UTTARAKHAND (GAUMUKH - HARIDWAR)
NATURAL LANDSCAPE
(Along the either side of river)

ZONE **ALPINE**

SOIL TYPE **Acidic**

MODEL – 1/UNL **Biodiversity Conservation**

*****No Forestry intervention required, efforts shall be made to conserve the species available in the area.

List enclosed of available general species

1. Alpine Meadows/ Bugyals (15/C3)

S.No.	SHRUBS		S.No.	MEDICINAL PLANTS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Rhododendron authopogon*	Talishpatra, Kodiya	1.	*Arnebia benthamii*	Baalchar
2.	*Rhododendron campanulatum*	Simru	2.	*Aconitum heterophyllum*	Atish
3.	*Juniperus indica*	Thelu, Bila	3.	*Aconitum balfourii*	Bish
4.	*Juniperus squamata*	Padmachunder	4.	*Aconitum violaceum*	Bish
			5.	*Allium humile*	Jamboo
			6.	*Allium stracheyi*	Farn
S.No.	**GRASSES**		7.	*Bergenia stracheyi*	*Bergenia stracheyi*
	Botanical Name	**Local Name**	8.	*Nardostachys jatamansi*	Jatamansi
1.	*Danthonia cachemyriana*	Babiya	9.	*Picrorhiza kurrooa*	Kutaki
2.	*Danthonia schneideri*	Babiya	10	*Fritillaria roylei*	Kshir kakoli
3.	*Calamagrostis emodensis*		11	*Dactylorhiza hatagirea*	Hathajarhi
4.	*Briza media*		12	*Anglica glauca*	Chaura
	Agropyron semicostatum		13	*Carum carvi*	Kala Jeera
	Millium effusum		14	*Pleurospermum agelicoides*	chhipi
	Phleum alpinum		15	*Selinum coniifolium*	Bhootkeshi
S.No.	**SEDGES**				
	Botanical Name	**Local Name**			
1.	*Kobresia laxa*				
2.	*Kobresia nepalensis*				

2. PLANTS OF GLACIAL ZONE

S.No.	HERBS		S.No.	SHRUBS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Anaphalis contorta*		1.	*Rhododendron lepidotum*	
2.	*Androsace sarmentosa*		2.	*Salix denticulata*	
3.	*Arenaria kumaonlensis*		3.	*Salix flabellaris*	
4.	*Aster faccidus*		4.	*Salix lindleyana*	
5.	*Polygonum affine*				
6.	*Cassiope festigata*				
7.	*Saxifraga jacquemontii*				
8.	*Saussurea simpsoniana*				
9.	*Waldheimia tomentosa*				
10	*Oxyria digyna*				
11	*Rhodiola tibetica*				
12	*Primula macrophylla*				
13	*Meconopsis aculata*				

UTTARAKHAND (GAUMUKH - HARIDWAR)
NATURAL LANDSCAPE
(Along the either side of river)

ZONE **SUB-ALPINE**

SOIL TYPE

MODEL – 2/UNL **Biodiversity Conservation**

***** No Forestry intervention required, efforts shall be made to conserve the species available in the area.

List enclosed of available general species

S.No.	TREES		S.No.	MEDICINAL PLANTS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Abies spectabilis*		1.	*Paris polyphylla*	
2.	*Picea smithiana*		2.	*Betula utilis*	
3.	*Betula utilis*		3.	*Trilium govanianum*	
4.	*Sorbus aucuparia*		4.	*Bergenia stracheyi*	
5.	*Pyrus lanata*		5.	*Berberis jaeschkeana*	
6.	*Syringa emodi*		6.	*Podophyllum hexandrum*	
			7.	*Gaultheria trichophylla*	
			8.		
S.No.	**SHRUBS**		9.		
	Botanical Name	**Local Name**	**S.No.**	**GRASSES**	
1.	*Rhododendron campanulatum*			**Botanical Name**	**Local Name**
2.	*Viburnum cotonifolium*		1.	*Stipa roylei*	
3.	*Salix denticulata*				
4.	*Cotoneaster acuminatus*				
5.	*Berberis jaeschkeana*				
6.	*Lonicera hispida*		**S.No.**	**SEDGES**	
7.	*Ribes glaciale*			**Botanical Name**	**Local Name**
8.	*Sorbus foliolosa*		1.	*Carex obscura*	
9.	*Myricaria elegans*				

