# Temperate Oaks and Beech Network

## Summary of the third meeting

Borovets, Bulgaria, 22-24 June 2000

EUFORGEN

European Forest Genetic Resources Programme (EUFORGEN)

EUFORGEN is
coordinated by
Bioversity International

# Summary of the meeting

## Opening of the meeting

Professor Alexander Alexandrov of the Forest Research Institute of Bulgaria, in his capacity as EUFORGEN National Coordinator, officially welcomed the participants to Borovets and conveyed his wishes for a fruitful meeting.

Professor Ivan Raev, Director of the Forest Research Institute, welcomed the participants in the name of the Bulgarian Academy of Science. He underlined the importance of studying the genetic resources of social broadleaves, particularly in view of the current threats to valuable native broadleaved species. Pollution, climate change and other anthropogenic factors are strongly affecting the existing forests and it is paramount to conserve and protect forest resources.

He also remarked that the third EUFORGEN Social Broadleaves Network meeting is an important step in this direction and that it fits well within the framework of the Convention on Biological Diversity, the Convention on Climate Change and the global effort towards sustainable management of forests. He wished the participants a successful meeting.

Antoine Kremer, Chair of the Network, welcomed the participants and thanked the Bulgarian Forestry Research Institute for its efforts in organizing the meeting. He welcomed the newly attending countries, Turkey and Uzbekistan.

Simone Borelli, on behalf of the EUFORGEN Secretariat, provided some highlights of the EUFORGEN activities, meetings and outputs in the year 2000 and of those planned for 2001.

Antoine Kremer presented the agenda and it was adopted. Thomas Geburek and Ladislav Paule were appointed as rapporteurs.

## Joint session with the project on genetic resources of broadleaved species in southeastern Europe

Ioan Blada presented the results of the project, funded by Luxembourg for a 3-year period. He went over the objectives of the project and presented the results of the first 2 years of activities. He concentrated on the aspects related to inventories and gene conservation units. He gave information on the total surface of seed stands and protected areas in the participating countries and presented the distribution maps of some of the main species covered by the project (*Fagus sylvatica, Quercus petraea, Q. robur* etc.). He underlined the presence of virgin forest in some of the mountain ranges. He also gave some figures on the number and surface of stands that have been protected.

Myriam Heuertz presented the results of the molecular studies carried out on *Fraxinus excelsior*. She presented the characteristics of the species and highlighted the limited knowledge of the mating system. Southeastern Europe was selected because of the close-to-nature state of its forests. The objectives of the work were presented. This was followed by an overview of the results.

Simone Borelli briefly presented the objectives of the proposed Phase 2 of the project.

During the discussion, Ioan Blada indicated that Romania has the GIS facilities and is available in principle to prepare maps for other countries. The idea of joint maps at the European level was revived and the need to involve 'missing countries' in the Network's activities discussed. Ioan Blada underlined the need for additional funds, possibly from the EU.

Discussion focused on: the causes for changes in forest cover in Romania; problems related to the reproduction of oaks; the definition and distribution of virgin forests of beech and spruce; the characteristics and accuracy of the maps and the databases; the need for protection of seed stands; and several aspects related to the population genetic studies carried out on *Fraxinus*.

An important point raised was the contradiction between the status and regulations of national parks and the impossibility of collecting reproductive material in these areas. This problem appears to be common to many countries. In Austria, for example, discussion has been initiated on the possible use of genetic resources in protected areas.

## Overview of research projects supported by the European Union

### *FAIR OAK*

Antoine Kremer gave an overview of the results of the project (see Report of the last Network meeting). The project looked mainly at the distribution of cpDNA haplotypes of eight oak species throughout Europe. The coverage of the project had originally been limited to EU member countries but other countries progressively joined through bilateral agreements. Final results of the project will be soon published in the journal *Forest Ecology and Management*. Contact: Antoine Kremer, INRA Bordeaux, France.

### *FAIR Beech*

The project started in 1983 and will end in 2001. It includes 20 countries participating in an international provenance experiment. Seed was collected for as many provenances as possible (currently 300) and trials were established in different countries to evaluate adaptation. Data have been compiled in a database and most countries already provided the information. A coarse cpDNA map (based on 3–4 markers) is being developed. A new project focused on more in-depth analysis of the existing provenance trials may be initiated and possibly submitted for funding to the EU next year. Contact: Richard Stephan, BFH Grosshansdorf, Germany.

