

# **Invisible Forests**

**Trees Outside Forests**

**Trees in Rice Landscapes in Lao PDR**

**FFS Special Topics Curriculum**

**Separate Annex #1**

September - October 2015

# **Trees Outside Forests**

## **Trees in Rice Landscapes in Lao PDR**

### **FFS Special Topic Curriculum**

#### **Background**

The essence of Farmer Field Schools (FFS) is that they provide an effective means for assisting farmers make better use of their collective knowledge and experience, quickly learn new approaches to group-based observation and analysis, and strengthen group and individual decision making. FFS build on farmers vast store tacit of knowledge and understanding about farming, their local environment and rice field ecology.

FFS was initially developed in Indonesia to assist farmers make informed decisions about pest control in rice farming. To achieve this they needed to learn about the range of predator-prey relationships occurring in and around their ricefields and how these changed over the growing season. Part of the FFS was directed to undertaking experiments, e.g. simulating levels of insect damage at different growth stages and 'rice pot trials': to i) demonstrate how rice plants can recover from what appears to be significant leaf losses or damage and insect interactions, and ii) so they could directly learn about basic methods for conducting their own experiments on other topics of interest. The FFS approach and method were quickly generalised to use in other farming and social situations, e.g. vegetables and other crops, community health, agroforestry. Special Topics have almost always been used to provide FFS participants with additional insights into important problems, and new knowledge and skills.

The approach and methods use by the FFS have now been trialed for over 25 years in a many countries, for a wide range of crops and trees, and in a very broad range of sociocultural settings. It begins by working with farmers (or a community group) to better understand what is happening in the rice paddy (for example), using group observation, documentation, discussion and analysis. This process is called "Agroecosystem Analysis" and is a core activity in almost every weekly FFS session.

#### **Addressing Major Constraints**

The number of sessions available in the existing FFS curriculum for additional Special Topics is very limited - likely only two sessions. In addition, the time available for each session is very brief, and will come after all other weekly activities have been completed. It is not clear or certain, in the author's view, if it is feasible in two brief sessions to adequately cover all or even a majority of the essential material.

For comparison, in the Philippines five Special Topics sessions, each of about 2 to 4 hours duration, are proposed - total of some 12+ hours. This has apparently been discussed and agreed with the FFS coordinators, however it is not known

what these five sessions may have replaced in the 'standard' FFS Special Topics curriculum. The number of sessions and durations proposed for the Philippines seems potentially adequate, but many more than what may be possible in Laos.

It is apparent from the photos and the author's own experience that rice landscapes and associated agroforestry (TOF) systems in the Philippines are quite different from those to be found in Laos, whether in the north, centre or south. In brief, in the Philippines (and Indonesia) these systems are significantly less orientated to subsistence and more to cash income from economic trees (and vegetables). One counterintuitive consequence is that in Laos the range of economic tree species in rice landscapes and associated biodiversity is much broader and more complex; farm families also depend to a significantly greater degree on self-caught fish and OAA for their subsistence than in the Philippines (or Indonesia).

In Laos, the close dependencies between biodiversity (conservation) and food security for (probably) the majority of rural families is the rationale for linking these issues with trees in rice landscapes - as the presence of trees and woodlands are so commonly associated with the existence of habitats needed by wild foods, e.g. fish and OAA. Moreover, the continuing health of ricefield ecologies are also linked and dependent on trees and other perennials.

If sessions on trees in rice landscapes are to be included in the FFS curriculum - noting this an important and valuable addition - then further detailed discussions are required to explore if adequate time can be made available.

### **Trees in Rice Landscapes in Laos**

FAO Laos are active in further developing the approach to assist farmers better understand the value and role of trees in rice landscapes (rice-tree systems), and improving decision making about conserving and protecting trees, and planting new (economic) trees, as elements of biodiversity conservation.

A commonality north and south Laos share is that in rice landscapes (*nam tong*) trees are to be found along watercourses, around ponds and wetlands, in gullies and in hillier terrain on hillocks, and almost everywhere there are woodlands immediately adjacent to rice fields, regardless of local topography. Although only in central and southern Laos are trees commonly growing within ricefields on the paddy floor and dykes.

