Establishment of a European Information System on Forest Genetic Resources

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UNECE/FAO ToS on Monitoring of Sustainable Forest Management
EU-JRC, Ispra, Italy, 26-28 January 2010
About the EUFGIS project

- Project period: April 2007-Sep 2010
- Total budget € 1,1 million
  - Co-funded by the European Commission (DG Agriculture) (50%)
- Seven partners:
  - Bioversity International
  - BFW, Austria
  - State Forest Tree Improvement Station, Denmark
  - INRA, France
  - National Forest Centre, Slovakia
  - Slovenian Forestry Institute, Slovenia
  - Forest Research, United Kingdom
EUFGIS objectives

1. To create a Web-based, permanent information system to serve as the European documentation platform for national FGR inventories
2. To establish a network of FGR inventories in 40 countries to provide data for the information system
3. To develop minimum requirements for dynamic gene conservation units of forest trees and common information standards for these units at pan-European level
4. To make available, as a first step, harmonized data on the dynamic gene conservation units of 20 tree species from at least 80 % of the countries within each species’ distribution range in Europe
5. To provide training on FGR documentation to national focal points in participating countries
EUFGIS Work Packages

1. Creation of a network of national FGR inventories (SNS, Denmark)
2. Development of minimum requirements and information standards for dynamic gene conservation units (INRA, France)
3. Creation of the information infrastructure (Bioversity International)
4. Building the information system (SFI, Slovenia)
5. Coordination (Bioversity International)
EUFGIS activities

- Terms of Reference (ToR) for National Focal Points
- 35 countries have nominated their Focal Points
- Workshop on FGR documentation in Europe, Birkerød, Denmark, 23-24 October 2007
- Memorandum of Understanding (MoU) for sharing and using national data (draft)
- Pan-European minimum requirements and data standards for dynamic gene conservation units developed by the expert group (EUFORGEN Networks, FAO, project partners)
- Expert group meetings
  - Denmark, 25 October 2007
  - France, 8-9 April 2008
  - Slovenia, 1-2 October 2008
- Documentation manual (under development)
National Focal Points
Minimum requirements

• Define what is “a **dynamic gene conservation unit**”?
• Increase awareness of how these units should be managed so that they contribute to long-term gene conservation of forest trees
• Serve as a check list for the National Focal Points before they enter data into the EUFGIS information system
Dynamic gene conservation

- Maintenance of evolutionary processes within tree populations to safeguard their potential for continuous adaptation
  - managing tree populations at their natural sites within the environment to which they are adapted \textit{(in situ)}
  - establishing artificial, but dynamically evolving populations elsewhere \textit{(ex situ)}
Minimum requirements

• The units should have a designated status as gene conservation areas of forest trees at national level

• The units can be located in managed forests, protected areas or seed stands

• The units should have a basic forest management plan and gene conservation recognized as a major management goal
The minimum size of a dynamic gene conservation unit depends on tree species and conservation objectives:

1. **500 reproducing trees** (when the objective is to conserve genetic diversity of widely occurring and stand-forming conifers or broadleaf species)

2. **50 reproducing trees** (when the objective is to conserve adaptive or other traits in marginal or scattered tree populations) or **50 seed bearing trees** (scattered tree species with sexual dimorphism)

3. **15 unrelated reproducing trees** (when the objective is to conserve remaining populations of rare or endangered tree species)
Minimum requirements

- One or more tree species should be recognized as target tree species for each unit
- The units should be ideally located in autochthonous tree populations, but also
  - Ex situ units (representing well-adapted forests)
  - Units of introduced tree species (landraces)
- Silvicultural techniques should support reproductive processes
- If stands are regenerated artificially, the reproductive material should originate from the same gene conservation unit (or from another autochthonous stand nearby)
Minimum requirements

- Monitoring (regeneration success, damages, etc.)
- Comprehensive assessment of the conservation units should be carried out every 5 or 10 years
- Guidance for more detailed monitoring will be provided later (using specific genetic C&I or even molecular markers)
Data standards

- Define the format, the accuracy, the quality and the range of the data entered in the information system

