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AGREEMENT ON THE CONSERVATION OF
AFRICAN-EURASIAN MIGRATORY WATERBIRDS

WORKSHOP FOR THE REVISION OF THE INTERNATIONAL SINGLE SPECIES ACTION PLAN FOR THE TAIGA BEAN GOOSE

1-3 April 2025, Bonn, Germany and Online

DRAFT BIOLOGICAL ASSESSMENT AND PROBLEM ANALYSIS OF THE SCANDINAVIA/DENMARK AND UK POPULATION OF TAIGA BEAN GOOSE – "WESTERN POPULATION"[1], FORMER WESTERN MANAGEMENT UNIT[2]

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In terms of the Revised Format and Guidelines for AEWA International Single and Multi-species Action Plans (Doc. AEWA/TBG/ISSAP/Inf.1.3), the annexes of each International Single Species Action Plan (ISSAP) must include both a biological assessment and a problem analysis.

For the purposes of the Taiga Bean Goose ISSAP Revision Workshop, a preliminary biological assessment and preliminary problem analysis has been prepared for each of the four populations of Taiga Bean Goose. These meeting documents have been divided by population to enable each Range State to more easily focus on those populations that occur in their countries. During the workshop, participants' input will be sought on both how best to present these assessments and analyses in the revised ISSAP (i.e., whether/how they should be merged) and how their content can be further refined and strengthened.

This document includes both the preliminary biological assessment and preliminary problem analysis for the Scandinavia/Denmark and UK population of Taiga Bean Goose – "Western population".

[1] Given stakeholders' familiarity with referring to the 'Western MU', the term 'Western population' will be used for the purposes of the Taiga Bean Goose ISSAP Revision Workshop. At present, Table 1 of AEWA's Annex 3 lists this population as the 'Scandinavia/Denmark and UK' population of *Anser fabalis fabalis*. However, a proposal will be made to AEWA MOP9 to simplify these population names to the following: 'Scandinavia (br)' population of *Anser fabalis fabalis*. Assuming that the MOP adopts these amendments, the new population names will ultimately be reflected in the revised Taiga Bean Goose ISSAP.

[2] Funding for the action-planning process was provided by the Danish Agency for Green Transition and Aquatic Environment under the Ministry of Green Transition and the Finnish Wildlife Agency.

1. DRAFT BIOLOGICAL ASSESSMENT

Even though the overall range of the Western-most distribution of taiga bean geese is fragmented, it is considered expedient to consider them one population (Scandinavia/Denmark and UK population, former Western Management Unit), because it is: numerically rather small; functionally protected from all hunting throughout its range; and also thought to be biologically discrete based on re-sightings, DNA-studies, recoveries of marked birds, and several GPS-tacking studies. On this basis, it can be considered under similar management throughout, currently occurring under the jurisdictions of four Western European range states.

1.1 Distribution throughout the annual cycle

The Western population of the Taiga Bean Goose comprises birds breeding in Northern and Central Sweden and Southern and Central Norway, wintering mainly in Northern Denmark and Northern and Eastern United Kingdom. However, an unknown proportion may stage in Southern Sweden and winter in Zealand, Denmark (Boer, 2019) (Figure 1).

