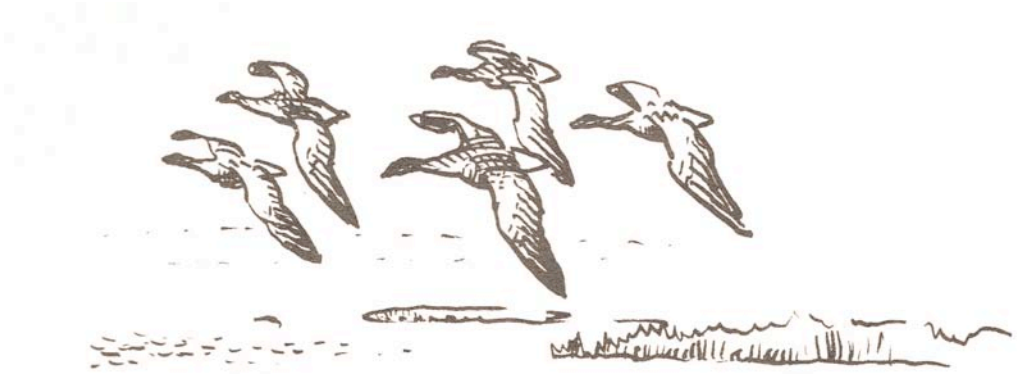

GOOSE BULLETIN

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GOOSE BULLETIN appears as required, but at least once a year in electronic form. The bulletin aims to improve communication and exchange information amongst goose researchers throughout the world. It publishes contributions covering goose research and monitoring projects, project proposals, status and progress reports, information about new literature concerning geese, as well as regular reports and information from the Goose Database.
Contributions for the **GOOSE BULLETIN** are welcomed from all members of the Goose Specialist Group and should be sent as a Word-file to the Editor-in-chief.
Authors of named contributions in the **GOOSE BULLETIN** are personally responsible for the contents of their contribution, which do not necessarily reflect the views of the Editorial Board or the Goose Specialist Group.

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Editorial

The Goose Specialist Group of Wetlands International and the IUCN-Species Survival Commission was founded to strengthen contacts between all researchers and volunteers interested in migratory goose populations of the northern hemisphere. Furthermore, the group has a strong focus on the database of goose censuses, which is maintained by a network of national co-ordinators.

One of the tools to keep and strengthen contacts between all stakehoulders was the production of a group newsletter. The editors of the first newsletter, which appeared 1989, hoped "*that the Newsletter will be used as an informal forum for disseminating information about ongoing projects, project proposals, conferences etc."* and invited all participants of the group to send contributions.

The first newsletter was named "IWRB Goose Research Group Newsletter" and appeared during 1989-1990 in three issues, followed between 1991 and 1995 by the "IWRB Goose Research Group Bulletin" with six issues and the "Wetland International Goose Specialist Bulletin" in 1996 with two issues. After a gap of 13 years the newsletter was revived in 2009 with GOOSE BULLETIN 9. Up to now, a total of nine issues of the GOOSE BULLETIN have appeared.

Over the past four years we had strong fluctuations in the number of manuscripts offered for the different issues. For some issues so many manuscripts were offered, that we had to shift some of them to the next issue, whereas for other issues the number of manuscripts was so low, or promised manuscripts arrived so late (or not at all), that the issue only could be produced with delay.

To avoid such delays in future, the editorial board would like to ask all potential authors to send us manuscripts. The GOOSE BULLETIN is the newsletter of the Goose Specialist Group and should be a tool for the members to communicate news, reports and views, as well as to inform the other members of the group about what they are doing, announcing projects, initiatives and meetings. Furthermore, the editorial board is keen to take short scientific notes and articles that, whilst they might not be quite good enough for submission to major journals, may be of general interest to other group members.

The next issue of the GOOSE BULLETIN is planned to appear in May 2014, which means that material for this issue should have reached the editor-in-chief not later than 31 March 2014.....but earlier arrival is allowed!

Thank you for your continued support and interest in GOOSE BULLETIN

The Editorial Board

Recent research on the Lesser White-fronted Goose *Anser erythropus* in China

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The Lesser White-fronted Goose *Anser erythropus* is globally threatened with an estimated world population of 25,000–28,000 individuals, of which the vast majority (and all of the Eastern Palearctic population) now winter in China (WANG et al. 2012). In the late 1980s/early 1990s, it was considered that *c*. 65,000 Lesser White-fronted Geese wintered in China, mainly in the Yangtze River flyway and distributed between the provinces of Jiangxi, Hunan and Jiangsu, with smaller, but regular numbers in Anhui and Jiangsu (see Figure 1; WANG et al. 2012).

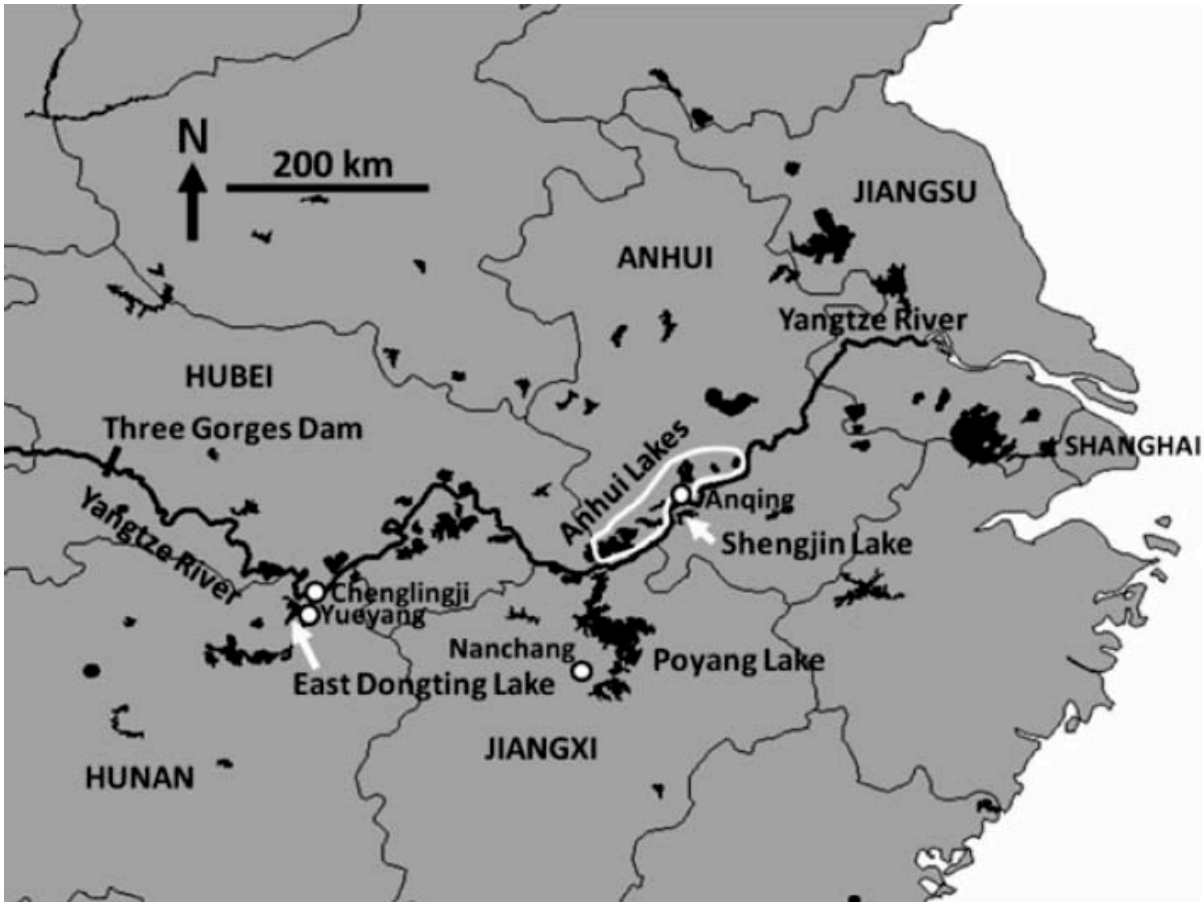

Figure 1. Yangtze River floodplain from the Three Gorges Dam to the river estuary at Shanghai, showing locations of provinces, wetlands and places (especially East Dongting and Poyang Lakes) mentioned in the text.

Although detailed and regular counts are insufficient to give a clear picture, we know that by the mid 1990s, numbers had fallen to *c*. 26,000, with most dramatic declines in in Jiangsu (94%), Jiangxi (64%) and Hunan (32%). By the late 2000s, the Lesser White-fronted Goose was effectively absent as a regular wintering species in Jiangsu and Hubei and present in numbers not exceeding 600 individuals in Anhui, but there were still *c*. 22,000 wintering in China (WANG et al. 2012).

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It is not impossible that birds were missed at some sites in the mid 1990s, but even allowing for the fact that the rate of decline had apparently slowed since earlier times, the continued concentration of wintering geese in fewer provinces was in itself worrying, and furthermore, within provinces, it was clear that this was also occurring at the site level, because by the mid 2000s, most of the birds were concentrated at just two major sites, Poyang Lake (Jiangxi) and East Dongting Lake (Hunan), with the majority at the latter site which has held between 8,620 and 16,550 Lesser White-fronted Geese during 2002/03-2009/10 (WANG et al. 2012).

The relatively stable numbers at East Dongting Lake in the last 10 years suggest that the population is not currently threatened, but the extreme concentration at one lake makes the species vulnerable. Initial studies of the feeding ecology of the Lesser White-fronted Goose in the north western corner of the East Dongting Lake complex, in 2008/2009 winter, showed that the geese arrived in late October, and through November, over 4,000 geese aggregated to graze on the new growth being produced in single species stands of Spike-rush *Eleocharis* spp. on exposed mud flats at Caisang Lake (see Figure 2; CONG et al. 2012).

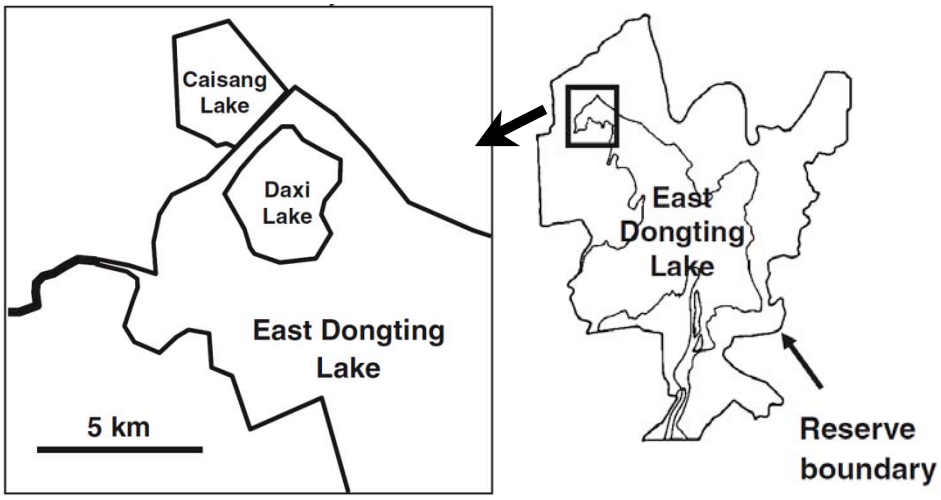

Figure 2. Map showing the main study area at East Dongting Lake in the Yangtze River floodplain, with inset showing locations of the places mentioned in the text.