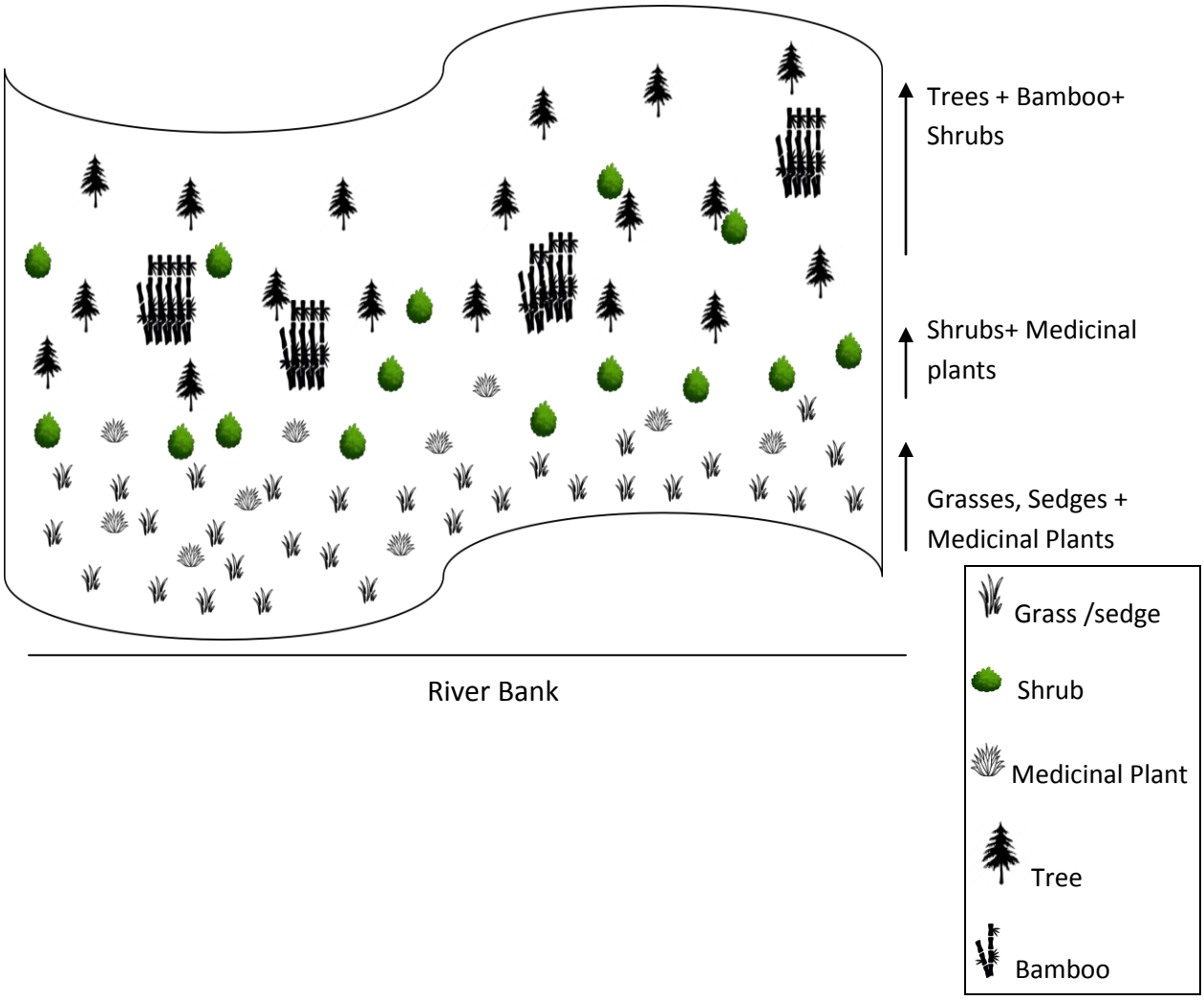
UTTARAKHAND (GAUMUKH - HARIDWAR)
NATURAL LANDSCAPE
(Along the either side of river)

ZONE **TEMPERATE MIXED CONIFER FOREST**
SOIL TYPE
MODEL –3/UNL
Temperate mixed Conifer Forest

Trees/ Bamboos	400
Shrubs	400
Medicinal Plants	200
Grasses/Sedges	200

S.No.	TREES		S.No.	MEDICINAL PLANTS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Picea smithiana*		1.	*Taxus baccata*	
2.	*Abies pindrow*		2.	*Thalictrum foliolosum*	
3.	*Cedrus deodara*		3.	*Polygonatum verticillatum*	
4.	*Acer caesium*		4.	*Lilium polyphyllum*	
5.	*Taxus baccata*		5.	*Rheum webbianum*	
6.	*Pinus wallichiana*		6.	*Skammia anquitilia*	
			7.	*Berberis aristata*	
			8.	*Berberis coriaria*	
			9.	*Allium wallichianum*	
S.No.	**SHRUBS**				
	Botanical Name	**Local Name**	**S.No.**	**GRASSES**	
1.	*Spiraea bella*			**Botanical Name**	**Local Name**
2.	*Viburnum nervosum*		1.	*Piptatherum munroi*	
3.	*Cotoneaster acuminatus*				
4.	*Rosa sericea*		**S.No.**	**SEDGES**	
				Botanical Name	**Local Name**
			1.	*Carex nivalis*	
			S.No.	**BAMBOOS**	
				Botanical Name	**Local Name**
			1.	*Thamnocalamus spathiflorus*	Tham Ringal

Diagrammatic layout/ design



UTTARAKHAND (GAUMUKH - HARIDWAR)
NATURAL LANDSCAPE
(Along the either side of river)

