

AEWA EUROPEAN GOOSE MANAGEMENT PLATFORM



11th MEETING OF THE AEWA EUROPEAN GOOSE MANAGEMENT INTERNATIONAL WORKING GROUP *16-18 June 2026, Skövde, Sweden*



EGMP 10th ANNIVERSARY REPORT

Prepared by the AEWA Secretariat

Summary:

At its 9th meeting in 2024, the AEWA European Goose Management International Working Group (EGM IWG9) reviewed potential activities to mark the 10th anniversary of the European Goose Management Platform (EGMP) in 2026. To advance this work, the meeting established an ad hoc working group, building on the EGMP Communications Contact Group, with the mandate to further refine proposed initiatives and prepare a detailed workplan.

At EGM IWG10, the ad hoc working group presented a set of proposed anniversary activities for implementation by the EGMP Secretariat, the Data Centre and relevant partners. These included the development of an anniversary report aimed at reviewing a decade of efforts in the conservation and management of goose populations, showcasing key accomplishments, and providing an overview of the initiatives undertaken and their impact on populations covered by the EGMP.

The present report presents an overview of the establishment, structure and functioning of the EGMP and how it has evolved over the years, highlighting major milestones and developments. This historic overview is followed by an assessment of implementation progress for the action and management plans under the remit of EGMP, highlighting key achievements, ongoing efforts and areas requiring further attention.

Lastly, the report presents a set of case studies illustrating the implementation of goose management measures in different national contexts. These case studies cover monitoring, conflict mitigation, stakeholder engagement and policy instruments and provide examples of how goose management and conservation are applied in practice.

Action requested from the EGM IWG:

Take note of the anniversary report and provide advice, as necessary.

EGMP TENTH ANNIVERSARY REPORT
AEWA European Goose Management Platform

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EGMP TENTH ANNIVERSARY REPORT**

June 2026

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List of acronyms and abbreviations

Acronym	Full Term
AEWA	Agreement on the Conservation of African–Eurasian Migratory Waterbirds
AFMP	Adaptive Flyway Management Programme
AHM	Adaptive Harvest Management
CAP	Common Agricultural Policy (EU)
EGMP	European Goose Management Platform
EGM IWG	European Goose Management International Working Group
EU	European Union
FRP	Favourable Reference Population
FRV	Favourable Reference Value
HPAI	Highly Pathogenic Avian Influenza
IBA	Important Bird and Biodiversity Area
IPM	Integrated Population Model
ISSAP	International Single Species Action Plan
ISSMP	International Single Species Management Plan
IWC	International Waterbird Census
MU	Management Unit
MOP	Meeting of the Parties
SPA	Special Protection Area

1. Introduction

Driven by conservation measures, Arctic warming and the availability of food from intensive agricultural practices, some goose populations in Europe have increased markedly in recent decades. This growth has brought a range of consequences, including agricultural impacts, altered ecosystem functions, increased risks of aircraft–goose collisions and heightened concerns over the spread of Highly Pathogenic Avian Influenza (HPAI) to humans and other animals.

At the same time, geese provide important benefits. They support both consumptive and recreational activities, hold cultural significance, and have long been a focus of research and conservation efforts across Europe. Balancing these benefits with emerging socio-economic challenges requires structured decision-making and coordinated management at flyway scale. For goose populations that migrate across multiple countries throughout their annual cycles, mechanisms are needed to facilitate the involvement of all Range States and other relevant stakeholders in these processes. In response to these concerns and the need for coordinated international action, the European Goose Management Platform (EGMP) was established under the Agreement on the Conservation of African–Eurasian Migratory Waterbirds (AEWA) as a framework for structured, science-based and cooperative management.

To mark the 10th anniversary of the EGMP's establishment, this report reviews the Platform's evolution and its contribution to goose management and conservation. It provides an overview of the Platform's development, governance and operational mechanisms, as well as its role in supporting the implementation of AEWA International Single Species Management and Action Plans (ISSMPs and ISSAPs). It also evaluates progress made in addressing key challenges of goose management and highlights lessons learned from applying adaptive management approaches.

The present report presents overview of the establishment, structure, and functioning of the EGMP and how it has evolved over the years, highlighting major milestones and developments. This historic overview is followed by an assessment of implementation progress for the action and management plans under the remit of EGMP, highlighting key achievements, ongoing efforts, and areas requiring further attention.

Lastly, the report presents a set of case studies illustrating the implementation of goose management measures in different national contexts. These case studies cover monitoring, conflict mitigation, stakeholder engagement, and policy instruments, and provide practical examples of how goose management and conservation are applied in practice. Together, these elements provide an overview of the EGMP as a dynamic science-policy framework for coordinated management and conservation of migratory goose populations in Europe.

1.1 Contribution of the EGMP to Other International Policy Frameworks

The EGMP operates as a science-policy interface for the management of migratory geese in the intersection of conservation objectives with socio-economic interests. Through its objectives, governance and implementation approach, the EGMP provides a mechanism for translating international conservation commitments related to biodiversity and sustainable use into coordinated actions. Within this context, the EGMP contributes directly to the implementation of not only AEWA, but also the Kunming–Montreal Global Biodiversity Framework (GBF) under the Convention on Biological Diversity and regional conservation instruments such as the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and the European Union's Birds Directive.

For example, The EGMP's work on maintaining goose populations above the Favourable Reference Population (FRP) and adjusting harvest levels based on the continuous monitoring of population status supports GBF Target 4 on species conservation and Target 5 on ensuring that the use, harvesting and trade of wild species is sustainable,

safe and legal, preventing overexploitation. The Platform's efforts to reduce conflicts related to agriculture, flight safety and risks of zoonotic diseases outbreaks are also relevant to the element of Target 4 regarding effective management of human-wildlife interactions and minimisation of human-wildlife conflict, and to Target 9, which promotes sustainable management and use of biodiversity, providing social, economic and environmental benefits for people. In addition, the integration of goose management and conservation into sectors such as agriculture and aviation supports Target 14 on mainstreaming biodiversity across policy areas. The sharing of data across Range States and EGMP initiatives to promote cooperation and knowledge transfer through webinars and the work of its Task Forces contributes to achieving Target 20 on scientific and technical cooperation. Lastly, the involvement of governments, scientists, and other stakeholders in decision-making processes under the EGM IWG contributes to Target 21 on inclusive and participatory environmental governance (see Table 1).

Table 1. EGMP Contributions of the Kunming-Montreal Global Biodiversity Framework.

Kunming-Montreal Global Biodiversity Framework Target	EGMP Contributions
Target 4 - Halt Species Extinction, Protect Genetic Diversity, and Manage Human-Wildlife Conflicts	Maintaining goose populations at (or, where necessary, restoring them to) a favourable conservation status – including by coordinating efforts to maintain several populations and their range and habitats, above FRVs, monitoring of population status, and reduction of human-goose conflicts.
Target 5 - Ensure Sustainable, Safe and Legal Harvesting and Trade of Wild Species	Regulation and international coordination of harvest to ensure sustainable and controlled use across Range States.
Target 9 - Manage Wild Species Sustainably to Benefit People	Reduction of conflicts (e.g. agriculture, aviation, HPAI) while maintaining socio-economic and cultural benefits from geese.
Target 14 - Integrate Biodiversity in Decision-Making at Every Level	Integration of goose management and conservation into environmental, agriculture and aviation sectors through coordinated management and policy.
Target 20 - Strengthen Capacity-Building, Technology Transfer, and Scientific and Technical Cooperation for Biodiversity	Strengthening of international cooperation, data sharing and promotion of capacity building through technical Task Forces, webinars and publications.
Target 21 - Ensure That Knowledge Is Available and Accessible To Guide Biodiversity Action	Publicly available goose monitoring data, technical analysis and code, and engagement of governments, experts and other stakeholders in decision-making, implementation and monitoring processes.

The Platform also contributes to the implementation of the Bern Convention by supporting core obligations related to the conservation and management of species listed in Appendix II and Appendix III. Through coordinated management of offtake and the promotion of sustainable use across Range States, the EGMP supports Parties in ensuring compliance with Article 2 of the Convention, amongst other provisions. In addition, its flyway-level

monitoring and data sharing activities contribute to Article 11 on research and monitoring, while its work on the identification, protection and management of key sites across breeding, staging and wintering areas supports the implementation of Article 4 on habitat conservation.

In the European Union context, the EGMP provides support to the implementation of the EU Birds Directive. The European Commission has highlighted that the European Goose Management International Working Group (EGM IWG) contributes to coordinated approaches, including recommendations on the coordination of derogations for non-huntable species¹. For example, within the EGMP framework, Favourable Reference Values (FRVs) have been developed for population size, range and habitat and a precautionary threshold of 200% of the FRP has been applied to guide management responses.

Overall, the EGMP links international policy objectives with implementation by providing a structured, adaptive and cooperative framework for the management of migratory goose populations. It supports compliance with multiple legal instruments while addressing the challenges associated with managing shared natural resources across national boundaries.

¹ More information available at the Draft Commission Notice on the Guidance document on the general system of protection of bird species - Article 5 and Article 9 of the Birds Directive.

2. The European Goose Management Platform

2.1 The Road to the EGMP

AEWA's legal text requires Parties to cooperate with a view to developing and implementing international species action plans for certain migratory waterbird populations in need of recovery. It also provides for the development of international species management plans for migratory waterbird populations that cause significant damage, especially to crops or fisheries. Action and management plans are two of the most vital and practical tools under AEWA for the coordinated international conservation and sustainable use of migratory waterbirds. They represent the quintessence of AEWA: cooperation across flyways towards a common defined goal.

While AEWA has a long history of developing and coordinating the implementation of international species action plans, the AEWA Strategic Plan 2009-2017 set an objective to ensure that any use of waterbirds in the Agreement area is sustainable, including a target calling for the establishment of adaptive harvest management of quarry populations at the international scale. In line with this objective, the first species management plan to be developed under the Agreement was the International Single Species Management Plan for the Svalbard population of Pink-footed Goose (*Anser brachyrhynchus*), which was adopted in 2012 and constituted the first European example of internationally coordinated adaptive harvest management. The implementation of this plan was initially coordinated through a dedicated International Working Group (IWG), and the plan's development and early implementation helped to pioneer practical approaches to internationally coordinated adaptive harvest management.

While rising populations of some goose species where, by this time, resulting in significant and, in some cases, escalating pressures on agriculture, ecosystems, and other sectors, several huntable migratory waterbird species were experiencing population declines, highlighting the need for coordinated international action to ensure their recovery and long-term conservation. In this context, a process was initiated in 2013 to develop an International Single Species Action Plan for the Taiga Bean Goose (*Anser fabalis fabalis*). This marked an important milestone, insofar as the plan would ultimately become the first AEWA international species action plan to endeavour to coordinate harvest management measures for a population in need of recovery. Building on these developments, an international conference was convened in Denmark in October 2015 by the Danish Government and Aarhus University to discuss measures to address goose management challenges. The conference reviewed national approaches to managing goose-related conflicts and assessed stakeholder satisfaction with existing policies.

Participants concluded that fragmented national efforts were insufficient and that internationally coordinated management plans were necessary to address conflicts effectively at flyway scale. They emphasized the importance of evidence-based decision-making, clearly defined objectives, and adaptive management frameworks supported by robust data. As a result, the conference recommended establishing a European Multi-Species Goose Management Platform under AEWA. The 6th Meeting of the Parties to AEWA (MOP6), which was held in Bonn, Germany, in November 2015, noted the conference's conclusions and adopted Resolution 6.4, which mandated the Secretariat to facilitate the creation of such a platform to support the sustainable use of goose populations and provide for the resolution of human–goose conflicts. This resolution further identified several goose populations as priorities for the platform, including populations of Barnacle Goose (*Branta leucopsis*) and Greylag Goose (*Anser anser*), for which management plans were yet to be developed, as well as the Svalbard population of Pink-footed Goose and the Taiga Bean Goose. The Pink-footed Goose management plan had by that stage already been operational for a triennium, while the Taiga Bean Goose action plan was adopted by MOP6.

2.2 The Paris Declaration

An intergovernmental meeting to advance this initiative was held in May 2016 in Paris, at the invitation of the French Ministry of Environment, Energy and the Sea. At this meeting, the countries attending reaffirmed the need for a coordinated international approach to managing goose populations. They stressed the importance of reducing conflicts related to agriculture, aviation safety and ecosystem impacts, while ensuring sustainable use. At the same time, they identified important gaps in biological and management data, including population sizes and harvest levels, which limited effective decision-making.

This shared understanding led to agreement on developing structured, flyway-level management frameworks, alongside improved systems for data collection and information sharing among Range States. Building on the 2015 conference outcomes, the countries attending the meeting formally agreed to establish a European Goose Management Platform under AEWA in a declaration².

2.3 Establishment of the EGMP

The EGMP was established to provide a structured, coordinated, and inclusive mechanism for decision-making on the sustainable management of goose populations in Europe. Its overarching objective is to maintain populations at a favourable conservation status while taking into account stakeholder interests and relevant legal frameworks.

The Platform supports integrated, flyway-level conservation and management in line with international obligations - including those under AEWA, the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), and the EU Birds Directive. Its governance structure follows AEWA's *Conservation Guidelines on the Sustainable Harvest of Migratory Waterbirds* and is inspired by the "Flyway Council" model used in North America. Notably, it represents the first multispecies management initiative of its kind in the African–Eurasian region.

Drawing on experience from the International Single Species Management Plan for the Pink-footed Goose, the EGMP is built around three main components:

1. AEWA European Goose Management International Working Group (serviced by the AEWA Secretariat), responsible for coordination and decision-making;
2. International Data Centre, which compiles and analyses information on goose populations and harvest levels across Europe; and
3. National Working Groups, responsible for implementing agreed measures at the national level.

A more detailed overview of the EGMP's current structure is provided in section XX below.

The Platform operates through an annual cycle. Range States submit monitoring data to the International Data Centre, which analyses trends and effects of management actions taken at the flyway scale and reports its findings to the International Working Group. Based on this evidence, the Working Group adopts management decisions, which are then implemented by Range States. Updated data are subsequently fed back into the system, ensuring continuous learning and adjustment of management actions.

² Establishment and operation of a European Goose Management Platform. Available at: https://www.unep-aewa.org/sites/default/files/aewa_egmp_paris_may-2016_final_declaration.pdf.

2.4 Ten Years of EGMP Evolution

The [first meeting](#) of the European Goose Management International Working Group (EGM IWG1) marked a shift from the pilot single-species management model developed under the Pink-footed Goose ISSMP to a broader, multi-species framework for international flyway coordination.

Held in Kristianstad, Sweden, in December 2016, the meeting adopted the Platform's *Modus Operandi*, elected Belgium as the first Chair of the International Working Group and Norway as Chair for the subsequent two meetings (see Table 2), adopted the structure of the Adaptive Harvest Management annual cycle for the Central Management Unit for the Taiga Bean Goose (now the Finland & NW Russia (br) population³) and established a Task Force to develop a cooperation framework for addressing agricultural conflicts.

Table 2. EGM IWG Chairs over the years.

EGM IWG Chair	Meetings
Belgium	2016
Norway	2017 & 2018
Denmark	2019 & 2020
United Kingdom	2021 - 2023
Sweden	2024 - 2026

Following the inaugural meeting in December 2016, the EGM IWG reconvened in Denmark in June 2017, establishing what would become the routine pattern of annual meetings held each June.

The [second EGM IWG](#) marked the establishment of species-focused Task Forces for the Pink-footed Goose and Taiga Bean Goose and a cross-cutting Task Force focused on agriculture impacts. The Task Forces became responsible for aspects of the preparatory work before the meetings of the EGM IWG, which remained the decision-making forum of the Platform. The Task Force membership was less restrictive than that of the EGM IWG, including national government representatives and other government-designated experts from various thematic fields. EGMP Task Forces have played a key role in furthering technical work for implementation of EGM IWG decisions and other activities stemming from action and management plans.

In parallel with the consolidation of the EGMP, the AEWA Secretariat initiated the development of international management plans for the two remaining species that had been identified as priorities by Resolution 6.14: the Barnacle Goose and the Greylag Goose. International management planning workshops were convened for the

³ At the time that the 2015 version of the Taiga Bean Goose ISSAP was adopted, AEWA included two populations of Taiga Bean Goose (the North-east European/North-west European population and the West & Central Siberia/Turkmenistan to W China population). The original ISSAP therefore applied to those two populations. However, discrete flyways of Taiga Bean Geese in Western Eurasia were included in the 2015 ISSAP as Management Units at the sub-population level. Subsequently, in 2022, AEWA's annexes were amended to divide the North-east European/North-west European population into three individual flyway populations. The Finland and Northwestern Russia breeding population corresponds to what was previously defined as the Central Management Unit. The population names used throughout the remainder of this report are those included in the current version of AEWA Annex 3, as amended in 2025 by the 9th Session of the Agreement's Meeting of the Parties.

Barnacle Goose in June 2017 in Copenhagen, Denmark, and for the Greylag Goose in October 2017 in Paris, France.

Following these intergovernmental workshops, a meeting was held in Kalø, Denmark, in January 2018 to compile the information that had been provided by Range States and to facilitate the preparation of draft frameworks for action for both species. Subsequently, a joint workshop for the Barnacle and Greylag Goose was organized back-to-back with EGM IWG3 in June 2018 in Leeuwarden, the Netherlands. This sequence of workshops significantly advanced the development of the new species management plans for adoption at the seventh session of the AEWa Meeting of the Parties (MOP7) in December 2018.

The [EGM IWG3](#) in 2018 also marked the establishment of the International Modelling Consortium under the auspices of the EGMP Data Centre. The consortium brought together research expertise across Europe to support the development of population models which became one of the pillars for taking management decisions in the subsequent years.

After the adoption of the ISSMPs for the Barnacle Goose and the NW Europe (br) population of the Greylag Goose by AEWa MOP7, the populations covered by these plans were formally incorporated under the framework of the EGMP in 2019.

The year 2019 marked the first time that both the EGMP Secretariat and the Data Centre were fully staffed and plans for all of the species that had initially been identified as priorities for the Platform were operational. With a view to supporting a coordinated and efficient implementation of the Platform's programme of work, during [EGM IWG4](#), the Secretariat presented a consolidated summary of the national reports submitted by Range States and an overview of management measures for geese in Range States developed by the Agriculture Task Force.

The meeting also launched the process to develop Adaptive Flyway Management Programmes (AFMPs) for the Russia (br) and E Greenland (br) populations of Barnacle Goose and for the NW Europe (br) population of the Greylag Goose. EGM IWG4 also initiated two important new areas of work: the development of Favourable Reference Values (FRVs) and the operationalisation of Integrated Population Models (IPMs) with support of the Modelling Consortium, both of which would later become central components of the Platform's population management framework.

Amid the global disruptions brought on by the COVID-19 pandemic in 2020, the [EGM IWG5](#) needed to be held in virtual format. Nevertheless, for the first time, Ireland and Spain joined the discussions as Range State observers⁴. The engagement of Ireland in the work for the Greenland population of Barnacle Goose and Spain's contributions to the Greylag Goose ISSMP were met with appreciation from participating Range States, reflecting the strengthening and expansion of the EGMP's flyway-level coordination across the region. The meeting adopted the AFMP for the Greylag Goose and delegates also agreed on a timeline for completing the outstanding sections of the Barnacle Goose AFMPs for presentation the following year.

The 2020 meeting marked another important expansion of the Platform's architecture: the establishment of three new population-specific Task Forces—the Greenland Barnacle Goose Task Force, the Russia Barnacle Goose Task Force, and the Greylag Goose Task Force. Together with the already active Task Forces, these additions shaped a more elaborate governance structure comprising four population-focused Task Forces and one cross-cutting thematic Task Force dedicated to mitigating agricultural impacts. This new configuration further strengthened the scientific and operational backbone of EGMP.

⁴ At that time, the EGMP participating Range States included Belarus, Belgium, Denmark, Estonia, Finland, France, Germany, Iceland, Latvia, the Netherlands, Norway, Sweden, Ukraine and the United Kingdom, together with the European Union represented by the European Commission.

In 2021, following a period of participation as an observer Range State, Ireland formally joined the Platform with the intention of contributing to the implementation of the Barnacle Goose ISSMP. This step represented a broadening of the Platform's collaborative base.

That same year, the annual population assessment and other technical inputs to EGM IWG deliberations was, for the first time, consolidated into a single comprehensive publication: the *Population Status and Assessment Report*. The report provided an overview of the analytical work available for all goose populations managed under the EGMP, including assessments of population status, survival and productivity, hunting bag and derogation statistics, progress in population modelling, and evaluations of the cumulative impact of derogation and legal hunting. For some populations, the report also presented management recommendations based in the best available science. The consolidated report became a flagship publication of the EGMP and has been used by a diverse range of stakeholders to inform policy and management decisions at the national and European Union levels.

During [EGM IWG6](#), Range States also adopted the Adaptive Flyway Management Programme for the Russia Barnacle Goose. Following this adoption, the meeting marked another methodological advancement with the first steps towards the operationalization of Favourable Reference Values as formal triggers for policy responses for declining populations and management units. The 200 per cent Favourable Reference Population (FRP) threshold was discussed by Range States as a trigger for enhanced coordination of offtake to prevent further deterioration of population status. The meeting agreed to continue work under the Task Forces on developing a coordinated process for the management of hunting and derogations.

In 2022, [EGM IWG7](#) marked a return to in-person setting through a hybrid meeting hosted in Helsinki, Finland. Following Task Force discussions throughout the year, it was agreed that the EGMP would facilitate a dialogue among relevant Range States for the coordination of offtake of populations or management units below the 200 per cent FRP threshold and, based on this decision, a trilateral coordination of offtake was recommended between the Netherlands and the German Federal States of Lower Saxony and Schleswig-Holstein in relation to management unit 3 of the Russia population of Barnacle Goose.

The year also witnessed the launch of the EGMP webinar series, an initiative spearheaded by the EGMP Task Forces which quickly established itself as an effective tool for knowledge exchange. In addition, during the meeting, members agreed to establish a contact group on communication to support the Secretariat and Task Forces in strengthening EGMP communication efforts, and the EGMP Data Centre introduced a publicly accessible database, adding more transparency to EGMP operations by opening the underlying data used for analysis, reporting and policy recommendations to all stakeholders.

[EGM IWG8](#) in 2023 was held in Bonn, Germany. The meeting considered the second summary of EGMP national reports on ISSAP and ISSMP implementation, as well as the approaching end of the lifespan of some of the action and management plans within the EGMP's remit.

When an AEWA ISSAP or ISSMP is reaching the end of its lifespan, the AEWA Technical Committee (TC) recommends whether to retire, extend, update or revise the plan. Where feasible, this recommendation is based on a comprehensive evaluation of the plan's results and implementation performance, following an evaluation report template approved by the TC. This template is based on the steps of a decision-making process that has been adopted by the AEWA MOP.

The Taiga Bean Goose ISSAP was adopted in 2015 with a 10-year lifespan and the Pink-footed Goose ISSMP was adopted in 2012 with a 10-year lifespan that was subsequently extended until 2025 by EGM IWG8. As a result, the first two plans to be covered by the EGMP process were therefore approaching the end of their lifespans

and needed to undergo evaluations. An overview of the anticipated evaluation process was provided at this meeting, after which the Taiga Bean Goose and Pink-footed Goose Task Forces subsequently played a central role in the preparation of both evaluation reports.

The meeting in 2023 also took important decisions regarding the integration of crosscutting technical advice related to Highly Pathogenic Avian Influenza (HPAI) and the management of risks of aircraft-goose collisions and other flight safety considerations around European airports. EGM IWG8 decided to establish an HPAI Contact Group across EGMP populations to liaise with the multi-institutional Scientific Task Force on Avian Influenza and Wild Birds, with the aim of bringing suggestions to the EGM IWG for integrating HPAI considerations into goose management. The meeting also decided to establish a Flight Safety Task Force to advise the EGM IWG on matters related to goose management and flight safety, and to monitor and report on the implementation of related activities to the EGM IWG. These developments expanded the scope of EGMP work to address two important health and safety concerns in Europe.

Regarding coordination of offtake, the Netherlands and Germany agreed that if significant derogation activities were planned in Germany, coordination would take place between the two countries. Otherwise, coordination should mainly occur within the Netherlands, where the national FRP had been allocated across provinces. In response to population levels approaching provincial FRP thresholds, suspension or significant reduction of derogations had already been implemented in some Dutch provinces following initial decisions of EGM IWG7 in 2022, strengthening the use of FRVs for the management of derogation permits in line with ISSMP's objectives.

[EGM IWG9](#) in 2024 marked the first EGMP meeting held above the Arctic Circle, taking place in Tromsø, Norway. Issues discussed at this meeting included, amongst others, a draft evaluation of the Pink-footed Goose ISSMP (see section 4.2 for further information), recommendations for enhancing Greylag Goose monitoring and the approval of the first Flight Safety Task Force workplan.

Leading up to the EGM IWG9 in 2024, the EGMP Data Centre organised a monitoring workshop in Copenhagen, Denmark in November 2023. The workshop, as the first meeting of national goose monitoring coordinators under the EGMP, served to establish connections within the coordinator network and to provide the EGMP Data Centre with an overview of ongoing national monitoring activities.

The workshop reviewed key monitoring gaps for several goose populations. Other cross-cutting topics included expanding the use of GPS tags to improve count accuracy, exploring field-recording apps, developing materials to attract new observers, and considering the creation of a broader monitoring forum involving EGMP, the IUCN Goose Specialist Group, and the International Waterbird Census.

Since the adoption of the Greylag Goose ISSMP in 2019 and its AFMP in 2021, the EGMP had not been able to move from an information-gap decision model to an IPM assessment that would allow dynamic decision-making and coordinated management. Knowledge gaps, particularly those related to summer population counts and productivity estimates, combined with an apparent bias in the offtake estimates and the lack of standardised offtake assessment protocols, have presented significant challenges to progress.

During EGM IWG9, the Data Centre presented a report on the status of, and recommendations for, post-breeding population counts and age-ratio surveys in the breeding range states of Management Unit (MU) 1 of the Greylag Goose. As regular post-breeding counts and age-ratio surveys are necessary for managing Greylag geese at MU level, the provision of such data was recommended to be given priority in the following years.

The meeting also approved an ambitious workplan on flight safety. The Flight Safety Task Force rapidly expanded its membership to fifteen experts from six Range States and proposed four main tasks for its initial work. These tasks included consolidating the Task Force and mapping relevant international aviation processes to which it

could provide input; establishing a European databank on aircraft–goose strikes; improving the understanding of the problem created by aircraft–goose strikes in Europe; and raising awareness of risks and management options to reduce aircraft–goose strike hazards.

[EGM IWG10](#) in 2025 was held in Brussels, Belgium. The meeting received updates on the progress towards evaluating and revising the Pink-footed Goose ISSMP and the Taiga Bean Goose ISSAP. With the evaluation reports for both plans ultimately having recommended full revisions (see section 4.3 for more information), and these recommendations having been approved by the AEWA Standing Committee on the advice of the Technical Committee, the Secretariat had initiated revision processes, following the applicable AEWA guidance. A workshop for the revision of the Pink-footed Goose ISSMP had been held in Levanger, Norway, in October 2024 and a hybrid workshop for the revision of the Taiga Bean Goose ISSAP had been held in Bonn, Germany, in April 2025. Both workshops contributed to advancing the revision of the plans and preparation of drafts which were undergoing several rounds of consultation before being presented for adoption at AEWA MOP9 in November 2025.

In response to the challenges associated with the Greylag Goose IPM and to further examine short-stopping of Greylag Geese, identify knowledge gaps and potential funding needs related to the declining number of wintering birds in Spain and France, the EGM IWG10 established an ad hoc working group. This approach enabled the EGMP to engage a broader group of experts to provide technical information and advice for consideration at EGM IWG11. EGM IWG10 also discussed the third summary of national reports, a protocol for the assessment of AFMP indicators and activities planned for the EGMP's tenth anniversary.

