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REPORT AND RECOMMENDATIONS OF THE EGMP TAIGA BEAN GOOSE TASK FORCE AND WORKPLAN FOR 2020/2021

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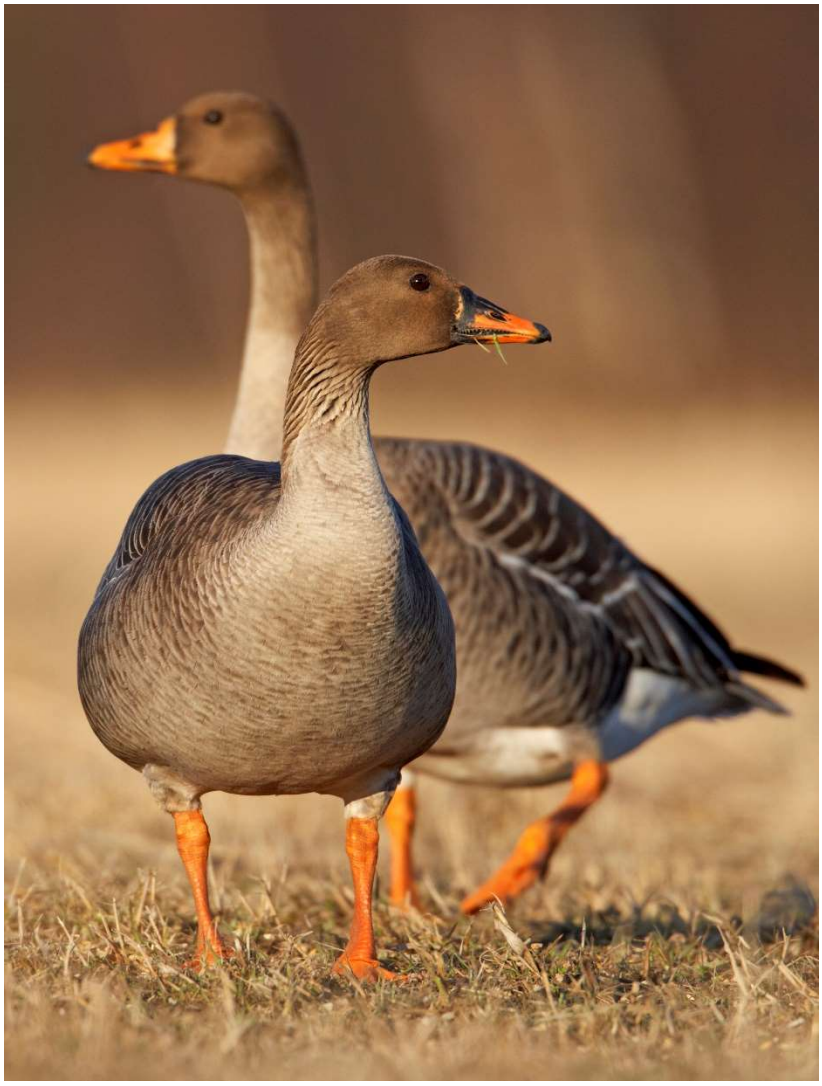

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The 5th Meeting of the AEWA European Goose Management International Working Group is taking place remotely in an online conference format.

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Introduction

According to Rule 29 of the European Goose Management International Working Group (EGM IWG) Modus Operandi, the EGM IWG may establish species and/or thematic Task Forces, as necessary, to deal with the preparation and coordination of decision papers and background documents, as well as to deal with other specific tasks as assigned by the EGM IWG.

The Taiga Bean Goose Task Force (TBG TF) was established, following the recommendations of the 2nd Meeting of the EGM IWG (EGM IWG2) in June 2017, in Copenhagen. Mr Mikko Alhainen was identified as the Coordinator for the TBG TF. The current membership of the TBG TF is indicated in Annex 1 to this document. In line with the Terms of Reference, the nomination of additional members to the Task Force is at the discretion of the National Government Representative of each Range State and the Coordinator of the Task Force.

At the 3rd Meeting of the EGM IWG (EGM IWG3) in June 2018, in Leeuwarden, the Netherlands, the TBG TF reported on the work progress since the establishment of the TF and presented recommendations to the EGM IWG, referring to document AEWA/EGMIWG/3.13/Rev.1. The Range States agreed on the extension of the period of the Workplan for the implementation of non-AHM related actions of the AEWA Taiga Bean Goose ISSAP from 2017-2018 until 2020 with small amendments, as recommended by the TBG TF. Moreover, the EGM IWG agreed on the establishment of a thematic sub-group to the Task Force including external goose monitoring experts for the development of a monitoring framework.

At the 4th Meeting of the EGM IWG (EGM IWG4) in June 2019, in Perth, UK, the TBG TF reported on the work progress since the EGM IWG3 and presented recommendations to the EGM IWG, referring to document AEWA/EGMIWG/4.11. Range States agreed on the development steps on monitoring and population assessment in each Management Unit, based on the work of the thematic sub-group's work between IWG3 and IWG4.

This document provides an overview of the work that has taken place since the EGM IWG4 and the recommendations and workplan for the implementation of the AEWA International Single Species Action Plan (ISSAP) for the Taiga Bean Goose for 2020-2022.

1. Meetings

Since no funding has been specifically allocated for the work of the TBG TF, communication and information exchange has been conducted via email, online meetings and the EGMP Workspace.

The Task Force has had a total of five meetings during the period between EGM IWG4 and EGM IWG5. Online meetings took place on 5 September 2019, 19 December 2019, 6 March 2020, 8 April 2020 and 29 April 2020.

