GOOSE BULLETIN

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

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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 year 2020 will be remembered as the year of Covid-19. In 2020 there were wars, hunger, refugee misery, catastrophic weather events, the human-made climate change and running loss of biodiversity continued unabated, but in a great number of countries most attention was focused on the Covid-19 pandemic. Although each of the enumerated events is threatening the longterm survival of mankind, in 2020 this small virus stood in the focus of public awareness. In a part of the human population, because they denied its existence, but in the majority of the people simply because they are afraid to die. Within less than a year a number of effective vaccines were developed. Agony gave us wings!

No government ever thought about even a "lockdown-light", to save the climate or to stop the decrease of biodiversity, although in the longterm the impact of both of these developments will be much more serious as the impact of Covid-19 ever can be. But a longterm threat of life is less terrifying as an event, which is felt as an imminent threat of the own life.

Up to now, officially more than 1.5 million people died from or with Covid-19 (0,02% of the world population). But that is not all. Besides the fact that Covid-19 is not finished yet, the pandemia has enormous social and economic consequences, not only for us, but also for future generations. To fight the disease and to mitigate the consequences of the disease as well as of the measures against it, billions of dollars, euro, pounds etc. were and have to be spent. We, but mainly our children and childrens' children, will pay the debts!

The risk is high, that subsequently the governments will argue, that they have to promote economy to pay the debts and that they have to reduce financial support and expenses for measures against climate change, loss of biodiversity, social issues, education, culture and nature conservation as well as many research issues.

Goose research maybe is not that crucial for most people, but it is an important jigsaw piece within the scope of arctic, climate change and biodiversity research and therefore it needs reliable longterm financial support from society and the public authorities.

The Goose Specialist Group up to now is an informal conglomeration of goose interested people and professional goose researchers. Our group has the potential to become a strong lobby organization for goose research. To do such a job it could be very helpful to have a kind of official legal structure as well as to have a reliable financial basis to cover the running costs.

In previous issues of the GOOSE BULLETIN we asked the GSG-members with regard to the GSG-future-structure item: "Please let us know, what you think about it. Send your opinion to the Editorial Board of the Goose Bulletin, to give the Board of the Goose Specialist Group a lead where to go in future, ... in our future." Number of reactions? ……. null, zero, nothing!!

You still have the possibility to react! Please let us know what you think about it and stay healthy!

The next issue of the GOOSE BULLETIN is planned to appear in May 2021, which means that material for this issue should have reached the editor-in-chief not later than the 31st of March 2021.....but earlier submission is, of course, always permitted, if not actively encouraged!

Editor in chief

Arctic Terns *Sterna paradisaea* attacking a leucistic Barnacle Goose *Branta leucopsis* near Longyearbyen, Svalbard: an explanation for the high local leucism frequency?

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In many bird species, individuals with an aberrant (partly) white plumage are occasionally observed and reported (e.g. WIGMAN 1917, BROUWER 1938, LEBRET 1941, SLUITERS 1952, HOOGERWERF 1974, VAN GROUW 2006). Thanks to their high visibility in open landscapes, such individuals among geese are easily discovered and a frequency of occurrence can be readily calculated if the flocks are counted (e.g. LEBRET 1958, VAN DEN BERGH 1968, KUIJKEN 1970, OWEN AND SHIMMINGS 1992). But what is the ecological significance of such abnormal plumage colourations? HOLYOAK (1978) proposes for some species of Polynesian *Acrocephalus* warblers that their high degree of leucism may be an adaptation that allows for individual recognition, as those species lack the usual warbling songs of other Polynesian warblers. In birds that fly in flocks, like Feral Pigeons (*Columba livia*) and Common Starlings (*Sturnus vulgaris*), odd white individuals may have the disadvantage of being more susceptible to predation, as they are more easily targeted by predators (e.g. RUTZ 2012, SCHREVEN 2016). For Barnacle Geese (*Branta leucopsis*), OWEN & SHIMMINGS (1992) showed that leucistic individuals seemed to have similar mating success and reproductive success, but lower survival than normally coloured individuals. The latter was probably the result of hunters targeting the white individuals as a trophy. We describe here that, on Svalbard, a leucistic Barnacle Goose was harassed by Arctic Terns (*Sterna paradisaea*). We suspect that the terns saw the goose as a Glaucous gull (*Larus hyperboreus*), a predator of the terns. We speculate that such a "deception" effect might be one of the factors that could explain the relatively high frequency of leucism in Barnacle Geese in this area.

Photo 1. The Barnacle Goose family observed in Adventdalen, 3 August 2019: a leucistic female with a normal male and two chicks. Photo: Kees Schreven.

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Leucistic Barnacle Geese around Longyearbyen

From 3 to 9 August 2019, we observed in total 1964 Barnacle Geese (doubles avoided) around Longyearbyen, Svalbard. We surveyed the area from the Longyearbyen Lufthavn to Adventdalen and Bolterdalshaugen. In a subset of our observed groups (both breeders and failed/non-breeders), the overall percentage of young was 21.4% (577 adults, 157 chicks). We observed in total 3 or 4 leucistic individuals. The first was an adult female, with two goslings and a normal male, in a group of 71 adults and 35 young northwest of Isdammen. The female was white, but had black eyes, bill, legs and a few grey-black feathers on the back (photo 1). The goslings looked slightly paler than other goslings, but this was presumably due to their younger age rather than a plumage aberration. On the north side of Adventdalen, we saw a white gosling in a family of two normal adults and three normal goslings. They were in a family group of in total 485 Barnacle Geese and 350 Pink-footed Geese (*Anser brachyrhynchus*). Further, we saw a white adult that had black eyes, bill, and legs, flying in with 15 normal adults, just southeast of Isdammen. Lastly, we saw a white adult that had black eyes, bill, legs and a few light-grey feathers on the back flying in with four normal adults at the Laguna Bird Area, Hotellneset (photo 2 and 3). The last two sightings may or may not concern the same individual; we had not taken pictures of the former. If we extrapolate the percentage of goslings to the total number of observed Barnacle Geese, we get 1544 adults and 420 chicks. We assume that we saw all leucistic geese present in these groups. This would mean that the overall leucism frequency was 0.15-0.20% (0.13-0.19% for adults, 0.24% for goslings), which is four to 10 times higher than in other studies (ROBERTS 1965: 0.02% and OWEN & SHIMMINGS 1992: 0.04%).

Photo 2. The leucistic Barnacle Goose being attacked by an Arctic tern, observed in Laguna Bird Area, Hotellneset, 9 August 2019. Photo: Aija Lehikoinen.

Attacks by Arctic Terns

The latter individual landed with four normal Barnacle Geese in the pool where four Barnacle Geese were already present. Additionally, at the nearby camping area, a family group of 150 Barnacle Geese was present. Upon arrival, the leucistic goose was attacked by four Arctic terns (photo 2 and 3). They alarmed and dived at the goose repeatedly for a few minutes, making in total around 25 dive-attacks. The leucistic goose was dodging the attacking terns by pulling its head down. It swam towards six other Barnacle Geese. However, when approaching these geese, it was chased away by one of them. KUIJKEN (1970) also reported from the wintering grounds that a light-coloured "Isabel" White-fronted Goose (Anser albifrons) was expelled from a group of White-fronted and Pink-footed Geese. However, in our case, the expelling may have been evoked by the bent-necked posture of the leucistic goose (when dodging the attacking terns), which resembles a threatening posture (see JONES 1960). After a few minutes, when the goose stood among the six other geese, the situation calmed down. No further attacks by the terns or geese was witnessed.
A video of these events is available on:
https://www.youtube.com/watch?v=UH84UspBnAs&t=18s.

Photo 3. The leucistic Barnacle Goose being attacked by an Arctic tern, observed in Laguna Bird Area, Hotellneset, 9 August 2019. Photo: Aija Lehikoinen.

Discussion

The Laguna Bird Area at Hotellneset is a breeding area for Arctic Terns, with up to 150 pairs (LOFF 2008). We saw at least 40 adult terns at once. The terns had large young at this time. We suspect that the four attacking terns may have seen the leucistic Barnacle Goose as an adult Glaucous Gull, of which at least 14 pairs occur around Longyearbyen (pers. obs. 2018 and 2019). The Barnacle Goose has a similar body size as the Glaucous Gull and no other white bird of this size and shape occurs around Longyearbyen. The Svalbard Rock Ptarmigan (*Lagopus muta hyperborea*) is smaller, rounder, and has shorter wings.

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Glaucous Gulls are probably a common predator of Arctic Terns. Although we did not observe such predation, Arctic Terns do attack adult Glaucous Gulls in Longyearbyen (pers. obs. 2018). Concerning the Glaucous Gulls' diet around Longyearbyen, we can report that they eat dead fish at the coast and fish discards near the dog kennels (pers. obs. 2018 and 2019). Further, we saw them probably hunting, i.e. closely watching and flying above a Barnacle Goose family group and a Common Eider (*Somateria mollissima*) family, which alarmed in response. In August 2018, KS saw an adult Glaucous Gull pulling a Kittiwake (*Rissa tridactyla*) chick from a cliff and eating it on the ground at Dundrabeisen, Dunderbukta, and eight adults feeding on a stranded dead Walrus (*Odobenus rosmarus*) at Donpynten, Daudmannsøyra. According to GLUTZ VON BLOTZHEIM & BAUER (1982) and CRAMP & SIMMONS (1983), Glaucous Gulls in the high Arctic feed frequently on eggs, chicks, fledglings and adult birds, and terns are on their menu.

The scenario where other species see a leucistic Barnacle Goose as a predator may be quite specific to the situation that is found on Svalbard, where there is a high density of white avian predators of approximately the same size as the Barnacle Goose. It raises the question whether leucistic geese may benefit from this during breeding. Apart from giving eventual camouflage in snow, the leucistic plumage might keep predators at a distance, such as Arctic Fox (*Vulpes lagopus*), Arctic Skua (*Stercorarius parasiticus*) and perhaps also Glaucous Gulls. Such a possible advantage could be one of the factors explaining the relatively high frequency of leucism in this population. However, to test this idea, further observations during the breeding stage are required.

Acknowledgements

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From the ground or from the air - how good are our methods?

