- Delany, S., Reyes, C., Hubert, E., Pihl, S., Rees, E., Haanstra, L. and van Strien A., 1999. Results from the International Waterbird Census in the Western Palearctic and Southwest Asia in 1995 and 1996. Wetlands International Publcation No. 54. Wageningen, The Netherlands.

- Delany, S., Scott, D., Dodman, T. and Stroud, D. 2009. An Atlas of Wader Populations in Africa and Western Eurasia. Wetlands International, Wageningen, The Netherlands.

- Diagana C.H., & Dodman T. 2006. Coastal waterbirds in the West African Seaboard January 2006. Wetlands International, Dakar.

- Dodman, T., Beibro, H., Hubert, E. & Williams , E. 1999. African Waterbird Census 1998. Les Denombrements d'oiseaaux d'Eau en Afrique, 1998. Wetlands International, Dakar, Senegal.

- Dodman, T. 2014. Status, Estimates and Trends of Waterbird Populations in Africa: AEWA-listed African populations. Wetlands International.

- DPN 2014. Rapport de synthese du denombrement international des oiseaux d'eau 2014. Dakar, Senegal.

- Ebbinge, B., Blew J., Clausen P., Günther K., Hall C., Holt C., Koffijberg K., Le Dréan-Quénec'Hdu, Mahéo & Pihl S., 2013: Population development and breeding success of Dark-bellied Brent Geese Branta b. bernicla from 1991-2011. Wildfowl Special Issue 3: 74-89.

- Ekroos J, Fox, A.D., Christensen, T.K., Petersen, I.K., Kilpi, M., Jonsson, J.E., Green, M., Laursen, K., Cervencl, A., de Boer, P., Nilsson, L., Meissner, W., Garthe, S. 2012. Declines amongst breeding Eider Somateria mollissima numbers in the Baltic/Wadden Sea flyway. Ornis Fennica 89: 1-10.

- Engelmoer M. & Roselaar C.S. 1998. Geographical Variation in Waders. Kluwer Academic Publishers. The Netherlands.

- Ens, B., Blew, J., Van Roomen, M., van Turnhout, C., 2009. Exploring contrasting trends of migratory waterbirds in the Wadden Sea. Wadden Sea Ecosystem No. 27. 27 pp. Common Wadden Sea Secretariat, Wilhelmshaven. Germany.

- EEA 2015. State of nature in the EU. Results from reporting under the nature directives 2007-2012. EEA Technical report no2/2015. European Environment Agency, Copenhagen. Denmark.

- Fox, A.D., Ebbinge, B.S., Mitchell, C., Heinicke, T., Aarvak, T., Colhoun, K., Clausen, P., Dereliev, S., Faragao, S., Koffijberg, K., Kruckenberg, H., Loonen, M.J.J.E., Madsen, J., Mooij, J., Musil, P., Nilsson, L., Pihl, S., and Van der Jeugd, H. 2010. Current estimates of goose population sizes in eastern Europe, a gap analysis and an assessment of trends. Ornis Svecica 20: 115-127

- Frikke, J. Pihl, S. & Asbirk , S. 2002. Wadden Sea Waders in West Africa: a survey of waterbirds in the Bijagos Archipelago in Guinea-Bissau in January/February 2001. Wadden Sea Newsletter 26: 15-17.

- Hagemeijer, E.J.M., Smit, C.J., de Boer, P., van Dijk, A.J. N., Ravenscroft, N., van Roomen, M.W.J. and Wright, M. 2004. Wader and waterbird census at the Banc d'Arguin, Mauritania, January 2000. WIWO Report 81, Beek-Ubbergen, The Netherlands, 146 pp.

- Hirschfeld, A. & Heyd, A. 2005. Mortality of migratory birds caused by hunting in Europe: bag statistics and proposals for the conservation of birds and animal welfare. Ber. Vogelschutz 42: 47-74.

- Hötker H., & Dietrich S., 1991. Rapport d'étude sur l'écologie des Avocettes et autres oiseaux d'eau dans le delta du Sénégal 1988. Husum, Germany.

- Isenmann P. 2006. Les Oiseaux du Banc D Arguin. Le Sambuc. Fondation Internationale du Banc d'Arguin.

- Jammeh, K., Sanyang L., Kinteh F., Faux M., and Camara F. 2014. African Water bird Census Report The Gambia, January 2014. DPWM, Banjul, The Gambia.

- Van der Jeugd H.P., Ens B.J., Versluijs M. & Schekkerman H. 2014. Integrated monitoring of birds in the Dutch Wadden Sea (in Dutch). Vogeltrekstation rapport 2014-01. Vogeltrekstation, Wageningen; CAPS-rapport 2014-01; Sovon-rapport 2014/18, Sovon Vogelonderzoek Nederland, Nijmegen.

Photo: Bernd de Bruijn

Photo: Arnold Meijer / Blue Robin

■ Keijl, G.O., Brenninkmeijer, A., Schepers, F.J., Stienen, E.W.M., Veen, J. and Ndiaye, A. 2001. Breeding Gulls and terns in Senegal in 1998 and proposal for new population estimates of gulls and terns in west Africa. Atlantic Seabirds 3 (2) 59-74.

■ Kleijn D., Cherkaoui I., Goedhart P.W., van der Hout J. & Lammertsma D. 2013. Waterbirds increase more rapidly in Ramsar-designated wetlands than in unprotected wetlands. Journal of Applied Ecology. Doi: 10.1111/1365-2664.12193

■ Koffijberg K., Dijksen L., Hälterlein B., Laursen K., Potel P., & Schrader S. 2009. Breeding Birds. Thematic Report No. 18 in Marencic, H. & Vlas J. de (eds.) 2009. Quality Status Report 2009. Wadden Sea Ecosystem No. 26. Common Wadden Sea Secretariat, Trilateral Monitoring and Assessment Group, Wilhelmshaven, Germany.

■ Meininger P.L., Schekkerman H., & van Roomen M. 1995. Population estimates and 1% criteria for waterbird species in the Netherlands: suggestions for standardization. Limosa 68: 41-48.

■ Moreno-Opo R., Ould Sidaty Z.E., Baldó J.M., Garcia F., Ould Sehla Daf D. & Gonzalez M. 2012. A breeding colony of the Near Threatened Lesser Flamingo in western Africa: a conservation story of threats and land management. Bird Conservation International 23: 426-436.

■ Nagy, S., Flink, S., & Langendoen, T. 2014. Waterbird trends 1988-2012: Results of trend analyses of data from the International Waterbird Census in the African-Eurasian Flyway. Wetlands International, Ede, The Netherlands

■ Nagy, S., Flink, S., & Langendoen, T. 2015. Report on the Conservation Status of Migratory Waterbirds of the African Eurasian Waterbird Agreement. Wetlands International, Ede, The Netherlands.

■ Ntiamoa-Baidu Y., Nuoh. A.A., Reneerkens J. & PiersmaT.

PHOTO Dave Montreuil

2014. Population increases in non-breeding Sanderlings in Ghana indicate site preference. Ardea 102. 131-137.

■ Overdijk O. & El Hacen M. 2013. Population development in Mauritanian spoonbills In: Navedo J.G. (ed.) Proceedings of the Eurosite VII Spoonbill Workshop, Cantabria, Spain.

■ Overdijk, O., Smart, M., & Navedo, J. 2013. An overview of Eurasian Spoonbill situation. Pp. 13-14. In: Navedo JG (ed.) Proceedings of the Eurosite VII Spoonbill Workshop, Cantabria, Spain.

■ Pannekoek J. & van Strien A. 2005. TRIM 3 Manual. Statistics the Netherlands (http://www.cbs.nl).

■ PNBA 2014., Resultat denombrement Parc National du Banc d' Arguin, January 2014. PNBA, Nouackchott, Mauritania.

■ PND 2014. DENOMBREMENT INTERNATIONAL DES OISEAUX D'EAU DES ECOSYSTEMES DE LA Réserve de Biosphère Transfrontalière du delta du fleuve Sénégal (RBT-RIM). January 2014, Report Ministère de l'Environnement et du Développement Durable, Mauritania.