ZONE **TEMPERATE (Degraded landscape along the riverbanks)**

SOIL TYPE

MODEL –4/UNL

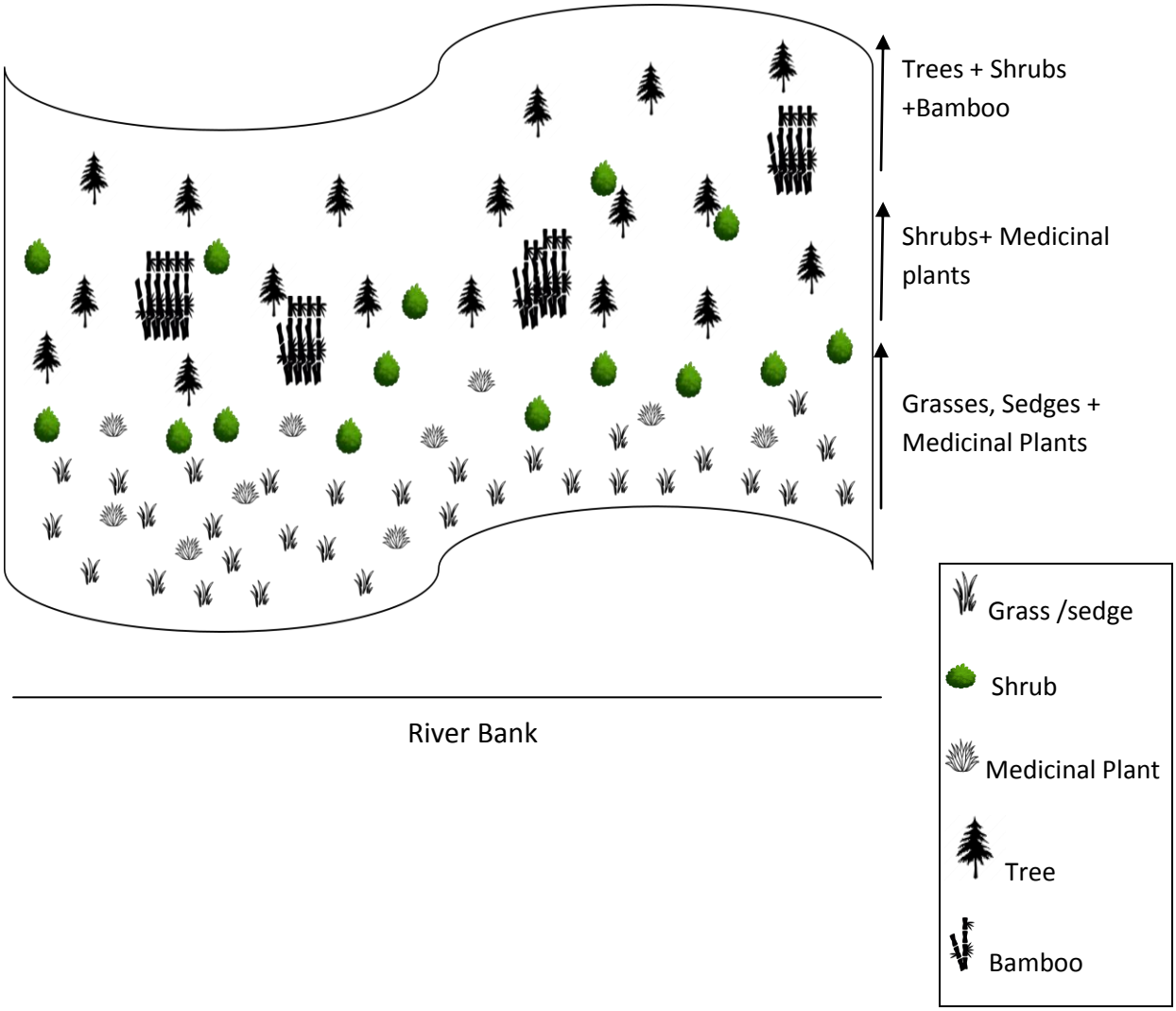
Mixed Forest

Tree/Bamboo	400
Shrub	400
Medicinal Plants	200
Grasses/Sedges	200

S.No.	TREES		S.No.	MEDICINAL PLANTS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Cedrus deodara*		1.	*Podophyllum hexandrum*	Bankakri
2.	*Pinus wallichiana*		2.	*Dictamnus albus*	Burning bush
3.	*Aesculus indica*		3.	*Ferula jaeschkeana*	False Hing
4.	*Populus cilliata*		4.	*Ephedra intermedia*	Somlata
5.	*Acer caesium*		5.	*Lilium polyphyllum*	Kakoli
6.	*Acer caudatum*		6.	*Polygonatum verticillatum*	Maha medha
7.	*Prunus persica***	Peach			
8.	*Robinia pseudacacia*				
9.	*Prunus cornuta*				
S.No.	**SHRUBS**				
	Botanical Name	**Local Name**	**S.No.**	**GRASSES**	
1.	*Salix karelinii*			**Botanical Name**	**Local Name**
2.	*Sorbaria tomentosa*		1.	*Stipa roylei*	
3.	*Cotoneaster macrophyllus*				
4.	*Sarcococca saligna*		**S.No.**	**SEDGES**	
5.	*Daphnae cannabina*			**Botanical Name**	**Local Name**
6.	*Ziziphus oxyphylla*		1.	*Carex infescata*	
				Carex nivalis	
			S.No.	**Bamboos**	
				Botanical Name	**Local Name**
				Thamnocalamus falconeri	Deo ringal
				Sinarundinaria anceps	Jumra

** Exotic but naturalized on way to Gangotri

Diagrammatic layout/ design



UTTARAKHAND (GAUMUKH - HARIDWAR)
NATURAL LANDSCAPE
(Along the either side of river)

