Urban Agriculture

URBAN PERMACULTURE

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What is Permaculture

Bill Mollison "permanence and stability in a landscape are most easily achieved when one works with rather than against ecological forces".

Permaculture uses a set of principles and practices to design sustainable human settlements.

- Permanent culture
- Permanent agriculture

Permaculture Principles

Core principles for ecological design

1 – Observe

2 – Connect

3 – Catch and store energy and materials

4 – Each element performs multiple functions

5 – Each function is supported by multiple elements

6 – Make the least change for the greatest effect

7 – Use small-scale, intensive systems

8 – Optimize Edge

9 – Collaborate with succession

10 – Use Biological renewable resources

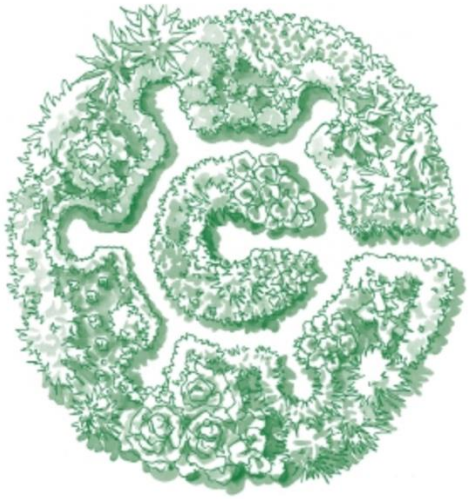
Principles based on attitude

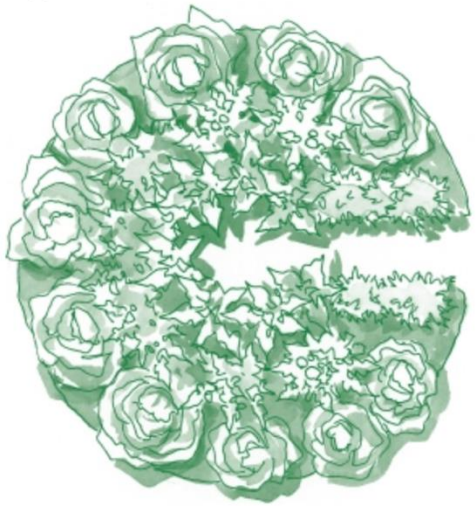
11 – Turn problems into solutions

12 – Get a yield

13 – Biggest limits to abundance is creativity

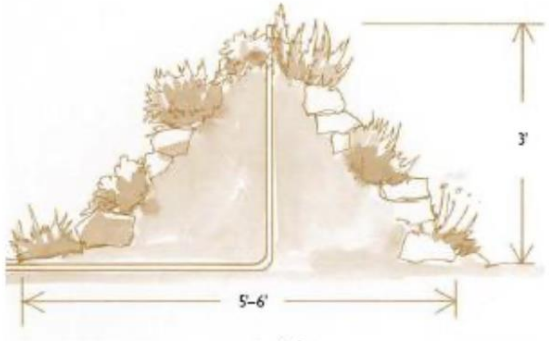
14 – Mistakes are tools for learning



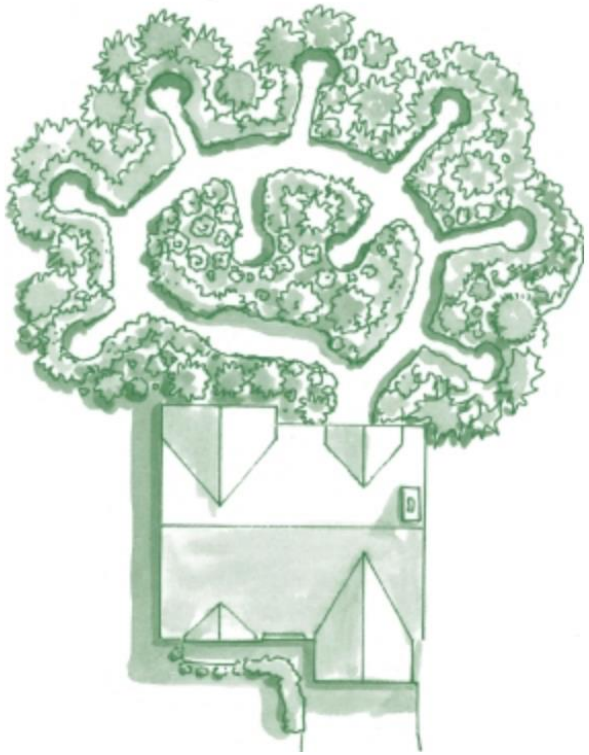


1 feverfew
2 calendula
3 coriander
4 parsely
5 chives
6 fennel
7 yarro
8 sage
9 echinacea
10 chamomile
11 thyme
12 oregano
13 dill
14 rosemary