■ van de Pol, M., Atkinson, P.W., Blew, J., Crowe, O., Delany, S., Duriez, O., Ens, B.J., Hälterlein, B., Hötker, H., Laursen, K., Oosterbeek, K.H., Petersen, Æ., Thorup, O., Tjørve, K., Triplet, P., & Yésou, P. 2014. A global assessment of the conservation status of the nominate sub-species of Eurasian Oystercatcher *Haematopus ostralegus ostralegus*. In: *The conservation status of Oystercatchers around the World* B.J. Ens & L.G. Underhill (eds). International Wader Study Group.

■ Reneerkens J., Benhoussa A., Boland H., Collier M., Grond K., Günther K., Hallgrimsson G.T., Hansen J., Meissner W., de Meulenaer B., Ntiamoa-Baidu Y., Piersma T., Poot M., van Roomen M., Summers R., Tomkovich P. & Underhill L.G. 2009. Sanderlings using African-Eurasian flyways: a review of current knowledge. Wader Study Group Bull. 116: 2-120.

■ van Roomen M., van Winden E. & van Turnhout C. 2011. Analyzing population trends at the flyway level for bird populations covered by the African Eurasian Waterbird Agreement: details of a methodology. SOVON-information report 2011/05. SOVON Dutch Centre for Field Ornithology, Nijmegen, the Netherlands.

■ van Roomen, M., Delany, S. & Schekkerman H. 2013. Integrated monitoring of coastal waterbird populations along the East Atlantic Flyway. Framework and programme outline for Wadden Sea and other populations. Programme Rich Wadden Sea, Leeuwarden, The Netherlands and Common Wadden Sea Secretariat, Wilhelmshaven, Germany.

■ van Roomen, M., Delany, S., Dodman, T., Fishpool, L., Nagy, S., Ajagbe, A., Citegetse, G. & Ndiaye A. 2014. Waterbird and site monitoring along the Atlantic coast of Africa: strategy and manual. BirdLife International, Cambridge, United Kingdom, Wadden Sea Secretariat, Wilhelmshaven, Germany, and Wetlands International, Wageningen, The Netherlands.

■ Salvig, J.C., Asbirk, S., Kjeldsen, J.P. and Rasmussen, P.A.F. 1994. Wintering waders in the Bijagos Archipélago, Guinea-Bissau 1992-1993. Ardea 82: 137-142.

■ Salvig. J.C., Asbirk, S., Kjeldsen, J.P., Rasmussen, P.A.F., Quade, A., Frikke, J. and Christophersen, E. 1997. Coastal waders in Guinea-Bissau - aerial survey results and seasonal occurrence on selected low water plots. Wader Study Group Bulletin 84: 33-38.

■ Sayoud M.S., Salhi H., Dakki M., Qninba A., Azafzaf H., Feltrup-Azafzaf C., Abdou W., Assran H.H., Etayeb K., Bouras E, Defos du Rau P., Mondain-Monval J.Y., Deschamps C. , Brochet A.L. & Veran S. in prep. First North African coordinated mid-winter waterbird census: spatial contribution of the IWC to the conservation of waterbirds and wetlands at a biogeographic level.

■ Schepers, F.J. & Marteijn E. C. L. (eds) 1993. Coastal waterbirds in Gabon, winter 1992. WIWO-report nr. 41. Zeist.

■ Schepers, F.J., Keijl, G.O., Meininger, P.L. and Rigoulot, J.B. 1998. Oiseaux d'eau dans le Delta du Sine-Saloum et Petit Côte, Sénégal, Janvier 1997. WIWO Report No. 63, WIWO, Zeist.

■ Scott, D.A. & Rose, P.M. 1996. Atlas of Anatidae Populations in Africa and Western Eurasia. Wetlands International Publication No 41. Wetlands International, Wageningen, The Netherlands.

■ Smit, C.J. and Piersma, T. 1989. Numbers, midwinter distribution, and migration of wader populations using the East

PHOTO Dave Montreuil

PHOTO Lars Rasmussen

Atlantic Flyway. In: Boyd, H. and Pirot, J.-Y. (eds). Flyways and Reserves Networks. IWRB Special Publication No. 9. 1989. Slimbridge, UK.

Soldaat L., Visser H., van Roomen M. & van Strien A. 2007. Smoothing and trend detection in waterbird monitoring data using structural time-series analysis and the Kalman filter. J. Ornithol. DOI 10.1007/s10336-007-0176-7.

Soloviev M. & Tomkovich P 2008. Arctic Breeding conditions 2007. Arctic Birds, No. 10.

Spaans B., van Kooten L., Cremer J., Leyrer J., & Piersma T. 2011. Densities of individually marked migrants away from the marking site to estimate population sizes: a test with three wader populations. Bird Study 58: 130-140.

van Spanje, T., Hamat Ndongo, M. & Mahmoud, M. 2014. Recensement des oiseaux aquatiques de la Baie du Lévrier. 2-11 février 2014. Report BGP IMROP.

Stroud, D.A., Davidson, N.C., West, R., Scott, D.A., Haanstra, L., Thorup, O., Ganter, B. and Delany, S. (compilers) on behalf of the International Wader Study Group 2004. Status of migratory wader populations in Africa and Western Eurasia in the 1990s. International Wader Studies 15, 259 pp.

Thorup, O. (compiler) 2006. Breeding Waders in Europe 2000. International Wader Studies 14. International Wader Study Group, UK.

Triplet, P. and Yésou, P. 1998. Midwinter counts of waders in the Senegal delta, West Africa, 1993-1997. Wader Study Group Bulletin 85: 66-73.

Trolliet B. 2006. Enigmas about Whimbrel *Numenius phaeopus* in the East Atlantic Flyway. *Waterbirds around the World*. Eds. G. C. Boere, Galbraith & D.A. Stroud. The Stationery Office, Edinburgh.

Trolliet, B. and Fouquet, M. 2002. La population ouest-africaine du Flamant nain Phoeniconias minor:. Malimbus: 24: 87-92.,UK.

Trolliet, B. and Fouquet, M. 2004. Wintering waders in coastal Guinea. Wader Study Group Bulletin 103: 56-62.

Trotignon, E &J., Baillou, M., Dejonghe, J-F., Duhautois, L., & Lecomte 1980. Recensement hivernal des limicoles et autres oiseaux aquatiques sur le Banc d'Arguin, Mauritanie. L'Oiseau et R.F.O. 50: 323-343.

Veen, J., Dallmeijer, H.,& Diagana, C. 2007. Monitoring colonial nesting birds along the West African Seaboard. Wetlands International Africa, Dakar, Senegal. Pp 37.

Veen, J., Mullié, W.C., Sylla, C.M., Robinson, P. & Diop, M.S. 2011. Suivi de la reproduction 2011 des colonies d'oiseaux marins de l'Ile aux Oiseaux, Parc National du Delta du Saloum. VEDA Consultancy, Wenum Wiesel / DPNS, Parc National du Delta du Saloum / Wetlands International, Dakar.

Wetlands International (2014). Annual African-Eurasian Waterbird Census National Count Totals: 2011-2014. www.wetlands.org.

Wetlands International (2015). "*Waterbird Population Estimates*" .http://wpe.wetlands.org.

van der Waarde J.J. (ed) 2007. Waterbird census of coastal Cameroon and Sanaga river. January-March 2007. WIWO report. Beek-Ubbergen.

van der Winden, J., Siaka, A., Dirksen, S. & Poot, M.J.M. 2007. Waterbirds in coastal wetlands of Sierra Leone, January - February 2005. WIWO-report nr. 84. Foundation WIWO, Beek-Ubbergen, The Netherlands.

WWT. 2013. Goose & Swan Monitoring Programme: survey results 2012/13 East Atlantic Light-bellied Brent Goose *Branta bernicla hrota* WWT/JNCC/SNH, Slimbridge. URL: http://monitoring.wwt.org.