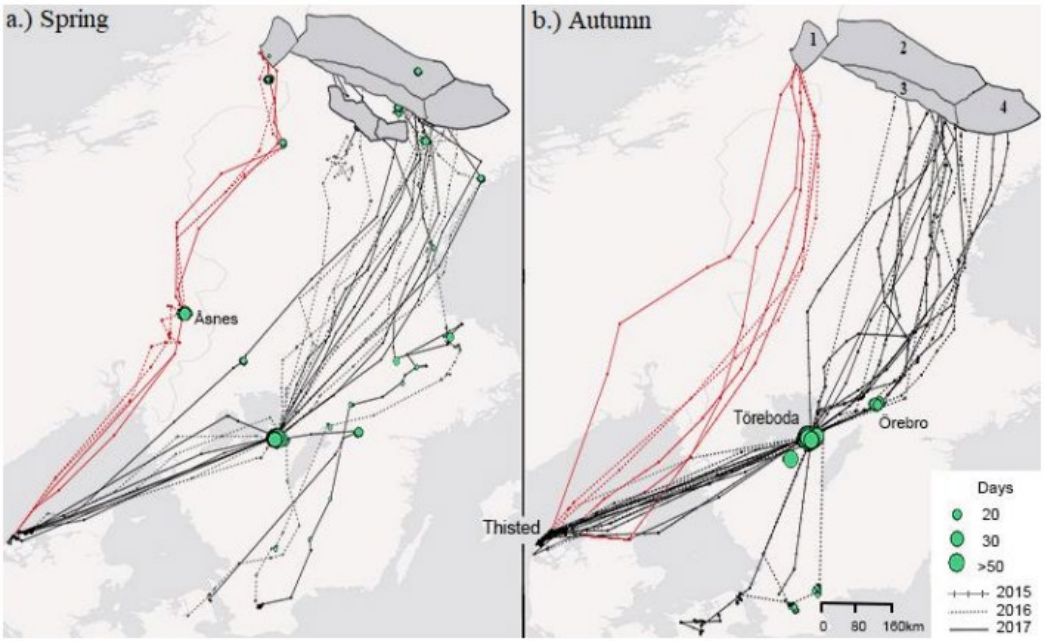

Figure 1. Migration route during a.) spring and b.) autumn. Routes in 2015, 2016 and 2017 are shown in crossed lines, dotted and straight lines respectively. Routes of tagged birds breeding in northern Sweden are shown in black, the two tagged geese breeding in central Norway are shown in red lines. 1 = Børgefjell national park, Norway, 2 = Vilhelmina kommun, Sweden, 3 = Dorotea kommun, SE and 4 = Åsele kommun, SE. Stopover (green circles) size is shown relative to length of stay (Source: Boer, 2019).

Previous evidence indicates that taiga bean geese neck-banded during the breeding season are re-sighted in Western Sweden, South and South-east Norway, Northern Jutland in Denmark and Norfolk and Scotland in the United Kingdom. The timing of movements, migration routes, breeding area and identification of important stop-over sites for the birds wintering in the UK were described for the first time in Mitchel et al. (2016). These birds left Slamannan, Scotland, during February and flew to west Denmark. Stop-over duration in Denmark was 20-36 days. Tagged geese arrived in Dalarna, Sweden, early April and left late August, staged in Southern Norway and East Sweden. Autumn migration routes differed between tagged geese, with two flying from Norwegian stopover sites to UK destinations in both England and Scotland. One staged in Sweden and followed the spring migration route via North-West Jutland, Denmark, to Scotland. In a more recent Swedish study (Boer, 2019), 13 birds tracked with GPS tags at the breeding site in Vilhelmina, Sweden, provided spring migration tracks from 2015 to 2017 revealing two distinct migration patterns pertaining to two

separate breeding areas. Two out of 13 tagged geese had a more western bound route along the Swedish/Norwegian border, while the remaining geese restricted their migratory routes flying inland through central Sweden. One goose spent both winters in Skåne County, and another resided in both Skåne and Zealand, Denmark. Departure from wintering grounds took place during late February until mid-April. Spring migration took on average 45 days for all tagged geese. Autumn migration routes were comparable to spring migration routes. Autumn migration for birds departing from northern Sweden varied from 11 to 150 days. In comparison, the Norwegian breeding birds generally reached their winter destination within less than a day during autumn, without making use of any stopovers.

Despite these and other studies, the phenology and range of the Western population are inadequately known. This applies, in particular, to breeding areas. However, summarized evidence indicates that the breeding range is scattered and used by distinct groups of breeding birds following distinct moulting and migratory patterns, which is also supported by DNA-based studies. Breeding sites are probably sparsely and unevenly populated. Previous data indicate that birds in the population mostly moult at or near their breeding areas, which is also supported by Boer (2019) and further by reports from the Børgefjell, Norway, breeding site which is monitored rather systematically both in terms of direct observation from a distance and the collection of droppings and feathers for DNA-analyses as a basis for individual identification in the region (Jan Eivind Østnes, pers. comm.).