Building on the lessons from its predecessor (a pilot, single-population framework for coordinating implementation of the Pink-footed Goose ISSMP), the EGMP has, over its first decade, evolved into a coordinated, multi-species flyway management platform supported by structured governance, specialised Task Forces, and an expanding network of Range States governments and experts (see Figure 1). By amongst other activities, developing AFMPs, supporting technical processes, including population modelling, monitoring frameworks and development of FRVs, and undertaking cross-cutting work on the prevention of agricultural damage, flight safety and HPAI, the Platform has established itself as an innovative mechanism for coordinating implementation of the ISSAP and ISSMPs. The period also saw a progressive expansion of participation, data provision, and scientific and technical developments. The accumulated experience, institutional framework and technical tools provide a foundation for continued coordination of goose management at flyway scale to address emerging management needs and future challenges.

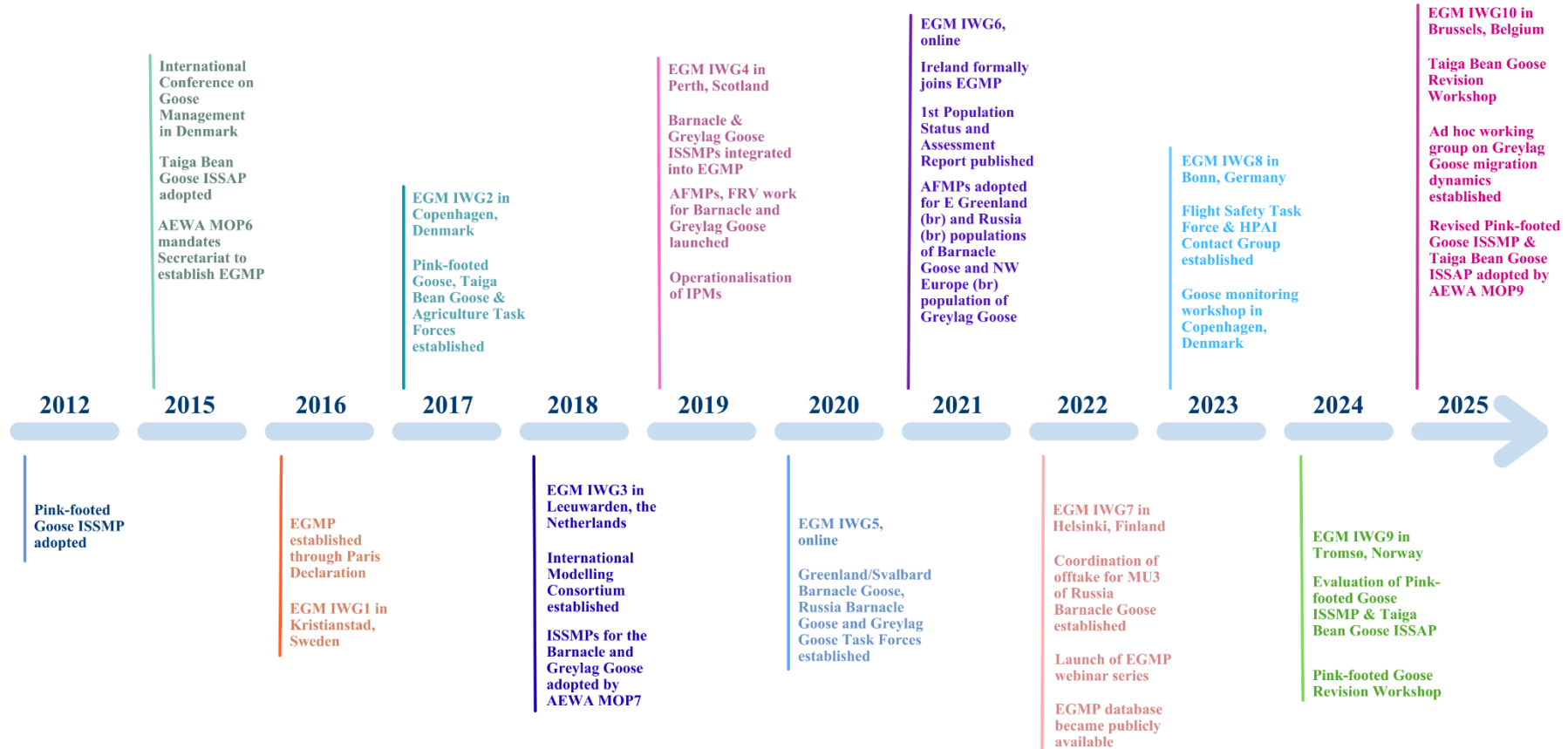


Figure 1. Chronology of milestones related to EGMP.

3. EGMP Structure

3.1 Range States

An EGMP Range State is a State whose territory is within the natural range of distribution of a population/species under the remit of the Platform. The EGMP has 16 participating Range States (see Figure 2), 15 national governments and the European Commission: Belarus, Belgium, Denmark, Estonia, EU, Finland, France, Germany, Iceland, Ireland, Latvia, Netherlands, Norway, Sweden, Ukraine and United Kingdom. Ireland was the latest country to join the EGM IWG, in June 2021. Spain is participating in the Greylag Goose implementation process through data provision. However, Spain, Lithuania, Poland and Russia officially remain non-participating Range States of the EGMP.

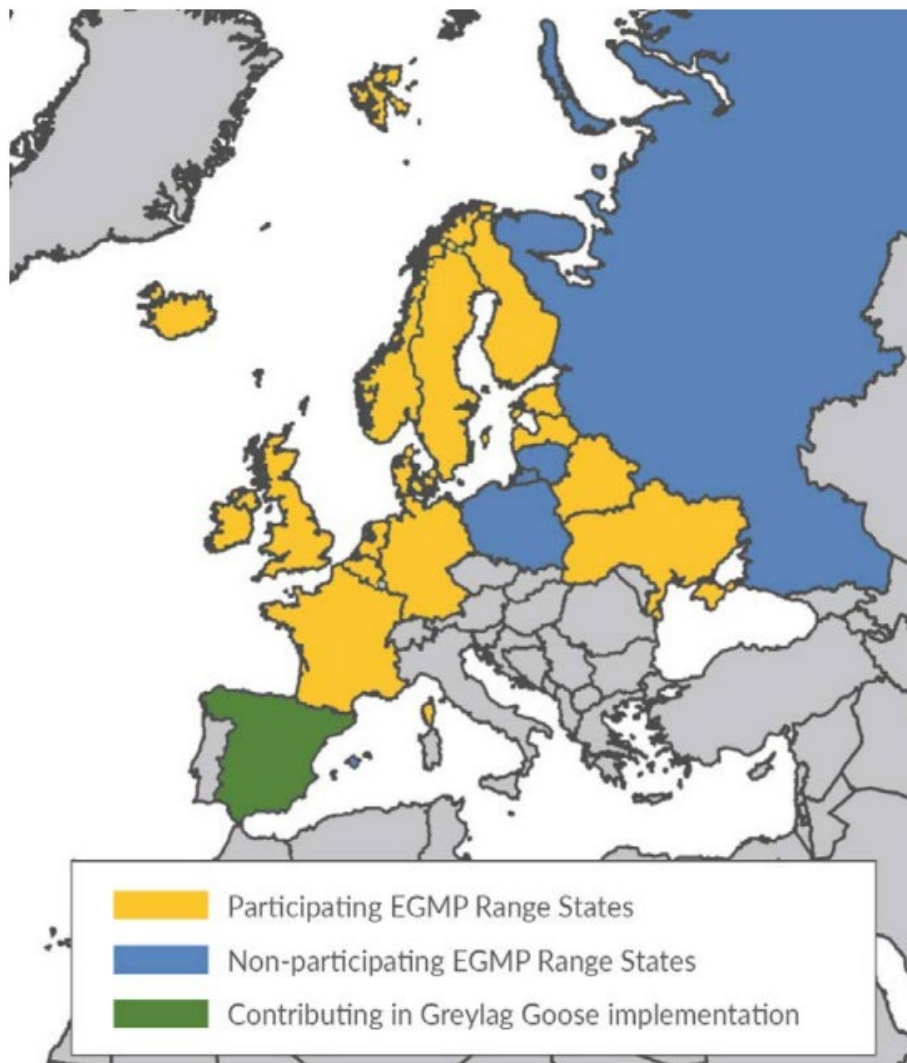


Figure 2. EGMP participating Range States.

3.2 European Goose Management International Working Group (EGM IWG)

The EGM IWG serves as the main coordinating and decision-making body for implementation of the ISSMPs and ISSAP within its remit and is composed of designated Range State representatives (including government representatives and national experts) and representatives of the European

Commission, on behalf of the European Union. Permanent observer organizations and invited experts also participate in EGM IWG meetings.

The EGM IWG meets annually to guide and oversee the conservation and sustainable use of the species and populations under its remit. It is responsible for setting priorities for action and taking key decisions, coordinating international implementation of agreed activities, and mobilizing the financial and other resources required.

The group is tasked with ensuring regular and comprehensive monitoring of these species and populations by the Range States, including the timely annual submission of national data to the EGMP Data Centre in line with EGM IWG requirements. It also reviews the effectiveness of the implementation of the relevant AEWA International Species Management and Action Plans, takes appropriate action based on monitoring results, and contributes to their update, as required.

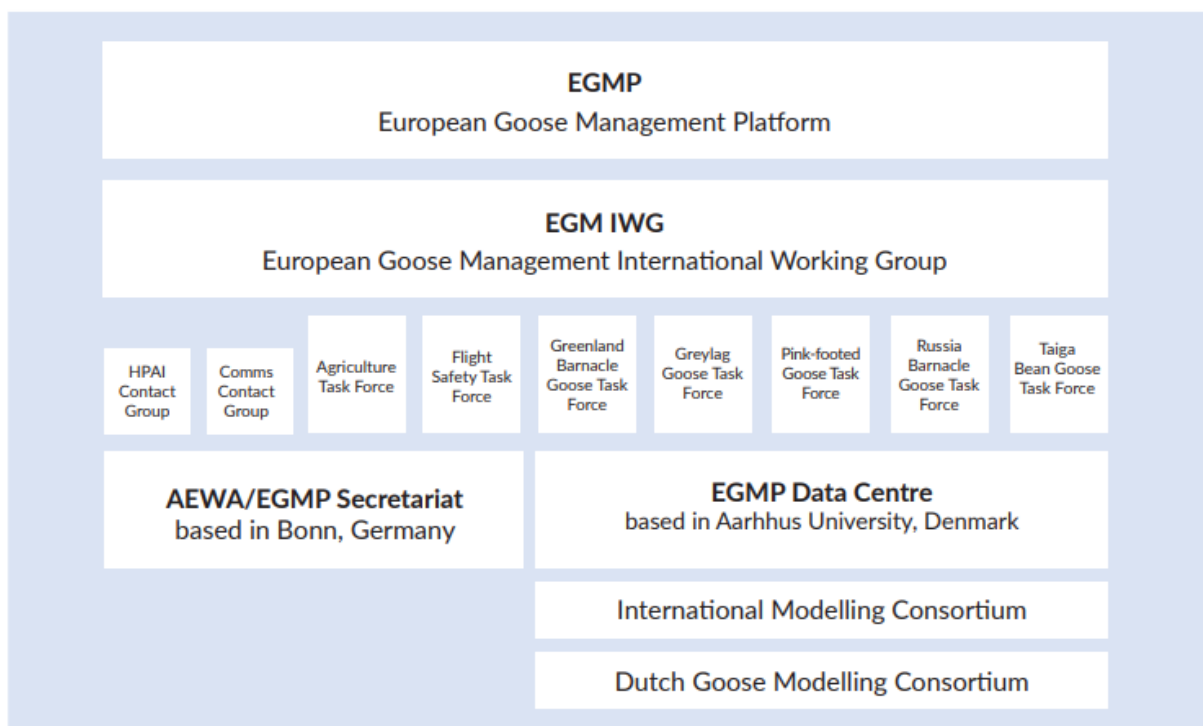


Figure 3. Organisational structure of the European Goose Management Platform.

3.3 EGMP Data Centre

The EGMP Data Centre collates and assesses population and harvest information based on input from the Range States. Based on updated population estimates and harvest data, the Data Centre uses state-of-the-art modelling tools to predict the annual optimal management strategies for the annual decision-making process in the EGM IWG.

The information is based on input provided by Range States and includes information regarding population size, demographic variables, actual harvest as well as socio-economic data on agricultural damage and flight safety risks. Based on this information the Data Centre provides annual assessments on population status and proposals for optimal management strategies to inform the annual decision-making process.

Under the coordination of the EGMP Data Centre an International Modelling Consortium, consisting of an international partnership of scientific institutions, collaborates on the development of population models (see Figure 3).

3.4 EGMP Secretariat

The EGMP Coordination Unit, serviced by the AEWA Secretariat, is responsible for facilitating the coordination of the European Goose Management Platform, including its governing and technical bodies, as well as collaboration among the participating Range States.

3.5 EGMP Task Forces

Task Forces are expert groups set up under EGMP to help turn management and action plans into practical action. They support the EGM IWG in coordinating and catalysing the implementation of species/population-specific plans or activities related to such topics as agriculture conflicts and flight safety. Task Forces help ensure that Range States and relevant stakeholders work together in a coordinated way to manage goose populations sustainably and based on the best available knowledge.

Each Task Force is led by a voluntary Coordinator, usually from a country or organisation with strong expertise in the relevant species or topic. The Coordinator works closely with the AEWA Secretariat and the EGMP Data Centre. Participation in Task Forces is inclusive, bringing together government representatives from Range States, designated national experts, representatives of admitted observer organisations, and other experts as required. This broad membership helps ensure that the Task Forces' work is informed by science, practical experience, and different national perspectives.

The EGMP currently includes seven Task Forces: five species- or population-specific Task Forces mandated to advise the EGM IWG and to support the implementation, monitoring, and evaluation of ISSAPs, ISSMPs, and AFMPs under the EGMP framework, and two thematic Task Forces mandated to provide advice to the EGM IWG and other Task Forces on cross-cutting issues related to their respective themes (see Table 4).

Table 3. EGMP Task Forces.

Task Force	Year of establishment	Type of Task Force	Coordinator
<i>Pink-footed Goose Task Force</i>	2017	Population	Mr Jesper Madsen, Aarhus University, Denmark
<i>Taiga Bean Goose Task Force</i>	2017	Species	Mr Mikko Alhainen, Finnish Wildlife Agency, Finland
<i>Greylag Goose Task Force</i>	2020	Population	Ms Malin Åhl, Swedish Environmental Protection Agency, Sweden
<i>Greenland Barnacle Goose Task Force</i>	2020	Population	Ms Rae Mckenzie, NatureScot, United Kingdom
<i>Russia Barnacle Goose Task Force</i>	2020	Population	Mr Sander Moonen, Wageningen Environmental Research, Netherlands

<i>Agriculture Force</i>	<i>Task</i>	2017	Thematic	Ms Ingunn Tombre, Norwegian Institute for Nature Research, Norway
<i>Flight Safety Force</i>	<i>Task</i>	2023	Thematic	Mr Albert de Hoon, Ministry of Infrastructure and Water Management, Netherlands

Most Task Force work is carried out through online collaboration. When possible, Task Forces meet face-to-face, often alongside international meetings of the EGM IWG or related conferences, to strengthen coordination and collaboration.

Task Forces also play an important role in monitoring progress and reporting. They contribute information to national reports prepared by Range States and provide regular updates on their activities to the EGM IWG. Through this process, Task Forces help track implementation, identify gaps in knowledge, and support continuous improvement in the implementation of action and management plans and the conservation and management of goose populations.

3.6 EGMP Contact Groups

In addition to the Task Forces, the EGM IWG has established two contact groups that support the work of the Platform in the areas of highly pathogenic avian influenza (HPAI) and communication. These contact groups are less formal than Task Forces and do not have annual workplans approved by the EGM IWG. They meet on an as-needed basis to discuss emerging or relevant issues and to provide additional expertise and advice to the EGM IWG, the Task Forces and the EGMP Secretariat (see Figure 3).

4. Implementation of the International Species Action and Management Plans within the EGMP's Remit

4.1 Introduction

During the past decade, the European Goose Management Platform has coordinated the implementation of one ISSAP, three ISSMPs and three associated AFMPs, currently covering a total of nine populations. This section reviews the implementation of these plans under the EGMP framework. It begins with an overview of the populations and management instruments currently covered by the Platform (Table 5).

It then presents an overview of the formal evaluations of the Pink-footed Goose ISSMP and the Taiga Bean Goose ISSAP, which were undertaken before the expiration of the initial versions of these plans and provided a basis for their revision. These evaluations summarised progress made towards the plans' objectives and identified remaining gaps in knowledge and implementation.

For the Greylag Goose and Barnacle Goose ISSMPs, the current versions of which are only due to expire in 2031, the section provides high-level stocktakes of progress based on information submitted by Range States through national reports in 2025, complemented by assessments undertaken by the EGMP Task Forces. The stocktakes review the level of progress in implementing actions, highlight areas of good progress, and identify where further efforts are required.

Table 4. Overview of populations and Management Units (MUs) covered under the EGMP and relevant management documents.

Population	Management/Action Plan (ISSMP/ISSAP)			Adaptive Flyway Management Plan (AFMP)/Implementation Plan (IP)		
	Link	Adopted	Expires	Link	Adopted	Review
Svalbard (br) population of Pink-footed Goose	ISSMP	2025 (replacing 2012 version)	2037	[AFMP]	[2026]	[2032]
Scandinavia (br) population of Taiga Bean Goose	ISSAP	2025 (replacing 2015 version)	2037	Not developed	-	-
Finland & NW Russia (br) population of Taiga Bean Goose	ISSAP	2025 (replacing 2015 version)	2037	Not developed	-	-
Germany & Poland (nbr) population of Taiga Bean Goose	ISSAP	2025 (replacing 2015 version)	2037	Not developed	-	-

C Asia (nbr) population of Taiga Bean Goose	ISSAP	2025 <i>(replacing 2015 version)</i>	2037	Not developed	-	-
NW Europe (br) population of Greylag Goose consisting of 2 MUs; MU1 (migratory) and MU2 (sedentary)	ISSMP	2018	2031	AFMP	2020	2026
Russia (br) population of Barnacle Goose consisting of 3 MUs; MU1 (Arctic), MU2 (Baltic) and MU3 (North Sea)	ISSMP	2018	2031	AFMP	2020	2026
E Greenland (br) population of Barnacle Goose	ISSMP	2018	2031	AFMP	2020	2026
Svalbard (br) population of Barnacle Goose	ISSMP	2018	2031	Not developed	-	-

4.2 Evaluation of the Pink-footed Goose ISSMP

The implementation of the Pink-footed Goose ISSMP was assessed through an end-of-lifespan [evaluation](#), which recommended that the plan undergo a full revision. The main findings of the evaluation are summarised below.

Between 2012 and 2015, implementation of the ISSMP for the Pink-footed Goose was coordinated by the AEWA Pink-footed Goose International Working Group. Since 2016, this work has continued under the EGMP, where a dedicated Pink-footed Goose Task Force provides annual recommendations to the EGM IWG, supported by national working groups in most Range States.

The ISSMP aimed to reduce agricultural conflict and limit impacts on Arctic ecosystems. Maintaining a stable population at an agreed population target was identified as the main approach to achieving these aims and was agreed by all Range States. The plan set goals and objectives but did not include FRVs or indicators to measure progress. Nevertheless, the evaluation found that the key objectives had been achieved: the population's range increased, agricultural conflict declined, the population stabilised as a result of harvest management measures (though remained above the target), grazing impacts on Svalbard tundra slowed, and crippling from hunting decreased due to changes in hunting practices and training despite increased harvest levels. The existence of a framework to address impacts and the ongoing communication linked to the plan also helped address concerns among farmers.

During the plan's implementation, the population continued to expand naturally. New breeding areas were established in Novaya Zemlya and new staging and wintering sites developed in Finland, Sweden, eastern Denmark, Poland and Germany. This new migratory group grew from a few hundred birds to more than 4,000 over 15 years, probably founded by individuals shifting away from the traditional flyway. More Svalbard-breeding birds are now migrating through Sweden and Finland, making Finland, Sweden and Russia additional Range States of the population. As the migration patterns are still changing, the future configuration of breeding, staging and wintering areas remains uncertain.

The ISSMP identified 17 priority results, which were evaluated on a scale from 1 to 5 and received an average score of 3.7 (Figure 4). Essential results achieved full scores, while high- and medium-priority results scored lower (high-priority results averaged 3.4, and medium-priority results averaged 2.8). Beyond these formal results, the adaptive and participatory nature of the plan supported international exchange, such as cooperation between hunters in Denmark and Norway, and encouraged new research and monitoring methods, including improved age counts, the use of ringing and resightings, and optimised monitoring approaches. Between 2013 and 2023, at least 63 scientific papers and multiple academic theses were produced, many linked to international collaborations within the plan. This close interaction between science and management strengthened adaptive learning and informed decision-making in the EGM IWG.

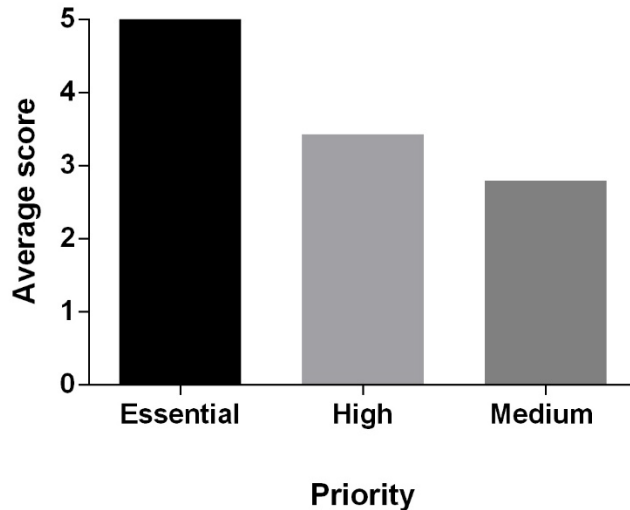


Figure 4. Average scoring of achievements of results according to the defined priorities in the ISSMP. Score 1 = (not implemented); Score 2 = (limited progress); Score 3 = (good progress); Score 4 = (significant progress); Score 5 = (implemented).

Overall, the ISSMP made steady progress (see Figure 5). However, although the population stabilised, it remained about 10,000–20,000 individuals above the 60,000 target. Reaching that target would have required further increases in harvest or other actions affecting survival or reproduction, but the factors limiting higher harvest levels are not yet clear. The proposed measure to prevent new breeding colonies on the Norwegian mainland was not pursued, although available information suggests only limited breeding attempts. At the same time, agricultural conflict decreased and grazing impacts on tundra vegetation appeared less severe than initially anticipated, reducing the perceived need for population control on the Norwegian mainland. Grassland restoration, which was highlighted as an important action to reduce conflict, was only carried out in Belgium. Elsewhere, particularly in Norway, efforts focused instead on subsidy schemes allowing Pink-footed Geese (and Barnacle Geese) to forage undisturbed on existing grasslands. The development of national management plans and ecotourism initiatives progressed slowly. Some outreach activities took place in Belgium, Denmark and Norway, including media features and the publication of a goose cookbook, but broader initiatives have not advanced due to lack of funding.

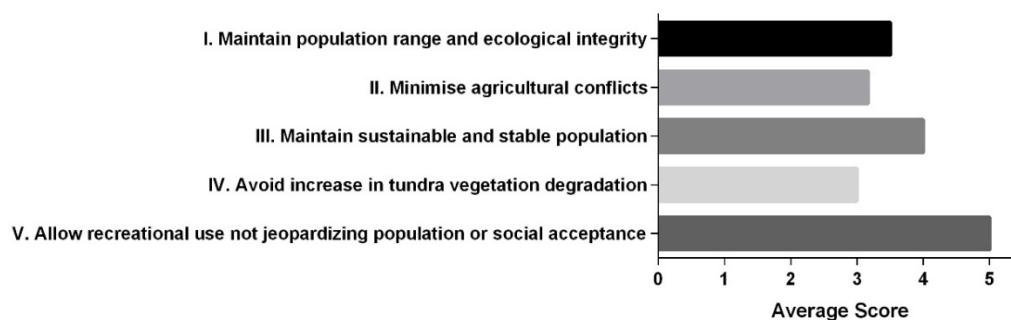


Figure 5. Average scoring of achievements of objectives defined in the ISSMP. Score 1 = (not implemented); Score 2 = (limited progress); Score 3 = (good progress); Score 4 = (significant progress); Score 5 = (implemented).

The evaluation concluded that a coordinated international management framework remains necessary. Key challenges persist, including the need to maintain population stability to limit agricultural conflicts and avoid negative impacts on Arctic ecosystems, as well as to address emerging changes such as the ongoing expansion of the population into new breeding areas.

Lessons learned during the first implementation phase, for example, the benefits of adaptive harvest management, structured decision-making, and close integration between science and policy, have informed the revision of the ISSMP. Building on a renewed problem analysis identifying both services and disservices, as well as current and potential threats to the population, the revision process updated the ISSMP's framework for action (including its goal, objectives and actions) and aligned its structure with the latest AEWA format and guidance for species management plans. It incorporated methodological advances and experience gained from other ISSMPs, including the definition of FRVs, a mandate to develop an AFMP and an updated population target, strengthening the overall management framework of the plan.

The revised ISSMP for the Pink-footed Goose was adopted at AEWA MOP9 in November 2025, after which the development of the AFMP was initiated. The EGM IWG 11 in 2026 marks the first meeting under the new plan, at which the AFMP is expected to be adopted.

4.3 Evaluation of the Taiga Bean Goose ISSAP

The AEWA International Single Species Action Plan for the Taiga Bean Goose was the first AEWA flyway conservation plan developed for a declining quarry species and built on lessons learned from the adaptive management framework used for the Pink-footed Goose.

At the heart of the ISSAP was a population target agreed by Range States and stakeholders. This target served as a shared point of reference: a level that could help guide the population back toward a favourable conservation status while still allowing for sustainable hunting. When the initial version of the plan was developed, there was no precedent for defining Favourable Reference Values in the context of AEWA implementation and AEWA's format and guidelines for international species action plans did not yet call for the identification of Favourable Reference Values, so these were not included. Nevertheless, the target implicitly reflected a population level considered safe from extinction risks.

Implementation began in 2016, when the Taiga Bean Goose was incorporated into the EGMP. A Taiga Bean Goose Task Force was established to provide annual recommendations to the EGM IWG, supported by national working groups.

The ISSAP set ambitious long-term goals: to restore and maintain a total population of 165,000–190,000 birds, with separate targets for each Management Unit. Additional targets were set for 2035, totalling 94,000 birds. When the plan was adopted, the population was estimated at around 51,500 individuals, though data for Eastern MU2 were unknown.

According to the ISSAP [evaluation](#), population trends during implementation and achievement of the plan's objectives varied significantly across the Management Units. The Western MU was estimated in 2025 at 1,174 birds and appeared stable or slightly increasing since 2015, but the wintering range had contracted, with fewer than ten birds wintering in England after 2019. For this MU, the plan's goal and purpose were only partly achieved. In the Central MU, the most recent IPM-based estimate from March 2024 was 75,363 birds (range 66,829–84,837), indicating that this MU met both the ISSAP's purpose to stabilise the population and its long-term population goal. The Eastern 1 MU was estimated at

17,000–20,000 birds, similar to the estimate at the time of the plan’s adoption, although no information on trend has been available. For Eastern MU2, basic information on population size and trend is still lacking, although a handful of studies using GPS tracking and citizen-science observations have revealed potential migratory routes and staging sites in Central Asia.

Seventeen actions were identified in the ISSAP and scored based on the best available information for each MU. Higher priority actions scored better on average (see Figure 6), and good progress overall was achieved for the Western and Central MUs.