Zwarts, L. 1988. Numbers and distribution of coastal waders in Guinea-Bissau. Ardea 76: 42-55.

Zwarts, L., J. van der Kamp, O. Overdijk, T. van Spanje, R. Veldkamp, R. West and M. Wright. 1998a. Wader count of the Banc d'Arguin, Mauritania, in January/February 1997. Wader Study Group Bull. 86: 53-69.

Zwarts, L., Bijlsma, R.G., van der Kamp, J. & Wymenga, E. 2009. Living on the edge: Wetlands and birds in a changing Sahel. KNNV Publishing, Zeist.

PHOTO Dave Montreuil

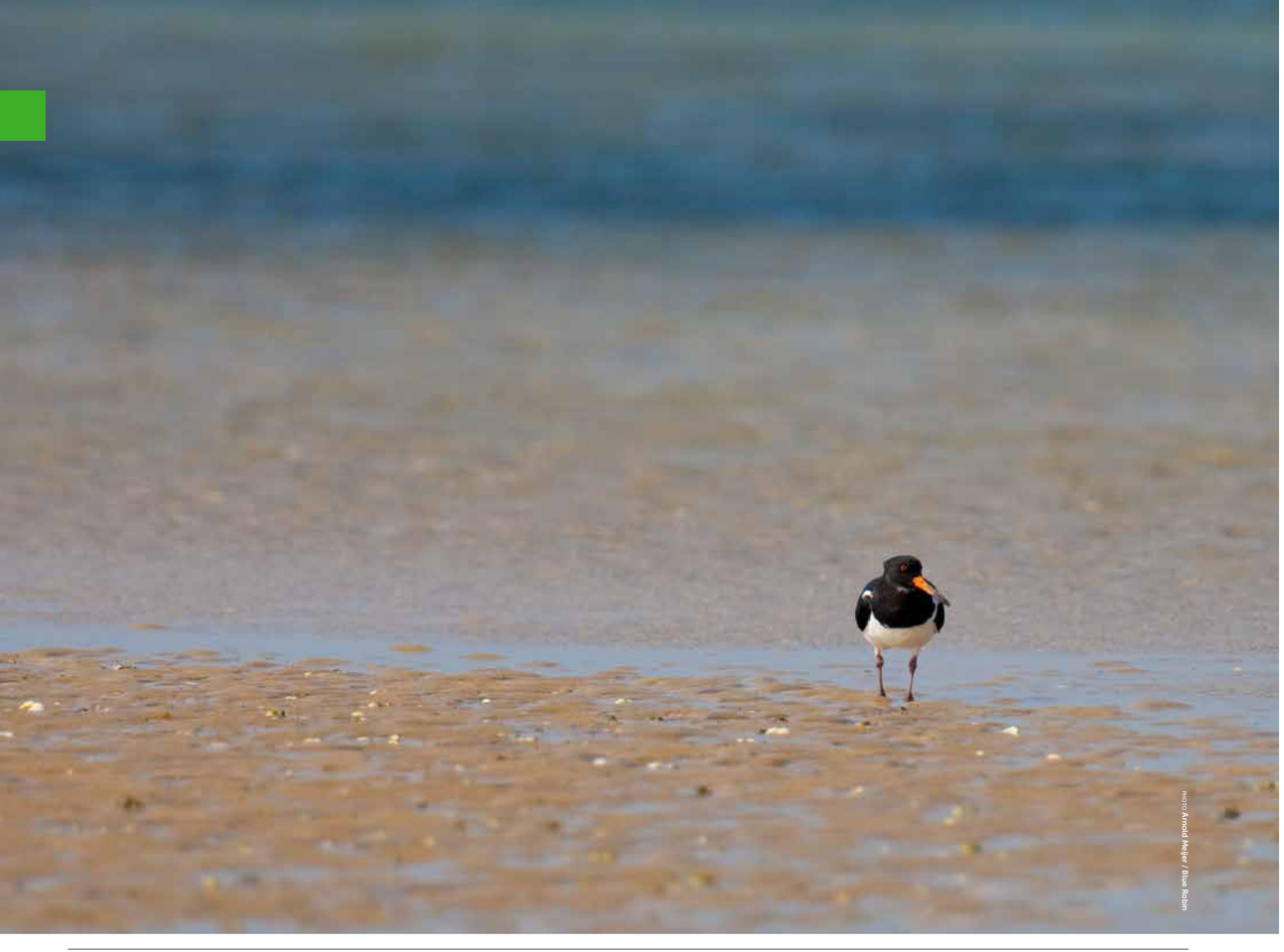


photo: Arnold Meijer / Blue Robin

Appendices

Annex 2.1. Sources of January data per country

Iceland For Common Redshank (robusta population), Ruddy Turnstone (NE Canada and Greenland population) and the Eurasian Oystercatcher (ostralegus population) Iceland is considered as within the wintering range. The number of Redshank and Turnstone is taken as similar to that reported in Stroud et al. 2009. For Oystercatcher the wintering number is from van de Pol et al. 2014.

Norway Data used as reported to the IWC. National Coordinator is Svein-Hakon Lorentsen (NINA).
Sweden Data used as reported to the IWC and as part of the EU Birds Directive ArticleArticle 12 reporting. National coordinator of IWC is Leif Nilsson (University of Lund). For Oystercatcher, the wintering number is from van de Pol et al. 2014.

Denmark Data used as reported to the IWC and as part of the EU Birds Directive Article 12 reporting. National Coordinator of IWC was Stephan Pihl until 2014 and after his retirement, Preben Clausen (University of Aarhus, Department of Bioscience). Coordination in the Danish Wadden Sea is carried out by Karsten Laursen (University of Aarhus), see also Blew et al. 2013.

Germany Data used as reported to the IWC and as part of the EU Birds Directive Article 12 reporting. National Coordinator of IWC is Johannes Wahl (DDA). Coordination in the Schleswig-Holstein part of the Wadden Sea is carried out by Klaus Günther (Schutzstation Wattenmeer). Coordination in Niedersachsen part of Wadden Sea is carried out by Staatliche Vogelschutzwarte - Niedersächsischer landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz). See also Blew et al. 2013.

The Netherlands Data used as reported to the IWC and as part of the EU Birds Directive Article 12 reporting. National Coordinator of IWC is Menno Hornman and data manager Erik van Winden, Sovon. Coordination in the Dutch part of the Wadden Sea is carried out by Romke Kleefstra (Sovon), See also Blew et al. 2013.

United Kingdom Data used as reported to the IWC and as part of the EU Birds Directive Article 12 reporting. National Coordinator of IWC is Chas Holt (on behalf of the Wetland Bird Survey organised and funded by BTO, WWT, RSPB & JNCC).

Ireland Data used as reported to the IWC and as part of the EU Birds Directive Article 12 reporting. National Coordinator of IWC is Helen Boland and data manager is Olivia Crowe, (BirdWatch Ireland).

Belgium Data used as reported to the IWC and as part of the EU Birds Directive Article 12 reporting. For this coastal review only data from Flanders is used. Coordinator of IWC in Flanders is Koen Devos, INBO.

France Data used as reported to the IWC and as part of the EU Birds Directive Article 12 reporting. National Coordinator of IWC is Bernard Deceuninck, LPO.

Italy Estimates for Italy are included in the population estimates for a small number of populations. Data used from national country totals (Wetlands International 2014). National Coordinator of IWC is Nicola Baccetti and data manager is Marco Zenatello (ISPRA).

Spain Data used as reported to the EU Birds Directive Article 12 reporting. National Coordinator of IWC is Blas Molina (SEO).

Portugal Data used as reported to the IWC and as part of the EU Birds Directive Article 12 reporting. National Coordinator of IWC is Vitor Encarnação (DSCN).

Tunisia Estimates for Tunisia are included in the population estimates for a small number of populations. Data used from national country totals (Wetlands Interna-

tional 2014). National coordinator is Hichem Azafzaf (Les Amis des Oiseaux / Groupe Tunisien d'Ornithologie). A North African review of the counts in January 2013 is in preparation (Sayoud et al. in prep.).