2. Report of Key Activities

The work of the TBG TF was based on the mandates and tasks agreed at EGM IWG4.

Recommendations from EGM IWG4 are listed below and key outcomes to be delivered by EGM IWG5 are briefly described below. Other key achievements on the implementation of the TBG ISSAP are mentioned for each Management Unit.

2.1. Western Management Unit

Action 1

Increase of the number of GPS-tagged Taiga Bean Geese to assess the unknown staging and wintering sites, focus the monitoring activities on the right areas and provide information on possible risks associated with the Swedish hunting and spring derogation/conditional shooting. Put special focus on the GPS-tagging of the Norfolk group, which has experienced the most severe decline and whose current migratory patterns and threats currently remain unknown;

OUTCOME: Preparations were made for a catch in winter 2019/2020, however it was unsuccessful as the birds did not settle into a predictable routine.

Action 2

Continue age structure / juvenile proportion assessment in Slamannan and organise it in Jutland. In Norfolk, ageing of the birds can be challenging due to their late arrival;

OUTCOME: Age ratios have been assessed in Slamannan and ageing has been started in Jutland.

Action 3

Compile all existing data to combine with the new telemetry data for the assessment of key sites and combine with spatial data on the extent and distribution of spring derogation / conditional hunting;

OUTCOME: Forthcoming as researchers publish their results.

Action 4

Improve international coordination of the mid-winter counts. Immediate sharing of monitoring data and bird movements between monitoring experts to increase the chances of finding the birds during mid-winter counts.

OUTCOME: Information sharing has been improved.

Other key achievements on the implementation of the TBG ISSAP:

From the small breeding population in central Norway, faeces and feathers were collected (summer 2019) for genetical analysis. More detailed results are expected to be released as scientific publications.

2.2. Central Management Unit

Action 1

For the period of three years, the Central MU Taiga Bean Goose population size is being monitored in three seasonal counts:

(1) Autumn, (2) mid-winter and (3) spring counts. Together with previous datasets, they will provide the basis for further analysis of the optimal monitoring framework:

Table 1. October counts

Year	Not Separated	Taiga	Tundra	Total
2016	24085	43243	8251	75579
2017	6959	60327	9642	76928
2018	6344	58913	3040	68297
2019	20857	54700	5226	80793

In addition, age ratios were checked:

Table 2. Age ratio data

Year	Adults	Yearlings	Total Checked	Percentage of Young
2017	1795	135	1930	7,0
2018	1336	116	1432	8,0
2019	1181	435	1616	26,9

Table 3. January counts

Year	Not Separated	Taiga	Tundra	Total
2014	9241	23391	9330	41962
2015	7549	28748	1432	41367
2016	7574	31072	3691	42337
2017	10569	41737	3128	55434
2018	9738	26068	1139	36945
2019	7488	30534	1148	39170
2020	12719	23517	1690	37926

i) Continue autumn and January counts as part of the Swedish monitoring programs;

OUTCOME:

Swedish autumn and winter counts have been carried through as usual. We have experienced some problems with separating Taiga and Tundra Bean Geese during the counts, due to the mild winter. The geese rested further north in Sweden than usual, and the staff in these areas weren't used to identify sub-species. *Full report as an Annex 5 of this document.*

ii) Supported with funding spring counts based on voluntary efforts to cover essential coordination and travel costs and ensure successful monitoring;

OUTCOME:

Ulf Skyllberg reports 64 000 counted in February-March (unpublished).

iii) Consider further expanding the spring monitoring to spring staging sites in Finland and Denmark. A proposal to organise spring counts in Finland will be prepared, if considered necessary.

OUTCOME:

Information from Finland and Denmark is collected from available datasets. Well organised spring counts will be prepared, if considered necessary.

Action 2

An IPM is used to 1) estimate the true population size and 2) analyse which of the available censuses provides greatest value for effort and how to further strengthen the monitoring within the available resources, thus providing feedback to required monitoring efforts;

OUTCOME:

Finland (Finnish Wildlife Agency and Natural Resources Institute) funded the development of an Integrated Population Model (IPM) for the purpose of improving harvest management for the Central Management Unit of Taiga Bean Goose (*Anser fabalis fabalis*). Based on this, a progress report was prepared to be made available for the decision-making process during IWG5 (AEWA/EGMIWG/Inf. 5.16). Further development is foreseen during the second half of 2020, to be finalised by the end of the year.

Action 3

Harvest bag recording in Sweden and Denmark is further strengthened, and new ways of collecting harvest data on species and/or sub-species, subject to international quotas, is explored. Harvest bag recording shall cover regular hunting, conditional hunting and derogation shooting with the possibility to differentiate between forms of harvest. A harvest data estimation process will be developed to meet the schedule of the annual decision-making process of the EGM IWG.

OUTCOME:

In Denmark, the hunting season for Bean Goose is restricted both geographically and temporally to protect Taiga Bean Geese. Bean Goose is huntable only in three municipalities in the south-eastern corner of Denmark, and only from 1 September to 30 November, so most years the season is closed by the time the majority of Taiga Bean Geese reach the area. The last few years, hunters have been encouraged to send in heads of bagged Bean Geese for sub-species identification, but only very few hunters have done so. During the hunting season of 2018/2019, 654 Bean Geese were reported shot, but only nine heads were submitted for sub-species determination (eight Tundra Bean Geese and one Taiga Bean Goose). Data for the 2019/2020 season is not yet available. During the coming hunting season, the Danish Hunters' Association will collect heads again, this time combining volunteer contributions with a coordinated effort to acquire heads from professional game meat handlers. Geese will be assigned to sub-species in collaboration with Aarhus University.