ZONE **TEMPERATE (Open landscape along the riverbanks)**

SOIL TYPE

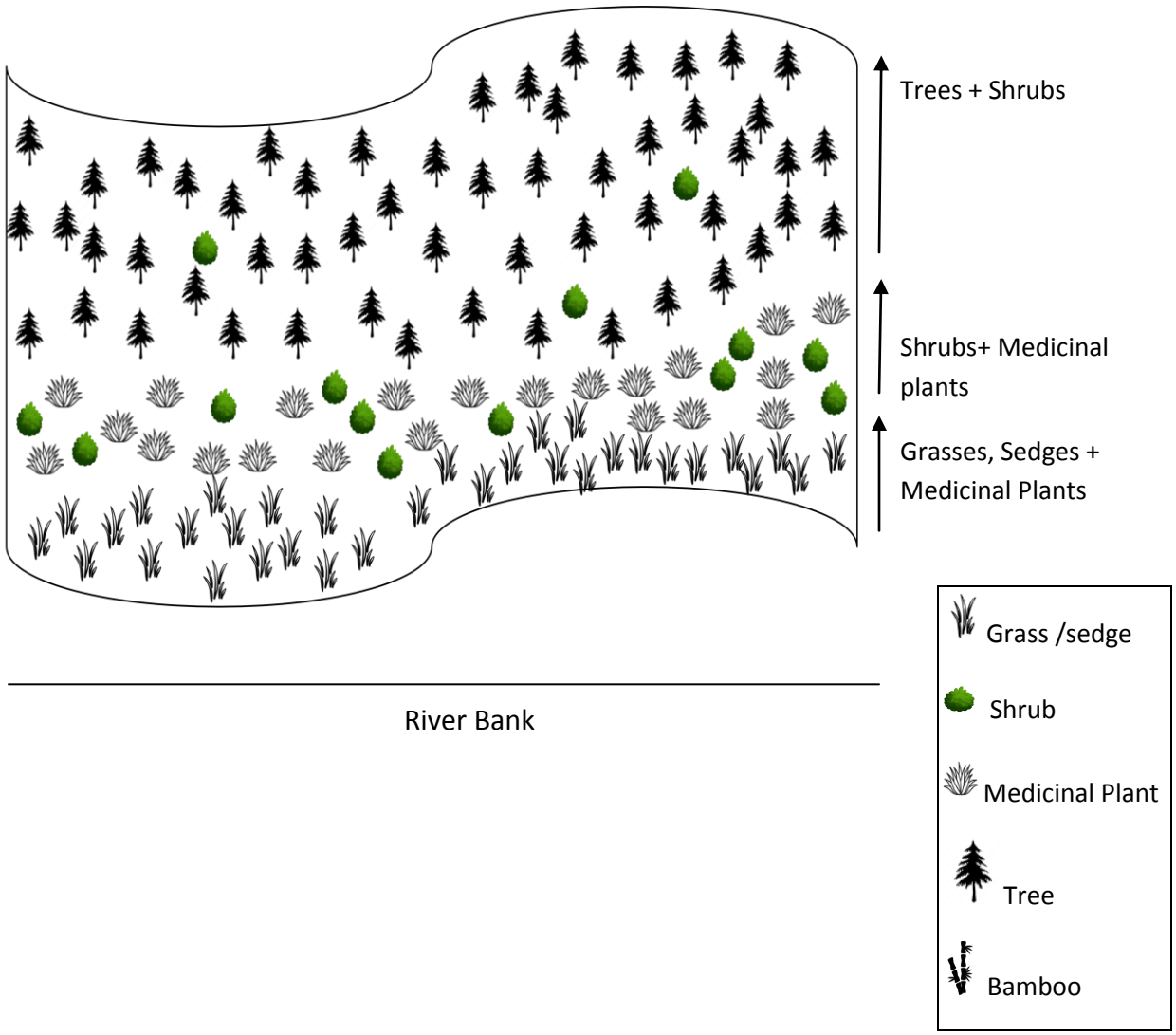
MODEL –5/UNL

Temperate mixed Conifer Forest

Tree	400
Shrub	400
Medicinal Plants	200
Grasses/Sedges	200

S.No.	TREES		S.No.	MEDICINAL PLANTS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Alnus nepalensis*		7.	*Skimmia anquitilia*	
2.	*Betula alnoides*		8.	*Phytolacca acinosa*	
3.	*Populus cilliata*		9.	*Paeonia emodi*	
4.	*Rhus punjabensis*		10.	*Thymus lineare*	
5.	*Rhus acuminata*				
6.	*Toona serrata*		**S.No.**	**GRASSES**	
7.	*Celtis australis*			**Botanical Name**	**Local Name**
8.	*Fraxinus macrantha*		1.	*Chrysopogon gryllus*	
9.	*Acacia mearnsii*				
10.	*Prunus cerasoides*				
11.	*Pyrus pashia*				
12.	*Albizia chinensis*		**S.No.**	**SEDGES**	
				Botanical Name	**Local Name**
S.No.	**SHRUBS**		1.	*Carex obscura*	
	Botanical Name	**Local Name**			
1.	*Indigofera heterantha*		**S.No.**	**SOIL BINDERS**	
2.	*Indigofera dosua*			**Botanical Name**	**Local Name**
3.	*Rubus ellipticus*		1.	*Cotoneaster macrophyllus*	
			2.	*Pyracantha crenulata*	
			3.	*Princepia utilis*	

Diagrammatic layout/ design



UTTARAKHAND (GAUMUKH - HARIDWAR)
NATURAL LANDSCAPE
(Along the either side of river)

