Moulting Shelduck in the Wadden Sea
2010–2012

Joint Monitoring Group of Migratory Birds in the Wadden Sea (JMMB)

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Evaluation of three years of counts and recommendations for future monitoring

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Common Wadden Sea Secretariat
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Summary

The Shelduck is one of the Natura 2000 species for which the Wadden Sea is of great international importance as a moulting area. The Wadden Sea is designated as a Ramsar and Special Protection Area (SPA), again because of these internationally significant numbers of Shelduck. Traditionally almost all West European Shelduck moult in the German Wadden Sea, where they have been systematically counted since the late 1980s. Numbers ran up to about 200,000 around the turn of the century, but since 2003 they have steadily decreased. This would have indicated a decrease in the overall West European population, had it not been for the Dutch Wadden Sea, where concentrations of moulting Shelduck were found.

Because of this new situation, additional counts of moulting Shelduck were organized in The Netherlands in the period 2010-2012. It seems that about a quarter of the moulting Shelduck in the Wadden Sea shifted from the German to the Dutch Wadden Sea.

For Natura 2000, national and international monitoring and assessment of the conservation status of European priority species like the Shelduck is required. Information about specific habitat requirements and future prospects is also needed in order to decide whether or not to designate and manage protected sites. For an appropriate impact assessment sufficient data about numbers and distribution is essential. With current monitoring arrangements, the lack of moulting numbers in the Dutch trend calculations produces an inaccurate reflection of the real numbers of Shelduck. Under the Trilateral Wadden Sea Plan (1997 and 2010), Bird Targets such as 'favourite food availability' and 'sufficiently large undisturbed roosting and moulting area' can only be evaluated accurately when a trilateral monitoring programme is undertaken – and this can be carried out in conjunction with comprehensive trilateral monitoring for Shelduck and Eider.

To monitor the number of moulting Shelduck in the international Wadden Sea, harmonized counts are crucial, especially with the growing importance of the Dutch Wadden Sea. The present shift of population from the German to the Dutch Wadden Sea demonstrates quite clearly that Shelduck monitoring should be on a trilateral level, which will also help monitoring of the North West European breeding population. Thus it is recommended that the number of moulting Shelduck in The Netherlands and the Danish Wadden Sea should be monitored from now on, and combined with summer counts of (moulting) Eider. This follows the monitoring of both species in the German Wadden Sea and it gives the monitoring of both Natura 2000 species a trilateral character, making it possible to identify and secure the importance of the whole Wadden Sea as a moulting area for both species.

Sammenfatning

Gravand er blandt de udpegede Natura 2000-arter, da Vadehavet har stor betydning som fældeområde. Vadehavet er udpeget som Ramsar område og som Ef-fuglebeskyttelsesområde (SPA) på grund af det internationalt betydende antal Gravænder, hvor arten er blandt de fem vigtigste for området. Traditionel fælder næste alle Gravænder i Vesteuropa i det tyske Vadehav, hvor de har været systematisk optalt siden sidst i 1980'erne. Antallet var omkring 200.000 fugle omkring år 2000, men er faldet konstant siden. Det kunne indikere et faldende antal i Vesteuropa, hvis det ikke havde været for et stigende antal i det hollandske Vadehav.

På grund af disse nye fund, er optællinger af Gravænder blevet iværksat i Holland i 2010-2012. Tællingerne viser, at omkring et fjerdedel af de fældende Gravænder i Vadehavet har skiftet opholdssted fra det tyske til det hollandske Vadehav.

I Natura 2000 områderne er det nødvendigt, at foretage overvågning for at kunne vurdere de udpegede arters bevarings prognose, nationalt og internationalt. Informationer om arternes specifikke habitat krav og fremtidige udviklingstendens er også nødvendig, for at kunne vurdere om beskyttelsen lever op til en forsvarlig forvaltning af de udpegede områder. For kunne foretage en grundig miljøvurdering er det ligeledes nødvendigt, at der foreligger tilstrækkelige data om antal og fordeling af arterne. Med den foreliggende overvågning vil det lave antal fældende Gravænder i det tyske Vadehav give et ufuldstændigt billede af det faktiske antal. I relation til den Trilaterale Vadehavsplan (1997 og 2010), er målene at fuglene har 'en favorable tilgængelighed af føde' samt 'tilstrækkeligt store uforstyrrede raste- og fældepladser' hvilket kun kan vurderes ud fra resultater fra en systematisk trilateral overvågning af Gravand.