Swedish Hunters' Association continues the collection of heads during regular and conditional hunting. The results show that the majority of geese are shot during conditional hunting to protect crops.

Other key achievements on the implementation of the TBG ISSAP:

During spring and summer 2019, 23 Taiga Bean Geese were GPS-tagged in Finland. Marking continues in spring 2020 with a goal to deploy 37 GPS-tags. Additionally, Taiga Bean Geese are marked with neckbands. The goal is to study detectability of birds from a helicopter on breeding grounds, coverage of Bean Goose counts during non-breeding period and movements of Taiga Bean Geese during breeding in Western Russia. Marking is done in collaboration between University of Turku, Natural Resource Institute Finland, Finnish Wildlife Agency and Ministry of Agriculture and Forestry.

The Taiga Bean Goose is included to the regional level Red List of the Karelia Republic in Russia, providing legal protection in the region.

2.3. Eastern 1&2 Management Units

Action 1

Secure funding for the project proposal compiled by the TBG TF and circulated to the Range States in May 2019;

OUTCOME:

No funding was secured for the proposed activities. The activities are still valid and new ways to provide resources to support activities in the Eastern MU's are explored. The Range States are encouraged to support TBG research financially.

Action 2

Designate a second coordinator, taking the lead on the implementation of the ISSAP and non-AHM workplan as well as monitoring in the Eastern 1&2 MUs. The Coordinator of Eastern MUs should have a good network in the region and should preferably be Russian-speaking, for more effective communication.

OUTCOME:

The TBG Task Force has discussed this issue several times. However, further work and consultation is required.

2.4. Other Key Achievements on the Implementation of the TBG ISSAP

Russia (*more detailed report as Annex 2 of this report):*

- In Russia, the Taiga Bean Geese of Eastern1 and Eastern2 MUs are now included in the federal Red Data Book. The intention is to protect them from hunting throughout their range in the Russian Federation and that areas of important habitat for the birds should be completely protected under state legislation (Order # 162 from 24 March 2020 of the Ministry of Natural Resources and Ecology of Russia, registered by the Ministry of Justice 02 April 2020). This represents a very important increase in the level of protection for the subspecies in Russia. However, Taiga Bean Goose is only fully protected in regions, which themselves have included it in their regional Red Books, e.g. the 3 west Siberian regions Yamalo-Nenets, Khanty-Mancy and Novosibirsk. This is an important achievement for the conservation of the Eastern populations. Special thanks to Sonia Rozenfeld for her determination, and to all other Russian scientists who have been working on this.
- Significant progress has been made on the research of migration routes and stopover sites of the Eastern Management Units using GPS-tagging in Eastern Germany and Yamal area. This work shall be further continued and strengthened to provide scientific basis for the establishment of a monitoring framework with a specific goal of assessing the population size of E1 MU.
- New key staging area was found on E1, based on GPS in the vicinity of Gorodishche village in Baykalovsky district, Sverdlovsk region. Birds stayed in Yugansky Nature Reserve during the summer.
- Further progress has been made on the population count development, especially in the Olonets region, where data is available on TBG occurrence in staging areas and in the harvest bag.
- Sub-species separation materials for Russian hunters has been shared at https://goosemania.ru/kak-otlichit-krasnoknizhnogo-gumennika/
- Ring-recovery analysis since 1960 to assess the past hunting pressure as explaining factor for population decline.
- New grant from Yamal-Nenets Autonomous Okrug Administration surveys and possible tagging in the western part of YNAO and in Yougansky State Reserve.

Germany

- Germany is starting a goose monitoring project with special focus on Taiga Bean Goose. Results of the ongoing newly established monitoring are foreseen to be published in 2 years.

Ukraine

- An analysis of all Ukrainian ornithological publications over the past 20 years, where *Anser fabalis* is mentioned (about 50 publications), as well as key publications from an earlier period has been done. As a summary: *Anser fabalis* is present in Ukraine during the spring and autumn migrations,

and sometimes in winter. Of the two sub-species, *A. fabalis rossicus* is the most numerous, *A. fabalis fabalis* is noted in small quantities. *More detailed report as Annex 4 of this report.*

- As new unpublished information, the Taiga Bean Goose has been observed in the North-East Ukraine in higher numbers in spring compared to autumn. It seems that autumn migration takes place north of Ukraine.

2.5. Other Tasks

Action 1

Guidelines (brochure) for separation of Tundra and Taiga Bean Goose are being prepared, disseminated and promoted to goose experts/counters/hunters to generate data on migration patterns and the proportions in harvest of the sub-species:

OUTCOME:

The guidelines for separation of Tundra and Taiga Bean Goose were finalised in April 2020 and language versions in English, Ukrainian, Finnish and Danish have been produced and disseminated. https://www.unep-aewa.org/en/publication/identification-guide-tundra-and-taiga-bean-goose

Action 2

Collection of datasets (pictures, DNA etc.) on sub-species to increase our understanding of how to differentiate between Taiga and Tundra Bean Goose:

OUTCOME:

During 2019, Bean Goose head samples were collected in Finland, Estonia and Sweden. The total number of collected heads was 18 from Finland and 76 from Estonia. From Sweden, around 1 000 bean goose heads have been collected during period of 2017-2019. Altogether, around 1 200 heads have been collected and DNA analyses are underway. Final results are expected by the end of 2020.

