

British Ecological Society, 17th May 2011
@ The Organic Research Centre

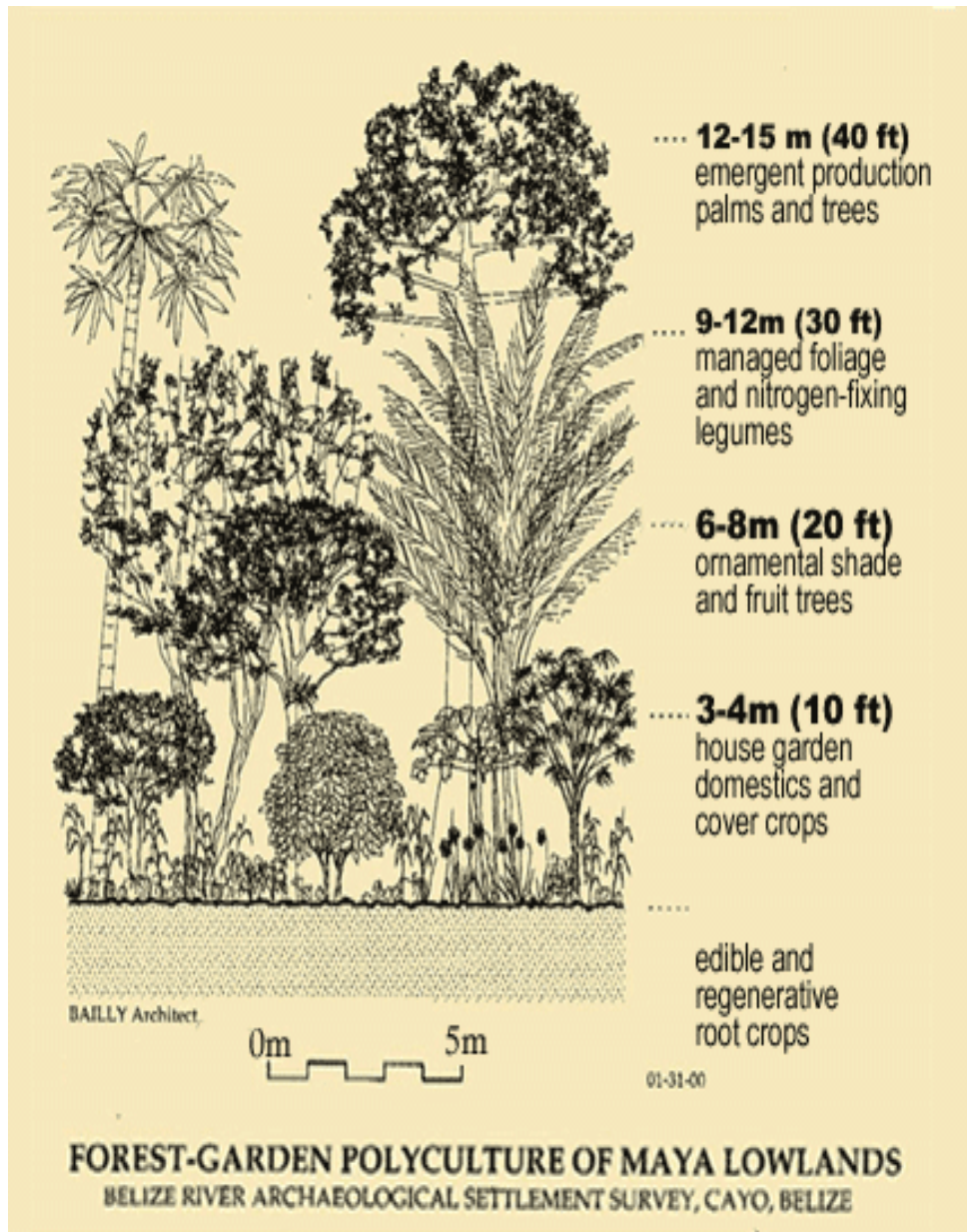


Enhancing biodiversity in cultivated ecosystems: the permaculture design approach.

