Doc. AEWA/EGMIWG/11.6
Date: 29 May 2026

AEWA EUROPEAN GOOSE MANAGEMENT PLATFORM

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

DRAFT INDICATOR ASSESSMENT FOR THE ADAPTIVE FLYWAY MANAGEMENT PROGRAMME FOR THE RUSSIA (BR) POPULATION OF THE BARNACLE GOOSE *BRANTA LEUCOPSIS*

Compiled by Iben Hove Sørensen & Kees Koffijberg, with input from Range States and members of the Russia Barnacle Goose and Flight Safety Task Forces

Summary:

The Adaptive Flyway Management Programme (AFMP) for the Russia (br) population of Barnacle Goose was adopted at the 6th Meeting of the European Goose Management International Working Group (EGM IWG6) in 2021. The AFMP has an initial lifespan of 6 years and is then subject to review, with two 6-year cycles being envisioned, encompassing evaluation and adaptation related to, among other things, the state of indicators. The EGM IWG10, in 2025, approved the proposed protocol for the assessment of AFMP indicators as set out in document AEWA/EGMIWG/10.20 and invited Range States to support the gathering and transmission of the necessary information to the EGMP Data Centre. In October 2025, a questionnaire containing the agreed set of questions was sent to the National Government Representatives and National Experts of the EGM IWG. Replies were provided by Range States and additional reporting was done through the EGMP Russia Barnacle Goose and Flight Safety Task Forces. This document presents the results of the indicator assessment and recommendations to optimize the indicators for the next 6-year cycle.

Action requested from the EGM IWG:

The EGM IWG is requested to take note of the report and provide advice, as necessary.

Introduction

The AEWA International Single Species Management Plan for the Barnacle Goose (BG ISSMP) (Jensen et al. 2018) was adopted at the 7th Session of the Meeting of Parties to AEWA (MOP7) in 2018. Following the adoption of the ISSMP, a population-specific Adaptive Flyway Management Programme (AFMP) was developed for the Russia (br) Population of Barnacle Goose (Nagy et al. 2021). This AFMP was adopted at the 6th Meeting of the European Goose Management International Working Group (EGM IWG6) in 2021.

The AFMP has an initial lifespan of 6 years and is then subject to review, with two 6-year cycles being envisioned, encompassing evaluation and adaptation related to, among other things, Management Units (MUs), Favourable Reference Values (FRVs), population models, impact models, the state of indicators, and evaluation towards achieving objectives. Upon its adoption, it had been envisioned that the AFMP would be evaluated and adapted in 2026 by the EGM IWG.

This document provides a status of the progress towards achieving the fundamental objectives of the Barnacle Goose ISSMP, focusing on the Russia (br) Population and based on an assessment of the indicators described in the population-specific AFMP.

Data for the period 2020-2024, or data on the current situation combined with a trend for the period 2020-2025 has been reported to the EGMP Data Centre by Range States. This report has been prepared for EGM IWG11 in June 2026 to present the results of the indicator assessment and inform a discussion on optimization of the indicators for the next 6-year cycle of the AFMP.

Methods

The proposed protocol for evaluating progress towards achieving the fundamental objectives of the ISSMP for the Barnacle Goose (Doc. AEWA/EGMIWG/10.20) was approved by the EGM IWG10 in June 2025. Barring a few exceptions, the protocol described ways to assess each of the indicators listed in the AFMP (Nagy et al. 2021). For some indicators, such as those related to Fundamental objective II (Minimize agricultural damage and conflicts), proxies are used instead of directly measuring the indicator, as for example damage payments and derogation permits are used to assess the level of conflict.

In October 2025, a questionnaire containing the agreed set of questions was sent to the National Government Representatives and National Experts of the EGM IWG. Replies were provided directly to the EGMP Data Centre, yet for some indicators additional reporting was done through the EGMP Russia Barnacle Goose and Flight Safety Task Forces. Indicators regarding abundance and derogations were derived from the data provided to the annual assessment and status report. Range states were requested to provide one agreed answer to the questionnaire, making use of all relevant expertise available in each range state.

To ensure a timely assessment of the indicators, Range States were asked to report on the period 2020-2024 now, although the 6-year cycle of the AFMP also includes 2025 and 2026. Where possible, reporting was done by providing information for each year, and in the remaining cases, data on the current situation combined with a trend indication for the period 2020-2025 was reported. Where relevant, data collection will continue in 2025-2026 and onwards. Replies were received from Belgium, Denmark, Estonia, Finland, Germany, Latvia, the Netherlands, and Sweden.

Results

Fundamental objective I: Maintain the population at a satisfactory level

Indicator I.1: Population size compared to the Favourable Reference Population (FRP)

This indicator measures the progress towards maintaining the population size at a satisfactory level, i.e. safely above the (FRP) for Barnacle Goose. Data on abundance of the Russia (br) Barnacle Goose population is collected annually by the EGMP Data Centre and presented to the EGM IWG in the annual EGMP Population Status and Offtake Assessment Report (most recently in Sørensen et al. 2026). For this population, counts are carried out during the summer, in the post-breeding period, to assess population status in the respective MUs (in this case only the Baltic MU2 and the North Sea MU3), and in the midwinter period in January to assess the status of the total flyway population. Along with data on productivity and offtake under derogations, count data are fed into an Integrated Population Model (IPM), and the IPM results are used for the annual assessment (see Sørensen et al. 2026 for latest details). This includes an estimate for the Russian MU1, which is not covered by the census during summer.

The total flyway population consisted of around 1.5 million individuals between 2020 and 2024 and also remained at this level in 2025 (Fig. 1). This population size is four times the FRP of 380,000 individuals and there are no signs of the total flyway population approaching the FRP. However, the flyway population size is still lower than predicted in the ISSMP (see Fig. 14 in Jensen et al. 2018). The annual population growth of more than 10%, which was by then assumed for the future population trajectory, has in fact slowed down recently, leading to only small changes in abundance since 2020.

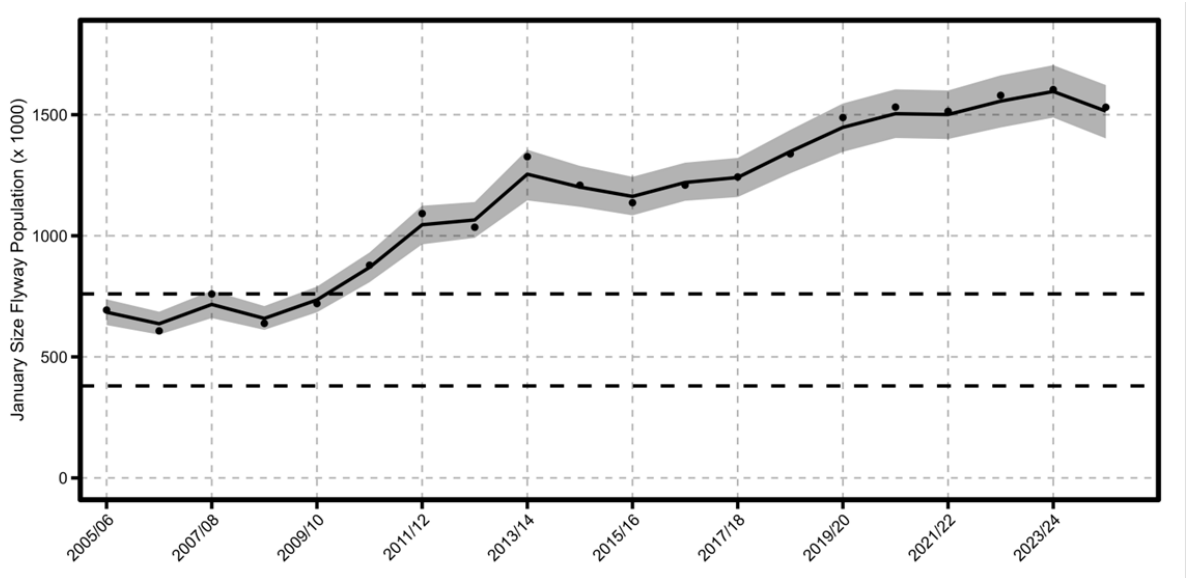


Figure 1. *January total flyway population counts (dots), posterior means based on the IPM (solid line), 95% credible intervals (shaded area) and FRP as well as the 200% of the FRP (lower and upper dashed line respectively). From Sørensen et al. 2026.*

