The Second Regional Training on Forest Genetic Resources

September 18th – 22nd 2017

Binzhou, Shandong Province, China

Organized by

National Forest Genetic Resource Platform of China

Research Institute of Forestry, Chinese Academy of Forestry

Bioversity International

Asia Pacific Forest Genetic Resources Programme

APAFRI

China Happy Ecology Industrial Co., Ltd.

Sponsor:

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Introduction

The *State of the World's Forest Genetic Resources* (FGR) Report highlighted how populations of many important tree species are declining due to a variety of threats (FAO, 2014). The alarming results led to the development of a *Global Plan of Action on Forest Genetic Resources*, as a call for governments, international organisations and others to respond before it is too late. Forest trees are long-lived species with high genetic diversity that is crucial for their survival, regeneration and adaptation. Genetic diversity also provides the foundation for selection and breeding programmes to improve the productivity, resistance or quality of trees and their products. Conservation of tree genetic diversity can be achieved together with the use of trees to produce wood or non-wood products, including food for humans and animals – as long as management and sustainable use practices are designed to safeguard this diversity.

However, forest managers and conservationists are often not well informed about the relevance of genetic aspects to meeting their objectives. Lack of understanding of FGR therefore constrains conservation of tree species, increases genetic risks in subsequent generations and limits adaptation to climate change. Tertiary (universities, forestry colleges) forestry education curricula show poor or no coverage of FGR issues, while biology teaching is often devoid of the social and practical realities. As such there is lack of curricula and training that allow forest managers, conservation practitioners and other non-specialists to effectively integrate genetic conservation of tree species in forest conservation and management.

This training course provides an introduction to the principles of genetic conservation of tree species. It demonstrates the use of a *Forest Genetic Resources Training Guide*, developed by Bioversity International, as a flexible tool for teaching and learning about FGR issues in formal and informal education, or on-the-job training. Targeting non-specialists, it uses real case studies to focus on the links between sustainable forest management and FGR, covering areas such as conservation strategies, trees outside forests, seed supply chains, forest management, forest restoration and logging. The Guide demonstrates the value of FGR for responsible decision-making in forest and natural resource management. It has a global geographic scope and covers issues of practical relevance to local conservation and sustainable use of FGR.

The course is organized in collaboration with *United Nations Food and Agriculture Organization*, and contributes to the implementation of the *Global Plan of Action on Forest Genetic Resources*.

Training topics

The course will cover the four training modules of the Forest Genetic Resources Training Course:

Module 1: Species conservation strategies

- Conservation paradigms – *in situ*, *ex situ*, through use (*circa situm*)
- Biological corridors
- Genetic processes associated with small populations – which populations are too small?
- Identifying threats – genetic and others

Module 2: Trees outside of forests

- Fragmentation - gene flow patterns and maintenance of viable populations
- Conservation of species and genotypes
- Conservation paradigms - in situ, ex situ, through use (circa situm)
- Reproductive materials - source and collection

Module 3: Seed supply chain

- Reproductive materials – source, collection and distribution
- Genetic processes associated with small populations – bottleneck, increased genetic drift, increased inbreeding and consequently homozygosity

- Effective population size compared to census size
- Sexual systems – dioecy, hermaphrodite
- Self-incompatibility mechanisms

Module 4: Forest management

- Inbreeding – changes in mating patterns after logging
- Population bottlenecks and genetic drift
- Modelling – evaluation of long-term impacts of extraction
- Dysgenic selection – high grading, logging of the best trees
- Reproductive materials – source of regeneration

For more information see: http://forest-genetic-resources-training-guide.bioversityinternational.org/

Participants

This course is about the links between sustainable forest management and forest genetic resources and how to incorporate them into teaching without changes to curricula. During the course, participants will examine and gain an understanding of the relevance of genetic diversity issues to broader forest management, restoration and conservation. The course is aimed at university lecturers from South, East and Southeast Asian countries who: (i) teach forestry but are not specialized in genetics, or (ii) are specialised in genetics but are not teaching forestry, or (iii) teach tree breeding but are interested in teaching broader genetic issues. After the course, it is expected that participants will incorporate some of the content into their teaching, and also share with colleagues in their home institutions or beyond. We welcome paired applications (category i and ii) from lecturers in the same institution or country

Training language

The training will be conducted in English. Participants need to be sufficiently fluent in English to read course materials and participate in group discussions in English (for examples see http://forest-genetic-resources-training-guide.bioversityinternational.org/using-this-training-guide/

Venue

The course will be held in Binzhou, Shandong Province, China. Transportation will be arranged from and to Beijing on 17 and 23 September, respectively.