The average score of actions for each MU is as follows:

- Western MU: 3.08 (Good progress)
- Central MU: 3.11 (Good progress)
- Eastern 1 MU: 1.90 (Limited progress)
- Eastern 2 MU: Not assessed due to the lack of information

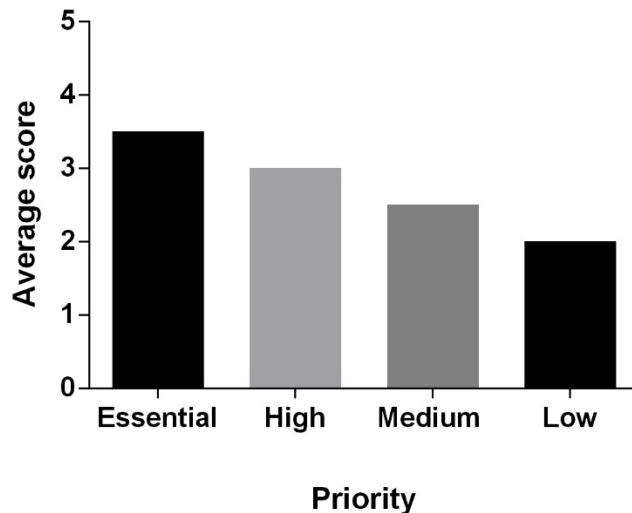


Figure 6. Average scoring of the implementation of actions according to the defined priorities in the Taiga Bean Goose ISSAP. Score 1 = (not implemented); Score 2 = (limited progress); Score 3 = (good progress); Score 4 = (significant progress); Score 5 = (implemented).

Taken together, these results showed that progress had been made, even if important gaps remain. The absence of robust data from the Eastern MUs continues to hinder a complete assessment of the Western Siberia-breeding populations, which remain essential to the subspecies’ recovery.

Following this assessment, the evaluation made clear that continued implementation of conservation and management measures is needed. Coordination through adaptive harvest management remains important in the Central MU to ensure sustainable harvest. Further efforts are required to understand the status and development of the Western and Eastern MUs, ensure compliance with hunting regulations, and maintain suitable feeding habitats such as wet grasslands. Continued monitoring will be necessary to understand why the former English wintering flocks have not recovered.

Alongside these findings, new developments and insights emerged during implementation. AEWA moved from treating the Taiga Bean Goose as two populations divided into four management units to recognising the four units as separate AEWA-listed populations. Advances in GPS tracking improved understanding of migration routes and habitat use. At the same time, the rapid growth of renewable energy infrastructure introduced new pressures on breeding, staging and wintering areas along the flyway.

The evaluation also reviewed progress under the ISSAP's objectives. Efforts to improve adult survival relied on harvest regulation, enforcement and specific conservation actions. Harvest levels decreased after Finland's 2014 moratorium, and Sweden's 2021 closure of the general Bean Goose hunting season reduced offtake by about 90%. These measures contributed to apparent survival averaging 91% between 2019 and 2024. Complementary actions included awareness campaigns to reduce illegal shooting, predator management during vulnerable periods, non-lethal approaches to reduce agricultural damage and measures to limit exposure to lead ammunition. Information for the Western and Eastern MUs, however, remained limited.

Reproductive success followed a similar pattern of uneven progress. In the Central MU, intrinsic reproductive rates remained stable at an average of 0.32 over ten years. In the Western MU, juvenile proportions increased but remained lower than before 2013. Reproductive information for the Eastern MUs remained scarce, though new listings in Russian regional Red Data Books strengthened legal protection across parts of the breeding range. Seasonal restrictions and targeted management generally kept disturbance low in the Western and Central MUs, and programmes such as Finland's Unharvested-Fields-For-Birds provided additional support at a small scale. Yet significant data gaps still limit understanding of the situation in the Eastern MUs.

Progress on habitat-related objectives was limited. Wildlife-friendly forestry and small-scale restoration projects provided local benefits, but their overall reach remained narrow. Restoration initiatives in Finland and the UK improved ecological conditions at specific sites, though the scale of degraded peatland landscapes limited population-level effects. Grassland restoration funded through the EU's Common Agricultural Policy led to local improvements but was constrained by changing subsidy structures and the small size of intervention areas. Similarly, the integration of Taiga Bean Goose considerations into renewable energy planning advanced only slowly, even as infrastructure expanded along migration corridors.

A number of obstacles continued to impede progress. Limited resources restricted the expansion of successful initiatives, and geopolitical instability, particularly the war in Ukraine, reduced access to key breeding areas and limited Ukraine's capacity to contribute to migratory waterbird conservation. The United Kingdom has faced challenges in maintaining former English wintering flocks, partly because of short-stopping. Sweden reported limited capacity for monitoring and managing the Western MU and, in Finland, long-term funding needs slowed forestry and mire restoration, large-scale predator management in remote areas remained impractical, and expanding wind energy development raised concerns about cumulative impacts. These challenges highlighted the importance of continued, coordinated work as the ISSAP enters its revision phase.

Overall, the first implementation cycle of the Taiga Bean Goose ISSAP showed that coordinated international action within an adaptive harvest management framework can slow population declines in a quarry species, even while sustainable recreational hunting continues. At the same time, the evaluation

made clear that important gaps remain, particularly in the eastern parts of the range where information is still limited and pressures continue to evolve.

The revised plan adopted by AEWA MOP9 reflects these findings and incorporates several important improvements. It follows the most recent AEWA format and guidelines for international species action plans, including by identifying FRVs for the Finland & NW Russia (br) population, which is currently the only population that is subject to internationally coordinated harvest. It also reflects AEWA's recognition of four distinct Taiga Bean Goose populations, providing separate biological and threat assessments for each. In addition, the revised ISSAP places stronger emphasis on the need to engage all Range States in implementation, including those outside the AEWA Agreement Area, in order to ensure effective coordination across the full flyway. The ISSAP anticipates the development of an Implementation Plan, which will, amongst other things, include an evaluation framework for the ISSAP and endeavour to identify FRVs for the remaining populations.

As the revised plan adopted by AEWA MOP9 moves into implementation phase, the EGMP provides a foundation for ensuring that conservation and management efforts remain coordinated, responsive and effective across the entire flyway.

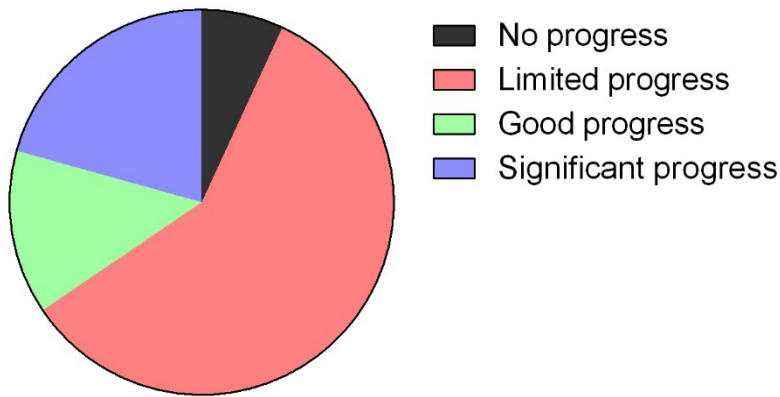
4.4 Stocktake of implementation progress for the Greylag and Barnacle Goose ISSMPs

A stocktake of progress towards implementation of the actions identified in the framework for action of the management plans for Greylag Goose and Barnacle Goose was carried out by EGMP Task Forces. For the latter, separate stocktakes were undertaken for the Greenland and Russia breeding populations. The Svalbard population of Barnacle Goose was not included in the assessment, as an AFMP has not yet been developed for this population and it has not been included in national reporting by Range States to the EGM IWG. The stocktake aimed to assess collective progress and identify gaps in implementation based on information contained in the national reports submitted by Range States to the EGM IWG in 2025. Unlike the more comprehensive evaluations that were undertaken for the Pink-footed Goose ISSMP and Taiga Bean Goose ISSAP towards the end of their lifespans, this stocktake exercise did not assess progress towards achieving the plans' goals and objectives and did not consider information beyond that submitted by Range States in their national reports. Its assessment of progress took a qualitative approach. MOP9 extended the lifespans of the Greylag and Barnacle Goose ISSMPs until 2031. A more comprehensive evaluation of these plans' results and implementation performance will be undertaken before they expire to inform decisions about whether they should ultimately be retired, extended, updated or revised.

4.4.1 Greylag Goose ISSMP

The Greylag Goose International Species Management Plan includes 29 actions aimed at conserving important sites, managing goose populations sustainably, and reducing conflicts with farming, aviation, and other priorities. Around two-thirds of the actions are classified as High or Essential priority.

The stocktake suggested that overall progress in implementing the actions identified by the ISSMP's framework for action is uneven. Around 30% of actions show good or significant progress (Figure 7), particularly those related to land-use planning, legal protection of key sites, promotion of good hunting practices, and support for implementation of the plan at both national and international levels.



Total= 29 actions

Figure 7. Progress towards implementation of Greylag Goose ISSMP actions.

However, more than half of all actions show only limited progress, and a small number show no progress at all. In particular, actions related to monitoring, data collection, coordinated population management, and assessment of agricultural impacts are advancing relatively slowly (see Table 5). Persistent data gaps and weak international coordination continue to limit the ability to manage the Greylag Goose population at management unit level and in a fully adaptive manner.

In summary, the foundations for managing Greylag Goose populations are largely in place, and commitment from participating countries is clear. However, the stocktake shows a strong need to accelerate delivery, especially for high-priority actions that require joint international effort to strengthen population monitoring and enable the start of adaptive harvest management based on integrated population models. Improving shared monitoring systems, international coordination, and targeted research will be key to achieving long-term, sustainable management of the Greylag Goose.

Table 5. Stocktake of implementation progress for the Greylag Goose ISSMP.

Actions from the ISSMP	Priority	Progress	Comments
1.1 Provide adequate protection and management to key sites of international importance under Article 4(2) of the Birds Directive in the EU and other relevant instruments in other Range States throughout the range of the population and maintain them in good ecological status	Essential	Significant progress	All reporting Range States have established legal protections for key sites used by the Greylag Goose population. In addition to formal designations, Belgium, Norway, and Sweden integrate agri-environmental schemes or farm-level arrangements to maintain or enhance the ecological quality of these areas.
1.2 Promote goose-based eco-tourism at selected key sites	Medium	Limited progress	Most countries report limited or indirect promotion of goose-based eco-tourism. Only Norway and Sweden reported tangible examples of goose-focused eco-tourism infrastructure, while other countries mention broader wildlife tourism or minimal targeted activity.
2.1 Take key sites for geese into account in land use planning and growing of sensitive crops	High	Significant progress	Most countries integrate key goose areas into land use planning through a mix of legal designations and targeted measures.
2.2. Provide accommodation areas to reduce risks and conflicts at sensitive areas through e.g. subsidies	Medium	Significant progress	Belgium, Finland, the Netherlands, and Sweden have implemented or subsidised designated areas to redirect geese away from conflict zones, while other countries either lack formal schemes or consider current conflict levels too low to warrant intervention.
2.3 Apply scaring and land management techniques to reduce the attractiveness of sensitive areas, monitoring the implications of such local displacement for conflicts at wider scale	High	Limited progress	All countries acknowledge the role of scaring in mitigating local damage, but only Sweden, Belgium, and Norway combine its use with coordination, monitoring, or evaluation. Broader-scale displacement effects are not systematically tracked in any Range State.
3.1. Reduce risk posed by goose migration to air safety through operational measures such as radar surveillance	High	Limited progress	Countries apply localized measures to reduce bird-strike risks in Norway, the Netherlands, Sweden and Denmark, but coordination at the flyway scale is still lacking.
3.2 Establish an internationally coordinated programme to assess agricultural damage including monitoring and assessment protocols	High	Limited progress	Countries with significant agricultural damage use different systems for monitoring and compensation, and most report contributions to the EGMP Agricultural Task Force; however, coordination at the flyway scale remains lacking.

Actions from the ISSMP	Priority	Progress	Comments
3.3 Liaise with farmers affected by goose damages to reduce agricultural conflicts	High	Limited progress	Norway, Sweden, and the Netherlands have structured farmer engagement through e.g. forums, management groups, and compensation schemes, but national-level capacity building is limited, and international farmer cooperation on goose issues remains unexplored.
4.1 Establish hierarchical population targets at flyway, management unit and national levels iteratively to ensure national targets are consistent with the flyway targets and with legal requirements at all levels	Essential	Limited progress	Flyway targets have been set for MU1 and MU2 at 70,000 and 80,000 breeding pairs, respectively, resulting in an approximate wintering population size of 545,000 individuals. Belgium has national population targets. The Netherlands uses Article 9 derogations and FRVs from the Adaptive Flyway Management Plan to monitor conservation status at the provincial level. FRVs have been used to define national conservation status, and provincial status has been derived from these based on goose distribution. Other countries report no national targets. Despite the flyway and MU level targets, it has not been possible to move from the information-gap decision model at population level to a dynamic and model-based management at MU level due to data availability.
4.2 Establish an internationally coordinated population management programme (including both hunting and, if necessary, killing under derogations) for the transboundary management units encompassing monitoring, assessment and decision-making protocols	Essential	Limited progress	EGMP provides an internationally coordinated population management programme but monitoring challenges have hindered the development of integrated population models and the full deployment of adaptive population management tools.
4.3 Improve effectiveness of population control measures through experimenting with different timing and methods and better understanding the relative efficacy of lethal versus non-lethal scaring techniques	High	Good progress	Research on lethal and non-lethal scaring techniques is ongoing in multiple countries, with several case studies and new initiatives to reduce conflicts published, but no flyway-scale evaluations exist. There is a clear need to synthesize findings and address knowledge gaps. Some of this work has been done under the Agriculture Task Force.
4.4 Promote best practices of goose hunting including timing to minimize damage and significant disturbance to other species	Medium	Significant progress	Most countries apply best practices of goose hunting to minimize damage and disturbance to other species. Measures differ according to country but include research, policies to optimize hunting timing and capacity building activities with hunters.
4.5 Maintain low crippling rates	High	Limited progress	Most countries address crippling primarily through education and awareness initiatives; however, a coordinated framework for monitoring crippling rates across the flyway remains absent. Effectiveness of these measures are still unknown.

Actions from the ISSMP	Priority	Progress	Comments
4.6 Develop hunting techniques to further reduce crippling	Medium	Good progress	Measures in most countries focus mainly on policies to promote education and awareness. Effectiveness of these measures are still unknown.
A.1 Produce and update periodically spatially explicit population size estimates based on agreed international monitoring	Essential	Limited progress	Despite better data availability, management remains constrained by the information-gap decision model at the population level, preventing a shift to dynamic, model-based management at the management unit (MU) level. Implementing regular post-breeding counts and age-ratio surveys is essential to enable effective MU-level population management.
A.2 Maintain an annually updated bag statistics database including geese harvested by any means	Essential	Limited progress	Most countries provide information on offtake levels but estimates continue to appear biased high.
A.3 Maintain a spatially explicit database on goose damage to agriculture, other flora and fauna and risk to air safety	Essential	Good progress	Most countries facing significant agricultural damage or air safety risks maintain spatially explicit databases. However, a comparable system for recording impacts on other fauna and flora is still lacking.
A.4 Collect demographic (mortality, reproduction, differential migration and connectivity) data from an agreed representative sampling framework across the range	High	Limited progress	The Data Centre receives monitoring data on an annual basis. Current measures include GPS tagging, neckbanding, productivity counts, with new research projects underway that may provide additional data in the future. However, coordination of data collection remains suboptimal, and significant gaps persist in certain regions. The recommendations for estimating Greylag Goose breeding population size and productivity outlined in document AEWA/EGMIWG/9.10 have not yet been implemented.
A.5 Analyse the impact of various agricultural policy scenarios and measures (Nitrate Directive, agri-environmental measures, various production incentives including biofuels) on goose populations and on goose damage	High	No progress	No actions reported by Range States.
A.6 Assess the role of predators (e.g. White-tailed Eagle <i>Haliaeetus albicilla</i>, Red Fox <i>Vulpes vulpes</i>) in regulating goose populations	Medium	No progress	No actions have been taken to assess predator impacts, Finland indicated that ongoing GPS tagging may help clarify predator-related mortality over time.

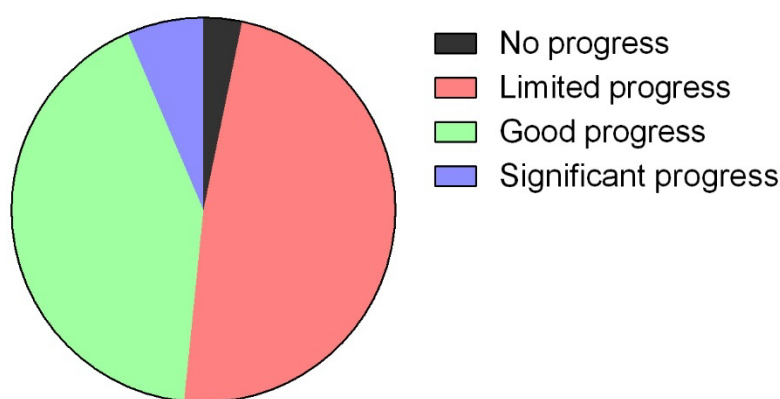
Actions from the ISSMP	Priority	Progress	Comments
B.1 Produce best practice guide on establishing refuge areas (size, management, subsidies)	Medium	Limited progress	The AEWA Secretariat has not yet developed guidance on the establishment of refuge areas. Measures implemented by Range States include seasonal hunting restrictions, crop-damage compensation schemes linked to scaring, habitat protection, and the creation of refuges. However, knowledge transfer remains limited, and practical guidance tailored to farmers is still lacking.
B.2 Provide guidance on conflict resolution and how to make this consistent with the European legal framework, including the Common Agricultural Policy	High	Limited progress	The Secretariat has facilitated discussions on conflict resolution strategies; however, no formal guidance has been developed to date. Structured conflict resolution initiatives are underway in Denmark and Sweden, while most other Range States either report no current conflicts or rely primarily on compensation schemes. The EU did not report the implementation of any additional measures.
B.3 Create a toolbox for decisions in relation to determining significant damage (including metrics, benchmarking, verification, monitoring, various management techniques to prevent damage, compensation)	High	Limited progress	The EGMP Impact Model is expected to be finalised soon. Measures implemented at the national level include legally defined damage thresholds, minimum scaring requirements as a condition for compensation, standardised crop damage inspection protocols, and assessment guidelines embedded within damage regulation procedures. Flyway-level coordination on the definition of significant damage has not yet been implemented.
B.4 Provide guidance on implementation of population management protocols at national level	Medium	Limited progress	The AEWA Secretariat has sought to provide guidance on population management. However, monitoring limitations have prevented a transition from an information-gap decision model at the population level to a dynamic, model-based management approach at the MU level. At the national level, most Range States provide guidance on management. Measures include the publication of national guidelines, species monitoring to regulate hunting pressure, and the application of derogations under the EU Birds Directive.
B.5 Share experience concerning methods to prevent damage to agriculture and risks to human health, air safety as well as to other flora and fauna	Medium	Limited progress	Key measures include codifying best practices in legislation, conducting studies to inform management, and fostering coordination through EGMP task forces and national/subnational committees, including local outreach via farmers and hunters organizations.
C.1 Develop and implement a communication strategy and plan	Medium	Limited progress	Despite the absence of a communication strategy and plan developed by the AEWA Secretariat, communication is generally carried out through regular outreach activities, including county-level forums and broader wildlife communication strategies. Awareness could be further enhanced through the development of targeted communication materials aimed at practitioners and decision-makers.

Actions from the ISSMP	Priority	Progress	Comments
D.1 Range States review their national legislation in the light of the framework legal guidance document developed under the EGMP	High	Good progress	In most Range States, the review of national legislation has been completed or is currently underway.
E.1 Range States contribute on a regular basis to the budget of the EGMP	Essential	Significant progress	Range States have contributed consistently to the EGMP budget.
E.2 National and regional governments secure the necessary funds for the implementation of the actions at national and sub-national levels	Essential	Significant progress	Fund is in place in most countries.

4.4.2 Barnacle Goose ISSMP: Russia (br) population

The stocktake for the Barnacle Goose International Species Management Plan assessed 31 actions covering conservation, population management, conflict mitigation, monitoring, research, and governance. About two thirds of these actions are classified as High or Essential priority.

The stocktake of the ISSMP's implementation in relation to the Russia (br) population showed that implementation has good progress in relation to regular monitoring programmes and surveys of breeding, staging, and wintering geese, often conducted in collaboration with research institutes or regional wildlife authorities (Figure 8, Table 6). Good progress has also been made where actions could be delivered through existing national instruments, contributing to protection and management of key sites, land-use planning and growing of sensitive crops, and engaging with farmers and civil aviation authorities to implement measures to reduce conflicts. These results indicate that Range States were generally able to strengthen cooperation with relevant stakeholders and mobilise policy tools and funding mechanisms to implement important activities on the ground.



Total= 31 actions

Figure 8. Progress towards implementation of Barnacle Goose ISSMP actions in relation to the Russia (br) population.

By contrast, the assessment identified systematic weaknesses in actions requiring harmonisation, shared analytical capacity, or flyway-level coordination. A number of actions showed only limited progress, and one showed no progress. These included coordinated assessment of agricultural damage, development of common guidance and toolboxes, consistent spatial reporting of damage and ecological impacts, evaluation of the effects of agricultural policy instruments, and assessment of cumulative ecological impacts in the Arctic. Variability in national data systems, limited temporal and spatial resolution of information, and incomplete reporting to the EGMP Data Centre constrained the ability to support integrated, evidence-based decision-making across Management Units.

The stocktake indicated that the institutional framework for Barnacle Goose management is largely in place but not yet delivering its full strategic potential (see Table 6). While national implementation measures and funding arrangements were generally in place, progress lagged on measures that are

critical for adaptive, flyway-level management. Addressing these gaps will require targeted commitments to improve data standardisation, strengthen coordination mechanisms, and prioritise analytical and guidance-related actions to address the needs of farmers, hunters and practitioners. Advancing these elements was identified as essential to support more coherent, adaptive, and cost-effective policy choices for the long-term management of Barnacle Goose management units.

Table 6. Stocktake of implementation progress for the Barnacle Goose ISSMP in respect of the Russia (br) population.

Actions from the ISSMP	Priority	Progress	Comments
1.1 Provide adequate protection and management to key sites of international importance under Article 4(1) of the Birds Directive in the EU and other relevant instruments in other Range States throughout the range of the populations and maintain them in good ecological status	Essential	Good progress	Key sites of international importance for Barnacle Geese are largely secured through conservation measures, including the designation of Special Protection Areas and Natura 2000 sites in wintering and staging areas. Denmark, Estonia, Finland, Germany, and the Netherlands reported adequate protection and management of key sites. In the Netherlands, for example, 40% of feeding geese and 90% of night roosts are within SPA boundaries. Protection of breeding areas remains poorly understood.
1.2 Promote goose-based eco-tourism at selected key sites	Medium	Good progress	Goose-based ecotourism has been promoted through guided tours, birdwatching events, and visits to well-known staging areas, often supported by private tour operators and public facilities in key wildlife regions. Large seasonal goose flocks have been used as natural attractions to boost local tourism and nature-based experiences, though not all Range States have specific initiatives for Barnacle Geese.
2.1 Take key sites for geese into account in land use planning and growing of sensitive crops	High	Good progress	Key measures have included safeguarding grasslands within existing SPAs, integrating staging sites into land-use planning processes, and carrying out large-scale studies to guide future land-use management. Sweden, for instance, reports that most key sites are now protected and that guidance and compensation mechanisms for damages are in place. However, land-use planning recommendations still need to be implemented in eastern Finland and Estonia, which remain important staging areas. In Denmark, experiences from different projects as well as farmers' 'learning by doing' have resulted in awareness and grazing practises have led to goose-friendly management of saltmarshes and extensive grasslands.

Actions from the ISSMP	Priority	Progress	Comments
2.2. Provide accommodation areas to reduce risks and conflicts at sensitive areas through e.g. subsidies	Medium	Good progress	Efforts to provide accommodation areas and reduce conflicts at sensitive sites have included the use of dedicated feeding and resting fields, agri-environmental schemes, and subsidies that guide geese away from vulnerable crops. Several Range States are developing or restoring suitable habitats, implementing hunting restrictions in designated wintering areas, or planning “goose fields” to relieve pressure on sensitive farmland. Compensation systems, together with targeted accommodation areas and guidelines for farmers, have helped to balance conservation needs with agricultural production, although in some places implementation remains limited. There is potential to scale up successful measures. In the Netherlands, evaluations at different scale levels (national, provincial, local sites) have been carried out to evaluate existing measures and recommend measures to improve efficiency of accommodation areas.
2.3 Apply scaring and/or land management techniques to reduce the attractiveness of sensitive areas to geese, monitoring the implications of such local displacement for conflicts at wider scale	High	Good progress	Scaring techniques have been used by several Range States to reduce the attractiveness of sensitive crops. Such measures are often required before compensation or derogation can be granted, and in some Range States they are supported through subsidies, training, and monitoring. Some Range States have paired scaring with accommodation areas as part of landscape-level integrated management. In the Netherlands, modelling studies have been carried out to compare different scaring regimes and their impact on distribution of geese and damage levels.
3.1. Reduce risk posed by goose migration to air safety through operational measures such as radar surveillance	High	Good progress	Some Range States have applied approaches combining radar systems, scaring, population management, and habitat manipulation. Denmark has implemented local measures around each airport, with Copenhagen Airport employing a new radar system to enhance surveillance and response. Additionally, a scientific study is underway to evaluate the effectiveness of derogation shooting outside the airport. The Netherlands employs a comprehensive approach, including radar surveillance, population management, scaring, and land-management techniques for crop residues. Other Range States have relied primarily on standard bird-control procedures where geese pose minimal threat.