As the autumn progressed, and temperatures fell, so the *Eleocharis* ceased growing, and this fact, combined with depletion caused by such high feeding densities of geese, ultimately resulted in the complete removal of most above ground biomass of *Eleocharis* by early December. At this point, the geese moved off of Caisang Lake to nearby lakes, particularly Daxi Lake, where they fed on old-growth above-ground sedge *Carex heterolepis*. This plant (in contrast to *Eleocharis* which although locally abundant, has a highly restricted distribution throughout East Dongting Lake) is a very common and widespread plant at the site, forming single species stands over relatively large areas. This sedge is also very abundant and widespread throughout many Yangtze River floodplain wetlands.

Lesser White-fronted Geese remained feeding on this species in the middle part of the winter, when there was no above ground green production from any plant species in the wetlands. Cool and arid conditions inhibited plant growth until January, when the grass *Alopecurus aequalis* and *C. heterolepis* restarted growing, attracting geese back to Caisang Lake (CONG et al. 2012).

Greater numbers returned in late February when *Eleocharis* also began to grow, rapidly building to peak at 4,500 in late March when geese began spring migration.

To try and account for this extraordinary reliance of Lesser White-fronted Geese upon a very narrow range of food plants at East Dongting Lake, and to understand better the winter feeding ecology and habitat requirements of this poorly known species, investigations were undertaken of their food availability, diet and energy budgets at this site through two winters. By combining measures of food intake, the energy and nitrogen content of the droppings and food (corrected for digestion using the indigestible marker system) and daily activity budgets (to estimate energy expenditure) it was possible to show that Lesser White-fronted Geese maintained a positive energy budget when feeding on above-ground green production of *Eleocharis* and *Alopecurus* in recessional grasslands in autumn and spring (WANG et al. 2013a). This meant that in theory, during these periods the geese could store energy in the form of fat. This was confirmed by regular scoring of accumulated fat stores using the abdominal profile index method, which showed fat stores increased during these phases of the year (WANG et al. 2013a). By following the available above ground green biomass of both these plant species, it was evident that these food resources were severely depleted by late November and showed no growth in mid-winter. These subsequent studies also showed that as this happened, so geese switched to fed on more extensive old-growth *Carex* sedge meadows in mid-winter, which to some extent involved a shift in feeding areas, explaining the movement that had been observed from Caisang Lake to Daxi Lake. What was more interesting was that when feeding on sedge, calculations of the energy budgets of geese showed that they were in energy deficit and observations of changes in abdominal profile confirmed that the geese were actually depleting endogenous fat stores at that time (WANG et al. 2013a). This was a result of the combination of poorer food quality, shorter foraging days and enhanced thermoregulatory costs during the middle part of the winter.
In 2009/10, unusually high water levels prevented geese from using the recessional grassland feeding areas rich in *Eleocharis* and *Alopecurus*. In this year, geese conspicuously failed to accumulate the same level of autumn fat stores as they did in a year with lower water levels and profuse growth of these species. Surprisingly, the average fat stores amongst all geese remained lower throughout that entire winter and geese eventually left for breeding areas later in spring than in the previous year, perhaps reflecting the need to gain threshold fat stores for migration (WANG et al. 2013a). It is very tempting to conclude that the autumn fattening that these geese derive from feeding on the recessional grassland is critical for attaining fat stores, not just to maintain the geese through the lean period of mid-winter, when food supplies fail to maintain energy budget in these geese, but also to get geese into condition early enough for spring migration. It is evident that Lesser White-fronted Geese feed throughout the daylight hours, but for whatever reason do not feed at night (FOX et al. 2008), so they are not in a position to increase their food intake at any time of the winter.

We also compared the field energy budgets of the larger Bean Goose *Anser fabalis serrirostris* and Greater White-fronted Goose *Anser albifrons* (which differ in body size by being bigger than the Lesser White-fronted Geese), which also feed on the same type of sedge meadows at other sites. Throughout the winter, these two species maintained positive energy budgets in autumn and spring despite grazing lower quality sedge (WANG et al. 2013b).

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However, like the Lesser White-fronted Geese, neither species could maintain a positive energy balance in mid-winter and also both species lost mass at this time because their mean abdominal profile score was reduced. However, their ability to accumulate fat stores when feeding on sedge in autumn and spring means that they are more catholic in their site use, because unlike the Lesser White-fronted Geese, they can use lakes with only sedge meadows present and do not rely on the rarer recessional grasslands where neither of the two larger species were ever seen feeding, probably because the low biomass (despite its quality) could not fulfill their greater energy needs at these times (WANG et al. 2013b).

We therefore think we may be able to explain the unusual concentration at East Dongting Lake. At the flyway level, sedge meadows are widespread at other Yangtze River floodplain wetlands, but recessional grasslands are rare and perhaps restricted to parts of East Dongting Lake, which would explain the highly localized distribution of Lesser White-fronted Geese in China and their heavy use of these habitats at this site (WANG et al. 2013a). Sympathetic management of water tables is essential to maintain the recessional grasslands in the best condition for geese.

Lesser White-fronted Geese rely on very specific meadow vegetation exposed after water recession, so changes in water levels or recession timing, either because of local water-level management or to hydrological changes following the commissioning of the Three Gorges Dam, may affect biomass, palatability and plant species composition of the meadows.

Thus, it is critically important to understand the wintering ecology and habitat needs of this threatened species at East Dongting Lake. Regular depletion of fat stores whilst grazing sedge meadows in mid-winter also underlines the need to protect the species from unnecessary anthropogenic disturbances that enhance energy expenditure. The specialized diet of the Lesser White-fronted Goose may therefore explain its highly restricted winter distribution in China, but also this may help explain its current global rarity.

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Drinking behaviour of Brent geese recorded by remote interval photography

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Abstract
The drinking behaviour of Brent geese (*Branta bernicla*) was monitored on sandy beaches intersected by small rivers in northern Japan, using remote interval photography with fixed compact cameras, in January and February of 2013. A total of 88.2 hours of monitoring over a period of 9 days was conducted using the fixed cameras. Regardless of tide levels, the number of geese increased between sunrise and 09:00. After landing on the beach, the geese drank at first, then preened and rested at the mouth of the stream. The time spent drinking was ≤5 min per visit. An effective use of these remote time-lapse cameras would be to record the diurnal fluctuation in the number of birds observed on open land, such as shorebirds, waterfowl, terns, and gulls.

Key words: Brent geese, drinking behaviour, monitoring, remote interval photography, sandy beach.

Introduction

The increasing popularity of remote photography allows wildlife researchers access to a large variety of equipment and methods. Remote photography has been used primarily to study avian nest predation, feeding ecology, and nesting behaviour (CUTLER & SWANN 1999). Time-lapse video recorders (e.g. BOOMS & FULLER 2003, THOMPSON & BURHANS 2003) and animal-triggered cameras (e.g. SAWIN et al. 2003, ANTHONY et al. 2004) are more recent additions to the equipment available. Although remote photography can be less time-consuming and costly than traditional research methods, researchers must invest more time and money in troubleshooting problems (CUTLER & SWANN 1999). To alleviate such problems, more care must be taken with regard to remote equipment and methodology.

Brent geese (*Branta bernicla*) breed in the high arctic of eastern Siberia, Alaska, and northwestern Canada, and winter mostly on the west coast of North America from southern Alaska to California, but also in East Asia (KEAR 2005). In Japan, the geese arrive in Hokkaido in October, and thereafter winter in southern Hokkaido and northern Honshu (LANE & MIYABAYASHI 1997). Brent geese forage on sea grasses and marine algae at intertidal mudflats in shallow marine waters (MIYABAYASHI 1994, REED et al. 1998, GANTER 2000), which means the birds are unable to avoid a large intake of salt. Salt concentrations in blood are lowered by excreting saline solution from the nasal glands and drinking fresh water (SUMMERS & SMITH 1990). Drinking is generaly restricted to very short time intervals; in a wintering population in the United Kingdom, drinking occupied only 0.1% of the activity budgets (RIDDINGTON et al. 1996). Drinking behaviour, therefore, is difficult to observe and assess quantitatively.

More recent models of compact digital cameras have a function for remote time-lapse photography. In this study we attempted to record the diurnal activity pattern of the drinking behaviour of Brent geese using remote interval photography in addition to visual observations, and report the detailed results here.

Methods

Drinking behaviour of Brent geese was monitored on two sandy beaches (Hikado beach, 38°48′ N, 141°33′ E; and Oya beach, 0.6 km northeast of Hikado) intersected by small rivers, in Kesennuma city in Miyagi Prefecture, northern Honshu. A small river about 1–2 m wide flows down each beach, and the geese drank fresh water at the mouth of the stream (Fig. 1a, b).

Fig. 1. A flock of Brent geese (circle) visiting the mouth of the stream (a, photographed by a fixed remote time-lapse camera on Oya beach at 08:25 on 22 February 2013), and the drinking behaviour of the geese (b). (Photographs by K. TOKITA.)

Drinking behaviour of the geese was photographed from late January to late February 2013, using the remote interval-shooting function of digital cameras (PENTAX Optio WG-1GPS, Tokyo, Japan), with 140-mm telephoto lenses fixed on a tripod on the nearby beaches. A photo size of 14 Mb was set in advance in a 16-GB memory card. The interval time was set at 2 min because the drinking time was so short. The distance from the mouth of the river where the geese drank to the cameras was approximately 80 m on Hikado beach and 120 m on Oya beach. The recorded photographs were enlarged on a personal computer. The enlarged photographs enabled us to distinguish the geese from other birds and to count the number of geese (Fig. 1a). The number of geese in each photograph was counted, and the average number over 10 min was calculated.

To further discern the behaviour of the geese, in addition to remote photography fixed-point visual observation was conducted at Oya beach from 06:30 to 12:30 on 25 February 2013. The time, the number of geese flying to and landing on the beach, and their behaviour (drinking, preening, resting and so forth) were recorded.

Results and discussion

A total of 53 hr 47 min over 6 days and 34 hr 24 min over 3 days were photographed at Hikado and Oya, respectively. All-day monitoring was conducted for 4 days on Hikado sandy beach. Regardless of tide levels, the number of Brent geese increased between sunrise and 09:00, and the percentage of birds observed during this period ranged from 21% to 95% of the total counted over the study period. The maximum numbers were 12 at 09:00 on 30 January, 16 at 08:00 on 31 January, and 22 at 08:30 on 2 February (Fig. 2). The number of geese decreased after 10:00. Fewer geese flew to the beach on 21 February.