Cost

The course is free of charge for 20 selected, fully-funded participants. The organizers will cover travel to and from the training venue, accommodation costs and meals for these participants.

In addition, 10 partially funded or self-funded participants will be invited to the course:

- Partially funded participants: The course is free of charge and the organizers will cover accommodation costs, meals and transportation during the course. Participants are responsible for covering and arranging their international travel
- Self-funding participants: The course fee is 3000 RMB and covers tuition and training materials, accommodation costs, meals and transportation during the course. Participants are responsible for covering and arranging their international travel.

Application process

To apply to the course,

1. Please complete the online application form at: https://www.surveymonkey.com/r/FGR_training_Sep2017, and
2. Email your CV to Dr. HUANG Ping (pippin09@163.com)

Online applications are encouraged, but in case of technical difficulties, candidates may also complete the application form offline and email it along with their CV.

Applications must be made no later than 16 June 2017.
Selected participants will be notified by 3 July 2017.

Selection criteria

A total of thirty participants will be selected based on the quality of their application and the extent to which they meet the following criteria:

- Lecturer at a tertiary education institution (university, college, research or other training institution) in South, East or Southeast Asian countries
- Actively teaching courses in undergraduate or postgraduate programmes or on-the-job training, covering any of forestry, biological sciences, natural resources management, biodiversity and wildlife conservation

Additional considerations in selection include:

- Applicants from the member countries of the Asia Pacific Forest Genetic Resources Programme APFORGEN will be given preference (Cambodia, China, India, Indonesia, Republic of Korea, Lao PDR, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam)
- Selection will aim at a geographical balance between APFORGEN member countries, to have at least 2 representatives from each country
- Paired applications from forestry and genetics lecturers from the same institution or country may be given preference (see section 'Participants')
- Women are encouraged to apply and gender balance will be considered in selection

Partially funded and self-funded participants apply under a separate quota from fully-funded participants, and may not be required to fully meet the above criteria, depending on the number of applications.

Contact information

Chair of the Organizing Committee:
Prof. ZHENG Yongqi (zyq8565@126.com)

Registration, logistics and inquiries:
Dr. HUANG Ping (pippin09@163.com)
Dr XU Cai (xu.cai@qq.com)
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Dong Xiao Fu No. 1, XiangShan Road, HaiDian District, Beijing.
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Tentative Programme

Sunday, 17 September 2017
Arrivals
Transportation to Binzhou from Beijing

Monday, 18 September 2017

08:30-09:30	*Registration*
09:30	Opening, Welcome and participant introductions *Zheng Yongqi, Chinese Academy of Forestry*
10:00	Global Plan of Action on Forest Genetic Resources *Riina Jalonen, Bioversity International*
10:30	Strengthening capacities on Forest Genetic Resources conservation and management: common problems and the Forest Genetic Resources training guide *David Boshier, Bioversity International/University of Oxford*
11:00	*Tea break*
11:30	Practical: Basic Population Genetic Concepts *David Boshier, Bioversity International/University of Oxford*
13:00	*Lunch*
14:00	Introduction to Module 3: Seed supply in forest restoration *David Boshier, Bioversity International/University of Oxford*
14:45	Seed supply Case studies: group work
16:00	*Tea break*
16:30	Seed supply Case studies: group work
17:30	Closing day 1
18:30	Welcome Dinner