3. Workplan for the Implementation of non-AHM Related Actions (2020/2022)

The EGM IWG3 agreed on the extension of the period of the workplan for the implementation of non-AHM related actions of the AEWA Taiga Bean Goose ISSAP from 2017-2018 until 2020.

The TBG TF prepared a new workplan for the implementation of non-AHM related actions of the AEWA Taiga Bean Goose ISSAP from 2020 until 2022. The new workplan focused on essential enabling or focused conservation activities which are foreseen as realistic to achieve or make progress on within the next two years.

The non-AHM workplan for 2020/2022 is provided in the Annex 3 of this document.

Summary of the key activities of the non-AHM workplan for 2020/2022:

- Establish coordinated Taiga Bean Goose counts in Eastern 1 Management Unit, especially in Poland;
- Increase the number of GPS-tagged and neck-collared Taiga Bean Geese;
- Strengthen the harvest bag recording;

- Organise a campaign to raise skills and awareness of the goose hunters;
- Establish a national working group, if relevant, and develop a national prioritised 5-year work plan for coordinated implementation of actions relevant for the Range State.

3.1. Recommendations of the TBG TF for non-AHM Activities

1) Adoption of the non-AHM workplan for 2020/2022 and recommendation to actively raise funding from national sources to support the proposed activities in each Management Unit respectively.
2) Recommendation to foresee the continuation of at least October and March counts in the Central MU beyond 2021, as an established and secured monitoring framework in respective countries.
3) The Range States are encouraged to nominate experts to the Taiga Bean Goose Task Force. Official members from Estonia, Latvia, Lithuania, Belarus, Poland and Germany would make a valuable investment to Task Force's capacity. Involvement in the Task Force activities enables information sharing and coordination of activities as well as formation of a good overview of all the good progress made in the respective countries. Optimally a person from Eastern 1 Management Unit Range State could take the lead on the coordination of the monitoring framework to assess the population size of the Eastern 1 Management Unit.

4. Proposed decisions for Adaptive Harvest Management

1) Summary of the current situation and possible decision alternatives and steps on AHM at CMU. Please refer to the Table 4 of this document for more detailed information on the decision alternatives of the AHM development.
   - Proposed decision: Replacement of the population size estimate based on January count with the population size estimate provided by the Integrated Population Model (IPM) as the basis for the population status report and the AHM report & harvest quotas.
   - Proposed decision: Anniversary date of CMU population model will be moved from January to March, which is after most of the harvest has taken place and is therefore a better estimate of the population size prior to reproduction.
   - Proposed decision: Continuation of the Interim Harvest Strategy until the Range States have the capacity to adjust harvest regulations periodically (annually) in relation to agreed quotas and to provide sub-species level harvest bag records within the required timeline to enable true Adaptive Harvest Management implementation.
   - Recommendation: In light of achieved population target under updated information and better understanding, some harvest liberalisation may be permissible.
     i) Consider reassessing the current 3% harvest rate in relation to the current population size and population objectives. The IWG is requested to consider increased harvest rates in the range of 6 % to 10% adult harvest in comparison to 3% adult harvest.
     ii) As an alternative to fixed harvest rate as a basis for quota setting, the Interim Harvest Strategy provides an alternative to set a harvest target as an absolute number of birds, which is expected to balance average population size in relation to the average harvest. Setting a target harvest level has certain advantages over a fixed harvest rate as abundance reaches the target and the objective is no longer to increase the population size. The key advantage of setting a fixed harvest level is a stable hunting quota leading to less variable hunting regulations. A fixed harvest rate means annually varying quotas in relation to fluctuations of the population size. However, it should be

recognised that a fixed absolute harvest should only be used for short periods of time as the population status can change, thus potentially requiring a change in the level of harvest.

Decision structure of Taiga Bean Goose Adaptive Harvest Management development at Central Management Unit

Adaptive Harvest Management of Taiga Bean Goose Central Management Unit has several theoretical and few practical decision alternatives combing the existing elements of AHM.

Each of the alternative combinations have trade-offs and minimum requirements.

Available elements of TBG AHM

1. **Population size assessment:** January count **OR** Integrated Population Model (IPM)
2. **Anniversary date of population model:** January **OR** March
3. **Harvest Model:** Interim Harvest Model – fixed adult harvest rate **OR** Dynamic Harvest Model – periodically adjusted harvest rate to manage the population towards target population size.
   - Depending on the decided combination, further decision must be taken in terms on Harvest Strategy.
   - If decision is:
     a) **Interim Harvest Model:** Continuation of 3% Adult Harvest **OR** Harvest liberalization (to be defined once Population Status Assessment for 2020 has been published).
     b) **Dynamic Harvest Model:** Decision on weights/trade-offs between Population and Harvest objectives. The weight between the objectives partly determines the harvest level in relation to population size within the model.

Current agreed structure of the AHM, the recommendation of the Taiga Bean Goose Task Force for new decisions as well as Task Force's vision of the long-term goal on the AHM described in Table 4 on the following page.

Table 4. Current AHM structure, recommendation of the Taiga Bean Goose Task Force and its vision on the long-term goal for the AHM.

