

Trees of knowledge

Eden's partnership project in Thailand sows the seeds of forest education.

Early in 2002 Eden began supporting the Forest Restoration Research Unit (FORRU for short), a small research team at Chiang Mai University (CMU) in northern Thailand, whose mission is to find out how to recreate tropical forest ecosystems on abandoned agricultural land in national parks. A unique feature of this project is its focus on restoring biodiversity, which has been phenomenally successful. Denuded hillsides, formerly smothered in grass and bracken fern, can now be transformed into closed-canopy tropical forest, rich in biodiversity, just 3 years after planting 30 or so specially selected, native tree species.

There's no magic involved; just painstaking research. First, FORRU's research team sorted through more than 400 indigenous forest tree species to select a few dozen potential 'framework' tree species capable of accelerating natural forest recovery when they are planted in deforested sites. Next, the researchers developed propagation techniques to produce top-quality planting stock of the most promising species and set up field trials to test various treatments (e.g. mulching, weeding, fertiliser application, etc.) to maximise the performance of the planted trees. Results from the field trials showed that simply re-establishing basic forest structure and ecological functioning can create the conditions that encourage natural forest regeneration. Restoration of tropical forests is no longer a dream but a realistically achievable goal.

The framework species method of forest restoration was originally conceived in



The current Darwin Education Team for Forest Restoration, Thanakorn, Wasun and Natenapit prepare for a workshop along a forest trail.

Above: FORRU has developed the so-called "framework species" technique of forest restoration. This plot has been transformed from denuded land into closed canopy forest in just 5 years.

by **David Blakesley**
and **Stephen Elliott**,
FORRU's research team



Queensland, Australia¹ and FORRU is now modifying it to suit the ecological and socio-economic conditions of northern Thailand. Framework tree species are those that can survive and grow rapidly under the harsh conditions in deforested areas. They must also be able to shade out weeds quickly and re-establish a forest canopy. Biodiversity gradually recovers when, at a young age, the planted trees produce fruits, nectar or nesting sites, which attract seed-dispersing wildlife.

Using the techniques developed by this

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research, canopy closure can now be achieved as soon as 2–3 years after tree planting. Weeds are rapidly replaced with a thick carpet of leaf litter, which breaks down to increase soil organic matter, nutrient content and water-holding capacity. As soon as canopy closure is complete, wildlife such as hog-badgers, pangolins and many forest bird species gradually take up residence in the newly formed patches of forest.

This is not rocket science – anyone can do it, and FORRU makes sure of that by testing the practicability of the techniques developed from their research in a local hill tribe community living within a national park (see *Eden Friends* issue 10). But all this research won't save Thailand's forests unless the results are passed on to the many and diverse organisations that are involved in tree-planting programmes. So now FORRU is taking the research results on the road in an attempt to show that anyone who is willing to learn can play a practical role in reversing the tide of deforestation which is laying waste to Thailand's northern hills and threatening the survival of both humans and wildlife.

Eden is not the only British organization involved. To secure the additional funds needed for the new outreach program, FORRU teamed up with its UK partners, Horticulture Research International in Kent, to put together a successful joint application to the U.K. government's Darwin Initiative. The project, entitled 'Education and Training for Restoring Tropical Forest Biodiversity' is now halfway through its 3-year period. Its aim is to provide anyone interested in saving Thailand's forests

with all the knowledge and skills needed to restore biodiverse forest ecosystems. Biodiversity is emphasized as an integral component of forest restoration. Monitoring it is given as much prominence as tree planting. Forestry officials, community leaders, NGOs and especially those responsible for training others, are all benefiting. School children



Right: A teacher at one of FORRU's workshops collects a few trees for her pupils to plant back at their school.

Below: Ban Mae Sa Mai school children near Mae Rim learn seedling care in their community native tree nursery.



are an especially important target group, since ultimately they have most to gain from restoration of diverse forest ecosystems.