- Guide the National Focal Points in data compilation and upload of the data into the information system

- Data on the gene conservation units
  - unit level
  - species level
## Unit level

1. Country of the unit * *(i.e. FIN)*
2. Unit number * *(i.e. FIN00001)*
3. National gene conservation unit number*
4. Province or state
5. Department or county
6. Municipality
7. Local name
8. Latitude *
9. Longitude *
10. Restriction in making the geographical coordinates publically available
Unit level

11. Datum

12. Polygon coordinates (if available)

13. Minimum elevation*

14. Maximum elevation*

15. Surface area of the unit *

16. Ownership of the unit

17. Type and function of the unit – multiple choice
   – Gene reserve forest
   – Biodiversity conservation (habitats and/or species)
   – Seed stand
   – Protective forest area (soil, water, timber line, etc)
   – Forest area managed for wood production and /or multiple uses and services
Unit level

18. Monthly temperature (°C)
19. Total annual mean precipitation (mm)
20. Heat sum and/or length of the growing season (in days)
21. Accumulated moisture deficit
22. Year of collection of the field data entered*
23. Year of the most recent visit*
24. Remarks on specific soil characteristics
25. Remarks on other specific characteristics of the unit
26. All tree species growing in the unit*
Species/population level

27. Target species* (full Latin name)
28. Unit number *
29. Year of collection of the field data entered*
30. National population unit number if existing
31. Year of establishment of the GCU for the species
32. Year of the most recent visit*
Species/population level

33. Status of the target tree population regarding the EUFORGEN common action plans
   – Included
   – Not included
   – Pending

34. Category of the population*
   – In situ
   – Ex situ

35. Origin of the material*
   – autochthonous
   – introduced
   – unknown
Species/population level

36. Predominant silvicultural system
   – Coppice
   – Clear-cutting with artificial regeneration (planting or seeding)
   – Clear-cutting with natural regeneration (seed trees or strips)
   – Shelterwood systems
   – Close-to-nature forestry (continuous cover forest, selective logging)

37. Level of management allowed to favour the target species
   – No intervention allowed
   – Minimum intervention allowed
   – Conservation through active intervention carried out
38. Main reason for carrying out gene conservation for this species*
   – to maintain genetic diversity in large tree populations
   – to conserve specific adaptive and/or phenotypic traits in marginal or scattered tree populations which are often relatively small
   – to conserve rare or endangered tree species with populations consisting of a low number of remaining individuals

39. Total number of reproducing trees per unit*
   – 15 - 50
   – 51 - 500
   – 501 - 5000
   – > 5001
Species/population level

40. Sex ratio, if appropriate
   – predominately males
   – even sex ratio
   – predominately females

41. Status of long-term viable regeneration
   – continuous
   – sporadic
   – requires management intervention

42. Distribution of the reproducing trees in the unit (multiple choice)
   – in stands
   – scattered
   – in groups
Species/population level

43. Estimated share of the total area within the unit in which the species is occurring (%)*

44. Remarks on the population
Data compilation

• Regional training workshops organized for National Focal Points in 2009
  – Vienna, 24-26 March
  – Ljubljana, 21-23 April
  – Avignon, 5-7 May
  – Copenhagen, 12-14 May

• Demonstration of the intranet

• Helpdesk support for National Focal Points to compile their data sets

• So far data on 1024 units and 74 target tree species (30 countries)
Data compilation
Data compilation
Next steps

- Data compilation and uploading is continuing
- Some Focal Points still need training
- Finalization of the EUFGIS portal
- Two case studies
- The EUFGIS portal will be launched at the final meeting in Vienna on 14-16 Sep 2010
- The information system will serve many purposes
  - Pan-European gene conservation strategies
  - MCPFE report
  - SoW-FGR report
  - National FGR activities
  - Research
Future

- The information system will be maintained and further developed as part of EUFORGEN Phase IV (2010-2014)
- National Focal Points remain responsible for updating the data (once a year or as needed)
- EUFGIS will become a data provider to GBIF and linked to other relevant portals (e.g. GFIS and EUROFOREST)
www.eufgis.org