ZONE **TEMPERATE (Moist Broadleaved Forest)**

SOIL TYPE

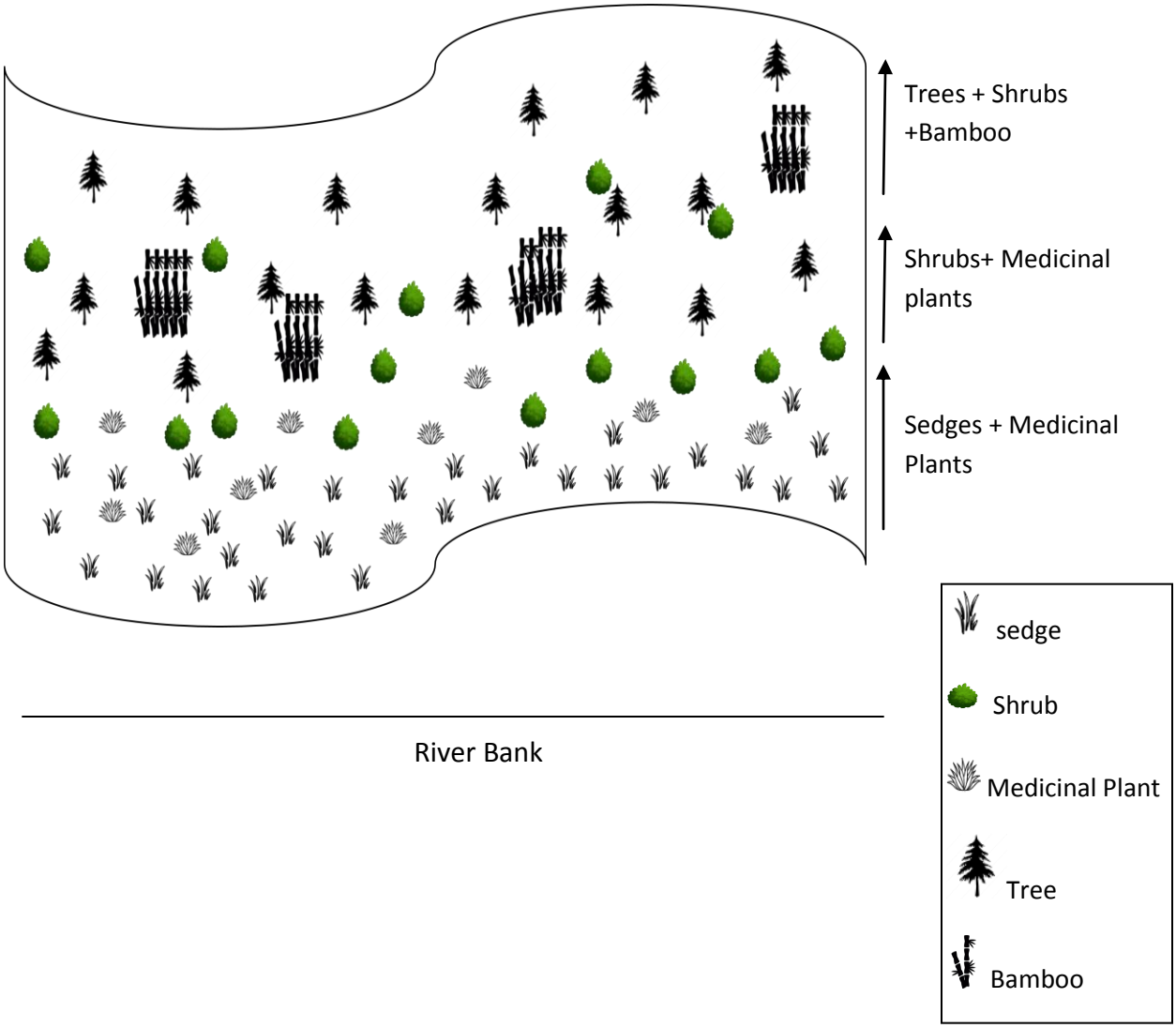
MODEL –6/UNL

Temperate Mixed Broadleaved moist

Tree	400
Shrub	400
Medicinal Plants	200
Grasses/Sedges	200

S.No.	TREES		S.No.	MEDICINAL PLANTS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Hippophae salicifolia*		1.	*Polygonatum cirrhifolium*	Medha
2.	*Acer villosum*		2.	*Prinsepia utilis*	
3.	*Juglans regia*		3.	*Habenaria intermedia*	
4.	*Rhododendron arboreum*		4.	*Satyrium nepalense*	
5.	*Lyonia ovalifolia*		5.	*Symplocos paniculata*	
6.	*Populus ciliata*		6.	*Malaxis acuminata*	
7.	*Ulmus wallichiana*		7.	*Heydycium spicatum*	
8.	*Machilus odoratissima*		8.	*Cinnamomum tamala*	
9.	*Lindera pulcherrima*		9.	*Micromeria biflora*	
10	*Symplocos paniculata*		10.	*Valeriana wallichii*	
11	*Olea glandulifera*				
12	*Quercus floribunda*		**S.No.**	**SEDGES**	
				Botanical Name	**Local Name**
			1.	*Scripus setaceus*	
S.No.	**SHRUBS**				
	Botanical Name	**Local Name**		**Bamboo**	
4.	*Indigofera heterantha*		1.	*Sinarundinaria falcata*	
5.	*Rosa moschata*				
6.	*Berberis aristata*				
7.	*Lonicera quinquelocularis*				
8.	*Jasminum humile*				

Diagrammatic layout/ design



UTTARAKHAND (GAUMUKH - HARIDWAR)
NATURAL LANDSCAPE
(Along the either side of river)

