Proposal for Japanese Junior Professional Officer

Terms of Reference

Title of Project:

Bridging the knowledge gap in tree-based restoration of degraded land in the tropics

Background:

Ecosystem restoration is increasingly a global priority to tackle climate change, desertification and loss of biodiversity, the main environmental problems of our times. This emerging interest in restoring ecosystems was formalized with the adoption of the revised and updated Strategic Plan of the UN Convention on Biological Diversity (CBD) for 2011–2020, which aims for the restoration of at least 15% of degraded ecosystems by 2020 (Target 15). As approximately 2 billion hectares of land are estimated to have potential to benefit from restoration, achieving Target 15 would imply the restoration of 300 million hectares by 2020. Numerous initiatives have been set up to reach this goal, among which notably the Bonn Challenge, which aims to restore 150 million hectares by 2020.

Along with the enormous scale of planned projects come both opportunities and risks. One opportunity is to use restoration efforts as a way to restore lost biodiversity, for example native tree species. The risks of failure are associated with the use of inadequate or mismatched reproductive material, which may provide forest cover in the short term, but often does not establish a self-sustaining ecosystem. Indeed, restoration is not just tree planting. In the past, many, if not most, large-scale restoration projects failed and one reason for this was the use of ill-adapted planting material. This must be avoided in the future. What is needed is to develop knowledge that will allow a reduction in failures and the concomitant loss of investments and that will generally improve the long-term success of restoration.

Several ecosystem restoration approaches have been developed and some of these show great potential for the establishment of a resilient ecosystem in the long term. Among these is the Miyawaki Method (named after Prof. Akira Miyawaki, from the Japanese Center for International Studies in Ecology, Institute for Global Environmental Strategies, Japan). Since 1971, over 40 million native trees have been planted using the Miyawaki method in over 1700 sites around the world. The method appears, anecdotally, to be extremely effective. Unfortunately, so far no research has been done comparing the original populations and the restored ones, assessing the effectiveness in keeping the original genetic diversity and therefore restoring the adaptive capacity of the forests.
**Project Description:**

Bioversity is dedicated to generating scientific knowledge about the genetic considerations that need to be taken into account in restoration activities to ensure that the trees we plant now will become the healthy and resilient forests of the future. Bioversity has recently coordinated a thematic study on the importance of genetic considerations which will be published later this year as part of FAO's State of the World’s Forest Genetic Resources. We are now looking for a dedicated junior professional officer to strengthen our team working on tree-based restoration. Under the guidance and supervision of a Scientist in Forest Genetic Resources, the incumbent will work to provide efficient and effective scientific support to ongoing and new activities, in particular:

- Actively participate, and eventually lead some of the activities in an ongoing project on the restoration of Tropical Dry Forest in Colombia. This project aims to develop practical protocols which allow restoration practitioners to select the most appropriate species combination and associated seed sources according to the characteristics of the restoration site, explicitly considering functional and genetic diversity considerations, as well as the anticipated impact of climate change;
- Actively contribute to the development of project proposals to evaluate the effectiveness of various ecosystem restoration approaches, in maintaining the genetic diversity of the original populations, of sites restored using the Miyawaki Method and other relevant methods and initiatives in Southeast Asia, sub-Saharan Africa and Latin America;
- Actively contribute to the development of project proposals on tree-based restoration of degraded land, most notably the ongoing development of a proposal for submission to the Global Environment Facility on the restoration of land degraded by gold mining, and the development of tree-based solutions to eliminate hazardous pollutants (mercury and cyanide) from mining sites in Colombia and Peru.
- Support the development of practical guidelines, decision-making and monitoring tools on ecosystem restoration;
- Contribute to the development and automation of geospatial and statistical analysis methodologies relevant to restoration and conservation of FGR.
- Contribute to scientific articles, training materials, research proposals and technical reports;
- Provide scientific support to research partners in the region through capacity building.
Desired outputs:

- Detailed protocols on the restoration of tropical dry forest in Colombia made available to a variety of end users, providing them with all the necessary information to carry out restoration at any potential site in Colombia. This involves site-specific identification of the most appropriate species combination, associated seed sources and propagation protocols.
- Two large project proposals on testing the genetic performance of the different restoration methods, among which the Miyawaki method and the restoration of land degraded by gold mining developed, negotiated with local, national and international partners and successfully submitted to donors.
- Practical guidelines, decision-making and monitoring tools on ecosystem restoration made available to the communities of restoration practitioners.
- Author on at least 3 peer-reviewed publications.
- New opportunities for collaborative research with universities and other academic institutions, CGIAR centres, CGIAR Research Program activities and development partners explored.

Qualifications and competencies:

Essential:
- MSc degree in a related area: e.g. forest ecology and/or genetics, geography, biology, botany or plant ecology.
- Strong analytical skills, including knowledge of data management and statistical methods.
- Ability to effectively interact with people at all levels and work effectively in a multi-cultural and multi-disciplinary environment.
- Good knowledge of written and spoken English.

Desirable:
- Experience (practical or theoretical) in ecological restoration.
- Experience in spatial analyses in GIS environments, and preferably environmental modeling.
- Knowledge of written and spoken Spanish.
- International experience.
- Knowledge of population genetics.

Duration of contract and preferred starting dates:

A two-year contract starting as of July 2014, depending on availability of the successful candidate.
Research location:

The JPO will be based at Bioversity International’s Office in Cali, Colombia (other duty stations such as Cameroon, Italy or Malaysia may be considered, depending on project needs and candidate expertise)

Supervision:

The successful candidate will be supervised by Dr Evert Thomas and Dr Michele Bozzano, and will work in close collaboration with other scientists within Bioversity’s Forest Genetic Resources Programme and across the organization.
Title of Project:

“Helping smallholders in Enset farming communities in Ethiopia generate incomes and nourish their families”

Background:

Enset (often called false banana), just like banana and plantain, belongs to the Musaceae family. Enset (Ensete ventricosum (Wew.) Cheesman) is only cultivated in Ethiopia and provides a source of food and non-food products to around 15-20 million people. Up to 600 enset clones have been recorded. Despite its usefulness, it is an under-utilized crop and its potential to improve the lives of poor farmers has not been sufficiently explored.

Enset farming can and has more potential to ensure household food security, particularly when adverse climatic conditions occur, assuring food for consumption following drought-induced crop losses. Enset also holds an important place in the culture of Southern Ethiopia. Enset has potential for those seeking long-term sustainable solutions to the country’s food insecurity problem.

The Commodity Systems and Genetic Resources Programme of Bioversity International has a long track record of research and development activities (along the production to consumption chain) on banana and plantain. One example is Bioversity’s excellence in delivering high impact solutions to poor farmers facing the threat of Xanthomonas wilt in east and central Africa. Bioversity’s wealth of experience in Africa, Latin America and Asia on banana and plantain can be applied for the improvement of enset cropping systems in Ethiopia.

Project Description:

Our goal is to undertake research and knowledge transfer to enhance nutrition and health, and improve the livelihoods of poor smallholder farmers in enset-based communities. We seek a systems approach to strengthen the farm production and livelihoods of enset-livestock based communities. We plan to synthesize current knowledge, carry out initial baseline surveys, conduct research in development and carry out knowledge dissemination through broader engagement with downstream partners on the following themes:

- enset germplasm diversity (high quality germplasm)
- enset diseases
- crop-livestock interaction
- contribution of inter/associated crops such as tef, sweet potatoes, leafy vegetables, coffee, maize, pulses and livestock production to food security/income and nutrition
- healthy and productive seed systems
- household consumption/nutrition/balanced diets
• gender roles in enset-livestock systems (seeking opportunities for women’s business development)
• post-harvest and processing issues
• marketing/commercialization/value chain issues

In the framework of this enset-livestock system livelihoods project, Bioversity International is looking for a JPO to:
• Assist with research on enset Xanthomonas wilt disease;
• Contribute to research on Enset-livestock system characterization and intensification;
• Conduct on farm surveys, carry out on farm research, collect and analyze data and lead/contribute to scientific publications;
• Initiate work on assessing gender roles in enset –livestock production systems (farm enterprise management, decision making, control of resources);
• Contribute to a PhD study (Ethiopian student who is registered at the Hawassa University) on enset production system characterization; and more specifically assist with on farm surveys.