At both Hikado and Oya beaches, the number of geese increased between sunrise and 09:00, the percentage during this time being 60%–100% of the total recorded. The maximum numbers were seven at 08:00 on 7 February, 13 at 08:00 on 9 February, and 36 at 07:40 on 22 February (Fig. 2).

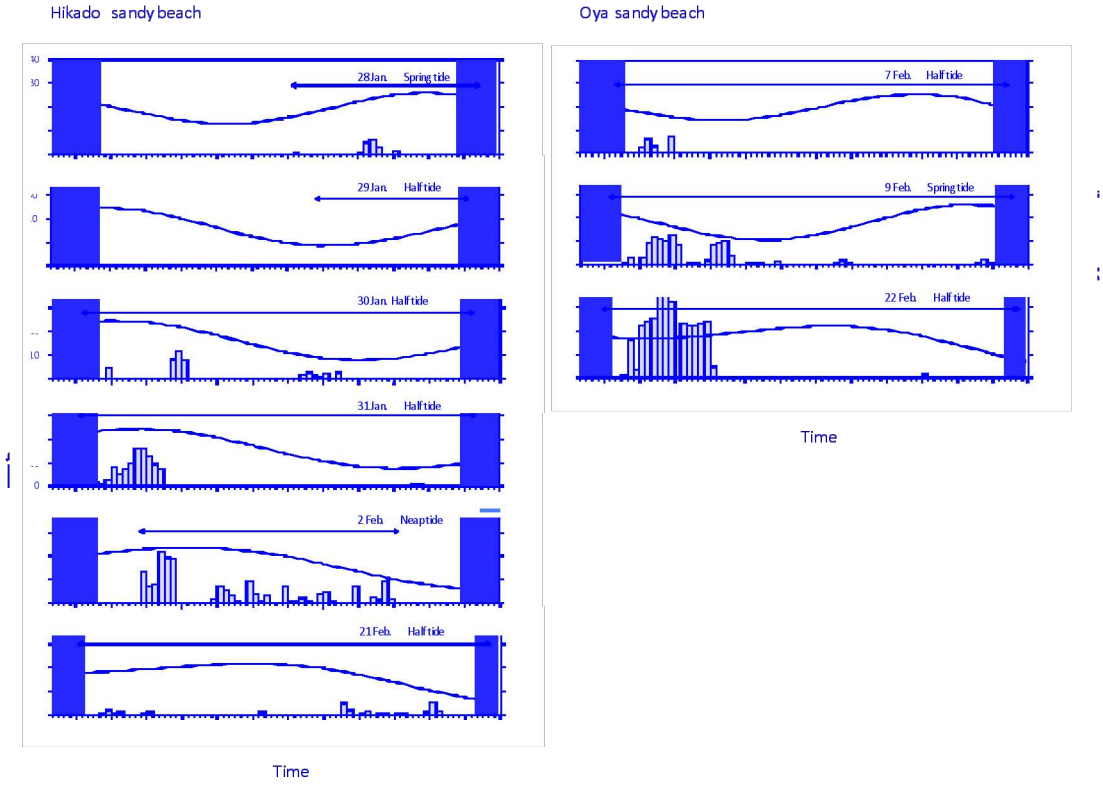

Fig. 2. Diurnal changes in the numbers of Brent geese on Hikado and Oya beaches. Arrows and shaded areas indicate camera-monitoring time and nocturnal time, respectively.

Visual observations on Oya beach on 25 February showed that a total of six flocks (15, four, four, three, six, and eight geese) flew to the beach between 06:30 and 12:30. All geese drank immediately after landing, indicating that drinking was the main purpose for landing on the beach. Subsequently some flocks left the beach while some preened and rested. The geese stayed at the shoreline with legs submerged in the water. The mean time spent drinking was recorded for six flocks (a total of 26 geese) and was 3.6 min (range 1–5 min). An increase in the number of drinking geese between sunrise and 09:00 was also observed on Oisehama beach, near the study sites, for two days in February to March 1994 (MIYABAYASHI, unpublished data).

We succeeded in clarifying the drinking behaviour of the geese by combining the remote interval photography with visual observation. An advantage of the compact digital camera is the absence of bulky and complicated equipment (CUTLER & SWANN 1999) previously required for the monitoring of animal behaviour. By setting appropriate intervals and image size based on the behavioural characteristics of the target animal, judging the distance from the camera to the animal, and providing adequate battery storage, the compact camera promises to be an effective means to record animal behaviour.

A potential application of these small cameras would be monitoring the diurnal fluctuation in the number of birds observed on open water or an expanse of land. Shorebirds on tidal flats, waterfowl on wetlands, and terns and gulls breeding on open land are potential targets for monitoring by remote time-lapse photography.

Discrimination of species and bird count can be conducted retrospectively on a computer. It will even become unnecessary for bird experts to set the camera. We propose an effective monitoring system using a combination of remote photography by individuals with personal compact cameras followed by computer analysis of the photographs by ornithologists. Such a system would permit mass participation in bird monitoring.

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Lesser White-fronted Geese *Anser erythropus* in Lower Saxony (NW Germany) – status, distribution and numbers 1900–2007.

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Abstract

In the period from 1907/08 to 2006/07, i.e. 100 winters, 156 records of 261 Lesser White-fronted Geese *Anser erythropus* were reported in Lower Saxony. The first records were from 9 December 1907. For the period before 1970, only accidental occurrences were reported. A large increase in the number of records occurred in the 1990s and continued in the 2000s. Since the mid-1990s, the Lesser White-fronted Goose has become a regular, annually occurring migratory bird in Lower Saxony. There is evidence of a concentration of records in the north-west of Lower Saxony in the region of East Frisia, especially in the Dollart-Lower Ems-Region (Rheiderland, Emsmarschen) and the Krummhörn including Leybucht, which are key sites of the occurrence. Other important sites are the Middle Elbe and the Lower Elbe.

During autumn migration, the first Lesser White-fronted Geese reach Lower Saxony in mid-October. From early December the numbers rise steadily until early March and peak in the first decade of March (median = 2 March). After that the numbers decrease but birds remain until the first third of April at a relatively high level, and birds are gone by the end of April. In 139 cases (92.1%), Lesser White-fronted Geese were recorded only on a single day, longer stays were reported only twelve times (7.9%, n = 151 records), the longest 27 days, indicating overwintering. About 93% of all observations of Lesser White-fronted Geese refer to birds which were associated in only small flocks of three individuals, and often only single birds (68.6%) occurred (n = 156 flocks and 261 ind.). "Large" flocks have been recorded rarely. 141 Lesser White-fronted Geese were reported as adult birds (86.5%), with only 21 individuals identified as juveniles (13.5%, n = 163). In 75% of records since the mid-1990s (73%, n = 70 records) Lesser White-fronted Geese were roosting with White-fronted Geese *A. albifrons*. In 19% of the records they were with Barnacle Geese *Branta bernicla*, and in 9 % with Greylag Geese *A. anser*.

There is a high likelihood of confusion between Lesser White-fronted Geese and White-fronted Geese during goose hunting, which is usually practiced at dusk at the night roosts of both species. Therefore, to collect data for better protection of Lesser White-fronted Geese in Lower Saxony we started a new research programme in autumn 2012 involving field research, satellite tracking and colour-marking as well as an awareness campaign for birders, hunters and the general public.

Key words: *Anser erythropus*, spatial distribution, Germany, Lesser White-fronted Goose, Lower Saxony, numbers.

Introduction

Lesser White-fronted Geese *Anser erythropus* are one of the most endangered waterbird species in the Western Palearctic (HEREDIA et al. 1996; JONES et al. 2008). The historical breeding grounds stretched from northern Norway in a broad belt along the southern tundra zone up to the Taimyr Peninsula and eastwards to Chukotka. Nowadays the western breeding range is highly fragmented (KEAR 2005), and only small isolated breeding group remain in areas of Scandinavia and Northern Russia still exist (MADSEN et al. 1999).

To stop the negative population trend on the Scandinavian breeding grounds a number of activities was started during the past 30 years: in Norway intensive research on the national breeding population was carried out as well as lots of activities to establish protection on the wintering grounds in Kazakhstan and southern Europe (see AARVAK & TIMONEN 2004). Since 1981, the Swedish breeding population has been reinforced with juvenile birds reared by foster parents (VAN ESSEN 1991, 1996). In Sweden and Finland and more recently in Norway, fledged juveniles were released close to wild living Lesser White-fronted Geese to reinforce local populations (LORENTSEN et al. 1999).
The main wintering areas of Lesser White-fronted Geese are located in Kazakhstan and southern Europe (KEAR 2005). However, since the beginning of the 20th century Lesser White-fronted geese were also observed in Germany (MOOIJ & HEINICKE 2008) and The Netherlands as well, but in small numbers (see KOFFIJBERG et al. 2005). According to these studies most of the observed birds were from the Scandinavian breeding population, but Russian breeding birds also might be involved.
However, due to the European Union Birds Directive, Lesser White-fronted Goose as an Appendix I species, requirs adequate protection by EU member states independent of their origin. For this reason, the statutory agencies in Lower Saxony are interested in the status of this species and nature conservationists were very concerned, when the Ministry of Agriculture opened a hunting season for Greater White-fronted geese *Anser albifrons* in 2008.

To date there has never been an overview made of Lower Saxonian Lesser White-fronted Goose observations. Here we summarise published observations as well as data from goose counts and the national rarity committee to give an overview about the current status of Lower Saxony as a stop-over or wintering area for Lesser White-fronted Geese. In autumn 2012 we started a three-year project to intensify studies on this rare species on behalf of the German BirdLife partner Naturschutzbund NABU and international partners.

Methods

This study is based on data from several sources. To determine the numbers and distribution of Lesser White-fronted Geese in Lower Saxony since 1900 the central database of international syncronous waterbird counts carried out monthly since the beginning of the 1970s and contains also results of intensive goose monitoring coordinated by the Staatliche Vogelschutzwarte (NLWKN) during the past 10 years was used as well as reports to national rarity committee and a large number of local ornithological publications like local or regional monographies and avifauna books.
All data were thoroughly checked for reliability by the authors again.
Reports with additional information about habitat, age of the birds, markings or flocking with other goose species were used for further analyses.
Additional information about marked birds was taken from the observer or from the marking project directly.

Results

The first record of a Lesser White-fronted Goose was reported in winter 1906/07 (Fig. 1).

In the period 1925–1955, several observations were documented, followed by a longer period without any observations. With the beginning of the Swedish restocking project in the 1980s, the number of records increased.

Then, towards the end of the 1990s, there was a massive increase in number of records and individuals, with a maximum of > 40 individuals per winter season, and up to 8 birds seen on the same day.

