

**Meeting on the Implementation of the AEWA International Species Management Plan (ISMP)  
for the Svalbard population of the Pink-footed Goose (*Anser brachyrhynchus*)  
4 – 8 August 2012, Longyearbyen, Svalbard, Norway**

**REPORT OF THE MEETING**



*Image courtesy of Sergey Dereliev*



Directorate for  
**Nature Management**

Sponsored by the Norwegian Directorate for Nature  
Management  
Organized by Aarhus University, Denmark



AARHUS UNIVERSITY

# Contents

Executive Summary .....	3
1. Opening of the meeting.....	4
1.1 Introduction and purpose of the meeting .....	4
1.2 Adoption of the agenda .....	4
1.3 Appointment of a meeting Chair .....	4
2. Presentation: Svalbard pink-footed goose news, population growth and hunting.....	5
3. Presentations: Updates on pink-footed goose management in the range countries.....	5
3.1 Denmark. ....	5
3.2. The Netherlands. ....	5
3.3 Belgium. ....	5
3.4 Norway.....	5
4. AEWA Pink-footed Goose International Working Group.....	6
5. Terms of Reference for the AEWA Pink-footed Goose International Working Group .....	7
6. The road to Adaptive Harvest Management for the Svalbard Pink-footed Goose .....	8
6.1 Presentation: Priority and desirability of ISMP actions .....	8
6.2 Presentation: Outline proposal for AHM, key actions and decisions needed .....	8
6.3 Presentation: AHM models and predictions for the Svalbard Pink-footed Goose .....	8
6.4 Presentation: Organization of local hunting, Skogn case-study Norway .....	8
6.5 Breakout session: implications of AHM .....	8
6.6 Information requirements .....	9
7. Habitat management and mitigation measures .....	10
7.1 Presentation: Focus on habitat management and mitigation measures.....	10
7.2 Breakout session: Habitat management actions and implications.....	10
8. Adaptive Harvest Management annual cycle .....	11
9. Information requirements and scheduling of the annual AHM cycle.....	11
9.1 Population counts and environmental variables .....	12
9.2 Bag statistics .....	12
9.3 Scheduling and publication of recommendations .....	12
10. Harvest Rates.....	13
11. Communications and operation of the PfG Working Group .....	14
11.1 National delegations.....	15
11.2 National working groups.....	15
13. Coordination Unit .....	16
14. Funding .....	16
15. Conclusion of the meeting .....	17
15.1 Key agreements .....	17
15.2 Key actions.....	17
15.3 Next meeting .....	17
15.4 Close.....	17
Appendices .....	18
Appendix 1. Summary list of participants.....	18
Appendix 2. Proposed Adaptive Harvest Management annual cycle.....	19

## Executive Summary

At the invitation of the Norwegian Directorate for Nature Management, a meeting was held in Longyearbyen, Svalbard between 4-8 August 2012 to launch the implementation of the International Species Management Plan (ISMP) for the Svalbard population of the Pink-footed Goose. The plan was endorsed at the 5<sup>th</sup> session of the AEWA Meeting of the Parties in May 2012, in France and is the first of its kind and a unique proposition in European waterbird management. It sets out to collaboratively manage and maintain the population size of this quarry species following the principles of adaptive management.

The meeting was convened to discuss and agree the organizational and procedural requirements needed to implement the ISMP for the Svalbard pink-footed goose in order to achieve its 4 objectives:

- I. Maintain a sustainable and stable pink-footed goose population and its range.
- II. Keep agricultural conflicts to an acceptable level.
- III. Avoid increase in tundra vegetation degradation in the breeding range.
- IV. Allow for recreational use that does not jeopardize the population.

It was attended by 24 participants comprising of national delegations from the 4 range countries (Belgium, Denmark, Norway and The Netherlands), with representatives from government authorities along with international experts, invited national hunting and conservation organisations, as well as observers from Wetlands International and FACE.

The ISMP for the pink-footed goose details a number of Key Actions aimed to secure its living and feeding conditions along its migratory route (flyway) as well as maintain the size of the population.

A stated Key Action of the ISMP is to maintain the population in the long term at around 60,000 individuals, in such a way that the population remains in favourable conservation status, but to avoid population explosion risk. Presentations and discussions were held to understand the current population growth and the implications of maintaining the population size based on the concept of adaptive harvest management, with the species hunted only in Denmark and Norway. A suggested harvest strategy was presented by Dr. Fred A. Johnson from the US Geological Survey, who is a recognized expert on adaptive harvest management. Ways to optimize hunting and minimize the risk of crippling were considered. Discussions were also held to identify the information requirements and outline an annual cycle of decision-making needed to ensure the effective regulation of hunting in both Denmark and Norway (the species is protected in Belgium and The Netherlands).

The ISMP sets out to secure favourable habitat conditions for the population and manage conflicts along its migratory route. A presentation was given by Dr. Ingunn Tombre of the Norwegian Institute for Nature Research (NINA) about managing goose related agricultural conflicts through habitat management and mitigation measures. These matters were further discussed during the meeting; particularly the benefits and implications of habitat protection and restoration, such as wet grasslands in Belgium. Tundra degradation by goose grubbing was also raised as a concern and the need for continued monitoring of the situation to fully understand the issues and implications for the vulnerable Arctic ecosystems.

The adaptive management concept means that the plan's various initiatives and impacts on the goose population require careful scientific monitoring and evaluation to enable adjustments of management actions. The proposed population target is based on current scientific evaluations but it is recognized that this may change in light of new scientific understanding as part of the on-going adaptive process, which aims to balance both biological and societal interests across its flyway.

Close cooperation and agreement between the range countries is needed to achieve the objectives and key actions of the plan. To ensure this, it was agreed to establish an AEWA international species working group, along with a coordination unit to support it. The Coordination Unit will be led by Professor Jesper Madsen, Aarhus University, Denmark. The meeting also approved the Terms of Reference for the Working Group.

It was agreed that Denmark and Norway would aim to implement a regulated system of hunting starting in 2013, internationally coordinated and guided by the recommendations of the AEWA Pink-footed Goose International Working Group. This would be based on a 3 year cycle of adaptive harvest management, with annual reviews to carefully assess population dynamics and other environmental factors to ensure the sustainability of hunting and the pink-footed goose population.

## 1. Opening of the meeting

To start the implementation of the International Species Management Plan (ISMP) for the Svalbard population of the Pink-footed Goose a meeting was held in Longyearbyen, Svalbard between 4-8 August 2012. It was convened and organized by the Norwegian Directorate for Nature Management along with the UNEP/AEWA Secretariat and Aarhus University.

AEWA Technical Officer Sergey Dereliev welcomed participants (appendix 1) to the meeting on behalf of the UNEP/AEWA Secretariat. He also thanked the Norwegian Directorate for Nature Management for supporting and hosting the meeting.