1.2 Habitat requirements

As the name indicates, the Taiga Bean Goose nest not only in open but also in wooded habitats, which is unique among the geese of the Western Palearctic (Cramp & Simmons 1977). Breeding areas throughout the range are mostly characterised by a mosaic of open and wooded mires, rivers, lakes or ponds, and taiga forests. The Western population of Taiga Bean Goose wintering in Scotland use natural forestry with mires, streams and pool systems in breeding sites (Mitchell et al. 2016). The geese utilize the edges of thawing ice along streams and riverbanks as well as edges of formerly managed sedge beds, with the latter increasingly being used as they thaw out. While wintering in Scotland, and on the staging areas in Denmark and Norway, the geese frequently use abandoned peat cuttings on raised mires or remote nature areas connected to dune lakes (Jørgen Peter Kjeldsen, pers. comm.) for roosting; the proximity of agricultural land to peat wetlands or dune lakes may be an important landscape feature shaping the distribution of the geese during the non-breeding season. Feeding on grassland and arable land (e.g. winter cereals including stubble) seems to be of primary importance while permanent grassland/seminatural habitats are less used.

In Finland and Sweden in the Central management unit, the highest densities of breeding geese have been observed in areas dominated by mesotrophic aapa flark mires (Pirkola & Kalinainen 1984a, b, Väisänen et al. 1998, Nilsson et al. 1999; see also Eriksson & Henricsson 1990). In such habitat, the mosaic water bodies provide safety from mammalian predators especially during the brood rearing and moulting period, as well as preferred plant dietary items which are available in wetlands and wooded habitats (Pirkola & Kalinainen 1984a).

In other parts of Europe staging and wintering Bean Geese show similar food preferences (for references, see Nilsson & Kampe-Persson 2013). Other winter feeding habitats reported in Denmark and Poland include e.g. grasslands, wet meadows and maize stubble fields (Parslow-Otsu & Kjeldsen 1992, Rosin et al. 2012). In spring, permanent pastures with sprouting grass, winter cereal fields and potato fields, in this order of preference, constitute the main feeding habitats for taiga bean geese in Southern Sweden (Nilsson & Kampe-Persson 1984, 2000, Nilsson & Kampe-Persson 2013). Spring is a critical season as geese need to build up fat and nutrient deposits for migration and breeding. Although it is not known to what extent taiga bean geese are capital versus income breeders, there is no doubt that the prelude to egg laying and incubation places substantial demands on the energetic and nutrient stores of breeding females which need to be accumulated prior to nesting.

In late autumn, Taiga bean geese staging in Southern Sweden prefer fields with sugar beet and potato waste residues over other feeding habitats and foods including winter cereals, grasslands and waste grain on stubble fields (Nilsson & Kampe-Persson 2013). Later in the season however, winter cereals become the most utilized food source.

1.3 Survival and productivity

No survival information exists for the Western

population of Taiga Bean Goose. It is legally protected from hunting in all range countries. The level of illegal/unintended harvest has not been investigated. However, there are examples of unintended killing of Taiga Bean Goose on North-West-Danish wintering grounds where hunting is banned (Kroglung and Østnes 2015; Jørgen Peter Kjeldsen, pers. comm.). The risk of misidentification during goose hunting, not least Pink-footed Goose hunting, is thought to be significant.

The proportion of juveniles in the Western population showed a positive trend over the last decade but is still significantly lower than the average from 2005-2013 (Figure 2). For the winter 2023/2024, within a flock of 90 birds, 14 juveniles were recorded, including one brood of three juveniles and one brood of two, resulting in a juvenile percentage of 15.5% (Johnson et al. 2024).