For at overvåge antallet af Gravænder i det samlede Vadehav, er det nødvendigt at der foretages koordinerede trilaterale optællinger, særligt efter at betydningen af det hollandske Vadehav har vist sig at være stigende. Det nuværende skift fra det tyske til det hollandske Vadehav demonstrerer klart af overvågning af Gravand bør være en del af det trilaterale overvågningsprogram, hvilket også vil hjælpe med til en overvågning af den Vesteuropæiske ynglebestand. På den baggrund anbefales det, at der iværksættes løbende optællinger af fældende Gravænder i Holland og Danmark og at de kombineres med sommertællinger af (fældende) Ederfugl. Disse tællinger vil komme til at følge tilsvarende tællinger i det tyske Vadehav, og samlet give overvågningen af de to Natura 2000 arter en trilateral karakter, som vil gøre det muligt at synliggøre og sikre betydningen af det samlede Vadehav som et fældningsområde for begge arter.

Zusammenfassung

Die Brandgans ist eine der Natura 2000 Arten, für die das Wattenmeer ein international wichtiges Mausergebiet darstellt. Das Wattenmeer ist ein Gebiet des Ramsar-Übereinkommens und der EU Vogelschutzrichtlinie auch wegen dieser signifikant hohen Anzahl von Brandgänsen. Traditionell mausern nahezu alle westeuropäischen Brandgänse im deutschen Wattenmeer, wo sie seit den späten achtziger Jahren systematisch gezählt werden. Bis über 200.000 Brandgänse wurden bis zum Ende des letzten Jahrhunderts gezählt, danach sanken die Zahlen kontinuierlich. Das hätte ein Absinken der westeuropäischen Population bedeuten können, wenn nicht im niederländischen Wattenmeer größere Konzentrationen von Brandgänsen gefunden worden wären.

Aus diesen Gründen wurden auch in den Niederlanden zwischen 2010 und 2012 zusätzlich Zählungen mausernder Brandgänse durchgeführt. Etwa ein Viertel der mausernden Brandgänse im Wattenmeer scheinen vom deutschen in das niederländische Wattenmeer abgewandert zu sein.

Für Natura 2000 ist ein nationales und internationales Monitoring und eine Bewertung des guten Erhaltungszustandes priorisierter europäischer Arten wie die der Brandgans gefordert. Informationen über spezifische Habitatanforderungen und zukünftige Entwicklungen werden auch benötigt um Schutzgebiete auszuweisen oder um schon geschützte Gebiete zu managen. Für eine angemessene Folgenabschätzung werden ausreichende Daten über Zahl und Verteilung der Vögel benötigt. Im Zuge der vorhandenen Monitoringreglungen erzeugt das Fehlen der Trends für mausernde Vögel in den Niederlanden eine ungenaue Zahl der tatsächlich mausernden Brandgänse. Im Trilateralen Wattenmeerplan (1997 und 2010) können die Ziele für Vögel wie „günstige Nahrungsverfügbarkeit" und „ungestörte Rast- und Mausergebiete von ausreichender Größe" nur dann ausreichend bewertet werden, wenn ein trilaterales Monitoring ausgeführt wird. Und dies kann zusammen mit einem ausreichend trilateralen Monitoring für Brandgänse und Eiderenten ausgeführt werden.

Für das Monitoring der mausernden Brandgänse im internationalen Wattenmeer ist ein abgestimmtes Vorgehen wichtig, insbesondere da die Bedeutung der niederländischen Mausergebiete zugenommen hat. Die in den letzten Jahren zu beobachtende Verschiebung der Mausergebiete vom deutschen in das niederländische Wattenmeer zeigt klar, dass das Monitoring der mausernden Brandgänse auf trilateraler Ebene durchgeführt werden muss, was ebenfalls für das Monitoring der nordwesteuropäischen Brutpopulation nötig ist. Aus diesem Grund wird eine Zählung mausernder Brandgänse zusammen mit Sommerzählungen von (mausernden) Eiderenten im niederländischen und dänischen Wattenmeer vorgeschlagen. Die vorliegende Empfehlung folgt dem Monitoringansatz beider Arten im deutschen Wattenmeer und gibt dem Monitoring beider Natura 2000 Arten einen trilateralen Charakter und ermöglicht es ebenfalls, die Wichtigkeit des gesamten Wattenmeeres als Mausergebiet beider Arten herauszustellen.