Tuesday, 19 September 2017

09:00	Genetic resource conservation initiatives in China *Zheng Yongqi, Chinese Academy of Forestry*
09:30	Seed supply Case studies: group presentations
10:30	*Tea break*
11:00	Summary and conclusions of Module 3
11:15	15 min presentations by 4 participants of FGR teaching in their institution/country
12:15	Introduction to Module 1: Species conservation strategies *David Boshier, Bioversity International/University of Oxford*
13:00	*Lunch*
14:00	Species conservation strategies Case studies: group work
15:30	*Tea break*
16:00	Species conservation strategies Case studies: group work
17:00	Asia Pacific Forest Genetic Resources Programme (APFORGEN) *Riina Jalonen, Bioversity International*
17:30	Announcements and closing of day 2

Wednesday, 20 September 2017

09:00	15 min presentations by 4 participants of FGR teaching in their institution/country
10:00	Species Conservation strategies Case studies: group presentations
10:30	*Tea break*
11:00	Species Conservation strategies Case studies: group presentations
11:30	Summary and conclusions of Module 1
12:00	Introduction to Module 2: Trees outside forests *David Boshier, Bioversity International/University of Oxford*
13:00	*Lunch*
14:00	Trees outside forests Case studies: group work
15:30	*Tea break*
16:00	Trees outside forests Case studies: group work
17:00	Indicators for monitoring forest genetic resources
17:30	Announcements and closing of day 3

Thursday, 21 September 2017

09:00	Flexible teaching of FGR within existing curricula *David Boshier, Bioversity International/University of Oxford*
09:30	Trees outside forests Case studies: group presentations
10:30	*Tea break*
11:00	Summary and conclusions of Module 2
11:15	Introduction to Module 4: Forest Management *David Boshier, Bioversity International/University of Oxford*
12:00	Forest management Case studies: group work
13:00	*Lunch*
14:00	Forest management Case studies: group work
15:30	*Tea break*
16:00	Forest management Case studies: group presentations
17:00	Open Forum – reflections on my FGR teaching – what it means for me
17:30	Announcements and closing of day 4

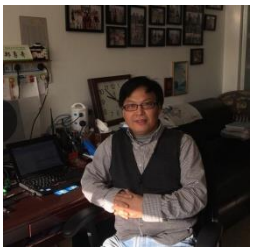
Friday 22 September 2017 (Field Day)

8:30-16:00	Field visit
18:00	Ending Banquet including presentation of certificates to participants

Saturday 23 September 2017
Transport to Beijing
Departures

Organizers gratefully acknowledge the generosity and support of China Happy Ecology Industrial Co., Ltd. for the training programme

Lead Trainers:



Yongqi Zheng, Research Institute of Forestry, Chinese Academy of Forestry

Yongqi is Research Professor, Principal Scientist and Director of Forest Genetic Resources at the Chinese Academy of Forestry, and Adjunct Professor at Nanjing Forestry University. He is also the Program manager of China's National Forest Genetic Resources Platform and project leader of the national priority research projects "Key Technologies for Conservation and Sustainable Utilization of FGR" and "Exploration and innovative use of critical genes from FGR". He is also supervising MSc and PhD students working on genetic conservation projects and teaching population genetics at the Graduate School of Chinese Academy of Forestry. He is also advisor to government agencies and forestry industries on issues related to forest genetic resources and tree breeding.

David Boshier, Bioversity International and University of Oxford, UK

David is Senior Research Associate focusing on the genetics of tree populations, human impacts (e.g. fragmentation, logging) on such populations and applications to issues of use and conservation in natural and agro-ecosystems. He has a keen interest in knowledge exchange through the development of appropriate materials. He has developed the series of training modules for use in the teaching of forest genetic resources, which will be used during the regional training course. He has co-published the *Central American trees: source book for extension workers* and conducted a training programme on the production of extension materials throughout Central America.

Judy Loo, Bioversity International, Rome

Judy Loo leads Bioversity International's research on conservation and sustainable use of forest and tree genetic resources. With her team of scientists located in different continents and research partners, she co-develops and manages research projects in sub-Saharan Africa, Asia and Latin America, and supports capacity strengthening initiatives for managing and conserving tree genetic resources. Judy contributes to international initiatives such as the Food and Agriculture Organization of the UN's first 'State of the World's Forest Genetic Resources' report and promotes implementation of the Global Action Plan on Forest Genetic Resources. Prior to joining Bioversity, her work included teaching short courses on conservation genetics in Mexico, through the North American Forestry Commission of the FAO.