Algeria Estimates for Algeria are included in the population estimates for a small number of populations. Data used from national country totals (Wetlands International 2014). National Coordinator of IWC is undertaken by Hamida Salhi and Samir Sayoud (Direction Generale des Forets). A North African review of the counts in January 2013 is in preparation (Sayoud et al. in prep.).

Morocco Data used from national country total in January 2013 (Wetlands International 2014). National coordinator is Mohamed Dakki (CEMO, Grepom). A North African review of the counts in January 2013 is in preparation (Sayoud et al. in prep.).

Mauritania Data used as reported to the IWC. Overall coordinator for the survey in Mauritania in January 2014 was Sidi Mohamed Lehlou, Directeur des Aires Protégées et du Littoral Ministère de l'Environnement et du Développement Durable. Counts were concentrated on the Baie du Lévier (van Spanje et al. 2014), the Parc National Banc d'Arguin (PNBA 2014, coordination by Lemhaba Ould Yarba, Abou Gueye and Zeine El Abidine o/ Sidaty) and the Mauritanian part of the trans-boundary Biosphere Reserve of the Senegal River (PND 2014, coordination by Zeine El Abidine o/ Sidaty). Counts were carried out by field workers from PND, PNBA, DAPL, Nature Mauritanie (all Mauritania), ACROLA (France) and from the Netherlands (Sovon and others). Important references to which the result of January 2014 could be compared (data entered in the IWC database) are Trotignon et al. 1980, Altenburg et al. 1982, Zwarts et al. 1998, Hagemeijer et al. 2004, Smit et al. unpublished and Diagana & Dodman 2006.

Senegal Data used as reported to the IWC. National coordinator of the IWC was Ibrahima Diop until 2014 (presently retired), data management and reporting by Aminita Sall Dip (the Direction des Parcs Nationaux). Senegal has the longest running and most comprehensive monitoring programme of waterbirds in West Africa. Data from 2010-2014 could be used to estimate population sizes. Included in the counts are, among others, the reserve de Biosphere du Delta du Fleuve Senegal (RBDFS), la zone des Niayes, La Petite Cote, the reserve de Biosphere du Delta du Saloum (RBDS) and the Parc National de Basse Casamance (PNBC). All results are summarized in DPN (2014). Counts were carried out by field workers from DPN, DAMCP, NCD (all Senegal) and from France. Important references for counts in the past are Hötker & Dietrich 1991, Schepers et al. 1997 and Triplet & Yésou 1998.

The Gambia Data used as reported to the IWC. The count of January 2014 is the main source for the 2010-2014 population estimate. During January 2014 Kawsu Jammeh with the help of Lamin Sanyang from Department of Parks and Wildlife Management (DPWM) was responsible for coordination and reporting (Jammeh et al. 2014). Counts were carried out by field workers from DPWM, WABSA (all Gambia) and from the Netherlands.

Guinea-Bissau Data used as reported to the IWC with extrapolation. National coordinator of the IWC is Joãozinho Sá from Bureau de la Plantification Côtière (GPC) and Wetlands International Guinea-Bissau (WIGB). The count of January 2014 is the main source for the 2010-2014 population estimate. Counts were performed both at the Bijagós Archipelago and at all coastal wetlands on the mainland. Based on sites and sub-sites used in the past (Salvig et al. 1997, Frigge et al. 2002) a total of 171 counting units were established. Because of extensive mudflats fringed by mangroves, total counts cannot be carried out in Guinea-Bissau. Counting results were accompanied by estimates of the percentages of the available waterbird habitat per counting unit that was counted. This was used to extrapolate the results to totals for the sites. Altogether, about 58% of the total surface area of waterbird habitat was counted. Extrapolation was only done for waders and other smaller waterbird species occurring on mudflats. Counts were carried out by fieldworkers from GPC, WIGB, IBAP, ODZH, DGFF (all Guinea-Bissau) and from Denmark, Germany, The Netherlands and Portugal. Important references to which the result of January 2014 could be compared (data entered in the IWC database) are Zwarts 1988, Salvig et al. 1994, Salvig et al. 1997 and Frigge et al. 2002.

Guinea Data used as reported to the IWC, National Coordinator is Namory Keita with the help of Balla Mousa Condé, Division Faune et Protection de la Nature (DFPN). Counts in January 2014 were carried out by field workers from DFPN, Guinee Ecology and Niedersachsen, Germany. Estimates for 2010-2014 are based on these results and on assessments published in Trolliet & Fouquet (2004) and Trolliet (unpublished).

Sierra Leone Data used as reported to the IWC, National Coordinator is Papanie Bai-Sesay, CSSL. Counts in January 2014 were carried out by field workers from CSSL (Sierra Leone), BTO and WWT (both UK) concentrating on Yawri Bay, Sherbo and Aberdeen Creek. Estimates for 2010-2014 are based on these results and on assessments published in van der Winden et al. 2007.

Mali Estimates for Mali are included in the population estimates for a small number of populations.
Coordinator for the IWC in Mali is Bouba Fofana (Wetlands International Mali). Estimates for 2010-2014 are based on Zwarts et al. 2009.

Niger Estimates for Niger are included in the population estimates for a small number of populations. These estimates are based on older assessments as published in Brouwer & Mullié 2001.

Liberia Data used as reported to the IWC, National Coordinator is Jerry Garteh (SCNL). Estimates for 2010-2014 are also partly based on Stroud et al. 2004.

Ivory Coast Data used as reported to the IWC, National Coordinator is Joelle Zouzou (Minstry of Water and Forests, direction de la Faune et des resources cynegetiques). Counts in January 2014 concentrated on Parc National d'Azagny, des Iles Ehotilés, la Baie de Cocody and Grand-Bassam. Counts were carried out in cooperation with the Ministry of the Environment.

Ghana Data used as reported to the IWC. No formal coordinator of the IWC is appointed at present in Ghana. The count in January 2014 was organized by Charles Christian Amankwah (Wildlife Division). Counts were performed at the Ramsar sites Desu Delta, Muni-Pomadze, Sakuma, Songor and Keta Lagoon. Estimates for 2010-2014 are also based on Stroud et al. 2004 and Ntiamoa-Baidu et al. 2014.

Togo Data used as reported to the IWC, National Coordinator is Okoumassou Kotchikpa (Ministere de l'Environment, direction de la Fauna et de la Chasse). Counts in January 2014 concentrated on Lagune de Bé, Torrent d'eau d'Agbalépedo, Mare de Tanmé, Mare de Dindin and Chebal Zalivé. Estimates for 2010-2014 partly based on Stroud et al. 2009.

Benin Data used as reported to the IWC, National Coordinator is Jacques Boco Adjakpa (CEROE). The count of January 2014 was organized under responsibility of Théophile Kakpo (Direction des Forets et des Resources Naturelles).

Nigeria Data used as reported to the IWC, National Coordinator is Alade Adeleke (Nigerian Conservation Foundation).

Cameroon Data used as reported to the IWC, National Coordinator is Gordon Ajonina (CWCS). In January 2014 a comprehensive coverage of the coast of Cameroon was carried out. For the estimates of 2010-2014 In addition also estimates from Van de Waarde 2007 were used.

Gabon Data used as reported to the IWC, National Coordinator is Alphonsine Koumbamfoubou (Ministere des Eaux et Forets). In 2014 counts were concentrated at Parc National d'Akanda and Parc National de Pongara. Estimates for 2010-2014 are also partly based on Stroud et al. 2004 and Schepers & Marteijn 1993.

Congo (Brazzaville) Data used as reported to the IWC, National Coordinator is Jérôme Mokoko Ikonga (WCS Congo).

Democratic Republic of Congo There is at present no national coordinator for the IWC in DRC. The count on the coast in January 2014 was coordinated by Pierre Mavuemba (PMM).