	Population size assessment	**Anniversary date of population model**	**Harvest model**	**Harvest strategy**	**Minimum requirements** (combined status of CMU range states) • Achieved • Under development
Status Quo, initial step towards true AHM	January count estimate	January	Interim Harvest Model	3% Adult harvest to enable population recovery while allowing limited recreational harvest	• Ability to restrict harvest to meet national quota • Well-functioning January count, covering the whole wintering range of CMU • Reliable harvest bag reporting at subspecies level in agreed timeline.
Development on 2020. TBG TF Recommendation.	Decision to use the **Integrated Population Model (IPM)**	Decision to use the **March anniversary date**	Decision to use the **Interim Harvest Model** until such time that minimum requirement of the Long-term Goal of the TBG AHM has been achieved, enabling true AHM framework to function effectively.	Decision on harvest rate/level	• Ability to restrict harvest to meet national quota • October, January and March counts in Sweden and Denmark • Reliable harvest bag reporting at subspecies level in agreed timeline.
Long-term Goal, true AHM framework, enabling the reduction of uncertainties through iterative modelling, decision making, monitoring and assessment.	Integrated Population Model (IPM)	March	Dynamic Harvest Model	Further decision to be made on the trade-offs between Population and Harvest objectives	• Ability to periodically (annually) adjust the harvest level nationally within the agreed timeline, to meet the internationally agreed quotas. • Well-functioning and long-term secured October and March counts • Reliable harvest bag reporting at subspecies level in agreed timeline. *Optimally also new updated information on survival and reproductive rates*

TBG TF Workplan for 2020/2021

The Taiga Bean Goose Task Force foresees to continue active working to support the implementation of the ISSAP, proposed non-AHM workplan and recommended activities.

A total of six meetings is planned for the period between IWG5 and IWG6:

1) August 2020: Organisation and further planning of the TF activities based on the outcomes of the IWG5;
2) November 2020: Update on agreed tasks and progress in relation to non-AHM workplan and other agreed work;
3) January 2021: Update on agreed tasks and progress in relation to non-AHM workplan and other agreed work;
4) March 2021: Preparation of the IWG6 documents;
5) April 2021: Finalisation of the IWG6 documents;
6) June 2021: Face-to-face meeting back-to-back with IWG6.

Annex 1. Membership of Taiga Bean Goose Task Force

Table 5 below shows the current membership of the Taiga Bean Goose Task Force per Range State.

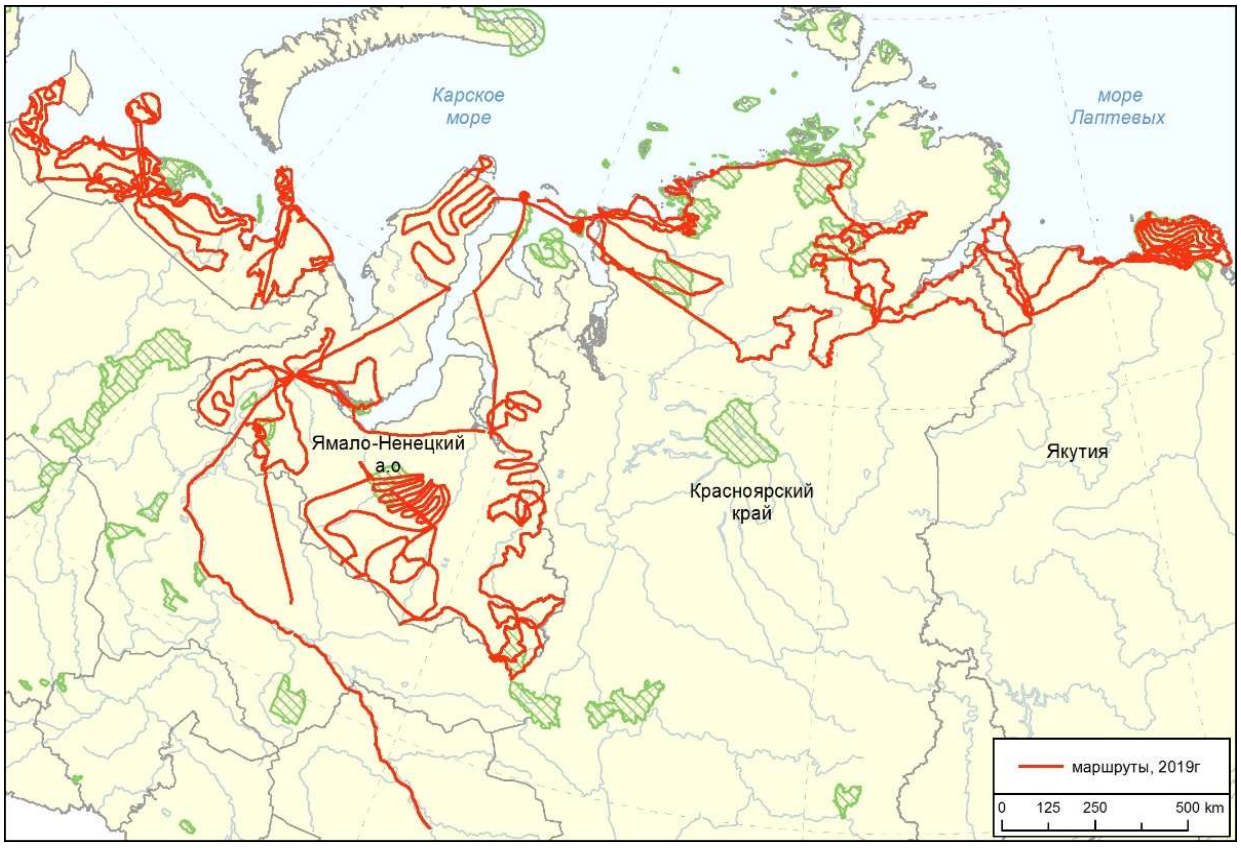
Table 5. Membership of Taiga Bean Goose Task Force as of May 2020

