Forest Restoration Research Training

Magalang, Pampanga, Philippines
November 12–14, 2013 (training)
November 16, 2013 (workshop)

A training and workshop sponsored by:
Environmental Leadership & Training Initiative (ELTI)
Chiang Mai University–Forest Restoration Research Unit (FORRU)
Pampanga Agricultural College (PAC)
Philippine Native Plant Conservation Society, Inc. (PNPCSI)

Background: The forests of the Philippines are very rich in biodiversity, containing over 3,500 recorded tree species. This species richness results from the archipelagic nature of the country wherein the geographical separation and differences in soils, rainfall, elevation, and other factors result in a profusion of different forest types and many endemic species. At the most general level, botanists have identified 12 different forest types, although much diversity remains within those categories as well. This high level of biodiversity, compounded by the escalating human pressures on those forests, has resulted in the Philippines being declared as one of the hottest of the world's hot spots.

ELTI is a joint initiative of: Yale SCHOOL OF FORESTRY & ENVIRONMENTAL STUDIES   Smithsonian Tropical Research Institute

Conventional approaches to reforestation, which rely on the planting of a small number of exotic species, have done little to maintain the native biodiversity of the Philippines or mitigate the threats to its remaining forest areas. Through the advocacy of the members of the Rain Forest Restoration Initiative (RFRI) and other like-minded organizations, the usage of native species for reforestation has been gaining greater traction over time. Increasing capacity in native species reforestation, however, is hampered by the fact that there is very limited knowledge about the propagation and growth characteristics of the vast majority of native species. Systematic research into native species, with a clear emphasis on choosing appropriate species for restoration based on current site conditions and target forest types, is needed.

ELTI, FORRU, and PAC held a national training to stimulate and lay the groundwork for restoration-related research in different regions of the country. This training was held immediately before the 2nd PNPCSI International Symposium (November 15–16, 2013)—the theme of which was "Our Native Flora: Rediscovering their Value and Exploring their Untapped Potentials"— to both take advantage of and contribute to this gathering of native species enthusiasts. To direct that enthusiasm towards the practical needs for native species reforestation, ELTI and FORRU worked with PNPCSI to conduct a workshop during the 2nd day of the Symposium to identify candidate framework tree species appropriate for reforestation in different parts of the Philippines.

Objectives

- Introduce forest restoration principles, concepts, tools, and approaches;

- Facilitate systematic research on identifying appropriate species for reforestation in the Philippines through hands-on field exercises and data analysis;

- Encourage establishment of research units throughout the country that will take the lead in forest restoration-related research, development, and extension;

- Provide a venue for exchange of lesson learned and best practices in forest restoration among participants.

Course Format: The training was held at PAC and was organized and facilitated by Ms. Hazel Consunji (ELTI), Dr. Jacqueline Bagunu (PAC), and a team of assistants. Dr. Stephen Elliot (FORRU), Dr. Panitnard Tunjai (FORRU) and Dr. Marlito Bande (Visayas State University) were the primary resource people. PAC President Honorio Soriano, Jr. and Dr. David Neidel (ELTI) provided opening remarks. The training then started with a series of presentations and discussions on the basic principles of forest restoration and different management techniques, including protection, assisted natural regeneration, and various approaches to tree planting, as they relate to different levels of land degradation. Participants also learned about the comparative economic costs of the different forest restoration methods, the broader socio-economic benefit gained, and innovative methods to raise funds for forest restoration, including various payment for environmental services schemes. After lunch, participants practiced a rapid survey technique for assessing potential restoration sites in terms of the amount of existing advanced regeneration and species diversity as a way determine to whether, and if so how much, tree planting was needed. They also learned a practical method for recording leafing and flowering phenology of native tree species, an important step in keeping track of when the seeds of different species are available for collection.

On the second day, the concept of the framework species method of forest restoration was introduced, and the criteria and process for screening potential native framework tree species were defined. Participants learned strategies for seed collection, treatment, and storage, as well as experimental techniques for evaluating the efficacy of different management treatments, which they later practiced in the nursery. Because many important forest trees in the Philippines do not fruit annually, participants were also taught techniques for collecting wildlings and setting up a recovery chamber, using locally available materials, to ensure high wildling survival. The day ended with a demonstration on how to set up seedling experiments as a way to evaluate the impact of different treatments on growth performance. The broad goal of all the experiments were to determine the best way to manage the seeds and seedlings so that they all reach the appropriate size for planting when needed.

The third day started with a discussion of strategies for addressing climate change in forest restoration through encouraging seed dispersal across the landscape and maximizing genetic diversity. This was followed by a presentation on the process of developing field trial plots, including addressing land tenure issues and engaging with the stakeholders, as well as technical considerations such as species mix, planting density and techniques (direct seeding vs. nursery-grown seedlings). The importance of documenting and monitoring tree growth performance in the field for the different experimental set ups was emphasized, and a method for developing a database for this was briefly shown. The participants were then led through a data analysis exercise using sample data on growth and survival using specific tree attributes to determine which are the best performing species. They also learned how to use minimum standards and ranking systems to evaluate which species to select based on defined objectives and site conditions. The training ended with an exchange of best practices among participants and a review of the steps needed to establish one's own forest restoration research unit.

Workshop Format: On the second day of the two-day PNPCSI Symposium (November 16), all of the participants were engaged in a workshop focusing on how to choose candidate framework tree species for forest restoration in the Philippines. Dr. Elliott first provided a short introduction to the framework species method, the criteria by which framework species are chosen, and the sources of information that can be drawn upon to select candidate species. The participants were then divided into two groups, with one group led by Ms. Consunji, Dr. Bande and Dr. Sandra Yap (PNPCSI) focusing on the wet zone of the country and the other group led by Dr. Edwino Fernando (University of the Philippines-Los Banos), Dr. David Neidel and Dr. Tunjai on the seasonally dry zone. Taking advantage of the participants' expertise in botany, the group leaders then solicited suggestions of tree species to be used for reforestation. Each of the species listed was then evaluated and given a score on the basis of the agreed upon criteria, including survival, growth, attractiveness to wildlife, ability to shade out weeds, economic value, and availability of planting material. The scores were then tabulated and the species were ranked. Afterwards, Dr. Elliott presented the two groups' top ranking species and encouraged further research and experimentation to fill the gaps in our practical knowledge of the Philippine's highly diverse native flora.

Participants: The training was attended by 45 participants selected from State Universities and Colleges that are part of the Philippine Forestry Education Network, the Department of Environment and Natural Resources and its line bureaus, the National Power Corporation and Energy Development Corporation's Watershed Management Units, and other groups with ongoing reforestation projects in various regions of the country. Meanwhile, approximately 200 people representing universities, government agencies, private companies, and other native plant enthusiasts from the Philippines and the South East Asian region attended the workshop.

Outcome: A number of participants expressed a strong interest in establishing their own forest restoration research units. ELTI will give support as needed and monitor their progress through the Leadership Program and in coordination with FORRU. Participants will also be added to the Rainforestation discussion group as a way to facilitate effective communications amongst themselves as well as with FORRU, ELTI and RFRI. The list of candidate framework species evaluated during the workshop was also disseminated through the group's list serve and will also be posted on the ELTI and RFRI websites to stimulate further research and exchange of available data.