Assessment of the abundance in each MU show that the Russian breeding population in MU1 holds by far the largest share (about 92%) of the total flyway population and has been the main driver of the overall population trend in the last decades. This MU has probably also increased in recent years (Fig. 2) but note the large credibility intervals. In July 2024 its size was estimated at 5.5 times its FRP of 113,000 pairs defined in the AFMP (Fig. 2). The Baltic MU2 is much smaller and has been subject to recent declines. In July 2024 its size was estimated at 22,000 pairs, which is 1.8 times the FRP of 12,000 pairs. The North Sea MU3 has been close to its FRP recently, but has recovered to a level of 19,000 pairs, which is 1.6 times the FRP. Both MU2 and MU3 are within the 200% FRP threshold set as a precautionary limit, which calls for close coordination of offtake under derogation between

Range States in the respective MU. While the size of MU1 does not show any signs of approaching its FRP, breeding populations in the Baltic and the North Sea areas need to be carefully monitored (and with locally improved data collection, see Sørensen et al. 2026 for details) in future years as their current population level is quite close to the FRPs.

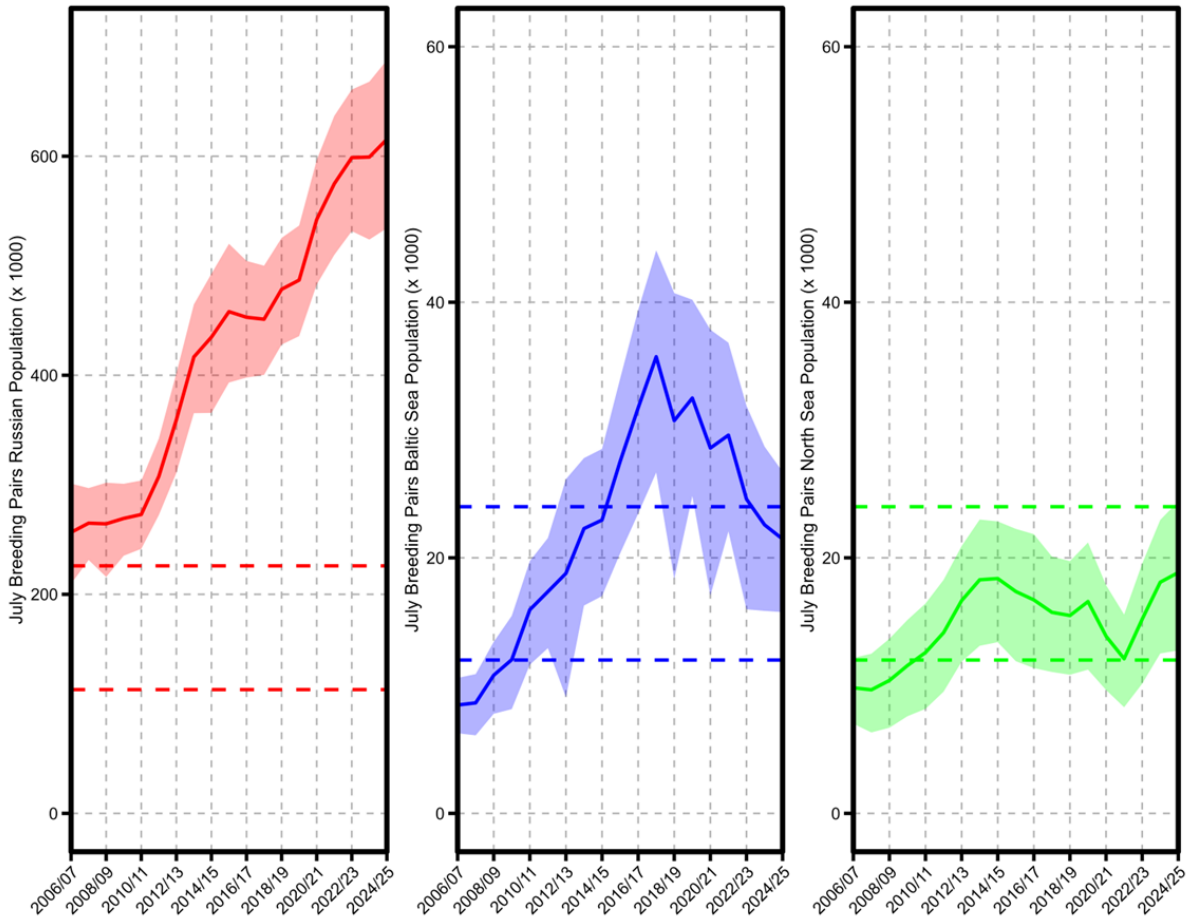


Figure 2. *Posterior means (solid line) and 95% posterior intervals (shaded areas) for the number of breeding pairs in July for the three MUs, derived from the IPM. Dashed lines are the FRP as well as 200% of the FRP. Left (in red) MU1, centre (in blue) MU2, right (in green) MU3. In the IPM framework, the number of breeding pairs has been set as the number of individuals of 2 years and older, divided by 2. Note the different scales on the y-axes between MU1 and MU2/3. From Sørensen et al. 2026.*

Indicator I.2: Range extent compared to Favourable Reference Range (FRR)

Information on the current breeding range was provided by Sweden, Finland, Denmark, Estonia, Germany and the Netherlands (Table 1). The breeding population in Belgium is considered a feral population, and national breeding range is thus not considered relevant. Barnacle Goose has never been recorded breeding in Latvia.

As the Favourable breeding Reference Range (bFRR) indicated in the AFMP included an estimate from Russia (95,000 km^2) and was rounded to provide a total of 228,000 km^2, the data provided for this assessment does not allow for a direct comparison of the total current breeding range and the bFRR. Table 1 provides for a direct comparison between values provided by each Range State. As seen below, the current range appears to be markedly below the national bFRR for some Range States, which results in the total range falling below the bFRR.

Table 1. *The current breeding range extent of the Russia (br) population of Barnacle Goose compared to the Favourable breeding Reference Range (bFRR) as indicated in the AFMP. All values are provided in km².*

Country	bFRR	Current range
Sweden	87,500	59,500
Finland	48,500	33,100
Denmark	1,800	900
Estonia	1,500	1,700
Germany	4,228	6,300
Netherlands	37,621	25,000
Total Population	**181,149**	**126,500**

Fundamental objective II: Minimize agricultural damage and conflicts

Indicator II.1: Relative change in damage payments

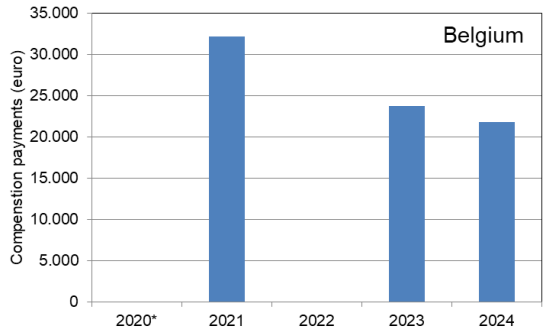
This indicator measures the progress towards minimizing agricultural damage and conflicts, dealing with compensation payments and subsidy schemes as well as derogation permits to relieve damage and conflicts.