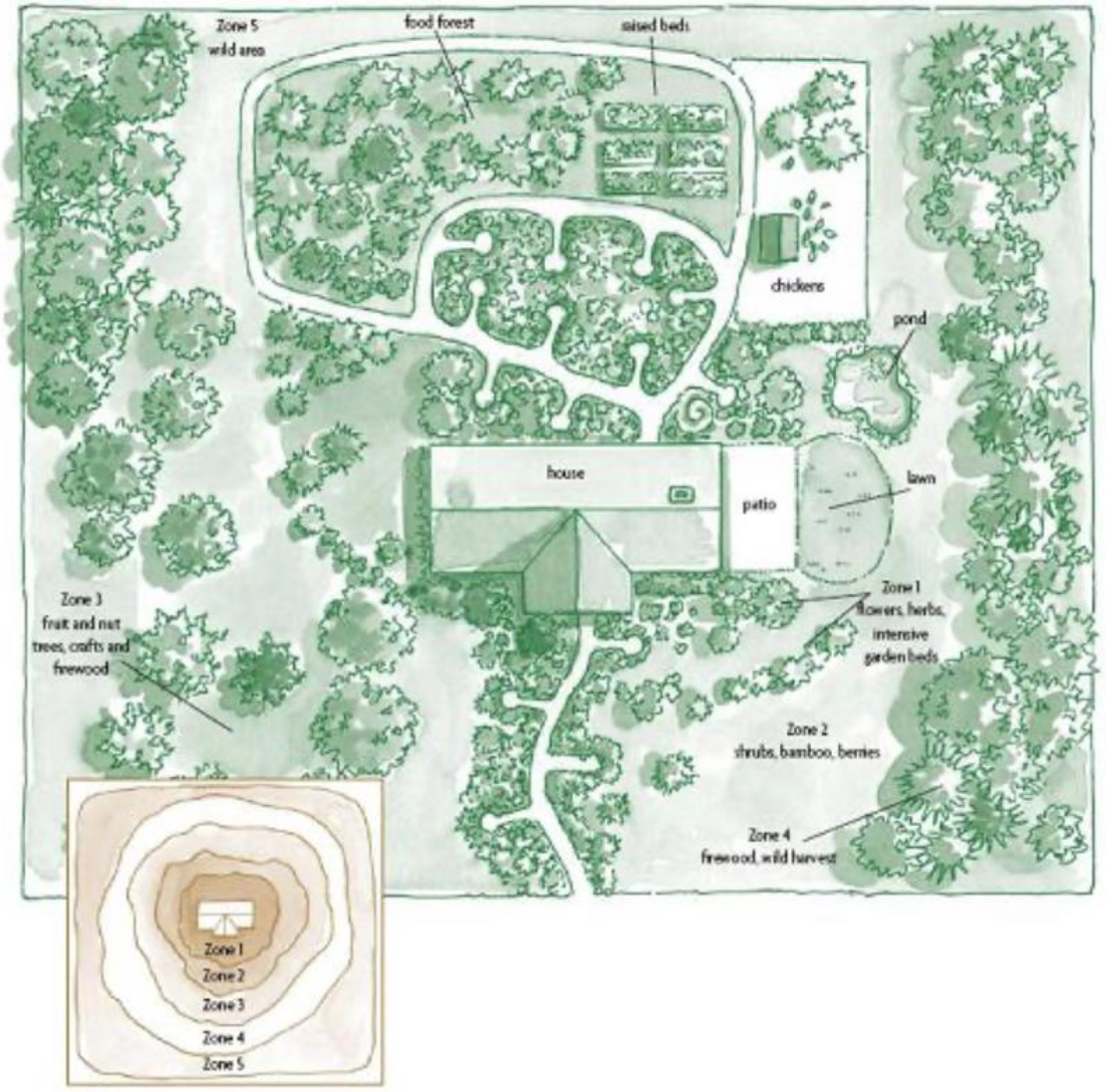
mini-sprinkler line



cross section



	Functions	Structures	Crops	Garden Techniques	Water Sources	Animals
Zone 1: Most intensive use and care. Zone of self-reliance	Modify house microclimate, provide daily food and flowers, social space, plant propagation	Greenhouse, trellis, arbor, deck, patio, bird bath, storage, potting shed, workshop, worm bin	Salad greens, herbs, flowers, dwarf trees, low shrubs, lawn, trees for microclimate	Intensive weeding and mulching, dense stacking, square-foot and biointensive beds, espalier, propagation	Rain barrels, small ponds, graywater, household tap	Rabbits, guinea pigs, small poultry, worms
Zone 2: Semi-intensely cultivated. Domestic production zone	Home food production, some market crops, plant propagation, bird and insect habitat	Greenhouse, barns, tool shed, shop, wood storage	Staple and canning crops, multifunctional plants, small fruits and nuts, fire-retardant plants, natives	Weekly weeding and care, Spot mulch, cover crops, seasonal pruning	Well, pond, large tanks, greywater, irrigation, swales	Rabbits, fish, poultry
Zone 3: Low intensity, extensive methods. Farm zone	Cash crops, firewood and lumber, pasture	Feed storage, field shelters	Cash crops, large fruit and nut trees, animal forage, shelterbelts, seedlings for grafting, natives	Cover crops, coppicing, light pruning, moveable fences	Large ponds, swales, storage in soil	Goats, pigs, cows, horses, sheep, other large animals, free-range poultry
