

AEWA EUROPEAN GOOSE MANAGEMENT PLATFORM



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**DEFINING FAVOURABLE REFERENCE VALUES
FOR THE NW/SW EUROPEAN POPULATION OF THE
GREYLAG GOOSE (*Anser anser*)**



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Background

The International Single Species Management Plan (ISSMP) for the Northwest/Southwest Population of the Greylag Goose (*Anser anser*) (Powolny et al. 2018) aims to maintain the population in a Favourable Conservation Status (FCS) and states that Favourable Reference Values (FRVs) for population size, habitat and range are to be established in the Adaptive Flyway Management Plans (AFMPs) by the European Goose Management International Working Group (EGM IWG). In addition, Means Objective 4 of the ISSMP aims to maintain the population between agreed minimum and maximum targets above the FRVs.

The 2nd AEWA International Management Planning Workshop for the Barnacle Goose and the Greylag Goose (NW/SW population) held in Leeuwarden, the Netherlands on 19 June 2018 has agreed that the process of setting the FRVs will follow the principles set out in the EU guidance documents (Bijlsma et al. 2019)¹.

This document presents the results of the assessment process following the stepwise process outlined in Bijlsma et al. (2019)².

Action requested from the EGM IWG

The EGM IWG is requested to review and agree on the proposed definition of FRVs for the NW/SW population of the Greylag Goose.

¹ The Netherlands made a disclaimer with regard to the use of this approach for other Birds Directive related subjects, in order to avoid setting a precedent in using this approach.

² The document on Defining and applying the concept of Favourable Reference Values for species and habitats under the EU Birds and Habitats Directives (Bijlsma et al., 2019) is a technical report that presents a common methodology for setting FRVs under both directives in agreement with the Explanatory Notes and Guidelines for reporting under Article 17 of the Habitats Directive for the period 2013–2018 (http://cdr.eionet.europa.eu/help/habitats_art17). The disclaimer of the document states that in case of conflicting definitions, approaches or examples, the above mentioned official guidelines takes precedence.

Step 1.1 Biology of the Species

The biology of the species is described in Annex 1 of the ISSMP for the Greylag Goose (Northwest/Southwest European Population) (Powolny et al., 2018) and is not repeated here. Only information relevant for the application of the FRV guidance not mentioned in the Greylag Goose ISSMP is added here.

Average body mass: 3.1 kg³.

Step 1.2 Spatial Scale of Functioning

Breeding Population

The total breeding population is estimated at 176,000 - 236,000 pairs (Table 4 in the ISSMP). The Greylag Goose is a widespread breeder. The breeding range surface in the EU is 608,408 km² plus some additional range in Norway.

The species home range size is estimated at $37 \times 3,1 = 115$ kilometres, using the allometric relationship with body mass⁴. The species dispersal capacity is estimated at $12 \times 115^{0.5} = 129$ kilometres. This means that populations more than $5 \times 129 = 645$ kilometres apart can be considered as isolated; and not such isolated segments occur within the breeding range of the population. Hence, the whole population can be considered as one breeding population.

Therefore, population category MR1 should be applied⁵ and FRVs should be set at national level.

Wintering Population

The Northwest/Southwest European population of the Greylag Goose is one of the six flyway populations of the species in Europe.

These populations correspond to category MNR3: Species with one or a few isolated non-reproductive populations for which FRVs are to be set at supranational level.

Step 1.3 Historical Perspective: What Happened to the Species?

It is not possible to quantify the species' historical numbers and distribution. The population was probably overexploited and suffered from loss of wetland habitats during historical time and suffered particularly from increased hunting pressure as quality of shotguns improved. The recovery of the species was assisted by reintroductions and reinforcements and benefited from regulation of hunting and agriculture intensification.

The NW/SW European population increased from c. 30,000 individuals in the mid-1960s to 120,000-130,000 in the mid-1980s (Madsen 1991), with the January count totals reaching c.700,000 in 2012 (Figure 4 in the Greylag Goose ISSMP).

³ This information will be required for allometric calculations in subsequent steps

⁴ For further details on the allometric relationship between home range and dispersal distance with body mass see Box 3.2 in Bijlsma et al. (2019)

⁵ See Table 3.1 in Bijlsma et al. (2019)

Step 1.4 Analysis of Distribution and Trends

Breeding Population

Distribution and breeding population data is available in the consolidated EU Birds Directive Article 12 report (EEA 2015)⁶ and in Hagemeyer & Blair (1997). The population growth and range recovery or range expansion is well documented, also in repeated national atlases in Denmark⁷ and The Netherlands⁸. Figure 2 in the Greylag Goose ISSMP shows the long-term (1980-2012) growth rate of the national breeding populations based on the national Article 12 reports and additional data from Norway as summarised in BirdLife International (2015).

The recorded breeding distribution of the species in the 1990s shows a high level agreement with the simulated 'present' distribution (Huntley et al. 2007). Consequently, no major gaps can be identified in the range based on models.