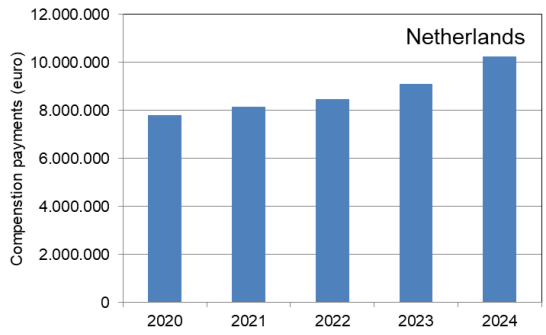
Compensation and subsidies

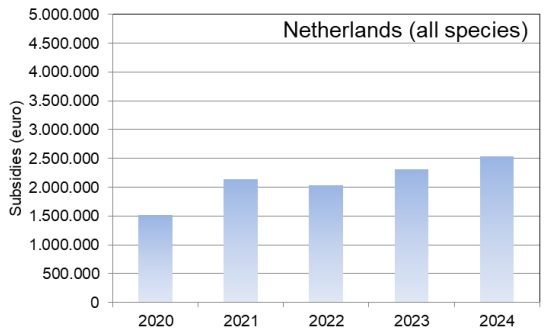
Of the eight reporting Range States, seven have schemes for compensation payments (only Denmark has not), while subsidies for e.g. accommodating geese in farmland have been established in six Range States (only Denmark and Belgium have no such subsidies) (Fig. 2). Usually, damage is assessed in the field, but methods may vary between Range States. Actual compensation payments may also be liable to changes in market prices, changes in management regulations or vary for socio-economic or societal reasons. Hence, the figures provided should be viewed as a proxy for the agricultural damage and the level of conflict. Subsidies are often not dedicated to single species, so data presented here do not always specifically refer to Barnacle Geese but may include additional goose species as well: Greater White-fronted Goose in Estonia; Greylag Goose, Greater White-fronted Goose and Dark-bellied Brent Goose in the Netherlands. Also, changes in regulations over the course of time may have an impact on the actual payments, as noted for Finland after 2022. The ratio between direct compensation payments and payments devoted to subsidy schemes differs greatly between countries due to differences in overall management policies. In the Netherlands and Estonia direct compensation payments dominate while subsidies have a larger volume in Schleswig-Holstein in Germany, in Sweden, and recently also in Finland.

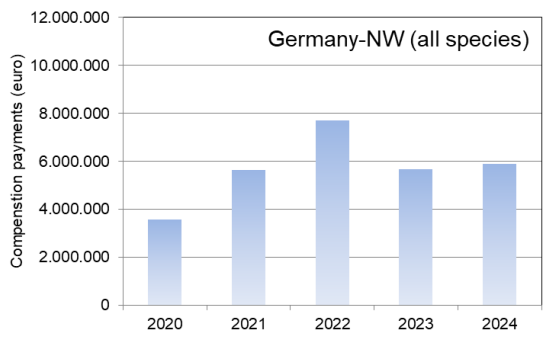
In Germany the regulations differ between the federal states, thus we have chosen to present them separately here: Schleswig-Holstein only just started in 2024 with compensation payments; in North Rhine-Westphalia, compensation payments cannot be separated to species, but (based on goose abundance) likely relate mainly to Greater White-fronted Geese. Only Lower Saxony has dedicated payments for Barnacle Goose.

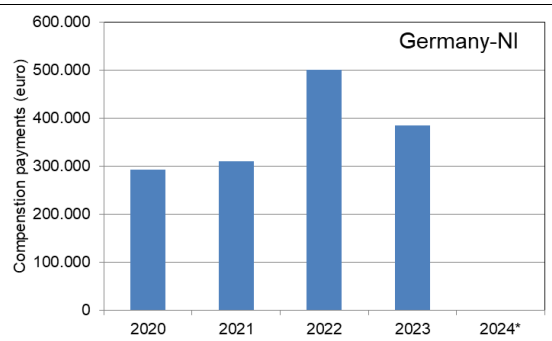
In many countries, direct compensation payments have fluctuated around a rather stable level since 2020 (North Rhine-Westphalia in Germany, Estonia, Finland) while others have been subject to an increase (the Netherlands, Lower Saxony, in Germany, Sweden until 2024). Only in Belgium payments assigned to Barnacle Geese have decreased in recent years. When adding up those countries with dedicated compensation payments for Barnacle Geese there seems to be a moderate increase since 2020 (Fig. 3), which is mainly driven by the increased payments in the Netherlands that in 2024 constituted 78% of the total volume of 13.1 million euro.

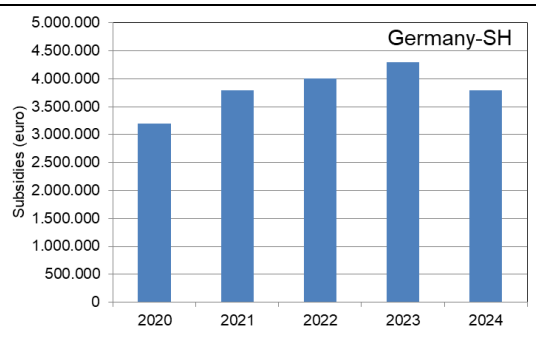

Belgium
Compenstion payments (euro)
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0
2020*
2021
2022
2023
2024

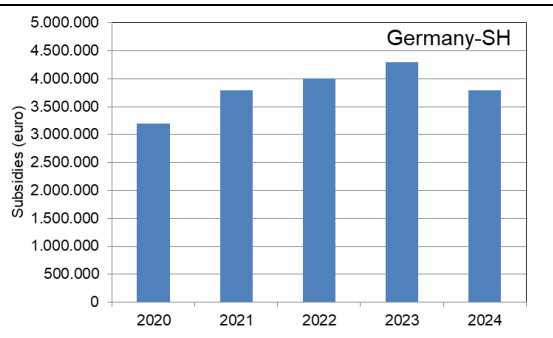

Netherlands
Compenstion payments (euro)
12.000.000
10.000.000
8.000.000
6.000.000
4.000.000
2.000.000
0
2020
2021
2022
2023
2024


Netherlands (all species)
Subsidies (euro)
5.000.000
4.500.000
4.000.000
3.500.000
3.000.000
2.500.000
2.000.000
1.500.000
1.000.000
500.000
0
2020
2021
2022
2023
2024


Germany-NW (all species)
Compenstion payments (euro)
12.000.000
10.000.000
8.000.000
6.000.000
4.000.000
2.000.000
0
2020
2021
2022
2023
2024


Germany-NI
Compenstion payments (euro)
600.000
500.000
400.000
300.000
200.000
100.000
0
2020
2021
2022
2023
2024*


Germany-SH
Subsidies (euro)
5.000.000
4.500.000
4.000.000
3.500.000
3.000.000
2.500.000
2.000.000
1.500.000
1.000.000
500.000
0
2020
2021
2022
2023
2024


Germany-SH
Subsidies (euro)
5.000.000
4.500.000
4.000.000
3.500.000
3.000.000
2.500.000
2.000.000
1.500.000
1.000.000
500.000
0
2020
2021
2022
2023
2024

