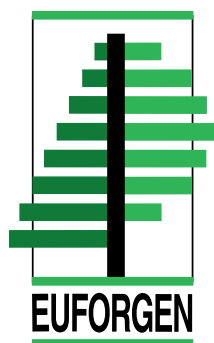




Conifers Network

Summary of the second meeting

Valsain, Spain, 20-22 September 2001



European Forest Genetic Resources Programme (EUFORGEN)

Second EUFORGEN Conifers Network Meeting

Opening

Csaba Mátyás, Chair of the Network, welcomed the participants to Valsaín and to the second EUFORGEN Conifers Network Meeting. Mr Manuel de Tuero y Reina, Director of the Breeding Service of Dirección General para la Conservación de la Naturaleza (DGCN) attended the opening session as a representative of the Ministry of Environment.

Ricardo Alía gave a brief presentation on the venue of the meeting, on the diversity of tree species in Spain in general and on the species that are found around Valsaín. He described the Valsaín complex, which includes a breeding centre and a sawmill that processes most of the Scots pine timber from the Valsaín forest. He also provided an overview of the logistic arrangements for the meeting and for the field trip, and introduced Ms Sonia Martin of the DGCN.

Csaba Mátyás gave a brief introduction on the importance of conifers in Europe. He pointed out that in many countries these species are now considered less important than broadleaves. An objective of the Network should be to highlight the role of conifer species and their ecological and economic importance. He also encouraged EUFORGEN members to become more active and open in respect of the environment protection community.

Jozef Turok welcomed the participants on behalf of IPGRI and underlined how the presence of so many countries shows the importance of conifers in Europe. He gave a brief overview of the latest developments in the preparatory process for the next Ministerial Conference on the Protection of Forests in Europe (MCPFE) to be held in April 2003. Some of the main items that will be discussed include sustainable forestry, national forest programmes, climate change and criteria and indicators. He also announced that the next EUFORGEN Steering Committee meeting would be held in June 2002, following the kind invitation from Sweden. It will be very important to emphasize the links between gene conservation and the issues listed above. He touched on the subject of research, pointing out that the Networks have been instrumental in providing opportunities to discuss needs and priorities for research, and a platform to develop research proposals and to facilitate dissemination of research results. He thanked the host country and all the local organizers for the excellent arrangements.

The agenda was presented and was adopted by the Network.

Reports on the status of conservation

Twenty-seven countries (Armenia, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Hungary, Italy, Lithuania, The former Yugoslav Republic of Macedonia, Malta, Norway, Poland, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom) were represented at the meeting.

In order to streamline the discussion on the progress made, it was proposed to divide the participants into four groups loosely representing major ecogeographic areas of Europe: western Europe, Mediterranean, northern Europe, and central and eastern Europe. Each group had the task of summarizing the important elements from the national reports and presenting them in a concise form in plenary.

Western Europe

Armin König presented the results of the group. The group realized that opinions on *in situ* conservation differ from country to country and are therefore difficult to generalize. In Germany, for example, even the different states have different approaches to conservation. The group felt that the standard country reports fulfil the requirements of reporting.

Monitoring should be used for evaluating changes between meetings or at least on a regular basis, on both the technical and the political aspects at country level. Reference was made to the Helsinki H2 Resolution, Natura 2000 (EU-wide) and the Birds Directive (EU-wide) as possible additional tools for conserving biodiversity. However, as in many countries protected areas cannot be used for collection of reproductive material, the inclusion of these areas in statistics might create confusion.

Mediterranean

Bruno Fady presented the results of the group discussion. It was felt that regional grouping was effective for comprehensive overviews, but that the country reports should also be accessible. The choice of species was limiting, as some countries did not have any of the four that were selected. It was proposed to include the *Pinus brutia/halepensis* complex. Common threats (transfer of plant material and global change) and breeding and research activities were identified. In general, the intensity of conservation activities is linked to the economic importance of species, which raises the issue of how to achieve conservation of non-commercial species, to bridge the gap between genetic diversity and biodiversity issues. The first measures taken were usually protected areas, followed in some cases by *in situ* conservation networks. For the three main species, research data are available on range-wide genetic diversity, but not on adaptive structures. Little information is available for *Taxus*. More research is needed for rare and endangered species. It was also felt that current conservation methods should be analysed for effectiveness, and on the basis of this evaluation the Network could provide indications for future directions.