ZONE **SUB-TEMPERATE (Pine Zone)**

SOIL TYPE **Acidic**

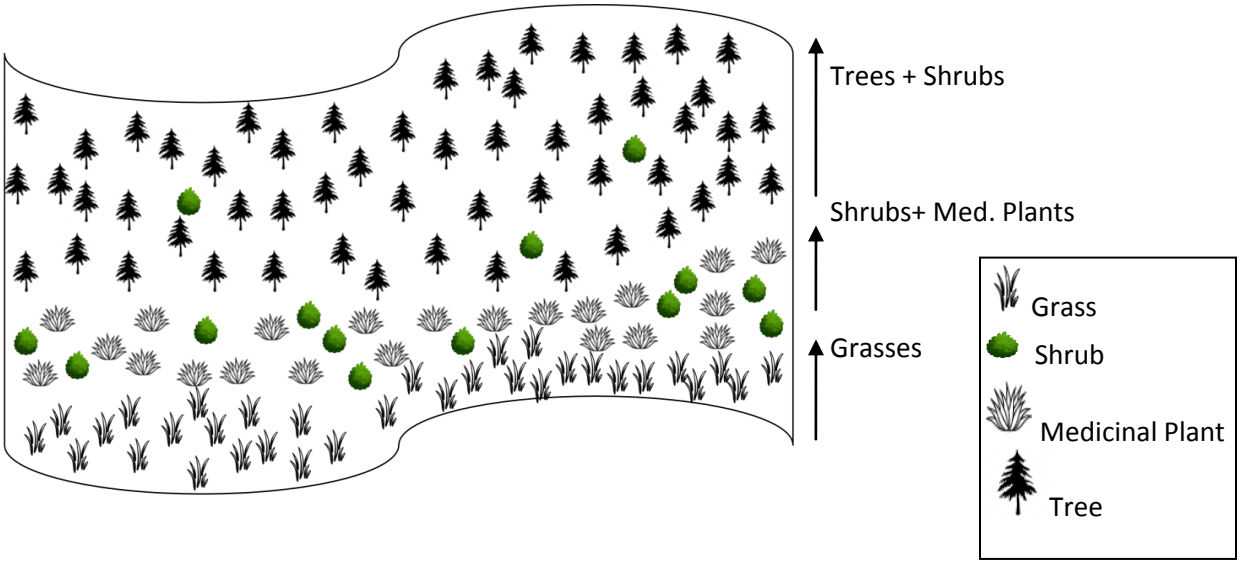
MODEL –7/UNL

Upper or Himalayan Chir Pine Forest

Tree	400
Shrub	400
Medicinal Plants	200
Grasses/Sedges	200

S.No.	TREES		S.No.	MEDICINAL PLANTS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Pinus roxburghii*		1.	*Arisaema tortuosum*	
2.	*Lyonia ovalifolia*				
3.	*Quercus leucotrichophora*				
S.No.	**SHRUBS**				
	Botanical Name	**Local Name**	**S.No.**	**GRASSES**	
1.	*Echinops echinatus*			**Botanical Name**	**Local Name**
2.	*Rosa moschata*		1.	*Heteropogon contortus*	
3.	*Artemesia nilagirica*			*Chrysopogon fulvus*	
4.	*Rhus parviflora*				

Diagrammatic layout/ design



UTTARAKHAND (GAUMUKH - HARIDWAR)
NATURAL LANDSCAPE
(Along the either side of river)

ZONE **SUB-TROPICAL (Deoprayag to Rishikesh)**

SOIL TYPE

MODEL –8/UNL

Sub-tropical Dry deciduous Forest

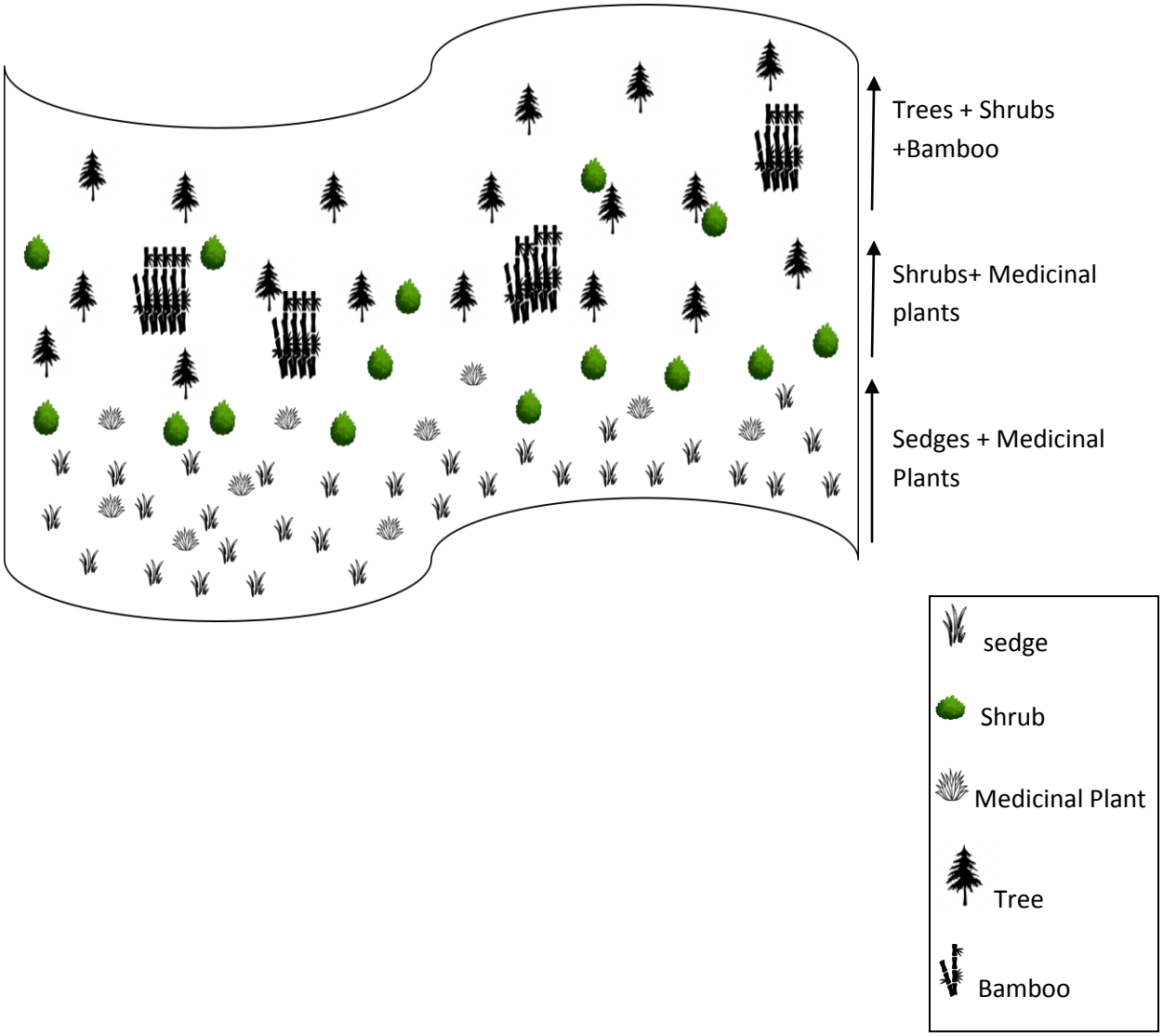
Tree	400
Shrub	400
Medicinal Plants	200
Grasses/Sedges	200