Country	Representative	Affiliation
Denmark	Prof. Anthony Fox	Aarhus University
	Ms Iben Hove Sørensen	Danish Hunters Association
	Mr Knud Flensted	BirdLife Denmark
	Mr Boris Schønfeldt	BirdLife Denmark
Finland	Mr Mikko Alhainen (Coordinator)	Finnish Wildlife Department
	Mr Toni Laaksonen	Natural Resources Institute Finland (Luke)
Norway	Dr Ingunn Tombre	Norwegian Institute for Nature Research, Department of Arctic Ecology
Sweden	Mr Per Risberg	Swedish Environmental Protection Agency
Ukraine	Dr Olesya Petrovych	Ministry of Ecology and Natural Resources of Ukraine
	Dr Vasyl Kostiushyn	Institute of Zoology NAS of Ukraine, Department of Monitoring and Conservation of Animals
United Kingdom	Ms Morag Milne (rep for Scotland)	Scottish Natural Heritage
	Mr Michael Meadows (rep for England)	Natural England
	Mr Carl Mitchell	Wildfowl & Wildlife Trust
Wetlands International	Dr Szabolcs Nagy	Wetlands International
Russian Bird Ringing Center	Ms Sonia Rozenfeld	Russian Bird Ringing Center
EGMP Data Centre	Dr Henning Heldbjerg	Aarhus University
EGMP Data Centre	Dr Fred Johnson	Aarhus University
AEWA Secretariat	Mr Sergey Dereliev	UNEP/AEWA
AEWA Secretariat	Ms Eva Meyers	UNEP/AEWA

Annex 2. Summary of key activities in Russia, April 2020

Sonia Rozenfeld

1. Including E1 and E2 populations of TBG in federal Red Data Book - Order of the Ministry of Natural Resources of Russia from 24.03.2020 № 162 (registered in 02.04.2020 № 57940).



Picture 1. Aerial counts in 2019

2. Establishment of the monitoring in Olonets (Karelia)

We counted Bean Geese between 21.04 and 15.05.2019 on their spring migration stop-over site in the fields around the town of Olonets. Of the 4646 Bean Geese identified on sub-species level, 308 individuals (6.6%) were Taiga Bean Geese (TBG). This ratio enabled extrapolation to the number of individuals of this sub-species among all Bean Geese that used the site daily. In April, during the period of mass migration, 41 (21.04) to 777 (23.04) TBG fed on this staging site, on average 293 individuals per day. In the first half of May, the number of TBG varied from 0 (9, 12 and 13.05) to 183 (10.05), 26 birds per day on average. The number of Tundra Bean Geese (*Anser fabalis rossicus*) was much higher and ranged from 1198 (21.04) to 6366 (28.04) individuals, on average 3628 per day. In the first half of May, this number varied from 10 (15.05) to 1424 (1.05) individuals, on average 382 per day. Taiga Bean Geese migrated five days earlier than Tundra Bean Geese.

TBG were observed on fields, in small isolated groups of 3 to 7 individuals, rarely in pairs or as single individuals in mono-species or mixed groups with Tundra Bean Geese and White-fronted Geese (*A. albifrons*). Larger groups occurred very seldom; we found three compact groups of TBG (10, 18 and 30 individuals) in a flock of 150 Bean Geese. Most Bean Geese (45.9% without a sub-species division) fed on crops of perennial grasses, 28.3% on ploughed fields of potatoes, cabbage and grain crops, 24.4% on the stubble of cereal crops, and 0.4% on winter crops. Based on the distribution of crops by area (more than 70% of the land on the stop-over site was occupied by perennial grasses, about 20% by stubble, and less than 10% were ploughed), it can be concluded that Bean Geese preferred to feed on the ploughed land and stubble. Most of the TBG (40,3%) fed on ploughed fields, 32.8% on crops of perennial grasses, and 26.9% on stubble.

At the beginning of the spring hunting season, which is open in the study region from 1 to 10 May, most of the TBG usually left the site; some of those that remained were shot. In spring 2019, in the Olonets District of Karelia, the total hunting bag was estimated at 1370 *Anser* Geese, about 37% of which were Bean Geese. We identified 36 Bean Geese bagged in 2013–2019, and two of them (5.6%) were TBG. Based on our estimations, about 30 TBG were bagged in the Olonets District during the spring of 2019.

To protect TBG, as well as other geese, the dates of the spring hunting season should be shifted to a later period. It is also necessary to ban hunting on the overnight sites and to change the status of the territory banned to hunting to that of a strictly protected area.

3. Satellite tracking data analysis of E2 sub-population

The main staging, molting, nesting and wintering sites were identified.

Picture 2. Satellite tracking data for E2 sub-population.

4. Cooperation with hunters, including the preparation of TBG identification materials on the special site https://goosemania.ru/kak-otlichit-krasnoknizhnogo-gumennika/

5. Ring recoveries analysis

The processing of ring recoveries of Bean Geese ringed since 1960 wintering in the Netherlands, where a significant sub-species of ringed birds was identified on the sub-species level is being carried out. Most of the recoveries occurred on the territory of the former USSR, mainly in the Russian Federation. The hypothesis about the greater impact of the hunting press on the TBG sub-species (in comparison with the tundra sub-species) is tested by comparing the survival times of the birds of the two sub-species and analysing the spatial and seasonal distribution of ring recoveries associated with hunting. We discuss the shorter periods of survival of the TBG (in comparison with the tundra sub-species); a multi-year shift in the timing of shooting towards spring hunting; a sharp decrease in the number of TBG in Western European wintering grounds (in the Netherlands) and a possible change of the regions of wintering of TBG (an increase in the value of Mediterranean wintering sites).

