

Appendix 1 and Appendix 2: Supplemental material for

“The alpine vegetation of the Khangchendzonga landscape, Sikkim Himalaya: Community characteristics, diversity, and aspects of ecology,” by Sandeep Tambe and G S Rawat; published in [Mountain Research and Development](#) (MRD) vol 30 no 3 (August 2010).

APPENDIX S1 Comparison of landscape features showing variation in physiography and climate across major watersheds (sequenced north to south, see also Figure 1) in Khangchendzonga National Park.

Landscape features			Watershed						
Category	Features	Unit	Lhonak	Zemu	Lachen	Rangyong	Rangit	Prek	Churong
Physiography	Regional differentiation	O, I, T ^a	T	I	I	I	O	O	O
	Dominant valley glacier	VG, NG ^b	VG	VG	VG	NG	NG	VG	VG
	Orientation	direction	W–E	W–E	N–S	W–E	N–S	N–S	N–S
	Area	km ²	243	368	95	664	118	144	152
	Percentage area of KNP	%	14	21	5	37	7	8	9
	Mean elevation	m	5250	5112	3447	4173	4176	3562	4591
	Highest elevation	m	7459	8586	5064	8476	5825	6691	7338
	Lowest elevation	m	3100	2700	1800	1220	2200	2200	2200
	Total relief	m	4359	5898	3264	7256	3625	4491	5138
	Basin length	m	44,065	42,697	27,171	31,413	10,747	25,626	23,953
Climate	Relief ratio	ratio	0.10	0.14	0.12	0.23	0.34	0.18	0.21
	Mean annual rainfall	mm	1334	1643	1812	1866	2250	2230	2037
	Climatic zone		cold arid	continental	continental	continental	oceanic	oceanic	oceanic

^a O = Outer Himalaya, I = Inner Himalaya, T = Tibetan Himalaya

^b VG = Dominant valley glacier, NG = No dominant valley glacier

APPENDIX S2 Synoptic table of the vegetation types in the alpine zone of the Khangchendzonga National Park, Sikkim Himalaya, India (with the threshold fidelity value for diagnostic species taken as 4, threshold frequency value for constant species as 60, and dominance indicated by average percentage cover).

Vegetation type	Diagnostic species	Constant species	Dominant species
Riverine willow (<i>Salix sikkimensis</i>) thicket	<i>Salix sikkimensis</i> 6.6, <i>Carex orbicularis</i> 4.6	<i>Salix sikkimensis</i> 100, <i>Epilobium wallichianum</i> 60	<i>Salix sikkimensis</i> 40
<i>Juniperus squamata</i> scrub	<i>Poa alpina</i> 7.4, <i>Juniperus squamata</i> 6.6	<i>Juniperus squamata</i> 100	<i>Juniperus squamata</i> 50
<i>Juniperus indica</i> scrub	<i>Juniperus indica</i> 6.2	<i>Juniperus indica</i> 100	<i>Juniperus indica</i> 60
Rhododendron scrub	<i>Rhododendron setosum</i> 4.5, <i>Morina nepalensis</i> 4.1	<i>Rhododendron setosum</i> 100, <i>Rhododendron anthopogon</i> 50, <i>Rhododendron setosum</i> 25	<i>Rhododendron anthopogon</i> 50, <i>Rhododendron setosum</i> 25
Morainic scrub	<i>Potentilla fruticosa</i> 5.0, <i>Spiraea arcuata</i> 4.6	<i>Potentilla fruticosa</i> 100, <i>Rhododendron anthopogon</i> 60, <i>Kobresia nepalensis</i> 60	<i>Rhododendron lepidotum</i> 20, <i>Potentilla fruticosa</i> 20
Riverine (<i>Myricaria rosea</i>) scrub	<i>Myricaria rosea</i> 6.0, <i>Parrya platycarpa</i> 4.6	<i>Myricaria rosea</i> 100, <i>Juncus</i> spp. 80, <i>Epilobium wallichianum</i> 60	<i>Myricaria rosea</i> 60
<i>Kobresia duthiei</i> moist meadow	<i>Kobresia duthiei</i> 7.4, <i>Kobresia capillifolia</i> 4.6, <i>Rheum acuminatum</i> 4.2	<i>Kobresia duthiei</i> 100, <i>Rheum acuminatum</i> 80, <i>Potentilla peduncularis</i> 80, <i>Kobresia nepalensis</i> 60, <i>Juncus</i> spp. 60	<i>Kobresia duthiei</i> 80
<i>Kobresia nepalensis</i> moist meadow	<i>Cremanthodium</i> spp. 4.6,	<i>Kobresia nepalensis</i> 100,	<i>Kobresia nepalensis</i> 60
<i>Kobresia pygmaea</i> dry meadow	<i>Bistorta milletii</i> 5.2, <i>Thalictrum alpinum</i> 5.1, <i>Primula capitata</i> 5.1, <i>Kobresia pygmaea</i> 5.1, <i>Kobresia</i> spp. 5.1, <i>Aster falconeri</i> 5.1, <i>Hedysarum sikkimense</i> 5.0	<i>Parnassia</i> spp. 75, <i>Kobresia schoenoides</i> 75, <i>Hedysarum sikkimense</i> 75, <i>Bistorta milletii</i> 75	
<i>Deschampsia caespitosa</i> marsh meadow	<i>Deschampsia caespitosa</i> 4.8	<i>Deschampsia caespitosa</i> 100 <i>Juncus</i> spp. 75	<i>Deschampsia caespitosa</i> 50
<i>Anaphalis xylorhiza</i> mixed meadow	<i>Saxifraga</i> spp. 6.6, <i>Arenaria</i> spp. 6.6, <i>Saussurea nepalensis</i> 6.0, <i>Lancea tibetica</i> 6.0, <i>Euphorbia</i> spp. 6.0, <i>Ephedra gerardiana</i> 6.0, <i>Anaphalis xylorhiza</i> 6.0	<i>Saxifraga</i> spp. 100, <i>Kobresia schoenoides</i> 100, <i>Kobresia nepalensis</i> 100, <i>Festuca valesiaca</i> 100, <i>Arenaria</i> spp. 100, <i>Anaphalis xylorhiza</i> 100, <i>Saussurea nepalensis</i> 67, <i>Lancea tibetica</i> 67, <i>Euphorbia</i> spp. 67, <i>Ephedra gerardiana</i> 67, <i>Arenaria</i> spp. 67	<i>Anaphalis xylorhiza</i> 33