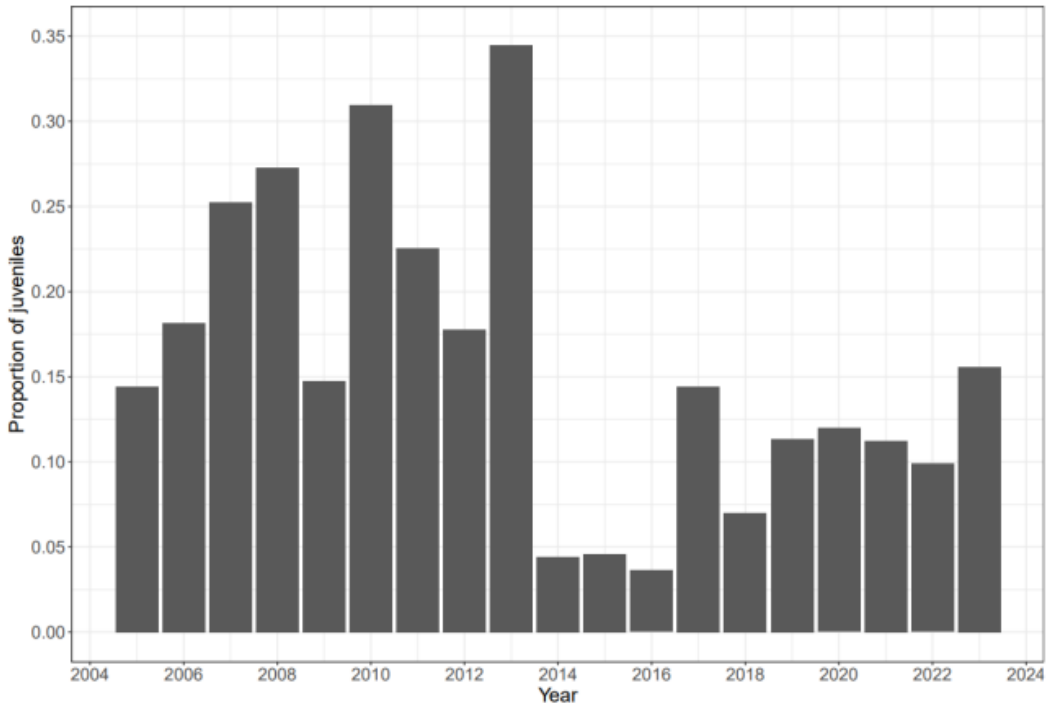

Figure 2. Annual proportion of juveniles in the Scandinavian/Denmark and UK population since 2025 (Source: Johnson, F.A et al., 2024)

1.4 Population size and trend

The size of the Western Taiga Bean Goose population is assessed primarily at the wintering grounds in Denmark, Scotland and England. Geese on the wintering grounds in North Jutland are notoriously very difficult to locate; hence some flocks might be missing during the counts. They may use wetlands and natural habitats well away from roads and human habitation that are not normally extensively searched during count periods, and which are unlikely to be found

by birdwatchers without a specific interest in locating these birds. An effort is made in Norway during spring and summer at the breeding areas, both in terms of direct observation from a distance (Finnmark in Northern Norway) and the collection of droppings and feathers for DNA-analyses as a basis for individual identification in the region of Børgefjell in mid-Norway. Seen in a historical perspective, it is evident that the population has declined both in size and range. However, according to the Taiga Bean Goose ISSAP evaluation report, the population size has stabilized in the last decade (AEWA 2025). The breeding population is scattered across multiple distinct sites and poorly monitored, thus cannot be used to evaluate population size or trends. Systematic counts on wintering grounds in Denmark and the UK, indicate total counts during the last decade of between 1,000 and 2,000 birds (Figure 3). AEWA MOP8 (Nagy 2022) assessed the population size at c. 1300–1500 individuals based on Heinicke et al. (2018) and Heldbjerg et al. (2021).

The most recent population size estimate based on counts is 1176 birds counted during the winter of 2023/24 (Johnson et al. 2024). The 2021/2022 count was higher (2,186) and the following year quite low (635), presumably due to varying efficiency of counting. Any birds belonging to the Western population staging in Southern Sweden and wintering in Zealand, Denmark, are not included in this overview.