To make these Special Topic modules generally relevant throughout Laos the emphasis will be on trees growing in and around the following rice landscape locations: watercourses, gullies, hillocks, ponds, wetlands, adjacent woodlands - and paddy dykes and floors where appropriate.

It is proposed the FFS Special Topics modules explore the roles trees play in biodiversity conservation and food security. This offers a straightforward means for assisting farmers understand the importance of trees and learning how they can contribute to their own food security by nurturing and protecting trees in their rice landscapes.

The overall learning objectives are to assist rice farmers understand the linkages between trees growing in rice landscapes, food security and biodiversity conservation.

This will be done through exploring how: i) trees growing along watercourses and in adjacent woodlands provide the habitats for the wide range of animal and plant, especially aquatic, species which are important for their food and nutrition, and healthy ricefield ecology; ii) why good stewardship of these trees and woodlands is essential for maintaining their food security, especially during dry seasons and droughts; and iii) what farmers can do to by protecting and through planting more economically important trees.

## Rice Landscapes and Trees - Special Topic

The approach and methodology used for rice Agroecosystem Analysis, has been adapted for observation, recording, analysis and group discussion of trees and biodiversity found in rice landscapes by FFS members.

**Proposed Schedule.** The proposed rice-trees special topics session will be scheduled for about weeks 12-15 of the seasonal FFS and will require (at least) two Special Topic sessions separated by about one week, e.g. week 12 and week 14 - to allow participants time for further observation, reflection and discussion.

## Rice Landscapes and Trees - Session #1

### Learning Objectives

Explore and clarify the relationships between trees in rice landscapes and their importance for biodiversity (conservation) and food security.

### Approach

Prior to the FFS session the trainer selects and marks out an area of the rice landscape that minimally includes the kind of features described below. The area marked out should be approximately 50-75 x 50-75 meters in size.

An area at the edge of ricefields bordering a watercourse, i.e. irrigation canal, watercourse, pond or wetlands; and/or

An area of ricefields bordering an adjacent woodlands; or

An area around a gully in the middle of the ricefield with trees growing in and around the gully; and/or

An area around a hillock in the middle of the ricefields with clumps of trees; and/or

An area of ricefields with scattered single trees and small clumps of trees within the rice landscape.

In some locations it may be possible to find an area that illustrates one or more of these conditions.

### Materials

- 1 Laminated small cards, each with space to: sketch the tree, write the tree's name, note if the tree is single or part of a clump of trees, and list the common uses of the tree. For woodlands (on hillocks, gullies or adjacent to the ricefields) different coloured cards should be used to list as many as possible of the useful trees observed in the woodland.
- 2 Prepared laminated small cards each with a simple image of different types of wildlife found in rice landscapes. Plus small cards with space to write the common name of each species found and its uses in Pasar Lao, its location and habitat (tree, water, earth).
- 3 Large (A2) sheets of paper, coloured felt tip pens, sticky tape, coloured stick pins.
4. Blank cards to record additional trees, plants and wildlife.

## Methodology

- 0 Several weeks before Session #1 of the Special Topic starts the FFS should discuss and select with the participants a suitable rice landscape matching one the types illustrated under Approach. Five sub-groups each of 2-3 FFS members is identified: one sub-group to make a sketch map of each of the staked out area; and four sub-groups for observing and recording: ii) trees and woodlands; iii) useful plants and herbs<sup>1</sup>; iv) aquatic wildlife; v) terrestrial wildlife - found in the area.
- 1 Prior to the session the FFS trainer marks out the area to be used for the field exercise using tall bamboo(?) stakes with coloured raffia tied to the top of the stakes.
- 2 During the field exercise the FFS members goes to the staked out area and members of each sub-group observes and records what they find, noting locations of the trees, woodlands and where wildlife species are found. For wildlife, noting if it is useful and/or edible or not, and if it is present i) only during wet season, ii) only during dry season or iii) always/usually year around.
- 3 On return to 'FFS base' the locations of trees, woodlands, plants and wildlife are marked by placing the recording cards on the sketch map.
- 4 Presentation and discussion of each sub-group's observations, with a focus on linkages between trees, habitats and different wildlife species, to be facilitated by the FFS trainer.
- 5 FFS trainer explains objectives of Session #2 and the basic meaning of 'food security' and requests that before the next session FFS members discuss how the wildlife identified and recorded provides food and nutrition, especially during the dry season or in times of drought.
- NB All cards, notes and drawings need to be safely stored by the FFS Trainer for use in Session #2.