Angola Data in January 2014 was collected during a training workshop organized by Tim Dodman. Counts were carried out at a small selection of sites. Estimates for 2010-2014 are also partly based on Stroud et al. 2004.

Namibia Data used as reported to the IWC, National Coordinator is Holger Kolberg (MET). Namibia has a long running and comprehensive waterbird monitoring programme.

South Africa Data used as reported to the IWC, National Coordinator is Jerome Ainsley (CWAC). South Africa has a long running and comprehensive waterbird monitoring programme.

Photo Koos Dansen

Annex 3.1 Sites along the western seaboard of Africa used for trend analyses

Country	Site code (WI)	Site name	first year count	number of counts until 2014
Morocco	MA00022	Baie d'Ad-Dakhla	1995	4
Morocco	MA00100	Embouchure de l'wad Dr'a	1990	6
Morocco	MA00101	Embouchure de l'wad Massa	1990	10
Morocco	MA00102	Embouchure de l'wad Malwiya	1989	10
Morocco	MA00107	Embouchure de l'wad Yquem	1992	7
Morocco	MA00108	Embouchure de l'wad Bou Regreg	1992	4
Morocco	MA00109	Embouchure de l'wad Oumma Fatma	1990	7
Morocco	MA00110	Embouchure de l'wad Chbeyka	1990	8
Morocco	MA00111	Embouchure de l'wad Al Wa'er	1991	7
Morocco	MA00112	Embouchure de l'wad Loukkos	1990	9
Morocco	MA00113	Embouchure de l'wad Martil	1991	6
Morocco	MA00115	Embouchure de l'wad Sebou	1990	6
Morocco	MA00116	Embouchure de l'wad Souss	1989	11
Morocco	MA00127	Lagune de Khnifiss	1990	9
Morocco	MA00128	Wad As-Saqia Al Hamra à La'youn	1994	5
Morocco	MA00129	Lagunes de Sidi Moussa-Walidia	1990	10
Morocco	MA00132	Marais du bas Loukkos	1991	8
Morocco	MA00134	Merja Bargha	1991	5
Morocco	MA00140	Merja de Sidi Bou Ghaba	1990	9
Morocco	MA00141	Merja des Wlad Khallouf	1990	7
Morocco	MA00142	Merja Al Halloufa	1990	8
Morocco	MA00143	Merja Hawwara	1990	6
Morocco	MA00145	Merja des Wlad Skher	1991	6
Morocco	MA00147	Merja Zerga plus Roosts	1990	17
Morocco	MA00168	Plan d'eau de Safi	1991	4
Morocco	MA00182	Sebkha Bou Areg	1992	8
Mauritania	MR00005	Bell	2000	6
Mauritania	MR00006	Chatt Boul	1980	9
Mauritania	MR00008	Etang du Diawling	2002	5
Mauritania	MR00030	Banc d'Arguin, Arel Island (9)	1979	11
Mauritania	MR00031	Banc d'Arguin, Niroumi Island (11)	1980	11
Mauritania	MR00033	Banc d'Arguin, Baie d'Aouatif (8)	1980	11
Mauritania	MR00034	Banc d'Arguin, Baie Saint Jean (36)	1980	9
Mauritania	MR00035	Banc d'Arguin, Cap Timeris	1980	6
Mauritania	MR00037	Banc d'Arguin, Nair Island (10)	1979	12
Mauritania	MR00038	Banc d'Arguin, Zira Island (7)	1980	11
Mauritania	MR00073	Banc d'Arguin, Ebelk Aiznay (5)	1980	11
Mauritania	MR00086	Banc d'Arguin, Ten Aloul- Cap Tafarit (39)	2000	3
Mauritania	MR00118	Banc d'Arguin,Tinimerguoui (15)	1980	5
Mauritania	MR00134	Banc d'Arguin, Tidra NE, 12	1979	6
Mauritania	MR00135	Banc d'Arguin, Tidra NW, 13	1980	5
Mauritania	MR00136	Banc d'Arguin, Tidra W, 14	1980	5
Mauritania	MR00140	Banc d'Arguin, Bay of Chikchitt, 2	1979	7
Mauritania	MR00141	Banc d'Arguin, Tidra SW,21	1979	6
Mauritania	MR00145	Banc d'Arguin, G'drarr-Tivide, 22	1980	5
Mauritania	MR00146	Banc d'Arguin, Avoidra-Tessit, 23	1980	5
Mauritania	MR00148	Banc d'Arguin, Baie Serini N, 24	1980	5
Mauritania	MR00149	Banc d'Arguin, Serini NW, 2	1980	5
Mauritania	MR00150	Banc d'Arguin, Serini SW, 26	1980	5
Mauritania	MR00151	Banc d'Arguin, Baie de Serini S, 27	1980	5
Mauritania	MR00152	Banc d'Arguin, Teichot N, 28	1980	5
Mauritania	MR00155	Banc d'Arguin, Teichot S, 29	1980	6
Mauritania	MR00156	Banc d'Arguin, Chikchitt, 3	1980	3
Mauritania	MR00157	Banc d'Arguin, Tidra SE, 30	1980	6
Mauritania	MR00159	Banc d'Arguin, Tidra E, 31	1980	5
Mauritania	MR00161	Banc d'Arguin, Zbarat Quarat -Tidra E, 32	1980	5
Mauritania	MR00165	Banc d'Arguin, D'benezer- Al Trique W, 33	1980	4
Mauritania	MR00166	Banc d'Arguin, D'benezer- Al Trique E, 34	1980	5
Mauritania	MR00169	Banc d'Arguin 35, Iwili, 34B	1980	5
Mauritania	MR00173	Banc d'Arguin, Kiaone, 4	1980	4
Mauritania	MR00177	Banc d'Arguin, Cheddid-Toufat, 19+20	1979	7
Mauritania	MR00179	Banc d'Arguin, Kiji, 16+17+18	1979	7
Senegal	SN00006	JOAL FADIOUTH	1997	5
Senegal	SN00016	Les Trois Marigots	1993	14
Senegal	SN00019	Ndiael	1993	16
Senegal	SN00020	Technopole	1999	8
Senegal	SN00024	PARC NATIONAL DE LA LANGUE DE BARBARIE	1988	9
Senegal	SN00025	PARC NATIONAL DES OISEAUX DU DJOUDJ	1989	19
Senegal	SN00028	RESERVE SPECIALE DE FAUNE GUEMBEUL	1994	13
Guinea-Bissau	GW00109	Bijagos Archipelago GW-BA	1987	5
Guinea	GN00002	Ile et marigot de Taidi	2000	6
Guinea	GN00009	RIZIERE DE WAMOUNOU	2003	5
Guinea	GN00010	Vasieres de Khonibenki et Yongo Sale	1999	9
Guinea	GN00013	VASIERES DE SONFONIA	2000	6
Guinea	GN00015	Iles Tristao	2000	7
Sierra leone	SL00001	ABERDEEN CREEK	1992	8
Ghana	GH00001	DENSU DELTA	1997	5
Ghana	GH00002	Esiama Beach	1999	6
Ghana	GH00003	Keta Lagoon complex	1997	8
Ghana	GH00005	Muni -Pomadze	1997	9
Ghana	GH00006	Sakumo Lagoon	1997	8
Ghana	GH00007	Songhor Lagoon	1997	6
Togo	TG00014	Wharf de Lome	2008	3
Benin	BJ00001	Bas Delta du Mono	1996	9
Benin	BJ00005	Fleuve Oueme	1999	7
Benin	BJ00006	Lac Aheme	1996	7
Benin	BJ00014	Lac Nokoue	1996	9
Benin	BJ00022	LAGUNE DE PORTO-NOVO	1996	7
Benin	BJ00029	RIVIERE SO	1996	5
Cameroon	CM00030	Bongo / Boloy Section of river Sanaga	2000	8
Namibia	NA00001	Aeroplane Bay	1995	13
Namibia	NA00002	Agate Beach	1995	13
Namibia	NA00010	Griffith Bay	1995	13
Namibia	NA00011	Grosse Bucht	1995	14
Namibia	NA00013	Guano Bay	1995	13
Namibia	NA00017	Kunene River Mouth	1992	3
Namibia	NA00026	Orange River Mouth (Ramsar Site)	1994	11
Namibia	NA00030	Radford Bay	1995	13
Namibia	NA00031	Sandwich Harbour	1992	20
Namibia	NA00040	Swakop River Mouth	1992	14
Namibia	NA00041	Mile 4 Saltworks	1992	12
Namibia	NA00042	Swakop Sewage Works	1992	20
Namibia	NA00046	Walvis Bay Ramsar Site	1992	19
Namibia	NA00047	Walvis Bay Sewage Works	1996	12
Namibia	NA00102	Cape Cross Saltworks	1992	8
South Africa	ZA00019	Berg River 1: Mouth & Estuary	2000	7
South Africa	ZA00021	Berg River 11: Doornfontein Floodplain	1997	6
South Africa	ZA00025	Berg River 3: Hotel Mudflats & Estuary	1999	8
South Africa	ZA00026	Berg River 4: Hotel Saltpans	1997	9
South Africa	ZA00027	Berg River 5: De Plaat	1997	8
South Africa	ZA00028	Berg River 6: Kliphoek Saltpans	1998	9
South Africa	ZA00087	Dick Dent Bird Sanctuary	2003	2
South Africa	ZA00158	Jakkalsvlei	1997	12
South Africa	ZA00177	Kleinriviersvlei (Klein River Estuary)	2000	11
South Africa	ZA00323	Paardevlei Dam	2000	3
South Africa	ZA00357	Rocher Pan	1992	14
South Africa	ZA00362	Rondevlei Nature Reserve: Block 12	2001	6
South Africa	ZA00400	Strandfontein Sewage Works: Central	1992	17
South Africa	ZA00441	Verlorenvlei	1992	16
South Africa	ZA00448	Wadrif Saltpan	1999	11
South Africa	ZA00455	Wildevoelvlei	1994	7
South Africa	ZA00461	Zandvlei: Lower Estuary	2001	8
South Africa	ZA00462	Zandvlei: Marina Da Gama	2003	6
South Africa	ZA00463	Zandvlei: Upper Estuary	2001	8
South Africa	ZA00464	Zandvlei: Westlake Wetlands	2003	3
South Africa	ZA00469	Langebaan: Lagoon Combined	1999	6
South Africa	ZA00471	Botriviervlei: Combined (A1,A2,B,C & D)	1994	8