Andy Goldring CEO,
Permaculture Association
www.permaculture.org.uk



Permaculture – ecological design

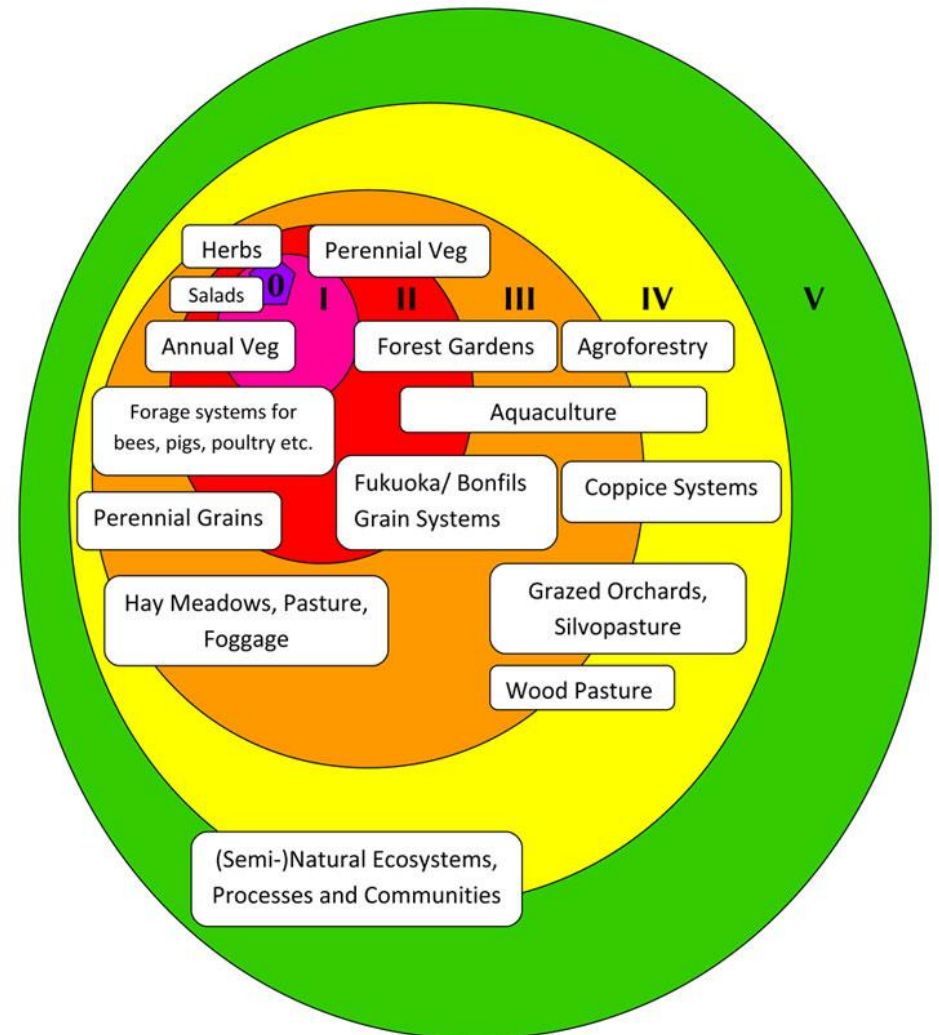


- From **Permanent-agriculture**
- Mollison and Holmgren influenced by ecologists, especially Howard Odum.
- Draws on traditional practices and modern science & technology.
- A design approach to creating agriculturally productive sustainable settlements.
- Permaculture seeks to make “eco-thinking” accessible to widest audience.