Actions from the ISSMP	Priority	Progress	Comments
<p>3.2 Establish an internationally coordinated programme to assess agricultural damage including monitoring and assessment protocols</p>	<p>High</p>	<p>Limited progress</p>	<p>The EGMP has produced a synthesis of studies of grazing by Barnacle geese in relationship to grazing pressure and goose abundances, including methodological guidance. Measures to assess agricultural damage from geese at national level have included compensation schemes that collect damage data, participation in coordinated research programmes, and the use of innovative monitoring tools such as satellite-based damage estimation. However, coordination at the flyway scale remains lacking. Routine national systems for processing claims, along with collaboration through the EGMP Agriculture Task Force, could help standardize assessments and improve information exchange.</p>
<p>3.3 Liaise with farmers affected by goose damages to reduce agricultural conflicts</p>	<p>High</p>	<p>Good progress</p>	<p>Liaison with farmers is supported through compensation schemes, advisory services, and structured cooperation platforms that help address goose-related damage in Denmark, Finland, Germany, Sweden, and the Netherlands. Many Range States engage farmers through e.g. local working groups, round tables, or wildlife management teams to coordinate measures such as accommodation areas, scaring, and agri-environmental support. However, national-level capacity building is limited, and international farmer cooperation on goose issues remains largely unexplored. For example, a Danish 6-year project has provided experiences with liaison and co-management between farmer and hunters, which can be used for transfer of knowledge across Europe.</p>
<p>4.1 If necessary and if there is no other satisfactory solution, apply lethal population control under derogations according to the provisions of the Birds Directive, the Bern Convention and AEWa, for preventing serious damage to crops</p>	<p>Essential</p>	<p>Limited progress</p>	<p>Range States have reported that lethal control has been applied only when necessary and when no other satisfactory solutions exist, following the provisions of the Birds Directive, the Bern Convention, and AEWa. However, interpretation and national application of these regulations vary across Range States. Local and regional effects of derogation on agricultural damage remain poorly understood. New scientific research on the topic is available in Denmark, Sweden and Finland</p>

Actions from the ISSMP	Priority	Progress	Comments
<p>4.2 Assess periodically, and report to the AEWA EGM IWG, the cumulative impact of derogations (as well as hunting in Range States in which derogation is not required) on the development of the population, the likelihood of serious damage to agriculture and risk to air safety and to other flora and fauna (including the Arctic ecosystems), and the non-lethal measures taken to prevent damage/risk, as well as the effectiveness of these. If necessary, coordinate the derogation measures between Range States to avoid risk to the population and to enhance effectiveness of the measures.</p>	Essential	Good progress	<p>The EGMP Data Centre has reported derogations annually for each Range State. Periodic assessment of derogations is supported through population monitoring, reporting obligations under Article 9 of the Birds Directive, and coordinated data exchange among Range States. Coordination of derogations between Germany and the Netherlands for MU3 is in place.</p> <p>The impact of derogations on population development and the likelihood of serious damage remains poorly understood; however, the annual population status and assessment reports evaluate the impact of cumulative offtake, including derogations, thereby providing an indicator of the effects of derogations at the flyway scale.</p>
<p>4.3 Improve effectiveness of derogation measures through experimenting with different timing and methods and better understanding the relative efficacy of lethal versus non-lethal scaring techniques</p>	High	Good progress	<p>Scientific projects in several Range States have assessed which approaches best reduce damage, with some studies showing no clear advantage of lethal over non-lethal techniques at the local level. Proposed strategies, such as frequent daily scaring combined with designated alternative feeding and accommodation areas, continue to expand knowledge on non-lethal methods. Guidelines for practitioners and cost-benefit analyses of lethal and non-lethal measures remain lacking.</p>
<p>4.4 Promote best practices of goose population adjustment including timing to minimize damage and significant disturbance to other species</p>	Medium	Limited progress	<p>Best practices have been created by some Range States and shared through national and regional-level coordination groups and stakeholder seminars. Measures differ according to country but include research, measures to optimize derogation and capacity building activities with farmers.</p>
<p>4.5 Maintain low crippling rates</p>	High	Limited progress	<p>Efforts to maintain low crippling rates have focused on avoiding shooting when possible, improving hunter training, and increasing awareness of best shooting practices. Monitoring efforts, such as renewed crippling-rate surveys and the use of X-ray checks during bird marking, have helped evaluate progress. However, in several Range States no specific measures have yet been implemented.</p>

Actions from the ISSMP	Priority	Progress	Comments
4.6 Improve derogation shooting techniques to further reduce crippling	Medium	Limited progress	Range States have worked to reduce crippling by promoting ethical shooting practices, such as limiting shooting distances, and by improving hunter training. In the Netherlands special courses for hunters have recently been developed to tackle (among other issues) the aspect of crippling. Some Range States also use non-lethal methods such as blank shots to disperse geese, while others rely on trapping instead of shooting. However, dedicated studies and targeted improvements to derogation shooting techniques remain limited in several Range States, indicating the need for further development.
A.1 Produce and update periodically, spatially explicit population size estimates based on agreed international monitoring	Essential	Significant progress	Population size estimates have been reported annually at MU-level. Range States have supported regular monitoring programmes, including seasonal counts, national waterbird census schemes, and standardized surveys of breeding, staging, and wintering geese, often conducted in collaboration with research institutes or regional wildlife authorities.
A.2 Maintain an annually updated bag statistics database including geese taken by any means (whether under derogations or, in those Range States in which it is permissible, hunting)	Essential	Limited progress	Bag statistics per Range State is reported annually. Most Range States submit bag statistics to the EU and EGMP, however, data-collection practices still vary, and some Range States have gaps in the historical series. The assignment of offtake to Management Units is currently limited by insufficient temporal resolution of bag data (e.g. the lack of monthly reporting), which hinders accurate MU-level allocation.
A.3 Maintain a spatially explicit database on goose damage to agriculture, other fauna and flora and fauna and risk to air safety	Essential	Limited progress	Range States maintain data on goose-related damage and risk to air safety with varying depth and consistency. Some collect detailed agricultural damage records through compensation schemes and record aircraft-geese strikes. A few Range States have well-developed spatial databases, and others are developing new systems, but several still lack comprehensive annual spatial updates. This information have not been reported consistently to the Data Centre.

Actions from the ISSMP	Priority	Progress	Comments
A.4 Collect demographic (mortality, reproduction, differential migration and connectivity) data from an agreed representative sampling framework across the range	High	Good progress	Range States have collected demographic data such as productivity, survival, and age ratios through marking schemes and seasonal counts. The data received by the EGMP and Dutch Modelling Consortium has been sufficient to run an IPM, but gaps in monitoring effort still exist during the summer period.
A.5 Analyse the impact of various agricultural policy scenarios and measures (Nitrate Directive, agri-environmental measures, various production incentives including biofuels) on goose populations and on goose damage	High	No progress	None of the Range States have conducted analyses on how agricultural policies, such as the Nitrate Directive, agri-environmental schemes, or biofuel-related production incentives, affect goose populations or agricultural damage. Belgium reports minimal relevance due to its small Barnacle Goose population, while all other Range States indicate no action.
A.6 Assess the role of predators (e.g. White-tailed Eagle, Red Fox, Polar Bear, Arctic Fox) in regulating goose populations	Medium	Limited progress	Range States have taken steps to assess predator impacts on goose populations, particularly those caused by White-tailed Eagles. Finland and Sweden have conducted research on predation on breeding geese, and Denmark is also planning a study focusing on White-tailed Eagle predation.
A.7 Monitor and assess the impact of the populations on other flora and fauna and ecosystems in the Arctic	High	Limited progress	Long-term exclosure experiments exist in Svalbard to monitor the effects of Barnacle Geese on vegetation structure. However, measures to monitor or assess the impacts of Barnacle Goose populations in other parts of the Arctic are still lacking. Addressing this gap will require cooperation with Russia and coordinated research efforts to better understand how Barnacle Geese affect other species and Arctic habitats in Siberia and Novaya Zemlya.
B.1 Produce best practice guide on establishing refuge areas (size, management, subsidies)	Medium	Limited progress	The AEWA Secretariat has not yet developed guidance on the establishment of refuge areas. Measures to develop best-practice guidance for refuge areas at national level remain limited across Range States. Existing efforts mainly involve reviews of current refuge or accommodation areas at national scale (e.g. in the Netherlands).

Actions from the ISSMP	Priority	Progress	Comments
B.2 Provide guidance on conflict resolution and how to make this consistent with the European legal framework, including the Common Agricultural Policy	High	Limited progress	The Secretariat has facilitated discussions on conflict resolution strategies, however, no formal guidance has been developed to date. Measures to provide conflict-resolution guidance at national level remain limited across Range States. Existing actions include compensation schemes, local demonstration projects, and advisory services or practical support tools offered to farmers. Some Range States also provide online guidelines for authorities and land managers. However, several have no specific measures, and overall guidance remains fragmented and only partly aligned with CAP requirements.
B.3 Create a toolbox for decisions in relation to determining significant damage (including metrics, benchmarking, verification, monitoring, various management techniques to prevent damage, compensation)	High	Good progress	The EGMP Impact Model is expected to be finalised soon. Measures at national level remain limited across Range States. Existing elements include legal thresholds for defining significant damage, standardized assessment methods, guidance frameworks for decision-making, and digital tools that support damage registration and verification. While these components offer useful foundations, a harmonized toolbox is still lacking. The EGMP goose damage assessment provides guidance on measurement techniques.
B.4 Provide guidance on implementation of population management protocols at national level	Medium	Limited progress	The AEWA Secretariat has sought to provide guidance on population management according to provisions in the ISSMP. Measures to provide guidance on implementing population management protocols at national level remain limited. Some examples include the use of derogations to prevent serious damage and the application of Article 9 procedures within national frameworks.
B.5 Share experience concerning methods to prevent damage to agriculture and risks to air safety as well as to other flora and fauna	Medium	Limited progress	Measures to share experience on preventing agricultural damage, reducing air-safety risks, and addressing ecological impacts have been taken by EGMP Task Forces. Production of best practices to targeted audiences and outreach via farmer organization have been under explored. Impact on other flora and fauna is currently under review as part of the AFMP-indicator assessment.

Actions from the ISSMP	Priority	Progress	Comments
C.1 Develop and implement a communication strategy and plan	Medium	Limited progress	Despite the absence of a communication strategy and plan developed by the AEWa Secretariat, communication is generally carried out through regular outreach activities, including county-level forums and broader wildlife communication strategies. Awareness could be further enhanced through the development of targeted communication materials aimed at practitioners and decision-makers.
D.1 Develop a specific guidance on the application of Art. 9 of the Birds Directive in the context of the Barnacle Goose Management Plan	Essential	Good progress	The European Commission has published a guidance document to clarify the provisions of Article 5 and Article 9 of the Birds Directive.
D.2 For Range States in which hunting is legal, review national legislation in the light of the framework legal guidance document developed under the EGMP	Essential	Limited progress	The Range States report that this is not relevant and/or that shooting is only possible under derogation.
E.1 Range States strive to provide voluntary contributions to the budget of the EGMP on a regular basis	Essential	Significant progress	Range States have contributed consistently to the EGMP budget.
E.2 National and regional governments secure the necessary funds for the implementation of the actions at national and subnational levels	Essential	Good progress	Belgium has secured the necessary funds. The Netherlands ensures implementation through provincial support to Wildlife Councils. Sweden's national system for monitoring, compensation, and subsidies is fully financed. Lower Saxony's system for monitoring, compensation and subsidies is fully financed.

4.4.3 Barnacle Goose ISSMP: E Greenland (br) population

The assessment of implementation of the International Species Management Plan actions for this population covered 31 actions addressing site conservation, conflict mitigation, monitoring, research, communication, and financing.

The stocktake showed that good progress had been achieved in core conservation and monitoring functions (Figure 9, Table 7). Significant or good progress was reported for the designation and management of key sites, incorporation of geese into land-use planning, establishment of accommodation areas, liaison with farmers, population demographic monitoring, bag statistics reporting, and the assessment and reporting of derogations. In particular, coordinated population monitoring and the use of integrated population models provided an increasingly robust basis for assessing population trends and the effects of cumulative offtake. These results indicated that Range States were successful in delivering several priority actions that relied on international cooperation.

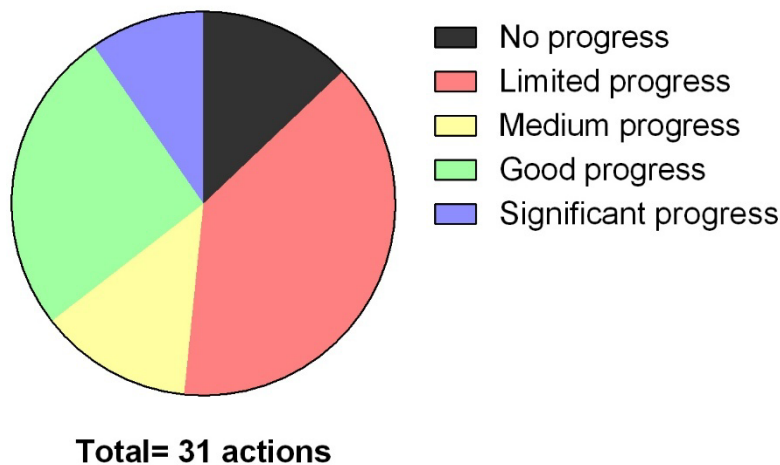


Figure 9. Progress towards implementation of Barnacle Goose ISSMP actions in relation to the E Greenland (br) population.

In contrast, the review highlighted implementation gaps in some critical areas. Limited or no progress was reported for several high-priority actions, including the assessment of agricultural policy impacts, evaluation of predator effects, monitoring of ecosystem-level impacts in the Arctic, refinement of derogation shooting techniques and monitoring of crippling rates, and the development of shared guidance documents, toolboxes, and communication strategies. In addition, progress on air-safety measures, eco-tourism, and spatially explicit damage reporting remained uneven across Range States.

The stocktake indicated that the monitoring and management framework is operational, and that the use of an integrated population model had enabled adaptive management of the population. Range States strengthened coordination of offtake and adjusted hunting and derogation policies in response to new information and recommendations from the EGM IWG. While the implementation of conservation and monitoring actions was generally effective, progress was weaker in the development of guidance documents and in the assessment of agricultural impacts (see Table 7).

Table 7. Stocktake of implementation progress for the Barnacle Goose ISSMP in respect of the E Greenland (br) population.

Actions from the ISSMP	Priority	Progress	Comments
1.1 Provide adequate protection and management to key sites of international importance under Article 4(1) of the Birds Directive in the EU and other relevant instruments in other Range States throughout the range of the populations and maintain them in good ecological status	Essential	Significant progress	All three Range States have designated and managed key sites used by the population. Iceland has identified six IBAs, Ireland has designated 22 SPAs holding 81–92% of the population recorded in recent censuses, and the UK has confirmed through its Third Network Review that its SPA network meets population and ecological criteria.
1.2 Promote goose-based eco-tourism at selected key sites	Medium	Limited progress	Promotion of eco-tourism is not identified as a government responsibility and is generally undertaken by non-governmental organisations. No specific data was reported on progress of eco-tourism activities.
2.1 Take key sites for geese into account in land use planning and growing of sensitive crops[1]	High	Significant progress	Key sites have been considered in land-use decision-making through planning, regulatory, and incentive-based measures, including the use of Agri-environment schemes, planning regulations, environmental impact assessments.
2.2. Provide accommodation areas to reduce risks and conflicts at sensitive areas through e.g. subsidies	Medium	Good progress	Accommodation areas have been implemented in Islay, Coll and Tiree, Uist, and South Walls in the UK through the provision of designated feeding areas and protection of roost sites. Iceland has provided financial compensation, with expected legislative reviews underway to inform future measures.
2.3 Apply scaring and/or land management techniques to reduce the attractiveness of sensitive areas to geese, monitoring the implications of such local displacement for conflicts at wider scale[3]	High	Medium progress	In Iceland, and the UK, scaring is carried out by individual farmers. Research on scaring and land management impacts done through Exeter University . Ireland has not issued license for the scaring of Barnacle Goose recently.
3.1. Reduce risk posed by goose migration to air safety through operational measures such as radar surveillance[4]	High	Limited progress	Air safety is monitored and reported by the national aviation authorities. No references to the use of radar surveillance or targeted goose-related measures.

Actions from the ISSMP	Priority	Progress	Comments
3.2 Establish an internationally coordinated programme to assess agricultural damage including monitoring and assessment protocols	High	Limited progress	Collaborative efforts have been undertaken with the Agriculture Task Force, including through the EGMP Impact Model and ongoing data collection using GPS/GSM loggers to assess the extent of agricultural damage in Iceland. However, coordination at the flyway scale remains lacking.
3.3 Liaise with farmers affected by goose damages to reduce agricultural conflicts	High	Good progress	Targeted schemes have been implemented to address potential conflicts between agriculture and goose conservation, including mechanisms to support farmers in all Range States.
4.1 If necessary and if there is no other satisfactory solution, apply lethal population control under derogations according to the provisions of the Birds Directive, the Bern Convention and AEWA, for preventing serious damage to crops	Essential	Medium progress	In Iceland, these measures are to be considered under forthcoming national legislation. In Ireland and the UK, either no licences or only a limited number of derogations have been issued in recent years. The number of birds taken and the risk of the population dropping below the FRV have been modelled by the EGMP Data Centre, and coordination of offtake among Range States was initiated in 2025. In response to a request from the EGMP IWG, Iceland and the UK have implemented restrictive measures to reduce offtake levels.
4.2 Assess periodically, and report to the AEWA EGM IWG, the cumulative impact of derogations (as well as hunting in Range States in which derogation is not required) on the development of the population, the likelihood of serious damage to agriculture and risk to air safety and to other flora and fauna (including the Arctic ecosystems), and the non-lethal measures taken to prevent damage/risk, as well as the effectiveness of these. If necessary, coordinate the derogation measures between Range States to avoid risk to the population and to enhance effectiveness of the measures.	Essential	Good progress	Annual hunting and derogation reports are provided by the Range States. Cumulative impacts of derogations are analysed through the population IPM.

Actions from the ISSMP	Priority	Progress	Comments
4.3 Improve effectiveness of derogation measures through experimenting with different timing and methods and better understanding the relative efficacy of lethal versus non-lethal scaring techniques	High	Limited progress	Iceland and Ireland reported no activity under this action. The United Kingdom uses a targeted and precautionary approach, applying the derogation shooting selectively in areas with high crop damage.
4.4 Promote best practices of goose population adjustment including timing to minimize damage and significant disturbance to other species	Medium	Good progress	Iceland has applied stricter shooting regulations for Barnacle geese compared to other goose species. Both Iceland and the UK have demonstrated efforts to align population control measures with ecological sensitivity, particularly by limiting disturbance to non-target species.
4.5 Maintain low crippling rates	High	Limited progress	Hunter education on best practices has been promoted but data on crippling rates is largely lacking.
4.6 Improve derogation shooting techniques to further reduce crippling	Medium	No progress	Limited information available on improvement of derogation shooting techniques
A.1 Produce and update periodically, spatially explicit population size estimates based on agreed international monitoring	Essential	Significant progress	Population size estimates have been reported annually. Ireland, Iceland and the United Kingdom all participate in the coordinated international Greenland Barnacle Goose population census. Iceland also conducts annual breeding surveys at Skúmeý, while the UK collects annual productivity data on Islay.
A.2 Maintain an annually updated bag statistics database including geese taken by any means (whether under derogations or, in those Range States in which it is permissible, hunting)	Essential	Good progress	Relevant Range States have maintained detailed bag records publicly available.

Actions from the ISSMP	Priority	Progress	Comments
A.3 Maintain a spatially explicit database on goose damage to agriculture, other fauna and flora and risk to air safety	Essential	Medium progress	Iceland has gathered spatial data on agricultural impact using GPS/GSM loggers. The United Kingdom reported no relevant data for air safety or biodiversity impacts, and agricultural damage to grass crops has not been measured in the past two years.
A.4 Collect demographic (mortality, reproduction, differential migration and connectivity) data from an agreed representative sampling framework across the range	High	Good progress	All three Range States have contributed to demographic monitoring, with the UK and Iceland already conducting regular assessments and Ireland working to enhance data quality and coverage.
A.5 Analyse the impact of various agricultural policy scenarios and measures (Nitrate Directive, agri-environmental measures, various production incentives including biofuels) on goose populations and on goose damage	High	No progress	At present, no Range State has systematically analysed agricultural policy impacts on geese.
A.6 Assess the role of predators (e.g. White-tailed Eagle, Red Fox, Polar Bear, Arctic Fox) in regulating goose populations	Medium	No progress	No formal evaluations have been carried out by any of the Range States to date.
A.7 Monitor and assess the impact of the populations on other flora and fauna and ecosystems in the Arctic	High	No progress	No monitoring or assessments have been undertaken to evaluate ecosystem-level impacts in the Arctic
B.1 Produce best practice guide on establishing refuge areas (size, management, subsidies)	Medium	Limited progress	The AEWA Secretariat has not yet developed guidance on the establishment of refuge areas. Iceland has indicated that this action is intended to be addressed through a forthcoming national management plan, which is not yet in place. While knowledge has expanded and examples of implementation exist in the UK, mechanisms for formal knowledge transfer and the development of shared guidance remain limited.

Actions from the ISSMP	Priority	Progress	Comments
B.2 Provide guidance on conflict resolution and how to make this consistent with the European legal framework, including the Common Agricultural Policy	High	Limited progress	The Secretariat has facilitated discussions on conflict resolution strategies, however, no formal guidance has been developed to date. No guidance has yet been produced by the Range States, with Iceland planning to address this action through a national management plan.
B.3 Create a toolbox for decisions in relation to determining significant damage (including metrics, benchmarking, verification, monitoring, various management techniques to prevent damage, compensation)	High	Limited progress	While no standalone toolbox has yet been developed, contributions to the Agriculture Task Force have been reported as part of implementation efforts under this action.
B.4 Provide guidance on implementation of population management protocols at national level	Medium	Limited progress	The AEWA Secretariat has sought to provide guidance on population management according to provisions in the ISSMP. Measures to provide guidance on implementing population management protocols at national level remain limited.
B.5 Share experience concerning methods to prevent damage to agriculture and risks to air safety as well as to other flora and fauna	Medium	Limited progress	Measures to share experience on preventing agricultural damage, reducing air-safety risks, and addressing ecological impacts have been taken by EGMP Task Forces. Production of best practices to targeted audiences and outreach via farmer organization have been under explored. Impact on other flora and fauna is currently under review as part of the AFMP-indicator assessment.
C.1 Develop and implement a communication strategy and plan	Medium	Limited progress	Despite the absence of a communication strategy and plan developed by the AEWA Secretariat, communication is generally carried out through regular outreach activities at the national level.
D.1 Develop a specific guidance on the application of Art. 9 of the Birds Directive in the context of the Barnacle Goose Management Plan	Essential	Good progress	The European Commission has published a guidance document to clarify the provisions of Article 5 and Article 9 of the Birds Directive.

Actions from the ISSMP	Priority	Progress	Comments
D.2 For Range States in which hunting is legal, review national legislation in the light of the framework legal guidance document developed under the EGMP	Essential	Good progress	This is only currently relevant for Iceland where hunting takes place, which replied that national legislation has been reviewed and hunting season updated.
E.1 Range States strive to provide voluntary contributions to the budget of the EGMP on a regular basis	Essential	Medium progress	Range States have contributed with varying levels of consistency to the EGMP budget.
E.2 National and regional governments secure the necessary funds for the implementation of the actions at national and subnational levels	Essential	Limited progress	Iceland reported that the government provides annual funding to support national monitoring activities. Ireland and the United Kingdom did not provide updates.

5. Case studies

Introduction

Effective management of goose populations across Europe requires balancing conservation objectives with socio-economic interests, often under conditions of uncertainty, competing priorities and changing ecological dynamics. The following case studies illustrate a diverse set of practical approaches developed across different countries to address these challenges. Together, they demonstrate how science-based decision-making, stakeholder engagement, adaptive management, and context-specific solutions can be combined to support sustainable coexistence between geese and human activities.

This collection of case studies results from an open call issued by the AEWA Secretariat on 26 November 2025, inviting the EGMP community to share practical experiences and insights from implementation of goose management, conservation, and research activities. Contributors were asked to submit concise, structured case studies describing challenges, approaches, lessons learned, and impacts.

A total of eight manuscripts were received. Manuscripts were selected by the EGMP Communication Contact Group and peer reviewed by members of the contact group and other case study authors. The selected contributions presented in this section reflect a diversity of contexts, management objectives, and methodological approaches, providing a snapshot of ongoing efforts under the EGMP framework in several Range States.

A common theme across the case studies is the central role of robust data and scientific evidence in informing management decisions. Whether through modelling spatiotemporal distributions of migratory species in Finland, refining population counts in Denmark, or maintaining long-term monitoring datasets in Belgium, these examples highlight the importance of continuously improving the knowledge base on goose populations. Such data underpin not only national management actions but also international cooperation frameworks, helping to ensure that measures taken at local or national level contribute effectively to flyway-level conservation and management goals.

Equally important is the application of adaptive and innovative management tools. For instance, Finland's use of spatiotemporal hunting regulations demonstrates how ecological insights can be translated into practical policy instruments that reconcile hunting interests with conservation needs. In Denmark, methodological improvements in population monitoring address critical data gaps that previously hindered coordinated management. Meanwhile, in the Netherlands, the assessment of goose scaring explores the limits, trade-offs, and context dependency of a widely used management measure, emphasizing that effectiveness depends on ecological, economic, and social conditions.

Several case studies also highlight the necessity of integrating socio-economic considerations into wildlife management. Conflicts between geese and agriculture are a recurring issue, as illustrated by the Norwegian grassland experiment and the Dutch scaring analysis. These cases show that purely ecological solutions are often insufficient. Instead, successful approaches require addressing farmers' livelihoods, economic incentives, and perceptions of fairness. The Norwegian case demonstrates the potential of co-developing solutions with stakeholders, such as testing alternative farming practices that maintain productivity while reducing conflict.

Another cross-cutting element is the emphasis on stakeholder collaboration and participatory approaches. Engaging hunters, farmers, volunteers, and local communities emerges as a key factor for both data collection and implementation of management measures. The Danish and Belgian case studies show how citizen science and long-term volunteer engagement can provide invaluable data while strengthening support for management objectives. The development of tools such as the FaunaSpot further illustrates how involving users in system design can improve data quality, compliance and uptake. .

The cases also underscore the value of spatial planning and landscape-level approaches. Managing geese effectively often requires influencing their distribution across landscapes, for example, by designating attractive feeding areas and reducing access elsewhere, or by protecting and restoring key habitats such as wetlands and grasslands. For example, collaboration between airport authorities, farmers, and scientists in Norway illustrates how multi-actor cooperation can change goose behaviour and address safety risks. These approaches not only help reduce conflicts but can also enhance biodiversity, ecosystem services, and even local economic opportunities such as nature-based tourism.

Finally, the examples highlight the importance of communication, transparency, and acceptance in management processes. Even when measures are scientifically sound, their success depends on whether stakeholders understand and support them. Several cases note ongoing challenges in communicating the rationale behind management decisions, pointing to the need for continued efforts to build trust and awareness among affected stakeholders.

Taken together, these eight case studies provide practical insights into the implementation of adaptive goose management across a range of ecological, institutional, and socio-economic contexts. The lessons presented here are intended to inform future management efforts and contribute to the continued development of coordinated, flyway-scale approaches under the EGMP and beyond.

Managing the harvest of Taiga and Tundra Bean Geese in Finland using spatiotemporal regulations

Antti Piironen¹, and Janne Pitkänen²

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Location: Finland

Summary:

Unlike most other European goose populations, the Finland & NW Russia (br) population declined across its range during the late 1990s and early 2000s, while the Tundra Bean Goose population increased simultaneously. The two species (formerly subspecies) differ in conservation status and therefore require different harvest management strategies. During autumn migration, they overlap in Finland, but are difficult to distinguish in the field, making species-specific hunting regulations impractical. This creates a challenge in allowing harvest of the abundant Tundra Bean Goose without jeopardizing conservation goals for the declining Taiga Bean Goose. To address this, hunting authorities used research to set spatio-temporal harvest regulations for bean geese. First, researchers used birdwatcher observation data to identify times and areas during autumn migration where only one taxon was present. Based on this analysis, hunting authorities implemented liberal bean goose hunting regulations in south-eastern Finland in late autumn, where most bean geese were Tundra Bean Geese, while imposing very strict restrictions or moratoria elsewhere. To verify that harvest was effectively targeted, samples from harvested bean geese in south-eastern Finland were analysed using molecular genetic methods. The results showed that 89% of birds harvested in south-eastern Finland were Tundra Bean Geese, confirming that hunting was successfully directed toward the intended taxon.

Challenges:

Recreational hunting is a traditional and culturally important activity in Finland, and huntable species are regarded as a valuable renewable resource that provides both food and recreational opportunities. Therefore, unnecessary hunting restrictions on abundant species should be avoided, provided that harvesting does not compromise the conservation objectives of the species in question or of other species. Taiga and Tundra Bean Geese differ in their conservation status and therefore require different harvest management strategies. However, the two species are very similar in appearance and cannot be reliably distinguished in hunting situations, making species-specific harvest regulations impractical. Both species occur in Finland during autumn migration. Consequently, opening the hunting season for Tundra Bean Geese risks exceeding international harvest quotas for Taiga Bean Geese, whereas a moratorium imposed to conserve Taiga Bean Geese would result in unnecessarily restrictive hunting regulations for the more abundant Tundra Bean Goose.

Building blocks:

1. Research on the spatiotemporal distribution of two bean goose species during migration.

Description: Researchers at the University of Turku analysed birdwatcher observation data to identify periods and locations during the autumn migration when only one of the two species is present.

Enabling factors: Subspecies-specific birdwatcher observations of taiga and Tundra Bean Geese collected and provided by BirdLife Finland.

Lessons learned: Although citizen-science data are often heterogeneous and contain substantial observation noise, they can provide a cost-effective and valuable source of information on the occurrence of species that are similar in appearance. Such data can be sufficiently accurate to support spatiotemporal harvest regulation for migratory species at the national level.