To meet the tremendous demand from local people for the skills and knowledge generated by FORRU's research, a new team of four Darwin Education Officers (DEOs) was recruited. Once they had completed a rigorous training programme in FORRU's techniques, they wasted no time in implementing technical workshops and schools activities, designed to increase the capacity of local people to restore forests around their communities. In addition to events at FORRU's tree nurseries and field plots, the team also provided on-site extension services at many reforestation projects currently underway throughout northern Thailand. They designed a varied range of learning modules, which can be combined and interchanged to create flexible programmes to meet the needs of target groups of different ages and levels of experience, from kindergarten children to forestry officials. Modules include classroom activities, nursery work stations, walks along nature trails and development of field skills in the demonstration plots.

Workshops are often run for groups directly involved in conserving Thailand's biodiversity.

For example, in September 2003 FORRU hosted a group of forestry officials and community leaders from a tiny conservation area centred around Khao Nor Chuchi in Krabi Province, Southern Thailand. This is the last refuge of Gurney's Pitta, a colourful and enigmatic bird species which has been brought to the brink of extinction by conversion of its lowland rainforest habitat into oil palm plantations. Only 12 pairs survive. Although local forest authorities have now seized back the plantations, they lack the skills and knowledge required to convert them back into the complex rainforest habitat of Gurney's Pitta, an essential step to provide this species with a chance of recovery. After the workshop in Chiang Mai, the Krabi group decided to opt for the framework species approach and an extension visit by the DEO's to Krabi is planned to help this group start identifying locally suitable framework tree species and establish a nursery to grow them. With luck, the research concepts which Eden's support has helped to foster may ultimately help save Thailand's most endangered bird species.

Interest in FORRU's approach has now even spread to other Asian countries. Recently the

Above right: Young village children participating in hands-on planting activities near their school.

Right: Learning how to germinate seeds and grow seedlings is an essential part of the forest restoration process. Natenapit (right) shows NGO volunteers how it's done.



grounds. And thus, little by little, the next generation begin to accept that growing forest trees and planting them every monsoon season is just as important in the annual cycle of life as the planting and harvesting of rice. In the past 6 months alone, 42 schools events have reached 2,188 children and 141 teachers.

All this education and training is generating tremendous enthusiasm amongst local communities to start their own community tree nurseries and tree planting projects. Although local communities freely donate their labour to building and running nurseries, they often lack the start-up funds needed to buy simple materials and equipment, which make the difference between a healthy crop of trees and a waste of time and effort. So now FORRU is looking for additional financial support to establish a support fund to help local communities use the training and education provided by the DEOs to build and manage their own forest tree nurseries. As little as £200 is sufficient to build and maintain a village tree nursery, producing 20,000 forest tree seedlings over 2 years. With follow-up training and extension visits, FORRU's staff plans to ensure that these small grants really do generate new forest. Anyone interested in contributing to this fund should email forru@science.cmu.ac.th. For further general information about CMU's Forest Restoration Research Unit, please log on to www.forru.org.



unit hosted workshops for foresters from the tiny Himalayan Kingdom of Bhutan and from Yunnan Province in Southern China.

Children are undoubtedly the DEOs' most enthusiastic audience. School children visit the project several times each week. They learn to appreciate the beauty, complexity and usefulness of forest ecosystems along trails that meander through forest around FORRU's research nursery in Doi Suthep-Pui National Park. In the nursery they learn how to recognise framework tree species and how to germinate their seeds and pot the resulting seedlings. Several schools have now started their own tree nurseries and are planting trees in and around their school

Notes

¹ Goosem, S. and N. I. J. Tucker, 1995. *Repairing the Rainforest: theory and practice of rainforest re-establishment*. Wet Tropics Management Authority, Cairns, Queensland, Australia 72 pp.

David Blakesley will give a talk to Friends on Tuesday 25 May. See Friends programme section for details.