S.No.	TREES		S.No.	MEDICINAL PLANTS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Shorea robusta*		1.	*Terminalia bellerica*	
2.	*Adina cordifolia*		2.	*Terminalia chebula*	
3.	*Acacia catechu*		3.	*Emblica officinalis*	
4.	*Dalbergia sissoo*		4.	*Oroxylum indicum*	
5.	*Mitragyna parvifolia*		5.	*Stereospermum chelnoides*	
6.	*Anogeissus latifolia*		6.	*Premna latifolia*	
7.	*Lagestroemia parviflora*		7.	*Desmodium gangeticum*	
8.	*Schleichera oleosa*		8.	*Rubia cordifolia*	
9.	*Holoptelea integrifolia*				
10	*Garuga pinnata*				
11	*Toona ciliata*		**S.No.**	**Grasses**	
12	*Aegle marmelos*			**Botanical Name**	**Local Name**
13	*Murraya paniculata*		1.	*Arundinella nepalensis*	
14	*Narenge crenulata*		2.	*Arindinella maxima*	
15	*Acacia farnesiana*		3.	*Apluda mutica*	
16	*Sapium insigne*		4.	*Chrysopogon fulvus*	
17	*Hymenodactylon excelsum*		5.	*Thysanolaena maxima*	
18	*Terminalia alata*		6.	***Saccharum spontaneum*	
19			7.	*Arundo donax*	
20			8.	*Phragmites karka*	
21	*Moringa oleifera*		**S.No.**	**Bamboos**	
	Casearia gravelens			**Botanical Name**	**Local Name**

S.No.	SHRUBS		1.	*Dendrocalamus strictus*	
	Botanical Name	**Local Name**			
1.	*Trema politoria*		**S.No.**	**SEDGES**	
2.	*Debregeasia longifolia*			**Botanical Name**	**Local Name**
3.	*Rhus parviflora*		1.	*Carex obscura*	
4.	*Carissa opaca*				
5.	*Buddleja asiatica*		**S.No.**	**SOIL BINDERS**	
6.	*Berberis lycium*			**Botanical Name**	**Local Name**
7.	*Woodfordia fruiticosa*		1.	*Eriophorum comosum*	
8.	*Lespedeza stenocarpa*				
9.	*Indigofera cassioides*				

** In few flood plains particularly river rafting camps

Diagrammatic layout/ design



UTTARAKHAND (GAUMUKH - HARIDWAR)
NATURAL LANDSCAPE
(Along the either side of river)