Samenvatting

De Bergeend is een van de Natura 2000-soorten waarvoor de Waddenzee van groot international belang is als ruigebied. Van oudsher ruien vrijwel alle West-Europese Bergeenden in het Duitse waddengebied, waar ze al sinds eind jaren tachtig systematisch worden geteld. Rond de eeuwwisseling ruiden daar ruim 200.000 Bergeenden, maar daarna namen de aantallen er gestaag af. Dit leek een afname van de West-Europese populatie te indiceren, ware het niet dat zich ruiconcentraties op het Nederlandse wad vormden. In de periode 2010-2012 zijn ook in Nederland tellingen van ruiende Bergeenden georganiseerd. Alles lijkt erop dat een ongeveer kwart van de ruiende Bergeenden tegenwoordig het Nederlandse wad boven het Duitse verkiest.

Voor de Nederlandse Waddenzee is er vanzelfsprekend al een trend en aantalsschattingen van de Bergeend op basis van het Meetnet Watervogels, maar door het ontbreken van de ruiende aantallen in die berekeningen vormt die huidige trend een onnauwkeurige afspiegeling van de echte trend en aantal. Met de toename van ruiers in de Nederlandse Waddenzee wordt deze afspiegeling steeds onnauwkeuriger. Het oordeel van het CBS over deze trend is dan ook 'redelijk' en niet goed zoals bij de meeste watervogelsoorten. Voor een prioritaire Natura 2000 soort als de Bergeend is het zaak gegevens te verzamelen die het mogelijk maken een oordeel te vellen over de Staat van Instandhouding. Met het oog daarop wordt aanbevolen ook in Nederland de aantallen ruiende Bergeenden te monitoren en dit te combineren met zomertellingen van (ruiende) Eiders, aansluitend op de monitoring van beide soorten in het Duitse waddengebied. Daarmee krijgt de monitoring een trilateral karakter, worden de populaties van beide Natura 2000-soorten nauwkeurig gevolgd en is het mogelijk het belang van de Waddenzee als ruigebied voor beide soorten te duiden en waarborgen.

1. Introduction and background

The Wadden Sea is of great international importance for Shelduck (*Tadorna tadorna*). Almost the complete breeding population in Western Europe, including Great Britain, moults here. Traditionally all these Shelduck moult in the German part of the Wadden Sea, in the outer Elbe estuary. Since the late 1980s these numbers have been monitored by plane surveillance flights. Since the millennium numbers of moulting Shelduck are decreasing in the German Wadden Sea, while they are increasing in the Dutch Wadden Sea. Ideally, the total number of moulting Shelduck should be monitored by simultaneous flights at low tide in Germany and The Netherlands. The main obstacle in implementing a common minimum monitoring programme for roosting and moulting Shelduck was the lack of a flight over The Netherlands' portion of the Wadden Sea.

The Joint Monitoring of Migratory Birds Group (JMMB) therefore agreed to organize one harmonized flight in the first week in August 2010. In The Netherlands, Shelduck numbers were also counted by boats for comparison. The counts were repeated in the summer of 2011 and 2012.

This report presents the methods and results, and makes recommendations for future trilateral monitoring of moulting ducks in the international Wadden Sea.

Moulting Shelduck in the Wadden Sea of Schleswig-Holstein. Photo: Norbert Kempf.

2. Data and methods

2.1. Introduction

The large numbers of moulting Shelduck in the German Wadden Sea have been monitored systematically for 25 years, while counts in the Dutch Wadden Sea have been more sporadic (see 2.3). Between 2010-2012 both parts of the Wadden Sea were surveyed. This chapter covers how the surveys were carried out, describes some general aspects of data acquisition in the last 20 years and gives a concise overview of data collected so far.