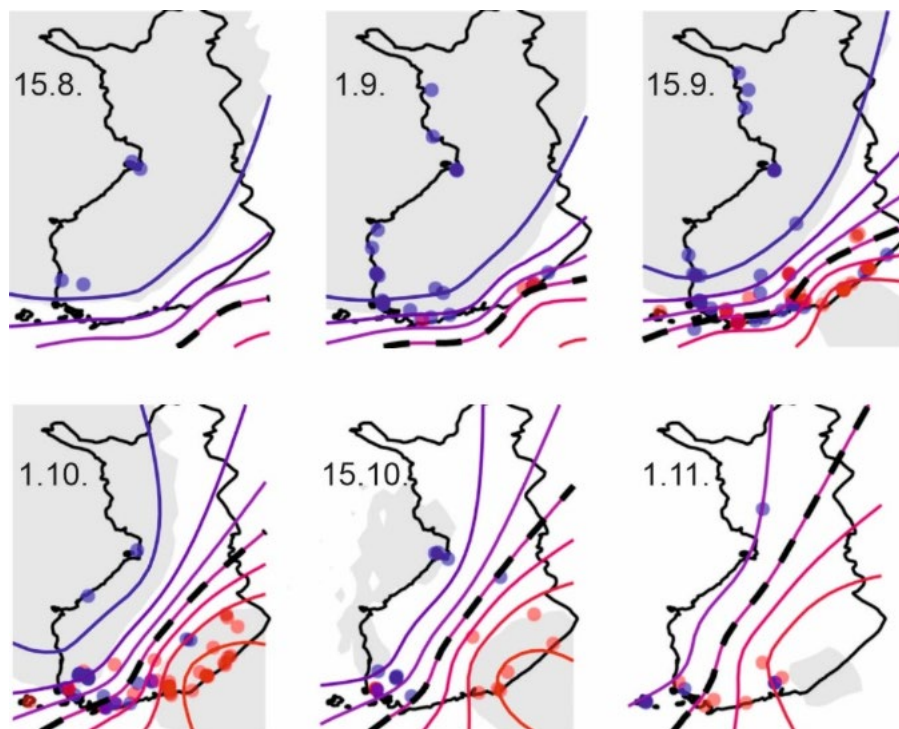


Figure 1. Average spatiotemporal distribution of Taiga and Tundra Bean Geese during autumn migration in Finland, based on Piironen et al. (2021). The maps show model predictions for different dates during the autumn migration (average across multiple years). Contours represent the mean posterior probability of Taiga Bean Goose occurrence. Blue indicates a high probability of Taiga Bean Geese, whereas red indicates a high probability of Tundra Bean Geese. The dashed black line marks the contour where the probabilities of taiga and Tundra Bean Geese are equal. Grey shading denotes areas where at least 95% of the posterior probability indicates that one taxon is more common than the other. Dots represent birdwatcher observations within eight days of the focal date; red and blue dots indicate that most observed bean geese were tundra or Taiga Bean Geese, respectively.

2. Spatio-temporal harvest regulation

Description: The Ministry of Agriculture and Forestry of Finland, together with the Finnish Wildlife Agency, adopted the results of the analysis on the spatiotemporal distributions of the two species. Liberal bean goose hunting was permitted in southeastern Finland in late autumn, where bean geese were mostly Tundra Bean Geese.

Enabling factors: Hunting legislation that allows spatially and temporally differentiated hunting regulations, supported by research on species occurrence. These are also recommended in EGMP Guidance nr 1. Guidance on Implementing Adaptive Harvest Management through Domestic Legal Regulations (Lewis, 2018).

Lessons learned: National legislation should enable annual or periodic regulation of the length of the hunting season and/or quotas. Factors to be considered in the decision making should include international decisions concerning adaptive harvest management as well as regional and spatial variation. This way, a necessary hunting

regulation for population recovery was achieved while providing limited sustainable use by avoiding a strict moratorium.

3. Monitoring species composition in the bean goose harvest

Description: Researchers at the Universities of Turku and Oulu collected samples from bean geese harvested in southeastern Finland and identified the subspecies using molecular genetic methods. The analysis showed that 89% of the harvested bean geese were Tundra Bean Geese, confirming that the hunting was effectively targeted at the intended species (formerly subspecies).

Enabling factors: Voluntary participation by hunters in collecting samples from harvested bean geese and the availability of developed molecular genetic tools.

Lessons learned: Hunting in southeastern Finland primarily targeted Tundra Bean Geese, as predicted by analyses based on birdwatcher observations and as intended by the wildlife authorities.

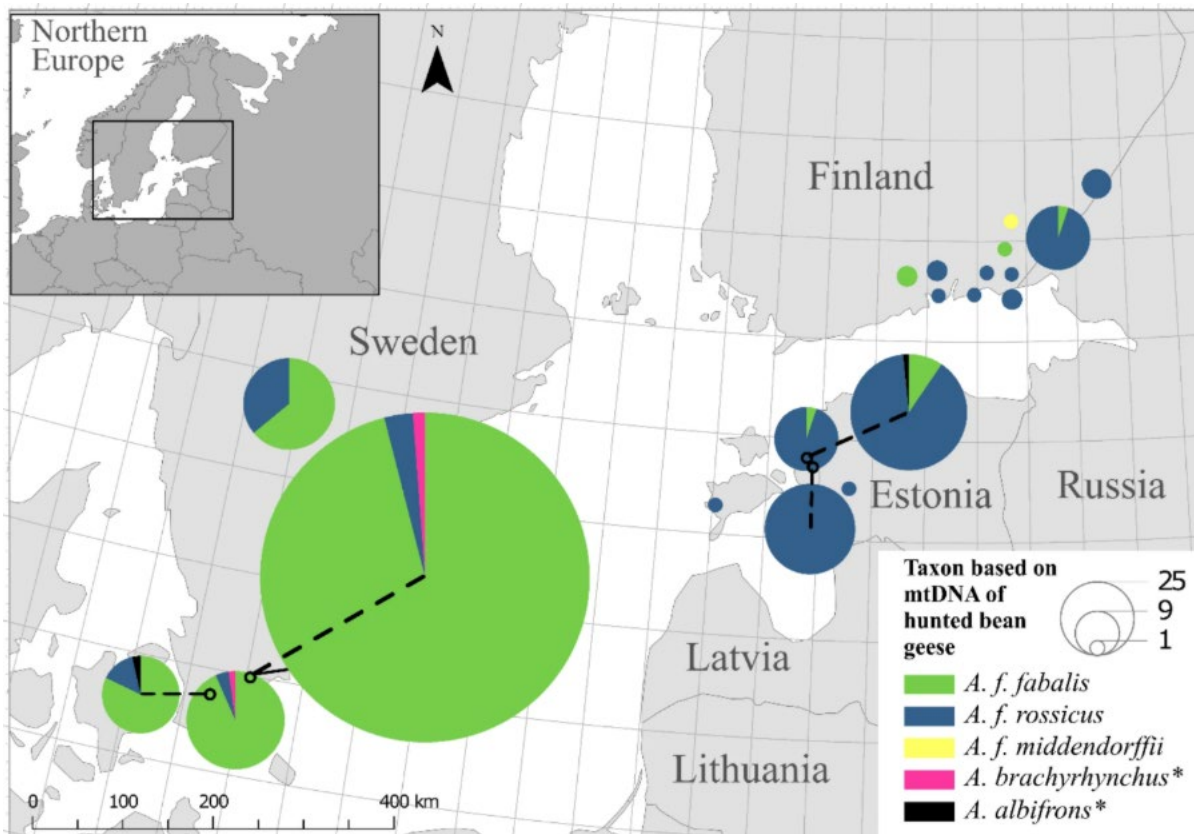


Figure 2. Approximate harvest locations and taxa of bean goose samples ($n = 779$) in Honka et al. (2025) based on mitochondrial DNA sequencing from south-eastern Finland, Sweden, and Estonia. Taxa marked with an asterisk denote potential hybrid individuals or bean geese with a haplotype of another species. Size of the circles are proportional to the number of samples in each site. To avoid overlap of the circles, small open circles denote the sampling site and dashed line connects the sampling site and the corresponding pie chart.

Summary of the process:

For spatiotemporal harvest regulation to be successful, close interaction and collaboration between researchers and hunting authorities are essential. Providing a transparent, science-based rationale for the regulations, along with monitoring their outcomes, helps to gain acceptance among hunters and the public. However, communicating

both the rationale and the outcomes of harvest regulations remains challenging. Despite several years of the current regulations and multiple popular articles published in Finnish hunting magazines, the reasons behind the existing bean goose harvest regulations are still not fully understood by hunters and the public.

Impacts:

The regulations benefit hunters by allowing relatively liberal bean goose hunting at times and in areas where most bean geese are Tundra Bean Geese. By ensuring that only very small numbers of Taiga Bean Geese are harvested during migration, these regulations make it possible to permit a strictly limited hunting season on the Taiga Bean Goose breeding grounds (where hunting is directed exclusively at Taiga Bean Geese) without risking exceedance of the internationally agreed harvest quotas for Finland. Thus, spatiotemporal harvest regulations during migration not only support conservation objectives by helping to meet Taiga Bean Goose conservation goals but also provide tangible benefits for hunters in Taiga Bean Goose breeding areas.

Beneficiaries:

Hunters, bird conservationists

References:

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- Honka, J., de Jong, A., Jumppanen, E., Alhainen, M. & Piironen, A. 2025. Genetic assessment of subspecies composition in bean goose (*Anser fabalis*) harvest in Sweden, Finland and Estonia. *European Journal of Wildlife Research* 71: 41. <https://doi.org/10.1007/s10344-025-01919-2>
- Lewis M., 2018. Guidance on Implementing Adaptive Harvest Management through Domestic Legal Regulations. AEWA EGMP Guidance No. 1. Bonn, Germany. https://egmp.aewa.info/sites/default/files/download/population_status_reports/EGMP_Guidance_001_legal_regulations.pdf

FaunaSpot: A Digital Registration System for Wildlife Management Data Location: Noord-Holland, The Netherlands

FBE Noord-Holland team

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Location: Noord-Holland, The Netherlands

Summary:

FaunaSpot is a mobile application introduced by the Faunabeheereenheid (FBE) Noord-Holland to improve the registration of wildlife management activities. Since 1 January 2023, the app has been the only system used by licensed hunters in the province of Noord-Holland to record preventive measures, deterrence actions, and culling. The project was developed to reduce the administrative burden for hunters and the FBE while ensuring reliable, location-based data that meets national and international requirements.

Previously, wildlife management data were often recorded afterwards, increasing the risk of incomplete or inaccurate information. FaunaSpot enables hunters to register activities directly in the field using their mobile phone or tablet, linking each record automatically to specific GPS coordinates. Hunters need to add a picture of the killed geese with their registration, which allows data validation. The app does not allow registration at a later time. This approach improves data traceability and strengthens the evidence base for wildlife management plans. By combining user-friendly technology with validated data collection, FaunaSpot supports more effective decision-making and contributes to greater political and societal support for wildlife management.

Challenges:

Wildlife management relies on accurate and verifiable data. Before FaunaSpot, the registration process was time-consuming and often only completed after field activities, creating risks of administrative errors and reduced data reliability. This posed an environmental challenge, as insufficient data can weaken wildlife management plans and limit the ability to prevent damage caused by wild animals.

Socially, the wildlife management sector faces increasing scrutiny from policymakers and the public. Demonstrating that wildlife management activities are necessary, controlled, and evidence-based requires transparent data collection. Trustworthy records and transparency are essential to build societal acceptance for wildlife management activities.

Economically, ineffective data collection can lead to poorly supported management strategies, potentially increasing agricultural damage and associated costs. The transition to a new digital system also required user adoption and confidence among hunters, many of whom had to adapt to a different way of working. Ensuring ease of use and minimizing additional workload were therefore critical to the project's success.

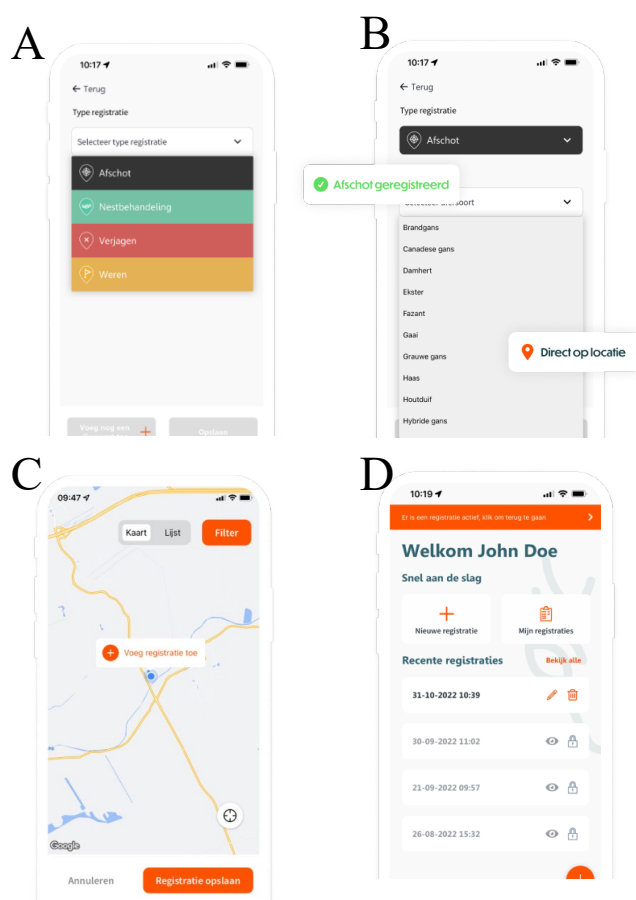


Figure 10. FaunaSpot App. Examples of app interface for A) choosing registration type; B) choosing species; C) registering activities in the field, and D) entering and managing registrations.

Building blocks:

1. User-friendly mobile application

Description: FaunaSpot was designed as an intuitive mobile app that allows hunters to register wildlife management activities quickly while in the field. With only a few clicks, users can log preventive measures, deterrence, or culling, add photos, and review past registrations. The system replaces older administrative processes and eliminates the need for manual data entry after returning from the field.

Enabling factors:

- Involvement of stakeholders, where we co-created the software with hunters and non-hunters during development
- A dedicated 6-month test period to gather feedback and improve functionality
- Availability on both iOS and Android platforms
- Continuous development based on user experiences

Lessons learned: Involving end users early in the design process significantly improves adoption. Providing a prolonged test phase helps identify technical issues and increase user confidence before full implementation.

2: Reliable location-based data collection

Description: Each FaunaSpot registration is automatically linked to a geographic location, ensuring that wildlife management actions can be verified. The system also requires photographic evidence, enabling validation for species and number of hunted animals through random checks conducted by the FBE. This strengthens the credibility of the data and ensures compliance with national and international instruments, such as AEW and the CMS.

Enabling factors:

- Automated GPS integration
- Mandatory photo documentation for culling
- Validation through sampling
- Clear governance, with FBE responsible for system management

Lessons learned: Automating data capture reduces human error and increases transparency. Verification mechanisms are essential for building trust among stakeholders and supporting evidence-based policy.

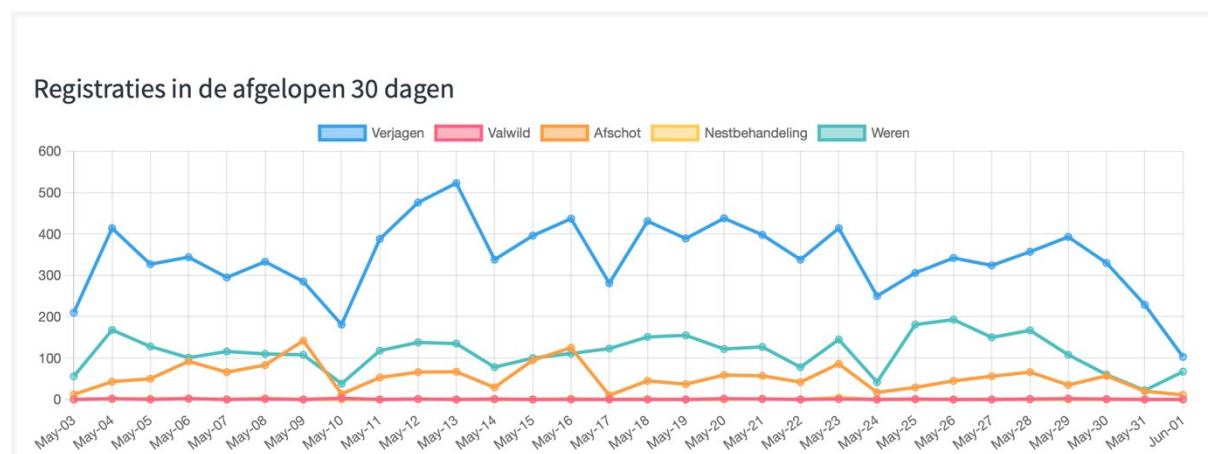


Figure 2. FaunaSpot CMS - registration monitor (30 days/real time, 2026).

3: Centralized data system for policy support

Description: FaunaSpot serves as a single provincial database for wildlife management activities. By standardizing registrations, the system provides consistent data that can be used to substantiate wildlife management plans and monitor implementation. Dashboards allow wildlife management units (WBEs) to access aggregated data for their areas without compromising personal privacy.

Enabling factors:

- Mandatory use across the province

- Compliance with data protection regulations (GDPR)
- Structured access for relevant stakeholders
- Exportable data for reporting purposes

Lessons learned: Centralization improves data accuracy, consistency, and accessibility. At the same time, clear privacy rules are necessary to maintain user trust.

Summary of the process:

FaunaSpot combines three strategic elements: ease of use, automated location-based registration, and centralized data management. The user-friendly app encourages hunters to register activities immediately in the field, while GPS linking and photo requirements ensure that records are verifiable. These validated data feed into a provincial database that supports wildlife management planning and reporting. Together, these components create a reliable and efficient system that strengthens both operational practices and policy development.

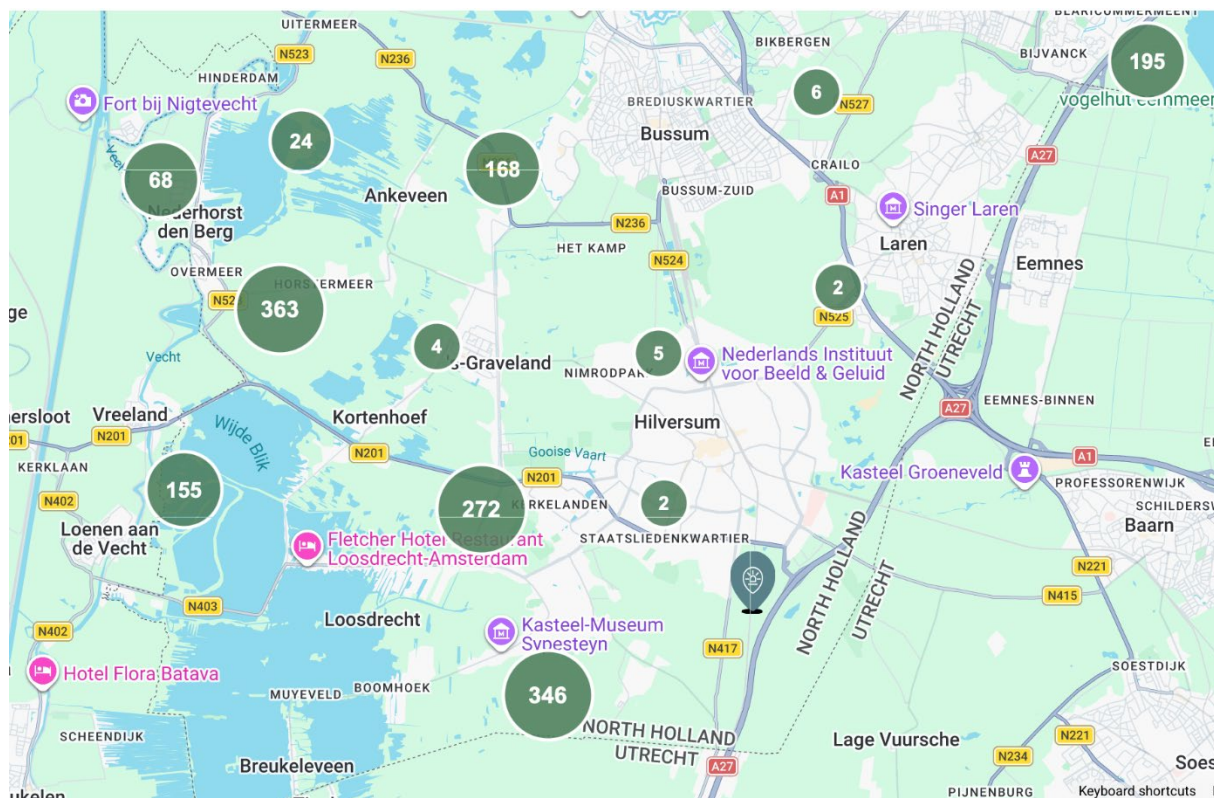


Figure 3. FaunaSpot dashboard - map of registrations of a Wildlife Management Unit.

Impacts:

FaunaSpot has improved the quality and reliability of wildlife management data in Noord-Holland. By enabling real-time registration, the system reduces administrative workload and increases reporting accuracy. Reliable data help authorities develop stronger wildlife management plans and demonstrate compliance with regulatory standards.

Environmentally, better data support more targeted interventions, contributing to balanced wildlife populations and improved prevention of agricultural damage. Socially, transparent and verifiable records enhance accountability and help build public and political trust. Economically, efficient data collection supports more effective management decisions, potentially reducing damage-related costs.

The system is now used province-wide and has created a standardized dataset that forms a robust foundation for evidence-based wildlife management. In the short term, the system will be expanded to include the registration of roadkill and enhanced with several practical features that make it easier for land users to exchange records when applying for compensation from the province. Additionally, the dashboard will be progressively expanded with new search capabilities, ensuring that the data becomes more accessible and easier to use.

Beneficiaries:

The primary beneficiaries are licensed hunters, who spend less time on administration and gain access to a simple digital tool for compliance. Wildlife Management Units benefit from clear dashboards and data insights for their regions. Policymakers and provincial authorities gain access to reliable information to support decision-making and oversight. Indirect beneficiaries include farmers, who rely on effective wildlife management to prevent crop damage, and the broader community, which benefits from transparent and well-documented environmental practices. Ultimately, local ecosystems benefit from management strategies that are informed by accurate data.



Figure 4. Visual to support communication about FaunaSpot.

Improving post-breeding counts of Greylag Geese in Denmark

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Location: Denmark

Summary:

The aim of this project⁵ was to adjust and evaluate the Danish post-breeding counts of Greylag Geese belonging to the NW Europe (br)population to improve the data available for wide-scale international management at population and management unit level. This was to be achieved by 1) developing a model to identify the most important areas in Denmark to cover during the count, 2) investigating goose behavioural patterns to identify the best time for counting, and 3) expanding the citizen science network of goose counters by engaging new stakeholder groups. Prior to this project, Greylag Geese were counted in September, mainly focusing on protected areas. The number of geese observed elsewhere was obtained from the online portal DOFbasen run by BirdLife Denmark. Thus, the expected outcome of this project included an estimate of the number of geese not covered by the traditional methods.

The conclusion was that an August count would indeed be feasible and that Greylag Geese are well-covered by the current monitoring setup. In addition, feedback from participants revealed that including new stakeholder groups in monitoring caused an increase in their engagement and support for the existing management goals. After the post-breeding count in 2022, the biennial count was moved to August.

Challenges:

The growing NW Europe (br)NW Europe (br)population of Greylag Goose causes socio-economic concerns, mainly related to agricultural damage and increased risks to public health and air safety. For management efforts to properly target specific concerns across the range, the population was split into two management units (MUs): the migratory Fennoscandian breeding birds in MU1, and the sedentary birds breeding in The Netherlands and its neighbouring countries in MU2 (see Fig. 1). Overall and at MU-level, the current population size is well above both the Favourable Reference Population size (FRP) and the population targets agreed on by the range states.

An information-gap decision model was developed for the period 2020-2022, and an internationally coordinated population management programme including both MUs was planned to start in 2023. However, due to important knowledge gaps, particularly related to summer population counts and productivity estimates, combined with an apparently large bias in the offtake estimates, the move to dynamic decision-making and coordinated management at MU-level was not possible. The project described here constitutes an example of the activities initiated to resolve some of the data quality issues mentioned above, in this case by improving the Danish post-breeding count. Productivity estimates have been compiled through other initiatives.

⁵ The project report is available at: https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Notater_2023/N2023_01.pdf.

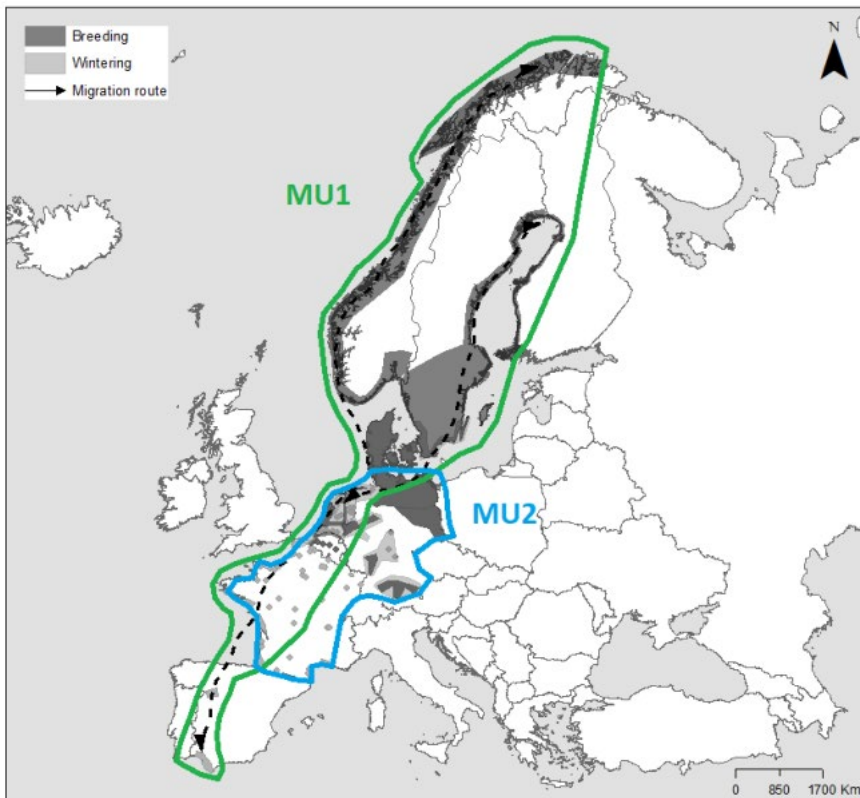


Figure 1. Agreed management units of the NW Europe (br)population of Greylag Goose. From Nagy et al. 2021.

Building blocks:

1. Identifying important locations to include in the monitoring of Greylag Geese.

Description: The first step of this project included an identification of the most important areas to cover during a country-wide count of the post-breeding Greylag Goose population in Denmark. The intention was to develop a Species Distribution Model (SDM) for this purpose, as SDMs provide a method for predicting population size for abundant and widely distributed species like the Greylag Goose (Waldock et al. 2022). However, the available information and range of variables did not allow us to produce such a model, so instead we developed a model using a presence/absence data set allowing us to estimate where to expect the highest probability of observing Greylag Geese during the count.

Enabling factors: We relied on previous counts, atlas surveys, and patterns observed from tracks of GPS-tagged geese to produce the model. The predictions were computed using a GLM model and values of wetland area, presence of breeding pairs, area of agricultural land, area of grassland, area of sea and type of wetland (lake or marsh).