Determination of the breeding stock of the Greylag Goose by flying over the study areas Großes Meer and Dümmer as well as the Unterems (NW Lower Saxony, Germany) in comparison to ground-based survey methods

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Abstract
As part of a state-wide study on the breeding occurrence of Greylag Geese in Lower Saxony, the breeding populations in three selected areas (Großes Meer (53° 25′ N, 07° 17′ E), Unterems (53° 18′ N, 07° 23′ E) and Dümmer (53° 34′ N, 11° 12′ E)) were recorded using different methods in spring 2016 and the results compared. The three areas are characterised by their size, lack of visibility, inaccessibility and, at the same time, a high number of breeding pairs. It was found that the two traditional ground-based methods of surveillance differed significantly in their geographical coverage and are therefore hardly comparable. However, both methods aimed to determine relative changes in breeding populations and have never aimed to produce real numbers. Both methods significantly underestimated the population compared to a nest count from a light aircraft. Identifying nests from the air yielded far better real data, provided the areas could be seen from above. As long as the ground-based surveys serve as a basis for determining population trends, essential to consistently maintain the effort and methods used for comparison with previous years. However, if real stock figures are required, the existing methods must be significantly improved and, if necessary, supplemented by technical applications such as aerial surveys.
Key words: Greylag Goose, *Anser anser*, monitoring methods, breeding area, population size, aerial survey, ground survey, nesting

Introduction

The regular, systematic recording of breeding populations of native bird species became increasingly interesting for species protection, politics and administration against the background of a growing awareness of environmental problems from the 1960s onwards ("Silent Spring", CARSON 1962). A wide variety of indicators have subsequently been developed, based on the number of breeding birds, among other things (Red Data Lists, SUDFELDT et al. 2003 as a basis for conservation measures, Sustainability Index ACHTZIGER et al. 2004, Biodiversity Index CBD 1992). While the focus was initially on particularly rare species, attention was also directed to common breeding birds by the 1992 UN Biodiversity Conference in Rio de Janeiro (cf. MITSCHKE et al. 2005). Birds are regarded as particularly suitable indicators of change due to their widespread distribution and species diversity (SÜDBECK et al. 2005) and as a basis for assessing landscape areas and nature reserves (USHER & ERZ 1994). A common feature of these efforts is generally that they are all aimed at qualitative observation of breeding bird populations (HUSTINGS et al. 1989). This means that year-on-year change (trend or index) is of crucial importance for the statements made by monitoring based on standardized methods, whereas the real figures are not (need not to be) the focus of attention at first.
Greylag Geese *Anser anser* were reintroduced to Lower Saxony at the beginning of the 1980s and have since increased significantly in numbers and largely reclaimed their historical range (KRUCKENBERG 2019). The positive development of the species leads to regional conflicts with agriculture.

Greylag Geese nests are often hidden in large reed beds, on safe islands or in structurally rich alluvial forests near their breeding waters (KEAR 2005). The monitoring of the breeding populations in Lower Saxony is traditionally carried out by the Staatliche Vogelschutz-warte (NLWKN) as part of national and international monitoring tasks in cooperation with the Ornithological Society Lower Saxony (NOV). Until the undertaking of an aerial survey in 2012 (KRUCKENBERG 2019), there was great doubt that the traditional ground-based method of recording breeding birds (SÜDBECK et al. 2005) would deliver realistic results in areas with large reed beds, islands, poor accessibility and particularly high breeding populations.

From 1994, the Hunting Association Lower Saxony (Landesjägerschaft Nieder-sachsen e.V. (LJN)) also recorded suspected breeding geese at hunting ground level as part of its wildlife monitoring (WTE, GRÄBER et al. 2017). In order to compare and evaluate these two methods, in spring 2016, an aerial survey of the areas Großes Meer and Dümmer as well as the Unterems was carried out in parallel to the survey of Greylag Geese (methods and results in KRUCKENBERG 2019) and the regular annual wildlife survey (WTE) of the LJN.

The question of the numerical breeding population is currently of interest not only internationally due to the discussions on the elaboration of an International Single Species Management Plan for the Greylag Goose within the framework of the European Goose Management Platform (POWOLNY et al. 2018), but also in terms to regional conflict management and solutions. Against the background of these conflicts, additionally, the Lower Saxony state parliament in 2014 passed a resolution to establish an overarching working group and a larger research project (LANDTAGSDRUCKSACHE 17-3324). In order to improve the existing records of breeding Greylag Geese in Lower Saxony, it was decided, within the framework of this working group, to update the state of knowledge on breeding populations and to survey the breeding population again in 2016. For this reason, existing ground-based methods were to be supplemented with counting based on aerial surveys and the results should be compared.

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Study Area

The Großes Meer (Aurich district, Natura2000 code DE2509331) and the Dümmergebiet (Diepholz and Vechta districts, Natura2000 code DE3415301) as well as the Unterems (Ems foreland between Papenburg and Emden, Emsland, Leer and Emden Natura2000 code DE2609401) were selected as study areas for the Greylag Goose studies within the framework of this project. The first two areas were initial areas during the Greylag Goose re-establishment in the 1980s (cf. KRUCKENBERG 2019). The Greylag Geese have been breeding on the Unterems since the beginning of the 1990s. All three areas are characterised by closely interlinked areas of grassland or brackish water salt marshes and reed beds with adjacent water areas. In the case of Dümmer and Großes Meer, these are inland lakes, while Unterems comprises the tide-dependent, outward-dike areas of the lower course of the river north of Papenburg to the outskirts of Emden.

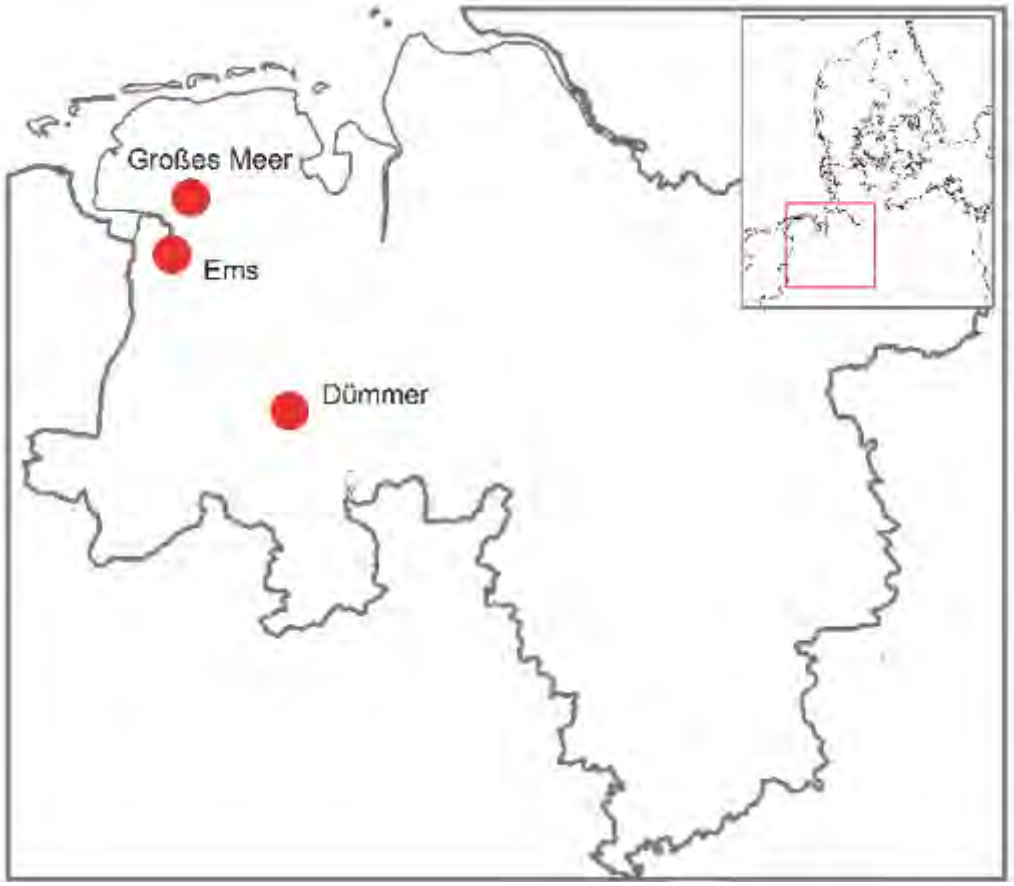

Figure 1. Study area Großes Meer, Unterems and Dümmer in Lower Saxony (Niedersachsen, Deutschland)

The three areas were flown over to determine the breeding sites of the Greylag Geese during the incubation period and photographed area-wide. For this purpose, the areas were flown over in previously defined areas at an altitude of 500 ft (Table 1) with a Eurostar EV97 microlight aircraft, flying at approx.100 km/h. A camera (Nikon D800E, 36 megapixels, Zeiss 35mm lens (Distagon T*2/35mm ZF) and the flight navigation software and hardware from TrackAir automatically generated georeferenced orthophotos (for the days of the flight and the number of images, see Table 1, HOFER & PAUTZ, Altenberge). Greylag Geese prefer to build their nests in secluded areas protected from predators. In all three areas flown over, these are mainly in reed beds and/or on islands.

The orthophotos showed the nesting sites of the Greylag Geese in the reeds. These were later evaluated on a computer with a Geographic Information System (GIS, Esri ArcGIS 10.6®). In this way, geographically very precise nest maps were produced, which were evaluated with regard to area affiliation, habitat type, etc. The method has already been used successfully in Denmark (KRISTIANSEN 1997).

The results of the aerial survey were compared with the methods used for the ground-based nationwide Greylag Goose survey conducted by the Vogelschutzwarte of Lower Saxony (NLWKN) and ornithological society (cf. SÜDBECK et al. 2005, KRUCKENBERG 2019) and the WTE wildlife survey conducted by the hunting association Landesjägerschaft Niedersachsen e.V. (KLAGES & STRAUSS 2008, www.wildtiermanagement.com). However, the two methods, which were carried out on a voluntary basis, differed not only in terms of methods and evaluation schemes, but also in terms of spatial reference. While the VSW / NOV survey volunteers with a handbook and description of methods (KRUCKENBERG 2016) were requested to report the pairs precisely according to defined criteria via www.ornitho.de or in writing as registration form, the WTE data referred to the municipality level (i.e. normally the boundaries of the historical municipalities).

The recording of breeding populations is implemented in Lower Saxony as part of the national and international monitoring tasks by the Vogelschutzwarte and is mainly run by volunteers of the Lower Saxony Ornithological Association (NOV) on site and has been carried out regularly since 1970, but not annually throughout the state. For this purpose, all active participants were called upon to carry out appropriate breeding bird mapping, which is carried out according to the standard method of the German Breeding Bird Atlas (DDA method manual SÜDBECK et al. 2005) and a mapping instruction (KRUCKENBERG 2016) sent to all participants. The volunteers were asked to identify the suspected breeding pairs in the period from 20th February to 15th March and to record flocks of non-breeding and late migrant birds separately. In addition, attendant males in the vicinity of a presumed nest, between-pair aggression and pair flights were also counted as breeding pairs. A single observation during the period of observation was considered sufficient for an evaluation. A targeted search for nests was expressly not desired for nature conservation reasons and would hardly have been possible in many protected areas. The use of a drone was permitted as an alternative possibility with the appropriate permits, but this has hardly been used to date. This recording was supplemented by censuses of goose families and the breeding success in May. This method is based SÜDBECK et al. (2005) and on the Dutch recording standard (VOSLAMBER 2015, KOWALLIK & KOFFIJBERG 2013). For all participants in the countywide survey, mapping instructions with specifications were prepared and sent out. To determine the nationwide breeding population (KRUCKENBERG 2019), observers were then asked to make a self-assessment of their coverage (30%, 50%, 70%, 90%) and the values were multiplied. However, these projections were not included in the following observations. At the same time, the members of the hunting society Lower Saxony (Landesjägerschaft Niedersachsen e.V. LJN) were also recording suspected breeding Greylag Geese at the level of the hunting grounds as part of the general wildlife survey (WTE, coordinated and scientifically accompanied by the Institute for Aquatic and Terrestrial Wildlife Research (ITAW) of the University of Veterinary Medicine Hannover). Within the WTE inquiries on several game species, focussing mainly on small game occurrences, but also opinions were requested (STRAUß et al. 2016, KEULING et al. 2011, TILMANN et al. 2012, RONNENBERG et al. 2016). The inquiries were sent to every tenant and owner of a private hunting ground (approx. 9,100 private hunting grounds) via the hierarchical structures of the hunting association.