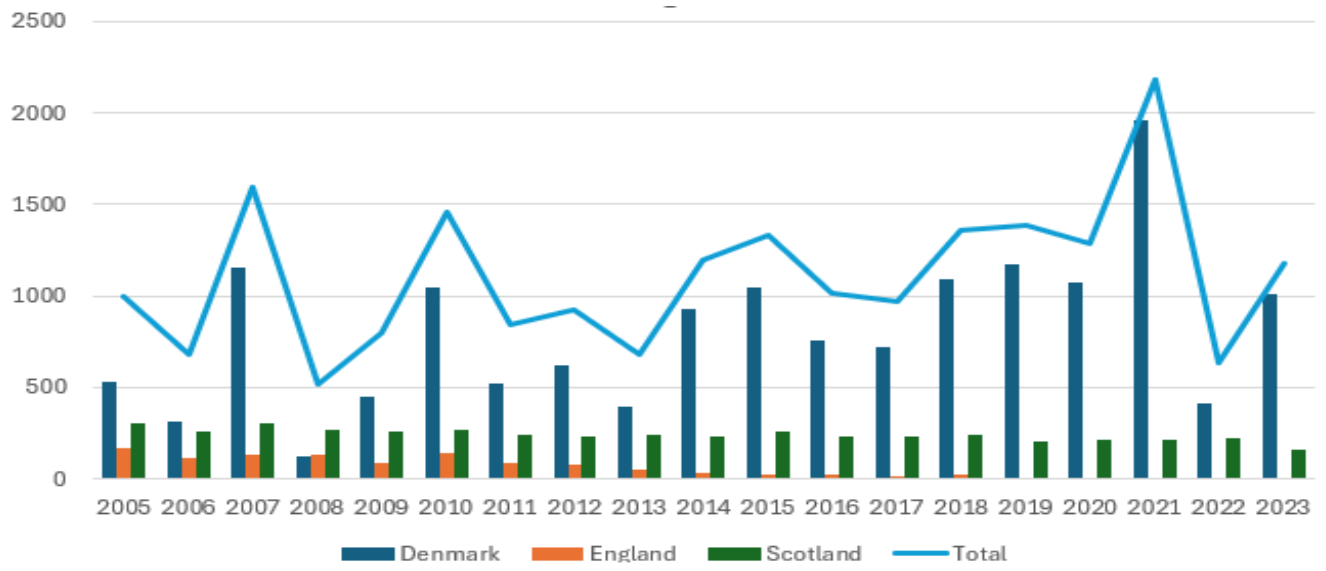

Figure 3. Winter population of the Scandinavian/Denmark and UK population since 2005 (redrawn from Johnson, F.A et al., 2024).

Table 1. Population size and trend by range state

Range state	**Breeding numbers**	**Quality of data**	**Year(s) of the estimate**	**Breeding population trend in the last 10 years (or 3 generations)**	**Quality of data**	**Maximum size of migrating or non-breeding populations in the last 10 years (or 3 generations)**	**Quality of data**	**Year(s) of the estimate**
Sweden	250	poor	2025	unknown	poor	?		

Norway	<50	poor	2025	unknown	poor			
Denmark	0	N/A	2025	-		2.000	medium	
UK	0	NA/	2025	-		300	medium	
Overall	<300	poor	2025					

Overall, the population seems to be rather stable based on winter counts at both Danish and Scottish wintering grounds, whereas the occurrence at wintering grounds in England, estimated in 1992 at 360-480 birds (Parslow-Otsu and Kjeldsen) has diminished dramatically and today is negligible. The gradual cessation of birds wintering in England may reflect short-stopping although a corresponding increase upstream the migratory route (e.g. in Scotland) has not been identified. Therefore, the decreasing numbers at the traditional English winter sites may reflect that a subunit of the population has simply disappeared.