Lessons learned: The highest probability of Greylag Goose occurrence was found in areas with large wetlands, a higher proportion of agricultural land and grassland, large area of sea, and in areas with breeding pairs (see Fig. 2). As expected, probability of occurrence was higher in lakes compared to marshes that may have dried out during the summer period.

2. Identifying the best time to count Greylag Geese (post-breeding).

Description: In Denmark, Greylag Goose has been counted annually in January and September since the 1980s, and since 2004 it has been embedded in the NOVANA (National Monitoring and Assessment Programme for the Aquatic and Terrestrial Environment) programme. Since 2017, the post-breeding count has only taken place every two years. Every six years, a country-wide count of moulting waterbirds has been conducted in July/August, thus also providing some information on the post-breeding population of Greylag Geese.

Enabling factors: We relied on available GPS-tracks to determine the best time of year to carry out the post-breeding count, avoiding, if possible, the open hunting season (starting on August 1st on agricultural lands at a distance of more than 300m from larger water bodies), periods of moult migration and the influx of migrating birds from other range states. Once we had decided to mainly cover wetland areas (see above), we needed to arrange the count so that most birds were present in wetland areas (including lakes, coastline etc.) during the count. To determine the best time of day to count the roosting flocks, we relied on the results from a pilot study in 2021 as well as data on the behavioural patterns of GPS-tracked individuals.

Lessons learned: Most experienced counters know their area and the daily movements of birds well and plan their counts accordingly, for example by counting at sunrise as the birds leave their night roost. Geese often forage scattered in the agricultural landscape during the morning and then return to roost at wetland sites during the day, thus we recommended new observers to count the Greylag Geese at wetlands between 11:00 and 18:00.

3. Evaluation of citizen science as an addition to existing population monitoring.

Description: To provide a better estimate of the current post-breeding population size, we involved professional/experienced counters from the NOVANA network as well as volunteers recruited through various channels. A dedicated attempt to involve hunters and birdwatchers with limited bird counting experience was made, which resulted in the recruitment of nearly 100 new volunteers.

Enabling factors: Collaboration between Aarhus University, the Danish Hunters' Association, and BirdLife Denmark, and the funding provided by The Danish Environmental Protection Agency allowed us to reach out broadly to potential participants. We relied on the existing network of NOVANA counters to participate and cover their usual sites, so that data from the new volunteers served as an addition to the well-established count methods. Finally, additional observations from DOFbasen were added to provide the total.

Lessons learned: The successful involvement of new participants in national bird counts largely depends on sufficient time being allocated to provide assistance on counting and reporting routines and produce new information and recruitment material. The inclusion of new volunteers to many wildlife projects is vital but also brings additional and unavoidable administrative costs and burdens. It is important to keep this in mind when planning new activities, even when a thorough assessment of costs and benefits might not be possible in advance. In this case, the addition of 100 new volunteers did not add significantly to the result of the count, in part because major goose locations were already covered by experienced counters, but several other positive outcomes were noted (see below).

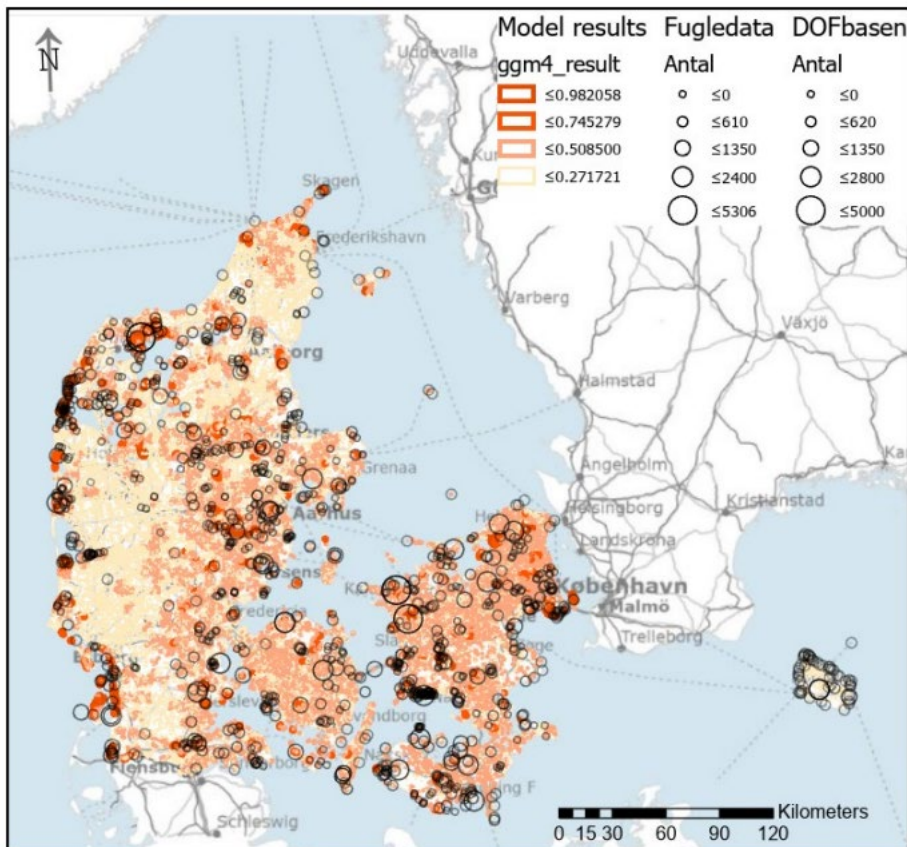


Figure 2. Field observations (open circles) and predicted probability of occurrence (red-sand colours) of Greylag Geese during early August in Denmark. From Jensen et al. 2023.

Summary of the process:

Relying on the results of previous studies, counts and ongoing monitoring, this project specifically targeted the Danish post-breeding count of Greylag Goose. It was important to have the biological and behavioural knowledge ready for determining method, time and place for the count. The network and collaboration established through the EGMP and various national projects facilitated the conceptualization of the project and specifically helped when reaching out to new volunteers. The detailed process is described above in the three building blocks.

Impacts:

Following the summer count in 2022, the Danish NOVANA-programme has moved its biennial post-breeding country-wide count of Greylag Goose from September to August. This will generate regular counts that are comparable to the 2022 count as well as previous total counts from July/August. This is an advantage for the management decisions and monitoring under the EGMP, as the FRP is expressed as number of breeding pairs for each range state (and at population level), and a count in August is much more likely to focus on Danish breeding birds than a count in September.

This project also illustrated the importance of maintaining a group of dedicated and experienced volunteers in any citizen science project; in this case the experienced bird observers involved in the NOVANA counts. They were able to work independently, almost without any advice or instructions, leaving more time for guiding new participants.

Beneficiaries:

Expanding the circle of citizen scientists involved in bird counts may bring several benefits in the longer term. Offering a high level of service and guidance during the first count (as has been the case here) is likely to give participants a positive experience (as was also the case here), which again might increase the chances that newly engaged citizen scientists will participate in future surveys and become regular contributors to monitoring programmes such as annual bird counts. Involving new stakeholder groups might bring further gains in terms of increased mutual understanding between stakeholder groups and secure a greater buy-in on management processes and the need for specific data.

National stakeholders involved in goose management in Denmark clearly benefitted from the project described here, but also the international processes and goose management under the EGMP were strengthened by this project. Aware of the limitations and different circumstances in each range states, the EGMP Greylag Goose Task Force, Data Centre, and IWG have all gained new knowledge from the Danish experiences which is useful for future management efforts for the Greylag Goose.

Long-term research on wintering Pink-footed Geese in Flanders (Belgium): contributions to flyway monitoring and lessons for conservation.

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Location: The coastal polders of Flanders and the adjacent sand region, up to a distance of approximately 30 km from the North Sea.

Summary:

Since the discovery of wintering geese in the coastal polders at Damme (near Bruges) the increasing numbers and steady range expansion were intensively monitored in relation to the total population. Sixty years of monthly counts illustrate the dynamics of the phenomenon. The goose database on regional numbers, distribution and habitat use in the Flemish coastal area represents a most valuable instrument for conservation. Continued long-term monitoring with engaged volunteers and additional scientific projects with tagged geese deliver irreplaceable knowledge at flyway level.

A national ban on shooting Arctic geese was issued in 1981. The core goose wintering grounds in the polders were designated in 1988 as Special Protection Areas (SPA) and also the fixed targets for the EU Bird Directive concerning Pink-footed goose numbers and area of suitable grasslands were decided, based on the database. Nature reserves have been established to ensure the conservation of historic wet grasslands that are threatened by agriculture. A balanced relation between intensive agriculture and conservation must avoid damage risks. Incorporating farmers in nature management is a real win-win model. Local restoration of wetlands in favour of geese, meadow birds and biodiversity in general is ongoing and supports ecosystem services. Watching the wildness of goose flocks stimulates public awareness for nature and landscapes; this recreation - endorsed by visitors centres - also creates economic added value.

Challenges:

Continue the long-term monitoring of the increasing goose numbers and their expanding wintering grounds through systematic, simultaneous counts and mapping; this requires the recruitment of skilled and committed volunteers and agreed-upon methodologies.

Several factors determine numbers, density and dispersal mechanisms of Pink-footed Geese; how far the traditional habitat requirements (food, safety) of this species can explain its recent behavioural adaptation to a changing environment? This needs further research.

Ensuring the functional status of the Pink-footed goose wintering grounds requires protection, management and restoration of old, permanent grasslands as preferred habitat. The conservation of this natural and landscape heritage needs slowing down some trends in industrializing agriculture. Nature restoration projects of these wetlands also contribute to the maintenance of optimal water levels and offer opportunities for a nature-inclusive economy and sustainable tourism

Building blocks:

1. Brief history and evolution of wintering Pink-footed Geese in the coastal polder area of Flanders, Belgium

In 1958 a small group of wintering geese was discovered in the polders near Damme. The occurrence of wintering geese was unknown at that time and aroused the interest of conservationists. Local hunters were approached and convinced to *voluntarily* refrain from hunting in this wintering area. As the geese (mainly White-fronted and Pink-footed geese) learned that it was safe to winter in this region, numbers grew year after year.

Two main factors were crucial for this increase in the 1980s and early 2000s (Fig. 1). First, the occurrence of some harsh winters, mainly 1978/79 and mid 1980s. Secondly, the *national hunting ban* on Arctic geese introduced in 1981 enabled the further exploration of the eastern coastal polders. In the 1990s up to 80% of the Svalbard Pink-footed Geese spent the winter period in Flanders. Actually, about 25% of Svalbard birds stay here from early November to mid-February (Fig 2).

Due to increased numbers and changed behaviour, the expansion of the wintering area still continues (see further and fig 3).

2. The long-term monitoring database on wintering geese in Flanders

Annually six mid-monthly counts are carried out simultaneously across the whole wintering region. Given the steady increase and expansion of the geese the activation and coordination of a growing number of volunteer field observers became crucial. A commented overview of results is quickly reported to the counting teams (actually 35-50 persons – Fig. 4); this feedback is essential to encourage their continued commitment.

From our database an annual overview of the counts is provided to the Flemish Institute for Nature and Forest Research (INBO) and the validated data are stored by Wetlands International (IWC) to be used by AEWA and other applications.

In recent decades Pink-footed Geese have shown a shifting feeding behavior: next to the traditional use of wet polder grasslands, an increasing feeding on crop leftovers (esp. maize), results in exploring the adjacent sand region.

A crucial tool to understanding movements has been the use of neck bands (started in 1990 by Jesper Madsen); thousands of resightings provided a reliable picture of the distribution, family relationships, and reproduction. Thanks to the presence of some GPS tagged Pink-footed Geese (2018 onwards, Danish-Dutch project) detailed knowledge on spatial distribution and the selection of nocturnal roosting grounds of Pink-footed Geese could also be followed, indicating priority sites.

3. Consequences of habitat loss related to developments in agriculture

Due to the extent of available habitat in combination with hunting restrictions, the geese had been able to spread their use of the agricultural landscape over a larger area ('ideal free distribution'), thus limiting the overall grazing pressure (Fig. 5). Most geese occur outside the growing season of agricultural crops, resulting in only limited or local damage on field; grazing on the preferred wet grasslands rarely resulted in agricultural damage.

The designation of protected areas aim safeguarding of traditional wintering grounds (see further and Fig 6). In recent decades, however, drastic changes and increasing industrialization in agriculture have led to the large-scale reversal of old permanent grasslands into intensive crops, accompanied by a significantly lowered water level,

often affecting even adjacent SPAs. An important area of grasslands is also levelled by filling the microrelief and many were reseeded to increase production.

This can create conflicts between wintering geese and agriculture, newly sown grasslands and arable fields being more susceptible to grazing damage. Notably, remaining patterns of the historic microrelief create temporary wet patches, with risk of trampling damage from geese and other birds (Fig 7). Muddy zones can become silted up and cultivation of winter grains can locally suffer significant damage (Fig 8). However, this problem may be more related to weather conditions than to the total number of geese.

4. Protection and restoration of the historical grassland area in the Flemish polder region

Extensive wet grassland landscapes are traditionally preferred by Pink-footed geese (Fig 9). The degradation of this habitat also impacts typical meadow birds and other nature values, incl. rare vegetation types such as brackish grasslands. The core wintering areas were designated as Special Protection Areas by the Flemish Government in 1988 and today still host most of the wintering Pink-footed Geese in Belgium (Fig. 4). Since the 1960ies several nature reserves were established, first by NGO Natuurpunt, later also by the Agency of Nature and Forests (Fig 10).

After acquisition of larger areas, restoration of natural vegetation and original water levels are aimed, often by rebuilding microrelief (Fig. 11). Currently restored grassland habitats range from 150ha to 550ha, totalling up to more than 1600ha. The management is mostly carried out in collaboration with local farmers, practicing mowing, traditional cattle or sheep grazing and respecting the carrying capacity of the ecosystem.

In 2015 historically permanent grasslands in the polders were given legal protection by the Flemish Government. Vegetation changes by levelling, ploughing and conversion into cropland became prohibited or subject to permits. This measure applies both inside and outside SPAs, where grasslands already had some degree of protection as a habitat for birds.

5. Socio-economic aspects of conservation efforts

The development and management of protected areas enables and Favors ecosystem services. This requires a balanced policy, especially when located in vast agricultural areas.

Even though the Pink-footed geese are keen to forage on crop leftovers in early winter, grasslands remain the preferred habitat. By restoring grassland complexes in the wettest areas, the risk of damage to the most susceptible arable fields is avoided. Further, a procedure of damage compensation is implemented by the Agency for Nature and Forests. This twofold strategy has led to a significant reduction of conflicts.

In most nature reserves the grassland management is carried out by local farmers who can use these grasslands for free, taking into account a number of restrictions based on the ecological objectives. This also reduces the cost for nature management, resulting in a *win-win situation* for both parties. As ‘nature inclusive farming’ can yield ‘green’ products, this cooperation could be strengthened and rewarded by assigning products from these regions a unique origin and quality label.

Stimulating public interest in nature and landscapes can also create economic added value. The establishment of Natuurpunt visitor centres in Uitkerke and Damme (Fig. 12) was also partly supported and advocated by the international significance of these traditional goose staging areas.

Summary of the process:

The objectives, working methods and opinions described above represent a coherent strategy. The results contribute to international initiatives and networks: Ramsar, EU Directives, Bonn and Bern Conventions, AEW, Wetlands International, BirdLife etc.

Counts, inventory and mapping of long term trends require specific expertise and collaboration with scientific institutions (INBO, Universities). Societal needs also received significant attention, ensuring educational initiatives such as lectures, guided excursions and training of volunteers. Communicating “*the goose phenomenon*”, is realized through publications in popular and scientific journals, both regionally and internationally.

The findings of this study have been and continue to be incorporated into environmental discussions: water policy, integrated agriculture and nature conservation, spatial planning and the management of stress factors (e.g. wind farms, powerlines). They provide concrete input for the spatial recognition of nature as a landscape heritage and support opportunities for sound nature management.

Impacts:

The figures in annex illustrate numbers, phenology, and distribution of wintering geese. The designation of Special Protection Areas in the coastal region was strongly related to the core areas of geese (Fig 6), as well as the establishment of protected areas (Fig. 5).

Regional conservation objectives for the EU Bird Directive SPAs were decided in 2009 by the Flemish government, fixing a target of 12,000 as a seasonal number for Pink-footed Geese. Over the last 20 winters, we calculated an average of 10,533. A target of 8-10,000 ha permanent grasslands was put forward in the same decision (Fig. 10) as functional nature rich habitat.

Beneficiaries:

This long-term goose research always enjoyed broad support from ornithological and nature conservation organizations. Results were regularly presented in their journals and at seminars.

These data helped advocating for securing relevant areas of suitable habitat for geese and waterbirds. The monitoring data also contributed to the successful approval of several EU-LIFE projects supporting grassland restoration.

The marvel of large flocks of Arctic geese wintering in an authentic polder landscape is appealing to a wide audience, attracting enthusiast’s from far away. Many are ‘winter tourists’ staying on the Belgian seacoast that come to enjoy the goose spectacle just inland. This recreational economy is generating revenue for the optical and bicycle industries, the sale of information, literature, regional products, local horeca and many more.

It is gratifying and most satisfying to be able to support and stimulate the resulting growing public awareness.

“Geese are a symbol of “wildness”: many individuals, hikers, naturalists associations and other groups make considerable efforts to observe and enjoy this phenomenon. The wintering Arctic geese therefore deserve respect and the necessary efforts from governments, responsible agencies, owners and land users”.

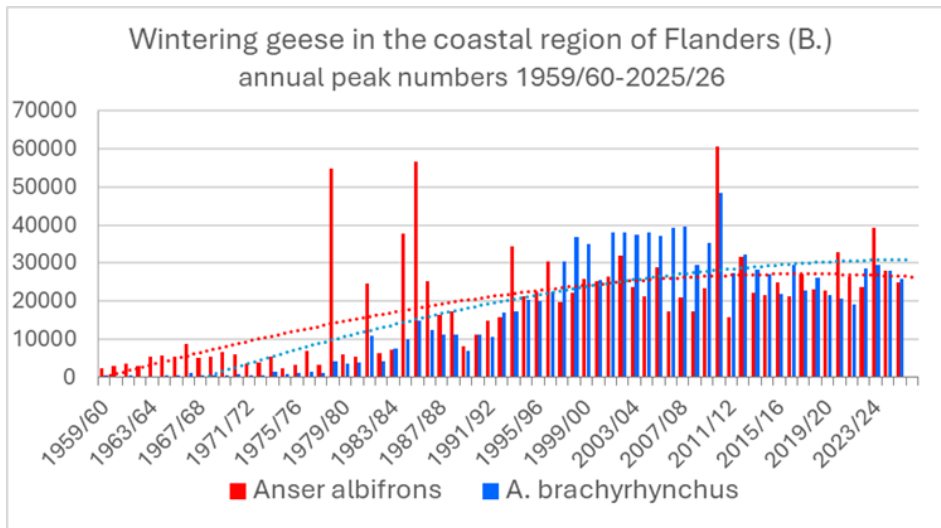


Figure 1. Long-term count data and trends.

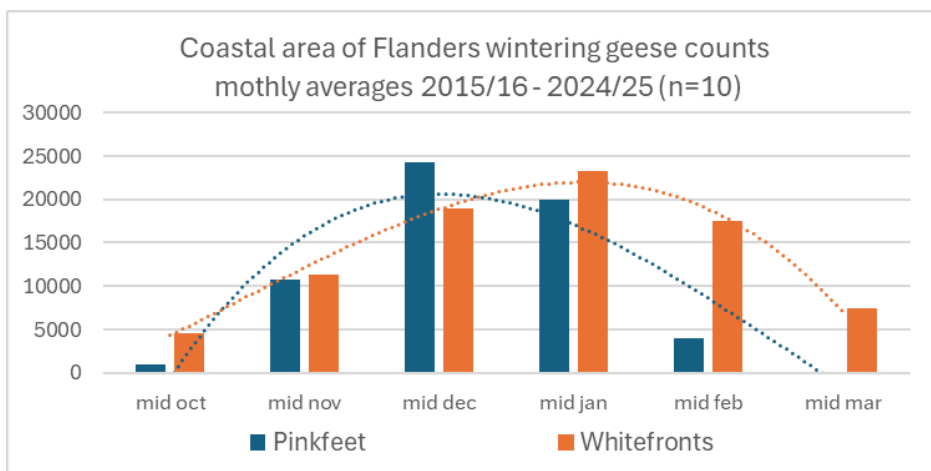


Figure 2. Phenology: monthly presence of goose numbers.



Figure 3. Coastal region of Flanders (B.) Expansion of goose wintering area, starting from Damme in 1959 (blue): the Oostkustpolders (red: 300 km²) and recent extended area (yellow: 1600 km²).

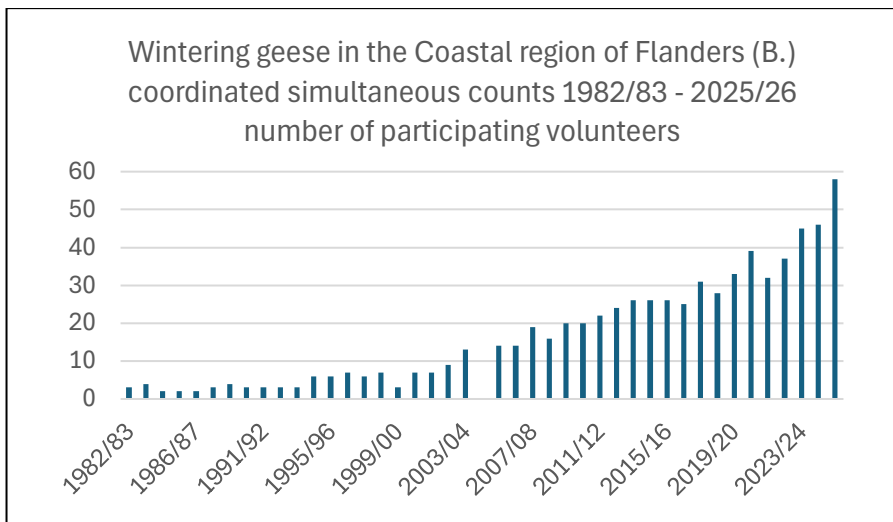


Figure 4. The expansion of the goose wintering area resulted in an increase of volunteers for simultaneous counts.

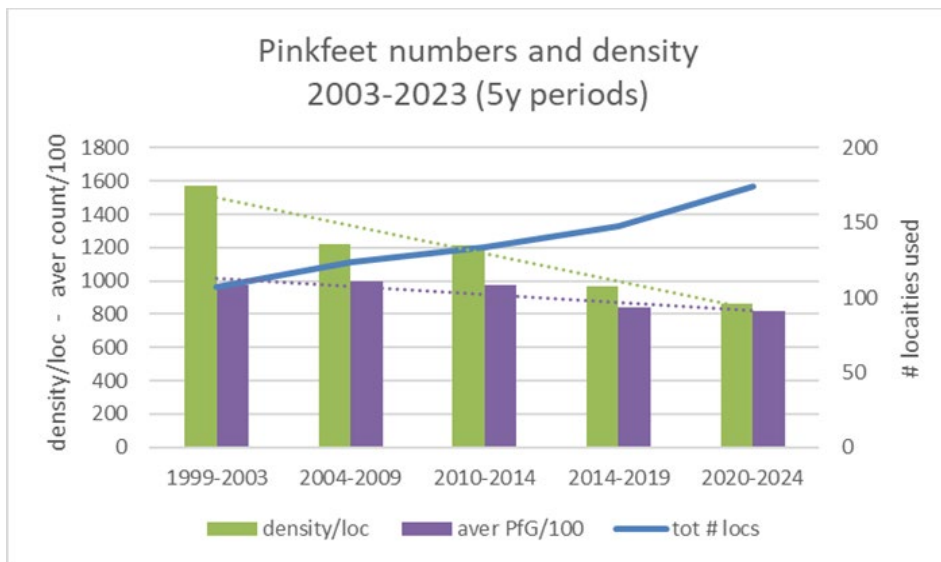


Figure 5. Expansion with increasing number of used localities leads to significant decrease in densities and lower damage risks.

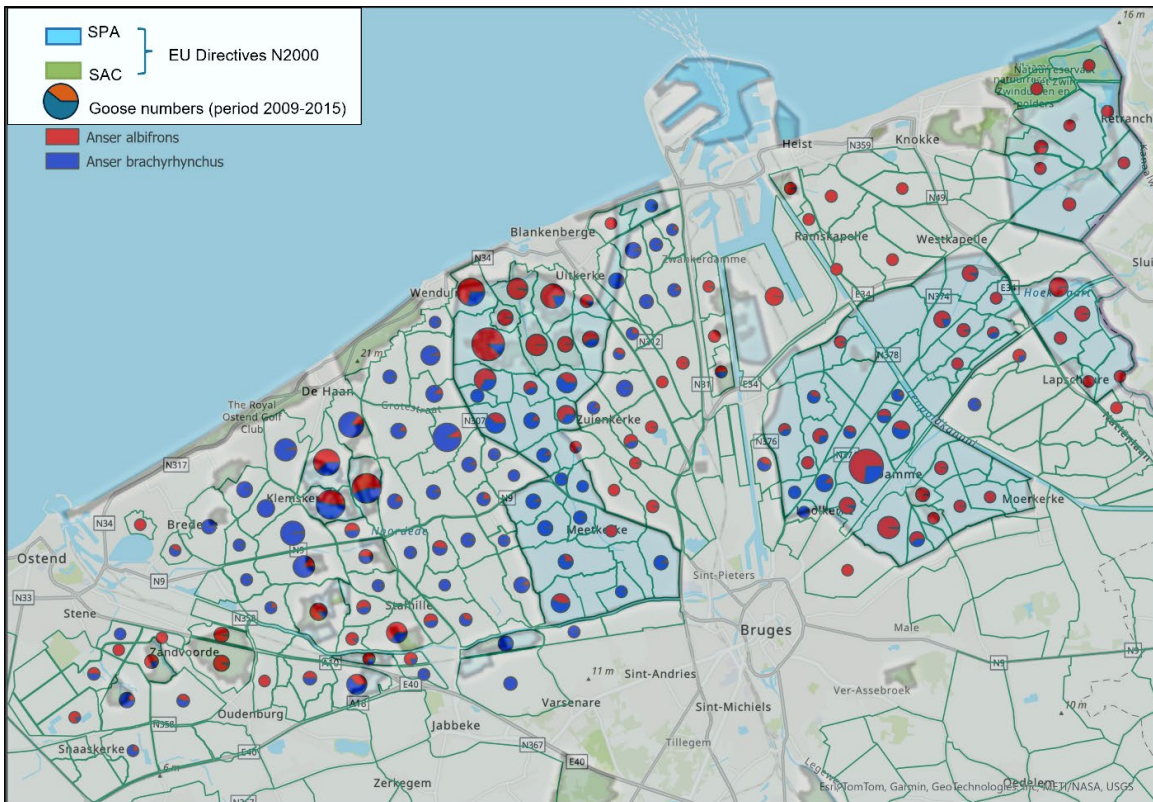


Figure 6. Data on core wintering localities of geese contributed to the demarcation of Special Protection Areas (SPA, EU Bird Directive) and Special Area's for Conservation (SAC, EU Habitats Directive).



Figure 7. In the historical permanent grasslands reversed into arable fields, the ancient microlief remains clearly present as wet zones - Uitkerke (photo Eckhart Kuijken).



Figure 8. Traces of the microrelief remain present when historical grasslands are reversed into arable fields. During rainy periods, these zones form patches with a high risk of damage. (photo F. Verhaeghe).



Figure 9. Wet grasslands are essential habitat for Pink-footed Geese (Photo: Eckhart Kuijken).