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The annual response rate of the survey was 85 to 90 %. The WTE requested numbers of breeding pairs of Greylag Geese from 1994. In 2016, the question on breeding pairs (besides other questions) was formulated as: "Did Greylag Geese breed in your hunting ground?" "How many pairs did you observe?" As the data are available at the level of the hunting grounds and are not spatially broken down further, the area sizes differed (Table 2). The WTE programme has been implemented since 1991 and is financed by the Ministry of Agriculture of Lower Saxony.

Table 1: Details of aerial survey flight data 2016

area	flight altitute	flight date	number of pictures	resolution
Dümmer	500 m	11.04.2016	3.968	5 cm
Ems northern part (1/3)	500 m	09.04.2016	5.896	5 cm
Ems south part (2/3)	500 m	10.04.2016	2.193	5 cm
Großes Meer 500 m eastern part (2/3)	500 m	10.04.2016	1.498	5 cm
Großes Meer 500 m western part (1/3)	500 m	11.04.2016	992	5 cm
Großes Meer 500 m (1 stripes gap closure at the eastern edge)	500 m	21.04.2016	92	5 cm
Großes Meer 150 m (NW part)	150 m	10.04.2019	788	3 cm

Table 2: Surveyed area sizes of used methods

	aerial survey	NOV / NLWKN	WTE
Dümmer total	**1,250 ha**	**1,250 ha**	**38,458 ha**
Dümmer reed beds		**207 ha[2]**	
Dümmer Ochsenmoor		**1,042 ha**	
Großes Meer	**220ha**	**220 ha**	**235 ha**
Lower Ems	**1,403 ha**	**1,800 ha**	**155,363 ha**

[2] BLÜML et al. 2008

Results

As expected, the results of the different methods differed (Table 3). Table 2 already shows a fundamental problem for a comparison between the three methods: in two out of three areas, WTE differs very significantly in terms of area size.

An exception is the Großes Meer, where the covered area of all three methods were very similar and a comparison seems possible. The area of the volunteers of the NOV corresponds approximately to that of the aerial survey due to the precise location information, although the areas near the dikes had to be added.

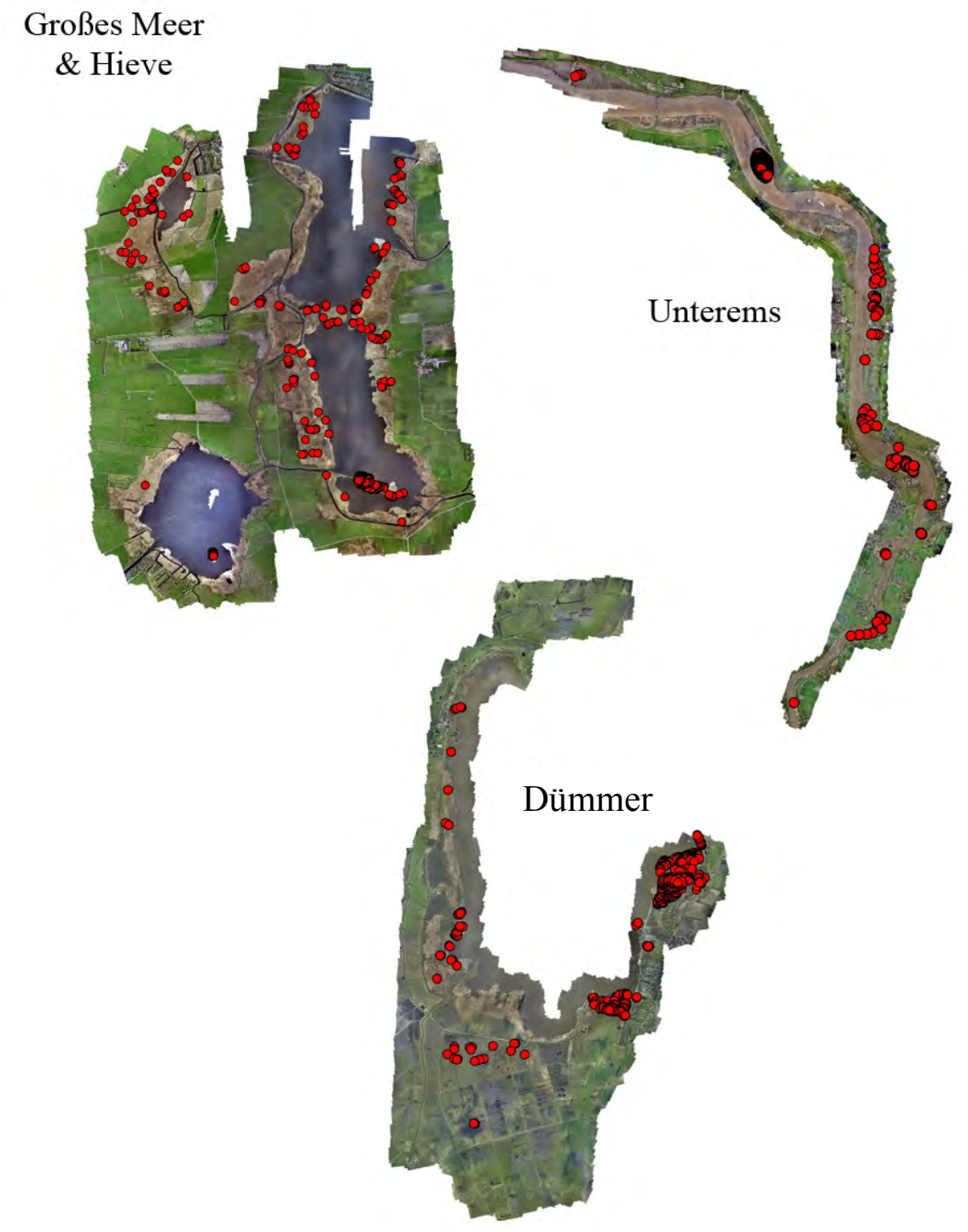

Figure 2. Nesting sites (not number of nests) of the Greylag Goose (red dots) at the Großes Meer and Hieve (East Frisia), Dümmer and Unterems in 2016, determined using aerial survey.

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Table 3: Results of the 2016 aerial photo evaluation with the results of the VSW and WTE surveys (BP = breeding pairs).

	aerial survey	NOV / NLWKN	NOV corrected	WTE
Dümmer	558 Nests	130 + ~ 280 BP	~ 490 BP[1]	*358 BP*
Dümmer reed beds	512 Nests	~ 280 BP (49 BP)*		
Dümmer Ochsenmoor	20 Nests	46 BP*		
Großes Meer	424 Nests	111 BP	222 BP[2]	271 BP
Lower Ems	1.193 Nests	429 BP	848 BP[2]	*541 BP*

* data NERI, pers. com., 1 coverage factor 80% ² coverage factor 50%

Aerial photo analysis revealed high breeding numbers in all three areas. This evaluation also showed that the nests are not widely distributed, but are often concentrated and in loose colonies. Due to their methodology in the field, and taking into account self-assessment, NOV volunteers achieved a coverage rate of 52%, 71% and 86% respectively. At the Großes Meer, WTE achieved a coverage rate of 61%. In the other areas, the coverage appeared to be significantly lower due to the ten times larger area.

The results from the Dümmer (Ochsenmoor) also showed the limitations of flying: here the nests were hardly visible from the air due to the large number of resting non-breeding birds and the structure of the terrain. Therefore, the results in open terrain were even worse than those of volunteers in the field.
The NOV method covered 68% of the nesting numbers in the reed beds, but less than half of the nests in the wet grassland could be identified from the aerial photographs taken during the flight.

Figure 3: Photo of the Hatzum Sand, an isle in the river Ems, with reed beds, during aerial survey 2012 (Photo H. KRUCKENBERG).

Discussion

At the beginning of this study it was suspected that the breeding numbers of Greylag Geese in the core areas of the occurrence could not be reliably determined using traditional methods. The three study areas are characterised by large water bodies (two large lakes and an estuarine and tidal river area), extensive reed beds and also high breeding populations of Greylag Geese. Long distances and the high mobility of the birds make synchronous recording almost impossible. As a consequence, we have long been unsure how reliably the results of traditional monitoring methods represent real stocks. The results of a preliminary investigation in 2012 (KRUCKENBERG 2019a) were confirmed by the current study. On the background of the new requirements for monitoring under the AEWA - European Goose Management Platform EGMP, we wanted to validate the existing methods.

Figure 4. Photo detail: Egg roll behaviour of a breeding Greylag Goose apparently after a raven crow attack (Hatzum sand 19.4.2012, photo: H. KRUCKENBERG, Nikon 7100, 200mm 5,6, flight altitude 500ft)

Trend analyses require consistent methodology year by year

Knowledge about long-term changes in animal and plant populations plays a fundamental role in nature conservation. Only in this way can the protection of species, a protection regime in protected areas or at international level be reviewed and only in this way can protective measures be taken at an early stage if necessary. For this reason, great importance has been attached to the recording of population sizes since the international waterbird censuses (IWC) began in the 1950s. However, the results of these censuses, which are largely based on the work of volunteers, are only approximations, as it is hardly possible to carry out a comprehensive census of migratory or scattered species.

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If breeding bird monitoring is always carried out in exactly the same way, relevant trends in the development of, for example, breeding bird populations in relation to the area under investigation can be derived, especially from long data series. In the regional, national or international overview, these results are usually used as a basis for extrapolations or the determination of population trends or indices. Quantitatively exact figures are therefore not necessarily the goal of these monitoring projects.