### *Dynabeech*

This EU-funded project (2000–2004) will look at genetic and ecophysiological differences between virgin forests and managed forests. Research teams from Austria, France, Germany and Italy participate in the project. In the genetic part of the project, predominantly microsatellites will be developed to measure geneflow within populations of *Fagus sylvatica*. Mating systems will also be studied. Contact: Thomas Geburek, FBVA Vienna, Austria.

### *Oakflow*

The project was recently accepted for funding by the EU. Ten countries will participate (14 institutions). The main objective is to assess hybridization and geneflow in oaks as a mechanism promoting diversity. There will be three main components: (1) assessing geneflow by parentage analysis with microsatellites, mainly in mixed forests (*Q. petraea* and *Q. robur*, and sometimes *Q. pubescens*); (2) evaluating genetic and ecological consequences of geneflow; (3) identifying impacts of geneflow on the management of seed and conservation stands. In many countries, forestry agencies will be involved in examining silvicultural consequences of hybridization and the evolution of diversity through simulation models (METAPOP). Contact: Antoine Kremer, INRA Bordeaux, France.

## Progress made in countries

### *Introductory country reports*

Gursel Karagöz presented the introductory country report from Turkey and Abduhalil Kayimov, Chair of the Central Asia Working Group on forest genetic resources, presented the report for Uzbekistan and other Central Asian countries.

### *Update on progress made by countries*

Countries were asked to present the highlights of their reports. Full reports will be provided to the Secretariat in electronic format by **15 July 2000** and will be posted on the EUFORGEN Web page. It was proposed that the meeting report should contain only a summary table of main country activities.

## Legislation

Sven de Vries presented an overview of legislation related to genetic resources of social broadleaves (see pp. 27–30). To date the overview covers 26 countries. The tables were circulated among participants and they were asked to clarify some of the information. Newly attending countries were asked to compile the full questionnaire in order to complete the survey.

Lennart Ackzell presented the gene conservation aspects included in EU Directive 1999/105/EC (forest reproductive material). The preamble includes reference to genetic diversity. Article 4 touches upon plant genetic resources, *in situ* conservation, sustainable use and genetic erosion. Article 6.5 allows countries to make material for various purposes, including conservation of genetic resources, available on the market. Annex II refers to criteria for seed sources, which will be established by Member States. The new regulation is aligned with the OECD Scheme.

## Results of the survey on joint conservation strategies

Thomas Geburek presented the results of the questionnaire that was distributed to members of the Network in 1999. The survey consisted of five sections:

- species distribution
- conservation
- research
- silviculture
- needs and activities of the Network.

Most urgent needs were expressed in the area of gene conservation strategies, conservation methods, and technical guidelines.

A number of countries provided maps of distribution areas of oak and beech. However, there is information missing from several countries. The Secretariat will contact countries not participating in the Network. Antoine Kremer and Thomas Geburek will lead the compilation of maps at the European scale of oaks and beech, respectively. The maps will be circulated **before the next Network meeting.**

The analysis also showed that no data were available in most countries on potential vegetation types. Most countries reported to have maps with 'regions of provenance'; however the information is too heterogeneous to be used for the development of conservation strategies.

Information on the health status of forest genetic resources was received. R. Stephan agreed to obtain the existing maps for oaks and beech at the European scale.

Tables of the status of natural regeneration in all countries were presented. While natural regeneration is of no major concern for beech, its absence is a major constraint for *in situ* conservation of *Q. petraea* and *Q. robur* throughout Europe.

*In situ* conservation measures are implemented in most countries for both *Fagus* and *Quercus*. *Ex situ* measures, namely conservation stands, seed orchards and clonal archives are found in some participating countries.

No additional measures seem to be necessary for *Fagus*. On the other hand, additional measures were deemed necessary by a large number of countries for *Q. robur*. The same situation can be found for *Q. petraea*. There is great interest for *in situ* measures for *Q. pubescens*, while *Q. cerris* seems to be the lowest priority.

The possibility of developing an *ex situ* network (multiple population breeding system—MPBS) was examined. A number of countries indicated the capacity to collect and establish *ex situ* stands for the different species, and *Q. robur* appears to be the priority species.

Thomas Geburek, Richard Stephan and Patrick Bonfils will prepare the results of the questionnaire for later publication. The Russian Federation and the Ukraine will provide responses to the questionnaire to Thomas Geburek by **31 July 2000**. The Secretariat will contact countries not participating in the Network and will ask them to provide a response by the same date.