ZONE **SUB-TROPICAL (Rishikesh- Haridwar)**

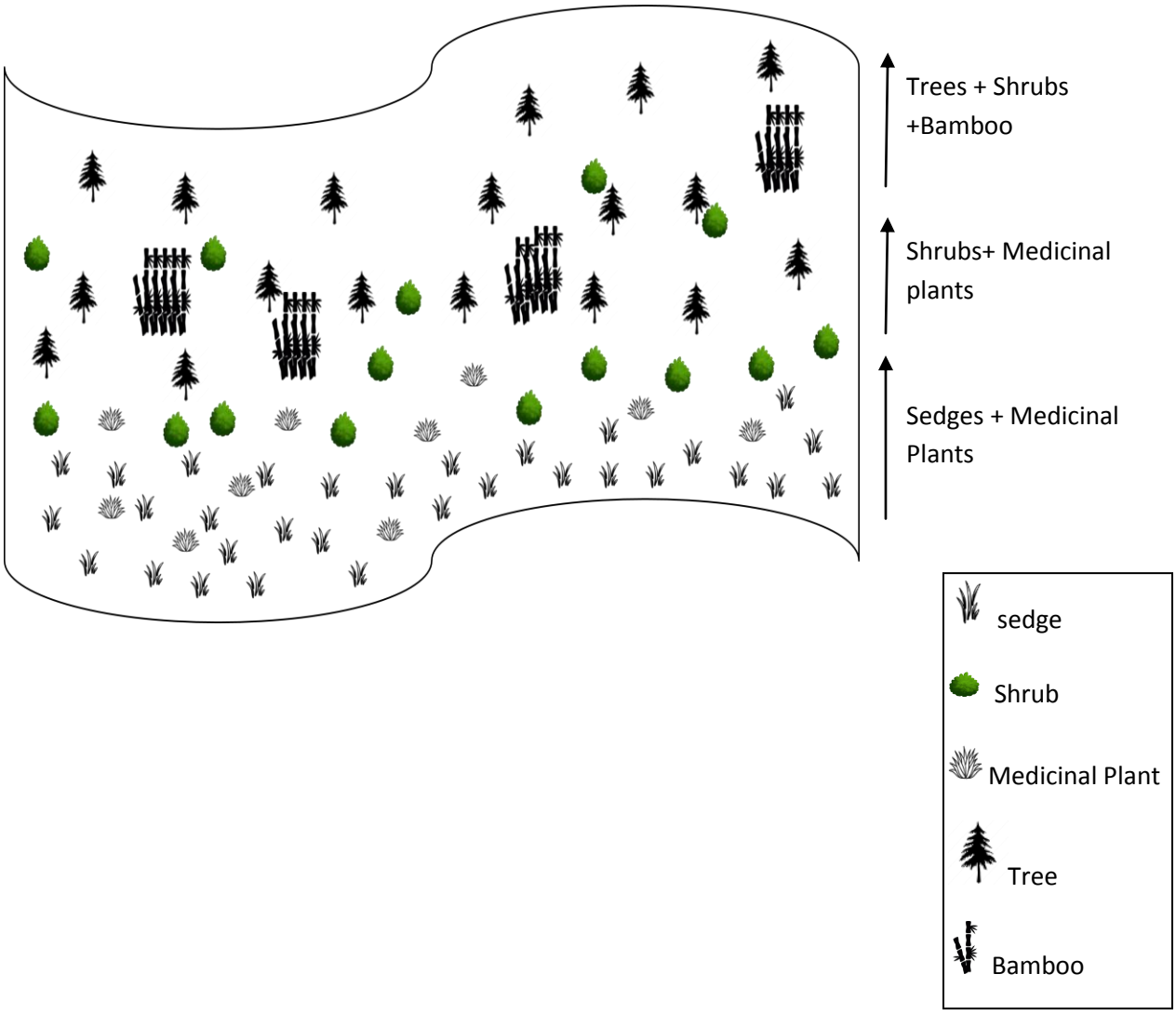
SOIL TYPE **Sandy Loam**

MODEL –9/UNL

Sub-tropical Dry deciduous Forest

Tree	400
Shrub	400
Medicinal Plants	200
Grasses/Sedges	200

S.No.	TREES		S.No.	MEDICINAL PLANTS	
	Botanical Name	**Local Name**		**Botanical Name**	**Local Name**
1.	*Terminalia arjuna*		1.	*Acorus calamus*	
2.	*Trewia nudiflora*		2.	*Celastrus paniculatus*	
3.	*Butea monosperma*		3.	*Desmodium gangeticum*	
4.	*Salix tetrasperma*		4.	*Sida cordifolia*	
5.	*Pongamia pinnata*		5.	*Tephrosia purpurea*	
6.	*Syzygium cuminii*		6.	*Hyptis suaveolens*	
7.	*Ziziphus mauritiana*		7.	*Helecteres isoa*	
8.	*Careya arborea*				
9.	*Ficus hispida*		**S.No.**	**Grasses**	
10	*Ficis racemosa*			**Botanical Name**	**Local Name**
11	*Ficus semicordata*		1.	*Saccharum spontaneum*	
12	*Phoenix sylvestris*		2.	*Saccharum benghalensis*	
13	*Holarrhena pubescens*		3.	*Vetveria zizanoides*	
14	*Boswellia serrata*		4.	*Desmostachya bipinnata*	
15	*Sterculia villosa*		5.	*Imperata cylindrica*	
16	*Hymenodactylon excelsum*		6.		
17	*Bauhinia racemosa*		7.		
18	*Bauhinia variegata*		8.		
19	*Bombax ceiba*		**S.No.**	**Bamboos**	
20	*Toona cilliata*			**Botanical Name**	**Local Name**
21	*Garuga pinnata*		9.	*Dendrocalamus strictus*	
22	*Terminalia chebula*		10.	*Bambusa bamboos*	

23	*Terminalia bellerica*				
24	*Ficus auriculata*		**S.No.**	**SOIL BINDERS**	
				Botanical Name	**Local Name**
S.No.	**SHRUBS**		1.	*Eulaliopsis binata*	
	Botanical Name	**Local Name**	2.	*Eriophorum comosum*	
1.	*Ficus laminosa*				
2.	*Woodfordia fruticosa*				
3.	*Carissa opaca*				
4.	*Tephrosia purpurea*				
5.	*Typha elephantina*				
6.	*Ziziphus onoplia*				
7.	*Orthanthera viminea*				
8.	*Tamarix dioca*				

Diagrammatic layout/ design