Desired outputs:

• Various databases created (from on farm surveys, study of gender roles in enset-livestock systems).
• Co-author of at least 3 peer-reviewed publications.
• Principal author of at least 2 peer-reviewed scientific publications.
• New opportunities for collaborative research with universities and other academic institutions, CGIAR centres, CGIAR Research Programme activities and development partners explored.
• Support enset research collaboration between Bioversity International and Japanese Universities (e.g. the Graduate School of Asian and African Area Studies, Kyoto University; Prof. Masayoshi Shigeta).

Qualifications and competencies:

Essential:
• MSc degree, preferably in agronomy, crop-livestock interactions or production system analysis
• Independent research ability
• Excellent computer skills with MS Office and at least one statistical software package
• Ability to effectively interact with people at all levels and work effectively in a multi-cultural and multi-disciplinary environment
• Good knowledge of written and spoken English
• Willingness to travel and work in rural regions of Ethiopia

Desirable:
• Field-based research experience in the before mentioned themes or international development
Duration of contract and preferred starting dates:

A two year contract starting from January 2015 and potential for a one year extension.

Research location:

The JPO will be based at Bioversity International’s Office in Addis Ababa, Ethiopia, with regular visits to the project’s action sites.

Supervision:

The successful candidate will work closely with Dr Guy Blomme, Scientist, Technology Transfer, other scientists within the Commodity Systems and Genetic Resources Programme and across the Organization.
Research proposal for Japanese Junior Professional Officer

Terms of Reference

Title of Project:

“Assessing farmers’ diversification strategies: links between environment, biodiversity, local food systems and dietary diversity in East Africa regions”

Research background and objectives

Within the semi-arid tropics in Sub-Saharan Africa (SSA), people’s livelihoods and nutrition security are critically linked to the complex, fragile and risk-prone environments in which they live. Poverty and environmental degradation are widespread in the region and communities living here heavily influence and impact the natural resources, such as vegetation and soil, on which they depend. To overcome environmental challenges, including climate change, societies and ecosystems need to become increasingly resilient and agricultural landscapes need to improve to provide a wide range of cultivated and wild foods and nutrients to adequately meet human nutritional requirements.

Bioversity has a long history of working with international and national partners in SSA to address many of these issues. The proposed research aims to identify the level of resilience of communities living in western and eastern Kenya and to document the strategies that are currently being adopted to cope with risk. At the same time, the current use of local wild and cultivated diversity will be assessed along with the cultural reasons/habits/beliefs that underlie the use (or non-use) of biodiversity for nutrition in the study areas.

Specifically, the study will document inter- and intra-specific diversity used on farm, current farming practices, traditional knowledge and dietary diversity. Through data collection, field observations and analysis, key entry points will be identified to promote novel, culturally-acceptable strategies to support resilience and nutrition security. The focus of this research is at the interface between agricultural, social sciences, traditional knowledge and farmers’ use of crop diversity. Research outputs will contribute to identifying barriers and opportunities for small-scale farmers to make better use of locally available agrobiodiversity for their nutrition security and livelihoods, including new marketing options. The research will also contribute to an improved integrated knowledge base on local agrobiodiversity for farmers and policy makers alike and will ultimately contribute to more resilient agroecosystems.
Project Description