## Current state of knowledge on biology and genetics of social broadleaves

In order to provide scientific background for the discussion on conservation guidelines, Antoine Kremer introduced the subject of genetic processes modifying genetic diversity in oak and beech forests. His presentation covered the influence of population size, hybridization, intraspecific geneflow and selection on genetic diversity.

To illustrate the influence of population size, he presented the results of a study of mating systems in a mixed oak stand in France. Effective pollen and seed flow were monitored with microsatellites and inferences were drawn on population size. It was determined that the neighbourhood size varies between 12 and 19 ha and, therefore, if the population is kept to this size there is no risk of genetic drift.

Oaks are predominantly outcrossing species and there is unidirectional hybridization from *Q. petraea* to *Q. robur*, which tends to increase the diversity of the former species. The case studies also clearly indicated the occurrence of long-distance pollen flow and the asymmetry between pollen and seed flow. These opposing forces tend to erase any spatial genetic structure of the stand.

Finally, concerning selection, there is currently a lack of experimental results showing the amount and direction of selective pressures.

## Discussion on technical guidelines on genetic conservation of European white oaks

The participants formed three groups for discussion. A set of questions related to what type of products or activities on *in situ* and *ex situ* conservation could be produced by the Network was distributed to the groups to facilitate the process. The questions referred to the target audience, style, format and dissemination of the technical guidelines; to the issue of access to protected areas for collecting reproductive material; and to the need of joint activities on *ex situ* conservation.

The rapporteurs for each group presented the results of the discussion.

The three groups agreed that the technical guidelines should be addressed to forest managers, forest owners and decision-makers and should be made available in the national language. It was proposed that the style should be less scientific, but that practical recommendations should be accompanied by the relevant references. Illustrations and graphs are also needed to make the material more immediately understandable.

It was proposed that a general document on the principles of genetic conservation should be developed that could be used for all Networks. In addition, smaller documents would be prepared for each species or group of species. However, other participants felt that this was not appropriate and that the Network should limit itself to producing a set of guidelines specific to oaks. These should also include general principles of gene conservation.

It was agreed that a decision on this issue would be aligned with the development of technical guidelines in other EUFORGEN Networks, and would follow discussion at the Inter-Network Meeting in October.

It was agreed that the material already prepared would be included in the Report of the meeting as technical presentations (see pp. 31–60). All participants will provide comments to the respective authors **by 31 July 2000.** The documents will be provided to the Secretariat **by 31 October 2000.**

It was proposed that the same authors would be responsible for preparing the final, concise version of the guidelines. The text should be no longer than 15 pages and structured along the lines agreed at the last Network meeting:

- Introduction (A. Kremer and Th. Geburek)—3 pages
- Biology and genetics of oaks (A. Kremer and P. Menozzi)—3 pages
- *In situ* conservation (P. Bonfils, A. Alexandrov and J. Gracan)—4 pages
- *Ex situ* conservation (S. Bordács)—2 pages
- Conclusions (A. Kremer, T. Geburek, L. Paule and J. Turok)—2 pages

The final draft document will be circulated to all Network members by the Secretariat **2 months before the next meeting.** The meeting will then discuss and adopt the text and will decide upon the format, layout, printing and distribution of the *Technical Guidelines on Genetic Conservation of European White Oaks.*

On the issue of access to genetic resources in protected areas, it appears that problems are different from country to country. It was proposed that additional discussion on possible EUFORGEN actions would be carried out at the level of the Steering Committee (see Report of the first Steering Committee meeting, 1995). The Secretariat will also approach relevant international organizations (i.e. CBD and IUCN) and seek to develop a common strategy.

For *ex situ* conservation activities there was a general feeling that establishing an MPBS network was premature, due to lack of knowledge on geographic variation and also to lack of breeding activities. A proposal was made for international provenance trials on *Q. robur* but, as resources are limited, these could be carried out on a bilateral basis. Although it is not the objective of the Network to become directly involved in provenance experiments, it can stimulate such activities as appropriate.

## Information management

Simone Borelli presented a series of activities related to information management.

He informed the participants on IPGRI's intention to use the Web page of the Regional Office for Europe as a gateway to general information on the conservation of plant genetic resources in Europe. Users will be able to access information on national programmes and find relevant links and contacts. The feedback of Network members will be essential to complete and update this information.

He then went on to present the EUFORGEN Web page and the section relevant to the Social Broadleaves Network. The participants were encouraged to visit the page and provide comments on contents, and on additional information that could be made available.