PHOTO Arnold Meijer / Blue Robin

Annex 3.2. Countries used for trend analyses of breeding birds in Europe for selected populations

AT= Austria, BE=Belgium, BG=Bulgaria, CZ=Czech Republic, DE=Germany, DK=Denmark, EE=Estonia, ES=Spain, FI=Finland, FR=France, HU=Hungary, IE=Ireland, IT=Italy, LT=Lithuania, LV=Latvia, NL=Netherlands, PL=Poland, PT=Portugal, RO=Romania, SE=Sweden, SI=Slovenia, SK=Slovakia and UK=United Kingdom.

Species & Flyway population	AT	BE	BG	CZ	DE	DK	EE	ES	FI	FR	HU	IE	IT	LT	LV	NL	PL	PT	RO	SE	SI	SK	UK
Black-headed Gull, West & Central Europe (bre)	x	x			x	x	x	x	x	x		x	x	x	x	x	x	x		x	x	x	x
Common Eider, *mollissima*, Baltic, Wadden Sea					x	x	x		x							x							
Common Redshank, *brittanica*		x								x		x				x							x
Common Ringed Plover, *hiaticula*		x			x	x	x		x	x		x		x	x	x	x			x			x
Common Tern, *hirundo*, N, E Europe (bre)	x		x	x		x	x		x		x			x	x			x		x	x	x	
Common Tern, *hirundo*, S, W Europe (bre)		x			x			x		x		x	x			x							x
Eurasian Curlew, *arquata*	x	x			x	x	x		x	x		x		x	x	x	x			x			x
Eurasian Spoonbill, *leucorodia*, E Atlantic		x			x			x		x						x		x					x
Great Cormorant, *sinensis*, N, C Europe	x	x			x	x	x	x	x	x				x	x	x	x			x		x	x
Gull-billed Tern					x	x		x		x			x					x					
Herring Gull, *argentatus*					x	x	x		x					x	x		x			x			
Herring Gull, *argenteus*		x								x		x				x							x
Little Tern, *albifrons*, W Europe (bre)		x			x	x	x	x	x	x		x	x	x	x	x	x	x		x			x
Common Gull, *canus*		x			x	x	x		x	x		x		x	x	x	x			x			x
Roseate Tern										x		x											x
Sandwich Tern, *sandvicensis*, W Europe (bre)		x			x	x	x	x	x	x		x	x	x	x	x	x	x		x			x
Whimbrel, *phaeopus*, NE Europe (bre)							x		x						x					x			

Annex 4.1 Waterbird estimates per country

January 2010-2014 for selection of populations on the East Atlantic Flyway

Species common name:	Great White Pelican	Great Cormorant	Western Reef-egret	Eurasian Spoonbill	Greater Flamingo	Lesser Flamingo	Eurasian Oyster-catcher	Pied Avocet	Grey Plover	Common Ringed Plover	Kentish Plover	Bar-tailed Godwit	Whimbrel	Eurasian Curlew	Spotted Redshank	Common Redshank
Population:	**W Africa**	**lucidus, Coastal W Africa**	**gularis**	**leucorodia, E Atlantic**	**W Africa**	**W Africa**	**ostralegus**	**W Europe (bre)**	**squatarola, E Atlantic (non-bre)**	**psammo-droma**	**alexandri-nus, E Atlantic**	**taymyrensis, W, SW Africa (non-bre)**	**phaeopus & islandica**	**arquata**	**Europe (bre)**	**totanus Northern Europe (bre)**
Iceland							2,400									
Sweden							50									
Norway							100									
Denmark							43,000		200					15,300		
Germany							205,000	0	10,500					100,000		
Netherlands							180,000	2,000	25,000					180,000		
Belgium							2,000	200	260					15,000		
United Kingdom							340,000	7,500	43,000					150,000		
Ireland							46,000	0	2,900					28,000		
France				700			51,000	17,000	30,500		350			40,000	500	
Spain				1,600			3,200	12,000	8,400		7,500		900	4,600	650	7,000
Portugal				1,200			900	8,500	8,000		3,800		450	1,200	80	3,300
Italy							15				1,300			6,700	900	
Tunisia							1,600				6,600		300		110	
Algeria							0				1,000			80	220	
Niger																
Mali	2,000		250												4,600	
Morocco			5	400			1,800	17,000	5,000	19,000	14,000	7,000	200	310	20	1,600
Mauritania	16,000	25,000	2,200	9,800	64,000	4,700	9,300	700	19,000	64,000	6,900	280,000	42,000	4,000	50	70,000
Senegal	29,000	6,700	4,600	2,600	16,000	6,800	3,500	2,600	2,200	6,400	1,200	5,400	4,000	420	230	2,000
Gambia	160	80	200		15	0	10	25	50	220	5	280	100	5	0	30
Guinea-Bissau	350	570	1,500		4,500	400	11,000	1,100	15,500	27,000	1,600	130,000	34,000	4,200	275	22,000
Guinea	700		2,000		13,000	11,600	230	5,600	21,000	71,000	500	64,000	36,000	4,000	60	25,000
Sierra Leone	450		3,600		25	0	100	600	5,000	6,300	70	3,200	7,000	500	0	8,500
Liberia			50						300	780	75	75	1,200		0	
Ivory Coast			50						30	0	0	0	5		5	
Ghana			550						1,000	5,000	200	230	400		7,000	
Togo			150						240	70	5	130	80		100	
Benin			190						25	110	15	5	340		30	
Nigeria			150							0		0	45		1,700	
Cameroon			120							420		10	220		100	
Gabon			10							2,200		5,000	4,100			
Congo										10		0				
Democratic Rep, Congo										10		0				
Angola										500		250				
Namibia										350		1,800				
South Africa										2,500		260				
Total	**48,660**	**32,350**	**15,625**	**16,300**	**97,540**	**23,500**	**901,205**	**74,825**	**198,105**	**205,870**	**45,120**	**497,640**	**131,340**	**554,315**	**16,630**	**139,430**