2.2. Surveys

German Wadden Sea

In the German part of the Wadden Sea the moulting Shelduck have been counted by plane since the late 1980s. The flights have been initiated from the Schleswig-Holstein National Park Authority. The traditional moulting area near Scharhörn and Knechtsand in the Hamburg and Lower Saxony part of the Wadden Sea was included in these flights. Since 1997 the monitoring of the moulting Shelduck has been split between the Schleswig-Holstein National Park Authority and the RWE Dea AG, the company operating the Mittelplate drilling and production island, situated in the middle of the Schleswig-Holstein moulting area since 1985. In even-numbered years about three counts per season are carried out by the Schleswig-Holstein National Park Authority. In the odd years, RWE Dea AG has mounted a series of about 10 counts of Shelduck, running from the beginning to the end of the moulting season.

The flights are carried out at low tide, when the flightless birds are concentrated in a few tidal creeks. The established flight route follows the water's edge of bigger tidal channels, covering all locations where moulting Shelduck have been recorded in the past. Series of photos are taken of all flocks as far as possible. In addition, direct estimates of bird numbers are noted on a map. Birds able to fly (individuals actually flying and birds distributed in loose aggregations on tidal flats far from water) are noted separately. Their numbers have to be estimated directly as aerial photos can only cover a small proportion of the total population. Finally, locations and types of boats and ships are noted on the map to help determine possible factors for the distribution of the birds.

After the aerial surveys, the photos are analysed. Until 2011, traditional analogue diapositive films were used. The slides were projected onto a big screen of paper, and the dots ticked by pencil. Every full portion of 10 was counted with a hand tally counter. Since 2012, the photos have been analysed on a big computer screen. Both methods lead to bird numbers with a very low error rate.

Dutch Wadden Sea

In the Dutch Wadden Sea moulting Shelduck were counted by plane and by boat in 2010-2012. The aerial surveys by staff of IMARES were combined with counts of Eider during high tide on August 14 2010 and August 7 and 8 2011 and covered the whole Dutch Wadden Sea (Smit & de Jong 2011). In 2012 no flights for moulting duck were carried out.

The surveys by boats were carried out in all three years by staff of the Wadden Unit of the Ministry of Agriculture and volunteers of Sovon during low tide, on August 9 2010, August 8 2011 and July 31 2012. Two boats covered the central area of the Dutch Wadden Sea, between the Frisian mainland and the isles of Terschelling and Ameland (Kleefstra *et al.* 2011), sailing through the rifts where the Shelduck concentrate. Numbers were counted and mapped from the tops of roofs, between 5-6 m above sea level. The distance to the groups of ducks ranged from 100 to 1,000 m. Additionally counts were carried out within a week in the western part of the Dutch Wadden Sea (Balgzand) and the eastern part (Dollard estuary).

Danish Wadden Sea

In the Danish Wadden Sea counts of all migratory birds are carried out by plane at high tide. Shelduck counted in summer are assumed to spend wing moult there (Laursen & Frikke 2013).

2.3. Available data

German Wadden Sea

Before 1988 there were no synchronic surveys of the whole traditional moulting area in the German Wadden Sea from Knechtsand (Lower Saxony) to Trischen or even further north in the Dithmarschen Wadden Sea. Moulting Shelduck were counted, but sometimes from the ground, sometimes by plane, and only in certain areas like Knechtsand or Scharhörn or Trischen, and only in certain years. The data available form the time before 1988 is summarized in Nehls *et al.* (1992).

From 1988 until 1996 regular systematic surveys covering the whole moulting area in Germany were carried out every year. In 1988 and 1993

about five counts per season took place commissioned by the operator of the Mittelplate oil drilling island (Deutsche Texaco respective RWE Dea AG). In the other years one to three counts per season took place, commissioned by the National Park Authority of the Schleswig-Holstein Wadden Sea.

In total, there is an annual figure for the seasonal maximum of moulting Shelduck in the German part of the Wadden Sea since 1988. In most years this figure reflects the true seasonal maximum very accurately as the series of counts shows the phenology quite clearly.