This comparative study shows first of all that the two ground-based survey methods can produce relatively similar results, even though an identical area reference would be required for a direct comparison. However, there are very clear differences between the monitoring approaches used so far and the results of an aerial photograph analysis. The differences between the different results can be explained purely methodically: in one method, nests are directly surveyed from above; in the other two methods, pairs of geese are mainly distinguished from the other non-breeders present and surveyed based on their behaviour. The birds to be surveyed do not even stay in the nest area, but are counted during the nest initialisation phase or are on their way to the daily feeding areas during a nesting break. For this reason, the results of the volunteer survey methods of the NOV as well as the wildlife survey (WTE) deviate significantly from the results of the aerial survey, even if they were calibrated by self-assessment projections which in fact doubled the results of Ems river and Großes Meer (KRUCKENBERG 2019).
The lack of spatial comparability between the two ground-based methods makes a final assessment very difficult. These differences seem to become even greater the more remote the breeding sites of the Greylag Geese are and the higher the breeding pair densities are. While in the open landscape of the Ochsenmoor, the ground-based methodology of NOV even provides better results by detection of the female incubating on the nest, the nesting sites in the wide, inaccessible reed beds of the Ems, Dümmer and Großes Meer are only marginally successful for both ground-based monitoring models. This is of course directly related to the accessibility of the areas. On all three waters, reedbeds are the main breeding grounds of the Greylag Geese. In the nature reserves, these are generally only accessible to a limited extent during the breeding season, as disturbances to other birds breeding in the reeds is discouraged. In some areas, e.g. the Ems, it is also very dangerous to enter the reed beds, which are higher than a man's height, as the tide of the Ems has dug deep holes and tideways here. A direct nest search is therefore not possible or only possible to a very limited extent for the surveyors, and in any case not desired.
For these reasons, the surveyors were not offered nest searching as a method, but were instead asked to identify breeding pairs indicating their territory (i.e. during the breeding breaks away from the actual nest). Given the size of these areas and the mobility of the geese, this is often very difficult on site. This is particularly so on the Ems river, where birds fly from the main breeding island of Hatzum Sand to both banks of the river to search for food. A complete survey there using traditional methods is hardly possible or would require a large number of synchronously active surveyors.
This is, of course, also true for WTE, although it also operates on a much larger spatial scale and without point-related data. For this reason, the ground-based methods are not quantitatively comparable.
Finally, it should be noted that the results presented here, probably mainly are valid for areas that are comparatively large, inaccessible, and with high numbers of breeding pairs. The currently used standard methods is more suitable for smaller areas such as ponds, small lakes or even parks to achieve valid results.

The involvement of volunteers ("citizen science") in nature conservation and species protection has long made it possible to cover large areas regularly, systematically and cost-effectively. However, this also requires a broad dissemination of knowledge about the methods in order to ensure valid evaluation and subsequent comparability of the results. At present, both voluntary methods (NOV / NLWKN according to SÜDBECK et al. 2005 and WTE) do not seem to reflect the actual breeding population. Last but not least, the hidden way of life of the Greylag Geese during the nesting season makes high methodological demands on the recorders. Moreover, the deviations from the results of the survey vary from area to area, so that a high counter and/or area influence must also be assumed. On average, however, the two methods are not far apart, although comparability is severely limited due to different area delimitations. It seems quite possible that training courses and intensive regional coordination could qualify participants in the two methods for a future monitoring programme, thus expanding the qualitative monitoring of breeding birds and ensuring it in view of a rapidly ageing society.

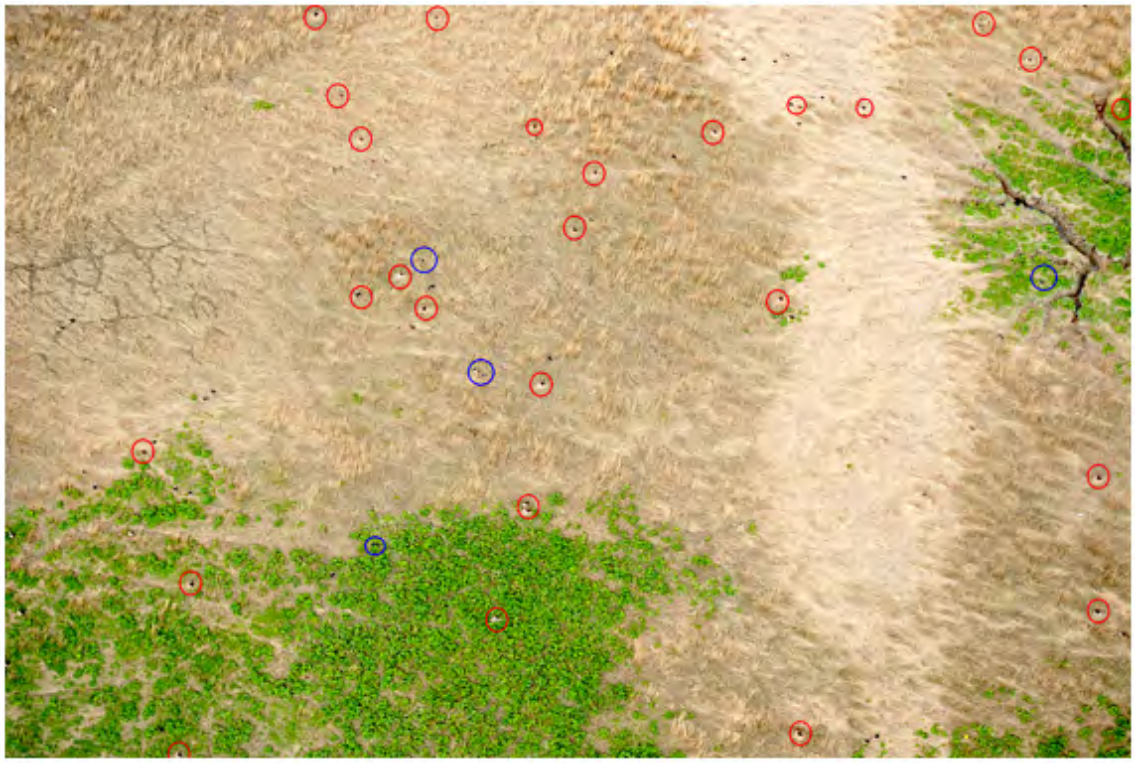

Figure 5. Photo detail. Evaluation of an aerial photograph of the reed beds on Hatzum Sand 2012. Nests of Greylag Geese in red circles, nests of Barnacle Geese *Branta leucopsis* in blue circles (Photo: H. KRUCKENBERG).

Due to the above-mentioned problems caused by the terrain, volunteers often tent to identifying only pairs with goslings for various reasons (cf. KRUCKENBERG 2019). In the three areas under study this wasn`t the case, but for countywide surveys this is a problem. At the Großes Meer, KRUCKENBERG (2019a) was able to show that a high proportion of the clutches do not hatch out successfully.
The percentage of successful hatchings varies between years and also between different breeding areas. On the Ems river, storm surge events can lead to large numbers of clutches being lost, with the result that family records greatly underestimate the original breeding population.

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It is also conceivable that the results of the survey may differ in the number of nests from those of the breeding pairs. After early loss of clutch or convoluted breeding under high breeding densities the number of offspring is low in Greylag Geese (HUDEC & ROOTH 1970) and may distort the results of aerial surveys, although this may be negligible.

The exclusive recording of family groups or a summer goose count (KOWALLIK & KOFFIJBERG 2018, NIPKOW 2019) are also not very suitable for determining the actual breeding pair numbers, as weather, predation and disturbances have a considerable influence on the breeding success and thus on the number of geese and young birds later in the season. The later the recording takes place, the stronger the effect of these factors. These influences can also vary considerably from one region to another. The annual determination of demografic parameters (hatching and breeding success, gosling survival) is a fundamentally necessary basis for management or population control concepts.

As long as the identification of population trends is the main focus of monitoring schemes, the coverage is generally less relevant, whereas the exact maintenance of methodological standards is elementary. Voluntary monitoring, for example, if carried out accurately, regularly and comprehensively, fulfils the statistical requirements for drawing up Red Lists, evaluating conservation measures and analysing international stock trends.

Figure 6. Photo detail. Evaluation of an aerial photoraph of the reed beds at Großes Meer 2012. Nests of Greylag Geese in red circles, and clusters of dumped eggs (Photo: H. KRUCKENBERG).

Paradigm shift through AEWA Management Plan requires adjustments to monitoring

When quantitatively reliable data are required (designation of protected areas if based on population numbers of a species), more accurate population figures are needed. The international AEWA Single Species Management Plan for the Greylag Goose (POWOLNY et al. 2018) also aims for real numbers and not trends. In this case, reliable stock figures are essential and thus fundamentally challenge traditional monitoring methods.

In view of a concrete requirement for quantitatively reliable stock numbers, a fundamentally new, methodologically modified concept is therefore needed. A mixed concept would be conceivable here, consisting of flying over areas that are difficult to survey from the ground and using ground-based methods for small water bodies and wet grassland areas. While the areas presented here could be efficiently surveyed by air due to their size, it may be more helpful for smaller lakes and pond areas to use unmanned aerial vehicles (UAV) (REINTSMA et al. 2018).
However, with good knowledge of species and locations and in suitable terrain, the monitoring methods used so far by SÜDBECK et al. (2005), KRUCKENBERG (2016) are equally suitable for providing valid quantitative figures. Against the background of demographic change, it seems to make sense to combine volunteer forces and develop common or at least comparable methods between WTE and NOV breeding bird monitoring. This is especially true of hunters, who are observing geographical areas that are often not sufficiently observed by ornithologists due to lack of interest, and should be more closely involved.

Consideration should therefore be given to the conditions under which they can be motivated, qualified and supervised to participate in the national monitoring system.
The WTE should also strive for a better spatial resolution of data collection.

Current international efforts to establish a hunting management system adapted to demographic parameters (adaptive harvest management, JOHNSON et al. 1993, see also APOLLONIO et al. 2017, VICENTE et al. 2019) urgently require reliable annual figures. The identification of breeding pairs, non-breeding and late migrating birds as well as the reliable determination of fledglings in the autumn censuses to determine breeding success must therefore be trained and applied by all volunteers.

Outlook on further research needs

The available results clearly show that quantitatively reliable breeding pair numbers in large, unclear areas cannot (only) be determined using ground-based methods. This does not indicate the extent to which ground-based methods can be used for smaller water bodies, large wetland areas, ponds or parks. Corresponding comparative studies are still missing.

In addition, our results reveal differences between the results of the two ground-based methods. It should be clarified to what extent continuous training of volunteers from bird protection and hunting communities can improve the results to such an extent that, for example, comparable data from aerial surveys can be obtained with a uniform correction value. In addition, it must be assumed that the strong individual deviations of the respective surveyors also occur at the other locations.

In order to further develop monitoring to achieve realistic results, a supra-regional categorisation of breeding areas is necessary to determine where ground-based surveys are useful and where flights are likely to provide better results.

Some methodological notes

A flight survey with the aim of capturing the nests of grey geese over a large area was first used in Lower Saxony in 2016. A similar experiment had already been carried out in 2012 (KRUCKENBERG 2019a), but was technically much simpler using a Cessna and a normal digital camera. For repetitions we therefore want to summarize our experience to an improvement.

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First of all, it must be made clear that an aircraft has considerable advantages over a UAV in terms of practicability and range. If, for example, the Unterems were completely photographed in 2012 in just under 2.5h, this is hardly conceivable with a UAV, as battery capacity and legal position (drone use only in the visual range) do not allow this.

For the later evaluation of the aerial photographs, it is imperative that they are taken vertically and the area is flown over in corresponding strips. By only following this method, the images can be georeferenced automatically or manually later. The images should be slightly overlapping or matching. The above presented processing of orthophotos from a large number of images leads to good results regarding terrain relief or habitat types, but makes the dry reed from the previous year, appear like a blurred veil and complicates the evaluation.

