Second meeting of the EUFORGEN working group identifying genetic aspects in production and use of forest reproductive material. Collecting scientific evidence to support the development of guidelines and decision support tools.)

Warsaw, Poland, 20–22 June 2017

1 Opening of the meeting

J. Kowalczyk welcomed the participants to the Forest Research Institute in Warsaw.

J. Czerepko, director of the Polish Forest Research Institute, expressed his gratitude to the working group for choosing the institute for the meeting. He highlighted that the working group activities also reflect the approach of the institute and therefore indicated strong interests in the final product of the working group. He gave an introduction of the structure of the institute and briefly explained the political and organizational changes throughout the last 87 years since the Forest Research Institute was established. Lastly, he wished the working group a successful and fruitful meeting.

On behalf of EUFORGEN, M. Bozzano thanked J. Czerepko for the opportunity of conducting the meeting in the institute.

M. Bozzano welcomed the meeting participants on behalf of the secretariat and presented the agenda of the meeting. K. Himanen, chair of the working group, welcomed the participants at the meeting, which was an important touchpoint in the development of the working group's work. The agenda was accepted with minor amendments.

M. Bozzano, N. Lauridsen and K. Himanen were nominated as rapporteurs of the meeting.

1.1 EUFORGEN update

M. Bozzano gave an update on recent activities of the EUFORGEN programme since the last working group meeting. He highlighted that Austria and Belgium had recently re-joined the programme and that Spain was about to re-join. These countries were invited to contribute to the working group activities.

M. Bozzano also updated the participants of the working group on the progress of the other two working groups operating during the current Phase of EUFORGEN. The working group that reviews the indicator 4.6, submitted a draft revision of the indicator taking into account a number of factors to better describe the *in situ* conservation progress of native species in the countries. The working group developing a decision support tool for the management of the GCUs' network would meet for the second meeting in Zürich, Switzerland the 28–31 August 2017.

2 Update on the working group activities

M. Bozzano reminded the working group members of the mandate given by the Steering Committee, which is to:

- Document the production chain of FRM and examine how genetic aspects are affected
- Make recommendations on how to improve existing schemes for tracking and recording FRM used.
- Define alternative choices of regeneration approaches (e.g. compare advantages of artificial vs. natural regeneration in the face of climate change).
- Analyse establishment techniques and use of FRM (e.g. how to ensure FRM used is sufficiently diverse).

The work builds upon the report of the Phase IV working group on "Use and transfer of FRM in Europe in the context of climate change" and includes a review of the results of the EUFORGEN Phase III Forest Management network.

He gave an overview of the activities that the working group had already achieved, including contribution to the GenTree stakeholders event where various stakeholders identified the critical points throughout the FRM production chain. Furthermore, during the first meeting, each member contributed with a review of national rules and regulations on genetic aspects regarding the use and production of FRM.

M. Bozzano summarised the working group activities by going through the draft outline and through the preliminary recommendations developed during the first meeting.

The draft outline of the working group's report was presented at the EUFORGEN Steering Committee, which clarified that the working group is expected to create a publication which will later be used as a basis for the development of specific products, for various sectors. The working group welcomed this suggestion and agreed to concentrate on developing a publication. The next step - to develop target-specific products and recommendations - will then be handled in collaboration with communication specialists, either by the same group or another working group. Target-specific products for various actors in the use and production chain should all be referenced to the publication that this working group will develop. It was noticed that some actors in the chain are closely related and thus these may need to have access and be aware of each other's guiding products and recommendations.

3 Related initiatives

3.1 update on SUSTREE Project

D. Gömöry presented the SUSTREE[1] project promoting climate change adaptation of forest ecosystems. The project consists of eight partner institution from six countries of Central Europe that share their expertise to enable transnational management of FGR. The objective of the cooperation is to identify endangered forest genetic diversity and to discuss cross-boundary seed transfer to use the best genetic material fit for climate change in the forests of Central Europe. Close collaboration with forest enterprises ensures real-time implementation of the research project outcomes. Tools and apps for practitioners will be developed, based on models of the adaptive capacity of trees and their seed provenances. Transnational seed recommendation schemes in climate change are expected to support forest nurseries to meet the need of a changing climate. The aim is to demonstrate promising strategies for adaptive management of forests, building on transnational seed transfer regulations.