Species common name:	Common Greenshank	Ruddy Turnstone	Red Knot	Sanderling	Little Stint	Curlew Sandpiper	Dunlin	Grey-headed Gull	Slender-billed Gull	Gull-billed Tern	Caspian Tern	Sandwich Tern	Royal Tern	Common Tern	Little Tern
Population:	**NW Europe (bre)**	**interpres, Fennoscandia, NW Russia (bre)**	**canutus**	**E Atlantic (non-bre)**	**Europe & West Africa (non-bre)**	**W Africa (non-bre)**	**schinzii, Iceland (bre)**	**poiocephalus, West Africa**	**West Africa**	**nilotica, W Europe & W Africa (bre)**	**W Africa (bre)**	**sandvicensis, W Europe (bre)**	**albidi-dorsalis**	**hirundo**	**albifrons & guinea**
Iceland															
Sweden															
Norway															
Denmark				300											
Germany				3,600											
Netherlands				11,000											
Belgium				350											
United Kingdom	770			17,000											
Ireland	890			5,300											
France	500			25,000	1,500							1,000			
Spain	3,500			5,000	14,000	1,000						1,200			
Portugal	300			3,700	450	400						150			
Italy	325				2,000							850			
Tunisia	260				13,000	5,000									
Algeria	50				1,300										
Niger	2,000				27,000			600		900					170
Mali	3,000				100,000			400		4,000					350
Morocco	80	1,000	800	5,000	25,000	15			160	0		600	5	0	0
Mauritania	7,100	15,000	196,000	54,000	28,000	62,000	725,000	100	5,500	1,600	7,600	2,200	900	50	1,200
Senegal	750	700	950	6,000	7,600	4,000	2,000	14,000	10,000	1,700	12,000	2,300	2,200	90	2,000
Gambia	65	100	0	200	800	200	5	5,700	1,500	80	2,000	550	1,300	20	160
Guinea-Bissau	2,400	3,000	45,000	35,000	12,000	130,000	350	1,100	600	17,600	21,000	11,000	8,000	3,500	8,000
Guinea	3,700	1,500	4,600	15,300	9,500	100,000	130	1,300	5	5,300	3,700	3,500	26,000	600	2,900
Sierra Leone	1,850	700	2,000	3,100	1,800	25,000	30	100		800	70	1,200	3,000	2,700	5,000
Liberia	3,000	0	100	300	200	680				300	50	150	150	5	100
Ivory Coast	25	0	0	50	10	0				1,000	160	180	170	5	100
Ghana	4,300	200	65	5,000	12,000	19,000					0	500	500	500	700
Togo	90	10	0	1,500	10	5					100	1,200	300	0	20
Benin	150	20	0	10	100	200					0	70	380	5	20
Nigeria	20		0		15							50	3,000	0	500
Cameroon			0		5							40	5,000	5	550
Gabon			370		13,000							540	9,000	120	60
Congo			0									150	3,000	0	
Democratic Rep, Congo			0									100	1,000	100	
Angola			50									140	300	470	
Namibia			25									4,300	10	23,000	
South Africa			200									2,700		21,000	
Total	**35,125**	**22,230**	**250,160**	**196,710**	**269,290**	**347,500**	**727,515**	**23,300**	**17,765**	**33,280**	**46,680**	**34,670**	**64,215**	**52,170**	**21,830**

Annex 6.1 Summary of trend and population size assessments

for populations covered in this report

Explanation of columns: *Method = data source used for trend estimation (w: January counts, b: Breeding bird numbers, *: expert judgement), Trends = long term and short term trend since start year (different columns) until and including end year (same column)(inc: increase, dec: decrease, sta:stable or fluctuating, unk: unknown), as in CSR6= trend indication as used in Conservation Status Report 6 (Nagy et al. 2015 and as presented on http://wpe.wetlands.org), Population size=gives minimum and maximum estimate of number of individuals, Type of EAF population= Wad: population makes use of Wadden Sea, Pal: palearctic population but not substantially making use of the Wadden Sea, Afr, population only occuring in Africa, wintering= main wintering area, breeding = breeding in the Wadden Sea or not, Food Type=main diet, Trend quality, % of pop. in trend calc. = percentage of population size in trend calculation, Trend quality, trend change without 2014 = is the trend indication changing without usage of 2014 and what is the trend in that case (carried out for selection of populations).*

Population	Method	Long term trend			Short term trend					Population size		Type of EAF population			Wintering			Breeding		Food type				Trend quality	
	trend	start year	slope	trend	start year	end year	slope	trend in this rap	as in CSR6	min	max	Wad-EAF	Pal-EAF	Afr-EAF	Europe	Europe-Africa	Africa	Wadden Sea	not	fish	benthos	plants		% of pop. in trend. calc.	trend change without 2014
Great White Pelican, W Africa	w	1989	1.06	inc	2003	2014	1.06	inc	sta/inc?	60.000	60.000			x			x		x	x				44	
Great Cormorant, sinensis, N, C Europe	b	1988	1.07	inc	2000	2013	1.02	inc	inc	615.000	615.000	x			x			x		x				71	
Great Cormorant, lucidus, Coastal W Africa	w	1993	1.01	sta	2003	2014	1.02	inc	inc?	40.000	40.000			x			x		x	x				49	
Grey Heron, monicae				unk				unk	unk	1.500	1.500			x					x	x				-	
Western Reef-egret, gularis	w	1997	1.04	inc	2003	2014	1.04	inc	inc/sta	10.000	50.000			x			x		x	x				25	
Eurasian Spoonbill, leucorodia, E Atlantic	b	1980	1.10	inc	2000	2012	1.09	inc	inc	14.200	18.900	x				x		x		x				59	
Eurasian Spoonbill, balsacii	b	1978	0.98	dec	2003	2012	0.95	dec	dec	2.250	2.250			x			x		x	x				100	
Greater Flamingo, W Africa	*	1989		sta	2003	2014		sta	sta/flu	45.000	95.000			x			x		x		x			-	
Lesser Flamingo, W Africa	w	1999	1.24	inc	2003	2014	1.24	inc	sta/inc?	15.000	25.000			x			x		x		x			100	
Barnacle Goose, N Russia, E Baltic (bre)	w	1988	1.07	inc	2003	2012	1.07	inc	inc	1.000.000	1.000.000	x			x			x					x		85	
Brent Goose, bernicla	w	1988	0.99	sta	2003	2012	0.99	dec	dec	200.000	250.000	x			x				x				x		100	
Brent Goose, hrota, svalbard	w	1980		inc	2003	2012		inc	inc	7.300	7.300	x							x				x		-	
Common Shelduck, NW Europe (bre)	w	1988	1.00	sta	2003	2012	1.00	sta	dec	250.000	250.000	x			x			x			x				100	
Eurasian Wigeon, NW Europe (non-bre)	w	1988	1.01	inc	2003	2012	0.98	dec	dec	1.300.000	1.500.000	x			x				x				x		87	
Northern Pintail, NW Europe (non-bre)	w	1988	1.01	sta	2003	2012	0.98	dec	dec	65.000	65.000	x			x				x		x				100	
Common Eider, mollissima, Baltic, Wadden Sea	b	1980	0.98	dec	2000	2012	0.93	dec	dec	976.000	976.000	x			x			x			x				74	
African Oystercatcher, SE Africa	*	1979		inc	2003	2012		inc	inc	6.600	6.700			x			x		x		x			4	
Eurasian Oystercatcher, ostralegus	w	1988	0.98	dec	2003	2012	0.98	dec	dec	850.000	950.000	x				x		x			x				75	
Pied Avocet, W Europe (bre)	w	1989	1.02	inc	2003	2012	1.03	inc	inc	88.000	98.500	x				x		x			x				100	
Grey Plover, squatarola, E Atlantic (non-bre)	w	1979	1.01	inc	2003	2012	0.98	sta	sta/flu	200.000	200.000	x				x			x		x				84	
Common Ringed Plover, hiaticula	b	1980	1.00	sta	2000	2012	0.98	dec	sta/dec	55.600	68.600	x			x				x		x				100	
Common Ringed Plover, psammodroma	w	1979	0.99	sta	2003	2014	0.99	sta	sta/flu	240.000	240.000	x					x		x		x				50	
Kentish Plover, alexandrinus, E Atlantic, W Mediterranean	w	1990	1.02	inc	2003	2014	1.02	inc	inc	57.000	76.000	x				x		x			x				47	
White-fronted Plover, mechowi W Coast Africa	*	1999		sta	2003	2014	1.00	sta	sta/flu	10.000	15.000			x			x		x	x				-	
White Fronted Plover, mechowi, Coast Angola-Cameroun				unk				unk	unk					x					x	x				-	
White Fronted Plover, arenaceus, SW Africa				unk				unk	unk					x					x	x				-	
Black-tailed Godwit, islandica	w	1988	1.07	inc	2003	2012	1.05	inc	inc	98.000	125.000		x		x				x		x				56	
Bar-tailed Godwit, lapponica	w	1988	1.01	inc	2003	2012	1.01	inc	inc/sta	120.000	120.000	x			x				x		x				100	
Bar-tailed Godwit, taymyrensis, W, SW Africa (non-bre)	w	1979	0.99	dec	2003	2014	0.99	dec	dec	500.000	500.000	x					x		x		x			68	yes (sta)
Whimbrel, phaeopus, NE Europe (bre)	b	1980	1.01	sta	2002	2012	1.05	inc	sta/inc	273.000	450.000	x					x		x		x			45	
Whimbrel, islandica	*	1980		inc	2003	2012		inc	unk	600.000	750.000		x				x		x		x			-	