Dutch Wadden Sea

For the Dutch Wadden Sea there are no regular surveys focussed on moulting Shelduck over a longer period. The first moulting concentration was registered in 1964 and 1965 when several hundred Shelduck were found to be moulting at the island of Vlieland (Spaands & Swennen 1968). After a remarkably long period of absence, moulting Shelduck were found in the early 1990s. An aerial survey on August 21 1991 recorded 16,000 moulting Shelduck along the Frisian mainland coast and another 7,500 on the mudflats near Wieringen (Swennen & Mulder 1995). Near Wieringen numbers have been counted regularly since then, both from the mainland and by boat, with numbers running up to 5,300 moulting Shelduck in 1992, 2,300 in 1993 (Swennen & Mulder 1995) and 5,500-6,400 in 1998-2000 (Kleefstra *et al.* 2011). Meanwhile a new moulting area was found south of the island of Ameland with 4,500-5,500 in late July 2001 (Smit 2001). Aereal surveys in the first half of August 2003 and 2004 indicated 12,500 moulting Shelduck, but these surveys only covered the western Dutch Wadden Sea near the island of Griend. In 2005 an integral survey by boat and plane recorded a total of 30,000 Shelduck in the Dutch Wadden Sea of which 23,000 were noted to be in the central part (between the islands of Terschelling and Ameland and the Frisian mainland coast, counted by plane) and 7,000 at Balgzand (near Wieringen, counted by boat; Kraan *et al.* 2006).

In subsequent years, up to 2009, there were counts by one boat of the former Ministry of Agriculture (now Ministry of Economical Affairs) at the start of August, but these were incomplete and covered only the western half of the moulting area in the central Dutch Wadden Sea. It resulted in about 25,000 moulting Shelduck a year (N. Laros, Wadden Unit, pers.com.).

Apart from this there are long term monthly high tide roost counts covering the whole Frisian Wadden Sea shoreline. These indicate an increase of Shelduck in August, from about 2,000-4,500 in 1994-1996 up to maximum numbers of around 47,000 in 2000, 53,000 in 2008 and even 77,000 in 2009 (data Wadvogelwerkgroep FFF, van Roomen *et al.* 2002, Kleefstra *et al.* 2011).

Danish Wadden Sea

There are no specific data on Shelduck moulting their wing feathers in the Danish Wadden Sea. Birds counted during aerial surveys in summer, probably at the usual high tide roosts, are registered as moulting. Numbers of these roosting Shelduck in summer have increased from 3,500 in the 1990s to 13,000 after the year 2000 (Laursen & Frikke 2013).

Moulting Shelduck in the Dutch Wadden Sea, July 31 2012. Photo: Romke Kleefstra.

3. Results

3.1 German Wadden Sea (flights)

In 2010 the number of moulting Shelduck counted in the German Wadden Sea was very high (Tab. 1). After three years of totals below 150,000, the figure in 2010 was almost as high as around the millennium, when numbers in Germany had reached their all-time maximum. In the two following years 2011 and 2012, numbers went back to about 160,000 Shelduck. At the moment there is no explanation for this result.

Since many years there are no more Shelduck moulting in the areas of Knechtsand, Scharhörn, or in the northern part of the Dithmarschen Wadden Sea. The birds are very much concentrated in a small area just north of the mouth of the river Elbe (Fig. 1). Only a relatively small number spends moulting time around the island of Trischen (Tab. 1).

3.2 Dutch Wadden Sea (flights & boats)

Aerial and boat surveys in 2010 showed quite similar numbers for the central part of the Dutch Wadden Sea (Tab. 1). Taking the numbers at Balgzand (aerial survey) and the Dollard estuary (boat survey) into consideration the maximum number for the whole Dutch Wadden Sea was more than 56,000 Shelduck.

In 2011 the numbers counted by plane and by boat differed greatly from each other. This was due to splitting the flight up over two days, just above the core moulting area. With the shifting of concentrations of Shelduck overnight and within tides, quite a large number was missed (Kleefstra *et al.* 2011). The survey by boat resulted in almost the same number of Shelduck in the central part of the Dutch Wadden Sea as in 2010. The total number for the whole Dutch Wadden Sea, based on the survey by boats, is about 51,500 individuals (Fig.1). In 2012 a much bigger number of moulting Shelduck was counted by boat, with over 66,000 in the central part of the Dutch Wadden Sea. Including Balgzand and Dollard the total number is almost 67,000. There was no flight possible in 2012.