D. Gömöry pointed out that the objective of the working group and the SUSTREE project are very similar. However, SUSTREE is only working in six countries that have similar environmental conditions and yet the project faces many challenges due to varying national situations and regulations.

The working group members thanked D. Gömöry for the exhaustive presentation and agreed that the working group would collect scientific evidence that in the future may be used to support the development of guidelines and decision support tools, as the ones developed by the SUSTREE project. Anyhow, the focus of this working group would be on identifying the genetic aspects in production and use of forest reproductive material.

3.2 Existing guidelines in Belgium

A. Servais presented examples of how forest genetic diversity is managed in Belgium, as well as some technical and practical measures to guide the seed collection. The objective of these different guidelines is to improve timber production through genetic improvement of FRM. A. Servais emphasised the importance of considering the economical aspect when promoting genetic diversity. He also underlined that the regulative guidelines are successfully taken up by policy-makers in Belgium.

The participants congratulated A. Servais on the inspiring work.

[1] www.interreg-central.eu/SUSTREE

4 Review of the draft chapters of the working group's report

Each sub-chapter was presented by the designated leading author. Presenters identified impediments or limitations in their work and sought advice from other meeting participants. The structure of the report and the scope of the content were discussed. Participants gave feedback on each chapter and additional collaborations were agreed.

Presentations were made in accordance with the outline of the report (see annex 2)

The Authors of the non-drafted chapters were encouraged to finalise their work in due time.

During the discussion, it was agreed that:

- The aim of the working group is to collect scientific evidence, while the dissemination material would be developed at a later stage, based on the final report of the working group.
- Country and regional case studies should be used only when needed to better explain issues, while the overall report should give a thorough overview of the situation across Europe. It was agreed that the final text should be a narrative rather than a list of case studies.
- A glossary of terms should be included (or referenced) in the final report.
- The whole report will be reviewed and standardized at a later stage.

To better capture the scope of the working group's task, the participants agreed to change the title of the report to: *Genetic aspects in production and use of forest reproductive material. Collecting scientific evidence to support the development of guidelines and decision support tools.*

Additional authors were welcomed to join the sub-groups. Especially, where there is still a lot of work to do. The working group members were generally encouraged to contribute by referring articles to support the other authors' sub-chapters.

4.1 Identification of the origin of forest reproductive material of European beech in Slovenia: an expertise for civil public service in 2016

To complement the chapter on traceability, H. Kraigher presented an example from Slovenia, where seed falsification had been successfully detected with help of genetic markers.

Following a spruce bark beetle gradation in 2015 and 2016, there was an increased request for *Fagus sylvatica* seeds in 2016.

The main seed dealer in Slovenia was marketing these seeds in 2015, after the ice-sleet damages in 2014. H. Kraigher explained how the Slovenian Forest Institute developed a

protocol, using molecular methods, to compare samples from seed stands where the seeds were declared to have been collected and the commercialized seeds. The exercise revealed that the seeds were coming from a source different from what was declared.

H. Kraigher concluded reporting the successfulness of the use of microsatellites and the applied methods to identify genetic diversity and identity of forest reproductive material. The study is pending publication in the Slovenian forestry professional journal (Westergren, Bajc, Finžgar, Božič, Kraigher).

4.2 Identification of gaps and needs

After the presentations, the working group went through the outline to enhance the logical order by restructuring the content and identifying topics which had not been covered. Titles and sub-titles were reformulated to specify the authors' focus, the authorships were revised and meeting participants volunteered to contribute to the various chapters and sub-chapters.

Visual materials, such as figures and photos, are welcome to complement the text whenever they support its understanding. However, only a limited amount of visuals should be included not to lengthen the report excessively. Annexes can be added as references when needed and appropriate.

Before wrapping up the meeting, the working group members discussed and coordinated further work within the writing groups.

After the meeting, all authors would be updated on the restructured outline and reconfirm their authorship.

5 Next steps before the next meeting

The purpose of the next and final meeting will be to analyse the revised material to identify eventual gaps and needs for improvement. In addition, during the next meeting, the working group members will formulate recommendations.

The drafting groups are encouraged to coordinate internally, in order to submit the revised drafts by **13 October 2017**. All writing group leaders are responsible for coordinating the work and sending the final draft to the secretariat.

The writing groups were encouraged to copy the secretariat in their correspondence to allow the secretariat to follow the activities and development of the work. The secretariat will remind the writing groups about the deadline.