## Discussion Guidance

- 1 How much of the observed wildlife and plants lives in or around trees or woodlands?
- 2 How do single trees and clumps of trees affect the ricefield and growth and condition of the rice - are the effects positive or negative and why?
- 3 How much of the wildlife and plants observed are eaten, exchanged or sold by FFS members?
- 4 What would happen to your family's health and nutrition if the wildlife you eat was significantly reduced?
- 5 In what ways has the field exercise changed your understanding of the importance of trees in the rice landscape for biodiversity and ecosystem health?
- 6 What actions can you take to improve and/or defend the health of the trees and your rice landscape ecology?
- 7 What other issues about the ecology of the rice landscape do you consider it important to discuss further?

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<sup>1</sup> 'Useful' includes trees, plants and herbs that can be eaten, used for ritual or medicinal purposes, for dyes and handcrafts, livestock fodder, or sold or exchanged.

**Duration**

- 1 Field observations, sketching and recording - 1.5-2 hours
- 2 Presentation and discussion - 1 hour
- 3 Preparation for Session #2 - 0.5 hour.

## Rice Landscapes and Trees - Session #2

### Learning Objectives

Build on group's understanding and agreement about the importance of trees in rice landscapes for the community's food security and nutrition.

### Approach

Time limitations make it impractical to begin Session #2 with a field visit, despite the desirability of doing so. The session is structured to build on what was learnt in the previous session and assist FFS members explore linkages between: what has been observed in the rice landscape, and documented and discussed, its implications for their diet, nutrition and food security and what they can do avert likely threats and improve the ecosystem health of their rice landscapes.

### Materials

- 1 Four photocopies of each of plant and wildlife cards, plus notes and drawings from Session #1.
- 2 Graphics and speaking notes for explaining and exploring the concept of 'food security' in the context of rural farming communities.
- 3 Separate sheets of paper with showing collections of FFS member's drawings of trees, plants, aquatic and terrestrial wildlife found in their rice landscape.
- 4 Several large (2 x A2 joined) sheets of paper with columns for listing: names of trees observed, their products, practical applications, and associated useful plants and wildlife.
- 5 Large (2 x A2 joined) sheet of white paper with four large 'Wild Food Bowls' drawn on it. One labelled 'Wet Season', one 'Dry Season', one 'Drought' and one of 'Half as Many Trees'.
- 6 Collection of cards illustrating: i) common *Threats* to trees and wildlife, and ii) *Options* for rice landscape ecosystem improvements.
- 7 Knowledge, Attitude, Practice (KAP) questions:
  - 1 Can you give some examples of the new things you learned?
  - 2 What was most important things you learned?
  - 3 Has your understanding and attitudes to the ecology of trees in rice landscapes changed as a result of these sessions? How so..?
  - 4 How do you plan to put this new knowledge into practice?
  - 5 What will you be encouraging others to do?

### Methodology

- 1 Refresher session covering the observations and results of the discussion from Session #1, revisiting the questions and discussion from Session #1.
- 2 Brief explanation and discussion of the concept of 'food security' and the importance of biodiversity and 'wild foods' for rural farming communities' diet and nutrition, and their livelihoods.
- 3 From memory and using the cards ask the group to fill in the listing of tree names, products and uses and associated wildlife observed in Session #1.

- 4 Lay out the large sheet with the four Rice Bowls, each of the four sub-groups select and place copies of their cards for plants, aquatic and terrestrial wildlife in the appropriate bowls.<sup>2</sup>
  - 5 Once completed, facilitate discussion about differences in the range of species in each of the bowls, especially how these differences might affect families' diets, nutrition and food security?
  - 6 Use *Threats* cards to identify and rank likely threats from 1-to-5, then explore means your community has for defending the trees and wildlife in your rice landscape.
  - 7 Use *Options* cards to identify and rank the options from 1-to-3 to explore practical means your community has for improving the health of their rice landscape.
  - 8 Use the KAP questions to reflect on and explore what FFS member's have gained from the two sessions on Trees in Rice Landscapes.
- NB The materials used for and created in Sessions #1 and #2 should be carefully stored by the FFS trainer for use in later sessions.