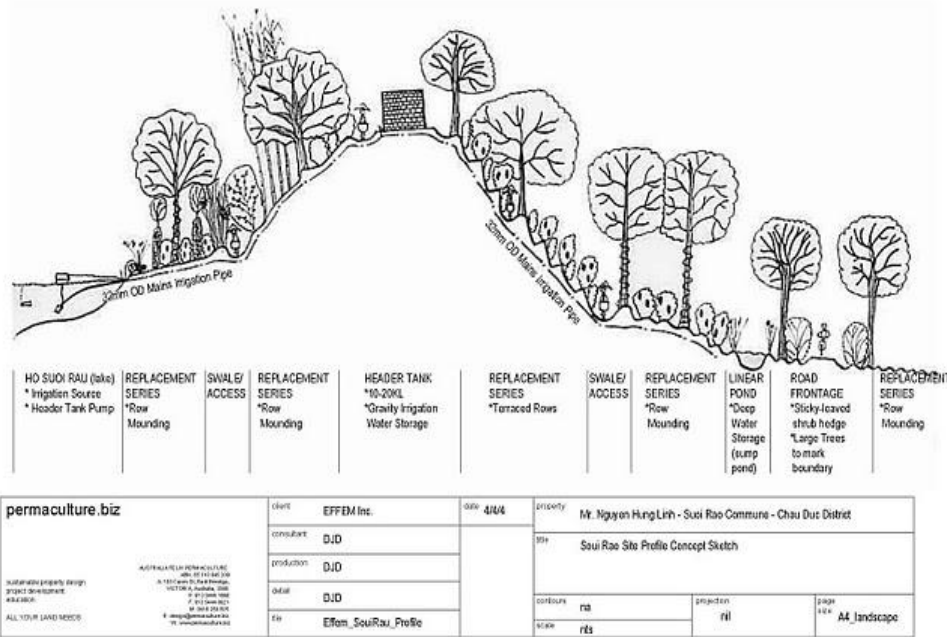
Settlement as farm

- Permaculture seeks to design highly productive “edible landscapes.”
- Self-reliance and productivity starts at the back door.
- Uses a system of 'zoning' to pattern different forms of production.
- Most intensive management within and near the home/settlement.
- Re-imagine farms as sophisticated polycultures within wild(er) wooded landscape
- Not trying to 'fix' monocultures, but to perfect polycultures.

Polyculture practices & zones



Principles and design criteria



- Principles guide overall thinking.
- They combine ecological insights and systems thinking, with design directives.
- Natural ecosystem structure and process as template for cultivated ecosystems.
- The design process seeks to maximise beneficial relationships between existing and new elements.
- The design emphasis is not principally on directly-usable yields or biodiversity, but on creating an ecosystem with maximum water, soil and plant resources.
- Species are therefore chosen for a wide range of desired functions.
- Close observation is undertaken to help shape appropriate system evolution.



Example: Krameterhoff

- Austrian farm – possibly most accomplished site in Europe
- 45 ha of former forested area
- 1000 – 1500m above sea level, up to 5 months of snow each year
- Now 70+ ponds, fish and fowl, pigs, yak, bison, cows, orchards, woodlands, hugel-kultur beds, mushrooms, et cetera
- Annual plantings in 'plant families' of 50+ varieties
- From personal experience Krameterhoff has an incredible associated biodiversity
- Biodiversity research has been undertaken (but I don't speak German!)



Pigs as multi-functional elements: workers; fertiliser; pest control; food; pulse disturbance; plough.



Research case studies: PFAF



Hippophae rhamnoides. PFAF website.