When using the minimum flight altitude of 500ft, we recommend the use of a 200mm fixed focal length with the widest possible aperture, as this also allows a strong zoom-in later (see Figure 4). The use of a shorter focal length or a wide-angle lens naturally enlarges the captured area and thus reduces the time required, but results in less detailed photos, which require more effort when evaluating them on the screen later.

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An improved leg-hold noose trap for capturing Brent Geese, *Branta bernicla*, in water

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Abstract

An improved leg-hold trap, which can be set under water, was developed to capture Brent Geese wintering and staging in two locations in Japan. A total of 14 Brent Geese, one Eurasian Wigeon, and two Slaty-backed Gulls were captured using these traps during 22 trapping days in 2019 and 2020. The traps were found to be resistant to waves and tides, because approximately 80% of leg-loops were still effective even when traps were set in the water under conditions of moderate tidal change and wind speed. These traps can be set quickly, and on various ground surfaces, such as concrete revetments, rocky shorelines, and sandy beaches. We believe that these traps may also be applicable for capturing other bird species which are found near water and are difficult to capture using existing methods.
Keywords: Brent Goose, leg-hold noose, capture technique

Introduction

Leg-hold nooses, including Bal-chatri traps and noose mats, have traditionally been used to capture birds such as raptors (SCHEMNITZ et al. 2009), shorebirds (MEHL et al. 2003; MCGOWAN & SIMONS 2005, HALL & CAVITT 2012), and geese (TAKEKAWA et al. 2009; SIMEONOV et al. 2014). These traps are usually used on inland habitats, but may also be used in water with floating-fish snares (CAIN & HODGES 1989). Although SAWA et al. (2019) developed a method to capture Brent Geese *Branta bernicla*, in intertidal habitats in staging/wintering sites, effective use of the traps was limited to certain conditions including low tidal ranges and calm winds, because the leg-hold nooses were easily pushed over by strong winds and waves. In this study, we developed improved leg-hold noose traps and new methods to set traps in the water in such a way that they were more resistant to waves and tides.

Methods

This study was conducted in February and March, 2019 and in March 2020 at Hakodate, Hokkaido, Japan (41.77°N, 140.82°E), and in October 2019 at Notsuke Bay, Hokkaido, Japan (43.58°N, 145.23°E). Hakodate supports over 400 Brent Geese during the winter (HIRATA et al. 2015), whereas Notsuke Bay supports approximately 8 600 Brent Geese during the autumn (FUJII 2017; SAWA et al. 2019).
The traps were produced according to the following procedures. A total of six traps were created.

Materials

- Fluorocarbon fishing line (10 lb test designation, indicating the breaking strength of the line)
- Grid mesh panel (60 cm × 90 cm)
- Plastic tape (black, width: 10 mm)
- Paper clips (length: 23 mm)
- Anti-tangle tubing for fishing line (black, inside diameter: 1.5 mm)

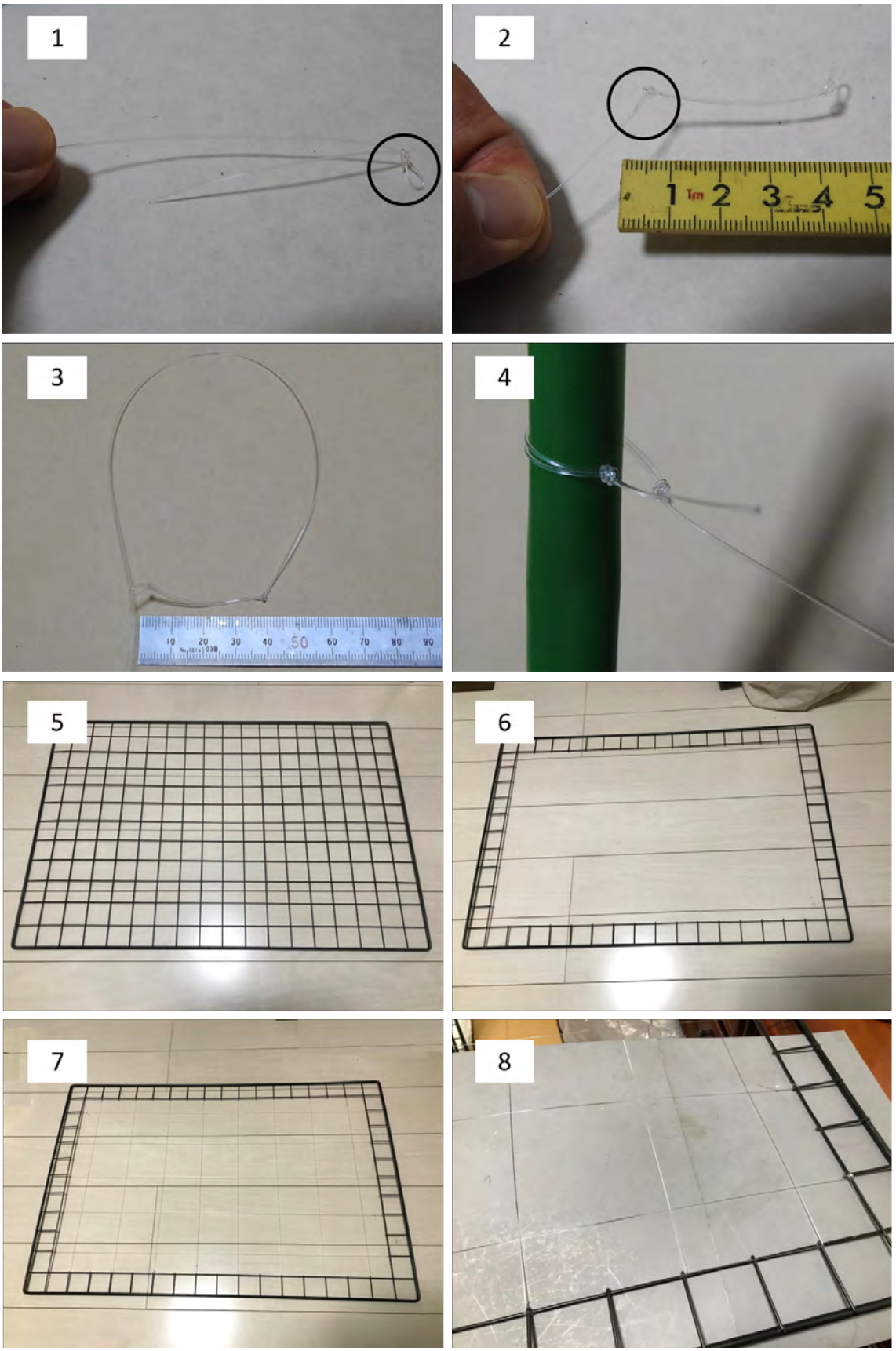

Figure 1-1. Procedures used to create improved leg-hold noose traps. See the Methods for detailed explanations of each step.

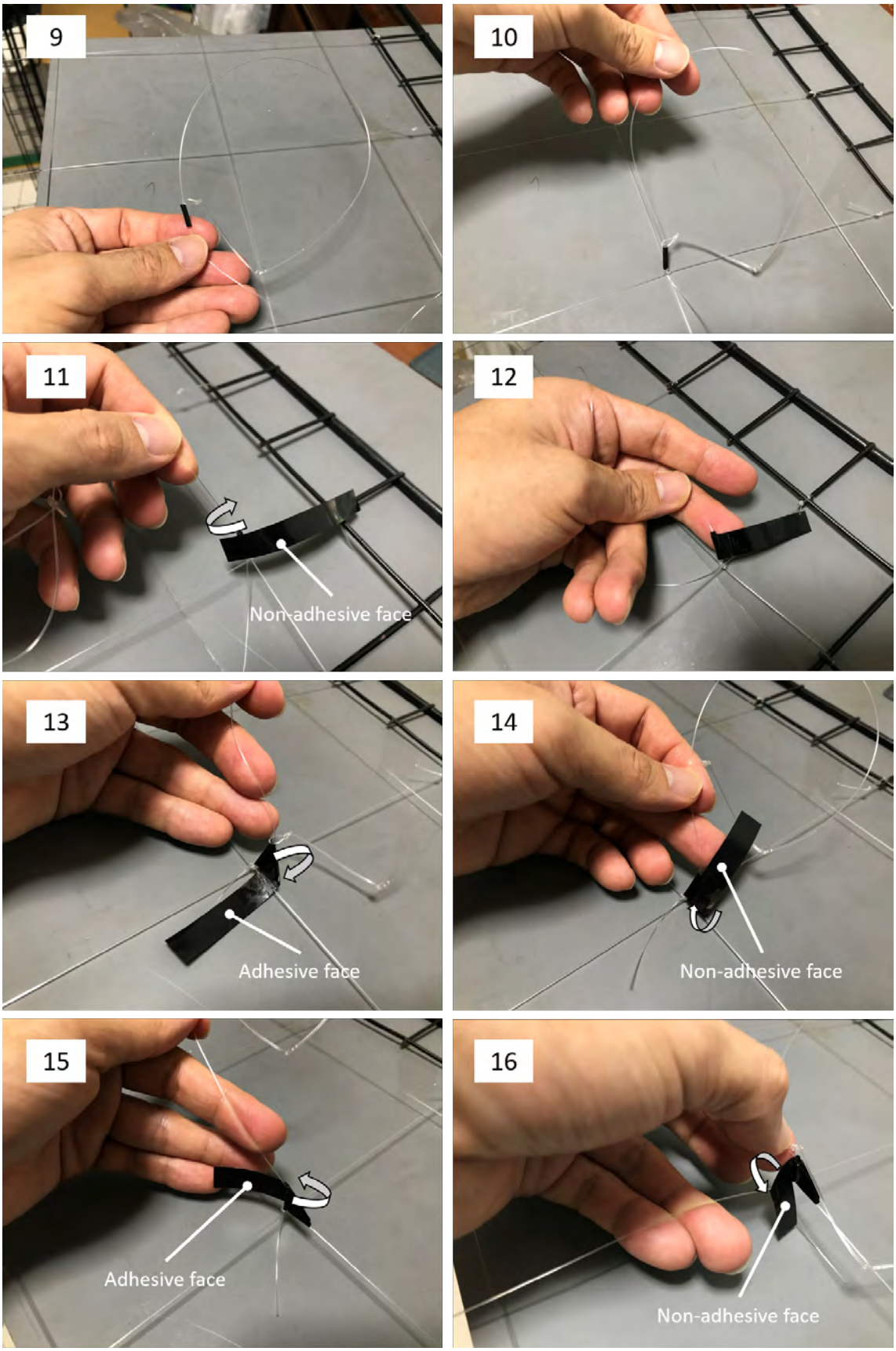

Figure 1-2. Procedures used to create improved leg-hold noose traps. See the Methods for detailed explanations of each step.