6. A grant from Yamal-Nenets Autonomous Okrug Administration has been received for identification of the nesting areas of TBG in the western part of YNAO and in Yougansky State Reserve with possible tagging of the nesting birds. Field work is planned in July.

Annex 3. Biannual non-AHM Workplan for 2020-2022 for the implementation of the Taiga Bean Goose ISSAP

Table 6. Biannual non-AHM Workplan prepared by the Taiga Bean Goose Task Force for 2020-2022, to be considered by the EGM IWG.

Western, Central, Eastern 1 & Eastern 2 Management Units			
	Action/Activity	**Range State / Management Unit / Stakeholder**	**ISSAP mandate**
1	**Establish coordinated Taiga Bean Goose counts in Eastern 1 Management Unit, especially in Poland.** **Target:** Functioning annual mid-winter (January) census of Eastern 1 Management Unit of Taiga Bean Geese on known key wintering areas (Germany and Poland) to generate population size estimate of the Eastern 1 Population. Development of spring and autumn counts on staging areas to better understand their exposure to hunting at other times of year, further strengthen the population size estimate and to establish a sampling protocol for generating annual age ratios from autumn staging areas. **Concrete action points:** a) In close coordination with on-going Taiga Bean Goose monitoring project in Germany, a Taiga Bean Goose monitoring in January is established in Poland utilising the existing GPS-data to cover previously unknown wintering sites in the area. b) The Range States of Eastern 1 MU are encouraged to raise funding for a project to cover the costs of monitoring framework establishment in Poland and adjacent areas of neighbouring relevant range states hosting Taiga Bean Goose during the times of the monitoring activities.	Eastern 1 Management Unit Range States (Primarily Poland and Germany) National authorities Bird and hunting organisations.	1.1.1.Develop and implement international adaptive harvest management framework. Obey the principles of sustainable harvest management and decision-making framework for harvest management as described in the revised AEWA Guidelines for sustainable harvest of migratory waterbirds adopted by MOP6. Obtain accurate estimates of (sub) population size, and robust demographic and harvest data.
2	**Strengthen the harvest bag recording** **Target:** Reliable Bean Goose harvest data with estimated Taiga Bean Goose proportion will be provided within the schedule of the annual decision-making process of the EGM IWG. Harvest bag recording shall cover regular hunting, conditional hunting and derogation shooting with the possibility to differentiate between forms of harvest.	National hunting and conservation authorities and hunting NGO's of those range states that lack the capacity to provide data annually.	1.1.1.Develop and implement international adaptive harvest management framework. Obey the principles of sustainable harvest management and decision-making framework for harvest management as described in the revised AEWA Guidelines for sustainable harvest of migratory waterbirds adopted by MOP6. Obtain accurate

	Concrete action point: Further develop or establish (electronic, citizen science-based) harvest bag recording system for waterbirds (focus on geese) with possibility to collect samples (pictures, heads) for sub-species and age ratio determination by end of 2021.		estimates of (sub) population size, and robust demographic and harvest data.
3	**Increase number of GPS tagged and neck collared Taiga Bean Goose** **Target:** Minimum of 40 GPS deployed annually both in Western & Central and Eastern 1&2, totalling at least 80 GPS tagged Taiga Bean Goose annually and 160 by the end 2022. Deploy neck collars to all captured Taiga Bean Geese for which GPS is not available. Objective is to provide information on: - migration routes & timing and estimation of monitoring coverage to enable improvement of monitoring framework to estimate the population size in each of the Management Units. Focus on Western and Eastern 1 MU; - breeding distribution of the population between the Range States and breeding success estimation. Focus on Central MU and - survival rates to assess the viability of the population. All MU's. It shall be noted that for scientifically robust estimation of above-mentioned points requires a sample of several hundred GPS-tagged birds which are captured as a random sample optimally in the wintering areas. This can be seen as a 5-year goal to provide information for the forthcoming update of the Taiga Bean Goose ISSAP in 2025. With annual tagging of at least 80 Taiga Bean Geese would lead to total of at least 400 tagged birds during 5-year period. **Concrete action points:** a) Explore research funding for 1) the opportunities to strengthen international co-operation on TBG at respective MU; 2) the purchase on average at least 6 GPS tags annually at each range state to be provided for scientists who are capable of catching TBG. The Range states are encouraged to establish multi-stakeholder funding framework for the purchase of the GPS tags involving nature, bird and hunting NGO's and	All Range States of TBG. National authorities Bird and hunting organisations	1.1.1.Develop and implement international adaptive harvest management framework. Obey the principles of sustainable harvest management and decision-making framework for harvest management as described in the revised AEWA Guidelines for sustainable harvest of migratory waterbirds adopted by MOP6. Obtain accurate estimates of (sub) population size, and robust demographic and harvest data.