### Discussion Guidance

- 1 What do you observe about the differences between the four 'Wild Food Bowls' and what are the reasons for these differences?
- 2 In the 'Dry Season' bowl is there sufficient wild foods in comparison to the 'Drought' bowl, or the 'Half as Many Trees' bowl?
- 3 What effect would planting more (economic) trees in the rice landscape have on the amount of 'wild food' in the different bowls?
- 4 Does have more (economic) trees in the rice landscape make quicker and/or it easier to collect food for your families?
- 5 What is the nature of the Threats to your rice landscapes, how soon might they happen, and how serious/severe might they be?
- 6 For the most urgent and/or severe Threat(s), and what plans have you made for deal with it? Which of the Threats require organised community action?
- 7 Which of the actions on the Options on the cards do you think are most useful for your community? What other options have you considered?

### Duration

- 1 Refresher session and food security - 0.5 hours
- 2 Listing trees, products, uses and wildlife - 0.5 hours
- 3 Rice Bowl exercise and discussion - 0.5 hours
- 4 Threats and Options discussion - 0.5 hours

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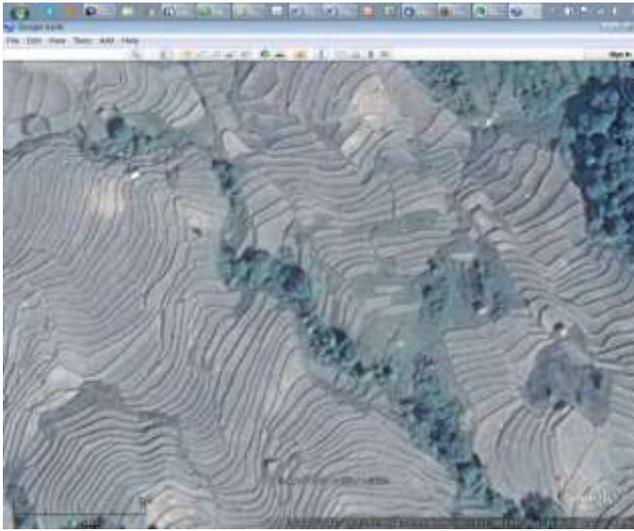
<sup>2</sup> Special Topics Annex 2 includes sample graphics for: Food Security, 'Wild Food Bowls', and the cards illustrating Threats and Options.