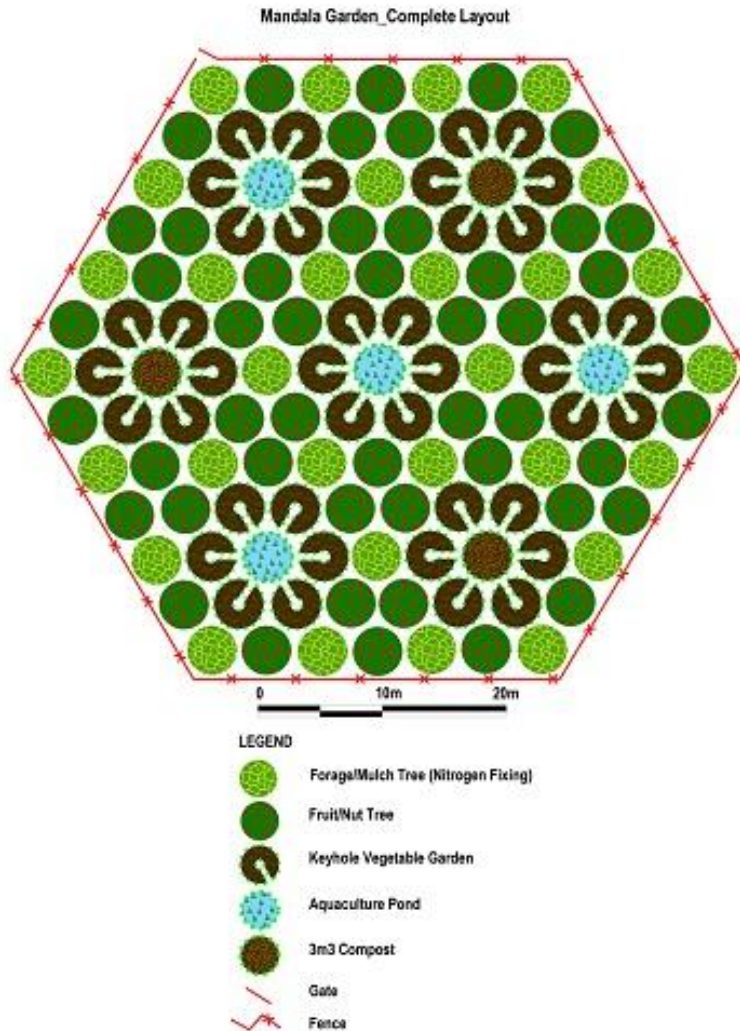
- Plants For A Future experimental site, Penpol, Cornwall.
- Converted a 'bare' barley field. Planted 1500+ edible perennials over 20 last years.
- Botanical survey now conducted.
- Report gives the data for impact of this land use on wild bird and mammal populations, pest control and pollination issues.
- Positive biodiversity impact.
- <http://www.pfaf.org>

Permaculture in practice

- Designs in place in 130 + countries.
- Therefore huge 'in situ' research resource. Many sites have conducted baseline biodiversity surveys.
- UK has many home garden, smallholding and public realm examples, but few at a farm scale.
- Internationally, many farm scale examples, with practitioners like Darren Doherty now working at a landscape scale (e.g. 150,000 Ha Yucatan, Mexico)
- Now initiating work to develop an internationally agreed research protocol to allow data aggregation and improved reporting of outcomes within permaculture systems.



Emerging observations



Modified Layout from 'The Permaculture Home Garden', Linda Woodrow, 1996, Penguin Books, Australia

- Polycultures are always more biodiverse than monocultures. That's just logic. But harder to harvest at scale.
- Perennial plants (esp tree crops) multi-function as habitat, have longer growing season and are resilient to shocks.
- But agricultural research focuses on annual plants.
- Diversity of crops and cropping patterns helps to create a habitat matrix suitable for greater biodiversity.
- We need to diversify farm businesses.
- Biodiversity is political. Agri-business, planning and land ownership determine much of UK landscape patterning.
- We need more people in the landscape.

Where are we now?

- Nearly three decades of in-situ, practical experience in the UK;
- Need to turn anecdotal evidence into papers.
- Testing participatory action research methods to gather the data (mixed veg, forest gardens)
- LAND project creating formal network of learning and research projects
- Research Advisory Board established and strategy in place
- Carrying out scientific literature reviews
- Forming academic alliances
- Getting up-to-date on funding cycles and current academic thinking, attending conferences
- Formulating questions, aimed initially at postgraduate projects.



We welcome your interest



- We need a strategic investigation of the usefulness and existing accomplishments of permaculture design systems.
- We therefore welcome:
 - questions and criticisms to illuminate strong and weak areas and guide further investigation;
 - suggestions of appropriate methods to capture in-situ knowledge and system-scale benefits
 - offers of co-operation on research project bids, in particular reviews, processing and analysing of action research programme data (i.e. completing communication loop from practitioners to academics and back again).

Results emerging

- Mixed vegetable trials phase one end of this year.
- Up scale trials in 2012
- 10 year forest garden trials initiated, interim studies and reports as we go.
- LAND project site data coming soon.
- A number of research proposals in the pipeline, in particular farm scale trials.
- We'll be back!



Our pilot mixed vegetable polyculture trials are based on work from Nepal. Home scale polycultures offer food production with no-dig and no chemicals, with potential benefits for local biodiversity

Thanks and any questions?



- If you want to discuss research and practical steps after the conference, please contact me via:
- andyg@permaculture.org.uk