Shelduck with moulting wing feathers.
Photo: Norbert Kempf.

Table 1.
Numbers of moulting Shelduck in the German and Dutch Wadden Sea in 2010-2012. For The Netherlands the total number in 2010 is based on the maximum number per region.

German Wadden Sea			
Plane	Aug. 3, 2010	Aug. 3, 2011	Aug. 3, 2012
Trischen area	6,260	24,910	51,815
Dithmarschen-Elbe mouth	190,020	134,690	112,900
Total German Wadden Sea	**196,280**	**159,600**	**164,715**

Dutch Wadden Sea			
Boat	Aug. 9, 2010	Aug. 8, 2011	July 31, 2012
central Dutch Wadden Sea	49,660	49,120	66,103
Balgzand (western Dutch WS)	-	2,360	750
Dollard (eastern Dutch WS)	1,000-1,300	<100	<100
Plane	Aug. 14, 2010	Aug. 7/8, 2011	Aug. 2012
central Dutch Wadden Sea	53,980	31,537	-
Balgzand (western Dutch WS)	1,195	-	-
Dollard (eastern Dutch WS)	-	-	-
Total Dutch Wadden Sea	**56,325**	**51,580**	**66,953**

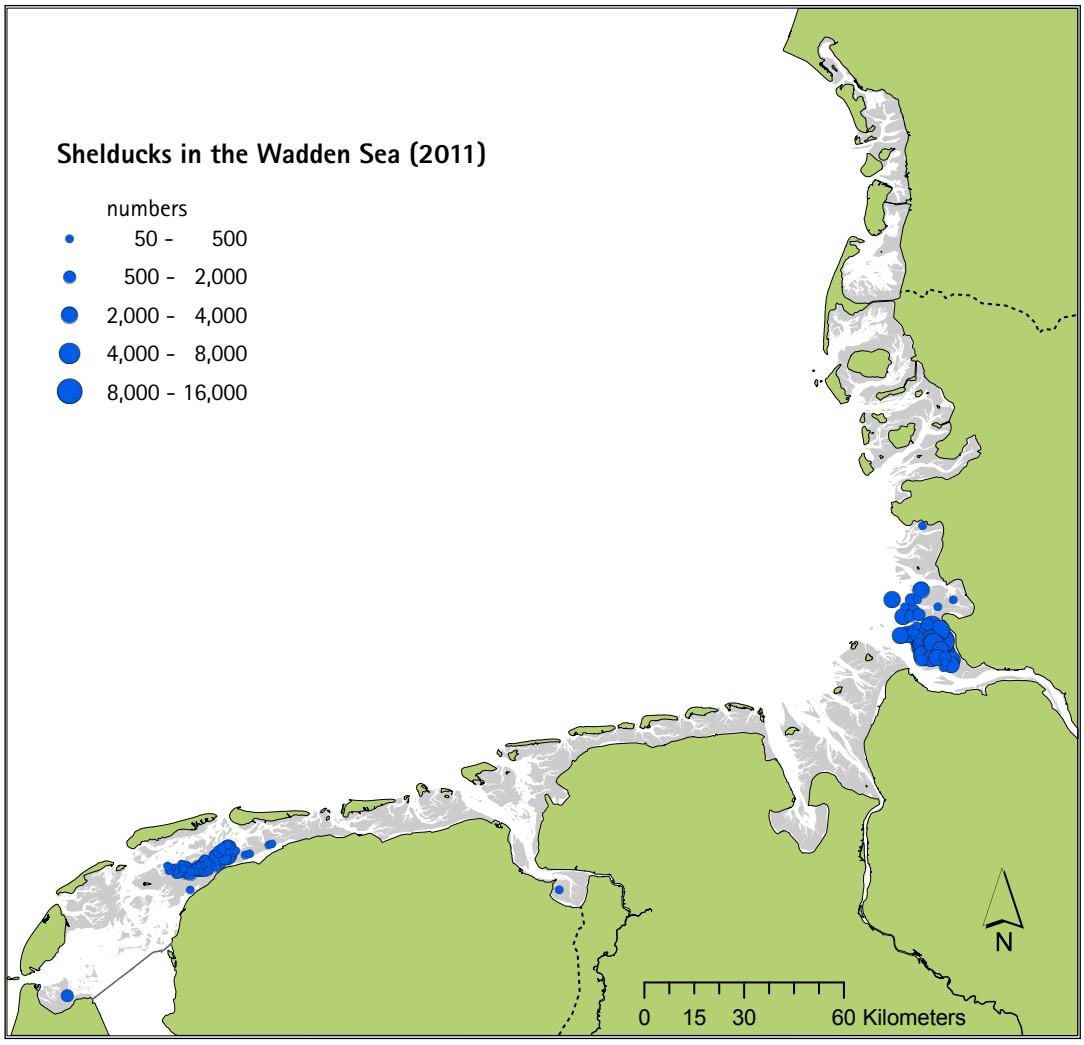

Figure 1.
Distribution of moulting Shelduck in the Wadden Sea in August 2011.

Plane for counting Shelduck in Germany.
Photo: Norbert Kempf.

4. Discussion

4.1. Trends in numbers and distribution

In the German Wadden Sea the number of moulting Shelduck initially increased from about 180,000 in the late 1980s to an average of 206,000 in the period 1996-2002 (range 195,000-219,000). Thereafter, numbers steadily declined to an average of 155,000 in 2003-2009 (range 130,000-183,000). This could be interpreted as a decline in the North West European Shelduck population, if it was not for the increase of moulting Shelduck in the central part of the Dutch Wadden Sea, growing from several thousand during the 1990s up to over 50,000 in recent years (see 2.3). This indicates that the decline in the German Wadden Sea is probably due to a shift in distribution to the Dutch Wadden Sea, although the number of over 196,000 in 2010 is an anomaly (Tab. 1). There is no explanation for that mismatch so far.