This increase seems to be correlated with the start of neck-banding of Greater White-fronted geese, which made observers more enthusiastic to check the flocks intensively.

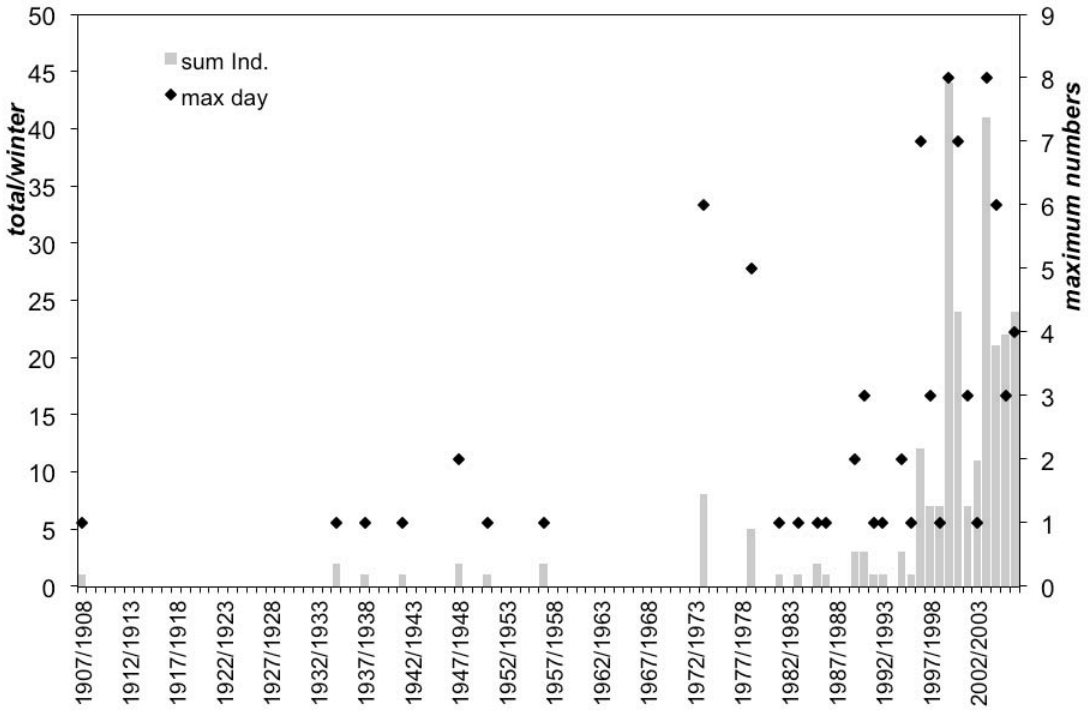

Fig. 1. Totals and daily maximum numbers of Lesser White-fronted Geese recorded in Lower Saxony per winter 1907/08-2006/07 (n = 260).

In most of the important goose staging areas in Lower-Saxony, Lesser White-fronted Geese were reported, but there is a clear hotspot in the northwestern part of the country (Fig. 2). In the Ems-Dollard-area as well as the Leybucht-area the Lesser White-fronted Geese were reported regularly every year, esp. since the late 1990s.

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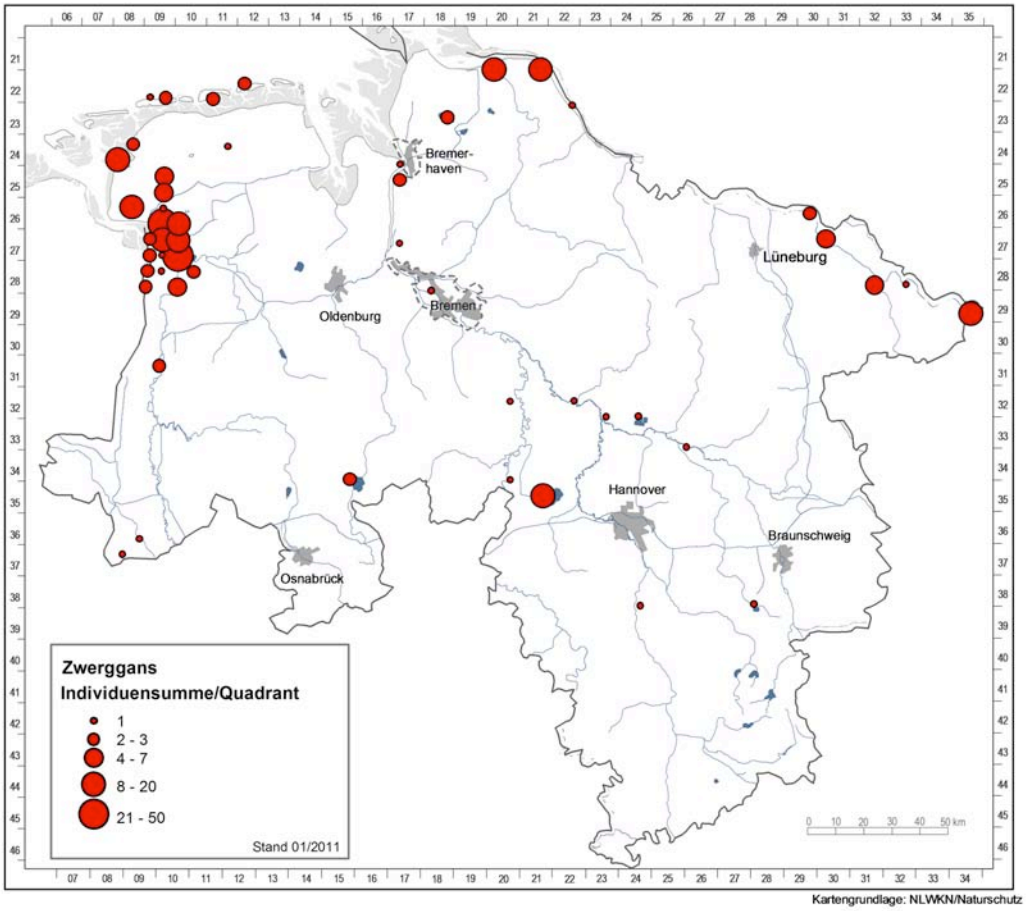

Fig. 2. Spatial distribution of Lesser White-fronted Goose records in Lower Saxony (1907/08-2006/07, n = 260)

Table 1 gives an overview of the sum of individuals recorded in every "goose region" in Lower Saxony as well as the importance of these regions for the species (percentage of records).

Table 1. Total number of Lesser White-fronted Geese recorded per "Goose region" of Lower Saxony (1907/08-2006/07, n = 260)

Goose region	Sum of individuals	% sum of individuals
Dollard and Ems Estuary*	94	45.4
Middle Elbe*	28	13.5
Leybucht and Krummhorn*	27	13.0
Elbe Estuary *	16	7.7
Lake Steinhude	9	4.3
Ems River Valley	7	3.4
Lake Großes Meer	6	2.9
Weser Estuary	6	2.9
Waddensea Islands	5	2.4
Middle Weser	2	1
River Aller Valley	2	1
Others	2	1

* areas with special goose monitoring programme, see methods

Nearly half of all the observations were made in the Dollard area and Ems estuary (45%), which is situated in the far northwest of the country bordering on The Netherlands. Here, Greater White-fronted and Barnacle Geese *Branta leucopsis* traditionally roost in high numbers. This area is one of the core monitoring areas of Lower Saxony where the geese have been counted weekly since 1996/97. In all, 13.5% of all observations were made in the Middle Elbe area, close to Mecklenburg-Vorpommern and Brandenburg, where Greater White-fronted- and Bean Geese *Anser fabalis* are the dominant species. The Leybucht and Krummhörn (13%) area, in the northwest of the country at the coast of North Sea as well as the Elbe estuary, is situated close to the Wadden Sea, and is heavily used by Greater White-fronted Geese , Barnacle Geese and Dark-bellied Brent Geese *Branta b. bernicla*. Lesser White-fronted Geese can be observed in Lower Saxony during the whole autumn and winter up to May, i.e. the whole period of goose wintering and migration (Fig. 3). Most of observations were reported during goose spring migration beginning normally in January. When all other arctic geese left Lower Saxony in May, the Lesser White-fronted Geese also disappeared.

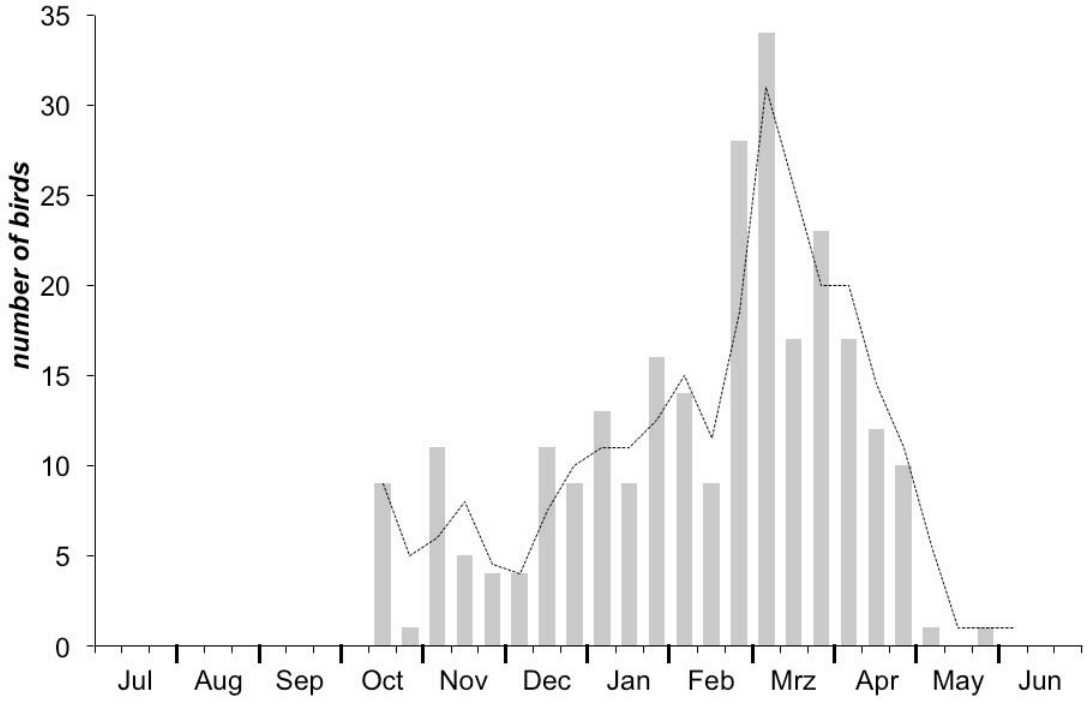

Fig. 3: Seasonal occurrence of Lesser White-fronted Geese in Lower Saxony (totals per thirds of month 1907/08-2006/07, only records with complete date are included, n = 258)

In 139 cases (92.1%) Lesser White-fronted Geese were recorded only on a single day, a longer stay has been reported only twelve times (7.9%, n = 151 records). Eleven records stem from 29 birds, which stayed 2-20 days at one site. The longest residence lasted 27 days.