An individual-based model for the Netherlands estimated that the national breeding population can reach carrying capacity at the level of 281,000 nests, i.e. 2.8 million birds (Baveco et al. 2013).

Wintering Population

The annual growth rate of the wintering population was c. 13% per year between the 1960s (Madsen 1987) and mid-1980s and has been 8.5% per year between 1980 and 2009 or 9.1% between 1995 and 2009 (Fox et al. 2010; Fox and Leafloor 2018). Although the numbers of Greylag Geese wintering in Spain have somewhat increased, an increasing proportion of the population winters further north.

Conclusions

The breeding distribution and the national breeding population sizes of the NW/SW European population of the Greylag Goose do not show a negative trend since the time the EU Birds Directive entered into force and even since the 1960s. It is unclear, however, whether historical distribution and breeding population sizes were smaller or larger than nowadays.

The wintering numbers also do not show a negative trend over the same period. However, an increasing number of birds winter further north than in the past (mainly in the Netherlands and increasingly even in Sweden).

It is also important to note that the generally favourable conservation status of the Greylag Goose was recognised by its listing on Annex II/A of the EU Birds Directive already in the late-1970s.

Step 2.1 Favourable Reference Population (FRP) Assessment

Breeding Population

Although a species specific Population Viability Analysis (PVA) is available for the Netherlands, it does not estimate the Minimum Viable Population (MVP). No PVAs estimating the MVP are available for other countries either. Based on the estimated body mass of 3.1 kg, the upscaled MVP is 2,500 pairs.

Table 1 shows the current values based on the information collected for the Greylag Goose ISSMP and approximates the national Directive Values (DVs) based on estimates from the 1990s (BirdLife International 2000). The last two columns assess whether the DV and the Current Value (CV) exceed the MVP.

⁶ <https://bd.eionet.europa.eu/article12/summary?period=1&subject=A043>

⁷ <https://dofbasen.dk/atlas/arter/01610/Gr%C3%A5g%C3%A5s>

⁸ <https://www.vogelatlas.nl/atlas/soorten/soort/1610>

Table 1. Population estimates in the 1990s representing approximated DV values (based on BirdLife International / EBCC 2000) and recently (based on Table 4 of the ISSMP)

| Range State | Breeding numbers in the 1990s | Recent breeding numbers (individuals or pairs) | Year/s of the recent estimate | DV > MVP | CV > MVP |
|----------------------------|--------------------------------------|--|--------------------------------------|--------------------|--------------------|
| Norway¹ | 7,000 - 10,000 pairs | 20,000 -25,500 pairs | 2016 | Yes | Yes |
| Sweden² | 4,000 - 6,000 pairs | 41,000 pairs | 2008 | Yes | Yes |
| Finland³ | 2,000 - 2,500 pairs | 5,600 - 9,000 individuals | 2015 | Yes | Yes |
| Denmark | 3,500 - 4,000 pairs | 15,000 - 17,000 pairs | 2015 | Yes | Yes |
| Germany | 8,000 - 10,000 pairs | 26,000 - 37,000 pairs | 2005-2009 | Yes | Yes |
| the Netherlands | 1,000 - 1,200 pairs | 67,000 - 111,000 pairs | 2013 - 2015 | No | Yes |
| Belgium (Flanders) | 370 - 390 pairs | 1,500 pairs | 2002 - 2015 | No | No |
| France | 47 pairs | 176 - 221 pairs | 2012 | No | No |
| Spain | None | minimum 25 pairs and a minimum population of 250 individuals | 2016 | No | No |

FRPs for the breeding season should be set at national level. FRPs cannot be smaller than the DV and also cannot be smaller than the MVP. With the exception of the Netherlands, Belgium, France and Spain, the DVs have already exceeded the MVP.

In the case of the NW/SW European population of the Greylag Goose, the DV or the MVP can be used (whichever is larger) because:

- 1) The species population has increased after the EU Birds Directive came into force, not as a consequence of restoration/improvement of natural conditions, but due to regulation of hunting, reintroduction and favourable conditions at artificial habitats⁹;
- 2) The Greylag Goose has been listed on Annex II/A of the EU Birds Directive, which expresses that the legislators have already considered its conservation status at that population level to be sufficiently favourable to allow hunting. Setting a higher FRP would substantially constrain the scope of taking into account of other interests during the MCDA process.

⁹ I.e. corresponds to the situation described under point 3 of Step 2 in section 4.3.2 on page 62 in Bijlsma et al. (2019)

In case of recovering overexploited populations Bijlsma et al. (2019) also recommended using either

- 3) The CV;
- 4) The potential range method; or
- 5) A ‘wait-and-see’ approach.

Obviously, 5) the ‘wait-and-see’ method and 3) the CV would contravene the objectives of the management planning that aims to adapt populations to levels that also correspond to economic and recreational requirements.