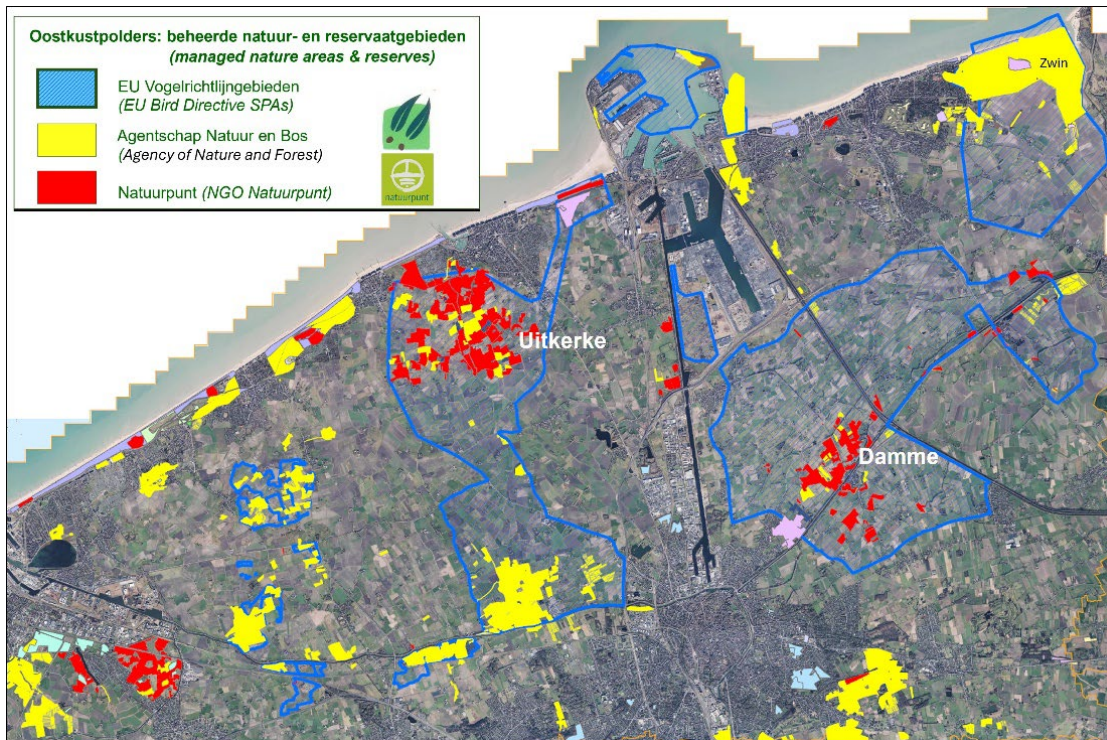


Figure 10. Managed nature areas & reserves (2025) and delineation of SPA Bird Directive (blue).



Figure 11. Example of habitat restoration in Uitkerke (photo Eckhart Kuijken).



Figure 12. Natuurpunt Visitors centre at Damme, opened in September 2025 (photo Patrick Meire).

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Goose population size and agricultural damage: explaining apparent mismatches can inform goose management

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Location: The Netherlands, with specific reference to Flevoland, Noord-Holland, Utrecht, Zeeland, Zuid-Holland

Summary:

Geese foraging on agricultural land can cause damage to crops, resulting in yield loss. In the Netherlands, farmers are compensated for such losses. Compensated damages have increased significantly, at a much faster rate than goose population sizes. Potential explanations for this apparent mismatch were explored in a literature review to support goose management in 5 Dutch provinces (Flevoland, Noord-Holland, Utrecht, Zeeland, Zuid-Holland). The relationship between goose population size and compensated damages is complex and influenced by ecological, environmental, economic, social and political factors. This case study expands on earlier reviews, providing a broad framework of existing knowledge. This can be used to understand when and where damage occurs, why this may change independent of population size, and how management may act on it.

Challenges:

Environmental: The Netherlands is very attractive to geese due to its mosaic landscape of lakes, swamps, and intensive agricultural land. Dairy farms make up a large part of the agricultural landscape, due to the dominant soil types. In some regions, goose populations exceed the carrying capacity of their natural habitat. Goose grazing can result in large yield losses, especially at the first, and most valuable, spring harvest.

Economic: National compensation payments for goose attributed damages exceeded €50 million in 2024. Damages appear to increase at a much faster rate than the goose population size.

Social: High compensation costs cause social and political tensions, and pressure to reduce these costs. At the same time, some animal rights organizations oppose any form of derogation shooting, causing further conflict. Animal rights activists, farmers, and hunters can and have challenged goose management plans in court. This underlines the importance of a strong scientific basis for goose management plans in the Netherlands.

Building blocks:

Dutch context

The Netherlands contain mosaics of small natural areas surrounded by agricultural fields. Large breeding populations of greylag and barnacle geese are present year-round, joined from autumn to spring by wintering greylag, barnacle, and white-fronted geese, and by local densities of brent and pink-footed geese. Agricultural damages are compensated by provincial governments. Farmers report damages, after which government-hired inspectors visit several times to determine the grazing species and location of damage. They assess yield loss shortly before harvest by comparing grazed and ungrazed sections. Most of the damage occurs on agricultural grassland, mainly at first harvest, and is attributed to greylag geese, followed by barnacle and white-fronted geese.

1. Review and synthesis of existing knowledge.

Grazing damage by geese can be influenced by factors operating at two distinct levels: 1) the grazing pressure on agricultural land and 2) the effect of grazing on yield loss and economic costs. Moving from grazing damage to compensated damages adds another layer of variability due to administrative and social factors.

Grazing pressure on agricultural land.

Fraction of the time and population on agricultural land: The effect a goose population has on agricultural land depends partially on the cumulative grazing pressure, which is a combination of the number of geese and the duration of grazing. This can increase independent of population growth when a larger fraction of the population forages on agricultural land or spends more time there.

Attractiveness and capacity of foraging habitats: Foraging time and location on agricultural land depend on its attractiveness relative to alternatives such as natural areas or harvest remains. This is influenced by distance to roost, predation risk, foraging quality, and inter- and intraspecific competition. Changes in these factors can cause a shift in goose distribution. Once the carrying capacity of alternative resources is reached, continued population growth disproportionately affects agricultural land (Table 1). Such processes can act across provincial or country borders.

Table 1. A fictional example illustrating the relevance of changes in the fraction of the population utilizing agricultural land. A population of 2000 geese is equally divided between natural and agricultural habitats. Subsequent population growth only increases the number of geese foraging on agricultural land. A doubling of the population results in a tripling of grazing pressure on agricultural land.

	Total (n)	Natural habitat (n)	Agricultural land (n)
Year 1	2000	1000	1000
Year 5	4000	1000	3000

Yield loss and economic costs.

Crop characteristics: The effect of grazing on yields and economic costs depends on the crop's value, production costs and resilience to grazing. Some plant parts or developmental stages are more vulnerable, such as roots and seedlings. The effect of grazing further depends on the harvested part: seed yields will be less influenced by grazing during the vegetative stage or by leaf consumption than total biomass yields.

Changes in growth rate: How fast a plant grows depends on its size; it needs to be neither too small nor too large. When grazing alters a plant's size, it also changes its growth rate. If the plant becomes smaller than is optimal, subsequent growth will be slower (fig. 1A). If the new size is closer to the optimum, growth rates will increase

(fig. 1B). This means yield losses can be higher or lower than the biomass eaten by geese (fig.2). The optimal height for plant growth may change with the season (fig. 3).

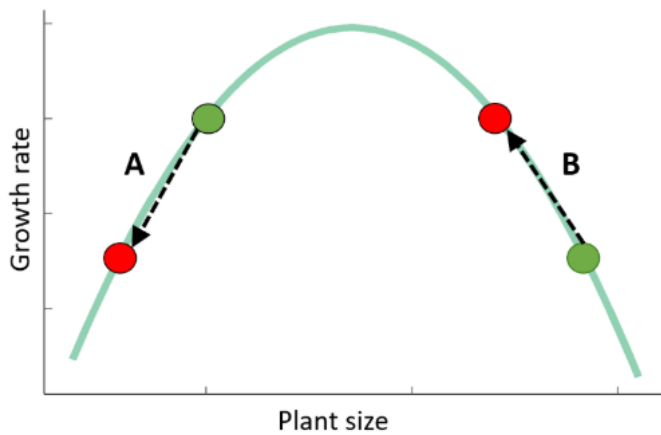


Figure 1. The growth rate of a (grass) plant may depend on the size of the plant in relation to the optimal size for growth. The effect of biomass removal then depends on the change in size compared to the optimum. In scenarios A and B, the plants are reduced to the same height by biomass removal. The green circles indicate the ungrazed situation, the red circles the grazed situation. In scenario A, the grazed plant will have a decreased growth rate compared to the ungrazed plant, as the difference between the height of the plant and the optimal height has increased. The difference in plant size between grazed and ungrazed will increase over time. In scenario B, the grazed plant will have a faster growth rate than the ungrazed plant as it is closer to its optimal height for growth. The difference in plant size between grazed and ungrazed will decrease over time (from Buitendijk et. al., 2023).

Time for recovery: The extent to which a growth response may mitigate or amplify yield loss depends on the growing conditions, the amount of biomass to be compensated, and the time available until harvest. Recovery time may be increased by delaying harvests, but harvest time can be restricted by weather conditions and changes in crop quality (fig. 4).

An example: grazing effects on agricultural grassland: Winter grazing reduces grass height only slightly, may increase growth rates, and allows time for recovery, resulting in a limited impact on first harvest (fig. 2, situation 3). Poor growing conditions in winter and early spring, along with a rigid harvest schedule, hamper full yield recovery (fig. 2, situation 4). However, when winter conditions are very limiting, geese may forage on root biomass. This not only reduces yields but also incurs costs due to required reseeding. In spring, the optimal height for grass growth increases (fig. 3), while geese maintain a short sward. The later in spring grazing occurs, the bigger the effect on growth rate and yield loss (fig. 2, situation 2). This shows how both timing and foraging behaviour can affect yield loss.

Potential effects of grazing on yield loss



Figure 2. Visual to demonstrate that the effect of grazing on the growth rate influences how the amount of biomass removed will translate to yield loss. Compensatory growth does not necessarily result in a compensation of yield loss.

Compensated damages.

Reporting rate: Most compensation schemes require farmers to report damage. Not all farmers will claim compensation. This means the total damage in a region exceeds the amount compensated, allowing these to change independently of each other.

Reporting system: Farmers are more likely to report damages if the reporting system is accessible and familiar, if there are no additional administrative fees, and a larger portion of the damages is compensated. This influences the gap between total and compensated damage.

Perceived and tolerated damage: Farmers will claim damages when *perceived damage* exceeds a certain ‘tolerance threshold’. This is subjective, influenced by goose presence and visibility, conspicuousness of damage and sentiments toward geese and goose management. These perceptions are shaped by community discussions, social tensions, and media portrayals. If social triggers or frustration reduce farmer tolerance, compensation payments may increase suddenly regardless of actual changes in yield loss.

Compensation policy and taxation methods: Compensation can be based on goose numbers, grazing pressure, or assessments of yield loss through yield comparisons. Limitations in the accuracy of damage assessments, as well as policy decisions on deductibles, can further widen the gap between actual and compensated yield loss.

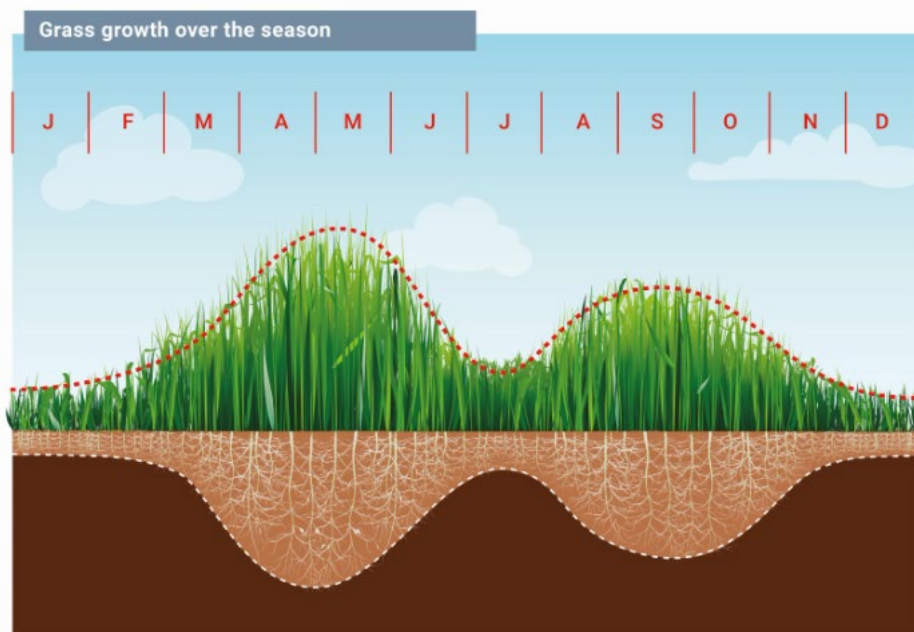


Figure 3. Visual representation of grass growth throughout the year in the Netherlands.

2. Explaining mismatches between goose numbers and agricultural damage.

The framework described here offers various explanations for mismatches between population size and yield loss or compensated damage. A combination of these likely contributes to the mismatch observed in the Netherlands. Some may also apply to other regions or could help predict future changes in agricultural damage both regionally and at a flyway scale.

Changing migration strategies: Changes in climate, land use, goose management, predation, and competition along a flyway can stimulate altered migration strategies. Increased goose numbers during periods of fewer alternative resources, more valuable crops, or greater crop vulnerability can greatly increase economic losses, disproportionate to local or international population growth. In the Netherlands, an increasing fraction of the barnacle goose population has extended their stay from late March to mid-May, likely due to increased competition and predation in Baltic stopover sites. This results in a disproportionate increase in grazing pressure on agricultural grassland during a vulnerable period, greatly increasing yield loss.

Interspecific competition and facilitation: Larger species may facilitate smaller geese by grazing tall grass down to a preferred height. The smaller species then keep the grass short over a longer period, reducing yields and outcompeting the larger species. Multiple species can graze the same field but not contribute equally to damage, potentially causing misallocation of damage. Outcompeted in natural habitats by smaller species, larger geese may shift to agricultural grassland. In the Netherlands, some of the damage attributed to greylag and white-fronted geese is likely caused by barnacle geese. A growing barnacle goose population may also have driven an increased presence of greylag geese on agricultural land, independent of greylag goose numbers.

Changes in reporting systems: Reducing costs, simplifying the process, or increasing outreach encourages more farmers to claim damages, leading to a permanent increase in reporting as they grow accustomed to the system. In Zuid-Holland, the simplification and promotion of the reporting system led to a steep increase in damage claims.

Years with extreme weather: Severe winters can drive geese southward, increasing local densities. Weather-induced stressors, such as severe cold, heat, or drought, may negatively affect plant growth and resilience, reduce the carrying capacity of natural habitats, and drive geese to root foraging. This can cause a temporary spike in yield loss. While not directly studied, it is likely that increased visibility of geese and grazing damage during years with extreme weather events will prompt more damage claims. This increases farmer familiarity with the reporting system and could potentially foster more negative sentiments towards geese and goose management. This can have lasting effects on the reporting rate and subsequent compensation payments.

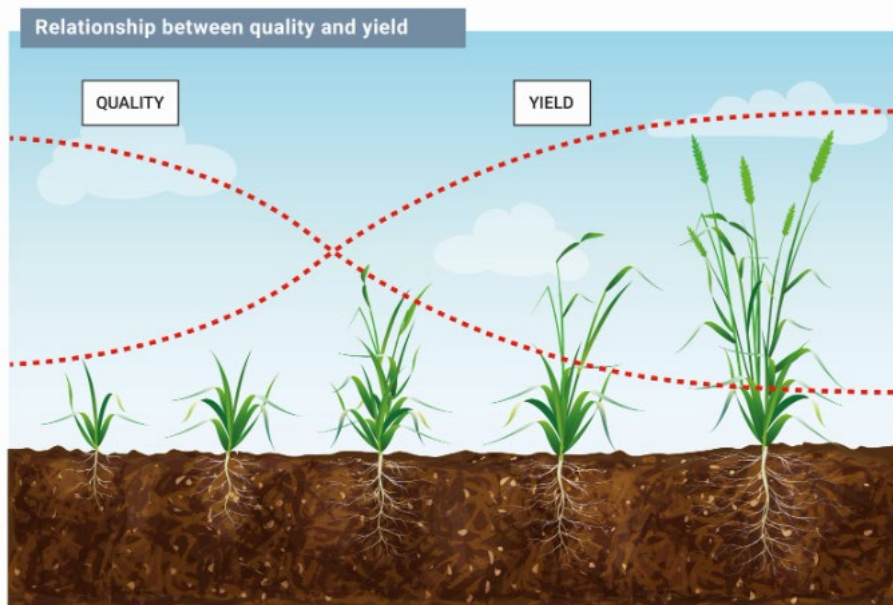


Figure 4. Visual illustrating the relationship between grass quality and biomass yield over time. The quality of grass as feed for dairy cows declines once it reaches a certain height and enters the reproductive stage. This highlights the importance of optimal harvest timing.

3. Applying theory to goose management.

Understanding the factors that influence grazing pressure, yield loss, and economic cost can inform management strategies to mitigate these effects, although not all may be equally practical, feasible, or cost-effective.

Reducing grazing pressure and yield loss: Surrounding roosts with natural habitat and managing these to be optimal for geese may decrease pressure on agricultural land. Harvest remains or diversionary feeding can also relieve the pressure on growing crops. Scaring can reduce the attractiveness of agricultural land. Understanding when and where grazing is most detrimental can inform when and where scaring efforts or provisioning of alternatives can be most effective. The cost-effectiveness of such methods will likely decrease with population size, especially when populations are large compared to the available resources.

Targeting the right goose population: Effective goose management requires targeting the right goose populations, especially when using lethal methods. This requires determining which populations forage on valuable crops, vulnerable plant parts or during vulnerable periods. Furthermore, when distinct populations within a species contribute differently to damage, as with breeding and migratory geese, the timing of management becomes

important to ensure the right population is affected. Determining whether interspecific competition influences foraging location helps prevent a disproportionate effect on an angel species.

Evaluating compensation schemes: Whether a compensation scheme results in a fair distribution of compensation depends on the local situation. Subsidy schemes based on the number of geese or grazing pressure are especially suitable when these are the main drivers of yield loss. Such schemes can take some factors into account, such as crop type, offering higher subsidies for more vulnerable or valuable crops. However, with increasing variability in the timing of grazing, such schemes are likely to over- and underestimate economic loss. Comparisons between grazed and ungrazed yields are more suitable in regions with high variability, although this relies heavily on the availability and quality of ungrazed references.



Figure 5. Simplified visual to demonstrate that the number of geese only partially explains the amount of compensated damages, with an indication of several other important factors.

Evaluating management efforts: Understanding which factors management strategies aim to influence can help to predict and evaluate their future effect. If predation risk in natural areas is high, scaring is unlikely to make agricultural land less attractive. Population reduction targeting a species with little impact on yields will not reduce yield loss. Another consideration is how to evaluate the effect of past management practices. Compensated damage will not reflect a decrease in true yield loss if reporting rates increase. Positive effects of management may be counteracted by extreme weather events in the same year. This illustrates the need to account for various factors and evaluate over multiple years.

4. Application in a Dutch goose management plan.

In Noord-Holland, the insights from this literature review supported a shift towards targeted management of spring and summer populations, while limiting winter interventions by implementing “winter rest” (prohibiting purposeful scaring and derogation). Part of the approach also involves the start of several research projects aimed at improving knowledge of when and where goose management strategies can be most effective. To communicate the insights underlying the goose management plan to the public, several graphical illustrations (figs. 2, 5 and 6) were created, along with a fact sheet summarising the relevant information in layman's terms.



Figure 6. Visual to illustrate that reducing the population does not correspond to an equal decrease in damages.

Summary:

Apparent inconsistencies between goose population trends and compensated agricultural damage can be attributed to the complex interplay of multiple ecological and environmental factors (habitat availability and quality, interspecific competition, timing of grazing, crop characteristics, weather), management practices (crop choice, scaring) and social-economic aspects (crop value, compensation system, reporting probability).

Changes in these factors may be driven by shifts in land use, goose management in neighbouring regions, migration patterns, extreme weather events, and sentiments towards geese and goose management. Studying such shifts is key to understanding regional and temporal variation in compensated damages, as well as the potential for damage reduction through goose management strategies.

Population reduction can be an effective strategy to limit agricultural damage if it targets geese present on agricultural land during periods of crop vulnerability. However, if a species uses farmland partly due to interspecific competition, specifically targeting them may disproportionately impact their population. Furthermore, the overall effectiveness of these measures may be obscured if compensation claims are driven more by reporting behaviour than by actual physical damage.

Impacts:

The fauna management units in each of the 5 provinces benefited from a clear overview of factors influencing damage compensation costs and a better understanding of the causes of past changes in compensated damages. This provided a sound scientific basis for building goose management plans.

These insights can also be applied to other regions. Consideration of changes in the local ecological, agricultural, and social conditions may help explain why economic costs, compensated or not, may have increased. This can illustrate which management actions may be available to locally reduce the effects of goose grazing, and if none of these actions is feasible, to develop fair compensation schemes.

At the EGMP level, considering the various local factors that influence estimated yield-loss may help to understand differences between range states. A population of the same size may have a very different effect on economic loss, depending on local ecological and agricultural factors and socio-political values. Such considerations may help inform and evaluate objectives and management plans at the flyway level.

Beneficiaries:

Governments, local practitioners, and/or farmers can benefit from developing well-informed goose management plans based on recent scientific knowledge. This may reduce agricultural damage or aid in the development of fair compensation schemes, directly benefiting farmers. A reduction in compensated damages benefits the governments paying those compensations. Farmers and hunters benefit by optimising their time, avoiding wasting time on ineffective goose management efforts. Geese benefit through the prevention of unnecessary killing or scaring.

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Finding solutions for the co-existence of geese and sustainable farming: a grassland mixture case study from northern Norway

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Location: Vesterålen in northern Norway

Summary:

This case study focusses on the interactions between spring-staging geese and pasture production at an important stopover site in northern Norway for Svalbard-breeding barnacle geese (*Branta leucopsis*) and pink-footed geese (*Anser brachyrhynchus*). As conflicts between geese and agricultural interests are significant in the region, mitigation tools are important for successful conflict management. Based on initiatives from local farmers, the main aim of this study was to evaluate and test new grass seed mixtures that would produce, regardless of spring-foraging geese, satisfying yield levels and quality as an alternative to the commonly used timothy-dominated mixtures. Based on experiments in a phytotron and on field plots, as well as implementation at farms and in-depth interviews with farmers, results from the study provided useful guidance for alternative farming practice which also may reduce conflict levels in the long run. The study identifies (I) recommendations for alternative farming practices, in terms of using alternative seed-mixtures which produce acceptable yield levels regardless of goose grazing, and (II) conflict resolution processes where target groups are actively involved in the research processes and the implementation of results.



Figure 1. The region in Vesterålen (Andøya), Northern Norway, where the case study was practically conducted. Here, the Svalbard-breeding populations of barnacle geese and pink-footed geese stop in spring on their way northwards. Most of the limited space available for geese are cultivated.

Challenges:

Due to increasing goose abundances and their preferences for agricultural crops over natural habitats, conflicts between geese and agricultural interests are significant in many European countries. There are several tools in the toolbox to reduce these challenges but results often vary and do not necessarily reduce the conflicts as such. Farmers in the current study have the opportunity to apply for subsidies, but available funding does not necessarily cover all their losses, and farmers also need silage for their livestock. Hence, other tools are needed to secure sustainable grass production, which also balances a successful management of the migrating goose populations.



Figure 2. The typical spring situation in Vesterålen, Northern Norway: barnacle geese and pink-footed geese interacting with the human settlement (Photo: Ingunn M. Tombre©).

Building blocks:

With this as background, we investigated the possibilities for adapting the farming practice to reach these goals, involving local farmers actively by experimentally implementing different grass-mixtures on their properties, sharing knowledge and experiences, as well as conducting in-depth interviews. Also controlled experiments on field plots and in the lab were performed, where grass growth response to simulated grazing (clipping) and yield production were compared between several alternative (and relevant) seed mixtures. The project consists of four building blocks at different scales, all integrated to reach the common goal; develop alternative farming practices which balance the yield production and manage the goose populations successively.

1. Grass-cutting experiments in a phytotron

Description: Pot experiments with different seed mixtures were established in a phytotron, a laboratory where temperature and light-conditions were controlled. Some pots were clipped to simulate goose grazing; others were uncut and served as controls. Both groups were grown at different temperatures (current and predicted warmer) in two periods mimicking the period before the first harvest (early July) and between the first and second harvest (late August) which is common practice at farms in northern Norway.



Figure 3. The phytotron and the pot experiments (Photo: Sigridur Dalmannsdóttir© and Karoline Vestland©).

Lessons learned: Results before the first cut in the phytotron study demonstrated a significant reduction in total biomass production when plants were cut regularly, hence revealing a relatively limited compensation capacity (seven weeks experimental period). Moreover, timothy (*Phleum pratense*) had the largest regrowth potential but did not increase the production at higher temperatures as the other mixtures did. Between first and second harvest, growth was also significantly reduced when plants were cut. There were no significant effects of increased temperature on production. Timothy is known for its' good growth ability at low temperatures, and this was demonstrated with the lowest production of all mixtures in the second period, which was warmer. The cutting in the first period also significantly reduced the number of new timothy shoots, demonstrating how goose grazing may reduce the harvest on timothy fields. In agriculture landscapes dominated by timothy fields with high goose abundances, a mitigating measure would hence be to recommend other seed-mixtures as this will presumably reduce the negative consequences of goose grazing.

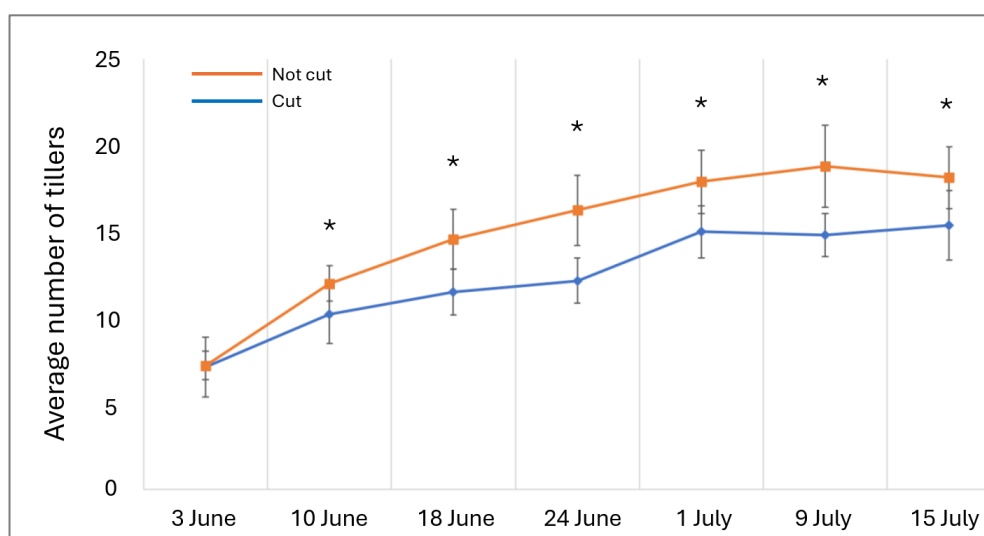


Figure 4. The average number of timothy-tillers in the pot experiment in June and July (simulated period between first and second harvest in northern Norway). The asterisks represent significant differences between the pots with simulated grazing (cut) and the controls (un-cut pots).

2. Grass growth experiments on fields plots with simulated grazing

Description: Various seed mixtures were sown in fields where parts of the plots were cut once a week, and the remaining parts harvested following the timing of harvest practice in northern Norway.