The head of the Norwegian delegation Øystein Størkersen, from the Norwegian Directorate of Nature Management also welcomed participants on behalf of the host country. He looked forward to a very positive and productive meeting to begin the implementation of the International Species Management Plan (ISMP) for the Svalbard population of the Pink-footed Goose, an exciting new development in European waterbird management.

### 1.1 Introduction and purpose of the meeting

**Sergey Dereliev** gave a brief introduction about AEWA's strategic objectives for the sustainable management of waterbirds, particularly the development of international management plans for at least two quarry populations based on the principles of adaptive harvest management (AHM) as outlined in the AEWA Strategic Plan 2009-2017. The Svalbard population of the Pink-footed Goose was selected as a suitable species and following an expert workshop, held in November 2010 in Denmark, an International Species Management Plan (ISMP) for the Svalbard Pink-footed Goose was compiled. The plan was reviewed by the AEWA Technical Committee in September 2011 and by the AEWA Standing Committee in November 2012 followed by endorsement by the 5th session of the AEWA Meeting of the Parties in May 2012, in France.

Following its endorsement, this meeting in Svalbard was the first step towards implementing the plan and was convened to discuss and agree the procedural elements of: AHM and its annual cycle of actions, other possible management actions and the coordination of these actions internationally. Proposals for an AEWA Species Working Group and a Coordinating Unit had been submitted prior to the meeting and agreement on their Terms of Reference (ToR) was also sought at this meeting.

Dereliev emphasised that this was a new development for international waterbird conservation in the African-Eurasian region, since the plan is the first of its kind to set-up a model process for the adaptive management of a waterbird species in Europe. Its implementation and continued development is intended to be achieved collaboratively, with open minds and by developing trust between conservationists and other interested parties through continued dialogue. Dereliev also clarified that as an inter-governmental meeting any decisions taken or official statements made were to be made by those nominated as the head of each national delegation. Other participants could make interventions in an advisory capacity as either international experts or non-governmental organisations.

### 1.2 Adoption of the agenda

The agenda distributed prior to the meeting (*PfG Imp Meet 1.2*) was reviewed and no amendments made.

**Decision:** *The agenda was adopted.*

### 1.3 Appointment of a meeting Chair

As an AEWA Species Working Group had not yet been established Dereliev proposed that instead of a Chair the meeting would appoint a facilitator and if the participants agree he would be prepared to make an attempt to fulfil this role with assistance from Professor Jesper Madsen and James H. Williams, the co-compilers of the ISMP.

**Decision:** The meeting participants agreed to appoint Sergey Dereliev as meeting facilitator to be assisted by Jesper Madsen and James Williams.

## **2. Presentation: Svalbard pink-footed goose news, population growth and hunting.**

**Professor Jesper Madsen**, Aarhus University, provided an update on the population growth of the Svalbard pink-footed goose and the rising annual hunting bags in both Denmark and Norway. Madsen also gave a summary of studies carried out between 1990 and 2011, in Denmark of shotgun pellets in pink-footed geese. These studies showed that after the introduction of a national anti-crippling action plan in Denmark a notable decline was achieved but a slight increase in crippling rates had been observed in recent years. A couple of other issues were also highlighted including: the possibility of increased goose grubbing in Svalbard and associated arctic habitat degradation, as well as the unknown implications of a large scale restoration project in Filso, Denmark. Finally Madsen outlined a number of relevant planned projects in particular: a project to better organize hunting in Denmark and a long-term study of the breeding pink-footed goose population on Svalbard.

## **3. Presentations: Updates on pink-footed goose management in the range countries**

**3.1 Denmark.** Henrik Lykke Sørensen from the Danish Nature Agency gave an update on the management and hunting of the pink-footed goose in Denmark. Sørensen stated that there are 16 SPAs designated for the pink-footed goose in Denmark, although these predominantly protect roost sites and not feeding areas. No compensation is paid for goose damage to crops but to help mitigate conflicts a number of management actions are available such as: the provision of scaring devices and advice on their use as well as derogations to shoot geese outside the open season, subject to strict conditions being met. In addition baiting fields with grain to avoid geese feeding on newly sown fields in spring is carried out at 2 sites, although this practice is being phased out. New agri-environmental subsidies for bird friendly management had been introduced on the Wadden Sea island of Mandø. Sørensen stated the Danish hunting bag for all quarry species of geese had increased and although the national crippling reduction plan had been a success it was added that the Nature Agency and the Danish Hunters' Association had started a new campaign to highlight the issue again.

**3.2. The Netherlands.** Sander Smolders from the Department of Nature & Biodiversity, within the Dutch Ministry of Economic Affairs, Agriculture and Innovation, summarized the Dutch Wintering Goose Management Policy. Developed in partnership with national and regional stakeholders in 2003, its aim is to maintain the balance between sustainable populations of wintering geese whilst keeping agricultural damage and compensation costs manageable. This has been achieved by providing goose accommodation areas, comprising of nature reserves and designated foraging areas on farmland. It was noted that the costs related to goose management, particularly compensation schemes had notably increased with larger wintering goose populations, of which the pink-footed goose was a relatively small part of. At the end of 2011 greater responsibility was given to regional authorities (the Dutch provinces) to manage goose populations. The provinces were now responsible for: compensating crop damage, derogations for hunting in relation to crop damage and alternative management measures. Smolders reaffirmed that the Netherlands was committed and wanted to be involved in the ISMP, hoping to ensure internationally hunting was sustainable and put forward other 'control options', whilst valuing the lessons to be learnt for other goose species.

**3.3 Belgium.** Sarah Roggeman from the Government of Flanders, Agency for Nature and Forests gave an update on goose management in Belgium (Flanders). The current focus for conservation in Flanders was protecting vulnerable bird species and the 'passive management' of goose related agricultural conflicts, such as through the restoration of traditional grasslands. It was restated that there was general shooting ban for arctic geese (including the pink-footed goose). There was no intention to open the hunting season and no derogations had been granted for the species. A compensation scheme had been in place since 2009 for crop damage but farmers needed to ensure scaring measures were taken prior, in order to receive payment. Roggeman stated that priorities had to be set due to limited resources and the focus for managing pink-footed geese in Flanders was the restoration of traditional grasslands. Roggeman reaffirmed that Belgium was committed and wanted to be involved in the ISMP implementation.

**3.4 Norway.** Arild Espelien of the Norwegian Directorate of Nature Management summarized the situation of geese in Norway and their management. Norway hosts a number of goose species with different management policies depending on their status. Some species are protected such as the Lesser White-fronted Goose whilst others have an open hunting season, which includes the Pink-footed Goose. The continued rapid growth in the Pink-footed Goose population was a concern for Norway because of increasing agricultural conflicts, due to crop damage, and 'grubbing' on the arctic tundra. A 1996 National Goose Management Plan describes the general management principles and these are still valid in that: in spring pink-footed geese are left undisturbed to utilize the resources at some sites, whilst at others they are not tolerated and can be chased away. In the autumn pink-footed geese are hunted but there are also sites where hunting is banned. It was highlighted that management actions are to a high degree knowledge-

based and Norway constantly seeks new knowledge to adjust their policy and regulations. Espelien stated that Norway looked forward to working in cooperation with the other range countries to achieve the objectives of the ISMP.