Theoretically, the potential range method 4) could be applied for the Greylag Goose. An individual-based model (Baveco et al. 2013) illustrates well the potential consequences of this approach. According to this model, the Dutch breeding national population has not yet reached carrying capacity. This is estimated at more than two times higher than the current size of the breeding population mentioned in the Greylag Goose ISSMP and the species would be in unfavourable status until it has reached the modelled figures. The relationships between the DV, CV and the carrying capacity are different in each country, but the national populations show no sign of reaching carrying capacity in any of the Range States yet. This means that FRPs set by using this method would certainly be higher than CVs in every country and this approach would also be inconsistent with the objectives of the management planning.

Therefore, it is suggested to set the FRP as a default option:

- 1) **At the level of DV in each country where it has exceeded the MVP at that time, i.e. in Norway, Sweden, Denmark and Germany;**
- 2) **At the level of the MVP in each country where the population has already exceeded this level, i.e. in the Netherlands and Finland; and**
- 3) **At a nationally defined level in Belgium¹⁰, France and Spain¹¹ considering that the species is only a marginal breeder in these countries.**

As the management plan aims to maintain the population above the FRV and not to reduce the distribution of the species, it is suggested to set the Favourable Reference Range (FRR) at CV.

Of course, Range States might define the FRVs differently than suggested above for their national breeding populations. Particularly Sweden, which is the only country where the Greylag Goose triggers SPA designation during the breeding season, should consider whether their suggested national FRP is consistent with their site protection obligations and inform the Secretariat by 12 July 2019.

Wintering Population

The wintering population trend is presented in Figure 4 of the Greylag Goose ISSMP and this mirrors the increase in breeding population numbers. Historically, this can be regarded as a recovery. The estimated DV of 130,000 individuals exceeds the MVP. The justification for selecting the DV for the national breeding populations above also applies to the wintering flyway population.

Therefore, it would be possible to set the FRP at DV, i.e. at 130,000 individuals. However, the FRP should be also consistent with the site management objectives under the EU Birds Directive and Means Objective 1 of the ISSMP. Consequently, it has to be checked whether the aggregated SPA-level FRPs for the Greylag Goose or the DV is higher and adopt the higher figure as the FRP at the level of the population.

¹⁰ Belgium already has FRVs for this species

¹¹ Prior to the meeting, Spain has informed the AEWa Secretariat that they consider the birds breeding in Spain being marginal in the breeding range of the species and in accordance with the principles adopted for reporting under Article 17 of the EU Habitats Directive, it is not necessary to set FRVs for these birds.

Unfortunately, no international summary of SPA-level targets is available and the time is limited to collect this information from the Range States before the target setting process using the MCDA method is launched. Therefore, in lieu of the sum of the SPA targets were used the numbers EU Member States reported wintering in SPAs in 2008-2012. Most likely, this value is much higher than the sum of the SPA-level FRPs would be for two reasons: (i) the current values are most likely higher than the site-level FRPs would be because the population has been consistently increasing over the years; (ii) there is some exchange between sites, which leads to inflated totals. Therefore, it is suggested taking into account only the minimum estimate.

Table 2. Wintering populations inside the SPA network (in individuals) by country (based on section 8 of Member States Article 12 reports¹²)

| Country | Minimum | Maximum | Geometric Mean |
|--------------------|----------------|----------------|-----------------------|
| Belgium | 6,412 | 21,200 | 11,659 |
| Denmark | - | - | - |
| Germany | - | - | - |
| France | 8,018 | 18,043 | 12,028 |
| Netherlands | 88,758 | 140,305 | 111,594 |
| Portugal | 2,500 | 2,500 | 2,500 |
| Spain | 114,587 | 114,587 | 114,587 |
| Sweden | 6,000 | 25,000 | 12,247 |
| Total | 226,275 | 321,635 | 264,615 |

Wintering Range States are requested to review the above figures in the light of their SPA targets and inform the Secretariat by 12 July 2019 if any revision is needed. In the meantime, **it is suggested to tentatively set the flyway-level FRP for the NW/SW European population of the Greylag Goose at 226,000 individuals** pending the above mentioned review.

¹² <https://bd.eionet.europa.eu/article12/summary?period=1&subject=A043>

Abbreviations

| | |
|-------|--|
| CV | Current Value (population level reported in the Greylag Goose ISSMP) |
| DV | Directive Value (population level at the time the EU Birds Directive has entered into force) |
| EU | European Union |
| FRP | Favourable Reference Population |
| FRR | Favourable Reference Range |
| FRV | Favourable Reference Value |
| MCDA | Multicriteria Decision Analysis |
| MR1 | Reproductive population of a widespread migratory species with more or less continuous distribution (often crossing national boundaries) and populations (assessment units) with more or less exchange at or below national level, for further explanation see Bijlsma et al. 2019 |
| MNR3 | Non-reproductive population of a migratory species with one or a few isolated populations, for further explanation see Bijlsma et al. 2019 |
| MVP | Minimum Viable Population |
| NW/SW | Northwest/Southwest |
| PVA | Population Viability Analysis |

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