Lessons learned: In the field experiments, cock's foot (*Dactylis glomerata*) soon became the dominating species, and dry matter yields varied significantly with no specific seed-mixture trends. For the plots intensively cut, winter survival was considerably reduced, demonstrating negative effects beyond one growing season. Hence, goose grazing may not only reduce yield loss but also lower the turnover rate on pasture fields. In order to sustainably manage such fields, geese should be scared off to other alternative locations, although this may need a landscape approach beyond the farmers' properties and commonly requires external funding and leadership.



Figure 5. The field experiments with different seed-mixtures (Photo: Sigridur Dalmannsdóttir©).

3. Implementation on farms

Description: Four farmers tested alternative seed mixtures at their fields in addition to the timothy-dominated mixture, commonly used in northern Norway. Cock's foot, meadow fescue (*Festuca pratensis*), tall fescue (*Lolium arundinaceum*) and perennial ryegrass (*Lolium perenne*) dominated the alternative seed mixtures.

Lessons learned: At the farms where different seed mixtures were established, foraging geese did not show any specific preferences for the grass types available. Hence, a change in use of seed mixture will apparently not affect the spring-staging geese negatively. At the same time, on average, significantly more silage balls were produced on fields with alternative seed mixtures, as well as the amount of grass (wet and dry weights) and milk units (although not significant). At the second harvest, the differences were statistically significant. Most of the fields were harvested at the same time regardless of seed mixture (following the common practice for most farmers), but when harvested in accordance with the grass development, cock's foot fields were harvested earlier than timothy fields and gave a third harvest. As the timothy fields became older, the proportion of sown species in the timothy mixture became smaller with a corresponding increase in weeds (which was also demonstrated in the experimental studies). This was not found for fields sown with alternative mixtures.

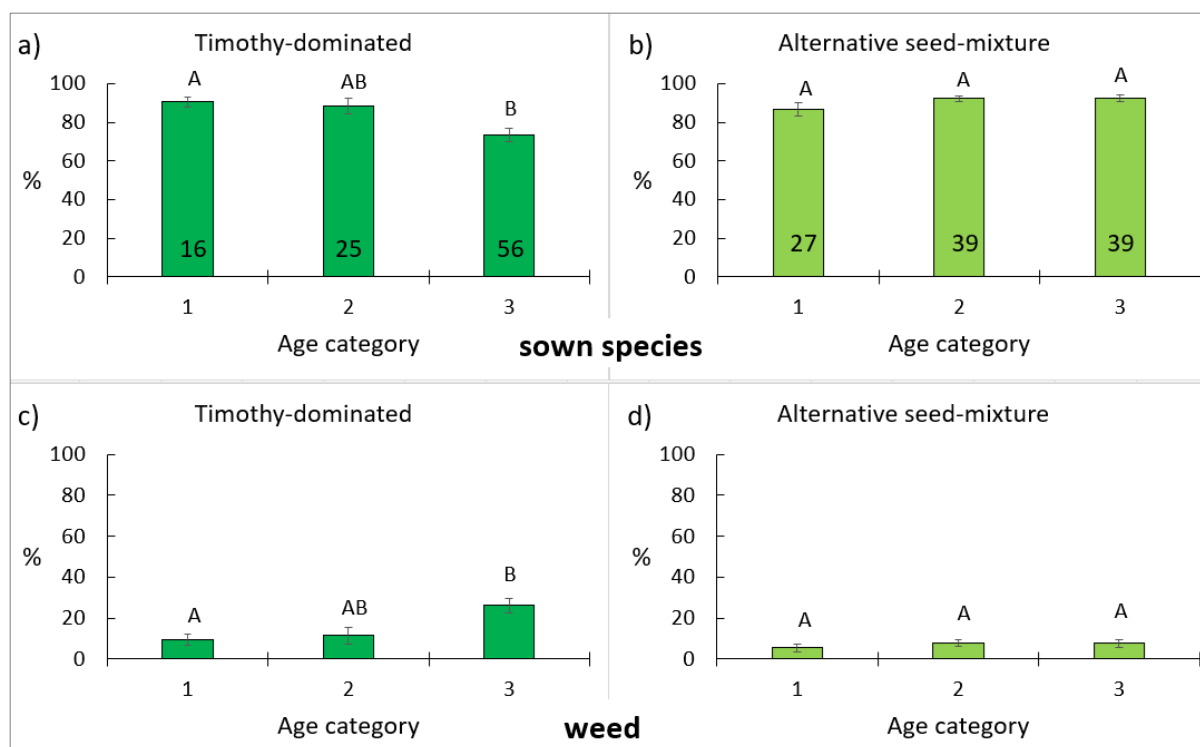


Figure 6. The percentage of sown grass types (a and b) and weed (c and d) registered in field plots on timothy-dominated fields (a and c) and fields with alternative seed-mixtures (b and d). The age categories of the fields are classified as follows: 1=new field established the previous year, 2=established two years ago, and 3=established three years ago or earlier. Different letters on columns represent significant differences (ANOVA with Tukeys HSD, overall model for a) $F=5,49_{2,96}$, $p=0,006$, for c): $F=5,18_{2,96}$, $p=0,007$, for alternative seed-mixtures p -values >0.05) and the numbers in columns are the number of registered field-plots. Vertical lines on columns are standard error.

4. Farmer-interviews

Description: The four farmers actively involved in the study were interviewed to gain knowledge about their experiences and ideas for solutions to the challenges of grazing geese.

Lessons learned: These farmers have significant challenges with geese throughout the spring and summer, as aside from pink-footed and barnacle geese, also greylag geese (*Anser anser*) forage on the pasture fields during the growing season. Goose grazing has direct and indirect effects on their grass production depending on goose abundances, the timing of grazing and climate (spring development). The farmers see the importance of exploring alternative mitigation tools, and good experience with the alternative seed mixtures is an important supplement to their farming practices as these new tested mixtures provide more grass for the animals, grow faster and reduce the weed challenges caused by goose grazing. They also experienced that the alternative seed-mixtures had good quality as winter fodder for their livestock. As responsible food producers, the farmers also recognize the need and value of relevant research and are, based on their long experience, knowledge and competence, valuable collaborators in the search for realistic solutions to the agriculture-geese conflicts.



Figure 7. Field inspections and project discussions with local landowners and managers in Andøy, Vesterålen (Photo: Ingunn M. Tombre©).

Summary of the process:

This study was designed at different scales from (I) small scale experiments to understand the mechanisms at the interphase between goose grazing and grass growth, to (II) the investigation of possibilities to implement new farming practices on farmland challenged by goose grazing in spring. The active involvement of farmers, also through in-depth interviews, further provided valuable knowledge providing realistic implementation possibilities for the project findings based on the farmers' perspectives, views and suggestions.

Impact:

The present project, with some of the original ideas suggested by farmers, was designed not only to produce scientific knowledge regarding various seed-mixtures' response to grazing but also aimed for realistic real-life implementation. Although the structure of the project was targeted to the climate conditions and farming practices in northern Norway, some general and overall results can be extracted from the study. For instance, the processes regarding conflict resolutions may have a prevailing effect for other studies in wildlife management and conflict situations. Moreover, although the conditions are different in different climate zones, we anticipate that plant responses and the set-up for the clipping experiments are useful and will provide some guidance for corresponding studies or processes.

Beneficiaries:

As this project was targeted directly to mitigate goose-agriculture conflicts, the farming industry is an obvious interest group for the knowledge gained. Wildlife managers at various levels (from local to international) are also important beneficiaries of project results, as finding solutions for co-existence between spring-staging geese and food production is the overall approach for the study. We furthermore anticipate that all stakeholders related to the goose populations and/or food production at some level will have some interests and benefits from our project ranging from (I) specific recommendations for alternative farming practices, in terms of using alternative seed-mixtures which produce acceptable yield levels regardless of goose grazing, to (II) conflict resolution processes where target groups are actively involved in the research processes and the implementation of results.

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Considerations on goose scaring as a management tool

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Location: Flevoland, Noord-Holland, Utrecht, Zeeland, and Zuid-Holland, The Netherlands

Summary:

This case study provides a literature-based assessment of the effectiveness of goose scaring as a management tool to reduce farmer-goose conflict. It is based on a literature review contributing to the factual basis underlying the goose management plans in 5 provinces in the Netherlands (Flevoland, Noord-Holland, Utrecht, Zeeland, and Zuid-Holland; www.ganzenplan.nl), which supported decision-making on goose management. What constitutes effective scaring depends on the objectives. The goal can be to reduce damage, overall costs, or tensions due to farmer-goose conflict. The scale can range from a single field to a country, from an individual farmer to the national government, and from short-term to long-term. Consideration of factors such as cost-effectiveness, goose well-being, and consequences for neighbouring regions can differ. Depending on the objective, various factors combine to determine whether effective scaring can be achieved: ecological (population size, availability of alternative habitat), agricultural (crop type, field management), economic (cost of scaring, division of costs), and legal (laws and international agreements on minimum population sizes).

Challenges:

Environmental challenges: the Netherlands is situated along several important goose flyways, and the combination of intensive agricultural grassland and extensive lakes and swamps attracts both migrating and breeding goose populations. In some regions, large goose populations exceed the carrying capacity of the natural habitats and forage extensively on agricultural land. In most provinces, agricultural grassland is the main crop, due to the dominant soil characteristics (i.e., weak structure, high water levels, and acidity).

Economic challenges: Farmers in the Netherlands are compensated by provincial governments for yield losses attributed to geese. Compensation costs in 2024 were over €50 million. To claim compensation, farmers need to apply non-lethal preventive measures to reduce damage; if these are unsuccessful, they need to ensure scaring through derogation shooting twice a week. Recent studies raise questions about whether this can reduce compensation costs.

Social challenges: Farmers want crop-protection, hunters want to hunt, and some nature organisations oppose any form of goose killing, resulting in social conflict and complicating the development of goose management plans. Coordinated scaring can be socially challenging due to the high labour demand and the cooperation required among farmers, hunters, and authorities, especially given the relatively small size of Dutch farms and the densely populated landscape.

Building blocks:

1. Grazing pressure at the local scale

Scaring methods: Considering natural behavioural mechanisms can help estimate the efficiency of various scaring methods. Scaring is meant to decrease grazing pressure by increasing the risk geese experience in an area (perceived predation risk). Novel objects or sounds are a potential threat to geese and are initially avoided, but if no true danger appears, the field will be deemed ‘safe’ again (habituation). Methods involving unpredictable movements, responses to geese arriving, or a resemblance to true predation make it harder for geese to learn there is no threat, delaying habituation. Something or someone approaching geese directly (active scaring) forces a fleeing response from the geese. However, they return once the threat is gone, unless frequently repeated (at least 4x day) at unpredictable intervals.

Reducing local grazing pressure: Consistently reducing grazing pressure in a scaring area of up to several km² requires an intensive, spatially coordinated approach, involving both non-lethal and lethal methods to prevent habituation. Labour costs may be reduced by utilising automated systems and/or stimulating object association. The latter teaches geese that active or lethal scaring occurs in fields with certain objects, so they avoid those fields.

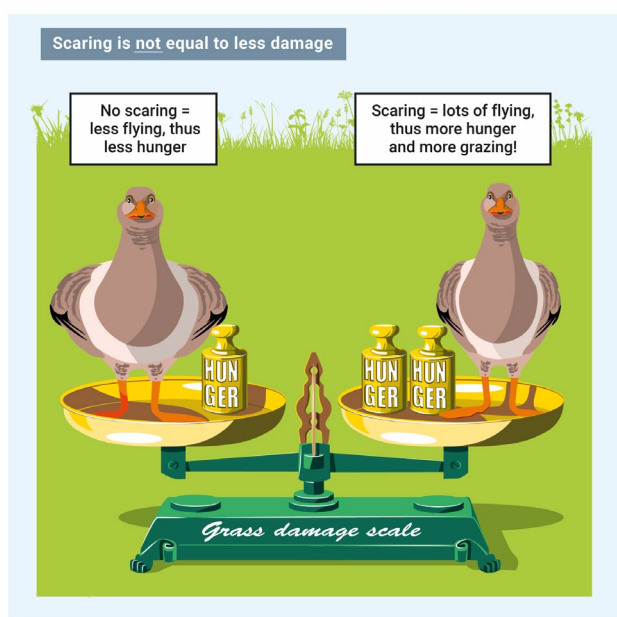


Figure 11. This figure accompanied an article to convey that scaring may not always reduce damage, since geese need to meet their energy requirements somewhere⁶.

2. Grazing pressure at a larger scale.

Consequences for overall grazing pressure, animal welfare and neighbours: Fleeing from disturbance costs energy, which must be compensated for through additional foraging. Frequent scaring may thus increase overall

⁶ To communicate the information from this literature review to the public, and to farmers and policymakers in particular, factsheets were created in simple language (in Dutch), providing an overview of the most important insights. These were supported by infographics to help readers understand and visualise the basic concepts.

grazing pressure. If scaring prevents additional grazing, goose body condition and survival may deteriorate, causing animal welfare concerns. Alternatively, geese may move to neighbouring regions, shifting the problem to someone else.

Necessity of accommodation areas: Accommodation areas are safe, alternative feeding areas on natural or agricultural land. If insufficient food is available in accommodation areas, geese will forage in scaring areas regardless of the perceived risk, reducing scaring efficiency and goose wellbeing. If accommodation areas are more attractive, geese are more likely to remain there, and scaring efforts may be reduced in the long run.

Size and location of scaring and accommodation areas: Large and/or poorly located scaring areas, combined with small, fragmented accommodation areas, make it harder for geese to learn where it is safe. Large scaring areas may contain more geese and increase the chance that geese accidentally land in them again after disturbance. If they overlap with traditional foraging grounds or roosts, displacing the geese will take more effort. All of this increases the number of geese chased and the number of disturbances per goose, increasing food requirements.

3. Potential benefits of shifting grazing pressure to accommodation areas.

From grazing pressure to agricultural damage: Scaring essentially shifts grazing pressure to a new area. If this moves grazing pressure from high-value crops to low-value crops, harvest remains, or natural habitat, this could reduce overall agricultural damage. However, if scaring- and accommodation areas contain crops of equal value, the damage will remain equal at best.

Reducing the perception of damage: Allowing scaring in areas with strong resistance to geese and providing compensation payments in areas where geese are more accepting may reduce perceived conflict. Spreading grazing pressure across more farms can have a similar effect, as it reduces the damage per farmer. A more positive attitude towards geese can reduce perceived damage and, subsequently, the number of damage claims.

Political approaches: Concentrating damages in specific areas can simplify compensation schemes. A political choice could be to frame compensation payments as contributions to nature conservation, to make them more socially acceptable. This does not reduce the overall societal costs.

4. The cost-effectiveness of scaring.

Scaring is frequently not cost-effective: Even studies that consider only local grazing pressure find that the costs of scaring outweigh the reduction in yield loss. Scaring costs increase with the size of the scaring area, as does the potential increase in overall grazing pressure. In situations with damage compensation, damage appraisal costs will increase with the number of damaged fields. Large-scale scaring is thus unlikely to reduce overall costs, especially on short time scales.

Cost-effective, animal- and neighbour-friendly scenarios: Damages may be reduced by scaring geese from small areas with high-value crops to well-situated accommodation areas of less agricultural value. The costs of scaring can be reduced by utilising automated systems and object association. Costs and negative effects on goose wellbeing may also decrease over time.

Relevance of scaring costs: Cost-effectiveness may be considered differently depending on how costs and responsibilities are distributed. In some situations, the costs of scaring and of yield loss may not fall to the same person or organisation. The costs of scaring can also be considered the price of nature conservation efforts and irrelevant when determining scaring efficiency.

5. From theory to practice.

Dutch context: In the Netherlands, compensation payments and goose management are organised at the provincial level. Farmers carry the responsibility and costs of scaring efforts. Farms are small (20-100 ha), and fields are often dispersed across a larger area. Spatially coordinated scaring efforts require cooperation between multiple farms, hunters, and land management organisations, increasing costs and responsibilities.

Different conclusions for different provinces: Noord-Holland, Zuid-Holland and Utrecht - In these provinces, nearly all damage occurs on agricultural grasslands. Natural habitats are insufficient to support the current populations. Since scaring will shift geese from one grassland field to another, it has limited potential to reduce compensation costs. In some cases, it could lead to increased yield loss. Small, fragmented farms complicate coordinated scaring efforts. If the government contributes financially to scaring efforts, the overall societal costs will increase. However, allowing scaring may reduce perceived conflict. Differences in total compensation costs and in the political landscape have led to different decisions regarding scaring as a management tool.

Flevoland and Zeeland - In Flevoland and Zeeland, goose populations are smaller, damage to high-value crops is more frequent, and farms are larger and more consolidated. In these provinces, scaring in small areas with high-value crops has the potential to reduce overall costs, especially if, in addition to natural habitat, harvest remains are offered as alternative foraging areas.

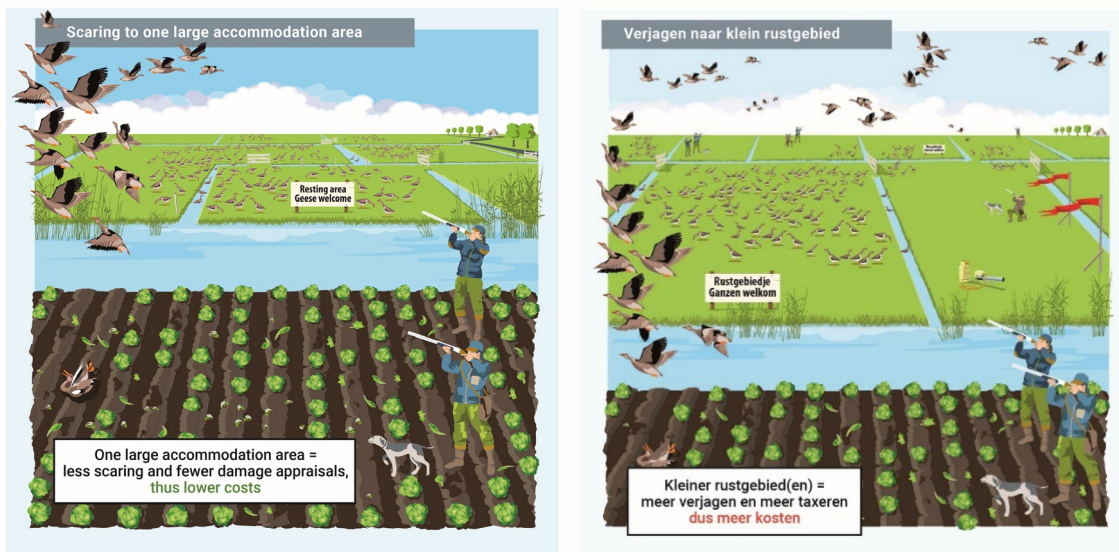


Figure 12. Two panels to convey that small, fragmented accommodation areas result in higher overall costs than a large, well-connected area. The scaring effort and subsequent costs increase because geese are less likely to understand which fields are safe and which are not. The appraisal costs increase because more fields are damaged and require appraisal for compensation payments.

Summary of the process:

To decide if scaring can be an effective management solution, different considerations need to be made. Whether a reduction in yield loss is possible depends on the spatial and temporal scale, the value of affected crops, the availability and value of alternative foraging habitats, and the population size. The most effective scaring methods and approaches can be selected by considering how geese perceive and respond to risk. Scaring may result in additional benefits, such as reduced perceived damage or simplified compensation schemes. Cost-effective

scaring may be challenging, but conceivable in some situations. In some contexts, the costs may be irrelevant. Other considerations are the required scaring effort, the effect on goose welfare, and the risk of shifting damages to neighbouring regions. These depend largely on the location and size of scaring and accommodation areas. If scaring is badly implemented at a large scale, it could increase overall damage and negatively impact goose welfare. The extent of the problem and the political landscape may affect how much weight each consideration carries, leading to different solutions in similar circumstances.

Impacts:

This case study contributes to the understanding of the potential costs and benefits of goose scaring as a management tool. It 1) aids in preventing unintended increases in goose grazing pressure caused by displacement and compensatory foraging; 2) supports more efficient allocation of public funds by identifying when prevention is unlikely to reduce the combined costs of compensation and management; and 3) provides clarity to farmers, hunters, and policymakers about the conditions under which scaring may prove effective. Both model studies and field experiments show that intensive scaring can locally reduce goose grazing pressure and damage, but only if scaring areas are limited in size. The necessity of sufficient alternative foraging habitat has also been clearly demonstrated. Setting limits is important to provide policymakers with the right tools to ensure the most suitable management approach is implemented, depending on the environmental context, spatial scale, and available human resources.

Beneficiaries:

Primary beneficiaries include farmers directly affected by goose grazing damage, who gain clearer guidance on when scaring is likely to be effective. Wildlife management units and governmental institutions benefit from improved decision-making tools that integrate ecological effectiveness with cost-based considerations. Hunters and coordinators of scaring activities benefit from clearer expectations regarding efforts and outcomes, and the spatial scales at which they may operate. Indirectly, taxpayers benefit from efforts to achieve a more cost-effective use of public funds. The geese may benefit from management strategies that reduce unnecessary long-term disturbances and energetic stress by having adequate disturbance-free foraging areas.

Solving challenges with geese at Trondheim Airport, Norway

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Location: Trondheim Airport, Værnes, Stjørdal Municipality, Norway

Summary:

The following case study is an example of how it is possible to influence the way staging geese use an area surrounding airports. The primary challenge with geese at Trondheim airport is a few thousand geese staging in the area during migration, flying between resting and foraging areas in the surrounding agricultural land and, in doing so, cross the runway several times a day, resulting in a risk of geese-aircraft collisions. In short, the method involves making certain areas attractive to geese while rendering other areas unattractive, thereby influencing their spatial distribution. The method was implemented following a mini conference on geese at Trondheim Airport in 2022, attended by researchers, authorities, Avinor (operator of 43 Norwegian airports), and several aviation stakeholders. The main challenge with the method is making good agreements with the farmers around Trondheim Airport, to influence where the geese graze. The aim is to remove food sources south of the airport, while making the north of the airport desirable for the geese to be able to graze undisturbed. Even though the setting is not perfect, the effort has yielded results. The number of geese crossing the airport by flying between resting areas and grazing sites has decreased.

Challenges:

During the autumn migration, geese mainly Greylag goose and Pink-footed goose, stage around Trondheim Airport. They rest in river courses at night and graze in the cornfields during the day (Figure 1). This causes the geese to cross the airport runway on their way between resting and grazing areas, or between different grazing areas. Bird strikes with geese are a serious aviation safety issue. It is therefore desirable to prevent the geese from crossing the runway as much as possible.



Figure 1. Map of the area around Trondheim Airport. 1 = resting areas, 2 = area where the geese can graze freely, 3 = area where it is not desirable for the geese to graze.

Building blocks:

The purpose of the measures is to control the spatial distribution of the geese; by influencing where they graze, we can be influence where they fly. This is done by removing food resources from fields south of Trondheim Airport, while allowing the geese to graze undisturbed north of the airport (Figure 2). Food availability is removed by ploughing remaining post-harvest grain into the soil as quickly as possible. To reduce disturbance around the feeding areas in the north, attempts have been made to avoid hunting and reduce human activity. An important part of the implemented measures, is that Trondheim Airport has supplemented guidance from Avinor's ornithologist, with knowledge from the research and agricultural sectors. Furthermore, a local ornithologist has been hired to conduct systematic monitoring of geese during the autumn migration.

1. Autumn ploughing.

Description: Plough the cornfields south of the airport right after threshing.

Enabling factors: Farmers must be paid compensation for losing subsidies related to spring ploughing.

Lessons learned: It is possible to make agreements with the farmers, but it is important to include all fields with grain and be able to predict where the geese will graze.



Figure 2. Examples of areas north and south of Trondheim Airport with various measures. North of the airport: Cornfields (green) should not be ploughed in the autumn and be hunting free = tranquillity and food. South of the airport: Cornfields (red) should be harvested and ploughed, and hunting controlled = no tranquillity and no food.

2. Avoid hunting.

Description: Avoid hunting north of the airport by purchasing hunting rights.

Enabling factors: The challenge is that there are many owners and that you must deal with both farmers and lessees.

Lessons learned: It may be sufficient to encourage that hunting does not take place in the most critical areas, where hunting would result in the highest risk of geese movement towards the airport.

3. Systematic monitoring of geese during the autumn migration period.

Description: An ornithologist monitors geese throughout the entire fall migration period, reports this to the airports, and keeps track of where the geese are and how they respond to the measures.

Enabling factors: Depending on an experienced ornithologist who can spend time daily on observation.

Lessons learned: It is very useful to receive daily reports on how many geese there are and where the geese are staying. Ornithologists is helpful at interpreting the geese's behaviour.



Figure 3. Bird strike with goose, Trondheim airport, September 5, 2022. Photo: Sonja Englund, Avinor.

Summary of the process:

The geese mainly rest north of the airport at night. To prevent the geese from flying to grazing areas south of the airport, it is desirable to remove food sources on the south side. This is done by paying farmers to plough the fields immediately after threshing in the fall. Normally, farmers receive subsidies for spring ploughing, so the airport must cover this loss by paying a corresponding amount.

In the fields north of the airport, it is desirable that the geese are disturbed as little as possible. Hence it is desirable to avoid hunting in this area. The airport has therefore purchased hunting rights. Attempts have also been made to restrict movement of people and dogs in the area.



Figure 4. A flock of greylag geese is grazing on a recently threshed grain field. Photo: Trond Øigarden.

Impacts:

The effect of the measures is fewer geese crossing over the airport and runway at Trondheim Airport. The most important consequence of this is that the risk of bird strikes at the airport decreases. Moreover, airport staff have less need to use scaring measures and gain more information and control over geese location around the airport.



Figure 5. No geese on the ploughed fields. Geese on the harvested grain field. Photo: Tom Roger Østerås.

Beneficiaries:

Bird strikes involving geese are considered a high risk in aviation. An example is the emergency landing on the Hudson River in 2009. The benefits of the measures are that airport personnel gain better control over the risk of goose strikes, airlines face a lower risk of serious injuries and accidents, and last but not least, the risk to life and health is reduced.

Acknowledgements:

We acknowledge Anne-Marie Austad, Dokkadeltaet Nasjonale Våtmarkssenter for reviewing this case study and providing helpful language edits.

6. Conclusion

Over the past decade, the EGMP has demonstrated how coordinated, science-based, and participatory approaches can address complex conservation and management challenges for geese in Europe. During this period, the Platform has evolved into a collaborative governance framework in which policymakers, researchers, practitioners, and other stakeholders jointly contribute to shaping and implementing management measures. The progress documented in this report reflects not only tangible outcomes, such as strengthened monitoring systems, innovative policy planning processes, coordinated management instruments, and improved integration of conservation and socio-economic objectives, but also the accumulation of shared experience and diverse perspectives that underpin the EGMP process.

The case studies presented in this report provide important practical examples of how these principles are applied in diverse national contexts. They highlight the critical role of robust data and scientific evidence in informing management decisions, from improving population monitoring and modelling approaches to developing innovative tools such as spatiotemporal harvest regulations and digital data collection systems. At the same time, they demonstrate that effective management requires going beyond ecological considerations, integrating socio-economic realities such as agricultural production systems, compensation schemes, and stakeholder perceptions.

A consistent message emerging from the case studies is that successful goose management depends on strong stakeholder engagement and collaboration. Whether through citizen science monitoring networks, co-designed digital tools, or participatory research with farmers, the involvement of those directly affected by management measures is essential for both implementation and long-term acceptance. These experiences also underscore the importance of trust, transparency and communication, as even scientifically robust measures require clear explanation and dialogue to ensure stakeholder support.

Together with the evaluations and stocktakes of management and action plans presented in this report, these insights illustrate that the EGMP has established a solid foundation for flyway-level management. However, they also point to persistent challenges, including data gaps, uneven implementation across Range States, and limited progress in areas requiring stronger international collaboration. Addressing these challenges in the upcoming years will require sustained political commitment from Range States, continued investment in research and monitoring, and strengthened collaboration between policymakers and stakeholders such as farmers, hunters and aviation authorities.