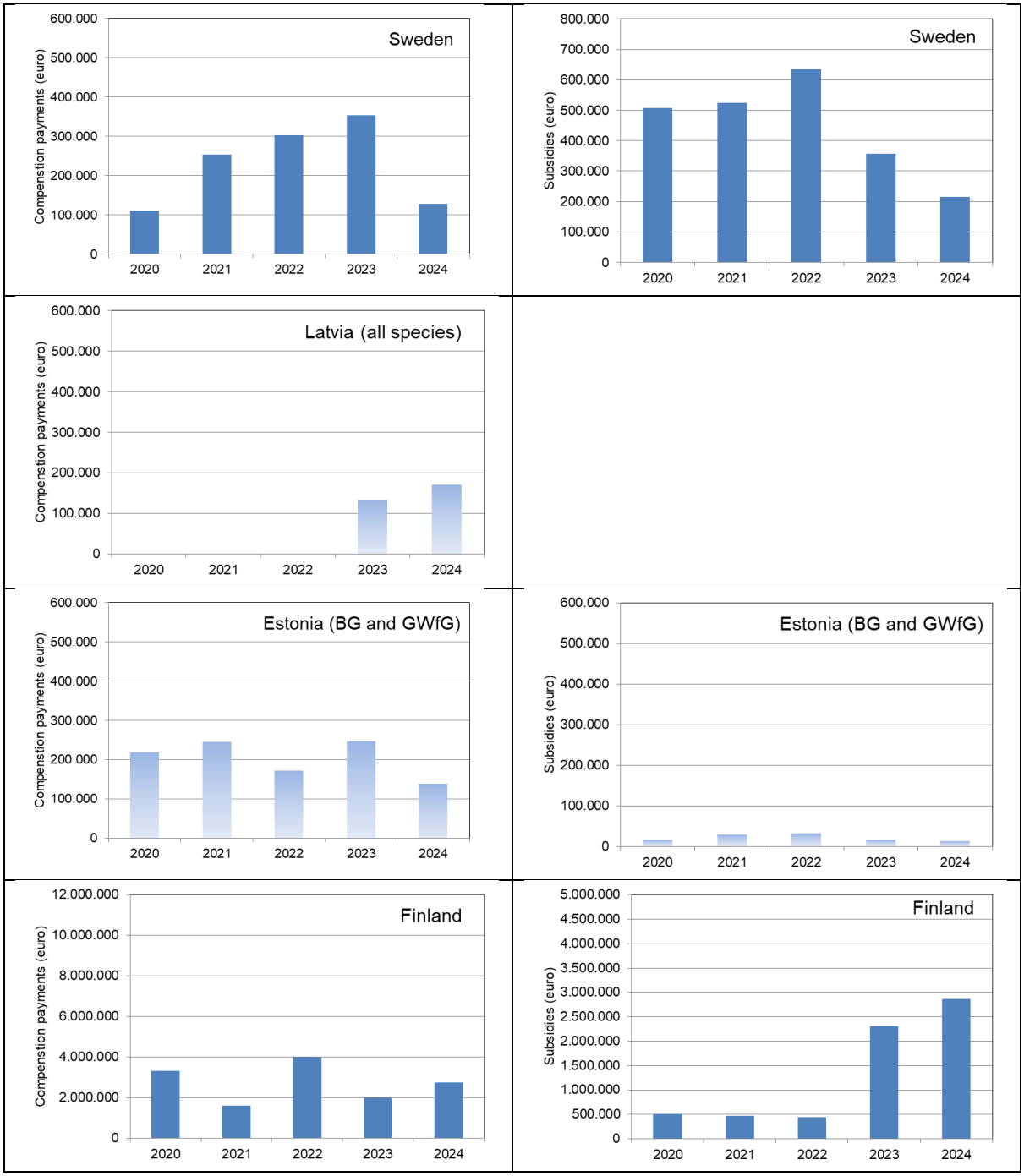


***Figure 2**. Overview of compensation payments (left) and subsidies paid e.g. to accommodate geese (right) (in euro). Note that some data were not made available (year marked with *) while some payments could not be specifically assigned to Barnacle Geese (indicated by pale blue columns). If known, (other) species are mentioned (BG: Barnacle Goose, GWfG: Greater White-fronted Goose). For Germany, data are shown for Schleswig-Holstein (SH), Lower Saxony (Niedersachsen, NI) and North Rhine-Westphalia (Nordrhein-Westfalen, NW) separately. Labels on x-axes may reflect either calendar years or seasons (in this case 2020 is reflecting the season 2019/20). Note different scales on y-axes.*

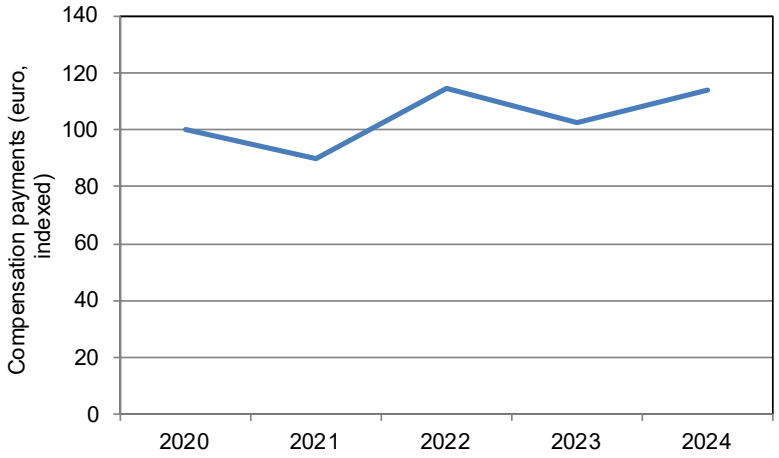


Figure 3. *Overall compensation payments for damage by Barnacle Geese (only countries where payments could be assigned to Barnacle Geese, i.e. BE, NL, DE-NI, DE-SH, SE, FI), indexed to year 2020.*

Number of geese killed under derogation

Apart from Russia, where Barnacle Goose is a huntable species, all other Range States are EU Member States and comply with the provisions of the EU Birds Directive. Data on the number of geese killed under derogation is collected for the annual status report (see Sørensen et al. 2026) and derived from either national agencies or from the EU derogation reports. Recent estimates indicate that from 2020 to 2024, 295,000 Barnacle Geese were killed under derogation (shot, or in case of the Netherlands caught and killed during wing-moult). A pronounced increase in the number of derogations is seen in the long term, but during the assessment period (2020-2024) numbers have decreased (Fig. 4). However, this is solely the result of a decreased derogation effort during the summer months (June to September) in the Netherlands, as earlier assessments made for the EGM IWG showed that MU3 approached the Favourable Reference Population (FRP) set in the AFMP. In addition, derogations during the winter months have also declined slightly. Overall, Denmark and the Netherlands are responsible for a major part of the derogations (in 2024 78% of all birds killed). Although in much smaller numbers compared to these two countries, derogations have clearly increased in Germany (more than doubled in Schleswig-Holstein since 2020) and Sweden (tripled since 2020). In Finland, an initial increase in derogations until 2021 was halted, as the number of derogation permits was further restricted following a national court case.