Zone 4: Minimal care. Forage zone	Hunting, gathering, grazing	Animal feeders	Firewood, timber, pasture plants, native plants	Pasturing and selective forestry	Ponds, swales, creeks	Grazing animals
Zone 5: Unmanaged. Wilderness zone	Inspiration, foraging, meditation	None	Native plants, mushrooms	Unmanaged, occasional wildcrafting	Lakes, creeks	Native animals


Zone 5
wild area
food forest
raised beds
chickens
pond
house
patio
lawn
Zone 3
fruit and nut
trees, crafts and
firewood
Zone 1
flowers, herbs,
intensive
garden beds
Zone 2
shrubs, bamboo, berries
Zone 4
firewood, wild harvest
Zone 1
Zone 2
Zone 3
Zone 4
Zone 5


MALABAR SPINACH
CITRUS GROVE
KUMQUAT
KEY LIME
SATSUMA
MEYER LEMON
GRAPEFRUIT
NATIVE GARDEN
PALMETTOS
BLACK GUM
BEAUTYBERRY
POSSUMHAW HOLLY
PERSIMMON
MULCH PATH
IRIS
HERB BED
BASIL
ROSEMARY
OREGANO
SAGE
PARSLEY
ROSE TRELLIS
SCENT ISLAND
SHRUB ROSE
LAVENDER
ROSEMARY
GERANIUM
HYSSOP
STAR JASMINE
BUTTERFLY GARDEN
YARROW
MILKWEED
VERBENA
SALVIA
ROCK ROSE
GALLARDIA
COREOPSIS
ASTER
WOODLAND
LEATHERLEAF MAHONIA
SHUMARD OAK
HOUSTON HOLLY
WEEPING YUPON
WAX MYRTLE
REDBUD
VIOLETS
BERRY ISLAND
BLACKBERRY
BLUEBERRY
BARBADOS CHERRY
GOLDEN FIG
BUTTERFLY GARDEN
PORTERWEED
PASSIONVINE
CASSIA
ESPERANZA
ALAMANDA
VERBENA
BOTTLEBRUSH
PLUMBAGO
SCENT ISLAND
ROCK WALL
ROSE TRELLIS
ROSE GARDEN


PAWPAW ORCHARD
EXISTING CONIFERS
PERENNIAL EDIBLE HERBS & FLOWERS
ROSE & SEABERRY HEDGE
NANNY-BERRY
KITCHEN GARDEN
GOOSEBERRIES & CURRANTS
ELDERBERRY PATCH
HERB SPIRAL
HARDY KIWI ARBOR
HAZELNUT
VEGETABLE GARDEN
RAINWATER TANKS
GOUMI
WILDFLOWER MEADOW
ASIAN PEAR
JUNEBERRY
CORNELIAN CHERRY
BUFFALO BERRIES
PEAR
KOUSA DOGWOOD
GOUMI
HONEYLOCUST
ASIAN PEAR
AMERICAN PERSIMMON