Northern Europe

Tore Skrøppa reported that only two of the selected species were present in the subregion (*Picea abies* and *Taxus baccata*). The distribution of *Taxus* is rather scattered. It is not used as a commercial species, but is of interest for many countries. There are many conservation areas, but little research has been done. Norway spruce is highly important in the region and is not at all neglected. The main threat to *P. abies* is fragmentation, particularly in the Baltic countries. At present, a significant proportion (up to 50%) of seed used for plantation originates from seed orchards. Research is under way in Norway and Sweden to quantify the implications of the Norway spruce plantations of central and eastern European origin for the degree of adaptation and diversity of the local provenances.

Central and eastern Europe

Karel Vančura presented the results. The status of the selected species varies between countries. Depending on the geographic location and/or climatic conditions, a species can be either widely occurring or rare and endangered. Several threats to forests were identified: dieback, pollution, browsing, illegal cutting and fragmentation. There is a lack of information on *Taxus*. Research activities are under way in most countries, but as yet not much information is available. Legislation is at different stages of development in the different countries, and adoption of EU regulations is also influencing its formulation. Priorities identified were capacity-building, halting illegal cutting, sustainable forest management, control of reproductive material, genetic response to climate change, improvement of collaboration between foresters and environmentalists, creation of genetic reserves, formulation of national strategies and legislation. It was suggested that more comprehensive reports should be prepared for the MCPFE, but it would also be useful to have some strong arguments, including economic considerations, to promote the agenda of forest genetic resources.

Summary

The Chair summarized the main points of the discussion. It is clear from all subregional reports that the quantification of conservation measures can be interpreted only if definitions for all categories of *in situ* and *ex situ* conservation measures are formulated very clearly in advance. Country progress reports were regarded as essential to the monitoring task, and

should focus on describing the progress achieved. In addition, important data may be submitted in tabular form. To facilitate monitoring and reporting, national databases on gene conservation should be established in each country (see section on Documentation below, pages 6–7). Range-wide species status reports are considered very useful as well, and their compilation should be made upon decision of the Network by elected rapporteurs.

Species priorities cannot be set uniformly across Europe as the status of the individual species may vary between low priority/abundance and serious levels of threat, according to local ecological and socio-economic conditions.

The need for harmonization of nature conservation and forest management elements of genetic conservation is considered as an essential issue in most European countries, particularly with regard to the various categories of nature protected areas.

The incorporation of genetic principles into the use of appropriate forest reproductive material should be encouraged. The creation of an adequate legal basis for conservation and use of forest genetic resources has to be regarded as high priority, particularly in view of the emerging concept of shared responsibility for gene conservation (see section below).

The importance of public awareness activities was also underlined. An interesting initiative is the establishment of 'promotional forest complexes' in Poland. Forest gene conservation units should also be considered as important demonstration areas.

Case studies

Francesco Spada presented an overview of the status of yew (*Taxus baccata*) in Italy, pointing out that the traditional phytosociological approach is insufficient to prove an understanding of the ecological behaviour of the species. Too much weight is put on arbitrary links between species (e.g. yew and beech), and the effects of more important factors, both ecological and anthropogenic, are underestimated. An interesting aspect of genetic regulation is the sexual reversal observed in individual trees, which seems to be associated with environmental conditions.

Karen Ter-Ghazaryan presented a case study on *Taxus baccata* in Armenia. The presentation included a general overview of Armenian forests, some details on the distribution of yew, its forestry importance, current research activities, ongoing and future projects, conservation status and activities, relevant policies and legislation, and *in situ* and *ex situ* conservation measures.

It was agreed that the Report of the meeting should include synthesis reports from the four ecogeographic subregions (outcome of working group discussions), as well as case studies. Additional case studies will be selected by the compilers and included in the Report of the meeting on the basis of the country reports submitted to the Secretariat. Network members concerned should send contributions to the Secretariat no later than 31 October 2001 (in electronic format). The country progress reports will be made available to subregional rapporteurs. The rapporteurs will compile and circulate the synthesis reports by 31 December 2001.

Criteria and indicators for monitoring progress

Jozef Turok briefly recalled the overall objectives of EUFORGEN. The need to monitor progress at both the Network and the country level (third objective of Strasbourg Resolution S2) was discussed. The results from the survey on the progress made in national programmes and in Europe during the last Steering Committee meeting (November 1998) were also presented.

The genetic indicators currently adopted at the MCPFE level appear to be rather vague ("proportion of forest areas managed for the conservation of genetic resources ..."). It is important to incorporate better monitoring procedures for the conservation of forest genetic resources.

