EDIBLE FOREST GARDENS A Delicious and Practical Ecology
David K. Jacke • 56 High St. • Keene, NH • 03431 • (603) 357-8899 • djnative@cheshire.net
Eric Toensmeier • 51 White Loaf Rd • Southampton, MA • 01073 • emtF90@hampshire.edu • www.perennialvegetable.com

An Edible Forest Garden Designer's Toolkit

DESIGN PROCESS: inherent to humans: "we are all designers!"
Goals guide the Analysis and Assessment, A & A discovers the Design.

Clear Intentions:
- Clear goals essential! WRITE THEM DOWN! Organize, prioritize.

Site Analysis and Assessment:
- Analysis: looking at parts. Which parts are relevant to goals?
- Assessment: giving weight to individual bits of data relative to goals. Be clear about observation vs. interpretation. Observations = facts. Interpretation = meaning, relating observations to goals.

"Design":
- Patterns emerge from A&A. Make mistakes on paper. Solve schematically first (bubble diagram), then do details. Use Techniques.
- Can start with plants then design system or design system then select plants. Or both!

Implementation:
- Prepare site & materials. Stake out design on site, revise. Build it.

Evaluation:
- Review goals. Make adjustments to either goals, design, or attitudes.

DESIGN TECHNIQUES:

Overlay: Use trace paper overlays to A & A site, and design succession stages.
Niche analysis: Analyze plant needs, yields, intrinsic characteristics.
Ecological analogs: Use native commty as model, swap similar useful species.
Guild build: Use niche analysis to invent unique polycultures.
Pattern language: Select from patterns observed in nature & other's gardens or that you invent (see Alexander, et al, A Pattern Language, 1977, as model).
On-site design: Skip paper, design on site using stakes, measuring tape, etc.
Incremental design: Just get started & adapt later. Usually results in mistakes on-paper design could have prevented. Best used after initial planning.

DESIGN PRINCIPLES:

General principles (system design and management):

Shifting the burden to the intervenor: when we intervene in a system, we end up bearing the burden of maintaining the system's balance.

Self-regulation: design self-regulating systems using functional interconnection, then don't intervene -- interact.

Site repair: build in and beautify damaged places. Leave beautiful places alone. "If it ain't broke, don't fix it".

Principles related to species niche:

Multiple functions: every design element has multiple functions. Use them or lose them.

Everything gardens: everything influences its environment. Observe!
Stress and harmony: Stress is forced unnatural function or prevention of natural function. Harmony is allowing natural functions and not forcing unnatural ones.
Limiting factors: growth will be limited by the one factor in least supply relative to needs.

Principles related to species interactions and community niches

Competitive exclusion: two species or individuals with the same or similar niches will compete. One always pushes the other to extinction unless there is an escape or niches differ.
Relative placement: placement affects ability to interact (competition or cooperation) and ease of use. Place infrequently used elements farther, more frequently used elements closer.
Functional interconnection: design systems where the inherent needs of one element are met by the natural products of another (harmony).
Redundancy: all critical needs or functions should be filled in more than one way.

DESIGN ISSUES:

- In reality, many "management" issues are largely system design issues.
- We solve many of typical forest garden design issues using plant selection and patterning, by applying ecological principles (below) and using nature's models:
  - Self-renewing fertility: N-fixers and dynamic accumulators; mulch; healthy soil food web; designed disturbance, minimized disturbance; keep system accumulating living and dead biomass (mid-succession).
  - Built-in resistance to weeds: designed disturbance; controlled colonization; controlled plant performance; fill available niches (use competitive exclusion); plant patterning, density and polycultures; zen approach (what does plant do, or tell you?); chef's approach (eat it).
  - Minimizing pests and disease: selecting resistant varieties; diverse genetics and species; polycultures; healthy soil and leaf microbial food webs; good nutrition; provide food and habitat for beneficial insects and larger fauna; designing microclimate; minimize stress (PLANT SPACING!)
  - Meeting water needs and availability: choose adapted plants; modify topography, drainage or infiltration; improve soil profile; increase organic matter / mulch.
  - Proper plant spacing: analyze root patterns; mingler or loner?; assess limiting resources (soil depth, fertility, moisture influence root spread); use common sense distances within each layer; stack plants vertically in layers, don't crowd plants within a layer; "woodland gardens".
  - Minimizing competition, while maximizing productivity: see "proper plant spacing"; use diverse polycultures, resource-sharing guilds and mutual support guilds; select best varieties & species; prevent resource scarcity.