## **Special Topics Annexes**

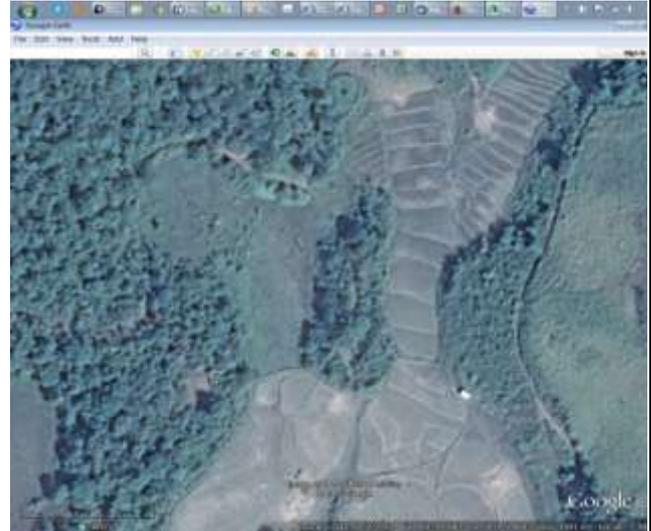
# Annex 1

## Illustrations of Rice Landscapes

**North Laos - Rice Landscape with Gully Vegetation**



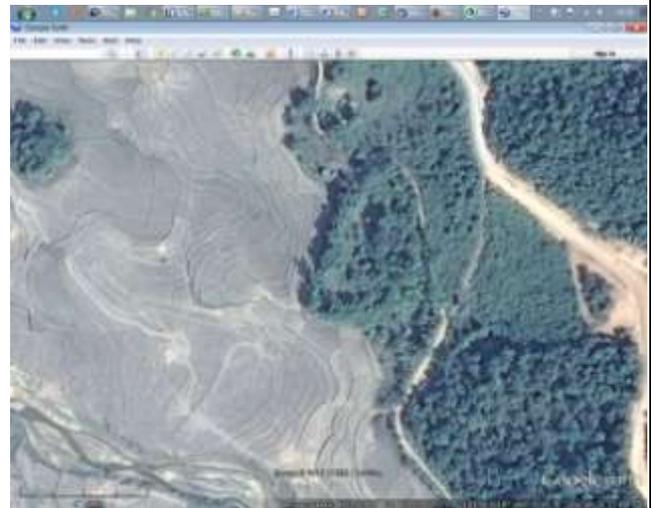
**North Laos - Rice Landscape with Hillock Vegetation**



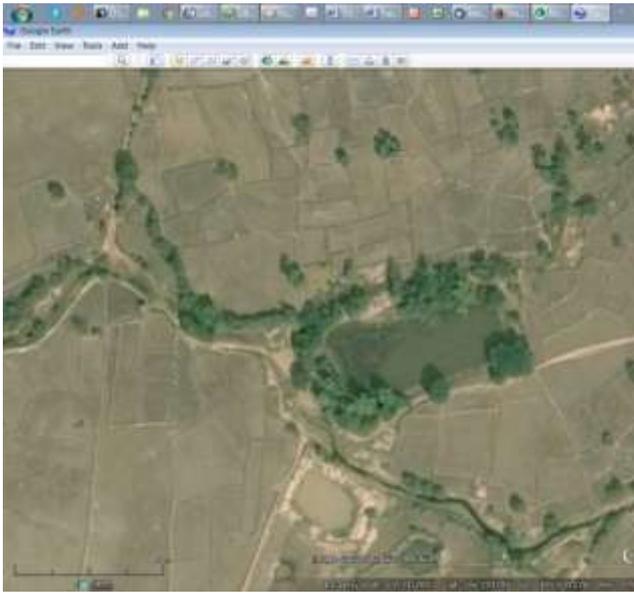
**North Laos - Rice Landscape with Watercourse & Gully Vegetation**



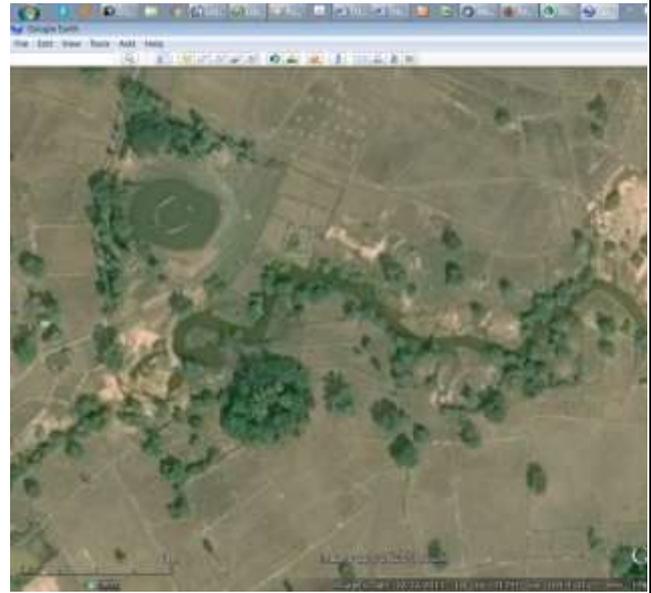
**North Laos - Rice Landscape with Adjacent Woodlands**



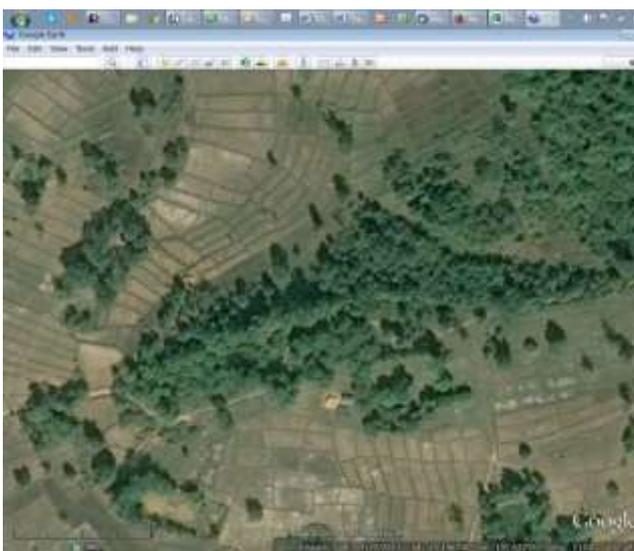
**Central Laos - Rice Landscape with Pond & Vegetation**