Please Also Consider

Mulch-making plants

Nutrient-accumulating plants

Nitrogen-fixing plants

Soil Fumigants and Pest Repellents

Insectary Plants

Fortress Plants

Spike Roots

Wildlife Nurturers

Shelter belters

Common Name	Botanical Name	Nutrient Accumulated											
		N	P	K	Ca	S	Mg	Mn	Fe	Cu	Co	Zn	Si
Hickory, shagbark	*Carya ovata*		x	x	x								
Horsetails	*Equisetum* spp.			x	x		x		x		x		x
Kelp	*(Several genera)*	x			x		x		x				
Lamb's quarters	*Chenopodium album*	x	x	x	x			x					
Lemon balm	*Melissa officinalis*		x										
Licorice	*Glycyrrhiza* spp.	x	x										
Locust, black	*Robinia pseudoacacia*	x		x	x								
Lupine	*Lupinus* spp.	x	x										
Maples	*Acer* spp.												
Marigold	*Tagetes* spp.		x										
Meadow sweet	*Astilbe* spp.		x		x	x	x		x				
Mosquitofern, Pacific	*Azolla filiculoides*							x		x			
Mullein, common	*Verbascum* spp.			x		x	x		x				
Mustards	*Brassica* spp.		x		x	x		x		x		x	
Nettles, stinging	*Urtica urens*	x		x	x	x			x	x			
Oak, bark	*Quercus* spp.			x									
Parsley	*Petroselinum crispum*			x	x		x		x				
Pennycress, alpine	*Thlaspi caerulescens*									x		x	
Peppermint	*Mentha piperita*			x			x						
Pigweed, red root	*Amaranthus retroflexus* .		x	x	x				x				
Plantains	*Plantago* spp.				x	x	x	x	x				x
Primrose	*Oenothera biennis*	x											
Purslane	*Portulaca oleracea*			x			x	x					
Rapeseed	*Brassica napus*		x		x	x		x		x		x	
Salad burnet	*Poterium sanguisorba*				x	x	x		x				
Savory	*Satureja* spp.			x									
Scarlet Pimpernel	*Anagallis arvensis*						x						
Shepherd's purse	*Capsella bursa-pastoris*				x	x							
Silverweed	*Potentilla anserina*			x	x					x			
Skunk cabbage	*Navarretia squanosa*						x						
Sorrel, sheep	*Rumex acetosella*		x		x								
Sow thistle	*Sonchus arvensis*			x			x			x			
Sunflower	*Helianthus annuus*				x			x		x		x	
Spurges	*Euphorbia* spp.												
Strawberry	*Fragaria* spp.								x				
Tansy	*Tanacetum vulgare*			x									

Common Name	Botanical Name	Nutrient Accumulated											
		N	P	K	Ca	S	Mg	Mn	Fe	Cu	Co	Zn	Si
Alfalfa	*Medicago sativa*	x							x				
Apple	*Malus* spp.			x									
Beech	*Fagus* spp.			x									
Alyssum	*Alyssum murale*				x			x				x	
Bentgrass	*Agrostis* spp.					x		x		x		x	
Birch	*Betula* spp.		x										
Borage	*Borago officinalis*			x									x
Bracken, eastern	*Pteridium aquifolium*		x	x				x	x	x	x	x	
Buckwheat	*Fagopyrum esculentums*		x	x									
Burdock	*Arctium minus*							x					
Caraway	*Carum carvi*		x										
Carrot leaves	*Daucus carota*			x			x						
Cattail	*Typha latifolia*	x											
Chamomile, corn	*Anthemis arvensis*			x	x								
Chamomile, German	*Chamomilla recutita*		x	x	x								
Chickweed	*Stellaria media*		x	x				x					
Chicory	*Cichorium intybus*			x	x								
Chives	*Allium schoenoprasum*			x	x								
Cleavers	*Galium aparine*				x								
Clovers	*Trifolium* spp.	x	x										
Clover, hop	*Medicago lupulina*	x	x										
Coltsfoot	*Tussilago farfara*			x	x	x	x		x	x			
Comfrey	*Symphytum officinale*	x		x	x		x		x				x
Creosote bush	*Larrea tridentata*									x			
Dandelion	*Taraxacum vulgare*		x	x	x		x		x	x			x
Dock, broad leaved	*Rumex obtusifolias*		x	x	x				x				
Dogwood, flowering	*Cornus florida*		x	x	x								
Duckweed	*Lemna minor*	x								x		x	
Dulse	*Palmaria palmata*				x		x		x				
Fat hen	*Atriplex hastata*			x					x				
Fennel	*Foeniculum vulgare*	x	x										
Fescue, red	*Festuca rubra*									x		x	
Flax	*Linum usitatissimum*			x				x	x				
Garlic	*Allium sativum*					x		x					
Geranium, scented	*Pelargonium* spp.							x	x	x	x	x	
Groundsel	*Senecio vulgaris*								x				