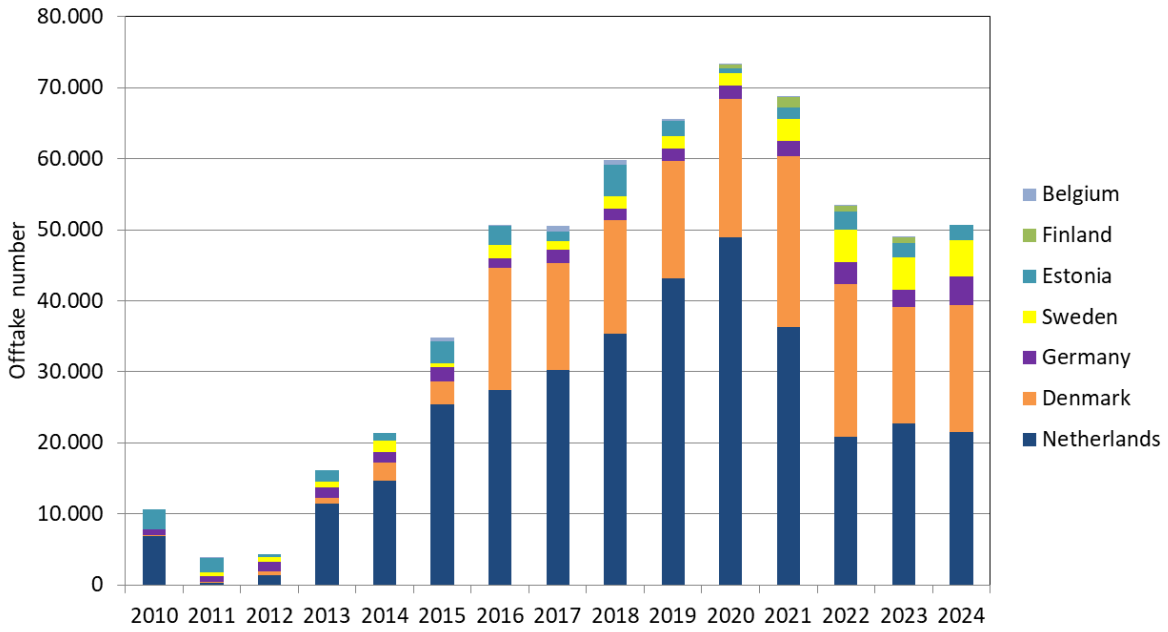


Figure 4. *Number of Barnacle Geese killed under derogation in EU countries since 2010. From Sørensen et al. 2026.*

Fundamental objective III: Minimize the risk to public health and air safety

Indicator III.1: Number of bird strikes with aircraft caused by Barnacle Goose

The eight range states of the Russia (br) Population of Barnacle Goose reported a total of seven bird strikes caused by Barnacle Geese during the period 2020-2024. As seen in Fig. 5, a maximum of two goose strikes per year were recorded. No trend was identified during the assessment period.

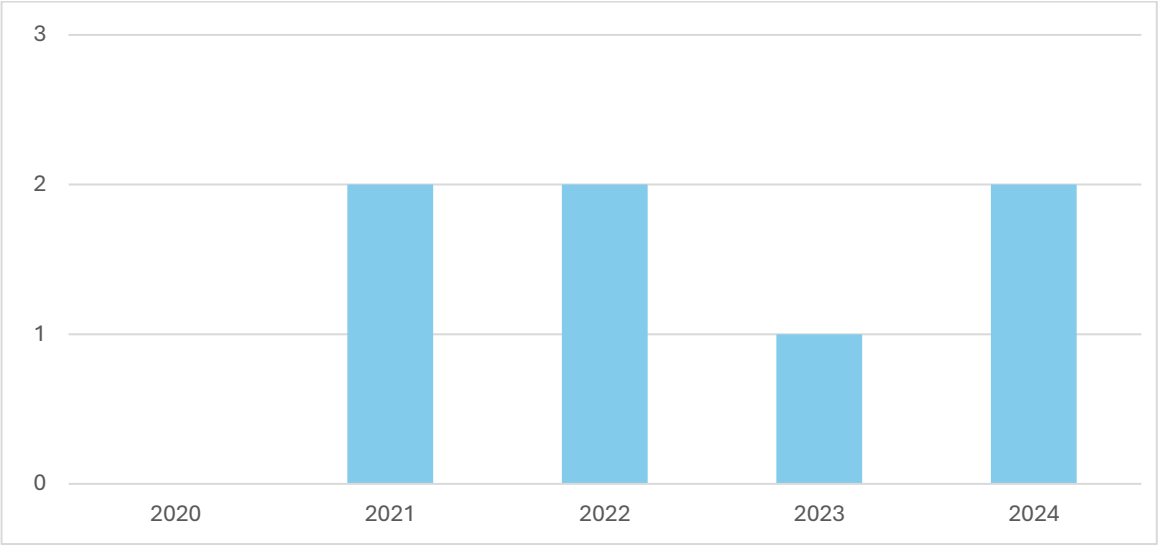


Figure 5. *Number of bird strikes with aircraft caused by Barnacle Geese during the period 2020-2024, as reported by the Range States of the Russia (br) population of Barnacle Goose.*

Indicator III.2: Number of Barnacle Geese passing over commercial airports

Most of the Range States of the Russia (br) population of Barnacle Goose do not systematically monitor the number of geese passing over commercial airports and none provided data to assess this indicator. Belgium indicated that the potential problem is likely to be small, as no Belgian airports have reported regular passage

or movements of Barnacle Geese. On the other hand, Finland stated that in the eastern part of the country, Barnacle Geese (and perhaps other goose species) may pose a risk during the autumn migration, particularly during periods with strong easterly winds.

Fundamental objective IV: Minimize the risk to other flora and fauna

Indicator IV.1: Area of natural habitat or habitat of threatened species negatively affected by Barnacle Geese

This indicator measures the progress towards minimizing the risk to other flora and fauna and considers only natural habitats of conservation interest, focusing on describing the current situation (as of 2024/25) along with a qualitative statement as to whether risks to other flora and fauna posed by Barnacle Geese have increased recently. Range States were specifically asked whether Barnacle Geese interact with (1) specific habitat of threatened species (e.g. birds or plant communities), (2) habitat quality in general (e.g. impact on nutrient-poor lakes) and (3) conservation objectives or management goals at site-level, which may be under pressure due to grazing by Barnacle Geese. In general, Barnacle Geese are thought to have lower impacts compared to Greylag Geese, with putative impacts often focusing on potentially negative impacts on meadow-breeding birds, notably waders (Buij et al. 2017).

Belgium, Germany and Latvia replied that no conflict regarding the three aspects mentioned above was known to them. In the Netherlands and Sweden, some of the aspects have been discussed (see below), while Finland and Denmark did not reply to this question (but see mention of studies from Denmark below). A more general reply from Estonia stated that the abundance of geese causes a lot of discussion and conflict among stakeholders in a broader scope, but impact mentioned under (1) and (2) were not known to them either.

In Sweden, it is thought that grazing by Barnacle Geese may have an impact on the breeding habitat of small waders, but there is no data to assess this in detail. Besides, observations indicate that the geese may have an impact on vegetation in limnic areas, but again there is no data available to quantify the impact. In the Netherlands, the first observations of possible interactions between Barnacle Geese and meadow birds were made in the late 1990s, when Esselink (2000) hypothesised that the decline in numbers of breeding Common Redshank on the salt marshes in the Dollard area in the Dutch/German Wadden Sea could be associated with heavy spring-grazing by Barnacle Geese. As of today, abundance of Common Redshank in the Dollard area has declined by about 80% since the early 1990s (Sovon Vogelonderzoek Nederland, unpublished data) while in neighbouring areas the species has maintained a much higher population level. Still, without further studies it mainly represents a correlation and does not give clear insight in the backgrounds. Further studies in the Netherlands could not find clear (negative) associations between trends in meadow birds and increasing goose numbers (e.g. Kleijn et al. 2009, see also Buij et al. 2017 for overview). Similar findings have also been made in the Danish Wadden Sea, where Madsen et al. (2019) could not detect any negative effects of grazing geese during spring on the field occupancy and nesting or chick-rearing waders. Moonen et al. (2023) compared goose grazing intensity with densities, distribution and nest success of meadow birds on grasslands in the outer River Elbe in northern Germany and found an insignificant positive association between Barnacle Goose density and nest territory density of Northern Lapwing and Common Redshank, and no association with territory selection of Black-tailed Godwit, Eurasian Oystercatcher or Common Ringed Plover. On the contrary, earlier studies in UK by Vickery et al. (1997) did find negative impacts of wintering geese (Dark-bellied Brent Geese and Pink-footed Geese) on nest density of waders during the following spring.