#### 4. AEWA Pink-footed Goose International Working Group

**Dereliev** introduced the proposal, as outlined in the ISMP, to create an AEWA Species Working Group. A draft Terms of Reference (ToR) for this group (*PfG Imp Meet 1.3*) had been prepared and distributed prior to the meeting. Dereliev briefly reviewed the draft ToR covering the key sections of the document. Comments or amendments were invited from participants, before seeking agreement on establishing the AEWA Pink-footed Goose International Working Group and its ToR.

##### **Discussion:**

**Angus Middleton**, FACE (Federation of Associations for Hunting & Conservation of the EU), noted that the role of AEWA was not specified in the draft ToR and clarification of its role was sought. **Dereliev** responded that the UNEP/AEWA Secretariat capacity for coordinating actions for such plans was limited and this role was to be outsourced to designated working groups. These working groups needed to inform the UNEP/AEWA Secretariat of their decisions and actions, to ensure consistency and they operated within agreed mandates. The UNEP/AEWA Secretariat could provide support and facilitate such groups, where necessary but these groups were independent and the role of the UNEP/AEWA Secretariat need not be specified in their ToR.

**The Netherlands** considered the proposal for a species working group for the Pink-footed Goose as ambitious for 2 reasons. The budget need to support such a working group was considered an issue. In addition concern was expressed about the range countries losing authority, to the proposed working group, for managing goose related issues in their own countries. The Netherlands was supportive of the ISMP but reiterated that it did not intend to open recreational hunting of pink-footed geese in the Netherlands, now or in the future, and was uncertain about the role and need for a species working group.

**Dereliev** clarified that the role of the AEWA Pink-footed Goose International Working Group (PfG Working Group) would be to coordinate and catalyse the implementation of the ISMP. The relevant national authorities would be responsible for undertaking actions detailed in the ISMP. Activities, for the coming years, would focus on implementing adaptive harvest management (AHM) in Norway and Denmark. The PfG Working Group would facilitate and coordinate these activities, as specified in the ISMP, but it would not infringe on the mandates of national authorities. Dereliev acknowledged that establishing and operating a species working group does require funding. The UNEP/AEWA Secretariat could not commit to any such funding, as no budget was available for supporting the ISMP. Funding had to come from the range countries and this was to be discussed during the course of the meeting.

**The Netherlands** stated it was also difficult to agree to the ToR or any funding requirements as it was currently in the process of decentralising responsibility, decision-making and goose management activities to regional authorities, who may need to be consulted. Furthermore, concern was expressed about some of the wording in the ToR, in particular bullet point 3 under 'Role'. This line indicated a mandate to set priorities for national actions. It was suggested it was removed or the wording changed with less emphasis on the PfG Working Group setting priorities.

**Denmark** noted that in bullet point 13, under 'Role', the wording 'ensure sufficient commitment and funding' suggested a binding commitment for an indefinite period. Denmark was not able to commit to this. Alternative wording of 'seek funding' was suggested.

**Norway** commented that it was good to be ambitious and if funding could not be found for certain actions then the implementation of the ISMP should be adjusted accordingly. It was suggested the UNEP/AEWA Secretariat should be the focal point for funding of the ISMP.

**Dereliev** commented that a first step need to implement the actions of the ISMP was to establish a coordination mechanism for these actions internationally. There was a need for a PfG Working Group and the draft ToR detailed what it will do and how. Funding would be discussed further. The UNEP/AEWA Secretariat could be a focal point and would have a close working relationship with the PfG Working Group. Dereliev suggested a short break in the meeting for participants to confer and discuss various points and the wording of the ToR. Agreement on the ToR would then be sought.

## 5. Terms of Reference for the AEWA Pink-footed Goose International Working Group

### **Goal and objectives**

These were as defined in the ISMP.

**Decision:** *Accepted and agreed*

### **Purpose**

No further issues were raised.

**Decision:** *The purpose of the PfG Working Group as defined by its ToR was accepted.*

### **Role**

A number of revisions were proposed as an outcome of discussions in the break.

**Decision:** *Subject to the following amendments the 'Role' of the PfG Working Group as defined in its ToR was accepted. The revisions to be made were: amend the wording in the 2<sup>nd</sup> and 3<sup>rd</sup> bullet points to read respectively 'review and determine a population target for the Svalbard population of the Pink-footed Goose ....', 'review and determine priorities for international action ....'. The bullet points also to be changed to a numerical format.*

### **Membership**

No further issues were raised.

**Decision:** *Accepted and agreed*

### **Officers**

These positions were regarded as standard but it was agreed to amend the wording to specify a rotational Chair and this would be selected from one of the national delegations. It was suggested that an existing Chair could be re-elected, so the wording 'usually one term' should be removed.

**Decision:** *Accepted and agreed subject to the proposed amendments and stating 'The Chair of the AEWA Svalbard Pink-footed Goose International Working Group will be elected amongst its members (countries). Chairmanship is rotational. The new Chair will be elected at the end of each meeting of the Working Group and the term will expire at the closure of the next meeting.'*

### **Meetings**

The annual cycle for AHM was to be discussed but the principal of annual meetings for the PfG Working Group was regarded as necessary for the implementation phase of the ISMP. The frequency may be altered in the future but the proposed wording was regarded as permitting this flexibility.

**Decision:** *Accepted and agreed*

### **Reporting**

Although annual meetings of the PfG Working Group were initially envisaged this requirement may change. It was proposed that the wording specifying the requirement for annual reporting be deleted. The template for reporting was to be decided.

**Decision:** *Accepted and agreed, subject to changes proposed and a report template to be circulated at a later date.*

### **Financing**

The text was generic and used in other AEWA species working group ToR.

**Decision:** *Accepted and agreed*

**Dereliev** concluded that a final version of the ToR for the AEWA Pink-footed Goose International Working Group would be prepared and published on the AEWA website.

## **6. The road to Adaptive Harvest Management for the Svalbard Pink-footed Goose**

### **6.1 Presentation: Priority and desirability of ISMP actions**

**James H. Williams**, Aarhus University, presented the results of a short survey sent to selected participants prior to the meeting. This was used to assess the perceived priority and desirability of the different management actions proposed in the ISMP. This feedback indicated that maintaining protected areas, restoring grassland habitats as well as hunter education and awareness to reduce crippling rates were all high priority and desirable actions. Recreational hunting as a means to control the population was also regarded as high priority but there were differences in its desirability, particular between the northern (Denmark & Norway) and the southern (Belgium and The Netherlands) range countries. The results only represented a small sample but they served as a reference for discussion. The results would be made available on the AEWA website (*PfG Imp Meet 1.7*).