The idea to contribute to a new EUFORGEN database on grey literature on forest genetic resources was accepted by the Network. The Secretariat will circulate the format in both Microsoft® Access and Excel by **15 July 2000.**

## Public awareness

### *New brochure*

Simone Borelli briefly presented the new brochure on *Conservation of Genetic Resources of Social Broadleaves in Europe.* Ioan Blada and Ned Cundall prepared the text for the brochure. Illustrations were taken from the Network slide collection (see below). Copies were distributed and more are available upon request.

### *Image collection*

Dominique Jacques summarized the objectives of the collection and presented the results obtained to date. Filemaker Pro was used as a management tool and an Internet link will be made available on the Web page of Centre de Recherche de la Nature, de Forêts et du Bois (CRNFB). So far, 11 countries have provided images.

The collection is organized following a series of criteria and keywords based on general themes. The database also contains information on the source of the images. It was reiterated that the images are free for use but that the author and the EUFORGEN Social Broadleaves Network should be cited as source. All countries were invited to send additional material in order to complete the collection.

Attention was drawn on the possibilities of adding images on additional themes (i.e. cultural) and a list of existing themes was circulated for comments.

It was decided that for the time being the collection will remain in Belgium. A link to the relevant Web site will be added to the EUFORGEN site. Dominique Jacques will provide details on how to submit material and on which themes are still incomplete by **31 July 2000**. The final version of the CD will be made available to all Network members by **31 October 2000**.

It was decided that a Social Broadleaves poster would be produced. Sven de Vries, Tor Myking and Patrick Bonfils agreed to prepare a draft text and layout and to send it to the Secretariat for circulation by **31 December 2000**.

France mentioned other public awareness activities carried out through the preparation of a booklet and public events. Spain referred to a special issue of the INIA journal to raise awareness on the importance of forest genetic resources.

## Date and venue of next meeting

Luxembourg and Norway offered to host the fourth Network meeting in June 2001. After short discussion, the Network members expressed preference for holding the meeting in Norway. The Secretariat will confirm the exact dates in due course.

## Conclusion

The report of the meeting was adopted. The EUFORGEN Secretariat and the Chair of the Network expressed once again their appreciation of the local arrangements and thanked all participants for their contribution.

## Programme

**Wednesday 21 June**
Arrival of participants to Sofia and transfer to Borovets

**Thursday 22 June**

**Opening of the meeting**

09:00 Welcome (Host country and Chair of the Social Broadleaves Network)
09:15 Introduction (IPGRI)
09:30 Adoption of the agenda and nomination of rapporteurs

**Research**

09:45 Genetic resources of social broadleaves in southeastern Europe—Joint session with the ongoing project (Luxembourg, Romania, Bulgaria and Moldova)
*10:30* *Coffee break*
11:00 Joint session continued
11:45 Other ongoing research projects (overview)
- FAIR OAK (A. Kremer)
- OAKFLOW (A.Kremer)
- FAIR BEECH (R. Stephan)
- DYNABEECH (T. Geburek)

*13:00* *Lunch*

**Progress made in countries**

14:30 Introductory country reports from newly attending countries (Turkey and Uzbekistan)
15:00 Update on progress made by countries (round table)
*16:00* *Coffee break*

**Legislation**

16:30 Overview of legislation related to genetic resources of Social Broadleaves (S. de Vries)

**Development of joint gene conservation strategies**

17:00 Results of the survey and discussion (T. Geburek)

**Friday 23 June**

9:00 Current state of knowledge of biology and genetics of Social Broadleaves (A. Kremer)
10:00 Introduction to the working groups (J. Turok)
*10:30* *Coffee break*
11:00 Development of technical guidelines for the sampling, design and management of gene conservation units (participants will be divided into three working groups for discussion)
*13:00* *Lunch*
14:30 Presentation of results of the working groups and discussion
*16:00* *Coffee break*

**Documentation**

16:30 EUFORGEN Database/Information platform
16:45 Web page
17:00 Bibliography

**Public awareness**

17:15 Leaflet
17:30 Slide collection (D. Jacques)
18:00 Other public awareness initiatives

**Saturday 24 June**

Morning:

**7:30 Field trip**

Afternoon:

14:30 Adoption of the report
16:00 Date and place of next meeting
16:30 Any other business

**Sunday 25 June**

Transfer to Sofia and departure of participants

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