	their funding instruments as well as corporations and individuals willing to sponsor GPS tagging for example in the form of an 'adopt a Taiga Bean Goose' campaign.		
4	**Organise a campaign to raise skills and awareness of the goose hunters.** **Target:** Active goose hunters have been reached by end of 2021 with popularized communicational materials delivering key messages about the importance of: • Flyway Management; • Species identification (ID brochure produced by TBG TF); • Status of TBG; • Role of harvest bag recording; • Good hunting practises and reduction of crippling. **Concrete action point:** In co-operation with national hunting NGO's a press release and other information activities will be carried out at national/regional level as relevant to TBG	All Range States Hunting NGO's & hunting administrations	1.1.3. Raise awareness amongst hunters on the need and ways to reduce crippling 1.2.2. Raise identification skills and awareness of the status of different goose species amongst hunters
5	**Establish a national working group, if relevant, and develop national prioritised 5-year work plan for coordinated implementation of actions relevant for the Range States** **Target:** Each Range State has thematic group of decision makers, researchers and stakeholders to support national level implementation of TBG ISSAP National working group has identified essential national activities and prepared a 5-year concrete action plan to implement TBG ISSAP. **Concrete action points:** a) National Working Group is active by end of 2020. If an EGMP National Working group already exists in the Range State, activities should be coordinated, and the Taiga Bean Goose discussion optimally takes place in shared EGMP Working Group alongside other populations subject to international coordination.	All Range States	1.2.1. Strengthen enforcement on persecution through intentional poisoning, harvest of moulting birds and shooting outside of season 1.3.1. Maintain and strengthen predator control measures in breeding and moulting areas 1.4.1. Maintain and strengthen alien predator control and eradication measures in breeding and moulting areas 1.5.1. Comply with AEWA provisions on the phasing out of lead ammunition for hunting in wetlands 1.6.1. Minimise oil pollution by strengthening enforcement of rehabilitation of oil stations 2.1.1. Introduce seasonal reserve protection at key staging and breeding areas 2.1.2. Involve local stakeholders in the voluntary reduction of human access to key breeding areas in critical periods

	b) Develop National 5-year action plan by IWG6 in 2021 for implementation of relevant ISSAP actions, where concrete progress is possible in respective range state. c) Provide compact annual reports on the implementation of the National plan until 2025 when TBG ISSAP is foreseen to be updated. d) EU-countries: Active involvement of national CAP planning process to include ISSAP Actions 2.2.1, 3.2.1 and 3.4.1.		2.2.1. Maintain the unharvested-fields-for-birds programme within the Common Agricultural Policy (CAP) of the European Union 3.1.1. Continue the adaptation of forestry operations to take into account wildlife, in particular Taiga Bean Goose 3.1.2. Continue restoring mires used by Taiga Bean Geese that have been affected by past drainage 3.2.1. Maintain grassland restoration as part of CAP, in agricultural policies and actions to restore suitable grasslands as feeding habitat in key staging areas. 3.3.1. Take account of Taiga Bean Goose breeding, staging and wintering habitats in the planning of new oil and gas and renewable energy developments

Annex 4. Taiga Bean Goose *Anser fabalis* in Ukraine

Brief overview of publications and some unpublished data

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An analysis of all Ukrainian ornithological publications over the past 20 years, where the *Anser fabalis* is mentioned (about 50 publications), as well as key publications from an earlier period, showed the following:

There are just a few publications specifically dedicated to the *A. fabalis*. The number of publications devoted to geese as a whole, which also includes *A. fabalis*, is also small. The bulk of the publications simply mentioned the occurrence of this species among other bird species in certain locations.

There are no national counts of this species. Regular observations of migrations of this species are being carried out now or were carried out in the recent past only in the north-eastern part of Ukraine - Chernihiv and Kharkiv regions.

Anser fabalis is present in Ukraine during the spring and autumn migrations, sometimes in winter. Of the two sub-species, *A. fabalis rossicus* is the most numerous, *A. fabalis fabalis* is noted in small quantities. The species was observed in almost all regions of Ukraine, but in different numbers. The biggest number of these birds is recorded in the northern regions, both in the west and in the east of the country. In the central regions, it occurs much less frequently, in the southern regions (the Azov-Black Sea region) - irregularly and in small quantities, and sometimes in wintering there (Andryushchenko et.al, 2019).

According to some estimates, during the period of migration, 150 to 300 thousand birds fly through Ukraine (Poluda, 2018). In the spring, there are much more birds than in the autumn. Although this is only an expert opinion on total number of migratory birds, some local monitoring data support this assumption. Thus, according to unpublished data of S. Glushchenko, which conducts surveys of geese on spring migration in the Desna floodplain on the border of Sumy and Chernihiv regions (northeast of the country) in 2013-2018 - the number of registered birds was from 3135 to 38050 birds per season. In 2005, at the Krasnopavlovsk reservoir (Kharkiv region, east part of the country) were counted 103680 *A.fabalis*. On some other reservoirs of Kharkov and Donetsk regions of the region in the period 2002 – 2017 were counted from 1460 to 38000 birds in each of the examined reservoirs. However, it should be noted that after 2010 the number of geese in this region decreased significantly. (M. Banik, unpublished data).

The beginning of spring migration depends on the course of winter. In prolonged winters, the dates of the migration are shifted to later ones. Typically, the beginning of migrations is the last decade of March (very rarely the end of February), the peak of migration is the first decade of April, and the end of migration is the first decade of May. The average dates of arrival of birds over the past 25 years have not changed. Autumn migration takes place in October - November.

In spring, migrating birds enter Ukraine through the Transcarpathian region. Crossing the Carpathians, they fly to the east and north-east directions, through the northern and central regions of Ukraine. Birds that have reached the eastern regions of the country are turning northeast, towards their nesting sites in Western Siberia. In autumn, they fly back along the same route. At the same time, it should be noted that autumn migration is different from spring - there is no mass transit migration and there are no large concentrations of birds in water bodies where they are observed in spring. It is assumed that the bulk of the birds during the autumn migration fly north of Ukraine, moving straight to the wintering places (Banik, 2009; Poluda, 2018).