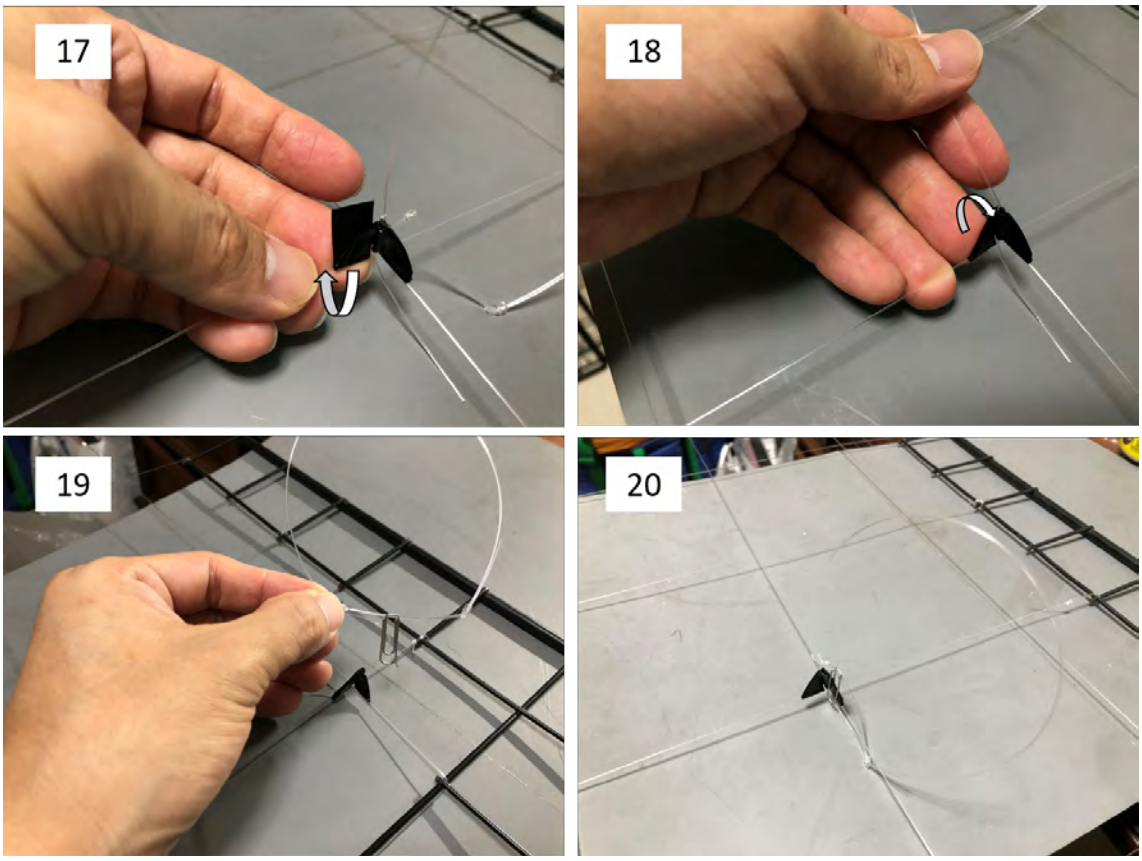

Figure 1-3. Procedures used to create improved leg-hold noose traps. See the Methods for detailed explanations of each step.

Procedure for creating the traps (see Figure 1)

1. Cut the fishing line to a length of 45 cm, and make a small loop using a figure eight knot 7-8 cm from the end of the line.
2. Tie the second knot 4 cm from the first knot. The first knot forms a noose for capturing a bird. The second knot serves as a stopper to keep the noose from becoming too tight and cutting into the leg of the snared bird.
3. Make a noose by passing the other side of the fishing line through the first loop.
4. See Figure 1 panel 4 for an image of how the noose works.

5-6. Cut and remove the inside of the grid mesh panel. Steps 5 to 8 are measures to ensure the traps are inconspicuous when set in the field. These steps can be skipped if you choose to use the grid mesh panel as is.

7-8. Attach fishing line to the inside of the grid mesh panel, using a latticed pattern. In this case, fishing line was attached to every other square in the mesh, but this can be changed according to the desired density of the nooses.

9. Cut the anti-angle tubing into a 1 cm long piece, and pass the fishing line through it.
10. Tie a noose (diameter: 8 cm) to the latticed fishing line.
11. Cut the vinyl tape into a piece of 10 cm, and attach it to the tube 1 cm from the edge of the tape.
12. Wrap the tube with the tape.
13. Fold the tape down from the upper end of the tube as a starting point, and pass the tape under the fishing line.
14. Fold the tape up to wrap the fishing line.
15. Turn the tape in the direction of the tube, and make a triangle.

16. Turn the tape 90° towards the triangle made in step 15, and fold the tape down from the upper end of the tube as a starting point.
17. Fold the tape up by wrapping the fishing line with it.
18. Turn the tape along with a side of a triangle. Cut the tape to a suitable length.
19. Pass a paper clip between the first and the second knot.
20. Attach a paper clip to the triangle. Attach 25-30 nooses to one grid mesh panel.

Setting the traps

The traps were set at the mouth of a small river in Hakodate, a location frequently visited by Brent Geese to drink fresh water (SHIMADA et al. 2013). The location of the traps was adjusted according to the tidal change, because the depth at which the traps can be used is between 5 and 15 cm. The traps were exposed, and birds could easily recognize the traps when the water was less than 5 cm deep, whereas the traps did not reach the birds' legs when the water depth exceeded 15 cm. In order to place the traps in such a way that they would be at the appropriate depth range (5-15 cm) 30 minutes after they were set, traps were set on land during the rising tide, and at depths of 20-30 cm during ebb tide (Figure 2). Traps placed around the sandy beach at the river mouth were set by burying the edge of the traps in the ground (Figure 2). The traps were connected to each other with cable ties, and fixed with metal stakes or using 2 kg concrete blocks. In Notsuke Bay, the traps were set in a sand bar where Brent Geese rest, preen their feathers, and obtain grit that aids in the digestion of eelgrass leaves and shoots (SAWA et al. 2019). The setting procedures were the same as in Hakodate.

Figure 2. (a) Six traps were created and set on a sandy beach near a small river visited by Brent Geese to drink fresh water. Traps were set on land during the rising tide, and anchored by a concrete block. (b) A Brent Goose was captured by a trap set in (a). (c) Traps set on a concrete revetment in the water. (d) Exposed traps when the tide rolled out. Most leg-loop nooses remained upright and open when the waves washed out.

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Results

During trapping attempts conducted on a total of 22 days, 14 Brent Geese, one Eurasian Wigeon (*Anas penelope*), and two Slaty-backed Gulls (*Larus schistisagus*) were captured at various trapping sites, including concrete revetments, rocky shorelines, and sandy beaches (Table 1).

Table 1. List of birds captured in this study using improved leg-hold traps and the environmental conditions at the time of capture. U: Unknown, F: Female, M: Male, A: Adult, J: Juvenile

Date	Species	Sex	Age	Capture site	Environment	Wind speed (m/s)	Tide differences during 30 min before capture (cm)
10 Feb 2019	*Branta bernicla*	U	J	Osatsube, Hakodate	Concrete revetment	2,1	-2
11 Feb 2019	*Branta bernicla*	U	J	Osatsube, Hakodate	Concrete revetment	2,6	-9
12 Feb 2019	*Branta bernicla*	F	A	Osatsube, Hakodate	Concrete revetment	2,8	-8
21 Mar 2019	*Branta bernicla*	F	J	Shinori, Hakodate	Rocky shoreline	4,5	7
23 Mar 2019	*Branta bernicla*	F	A	Osatsube, Hakodate	Rocky shoreline	3,2	4
23 Mar 2019	*Larus schistisagus*	U	A	Osatsube, Hakodate	Rocky shoreline	4,9	7
25 Mar 2019	*Branta bernicla*	M	A	Shinori, Hakodate	Rocky shoreline	1,8	9
27 Mar 2019	*Larus schistisagus*	U	A	Kakkumi river mouth, Hakodate	Rocky shoreline	4,7	-9
29 Mar 2019	*Branta bernicla*	F	J	Shinori, Hakodate	Rocky shoreline	7,5	-8
30 Mar 2019	*Branta bernicla*	F	J	Nezaki, Hakodate	Sandy beach	5,5	-5
18 Oct 2019	*Branta bernicla*	F	J	Notsuke	Sandy beach	2,4	-3
18 Oct 2019	*Branta bernicla*	F	A	Notsuke	Sandy beach	2,4	-4
21 Oct 2019	*Branta bernicla*	U	A	Notsuke	Sandy beach	2,0	-1
21 Oct 2019	*Branta bernicla*	U	A	Notsuke	Sandy beach	2,4	1
23 Mar 2020	*Branta bernicla*	F	A	Nezaki, Hakodate	Sandy beach	5,0	8
25 Mar 2020	*Anas penelope*	M	A	Zenigame, Hakodate	Rocky shoreline	8,6	2
26 Mar 2020	*Branta bernicla*	M	J	Nezaki, Hakodate	Sandy beach	6,5	3

The water depth when the birds were captured was approximately 10 cm, which was shallow enough for Brent Geese to walk in. When the traps were under water, Brent Geese were not cautious around the traps. When the traps were exposed, Brent Geese usually circumvented the traps or walked on the traps avoiding the nooses. It was difficult to capture several birds at once because the captured birds usually called and flapped their wings, causing the rest of the flock to fly away.

The time it took two people to set six traps was within a few minutes. The maximum tidal change was ± 9 cm during the 30 minutes before capture, and the maximum wind speed was 8.6 m/s (Table 1). Despite the weather conditions, approximately 80% of the nooses remained upright and opened. However, most of the nooses were washed out at locations where there were a lot of floating seaweeds, and no birds were captured under such conditions.

Discussion

The improved methods for setting leg-hold noose traps in the water described here proved to be applicable for various ground surfaces. It took two people only a few minutes to set the improved traps, while it took two people approximately 30 minutes to set normal leg-hold noose traps (SAWA et al. 2019). The reduced time required to set the traps is an important factor to minimize the disturbance to the targeted birds.

The plastic tape and anti-tangle tubing were effective in keeping the nooses upright, and the paper clips prevented the nooses from being washed out by waves and tides. However, the nooses were washed out by floating seaweed.

Although stronger paper clips would make traps more resistant to the floating seaweed, using stronger paper clips would also affect the capture efficiency, because such clips would not be released smoothly when birds are snared. The birds became cautious around the traps after the first bird was captured, and it was difficult to capture a second bird as long as the same flocks used the surrounding area. This was partly due to the low density of wintering Brent Geese (fewer than 150 individuals in March 2019 and 2020 in Hakodate). To capture more birds, several capture sites should be prepared, and/or additional trapping sessions should be conducted.

In this study, we were able to enhance the versatility of leg-loop noose traps, adapting the traps so that they could be used on a variety of ground surfaces, improving the traps' resistance to waves and tides, and reducing the time it takes to set the traps. We believe that the improved leg-loop noose traps described in this study could be used to efficiently capture other water birds in intertidal and wetland habitats, by adjusting the size and configuration of the traps to the target species.