About 93% of all observations of Lesser White-fronted Geese referred to small flocks of up to three individuals (Fig. 4). In most of the cases only single birds (68.6%) occurred (n = 156 flocks and 261 individuals). Larger groups have been recorded occasionally: 2 x 4 individuals, 3 x 5, 3 x 6, 2 x 7 and 2 x 8. Of these, 141 Lesser White-fronted Geese were determined to be adult birds (86.5%), and only 21 individuals were identified as juveniles (13.5%, n = 163).

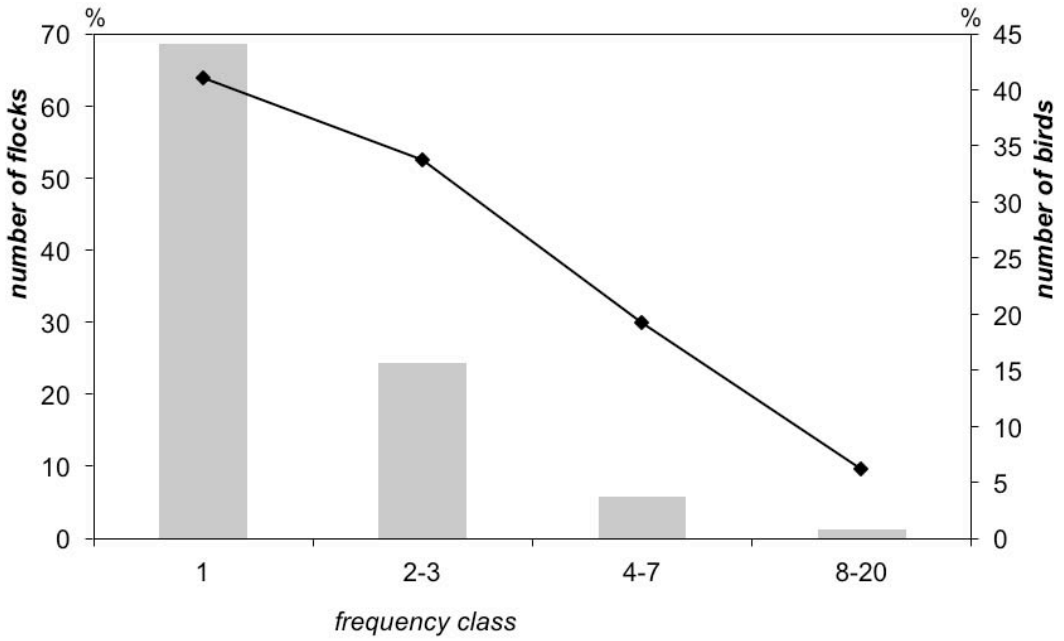

Fig. 4. Flock size of Lesser-Whitefronted Geese in Lower Saxony (n = 133 observations)

In just over three quarters of the cases since the mid-1990s (73%, n = 70 records) Lesser White-fronted Geese were associated with Greater White-fronted Geese, which occurred exclusively or represented, in the case of multi-species flocks, the "main species". In 19% of the records they were with Barnacle Geese, and in 9 % with Greylag Geese *A. anser*. In addition to the main species within flocks holding Lesser-White fronted Geese, White-fronted Geese were involved at 52 % of all records, Barnacle Goose at 39 % and Greylag Goose at 21%.

Discussion

Lesser White-fronted Geese are a rare but regularly observed species in Germany (MOOIJ & HEINICKE 2008). Traditionally, Lesser White-fronted Geese migrated from their breeding grounds in northern Scandinavia via the Baltic States to Hungary, Bulgaria and Greece, while Russian breeding birds move southwards via Kazakhstan to Greece, Azerbaijan or Iraq (LORENTZEN et al. 1998). Historic publications also reported shot or caught Lesser White-fronted Geese from Germany and The Netherlands (GLUTZ VON BLOTZHEIM & BAUER 1990) long before population re-inforcement in Sweden started. Doubtless historically a few individuals or potentially a small part of Scandinavian or Russian population wintered in Western Europe, but nowadays it has become more prevalent due to the re-inforced Swedish population. On their traditional migration routes, as well as in the wintering areas, the Lesser White-fronted Geese are highly threatened by Greater White-fronted Goose hunting and poaching (JONES et al. 2008). Probably because of the high risk of confusion between Lesser White-fronted and Greater White-fronted Geese, activities to educate hunters and reduce hunting losses failed – especially in Kazakhstan and Russia, but also in Greece marked birds were shot. On the other hand, hunters probably have no real chance to discriminate between Lesser- and Greater White-fronted Geese since hunting on morning and evening flights often takes part in dawn or twilight. Also changes in agriculture at the staging sites and on the wintering grounds at Hungary and Kazakhstan might have had negative effects (KEAR 2005).

Population reinforcement in Sweden was started in 1981 by the Swedish Hunters Organisation (VAN ESSEN 1997, 1999), using Barnacle Geese as foster parents, to show the Lesser White-fronted Geese offspring the way to safer winter quarters. In principle this method succeeded and so the Swedish breeding population increased slowly (ANDERSSON 2011). Because of this, the number of sightings in Germany and The Netherlands increased markedly.
During the 1980s many colour-marked birds were found. They were identified quite easily as Lesser White-fronted Geese because of these colour rings. Over the course of 100 years, several factors have influenced the number of observations, for instance, a) the quality of optics, b) mobility of goose observers and c) the trend towards greater interest in rare bird species.
At least one other factor might be involved: Towards the end of 1990s another important effect emerged and the number of Lesser White-fronted Geese records increased drastically: in cooperation with Alterra WUR institute Wageningen and Dutch Goose catchers we (a goose research group formerly at university of Osnabrück) started to mark Greater White-fronted Geese with black and lime neck collars. Henceforward more and more goose observers started to check goose flocks intensively for collars and rare species like Lesser White-fronted Geese were identified more often (see MOOIJ & HEINICKE 2008).

First-winter Lesser White-fronted Geese in December.

The two goose areas in the northwest of Lower Saxony (Ems-Dollard-Region and Leybucht-Krummhörn) hold more than 50% of all observations of staging Lesser White-fronted geese. 80% of all individuals were seen in the areas where intensive goose monitoring is carried out by the authorities and observer effort is high. Overall the observation density is quite high especially in these areas, so the likelihood of finding rare species accidentally is also high.

In general we expect that especially Swedish Lesser White-fronted Geese migrate via Denmark and Schleswig-Holstein along the coastline to The Netherlands and may roost at Lower Saxony more often in the coastal region close to the Wadden Sea, like the two goose areas in the northwest of Lower-Saxony. Russian and Fennoscandian birds are expected to migrate with other arctic species and can be found at all goose staging sites in small numbers. In the 1990s this was shown by the number of colour-marked individuals: most of them were seen along the coast, mainly during peak migration period of Swedish birds: early October and late spring.

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Future perspective

On behalf of NABU Niedersachsen a three years project was started to nurture knowledge of Lesser White-fronted Goose migration through Lower Saxony.
As part of the scope of this project during main peak of Scandinavian Lesser White-fronted Goose migration (early October and late March) special investigations will be carried out by competent volunteers in 2013 and 2014.
All other goose counters and interested volunteers will be especially trained in recognizing rare goose species in the field.

In cooperation with Dutch and Swedish Lesser White-fronted Goose specialists it is planned to fill in the gaps of knowledge about stopover sites which still exist for this species by using satellite tracking. The main goal is to catch birds on the wintering grounds in The Netherlands as well as on the autumn staging sites at northern Sweden. In northern Lower Saxony a goose catching field station will be setup, using a traditional Frisian goose catching method with especially trained living decoys and clapping nets ("ganzenflapper", EBBINGE 2000). Here, we will try to train tame captive Lesser White-fronted Geese to optimize the chances catching migrating individuals of this species.

Acknowledgements

We thank all goose observers for reporting Lesser White-fronted Geese to the Lower Saxony Goose database and the National Rarity Committee. We also thank the National Rarity Committee for good cooperation.
The project "Protection of Lesser Whitefronted geese in Lower Saxony – more knowledge for a countrywide strategy of conservation" is carried out on behalf of Naturschutzbund Deutschland Landesverband Niedersachsen (BirdLife section Lower Saxony) and funded by Lower Saxony Wadden Sea Foundation and the Bingo Umweltlotterie Lower Saxony in cooperation with the Federal State Agency of Bird Protection of Lower Saxony.

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Evaluation of management for wintering geese in The Netherlands

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The Netherlands has a strong tradition of supporting large numbers of geese during winter. During the recent cold winters, numbers amounted to 2 million geese (HORNMAN et al. 2013). During large parts of their stay, geese rely on food resources offered by agricultural fields, which comprise about 70% of the country. Important food resources include harvest remains (sugar beet, potato, maize), improved grassland and crops like autumn-sown cereals. Where damage occurs as a result of feeding geese, farmers may get compensation payments by the so-called Faunafonds (see www.faunafonds.nl). From 2005/06 onwards, a shift in goose management took place, and 80,000 ha of specific feeding areas for wintering geese were designated (VAN DER ZEE et al. 2009). These consisted of both farmland and nature reserves (e.g. Natura 2000 sites), where geese would be left undisturbed. Agri-environmental schemes were established to support farmers accommodating geese on their fields, within the designated area. Outside the feeding areas and nature reserves, geese should be distracted from feeding by derogation shooting and other scaring methods. The scheme focuses on Pink-footed Goose *Anser brachyrhynchus*, White-fronted Goose *Anser albifrons*, Greylag Goose *A.anser* and Barnacle Goose *Branta leucopsis*, as well as Wigeon *Anas penelope*. The scheme was set-up under the hypothesis that the birds would "learn" to use the designated feeding areas and crop-damage would decline.

After the first three years of the new management, VAN DER JEUGD et al. (2008) analysed data from the national goose counts and concluded that 57-60% of the four goose species concentrated in the designated feeding areas. Still many geese were feeding outside the designated areas and thus subject to derogation shooting. The number of shot geese (White-fronted Goose, Greylag Goose) and Wigeon during winters 2005/06–2007/08 increased from 62,497 to 109,024 birds, of which, on average 45% were White-fronted Geese (VAN DER ZEE et al. 2009). The lower number of geese concentrating in the designated areas were attributed to the intensity of scaring that had not succeeded to influence the distribution pattern, less optimal situation of some of the feeding areas and the fact that some goose species (notably Greylag Goose and Barnacle Goose) had further increased in abundance since the initial calculations of the amount of needed hectares of feeding areas had been made (VAN DER JEUGD et al. 2008).