Besides the aspect of potential direct impact on species or habitats, Kleijn et al. (2012) showed that heavy grazing of Barnacle Geese may also have an impact on tenant farming practices in nature reserves. In this case, heavy grazing by Barnacle Geese made it unattractive for farmers to work under such contracts. Since some form of agricultural management is needed to keep breeding habitats of certain conservation target species attractive, breeding birds may be indirectly affected when management practise is abandoned, and no new farmers are ready to take over.

Fundamental objective V: Maximize ecosystem services

Indicator V.1: Number of people enjoying watching geese

Seven Range States reported the annual number of people reporting Barnacle Goose observations to the national online bird portals. No data was available from Finland. Considering the purpose of this report, and since each Range State has submitted data for all years, allowing us to make direct comparisons across years, we have included all data as reported in Fig. 6. As shown here, the number of people watching and reporting Barnacle Geese has increased since 2020. Although the number of goose observers per year varied greatly between national reports, probably also indicating varying levels of coverage, we consider the data representative and indicating a real trend.

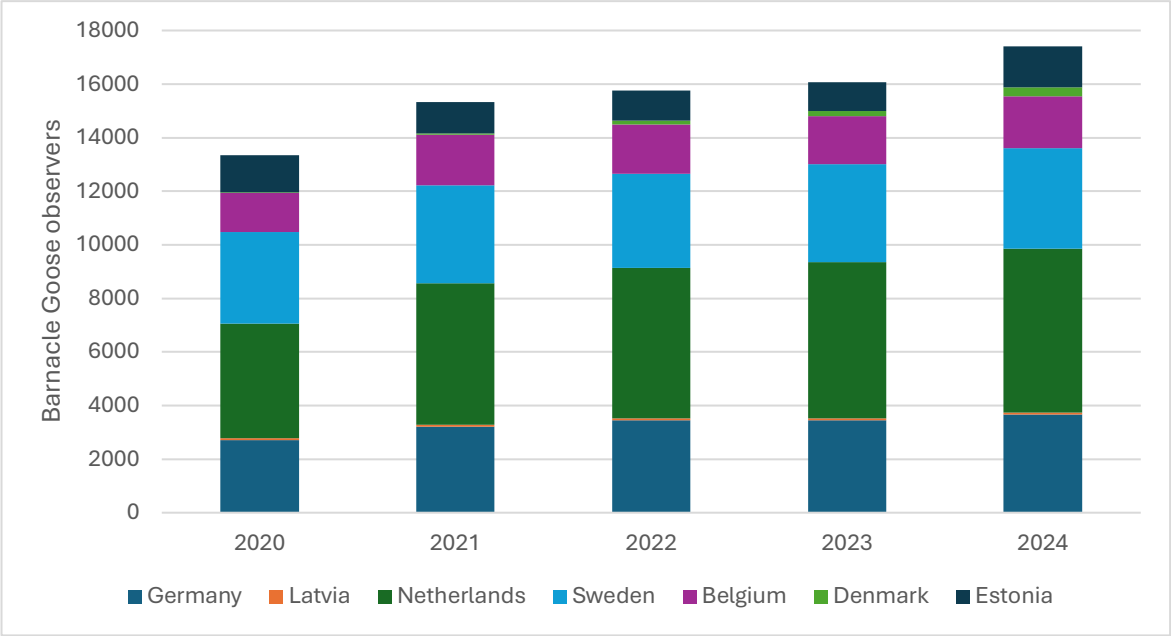


Figure 6. *The number of observers reporting Barnacle Geese to national online bird portals during the period 2020-2024.*

Fundamental objective VI: Minimize costs of goose management

Indicator VI.1 Relative change in cost of goose management

This indicator measures the progress towards minimizing the costs of goose management and is defined by the number of administrative man-years spent on goose management in the Range States. The results provide detailed insight on how goose management (not only for Barnacle Goose, but in a broader context as well) is organised in the different Range States within the flyway (Table 2). Furthermore, responses also give insight into the workflows related to goose management. However, only a few responses delivered results on the amount of labour associated with goose management, as respondents found it difficult to estimate the actual number of people involved and how much of their time is spent specifically on goose management. The number of agencies (and presumably the number of employees) involved - either at national, regional or local level - is particularly high in countries with decentralised management responsibilities for geese, like in the Netherlands, the federal states in Germany, and in Sweden. These countries routinely assess agricultural damage and have set up comprehensive systems for compensation payments and/or for managing subsidy schemes to accommodate geese. In Belgium, a compensation scheme also exists, but as only small numbers of Barnacle Geese are involved (and included in only about 15% of damage cases), effort is limited. Only Schleswig-Holstein in Germany reported that the amount of time involved in goose management has increased in recent years due to increased need for goose management and establishment of compensation payments (see

also section on indicator II.1). Several other countries have national administrative bodies in place, partly represented by regional representatives.

Table 2. *Overview of local, regional and national organisation of goose management along with an estimate of labour involved. n/a: not available, i.e. not reported. Note that this table does not only indicate specific efforts to manage Barnacle Geese but includes general goose management as well.*

Country	No. agencies	Labour	Agencies involved
Belgium			
Local	-	-	
Regional	1	n/a	Agency of Nature and Forest, Flem. Government
National	1	n/a	Agency of Nature and Forest, Flem. Government
Netherlands			
Local	-	-	
Regional	25	35.3 man-years	12 provinces, 12 regional wildlife councils, BIJ12 agency
National	1	0.3 man-years	Ministry of Agriculture, Fisheries, Food Security and Nature
Germany-NW			
Local			
Regional	3	n/a	Local districts/counties (multiple units involved)
National	2	n/a	administration (LANUK) / Landwirtschaftskammer
	Not applicable	-	
Germany-NI			
Local	Ca. 7	n/a	Local districts/counties (multiple units involved)
Regional	2	4 man-years	administration (NLWKN) / Landwirtschaftskammer, Ministry of Environment
National	Not applicable	-	
Germany-SH			
Local			
Regional	16	n/a	Lower hunting + nature conservation units
	5	n/a	Higher hunting + nature conservation units, State bird observatory, Ministries of Environment + Agriculture
National			
	Not applicable	-	
Denmark			
Local	-	-	
Regional	1	1.5 man-year	Nature Agency Wildlife Management Units
National	3	0.25 man-year	Nature Agency, Agency of Green Transition and Aquatic Environment, Danish Veterinary, Food, Agriculture and Fisheries Agency
Sweden			
Local	-		
Regional	21	n/a	County administration boards
National	8	n/a	Environmental Protection Agency, Sw. Board of Agriculture, Sw. Veterinary Agency, Sw. University of Agricultural Sciences, Sw. Association of Hunting & Wildlife Management, BirdLife Sweden, Federation of Swedish Farmers, Hunters Association
Latvia			
Local	n/a	n/a	
Regional	n/a	n/a	
National	1	n/a	Nature Conservation Agency

Country	No. agencies	Labour	Agencies involved
Estonia			
Local	-	-	
Regional	-	n/a	
National	1	n/a	Environmental Board of Estonia
Finland			
Local	n/a	n/a	
Regional	n/a	n/a	
National	n/a	n/a	

Discussion

Fundamental objective I: Maintain the population at a satisfactory level

Indicator I.1: Population size compared to the Favourable Reference Population (FRP)

This indicator measures the progress towards maintaining the population at a satisfactory level, i.e. at a population size above the FRP. As seen in Fig. 1, the annual status update within the EGMP framework currently shows that population size of the total flyway as well as of the three MUs are above the respective FRPs. For MU1 and the overall flyway population this is 4.0 and 5.5 times the FRP, respectively. The Baltic and North Sea breeding populations (MU2 and MU3) are much closer to the FRPs (1.8 and 1.6 times, respectively), and MU3 has previously been close to (and possibly below) the FRP in recent years. Both MUs are now below the 200% threshold which requires special care and coordination of offtake under derogations that may affect the local breeding populations. For the large Russian population, which is also the major driver of abundance at flyway level, there is no indication that the population size will decline towards the FRP. On the other hand, it has not developed as predicted when drafting the ISSMP but grown at a much lower rate.

