

## INTRODUCTION

*Janice Kerby*<sup>1</sup>

This session provided a broad overview of the various forest restoration techniques being practised in the region. Speakers presented historical perspectives of their countries or projects, including their most relevant findings and their requirements for further research to improve forest restoration for wildlife conservation.

The countries represented encompassed substantial variation in biogeography and economic development, which inevitably led to differing priorities for forest restoration. For example, in Bangladesh there is high pressure on forest resources to sustain the livelihoods of the very poor, whereas in Hong Kong the mainly urbanised population no longer relies on their immediate environment to provide their daily needs. All countries had a history of large-scale deforestation for both timber and to provide agricultural land but had now reduced logging and increased reforestation. The problem of growing populations and increased demand for fuel-wood, timber and NTFP's was a common theme. For example, the volume of wood used annually as fuel in Myanmar is tenfold the volume harvested for timber. Serious soil erosion, watershed degradation and loss of wildlife due to unsustainable forest exploitation were all identified as serious problems by most speakers.

All papers presented revealed a history of state-lead commercial afforestation predominantly by establishing mono-specific plantations of exotic tree species. Notably, most countries are now starting to move towards more community-based forestry programmes with increased emphasis on planting native species to meet local needs. However, the familiarity of state forest departments with a limited number of exotics inevitably leads to their continued use in many plantations, even though suitable native alternatives may be available. Most speakers considered that detailed knowledge of how to produce native seedlings in their countries was limited to only a handful of species. There was general agreement amongst participants that forest restoration could help wildlife, not only directly through replenishing habitat, but also indirectly through reducing pressure on remaining natural forests.

The speakers suggested many ways of tackling the issues described above. Several techniques were commonly mentioned, such as the inclusion of species which bear edible fruits or which can be coppiced for firewood, so that local people will have an incentive to support the forest restoration. The use of a mixture of pioneer and climax species in forest restoration planting schemes is being practised in Thailand, Vietnam, China and Myanmar. Adaptation of traditional silvicultural techniques is also widespread, such as the use of native species as nurse crops, inter-planting and thinning to improve plantation diversity and structure. Such techniques can substantially increase the value of restored sites for wildlife at an early stage. The majority of current forest restoration projects are carried out

---

<sup>1</sup> Education Officer, Forest Restoration Research Unit, Biology Department, Science Faculty, Chiang Mai University 50200, Thailand

by planting pot-grown seedlings raised in nurseries. In contrast, in Hong Kong, both direct seeding and bare-root planting have been attempted with varying degrees of success, whilst in Vietnam, direct seeding has been very effective.

A key theme was the need to protect young plantations from fire and the substantial problems posed by the scale of fires started by people. Various methods were identified. Cutting of firebreaks seemed to be common in most countries, whilst education of local people about fire prevention was highlighted as an area needing further work.

Workshop participants generally agreed that the old paradigm of forestry being undertaken only by the state and commercial companies is changing and there is considerable potential for new partnerships. In the Philippines, Thailand, Burma and Hong Kong, involvement of NGO's in facilitating planting schemes is increasing. In addition, the role of academic institutions in developing techniques that can then be adopted by other sectors is growing.

The speakers identified a wide range of research requirements, covering all aspects of forest restoration from tree species choice to silviculture of developing plantations. There is a need to identify suitable native species for planting that have high wildlife value, can grow in degraded sites and also have characteristics that will engender community support. Considerably more research is necessary on storage, treatment and germination of seeds. Methods of reducing nursery costs were also targeted, as currently native seedlings can be more expensive to produce than commercial exotics, because of the economies of scale associated with production of the latter. Direct seeding was also identified as an area in need of further development, particularly concerning techniques to expand the scale of planting, such as aerial seeding. In discussion sessions, ideas on direct seeding were developed into an outline research proposal (see Part 7, 4.3)

Improved techniques for fire control and greater understanding of the ecology of forest fire were highlighted (see Part 7, 3.1 & 3.2). It was also suggested that there is a need for augmenting knowledge of the behaviour of fragmented forest ecosystems, with regard to their provision of seed and seed dispersers. In addition there is a clear gap in available knowledge as to what degree wildlife actually utilises restored sites and thus it is hard to evaluate how effective restoration has been.

All the speakers presented a wealth of data, ideas and experience, many of which can be adapted and applied throughout the region. Several of the techniques presented generated substantive discussion later in the workshop and lead to identification of priority research areas. At present, most forest restoration plots are small and experimental. It is essential to expand the scale of forest restoration, if it is going to be effective at reducing losses of wildlife species. Thus it is timely to investigate restoration methods that will be suitable for large-scale implementation.