In order to identify the best milestones for assessing progress it was proposed to create an Inter-Network task force. On the basis of the Steering Committee survey, this task force will review the qualitative milestones already available and separate them into two groups:

- Milestones for measuring progress reached within the national programme in general (policy, legal frameworks, institutional capacities, etc.). These milestones will be the responsibility of the National Coordinators.
- Milestones for measuring progress in the conservation of individual species (*in situ*, *ex situ* conservation measures etc.). These milestones will be the responsibility of the Network members.

Milestones should be realistic and achievable. The task force will also propose which milestones would be suitable for reporting at the broader level of the MCPFE process. The issue of genetic criteria and indicators will be discussed at the next Steering Committee meeting, in June 2002. The task force will be contacted by the Secretariat before 31 October 2001. Tore Skrøppa and Thomas Geburek were invited to represent the Conifers Network on this task force.

Research

Giovanni Vendramin presented a research proposal on Mediterranean conifers, to be submitted to the EU in mid-October 2001, which is being jointly developed by Italy, France and Spain. The proposal is still at a preliminary stage and is open for other participants to join. It is expected that Mediterranean conifer forests will be strongly affected by climate change. The project will address their reaction in terms of adaptation and migration to be included in a prediction model. Neutral and adaptive molecular markers will be used for assessment. An emphasis will be placed on interspecific hybrids expected to occur following migration. Five work packages were identified and were briefly described.

Ladislav Paule presented an INTAS proposal (see www.intas.be) on gene conservation of yew in the Carpathians, Crimea and the Caucasus. He provided some background information on the history and the current distribution of yew. There is limited information on genetic diversity and differentiation, and no gene conservation strategies have been elaborated. The project will update the knowledge of present distribution in the three mountain regions, carry out a comparative phytosociological study with modern methodologies and analyse biotic factors that are threatening yew. Sexual reproduction will be studied, and finally genetic diversity will be studied with isoenzymes and cpDNA markers. All the results will be used for the development of *in situ* and *ex situ* gene conservation measures and the design of a gene conservation strategy. Six partners will participate in the project (Slovakia, Italy, Russia, Armenia, Georgia, Ukraine).

Seminar: Emerging facts and issues related to gene conservation of conifers in Europe

Tore Skrøppa presented a paper on epigenetic effects (changes in gene expression without changes in DNA sequence) and their consequence for gene conservation. This is a widely occurring phenomenon, in both plants and animals. Experiments conducted on *Picea abies* have shown that seedlings of identical genetic background, produced under different environmental conditions, performed differently. A project funded by the EU is currently further evaluating the genetic basis of these effects and attempting to understand the links between environmental conditions and gene expression.

The implication of these effects on conservation and breeding strategies were discussed. It was agreed that although epigenetic effects play a role in maintaining genetic diversity, it is still premature to draw conclusions for conservation strategies because neither the general validity of the effects at species level nor the group of species displaying epigenetic effects has been clarified.

Weber Amaral presented a paper on climate change and forest genetic resources. He provided a brief overview of IPGRI's activities in this area and gave information on the

general effects of climate change on agriculture, forestry and natural environments. He emphasized the need to scale down from the global to the local level and develop species-specific models. Several possible mitigation options that were discussed in the framework of the Kyoto Protocol were presented. A practical geographical information system (GIS) application developed for crops was presented.

Sharing of gene conservation responsibilities

The conclusions of the Inter-Network Meeting held in Antalya, Turkey in October 2000 were briefly presented. The idea of a Europe-wide system of *in situ* conservation units was agreed to be a vision for future activities of the EUFORGEN programme. The role of EUFORGEN would be to analyse gaps in conservation, to develop minimum conservation standards and to raise public awareness. The *in situ* networks would be designated through a multilateral agreement or master plan to which countries would adhere on a voluntary basis. In each country, some of the conservation areas would be designated to become part of the networks, or countries could decide to create new reserves to complete the coverage of the distribution range.

The proposal was agreed in principle, but some concerns were raised, particularly relating to the legal status of the units and the cost associated with the management of these networks.

In order to assess the feasibility of the system, it was agreed that a pilot study would be initiated with *Picea abies*, for which standards for conservation units have already been developed. Therefore, as a first step, all countries will provide information on existing gene conservation units for Norway spruce. Each country will be responsible for deciding which areas should be included in the European network.

The Secretariat will provide the existing minimum requirements (definitions and criteria) for the gene conservation units to be included and the form to be completed for each unit before 31 October 2001. Countries will provide information to be converted to map format and made available over the Internet by 31 March 2002.