Provided that monitoring data are submitted annually and that the annual update of the IMP will continue (presently secured until 2028), we recommend maintaining this essential indicator.

Indicator I.2: Range extent compared to Favourable Reference Range (FRR)

This indicator measures the progress towards maintaining the population range at a satisfactory level. According to the AFMP, assessment of this indicator should include both breeding and non-breeding (staging and wintering) range compared to the FRRs. However, while information on the current breeding range in proportion of the breeding FRR is easily extracted from the Article 12 reporting (EU Member States) or the AEWA national population status, the current non-breeding range in proportion of the non-breeding FRR is not readily available.

As shown in Table 1, the current breeding range of the Russia (br) population of the Barnacle Goose is smaller than the bFRR. Further inspection of Table 1 reveals that we do not have any information on the current range of MU1, whereas the breeding ranges of MU2 and MU3 are both currently smaller than the bFRR. Further analysis is needed before we can evaluate this result, looking into the values used when defining the bFRR as well as the data provided for this assessment.

However, this indicator is of central importance to the ISSMP and in its current form does not incur any additional burden on the respective Range States, thus we recommend maintaining it. As the procedure for delineating the non-breeding range is rather complicated, it was decided to rely only on information on the breeding range for this assessment, and we recommend that this minor change is introduced once the AFMP is revised.

Fundamental objective II: Minimize agricultural damage and conflicts

Indicator II.1: Relative change in damage payments

Based on the six countries (two federal states in Germany treated as different countries) with compensation schemes in place, having assigned this specifically to Barnacle Geese, the volume of payments for Barnacle Goose damages has increased moderately since 2020. However, this is entirely determined by the situation in the Netherlands, which has the highest share of the compensation payments. In 2024, more than 10 million euros were paid to farmers as compensation for damage caused by Barnacle Geese. Additionally, five countries provide subsidies for accommodating geese, but these are often not species-specific and were subject to changes in regulations during 2020-2024 which confounded an assessment of trends. A comprehensive scheme in the Netherlands points at a slight increase since 2020, but less so compared to the direct compensation payments.

The number of Barnacle Geese killed under derogation has increased in the long term, but due to reduction of derogations in the Netherlands during the summer period (affecting MU3), numbers killed have decreased from 2022 onwards. This reduction is a direct consequence of the annual assessment of the population. Smaller numbers killed in Schleswig-Holstein and Sweden have shown pronounced increases in the past years while in Finland national court cases have recently limited the offtake under derogation.

The specification of this indicator was discussed during the AFMP indicator setup and has some limitations which should be noted for interpretation (see also discussion below). Only a selection of countries manages specific compensation schemes for damage to agriculture. When applied, the volume of monetary payments may be the result of multiple other (socio-economic) factors in addition to the actual grazing pressure. Furthermore, aspects like milder winters, earlier onset of the growing season, and increasing overlap between crop growth and goose presence may play a role as well. Moreover, payments may relieve the agricultural conflict, but do not necessarily provide the full overview of the level of conflict (especially for countries without compensation schemes). Subsidy schemes may come with periodical changes in regulations, which makes it difficult to assess trends.

However, despite these limitations, both type of payments were easily retrieved from the relevant Range States for this assessment, and our proposal is to maintain this indicator as it is. Suggestions for other ways of assessing this indicator include interviews with farmers and other stakeholders, yet this may introduce other shortcomings as perception and evidence may be mixed-up, especially when intolerance towards geese becomes a reflection of overall dissatisfaction regarding farming systems or (national) policies. Finally, results from impact assessment modelling (see Doc. AEWA/EGMIWG/Inf.8.15) may assist further in finding ways to link damage and conflict levels to goose abundance.

Independently from payments, derogation permits are commonly considered another proxy for the level of agricultural conflict (Heldbjerg et al. 2022). The long-term increase of Barnacle Geese is also clearly associated with an increase in the level of derogations at flyway level. A webinar organised by the EGMP in April 2026 illustrated that countries have different approaches to applying derogations, reflecting how European regulations for derogations have been implemented in national laws. Besides, the EU has recently issued guidance on how to deal with derogations, including for Barnacle Geese (DG Environment 2026). Sharing experiences among countries and application of the guidance provided by the EU may challenge alternative strategies for implementation of the derogation rules at national level and thus also may have an impact on numbers killed under derogation in future years. Despite these perspectives, derogations are a key parameter currently being collected for the annual status report and therefore should remain in the indicator assessment as well. As with payment systems, background information is important for interpreting patterns appropriately.

Fundamental objective III: Minimize the risk to public health and air safety

Indicator III.1: Number of bird strikes with aircraft caused by Barnacle Goose

This indicator measures the progress towards the air safety component of fundamental objective III. The number of bird strikes involving Barnacle Geese during 2020-2024 was relatively low and did not show any signs of an increasing trend, however, efforts to improve flight safety should obviously be maintained. As the potential damage caused by a collision between aircraft and geese is considerable, we recommend continued monitoring of this indicator to ensure timely actions from the EGMP in case the risk of bird strikes should increase. Monitoring this risk should remain a key activity of the EGMP Flight Safety Task Force.

Indicator III.2: Number of Barnacle Geese passing over commercial airports

This indicator also measures the progress towards the air safety component of fundamental objective III, focusing more on the risk than on the number of incidents. Although attempts were made to gather data on the number of geese passing over commercial airports, neither the Range States nor the Flight Safety Task Force have been able to procure such data. Although unpublished data exist from Copenhagen Airport in Denmark, this indicator seems extremely difficult to monitor, and therefore we do not find it very useful in terms of measuring progress in the implementation of the Barnacle Goose ISSMP. Our recommendation is to revise this indicator and seek other ways to assess the risk of bird strikes in the future.

Fundamental objective IV: Minimize the risk to other flora and fauna

Indicator IV.1: Area of natural habitat or habitat of threatened species negatively affected by Barnacle Geese

This indicator measures the progress towards minimizing the risk to other flora and fauna and considers only the natural habitats of conservation interest. The partly contrasting evidence presented in this report points out that the effect of grazing (Barnacle) geese on breeding waders, be it positive or negative, is not straightforward and may be heavily confounded by local conditions and other environmental parameters (see also discussion in Moonen et al. 2023), making it difficult to assess the matter on a higher level. To gain more insight in this topic, carefully designed (experimental) studies, preferably done at multiple site levels and in different habitat constellations, should be carried out to quantify potential impacts. Also, specific studies on threatened species would be important in order to be able to undertake timely management actions.

