First meeting of the EUFORGEN Working Group on Genetic Conservation Strategies
Maccarese (Rome), Italy, 2-4 November 2011

Summary of the meeting

Opening of the meeting

J. Engels, Interim Regional Director for Europe, welcomed the participants on behalf of Bioversity International. He expressed his strong interest in the task of the Working Group and noted that development of genetic conservation strategies for forest trees is also relevant for the similar efforts that are underway for crop wild relatives. He also briefed the participants on the CGIAR reform process and the envisaged changes at Bioversity. He concluded by stressing that these changes will have no impact on the hosting arrangements of the EUFORGEN Secretariat and wished the Working Group a fruitful meeting.

J. Koskela, EUFORGEN Coordinator, welcomed the participants on behalf of the EUFORGEN Secretariat, and presented the meeting agenda which was adopted without changes. S. de Vries was elected as Leader of the Working Group, and J. Koskela and M. Bozzano were nominated as rapporteurs of the meeting.

All participants then introduced themselves. J. Cottrell attended the first day of the meeting via a video call.

EUFORGEN update and expected outputs of the Working Group

J. Koskela briefly revisited the objectives of EUFORGEN Phase IV (2010-2014) and explained the new modus operandi which is based on small working groups and workshops. In September 2010, the EUFORGEN Steering Committee decided to establish three working groups for 2011-2012 focusing on 1) genetic conservation strategies, 2) genetic monitoring, and 3) forest reproductive material. The members of each working group (max. 10 experts) were selected from a pool of national experts nominated by the EUFORGEN National Coordinators. Other nominated experts for Objectives 1 (use of forest genetic resources) and 2 (conservation of forest genetic resources) will have an opportunity to contribute to the work of the different working groups by email and to attend the workshops. A total of 52 and 50 experts have been nominated to Objectives 1 and 2, respectively.

J. Koskela continued by presenting the tasks of the Working Group which is expected to:

- Review the earlier work done by the EUFORGEN Networks on Common Action Plans (CAPs)
- Carry out the assessment of gene conservation status for model species based on the EUFGIS data
- Carry out a review of the knowledge on the genetic diversity of the species
- Select the most valuable genetic conservation units from the pan-European perspective
- Identify gaps in the network of the units to improve the long term sustainability
- Construct genetic conservation strategies at the level of group of species
- Prepare a draft report

He further informed the participants about the work schedule. The second meeting of the working group will be held in spring 2012 and that the draft report should be ready by June

2012. The results of the working group will be then presented for further discussion at the FGR conservation workshop which will be organized in September 2012. The EUFORGEN Steering Committee is then expected to make decisions on further action during its next meeting in November 2012. He also presented a tentative schedule of other EUFORGEN meetings in 2012.

He noted that three new projects on forest genetic resources have been approved recently by the EC under the Knowledge-Based Bio-Economy Programme of the Seventh Framework Programme for research. These include PROCOGEN on conifer genomics, TREES4FUTURE on increasing the use of forest resources for wood products and services, including tree breeding, and FORGER on managing forest genetic resources. The FORGER project will be implemented in collaboration with EUFORGEN. More information on these and other KBBE projects are available on the EC website (http://ec.europa.eu/research/bioeconomy/projects/index_en.htm). Furthermore, he also informed the participants that the DG Agriculture and Rural Development of the EC is expected to make decisions on the continuation of the AGRI GEN RES Programme during 2012 (the EUFGIS project (2007-2011) was supported as part of this programme).

Overview of the earlier Common Action Plan units and the EUFGIS data

M. Bozzano presented an overview of the work done by the earlier EUFORGEN Networks (Conifers, Scattered Broadleaves and Stand-forming Broadleaves) during Phase III (2005-2009) on the collection information on genetic conservation units for the development of the Common Action Plans (CAPs). He compared the earlier identified units for 18 tree species with the harmonized data available in the EUFGIS database by presenting the two different types of units across each species' distribution range. He also noted that there is much more and better data available now. The major difference between the two datasets is that the earlier data included units which were considered valuable but which were not necessarily managed for genetic conservation. Furthermore, many of the earlier CAP units do not meet the pan-European minimum requirements for dynamic conservation units of forest genetic resources that were developed during the EUFGIS project.

Case studies carried out as part of the EUFGIS project

J. Koskela presented preliminary results of two case studies which are being finalised in the context of the EUFGIS project. The first one focuses on assessing dynamic conservation of forest genetic resources in Europe and the second one attempts to quantifying the impact of climate change on dynamic conservation units of forest trees in Europe. He pointed out that the first case study in particular is very useful for this working group as it demonstrates how gaps in genetic conservation efforts can be identified and as it tested various indexes for this purpose. He concluded the presentation by listing key questions and issues for further discussion. These included:

- What is the targeted level of conservation? This helps to determine what a gap is and what's not, and to indicate when conservation is "adequate"
- What do we want to conserve (genetic resources, genetic diversity, adaptive diversity)?
- Selection criteria for units of pan-European importance
- Management of conservation networks
- Level of duplication needed (extreme weather events, pests and diseases, etc)
- Complementing *ex situ* measures (static ones)

The meeting participants continued discussing these questions and issues during the subsequent sessions.