During recent years, monitoring of the use of feeding areas by geese has been continued on request of the Faunafonds, in order to analyse if after five years of the new management scheme, the distribution over feeding- and non-feeding areas would become different (SCHEKKERMAN et al. 2012, 2013). During winter 2011/12, 59% of the focus species was recorded within the designated feeding areas, i.e. in about the same range as observed in 2010/11 and during 2005–2008 (Fig. 1).

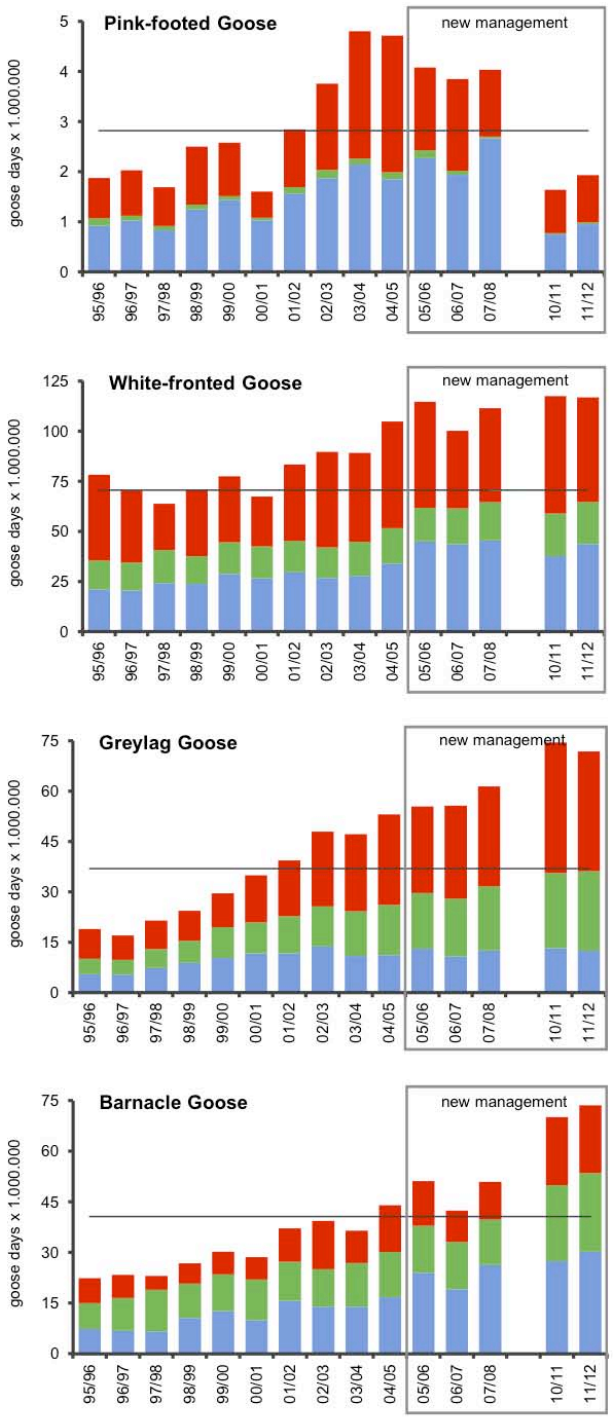

Fig. 1. Trend in wintering goose numbers from 1995/96 onwards. The period of the new management scheme after 2005/06 is shown separately (no data in 2008/09 and 2009/10). Numbers are expressed in "white-fronted goose days" in order to compare species. Shown are numbers in designated feeding areas in farmland ("foerageergebied", blue), numbers in nature reserves ("natuurgebied", green) and numbers outside the designated feeding areas ("overig gebied", red). The horizontal line shows the theoretical carrying capacity that was initially calculated to accommodate wintering geese. After SCHEKKERMAN et al. 2013.

Still, it seems that the difference in conditions between feeding- and non-feeding areas is too little to affect the distribution of geese significantly, whereas the situation in less suitable feeding areas (Fig. 2) and the increase of some species were still in place.
However, an increase in use of feeding areas was not observed in Pink-footed Goose, which sharply declined in number after 2009/10 and in White-fronted Geese, whose numbers remained rather stable during the past years. During recent winter seasons, the number of geese shot by derogation shooting were about 40-60,000 Greylag Geese and 40-47,000 White-fronted Geese (M.MONTIZAAN/KNJV in litt.).

From 2013/14 onwards, another change in management will take place, as most of the agri-environmental schemes in the designated feeding areas have now ceased and the results were not satisfactory, as described before. Management in winter will still focus on feeding areas, but derogation shooting will be confined to sensitive crops like autumn-sown cereals.

In addition, a consortium of agricultural associations, nature conservation agencies and the 12 Dutch provinces have agreed to start culling operations for breeding geese in 2014. The aim is to reduce the number of breeding Barnacle Geese (estimated breeding pairs in 2012 13,800; SCHEKKERMAN 2012) to the level of crop-damage in 2011 and reduce the number of breeding Greylag Goose (2012: 110,000 bp; SCHEKKERMAN 2012) to the level of crop-damage recorded in 2005.

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Moreover, it is aimed to eradicate non-native species like Canada Goose *Branta canadensis and* Egyptian Goose *Alopochen aegyptiacus* and breeding White-fronted Goose (GANZEN 7 2012). Implementation of these aims is currently (November 2013) being discussed (see http://www.ipo.nl/publicaties/overzicht-wijzigingen-ganzenakkoord).

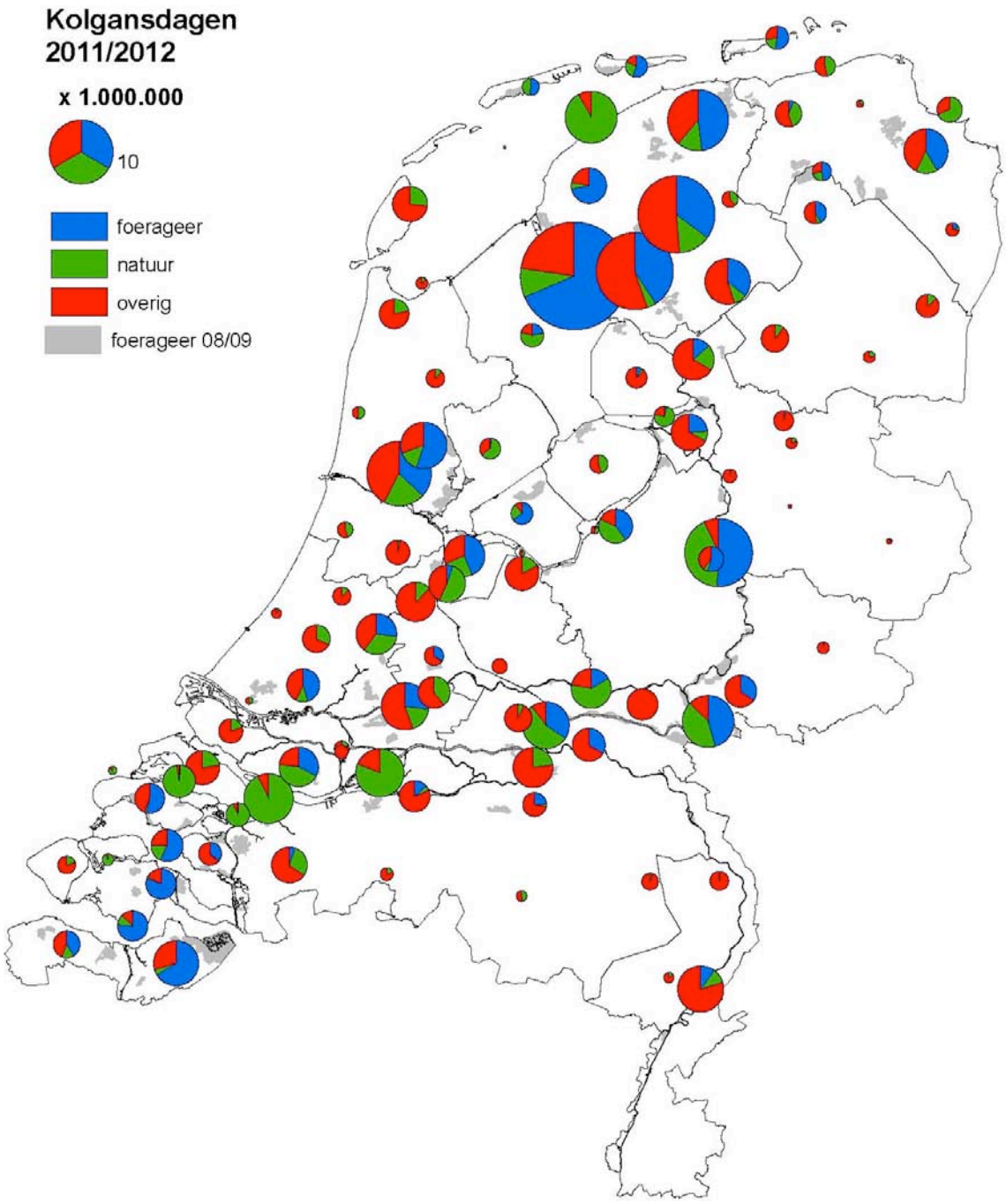

Figure 2. Distribution of wintering Pink-footed Goose, White-fronted Goose, Greylag Goose and Barnacle Goose in 2011/12. Shown is the number of "white-fronted goose days" for each main census area, separated according to feeding areas in farmland ("foerageer", blue), numbers in nature reserves ("natuur", green) and numbers outside the designated feeding areas ("overig", red). Feeding areas are depicted by the grey shaded areas. After SCHEKKERMAN et al. 2013.

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New breeding area for the Lesser White-fronted Goose *Anser erythropus* in the Bolshezemelskaya tundra.

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We surveyed the Padimeitivis River basin, Bolshezemelskaya tundra in the Nenets autonomous district (Fig. 1.) during 30 June-6 July 2013, an area never previously explored by ornithologists.