Distribution maps

It was agreed that the Secretariat, in collaboration with Teijo Nikkanen, will follow up the contacts made with the *Atlas Florae Europaeae* (based in Helsinki, Finland) and verify the possibility of collaborating on the production of distribution maps at suitable scale to help identify gaps for gene conservation. The Secretariat will inform the Network about the progress made before 31 October 2001.

Technical guidelines

The relevant outcomes of the first Inter-Network meeting of Chairs of the EUFORGEN Networks were presented and discussed. The role of the Inter-Network Group is to harmonize priorities and coordinate activities among the five Networks, in order to share experience and avoid duplication of efforts. With regard to the technical guidelines, the Inter-Network Group agreed that a general document on the objectives, principles and methods of forest genetic conservation should be prepared, as a basis for the species-specific guidelines that could be developed as separate modules. This general document is being prepared on the basis of a training manual used for the course in Austria in May 2001.

The modules will be developed with similar format for a first set of identified species (see below). It was agreed that five draft guidelines should be produced before the next Network meeting:

- *Abies alba* (H. Wolf)
- *Picea abies* (T. Skrøppa)—on the basis of the existing document produced by the *Picea abies* Network in 1997
- *Pinus halepensis/brutia* complex (B. Fady)
- *Pinus pinaster* (R. Alia)
- *Taxus baccata* (L. Paule)

Each module should be no longer than four printed pages, including illustrations, etc. The final text should be limited to 1200 words. Each module will comprise the following components: standard introduction paragraph, distribution map (native and naturalized distribution will be highlighted in different colours), biology and ecology of the species, threats to genetic diversity, genetic knowledge, importance and use, and guidelines for genetic conservation and use. These guidelines will consist of a sequence of actions, or steps, ordered according to their technical and economic feasibility, which are required to ensure the conservation and sustainable use of genetic resources within the species' distribution areas in Europe.

The target audience, as agreed at previous Network meetings, includes forest officers and agencies responsible for applied forest genetic conservation in each country. The sheets will be produced first in English, but the template of each will be made available to Network members, who will be responsible for their translation and adaptation to national conditions. The modules will include relevant graphs, figures and illustrations. References for further reading will be included at the end of each module.

Similar species modules currently being developed for noble hardwoods and other species will be circulated through the EUFORGEN listserv before the end of the year. The authors may seek inputs or review of the draft modules from other Network members and other specialists as appropriate.

The Secretariat will send the Table of Contents of the general document (see above) to the authors before 31 October 2001.

A draft of the five species guidelines will be circulated 2 months before the next meeting.

Research needs

The Chair summarized the research needs of continued high interest for conifer species, as follows:

- 1 Mating systems of species, intensity and effects of gene flow: more knowledge in both areas is essential for formulating gene conservation strategies.
- 2 The role of phenotypic plasticity and epigenetic effects in maintaining genetic diversity and counteracting local adaptation require to be clarified.
- 3 Velocity of adaptation processes and the realistic assessment of adaptation to local ecological conditions are needed to refine the traditional view on autochthonous origin and value of local populations.
- 4 Species migration potentials, possible effects of introgression and response to predicted environmental (climatic) changes should be investigated at both molecular and quantitative levels.
- 5 Links between neutral molecular markers and adaptively important traits need to be identified to assist the selection of areas and populations of high value for forest genetic resources conservation.
- 6 Evaluation is required, at the ecological, economic and genetic levels, of the efficiency of the different gene conservation strategies implemented over Europe.

In line with the statements of the Inter-Network Group meeting, it was proposed that multinetwork seminars on the above questions would be useful. Representatives of relevant scientific disciplines (such as ecology) could be invited to attend such seminars.

It was felt that special, increased attention should be given to practical implementation. Because of the nature of information on genetic diversity, it is of the utmost importance for the forest genetic resources community to find suitable ways of demonstrating links to forestry practice, such as management regimes in commercial and protected forests, the use and control of reproductive material, mitigating effects of climate change, etc.

Documentation

Simone Borelli explained the idea of providing a gateway to information on plant genetic resources in Europe through the IPGRI website, in particular by facilitating access to

information on national programmes. The page also provides direct access to the ECP/GR and EUFORGEN Networks. He also briefly presented the existing EUFORGEN databases to demonstrate the ease of access to information.

He then presented the EUFORGEN bibliography, which was developed on the basis of the existing bibliographies from the different networks. The bibliography currently contains around 1700 references, mostly to grey literature on conservation and use of forest genetic resources. This online database is being used quite extensively and in fact is the most frequently visited page of the entire IPGRI site. However, in order to maintain the effectiveness of this tool, it must be continuously updated. Network members were encouraged to provide additional references from their respective countries whenever they have the opportunity, in Microsoft Access database format. To facilitate this task, the Secretariat will send the format for contributions by 30 September 2001, together with the electronic version of this report.