Genetic and adaptive diversity of the model tree species in Europe

The meeting participants discussed extensively adaptive and genetic diversity of forest trees in Europe. It was recognized that it is important to conserve both types of diversity but it was agreed to give priority to adaptive diversity. Furthermore, it was agreed that climatic stratification of Europe (Metzger et al. 2005, Global Ecology and Biogeography 14: 549-563, http://onlinelibrary.wiley.com/doi/10.1111/j.1466-822X.2005.00190.x/full) would be used as a proxy for characterizing adaptive diversity conserved in the genetic conservation units across the continent, similarly to the first EUFGIS case study. Gaps in conservation efforts would be identified based on the country boundaries and the zone-level climatic stratification within the distribution range of a model tree species (so called "country x zone" approach). The country x stratum approach was consider to be too fine-scale for the purpose.

Any available information on genetic diversity within the distribution range of a model species will be used as an additional criterion to identify gaps in the conservation efforts. It was considered important that conservation efforts include migration routes, known refugial areas and contact zones where the migration routes merged. When information on genetic diversity is available, each country within species' distribution range should have a minimum of one unit for each haplotype occurring in the country.

In order to be able to complete the classification of the Units and the ranges of the species, it was agreed that the Secretariat should contact the research group that developed the environmental stratification of Europe and ask if it is possible to develop an extended environmental stratification for those parts of Europe that were not covered in the paper of Metzger et al. 2005 (i.e. Ukraine, Russia, Turkey and Caucasus). Furthermore, it should also be clarified whether the same research group can produce an environmental stratification for the predicted climate in Europe.

List of model tree species

The meeting participants reviewed the list of model tree species used by the EUFORGEN Networks and decided that it is necessary to reduce the number of species. It was agreed to group the species based on their geographic distribution (wide or restricted distribution) and ecological behavior (stand-forming or scattered). These criteria resulted in the creation of four groups of species. The participants then selected the model tree species for each group as listed below:

1. **Widely distributed and stand-forming species**
    a. *Abies alba*
    b. *Fagus sylvatica*
    c. *Picea abies*
    d. *Pinus sylvestris*
    e. *Quercus petraea*

2. **Widely distributed and scattered species**
    a. *Populus nigra*
    b. *Populus tremula*
    c. *Fraxinus excelsior*
    d. *Pinus nigra*
    e. *Sorbus torminalis*

3. **Restricted-distribution and locally common species**
    a. *Castanea sativa*

4. **Restricted-distribution and locally scattered species**
    a. *Pinus cembra*

The availability of range-wide genetic data for each of the selected species was then discussed. The data availability seems to be good for most of the selected species but in case of some species further clarifications are needed. It was agreed that also other experts (email contributors) are encouraged to share relevant references on range-wide genetic studies for the listed species.

Selection of the most valuable genetic conservation units from the pan-European perspective

The meeting participants discussed the purpose of selecting the most valuable genetic conservation units at the pan-European level. It was clarified that the purpose is to ensure a minimum level of genetic conservation at the range-wide level and to establish a core network of dynamic conservation units for the model species. It was also noted that all genetic conservation units managed by countries and entered into the EUFGIS database are valuable but that it is easier to pinpoint gaps in conservation efforts at the pan-European level through the core network approach.

It was agreed that the goal is to have, within the distribution range of a given species, one conservation unit in each environmental zone within a country. Additional units will be selected, if necessary, to cover migration routes, refugial areas and contact zones. In case of marginal or scattered tree populations and rare or endangered tree species, it is advised that there are duplicates within the "country x zone" area.

Considering the above-mentioned goal and criteria, the Working Group will make the selection of the conservation units for the core networks based on information available in the EUFGIS database as of 1 November 2011. In case there are more than one unit per "country x zone" in the database, the unit for the core network will be selected taking into account the state of natural regeneration, the number of reproducing trees and the ownership status (priority will given to public ownership). If there are still more than one unit available after applying these filters, the Working Group will make its selection based on expert judgment. The National Focal Points will be then asked to comment on the selection of the units in their country and they will have a possibility to propose changes, if necessary and justified.

The Working Group will then identify gaps in the conservation efforts and make recommendations for countries to take action. Static *ex situ* measures are not accepted as dynamic conservation units but they can be considered as part of the conservation strategies if this is the only way to conserve relevant material alive.

Development of pan-European genetic conservation strategies

The meeting participants continued by developing the title and the outline of its report. It will be presented by the Working Group Leader (S. de Vries) to the FGR conservation workshop in September 2012 for further discussion and to the EUFORGEN Steering Committee in November 2012 for further action. It was agreed that the report will be titled as "Pan-European Strategy for Genetic Conservation of Forest Trees: establishment of a core network of dynamic conservation units". The participants then developed the outline and identified those members who will lead writing of different chapters (see Annex 1).

The first draft text for each chapter should be sent to the Working Group Leader and the Secretariat **by 20 December 2011**.