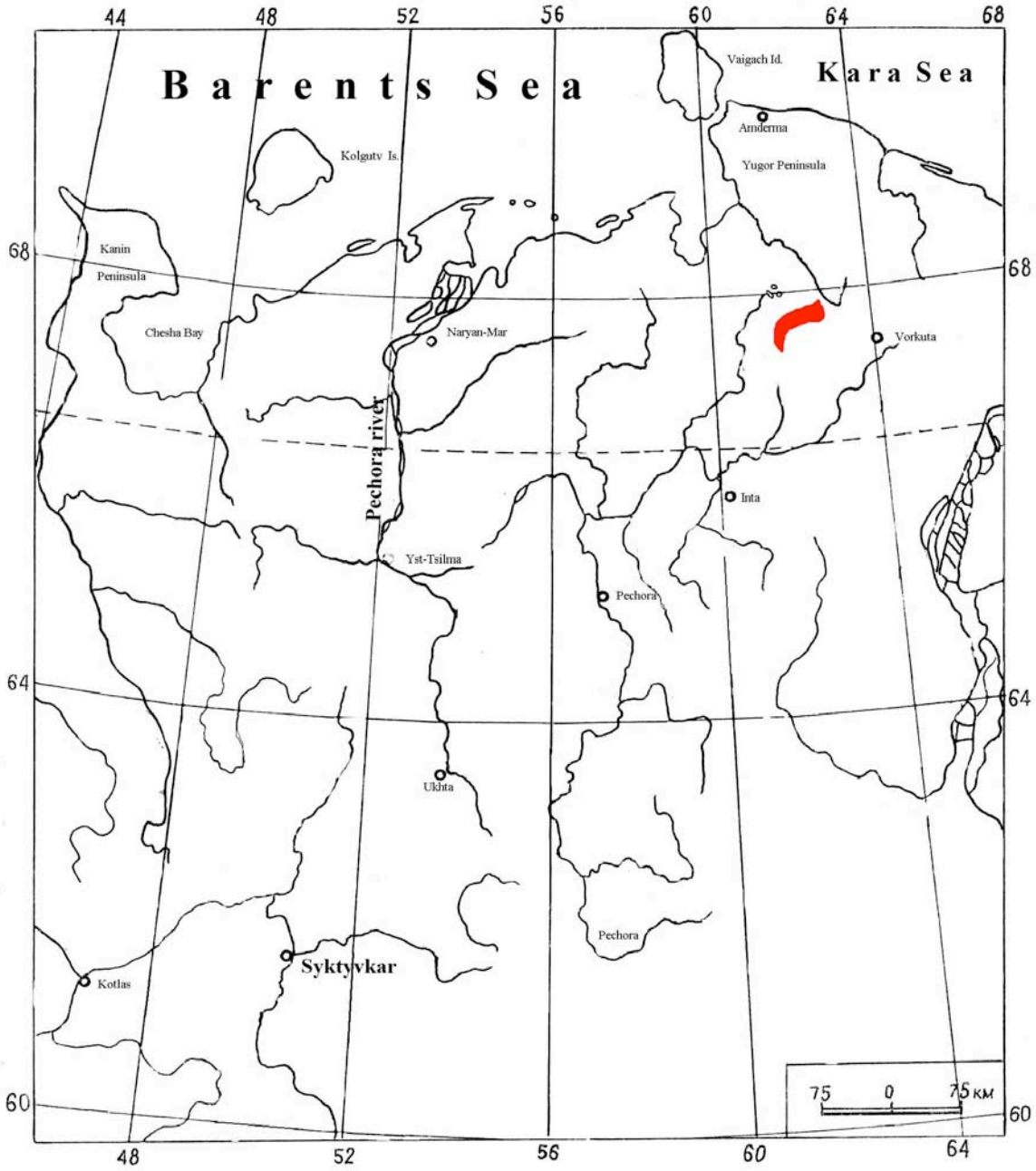

Fig. 1. Map of the discovered breeding area of the Lesser White-fronted Goose (course of the Padimeitivis River)

The Padimeitivis River is about 120 km long, and originates from a system of lakes of glacial origin called the Padimey lake system. In its upper course, the river flows north-eastward, and then turns to the north and than again north-eastward. Crossing spurs of the Bolshezemelskij range, the river meanders strongly before flowing into Korotaikha River.

Much of the area surveyed was between 70 and 158 m above sea level. In the upper course of the river, there are abundant tundra lakes, but lower down, the river valley is wide (300-600 m) with several terraces and the dominant floodplain vegetation is wetland and willow scrub. Sloping banks alternate with abrupt clayey-sandy slopes, rising up to 30-40 m above the valley floor. In these areas, the river flows fast, up to 0,8 m/s, and stony shoals are frequent, alternating with sandy banks. Aquatic vegetation near banks is dominated mainly by the tall herb *Nardosmia (Petasites) frigida*. Where the valley was wide with willow and meadow vegetation alternating with high abrupt banks, we found nesting Lesser White-fronted Geese (*Anser erythropus*). We walked 25 km of transect routes along the bank of sections of the river and also covered some 50 km close to the river valley using cross-country vehicles.

Fig. 2. Nesting habitat of the Lesser White-fronted Goose on the Padimeitivis River

At 2 July, we found a nest of the Lesser White-fronted Goose situated on the steep sandy bank of the river, 35 cm from a 25 m cliff on a terrace 10 m above the river. The nest was partially hidden by small dwarf willow (26 cm high) and grass (Fig. 2), and was lined with down with and admixture of dry grass, 30 cm in diameter, the nesting hollow 20 cm in diameter 5.5 cm deep. The nest contained three eggs (with a fourth egg lying near the nest about 1 m away) with the following dimensions:

1) 71.7 mm x 48.5 mm,
2) 72.5 mm x 47.7 mm,
3) 71.9 mm x 48.1 mm,
4) 70.7 mm x 46.2 mm.

Within 22 m from the nest, there was a Peregrine Falcon (*Falco peregrinus*) nest with three eggs and within 20 m a Bean Goose (*Anser fabalis*) nest with six eggs.

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Fig. 3. Lesser White-fronted Goose on the nest on the steep bank of the Padimeitivis River

During our journey through the floodplain, we registered two other pairs of Lesser White-fronted Goose. We attempted to find the nest of a second pair which showed nesting behavior, situated in a similar biotope in association with breeding Peregrine Falcons, but we were unsuccessful, mainly due to lack of time. At present, there is no human activity to disturb the ecosystems of the Padimeitivis River basin, which retain practically natural conditions for the geese.

The International Waterbird Census (IWC) is back on track

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Introduction

The first systematic waterbird counts were organised from the 1930s in Great Britain, followed by The Netherlands in the beginning of the 1950s and by Germany and Switzerland some years later. Up to 1963 these counts were performed by volunteers and coordinated by NGOs on a national level, but since 1963 international coordination of the counts was initiated by the „International Waterfowl and Wetlands Research Bureau“ (IWRB), which was the moment of birth of the International Waterbird Census (IWC).

IWRB

From the beginning, the goose counts were organised and implemented separately from the counts of the other waterbirds. Although the goose counts are part of IWC, the goose data bank was kept separately from the IWC data bank.
The aim of IWC was to create a worldwide standardised and coordinated international scheme for monitoring waterbird populations as a tool to establish a worldwide waterbird data bank containing annual information on the numbers and distribution of waterbirds and to provide up-to date information on population sizes, regional and seasonal distribution, population trends etc.

Past

From its earliest beginnings the national and international waterbird counting schemes were a unique combination of amateur birdwatchers and professional ornithologists, organised in a global network to collect basic data about the size und development of waterbird populations. At the start of IWC only a few European countries were involved and the connections within the network were close, and familiar. But since the 1960s the IWC grew into a key position in international nature conservation efforts.
The first international nature conservation convention that included IWC-results in the decision making process was the Ramsar Convention of 1971. Subsequently the results of the IWC also were included in the Bonn Convention (CMS) and the EU Bird Directive (79/409/EEC) in 1979 as well as the Biodiversity Convention in 1992 and the African-Eurasian Waterbird Aggreement in 1996. This development triggered the evolution of IWRB from a more or less “family firm” to a worldwide organisation. After the development of IWC in Europe, Africa and the Middle East, in the early 1980s, IWRB also supported the establishment of IWC in Asia and the Pacific region, where IWC was coordinated by the Asian Wetland Bureau (AWB), and since the mid 1980s IWC was extended to the Americas, where the scheme was coordinated by Wetlands for the Americas (WA).

Due to the increasing importance of the IWC for decision-making in international nature conservation, organisational structures had to be condensed and professionalised. Subsequently IWRB, AWB and WA joined forces in a new organisation, called "Wetlands International" (WI) in 1995.

Present

As a result of this new organisation structure WI became a partner of a number of international conventions, produced waterbird population estimates and trends, but increasingly lost contact to the basic network of amateur birdwatchers and regional coordinators. The AEWA-meeting in The Hague 2010 concluded that, although "on the one hand the International Waterbird Census (IWC) provides very valuable products, on the other hand there is an issue of not receiving regular outputs required by all the stakeholders." At the same time the Goose Specialist Group, which until now had kept up a more or less separate goose counting scheme within IWC, studied possibilities to establish regular goose counts as well as an international goose data base outside the IWC and a number of member countries threatened to withdraw or actually withdraw their financial support for IWC from Wetlands International.

In this critical situation a workshop was organised to solve the problems of the IWC during the tri-annual membership meeting of Wetlands International in Edinburgh 2011. After the discussion of an unsparing analysis of the situation by independent experts, the workshop proposed a number of actions to bring the IWC back on the track.
Inter alia it was suggested that the IWC should seek a closer connection to the European Bird Census Council (EBCC) conferences to get back the family feeling and to set up a Steering Group which could involve coordinators and organisations contributing to the international coordination of IWC as well as other partners in the scheme in a more responsible way and enable them to help to decide about the way forward. The Steering Group should not only have an advisory role, but also have a role in defining the strategic direction; it would not be involved in day-today management or decisions relating to this, but should take action to help to ensure the long-term funding of IWC. The Steering Group should establish a partnership of all parties interested in IWC to ensure the long-term sustainability of the scheme.
As a result of these reflections in 2011 the African-Eurasian Waterbird Monitoring Partnership (AEWMP) was founded.

As a result of forming the AEWMP a workshop for the African national IWC coordinators took place at the 14th Pan-African Ornithological Congress in Arusha (Tanzania) in October 2012, and a comparable workshop for European and Central-Asian IWC coordinators in September 2013 in the scope of the 19th Conference of the EBCC in Cluj (Romania). The aim of these workshops was to offer the opportunity to national IWC coordinators and other interested parties to discuss issues related to the governance and development of this important monitoring scheme.

Over the last three years, the IWC has started producing low cost electronic National Count Total reports at the end of each year providing a good feedback to the network. Data management has improved significantly and the backlog of data entry has been eliminated.

Participants of the IWC-workshop in Cluj, Romania 2013

Thanks to the strengthening of the IWC in the African-Eurasian Flyway an existing generic online data gathering system (Observado.org) was adapted to the needs of the IWC to assist national coordinators to collect data from their observers. This is complemented by the IWC Online system, developed in collaboration with Sovon, the Dutch Centre for Field Ornithology, to enable national coordinators to submit and update their countries' data.

These activities were funded by the membership fees of the members of Wetlands International as well as voluntary contributions from the governments of Switzerland and the United Kingdom and a major grant from the MAVA Foundation as well as the partnership approach with national coordinators, specialist groups and other stakeholders such as the Sovon, Tour du Valat, the AEWA Secretariat, BirdLife International, FACE, the EBCC, ONCFS, the Aarhus University and the BTO.