Denmark has a long tradition of aerial counts of waterbirds. During 1965-1973 countrywide surveys were performed, and were repeated during 1987-1989 and again in 2004 and 2007 (Joensen 1974, Laursen *et al.* 1997, Petersen *et al.* 2006 & 2010). These counts reveal that between 2,500-6,000 Shelduck were moulting in the Danish Wadden Sea. A more systematic survey in this part was performed during 1980-1986 with monthly counts, which were reduced to 2-4 counts annually in the following years (Laursen & Frikke 2013). Combined aerial and ground counts show that about 3,500 Shelduck were present in the moulting period in the Danish part in 1987-2000, and that this number had increased to 13,000 between 2001-2010 (Laursen & Frikke 2013). The birds are mostly staging off the Margrethe Koog in the southern part and south of Esbjerg in the northern part of the Danish Wadden Sea.

4.2. Comparison of methods

In the German Wadden Sea counting by boat from gullies in moulting areas is impossible. The difference of altitude between tidal flats and gullies is quite high and therefore the visibility range is very restricted. The water courses are strongly meandering and most of the water's edge, where Shelduck roost, is not visible from a certain point. Anyway, the number and length of the tidal channels and creeks is too high for surveys by boat. In many tidal creeks the water is too shallow. Only aerial surveys provide adequate overview, cover the moulting area in one low tide, and deliver series of aerial photos for accurate results.

In the Dutch Wadden Sea counting by boat is feasible, because the mudflats are so flat that a full overview can be gained from the tops of the Ministry boats. In addition, distances in the current moulting area are smaller than in the Elbe estuary. The small difference between the aerial survey and the survey by boat in 2010 indicates that boat surveys seem to work for The Netherlands. The presence of the boats leads to disturbance so the chance of missing groups outside the core moulting area is considerably bigger. In Schleswig-Holstein there are indications that the presence of boats has an important influence on numbers and distribution of moulting Shelduck (see photo p.13).