Wrap-up session

The Working Group members agreed to continue the work by email and to compile the first draft of the report for further discussion at the next meeting. L. Vietto kindly offered to host the next meeting of the Working Group in Casale Monferrato, Italy. The week of 20-24 February 2012 was tentatively identified as suitable dates. The exact meeting dates will be confirmed later. The Working Group members considered the length of the first meeting ideal and recommended that the next meeting should have the same length.

Closure of the meeting

S. de Vries thanked all participants for their inputs to the discussions and the Secretariat for organizing the meeting. With no other business, he then closed the meeting.

Annex 1. Outline of the Working Group report and lead authors for different chapters.

Pan-European Strategy for Genetic Conservation of Forest Trees: establishment of a core network of dynamic conservation units
(Overall coordination: S. de Vries, Working Group Leader)

Preface (J. Koskela)

1. **INTRODUCTION** (J. Koskela)
   CBD, Forest Europe, EUFORGEN

2. **OBJECTIVES**

   a. **What do we propose to conserve** (E. Collin, P. Rotach)
      i. Adaptive diversity (introduce also the Environmental stratification of Europe) and
      ii. Genetic diversity

   b. **Targeted level of conservation for the Pan-European Network point of view (core network)** (J. Cottrell, L. Yrjänä)
      i. Overall goal: to maintain adaptive and genetic diversity of forest trees at pan-European level?
      ii. Species target(s): country x zones
      iii. The approach: dynamic conservation units

3. **METHODS**

   c. **Selection of the groups of species** (V. Buriánek, M. Ivankovic)
      - Widely distributed stand forming
      - Widely distributed scattered
      - Restricted-distribution locally common
      - Restricted-distribution locally scattered

   d. **Selection of units for the core network** (M. Alan, M. Ivankovic)

   e. **Genetic conservation status of model tree species** (C. Kelleher, L. Vietto)

   f. **Identification of gaps** (L. Yrjänä, M. Bozzano)

4. **RESULTS (**authors as above)
   a. **Selection of the groups of species**
   b. **Selection of units for the core network**
   c. **Assessment of genetic conservation status of model tree species**
   d. **Identification of Gaps**

5. **IMPLEMENTATION / ACTION PLAN (Management of conservation networks)** (P. Rotach, M. Alan)
   a. **Countries, other actors (EUFORGEN, etc)**
   b. **Resources needed?**
   c. **Level of duplication needed**

d. Complementing static ex situ measures
e. Monitoring of progress (L. Vietto, E. Collin)

f. **Revision of the strategy** (L. Yrjänä, J. Cottrell)
Incorporation of new information

g. Climate Change (E. Collin, C. Kelleher)

References

Annexes

Annex 2. Agenda of the meeting

Tue 1 November		
15:00-	Arrival to Fiumicino Airport and train to the hotel	Hotel Express by Holiday Inn (via Assisi 53)
	Dinner on your own	

Wed 2 November		
09:00	Opening of the meeting ● Welcome to Bioversity (J. Engels) ● Introduction to the meeting (J. Koskela) ● Adoption of the agenda ● Selection of WG Leader and nomination of rapporteurs	Bioversity International Scylla meeting room (Stretto building)
09:15	EUFORGEN update and expected outputs of the WG (J. Koskela) ● Discussion	
09:45	Overview of the earlier CAP units and the EUFGIS data (M. Bozzano) ● Discussion	
10:30	Coffee/tea break	Stretto coffee room
11:00	Case studies carried out as part of the EUFGIS project (J. Koskela) • Assessment of FGR conservation in Europe • Impact of climate change on genetic conservation units • Discussion	
12:30	Lunch	
14:00	Genetic and adaptive diversity of the model tree species in Europe ● Review of the current knowledge ● List of target tree species and its possible revision ● Discussion	
15:30	Coffee/tea break	Stretto coffee room
16:00-17:30	Selection of the most valuable genetic conservation units from the pan-European perspective ● Approach(es) and criteria to be used by the WG ● Discussion	
20:00	Social dinner	

Thu 3 November		
09:00	Identification of gaps in the networks of the conservation units ● Approach(es) and criteria to be used by the WG ● Discussion	Bioversity International Scylla meeting room (Stretto building)
10:30	Coffee/tea break	Stretto coffee room
11:00	Development of pan-European conservation strategies ● Discussion	
12:30	Lunch	
14:00	Report of the Working Group ● Development of the table of contents ● Discussion	
15:30	Coffee/tea break	Stretto coffee room
16:00-17:30	Initiation of the WG tasks ● Compilation of data, relevant publications etc. ● Discussion	

Fri 4 November		
09:00	Initiation of the WG tasks (continued) ● Compilation of data, relevant publications etc. ● Discussion	Bioversity International Scylla meeting room (Stretto building)
10:30	Coffee/tea break	Stretto coffee room
11:00	Next steps before the second WG meeting ● Tasks and deadlines	
12:15	Wrap-up session ● Any other business ● Date and place of next meeting	
12:30	Lunch	Stretto coffee room
13:00-	Transport to Fiumicino Airport, as needed	

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