### **6.2 Presentation: Outline proposal for AHM, key actions and decisions needed**

**Jesper Madsen**, Aarhus University, gave a presentation on implementing AHM for the Svalbard pink-footed goose, outlining the likely requirements in terms of information, regulations and the annual decision cycle. Madsen covered a number of key points: the importance of thorough and timely monitoring of both the population and hunting bag statistics to ensure streamlined and reliable predictive modelling. The need for a flexible hunting system and a continued focus on crippling rates was emphasised. Madsen stated that further discussion and agreement was needed on appropriate mechanisms and means of communication to: regulate hunting, decide the share of harvest between Norway and Denmark and establish the annual cycle of AHM. These points were to be discussed during the course of the meeting.

### **6.3 Presentation: AHM models and predictions for the Svalbard Pink-footed Goose**

**Fred A. Johnson**, US Geological Survey, an invited technical expert on AHM then gave a presentation reviewing the components and processes of AHM and how these could be applied in the context of the Svalbard Pink-footed Goose. The latest work on analysing population dynamics and the results from the predictive models developed was presented. Based on this analysis and model predictions an optimal harvest strategy was suggested in order to achieve the stated population size, whilst maintaining sustainable harvests. A number of key messages were highlighted, in particular the suggested harvest strategy, in the long term, was expected to produce a mean population size of 61k, with a mean harvest rate of 0.08 (proportion of the population to be harvested). Based on recently observed population dynamics and environmental variables an initial optimal adaptive harvest strategy suggested a harvest rate of 0.3.

### **6.4 Presentation: Organization of local hunting, Skogn case-study Norway**

**Ingunn Tombre**, Norwegian Institute for Nature Research (NINA), gave a short presentation about an initiative between hunters and landowners to better manage and regulate hunting in Skogn, central Norway. This was a small scale pilot project where participating landowners could regulate where and when hunters were able to hunt, using a website to control hunting access through a booking system. The scheme had proved beneficial for landowners and hunters, as well as providing valuable research data and possibilities to manipulate and test different hunting arrangements.

### **6.5 Breakout session: implications of AHM**

Having heard the outline proposals for AHM, along with the latest model predictions and a suggested harvest strategy participants in the meeting were divided into three groups. Two groups were convened to discuss possible hunting regulations (measures to control hunting), the communication of these and crippling rate reduction. One technical group was convened to discuss the information requirements needed for effective AMH.

#### **Feedback:**

##### *Group 1: Regulation, communication and crippling rates*

The group noted that both in Norway and Denmark hunting was predominately locally organized. Hunters were thought to prefer a stable framework of hunting regulations and the willingness to accept regular changes would vary amongst hunters. Furthermore Denmark and Norway had different time-frames for regulatory changes (revisions to the hunting season) with reviews in Denmark every 3 years and in Norway every 5 years. It was suggested these could



be aligned. Annual changes in hunting regulations could be made but such changes were viewed as problematic, although possible. Annual changes would require considerable work, close cooperation and flexible agreements between Denmark and Norway as well as between the appropriate authorities and hunters. The Skogn/Goosehunt project, as piloted in Norway, was seen as a favourable way to organize and regulate hunting locally. Adjusting the season length was considered preferable to setting bag limits. The internet and local newspapers were regarded as appropriate and fast channels for communication. Awareness and education campaigns amongst hunters were important in helping to reduce crippling rates. Reliable hunting bag statistics from both Denmark and Norway were also needed.

#### *Group 2: Regulation, communication and crippling rates*

The group repeated that annual changes were undesirable and suggested a 3 year cycle was considered optimal for regulatory changes. Within this cycle there could be options for annual changes, for instance to instigate emergency measures triggered by unusual events e.g. severe winters or a dramatic population decline. It was suggested a formula could be developed to establish the share of harvest between Norway and Denmark, based on levels of hunting demand and conflict in each country. The PfG Working Group should act in an advisory capacity but the decision on the share of harvest (quotas) should be made between the two countries (Denmark and Norway). Agreed national quotas should be communicated at an international level. The setting of regional or individual bag limits was not desirable. Harvest rates/targets should be realized by the temporal and spatial organization of hunting, with the appropriate authorities setting and communicating the necessary regulations. International coordination and communication should be channelled through the National Focal Points. FACE could support communications with national hunting organisations. The internet was considered a key channel for communication. To reduce crippling rates better hunter awareness, training and organization was again considered crucial.

#### **Discussion:**

**Szabolcs Nagy**, Wetlands International, commented that an issue not raised was achieving the projected harvest rates/targets as suggested by the model predictions from Fred A. Johnson. **Johnson** responded that this was an important consideration, especially how to maximise hunting, in the short term, to achieve these harvest rates and bring the population down to the target agreed in the ISMP.

**Johnson** commented that better organization of hunting, at a local level, was key to ensuring efficient hunting in a responsible way. Improving the spatial and temporal management of hunting would increase the hunting opportunity but this would require annual modelling and targets.

**Marco Brodde**, Danish Ornithological Society (DOF), questioned if it was necessary to adjust the harvest rates/targets every year. **Johnson** responded that it would be better to make annual changes to achieve the stated management objectives, but could understand the wish to avoid political discussions every year to set these targets. At most a 3 year cycle could be operated but Johnson recommend yearly analysis of population and hunting data. This would allow for possible annual adjustments of harvest rates/targets, for example emergency measures given extreme circumstances. Guidelines would need to be developed as to what would trigger an annual change and what this change would entail e.g. a small adjustment or closing the season.

**Dereliev** commented that only the national authorities can change hunting regulations and the regulatory cycles of Denmark and Norway would need to be synchronized, as they are currently 3 and 5 years respectively. The AHM cycle would be discussed in more detail later in the meeting.

## **6.6 Information requirements**

#### *Group 3*

The group summarized the information requirements regarded as necessary to inform decisions as part of the AHM cycle for the pink-footed goose.

Critical information needs were identified as:

- Estimated population size
- Estimated harvest (with an improved reporting system in Denmark, reporting at a species level)
- Age structure of the harvest

The timing of population estimates and bag statistics needed to tie-in with the proposed annual cycle for AHM in order to inform decisions. Changes were necessary, particularly the need for a co-ordinated population count across

the flyway in May (after the hunting season). In addition bag statistics from Norway, at present, were not available until August. This was regarded as too late but could potentially be changed. Survival rates were not necessary for the models but aided their calibration. An important environmental factor to be monitored was snow cover in Svalbard. This could be obtained from remote sensing MODIS data and correlated closely with a key model variable, 'tempdays' (no. of days in May above 0°C). Monitoring of crippling rates should be continued, both in Denmark and Norway (currently not undertaken in Norway).