During discussions with site managers and other stakeholders, Barnacle Geese are often mentioned to affect other flora and fauna, specifically the abundance and breeding success of meadow birds inhabiting the same habitats. As breeding meadow birds, local Barnacle Goose breeding populations, and locally high densities of arctic-breeding Barnacle Geese overlap in certain habitats during most of the spring (migrants until about mid-May), potential impacts include habitat changes incurred by the tendency of Barnacle Geese to graze swards short and hardly leave any vegetation for concealing nests of species like Common Redshank and providing chick-rearing habitat for multiple species. The Netherlands and Sweden both indicated that concerns related to the effects of Barnacle Geese on other flora and fauna have been raised at national level, yet the scarce dedicated studies so far (Madsen et al. 2019, Moonen et al. 2023) have failed to find significant negative impacts of grazing geese on meadow birds. Some even point towards (weak) positive effects. Both in the Netherlands and in Estonia, responses also point out that high abundance of Barnacle Geese provokes more general discussions among different stakeholders regarding e.g. management of nature reserves and interactions with tenant farmers.

Assessment of this indicator retrieved valuable information about the potential impacts on flora and fauna, yet it remains difficult to pinpoint parameters that may be used to monitor future trends. Therefore, we recommend using the responses given for this assessment as a background for conducting a comprehensive review of

existing literature in order to assess the risk and formulate possible ways to proceed with assessing this aspect of damage to other flora and fauna. In addition, well-designed studies would help to gather evidence of how Barnacle Geese and breeding waders interact, and at which levels (local versus population level) conflicts do arise. Once a literature review has been carried out, we will advise on how to proceed with this indicator. For now, we suggest maintaining it as it is.

Fundamental objective V: Maximize ecosystem services

Indicator V.1: Number of people enjoying watching geese

This indicator measures the progress towards the cultural/recreational component of Fundamental Objective V. Reports from Range States show an increasing number of observers reporting Barnacle Goose observations to their national databases. This may be caused by a general increase in the use of online bird portals, yet we still consider the increase as an indication that the number of people watching geese has in fact increased. We are aware that not all goose records are submitted to the chosen portals, but this bias is likely to be similar for all years. Through the monitoring reports submitted to the EGMP Data Centre on an annual basis, we are aware that many observers take part in goose population counts and other surveys; these observers are likely reporting through other channels and thus may not be included in the figures presented here.

As the data for assessing this indicator is readily available and useful for evaluating the interest in watching and reporting geese, we recommend maintaining this indicator. However, as the AFMPs instruct Range States to base the assessment on the change in the annual number of people submitting sightings of Barnacle Geese to EuroBirdPortal, we recommend revising the definition of this indicator to include information on the number of observers submitting sightings of Barnacle Goose to the national databases instead (as done for this assessment). The data is likely to be similar, if not identical, as EuroBirdPortal is fed by the national databases, but the national databases are more accessible.

To focus more on other types of ecosystem services, additional indicators could be considered.

Fundamental objective VI: Minimize costs of goose management

Indicator VI.1 Relative change in cost of goose management

This indicator measures the progress towards minimizing the costs of goose management and is defined by the number of administrative man-years spent on goose management in the Range States.

Responses to this indicator gave a very mixed picture, with missing replies from several countries. A rather detailed overview of how goose management is organised in the respective Range States has been provided, illustrating different levels of responsibilities and how management is organised on the ground. Countries with decentralised goose management routines, such as the Netherlands, the federal states in Germany, and Sweden, have multiple administrative levels involved and thus automatically also include several different people and extensive workloads (though the latter was not quantified well by all Range States). Most of these countries also manage some sort of compensation and subsidy schemes, which explains part of the high management effort and cost. Only in Schleswig-Holstein in Germany, it was stated that the workload has increased since compensation payments were installed, confirming that such systems increase the cost of management (see also discussion in de Jager et al. 2023).

Despite difficulties in retrieving this information from all Range States, we suggest maintaining this indicator as it is, especially given the fact that balancing management costs is an important objective within the ISSMP.

Conclusion

Based on the assessment reported here, we recommend that indicators I.1, I.2, II.1, III.1, IV.1, and VI.1 are maintained as they are. However, for indicator I.2 to remain meaningful, it is important to align the methods used for defining the bFRR with the methods used for assessing the indicator.

Indicator III.2 should be revised to ensure an appropriate assessment of the risk of bird strikes involving Barnacle Geese, as no data is currently available to support such an assessment.

A slightly revised version of Indicator V.1 is recommended (see above).

References

Buij, R, T.C.P. Melman, M.J.E.E. Loonen & A.D. Fox. 2017. Balancing ecosystem function, services and disservices resulting from expanding goose populations. *Ambio* 46 Supplement 2: S301-S318.

DG Environment 2026. Guidance document on the general system of protection of bird species - Article 5 and Article 9 of the Birds Directive. Directorate-General Environment, Brussels.

Esselink, P. 2000. Nature management of coastal salt marshes. PhD Thesis, University of Groningen, Groningen.

Heldbjerg, H., K.K. Clausen, T.J.S. Balsby, P. Clausen,R.D. Nielsen, F. Skov, T. Nyegaard & J. Madsen 2022. Barnacle goose *Branta leucopsis* derogation shooting effort in relation to abundance and vulnerable crops. *Agriculture, ecosystems & Environment* 325, 107746.

de Jager, M., N.H. Buitendijk, J.M. Baveco, P. van Els & B.A. Nolet. 2023. Limiting scaring activities reduces economic costs associated with foraging barnacle geese: Results from an individual-based model. *Journal of Applied Ecology*, 60, 1790–1802.

Jensen, G. H., J. Madsen, S. Nagy, and M. Lewis. 2018. AEWA International Single Species Management Plan for the Barnacle Goose (*Branta leucopsis*) - Russia/Germany & Netherlands population, East Greenland/Scotland & Ireland population, Svalbard/South-west Scotland population. AEWA Technical Series No. 70. Bonn.

Kleijn, D., E. van Winden, P.W. Goedhart & W.A. Teunissen 2009. Evaluatie Opvangbeleid 2005–2008 overwinterende ganzen en smienten. Deelrapport 10. Hebben overwinterende ganzen invloed op de weidevogelstand? Rapport No. 1771. Wageningen, The Netherlands: Alterra.

Kleijn, D., J.J. van der Hout, H.A.H. Jansman, D.R. Lammertsma & T.C.P. Melman 2012. Brandganzen en Kleine Mantelmeeuwen in het Wormer-en Jisperveld: Effecten op weidevogels. Alterra-rapport 2293, Alterra, Wageningen.

Madsen, J., L.K. Marcussen, N. Knudsen, T.S. Balsby & K.K. Clausen 2019. Does intensive goose grazing affect breeding waders? *Ecol Evol*. 9: 14512–14522.

Moonen, S., J. Ludwig, H. Kruckenberg, G.J.D.M. Müskens, B.A. Nolet, H.P. van der Jeugd & F. Bairlein 2023. Sharing habitat: Effects of migratory barnacle geese density on meadow breeding waders. *Journal for Nature Conservation* 72: 126355.

Nagy S., H. Heldbjerg, G.H. Jensen, F.A. Johnson, J. Madsen, O. Therkildsen, E. Meyers, and S. Dereliev (Compilers). 2021. 'Adaptive Flyway Management Programme for Russia/Germany & Netherlands Population of the Barnacle Goose (*Branta leucopsis*)'. AEWA EGMP Programme No. 3. Bonn, Germany.

Sørensen, I.H., R.R. Germain, K. Koffijberg, J. van Irsel and Madsen, J. (2026). Population Status and Assessment Report 2026. EGMP Technical Report No. 29. Bonn, Germany

Vickery, J. A., W.J. Sutherland, M. O'Brien, A.R. Watkinson & A. Yallop 1997. Managing coastal grazing marshes for breeding waders and over wintering geese: Is there a conflict? *Biological Conservation,* 79(1): 23–34.