After the deadline, the secretariat will circulate the collected documents. The sub-chapters will be kept separately for easier review and correction and only at a later stage will they be merged into one document.

Only after the working group members feel confident about the product, will it be circulated to e-mail contributors.

6 Wrap up of the meeting

All nominated experts and e-mail contributors will receive updates on the progress of the working group.

The next meeting will take place on 21 – 23 November 2017. It will be similar in length, from noon on Tuesday till noon on Thursday.

The next meeting will take place in Slovenia, or Italy, the Secretariat will identify the most suitable venue in consultation with local organizers in due time.

K. Himanen warmly thanked all the participants for the fruitful meeting. She highlighted that the reorganisation of the outline of the report had clarified further work to the working group members. She expressed special thanks to the EUFORGEN Secretariat and J. Kowalczyk for organising the meeting. K. Himanen then officially closed the meeting.

Annex 1: Agenda of the meeting

20 June	
	Transport from airport to meeting venue by taxi
13.00	Lunch (sandwiches at the meeting venue)
14.00	Opening of the meeting ● Welcome opening from host (**J. Kowalczyk**) ● Introduction to the meeting (**M. Bozzano**) ● Adoption of the agenda ● Nomination of rapporteurs
14.15	EUFORGEN update and feedback from the Steering Committee on the draft outline of the report (**M. Bozzano & K. Himanen**)
14.30	• Brief overview of the SUSTREE project (**D. Gömöry**) • Brief overview on existing guidelines or consolidated practices on the production and use of forest reproductive material that incorporate genetic aspects in Belgium (**A. Servais**)
15.00	**Session 1 update on development of the guidelines** **Chapter 2 Artificial vs. natural regeneration in the face of climate change** a. Timeframe: how fast can we buffer effects of climate change/foster adaptation by using natural vs artificial regeneration (**D. Gömöry**) b. Influence of site management practices (**V. Schneck**) c. Enrichment planting (**Friis Proschowsky**) d. What diversity to monitor/use? What markers (neutral vs adaptive) risks of using homogeneous FRM with regard to resilience (**S. A'Hara**)
16.00	Coffee/tea break
16.30	**Chapter 3 Production chain of FRM** All sub groups will present the current draft and progresses for all the 3 sub-chapters: a. Assessment of needs and purpose (**S. Bordács**) b. Identification of basic material and establishing/approval of sources c. Management measures of basic material d. Collection Production environment [included in all points below] i. Which category 1. Uncertified (**K.Himanen**) 2. Certified a. Source identified (**T. Maaten**) b. Selected (**M. Ivankovic**) c. Qualified (**D. Gömöry / S. Bordács**) d. Tested (**V. Schneck**) ii. Breeding effects on basic material (**Gömöry + Bordács + Ivankovic**) iii. Conservation strategy (**Gömöry + Bordács + Ivankovic**)
18.00	Wrap-up of the day (M. Bozzano)
19.00	Dinner at the hotel

21 June	
8.30	Walk from the hotel to the meeting venue
8.45	Synthesis of main points from previous day (M. Bozzano)
9:00	e. Processing and storage (**A. Pilipovič**) f. Nurseries practices (**K. Himanen**) g. Transport and treatment during transport (**S. Bordács**) h. Verification of origin/control systems (**S. Bordács**)
10.30	Coffee/tea break
11.30	i. Choice of establishment method (**R. Proietti**) j. Planting and sowing (**K. Himanen**) k. Traceability (**H.Liesebach**) • Identification of forest reproductive material origin of European beech: an expertise for civil public service in 2016 (**H. Kraigher**)
13:00	Lunch at Hotel Lesna Polana (IBL)
14:00	**Chapter 4 Analysis**: the use of FRM and available tools for choices (**J.Kowalczyk**)
16:00	Coffee/tea break
16.30	What is missing? Identification of gaps and needs (M. Bozzano) Working in sub-groups
18:30	Wrap-up of the day (M. Bozzano)
19.00	Social event: bonfire at IBL

22 June	
8.30	Walk from the hotel to the meeting venue
8.45	Synthesis of main points from previous day (M.Bozzano)
9:00	Finalisation of the working group tasks ● Discussion
10.30	Coffee/tea break
11:00	Next steps before the third meeting ● Tasks and deadlines
12:15	Wrap-up session ● Any other business ● Date and place of next meeting
13:00	Lunch (sandwiches)
13:00-14:00	Transport to the airport, as needed