It was suggested that the results of the annual modelling cycle should have some form of peer review, with the information and any hunting regulation recommendations approved by the PfG Working Group. This information would need to be communicated at the latest by early August. It was noted that the technical expertise needed for modelling had to be secured for the long-term.

## **7. Habitat management and mitigation measures**

At the beginning of this session **Madsen** showed a number of photographs taken during recent fieldwork in Sassendalen, Svalbard to illustrate the observed impact of goose grubbing on arctic tundra vegetation.

### **7.1 Presentation: Focus on habitat management and mitigation measures**

A presentation was given by **Tombre** about alternative options, other than AHM, for managing goose related conflicts by habitat management and mitigation measures. Actions included creating containment and exclusion areas as illustrated by a Norwegian regional subsidy scheme, which was evaluated as part of the MIGRAPOP research project. This project assessed the biological and social impacts of creating a mosaic of refuges and farmland subject to scaring. In addition possibilities for grassland restoration, creating new protected sites and promoting beneficial agricultural practises, such as late ploughing were also highlighted. Developing recreational activities (goose tourism and hunting) was also suggested. Issues were raised in relation to potential habitat changes for instance agricultural abandonment, as well possible arctic tundra degradation caused by goose grubbing.

### **7.2 Breakout session: Habitat management actions and implications**

To discuss the points and issues raised in the preceding presentation participants in the meeting were divided in to two groups. Their feedback was then sought.

#### **Feedback:**

##### *Group 1*

The group stated that grassland restoration was an important priority and a possible means to stop geese feeding on high nutritional value crops. It was noted that habitat restoration may be of greater benefit in the southern range countries (Belgium and The Netherlands) where it is easier to attract pink-footed geese to grasslands. The potential benefits of late ploughing were recognised but difficult to encourage due to the envisaged need for payments to promote such practices. Protecting key feeding areas was viewed as beneficial but it was believed there was limited political support for the likely compensation or subsidy schemes needed. Understanding the implications of the Common Agricultural Policy (CAP) reforms was also considered important. It was suggested that greater dialog with and involvement of agricultural representatives was needed to understand their issues and share knowledge. Better understanding of goose grubbing and arctic tundra degradation was called for as this was an issue of great concern. It was noted that the flyway should be considered as a whole to maintain connectivity between regions and sites. Solutions may vary between different sites and over different time scales as the environment changes.

##### *Group 2*

Maintaining the existing network of protected areas was stated as important by the group. The call for grassland restoration in wintering areas was repeated. This would not only create biodiverse habitats but may also reduce the quality of wintering feeding areas, seen as a possible means to regulate the fitness of geese prior to migration and limit population growth. It was noted that this was still a hypothesis and such actions and their impacts should be monitored. Habitat restoration was regarded as a high priority but a number of issues were identified: finding suitable sites, the costs of restoration and the expansion of potential stop-over sites could fuel further population growth, was this desirable? The possibility of managing the population in Svalbard was also raised. Rural tourism was noted as having the potential to provide income for farmers, offsetting the cost of crop damage with rural development funds available within EU. It was also suggested that a better understanding was needed of the carrying capacity of all

potential habitats, how close was this to a predicted maximum capacity? The impact of the increasing pink-footed goose population on arctic tundra degradation was raised as a concern and the need to understand its scale and impact on arctic biodiversity. Water management in the Netherlands was also suggested as a means to manage habitats in wintering areas.

**Conclusions:** *Habitat and grassland restoration are key priorities and funding should be sought to enable beneficial restoration projects to be realized, particularly in Belgium and led by the authorities there. Arctic tundra degradation by goose grubbing was of concern and continued monitoring to gain a better understanding of the situation was required. Other actions to mitigate conflicts should be developed over time.*

## 8. Adaptive Harvest Management annual cycle

Following on from the preceding presentations and feedback the whole group was called to discuss and agree the annual cycle of actions and decisions that needed to occur as part of AHM.

**Middleton** (FACE) commented that a 3 year cycle had previously been discussed and wanted clarification on how the annual cycle would fit within this and the possibility of annual adjustments, as a result of specified triggers. **Johnson** responded that the current analysis presented was based on annual decisions being made on hunting regulations with the possibility of these changing every year. The models could be run based on hunting regulation changes every 3 years. The data could be reviewed annually to identify key trigger points for possible annual changes, but he questioned what would constitute a trigger point. **Madsen** added that an annual routine of modelling and assessment would be preferable, ensuring a responsible approach to maintaining the pink-footed goose population because it was still a relatively small one.

**Denmark** agreed that a 3 year cycle for regulatory changes would be preferable and this was feasible within the existing Danish framework. It would be administratively possible to make some annual changes (given a minimum of a month's notice) but this would essentially be to close the hunting season. Any annual change would need to be presented to the Danish Wildlife Board.

**Johnson** agreed that the models could be run to identify possible trigger points which would necessitate an annual change. These changes needed to be simple to implement, for example the closure of the hunting season.

**Brodde** (DOF) raised a concern that other actions to prevent agricultural conflicts and the population growth of the pink-footed goose were not being considered, rather than relying solely on population control. Other actions related to habitat management should be developed and such actions still needed to be defined and agreed.

**Dereliev** agreed other management tools should and will be developed in time. Such measures are included as part of the ISMP Key Actions. For the moment, as an agreed Key Action is the AHM of the pink-footed goose population, what was needed was agreement on the cycle of decision-making for this to be implemented.

**Decision:** *A 3 year cycle for hunting regulation changes was agreed as preferable. An annual review would be undertaken as part of this 3 year cycle. Key trigger points could prompt a change in annual regulations, predominately envisaged to be a closure of the hunting season. Johnson would undertake further modelling analysis to assess the impact of this 3 year cycle and identify potential key trigger points. Norway and Denmark both confirmed they could operate a 3 year cycle and would aim to synchronise their respective regulatory frameworks by August 2013.*

## 9. Information requirements and scheduling of the annual AHM cycle

Although a 3 year cycle for hunting regulatory changes was agreed there was still the need to monitor the population and assess the impact of hunting and environmental variables on an annual basis. **Madsen** provided an illustrative example of the annual cycle with a schedule for when monitoring, modelling and decisions needed to occur. Appendix 2. The group was asked to discuss and agree this annual cycle.

## 9.1 Population counts and environmental variables

**Madsen** confirmed the need for November and May population counts. There were issues of capacity and budget but these counts were a top priority. The involvement of the Dutch was seen as crucial, particularly for the November count and a move to conducting population counts in May was of high importance. The need for a December count could be reviewed.

**Dereliev** suggested the requirements for population counts, as part of the AHM cycle, should be further outlined. Madsen agreed.

**Decision:** ***Madsen** would produce a paper detailing what population counts were needed, as well as when and how these would be undertaken. In addition Madsen would take responsibility for ensuring the provision of the environmental data need for the population models.*

## 9.2 Bag statistics

**Madsen** noted that bag statistics were needed in June in order to run the models to determine if any regulatory changes were required for a forthcoming hunting season. At present, the bag statistics from Norway and Denmark were not available until August each year.