Last but not least, the ability to combine aerial surveys of moulting Shelduck with aerial surveys of Eider, make flights highly effective in the Dutch Wadden Sea (see 4.3.). However, methods are still different. In The Netherlands aerial surveys of Eider are carried out during high tide and in Germany during low tide. It is recommended to count the international Wadden Sea during low tide, because then Eider (and Shelduck) are much more concentrated in rifts and channels, eliminating the need for the whole Wadden Sea area to be covered with an extensive aerial survey.

4.3. Conclusions and recommendation

The Shelduck is one of the Natura 2000 species for which the Wadden Sea is of great international importance as a moulting area. Almost the complete North West European breeding population moults in the German and Dutch Wadden Sea. Therefore, the Wadden Sea countries have a high responsibility for the conservation and management of Shelduck. The Wadden Sea is also designated as a Ramsar wetland of international importance and a European Special Protection Area for Birds because of these internationally important numbers.

Natura 2000 obligations necessitate the monitoring and assessment at national and international scale of population levels of European priority species like the Shelduck. Information about specific habitat requirements and future prospects are also needed in deciding whether or not to designate and manage protected sites. For an appropriate impact assessment, sufficient data about numbers and distribution is essential. Moulting and therefore flightless Shelduck are particularly vulnerable, they are found in large concentrations and a good food supply is required.

In the Dutch Wadden Sea there is of course already a programme estimating total numbers of Shelduck based on the waterbird monitoring network. However, the lack of moulting numbers in these calculations makes the current trend an inaccurate reflection of the real numbers of Shelduck. This is becoming increasingly inaccurate now that the number of moulting Shelduck is increasing.

With regard to the Wadden Sea Plan (1997 and 2010) the Bird Targets 'favourite food availability' and 'sufficiently large undisturbed roosting and moulting area' can only be evaluated by an appropriate trilateral monitoring programme.

To monitor the number of moulting Shelduck in the international Wadden Sea, harmonized counts throughout the area are crucial, especially now that the importance of the Dutch Wadden Sea has grown. The present shift of population from the German to the Dutch Wadden Sea demonstrates quite clearly that the Shelduck monitoring should be put on a trilateral level. It also is important for monitoring the North West European breeding population.

Compared to the Shelduck numbers in the German and the Dutch Wadden Sea, the numbers in the Danish Wadden Sea are small, but the trend towards increasing numbers in the Danish part would be interesting to follow in the context of an ongoing change in distribution with decreasing numbers in the German and increasing numbers in the Dutch Wadden Sea.

To realise harmonized counts, aerial surveys at low tide should be initiated in The Netherlands and also in Denmark, and be undertaken alongside the main counting date in the German Wadden Sea, the first week of August. The Dutch surveys should preferably also include counts of moulting Eider to complement counts in the Wadden Sea region of Lower Saxony and Schleswig-Holstein. In Germany systematic aerial surveys of Eider ducks in the Wadden Sea and in the Baltic Sea were started in the early 1980s (Nehls 1991). In the 1980s and early 1990s several counts per year, spanning all seasons, were carried out in the framework of special studies (*i.a.* Nehls & Ketzenberg 2002). After some years of sporadic counting, a system of four counts per year was established in 1999 in Schleswig-Holstein: one count in mid-winter (mostly mid-January), one in July, one in August, and one in October. In Lower Saxony there are only two counts per year, one in January/February, one in July/August. Just like the Shelduck, the Eider is an important Natura 2000 species for which the Wadden Sea is of great importance as a moulting area.

It is also recommended that an aerial survey is undertaken in summer 2013 in the Danish Wadden Sea to check the areas where Shelduck could moult.

Disturbance of moulting Shelduck caused by a boat. Photo: Norbert Kempf.

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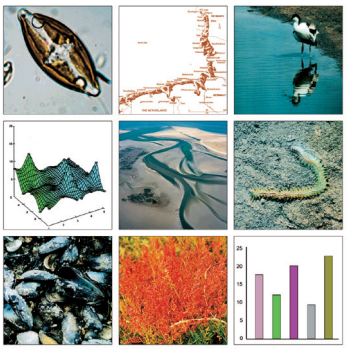
Moulting Shelduck in Schleswig-Holstein. Photo: Norbert Kempf.



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