Acknowledgements

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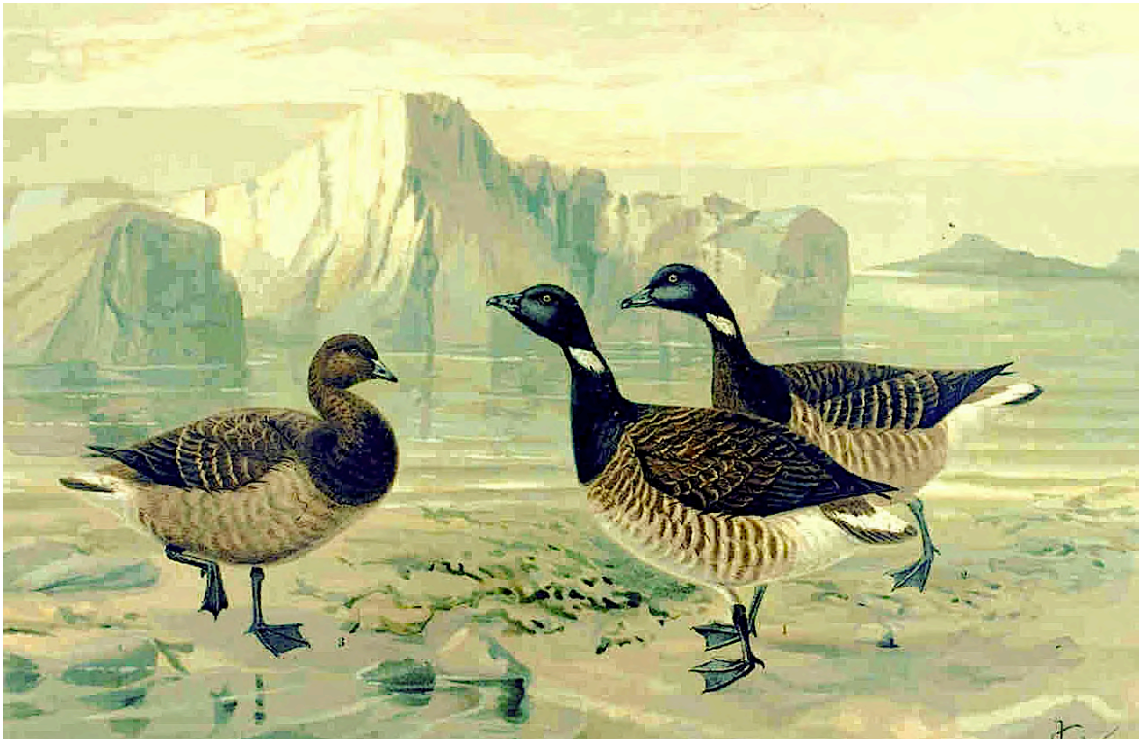

Obituary: Jules Philippona (1924-2020)

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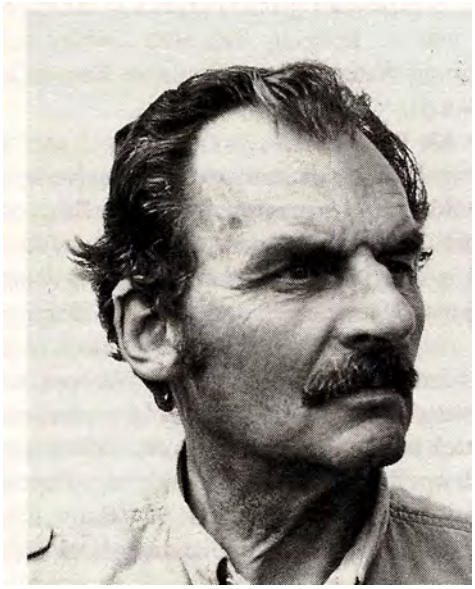

Jules Philippona (19-04-1924 – 18-11-2020) was one of the leading goose researchers from The Netherlands, who passed away on the 18th of November 2020.
Jules was born in Blaricum a small village in the province of North-Holland. When he was seven years old his family moved to the neighbourhood of Haarlem, where he spent his youth. At the age of 15 he entered the "Nederlandse Jeugdbond voor Natuurstudie" (NJN), an organization for the study of nature for young people, where his interest in nature was focused on birds.

After World War II he studied social geography and became a teacher of geography and taught at secondary schools in a number of different towns in The Netherlands.
Besides his work as a teacher he started goose monitoring and goose studies from 1958 onwards. In this period he made a number of goose study journeys to the former German Democratic Republic as well as to Hungary and Romania. Later he also visited Iceland to study Pink-footed Geese and Northern America to study Snow Geese.
Apart from geese he also studied and monitored other bird species, like tits, meadow birds, swallows and larks and he was an early and prominent volunteer of the national bird monitoring schemes of The Netherlands.

White fronted Geese at the Ganzendiep, Kampereiland, 2nd of March 1976 (photo: Jules Philippona)

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As a nature-loving teacher Jules never could keep his findings for himself. He always tried to communicate his knowledge with the public, with a special focus on young people whom he wanted to inspire for nature and nature research.
About all his findings he wrote many publications. Besides a considerable number of articles in national and international journals he wrote a monography about the White-fronted Goose ("Die Blessgans" (1972), Neue Brehm Bücherei) and the Pink-footed Goose ("de Kleine Rietgans" (1981), Kosmos Vogelmonografieen) and was one of the authors of the standard work about geese in The Netherlands "Wilde ganzen in Nederland" (1976), written by Tom Lebret, Theo Mulder, Jules Philippona and Arend Timmerman.

I first met Jules in the 1980s and we had regular contacts since then. I learned a lot from him. He was one of the first that collected data about the annual percentage of juveniles among the wintering geese. He taught me how to count feeding and flying geese and how to assess the number of juvenile geese in a group.
I am thankful that I knew him and I am proud to have had him as one of my teachers.

Jules Philippona died in the blessed age of more than 95 years and with his death, the goose community lost one of its oldest members.

Obituary: Alexander Andreev (1948-2020)

Alexander Kondratyev

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A prominent Russian scientist, the Head of Ornithology Laboratory of the Institute of Biological Problems of the North (Russian Academy of Sciences), Prof. Dr. Alexander Andreev has passed away 7 December 2020.

Alexander Andreev was born on 12 November 1948 in Leningrad.
After graduation from the Leningrad State University in 1971 under supervision of Prof. Malchevskiy and R. Potapov, he moved to Magadan where he was employed by the Institute of Biological problems of the North for his entire life.

Andreev's studies in 1970s dealt with behavioral, ecological and physiological adaptations of birds to winter conditions of the Subarctic. He developed and used sophisticated instruments and methods for studying avian winter bioenergetics. These sensors and photo-registration tools were made to function in extreme cold, completely off the grid in the middle of the Siberian wilderness. He was the first to measure ambient temperature in snow burrows of Hazel Grouse while the outside temperature was reaching a staggering -55C. These working conditions were as extreme as they can possibly get on this planet. To be able to carry out his field studies, Andreev had to travel on foot or self-made skis more than a hundred of kilometers in the middle of North-Siberian winter. He had to build his own log cabins in the taiga and survive there completely alone for months without any possibility to communicate with the outside world. He discovered many phenomena of birds' winter life, such as unique postures of birds that optimize their bodies' surface to volume ratio and behavioral strategies in digging their subnivium shelters. These studies were the basis of his PhD thesis defended in 1977 and received a governmental recognition award in 1981.

Andreev started as a junior researcher in 1971 and by 1986 he became the Head of the Ornithology Laboratory. Under his leadership it became a vibrant research group, working on the fundamental concepts of avian ecology and their applications for conservation of the fragile ecosystems in the Arctic.
Ten more years of Andreev's life were devoted to the secrets of summer life of birds in the Arctic tundra. This research was focused on studies of nutrient and energy balance in various bird species during their reproduction period. He designed ingenious field methods and instruments to study heat loss during incubation and published prolifically on avian energetics in the tundra. These studies resulted in the DSc thesis which he defended in 1990.

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One of his favorite group were Grouse (Tetraonidae) which were the object of his student capstone paper at the Leningrad University and of his PhD thesis. Detailed ecological studies of individually marked population of Siberian Grouse in the Amur taiga resulted in the World's first monograph on this endemic species, and a long series of detailed studies of Black-billed Capercaillie resulted in a number of papers and books on the breeding biology, winter ecology and lek structure of one his most beloved birds.

A charismatic leader, he organized several national and international ornithological Symposia and Conferences. In 1986 he and his Magadan team hosted the All-Union Symposium "Study and Conservation of Birds in Northern Ecosystems". In 1990 he attracted the world attention to the importance of international collaboration in conservation of Arctic geese populations in East Asia, and organized the international conference "Wild Geese Populations in Northern Asia", also held in Magadan. In 1992, 1996, 1998 and 2000 he initiated other conferences that were held across Siberia and Russian Far-East. Among them were the International Conference in Blagovestchensk "Monitoring of East-Asian Geese Populations" and "Red Data Book and Important Bird Areas in Asia", held in Khabarovsk and Shushenskoje.

In 1986 Alexander Andreev, together with A.Ya. Kondratiev established an ornithological station at the Talan island, Sea of Okhotsk. The station was instrumental to the study and monitoring of sea-bird colonies. The island of Talan, which hosted ca. 1 mln birds was eventually featured in many natural history documentaries. To date it is the only surviving permanent field station in Russia for the studies and monitoring of colonial sea birds populations.

A major scientific interest of Andreev were Wetlands and Waterfowl of the North-Eastern Russia with the Arctic geese as the most important group due to long-term decline of their Siberian populations.

International collaboration started after the International Geese workshop held in Magadan in 1990 and resulted in a series of long-term marking and monitoring studies in different parts of Northern Yakutia and Chukotka under his permanent leadership and deep personal involvement. Already after the first field seasons, new fascinating results were received, revealing complex ways of migratory connectivity between different populations of different species with wintering grounds in China, Korea, Japan and North America. In 1997 he published the first inventorial paper of goose populations in North-East Asia and, in 2009 – a comprehensive review on the individual energetics and population dynamics of geese species in North-East Asia. A pioneering joint Russian-Japanese project on the Lesser Snow Goose restoration in East Asia started in 1993 in the tundra habitats of Anadyr lowland, the results of which can be seen now on the Japanese wintering grounds. Famous European, Japanese, Korean and Alaskan scientists were involved in several kinds of cooperative research of bird ecology, migrations and conservation. In 1995, Andreev received a special award of the "Japanese Society for promoting the progress of Science". In 1996 he became a vice-president of the Asian Council of BirdLife International, working in the editorial board of the comprehensive volume "Threatened Birds of Asia: The BirdLife International Red Data Book", published in 2001.

Not only rare bird inventories, but their habitats were also Andreev's research interest. Being a restless traveler, he visited and had a deep knowledge of many remote corners of North-East Asia that are important for supporting bird populations.

In 2001 he prepared and edited an inventory of North-East Asia Internationally Important Wetlands, that became the 4th volume of the "Wetlands of Russia", a book series published by Wetlands International.

In 2013, he prepared and published the book "Natural Treasures of the Okhotsk and Kolyma Area" that comprised not only an inventory of the network of Specially Protected Areas of the Magadan region, but also a perspective approach to establish a working system for nature conservation in this region. In 2007, he co-authored with M.T. Mazurenko an illustrated book "Notes on the Biology of the Northern Plants" which is an example of complex natural history approach to the phenomena of biological adaptations to Arctic conditions.