**Norway** confirmed this was the case but stated the bag statistic report deadline in Norway ends in April. By the 1<sup>st</sup> of May many hunters had reported their bag statistics, with approximately 80% of completed forms received by mid-May. A partial report could be provided at the end of May but the complete report would not be available until the end of August.

**Denmark** added that the hunting bag statistics in Denmark were progressively done by online reporting. In addition as all Danish hunters are obliged to report their personal bags for the previous season no later than March 31<sup>st</sup> (after this date the reporting system is closed), it was believed that a partial report could be delivered in by the end of May.

**Brodde** commented that the Danish Ornithological Society (DOF) would be grateful if they could be informed of any changes to the Danish bag statistics and how they are collected. Further details were also requested on the Danish Hunting Project that was currently under discussion between Aarhus University and The Danish Hunters' Association.

**Decision:** ***Madsen** would set out the requirements for hunting bag statistic needed for the AHM cycle, contacting the National Focal Points to determine what they were able to deliver and when. Madsen confirmed that DOF would be informed of any changes to the Danish bag statistics and would be given further details about Danish Hunting Project.*

## 9.3 Scheduling and publication of recommendations

**Madsen** outlined the envisaged timings for when data was to be received, modelling to be undertaken and an annual report to be published. Data should be received by mid-June, at the latest, to enable the modelling and assessment of annual data. The publication of an annual report should be available by early August to enable the appropriate authorities to take any recommended actions.

**Eckhart Kuijken**, Belgium Pink-footed Goose Expert, commented that any recommended actions needed to be reviewed and questioned who would do this. **The Netherlands** added that it was important for experts within the range countries (Norway, Denmark, The Netherlands and Belgium) to review the models developed by Johnson but was not sure if this needed to be done annually.

**Madsen** responded that a peer review of the models was planned through publication in academic journals but this was unlikely to be achieved by August 2013. Alternatively, details of the models and their analysis could be sent to the National Focal Points to be forwarded for review by national experts in each of the 4 range countries.

**Dereliev** added that the PfG Working group would review the annual assessment and model predictions and make any necessary recommendations in an annual report. The report could then be forwarded by the National Focal Points, as desired, to the appropriate authorities for further comments. Feedback received from the National Focal Points would be regarded as the official response from each range country. Once the report and recommendations had been

agreed by the PfG Working Group this would then be published and then it would be the responsibility of the appropriate authorities to implement any recommended actions.

**Johnson** suggested an Executive Summary style annual report should be produced on the status of the pink-footed population along with any recommendations. The exact requirements of this report needed to be defined in line with the requirements for a 3 year cycle of hunting regulations.

**Decision:** *The PfG Working Group would undertake to review the annual assessment and make any recommendations necessary, based on model predictions. An initial review of the models should be undertaken by selected experts within each range country and the models would be made available to them. The models would also be peer reviewed through publication in academic journals. The scheduling of actions as part of the annual AHM cycle, the format of an annual report and how recommendations made would be communicated to the appropriate authorities did require further definition and documentation. This would be done by Madsen in collaboration with the UNEP/AEWA Secretariat and the National Focal Points.*

## 10. Harvest Rates

During the course of discussions about management actions and the annual AHM cycle the topic of harvest rates was repeatedly raised.

### **Discussion:**

**Kuijken** commented that given a population target of 60,000 had been agreed and that the current population stood at 80,000, a 20,000 reduction in the population over a short period of time could prove unacceptable, impracticable and difficult to communicate publically. All 4 range countries needed to support a harvest rate and it would need to be publically acceptable. These comments were supported by both Denmark and the Netherlands. The question was asked as to whether an agreed harvest rate could be spread over a longer period of time, to gradually reduce the population.

**Johnson** responded that an agreed harvest rate could be spread over a longer period of time but there was the potential that an 'acceptable harvest rate' may not result in a decline of the population growth. The population target and any agreed harvest rate were, in part, value judgements and once a recommendation had been made the decision needed to be adhered to. There was the option to place an upper limit on the size of annual harvest rate.

**Middleton** commented that a one-time cull to bring the population down was not an option. This seemed generally unacceptable to all parties. Hunters were interested in a stable framework of hunting regulations, as agreed over a 3 year cycle. In addition harvest rates, targets or quotas were usually not of interest to 'local hunters'. These should rather be discussed and agreed at an international level but local hunters would usually prefer these to be translated in to a regulatory framework, such as adjusting the hunting season.

**Dereliev** asked if it was possible for Johnson to outline an approach for setting a harvest rates based on the discussions so far. A short break was convened.

**Johnson** presented the following approach based on series of questions to the group:

- The population goal is 60k (as agreed in the ISMP)
- Question: What is *maximum* feasible harvest capacity (over the next few years)?
- Given that maximum, what is the optimal harvest strategy and how long would it take to reach the population goal?
- How long would it take to reach the goal if the optimal harvests could not be achieved?
- These questions should be examined under an average and a warming climate.
- If the time to reach the goal is unacceptable, we should ask how much of an increase in harvest capacity would be needed to make the time frame more acceptable.

**Belgium** asked if Johnson could look at a number of scenarios and model the impact of different harvest rates.

**Kuijken** requested that other factors be considered as part of the modelling, other than an average and a warming climate e.g. competition with Barnacle geese.

**Johnson** responded that the models could be re-run based on the above approach. What would be needed was an indication of feasible and acceptable harvest rates for Danish and Norwegian hunters. The inclusion of other variables in the models was possible but these would need to be part of future developments.

**Dereliev** suggested that a small working group been convened to discuss feasible harvest rates. This should be led by Madsen and Johnson in collaboration with the Danish and Norwegian Hunting Associations.

**Decision:** *A small working group would be setup to determine feasible harvest rates. Johnson would re-run the models to determine the impact of these harvest rates. The results would be distributed to the PfG Working Group to assess, agree and recommend a desirable harvest rate and strategy for implementation.*

## 11. Communications and operation of the PfG Working Group

**Dereliev** led a discussion on what needed to be communicated as part of the AHM cycle and how this was to be facilitated by the PfG Working Group, as well as other aspects of its operation.

**The Netherlands** commented that when communicating the purpose of the plan it should be about stabilization of the population at around 60,000 not reducing it. In addition it should be the responsibility of the National Focal Points to communicate recommendations of the PfG Working Group to the appropriate authorities. It is then up to these authorities to approve any policy decisions and actions and to communicate these to national and regional managers and stakeholders.

**Kuijken** added that the appropriate national/regional authorities were the right channel for communicating nationally but the language used should be tailored to meet the needs of different stakeholder groups.