Population	Method	Long term trend			Short term trend					Population size		Type of EAF population			Wintering			Breeding		Food type				Trend quality	
	trend	start year	slope	trend	start year	end year	slope	trend in this rap	as in CSR6	min	max	Wad-EAF	Pal-EAF	Afr-EAF	Europe	Europe-Africa	Africa	Wadden Sea	not	fish	benthos	plants		% of pop. in trend. calc.	trend change without 2014
Eurasian Curlew, arquata	b	1980	0.99	dec	2002	2012	0.98	dec	sta/dec	640,000	920,000	x				x		x			x			68	
Spotted Redshank, Europe (bre)	w	1993	1.00	sta	2003	2014	1.00	sta	sta/flu	61,500	162,000	x				x				x	x			7	
Common Redshank, robusta	w	1988	0.99	dec	2003	2012	0.97	dec	dec?	150,000	420,000	x			x					x		x		41	
Common Redshank, britannica	b	1980	0.98	dec	2000	2012	0.97	dec	dec	76,500	76,500	x			x			x			x			100	
Common Redshank, totanus Northern Europe (bre)	w	1979	1.01	sta	2003	2014	1.01	sta	sta/flu	154,000	205,000	x					x	x			x			82	
Common Greenshank, NW Europe (bre)	w	1993	1.02	inc	2003	2014	1.02	inc	inc	230,000	470,000	x					x			x	x			5	
Ruddy Turnstone, interpres, NE Canada, Greenland (bre)	w	1988	1.01	inc	2003	2012	1.02	inc	inc	100,000	200,000	x			x					x		x		37	
Ruddy Turnstone, interpres, Fennoscandia, NW Russia (bre)	w	1993	0.99	sta	2003	2014	0.99	sta	sta/flu	62,700	111,000	x						x		x		x		30	no
Red Knot, islandica	w	1988	1.00	sta	2003	2012	1.00	sta	sta/dec?	500,000	565,000	x			x					x	x			67	
Red Knot, canutus	w	1979	0.98	dec	2003	2014	0.98	dec	dec	250,000	250,000	x						x		x	x			100	no
Sanderling, E Atlantic (non-bre)	w	1979	1.04	inc	2003	2014	1.06	inc	inc	200,000	200,000	x								x				59	
Little Stint, Europe & West Africa (non-bre)	w	1980	0.96	dec	2003	2014	0.96	dec	dec	300,000	300,000		x							x				9	no
Curlew Sandpiper, W Africa (non-bre)	w	1979	0.98	dec	2003	2014	0.98	dec	dec	350,000	450,000	x									x			75	yes (sta)
Dunlin, alpina	w	1988	1.00	sta	2003	2012	0.99	dec	dec	1,330,000	1,330,000	x						x						97	
Dunlin, schinzii, Iceland (bre)	w	1979	0.99	sta	2003	2014	0.99	sta	sta/flu	730,000	830,000		x							x				68	no
Dunlin, schinzii, britain	b	1980		dec	2003	2012		inc	inc	26,300	32,300		x					x			x			-	
Dunlin, schinzii, baltic	b	1980		dec	2003	2012		dec	dec	1,180	1,430	x						x			x			-	
Dunlin, arctica	*	1980		sta	2003	2012		sta	sta?	21,000	45,000		x							x				-	
Common Gull, canus	b	1980	1.00	sta	2000	2012	0.99	sta	sta/flu	1,200,000	2,000,000	x						x		x				59	
Herring Gull, argentatus	b	1980	0.99	dec	2000	2012	0.98	dec	sta/flu	1,300,000	1,600,000	x								x				44	
Herring Gull, argenteus	b	1980	0.99	dec	2000	2012	0.99	dec	dec	706,000	803,000	x						x			x			50	
Grey-headed Gull, poiocephalus, West Africa	w	1997	0.96	sta	2003	2014	0.96	dec	dec?	25,000	30,000			x						x	x			16	
Black-headed Gull, West & Central Europe (bre)	b	1980	0.99	dec	2002	2012	0.99	dec	sta/dec?	2,750,000	3,550,000	x						x			x			56	
Slender-billed Gull, West Africa	w	1997	0.99	sta	2003	2014	0.99	sta	sta/flu	24,000	30,000			x						x	x			30	
Gull-billed Tern, nilotica, W Europe & W Africa (bre)	b	1980	1.03	inc	2000	2012	1.02	inc	inc	37,000	63,000	x								x				10	
Caspian Tern, W Africa (bre)	w	1993	1.03	inc	2003	2014	1.03	inc	inc/sta	45,000	60,000			x						x	x			18	
Sandwich Tern, sandvicensis, W Europe (bre)	b	1980	1.01	inc	2000	2012	1.01	inc	inc	160,000	186,000	x								x				97	
Royal Tern, albididorsalis	*	1990		inc	2003	2011		sta	sta/flu	255,000	315,000			x						x	x			-	
Common Tern, hirundo, N Europe	b	1980	1.01	sta	2000	2012	1.02	inc	inc	640,000	1,500,000		x							x	x			31	
Common Tern, hirundo, S, W Europe (bre)	b	1980	1.01	sta	2000	2012	0.99	dec	dec	169,000	208,000	x								x				84	
Roseate Tern, dougallii, W Europe (bre)	b	1980	1.02	inc	2000	2012	1.05	inc	inc	6,800	8,650		x							x				57	
Little Tern, albifrons, NW Europe and West Med (combined)(bre)	b	1980	1.00	sta	2000	2012	1.00	sta	sta	40,000	53,000	x								x	x			97	
Little Tern, guineae	*			unk					unk	unk	2,000	3,000			x					x				-	
Damara Tern, SW Africa (bre)	*	1992		dec	2003	2012		dec	dec?	3,000	7,250			x						x				-	
African Skimmer, West & Central Africa	*			unk	2003				unk	7,000	13,000			x						x				-	

PHOTO Arnold Meijer / Blue Robin