**Central Laos - Rice Landscape with Watercourse, Pond & Vegetation**



**South Laos - Rice Landscape with Adjacent Woodlands**



**South Laos - Rice Landscape with Watercourse & Trees in Paddy Fields**



## Annex 2

Graphics for Food Security, 'Wild Food Bowls', and Threats and Options cards.



### Food Security has Four Dimensions (FAO Policy Brief, 2006)

<b>Dimensions</b> <i>Pasar Lao</i>	<i>Pasar Lao</i>	<b>Explanation</b>
<i>Pasar Lao</i> Food availability	<i>Pasar Lao</i>	The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).
<i>Pasar Lao</i> Food access	<i>Pasar Lao</i>	Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet, including traditional rights such as access to common resources.
<i>Pasar Lao</i> Utilization	<i>Pasar Lao</i>	Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met.
<i>Pasar Lao</i> Stability	<i>Pasar Lao</i>	To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity).

# 'Wild Food Bowls' Graphics

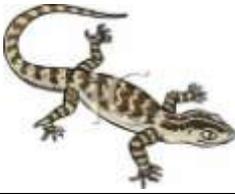
## Insects

							
Ant	Bee Hive	Beetle	Butterfly	Cricket	Dragonfly	Grasshopper	Insects
							
Spider	Termite	Wasp	Bamboo Worm	Water Cricket	Beetle	Water Beetle	

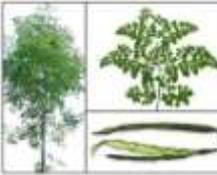
## Fish & Amphibians

							
Various Species	Catfish	Eels	Frogs	Molluscs	Snails	Crab	Turtle

**Terrestrial Wildlife**

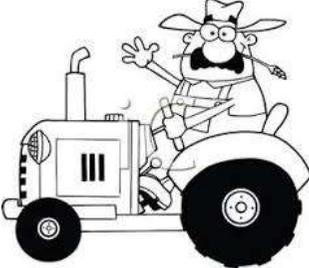
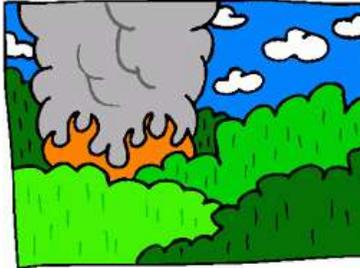
							
<b>Bush rats</b>	<b>Squirrel</b>		<b>Lizard</b>				

**Trees & Plants**

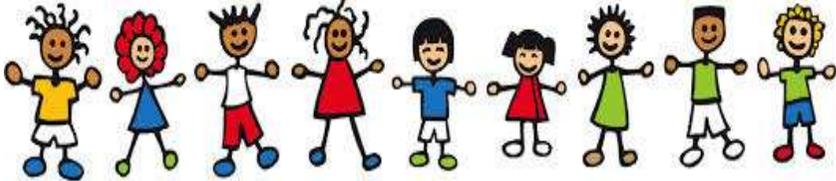
							
<b>Fruit Trees</b>	<b>Rattan</b>	<b>Medicinal Plants</b>	<b>Dye Plants</b>	<b>Mushrooms</b>	<b>Bamboo</b>	<b>Betel Vine</b>	<b>Fragrant Trees</b>

# Threats and Options Cards

## Threat Cards

				
<p>Mechanisation</p>	<p>Logging</p>	<p>Fire</p>	<p>Elephants</p>	<p>Forest Clearing</p>

## Options Cards

			
<p>Protected Areas</p>	<p>No Go Area</p>	<p>Working Together</p>	<p>Cooperation</p>
			
<p>Planting by Watercourses</p>	<p>Learning at School</p>	<p>Fencing</p>	<p>Tree Planting</p>