The project also helped to upgrade the communication with the national coordinators: there is now an informative and regularly updated section on the website of Wetlands International providing access to news, outputs and guidelines, a newsletter is published quarterly and there is a dedicated Waterbird Forum to exchange ideas and information amongst the national coordinators. Furthermore the project made it possible that national IWC coordinators from the relevant regions meet in person at the Pan-African Ornithological Congress and the Conference of the European Bird Census Council allowing them to discuss the future development of IWC. The project has also significantly contributed to capacity building in close collaboration with other projects in the region such as the Mediterranean Waterbirds project of Tour du Valat, ONCFS and Wetlands International and the Conserving Migratory Birds in West Africa/Wadden Sea Flyway project of BirdLife International, Wetlands International and Sovon.

This development of IWC demonstrated clearly the power of the partnership approach and shows that the IWC is back on the right track.

Future

Since the Edinburgh meeting, IWC has recovered and today covers over 25,000 sites in more than 100 countries. In each country, national coordinators work with a network of professional and amateur counters to provide waterbird counts to the IWC. In total, more than 15,000 people submit their data annually, making IWC one of the largest global monitoring schemes largely based on citizen science. Also the integration of the goose data bank made good progress. To use all possible synergies, WI collaborates closely with other organisations, specialist groups and international bodies, both individually and through the Waterbird Monitoring Partnership. Among other functions, the Waterbird Monitoring Partnership integrates the International Waterbird Census with other monitoring schemes and expertise to improve the scientific basis of the work of Wetlands International and its Specialist Groups.

Unfortunately, the MAVA project will finish next year and there has been only limited progress in securing additional voluntary contributions to support consistent monitoring activities in low-income countries and to sustain the flyway level coordination, which proved to be essential to achieve these results. According to the estimates provided for MOP5, supporting the monitoring activities would require c. 60,000 Euro annually and the flyway level coordination a similar amount. So far some 25,000 Euro has been secured for 2014.

Your help is urgently needed to ensure that we can sustain these achievements. If you have the possibility to support the IWC, please contact Szabolcs Nagy at Wetlands International (Szabolcs.Nagy@wetlands.org).

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New Publications 2012/2013

CHUDZINSKA, M., J. MADSEN & J. NABE-NIELSEN (2013) Diurnal variation in the behaviour of the Pink-footed Goose (*Anser brachyrhynchus*) during the spring stopover in Trøndelag, Norway. – J. Ornithol. 154: 645-654.

CLAUSEN, K.K. & P. CLAUSEN (2013): Earlier arctic springs cause phenological mismatch in long-distance migrants. - Oecologia doi: 10.1007/s00442-013-2681-0

CLAUSEN, K.K., P. CLAUSEN, A.D. FOX, C.C. FÆLLED & J. MADSEN (2013): Varying energetic costs of Brent Geese along a continuum from aquatic to agricultural habitats: the importance of habitat-specific energy expenditure. – J. Ornithol. 154: 155-162.

CLAUSEN, K.K., M. STJERNHOLM & P. CLAUSEN (2013): Grazing management can counteract the impacts of climate change-induced sea level rise on salt marsh-dependent waterbirds. - Journal of Applied Ecology doi: 10.1111/1365-2664.12043

DOROFEEV, D., Y. ANISIMOV, O. ANISIMOVA & K. LITVIN (2013): Number and distribution of Barnacle Goose *Branta leucopsis* colonies on the Timansky coast of the Barents Sea in 2009. - Ornis Norvegica 36: 25-27.

EBBINGE, B. (2013): Proceedings of the 14th meeting of the Goose Specialist Group of the IUCN Species Survival Commission and Wetlands International. – Ornis Norvegica 36: 14.

HEINICKE, T. & A. DE JONG (2013): Tundra Bean Geese *Anser fabalis rossicus* in central and southern Sweden autumn 2009–spring 2012. - Ornis Norvegica 36: 32-37.

HUGHES, A.L. (2013): Indices of Anseriform body shape based on the relative size of major skeletal elements and their relationship to reproductive effort. – Ibis 155: 835-846.

JENSEN, G.H., J. MADSEN, F.A. JOHNSON & M.P. TAMSTORF (2013): Snow conditions as an estimator of the breeding output in high-Arctic pink-footed geese *Anser brachyrhynchus*. - Polar Biology 300; DOI 10.1007/s00300-013-1404-7.

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JONG, A. DE, T. HEINICKE, T. AARVAK, & I.J. ØIEN (2013): Movements of Tundra Bean Goose *Anser fabalis rossicus* neck-banded in northern Scandinavia. – Ornis Norvegica 36: 28-31.

KONDRATYEV, A., E. ZAYNAGUTDINOVA & H. KRUCKENBERG (2013): Barnacle Goose *Branta leucopsis* abundance on Kolguev Island – current status and history of population growth. - Wildfowl 63: 000–000.

KOWALLIK, C. & K. KOFFIJBERG (2013): Does every goose count? Pitfalls of surveying breeding geese in urban areas. - Wildfowl 63: 90–104.

LEAFLOOR, J.O., J.A. MOORE & K.T. SCRIBER (2013): A hybrid zone between Canada Geese (*Branta canadensis*) and Cackling Geese (*B. hutchinsii*). – The Auk 130: 487-500.

LEBEUF, A.P. & J.-F. GIROUX (2013): Sibling Pairing in Temperate-nesting Canada Geese. - The Wilson Journal of Ornithology 125(2):398-401. - doi: http://dx.doi.org/10.1676/12-171.1.

LENSINK, R., L.M.J. VAN DEN BERGH & B. VOSLAMBER (2013): De geschiedenis van de Grauwe Gans als Nederlandse broedvogel in de 20e eeuw. – Limosa 86: 1-11.

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RAES, D. (2013): European colour-ring birding: colour-ringed birds from the (cannon)net to the (inter)net. - Ornis Norvegica 36: 15-16.
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TOMBRE, I.M., E. EYTHÓRSSON & J. MADSEN (2013): Stakeholder involvement in adaptive goose management; case studies and experiences from Norway. – Ornis Norvegica 36: 17-24.
WANG X., A.D. FOX, P.H. CONG & **L.** CAO (2013): Food constraints explain the restricted distribution of wintering Lesser White-fronted Geese *Anser erythropus* in China. - Ibis 155: 576-592.
WANG, X., M. ZHAO, L. CAO, Y. ZHANG & A.D. FOX (2013): The benefits of being big: effects of body size on energy budgets of three wintering goose species grazing *Carex* beds in the Yangtze River Floodplain, China. - Journal of Ornithology 154: 1095-1103.
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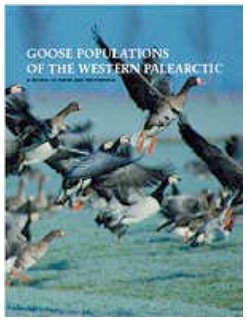
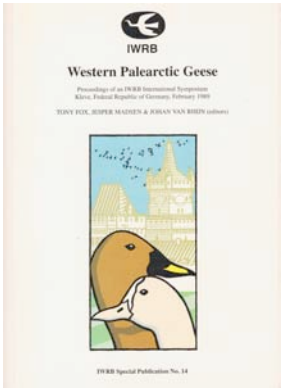


The Goose Specialist Group made an impressive compilation (edited by Jesper Madsen, Tony Fox & Gill Cracknell) of our knowledge on the status and distribution of the goose populations of the western palearctic. This book is not for sale anymore, but a digital copy can be downloaded for free from:
http://issuu.com/jesper_madsen/docs/goosepopulationswestpalearctic
or from
http://bios.au.dk/en/knowledge-exchange/about-our-research-topics/animals-and-plants/mammals-and-birds/goose-populations-of-the-western-palearctic/

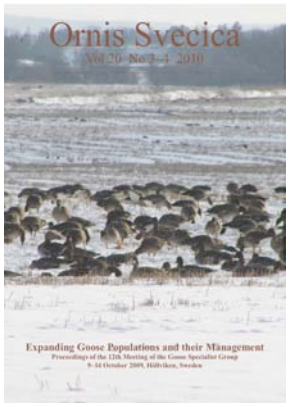
The latest edition of the Wildfowl journal are now also available online, for free, at http://www.wwt.org.uk/what-we-do/publications/wildfowl/archive/wildfowl-issue-61/.

Furthermore it is still possible to receive a printed copy of the official proceedings of earlier meetings of the Goose Specialist group, as there are:
- IWRB International Symposium on Western Palearctic Geese, Kleve, Germany 1989,
- 10th Meeting of the Goose Specialist Group, Goose 2007, Xanten, Germany 2007,
- 12th Meeting of the Goose Specialist Group, Goose 2009, Höllviken, Sweden 2009:



Proceedings Goose Meeting 1989
(Kleve, Germany)
Interested? Please contact:
johan.mooij@bskw.de

Proceedings Goose 2007
(Xanten, Germany)
Interested? Please contact:
johan.mooij@bskw.de



Proceedings Goose 2009
(Höllviken, Sweden)
Interested? Please contact:
leif.nilsson@zooekol.lu.se

Proceedings of the 14th meeting of the Goose Specialist Group of the IUCN Species Survival Commission and Wetlands International are now available online!

During the 14th meeting of the Goose Specialist Group which was held in Steinkjer, Norway in April 2012, contributors were invited to submit articles to the online journal Ornis Norvegica. Ornis Norvegica is the scientific journal of the Norwegian Ornithological Society (Norsk Ornitologisk Forening – NOF).
I am pleased to announce that the proceedings have finally been published. You can find articles from the 2012 meeting, as well as a number of other ornithological papers which are surely of interest on the journal website:
https://boap.uib.no/index.php/ornis/index/

Best wishes,
Paul Shimmings

Call for help:

As discussed during the Höllviken meeting we invite all goose researchers to send their publications to our data bank of geese literature. Not only international but also local publications (including those in languages other than English) are most welcome.
Please send your publications, preferably as a pdf file, to Fred Cottaar - fred.cottaar@tiscali.nl.

Instructions to authors

The Goose Bulletin accepts all manuscripts dealing with goose ecology, goose research and goose protection in the broadest sense as well as Goose Specialist Group items.
All manuscripts should be submitted in English language and in electronic form. Text files should be submitted in ".doc"-format, Font "Times New Roman 12 point", tables and graphs in ".xls"-format and pictures in good quality and ".jpg"-format.
Species names should be written with capitals as follows: Greylag Goose, Greenland White-fronted Goose etc. Follow an appropriate authority for common names (e.g. Checklist of Birds of the Western Palearctic). Give the (scientific) Latin name in full, in *italics*, at first mention in the main text, not separated by brackets.
Numbers - less than ten use words e.g. (one, two three etc) greater than 10, use numbers with blank for numbers over 1 000.
In case of doubt, please look at the last issue of the Goose Bulletin.

GOOSE BULLETIN is the official bulletin of the Goose Specialist Group
of Wetlands International and IUCN