Andreev was an active and talented team leader with an enthusiastic team of laboratory colleagues who held him in deep respect. Eight PhD dissertations were successfully defended under his supervision, and his former students are working all over the World. He was a talented writer, photographer and artist with birds being, of course, the favorite objects of his drawings. He was also a great storyteller, with a deep knowledge of Arctic ethnography and exploration history that he was always ready to share.
Hurrying to live, he was full of plans, constantly moving between his favorite study sites on the Talan Island, beloved self-built lodges on the Omchik creek and on Kupka River near Magadan, and even further, from the Amur river to Himalaya. In many of the places he visited he triggered some long-term research work. New plans to explore and protect unique and fascinating deep water lakes on the border of the Magadan region and Yakutia have just emerged.
Not just a renowned scientist, but a good colleague and trusted and reliable friend has passed away, leaving us now with deep memories about this remarkable person.

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Outstanding ornithologist of the past: Henry Seebohm (1832 – 1895)

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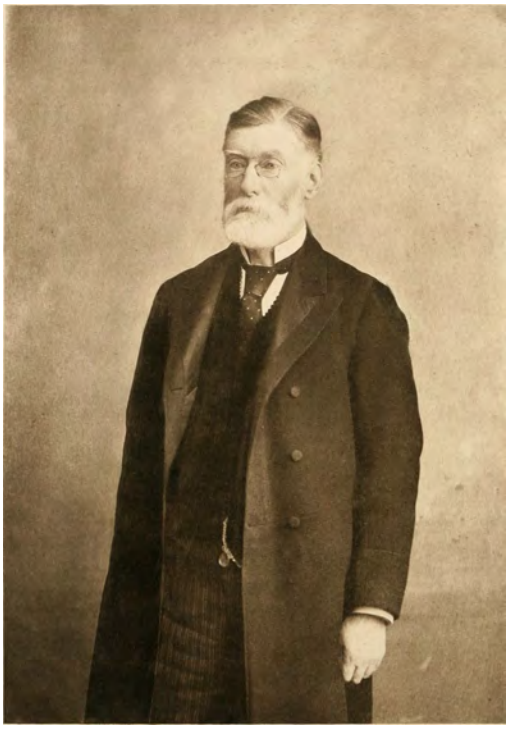

Henry Seebohm was born on 12 July 1832 at Horton Grange, a small farm near Bradford, Yorkshire, as son of Benjamin Seebohm, who was a wool merchant of German origin from Bad Pyrmont and his English wife Esther Wheeler from Hitchin, Hertfordshire. He was the eldest of four children and became interested in natural history in his early youth. His parents were active Quakers (Members of the "Religious Society of Friends") and young Henry was educated at the Quakers' school in York.

After school his father found him a job as a grocer's shop boy, but Henry had other aims in life than to become a grocer. He moved to Sheffield, where he initially took a job as a cashier in a steel firm and ultimately became a steel manufacturer. Besides the build-up of a solid economic basis, in his spare time he deepened his knowledge of birds.

In January 1859 Henry Seebohm married Maria Healey, daughter of a merchant from Manchester. At this time he had reached a certain level of prosperity and started traveling to hotspots of birdlife outside of Great Britain, visiting, for example, The Netherlands, France, Germany, Greece, Scandinavia, Turkey, South Africa and Siberia to collect birds, eggs, nests and skins in their natural habitats. Besides these collected objects, Seebohm brought a vast quantity of notes from his observations during his journeys, not only about birds, but also about the countries, native peoples and habits.

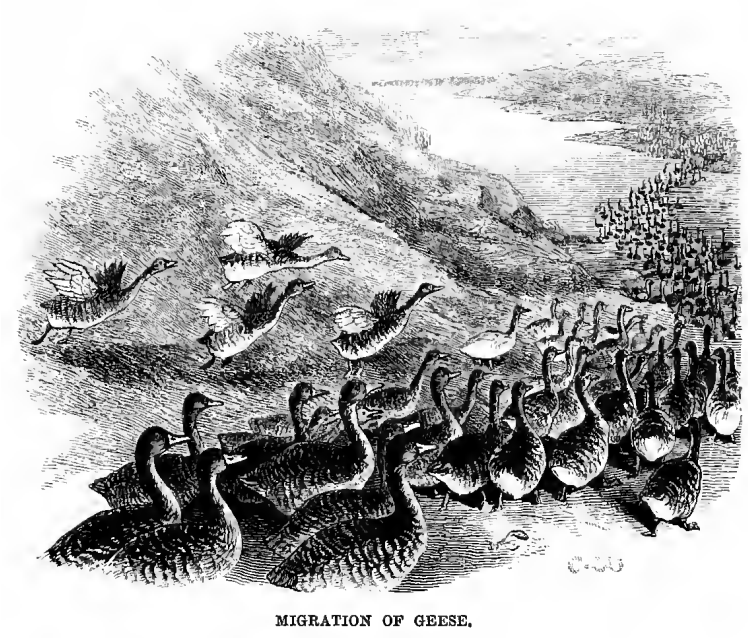

Figure from „Siberia in Europe".

During his travels Seebohm found the hitherto unknown breeding grounds of a number of arctic birds, like Bewick's Swan, Grey Plover and Little Stint, and wrote two books about his Siberian journeys: "Siberia in Europe" (1880), about his expedition to the Petchora valley, and "Siberia in Asia" (1882), about his journey to the Yenesei.

In 1901, both books were combined in one volume with the title "The Birds of Siberia".

Further books of Henry Seebohm are “A History of British Birds” (1883), “The Geographical Distribution of the family Charadriidae” (1887), “The Birds of the Japanese Empire” (1890), “Classification of Birds” (1890), “Geographical Distribution of British Birds” (1893), “Coloured Figures of the Eggs of British Birds, with descriptive Notices” (1896) and “A Monograph of the Turdidae” (1898).

All people that knew Henry Seebohm spoke with admiration about his amazing energy and a high scientific qualification, although he never studied biology. He was an excellent observer and a careful diary-keeper, taking notes of all daily events and observations. These notes were the cornerstones of his travelogues, which are agreeable mixtures of adventure story, scientific report and historic document about the way of living in the regions he visited. Besides his books, a collection of nearly 17,000 bird-skins, which he collected during his travels and gave to the British Museum, bear witness to his restless traveling and traditional scientific collection drive. As was usual in his time he was not only a good ornithologist, he also was a good hunter, and shot at least one bird of every species he observed and also collected at least one egg of each nest he found. Most of the collections of these 19th century ornithologists nowadays can be found in musea all around the world and form the basis for a lot of taxonomic work until today. A number of newly determined birds were named after Seebohm.

In spring 1895 he suffered from a severe influenza, from which he never fully recovered. Although het tried to recover in Biarritz in France, he never regained his former strength and energy, but still tried to work on. After he came back to London, he made a last public appearance at the meeting of the "British Ornithologists' Club” on the 23rd of October 1895. After this meeting most of the time he had to stay home and in bed and on the 26th of November 1895 Henry Seebohm died at his home in London.

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New Publications 2018 – 2020

AARVAK, T., I.J. ØIEN & V.V. MOROZOV (2018): Western main Lesser White-fronted Goose *Anser erythropus*. - in FOX, A.D. & J.O. LEAFLOOR (EDS.) (2018): A Global Audit of the Status and Trends of Arctic and Northern Hemisphere Goose Populations (Component 2: Population accounts). CAFF: Akureyri, Iceland. ISBN 978-9935-431-74-5: Pp. 43-44.

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LI, H., L. FANG, X. WANG, K. YI, L. CAO & A.D. FOX (2020): Does snowmelt constrain spring migration progression in sympatric wintering Arctic-nesting geese? Results from a Far East Asia telemetry study. – Ibis 162: 548-555.

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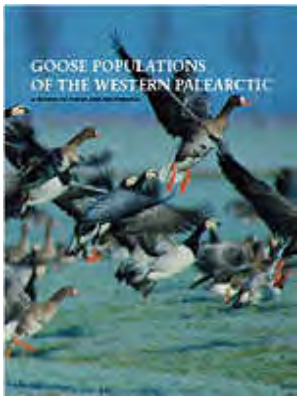


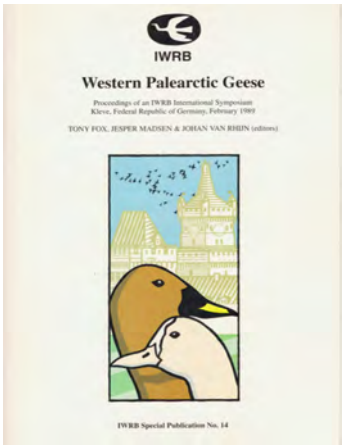
Goose populations of the Western Palearctic

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/

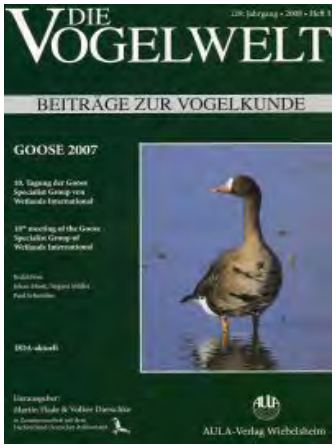
GOOSE BULLETIN is the official bulletin of the Goose Specialist Group of Wetlands International and IUCN

Proceedings of the Klever, the 10th and the 12th meeting of the GSG

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:



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

The proceedings of the 14th meeting of the Goose Specialist Group held in Steinkjer, Norway in April 2012 have been published in the online journal Ornis Norvegica, which is the scientific journal of the Norwegian Ornithological Society (Norsk Ornitologisk Forening – NOF). 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/issue/view/62

Proceedings of the 15th meeting of the Goose Specialist Group

The proceedings of the 15th meeting of the Goose Specialist Group held in Arcachon, France in January 2013 have appeared as a special edition of the journal **Wildfowl.**

By sending an email to wildfowl@wwt.org.uk a printed copy of this Special Issue (nr.3) can be ordered at the cost of £17 plus an additional £3.50 for credit card transactions.

It also can be downloaded for free at:
http://wildfowl.wwt.org.uk/index.php/wildfowl/issue/view/285

The journal Wildfowl

Wildfowl is an international scientific journal, recognised by the Web of Science and published annually by the Wildfowl & Wetlands Trust (WWT).
The journal appeared originally as the Annual Report of The Severn Wildfowl Trust at the end of the Trust's first working year in 1947. From the outset it presented the results of scientific research in order to improve knowledge and understanding of wildfowl populations. It now disseminates original material on the ecology, biology and conservation of wildfowl (Anseriformes) and ecologically-associated birds (such as waders, rails and flamingos), and on their wetland habitats. The journal is completely free to contribute to as an author (there are no page or article changes at all) snd is open access, freely available to anyone who may wish to read the contents.
The complete back catalogue of Wildfowl is available via the Open Journal System at http://wildfowl.wwt.org.uk.

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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.

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