Common Name	Botanical Name	Comments	Common Name	Botanical Name	Comments
Acacia	*Acacia* spp.		Hog peanut	*Amphicarpa bracteata*	
Alder	*Alnus* spp.		Kentucky coffee tree	*Gymnocladus dioica*	
Alfalfa	*Medicago sativa*		Licorice	*Glycyrrhiza*	
Amur Maackia	*Maackia amurensis*		Lupine	*Lupinus* spp.	
Autumn olive	*Elaeagnus umbellata*		Mesquite	*Prosopis glandulosa*	
Barrel medic	*Medicago truncatula*		Milkvetch	*Astragalus* spp.	
Bayberry	*Myrica pensylvanica*		Mountain mahogany	*Cercocarpus montanus*	
Bean	*Phaseolus* spp.		Pencil flower	*Stylosanthes biflora*	
Bird's foot trefoil	*Lotus corniculatus*		Prairie turnip	*Psoralea esculenta*	
Black Locust	*Robinia pseudoacacia*		Russian olive	*Elaeagnus angustifolia*	
Bladder senna	*Colutea arborescens*		Sea buckthorn	*Hippophae rhamnoides*	
Blue false indigo	*Baptisia australis*		Sesbania	*Sesbania exaltata*	
Broom	*Cytisus* spp.		Siberian pea shrub	*Caragana arborescens*	
Buffaloberry	*Shepherdia argentea*	Drought resistant	Silk tree or mimosa	*Albizzia julibrisin*	
Bush clover	*Lespedeza thunbergii*		Silverberry	*Elaeagnus commutata*	
Butterfly pea	*Clitoria mariana*		Spanish broom	*Spartium junceum*	
Carolina bush pea	*Thermopsis villosa*		Sunn hemp	*Crotolaria juncea*	
Clover	*Trifolium* spp.		Sweet gale	*Myrica gale*	
Cowpea	*Vigna unguiculata*		Sweet pea	*Lathyrus* spp.	
Elaeagnus	*Elaeagnus* × *ebbingei*		Sweet vetch	*Hedysarum boreale*	
False indigo	*Amorpha fruticosa*		Sweetfern	*Comptonia peregrina*	
Fava Bean	*Vicia faba*		Trefoil	*Desmodium* spp.	
Genista	*Genista* spp.		Vetch	*Vicia* spp.	
Golden-chain tree	*Laburnum anagyroides*	Flowers toxic	Wax Myrtle	*Myrica cerifrea*	
Goumi	*Elaeagnus multiflora*	Tolerates air pollution	Wild Bean	*Strophistyles umbellata*	
Groundnut	*Apios* spp.		Wild lilac	*Ceanothus* spp.	

Common Name	Botanical Name	Nutrient Accumulated											
		N	P	K	Ca	S	Mg	Mn	Fe	Cu	Co	Zn	Si
Thistle, Canada	*Cirsium arvense*								x				
Thistle, creeping	*Sonchus arvensis*		x	x					x				
Thistle, nodding	*Carduus nutans*								x				
Thistle, Russian	*Salsola pestifer*								x				
Toadflax	*Linaria vulgaris*				x		x		x				
Tobacco, stems/stalk	*Nicotiana* spp.	x											
Valerian	*Valeriana officinalis*												x
Vetches	*Vicia* spp.	x	x	x						x	x		
Walnut	*Juglans* spp.		x	x	x								
Watercress	*Nasturtium officinale*		x	x	x	x	x		x				
Willow	*Salix* spp.						x					x	
Yarrow	*Achillea millefolium*	x	x	x						x			

Sources: Cocannouer, Joseph. *Weeds: Guardians of the Soil*. Devin-Adair, 1976. Famulari, Stevie. University of New Mexico. Unpublished. Jacke, David and Eric Toensmeir. *Edible Forest Gardens*. Chelsea Green, 2005. Kourik, Robert. *Designing and Maintaining Your Edible Landscape—Naturally*. Metamorphic, 1984. Pfeiffer, Ehrenfried. *Weeds and What They Tell*. Biodynamic Farming and Gardening, 1970.

Questions?

Thank you.