Research carried out by the Junior Professional Officer (JPO) will complement existing studies carried out by Bioversity International in eastern and western Kenya. In eastern Kenya, through the Dietary Diversity projects, African Leafy Vegetables programme, Seeds for Needs project and Indicators of resilience in socio-ecological productive landscapes work, Bioversity has worked extensively to examine opportunities for local farmers and communities to adapt to change, build resilience and create new opportunities for development using crop diversity. In western Kenya the ongoing UNEP/FAO/GEF Biodiversity for Food and Nutrition Project (BFN Project) and the Humid Tropics System CRP are assessing the contribution of agrobiodiversity and associated traditional knowledge to dietary diversity and raising awareness of the importance of biodiversity for food and nutrition. The projects have established a strong network of national partners, both governmental and non-governmental organizations, whose involvement will be crucial to research success.

Duties and Responsibilities:

The JPO shall, on behalf of Bioversity International, contribute to the above mentioned projects (and others that may arise). More specifically, the successful candidate will:

- Contribute to analyzing primary and secondary data collected during the projects (e.g. agrobiodiversity, socio-economic, market survey data, food consumption data)
- Plan, design and implement data collection and analysis for future situational analysis/baseline surveys
- Conduct field research in ethnobotany and nutritional anthropology to better understand and isolate cultural reasons/habits/beliefs that regulate agrobiodiversity use, farming practices, opportunities and barriers for dietary and farm diversification
- Contribute to develop, test and validate a participatory action research protocol to engage farmers and households towards diversification of diets and farming systems
- Assist with training/capacity building of individuals and/or multi-sectoral teams to undertake participatory action research and upscale project results to a wider audience
- Support the strengthening of multi-disciplinary research partnerships by actively involving partners including university students, NGOs and the private sector as potential users of the outputs/outcomes (methods, findings and lessons learnt)
- Support the dissemination of research methods and best practices with local farmers who contributed the information
• Contribute to the drafting of concept notes and project proposals and identification of new research opportunities and funding
• Contribute to regional, inter-program activities and team building

Desired outputs:

• As a team member, at least four peer-reviewed publications and other relevant research articles such as book chapters, research guidelines, toolkits, manuals, working papers etc. on agrobiodiversity, local food use, dietary diversity and seed systems, sustainable practices and use.
• A field manual/guidelines for participatory action research in agrobiodiversity, nutrition and dietary diversity to engage farmers and households in diversifying diets and farming systems
• Data used for the assessments (panel data sets, and other related research materials including documented photos, collected plant specimen) made available for other research programmes and partners
• New opportunities for collaborative research with universities and other national and international academic institutions and other CGIAR centres identified.

Desired skills:

Essential:
• MSc degree in a relevant field
• Strong interest in the biological, sociological and development aspects of integrated landscapes
• Independent field research ability to organize field surveys
• Strong data analysis skills and experience using statistical software packages
• Ability to effectively interact with people at all levels and work effectively in a multi-cultural and multi-disciplinary environment
• Good knowledge of written and spoken English

Desirable:
• Field based research background in agrobiodiversity, anthropology, ecology/conservation biology, indigenous food use and nutrition security, or international development
• Ability to speak in Kiswahili
**Duration of contract and preferred starting dates:**

A two year contract starting from January 2015 and potential for a one year extension. The area of nutrition, agrobiodiversity and dietary diversity is one of growing importance for Bioversity International and strong opportunities exist for the successful candidate to be retained beyond this assignment.

**Research location:**

The JPO will be based at Bioversity International’s Office in Nairobi, Kenya.

**Supervision:**

The successful candidate will work closely with Yasuyuki Morimoto, Associate Scientist (Ethnobotany/Genetic Diversity) in Nairobi as well as other scientists across the Organization.
Duration of contract and preferred starting dates:

A two year contract starting from January 2015 and potential one year extension. This is an internationally recruited position in Bioversity International, based in Bioversity International’s Office in Nairobi, Kenya. The area of nutrition, agrobiodiversity and dietary diversity is one of growing importance for Bioversity International and strong opportunities exist for the successful candidate to be retained beyond this assignment.