2. DRAFT PROBLEM ANALYSIS

2.1 General overview

Evidence since 2015 suggests that the Western Taiga Bean Goose population comprises several small and highly vulnerable sub-units with discrete winter ranges, breeding sites, and migratory pathways, exhibiting an apparent metapopulation structure. There is still relatively little information on the connectivity between units. Parslow-Otsu and Kjeldsen (1992) observed, based on neck-banded birds, that several foraging and resting flocks maintained a constant size; even though they occasionally foraged in the same field, they were often divided into groups. Small home ranges used by the Scottish wintering flock along the flyway suggest that it may be largely independent, with only limited interchange with other wintering and staging flocks/units (Mitchell et al. 2016).

Due to small home ranges at breeding, staging and wintering sites the subunits are potentially vulnerable to local infrastructural developments such as green energy initiatives, land use change, disturbance from tourism, and rural housing/farm building. Loss of feeding or roosting habitats and interspecific competition could affect the birds' traditional use and result in them moving to suboptimal areas with consequences for future survival and productivity. Unintended harvest of birds may have significant survival impact. All in all, new evidence suggests these birds might be more vulnerable than originally thought.

2.2 Habitat change

Western population Taiga Bean Goose breeding areas, although only poorly known, seem to be overall well protected against major land use change as core areas are likely within national parks. Wintering sites in the UK are also located in protected areas. A main threat could be reformed land use planning in Denmark driven primarily by initiatives to develop green energy such as solar panels and windfarms. One example is the planning of Rosvang Energipark, situated at the core wintering area of Taiga Bean Goose in North-West Jutland (Thisted Municipality). Similar planning is going on near Pandrup (further North-West, Jammerbugt Municipality), also close to Taiga Bean Goose winter foraging sites.

As part of the green transition, Denmark plans to take several hundred thousand hectares of agricultural land out of use, particularly lowland areas. In some places, depending on the continuation or introduction of management schemes

improving habitat or maintaining current state this may improve conditions for geese. Elsewhere, it is expected to contribute to afforestation and the creation of shrub and scrubland areas being of low value for geese.

2.3 Disturbance

Disturbance from outdoor and tourist activities combined with increased public access may expose breeding grounds as already documented in Norway. Up until the end of the 20th Century a moulting area, numbering more than 150 Taiga bean geese, was known in the north-eastern part of Central Norway. However, probably due to increased disturbance in the area, moulting Bean Geese seem to have disappeared (Kroglund and Østnes 2015).

2.4 Predation

Predation of eggs, goslings and adults of Taiga Bean Goose is considered to be of medium importance in the Western population. Although full grown Taiga bean geese may be potentially taken at any time in the annual cycle, the impact of predation is likely to be most prominent during the breeding season, when geese are most vulnerable. However, estimates of the overall rates of predation on eggs, goslings, or adults, the relative significance of the various predators involved and their impact on the dynamics of the population are not available. Potential predators include Eagles (White-Tailed (Haliaeetus albicilla) and Golden (Aquila chrysaetos)), Brown Bear (Ursus arctos), Red Fox (Vulpes vulpes), Racoon Dog (Nyctereutes procyonoides), and Wolverine (Gulo gulo).

2.5 Interspecific competition

In Malå, Sweden, several persons have witnessed how aggressive the Whooper Swan can be during breeding including violent attacks on taiga bean geese which prevented them from landing in waters occupied by a swan pair, even when the geese have tried to land hundreds of metres from the swans (Kampe-Persson et al. 2025). In the light of these observations, the need of more knowledge about the impact of nesting site competition between these two species should be stressed.

2.6 Hunting

The abundance and demographics of the Western population Taiga Bean Goose is considered too small to support hunting and the population is legally protected from hunting in all range states. However, at the wintering sites in Denmark, there appears to be risk of unintended harvest due to misidentification of Taiga Bean Goose with huntable goose species e.g. Pink-footed Goose. The extend of such harvest is unknown, but documented cases exist of tagged birds shot by hunters unaware of the species. Goose hunting in Denmark is increasing due to growing populations of most species and an intensified focus on management of Pink-footed Goose. Hunting occurs in core Taiga Bean Goose feeding areas and along local movements routes between feeding and roosting sites.