Annex 2: Revised outline of the working group report

(Revised title) Genetic aspects in production and use of forest reproductive material. Collecting scientific evidence to support the development of guidelines and decision support tools

Chairs: **Himanen (Finland)**
[drafting Authors are in square brackets [], leading authors are in **bold** . Leading Author are responsible to initiate the drafting process and to ensure the draft are delivered in due time]

Executive summary

0. **Preface** [**Bozzano (Secretariat**)]

1. Introduction [will be elaborated at a later stage]

2. Production chain of forest reproductive material

2.1. **Assessment of needs and purpose** [**Bordács (Hungary**) Wolter (Luxembourg) Servais (Belgium)]

2.2. Identification of basic material and establishing/approval of sources //Management measures of basic material //Collection

2.2.1. Types of basic material

2.2.1.1. Seed sources[Bordács (Hungary), Ivankovic (Croatia), Himanen (Finland) **Maaten (Estonia)** Sperisen (Switzerland) (Slovenia)]

2.2.1.2. Stands [**Ivankovic (Croatia)** Guibert/Ducousso (France) Sperisen (Switzerland) Liesebach (Germany) Yüksel (Turkey), Proietti (Italy) Brynjar (Iceland) (Slovenia)]

2.2.1.3. Seed orchards[Himanen (Finland) **Gömöry (Slovakia)** Guibert/Ducousso (France) Tollefsrud (Norway) Liesebach (Germany) Kowalczyk (Poland) Uggla (Sweden) Brynjar (Iceland)]

2.2.1.4. Parents of families [**Gömöry (Slovakia)** Guibert/Ducousso (France) Tollefsrud (Norway) Kowalczyk (Poland) Uggla (Sweden) Brynjar (Iceland)]

2.2.1.5. Clones and clonal mixtures **Bordács (Hungary)** Pilipovič (Serbia) Kennedy (Ireland) Skulason (Iceland) Himanen (Finland)

2.2.2. Testing approaches [Pilipovič (Serbia) **Schneck (Germany)** Kowalczyk (Poland) Bordács (Hungary)]

2.2.3. Uncertified [**Himanen (Finland)** Maaten (Estonia) (Slovenia) Gömöry (Slovakia) Bordács (Hungary)]

2.2.4. Breeding effects on basic material including conservation strategy [Tollefsrud (Norway) Friis Proschowsky (Denmrk**) Gömöry (Slovakia)** Bordács (Hungary) Ivankovic (Croatia) Proietti (Italy) Frýdl (Czech Republic)]

2.3. **Processing and storage of seeds** [**Pilipovič (Serbia)** Himanen (Finland) Jurše (Slovenia) Yüksel (Turkey) Servais (Belgium) (Sweden) Uggla]

2.4. **Nurseries practices** [**Himanen (Finland**) Bordács (Hungary) Yüksel (Turkey) Kennedy (Ireland)]

2.5. **Trading** and Transport [**Bordács (Hungary**) Uggla (Sweden)]

2.6. **Traceability** [**Liesebach (Germany)** A'Hara (United Kingdom) Bordács (Hungary) (Slovenia)]

3. **Use of forest reproductive material**

3.1. **available tools for choices** - assisted migration, identification of FRM source) [**Kowalczyk (Poland)** Sperisen (Switzerland) Guibert/Ducousso (France) Friis Proschowsky (Denmark) Uggla (Sweden) (Slovenia)]

3.2. **establishment methods** [Proietti (Italy), **Schneck (Germany**), Pilipovič (Serbia) Uggla (Sweden) Himanen (Finland) Maaten (Estonia)] Bordács (Hungary) (Slovenia)

3.3. **enrichment planting** (open research questions on advantages/disadvantages)/ [Tollefsrud (Norway), Bordács (Hungary), **Friis Proschowsky (Denmark),** Yüksel (Turkey)]

3.4. **Keep records** (mandatory task at national level to maintain a database about performance of FRM where relevant, include progeny trials - *challenge: how to single out provenance effect among other factors ?* **[Geburek (Austria)** (Slovenia)]

4. **Recommendations [**will be defined during the next working group meeting, but individual authors groups are encouraged to identify relevant recommendations in each sub-chapter**]**