**Belgium** suggested that there was a need for a common communication strategy, which addressed some of the more sensitive issues of the ISMP and anticipated press reactions. A procedure should be developed to enable responses to regular questions e.g. frequent Q&As.

**Middleton** agreed there was a need for a common communications reference document and offered the services of a communications expert within FACE. As this was the 1<sup>st</sup> plan of its kind it would be better to be open and transparent when communicating what it was trying to achieve.

**Nagy** commented that communications within countries should be left to the appropriate authorities but the PfG Working Group should coordinate communications at an international level.

**Dereliev** added that the UNEP/AEWA Secretariat had developed a web platform for communication between members of AEWA species working groups. A specific website would be created for the PfG Working Group and this would be available shortly. Once the website had been launched its maintenance and administration would be handed over to the Co-ordination Unit. Some areas of this website would only be accessible to PfG Working Group members whilst other areas would display publically available information. There would be a small fee for hosting this website. Dereliev suggested that the lead Coordinator in conjunction UNEP/AEWA Secretariat could be a spokesperson for the PfG Working Group, relating to matters of the annual AHM cycle, ISMP and inter-governmental processes.

**Decision:** *It was agreed that the lead Coordinator would communicate official statements on behalf of the PfG Working Group but these would need to be approved by its members. Madsen in collaboration with the UNEP/AEWA Secretariat would prepare guidelines and a communications strategy and policy which would be sent to the PfG Working Group for consultation. In addition a short communication would be written to announce the launch and implementation of the ISMP. Website to be created for the PfG Working Group by the UNEP/AEWA Secretariat.*

## 11.1 National delegations

**Dereliev** reminded the meeting that the National Focal Points, as representatives of the national state authorities, were able to invite other participants as part of their national delegations. Who to invite was up to each range country to decide but delegations should represent the interests of all stakeholders. As greater involvement of farmers had been discussed it was suggested that inviting international/national farming representatives could be of benefit. This was open for the group to discuss.

### **Discussion:**

**Middleton** agreed but added that possible candidates, at an international level, were very busy and focused on other areas of concern. It was suggested that national champions from the farming sector could be identified to open lines of communication and discussion through them.

**The Netherlands** commented that problems with pink-footed geese, in the Netherlands, were a minor issue for farmers and did not believe it was necessary to involve them at this stage.

**Norway** suggested that perhaps it would be worthwhile inviting an appropriate farming representative as a one-off to a future PfG Working Group meeting, to give a farmers perspective and update on the wider agricultural issues they face.

**Decision:** *It was agreed that the composition of national delegations would be left to the discretion of the National Focal Points and the state authorities. Consideration would be given to inviting an appropriate farming representative to a future PfG Working Group meeting. Letters confirming membership to the PfG Working Group would be sent to the National Focal Points and National Experts. These would be the points of contact for the Coordination Unit. Letters of invitation would also be sent to international experts and representatives of international conservation, farming and hunting organisations to the PfG Working Group, as necessary.*

## 11.2 National working groups

The ISMP recommended that consideration should be given to the setting up of National Working Groups to represent the interests of different national stakeholders. These groups could provide feedback and input for the National Focal Points and the PfG Working group. This suggestion was open for discussion.

**The Netherlands** stated that there was a number of existing stakeholder groups in the Netherlands and regional authorities were now taking on the responsibility for goose management. The Netherlands did not believe there was currently a need to have a National Working Group.

**Norway** agreed that National Working Groups were potentially a good idea but there was generally limited capacity to set these up. Norway was open minded about establishing a National Working Group but would prefer if these were not obligatory.

**Tombre** commented it was important to involve local stakeholders particularly in areas such as central Norway. Dialog with local groups had already proved useful and beneficial.

**Dereliev** added that National Working Groups were not mandatory but it was open for the range countries to set these up as they saw fit, following similar principles and mechanisms of the international working group.

**Decision:** *It was agreed that the setting up of National or Local Working Groups would be left to the appropriate authorities to decide and instigate.*

### 13. Coordination Unit

Dereliev introduced the role of a Co-ordination Unit for the PfG Working Group, which would act to support and facilitate its work. A draft ToR for the Coordination Unit (*PfG Imp Meet 1.6*) had been prepared and distributed prior to the meeting. Dereliev briefly reviewed the draft ToR covering the key sections of the document. Comments or amendments were invited from the group, before seeking agreement on establishing the Coordination Unit and its ToR.

#### **Discussion:**

**The Netherlands** requested clarification about the external communications of the unit; would these be policy decisions or technical communications?

**Madsen** confirmed that communications from the Coordination Unit would predominantly be technical in nature e.g. model outputs as well as any key reference documents, agreements or recommendations approved by the PfG Working Group.

**Belgium** queried what was meant by 'prepare and distribute an annual work programme' under the heading 'Role'.

**Madsen** responded that this would be a simple log of annual actions agreed to be implemented by the range countries. These will be reviewed annually but may not necessarily change, in accordance with the agreed 3 year cycle.

**Norway** suggested a number of wording changes. Coordination Unit would be a better name for the role and that the wording should state that the administrator will support the lead Coordinator.

**Dereliev** proposed that the position of lead Coordinator would be undertaken by Professor Jesper Madsen and the role of administrator by James H. Williams. Agreement on establishing this unit and its ToRs was then sought.

**Decision:** *The Coordination Unit should be established and its ToRs were agreed, subject to the recommended amendments. The revised ToRs would be published on the AEWA website.*

### 14. Funding

**Madsen** presented a draft budget which had been prepared and distributed prior to the meeting. It was added that, in light of discussions, this would need to be revised slightly. The funding requirements were to cover the costs of operating the PfG Working Group and the Coordination Unit but none of the actions as specified in the ISMP. These would have to be funded separately by the range countries or from other sources. Funding had been pledged by Norway and Denmark. The other range countries and organizations were asked if they were able to contribute in any way.

**Dereliev** stated that the UNEP/AEWA Secretariat would provide the platform to host a PfG website. There may be some development costs incurred and there would be a cost for hosting it, about 200 EUR/year. The meeting was reminded that the costs for hosting and travelling to future PfG Working Group meetings were not covered in the draft budget.

**Belgium** stated that in the current economic conditions funding was very difficult, they would consider it but could not commit to any funding at present. This was repeated by **The Netherlands**. FACE and Wetlands International were also unable to commit to any funding.

**Dereliev** commented that symbolic funding would be a sign of commitment.

**Norway** stated their willingness to support the work of the PfG Working Group and the Coordination Unit. They could provide some funding but would like to see part funding from the other range countries.

**Denmark** stated they had agreed to provide some funding.



**Kuijken** commented that Belgium did contribute in many ways by undertaking population counts and other voluntary activities, although these were not seen as financial contributions.

**Dereliev** added that any funding provided would pass directly to Aarhus University under a memorandum of understanding with UNEP/AEWA Secretariat. The aim was to gain a 3 year funding agreement.