2.7 Diseases and contamination

In view of recent outbreaks in other goose populations, and the possible emergence of new and more virulent strains, the potential threat from HPAI should not be underestimated (see Percival et al. 2024). A small population consisting of distinct subunits and the Scandinavian/Denmark and UK Taiga Bean Goose must be particularly vulnerable to outbreaks of high pathogenic diseases.

Lead from hunting ammunition is widely regarded as a threat to multiple species of waterbirds due to the potential ingestion of lead gunshot in hunting areas. Geese are less exposed to such contamination than other waterbirds, such as Anatidae, but high concentrations of lead pellets may pose long-term risks to ecosystems, as shotgun pellets can remain in the soil for decades. Lead from ammunition may have ecotoxicological effects on birds that are hit and survive as

crippled, and it may also pose a health risk to people and animals consuming lead-contaminated goose meat from shot or crippled birds. The use of lead shot for shotgun hunting has been banned in Denmark for more than three decades, and in Norway, its use has been prohibited in and near wetlands since 2023 under the EU REACH directive, which is also legally binding for Norway.

However, since most goose hunting occurs over farmland, often away from wetlands, lead shot is still permitted for goose hunting in Norway, the UK, and Russia. In early 2025, the EU Commission proposed a broader restriction to ban hunting with lead shot in all habitats, with a three-year transitional period. This ban will apply to Norway as well, and a similar restriction is underway in the UK (UK REACH). Consequently, the use of lead ammunition for hunting across the range of the Taiga Bean Goose Scandinavia/Denmark, and UK population is expected to be banned in the near future. Enforcement which rests with national and local authorities is crucial to ensuring the actual phase-out of lead ammunition.

PFAS (per- and polyfluoroalkyl substances) are a large group of synthetic environmental toxins, also called "forever chemicals" as they do not break down but instead accumulate in the natural environment. In recent years, PFAS have received increasing attention due to their widespread industrial use and potential harm to various organisms. Most attention has been on the risks of human exposure, while less concern has been given to their impact on wildlife. As a result, the risk to geese as individuals and to populations and the effects on their demographics remain largely unknown.

2.8 Conflicts/risks to other interests

Risks to human and animal health

Wild goose species may act as a reservoir for viral diseases (e.g. avian influenza, coronavirus) as well as carriers of pathogenic protozoans (such as Toxoplasma gondii) and bacteria (e.g. Salmonella, E. coli and Campylobacter). Geese have even been found to act as vectors for resistant strains of E. coli closely related to those commonly occurring in humans. Due to their migratory behaviour, geese may potentially transport infectious diseases over long distances, thus also potentially transmitting diseases to poultry farms. Studies show that migratory geese are often exposed to diseases such as avian influenza in the large flocks on the wintering grounds , indicating that migratory geese may be more likely to act as vectors during the spring, and less so during autumn migration.

Table 2. Threat assessment of the Western population following the IUCN Threats Classification Scheme (IUCN, 2022)*

Population: Scandinavia/Denmark and UK population – Western population				
Threat	**Scope** (i.e. the proportion of the total population affected)	**Severity** (i.e. the overall declines caused by the threat)	**Timing** (i.e. past, ongoing or future)	**Overall Threat Impact Score**
Habitat land use change Windpower, solar fields and related powerlines (IUCN threat category 3.3 Renewable energy)	Affects the whole population (>90%)	*Unknown*	*Ongoing and future*	
Disturbance Tourism (IUCN threat category 6.1	Mainly breeding sites	*Local to nesting sites*	*Ongoing*	

Recreational activities)				
Predation	Mainly breeding sites	*Unknown*	*Ongoing*	
Hunting (IUCN threat category 5.1 Hunting and collecting terrestrial animals)	Only wintering population/Denmark	*Unknown*	*Past and ongoing*	
Diseases (IUCN threat category 8.2 Problematic native species/diseases)	Affects the whole population	*Unknown*	*Ongoing and future*	
Contamination (IUCN threat category 9 Pollution)	Affects the whole population	*Unknown*	*Past, ongoing and future*	

*To be completed during the workshop following participants' inputs on scope, severity and time columns.

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