5. References

Annex 3: List of participants

Alain Servais
Department of Nature and Forests - Forest Tree Seed Center
Z.I d'Aye, Rue de la Croissance, 2
B-6900 Marche-en-Famenne
Belgium
alain.servais(at)spw.wallonie.be

Gunnar Friis Proschowsky
Ministry of the Environment
Gillelejevej 2B
DK-3230 Græsted
Denmark
gfr(at)nst.dk

Tiit Maaten
Estonian University of Life Sciences
Kreutzwaldi 5
51014 Tartu
Estonia
tiit.maaten(at)emu.ee

Katri Himanen
Juntintie 154
77600 Suonenjoki
Finland
katri.himanen(at)luke.fi

Volker Schneck
Institute of Forest Genetics
Eberswalder Chausee 3a
15377
Waldsieversdorf
Germany
volker.schneck(at)vti.bund.de

Heike Liesebach
Sieker Landstraße 2
22927 Großhansdorf
Germany
heike.liesebach(at)thuenen.

Sándor Bordács
Department of Forest and Biomass Reproductive Material
Keleti Karoly utca 24
1024 Budapest
Hungary
BordacsS(at)nebih.gov.hu

Brynjar Skúlason
Gamla gróðrarstöðin, Krokeyri 600
Akureyri
Iceland
brynjar(at)skogur.is

Stuart Kennedy
Kilmacurragh Co. Wicklow
Ireland
Stuart.Kennedy(at)coillte.ie

Frank Wolter
81 Avenue de la Gare
L-9233 Diekirch
Luxembourg
frank.wolter(at)anf.etat.lu

Jan Kowalczyk
Silviculture and Genetics Department
Braci Lesnej Street, No. 3, Sekocin Stary
05-090 Raszyn
Poland
j.kowalczyk(at)ibles.waw.pl

Dušan Gömöry
Technical University
T.G. Masaryka 24
960 534 Zvolen
Slovakia
dusan.gomory(at)tuzvo.sk

Hojka Kraigher (on behalf of Ana Jurše)
Večna pot 2
1000 Ljubljana
Slovenia
hojka.kraigher(at)gozdis.si

Claes Uggla
Box 343
SE-50113 Borås
Sweden
claes.uggla(at)skogsstyrelsen.se

Christoph Sperisen
Snow and Landscape (WSL)
Zuercherstrasse 111
8903 Birmensdorf
Switzerland
christoph.sperisen(at)wsl.ch

Tefide Yüksel
Beşevler mahallesi, Sogutozu caddesi, 8/1
06560 Ankara
Turkey
tefideyuksel(at)ogm.gov.tr

Stuart A'Hara
Northern Research Station
Bush Estate, Roslin
Midlothian EH25 9SY
United Kingdom
stuart.a'hara(at)forestry.gsi.gov.uk

EUFORGEN secretariat

Michele Bozzano
(39) 06 6118 221
m.bozzano(at)cgiar.org

Nina Olsen Lauridsen
(39) 06 6118 409
n.lauridsen(at)cgiar.org

Unable to attend

Roberta Proietti
Council for Agricultural Research and Economics - Research Centre for Forestry and Wood
Arezzo
Italy
roberta.proietti(at)crea.gov.it

Mladen Ivankovic
Dept of Tree Breeding and Forest Seed Husbandry
Cvjetno naselje 41
10450 Jastrebarsko
Croatia
mladeni(at)sumins.hr

Monique Guibert
IRSTEA
45290 Nogent-sur-Vernisson3
France
monique.guibert(at)irstea.fr

Andrej Pilipović
Institute of Lowland Forestry and Environment
21000 Novi Sad
Serbia

andrejp(at)uns.ac.rs
Ana Jurše
Ministry of agriculture, forestry and food
Dunajska c. 22
1000 Ljubljana
Slovenia
Tel +386 (0)1 478 93 69
ana.jurse(at)gov.si

Mari Mette Tollefsrud
Norwegian Institute of Bioeconomy Research
NO-1431 Ås
Norway
Mari.mette.tollefsrud(at)nibio.no

Josef Frýdl
Forestry and Game Management Research
Institute (FGMRI)
Strnady 136
252 02 Jíloviště
Czech Republic
Frydl(at)vulhm.cz