**Decision:** *Belgium and The Netherlands pledged to look at the possibilities for funding. A revised budget was to be prepared and distributed by Madsen. The PfG Working Group would be kept informed of the funding need for its work, the Coordination Unit and other international activities.*

## **15. Conclusion of the meeting**

### **15.1 Key agreements**

**Dereliev** summarised the key decisions that had been taken during the course of the meeting regarding the institutional arrangements for implementing the PfG International Species Management Plan.

Agreements were gained on:

1. Establishing the AEWA Pink-footed Goose International Working Group and its Terms of Reference
2. Establishing the Coordination Unit and its Terms of Reference
3. Denmark and Norway to implement a system of regulated hunting starting in the 2013 hunting season, following the recommendations of the PfG Working Group. This would be based on a 3 year cycle of Adaptive Harvest Management, with annual reviews.

### **15.2 Key actions**

1. A small working group to be convened to determine feasible and acceptable harvest rates amongst Danish and Norwegian hunters.
2. Fred A. Johnson to carry out further population analysis following the agreed approach and to re-run model predictions based on revised harvest rates. Results to be distributed to the PfG Working Group and published in academic journals.
3. Madsen / Coordination Unit to produce a document detailing the requirements for obtaining population counts and bag statics and other data needed as part of the AHM process.
4. Madsen / Coordination Unit to provide revised budget for the PfG Working Group and Coordination Unit.
5. Madsen / Coordination Unit to prepare a document outlining communication guidelines and processes for the PfG Working group.
6. Madsen / Coordination Unit to prepare a schedule for the AHM annual cycle, an annual work programme and template for annual reporting, to be distributed and approved by the PfG Working Group.
7. UNEP/AEWA Secretariat to provide a website platform for the PfG Working Group.

### **15.3 Next meeting**

**Dereliev** stated the intention was to convene the 1st meeting of the PfG Working Group early next year. The date and location will need to be confirmed and whether this would be a face-to-face meeting or an online conference. A request was made to see if any of the range countries were willing to host this 1<sup>st</sup> meeting. If not the UNEP/AEWA Secretariat could host it but was unable to bear any costs. It was preferable for one of the range countries to host it.

All National Focal Points agreed to look in to the possibilities.

**Decision:** *The date and venue for the 1<sup>st</sup> meeting of the PfG Working Group was left open and would be decided in consultation with the National Focal Points. The decision would be communicated to the PfG Working Group.*

### **15.4 Close**

**Dereliev** thanked participants for coming to Svalbard and actively participating in the meeting in a very open and positive way. This was the first stage for implementing the ISMP of the Svalbard pink-footed goose and had been a significant step forward in realizing this innovative management plan.

## Appendices

### Appendix 1. Summary list of participants

*See also document PfG Imp Meet Info 1.4*

#### **NORWAY**

**Bjarte Benberg,**  
Environmental department/Governor of Svalbard,  
Email: [bjarte.benberg@sysselmannen.no](mailto:bjarte.benberg@sysselmannen.no)

**Terje Bø,**  
Norwegian Directorate of Nature Management,  
Email: [terje.bo@dirnat.no](mailto:terje.bo@dirnat.no)

**Arild Espelien,**  
Norwegian Directorate of Nature Management,  
Email: [Arild.Espelien@dirnat.no](mailto:Arild.Espelien@dirnat.no)

**Øystein Størkersen,**  
Norwegian Directorate of Nature Management,  
Email: [Oystein.Storkersen@dirnat.no](mailto:Oystein.Storkersen@dirnat.no)

#### **DENMARK**

**Marco Brodde,**  
Danish Ornithological Society,  
Email: [mb@fimus.dk](mailto:mb@fimus.dk)

**Niels-Erik Jørgensen,**  
Danish Hunters' Association,  
Email: [ne-amjorgensen@mail.tele.dk](mailto:ne-amjorgensen@mail.tele.dk)

**Ulrik Lorenzen,**  
Danish Nature Agency,  
Email: [blh@nst.dk](mailto:blh@nst.dk)

**Niels Henrik Simonsen,**  
Danish Hunters' Association,  
Email: [nhs@jaegerne.dk](mailto:nhs@jaegerne.dk)

**Henrik Lykke Sørensen,**  
Danish Nature Agency,  
Email: [HLS@nst.dk](mailto:HLS@nst.dk)

#### **THE NETHERLANDS**

**Sander Smolders,**  
Department of Nature, Landscape and Rural Area Ministry  
of Economic Affairs, Agriculture and Innovation,  
Email: [A.A.J.Smolders@mineleni.nl](mailto:A.A.J.Smolders@mineleni.nl)

**Marten Wesselius,**  
Official of the Province of Friesland,  
Email: [m.wesselius@fryslan.nl](mailto:m.wesselius@fryslan.nl)

#### **BELGIUM**

**Sarah Roggeman,**  
Government of Flanders, Agency for Nature and Forests,  
Email: [sarah.roggeman@lne.vlaanderen.be](mailto:sarah.roggeman@lne.vlaanderen.be)

**Christine Verscheure,**  
Natuurpunt (Birdlife International partner),  
Email: [christine.verscheure@scarlet.be](mailto:christine.verscheure@scarlet.be)

#### **INTERNATIONAL ORGANISATIONS**

**Sergey Dereliev,**  
UNEP/AEWA Secretariat,  
Email: [SDereliev@unep.de](mailto:SDereliev@unep.de)

**Angus Middleton,**  
Federation of Associations for Hunting & Conservation of  
the EU [FACE],  
Email: [angus.middleton@face.eu](mailto:angus.middleton@face.eu)

**Szabolcs Nagy,**  
Wetlands International,  
Email: [Szabolcs.Nagy@wetlands.org](mailto:Szabolcs.Nagy@wetlands.org)

#### **INTERNATIONAL EXPERTS**

**Fred Cottaar,**  
International Pink-Footed Goose Expert,  
Email: [fred.cottaar@tiscali.nl](mailto:fred.cottaar@tiscali.nl)

**Fred A. Johnson,**  
Southeast Ecological Science Centre,  
U.S. Geological Survey,  
Email: [fjohnson@usgs.gov](mailto:fjohnson@usgs.gov)

**Eckhart Kuijken,**  
International Pink-Footed Goose Expert,  
Email: [eckhart.kuijken@scarlet.be](mailto:eckhart.kuijken@scarlet.be)

**Jesper Madsen,**  
Aarhus University,  
Email: [jm@dmu.dk](mailto:jm@dmu.dk)

**Ingunn Tombre,**  
NINA (Norwegian Institute for Nature Research),  
Email: [Ingunn.Tombre@nina.no](mailto:Ingunn.Tombre@nina.no)

**James H. Williams,**  
Aarhus University,  
Email: [jhw@dmu.dk](mailto:jhw@dmu.dk)

## Annual cycle in monitoring, modeling and decision-making