Conifers in Spain

Sonia Martin gave an overview of the distribution of conifers and conservation activities in Spain.

Public awareness

Slide collection

Bruno Fady reported that few slides have been received so far, but quite a number were delivered during the meeting. He presented an outline of the possible contents of the slide collection for reference. Network members were reminded to send their slides by 15 October 2001.

As a follow-up to this task, it was proposed to produce a PowerPoint presentation on gene conservation of conifers.

Other public awareness activities

The need for more comprehensive publications to disseminate the activities of the EUFORGEN networks was raised.

There was a preliminary proposal to prepare a publication on conservation and management of forest genetic resources in Europe to be compiled from existing EUFORGEN material (i.e. reports, technical guidelines). The objective of the publication would be to reach policy makers and scientists. The contents could include:

- current situation of forest genetic resources in Europe
- the MCPFE: implications for genetic conservation in Europe
- the Strasbourg Resolution S2 and EUFORGEN
- technical guidelines and other practical tools
- country case studies
- thematic issues:
 - use of reproductive material
 - sustainable forest management
 - climate change
 - biodiversity

The idea of articles in newspapers at a national level was also raised as a possible means for raising awareness of the public at large. Websites for children were also mentioned as a possible means for raising awareness.

Adoption of the report

The report of the meeting was adopted.

Date and place of the next meeting

Poland invited the Network to meet at the Kostrzyca Forest Gene Bank facility during the last week of September 2002.

Any other business

Jozef Turok officially announced that Simone Borelli would be leaving the EUFORGEN Secretariat at the end of October 2001. He thanked him for his contribution and wished him luck in his new position in FAO.

Csaba Mátyás announced that Alphonse Nanson will officially retire at the end of September 2001 and thanked him for his valuable contribution to the activities of the Network.

Closure

The Chair thanked all participants for their contribution and commitment and encouraged them to continue providing their valuable contribution to the activities of the Network. He once more thanked the local organizers for the excellent arrangements and declared the meeting officially closed.

Programmes

Second EUFORGEN Conifers Network meeting

Valsain, Spain, 20–22 September 2001

Wednesday 19 September—arrival of participants

Thursday 20 September

Opening of the meeting

09:00 Welcome (Host country and Chair of the Network)

09:15 Introduction (IPGRI)

09:30 Adoption of the agenda and nomination of rapporteurs

Country reports on the status and practices of gene conservation in selected species

(Abies alba, Picea abies, Pinus pinaster, Taxus baccata)

09:45 Presentation of invited case studies

10:30 *Coffee break*

11:00 Invited case studies (continued)

12:30 Indicators of national gene conservation programmes (Secretariat)

13:00 Proposal for publication on current status of FGR in Europe (Csaba Mátyás)

13:30 Lunch

Research

15:00 Overview of ongoing research projects (All)

15:45 Presentation of project proposals (Project Coordinators)

16:30 *Coffee break*

17:00 Discussion on research needs and priorities (All)

Documentation

17:45 EUFORGEN Database/Information platform (Secretariat)

18:15 Bibliography (Secretariat)

20:00 Dinner

Friday 21 September

Seminar: Emerging facts and issues related to gene conservation of conifers in Europe—
technical presentations and discussion

09:00 Research on epigenetic effects and their consequences for applied gene conservation
(Tore Skrøppa)

09:30 Is genetic diversity and plasticity promoting evolution? (Csaba Mátyás)

10:00 Climate instability and gene conservation priorities (W. Amaral)

10:30 *Coffee break*

11:00 Discussion (All)

Sharing of gene conservation responsibilities

12:00 Results of the EUFORGEN Inter-Network meeting (Secretariat)

12:30 Selection of model ('flagship') species (All)

13:30 *Lunch*

15:00 Distribution maps and inventories (Secretariat)

16:00 *Coffee break*

16:30 Development of technical guidelines (All)

20:00 Dinner

Saturday 22 September

Field trip (half-day)

Public awareness

14:30 Follow-up, maintenance and use of image database (Bruno Fady)

15:00 Other public awareness initiatives – individual country or Network level (All)

15:30 Links between the Network and Ministerial Resolutions (Secretariat)

Adoption of the report

Date and place of next meeting

Conclusions

Sunday 23 September – departure of participants

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